SUZUKI

LT-Z400

SERVICE MANUAL

99500-43060-01E

FOREWORD

This manual contains an introductory description on the SUZUKI LT-Z400 and procedures for its inspection, service, and overhaul of its main components. Other information considered as generally known is not included.

Read the GENERAL INFORMATION section to familiarize yourself with the vehicle and its maintenance. Use this section as well as other sections as a guide for proper inspection and service.

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

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

⚠ WARNING

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

SUZUKI MOTOR CORPORATION

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GENERAL INFORMATION

1

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WARNING/CAUTION/NOTE

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

⚠ WARNING

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

CAUTION

Indicates a potential hazard that could result in vehicle damage.

NOTE:
Indicates special information to make maintenance easier or instructions clearer.

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

GENERAL PRECAUTIONS

⚠ WARNING

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

CAUTION

*** If parts replacement is necessary, replace the parts with SUZUKI Genuine Parts or their equivalent.**
*** When removing parts that are to be reused, keep them arranged in an orderly manner so that they may be reinstalled in the proper order.**
*** Be sure to use special tools when instructed.**
*** Make sure that all parts used in reassembly are clean. Lubricate them when specified.**
*** Use the specified lubricants, bonds, or sealants.**
*** When removing the battery, disconnect the ⊖ battery lead wire first, then the ⊕ battery lead wire.**
*** When reconnecting the battery, connect the ⊕ battery lead wire first, then the ⊖ battery lead wire. Finally, cover the ⊕ battery terminal with the terminal cover.**
*** When performing service to electrical parts, disconnect the ⊖ battery lead wire, unless the service procedure requires the battery power.**
*** When tightening cylinder head and crankcase nuts and bolts, tighten the larger sizes first. Always tighten the nuts and bolts from the inside working out, diagnoally and to the specified torque.**
*** Whenever you remove oil seals, gaskets, packing, O-rings, self-locking nuts, locking washers, cotter pins, circlips, snap rings and other specified parts, be sure to replace them with new ones. Also, before installing these new parts, be sure to remove any left over material from the mating surfaces.**
*** Never reuse a circlip and snap ring. When installing a new snap ring, take care not to expand the end gap larger than required to slip the snap ring over the shaft. After installing a snap ring, always ensure it is completely seated in its groove and securely fitted.**
*** Use a torque wrench to tighten fasteners to the specified torque. Wipe off grease and oil if a thread is smeared with them.**
*** After reassembling, check parts for tightness and proper operation.**

*** To protect the environment, do not unlawfully dispose of used motor oil, all other fluids, batteries, and tires.**
*** To protect the earth's natural resources, properly dispose of used vehicles and parts.**

SUZUKI LT-Z400K3 (2003-MODEL)

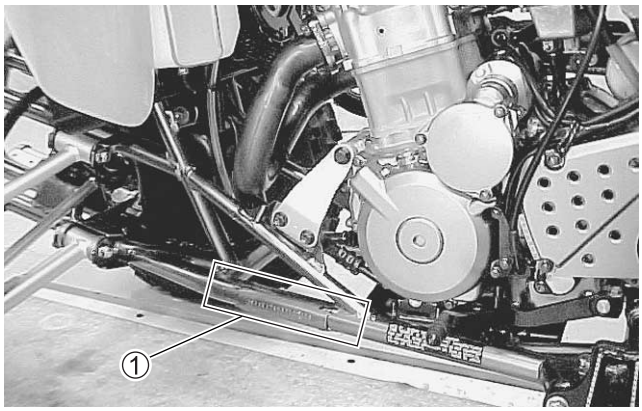
RIGHT SIDE

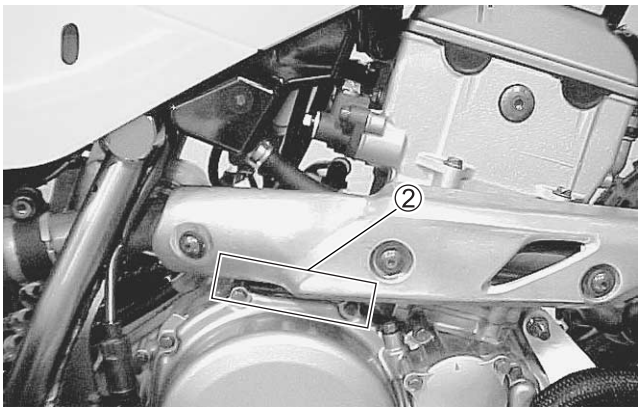
LEFT SIDE

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

SERIAL NUMBER LOCATION

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





FUEL AND OIL RECOMMENDATION

FUEL (For CANADA and USA)

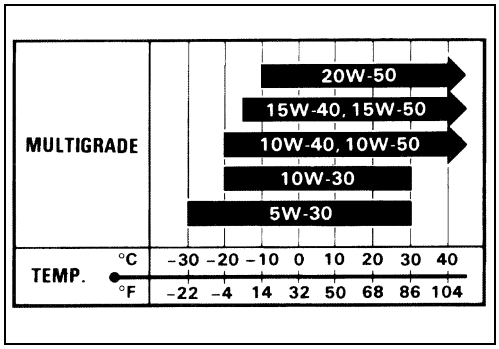
- Use only unleaded gasoline of at least 87 pump octane ($\frac{R+M}{2}$) method or 91 octane or higher rated by the Research Method.
- SUZUKI recommends that customers use alcohol-free unleaded gasoline whenever possible.
- Use of blended gasoline containing MTBE (Methyl Tertiary Butyl Ether) is permitted.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

FUEL (For the other countries)

Use unleaded gasoline that is graded 91 octane or higher by the Research Method.

ENGINE OIL (For USA)

SUZUKI recommends the use of SUZUKI PERFORMANCE 4 MOTOR OIL or oils that meet API service classifications SF or SG and that have a viscosity rating of SAE 10W-40. If engine oil with a rating of SAE 10W-40 is not available, select an alternative according to the chart.



ENGINE OIL (For the other countries)

Use a premium quality 4-stroke motor oil to ensure longer service life of your vehicle. Use only oils that meet API service classifications SF or SG and that have a viscosity rating of SAE 10W-40. If engine oil with a rating of SAE 10W-40 is not available, select an alternative according to the chart.

BRAKE FLUID

Specification and classification: DOT 4

⚠ WARNING

This vehicle uses a glycol-based brake fluid. Do not use or mix different types of brake fluid such as silicone-based and petroleum-based fluids for refilling the system, otherwise serious damage will result to the brake system.
Never use any brake fluid taken from old, used, or unsealed containers.
Never reuse brake fluid left over from the last servicing or which has been stored for a long period of time.

ENGINE COOLANT

Since antifreeze also has corrosion- and rust-inhibiting properties, always use engine coolant containing antifreeze, even if the atmospheric temperature does not go below the freezing point.
Use an antifreeze designed for aluminum radiator. SUZUKI recommends the use of SUZUKI COOLANT antifreeze. if this is not available, use an equivalent antifreeze for aluminum radiators.
Mix only distilled water with the antifreeze. Other types of water can corrode and clog the aluminum radiator.

Mix distilled water and antifreeze at a ratio of 50:50 – 40:60.

For more information, refer to page 5-3 in the Cooling System section.

CAUTION

The percentage of antifreeze in the coolant should be between 50 to 60%. If the percentage of antifreeze is above or below this range the coolant's frost protection and rust-inhibiting capabilities will be reduced. Always keep the antifreeze content above 50% even if the atmospheric temperature does not go below the freezing point.

BREAK-IN PROCEDURES

During manufacturing only the best possible materials are used and all machined parts are finished to a very high standard. It is still necessary to allow the moving parts to “BREAK-IN” before subjecting the engine to maximum stresses. The future performance and reliability of the engine depends on the care and restraint exercised during its early life. Refer to the following break-in engine speed recommendations.

- Keep to these breake-in engine speed limits.

Break-in engine speeds

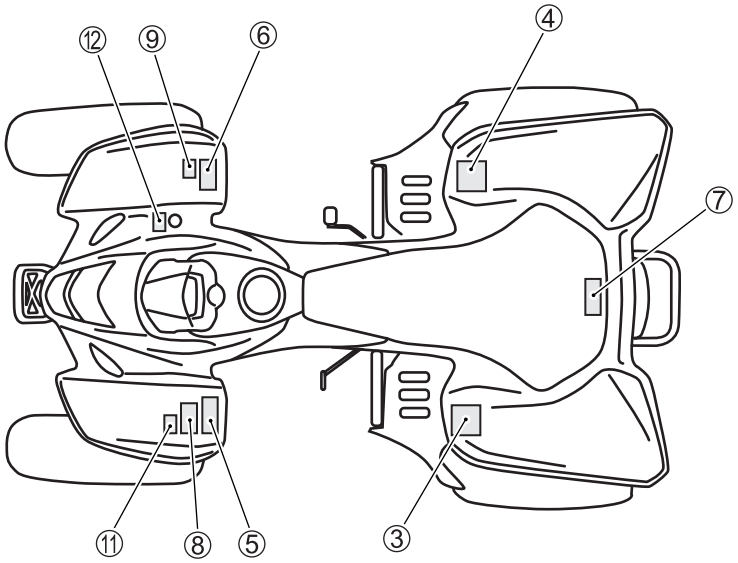
Initial 10 hours: Less than ½ throttle

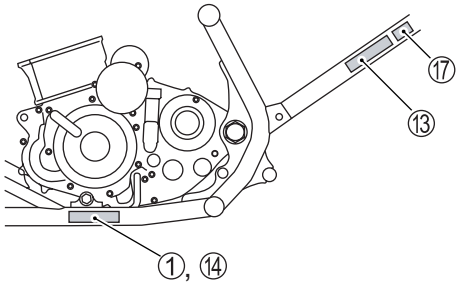
- After the engine has been operated for 10 hours the engine to full throttle operation, for short periods of time.

INFORMATION LABELS

NO	LABEL or PLATE NAME	APPLIED SPECIFICATION		
		E-03	E-28	E-33
①	Certification plate Ⓔ	○	—	○
②	Information label Ⓔ	—	—	○
③	Tire air pressure label Ⓔ	○	○	○
④	Tire air pressure label and warning no-passenger label Ⓕ	—	○	—
⑤	General warning label Ⓔ	○	○	○
⑥	General warning label Ⓕ	—	○	—
⑦	Warning no-passenger label Ⓔ	○	○	○
⑧	Age, 16 label Ⓔ	○	○	○
⑨	Age, 16 label Ⓕ	—	○	—
⑩	Manual notice label Ⓔ	○	—	○
⑪	Gearshift label Ⓔ	○	○	○
⑫	Gearshift label Ⓕ	—	○	—
⑬	ICES Canada label ⒺⒻ	—	○	—
⑭	Compliance label Ⓔ	—	○	—
⑮	Chain adjustment label Ⓔ	○	○	○
⑯	Chain adjustment label Ⓕ	—	○	—
⑰	EC approval mark	—	○	—

Ⓔ: English Ⓕ: French





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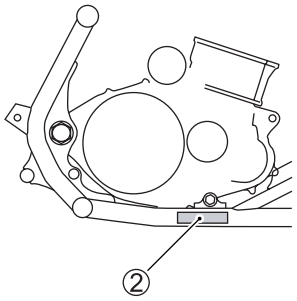

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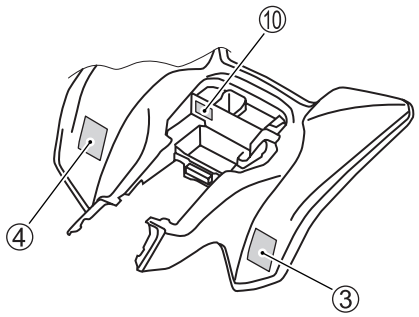
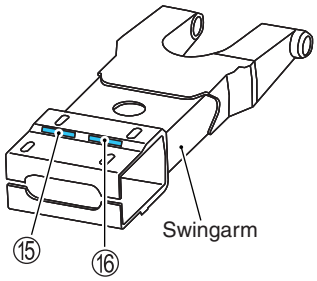




SPECIFICATIONS

DIMENSIONS AND DRY MASS

Overall length	1 830 mm (72.0 in)
Overall width	1 165 mm (45.9 in)
Overall height	1 160 mm (45.7 in)
Wheelbase	1 245 mm (49.0 in)
Front track	935 mm (36.8 in)
Rear track	910 mm (35.8 in)
Ground clearance	265 mm (10.4 in)
Seat height	810 mm (31.9 in)
Dry mass	169 kg (373 lbs)

ENGINE

Type	Four-stroke, liquid-cooled, DOHC
Number of cylinders	1
Bore	90.0 mm (3.543 in)
Stroke	62.6 mm (2.465 in)
Piston displacement	398 cm³ (24.3 cu.in)
Compression ratio	11.3 : 1
Carburetor	MIKUNI BSR36 SS, single
Air cleaner	Polyurethane foam element
Starter system	Electric
Lubrication system	Dry sump
Idle speed	1 500 ± 100 r/min

DRIVE TRAIN

Clutch	Wet multi-plate type
Transmission	5-forward and 1-reverse
Gearshift pattern, forward	1 down 4 up, foot operated
reverse	Foot/hand operated
Primary reduction ratio	2.960 (74/25)
Gear ratios, Low	2.538 (33/13)
2nd	1.666 (30/18)
3rd	1.238 (26/21)
4th	1.000 (23/23)
Top	0.846 (22/26)
Reverse	2.153 (28/13)
Final reduction ratio	2.857 (40/14)
Drive chain	RK 520KZO 96 Links

CHASSIS

Front suspension	Independent, double wishbone, coil spring, oil damped
Rear suspension	Swingarm type, coil spring, oil damped
Front wheel travel	215 mm (8.5 in)
Rear wheel travel	230 mm (9.1 in)
Caster	8.5°
Trail	36 mm (1.42 in)
Toe-in	5 mm (0.20 in)
Camber	–0.9°
Steering angle	41°
Turning radius	3.1 m (10.2 ft)
Front brake	Disk brake, twin
Rear brake	Disk brake
Front tire size	AT22 × 7 R10☆☆ tubeless
Rear tire size	AT20 × 10 R9☆☆ tubeless

ELECTRICAL

Ignition type	Electronic ignition (CDI)
Ignition timing	10° B.T.D.C. at 1 500 rpm
Spark plug	NGK CR7E or DENSO U22ESR-N
Battery	12 V 28.8 kC (8 Ah)/10 HR
Generator	Three-phase A.C. generator
Main fuse	20 A
Headlight	12 V 30/30 W × 2
Brake light/Taillight	12 V 21/5 W
Neutral indicator light	12 V 3 W
Reverse indicator light	12 V 3 W
Coolant tempereture warning light	12 V 3 W

CAPACITIES

Fuel tank, including reserve	10.0 L (2.6/2.2 US/Imp gal)
reserve	2.7 L (0.7/0.6 US/Imp gal)
Engine oil, oil change	2 000 ml (2.1/1.8 US/Imp qt)
filter change	2 100 ml (2.2/1.8 US/Imp qt)
overhaul	2 200 ml (2.3/1.9 US/Imp qt)
Coolant	1.2 L (1.3/1.1 US/Imp qt)

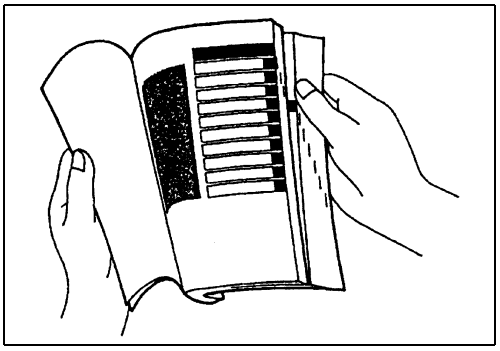
COUNTRY AND AREA CODES

The following codes stand for the applicable countries and areas.

CODE	COUNTRY OR AREA
E-03	USA
E-28	Canada
E-33	California (USA)

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

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



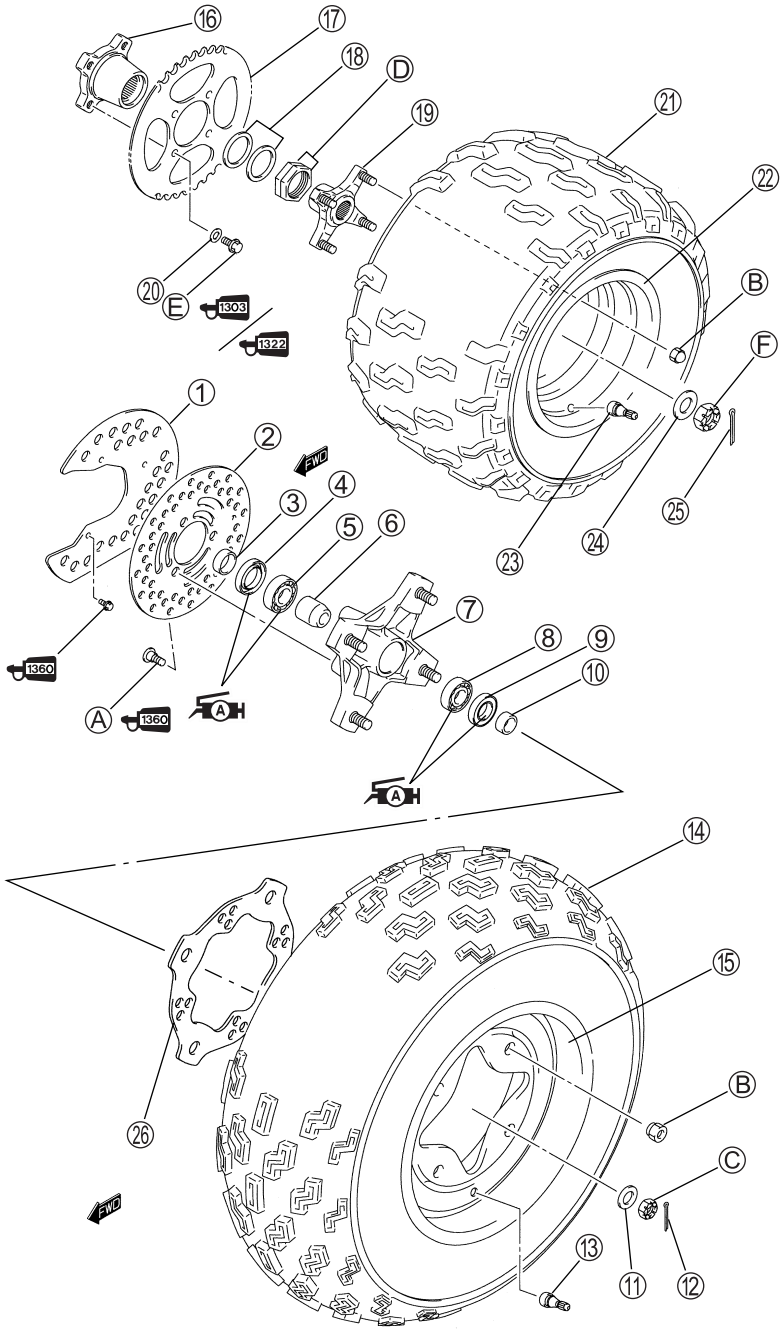
COMPONENT PARTS AND WORK TO BE DONE

Under the name of each system or unit there is an exploded view which provides work instructions and other service information (e.g.; tightening torque, lubricating points, and locking agent points).

Example: Front and rear wheels

① Disc cover
② Front disc
③ Spacer
④ Dust seal
⑤ Hub bearing
⑥ Bearing spacer
⑦ Front wheel hub
⑧ Hub bearing
⑨ Dust seal
⑩ Spacer
⑪ Washer
⑫ Cotter pin
⑬ Tire valve
⑭ Front tire
⑮ Front wheel rim
⑯ Sprocket flange
⑰ Sprocket
⑱ Washer
⑲ Rear wheel hub
⑳ Washer
㉑ Rear tire
㉒ Rear wheel rim
㉓ Tire valve
㉔ Washer
㉕ Cotter pin
㉖ Hub plate

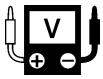
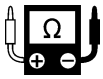
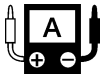
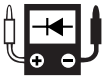
Ⓐ Disc bolt
Ⓑ Wheel set nut
Ⓒ Front hub nut
Ⓓ Rear axle nut
Ⓔ Sprocket mounting bolt
Ⓕ Rear hub nut



ITEM	N·m	kgf-m	lb-ft
Ⓐ	23	2.3	16.5
Ⓑ	50	5.0	36.0
Ⓒ	65	6.5	47.0
Ⓓ	180	18.0	130.0
Ⓔ	54	5.4	39.0
Ⓕ	100	10.0	72.5

SYMBOL

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

SYMBOL	DEFINITION	SYMBOL	DEFINITION
	Torque control required. Data beside it indicates specified torque.		Apply THREAD LOCK “1342”. 99000-32050
	Indicates service data.		Apply THREAD LOCK SUPER “1360”. 99000-32130
	Apply oil. Use engine oil unless otherwise specified.		Apply or use brake fluid.
	Apply molybdenum oil solution. (mixture of engine oil and SUZUKI MOLY PASTE in a ratio of 1 : 1)		Measure in voltage range.
	Apply SUZUKI SUPER GREASE “A”. 99000-25030 (USA) 99000-25010 (Others)		Measure in resistance range.
	Apply SUZUKI SILICONE GREASE. 99000-25100		Measure in current range.
	Apply SUZUKI MOLY PASTE. 99000-25140		Measure in diode test range.
	Apply SUZUKI BOND “1207B” 99104-31140 (USA) 99000-31140 (Others)		Measure in continuity test range.
	Apply SUZUKI BOND “1215”. 99000-31110 (Except USA)		Use special tool.
	Apply THREAD LOCK SUPER “1303”. 99000-32030		Use engine coolant. 99000-99032-11X (Except USA)
	Apply THREAD LOCK SUPER “1322”. 99000-32110 (Except USA)		

PERIODIC MAINTENANCE

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OIL PRESSURE TEST PROCEDURE 2-30

PERIODIC MAINTENANCE SCHEDULE

The chart below lists the recommended intervals for all the required periodic service work necessary to keep the vehicle operating at peak performance and economy. Maintenance intervals are expressed in terms of kilometers, miles and months, and are dependent on whichever comes first.

NOTE:
More frequent servicing may be performed on vehicles that are use under severe conditions.

PERIODIC MAINTENANCE CHART

Item \ Interval	Initial 1 month	Every 3 months	Every 6 months
Air cleaner	—	C	C
Exhaust pipe nuts and muffler bolt	T	T	T
Valve clearance	I	—	I
Spark plug	—	—	I
	Replace every 18 months.		
Spark arrester	—	—	C
Idle speed	I	I	I
Throttle cable	I	I	I
Fuel line	—	I	I
	Replace every 4 years.		
Engine oil and oil filter	R	—	R
Engine oil hoses	I	I	I
Clutch	I	—	I
Coolant	Replace every 2 years.		
Radiator hose	—	—	I
	Replace every 4 years.		
Drive chain	Inspect every time before riding.		
Brakes	I	I	I
Brakes fluid	—	I	I
	Replace every 2 years.		
Brake hose	—	—	I
	Replace every 4 years.		
Wheels and tires	—	I	I
Suspension	—	—	I
Steering	I	I	I
Chassis bolts and nuts	T	T	T
General lubrications	L	L	L

I = Inspect and adjust, clean, lubricate, or replace as necessary.
R = Replace
T = Tighten
C = Clean
L = Lubricate

MAINTENANCE AND TUNE-UP PROCEDURES

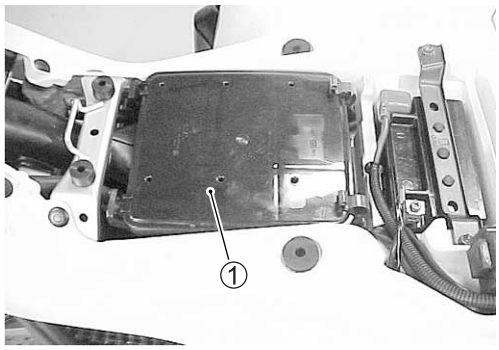
This section describes the servicing procedures for each item mentioned in the Periodic Maintenance chart.

AIR CLEANER

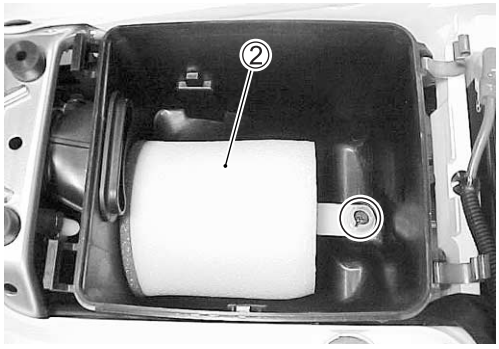
Clean every 3 months.

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

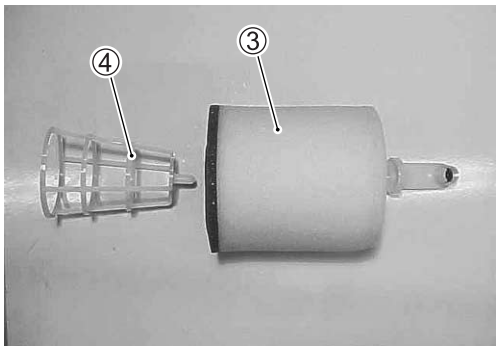
- Remove the seat.
- Remove the air cleaner case cover ①.



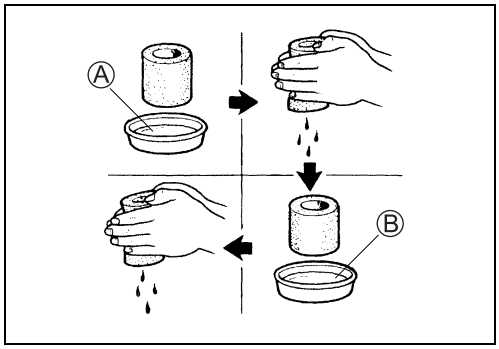
- Remove the air cleaner element ②.



- Separate the polyurethane foam element ③, element frame ④ and element holder.



- Fill a wash pan of a proper size with a non-flammable cleaning solvent. Immerse the air cleaner element in the cleaning solvent and wash it.
- Press the air cleaner element between the palms of both hands to remove the excess solvent: do not twist or wring the element or it will tear.
- Immerse the element in motor oil, and then squeeze out the excess oil leaving the element slightly wet.

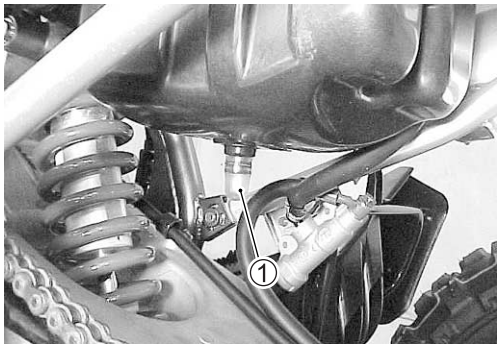


Ⓐ Non-flammable cleaning solvent
Ⓑ Motor oil SAE #30 or SAE 10W-40

CAUTION

*** Inspect the air cleaner element for tears. A torn element must be replaced.**
*** If driving under dusty conditions, clean the air cleaner element more frequently. The surest way to accelerate engine wear is to operate the engine without the element or with torn element. Make sure that the air cleaner element is in good condition at all times. Life of the engine depends largely on this component!**

• Remove the drain cap ① of the air cleaner box to allow any water to drain out.

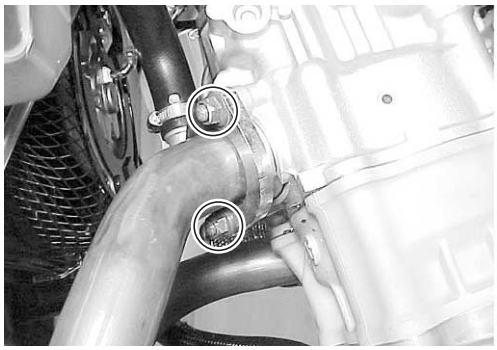


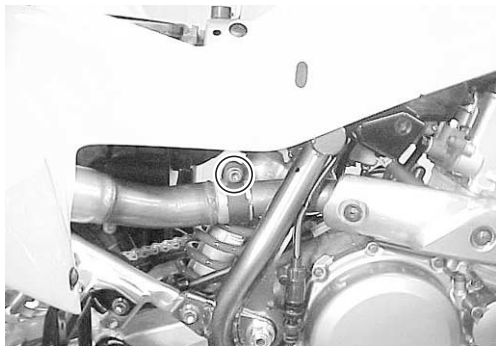
EXHAUST PIPE NUTS AND MUFFLER BOLTS

Tighten initially at 1 month and every 3 months thereafter.

• Tighten the exhaust pipe nuts ①, muffler connection bolt ②, and muffler mounting bolt ③ to the specified torque.

Exhaust pipe nut: 23 N·m (2.3 kgf-m, 16.5 lb-ft)
Muffler connection bolt: 23 N·m (2.3 kgf-m, 16.5 lb-ft)
Muffler mounting bolt: 23 N·m (2.3 kgf-m, 16.5 lb-ft)



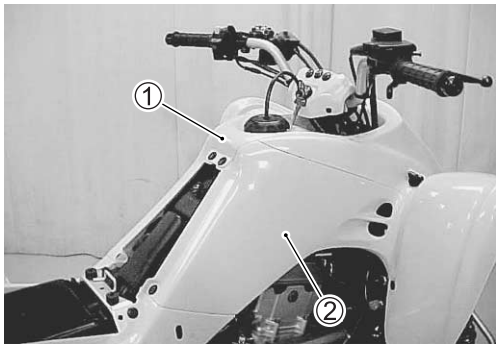


VALVE CLEARANCE

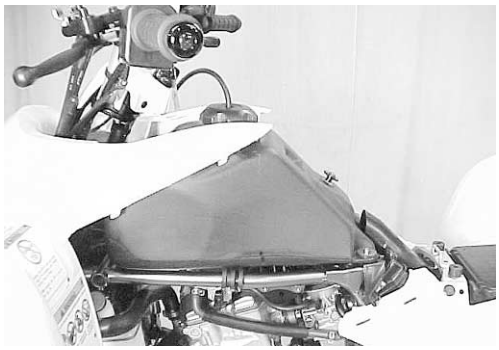
Inspect initially at 1 month and every 6 months thereafter.

Excessive valve clearance results in valve noise and insufficient valve clearance results in valve damage and reduced power.
Check the intake and exhaust valve clearances at the distances indicated above and adjust the valve clearances to specification, if necessary.

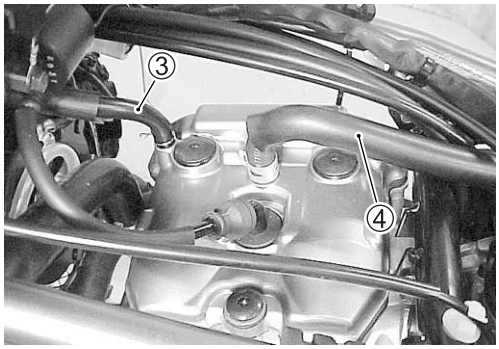
- Remove the seat. (☞6-4)
- Remove the fuel tank top cover ① and fuel tank covers ②. (L&R)



- Turn the fuel valve to the “ON” position and remove the fuel tank.

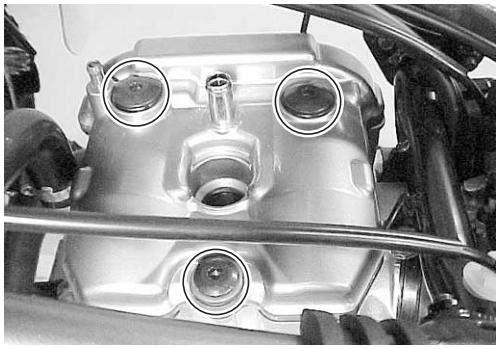


- Remove the spark plug.
- Disconnect the engine oil hose ③ and engine oil breather hose ④.

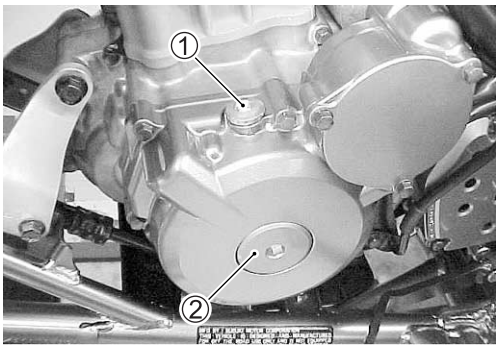


- Remove the cylinder head cover.

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 inspection, 2) when the valve mechanism is serviced, and 3) when the camshafts are removed for servicing.



• Remove the valve timing inspection plug ① and generator cover cap ②.

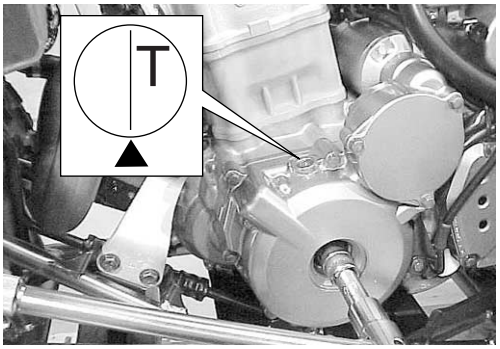


NOTE:

** 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.*

• Rotate the crankshaft with a box wrench to set the piston at TDC on the compression stroke. (Rotate the crankshaft until the "T" line on the generator rotor is aligned with the triangle mark on the generator cover.)



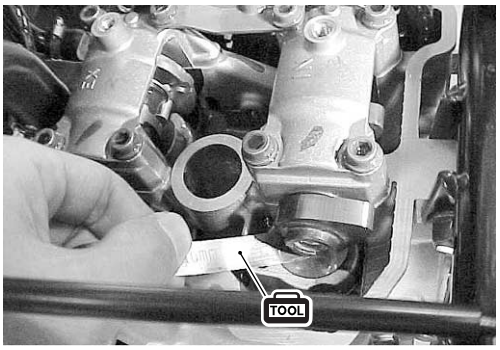
• Insert a thickness gauge between the tappet and the cam. If the clearance is out of specification, adjust it to the specification as follows.

TOOL 09900-20803: Thickness gauge

DATA Tappet clearance (when cold)

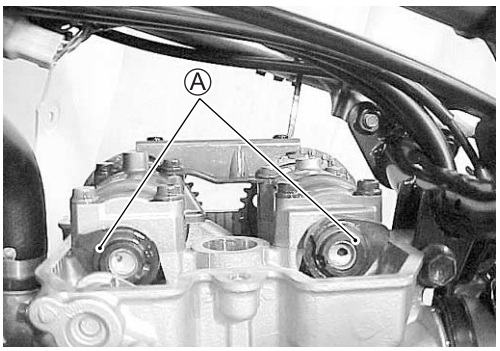
IN: 0.10 – 0.20 mm (0.0039 – 0.0079 in)

EX: 0.20 – 0.30 mm (0.0079– 0.0118 in)



NOTE:

The cam must be at position Ⓐ in order to check and adjust valve clearance. Clearance readings should not be taken with the cam in any other position than this position.

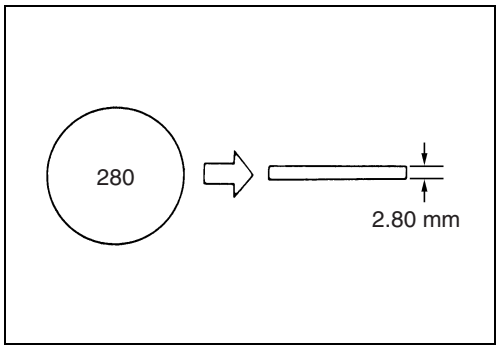


ADJUSTMENT

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

- Remove the intake or exhaust camshafts. (☞3-10)
- Remove the tappet and shim by hand or with a magnet. (☞3-19)

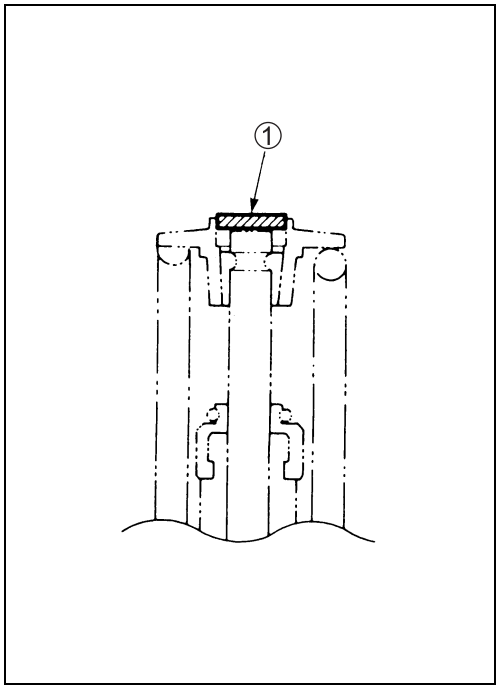
- Check the numbers printed on the tappet shim. These numbers indicate the thickness of the tappet shim, as illustrated.
- Select a replacement tappet shim that will provide the proper clearance. Tappet shims are available in 25 sizes, ranging from 2.30 to 3.50 mm (0.09 to 0.14 in) in increments of 0.05 mm (0.002 in). Install the selected shim ① at the valve stem end, with the numbers facing towards the tappet. Be sure to measure the shim with a micrometer to ensure that it is of the proper size.
  Refer to the tappet shim selection table for details.



NOTE:

** Be sure to apply molybdenum oil solution to the top and bottom faces of the tappet shim.*

** When installing the tappet shim, make sure that the side with the numbers face towards the tappet.*



CAUTION

Install the camshafts as specified. (☞3-60)

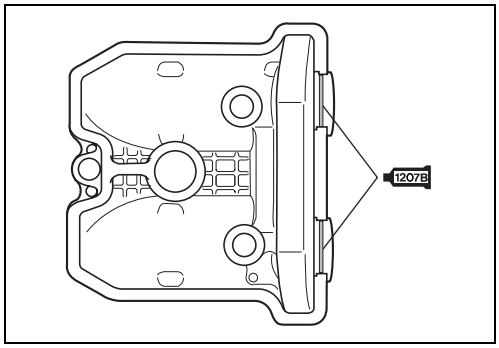
- After replacing the tappet shim and camshafts, rotate the crankshaft so that the tappet is depressed fully (this will squeeze out any oil trapped between the tappet shim and the tappet that could cause an incorrect measurement). After rotating the crankshaft, check the tappet clearance again to make sure that it is within specification.
- When installing the cylinder head cover, apply SUZUKI BOND "1207B" to the cam end caps of the cylinder head cover gasket.

1207B 99104-31140: SUZUKI BOND "1207B" (USA)

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

- Tighten the cylinder head cover bolts to the specified torque.

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



TAPPET SHIM SELECTION TABLE (INTAKE)
TAPPET SHIM NO. (12892-41C00-XXX)

TAPPET SHIM SET NO.(12800-41810)

MEASURED TAPPET CLEARANCE (mm) \ SUFFIX NO. / PRESENT SHIM SIZE (mm)	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320	325	330	335	340	345	350
	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
0.00–0.04			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
0.05–0.09		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
0.10–0.20	SPECIFIED CLEARANCE/NO ADJUSTMENT REQUIRED																								
0.21–0.25	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	3.50	
0.26–0.30	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	3.50		
0.31–0.35	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	3.50			
0.36–0.40	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	3.50				
0.41–0.45	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	3.50					
0.46–0.50	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	3.50						
0.51–0.55	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	3.50							
0.56–0.60	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	3.50								
0.61–0.65	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	3.50									
0.66–0.70	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	3.50										
0.71–0.75	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	3.50											
0.76–0.80	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50												
0.81–0.85	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50													
0.86–0.90	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50														
0.91–0.95	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50															
0.96–1.00	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50																
1.01–1.05	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50																	
1.06–1.10	3.25	3.30	3.35	3.40	3.45	3.50	3.50																		
1.11–1.15	3.30	3.35	3.40	3.45	3.50	3.50																			
1.16–1.20	3.35	3.40	3.45	3.50	3.50																				
1.21–1.25	3.40	3.45	3.50	3.50																					
1.26–1.30	3.45	3.50	3.50																						
1.31–1.35	3.50	3.50																							
1.36–1.40	3.50																								

How to use this chart:

I. Measure tappet clearance when the engine is cold.
II. Measure present shim size.
III. Match clearance in vertical column with present shim size in horizontal column.

Example:

Tappet clearance is	0.23 mm
Present shim size	2.70 mm
Shim size to be used	2.80 mm

TAPPET SHIM SELECTION TABLE (EXHAUST)
TAPPET SHIM NO. (12892-41C00-XXX)

TAPPET SHIM SET NO.(12800-41810)

MEASURED TAPPET CLEARANCE (mm) \ SUFFIX NO. / PRESENT SHIM SIZE (mm)	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320	325	330	335	340	345	350
	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
0.00–0.04					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
0.05–0.09				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
0.10–0.14			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
0.15–0.19		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
0.20–0.30	SPECIFIED CLEARANCE/NO ADJUSTMENT REQUIRED																								
0.31–0.35	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	3.50	
0.36–0.40	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	3.50		
0.41–0.45	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	3.50			
0.46–0.50	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	3.50				
0.51–0.55	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	3.50					
0.56–0.60	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	3.50						
0.61–0.65	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	3.50							
0.66–0.70	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	3.50								
0.71–0.75	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	3.50									
0.76–0.80	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	3.50										
0.81–0.85	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	3.50											
0.86–0.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50												
0.91–0.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50													
0.96–1.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50														
1.01–1.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50															
1.06–1.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50																
1.11–1.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50																	
1.16–1.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50																		
1.21–1.25	3.30	3.35	3.40	3.45	3.50	3.50																			
1.26–1.30	3.35	3.40	3.45	3.50	3.50																				
1.31–1.35	3.40	3.45	3.50	3.50																					
1.36–1.40	3.45	3.50	3.50																						
1.41–1.45	3.50	3.50																							
1.46–1.50	3.50																								

How to use this chart:

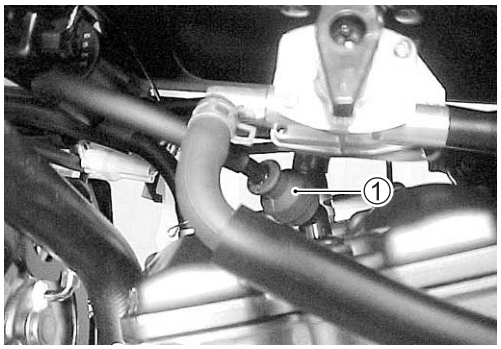
I. Measure tappet clearance when the engine is cold.
II. Measure present shim size.
III. Match clearance in vertical column with present shim size in horizontal column.

Example:

Tappet clearance is	0.38 mm
Present shim size	2.90 mm
Shim size to be used	3.05 mm

SPARK PLUG

Inspect every 6 months.
Replace every 18 months.

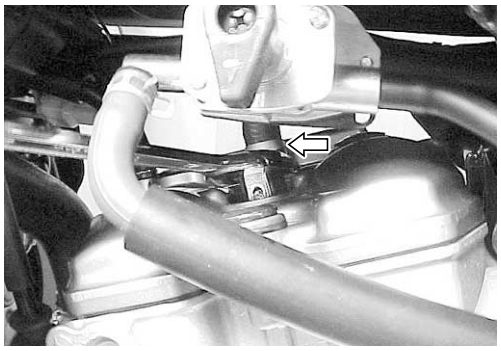


• Disconnect the spark plug cap ① and remove the spark plug.

	Hot type	Standard	Cold type
NGK	CR6E	CR7E	CR8E
DENSO	U20ESR-N	U22ESR-N	U24ESR-N

CARBON DEPOSITS

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

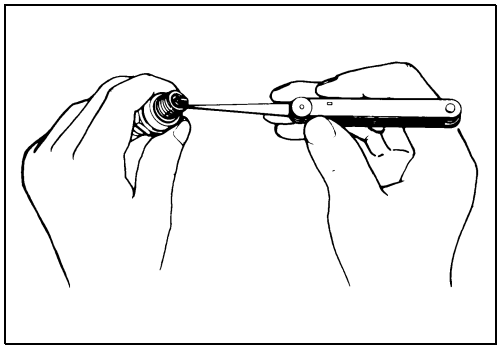


SPARK PLUG GAP

Measure the spark plug gap using a thickness gauge. If the spark plug gap is out of specification, adjust the gap.

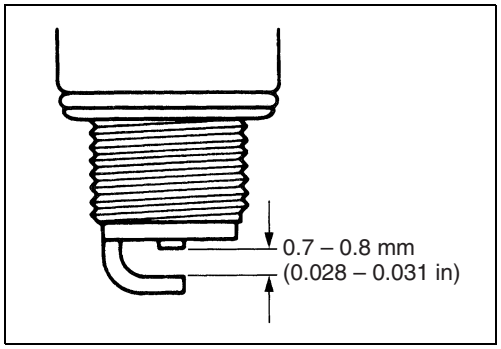
DATA Standard
Spark plug gap: 0.7 – 0.8 mm (0.028 – 0.031 in)

TOOL 09900-20803: Thickness gauge



ELECTRODE

Check the condition of the electrode.
If the electrode is extremely worn or burnt, replace the spark plug with a new one.
Also, replace the spark plug if it has a broken insulator, damaged threads, etc.



CAUTION

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

SPARK PLUG INSTALLATION

CAUTION

To avoid damaging the cylinder head threads; first, finger tighten the spark plug, and then tighten it to the specified torque using the spark plug wrench.

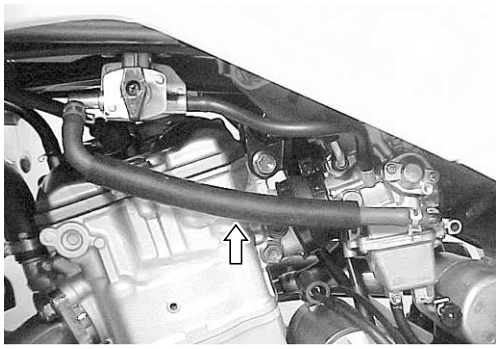
- Insert the spark plug and finger tighten it to the cylinder head and then tighten it to the specified torque.

Spark plug: 11 N·m (1.1 kgf-m, 8.0 lb-ft)

FUEL HOSE

Inspect every 3 months.
Replace every 4 years.

Inspect the fuel hose for damage and fuel leakage. If any damages are found, replace the fuel hoses with a new one.



THROTTLE CABLE PLAY

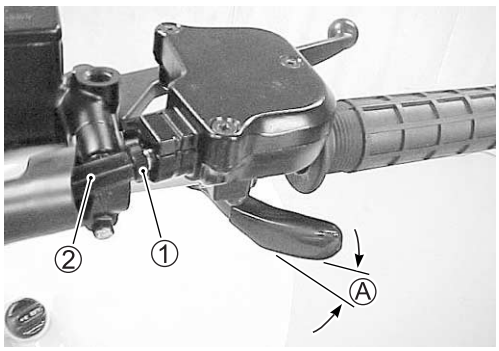
Inspect initially at 1 month and every 3 months thereafter.

Adjust the throttle cable play Ⓐ as follows.

- Loosen the locknut ① of the throttle cable.
- Turn the adjuster ② in or out to obtain the correct play.

Throttle cable play: 3 – 5 mm (0.12 – 0.20 in)

- After adjusting the throttle cable play, tighten the locknut ①.



ENGINE IDLE SPEED

Inspect initially at 1 month and every 3 months thereafter.

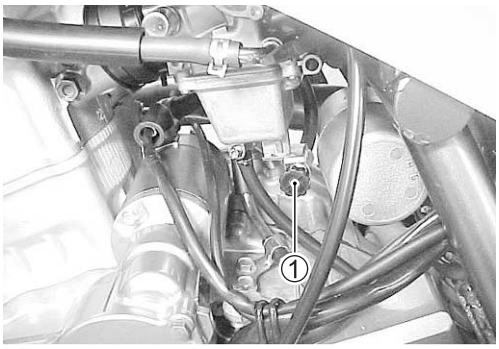
NOTE:
Make this adjustment when the engine is hot.

09900-25008: Multi circuit tester set

- Connect the electric tachometer or the multi circuit tester to the high-tension cord.
- Start the engine and set the engine idle speed between 1 400 and 1 600 r/min by turning the throttle stop screw ①.

DATA Engine idle speed: 1 500 ± 100 r/min

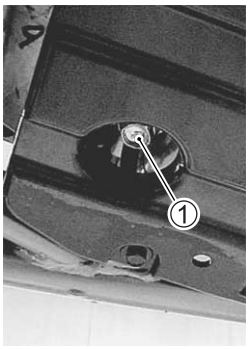
TOOL 09900-26006: Tachometer, or
09900-25008: Multi circuit tester set

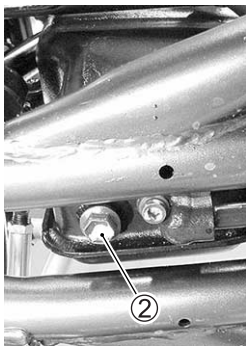


ENGINE OIL AND OIL FILTER

Replace initially at 1 month and every 6 months thereafter.

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

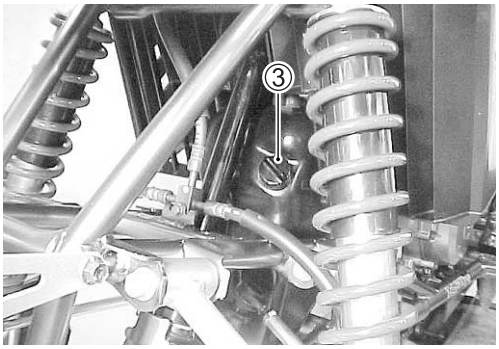




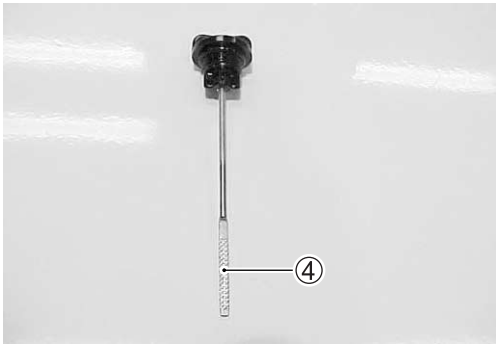
ENGINE OIL REPLACEMENT

- Place an oil pan under the drain plug ① on the crankcase and drain plug ② on the oil tank. Then drain out the engine oil by removing the engine oil drain plug ①, ② and engine oil filler cap ③.
- Reinstall the drain plug ①, ② and gasket. Tighten the engine oil drain plug ① and ② to the specified torque, and then pour the new oil through the oil filler hole. When performing an oil change (without oil filter replacement), the engine will hold about 2.0 L (2.1 US qt, 1.8 Imp qt) of oil. Use an engine oil that meets the API service classifications SF or SG and that has a viscosity rating of SAE 10W-40.

Engine oil drain plug ①: 21 N·m (2.1 kgf-m, 15.0 lb-ft)
②: 12 N·m (1.2 kgf-m, 8.5 lb-ft)

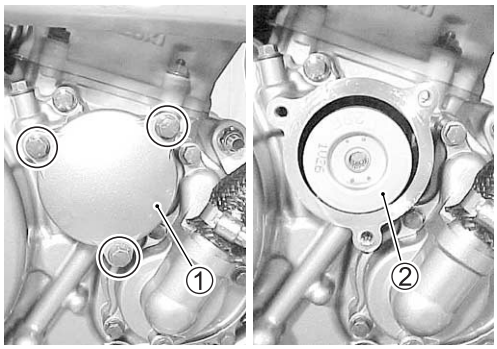


- Install the oil filler cap ③.
- Start the engine and allow it to run for a few minutes at idling speed.
- Turn off the engine and wait about three minutes, and then check the oil level on the dipstick ④. If the level is below upper line, add oil to that level. The vehicle must be in a level position for accurate measurement.



OIL FILTER REPLACEMENT

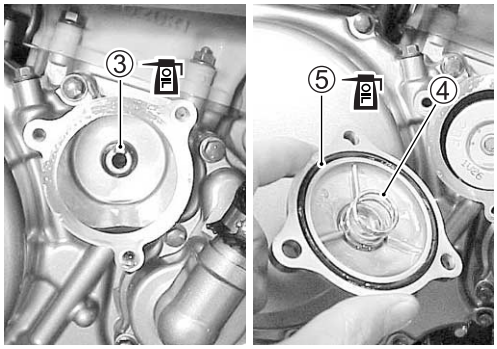
- Drain the engine oil as described in the engine oil replacement procedure.
- Remove the oil filter cap ① and oil filter ②.
- Replace the oil filter with a new one.



- Install the new O-ring ③.
- Install the spring ④ and new O-ring ⑤.

CAUTION

Apply engine oil to the O-rings.



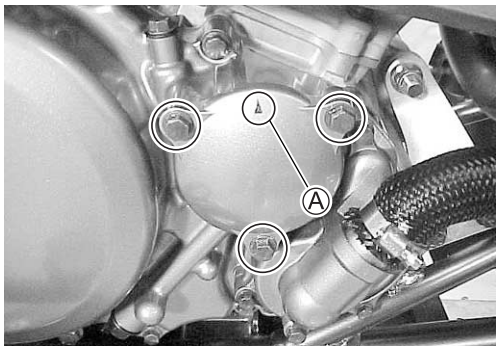
- Replace the oil filter cap and tighten the nut securely.

NOTE:
Face the triangle mark Ⓐ on the cap upward.

- Add new engine oil and check the oil level as described in the engine oil replacement procedure.

DATA Engine oil capacity

Oil change:	**2.0 L (2.1 US qt, 1.8 Imp qt)**
Oil and filter change:	**2.1 L (2.2 US qt, 1.8 Imp qt)**
Engine overhaul:	**2.2 L (2.3 US qt, 1.9 Imp qt)**



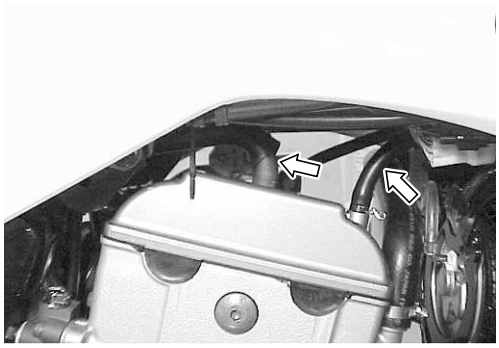
CAUTION

When reassembling the oil filter, make sure that the oil filter is installed as shown above. If the filter is installed improperly, serious engine damage may result.

ENGINE OIL HOSES

Inspect initially at 1 month and every 3 months thereafter.

Inspect the engine oil hoses for damage and oil leakage. If any damages are found, replace the engine oil hoses with new ones.

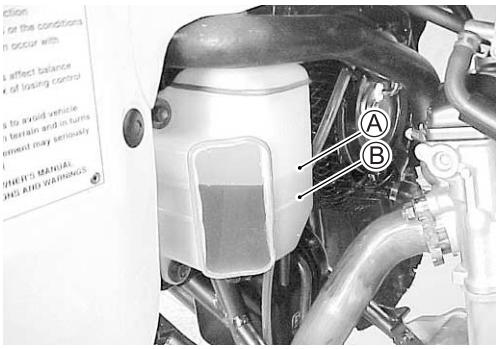


ENGINE COOLANT

Replace the engine coolant every 2 years.

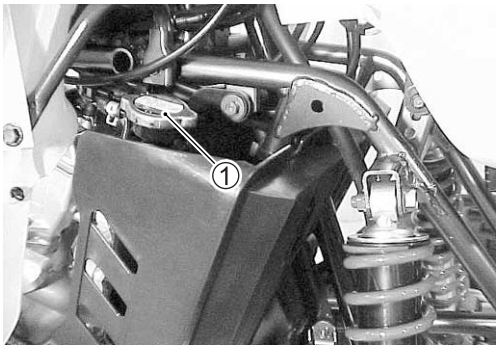
ENGINE COOLANT LEVEL CHECK

- Check the engine coolant level by observing the upper Ⓐ and lower Ⓑ lines on the engine coolant reservoir.
- If the level is below the lower line, add engine coolant until the level reaches the upper line.



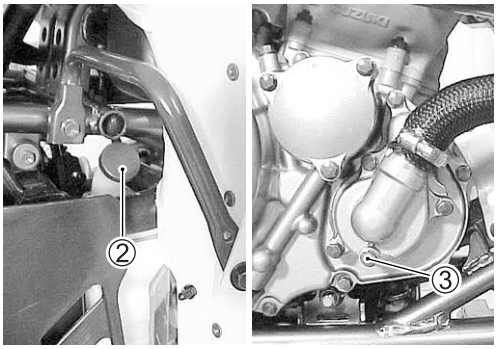
ENGINE COOLANT REPLACEMENT

- Remove the radiator cap ① and engine coolant reservoir cap ②.
- Place a pan below the water pump, and then drain the engine coolant by removing the drain plug ③.



⚠ WARNING

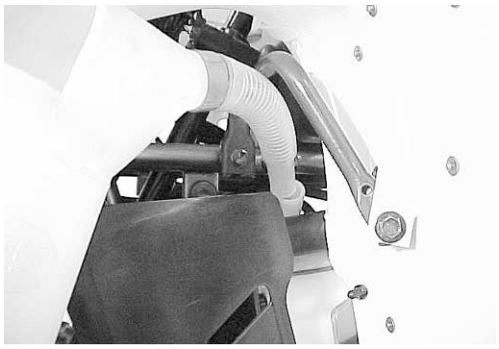
*** Do not open the radiator cap when the engine is hot, as you may be injured by escaping hot liquid or vapor.**
*** Engine coolant may be harmful if swallowed or if it comes in contact with the skin or eyes. If engine coolant gets into the eyes or contacts the skin, flush the eyes or wash the skin thoroughly, with plenty of water. If engine coolant is swallowed, induce vomiting and call a physician immediately.**



- Flush the radiator with fresh water, if necessary.
- Tighten the drain plug securely.
- Pour the specified engine coolant into the reservoir.

NOTE:
For engine coolant information, refer to page 5-3.

- Install the radiator cap securely.
- After warming up and cooling down the engine, add engine coolant until the level is between the upper and lower lines on the engine coolant reservoir.



CAUTION

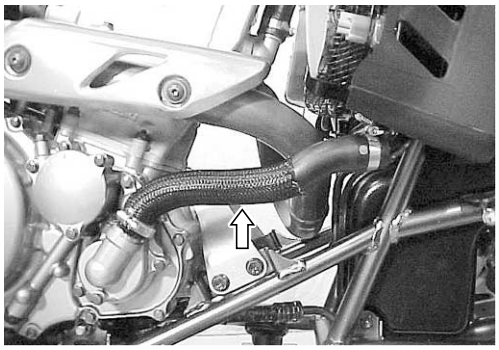
Repeat the above procedure several times and make sure the radiator is filled with engine coolant to the upper line of the engine coolant reservoir.

DATA **Engine coolant capacity (including reserve):**
1 200 ml (1.3 US qt, 1.1 Imp qt)

RADIATOR HOSES

Inspect every 2 000 km (1 200 miles, 6 months).

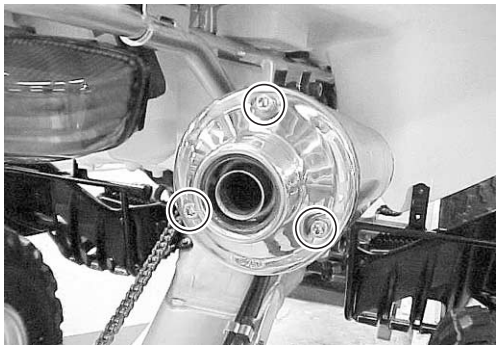
Inspect the radiator hoses for damage and engine coolant leakage. If any damages are found, replace the radiator hoses with new ones.



SPARK ARRESTER

Clean every 6 months.

- Remove the spark arrester.
- Clean the spark arrester pipe by brush.
- Reinstall the spark arrester pipe.



⚠ WARNING

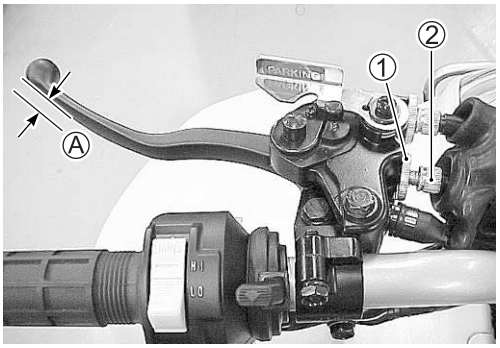
Only clean the spark arrester in an open area away from combustible materials. Exhausted hot carbon particles can start a fire.

CLUTCH

Inspect initially at 1 month and every 6 months thereafter.

- Loosen the locknut ①.
- Turn the adjuster ② in or out to obtain the correct play.
- Tighten the locknut ①.

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



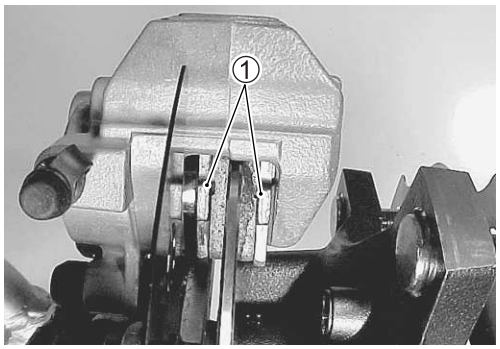
BRAKES

Inspect initially at 1 month and every 3 months thereafter.

BRAKE PADS

- Remove the front and rear wheels. (☞6-10)

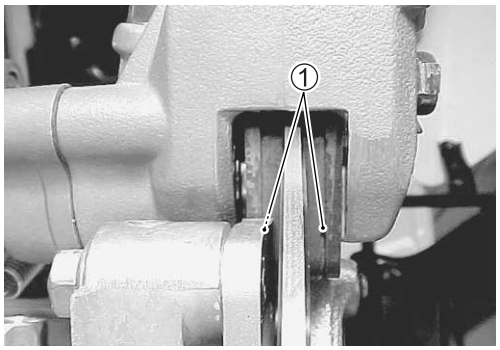
The extent of brake pad wear can be checked by observing the limit line ① on the side of brake pads. When the wear reaches the limit line, replace the pads with new ones. (☞6-18 and 6-50)



CAUTION

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

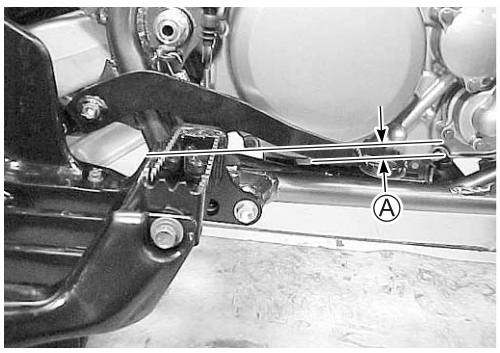
Brake pad mounting pin (front and rear):
18 N·m (1.8 kgf-m, 13.0 lb-ft)



REAR BRAKE PEDAL AND LEVER

The procedure for adjusting the rear brake pedal and brake lever is as follows:

NOTE:
First adjust the brake pedal, and then adjust the brake lever.

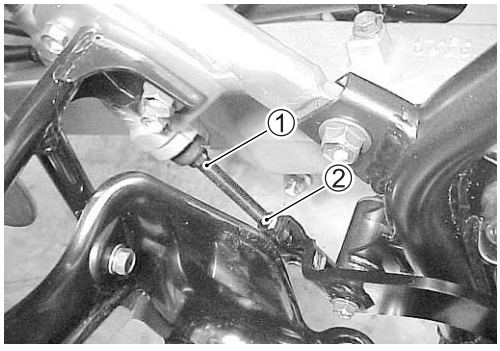


Brake pedal

- Turn the adjuster ① in or out until the pedal height Ⓐ to the specification, after loosening the locknut ②.
- Make sure to tighten the locknut ② securely.

DATA Brake pedal height Ⓐ: 0 – 10 mm (0 – 0.4 in)

Rear brake master cylinder rod locknut:
18 N·m (1.8 kgf-m, 13.0 lb-ft)

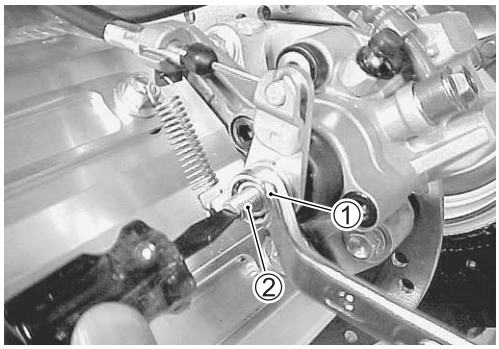


• Adjust the brake switch so the brake light comes on when the brake pedal is depressed 7 – 10 mm (0.3 – 0.4 in).

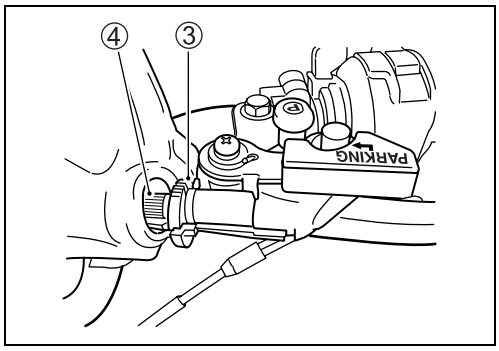
PARKING BRAKE

Parking brake adjustment may be required if the parking brake does not work properly. Every time the brake pads are replaced, adjust the parking brake.

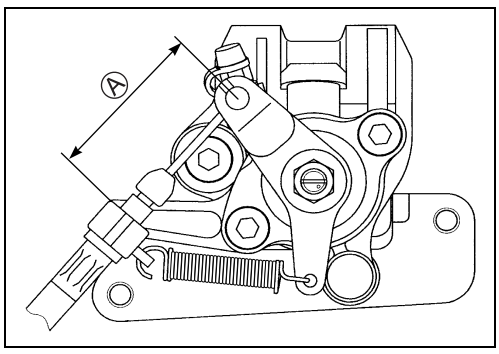
• Loosen the parking brake adjuster locknut ① while holding the adjuster ② with a screw driver.
• Loosen the adjuster ②.



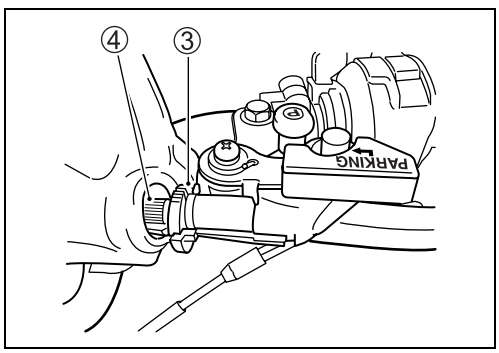
• Loosen the parking brake cable adjuster locknut ③.



• Turn the cable adjuster ④ so that the cable length Ⓐ is 47 – 51 mm (1.9 – 2.0 in).



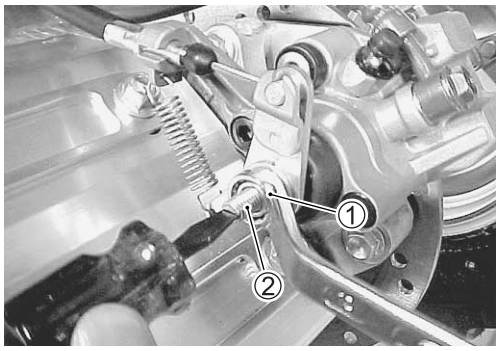
• Tighten the adjuster locknut ③.



— Continued on the next page —

- Turn the parking brake adjuster ② clockwise until it stops.
- Then turn the adjuster ② 1/8 – 1/4 back.
- Tighten the adjuster locknut ① while holding the adjuster ② in position with a screw driver.

Parking brake adjuster locknut:
18 N·m (1.8 kgf-m, 13.0 lb-ft)

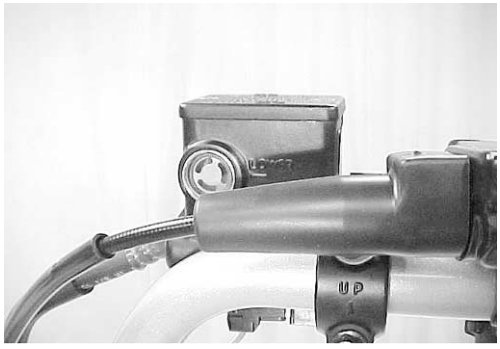


CAUTION

After adjusting the parking brake, check that there is no dragging when turning the rear wheel with the wheel off the ground.

BRAKE FLUID

Inspect every 3 months.
Replace every 2 years.



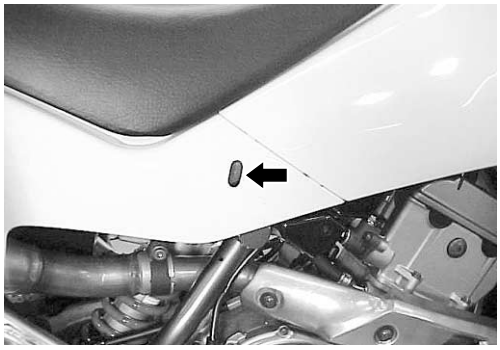
BRAKE FLUID LEVEL

- Place the handlebar straight.
- Check the brake fluid level by observing the lower limit line on the front brake fluid reservoir.
- Remove the seat. Check the brake fluid level by observing the lower limit line on the rear brake fluid reservoir.
- When the brake fluid level is below the lower limit line, replenish with brake fluid that meets the following specification.

Specification and classification: DOT 4

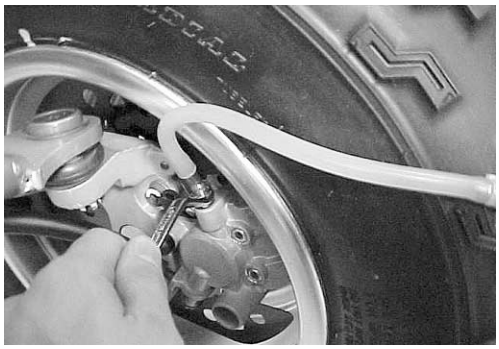
⚠ WARNING

*** The brake system of this vehicle is filled with a glycol-based brake fluid. Do not use or mix different types of fluid such as silicone-based and petroleum-based fluids. Do not use any brake fluid taken from old, used or unsealed containers. Never reuse brake fluid left over from the last servicing or stored for a long period of time.**
*** Brake fluid, if it leaks, will interfere with safe running and immediately discolor painted surfaces. Check the brake hoses and hose joints for cracks and oil leakage before riding.**

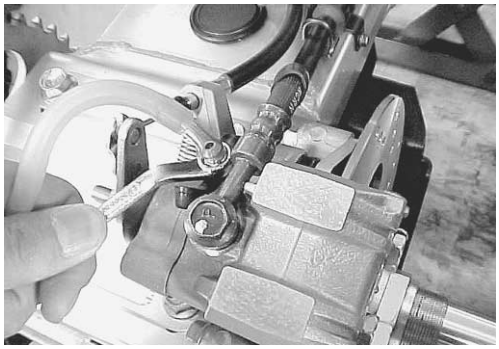


AIR BLEEDING THE BRAKE FLUID CIRCUIT

Air trapped in the brake fluid circuit acts like a cushion absorb a large proportion of the pressure developed by the master cylinder and thus interferes with the full braking performance of the brake caliper. The presence of air is indicated by “sponginess” of the brake lever and also by lack of braking force. Considering the danger to which such trapped air exposes the machine and rider, it is essential that, after remounting the brake and restoring the brake system to the normal condition, the brake fluid circuit be purged of air in the following manner:



- Fill the front or rear brake reservoir with the specified brake fluid to the top of the inspection window or the upper limit line. Replace the reservoir cap to prevent dirt from entering.
- Attach a hose to the air bleeder valve, and insert the free end of the hose into a receptacle.
- Squeeze and release the brake lever or the brake pedal several times in rapid succession and squeeze the lever or the pedal fully without releasing it. Loosen the air bleeder valve by turning it a quarter of a turn so that the brake fluid runs into the receptacle, this will remove the tension of the brake lever causing it to touch the handlebar grip or the brake pedal reaching bottom of the stroke. Then, close the air bleeder valve, pump and squeeze the lever or the pedal, and open the valve. Repeat this process until the fluid flowing into the receptacle no longer contains air bubbles.

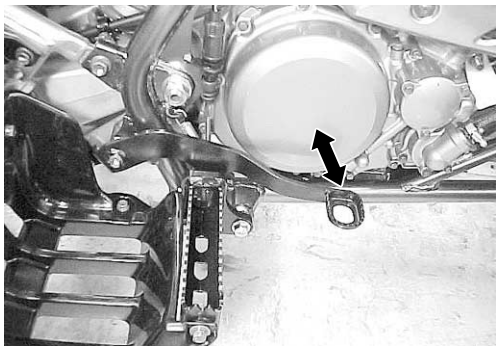


NOTE:

While bleeding the brake system, replenish the brake fluid in the reservoir as necessary. Make sure that there is always some fluid visible in the reservoir.

- Close the air bleeder valve, and disconnect the hose. Fill the reservoir with brake fluid to the top of the inspection window or the upper limit line.

Air bleeder valve: 7.5 N·m (0.75 kgf-m, 5.5 lb-ft)



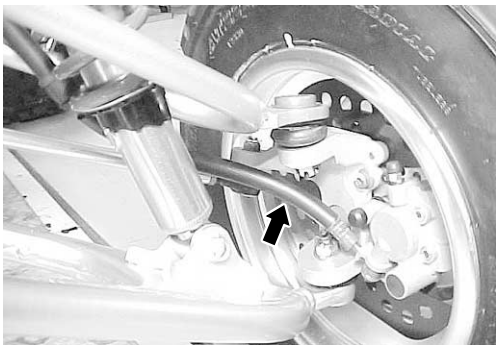
CAUTION

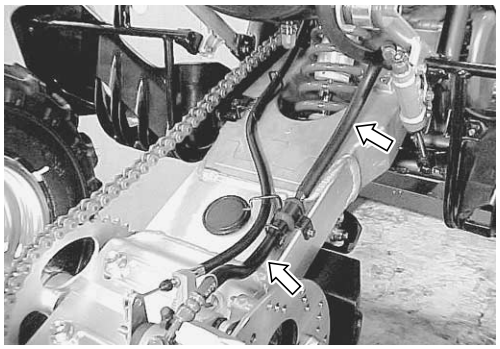
Handle brake fluid with care: the fluid reacts chemically with paint, plastics, rubber materials, etc.

BRAKE HOSES

Inspect every 6 months.
Replace every 4 years.

- Check the brake hoses for leakage, cracks, wear and damage. If any damages are found, replace the brake hoses with new ones.





TIRES

Inspect every 3 months.

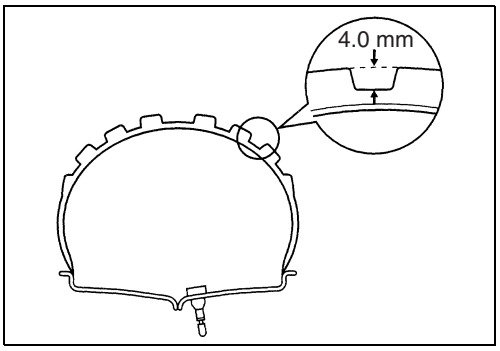
TIRE TREAD CONDITION

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

TOOL 09900-20805: Tire depth gauge

DATA Service Limit

Tire tread depth: Front 4.0 mm (0.16 in)
Rear 4.0 mm (0.16 in)



TIRE PRESSURE

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

COLD INFLATION TIRE PRESSURE	kPa	kgf/cm²	psi
FRONT	30.0	0.30	4.4
REAR	27.5	0.275	4.0

VEHICLE LOAD CAPACITY LIMIT: 110 kg (243 lbs)

CAUTION

To minimize the possibility of tire damage from over-inflation, we strongly recommended that a manual type air pump be used rather than a high pressure air compressor as found in service stations. When filling air into the tires, never exceed 70 kPa (0.7 kgf/cm², 10 psi).

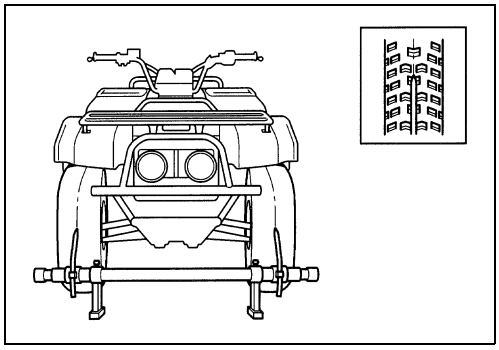
CAUTION

The standard tire fitted on this vehicle is an AT22×7R20☆☆ for the front and a AT20×10R9☆☆ for the rear. The use of tires other than those specified may cause instability. It is highly recommended to use the specified tires.

STEERING

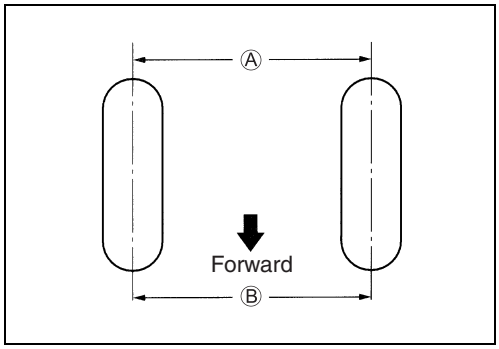
Inspect initially at 200 km (100 miles, 1 month) and every 1 000 km (600 miles, 3 months) thereafter.

Steering system should be adjusted properly for smooth manipulation of the handlebars and safe running.



TOE-IN

- Place the vehicle on level ground.
- Make sure the tire pressure for right and left tires is the same and set to the proper specification.
- Set the front wheels in the straight position.
- Place a load of 75 kg (165 lbs) on the seat.
- Measure the distance Ⓐ and Ⓑ of the front wheels with a toe-in gauge as shown and calculate the difference between Ⓐ and Ⓑ.



DATA Toe-in: 5 ± 4 mm (0.20 ± 0.16 in)

- If the toe-in is out of specification, bring it into the specified range. (☞6-47)

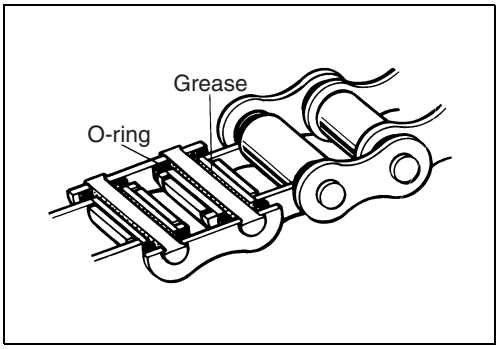
DRIVE CHAIN

Inspect drive chain each time the motorcycle is ridden.

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

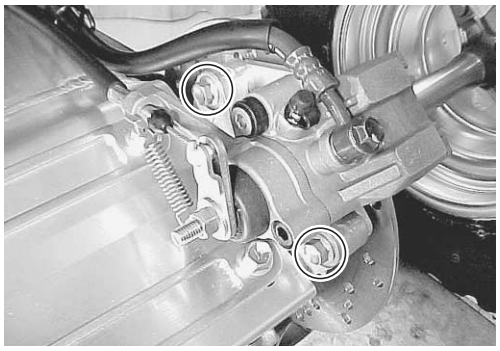
* Loose pins
* Damaged rollers
* Dry or rusted links
* Kinked or binding links
* Excessive wear
* Improper chain adjustment
* Missing O-ring seals

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

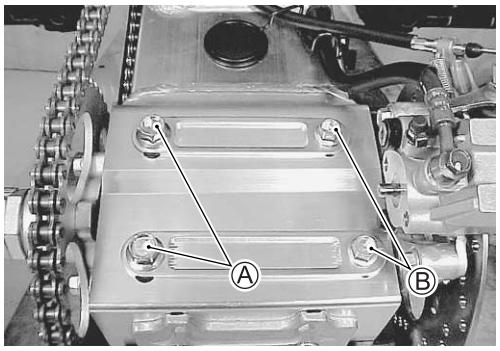


CHECKING

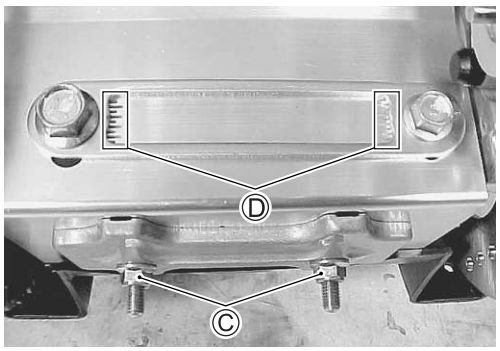
- Place the vehicle on a level ground.
- Remove the rear brake caliper.



- Loosen the rear axle housing set bolts Ⓐ and Ⓑ.

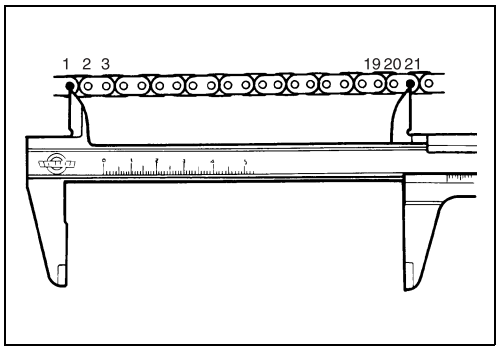


- Tense the drive chain fully by turning both chain adjusters Ⓒ.



• Count out 21 pins (20 pitches) on the chain and measure the distance between the two points. If the distance exceeds the service limit, the chain must be replaced.

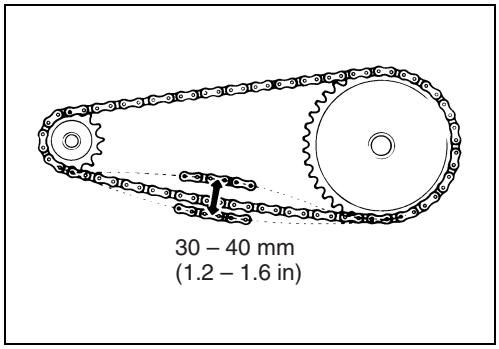
DATA Drive chain 20-pitch length
Service limit: 319.4 mm (12.57 in)



ADJUSTING

• Loosen or tighten both chain adjuster nuts Ⓒ until there is 30 – 40 mm (1.2 – 1.6 in) of slack at the middle of the chain between the engine and rear sprockets as shown. The reference marks Ⓓ on both sides of the swingarm and the edge of each chain adjuster must be aligned to ensure that the front and rear wheels are correctly aligned.

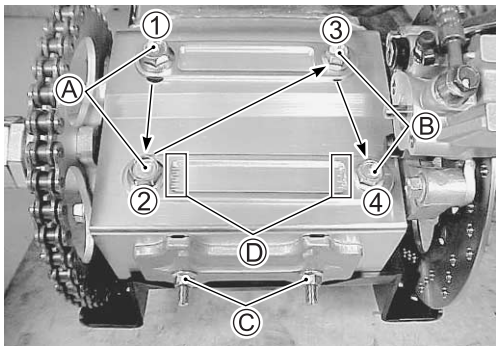
DATA Drive chain slack:
Standard: 30 – 40 mm (1.2 – 1.6 in)



• After adjusting the drive chain, tighten the rear axle housing set bolts Ⓐ and Ⓑ in the described order to the specified torque.

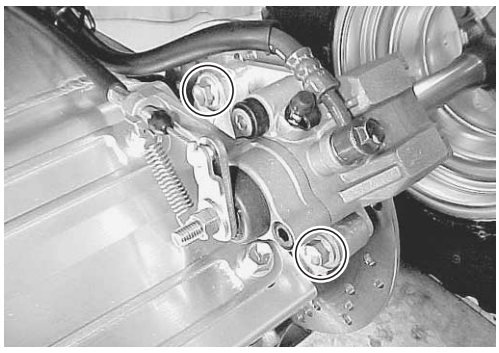
NOTE:
Tighten the nuts Ⓒ after tightening the set bolts Ⓐ and Ⓑ.

Rear axle housing set bolt Ⓐ: 100 N·m
(10.0 kgf-m, 72.5 lb-ft)
Ⓑ: 73 N·m
(7.3 kgf-m, 53.0 lb-ft)



• Remount the brake caliper and tighten the brake caliper mounting bolt to the specified torque.

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



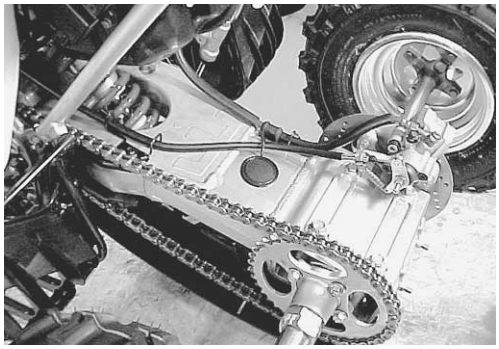
CLEANING AND LUBRICATING

- Clean the drive chain with kerosine. If the drive chain tends to rust quickly, the intervals must be shortened.

CAUTION

Do not use trichloroethylene, gasoline or any similar solvent. These fluids have too great a dissolving power for this chain and they can damage the O-rings. Use only kerosine to clean the drive chain.

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



CAUTION

*** Do not use any oil sold commercially as "drive chain oil". Such oil can damage the O-rings.**
*** The standard drive chain is a RK 520KZO SUZUKI recommends to use this standard drive chain as a replacement.**

SUSPENSIONS

Inspect every 6 months.

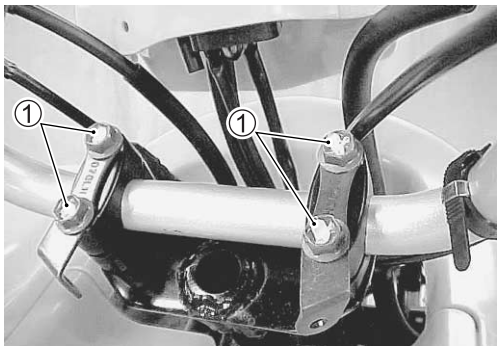
- Support the vehicle with a jack or wooden blocks.
- Remove the front and rear wheels. (☞6-10)
- Inspect the suspension arm, bearing and bushing for scratches, wear, or damage. If any damages are found, replace the suspension arm, bearing or bushing with a new one. (☞6-70)
- Inspect the swinging arm, rear axle and bearing for scratches, wear or damage. If any damages are found, replace them with a new one. (☞6-71 and 6-81)
- Inspect the front and rear shock absorbers for oil leakage or damage. If any damages are found, replace them with a new one. (☞6-30 and 6-64)

CHASSIS BOLTS AND NUTS

Tighten initially at 1 month and every 3 months thereafter.

Check that all chassis nuts and bolts are tightened to their specified torque. (Refer to page 2-26 and 2-27 for the locations of the following nuts and bolts.)

Item	N·m	kgf-m	lb-ft
① Handlebar clamp bolt	23	2.3	16.5
② Steering shaft holder bolt	23	2.3	16.5
③ Steering shaft lower nut	49	4.9	35.5
④ Wishbone arm pivot nut (Upper and Lower)	65	6.5	47.0
⑤ Front hub nut	65	6.5	47.0
⑥ Rear hub nut	100	10.0	72.5
⑦ Wheel set nut (Front and Rear)	50	5.0	36.0
⑧ Front shock absorber mounting bolt (Upper)	60	6.0	43.5
⑨ Front shock absorber mounting nut (Lower)	60	6.0	43.5
⑩ Tie rod end nut	60	6.0	43.5
⑪ Tie rod locknut	29	2.9	21.0
⑫ Brake air bleeder valve	7.5	0.75	5.5
⑬ Brake caliper mounting bolt (Front and Rear)	26	2.6	19.0
⑭ Brake pipe nut	16	1.6	11.5
⑮ Footrest bolt (M10)	55	5.5	40.0
⑯ Brake master cylinder mounting bolt (Front and Rear)	10	1.0	7.0
⑰ Brake hose union bolt (Front and Rear)	23	2.3	16.5
⑱ Brake pedal boss nut	11	1.1	8.0
⑲ Rear brake master cylinder rod locknut	18	1.8	13.0
⑳ Rear sprocket mounting bolt	54	5.4	39.0
㉑ Rear axle locknut (Outside)	180	18.0	13.0
㉒ Rear axle locknut (Inside)	20	2.0	14.5
㉓ Disc plate mounting bolt (Front and Rear)	23	2.3	16.5
㉔ Rear axle housing set bolt (Right)	73	7.3	53.0
㉕ Rear axle housing set bolt (Left)	100	10.0	72.5
㉖ Rear shock absorber nut (Upper)	60	6.0	43.5
㉗ Rear shock absorber nut (Lower)	55	5.5	40.0
㉘ Cushion lever nut	78	7.8	56.5
㉙ Swingarm pivot nut	84	8.4	61.0
㉚ Seat rail bolt (Upper)	26	2.6	19.0
㉛ Seat rail bolt (Lower)	55	5.5	40.0
㉜ Knuckle end nut	43	4.3	31.0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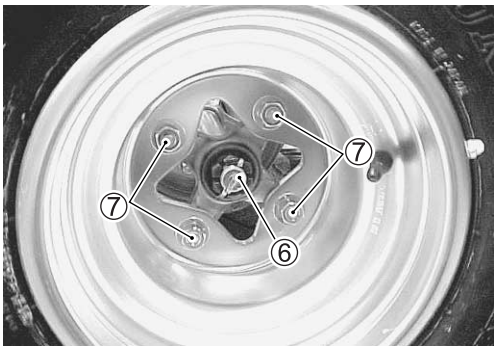
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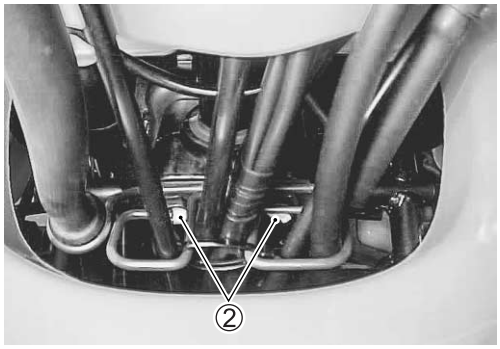
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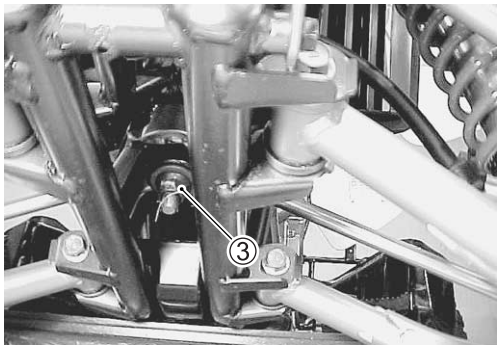
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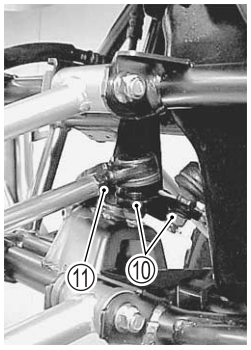
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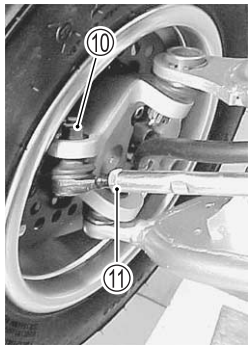
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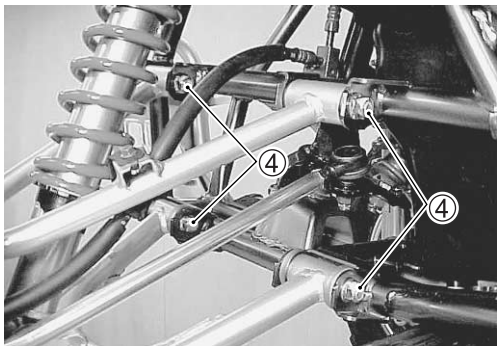
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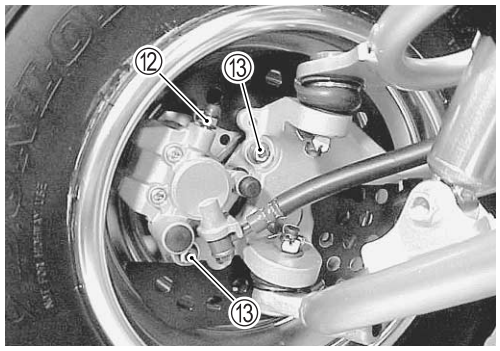
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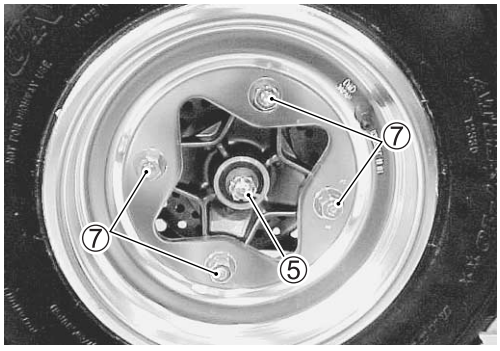
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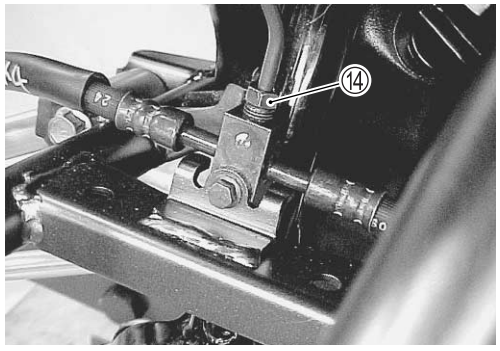
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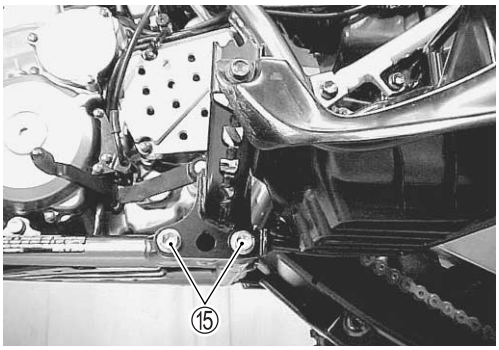
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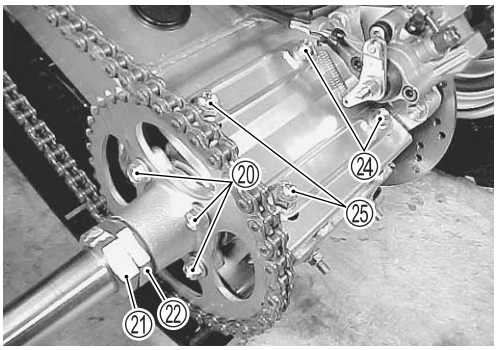
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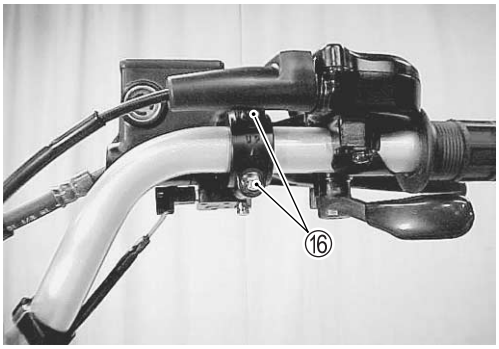
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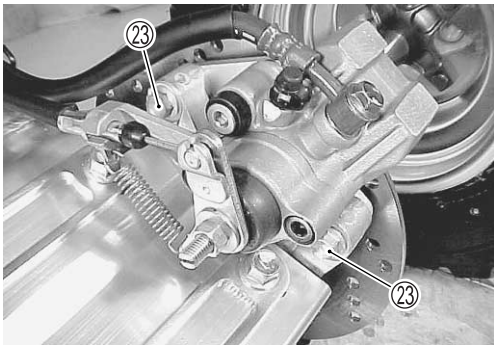
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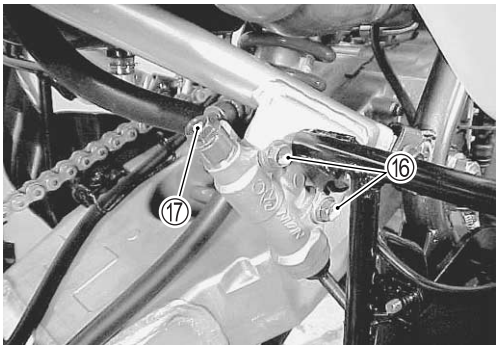
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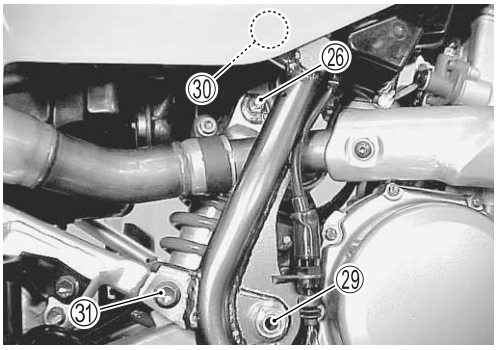
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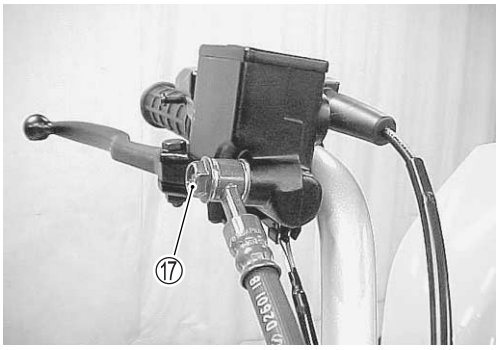
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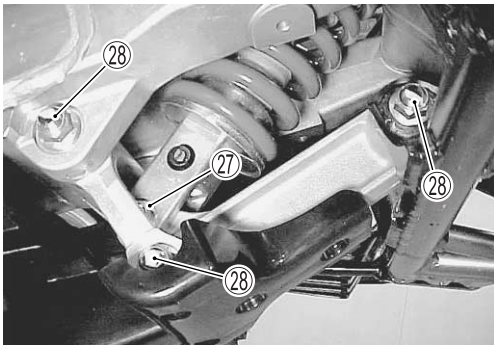
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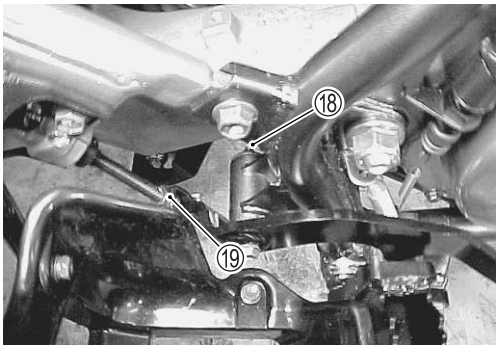
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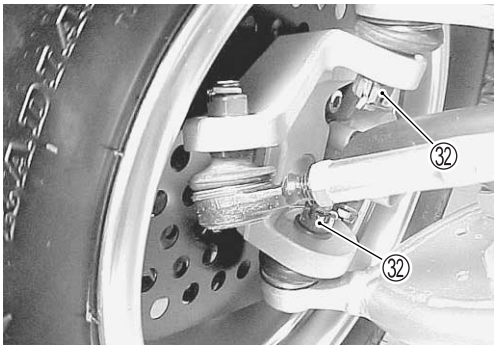
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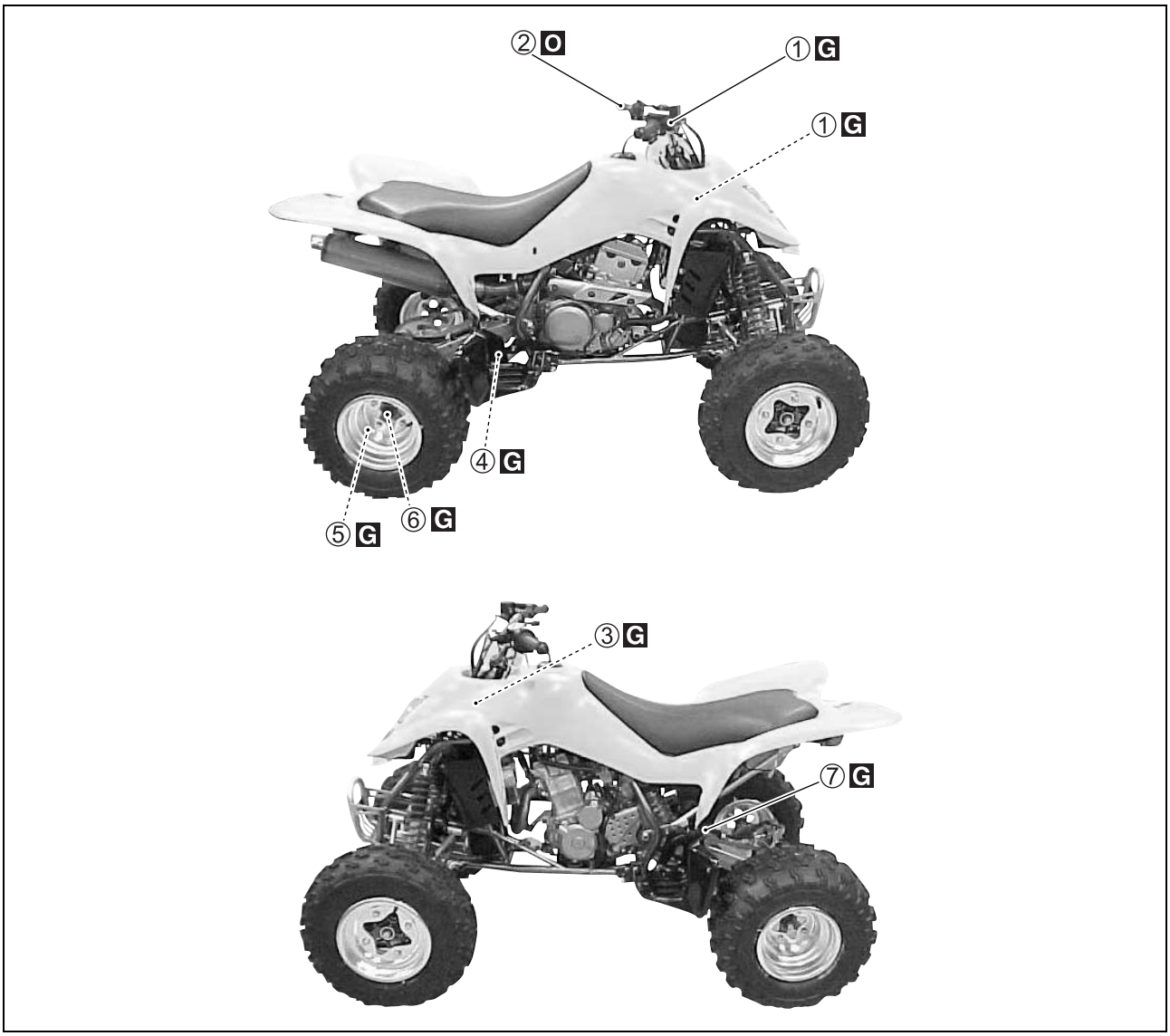
GENERAL LUBRICATION

Lubricate initially at 1 month and every 3 months thereafter.

Proper lubrication is important for smooth operation and long life of each working part of the vehicle. Major lubrication points are indicated below.



①Brake lever holder
②Throttle lever
③Steering shaft holder
④Brake pedal and rod link
⑤Brake cam
⑥Drive shaft joint spline
⑦Rear suspension grease nipple

G Grease
O Motor oil

NOTE:

** Before lubricating each part, remove any rust and wipe off any grease, oil, dirt, or grime.*

** Lubricate exposed parts which are subject to rust, with a rust preventative spray, especially whenever the vehicle has been operated under wet or rainy conditions.*

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. Periodic maintenance records kept at your dealership should include compression readings for each maintenance service.

DATA **Compression pressure:**
Standard: 1 000 kPa (10.0 kgf/cm², 142 psi)
(Automatic decompression actuated)

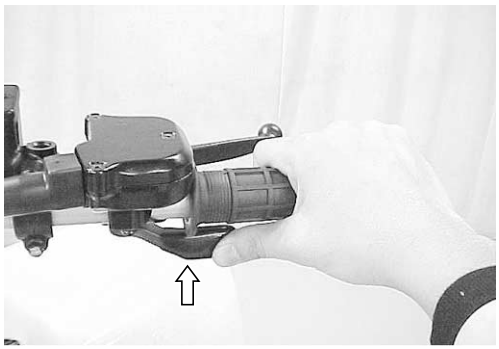
Low compression pressure can indicate any of the following conditions:

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

NOTE:
When the compression pressure goes below specification, check the engine for conditions listed above.

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.*
** Make sure that the battery is fully charged.*



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

- Remove the spark plug. (☞2-10)
- Install the compression gauge and adaptor in the spark plug hole. Make sure that the connection is tight.
- Keep the throttle lever in the fully open position.
- Press the starter button and crank the engine for a few seconds. Record the maximum gauge reading as the cylinder compression.

TOOL **09915-64512: Compression gauge set**
09915-63310: Adaptor

OIL PRESSURE CHECK

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

DATA Oil pressure:
Above 20 kPa (0.2 kgf/cm², 2.8 psi)
Below 60 kPa (0.6 kgf/cm², 8.5 psi)

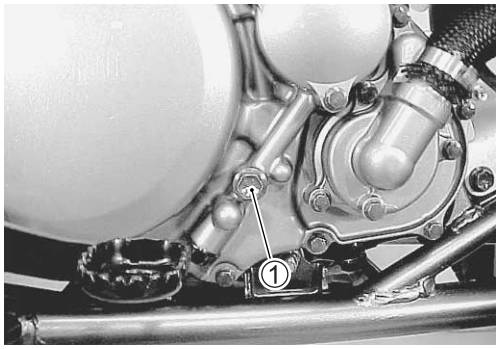
Low or high oil pressure can indicate any of the following conditions:

LOW OIL PRESSURE
* Clogged oil filter
* Oil leakage from the oil passage
* Damaged O-ring
* 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

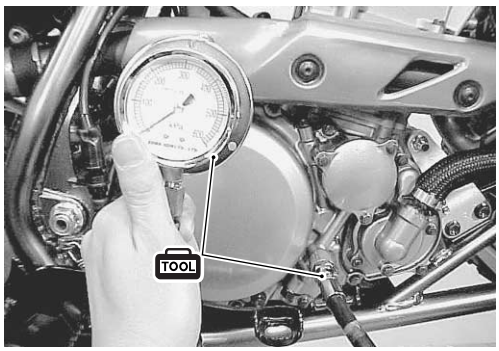
OIL PRESSURE TEST PROCEDURE

- Connect the tachometer onto the spark plug high-tension cord.
- Remove the main oil gallery plug ①.
- Install the oil pressure gauge and adaptor into the main oil gallery.
- Warm up the engine as follows:
  Summer: 10 minutes at 2 000 r/min
  Winter: 20 minutes at 2 000 r/min
- After warming up the engine, increase the engine speed to 3 000 r/min (observe the tachometer), and read the oil pressure gauge.



TOOL 09915-74511: Oil pressure gauge
09915-74532: Adaptor
09900-26006: Tachometer

Main oil gallery plug: 18 N·m (1.8 kgf-m, 13.0 lb-ft)



ENGINE

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ENGINE COMPONENTS REMOVABLE WITH ENGINE IN PLACE

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

ENGINE LEFT SIDE

PARTS	REMOVAL	INSTALLATION
Engine sprocket	3-5	3-8
Starter drive/driven gear	3-12	—
Generator rotor	3-16	3-50
Starter clutch	3-16	3-50
Neutral switch	3-17	3-56

ENGINE RIGHT SIDE

PARTS	REMOVAL	INSTALLATION
Exhaust pipe/muffler	3-6	3-7
Oil filter	2-13	—
Clutch pressure plate, drive plates, and driven plates	3-13	3-55
Clutch sleeve hub	3-13	3-54, 55
Primary driven gear assembly	3-14	3-54
Oil pump idle gear and driven gear	3-14	3-53
Oil pump	3-14	3-53
Gearshift shaft	3-15	—
Gearshift cam driven gear	3-15	3-52
Balancer drive/driven gear	3-15, 16	3-51

ENGINE CENTER

PARTS	REMOVAL	INSTALLATION
Carburetor	4-7	4-14
Starter motor	3-9	—
Cam chain tension adjuster	3-9	3-63
Cylinder head cover	3-9	3-62
Camshaft/automatic decompression assembly	3-10	3-60
Cylinder head	3-10, 11	3-59
Cylinder	3-11	3-58, 59
Piston	3-11	3-58
Cam chain	3-14	3-53

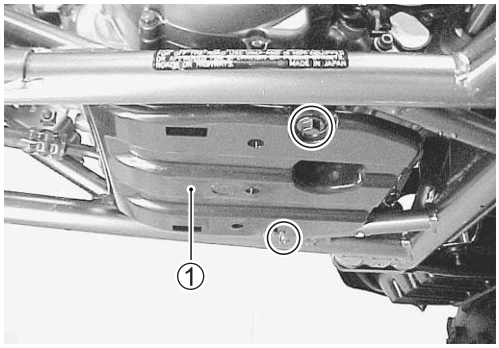
ENGINE REMOVAL AND REMOUNTING

ENGINE REMOVAL

Before taking the engine out of the frame, wash the engine using a steam cleaner. Engine removal is sequentially explained in the following steps.

- Drain engine coolant. (☞2-14)

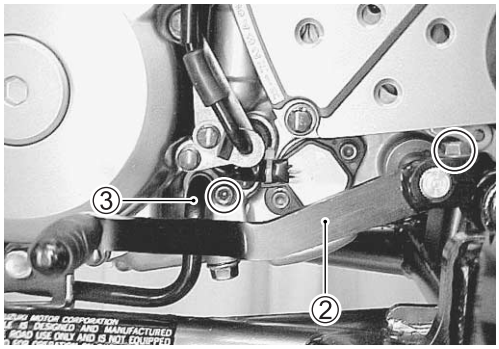
- Remove the engine under cover ①.

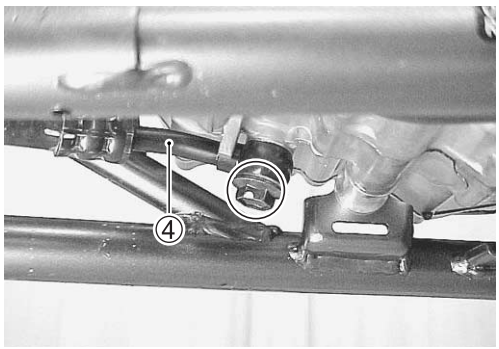


- Drain engine oil. (☞2-12)
- Remove the gearshift lever ② and spacers.
- Remove the engine oil outlet pipe ③ and inlet pipe ④.

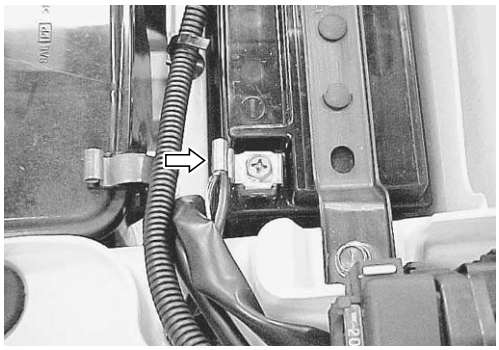
CAUTION

Do not lose the spacer with O-ring behind the outlet oil pipe.

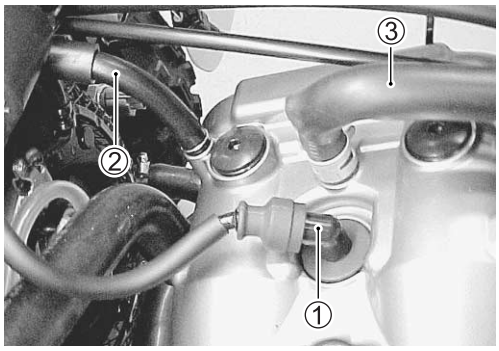




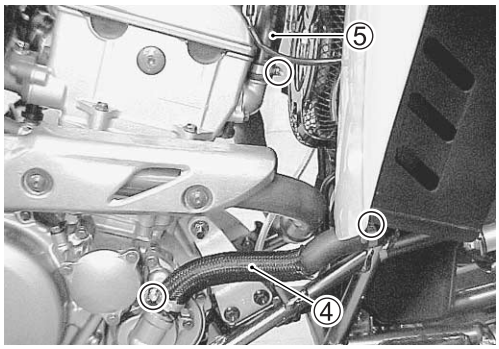
- Remove the seat. (☞6-4)
- Disconnect the battery ⊖ lead wire.



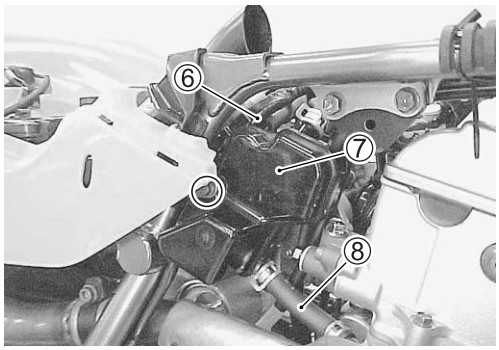
- Remove the fuel tank. (☞4-3)
- Disconnect the spark plug cap ① oil tank overflow hose ② and breather hose ③.



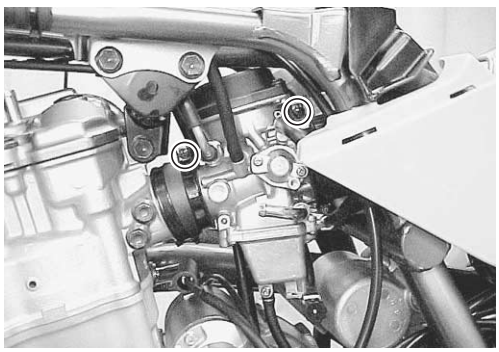
- Remove the engine coolant inlet hose ④ and disconnect the outlet hose ⑤.



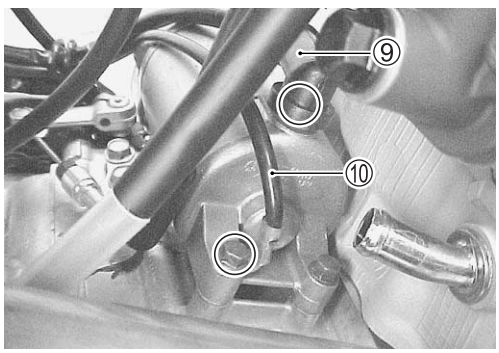
- Disconnect the breather hose ⑥ and remove the oil return tank ⑦ with hose ⑧.



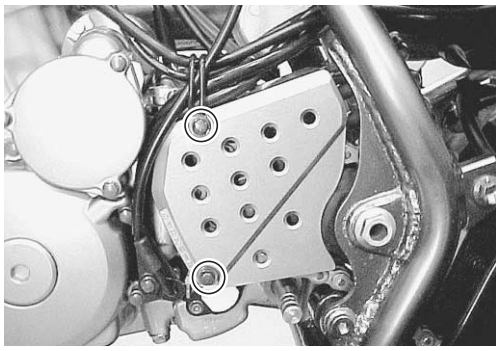
- Remove the carburetor with throttle cable.



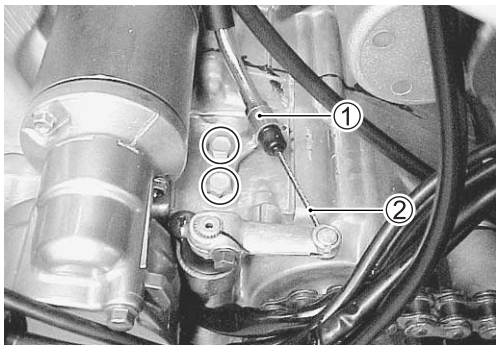
- Disconnect the starter motor lead wire ⑨ and ground wire ⑩.



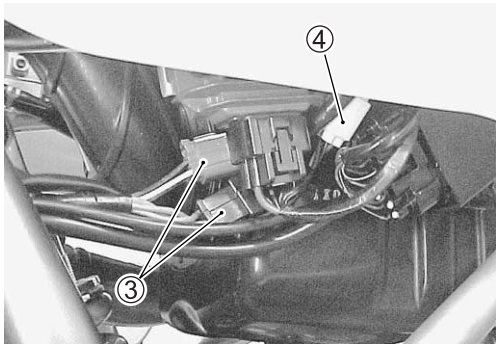
- Remove the engine sprocket cover.



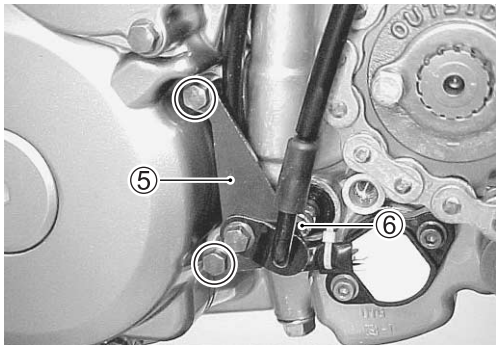
- Remove the clutch cable bracket ①.
- Disconnect the clutch inner cable ② from the cam lever.



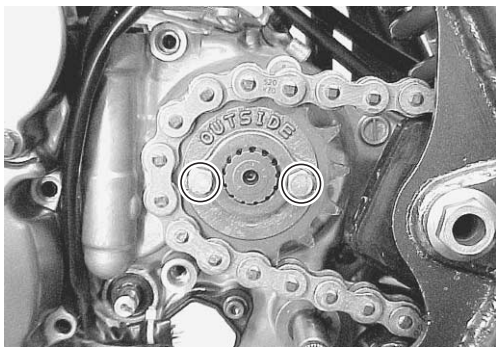
- Disconnect the generator lead wire couplers ③ and neutral switch lead wire coupler ④.



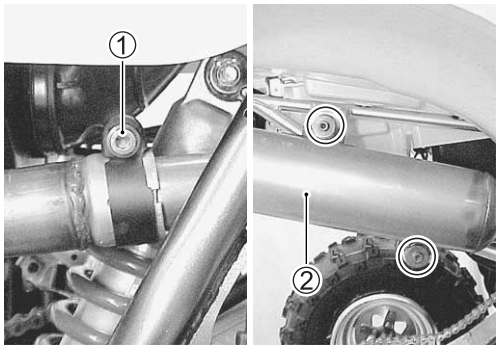
- Remove the reverse gear cable bracket ⑤.
- Disconnect the reverse gear cable inner wire ⑥.



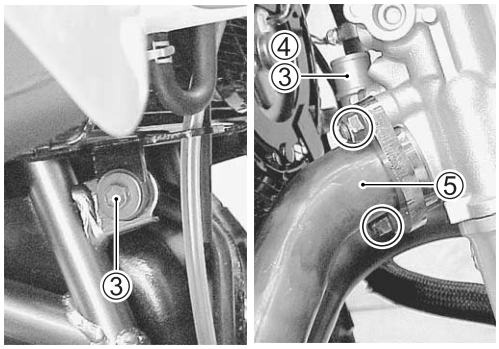
- Remove the engine sprocket with drive chain.



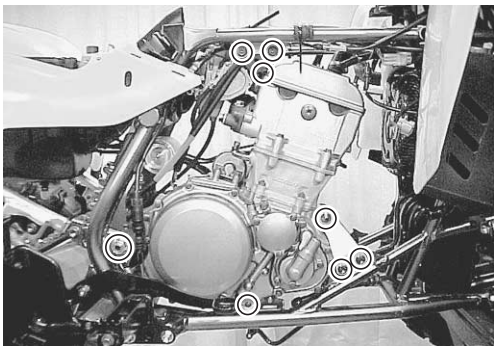
- Loosen the muffler clamp bolt ①.
- Remove the muffler ②.



- Remove the radiator lower mounting bolt ③ and push lower of the radiator forward.
- Remove the thermostat cover ④ and thermostat.
- Remove the exhaust pipe ⑤.



- Remove the engine mounting bolts and nut.
- Remove the engine mounting brackets.

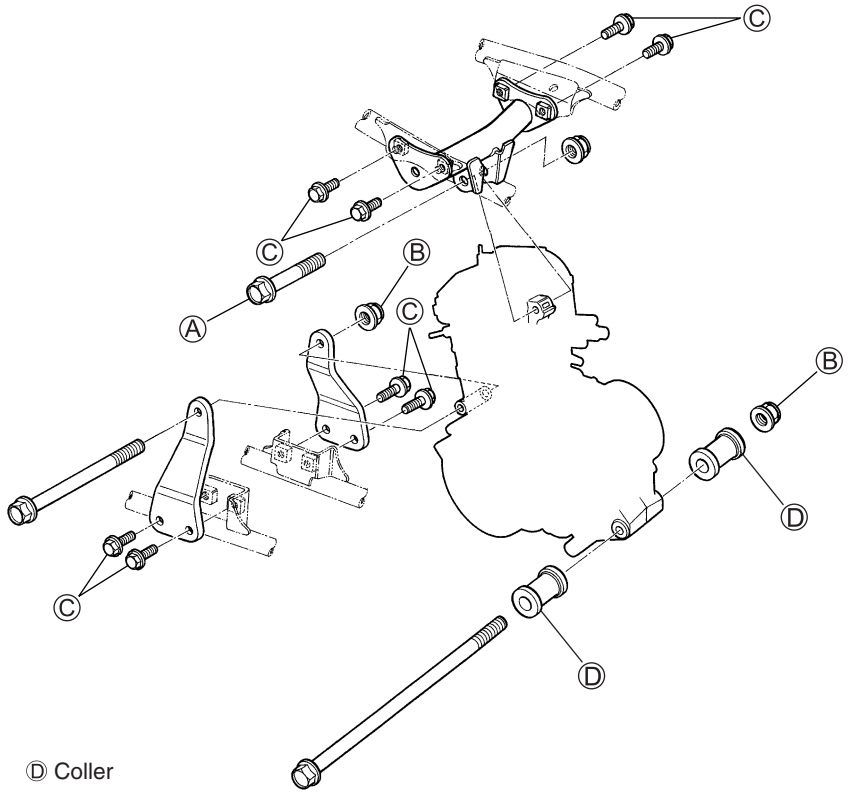


- Remove the engine from the left side.

ENGINE REMOUNTING

Remount the engine in the reverse order of engine removal.
Pay attention to the following points:

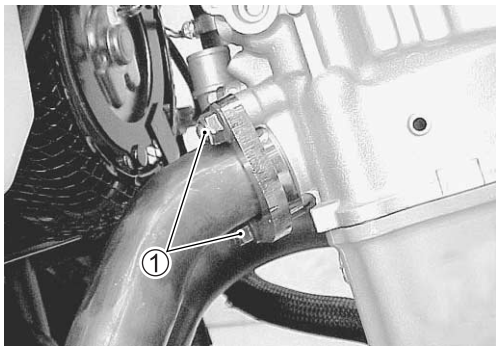
NOTE:
** The engine mounting nuts are self-locking.*
** Once the nut has been removed, it is no longer of any use. Be sure to use new nuts, and then tighten them to the specified torque.*



ITEM	N·m	kgf-m	lb-ft
Ⓐ	66	6.6	47.5
Ⓑ	66	6.6	47.5
Ⓒ	26	2.6	19.0

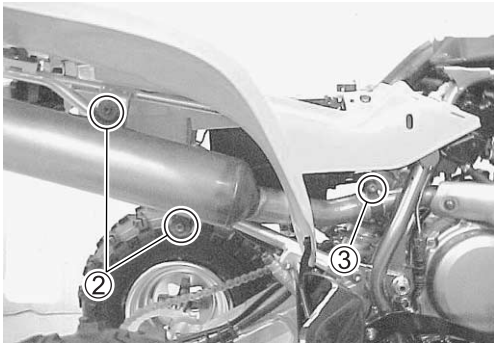
Ⓓ Coller

- Install the exhaust pipe and muffler.
- Install the thermostat and thermostat cover. (☞5-12)



- Tighten the exhaust pipe nuts ①, muffler mounting bolts ② and connecting bolt ③ to the specified torque.

Exhaust pipe nut: 23 N·m (2.3 kgf-m, 16.5 lb-ft)
Muffler mounting bolt: 23 N·m (2.3 kgf-m, 16.5 lb-ft)
Muffler connecting bolt: 23 N·m (2.3 kgf-m, 16.5 lb-ft)



- Install the engine sprocket with drive chain after loosening the chain adjuster bolts.

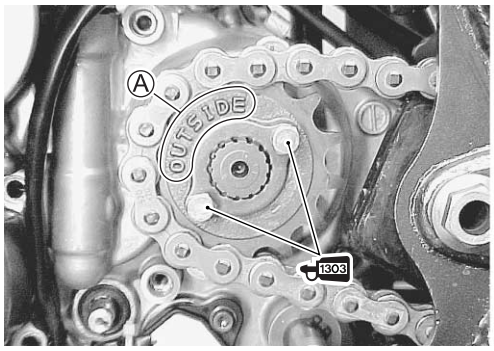
NOTE:
The letter Ⓐ on the engine sprocket should face to the outside.

- Apply THREAD LOCK SUPER “1303” to the sprocket bolts.

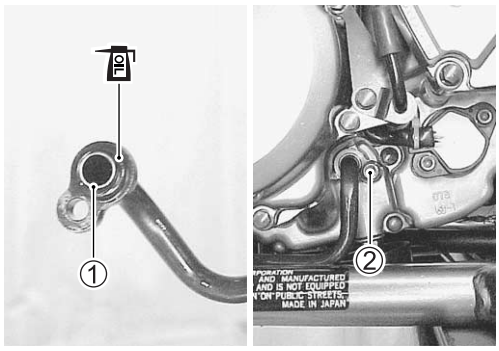
1303 99000-32030: THREAD LOCK SUPER “1303”

- Tighten the engine sprocket bolts to the specified torque.

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

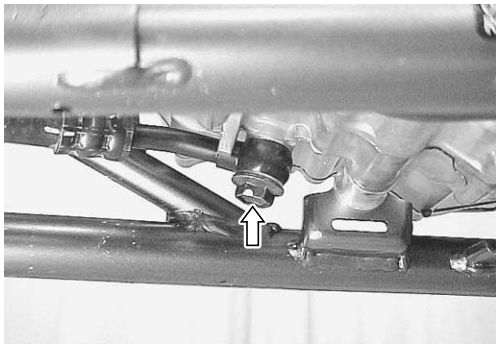


- Install the engine coolant hose. (☞8-18)
- Install the spacer ① with O-ring to the engine oil outlet pipe.
- Tighten the engine oil outlet pipe bolt ② securely.



- Tighten the engine oil inlet pipe union bolt to the specified torque.

Inlet pipe union bolt: 23 N·m (2.3 kgf-m, 16.5 lb-ft)



- After installing the engine, route the wiring harness, cables and hoses properly. (☞8-11 to 8-18)
- Adjust the following items.

* Engine oil ☞2-12

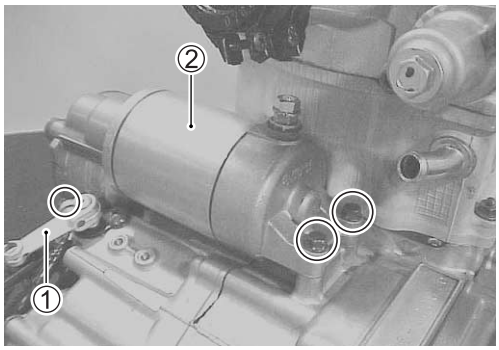
DATA Engine oil capacity

Oil change:	**2 000 ml (2.1/1.8 US/Imp qt)**
Oil and filter change:	**2 100 ml (2.2/1.8 US/Imp qt)**
Engine overhaul:	**2 200 ml (2.3/1.9 US/Imp qt)**

* Adjust the drive chain slack ☞2-22
* Throttle cable play ☞2-11
* Engine idle speed ☞2-11
* Clutch cable play ☞2-16

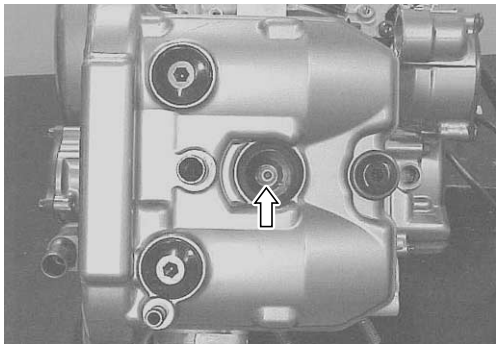
ENGINE DISASSEMBLY

- Remove the clutch release arm ①.
- Remove the starter motor ②.

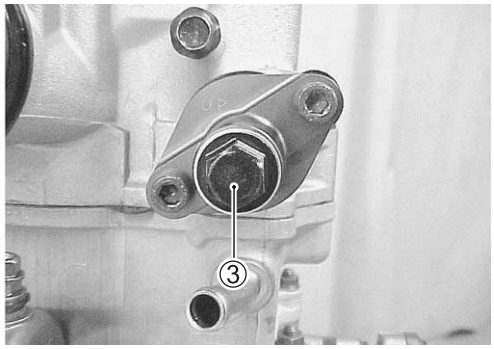


- Remove the spark plug.

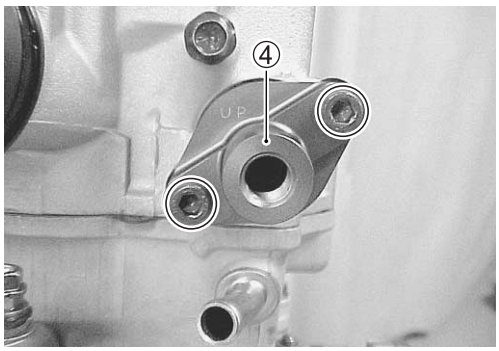
TOOL **09930-10121: Spark plug wrench set**



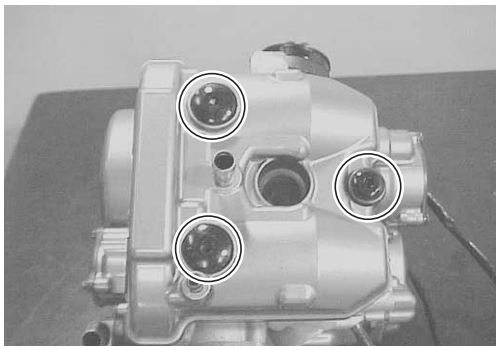
- Remove the spring holder bolt ③ of the can chain tension adjuster with spring.



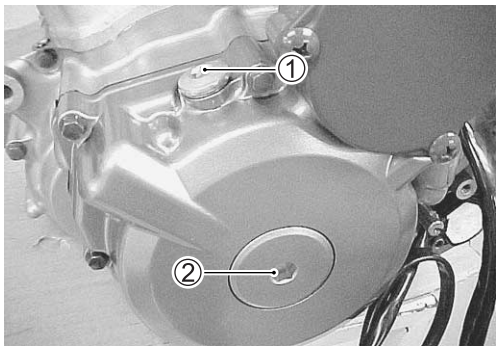
- Remove the cam chain tension adjuster ④.



- Remove the cylinder head cover bolts in diagonal stages, and then remove the cylinder head cover.

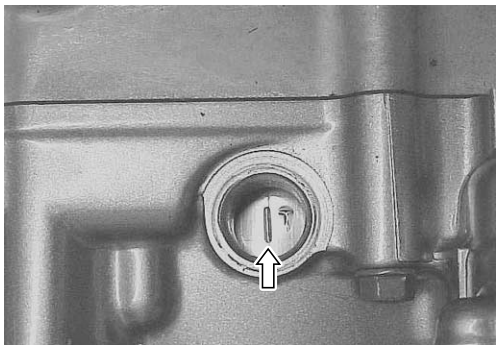


- Remove the valve timing inspection plug ① and generator cover cap ②.

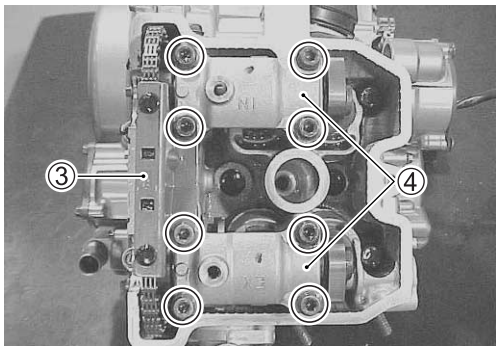


- Turn the generator rotor until the “T” line on the generator rotor is aligned with the center of the hole in the generator cover.

NOTE:
Before removing the camshaft journal holders, the piston must be at TDC of the compression stroke.

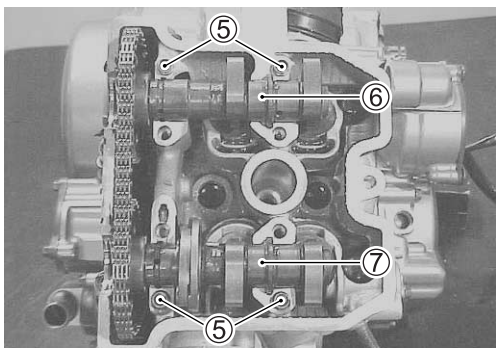


- Remove the cam chain guide ③ and camshaft journal holders ④.

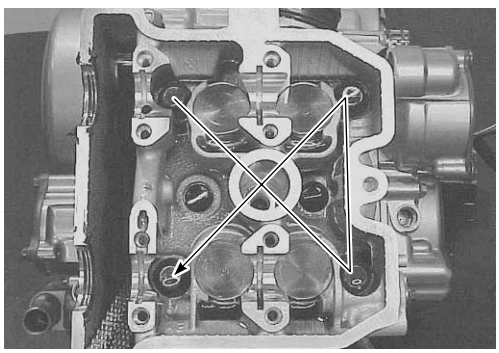


- Remove the dowel pins ⑤, intake camshaf ⑥ and exhaust camshaft ⑦.

NOTE:
Do not drop the dowel pins and camshaft drive chain into the crankcase.

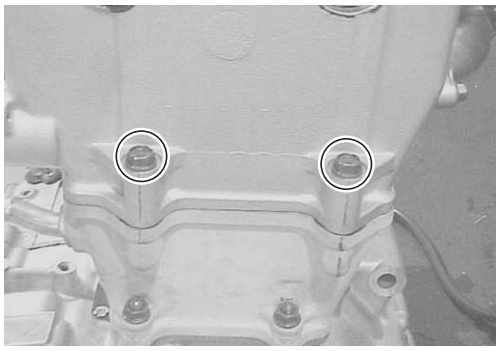


- Remove the four cylinder head bolts in diagonal stages.

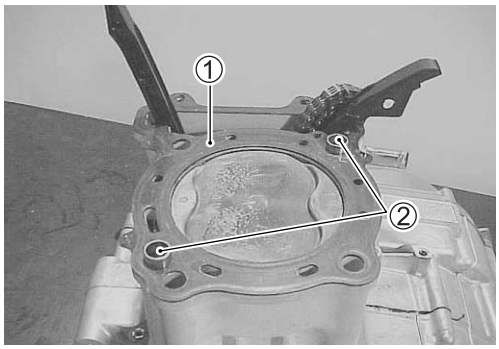


- Remove the cylinder head bolts, and then remove the cylinder head.

NOTE:
If the cylinder head does not come off easily, lightly tap it using a plastic mallet.

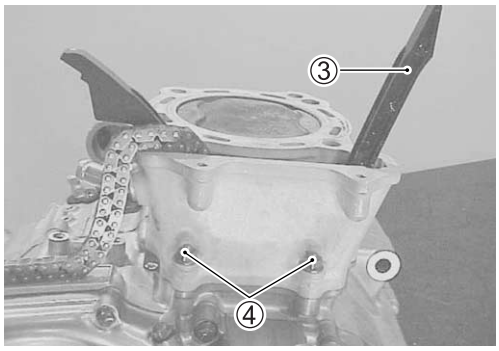


- Remove the cylinder head gasket ① and dowel pins ②.

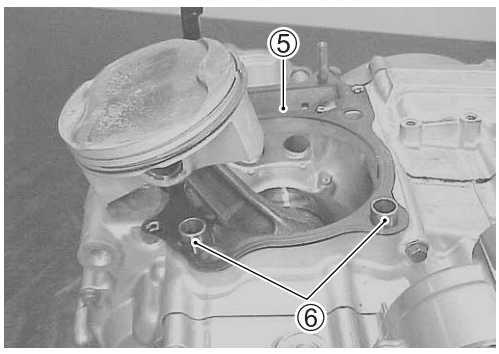


- Remove the cam chain guide ③.
- Remove the cylinder base nuts ④, and then remove the cylinder.

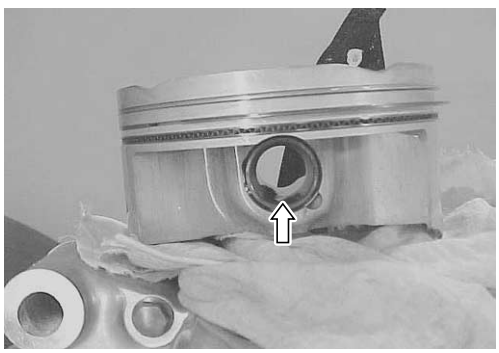
NOTE:
If the cylinder does not come off easily, lightly tap it using a plastic mallet.



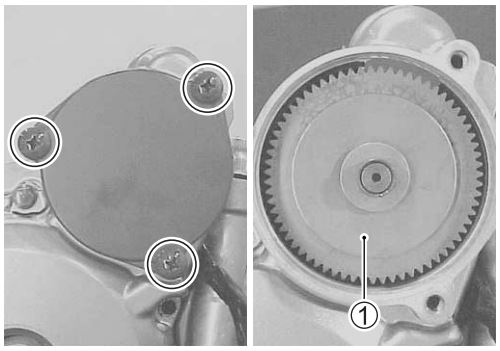
- Remove the cylinder gasket ⑤ and dowel pins ⑥.



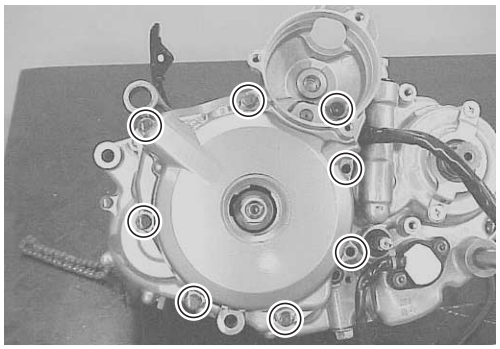
- Place a clean rag over the cylinder base to prevent the piston pin circlip from dropping into the crankcase.
- Remove the piston pin circlip.
- Draw out the piston pin and remove the piston.



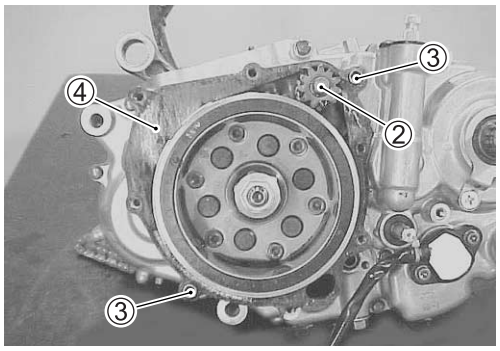
- Remove the starter drive gear cover and starter drive gear ①.



- Remove the generator rotor cover.

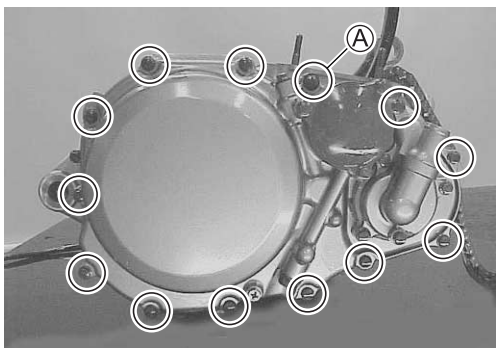


- Remove the starter driven gear ②, dowel pins ③, and gasket ④.

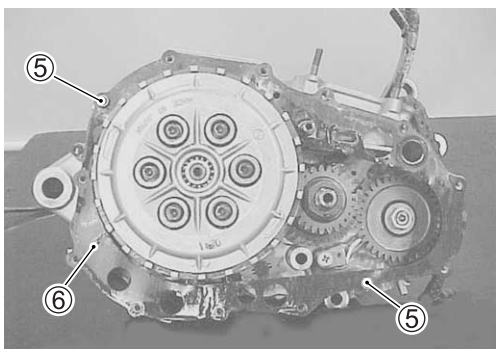


- Remove the clutch cover.

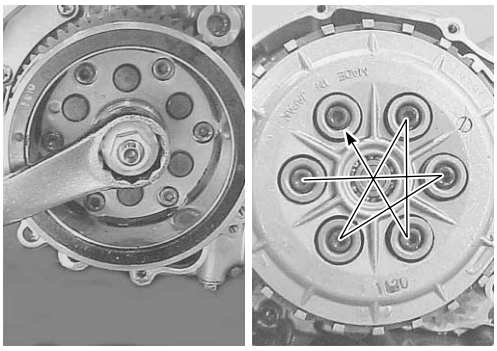
  Ⓐ: Bolt with washer



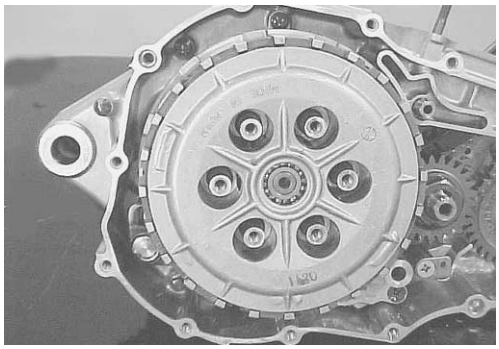
- Remove the dowel pins ⑤ and gasket ⑥.



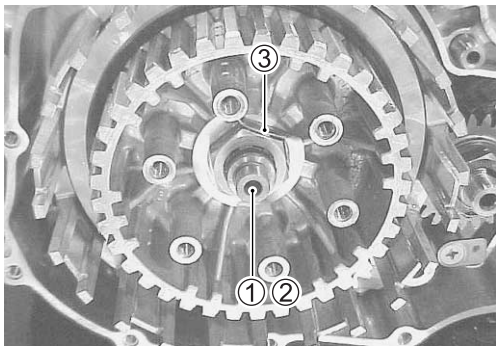
- Hold the generator rotor using a 27-mm offset wrench.
- Loosen the clutch spring set bolts working in diagonal stages.
- Remove the bolts and springs.



- Remove the clutch pressure plate, clutch drive plates, and clutch driven plates.

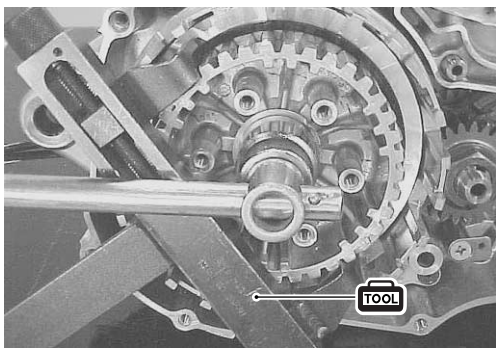


- Remove the clutch push piece ①, push rod ②.
- Flatten the clutch sleeve hub washer ③.

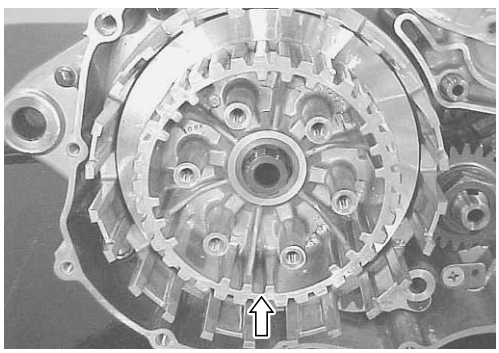


- Hold the clutch sleeve hub using the special tool, and then remove the clutch sleeve hub nut.

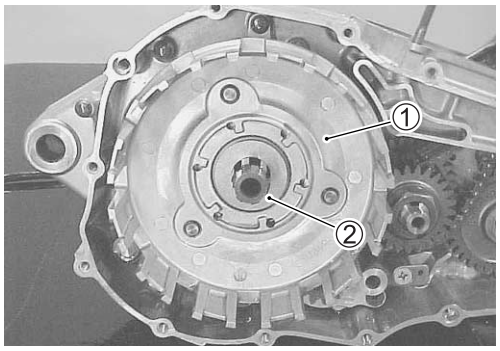
TOOL 09920-53740: Clutch sleeve hub holder



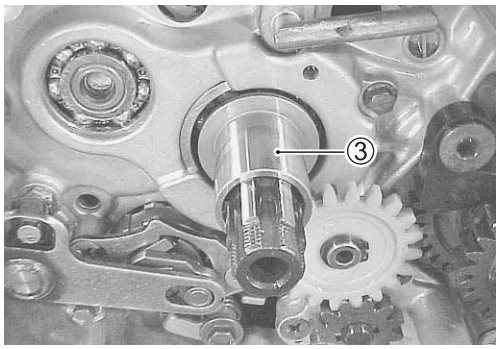
- Remove the clutch sleeve hub.



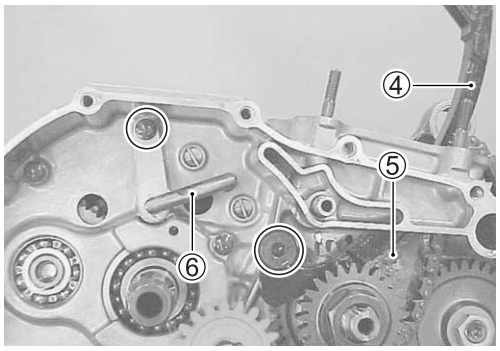
• Remove the primary driven gear assembly ① and washer ②.



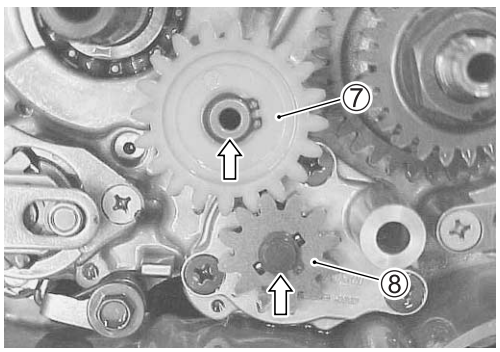
• Remove the coller ③.



• Remove the cam chain tensioner ④ and cam chain ⑤.
• Remove the oil pipe ⑥.



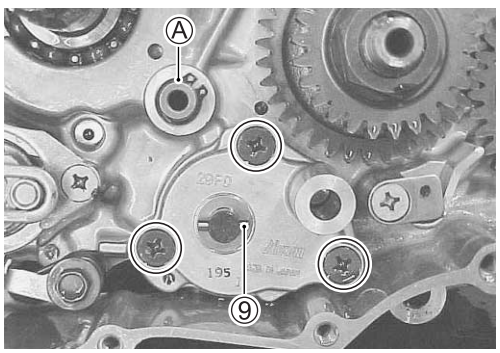
• Remove the oil pump idle gear ⑦ and oil pump driven gear ⑧.



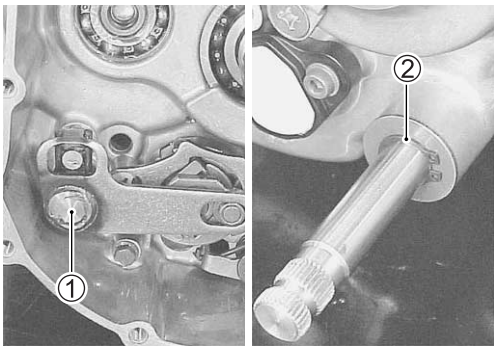
• Remove the pin ⑨ and oil pump assembly.

CAUTION

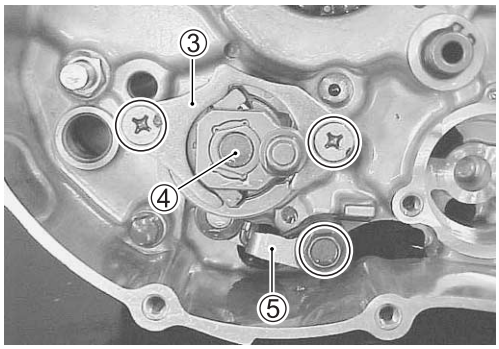
Do not remove the snap ring Ⓐ, before separating the crankase to prevent the oil pump idle gear shaft from dropping into the crankcase.



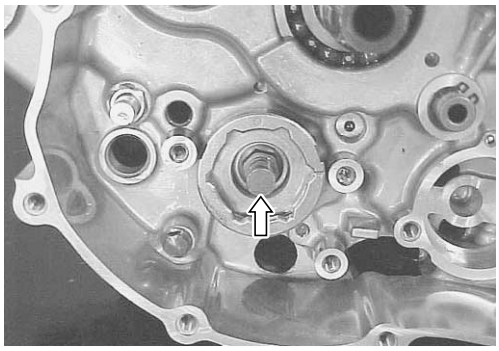
- Remove the gearshift shaft ① by removing the snap ring ②.



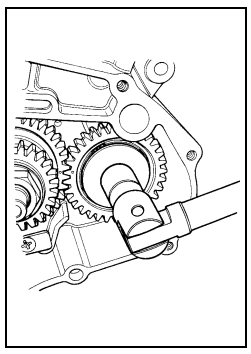
- Remove the gearshift pawl lifter ③ and gearshift cam driven gear ④.
- Remove the gearshift cam stopper arm ⑤.

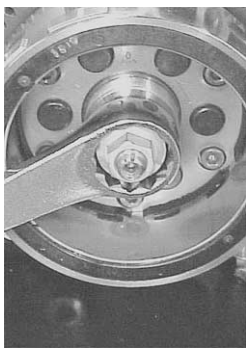


- Remove the gearshift cam driven gear bolt.



- Hold the generator rotor using a 27-mm offset wrench, and then remove the balancer driven gear nut.
- Remove the washer, balancer driven gear, and pin.

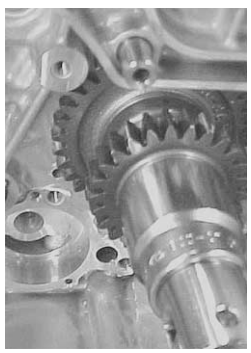


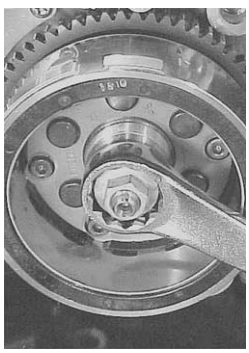


- Hold the generator rotor using a 27-mm offset wrench, and then remove the primary drive gear nut, washer and primary drive gear.

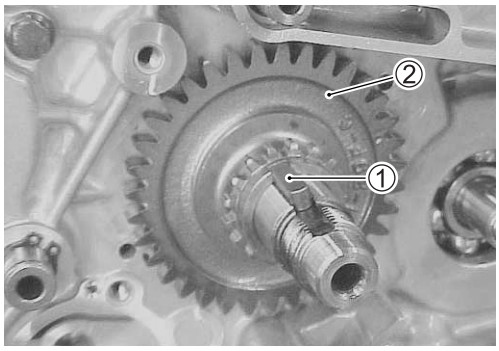
CAUTION

The primary drive gear nut has left-hand threads.

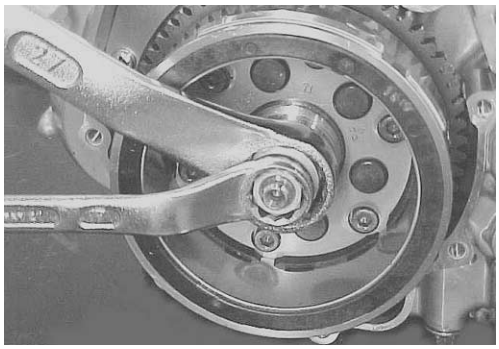




• Remove the key ①, balancer drive gear ② and pin.



• Hold the generator rotor using a 27-mm offset wrench, and then remove the generator rotor nut.



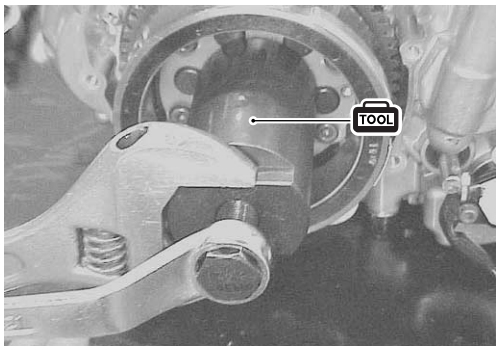
• Remove the generator rotor using the special tool.

09930-31921: Rotor remover

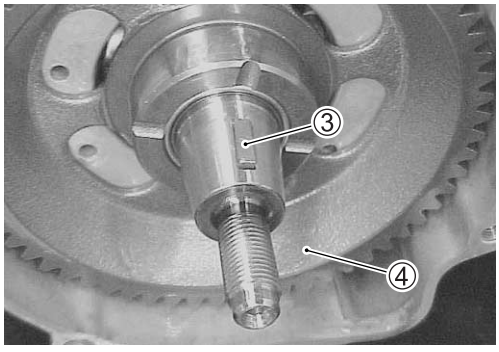
NOTE:
Temporarily install the generator rotor nut to the crankshaft, and then remove the generator rotor using the special tool.

CAUTION

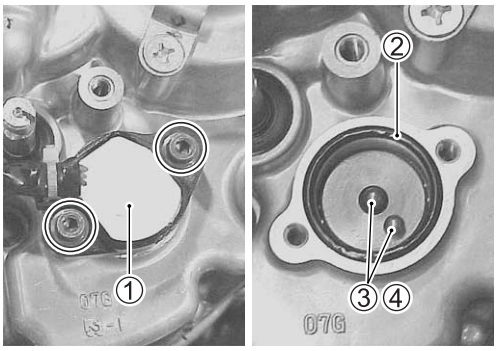
Do not hit the generator rotor with a hammer, otherwise the rotor may be damaged.



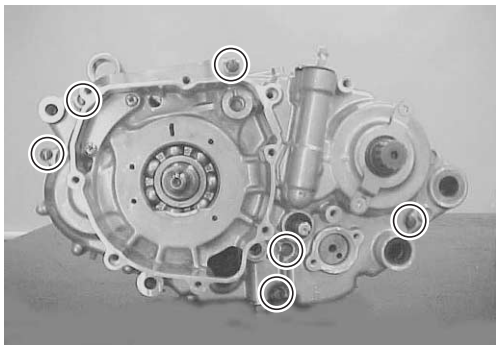
• Remove the generator rotor key ③.
• Remove the starter driven gear ④.



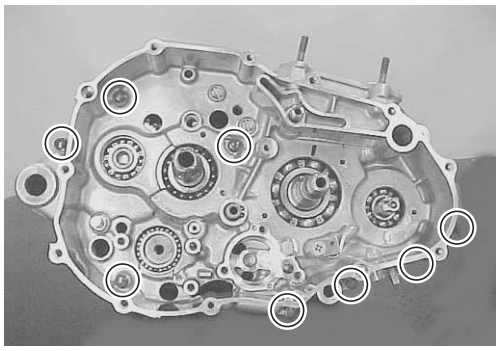
- Remove the neutral switch ①.
- Remove the O-ring ②, switch contacts ③ and springs ④.



- Remove the left crankcase securing bolts.



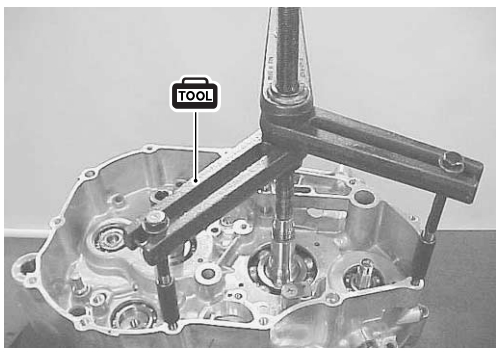
- Remove the right crankcase securing bolts.



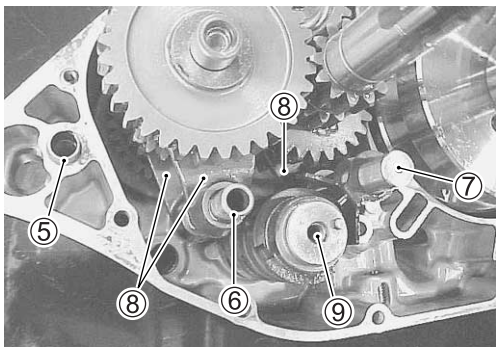
- Separate the crankcase using the special tool.

TOOL 09920-13120: Crankcase separating tool

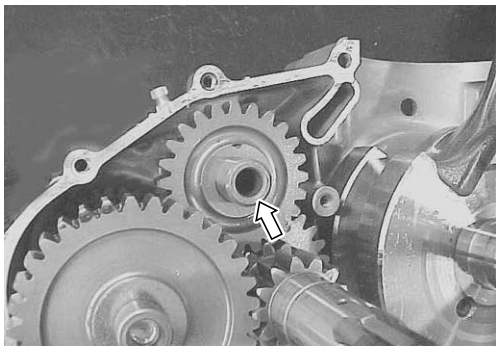
NOTE:
Fit the crankcase separating tool to the right crankcase, so that the tool plate is paralleled with the end face of the crankcase.



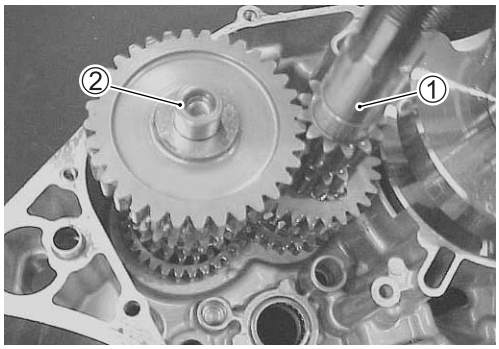
- Remove the dowel pin ⑤.
- Remove the gearshift fork shaft ⑥, reverse lock shaft ⑦, gearshift forks ⑧ and gearshift cam ⑨.



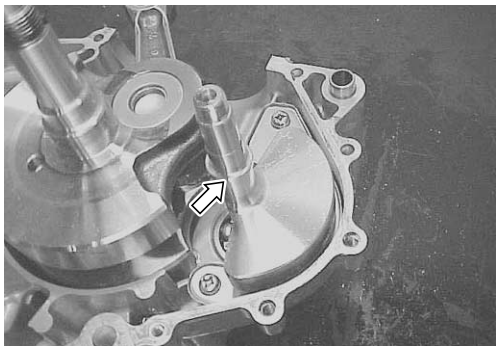
- Remove the reverse idle gear with its shaft.



- Remove the countershaft assembly ① and driveshaft assembly ②.

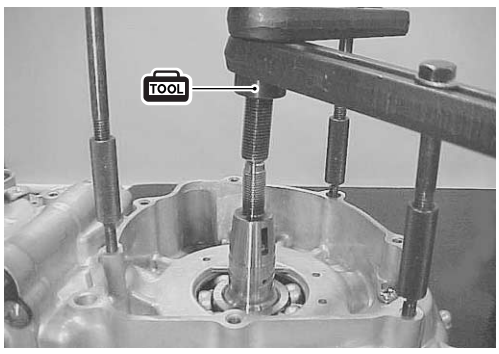


- Remove the balancer shaft.



- Remove the crankshaft from the crankcase using the special tool.

TOOL 09920-13120: Crankcase separating tool



ENGINE COMPONENTS INSPECTION AND SERVICE

CYLINDER HEAD

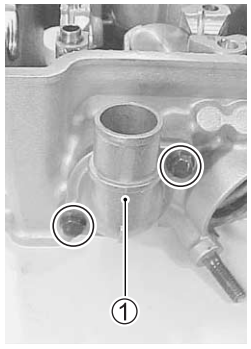
DISASSEMBLY

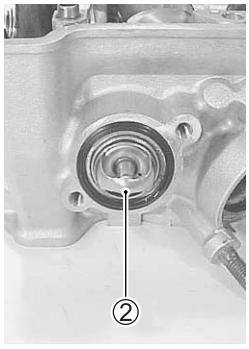
CAUTION

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

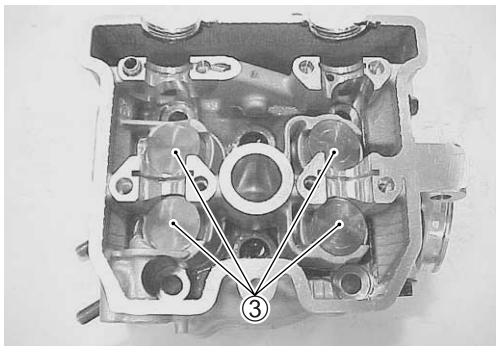
- Remove the intake pipe.

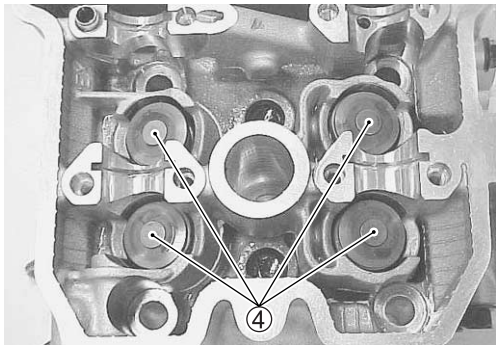
- Remove the engine coolant hose housing ① and thermostat ②.





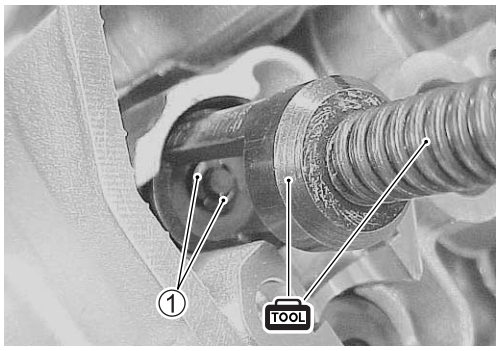
- Remove the tappets ③ and shims ④ by hand or by using a magnet.



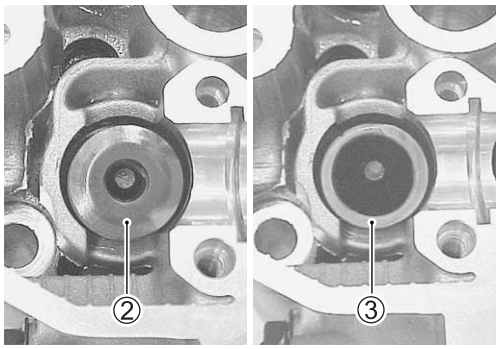


• Compress the valve springs, and then remove the valve cotters ① from the valve stem using the special tools.

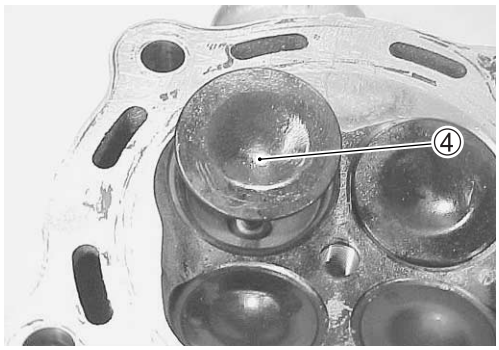
TOOL 09916-14510: Valve spring compressor
09916-14910: Attachment
09916-84511: Tweezers



• Remove the valve spring retainer ② and valve spring ③.

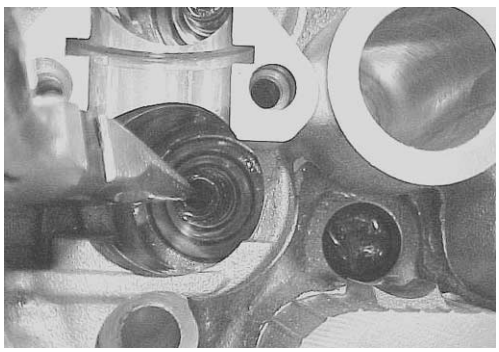


• Remove the valve ④ from the other side.



• Remove the oil seal with long-nose pliers.
• Remove the valve spring seat.

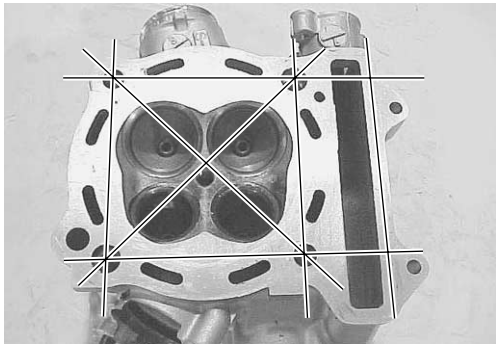
NOTE:
Removal of valves completes ordinary disassembling work. If valve guides have to be removed for replacement after inspecting the related parts, carry out the steps shown in the valve guide servicing.



CYLINDER HEAD DISTORTION

Decarbonize the combustion chamber.

Check the gasket surface of the cylinder head for distortion using a straightedge and thickness gauge. Take clearance readings at several places. If any clearance reading exceeds the service limit, replace the cylinder head with a new one.

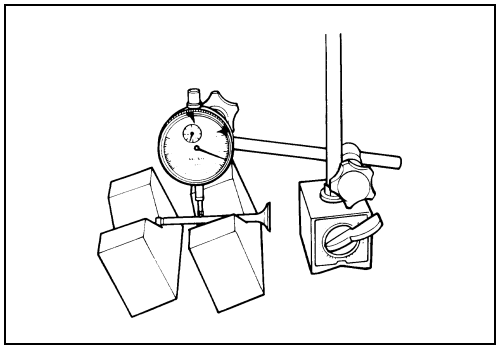


TOOL 09900-20803: Thickness gauge

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

VALVE STEM RUNOUT

Support the valve using V-blocks and measure the valve stem runout using the dial gauge, as shown. If the runout exceeds the service limit, replace the valve with a new one.

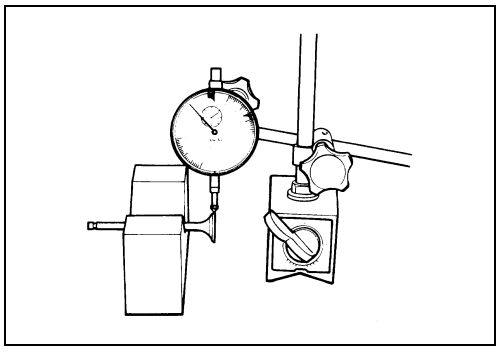


TOOL 09900-20606: Dial gauge (1/100 mm)
09900-20701: Magnetic stand
09900-21304: V-block set (100 mm)

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

VALVE HEAD RADIAL RUNOUT

Support the valve using a V-block and measure the valve head radial runout using the dial gauge, as shown. If the runout exceeds the service limit, replace the valve with a new one.

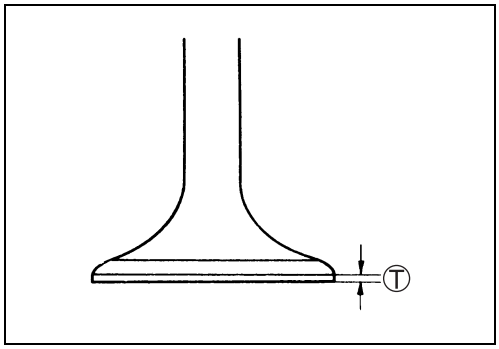


TOOL 09900-20606: Dial gauge (1/100 mm)
09900-20701: Magnetic stand
09900-21304: V-block set (100 mm)

DATA Valve head radial runout
Service Limit: 0.03 mm (0.001 in)

VALVE FACE WEAR

Visually inspect each valve face for wear or damage. If any abnormal wear is found, replace the respective valve with a new one. Measure the valve head thickness Ⓣ. If the valve head thickness is not within the specified value, replace the valve with a new one.

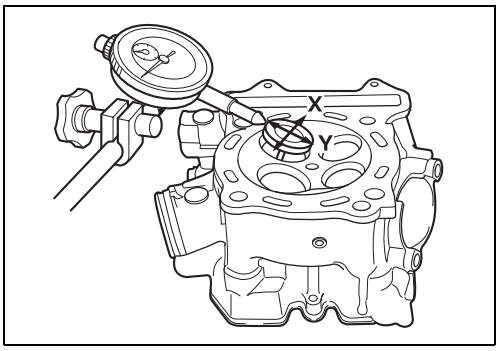


TOOL 09900-20101: Vernier calipers

DATA Valve head thickness Ⓣ
Service Limit: 0.5 mm (0.02 in)

VALVE STEM DEFLECTION

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

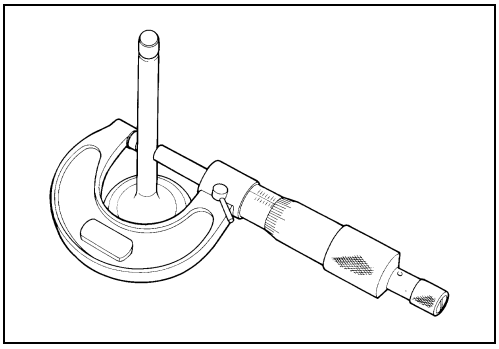


TOOL 09900-20606: Dial gauge (1/100 mm)
09900-20701: Magnetic stand

DATA Valve stem deflection
Service Limit: 0.35 mm (0.014 in)

VALVE STEM WEAR

Measure the valve stem outside diameter using the micrometer. If the outside diameter is not within the specified value, replace the valve with a new one. If the valve stem outside diameter is within specification, but the valve stem deflection is not, replace the valve guide with a new one. After replacing the valve or valve guide, check the deflection.

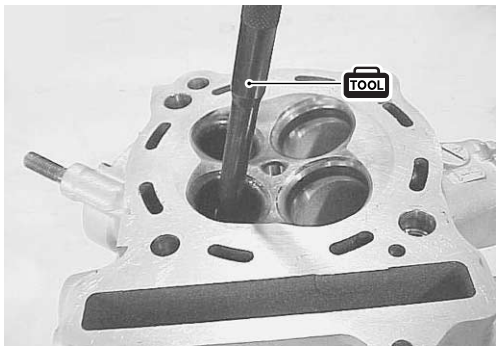


TOOL 09900-20205: Micrometer (0 – 25 mm)

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)

VALVE GUIDE SERVICING

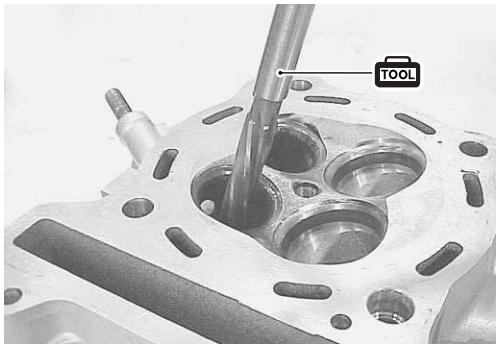
- Drive the valve guide out toward the camshaft side using the valve guide remover.



TOOL 09916-44310: Valve guide remover/installer

NOTE:
** Discard the removed valve guide.*
** Only oversized valve guides are available as replacement parts.*

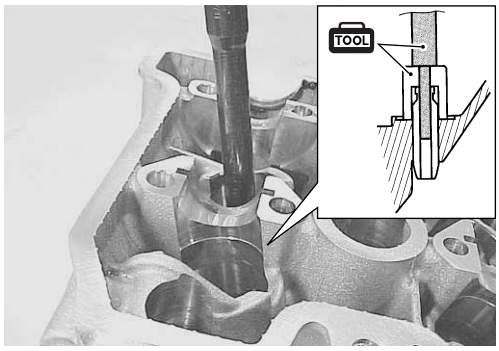
- Refinish the valve guide holes in the cylinder head using the valve guide reamer and handle.



TOOL 09916-34580: Valve guide reamer (10.8 mm)
09916-34542: Reamer handle

- Oil the stem hole of each valve guide and drive the guide into the guide hole using the valve guide installer and attachment.

TOOL 09916-44310: Valve guide remover/installer
09916-53360: Valve guide installer attachment

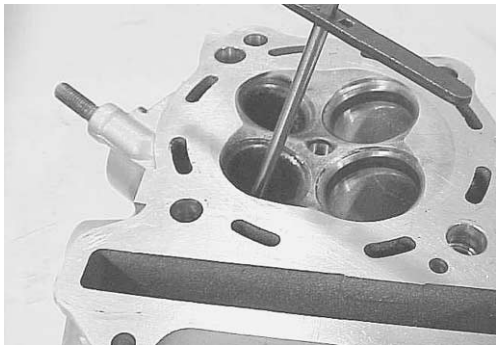


CAUTION

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

- After fitting the valve guides, refinish their guiding bores with the valve guide reamer. Be sure to clean and oil the guides after reaming.

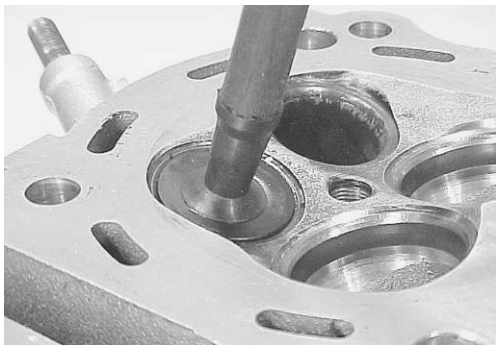
TOOL 09916-34570: Valve guide reamer (5.0 mm)
09916-34542: Reamer handle



VALVE SEAT WIDTH

- Coat the valve seat uniformly with prussian blue. Install the valve and attach a valve lapper onto it. Tap the coated seat with the valve face in a rotating manner, in order to obtain a clear impression of the seating contact.

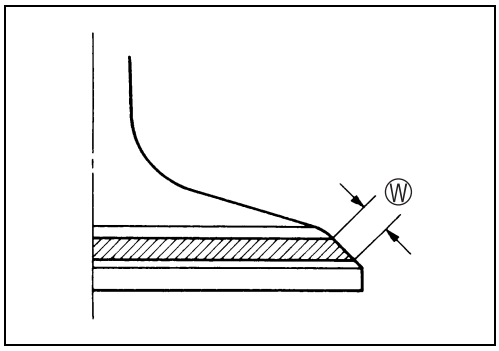
TOOL 09916-10911: Valve lapper set



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

DATA Valve seat width Ⓦ
Standard: 0.9 – 1.1 mm (0.035 ± 0.043 in)

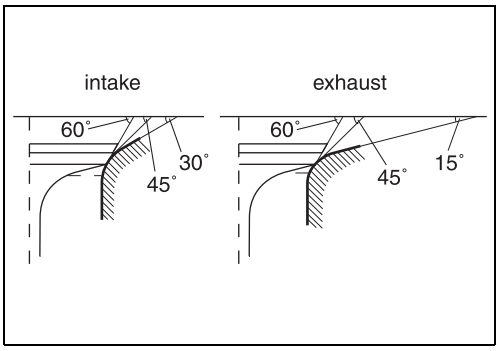
If the valve seat is out of specification, re-cut the seat.



VALVE SEAT SERVICING

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

	Intake	Exhaust
45°	N-128	N-128
15°	—	N-121
30°	N-128	—
60°	N-114	N-114



For USA

Valve seat cutter: N-114, N-121 and N-128
Solid pilot: N-100-5.0

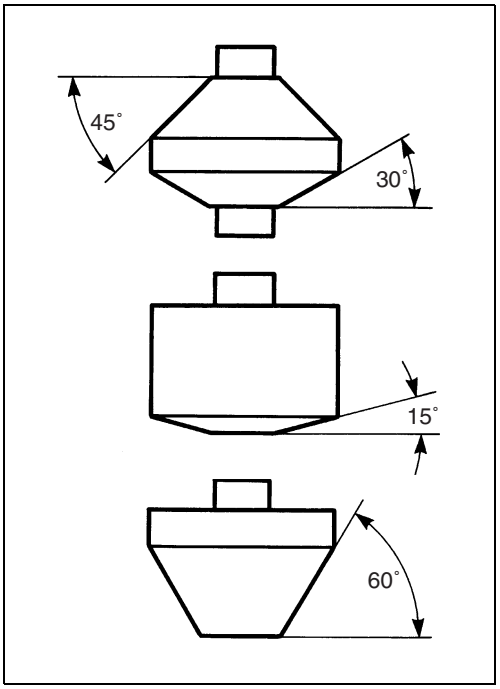
For the other countries

09916-21110: Valve seat cutter set
09916-22420: Cutter N-128
09916-22430: Cutter N-114
09916-20610: Cutter N-121
09916-24311: Solid pilot N-100-5.0

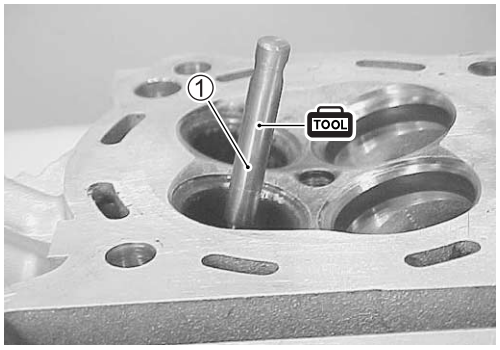
NOTE:
Use the solid pilot N-100-5.0 along with the valve seat cutters N-114, N-121, and N-128.

CAUTION

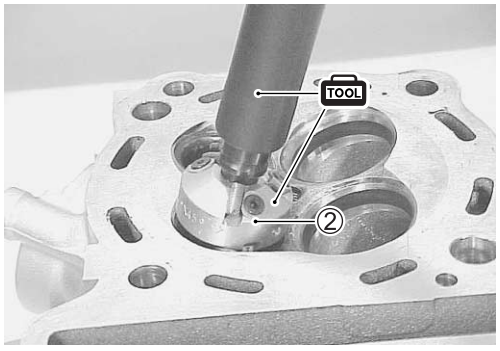
The valve seat contact area must be inspected after each cut.



- When installing the solid pilot ① rotate it slightly.

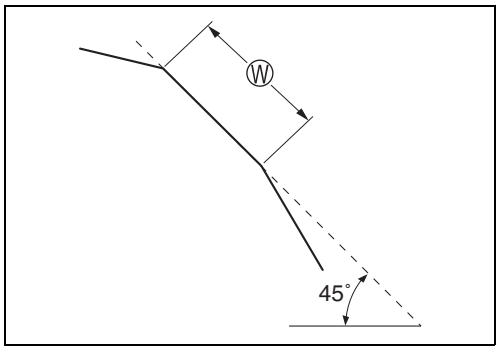


- Seat the pilot snugly. Install the 45° cutter ②, attachment and T-handle.



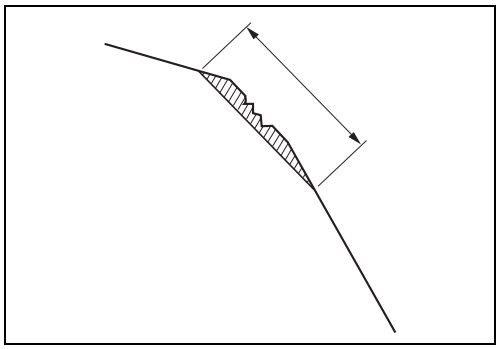
INITIAL SEAT CUT

- Descale and clean up the seat using the 45° cutter. Rotate the cutter one or two turns.
- Measure the valve seat width Ⓦ after every cut.



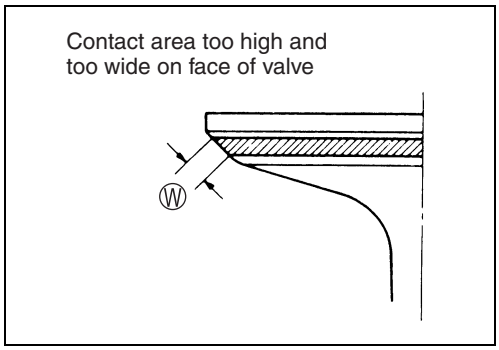
- If the valve seat is pitted or burned, use the 45° cutter to condition the seat some more.

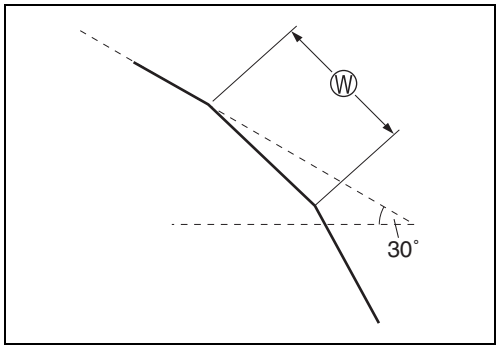
NOTE:
Cut only the minimum amount necessary from the seat to prevent the possibility of the tappet shim replacement.

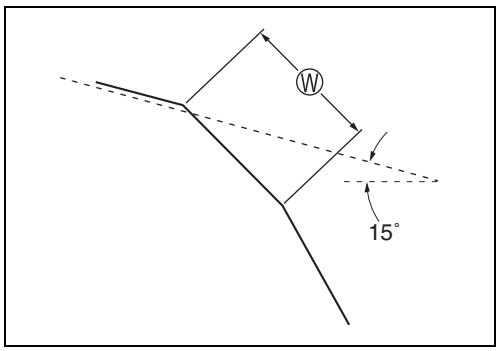


TOP NARROWING CUT

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

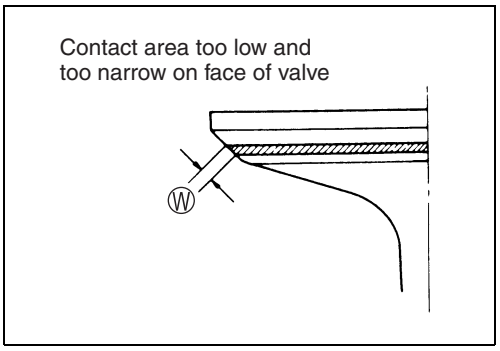






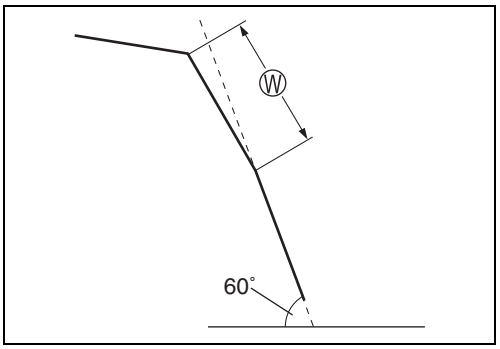
FINAL SEAT CUT

- If the contact area is too low or too narrow, use the 60° cutter to raise and widen the contact area. If the contact area is too high or too wide, use the 15° or 30° cutter to lower and narrow it to the correct width.
- After the desired seat position and width is achieved, use the 60° cutter very lightly to clean up any burrs caused by the previous cutting operations.



CAUTION

DO NOT use a 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 one. This will provide a soft surface for the final seating of the valve which will occur during the first few seconds of engine operation.



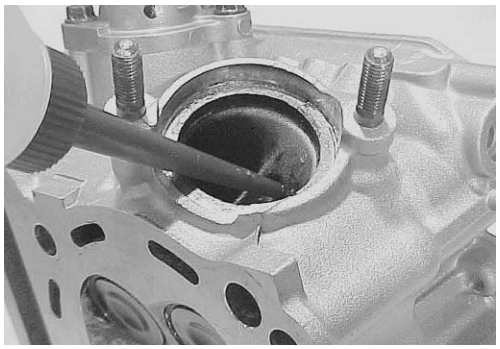
NOTE:

After servicing the valve seats, be sure to check the tappet clearance after the cylinder head has been installed. (☞2-5 to 2-9)

VALVE SEAT SEALING CONDITION INSPECTION

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

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



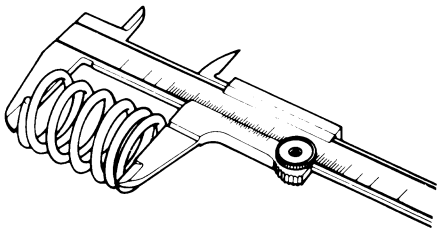
⚠ WARNING

Gasoline is highly flammable and explosive.
Keep heat, sparks, and flames away from gasoline.

VALVE SPRING

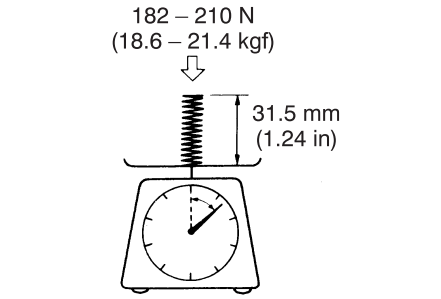
The force of the coil spring keeps the valve seat tight. A weakened spring results in reduced engine power output and accounts for the chattering noise coming from the valve mechanism.

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



DATA Valve spring free length (IN & EX)
Service Limit: 38.8 mm (1.53 in)

DATA Valve spring tension (IN & EX)
Standard: 182 – 210 N (18.6 – 21.4 kgf, 41.0 – 47.2 lbs) at length 31.5 mm (1.24 in)

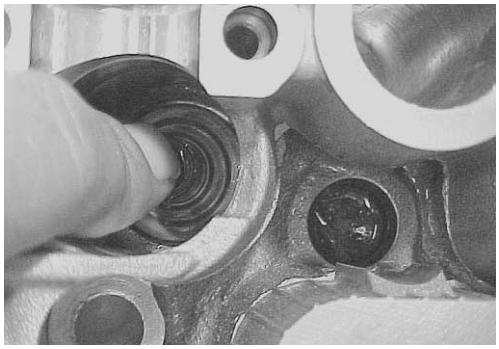


REASSEMBLY

- Install each valve spring seat.
- Apply molybdenum oil solution to each oil seal and press-fit them into position.

CAUTION

Do not reuse the oil seals.



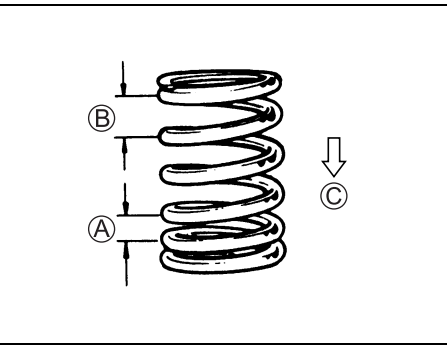
- Apply molybdenum oil solution to the valve as shown, and then insert them into the valve guides.

CAUTION

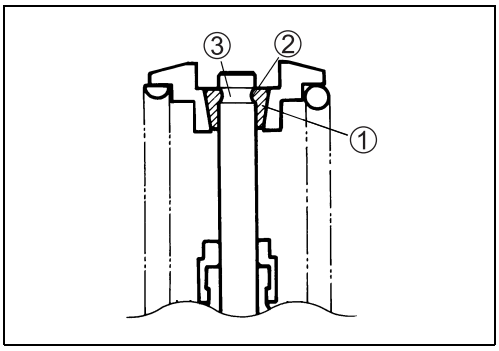
When inserting each valve into the valve guides, make sure not to damage the lip of the oil seal.

- Install the valve spring with the smaller pitch Ⓐ facing the cylinder head.

Ⓑ Larger pitch
Ⓒ Down



• Install the valve spring retainer by pressing down the spring using the valve lifter. Fit the cotter halves to the stem end and release the lifter to allow the cotter ① to wedge between the retainer and the valve stem. Make sure that the rounded lip ② of the cotter fits snugly into the groove ③ in the stem end.



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

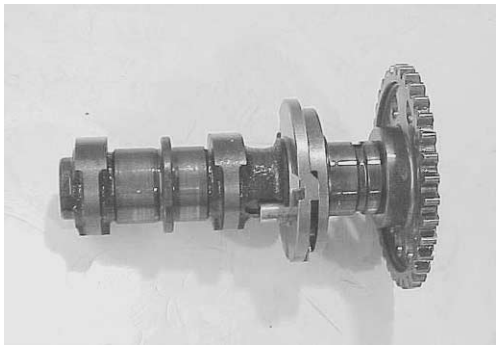
CAUTION

Be sure to install all of the parts in their original positions.

CAMSHAFT/AUTOMATIC DECOMPRESSION ASSEMBLY

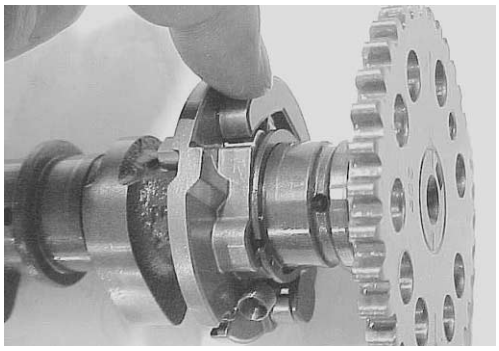
CAUTION

Do not attempt to disassemble the camshaft/automatic decompression assembly. It is not serviceable.



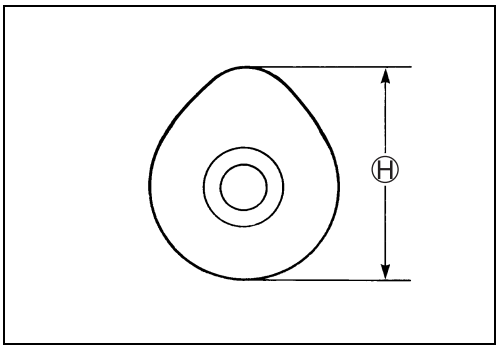
AUTOMATIC DECOMPRESSION

Move the automatic decompression weight by hand to inspect if it is operating smoothly. If the automatic decompression weight does not operate smoothly, replace it with a new one.



CAM WEAR

Worn-down cams are often the cause of mistimed valve operation resulting in reduced power output.
Measure the cam height Ⓗ using the micrometer. If the cams are worn to the service limit, replace the camshaft with a new one.

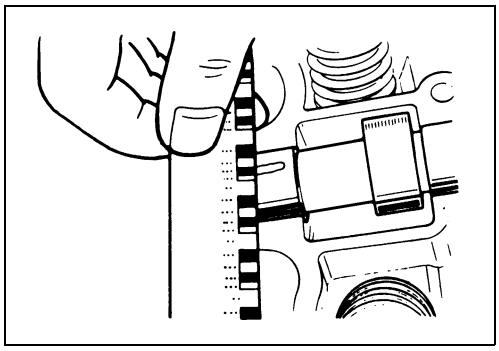


TOOL **09900-20202: Micrometer (25 – 50 mm)**

DATA **Cam height Ⓗ**
Service Limit
IN: 36.020 mm (1.4181 in)
EX: 34.900 mm (1.3740 in)

CAMSHAFT JOURNAL WEAR

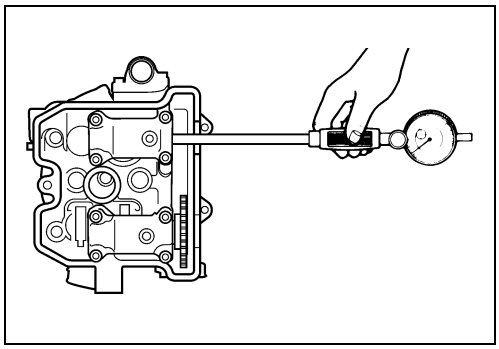
Measure the oil clearance, with the camshaft installed, using the plastigauge.



TOOL **09900-22301: Plastigauge**
09900-22302: Plastigauge

DATA **Camshaft journal oil clearance (IN & EX)**
Service Limit: 0.150 mm (0.0059 in)

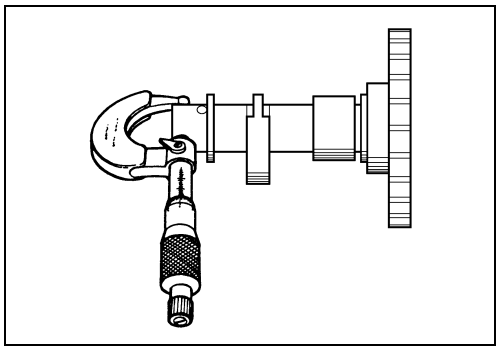
- Tighten the camshaft journal holder bolts evenly and in diagonal stages to the specified torque.



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 journal holders and read the width of the compressed plastigauge with the envelope scale. This measurement should be taken at the widest part of the compressed plastigauge.
If the camshaft journal oil clearance exceeds the service limit, measure the inside diameter of the camshaft journal holder and outside diameter of the camshaft journal. Replace the camshaft or the cylinder head and camshaft holder depending upon which one exceeds the specification.



TOOL **09900-22403: Small bore gauge**

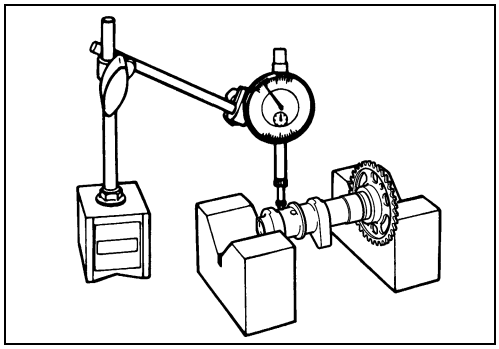
DATA **Camshaft journal holder I.D. (IN & EX)**
Standard: 22.012 – 22.025 mm (0.8666 – 0.8671 in)

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

DATA **Camshaft journal O.D. (IN & EX)**
Standard: 21.972 – 21.993 mm (0.8653 – 0.8659 in)

CAMSHAFT RUNOUT

Support the valve using V-blocks and measure the camshaft runout using the dial gauge. If the runout exceeds the service limit, replace the camshaft with a new one.

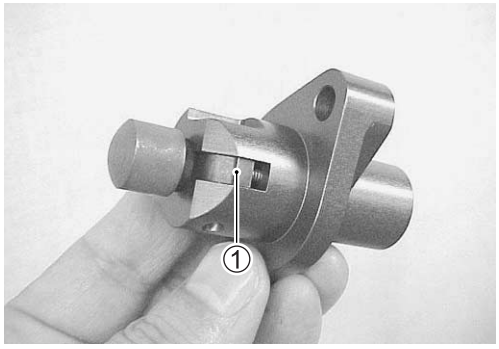


TOOL **09900-20606: Dial gauge (1/100 mm)**
09900-20701: Magnetic stand
09900-21304: V-block set (100 mm)

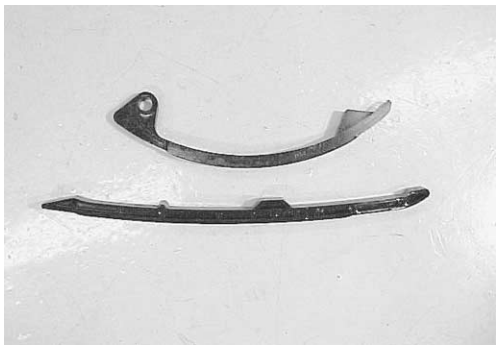
DATA **Camshaft runout**
Service Limit: 0.10 mm (0.004 in)

CAM CHAIN TENSION ADJUSTER AND TENSIONER

Check that the push rod slides smoothly when unlocking the ratchet mechanism ①.
If push rod does not slide smoothly, replace the cam chain tension adjuster with a new one.



Check the contacting surface of the cam chain tensioner and cam chain guide.
If it is found to be damaged, raplace it with a new one.



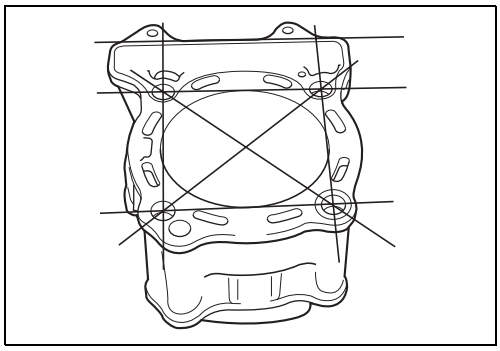
CYLINDER

CYLINDER DISTORTION

Check the gasket surface of the cylinder block for distortion using a straightedge and thickness gauge. Take clearance readings at several places. If any clearance reading exceeds the service limit, replace the cylinder block with a new one.

TOOL 09900-20803: Thickness gauge

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

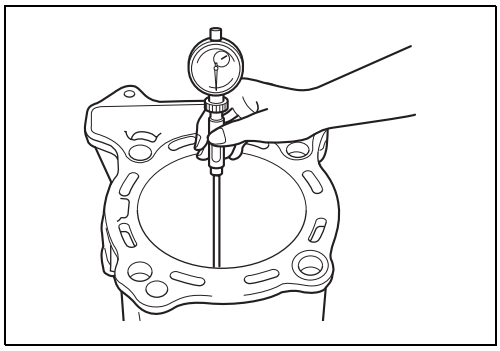


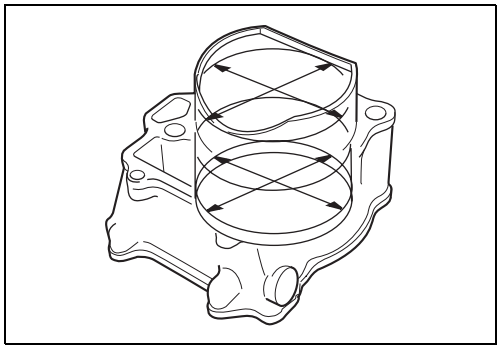
CYLINDER BORE

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

TOOL 09900-20508: Cylinder gauge set

DATA Cylinder bore
Standard: 90.000 – 90.015 mm (3.5433 – 3.5439 in)



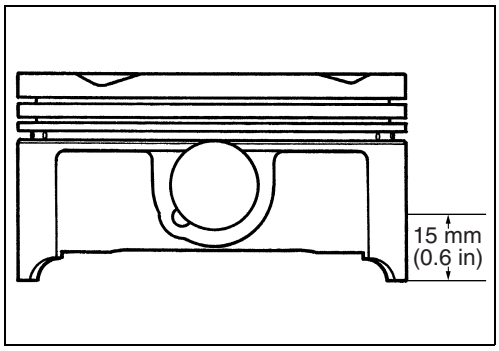


PISTON AND PISTON RING

PISTON DIAMETER

Measure the piston diameter using the micrometer at 15 mm (0.6 in) from the skirt end.

If the piston diameter is less than the service limit, replace the piston with a new one.



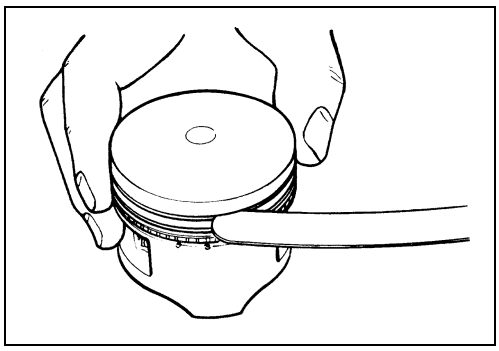
TOOL **09900-20204: Micrometer (75 – 100 mm)**

DATA **Piston diameter**

Service Limit: 89.880 mm (3.5386 in)

PISTON-RING-TO-GROOVE CLEARANCE

Measure the side clearances of the 1st and 2nd piston rings using the thickness gauge. If any clearance reading exceeds the service limit, replace both the piston and piston rings.



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)

2nd: 0.150 mm (0.006 in)

DATA **Piston ring groove width**

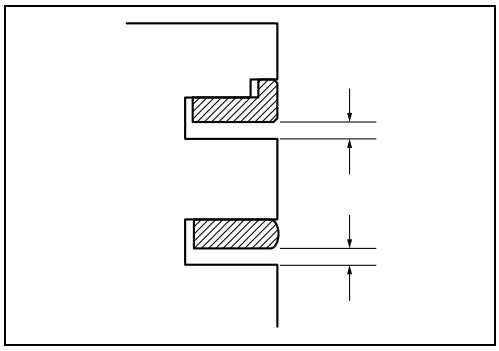
Standard:

1st: 0.78 – 0.80 mm (0.0307 – 0.0315 in)

1.30 – 1.32 mm (0.0512 – 0.0520 in)

2nd: 0.81 – 0.83 mm (0.0319 – 0.0327 in)

Oil: 2.01 – 2.03 mm (0.0791 – 0.0799 in)



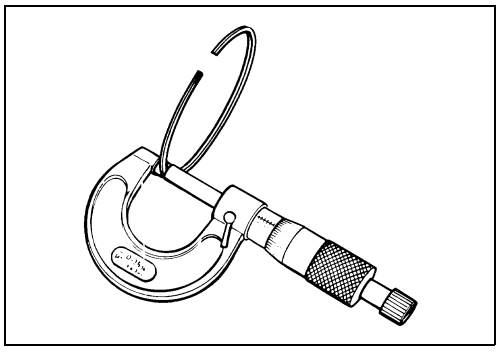
DATA **Piston ring thickness**

Standard:

1st: 0.71 – 0.76 mm (0.0280 – 0.0299 in)

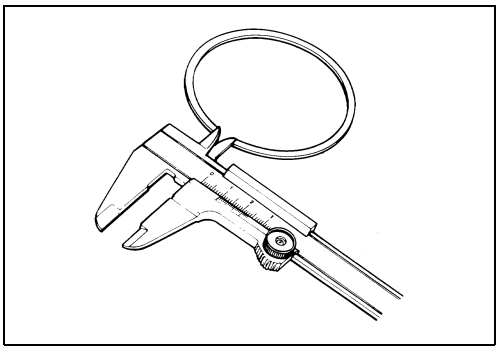
1.08 – 1.10 mm (0.0425 – 0.0433 in)

2nd: 0.77 – 0.79 mm (0.0303 – 0.0311 in)



PISTON RING FREE END GAP AND PISTON RING END GAP

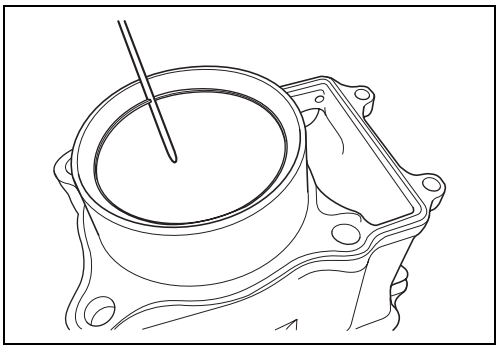
Measure the piston ring free end gap using the vernier calipers, first, and then fit the piston ring squarely into the cylinder and measure the piston ring end gap using the thickness gauge.
If any measurement exceeds the service limit, replace the piston ring with a new one.



TOOL **09900-20101: Vernier calipers**

DATA **Piston ring free end gap**
Service Limit:
1st: 5.5 mm (0.22 in)
2nd: 9.2 mm (0.36 in)

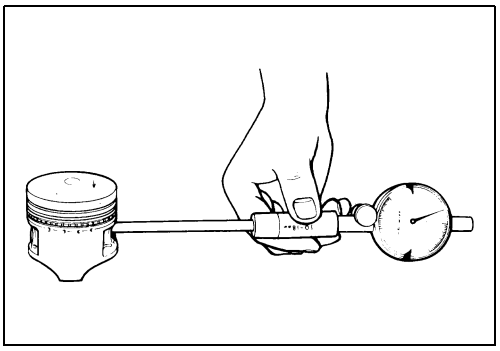
TOOL **09900-20803: Thickness gauge**



DATA **Piston ring end gap**
Service Limit:
1st: 0.50 mm (0.020 in)
2nd: 0.50 mm (0.020 in)

PISTON PIN AND PIN BORE

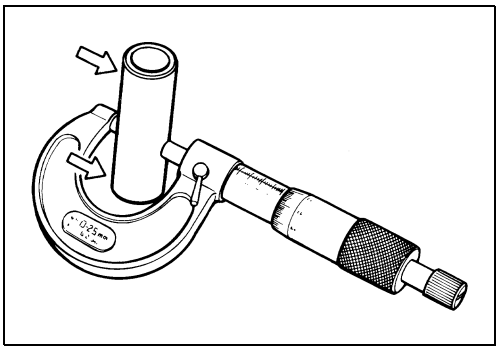
Measure the piston pin bore diameter using the small bore gauge. If the diameter exceeds the service limit, replace the piston with a new one.



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

DATA **Piston pin bore**
Service Limit: 20.030 mm (0.7886 in)

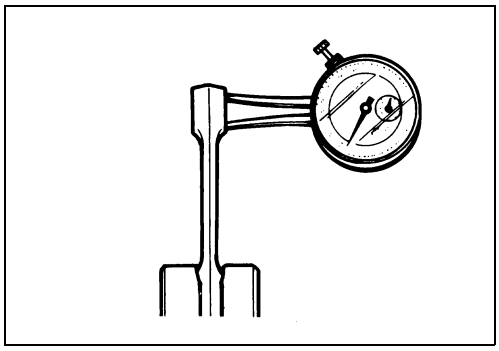
Measure the piston pin outside diameter at three positions using the micrometer. If any measurement exceeds the service limit, replace the piston pin with a new one.



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

DATA **Piston pin O.D.**
Service Limit: 19.980 mm (0.7866 in)

CONROD



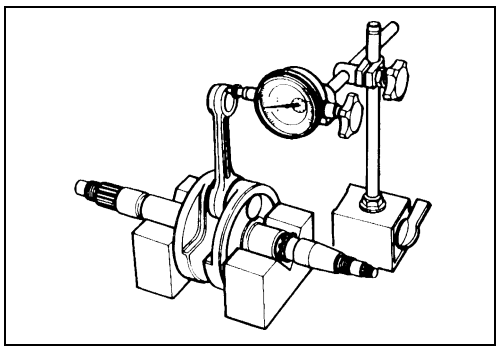
CONROD SMALL END I.D.

Measure the conrod small end inside diameter using the small bore gauge.

If the conrod small end inside diameter exceeds the service limit, replace the conrod with a new one.

TOOL 09900-20605: Dial calipers

DATA Conrod small end I.D.
Service Limit: 20.040 mm (0.7890 in)

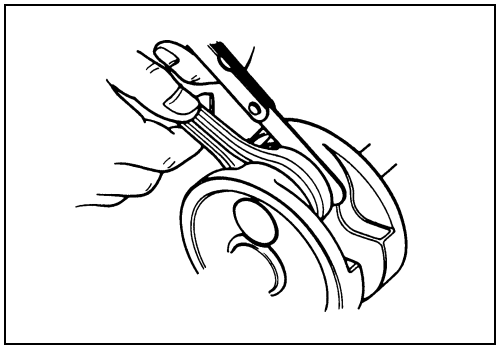


CONROD DEFLECTION AND BIG END SIDE CLEARANCE

Wear on the big end of the conrod can be estimated by checking the movement of the small end of the rod. This method can also be used to check the extent of wear on the parts of the conrod's big end.

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

DATA Conrod deflection
Service Limit: 3.0 mm (0.12 in)

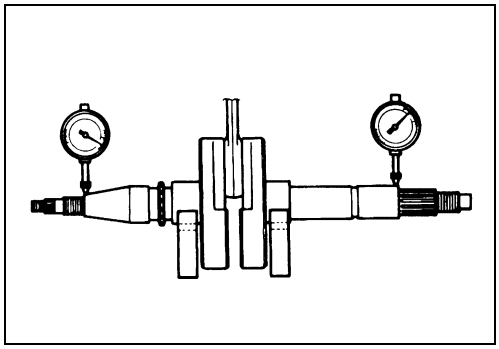


Push the big end of the conrod to one side and measure the side clearance using a thickness gauge. If the clearance exceeds the service limit, replace the crankshaft assembly with a new one or bring the deflection and the side clearance within the service limit by replacing the worn parts (conrod, big end bearing, crank pin, etc.) with new ones.

TOOL 09900-20803: Thickness gauge

DATA Big end side clearance
Service Limit: 1.0 mm (0.04 in)

CRANKSHAFT



CRANKSHAFT RUNOUT

Support the crankshaft using V-blocks and measure the crankshaft runout using the dial gauge, as shown. If the runout exceeds the service limit, replace the crankshaft with a new one.

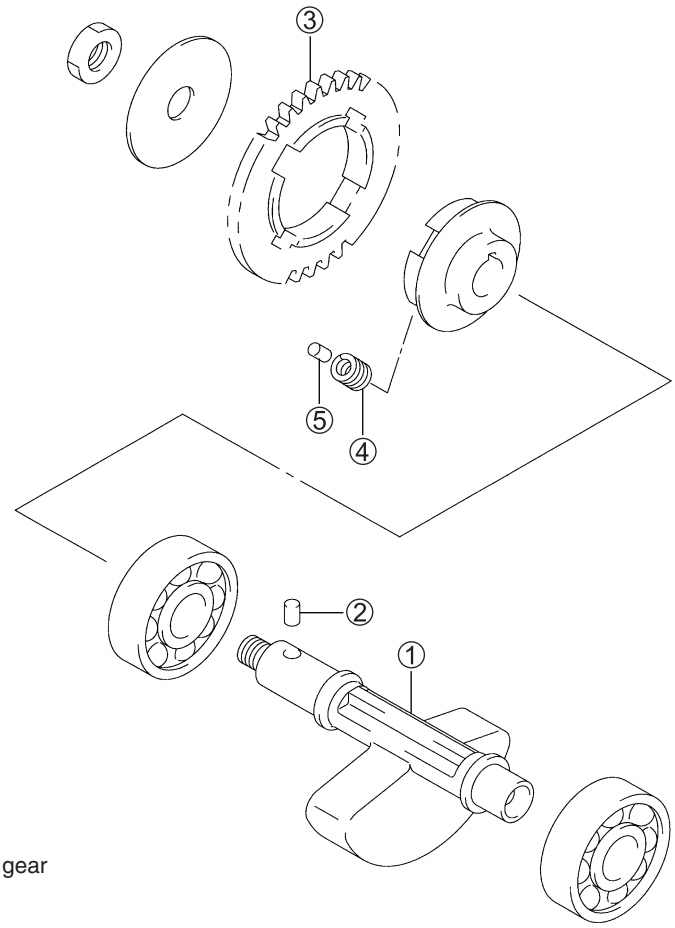
TOOL 09900-20606: Dial gauge (1/100 mm)
09900-20701: Magnetic stand
09910-21304: V-block set (100 mm)

DATA Crankshaft runout
Service Limit: 0.08 mm (0.003 in)

BALANCER SHAFT AND BALANCER DRIVEN GEAR

DISASSEMBLY

• Disassemble the balancer shaft as shown in the illustration.



① Balancer shaft
② Pin
③ Balancer driven gear
④ Spring (4 pcs.)
⑤ Pin (2 pcs.)

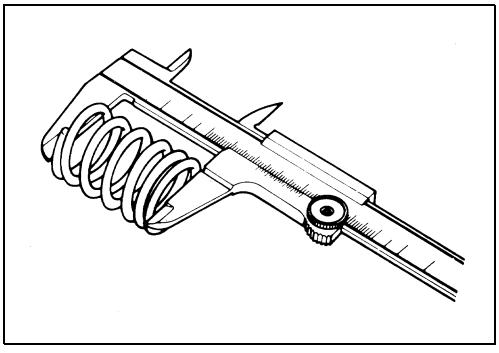
INSPECTION

Inspect the balancer shaft and balancer driven gear for wear or damage. If any wear or damage is found, replace the defective part.

Measure the free length of each balancer spring. If any spring length is less than the service limit, replace all of the spring.

TOOL 09900-20101:Vernier calipers

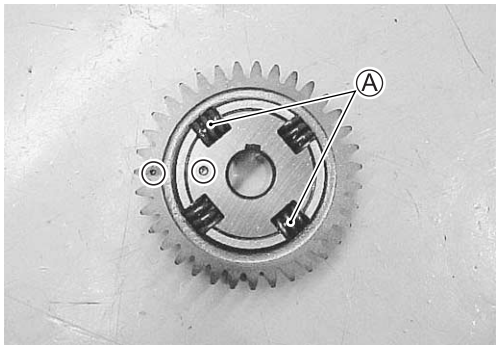
Service Limit: 10.3 mm (0.41 in)



REASSEMBLY

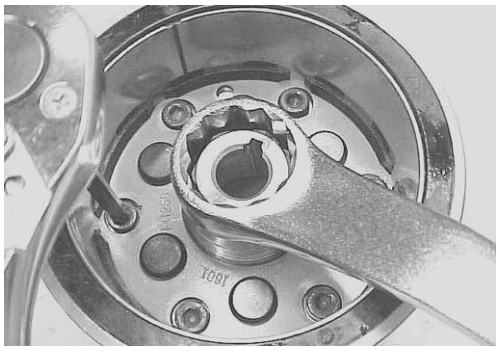
Reassemble the balancer driven gear in the reverse order of disassembly.

• Install the balancer driven gear by aligning the matching marks.
Ⓐ: Pin



STARTER CLUTCH

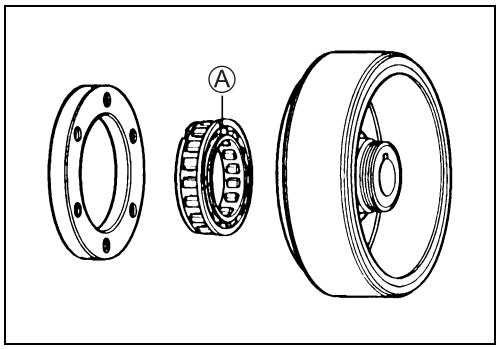
- Hold the rotor using a 27-mm offset wrench and remove the bolts.



- Install the starter clutch in the proper direction as shown.

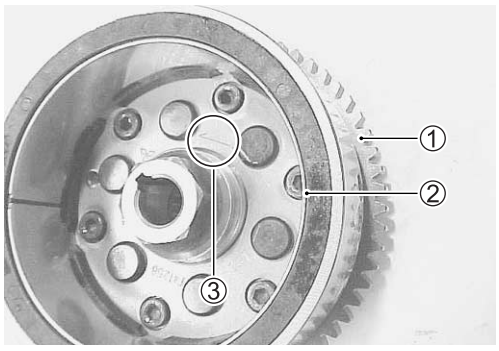
NOTE:
When installing the starter clutch onto the rotor, make sure that the flange side Ⓐ in the bearing faces to the rotor.

- Apply engine oil to the starter clutch.

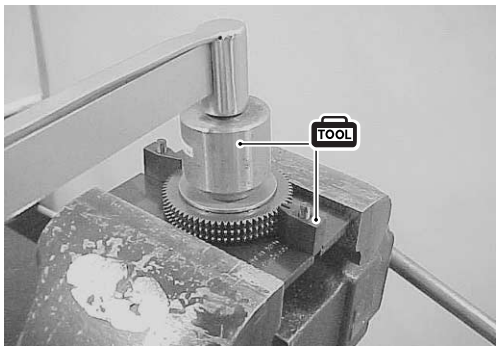


- Tighten the bolts while holding the rotor using a 27-mm offset wrench.

- Install the starter gear ① to the starter clutch.
- Check that the rotor ② turns in the direction of the arrow ③ on the rotor while holding the starter gear, and that the rotor never turns in the opposite direction of the arrow.



STARTER TORQUE LIMITER



CAUTION

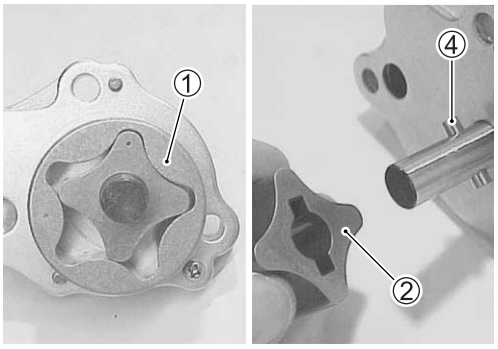
Do not attempt to disassemble the starter torque limiter. It is unserviceable.

Check the slip torque of the starter torque limiter using the special tools and vise as shown, if the slip torque is not within the specified torque, replace the starter torque limiter with a new one.

09930-73170: Starter torque limiter holder
09930-73180: Starter torque limiter socket

Slip torque:
30 – 55 N·m (3.0 – 5.5 kgf-m, 21.5 – 40.0 lb-ft)

OIL PUMP

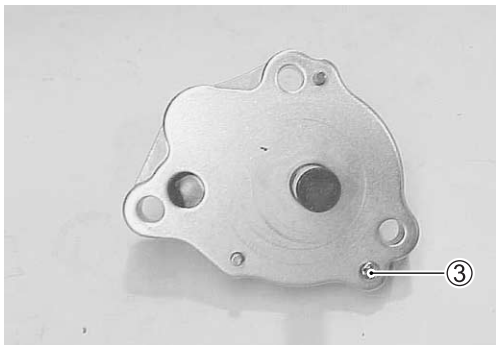


• Remove the outer rotor ①, inner rotor ② and pin ④.

Inspect the outer rotor ① and inner rotor ② for any scraches or other damage. If any damages are found, replace them with new ones.

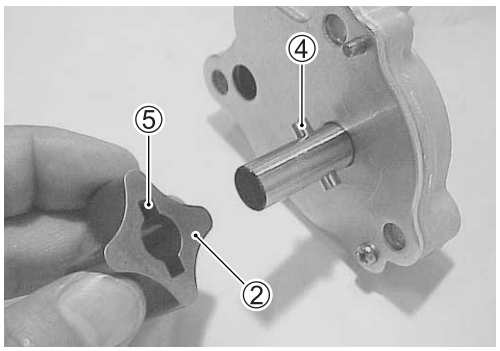
CAUTION

The oil pump case securing screw ③ is applied with SUZUKI THREAD LOCK SUPER "1303". If an attempt is made to overhaul the oil pump assembly, the screw may be damaged. Only the oil pump unit is available as a replacement.

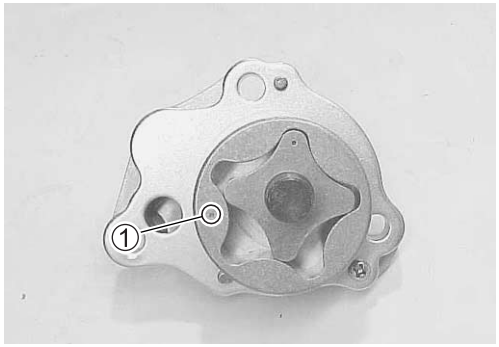


99000-32030: THREAD LOCK SUPER "1303"

- Apply engine oil to the sliding surfaces of the oil pump inner rotor, outer rotor and shaft.
- When installing the inner rotor ②, align the pin ④ with the groove ⑤.



• When installing the outer rotor, face the punched mark ① on the outer rotor to the outside.



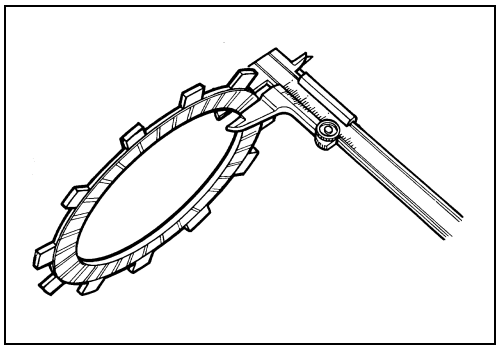
CLUTCH

CLUTCH DRIVE PLATES

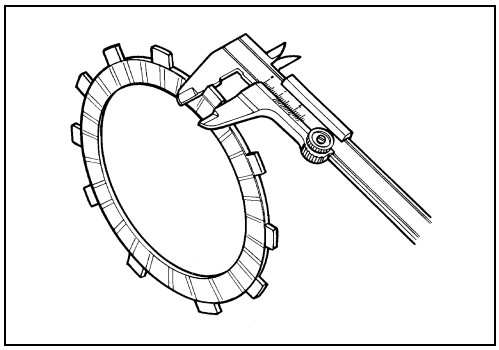
Measure the thickness of the clutch drive plates using vernier calipers. If a clutch drive plate is not within the service limit, replace the clutch plates as a set.

TOOL **09900-20101: Vernier calipers**

DATA **Drive plate thickness (No.1 & No.2)**
Service Limit: 2.62 mm (0.103 in)



DATA **Drive plate claw width (No.1 & No.2)**
Service Limit: 13.2 mm (0.520 in)

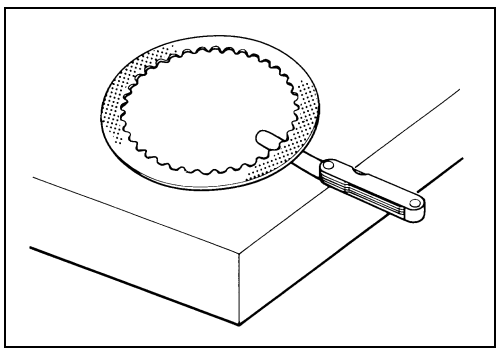


CLUTCH DRIVEN PLATES

Measure each clutch driven plate for distortion using the thickness gauge. If a clutch driven plate is not within the service limit, replace the clutch plates as a set.

TOOL **09900-20803: Thickness gauge**

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

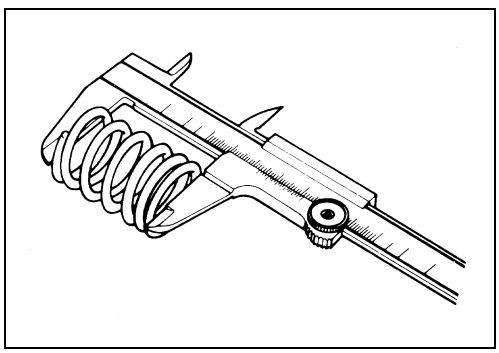


CLUTCH SPRING FREE LENGTH

Measure the free length of each clutch spring using vernier calipers. If any spring length is less than the service limit, replace all of the springs with new ones.

TOOL **09900-20101: Vernier calipers**

DATA **Clutch spring free length**
Service Limit: 49.9 mm (1.96 in)



GEARSHIFT FORK AND GEAR

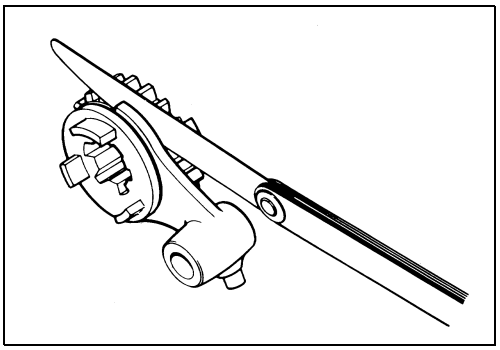
GEARSHIFT-FORK-TO-GEARSHIFT-FORK GROOVE CLEARANCE

Clearance for each gearshift fork plays an important role in the smoothness and positiveness of the shifting process.

Measure the gearshift fork clearance in the groove of its respective gear using the thickness gauge.

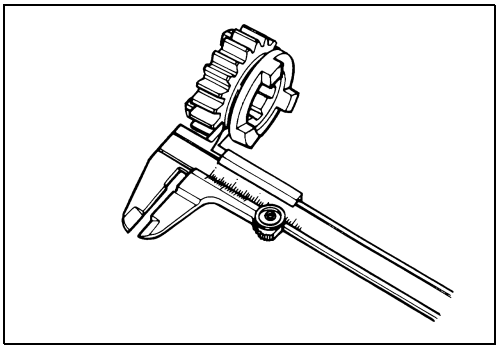
If the clearance exceeds specification, replace the fork, its respective gear, or both.

TOOL 09900-20803: Thickness gauge
09900-20101: Vernier calipers

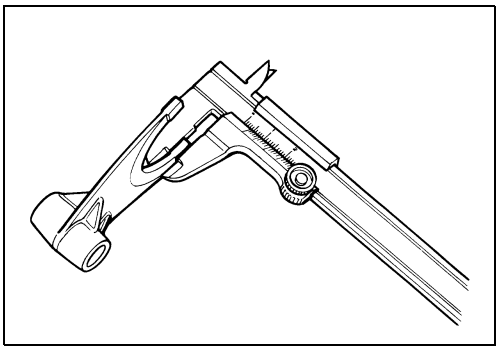


DATA Gearshift-fork-to-gearshift-fork-groove clearance
Service Limit: 0.50 mm (0.020 in)

DATA Shift fork groove width
Standard: 5.0 – 5.1 mm (0.197 – 0.201 in)



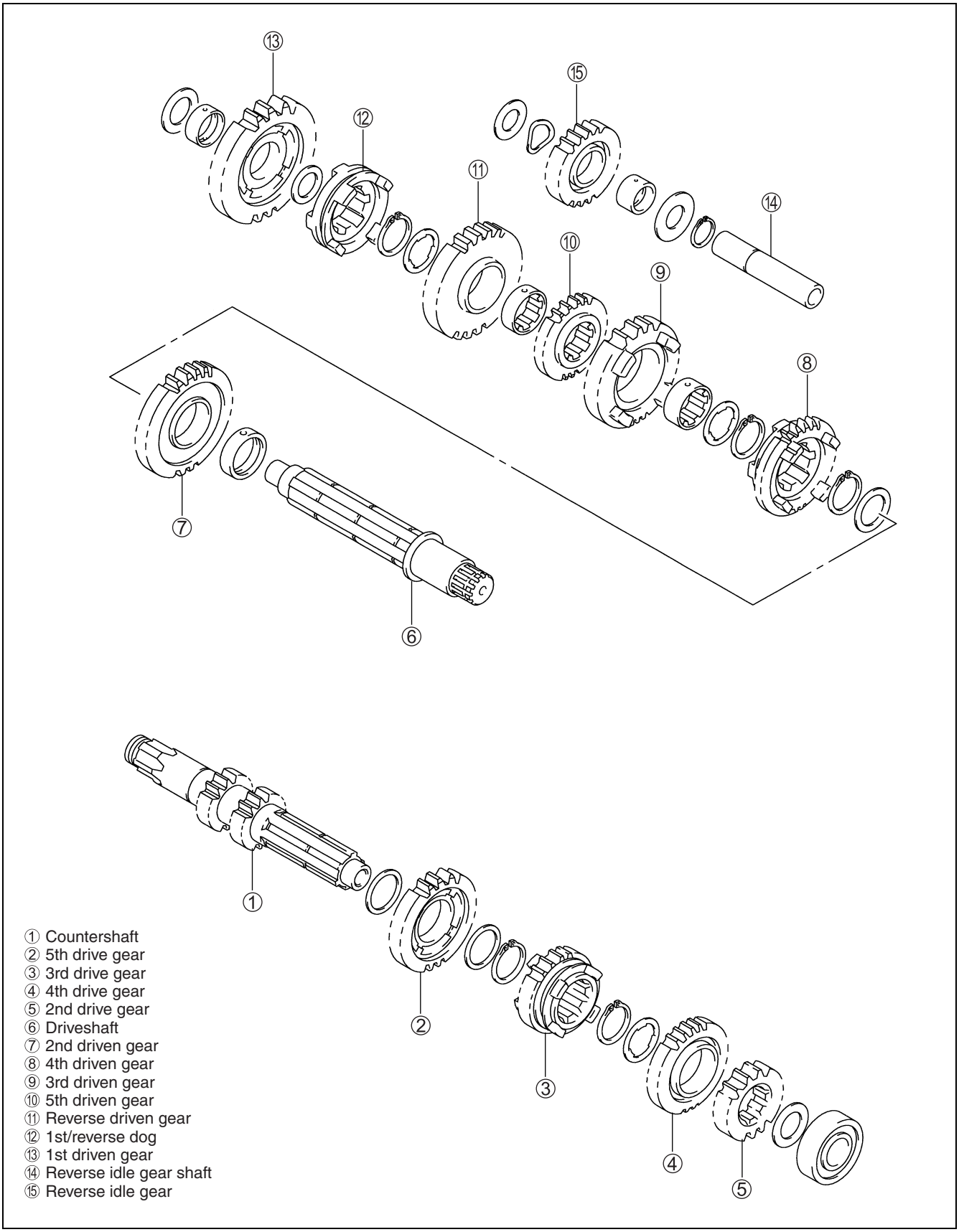
DATA Shift fork thickness
Standard: 4.8 – 4.9 mm (0.189 – 0.193 in)



TRANSMISSION

DISASSEMBLY

Disassemble the transmission gears as shown.



① Countershaft
② 5th drive gear
③ 3rd drive gear
④ 4th drive gear
⑤ 2nd drive gear
⑥ Driveshaft
⑦ 2nd driven gear
⑧ 4th driven gear
⑨ 3rd driven gear
⑩ 5th driven gear
⑪ Reverse driven gear
⑫ 1st/reverse dog
⑬ 1st driven gear
⑭ Reverse idle gear shaft
⑮ Reverse idle gear

REASSEMBLY

Reassemble the transmission in the reverse order of disassembly. Pay special attention to the following points:

NOTE:

Before installing the gears, apply engine oil to the inner surface of each gear and bushing.

CAUTION

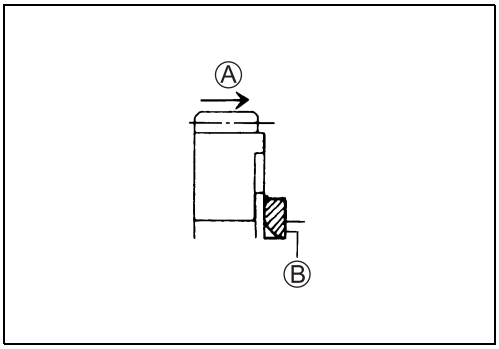
*** Never reuse a snap ring. After a snap ring has been removed from a shaft, it should be discarded and a new snap ring must be installed.**
*** When installing a new snap ring, do not expand the end gap larger than required to slip the snap ring over the shaft.**
*** After installing a new snap ring, make sure that it is completely seated in its groove and securely fitted.**

NOTE:

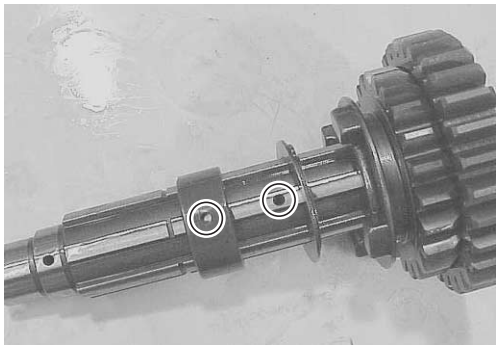
When reassembling the transmission, attention must be given to the locations and positions of the washers and snap rings. The cross sectional view shows the correct position of the gears, washers, and snap rings. (☞3-40)

- When installing a new snap ring, pay attention to the direction of the snap ring. Fit it to the side where the thrust is, as shown. The rounded side should be against the gear surface.

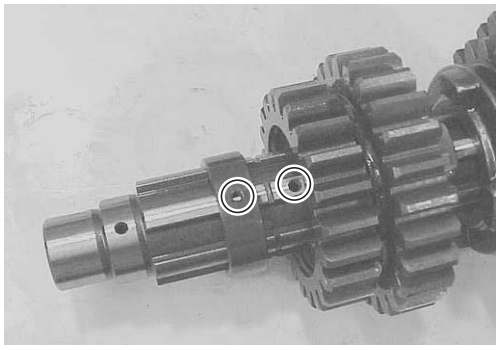
  Ⓐ Thrust
  Ⓑ Sharp edge

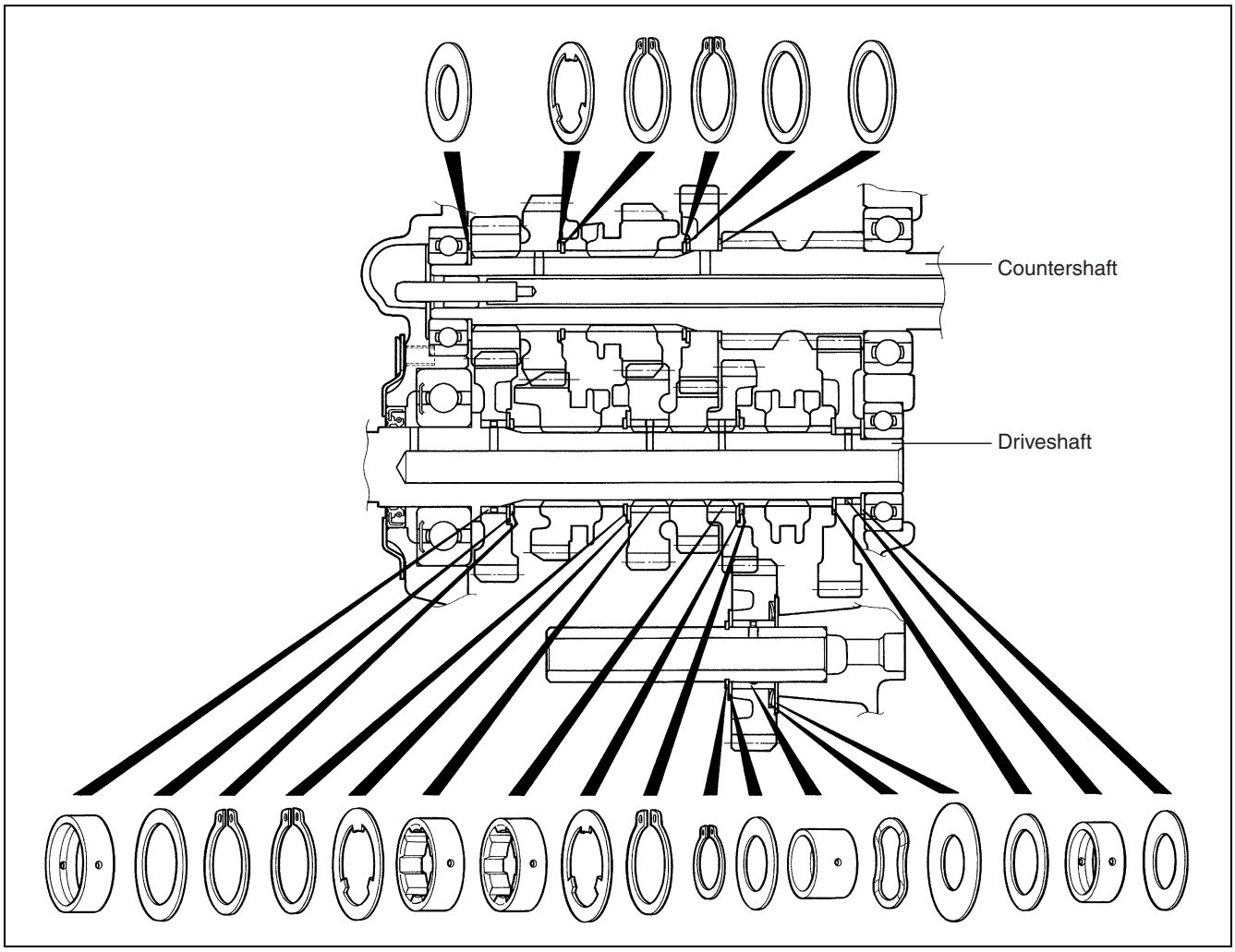


- When installing the third driven gear bushing, align the its oil hole with the driveshaft oil hole.



- When installing the reverse driven gear bushing, align the its oil hole with the driveshaft oil hole.

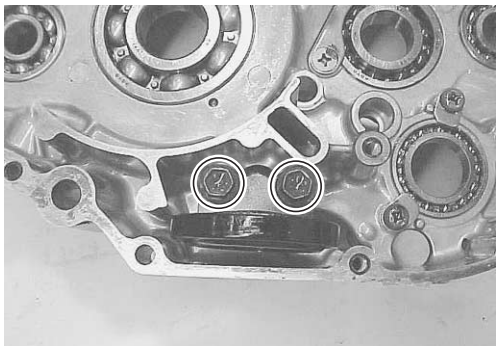




CRANKCASE

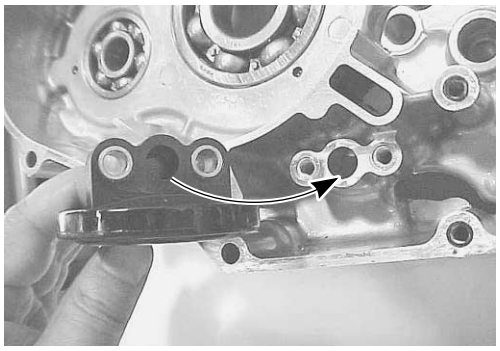
OIL SUMP FILTER

- Remove the oil sump filter.



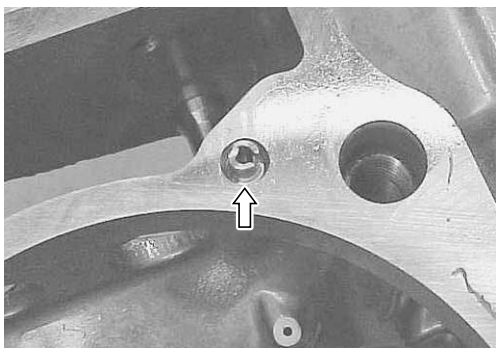
- Clean the oil sump filter using compressed air.

- Align the oil passage holes when installing the oil sump filter.

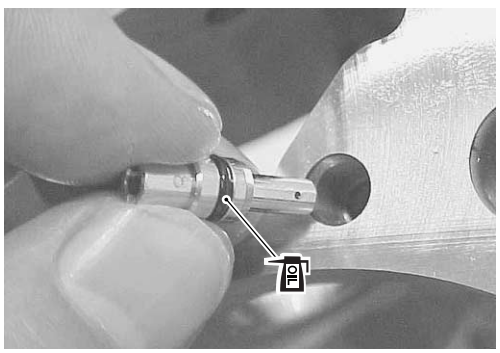


OIL JET

- Remove the oil jet.

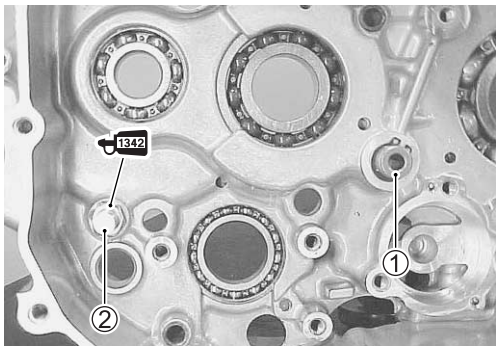


- Fit the new O-ring and apply engine oil to it.
- Install the oil jet as shown.



OIL PUMP IDLE GEAR SHAFT AND GEARSHIFT ARM STOPPER

- Remove the oil pump idle gear shaft ①.



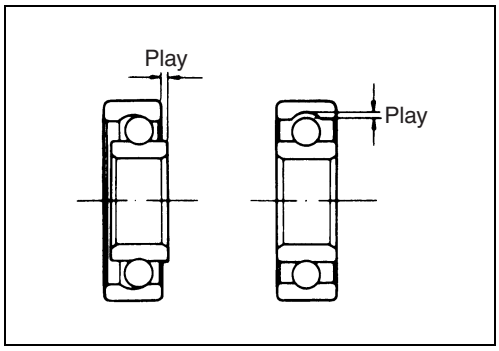
- Apply THREAD LOCK "1342" to the gearshift arm stopper.
- Tightening the gearshift arm stopper ② to the specified torque.

1342 99000-32050: THREAD LOCK "1342"

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

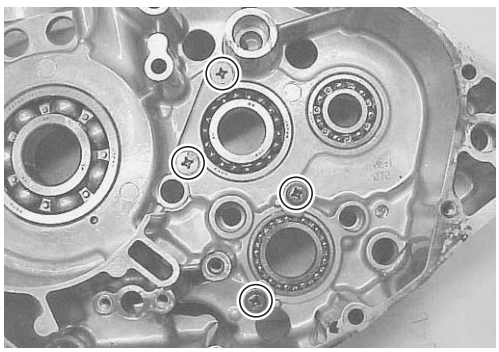
BEARING INSPECTION

Wash the bearing with a cleaning solvent and lubricate it with motor oil before inspection. Rotate the inner race and check to see that it turns smoothly. If it does not turn quietly and smoothly, or if there are signs of any abnormalities, the bearing is defective and must be replaced with a new one as follows.



BEARING REMOVAL

- Remove the bearing retainers.

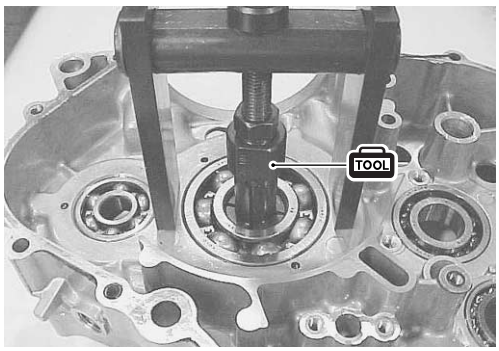


- Remove the crankcase bearings using the special tool.

TOOL 09921-20240: Bearing remover set

CAUTION

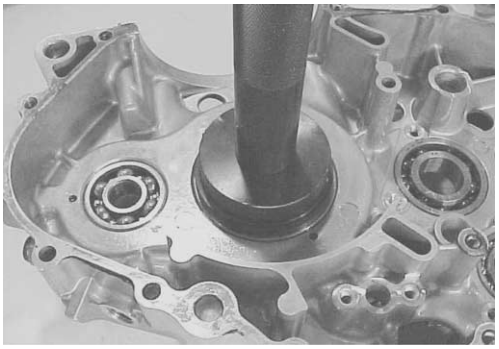
Replace the removed bearing with new ones.



BEARING INSTALLATION

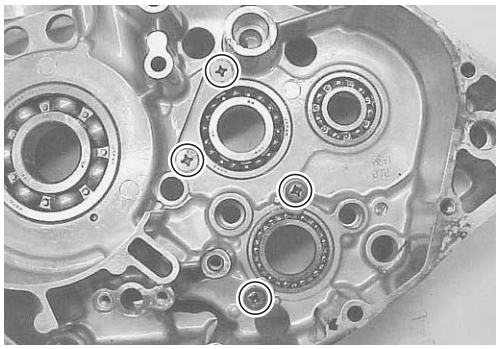
• Install the crankcase bearings using the special tool.

09913-70210: Bearing installer set



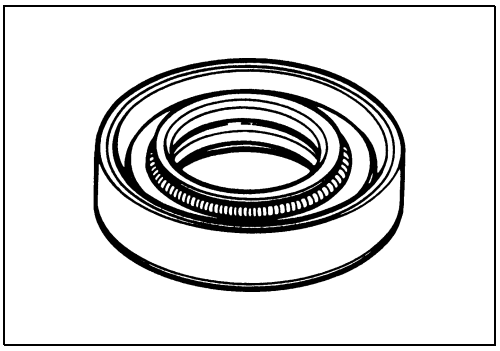
• Apply a small quantity of THREAD LOCK SUPER “1303” to the bearing retainer screws, and tighten them securely.

99000-32030: THREAD LOCK SUPER “1303”



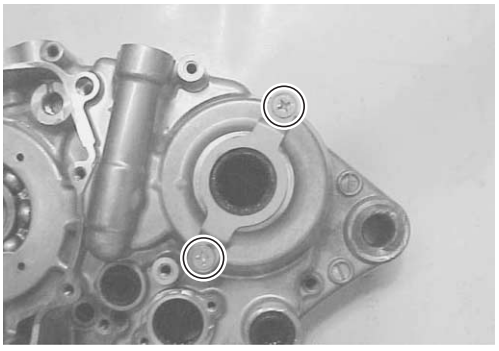
OIL SEAL INSPECTION

Damage to the lip of the oil seal may result in leakage of the engine oil. Inspect the oil seal for wear or damage. If any damages are found, replace the oil seal with a new one.

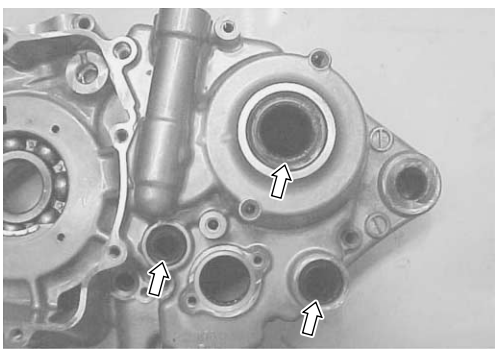


OIL SEAL REMOVAL

• Remove the oil seal retainer.



• Remove the oil seals.



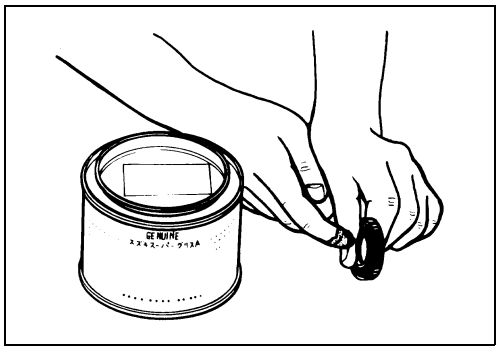
CAUTION

Replace the removed oil seals with new ones.

OIL SEAL INSTALLATION

- Install the oil seals into the crankcase. Pay attention to the following points:
- Apply SUZUKI SUPER GREASE "A" to the lip of the oil seals.

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

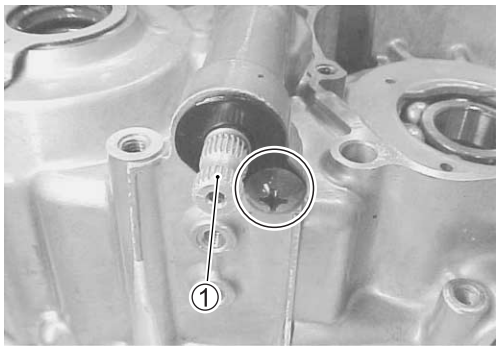


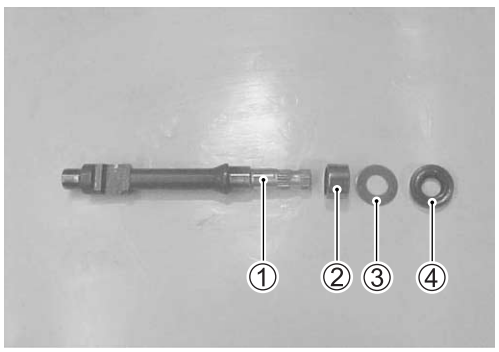
- Install the new oil seals using the special tool.

09913-70210: Bearing installer set

CLUTCH RELEASE CAMSHAFT

- Remove the clutch release camshaft.
  ① Clutch release camshaft
  ② Bearing
  ③ Washer
  ④ Oil seal





- Install the clutch release camshaft correctly.

CLUTCH COVER

OIL FILTER

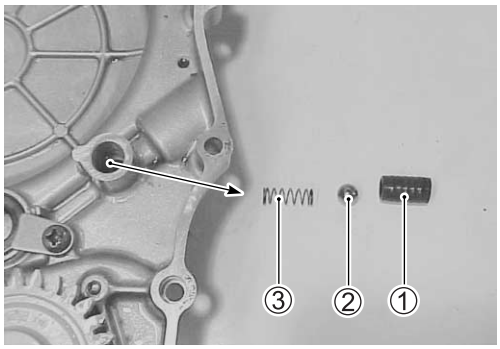
☞2-13

WATER PUMP

☞5-13

OIL CHECK VALVE

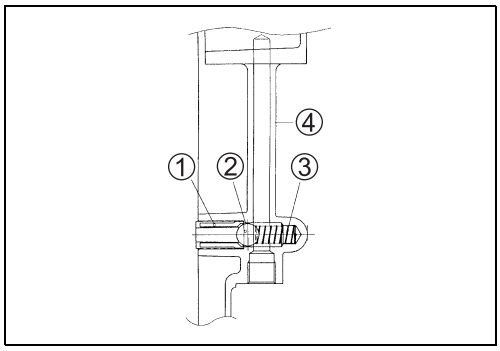
- Remove the bushing ①, oil check valve ball ② and spring ③.



- Install the spring ③, oil check valve ball ② and bushing ① to the clutch cover ④ as shown.

CAUTION

The rubber part of bushing ① must face to the outside.

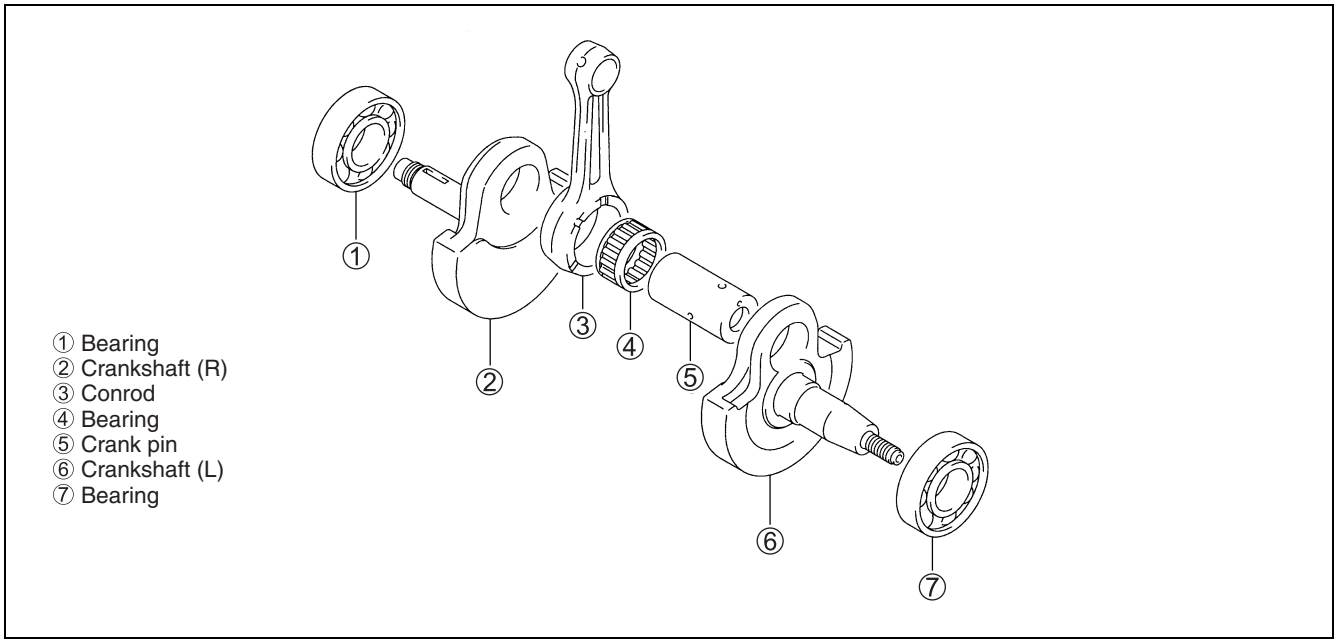


ENGINE REASSEMBLY

Reassemble the engine in the reverse order of disassembly. Pay special attention to the following points:

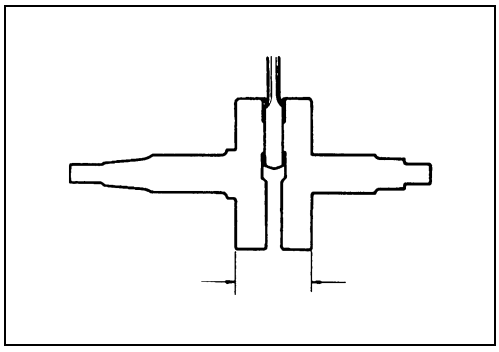
NOTE:
Apply engine oil to each running and sliding part before reassembling the engine.

CRANKSHAFT



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

DATA Crank-web-to-web-width
Standard: 62.0 ± 0.1 mm (2.441 ± 0.004 in)

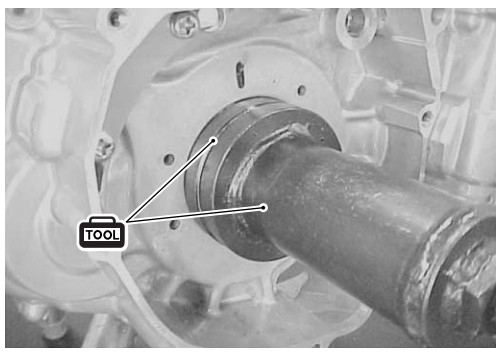


- When mounting the crankshaft in the crankcase, it is necessary to pull its left end into the crankcase by using the special tools.

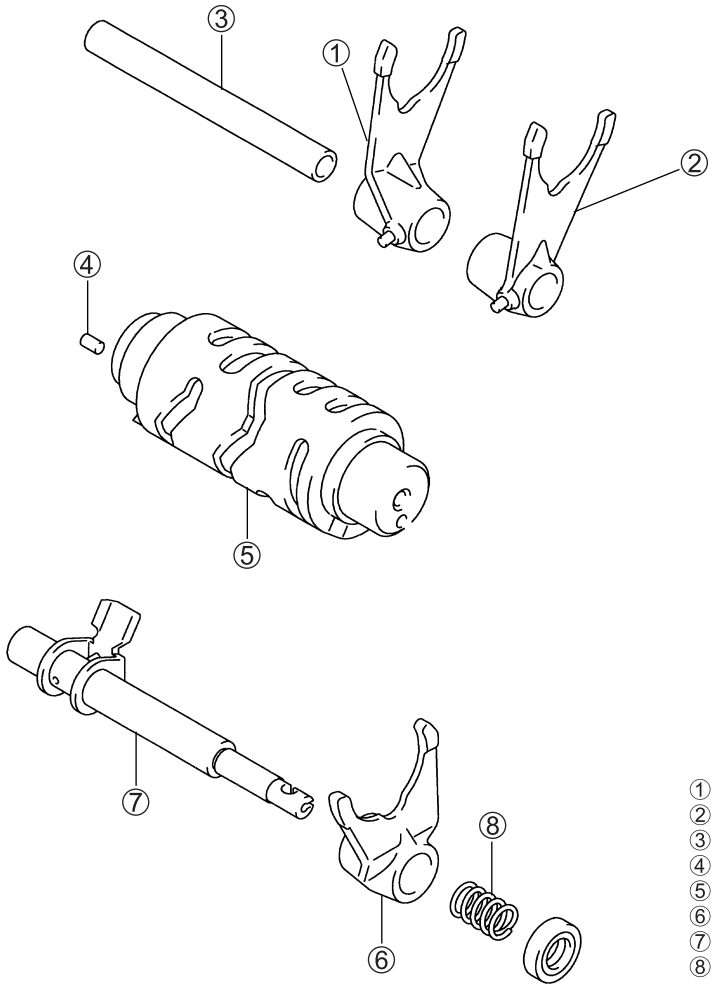
TOOL 09910-32812: Crankshaft installer
09910-32820: Spacer
09911-11310: Attachment

CAUTION

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

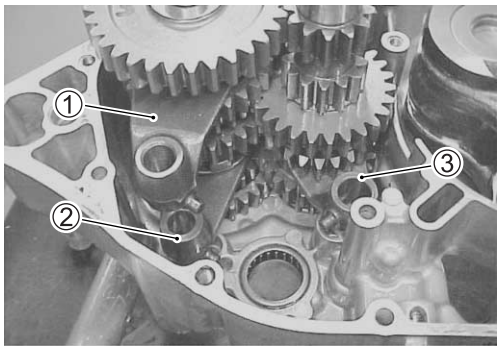


GEARSHIFT CAM, FORK AND REVERSE LOCK SHAFT



① Gearshift fork No.1
② Gearshift fork No.2
③ Gearshift fork shaft
④ Pin
⑤ Gearshift cam
⑥ Gearshift fork No.3
⑦ Reverse lock shaft
⑧ Spring

- Install the gearshift forks into the gearshifting grooves in the correct position and direction.
  ① Gearshift fork No.1
  ② Gearshift fork No.2
  ③ Gearshift fork No.3

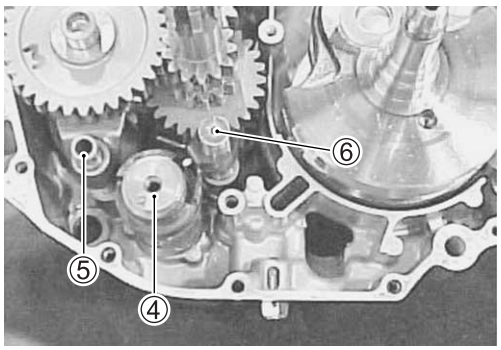


- Install the gearshift cam ④.
- Install the gearshift fork shaft ⑤ and reverse lock shaft ⑥.

NOTE:

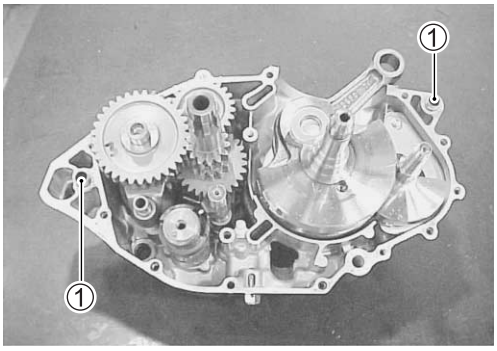
** After the gearshift fork shaft and gearshift forks have been fitted, make sure that the gears engage normally.*

** Set the transmission gears to the neutral position.*



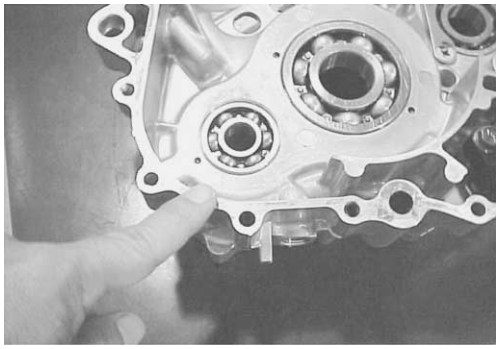
CRANKCASE

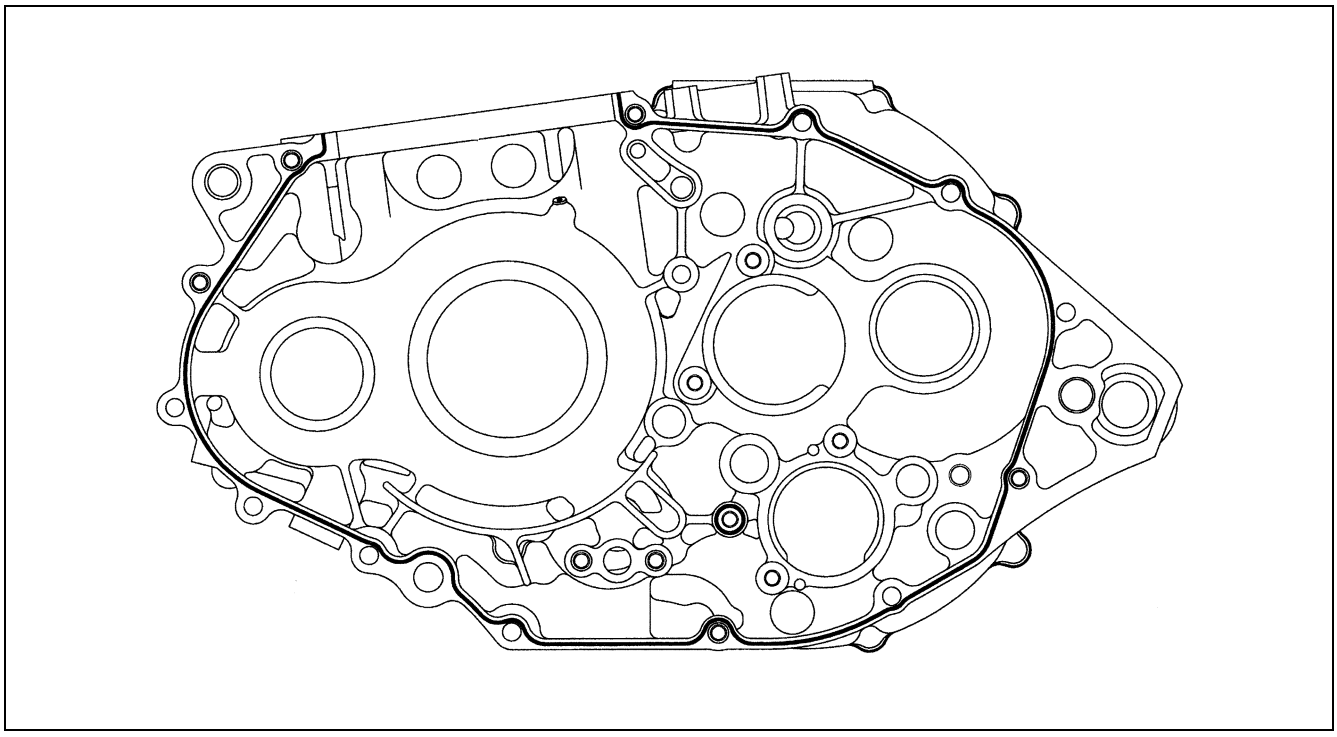
- Thoroughly remove the sealant material and oil stains on the mating surface of the right and left crankcases.
- Install the dowel pins ① to the left crankcase.
- Apply engine oil to the conrod big end and to the transmission gears.



- Apply SUZUKI BOND “1207B” or “1215” to the mating surface of the right crankcase as shown.

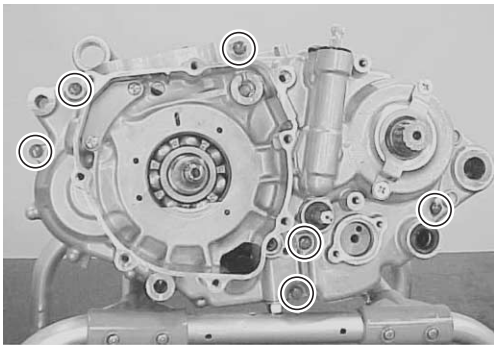
1207B **99104-31140: SUZUKI BOND “1207B” (USA)**
1215 **99000-31110: SUZUKI BOND “1215” (Others)**

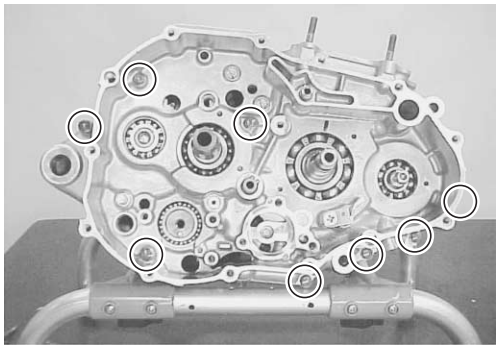




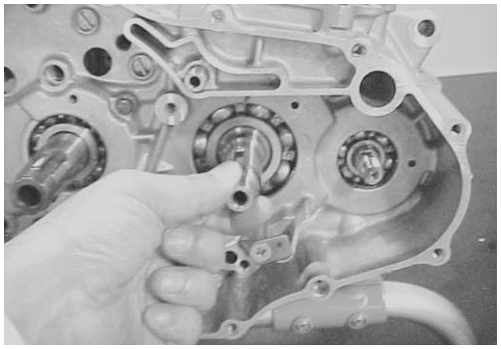
- Tighten the crankcase bolts to the specified torque.

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



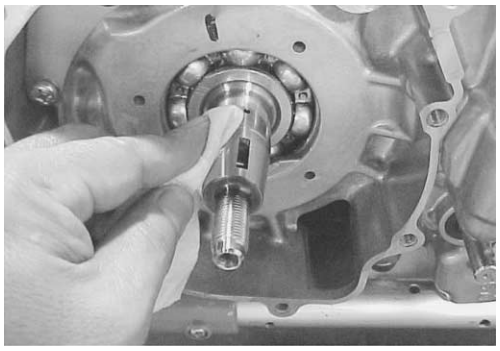


- After the crankcase bolts have been tightened, check if the crankshaft, countershaft, and driveshaft rotate smoothly. If a large resistance is felt to rotation, try to free the shafts by tapping them with a plastic mallet.

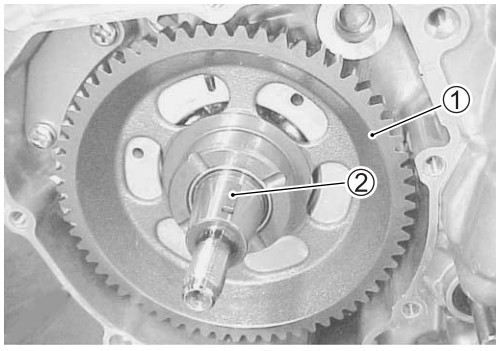


STARTER CLUTCH AND GENERATOR ROTOR

- Remove the grease from the tapered portion of the crankshaft and the generator rotor.

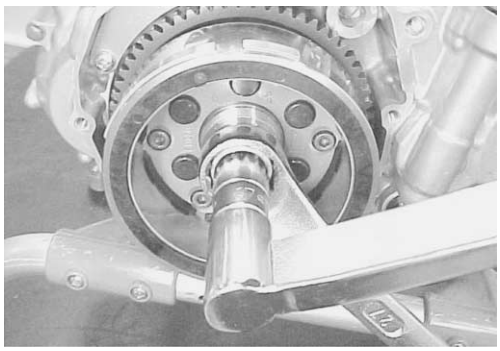


- Install the starter driven gear ① and key ②.



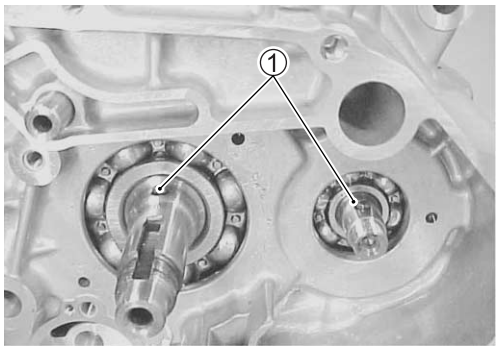
- Tighten the generator rotor nut to the specified torque using a 27-mm offset wrench.

Generator rotor nut: 120 N·m (12.0 kgf-m, 87.0 lb-ft)

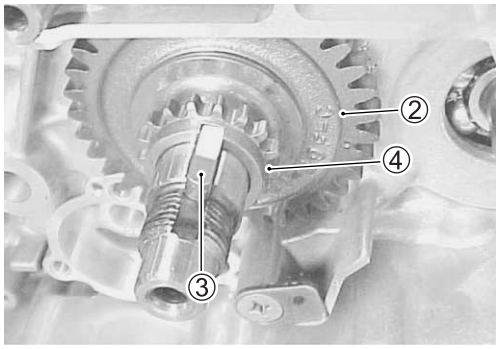


PRIMARY DRIVE GEAR AND BALANCER GEAR

- Install the pins ①.



- Install the balancer drive gear ②.
- Install the key ③ and cam chain drive sprocket ④.



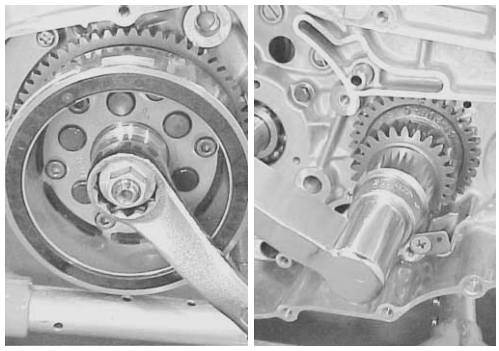
- Apply engine oil to the thread and inside surface of the nut.
- Hold the generator rotor using a 27-mm offset wrench, and then tighten the primary drive gear nut to the specified torque.

Primary drive gear nut: 140 N·m (14.0 kgf-m, 101.5 lb-ft)

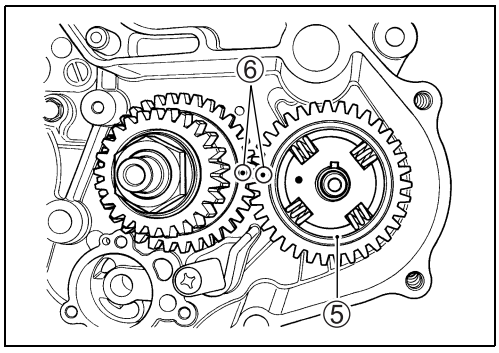
NOTE:
This nut has left-hand thread.

CAUTION

Apply engine oil to the primary drive gear nut.

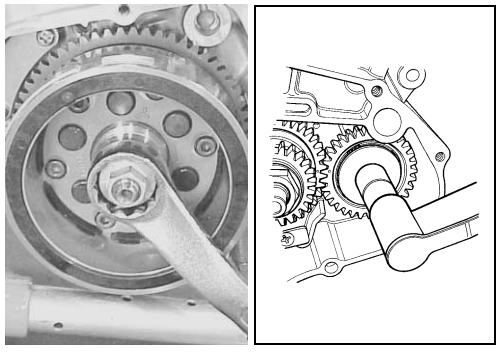


- Install the balancer driven gear ⑤ by aligning the matching marks ⑥.



- Hold the generator rotor using a 27-mm offset wrench, and then tighten the balancer driven gear nut to the specified torque.

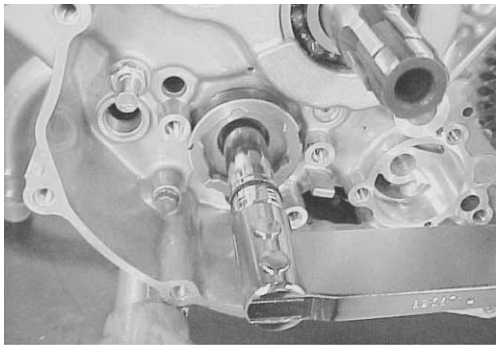
Balancer driven gear nut: 50 N·m (5.0 kgf-m, 36.0 lb-ft)



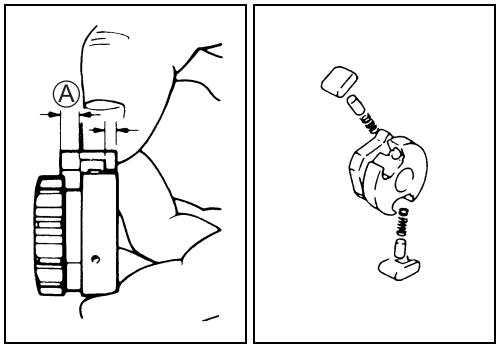
GEARSHIFT CAM DRIVEN GEAR

- Tighten the gearshift cam driven gear bolt to the specified torque.

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



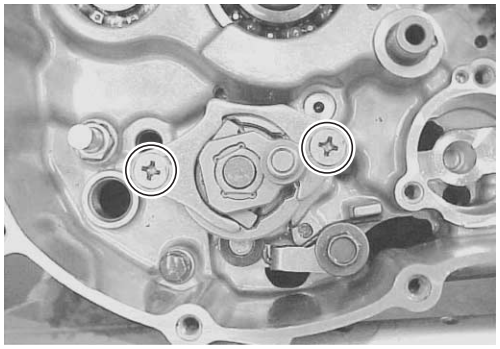
- Install each pawl lifter into the gearshift cam driven gear. The large shoulder Ⓐ must face to the outside.



- Apply a small quantity of THREAD LOCK “1342” or THREAD LOCK SUPER “1322” to the pawl lifter screws, and then tighten them securely.

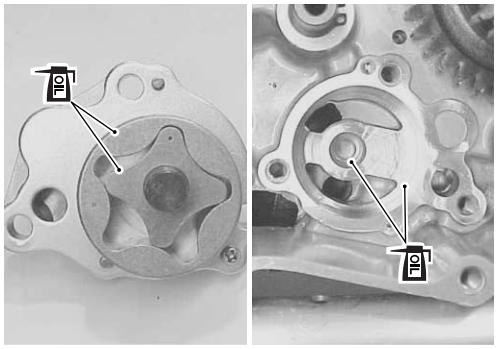
1342 **99000-32050: THREAD LOCK “1342” (USA)**

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



OIL PUMP

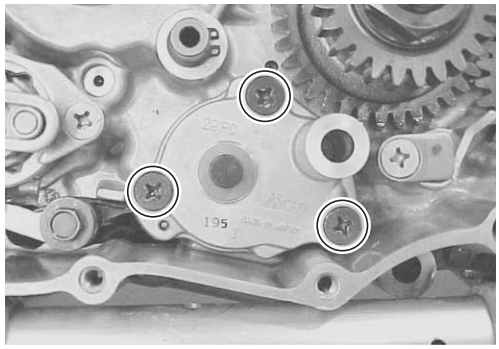
- Before mounting the oil pump, apply engine oil to the sliding surfaces of the oil pump case, outer rotor, inner rotor, and crankcase.



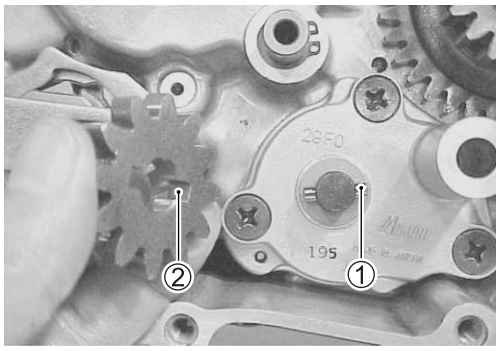
- Apply a small quantity of THREAD LOCK “1342” or THREAD LOCK SUPER “1322” to the oil pump mounting screws, and then tighten them securely.

1342 99000-32050: THREAD LOCK “1342” (USA)

1322 99000-32110: THREAD LOCK SUPER “1322” (Others)



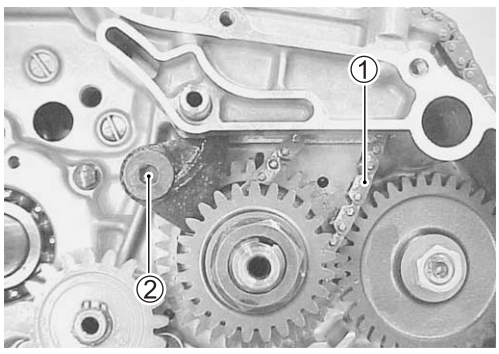
- When installing the oil pump driven gear, align the pin ① with the groove ②.



CAM CHAIN

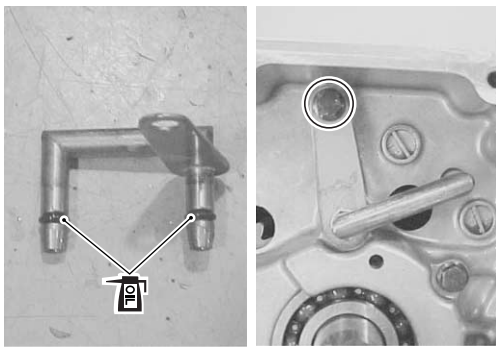
- Install the cam chain ① onto the sprocket.
- Tighten the cam chain tensioner mounting bolt ② to the specified torque.

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

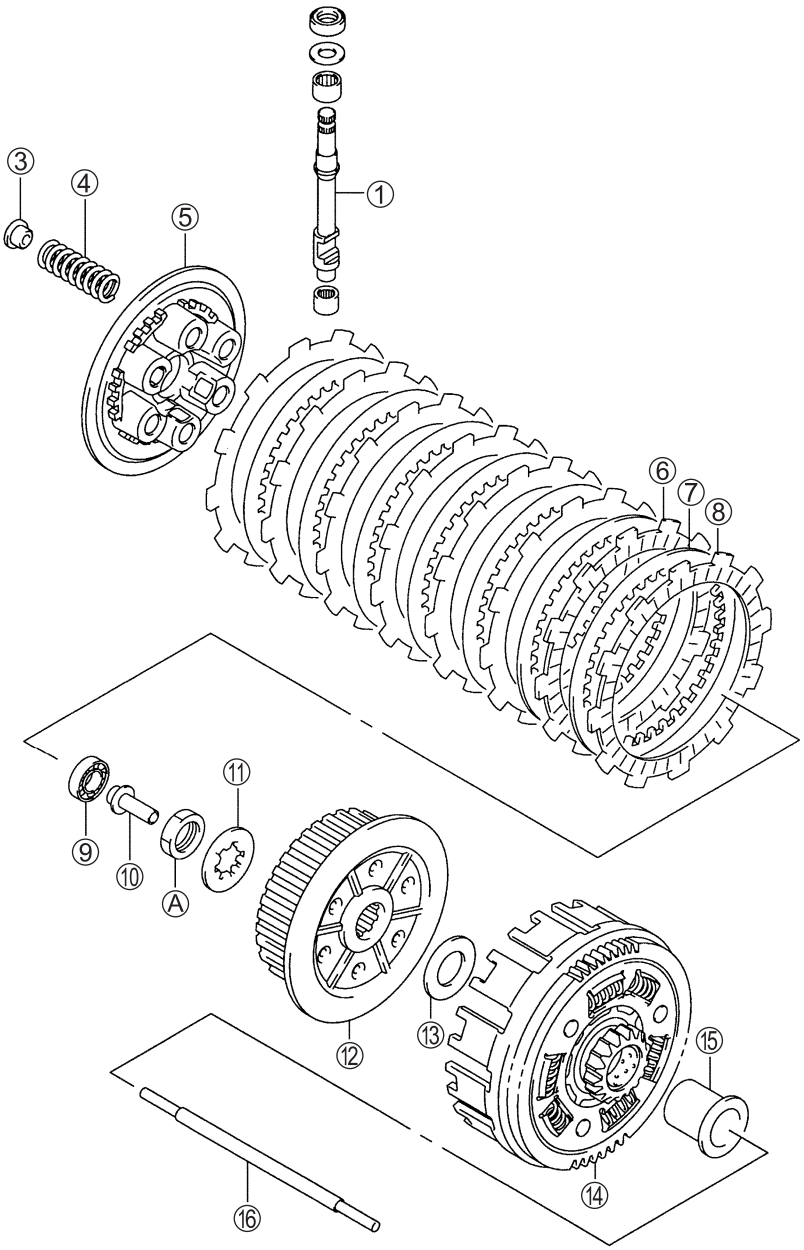


OIL PIPE

- Apply engine oil to the O-rings.
- Tighten the oil pipe bolt securely.



CLUTCH

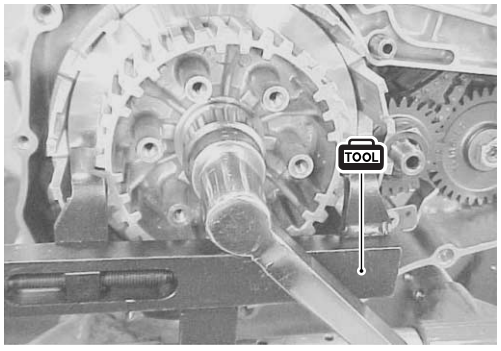


① Clutch release camshaft
② Bolt
③ Spring retainer
④ Spring
⑤ Pressure plate
⑥ Drive plate (7 pcs)
⑦ Driven plate (7 pcs)
⑧ Drive plate (1 pc)
⑨ Bearing
⑩ Push piece
⑪ Washer
⑫ Clutch sleeve hub
⑬ Washer
⑭ Primary driven gear assembly
⑮ Spacer
⑯ Push rod

Ⓐ Clutch sleeve hub nut

ITEM	N·m	kgf-m	lb-ft
Ⓐ	70	7.0	50.5

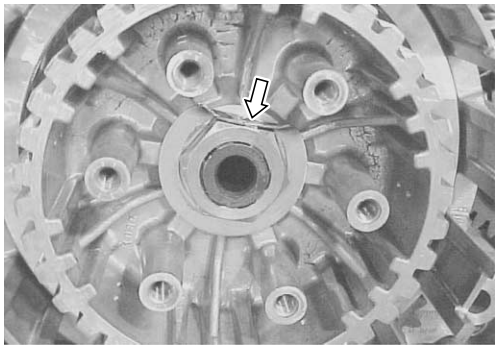
- Hold the clutch sleeve hub using the special tool, and then tighten the clutch sleeve hub nut to the specified torque.



TOOL 09920-53740: Clutch sleeve hub holder

Clutch sleeve hub nut: 70 N·m (7.0 kgf-m, 50.5 lb-ft)

• Bend the tongue of the washer securely.



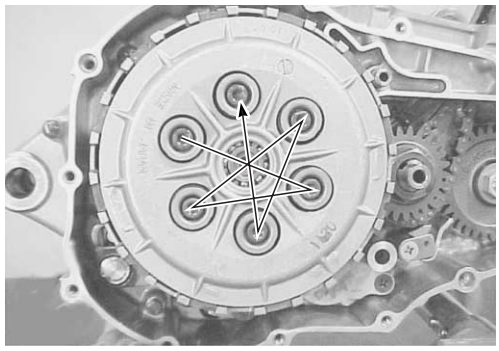
• Insert the clutch drive plates and driven plates one by one into the clutch sleeve hub in the prescribed order.

NOTE:

** Be sure to install the drive plate with an inside diameter of 122.5 mm (4.82 in), first.*

** Two different types of drive plates are used: one with an inside diameter of 122.5 mm (4.82 in) and seven with an inside diameter of 116 mm (4.5 in). For further information refer to page 3-54.*

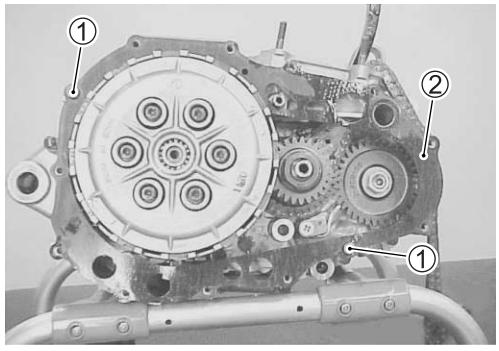
• Tighten the clutch spring set bolts securely in diagonal stages.



• Install the dowel pins ① and new gasket ②.

CAUTION

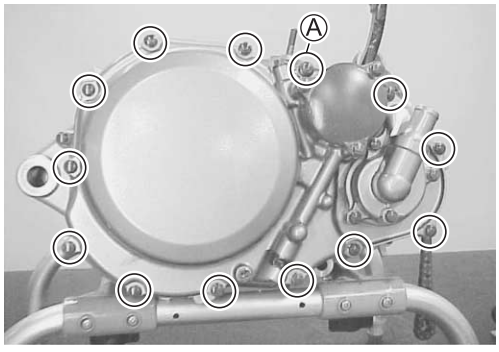
Use a new gasket to prevent oil leakage.



• Tighten the clutch cover bolts securely.

NOTE:

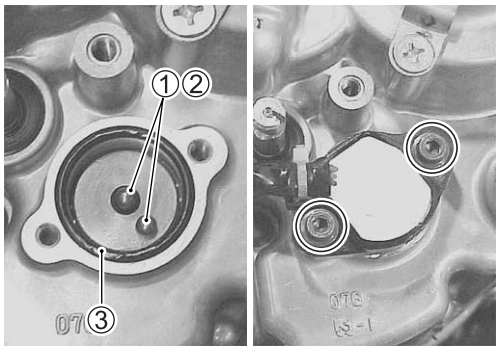
Install the new gasket onto the clutch cover bolt Ⓐ as shown.



NEUTRAL SWITCH

- Install the springs ①, contacts ② and new O-ring ③.
- Install the neutral switch and tighten the bolts to the specified torque.

Neutral switch bolt: 6.5 N·m (0.65 kgf-m, 4.7 lb-ft)

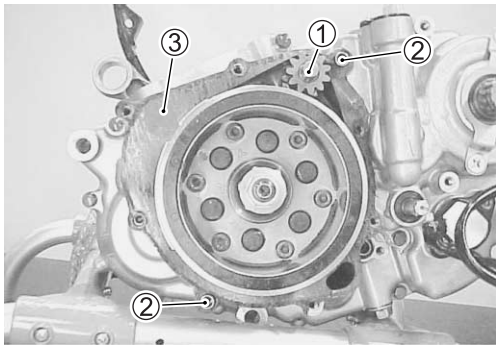


GENERATOR ROTOR COVER

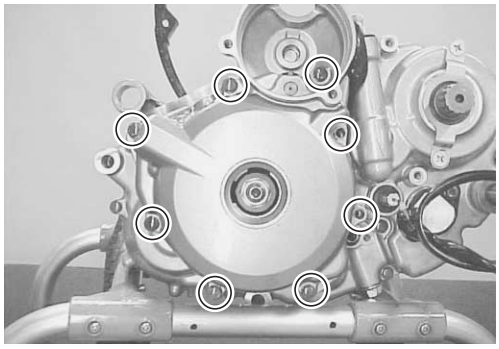
- Install the starter driven gear ①, dowel pins ②, and new gasket ③.

CAUTION

Use a new gasket to prevent oil leakage.



- Tighten the generator rotor cover bolts securely.



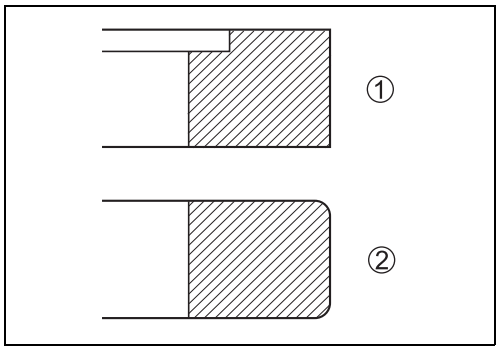
PISTON RING

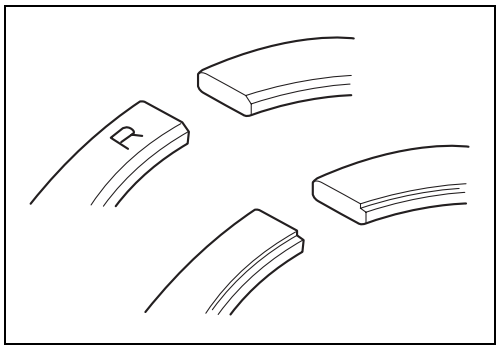
- Install the oil ring first, the 2nd ring second, and the 1st ring last.

NOTE:

** The 1st ① and 2nd ② piston rings differ in shape.*

** The 1st and 2nd piston rings should be installed with the mark facing up.*

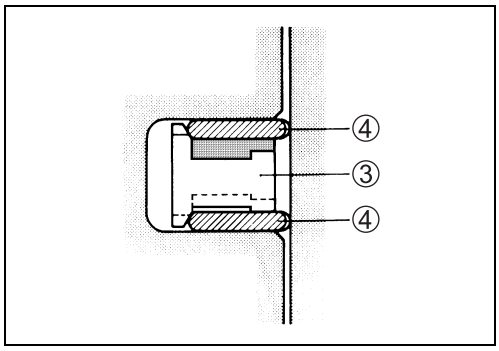




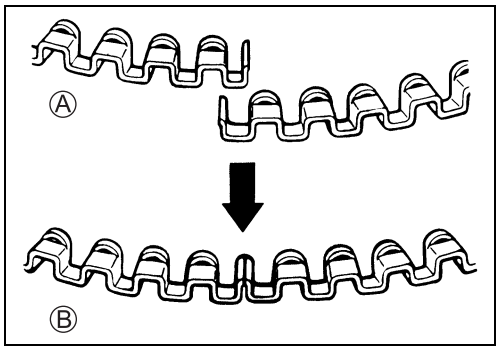
- First, install a spacer ③ into the oil ring groove, and then install the two side rails ④. The spacer and side rails do not have a designated top and bottom. They can be installed in any position.

CAUTION

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



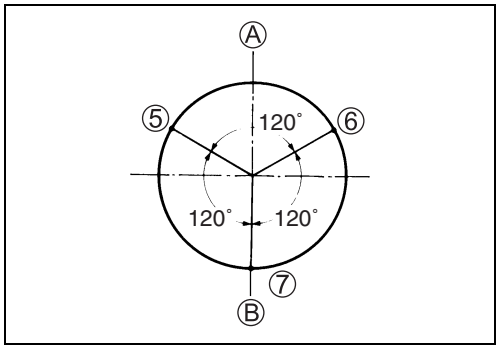
Ⓐ INCORRECT
Ⓑ CORRECT



- Position the piston ring gaps as shown. Before inserting the piston into its cylinder, check that the gaps are properly positioned.

Ⓐ Exhaust side
Ⓑ Intake side

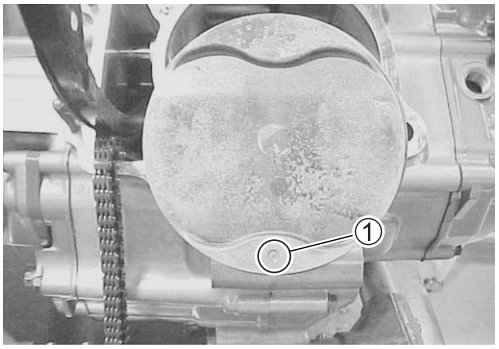
⑤ 2nd ring and lower side rail
⑥ Upper side rail
⑦ 1st ring and spacer



PISTON AND CYLINDER

- Apply molybdenum oil solution onto the piston pin and small end of the conrod.

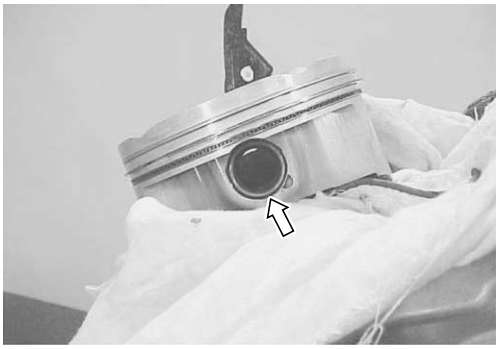
NOTE:
Install the piston with the punch mark ① on the piston head facing toward the exhaust side.



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

CAUTION

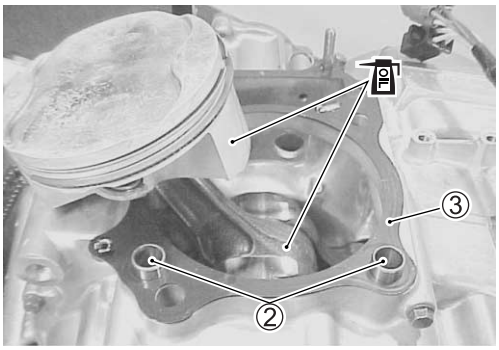
Use a new piston pin circlip to prevent circlip failure with a bent one.



- Apply engine oil to the sliding surface of the piston and big end of the conrod.
- Install the dowel pins ② and new gasket ③ onto the crankcase.

CAUTION

Use a new gasket to prevent oil leakage.



- 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.

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

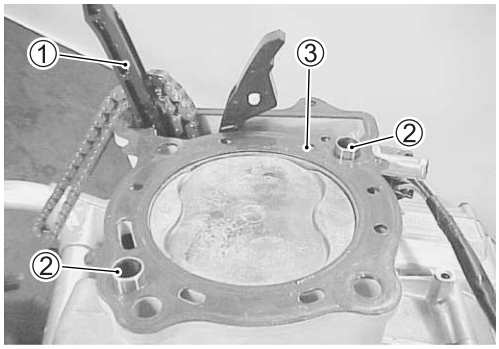
• Install the cam chain guide ①.

NOTE:
Make sure that the guide ① is inserted properly or binding of the cam chain and guide may result.

• Install the dowel pins ② and new gasket ③.

CAUTION

Use a new cylinder head gasket to prevent gas leakage.

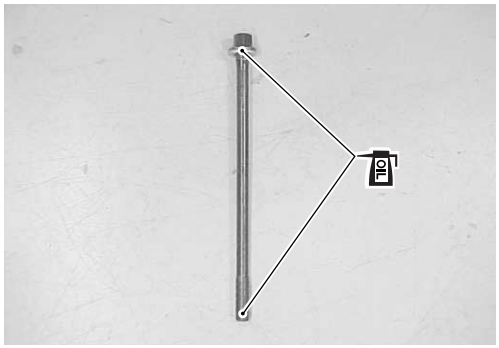


CYLINDER HEAD

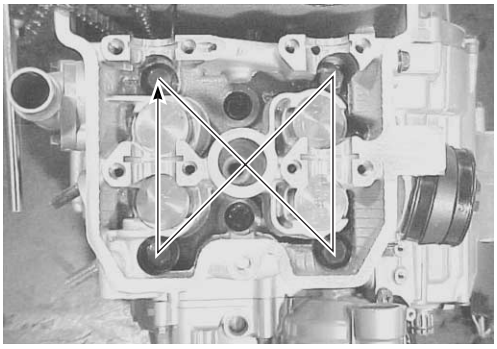
• With the head snugly seated on the cylinder, secure it by tightening the bolts in diagonal stages. Tighten the cylinder head bolts diagonally to the specified torque.

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)

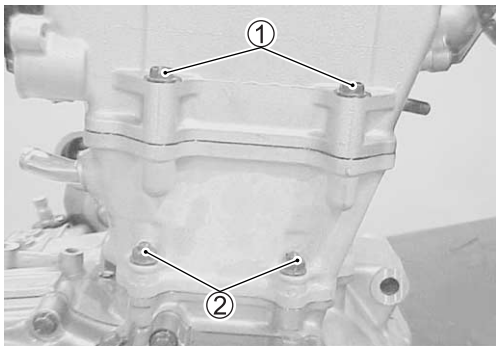


NOTE:
** Apply engine oil to the threaded parts of the cylinder head bolts and its washers.*
** Be sure to install the washer with rounded side facing up.*

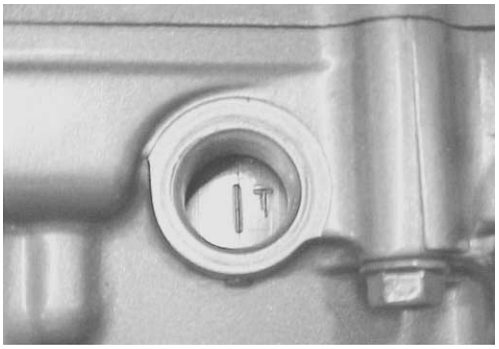


• After tightening the cylinder head bolts to specification, tighten the cylinder head bolts ① and cylinder nuts ② to the specified torque.

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



CAMSHAFT/AUTOMATIC DECOMPRESSION ASSEMBLY

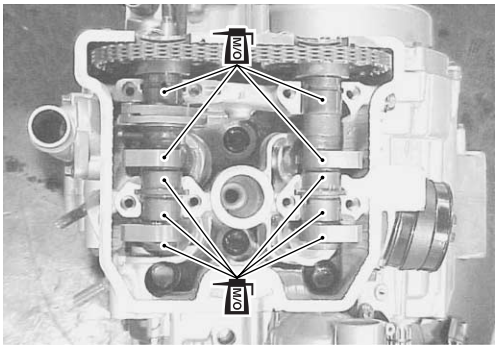


- Turn the generator rotor until the “T” line on the generator rotor is aligned with the center of the hole in the generator cover.

CAUTION

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

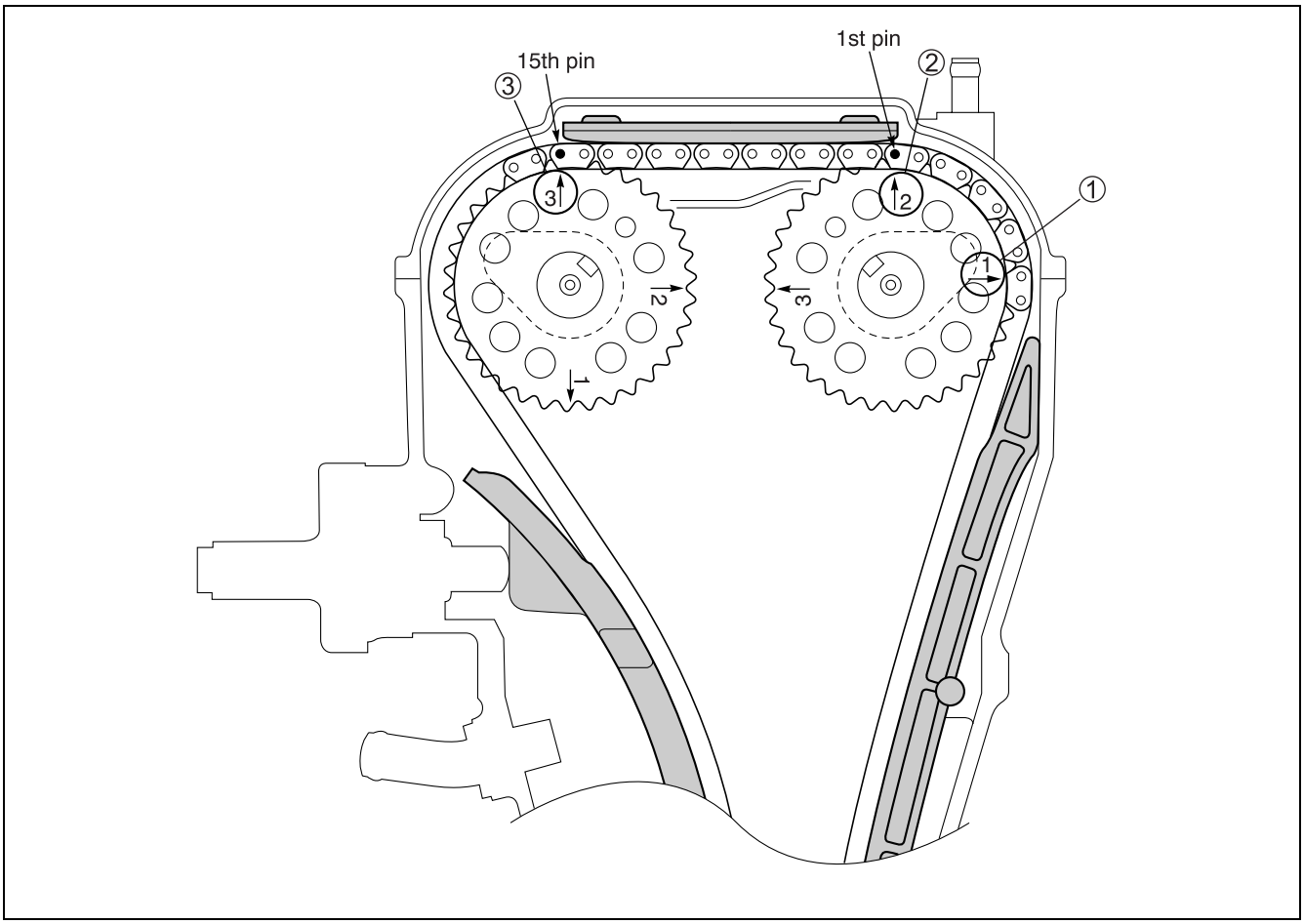
NOTE:
Just before installing the camshaft into the cylinder head, apply molybdenum oil solution to the camshaft journals and cam faces. Also, apply engine oil to the camshaft journal holders.



- Place each camshaft into the correct position.

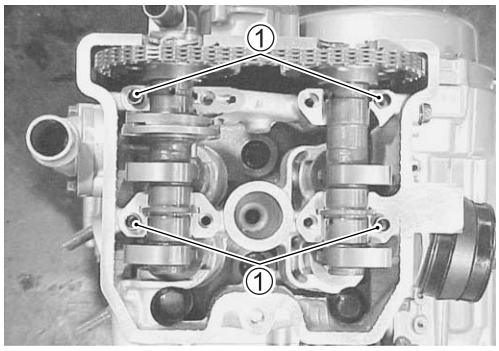
- With the “T” line aligned with the center of the hole, hold the camshaft steady and lightly pull up the cam chain to remove any slack between the cam chain drive sprocket and exhaust camshaft sprocket.
- The exhaust camshaft sprocket has an arrow marked “1” ①. Turn the exhaust camshaft so that the arrow is aligned with the gasket surface of the cylinder head. Engage the cam chain with the exhaust camshaft sprocket.
- The other arrow marked “2” ② should now be pointing straight up. Starting from the roller pin that is directly above the arrow marked “2” ② , count out 15 roller pins (from the exhaust camshaft side going towards the intake camshaft side).
  Engage the 15th roller pin on the cam chain with the arrow marked “3” ③ on the intake sprocket. 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 tensioner are secured.



- Install the dowel pins ①.
- Place each camshaft journal holders and cam chain guide into the correct position.

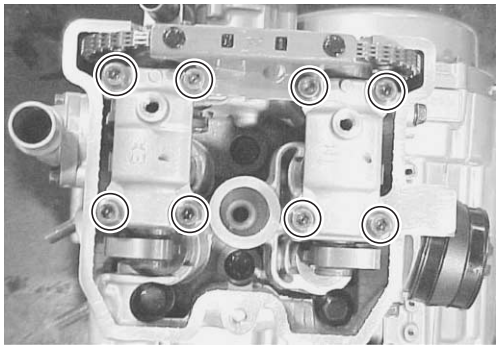
NOTE:
Camshaft journal holders marked "EX" are for the exhaust side and those marked "IN" are for the intake side.



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

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

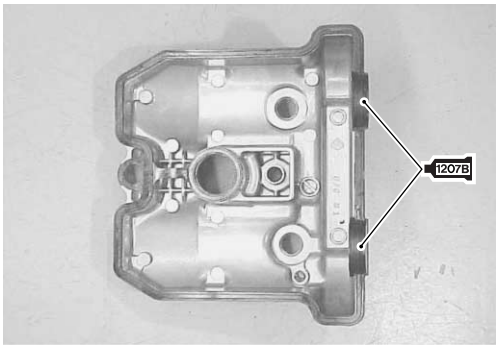
NOTE:
When tightening the camshaft journal holder bolts, the piston position must be at TDC on the compression stroke.



CYLINDER HEAD COVER

- Thoroughly wipe off oil from the fitting surfaces of the cylinder head and cover.
- Apply SUZUKI BOND "1207B" to the end caps of the cylinder head cover gasket as shown.

1207B 99104-31140: SUZUKI BOND "1207B" (USA)
1207B 99000-31140: SUZUKI BOND "1207B" (Others)

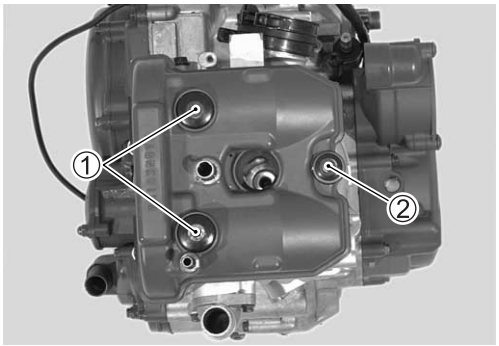


- Apply engine oil to both sides of the washer ①.
- Lightly tighten the cylinder head cover bolts in diagonal stages, and then tighten them to the specified torque.

Cylinder head cover bolt
Initial: 10 N·m (1.0 kgf-m, 7.0 lb-ft)
Final: 14 N·m (1.4 kgf-m, 10.0 lb-ft)

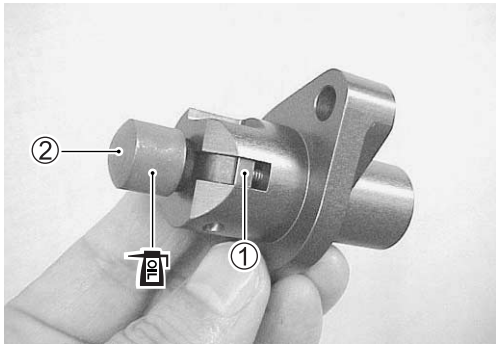
CAUTION

Use a new washers ① and cushion ②.



CAM CHAIN TENSION ADJUSTER

- Apply engine oil to the push rod.
- Unlock the ratchet mechanism ① and push the push rod ② all the way.

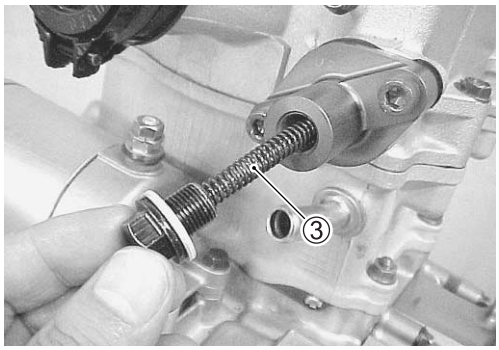


- Install the new gasket and cam chain tension adjuster to the cylinder.
- Tighten the cam chain tension adjuster mounting bolts to the specified torque.

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

- Install the spring ③.
- Tighten the spring holder bolt to the specified torque.

Cam chain tension spring holder bolt:
30 N·m (3.0 kgf-m, 21.5 lb-ft)



FUEL SYSTEM

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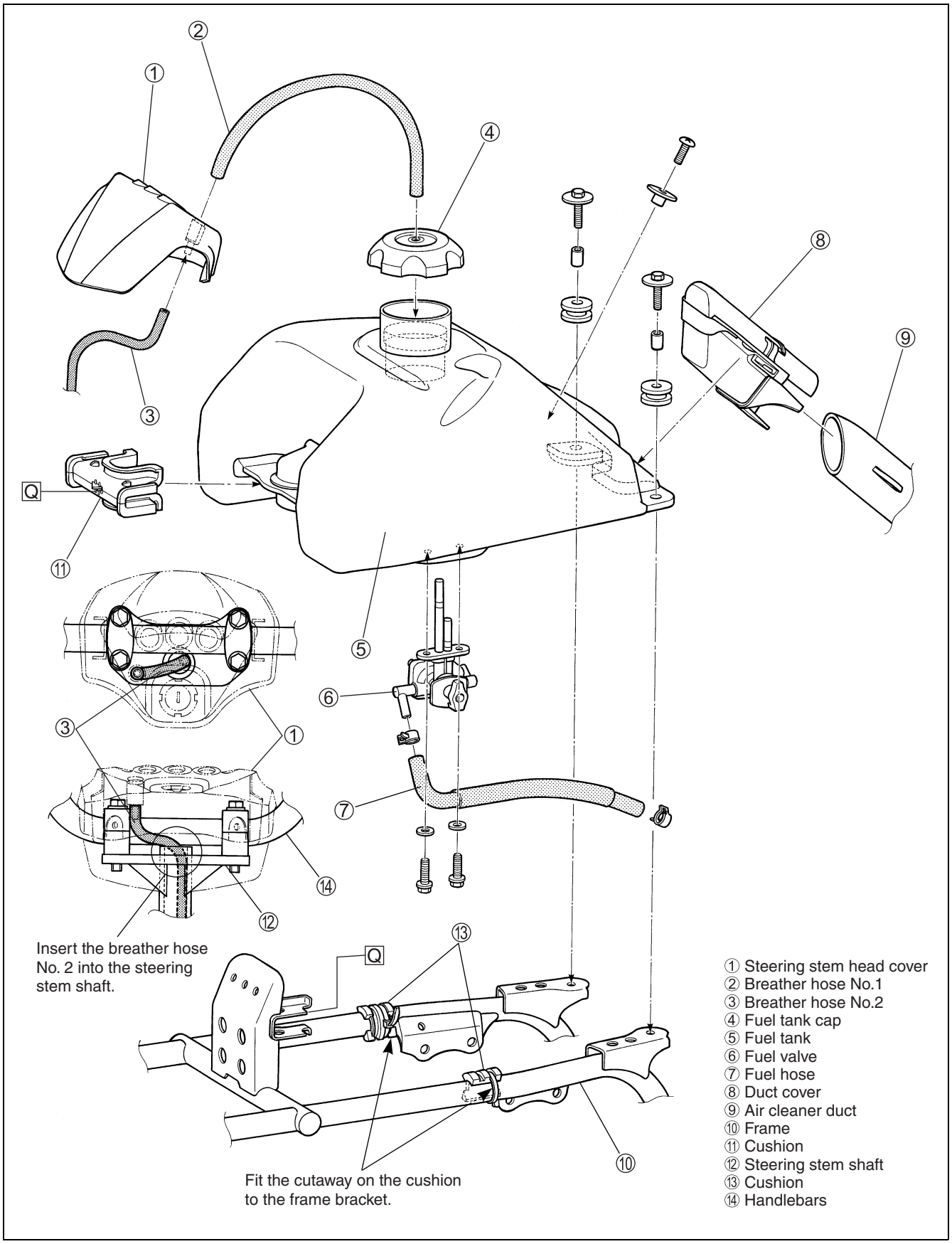
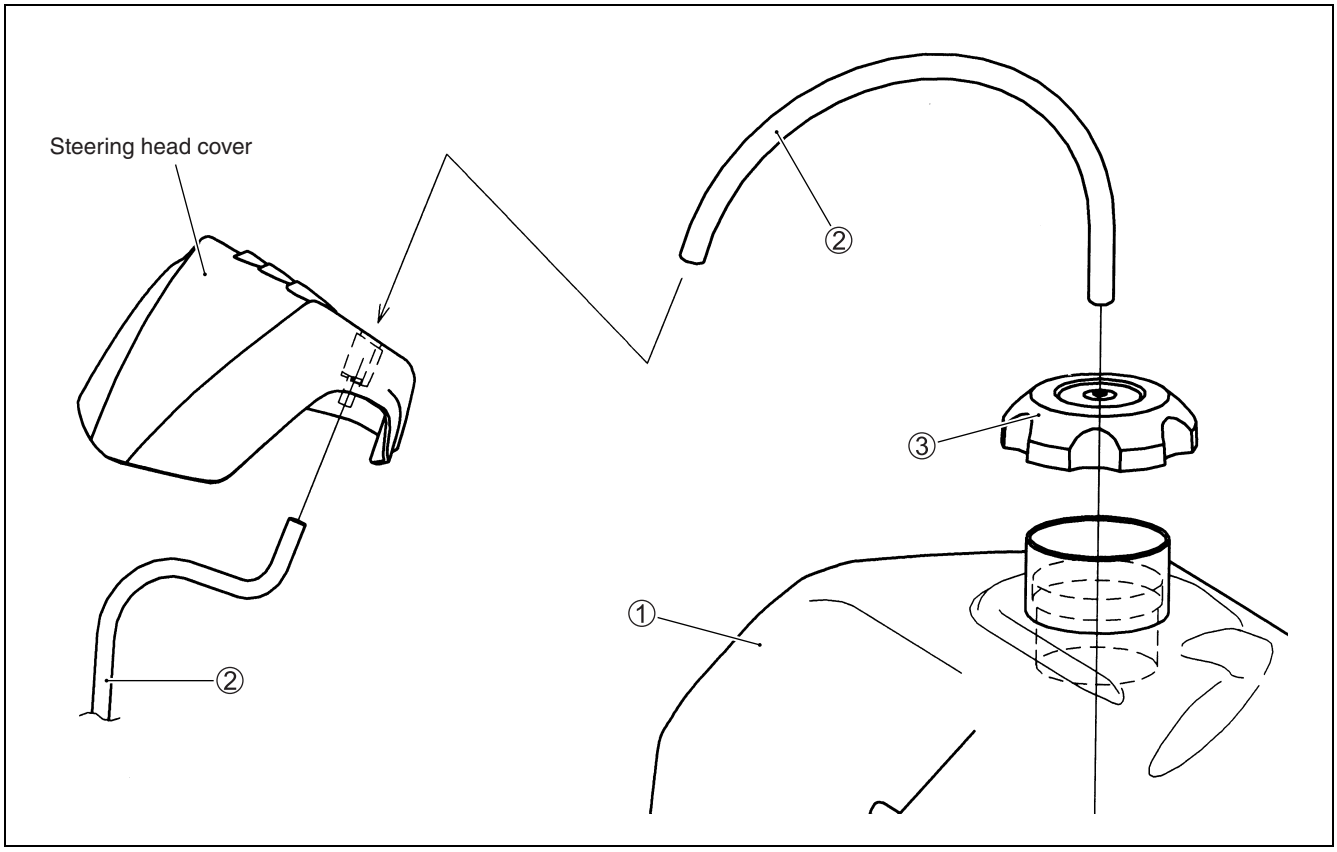
FUEL TANK
CONSTRUCTION



FUEL LINE INSPECTION

Inspect the fuel lines, fuel tank ①, fuel tank breather hoses ② and fuel tank cap ③ for damage, clogging and leakage of fuel. If any damages are found, replace the defective parts with the new ones.

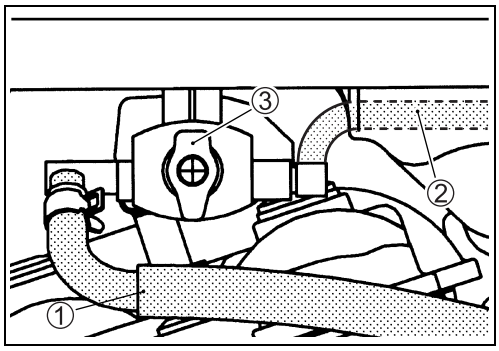


REMOVAL

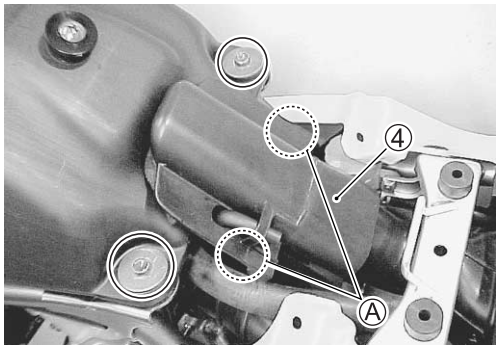
- Remove the seat, fuel tank side covers. (☞6-4)
- Turn the fuel valve to the “ON” position.
- Disconnect the fuel hose ① and vacuum hose ②.
- Remove the fuel valve knob ③ by removing a screw.

⚠ WARNING

Gasoline is highly flammable and explosive.
Keep heat, sparks and flames away from gasoline.



- Remove the air cleaner duct cover ④ by releasing stopper Ⓐ.
- Remove the fuel tank mounting bolts.
- Remove the fuel tank.
- Drain fuel completely.

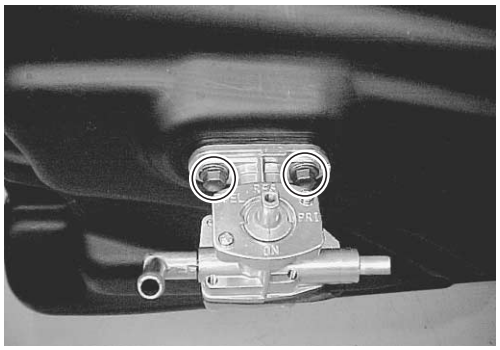


REMOUNTING

Remount the fuel tank in the reverse order of removal.

FUEL VALVE

REMOVAL AND INSPECTION



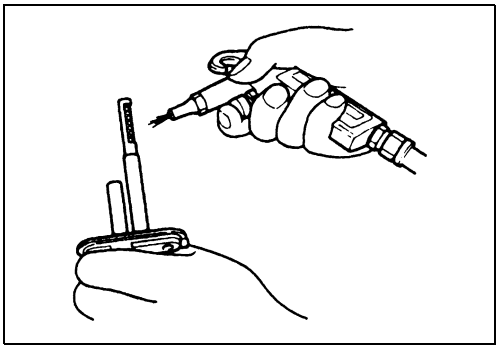
- Remove the fuel tank. (☞4-3)
- Drain fuel completely.
- Remove the fuel valve.

⚠ WARNING

Gasoline is highly flammable and explosive.
Keep heat, sparks and flames away from gasoline.

FUEL STRAINER

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

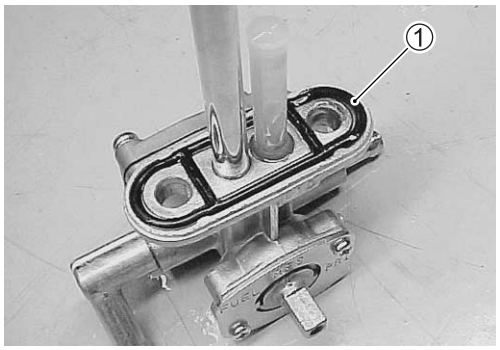


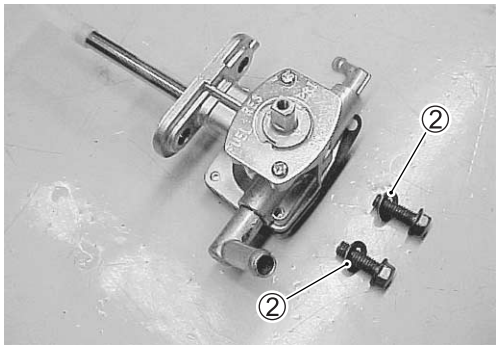
REMOUNTING

Remount the fuel valve in the reverse order of removal.

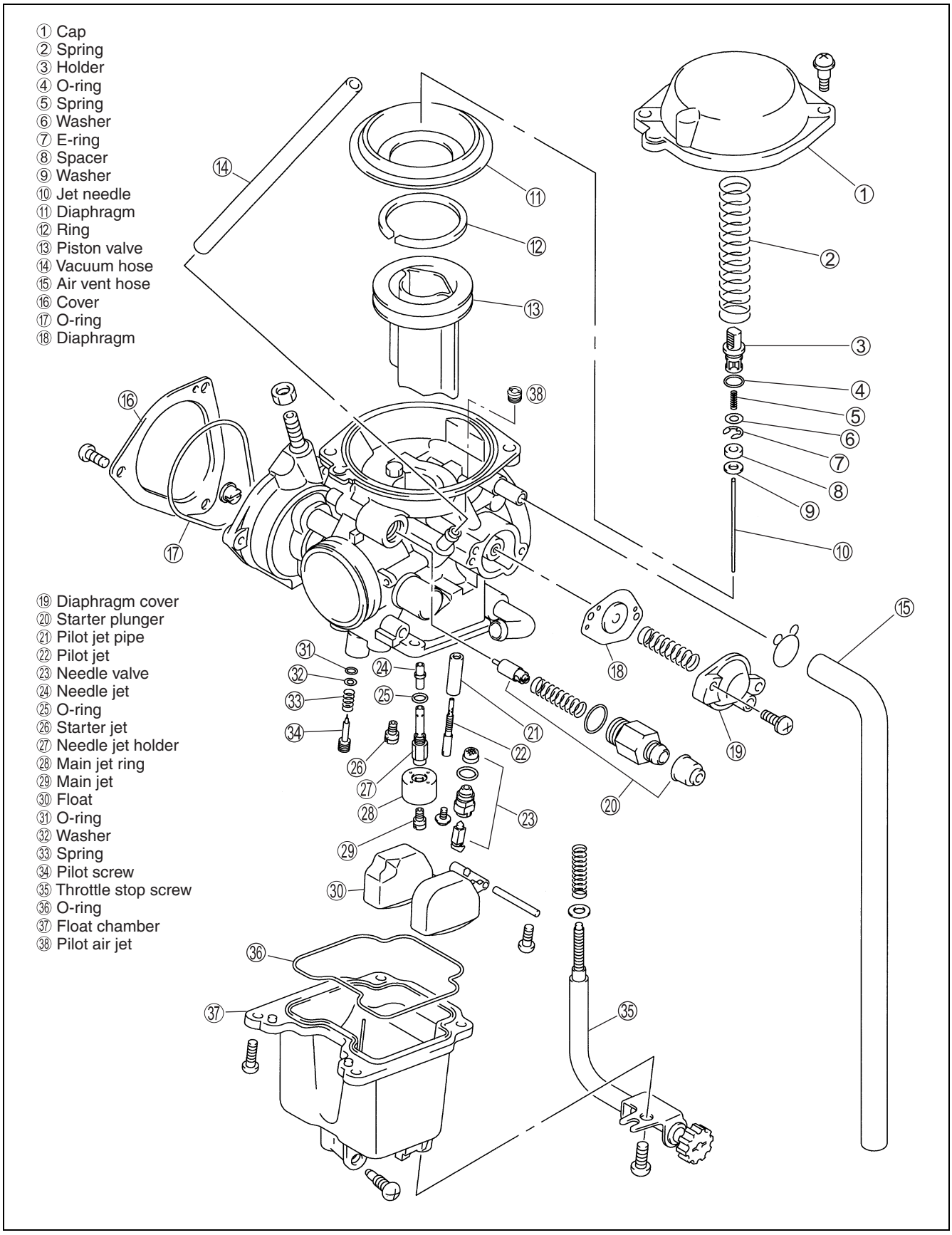
⚠ WARNING

Replace the removed gasket ① and seal washers ② with the new ones to prevent leakage of fuel.





CARBURETOR
CONSTRUCTION



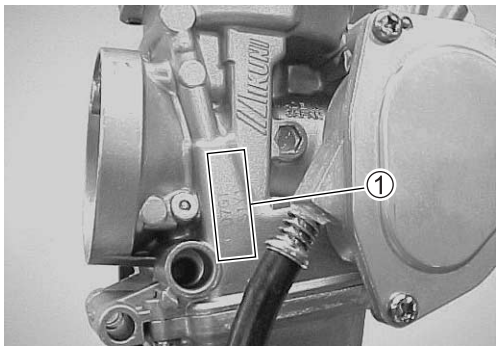
SPECIFICATIONS

ITEM	SPECIFICATION	
	E-03, 28	E-33
Carburetor type	MIKUNI BSR36	←
Bore size	36 mm	←
I.D. No.	07G0	07G1
Idle r/min	1 500 ± 100 r/min	←
Float height	13.0 ± 1.0 mm (0.51 ± 0.04 in)	←
Main jet (M.J.)	#130	# 130
Jet needle (J.N.)	5E26-1	←
Needle jet (N.J.)	P-0M	# P-0M
Pilot jet (P.J.)	#22.5	# 22.5
Pilot screw (P.S.)	2 ¼ turns back	PRE-SET
Throttle cable play	3 – 5 mm (0.12 – 0.20 in)	←
Starter (enricher) plunger cable play	0.5 – 1.0 mm (0.02 – 0.04 in)	←

E-03: USA E-28: Canada E-33: California (USA)

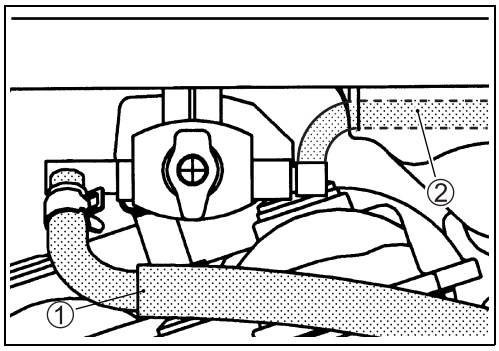
I.D. NO. LOCATION

Carburetor has an I.D. number ① punched on its body.

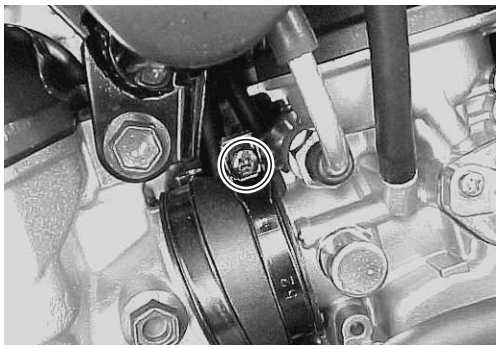


REMOVAL

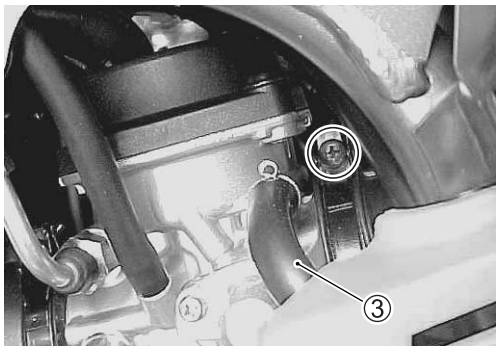
- Remove the fuel tank left side cover. (☞6-4)
- Disconnect the fuel hose ① and vacuum hose ②.



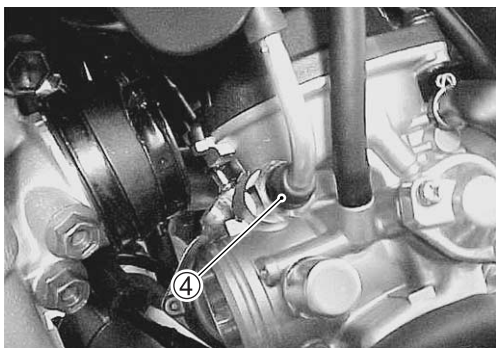
- Loosen the carburetor clamp screw.



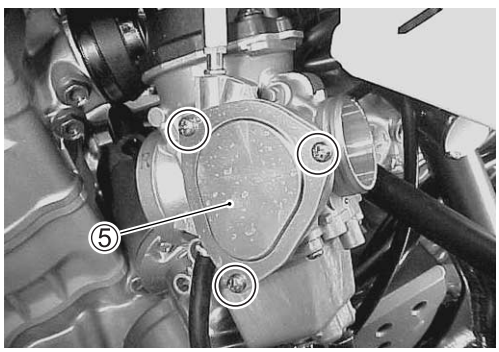
- Loosen the carburetor clamp screw.
- Disconnect the air vent hose ③.



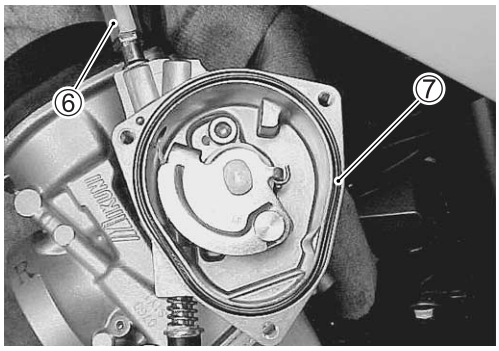
- Disconnect the starter cable ④.



- Remove the carburetor side cap ⑤.

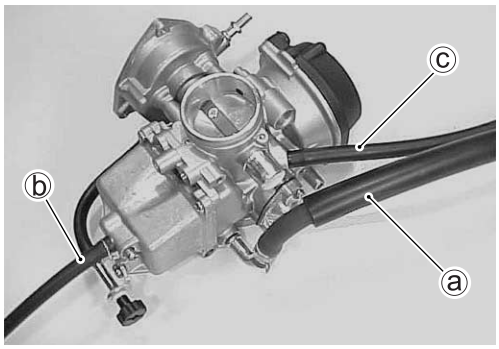


- Disconnect the throttle cable ⑥.
- Remove the O-ring ⑦.

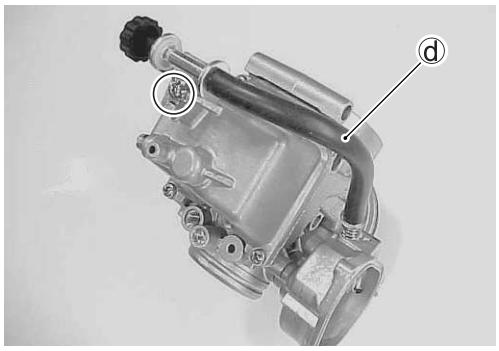


DISASSEMBLY

- Remove the fuel hose ⓐ, over flow hose ⓑ and vacuum hose ⓒ.



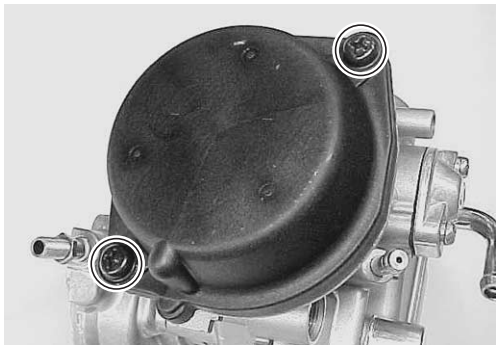
- Remove the throttle stop screw ⓓ.



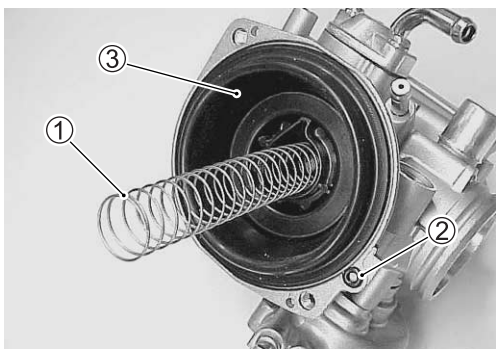
- Remove the carburetor top cap.

CAUTION

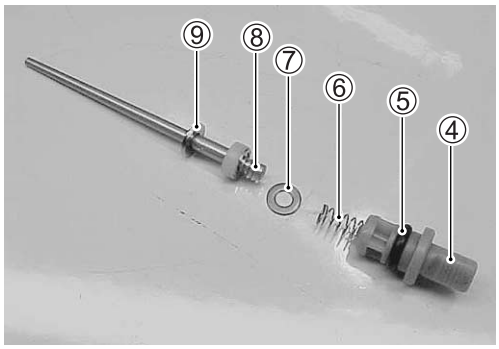
Do not use compressed air on the carburetor body before removing the diaphragm; this may damage the diaphragm.



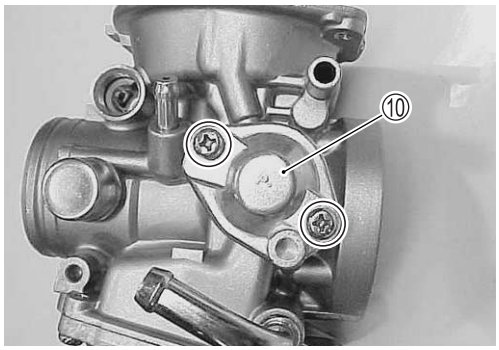
- Remove the spring ①, O-ring ② and diaphragm assembly ③.



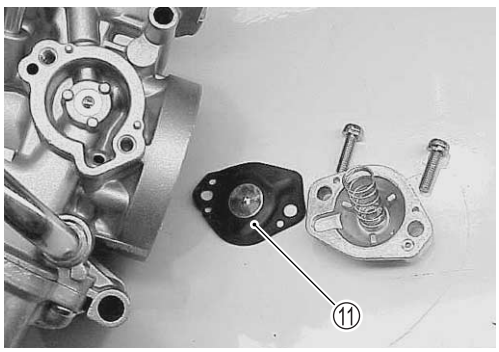
- Remove the jet needle holder ④, O-ring ⑤, spring ⑥, washer ⑦, jet needle ⑧ and washer ⑨.



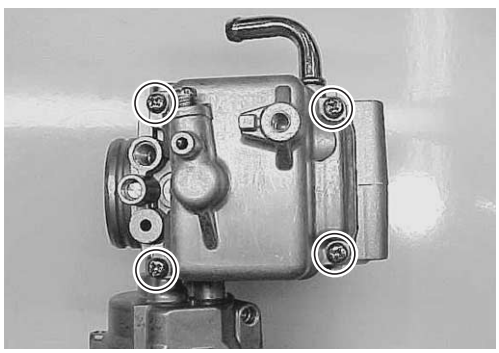
- Remove the diaphragm cover ⑩.



- Remove the diaphragm ⑪.



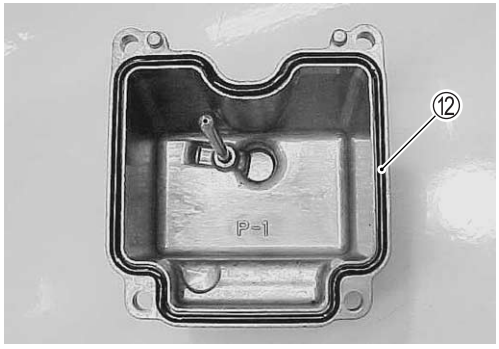
- Remove the float chamber.



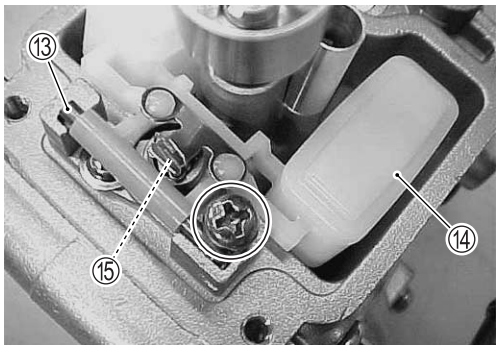
• Remove the O-ring ⑫.

CAUTION

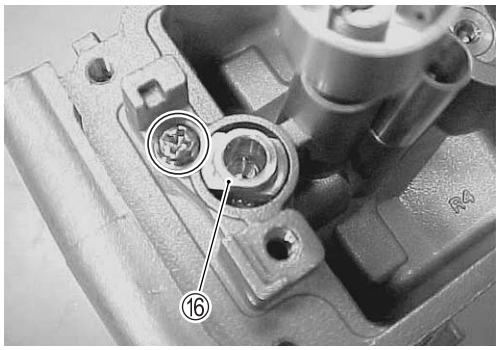
Replace the removed O-ring with a new one to prevent leakage of fuel.



• Remove the float pin ⑬, float ⑭ and needle valve ⑮.

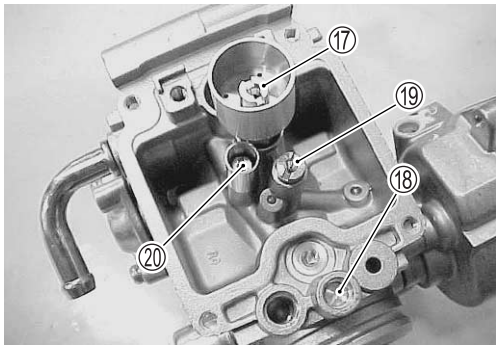


• Remove the valve seat ⑯.



- Remove the following parts.

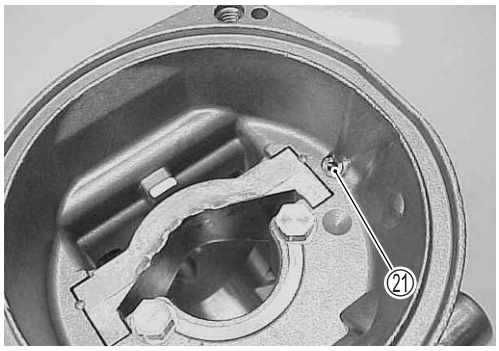
⑰ Main jet, main jet ring, needle jet holder and needle jet
⑱ Pilot screw
⑲ Starter jet
⑳ Pilot jet
㉑ Pilot air jet



NOTE:
Before removing the pilot screw ⑱, its setting must be determined. Slowly turn the pilot screw clockwise and count the number of turns until it is lightly seated. Make a note of how many turns were made.
When reassembling the pilot screw, you will want to set it to its original position.

CAUTION

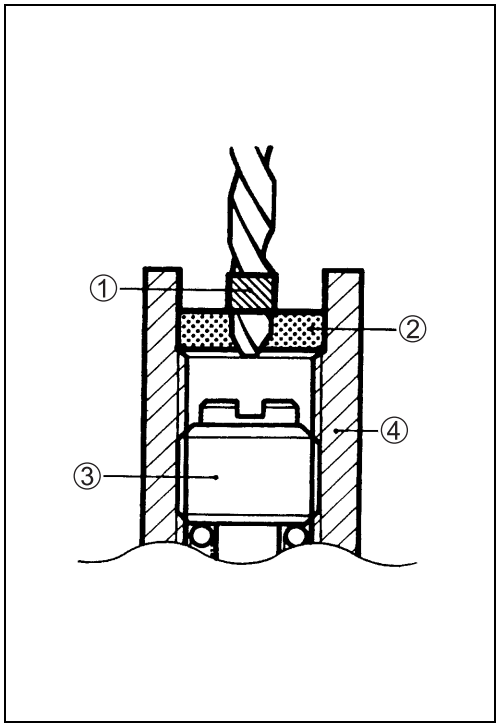
Do not use wire to clean the passageways, valve seat and jets. Used compressed air only.



PILOT SCREW REMOVAL (For E-33)

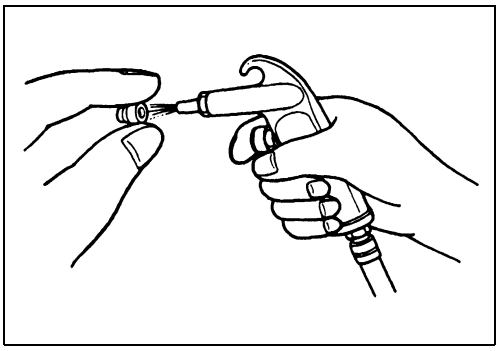
Because harsh cleaning solvents can damage the O-ring seals in the pilot system, the pilot system components should be removed before cleaning.

- Use a 1/8" size drill bit with a drill-stop to remove the pilot screw plug. Set the drill-stop 4 mm (0.16 in) from the end of the bit to prevent drilling into the pilot screw. Carefully drill through the plug.
- Thread a self-tapping sheet metal screw into the plug. Pull on the screw head with pliers to remove the plug. Carefully clean any metal shavings from the area.
- Slowly turn the pilot screw clockwise and count the number of turns until the screw is lightly seated. Make a note of how many turns were made so the screw can be reset correctly after cleaning.
- Remove the pilot screw along with the spring, washer and O-ring.
- After cleaning, install the pilot screw to the original setting by turning the screw in until it lightly seats, and then backing it out the same number of turns counted during disassembly.
- Install a new plug by tapping it into place with a punch.



① Drill-stop
② Plug
③ Pilot screw
④ Carburetor body

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 circuits of the carburetor thoroughly – not just the perceived problem area. Clean the circuits in the carburetor body with a spray-type cleaner. If necessary, soak each circuit 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. If the components cannot be cleaned with a spray-type cleaner it may be necessary to soak the components in a dip-type cleaning solution. Always follow the chemical manufacturer's instructions for proper use and cleaning of the carburetor components.

- After cleaning, reassemble the carburetor with new O-rings.

CAUTION

Replace the removed O-rings with new ones.

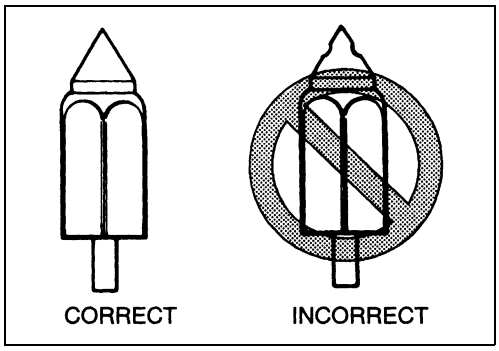
INSPECTION

Check the following items for any damage or clogging. If any damages are found, replace the damaged parts with new ones.

* Pilot jet
* Main jet
* Main air jet
* Pilot air jet
* Needle jet air bleeding hole
* Float
* Needle valve
* Valve seat
* Jet needle
* Needle jet
* Needle jet holder
* Piston valve
* Starter jet
* O-ring
* Throttle valve
* Diaphragm
* Pilot outlet and by-pass ports
* Vacuum hose
*Air vent hose
*Over flow hose

NEEDLE VALVE INSPECTION

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

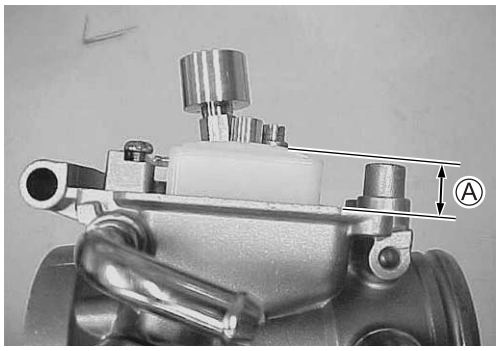


FLOAT HEIGHT ADJUSTMENT

To check the float height, turn the carburetor upside down.
Measure the float height Ⓐ while the float arm is just contacting the needle valve using venier calipers.
Bend the tongue as necessary to bring the float height Ⓐ to the specified level.

TOOL 09900-20101: Venier calipers

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



REASSEMBLY

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

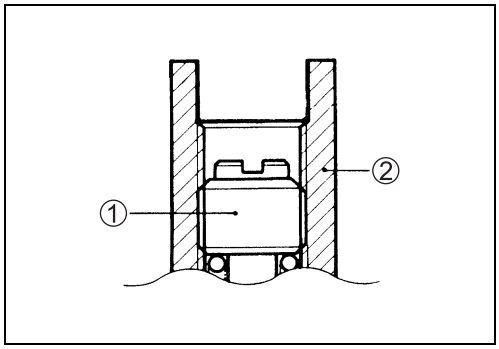
PILOT SCREW

- After cleaning, install the pilot screw ① to the original setting by turning the screw in until it lightly seats, and then backing it out the same number of turns counted during disassembly.

① Pilot screw
② Carburetor body

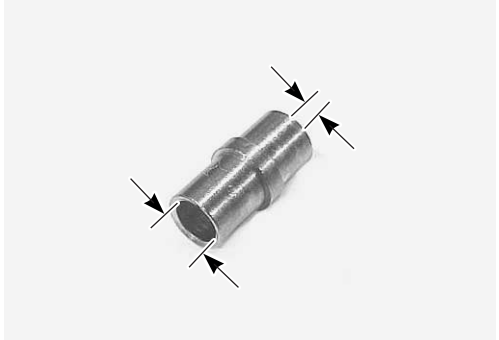
CAUTION

Replace the removed O-ring with a new one.



NEEDLE JET

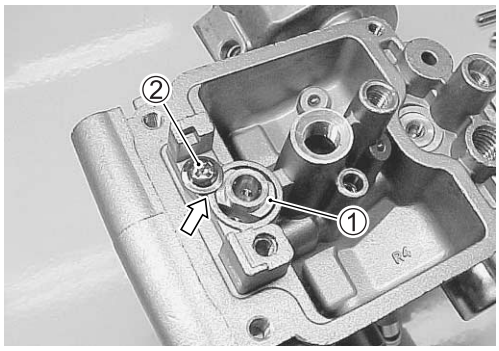
- Install the needle jet with the smaller internal diameter portion of the jet facing to the jet holder.



VALVE SEAT

- Install the valve seat ① into the carburetor body, and then tighten the screw ②.

NOTE:
Make sure that the collar of the screw ② holds the step of the valve seat ① securely.



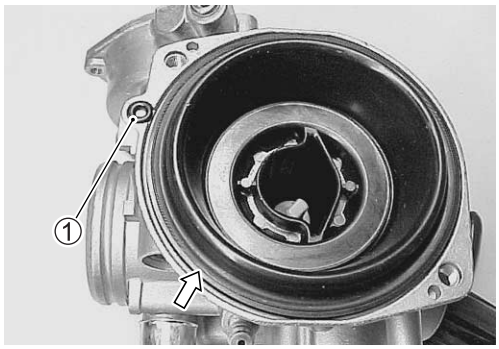
DIAPHRAGM

- Install the diaphragm assembly and O-ring ①.

NOTE:
When installing the diaphragm, make sure the diaphragm is seated at the concave section of the carburetor.

CAUTION

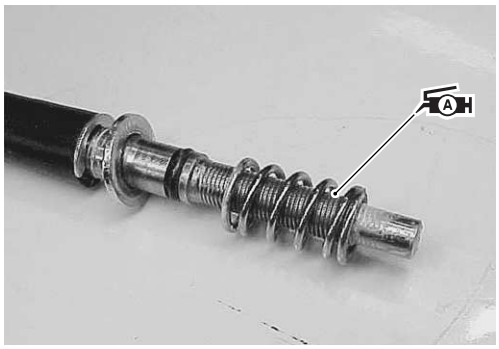
Replace the removed O-ring with a new one.



THROTTLE STOP SCREW

- Apply SUZUKI SUPER GREASE "A" to thread part of the throttle stop screw, then install the throttle stop screw to the carburetor.

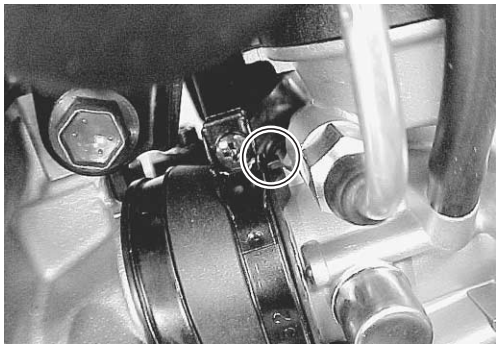
99000-25030: SUZUKI SUPER GREASE "A" (USA)
99000-25010: SUZUKI SUPER GREASE "A" (Others)



REMOUNTING

Remount the carburetor assembly in the reverse order of removal. Pay attention to the following points:

- Align the lug on the carburetor with the intake pipe's cutout.
- Connect the carburetor hoses properly. (☞8-15)



After the carburetor assembly has been remounted onto the engine, perform the following adjustments:

* Throttle cable play ..... ☞2-11
* Engine idle speed ..... ☞2-11

COOLING AND LUBRICATION SYSTEM

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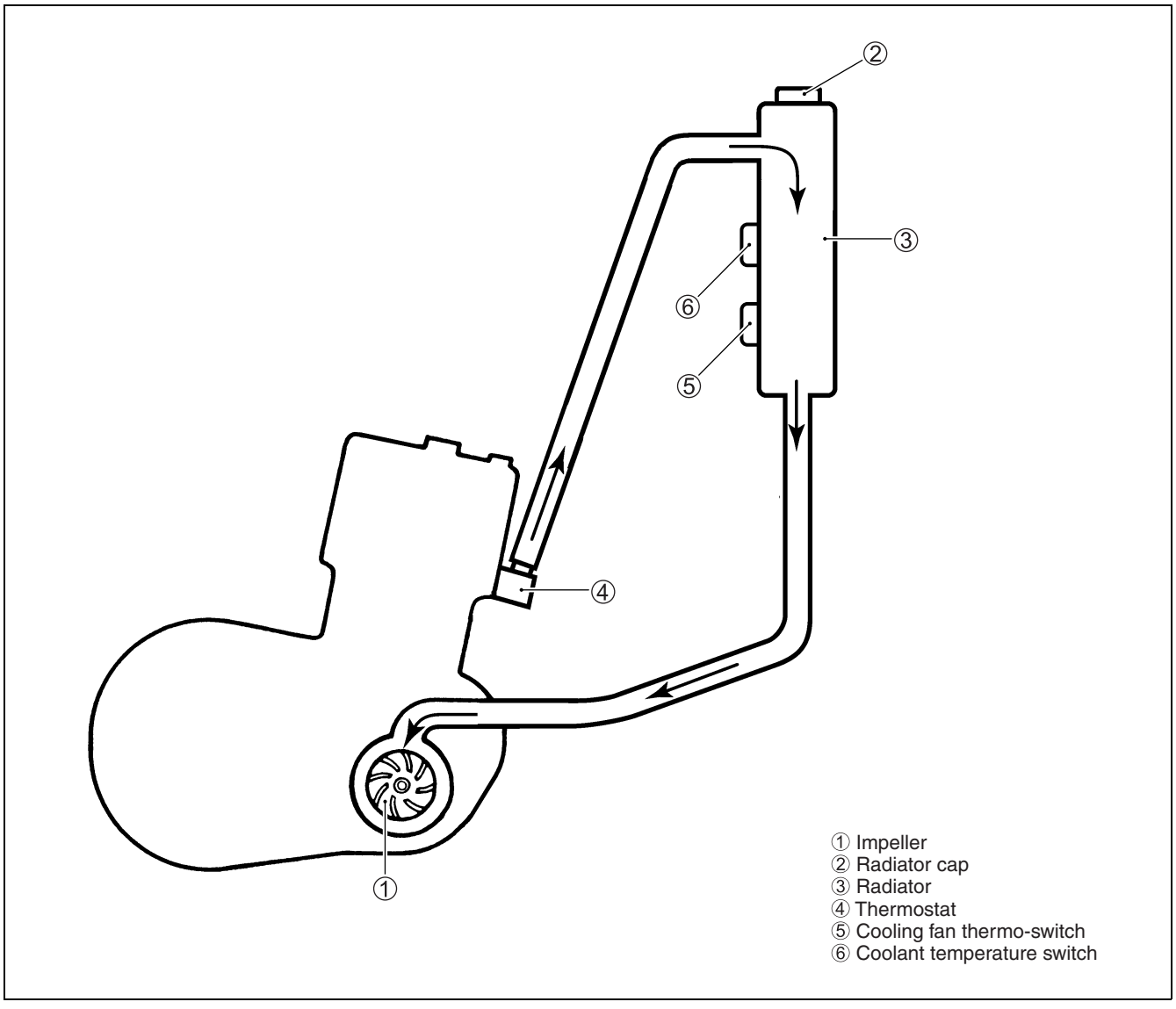
COOLING SYSTEM

DESCRIPTION

The engine is cooled by the forced circulation of engine coolant, using a high-capacity, centrifugal water pump, through water jackets formed in the cylinder and cylinder head, and through the radiator. The tube-and-fin type radiator is made of aluminum, which is characterized by lightness in weight and good heat dissipation.

A wax-pellet type thermostat is used to regulate the flow of engine coolant through the radiator. As the coolant temperature rises to about 75°C (167°F) the thermostat valve unseats and a normal coolant flow is established. At about 90°C (194°F) the thermostat becomes completely open and, as a result, heat is released to the atmosphere through the radiator core.

Referring to the following illustration, the thermostat is in the closed condition, so that engine coolant recirculates through the route comprising the water pump, engine, by-pass hole of the thermostat and radiator in the regulated condition.



ENGINE COOLANT

At the time of manufacture, the cooling system is filled with a 50:50 mixture of distilled water and ethylene glycol anti-freeze. This 50:50 mixture will provide the optimum corrosion protection and excellent heat protection, and will protect the cooling system from freezing at temperatures above –31°C (–24°F).
If the vehicle is to be exposed to temperatures below –31°C (–24°F), this mixing ratio should be increased up to 55% or 60% according to the figure.

Anti-freeze density	Freezing point
50%	–31˚C (–24˚F)
55%	–40˚C (–40˚F)
60%	–55˚C (–67˚F)

CAUTION

- *** Use a high quality ethylene glycol base anti-freeze, mixed with distilled water. Do not mix an alcohol base anti-freeze and different brands of anti-freeze.**
- *** Do not put in more than 60% anti-freeze or less than 50%. (Refer to Right figure.)**
- *** Do not use a radiator anti-leak additive.**

50% Engine coolant including reserve tank capacity

Anti-freeze	600 ml (1.3/1.1 US/Imp. pt)
Water	600 ml (1.3/1.1 US/Imp. pt)

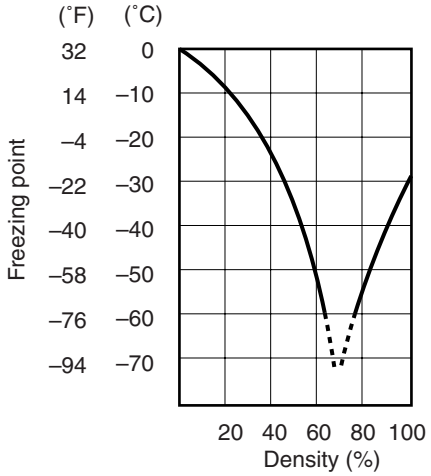


Fig.1 Engine coolant density-freezing point curve.

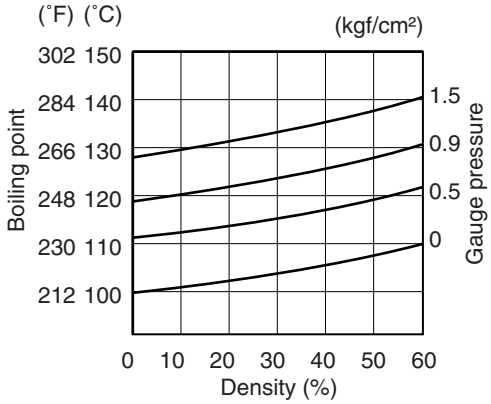


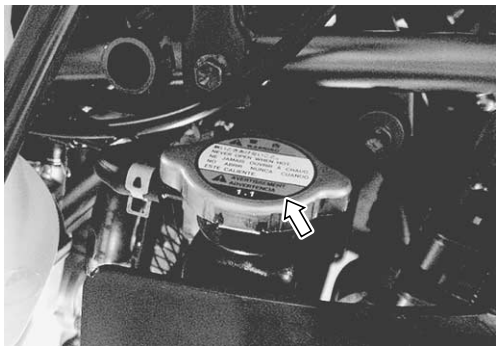
Fig.2 Engine coolant density-boiling point curve.

⚠ WARNING

- *** You can be injured by scalding fluid or steam if you open the radiator cap when the engine is hot. After the engine cools, wrap a thick cloth around cap and carefully remove the cap by turning it a quarter turn to allow pressure to escape and then turn the cap all the way off.**
- *** The engine must be cool before servicing the cooling system.**
- *** Coolant is harmful;**
  - **• If it comes in contact with skin or eyes, flush with water.**
  - **• If swallowed accidentally, induce vomiting and call physician immediately.**
  - **• Keep it away from children.**

RADIATOR AND HOSES

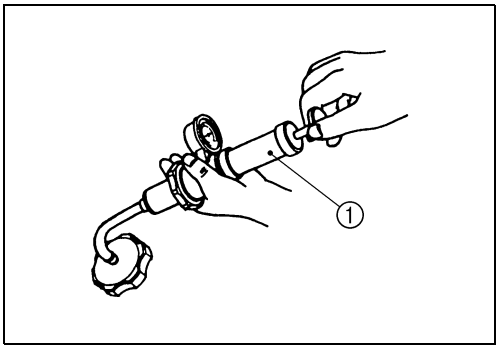
COOLING CIRCUIT INSPECTION



Before removing the radiator and draining the engine coolant, check the following.
Check the cooling system for leaks with a radiator tester ①.
Remove the radiator cap and connect the radiator tester to the filler. Pressurize the cooling system with 120 kPa (1.2 kgf/cm², 17 psi) of pressure, and then check if it holds the pressure for 10 seconds. If the cooling system does not hold the pressure for at least 10 seconds, check the entire cooling system for leaks. If a leak is found, replace the damaged part.

⚠ WARNUNG

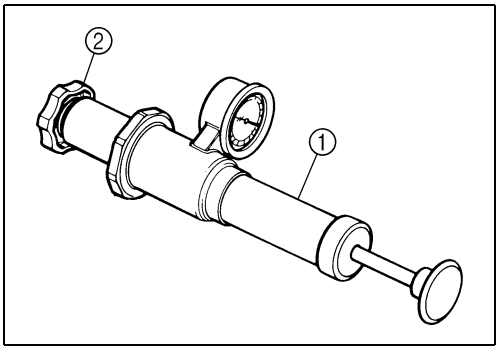
*** Do not open the radiator cap when the engine is hot, as you may be injured by escaping hot liquid or vapor.**
*** When removing the radiator cap tester, put a rag on the filler to prevent the engine coolant from spraying out.**



CAUTION

Do not exceed the radiator cap release pressure, or the radiator cap and subsequently the radiator, can be damaged.

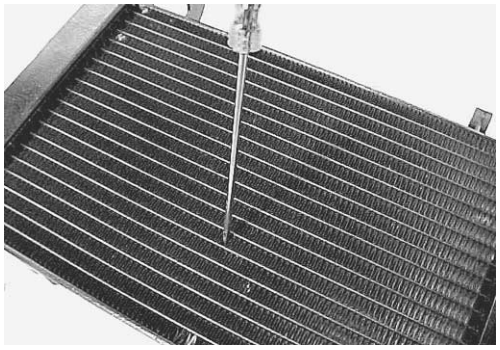
RADIATOR CAP INSPECTION



Check the radiator cap ② using a radiator tester ①.
Attach the radiator cap to the radiator tester as shown. Slowly apply pressure to the radiator cap; do not exceed 108 – 137 kPa (1.1 – 1.4 kgf/cm², 15.6 – 19.9 psi). If the radiator cap does not hold the pressure for at least 10 seconds, replace it with a new one.

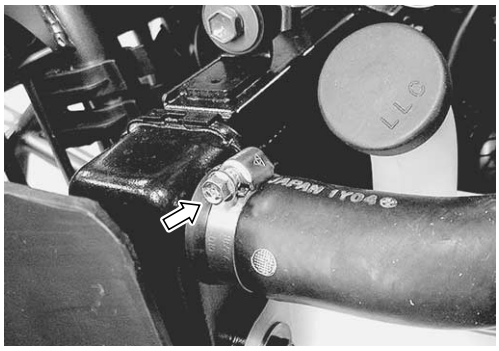
DATA Radiator cap release pressure: 108 – 137 kPa (1.1 – 1.4 kgf/cm², 15.6 – 19.9 psi)

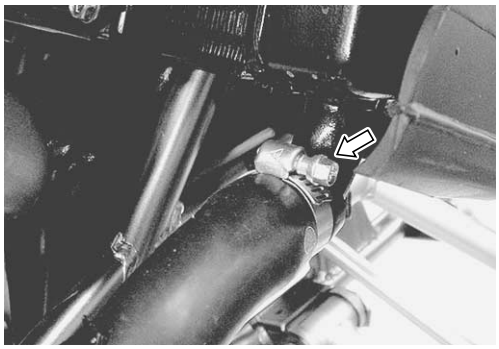
RADIATOR INSPECTION



Check the radiator for dirt and other foreign materials. If any are found, clean the radiator using compressed air. Also, repair any bent or dented fins using a small screwdriver.
Check all the water hoses for cracks, flat spots, or loose connections. Replace any damaged hoses and properly tighten any loose connections.

RADIATOR HOSE INSPECTION

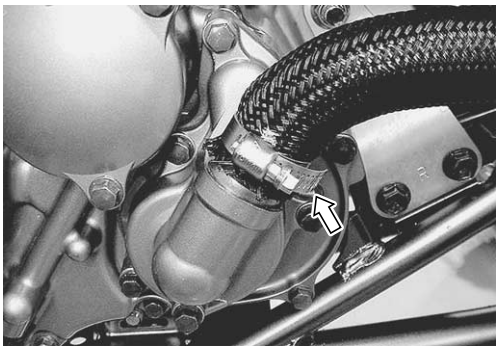


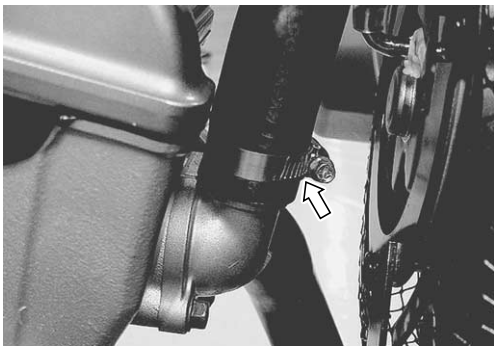


- Remove the front fender. (☞6-4)

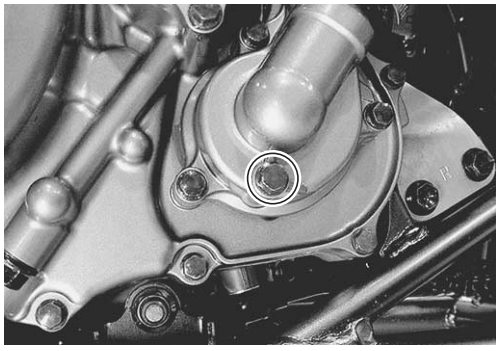
Any radiator hose found in a cracked condition or flattened must be replaced.

Any leakage from the connecting section should be corrected by proper tightening.

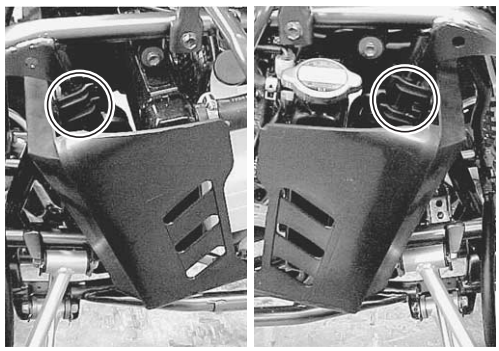




RADIATOR REMOVAL

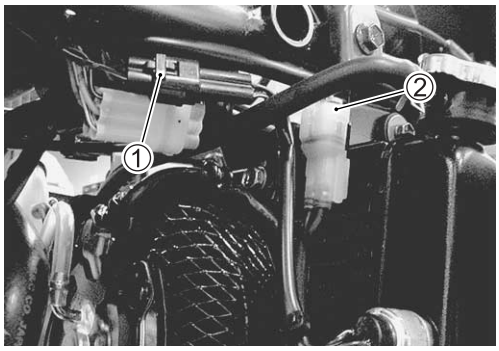


- Remove the front fender. (☞6-4)
- Drain engine coolant by removing the drain plug.

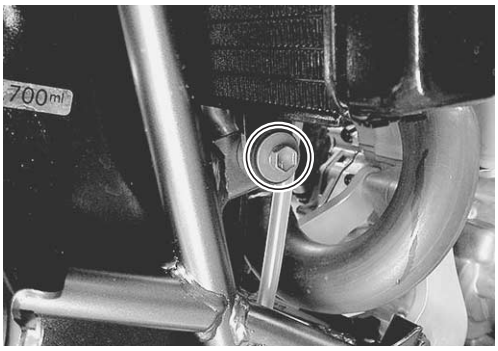


- Remove the radiator cover that is put in frame bar.

- Disconnect the engine coolant temperature switch lead wire coupler ① and cooling fan motor lead wire coupler ②.
- Disconnect the upper and lower radiator hoses.



- Remove the three mounting bolts and radiator assembly.



RADIATOR REMOUNTING

- Install the radiator and the radiator hoses in the reverse order of removal.
- Connect the cooling fan motor lead wire coupler and engine coolant temperature switch lead wire coupler.
- Install the radiator cover.
- Install the drain plug.
- Pour engine coolant. (☞2-14)
- Bleed air from the cooling curcuit. (☞2-14)
- Install the front fender.

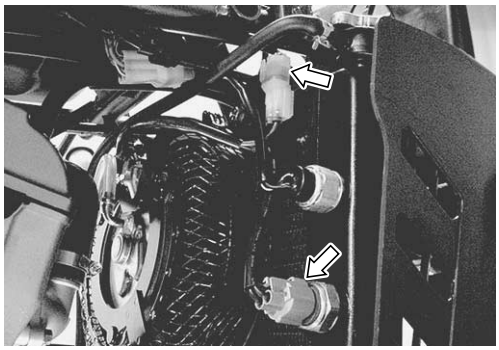
RADIATOR RESERVOIR TANK

REMOVAL/REMOUNTING

- Remove the reservoir tank mounting bolts and disconnect the siphon hose from the reservoir tank and drain engine coolant.
- Install the reservoir tank in the reverse order of removal.
- Fill the reservoir tank to the upper level line.

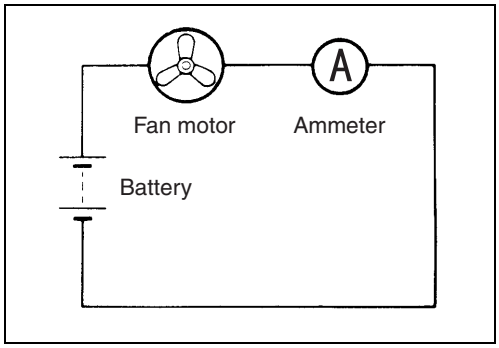
COOLING FAN

INSPECTION



- Remove the front fender. (☞6-4)
- Disconnect the cooling fan lead wire coupler.

Test the cooling fan motor for load current with an ammeter connected as shown in the illustration.



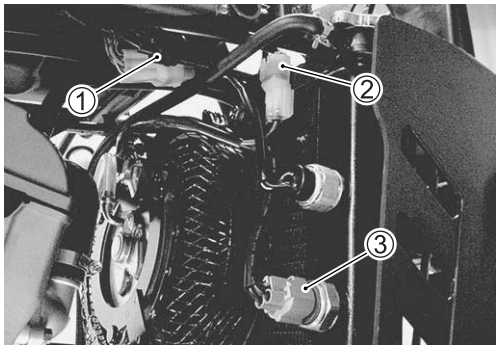
The voltmeter is for making sure that the battery applies 12 volts to the motor. With the motor with electric motor fan running at full speed, the ammeter should be indicating not more than 5 amperes.

If the fan motor does not turn, replace the motor assembly with a new one.

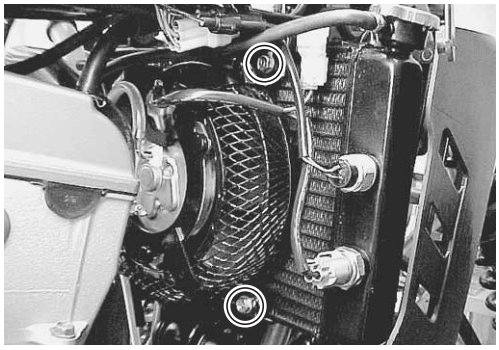
NOTE:

When making above test, it is not necessary to remove the cooling fan.

REMOVAL

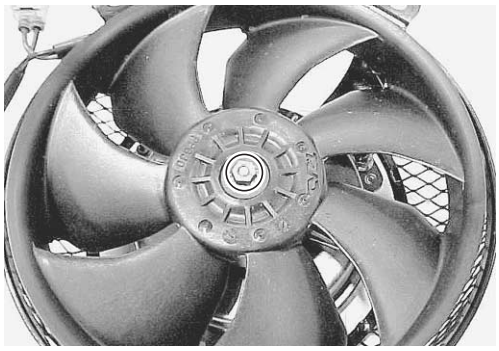


- Remove the front fender. (☞6-4)
- Disconnect the coolant temperature switch lead wire coupler ① and the cooling fan motor lead wire coupler ② and the cooling fan thermo-switch lead wire coupler ③.

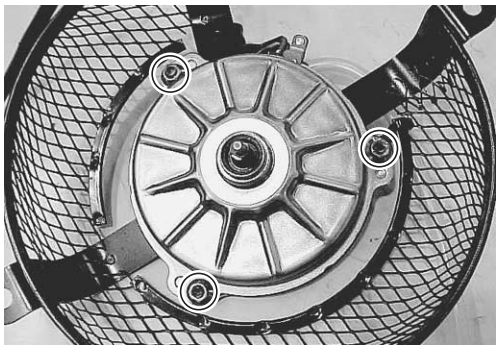


- Remove the three mounting bolts and the cooling fan unit.

- Remove the cooling fan.



- Remove the cooling fan motor.

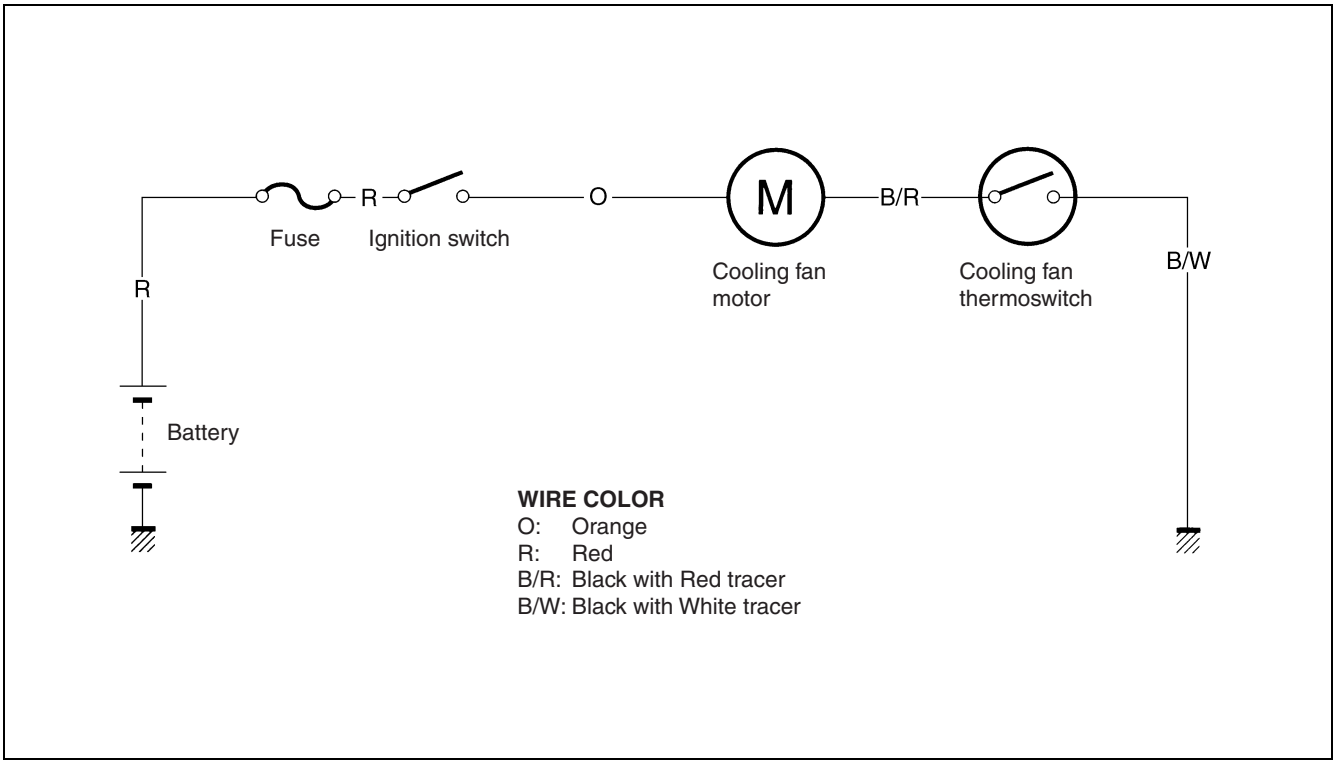


REMOUNTING

Remount the cooling fan in the reverse order of removal.

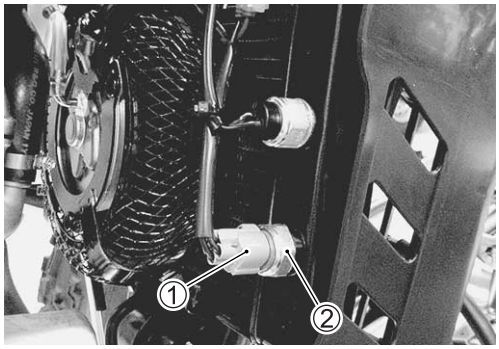
COOLING FAN THERMO-SWITCH

The cooling fan is secured behind the radiator by three bolts and is automatically controlled by the thermo-switch. The thermo-switch remains open when the temperature of the engine coolant is low, but closes when the temperature reaches approximately 88°C (190°F) setting the cooling fan in motion.

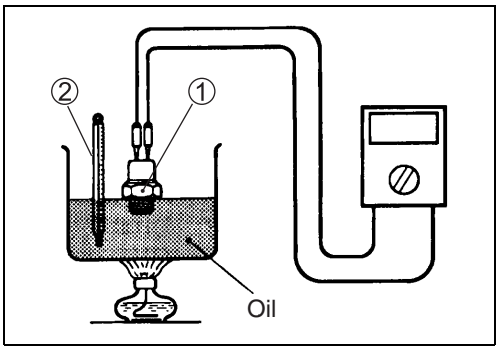


REMOVAL

- Remove the front fender. (☞6-4)
- Drain engine coolant. (☞2-14)
- Disconnect the cooling fan thermo-switch lead wire coupler ①.
- Remove the cooling fan thermo-switch ②.



INSPECTION



- Check the thermo-switch closing or opening temperatures by testing it at the bench as shown in the figure. Connect the thermo-switch ① to a circuit tester and place it in the oil contained in a pan, which is placed on a stove.
- Heat the oil to raise its temperature slowly and read the column thermometer ② when the switch closes or opens.

TOOL 09900-25008: Multi circuit tester set

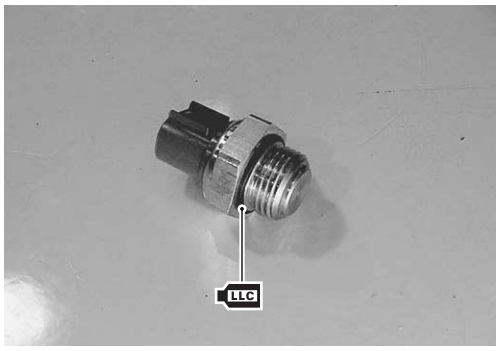
Tester knob indication: Continuity test (•))))

DATA Cooling fan thermo-switch operating temperature
Standard (OFF→ON): Approx. 88°C (190°F)
(ON→OFF): Approx. 82°C (180°F)

CAUTION

*** Do not contact the cooling fan thermo-switch ① and the column thermometer ② with a pan.**

INSTALLATION



Install the cooling fan thermo-switch in the reverse order of removal. Pay attention to the following points:

- Apply engine coolant to the O-ring.
- Tighten the cooling fan thermo-switch to the specified torque.

Cooling fan thermo-switch: 20 N·m (2.0 kgf-m, 14.5 lb-ft)

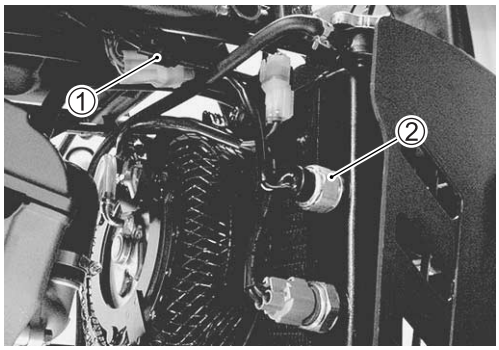
CAUTION

*** Take special care when handling the cooling fan thermo-switch. Do not subject it to strong blows or allow it to be dropped.**
*** Replace the removed O-ring with a new one.**

- After installing the cooling fan thermo-switch, be sure to add engine coolant. (☞2-14)

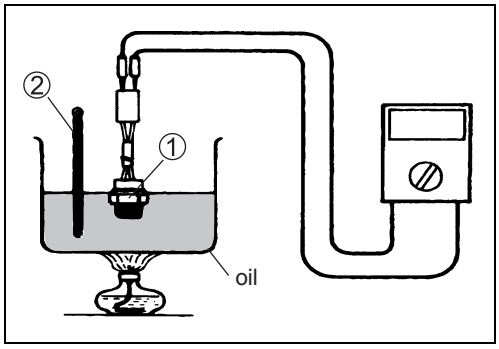
ENGINE COOLANT TEMPERATURE SWITCH

REMOVAL



- Remove the front fender. (☞6-4)
- Drain a small amount of engine coolant. (☞2-14)
- Disconnect the engine coolant temperature switch lead wire coupler ①.
- Remove the engine coolant temperature switch ②.

INSPECTION



- Check the engine coolant temperature switch by testing it at the bench as shown in the figure. Connect the temperature switch ① to a circuit tester and place it in the oil contained in a pan, which is placed on a stove.
- Heat the oil to raise its temperature slowly and read the column thermometer ② when the switch closes or opens.

09900-25008: Multi circuit tester set

Tester knob indication: Continuity test (•)))

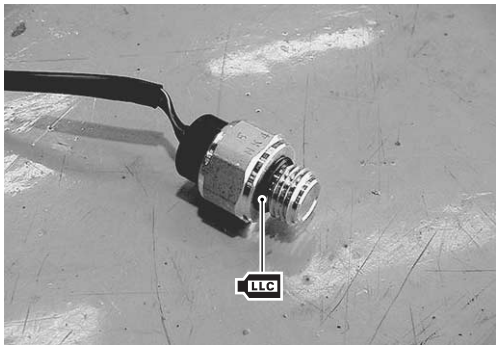
Engine coolant temp. switch operating temperature
Standard (OFF→ON): Approx. 120°C (248°F)
(ON→OFF): Approx. 113°C (235°F)

CAUTION

*** Do not contact the engine coolant temperature switch ① and the column thermometer ② with a pan.**

INSTALLATION

Install the engine coolant temperature thermo-switch in the reverse order of removal. Pay attention to the following points:



- Apply engine coolant to the O-ring.
- Tighten the engine coolant temperature thermo-switch to the specified torque.

Engine coolant temperature thermo-switch:
13 N·m (1.3 kgf-m, 9.5 lb-ft)

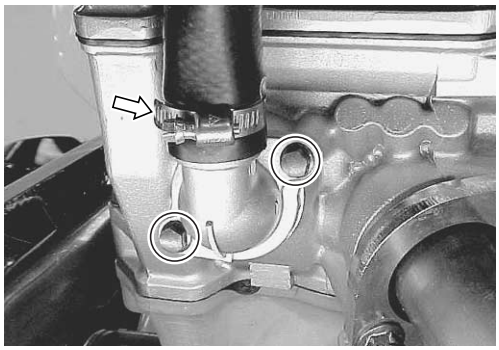
CAUTION

Take special care when handling the engine coolant temperature thermo-switch. Do not subject it to strong blows or allow it to be dropped.

- After installing the engine coolant temperature thermo-switch, be sure to add engine coolant. (☞2-14)

THERMOSTAT

REMOVAL

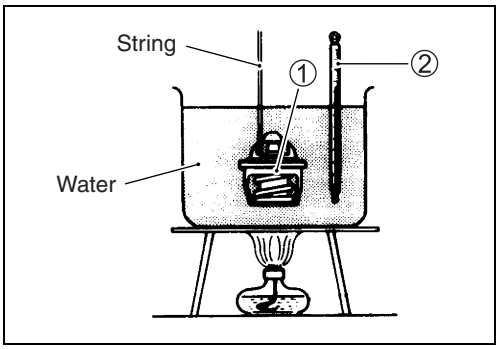


- Drain a small amount of engine coolant. (☞2-14)
- Place a rag under the thermostat case.
- Remove the thermostat case.
- Remove the thermostat.

INSPECTION

Inspect the thermostat pellet for signs of cracking.
Test the thermostat at the bench for control action, in the following manner.

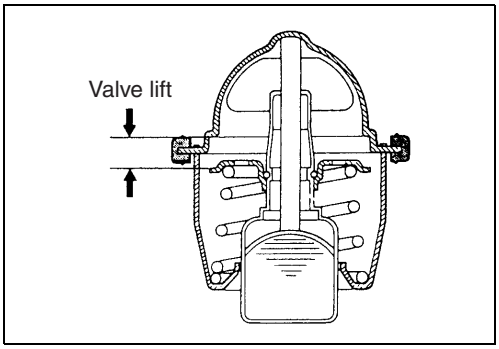
- Immerse the thermostat ① in the water contained in a beaker, as shown in the illustration. Note that the immersed thermostat is in suspension. Heat the water by placing the beaker on a stove and observe the rising temperature on a thermometer ②.



- Read the thermometer just when opening the thermostat. This reading, which is the temperature level at which the thermostat valve begins to open, should satisfy the standard value.

DATA Thermostat valve opening temperature
Standard: Approx. 75°C (167 °F)

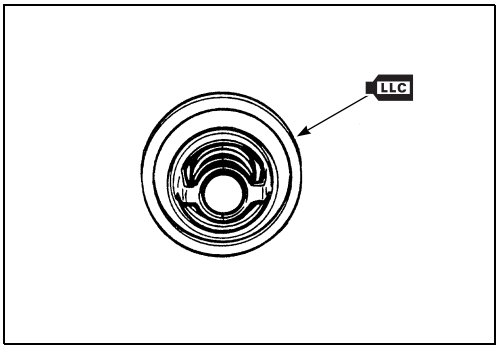
- Keep on heating the water to raise its temperature.
- Just when the water temperature reaches specified value, the thermostat valve should have lifted by at least 6.0 mm (0.24 in).



DATA Thermostat valve lift
Standard: Over 6.0 mm at 90°C (Over 0.24 in at 194°F)

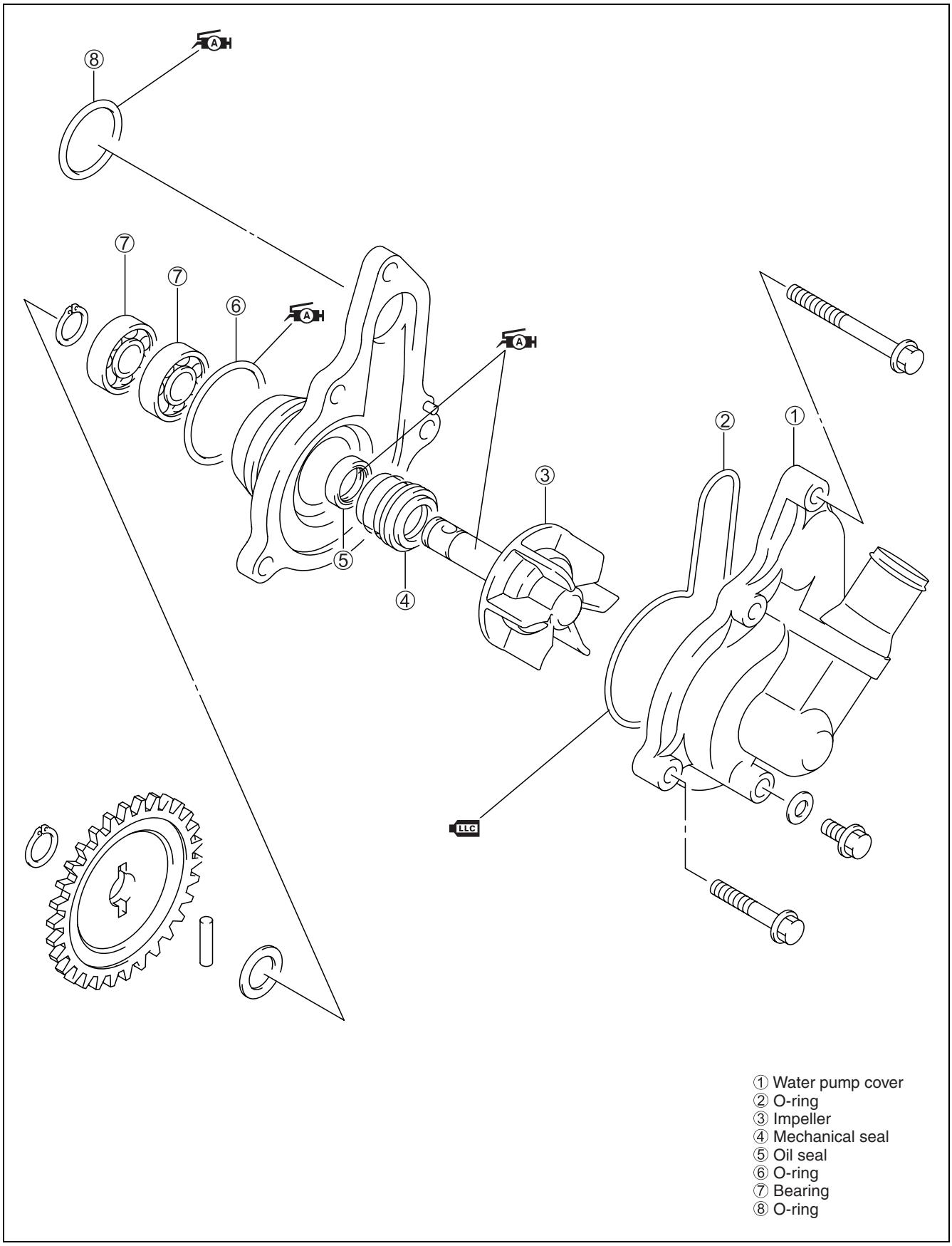
- A thermostat failing to satisfy either of the two requirements (start-to-open temperature and valve lift) must be replaced with a new one.

INSTALLATION



- Install the thermostat in the reverse order of removal.
- Apply engine coolant to the rubber seal on the thermostat.
- After installing the thermostat, be sure to add engine coolant. (☞2-14)
- Install the front fender.

WATER PUMP
CONSTRUCTION



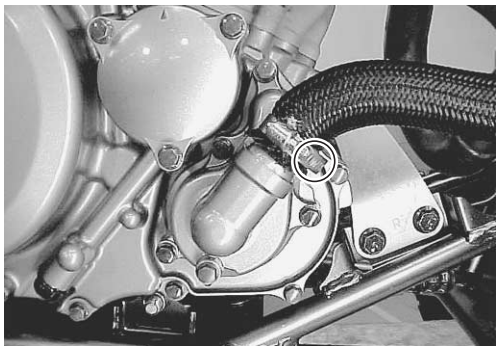
① Water pump cover
② O-ring
③ Impeller
④ Mechanical seal
⑤ Oil seal
⑥ O-ring
⑦ Bearing
⑧ O-ring

REMOVAL AND DISASSEMBLY

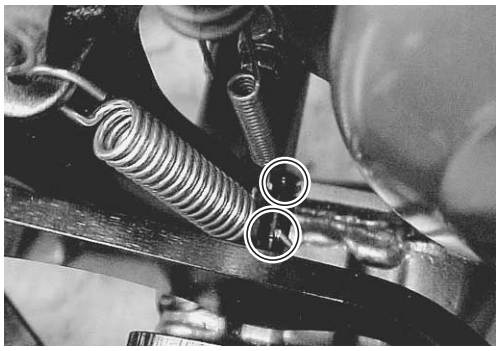
- Drain engine coolant. (☞2-14)
- Drain engine oil. (☞2-12)

⚠ WARNING

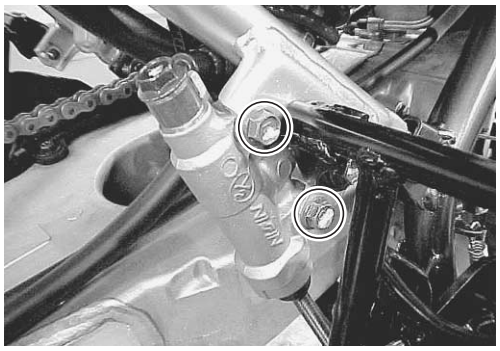
*** Do not open the radiator cap when the engine is hot, as you may be injured by escaping hot liquid or vapor.**
*** The engine must be cool before servicing the cooling system.**
*** Engine coolant may be harmful if swallowed or if it comes in contact with the skin or eyes. If engine coolant gets into 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.**



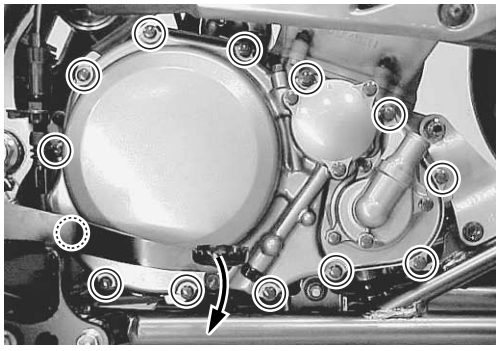
- Disconnect the radiator hose.



- Disconnect the rear brake switch spring and brake pedal spring as to lower side.

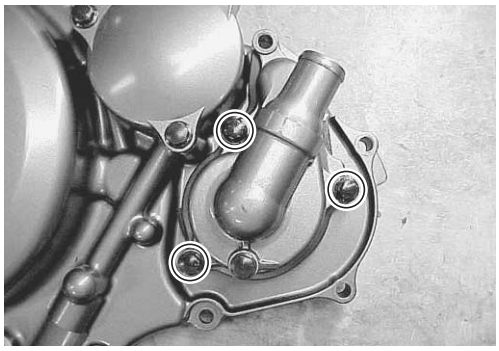


- Remove the master cylinder mounting bolts.

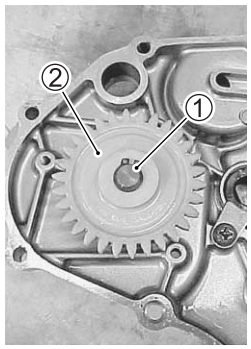


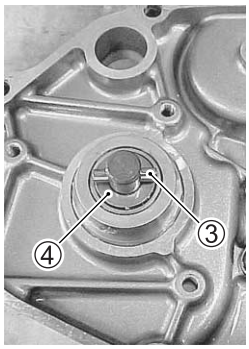
- Remove the clutch cover with pushing down the rear brake pedal.

• Remove the water pump cover.

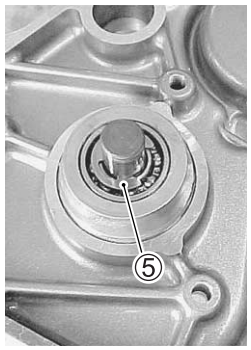


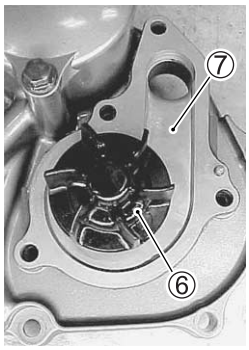
• Remove the snap ring ①, water pump driven gear ②, pin ③ and washer ④.





• Remove the E-ring ⑤, impeller ⑥, and water pump body ⑦.





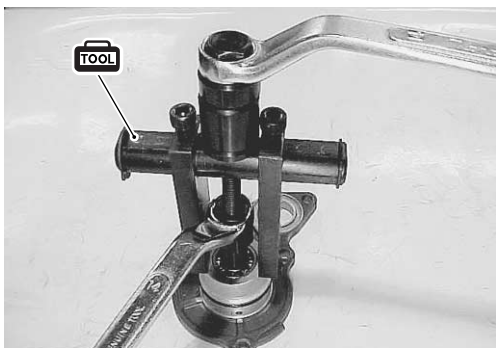
• Remove the bearing using the special tool.

TOOL 09921-20240: Bearing remover set

NOTE:
If there is no abnormal noise, bearing removal is not necessary.

CAUTION

The removed bearing must be replaced with a new one.



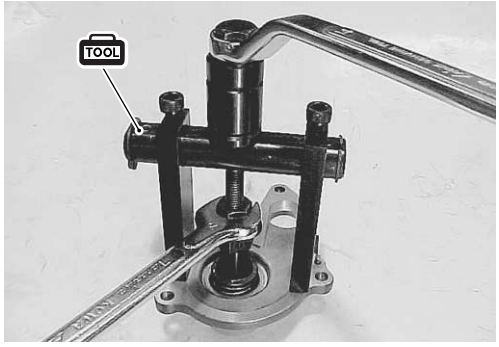
• Remove the mechanical seal using the special tool.

TOOL 09921-20240: Bearing remover set

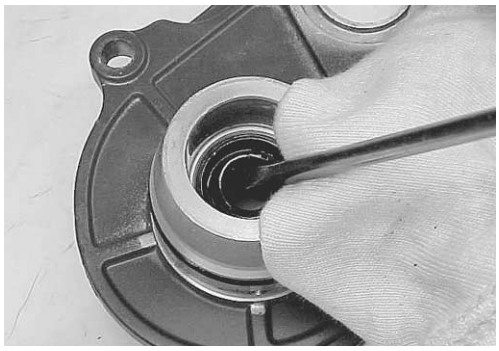
NOTE:
If there is no abnormal condition, the mechanical seal removal is not necessary.

CAUTION

The removed mechanical seal must be replaced with a new one.



- Place a rag over the water pump.
- Remove the oil seal using a suitable bar.

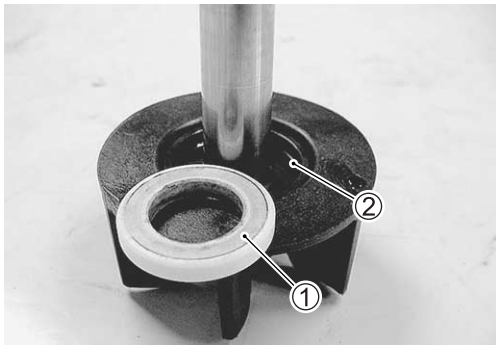


NOTE:
If there is no abnormal condition, the oil seal removal is not necessary.

CAUTION

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

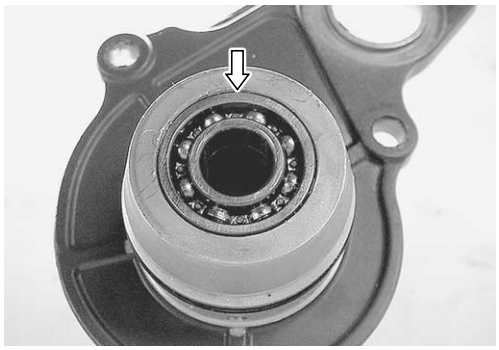
- Remove the mechanical seal ring ① and the rubber seal ② from the impeller.



INSPECTION

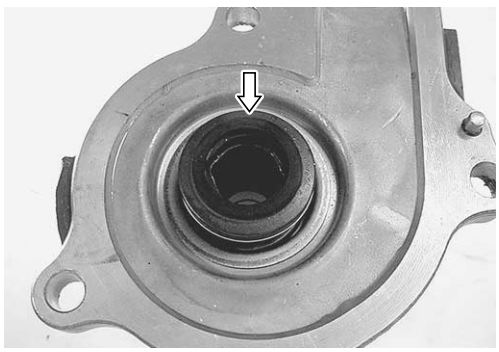
BEARING

- Inspect the play of the bearing by hand while it is in the water pump case.
- Rotate the inner race by hand to inspect for abnormal noise and smooth rotation.
- Replace the bearing if there is anything unusual.



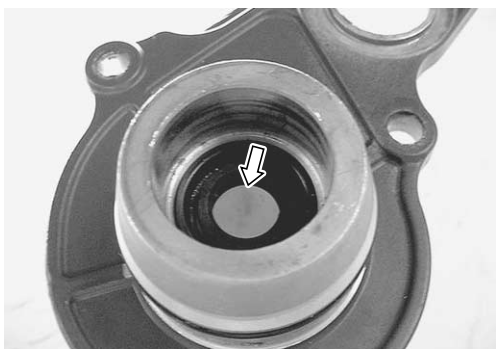
MECHANICAL SEAL

- Visually inspect the mechanical seal for damage, with particular attention given to the sealing face.
- Replace the mechanical seal that shows indications of leakage.



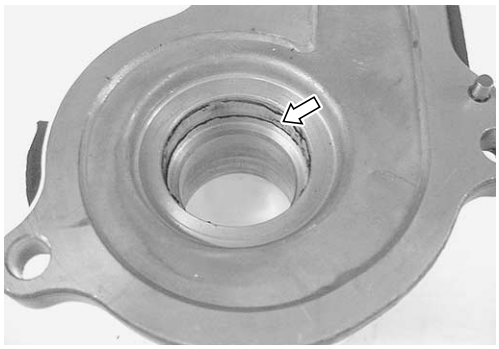
OIL SEAL

- Visually inspect the oil seal for damage, with particular attention given to the lip.
- Replace the oil seal that shows indications of leakage.



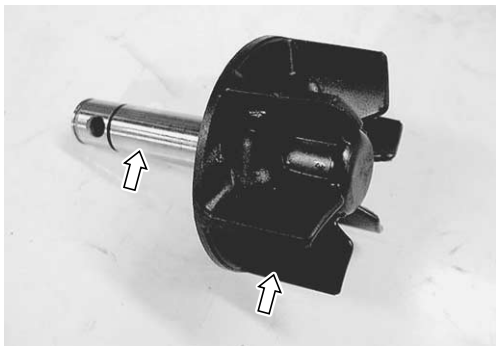
BEARING CASE/MECHANICAL CASE

- Visually inspect the bearing case and mechanical case for damage.
- Replace the water pump body if necessary.



IMPELLER

- Visually inspect the impeller and its shaft for damage.

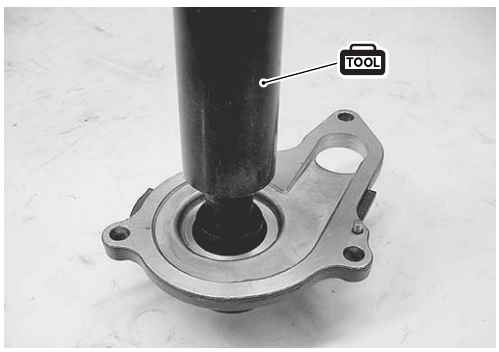


REASSEMBLY AND INSTALLATION

- Install the oil seal using the special tool.

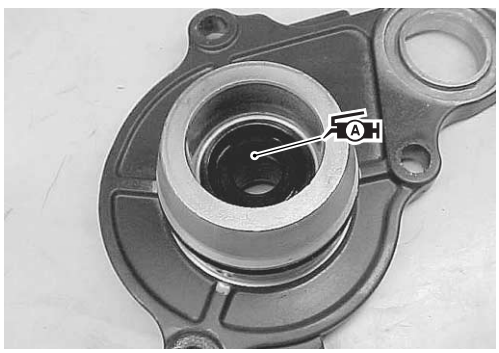
09913-70210: Bearing installer set

NOTE:
The stamped mark on the oil seal faces outside.



- Apply a small quantity of the SUZUKI SUPER GREASE "A" to the oil seal lip.

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



- Install the new mechanical seal using a suitable size socket wrench.

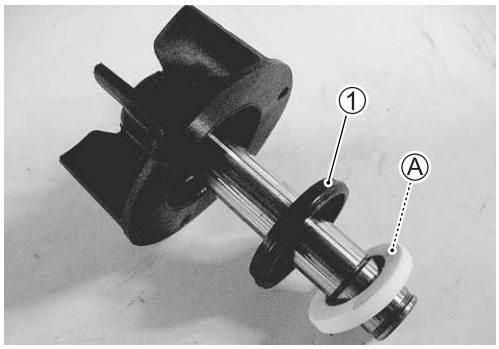
NOTE:
On the new mechanical seal, the seealer Ⓐ has been applied.

- Install the new bearing using the special tool.

09913-70210: Bearing installer set

- Install the rubber seal ① into the impeller.
- After wiping off the oily or greasy matter from the mechanical seal ring, install it into the impeller.

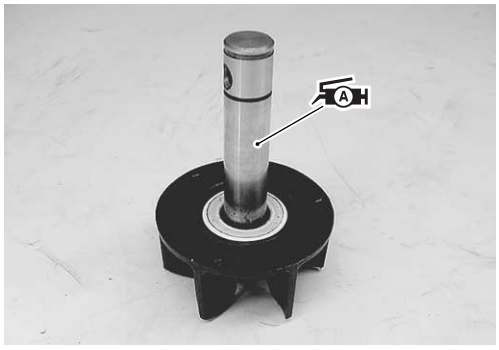
NOTE:
The paint marked side Ⓐ of the mechanical seal ring faces the impeller.



- Apply grease to the impeller shaft.

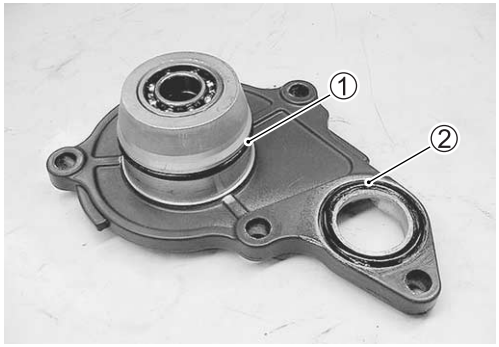
99000-25030: SUZUKI SUPER GREASE "A" (USA)
99000-25010: SUZUKI SUPER GREASE "A" (Others)

- Install the impeller shaft to the water pump body.

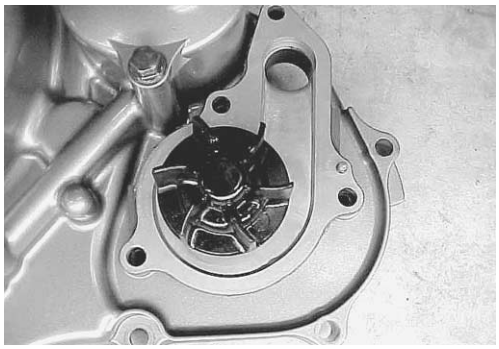


- Install the new O-rings ① and ②.
- Apply grease to the O-rings.

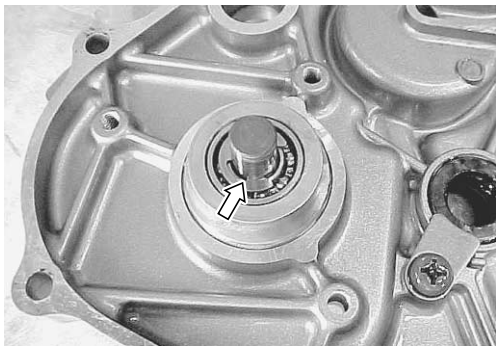
99000-25030: SUZUKI SUPER GREASE "A" (USA)
99000-25010: SUZUKI SUPER GREASE "A" (Others)



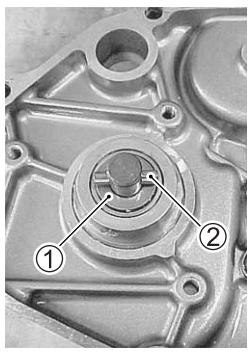
- Install the water pump body with the impeller to the clutch cover.

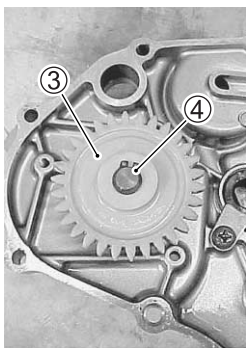


- Install the E-ring to the impeller shaft.

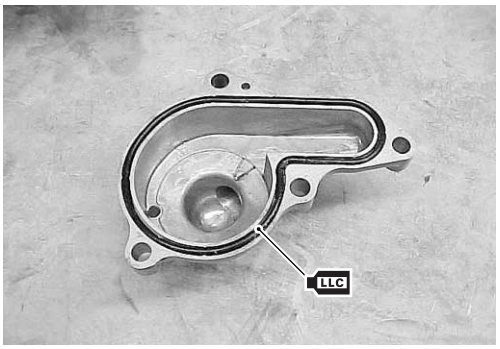


- Install the washer ①, pin ②, water pump driven gear ③ and snap ring ④.





• Install the new O-ring to the water pump cover.

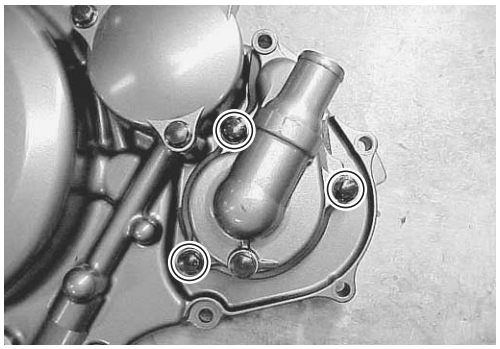


CAUTION

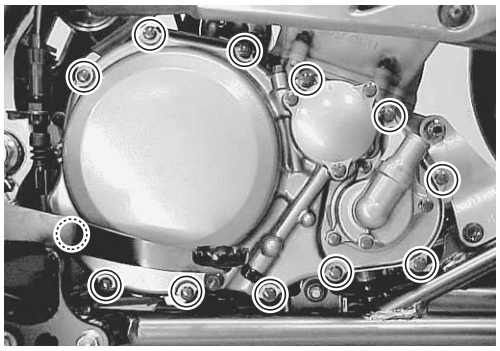
Use the new O-rings to prevent engine coolant leakage.

• Apply engine coolant to the O-ring.

• Install the water pump cover to the clutch cover.



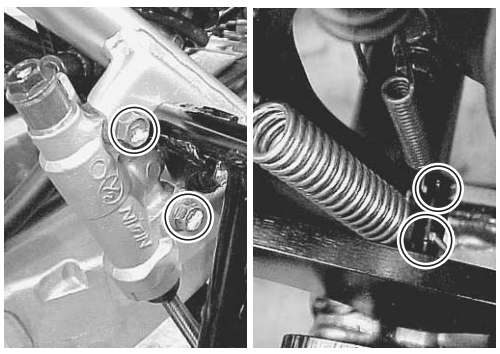
• Install the clutch cover. (☞3-55)



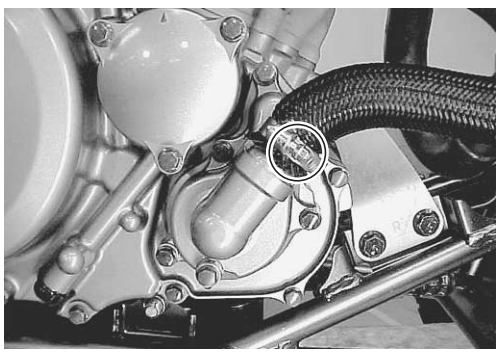
• Install the master cylinder mounting bolts.

Master cylinder mounting bolt:
10 N·m (1.0 kgf-m, 7.0 lb-ft)

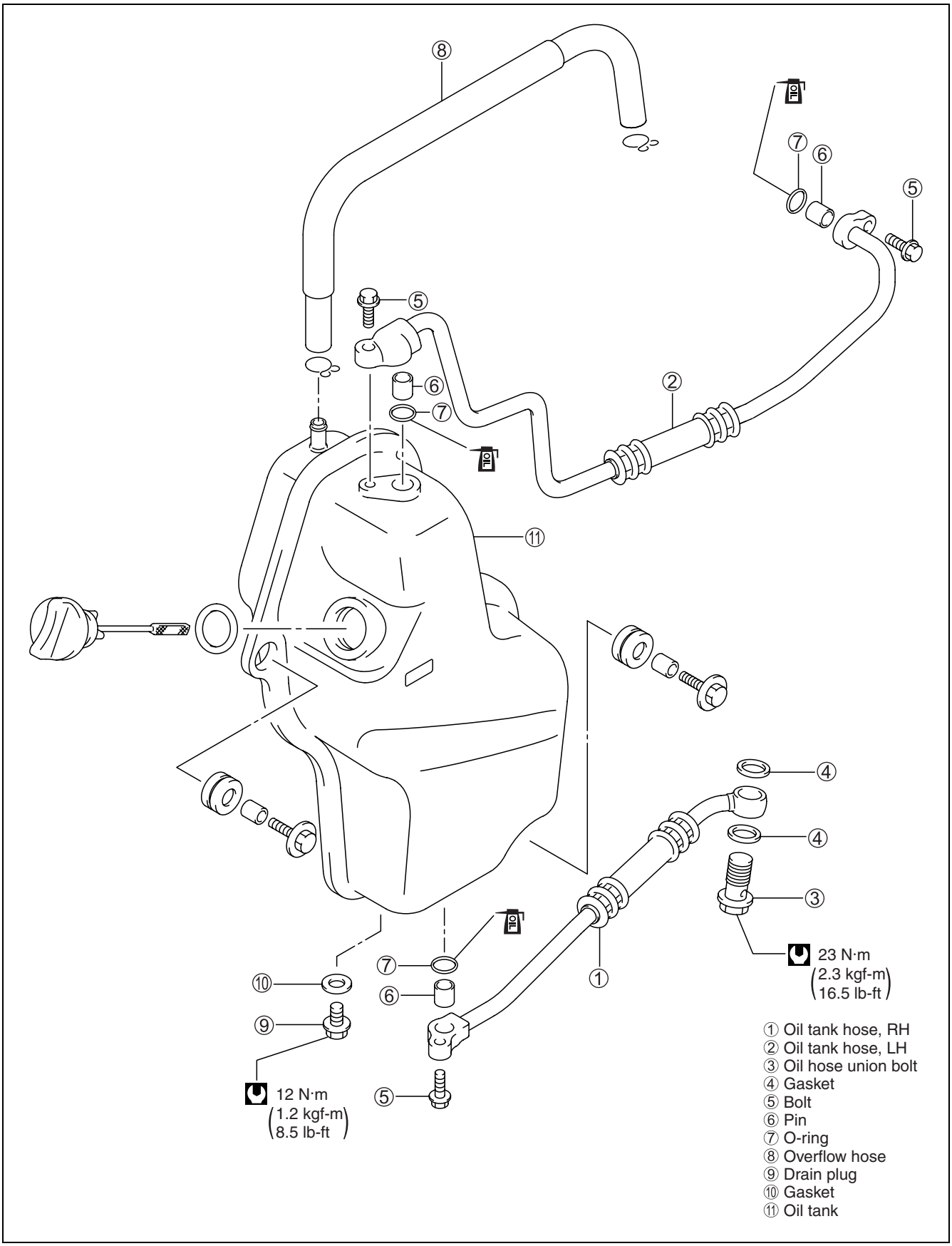
• Connect the rear brake switch spring and brake pedal spring as to lower side.



• Connect the radiator hose.
• Pour engine oil. (☞2-12)
• Pour engine coolant. (☞2-14)

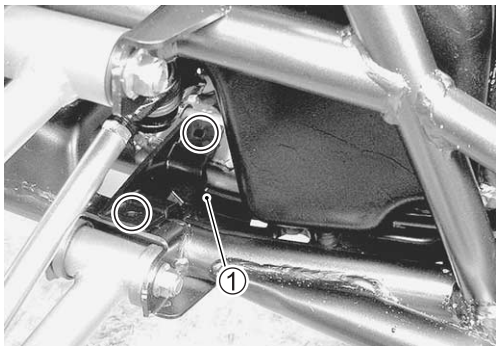


OIL TANK AND HOSES
CONSTRUCTION

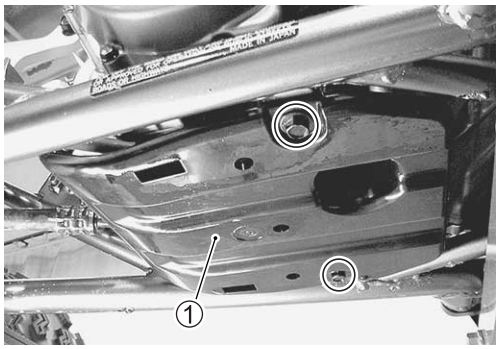


REMOVAL

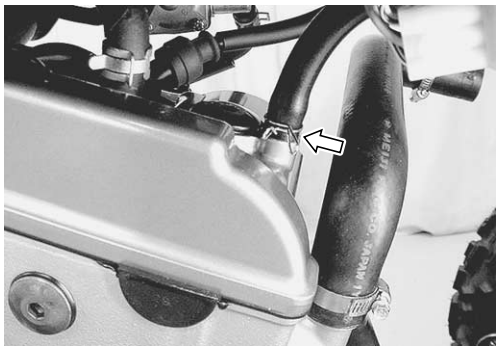
- Remove the front fender. (☞6-4)
- Drain engine coolant. (☞2-14)
- Remove the radiator. (☞5-5)
- Drain engine oil. (☞2-12)
- Remove the oil tank protector ①.

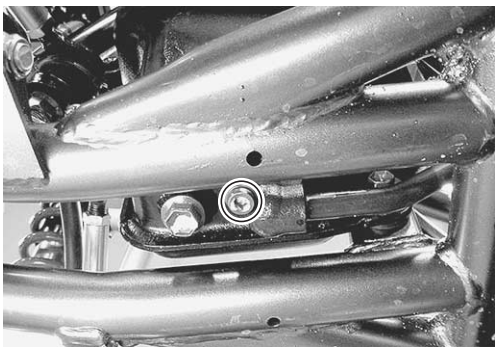


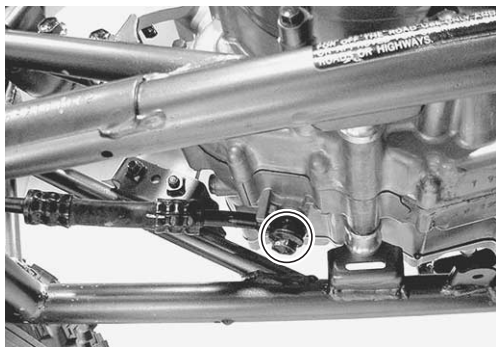
- Remove the engine protector ①.



- Remove the oil hoses.





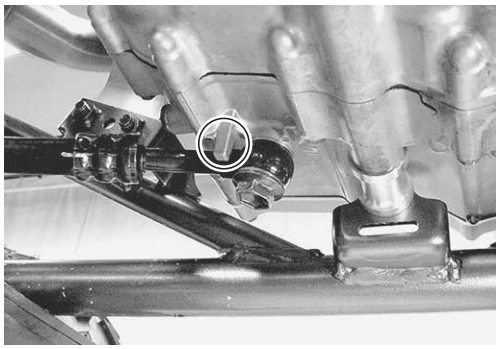


• Remove the oil tank.

REMOUNTING

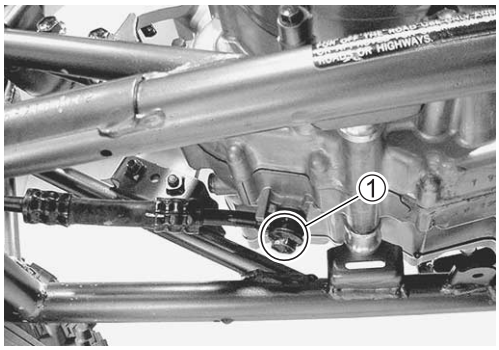
Remount the oil tank and hoses in the reverse order of removal. Pay attention to the following points.

• When connecting the oil tank right hose, place the base of oil pipe against the stopper on engine.



• Tighten the oil hose union bolt ① to the specified torque.

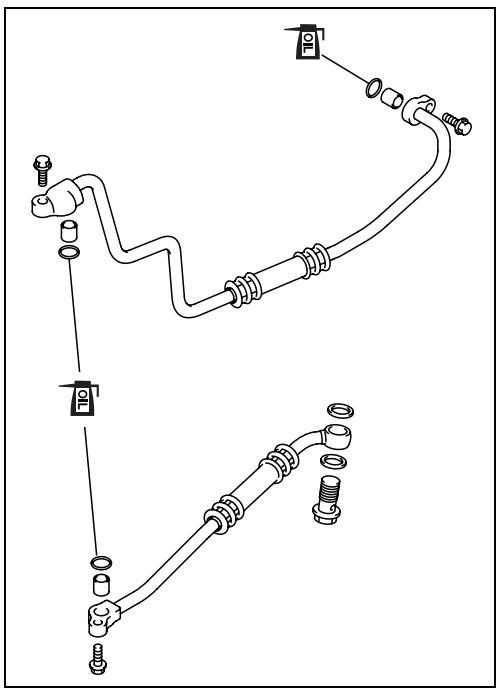
Oil hose union bolt : 23 N·m (2.3 kgf-m, 16.5 lb-ft)



• Install the new O-rings to the right and left hoses.

CAUTION

Use the new O-rings to prevent engine coolant leakage.



• Apply engine oil to the O-rings.

• Pour engine oil. (☞2-12)
• Install the radiator. (☞5-6)
• Pour engine coolant. (☞2-14)
• Install the front fender.

LUBRICATION SYSTEM

OIL PRESSURE

☞2-30

OIL FILTER

☞2-13

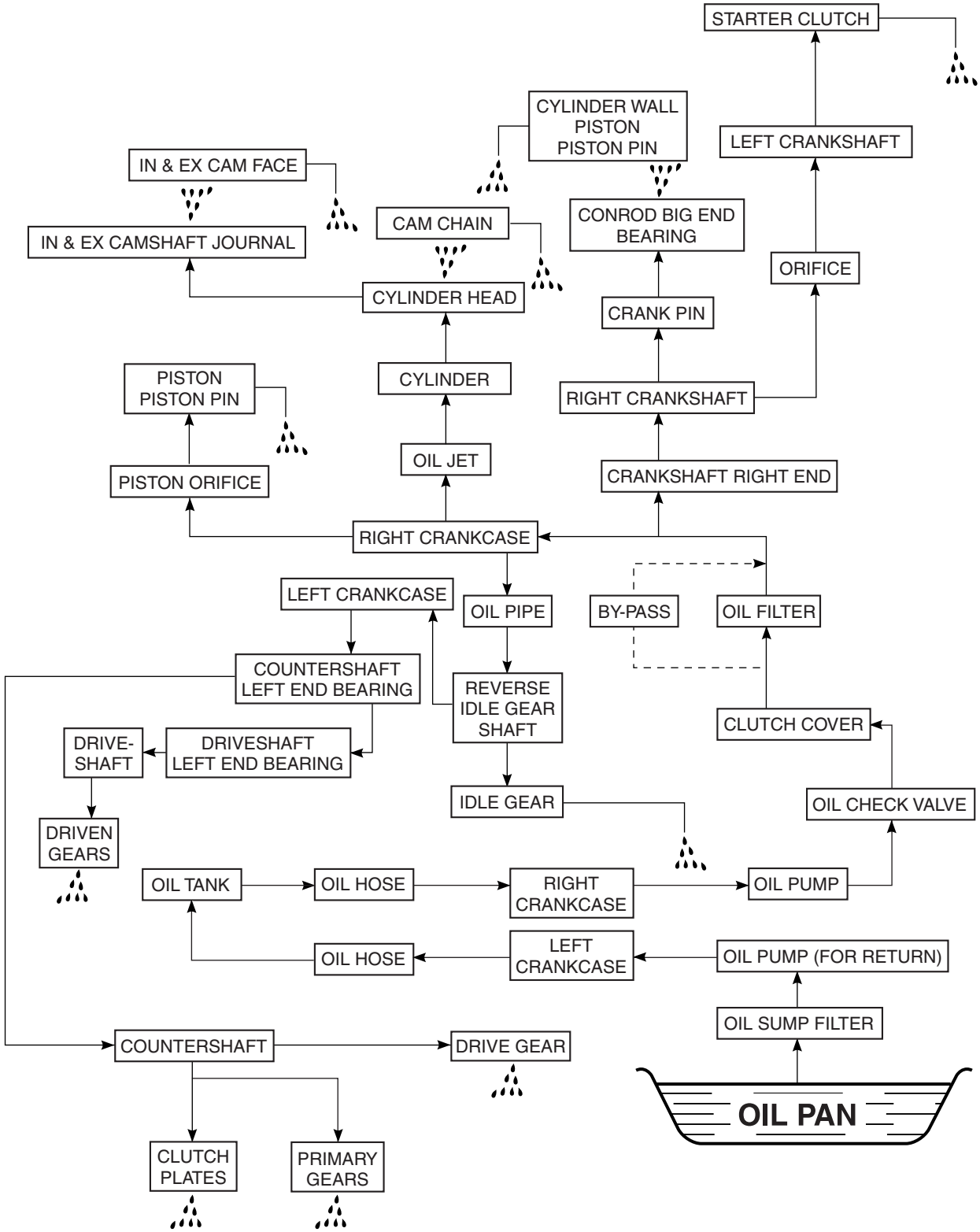
OIL SUMP FILTER

☞3-42

OIL PUMP

☞3-36

ENGINE LUBRICATION SYSTEM CHART



CHASSIS

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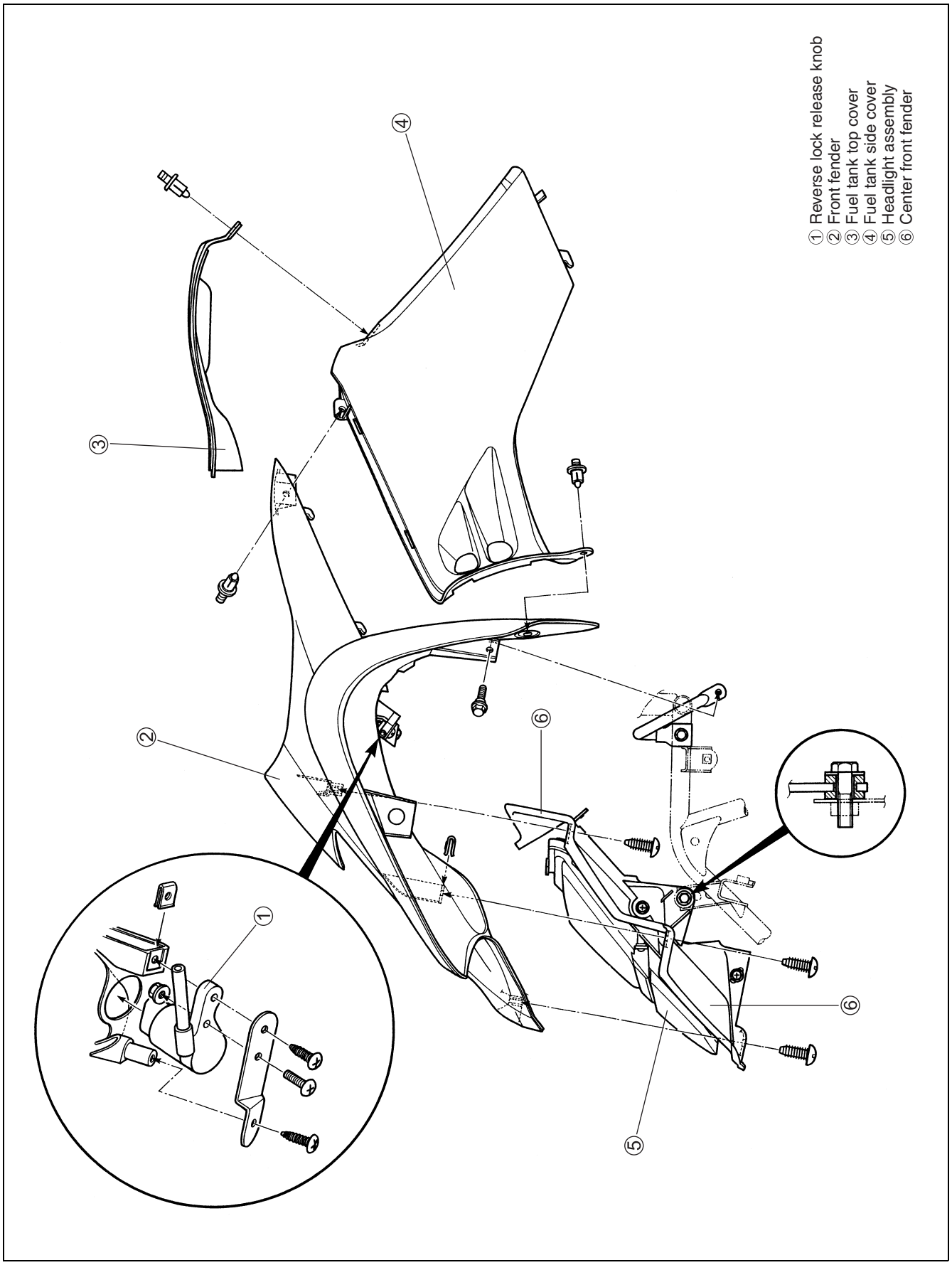
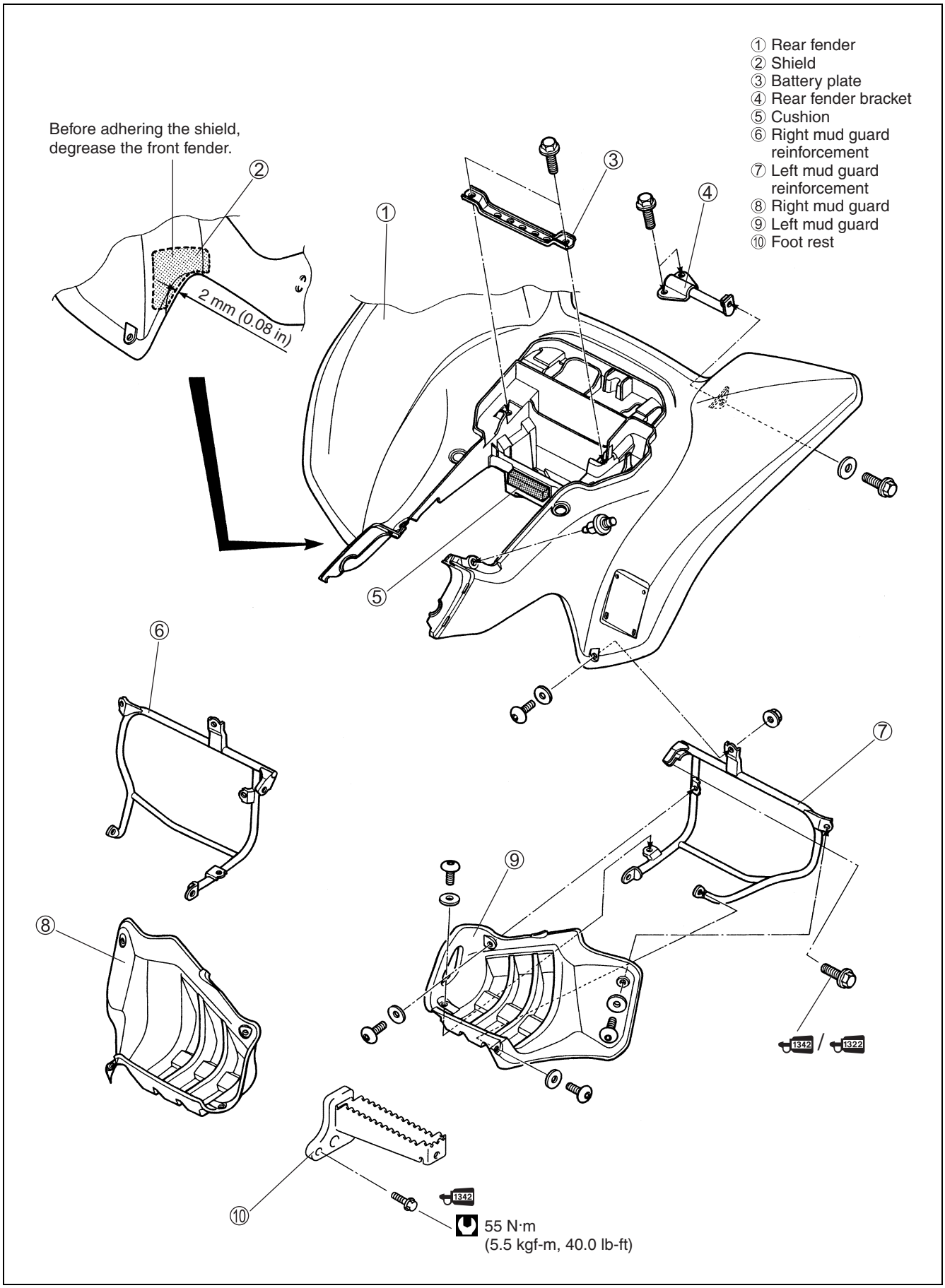
EXTERIOR PARTS
CONSTRUCTION




① Rear fender
② Shield
③ Battery plate
④ Rear fender bracket
⑤ Cushion
⑥ Right mud guard reinforcement
⑦ Left mud guard reinforcement
⑧ Right mud guard
⑨ Left mud guard
⑩ Foot rest
Before adhering the shield, degrease the front fender.
2 mm (0.08 in)
1342
55 N·m
(5.5 kgf-m, 40.0 lb-ft)
1342 / 1322

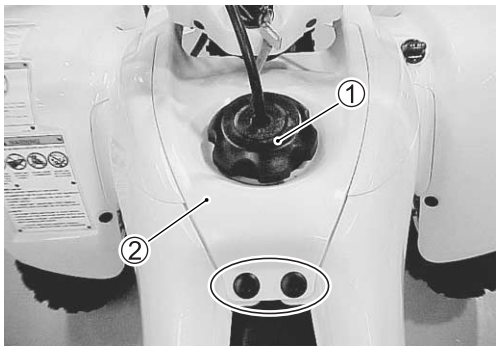
REMOVAL

SEAT

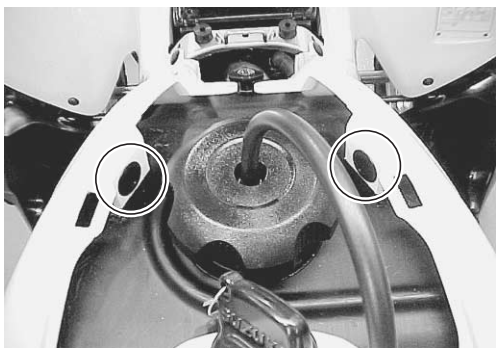
- Remove the seat by pulling the lock release lever ① which is located behind the rear fender.

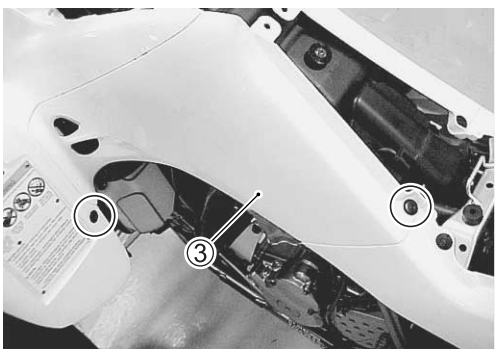
FRONT FENDER

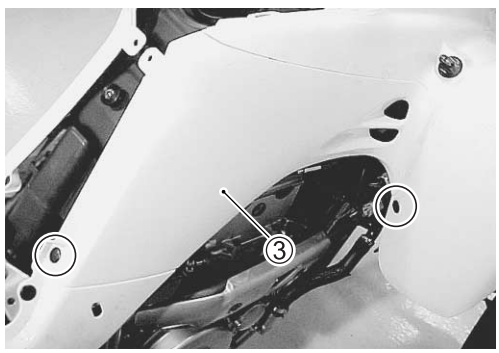
- Remove the seat. (☞above)
- Remove the fuel tank cap ①.
- Remove the fuel tank top cover ②.



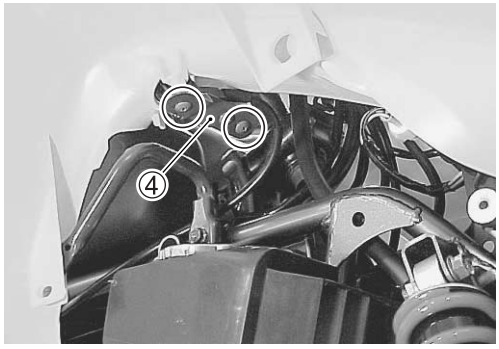
- Remove the fuel tank side covers ③.



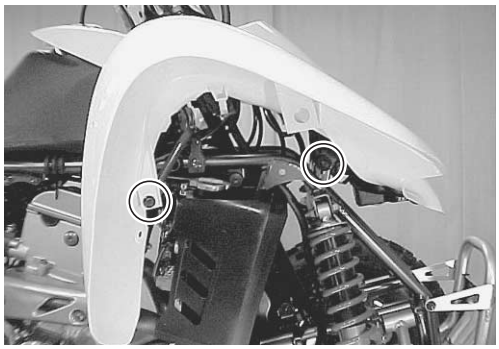


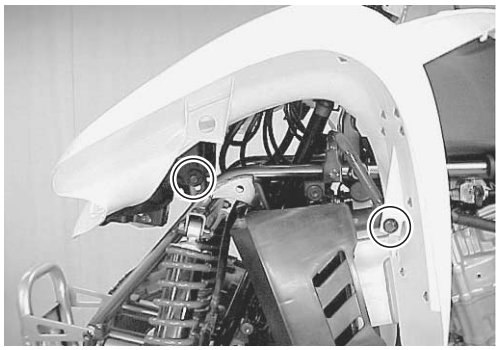


- Remove the reverse lock release knob ④.

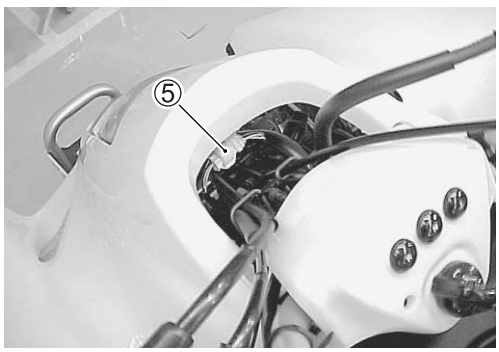


- Remove the front fender mounting bolts.

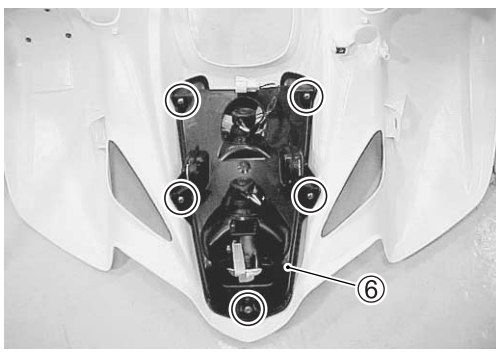




- Disconnect the headlight coupler ⑤.
- Remove the front fender.

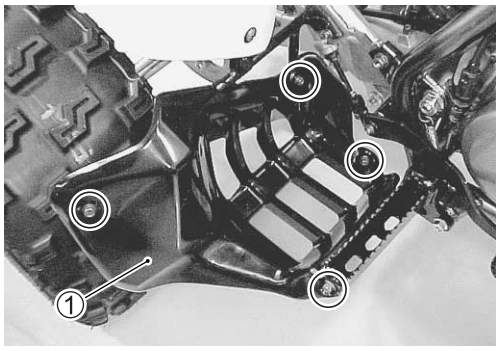


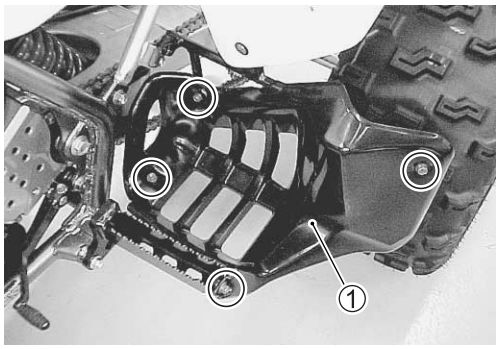
- Remove the headlight assembly ⑥.



FOOTREST MUD GUARD

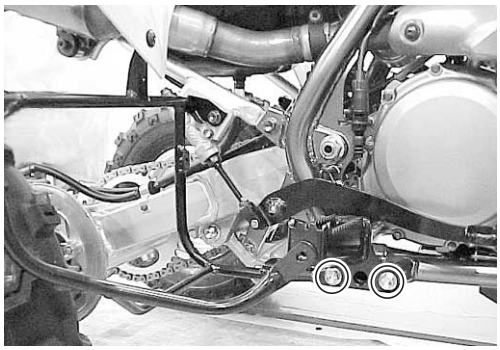
- Remove the mud guards ①.

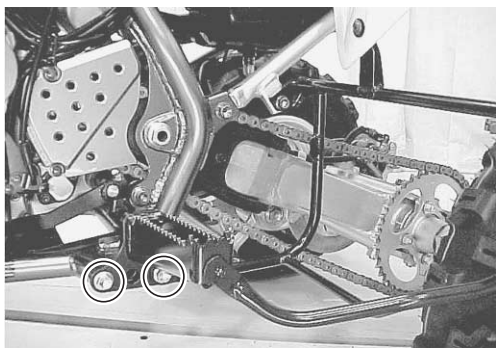




FOOTREST

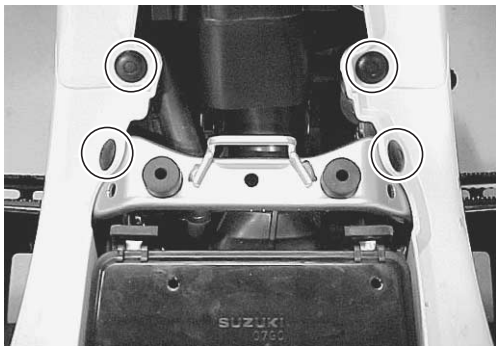
- Remove the footrest mud guards. (☞above)
- Remove the footrests.



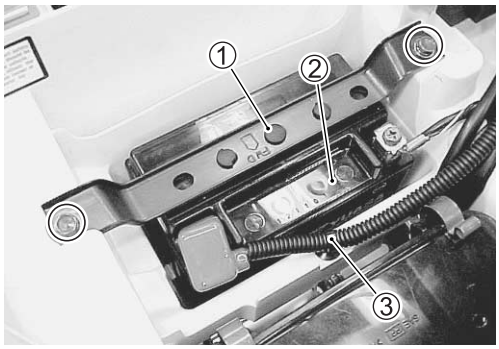


REAR FENDER

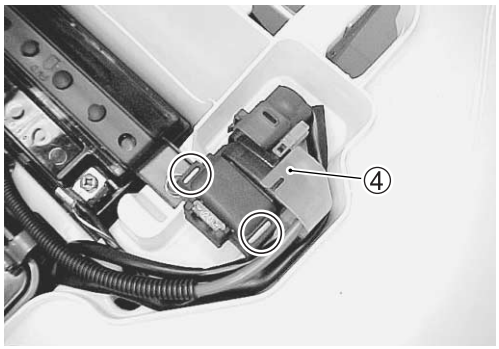
- Remove the seat. (☞6-4)
- Remove the fasteners.



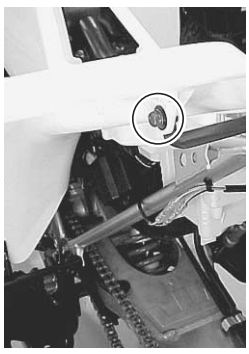
- Remove the battery plate ①.
- Remove the battery ②.
- Disconnect the battery lead wire clamp ③.

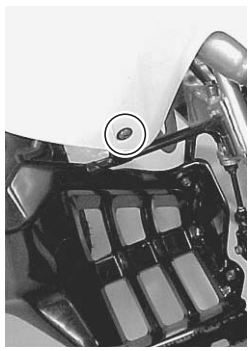


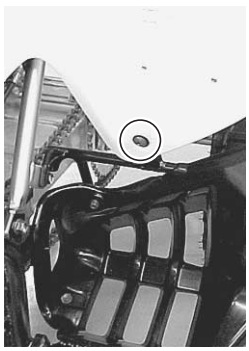
- Remove the starter relay ④.



- Remove the rear fender mounting bolts.
- Remove the rear fender.

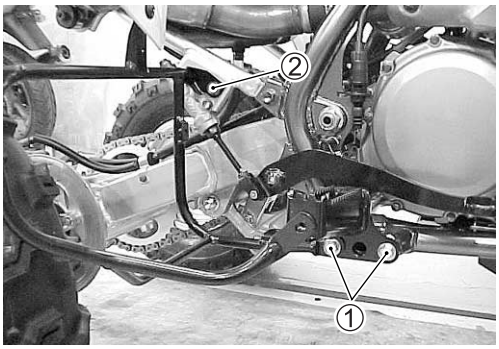






REMOUNTING

Remount the exterior parts in the reverse order of removal. Pay attention to the following points:

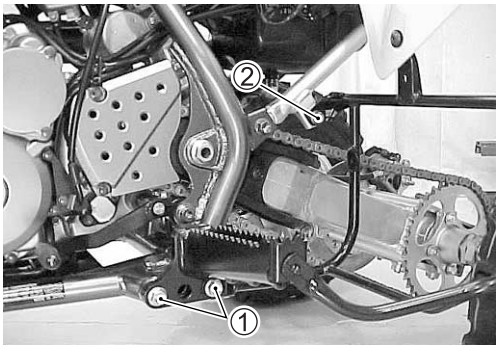


FOOTREST

- Apply THREAD LOCK “1342” to the bolts ① and tighten bolts to the specified torque.

1342 99000-32050: THREAD LOCK “1342”

Footrest mounting bolt: 55 N·m (5.5 kgf-m, 40.0 lb-ft)



MUD GUARD REINFORCEMENT

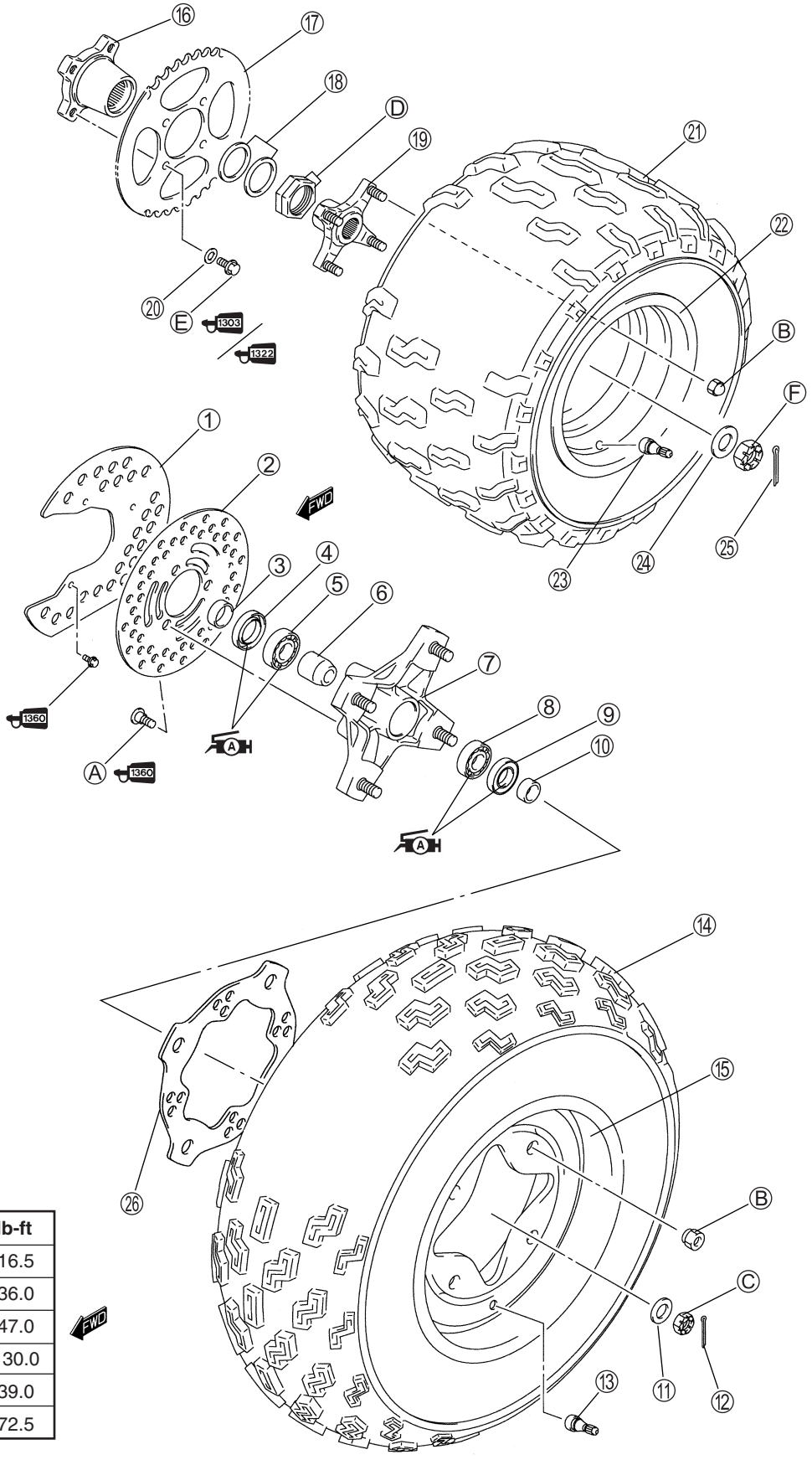
- Apply THREAD LOCK SUPER “1322” or “1342” to the mud guard reinforcement mounting bolts ②.

1342 99000-32050: THREAD LOCK “1342” (USA)

1322 99000-32110: THREAD LOCK SUPER “1322” (Others)

FRONT AND REAR WHEELS
CONSTRUCTION

① Disc cover
② Front disc
③ Spacer
④ Dust seal
⑤ Hub bearing
⑥ Bearing spacer
⑦ Front wheel hub
⑧ Hub bearing
⑨ Dust seal
⑩ Spacer
⑪ Washer
⑫ Cotter pin
⑬ Tire valve
⑭ Front tire
⑮ Front wheel rim
⑯ Sprocket flange
⑰ Sprocket
⑱ Washer
⑲ Rear wheel hub
⑳ Washer
㉑ Rear tire
㉒ Rear wheel rim
㉓ Tire valve
㉔ Washer
㉕ Cotter pin
㉖ Hub plate



Ⓐ Disc bolt
Ⓑ Wheel set nut
Ⓒ Front hub nut
Ⓓ Rear axle nut
Ⓔ Sprocket mounting bolt
Ⓕ Rear hub nut

ITEM	N·m	kgf-m	lb-ft
Ⓐ	23	2.3	16.5
Ⓑ	50	5.0	36.0
Ⓒ	65	6.5	47.0
Ⓓ	180	18.0	130.0
Ⓔ	54	5.4	39.0
Ⓕ	100	10.0	72.5

REMOVAL

FRONT AND REAR WHEELS

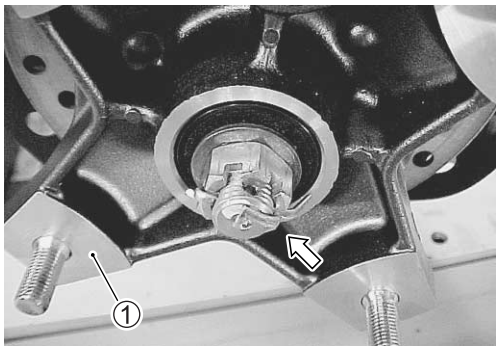
- Place the vehicle on level ground.
- Support the vehicle with a jack or wooden block.
- Remove the wheel.
- Remove the front hub plate ①.

FRONT WHEEL HUB

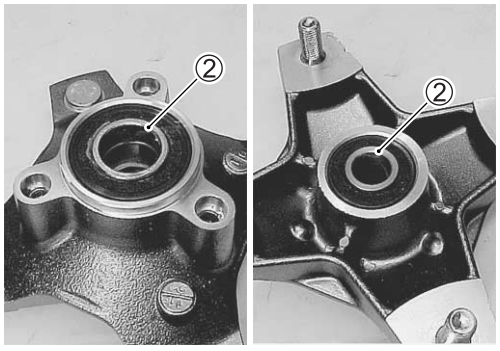
- Remove the front wheel. (☞See above)
- Remove the cotter pin, then loosen the wheel hub nut.
- Remove the wheel hub nut and washer.
- Remove the front brake caliper. (☞6-19)
- Remove the front wheel hub ①.

CAUTION

Do not operate the brake lever while removing the caliper.

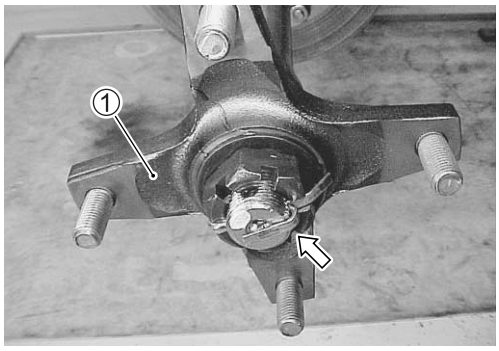


- Remove the disc. (☞6-24)
- Remove the spacers ②.



REAR WHEEL HUB

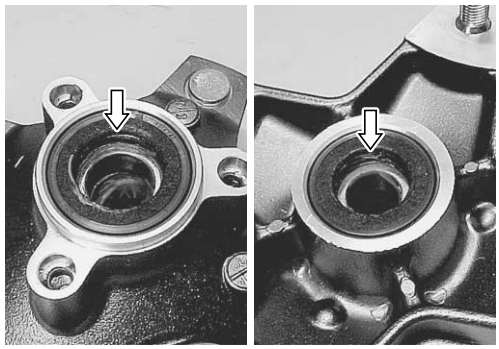
- Remove the rear wheel. (☞6-10)
- Remove the cotter pin and loosen the wheel hub nut by applying the rear brake.
- Remove the wheel hub nut and washer.
- Remove the wheel hub ①.



INSPECTION AND DISASSEMBLY

DUST SEAL

Inspect the dust seal lips for wear or damege.
If any damages are found, replace the dust seal with a new one.

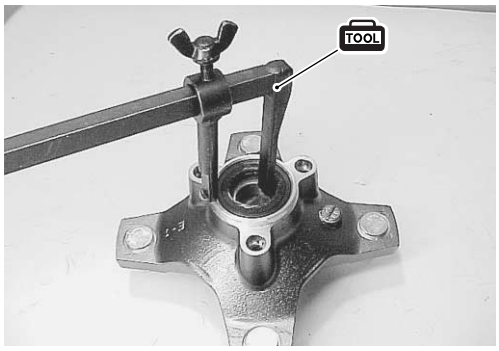


- Remove the dust seals with the special tool.

TOOL 09913-50121: Oil seal remover

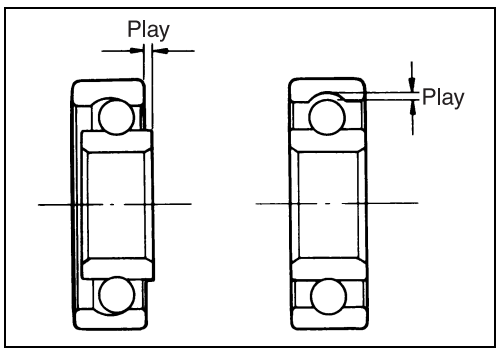
CAUTION

Replace the removed dust seal with a new one.



HUB BEARINGS

Inspect the inner race play of the hub bearing by hand while it is in the wheel hub.
Rotate the inner race by hand to inspect for abnormal noise and smooth rotation. If there is anything unusual, replace the bearing with a new one.

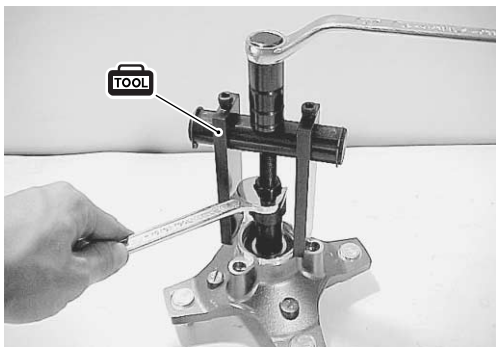


- Remove the hub bearing with the special tool.

TOOL 09921-20240: Bearing remover set

CAUTION

Do not reuse the removed bearings.

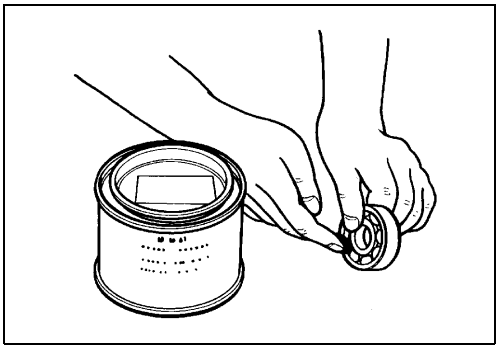


REASSEMBLY AND REMOUNTING

FRONT WHEEL HUB

- Apply SUZUKI SUPER GREASE “A” to the hub bearing.

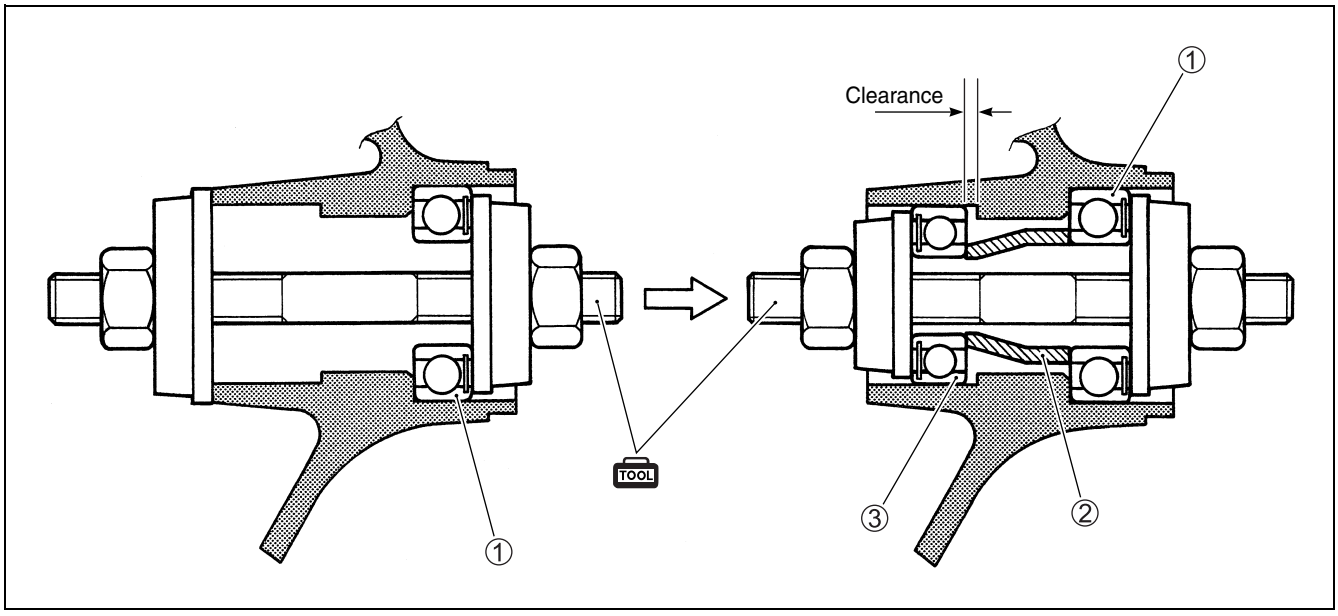
99000-25030: SUZUKI SUPER GREASE “A” (USA)
99000-25010: SUZUKI SUPER GREASE “A” (Others)



- Install the hub bearings and spacer into the front wheel hub with the special tool.

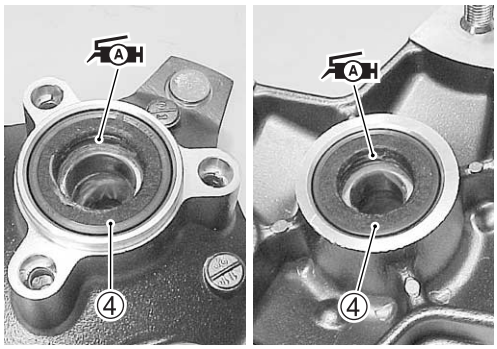
09913-70210: Bearing installer set
09924-84510: Bearing installer set

NOTE:
Install the inner bearing ① first, and then install the spacer ② and the outer bearing ③. Make sure that the sealed side of the bearing faces the bearing installer.

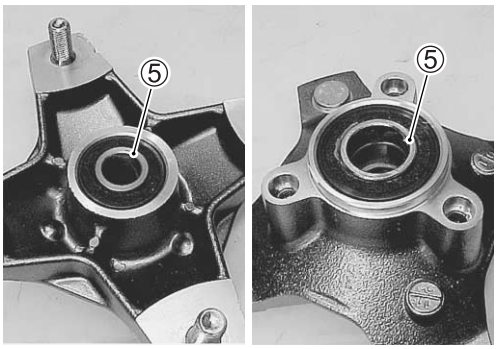


- Install the dust seals ④ into the front wheel hub with fabric portion facing to outside.
- Apply SUZUKI SUPER GREASE "A" to the dust seal's lip.

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



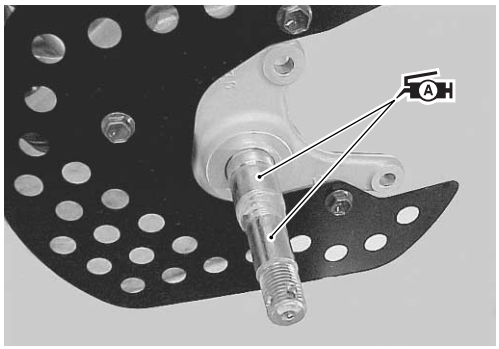
- Install the spacers ⑤ to the wheel hub.



- Install the front disc to the front wheel hub. (☞6-24)
- Apply SUZUKI SUPER GREASE "A" to the front axle.

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

- Install the wheel hub.
- Install the front brake caliper. (☞6-23)



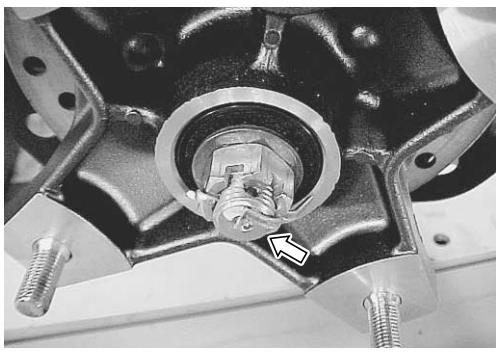
- Tighten the front wheel hub nut to the specified torque.

Front wheel hub nut: 65 N·m (6.5 kgf-m, 47.0 lb-ft)

- Install the cotter pin into the front axle.
- Install the front wheel. (☞6-14)

CAUTION

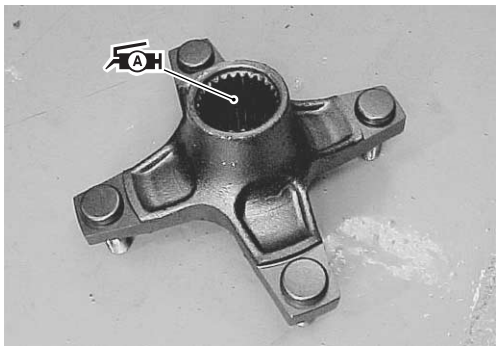
Replace the removed cotter pin with a new one.



REAR WHEEL HUB

- Apply small amount of SUZUKI SUPER GREASE "A" to the wheel hub's spline.

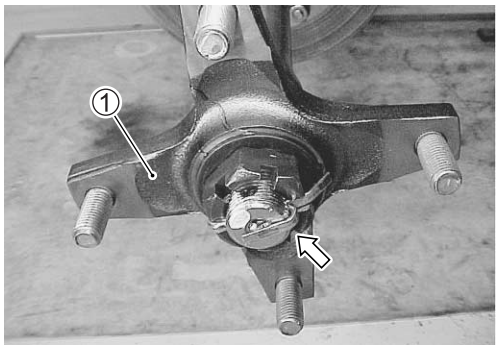
99000-25030: SUZUKI SUPER GREASE "A" (USA)
99000-25010: SUZUKI SUPER GREASE "A" (Others)



- Install the rear wheel hub ①, washer and nut.
- Tighten the rear wheel hub nut to the specified torque.

Rear wheel hub nut: 100 N·m (10.0 kgf-m, 72.5 lb-ft)

- Install the cotter pin into the rear axle.
- Install the rear wheel. (☞below)



CAUTION

Replace the removed cotter pin with a new one.

FRONT WHEEL

- Install the hub plate ①.
- Install the front wheel.
- Tighten the wheel set nuts to the specified torque.

Wheel set nut: 50 N·m (5.0 kgf-m, 36.0 lb-ft)

NOTE:
When installing the front wheel, make sure that the arrow Ⓐ on the tire points in the direction of rotation.

REAR WHEEL

- Install the rear wheel.
- Tighten the wheel set nuts to the specified torque.

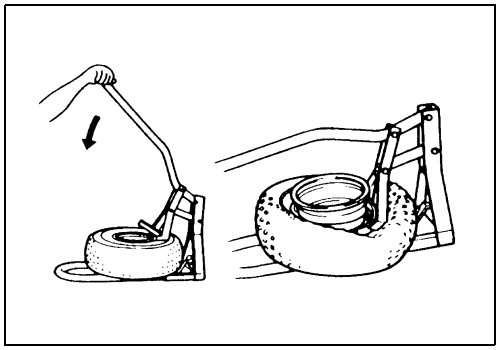
Wheel set nut: 50 N·m (5.0 kgf-m, 36.0 lb-ft)

NOTE:
When installing the rear wheel, make sure that the instruction "SIDE FACING OUTWARDS" Ⓑ on the rear tire faces outwards.

TIRES

TIRE REPLACEMENT

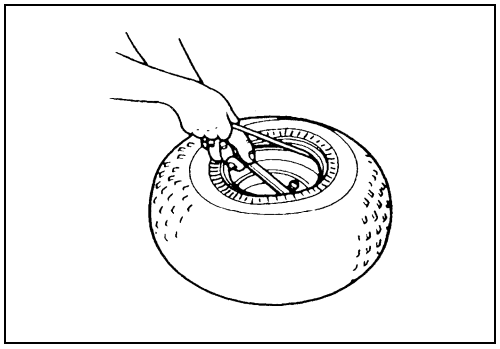
- Remove the front and rear wheels. (☞6-10)
- After removing the air valve cap, release the tire pressure by depressing the valve.
- Dismount the bead from the rim completely as shown.



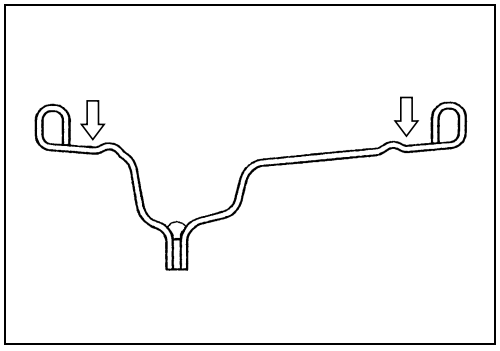
- Separate the tire from the rim by using a set of tire levers and rim protectors.

CAUTION

When using the tire lever, do not scratch or hit the sealing portion (hump) of the wheel or it may cause air-leakage.



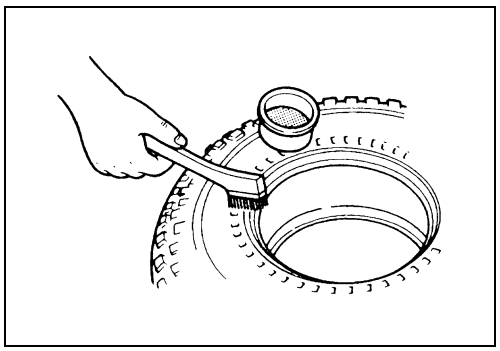
- Inspect the sealing portion of the rim for contamination and distortion. If any damages are found, replace the rim with a new one.
- Clear up the sealing portion of the rim.



- Apply tire lubricant to the tire bead and the flange of the rim.

CAUTION

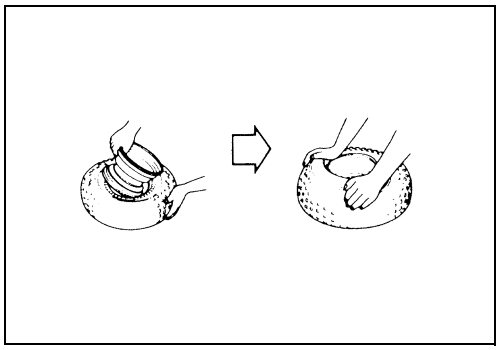
Never apply grease, oil or gasoline to the tire bead because they will deteriorate the tire.



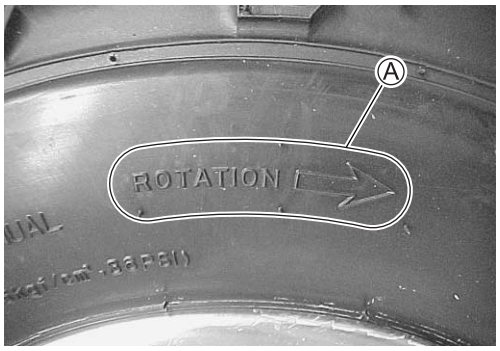
CAUTION

The standard tire fitted on this vehicle is AT22×7R10☆☆ for the front and AT20×10R9☆☆ for the rear.
The use of tires other than the standard may cause instability. It is highly recommended to use the specified tire.

- Mount the tire on the rim.



NOTE:
** For inspecting the tire, refer to page 2-20.*
** Inspect the valve core, before installation.*
** When installing the front tire, make sure that the arrow Ⓐ on the side wall of the front tire points in the direction of rotation.*
** When installing the rear tire, make sure that the instruction "SIDE FACING INWARDS" Ⓑ on the rear tire faces inwards.*

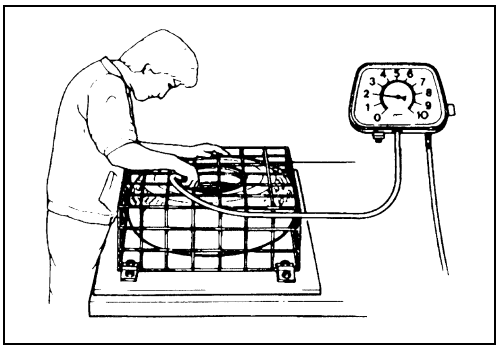


• Inflate the tire to seat the tire bead.

DATA Maximum tire bead seat pressure
Front : 250 kPa (2.5 kgf/cm², 36 psi)
Rear : 250 kPa (2.5 kgf/cm², 36 psi)

CAUTION

Place the tire under a protective tire cage or similar protective covering device before inflating the tire. To minimize the possibility of tire damage when seating the tire bead, never exceed the MAXIMUM TIRE BEAD SEAT PRESSURE rating shown on the tire.

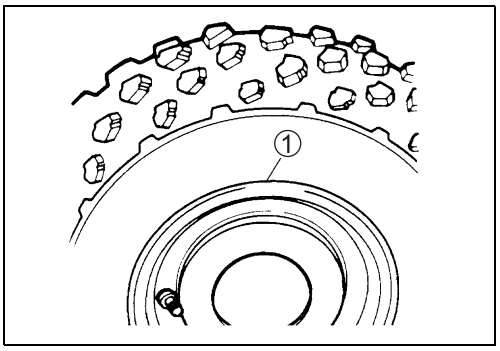


NOTE:
Check the "rim line" ① cast on the tire side walls. It must be equidistant from the wheel rim all the way around. If the distance between the rim line and the wheel rim varies this indicates that the bead is not properly seated. If this is so, deflate the tire completely, and unseat the tire bead on both sides. Then, coat the bead with clean water, and re-seat the tire.

• Adjust the tire pressure to the specification. (☞2-20)

CAUTION

Before inflating the tire, check the MAXIMUM OPERATING PRESSURE rating of the tire. This is indicated by a "☆" following the tire size shown on the sidewall. The number of "☆" on the tire indicates the maximum operating pressure.

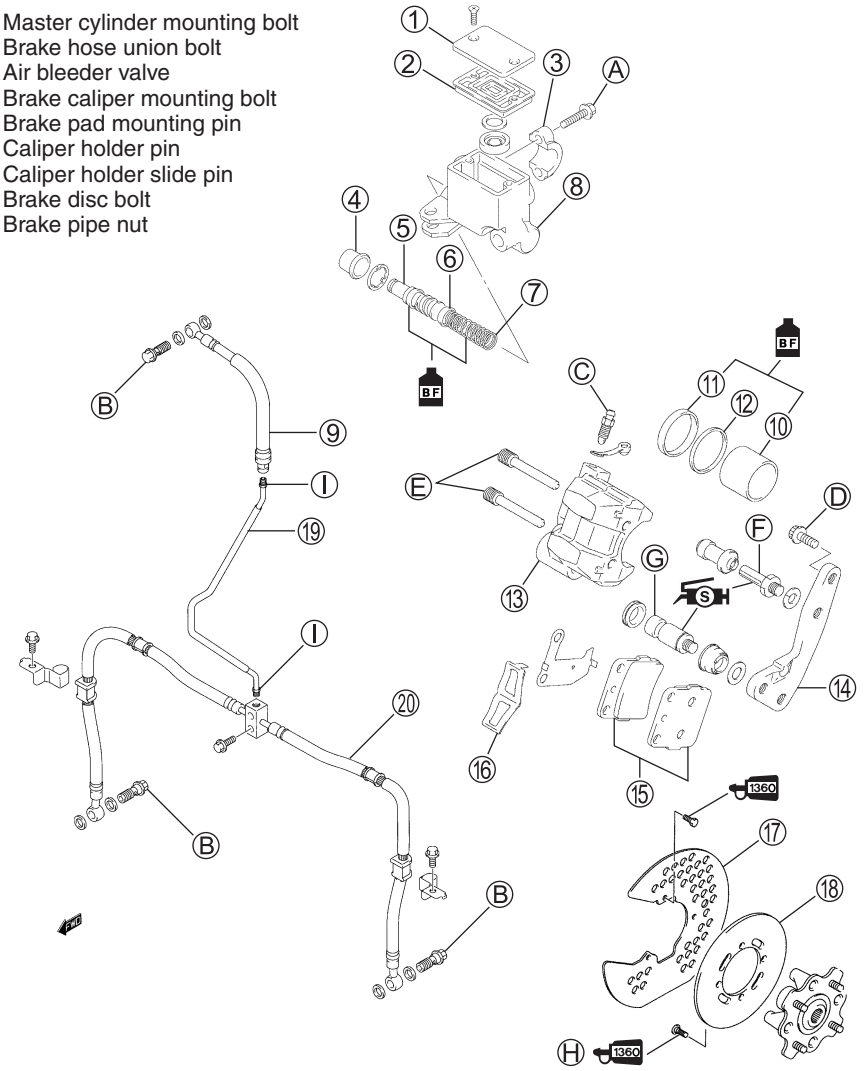


DATA Maximum operating pressure
☆☆: 35 kPa (0.35 kgf/cm², 5.1 psi)

FRONT BRAKE
CONSTRUCTION

① Master cylinder reservoir cap
② Diaphragm
③ Master cylinder clamp
④ Boot
⑤ Piston/cup set
⑥ Cup
⑦ Spring
⑧ Master cylinder
⑨ Brake hose No.1
⑩ Piston
⑪ Piston seal
⑫ Dust seal
⑬ Brake caliper
⑭ Brake caliper holder
⑮ Brake pad
⑯ Pad spring
⑰ Disc cover
⑱ Front brake disc
⑲ Brake pipe
⑳ Brake hose No.2

Ⓐ Master cylinder mounting bolt
Ⓑ Brake hose union bolt
Ⓒ Air bleeder valve
Ⓓ Brake caliper mounting bolt
Ⓔ Brake pad mounting pin
Ⓕ Caliper holder pin
Ⓖ Caliper holder slide pin
Ⓗ Brake disc bolt
Ⓘ Brake pipe nut



ITEM	N·m	kgf-m	lb-ft
Ⓐ	10	1.0	7.0
Ⓑ	23	2.3	16.5
Ⓒ	7.5	0.75	5.5
Ⓓ	26	2.6	19.0
Ⓔ	18	1.8	13.0
Ⓕ	18	1.8	13.0
Ⓖ	23	2.3	16.5
Ⓗ	23	2.3	16.5
Ⓘ	16	1.6	11.5

⚠ WARNING

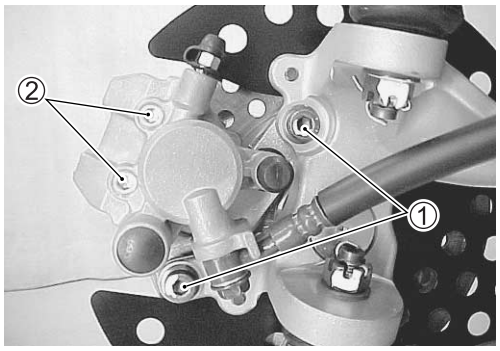
*** This brake system is filled with an ethylene glycol-based DOT 4 brake fluid. Do not use or mix different types of fluid, such as silicone-based or petroleum-based brake fluids.**
*** Do not use any brake fluid taken from old, used or unsealed containers. Never reuse brake fluid left over from the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

CAUTION

Handle brake fluid with care: the fluid reacts chemically with paint, plastics, rubber materials etc. and will damage them severly.

BRAKE PAD REPLACEMENT

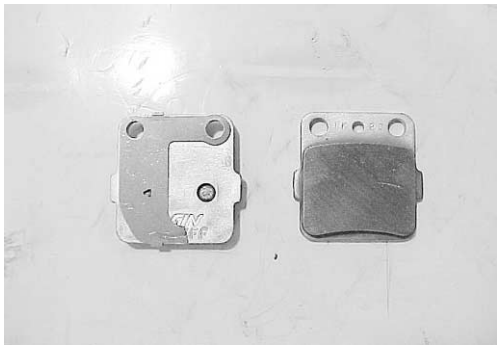
- Remove the front wheel. (☞6-10)
- Remove the brake caliper mounting bolts ① and brake pad mounting pins ②.



- Remove the brake pads.

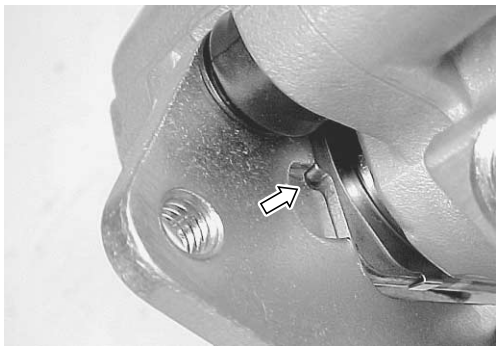
CAUTION

*** Do not operate the brake lever during or after brake pad removal.**
*** Replace the brake pads as a set, otherwise braking performance will be adversely affected.**



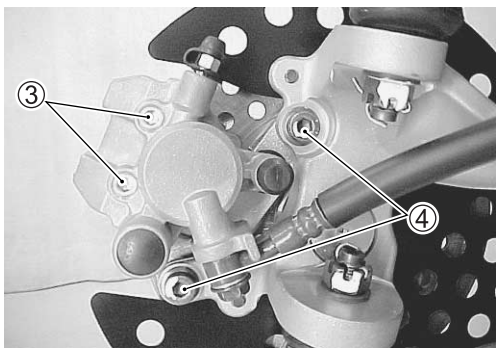
- Install the new brake pads.

NOTE:
** Before installing the new pads, inspect the pad mounting pins for wear. If excessive wear is found, replace them with new ones.*
** The shim must be installed to the calipe piston side pad.*
** Make sure that the detent of pad is fitted to the detent on the brake caliper holder.*



- Tighten the brake pad mounting pins ③ and brake caliper mounting bolts ④ to the specified torque.

Brake pad mounting pin: 18 N·m (1.8 kgf-m, 13.0 lb-ft)
Brake caliper mounting bolt:
26 N·m (2.6 kgf-m, 19.0 lb-ft)

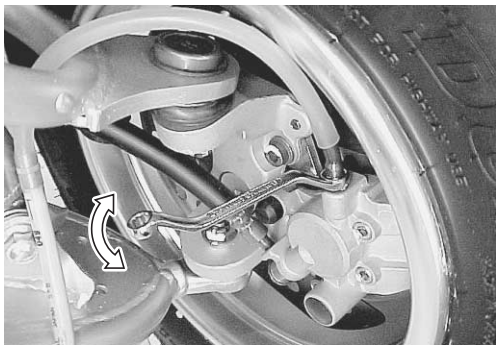


NOTE:
After replacing the brake pads, pump the brake lever several times to check for proper brake operation and then check the brake fluid level.

BRAKE FLUID REPLACEMENT

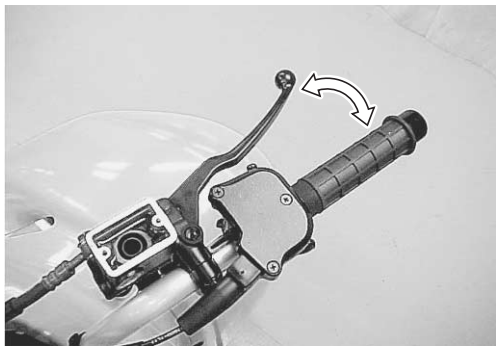
- Place the vehicle on a level surface and keep the handlebar straight.
- Remove the master cylinder reservoir cap and diaphragm.
- Suck up the old brake fluid as much as possible.
- Fill the reservoir with new brake fluid.

Specification and classification: DOT 4



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

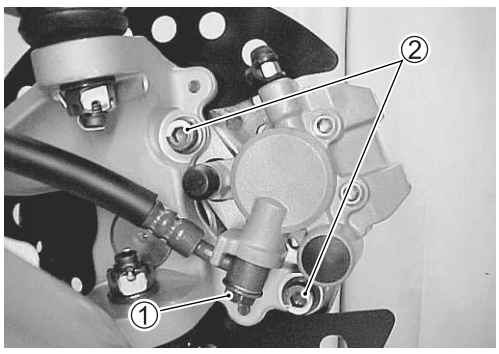
Brake air bleeder valve: 7.5 N·m (0.75 kgf-m, 5.5 lb-ft)



CAUTION

*** Never reuse the brake fluid left over from previous servicing and which has been stored for long periods of time.**
*** Bleed air from the brake system. (☞2-19)**

BRAKE CALIPER REMOVAL AND DISASSEMBLY

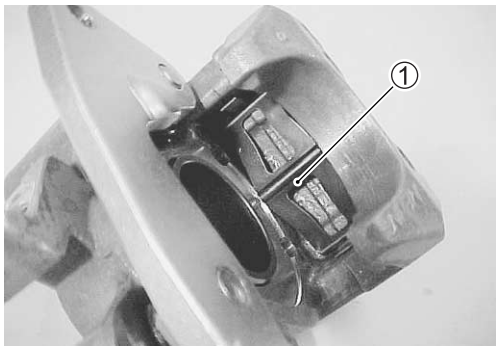


- Remove the front wheel. (☞6-10)
- Disconnect the brake hose from the brake caliper by removing the brake hose union bolt ① and allow the brake fluid to drain into a suitable receptacle.
- Remove the brake caliper by removing the brake caliper mounting bolts ②.
- Remove the brake pads. (☞6-18)

⚠ WARNING

Brake fluid, if it leaks, will interfere with safe running and discolor painted surfaces. Check the brake hose, brake pipe and hose joints for cracks and leakage of brake fluid.

- Remove the spring ①.



- Place a rag over the brake caliper piston to prevent the piston from popping out and then force out the piston using compressed air.

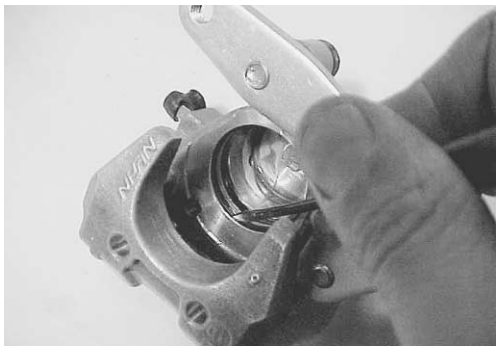
CAUTION

Do not use high pressure air to prevent brake caliper piston damage.

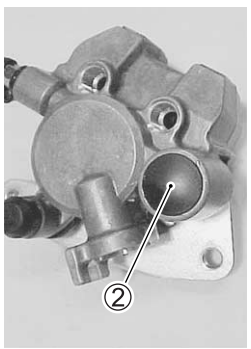
- Remove the dust seal and piston seal.

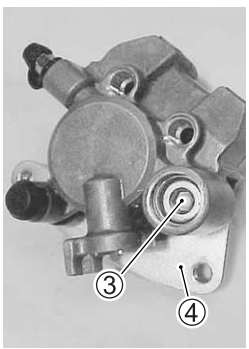
CAUTION

Do not reuse the dust seal and piston seal to prevent fluid leakage.

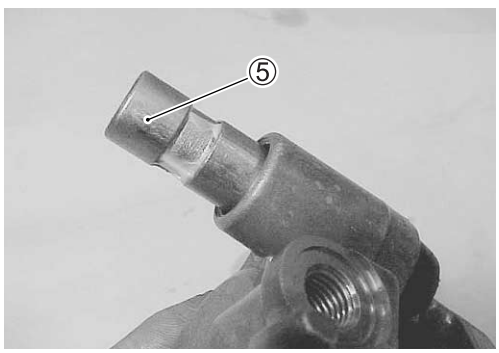


- Remove the cap ② and loosen the brake caliper holder slide pin ③.
- Remove the brake caliper holder ④.





- Remove the brake caliper holder slide pin ⑤.



BRAKE CALIPER INSPECTION

BRAKE CALIPER

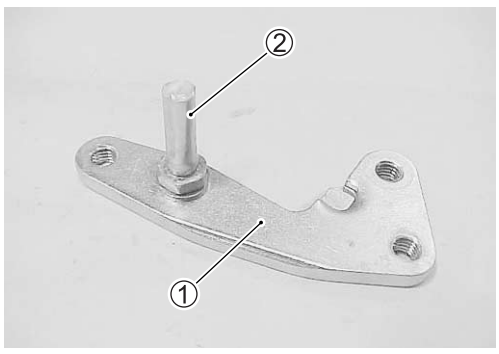
Inspect the brake caliper cylinder wall for nicks, scratches or other damage. If any damages are found, replace the brake caliper with a new one.

BRAKE CALIPER PISTON

Inspect the brake caliper piston for any scratches or other damage. If any damages are found, replace the piston with a new one.

RUBBER PARTS

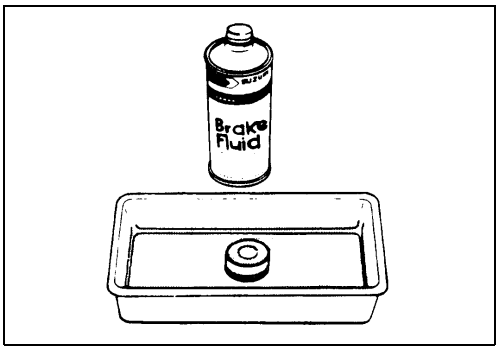
Inspect the rubber parts for damage. If any damages are found, replace them with new ones.



CALIPER HOLDER

Inspect the caliper holder ① and pin ② for damage. If any damages are found, replace them with new ones.

BRAKE CALIPER REASSEMBLY AND REMOUNTING



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

- Wash the caliper bore and piston with the specified brake fluid. Thoroughly wash the dust seal grooves and piston seal grooves.

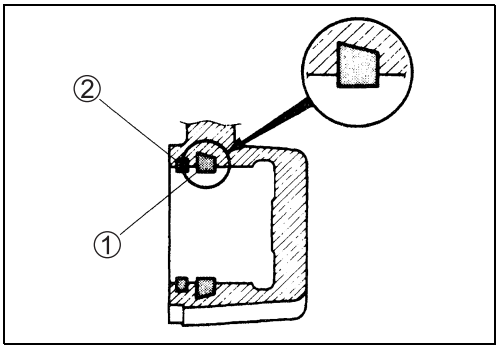
Specification and classification: DOT 4

CAUTION

*** Wash the brake caliper components with new brake fluid before reassembly.**
*** Do not wipe the brake fluid off with a rag after washing the components.**
*** When washing the components, use the specified brake fluid. Never use different types of fluid or cleaning solvents such as gasoline, kerosine, etc.**
*** Replace the removed piston seals and dust seals with new ones.**
*** Apply brake fluid to all of the seals, brake caliper bores and pistons before reassembly.**

PISTON SEAL

- Install the piston seal ① and dust seal ② as shown.



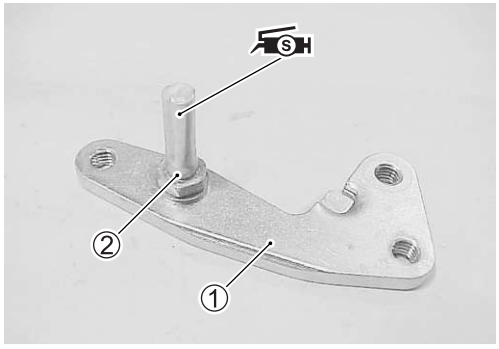
BRAKE CALIPER HOLDER

- Tighten the pin ② to the caliper holder ① to the specified torque.

Caliper holder pin: 18 N·m (1.8 kgf-m, 13.0 lb-ft)

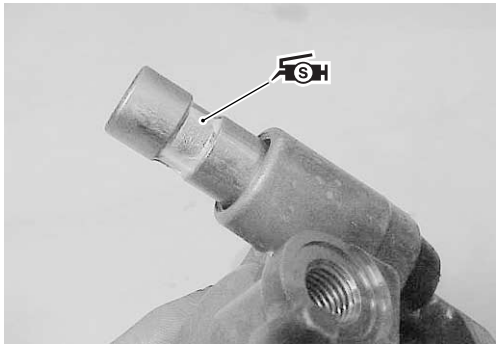
- Apply SUZUKI SILICONE GREASE to the brake caliper holder pin ②.

99000-25100: SUZUKI SILICONE GREASE



- Apply SUZUKI SILICONE GREASE to the brake caliper holder slide pin.

99000-25100: SUZUKI SILICONE GREASE



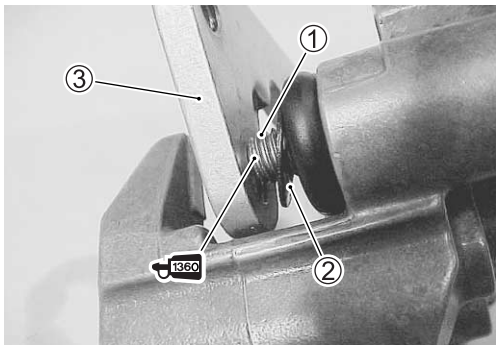
- Install the pin ①, washer ② and caliper holder ③ to the caliper.
- Apply THREAD LOCK SUPER “1360” to the pin ①.

99000-32130: THREAD LOCK SUPER “1360”

- Tighten the pin ① to the specified torque.

Caliper holder slide pin: 23 N·m (2.3 kgf-m, 16.5 lb-ft)

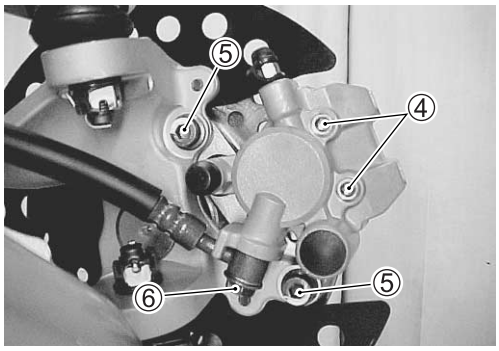
- Install the pads and spring to the caliper.



- Tighten the brake pad mounting pins ④, brake caliper mounting bolts ⑤ and brake hose union bolt ⑥ to the specified torque.

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

NOTE:
Before remounting the brake caliper, push the brake caliper pistons all the way into the caliper.



CAUTION

Bleed air from the system after reassembling the brake caliper. (☞2-19)

BRAKE DISC REMOVAL AND DISASSEMBLY

- Remove the front wheel. (☞6-10)
- Remove the front wheel hub. (☞6-10)
- Remove the brake disc.

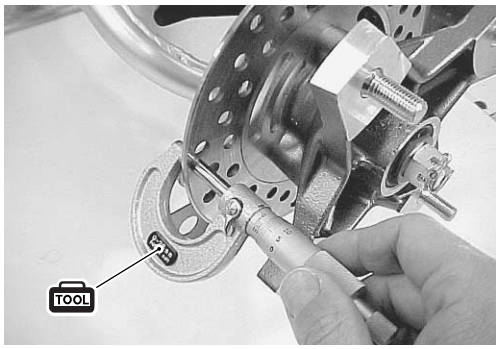
BRAKE DISC INSPECTION

- Remove the front wheel. (☞6-10)
- Remove the caliper. (☞6-19)

Inspect the brake disc for cracks or damage and measure the thickness using the micrometer. If any damages are found or if the thickness is less than the service limit, replace the brake disc with a new one.

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

DATA Brake disc thickness
Service Limit: 2.5 mm (0.10 in)

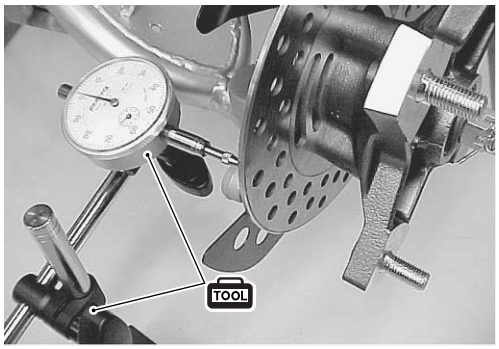


Measure the runout using the dial gauge. If the runout exceeds the service limit, replace the brake disc with a new one.

TOOL 09900-20607: Dial gauge (1/100 mm)
09900-20701: Magnetic stand

DATA Brake disc runout
Service Limit: 0.3 mm (0.012 in)

- If either measurement exceeds the service limit, replace the brake disc with a new one.



BRAKE DISC REASSEMBLY AND REMOUNTING

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

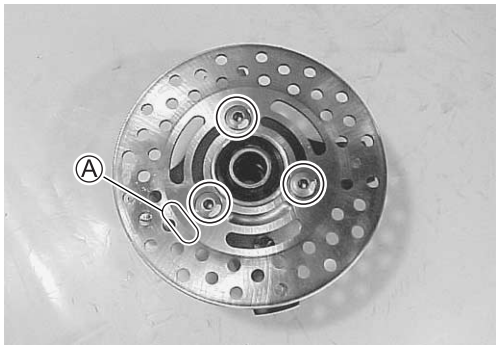
- Install the disc to the wheel hub with the punch mark Ⓐ on the disc showed up.

NOTE:
Make sure that the disc is clean and free of any greasy matter.

- Apply THREAD LOCK SUPER “1360” to the brake disc bolts and tighten them to the specified torque.

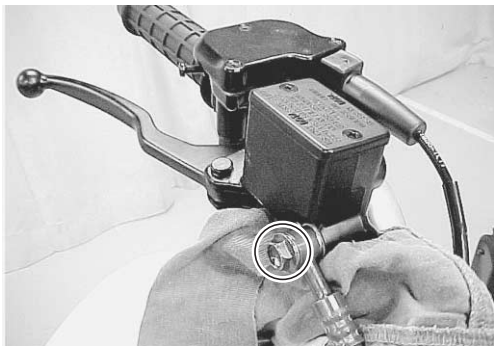
1360 99000-32130: THREAD LOCK SUPER “1360”

Brake disc bolt: 23 N·m (2.3 kgf-m, 16.5 lb-ft)



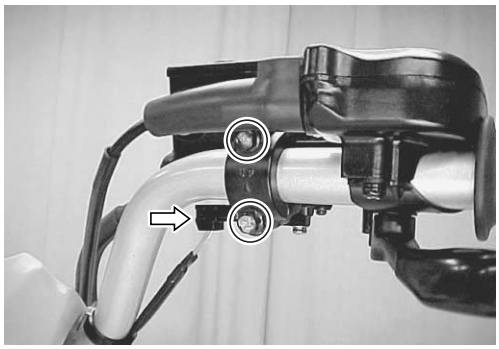
MASTER CYLINDER REMOVAL AND DISASSEMBLY

- Place a rag underneath the brake hose union bolt on the master cylinder to catch any spilt brake fluid. Remove the brake hose union bolt and disconnect the brake hose.



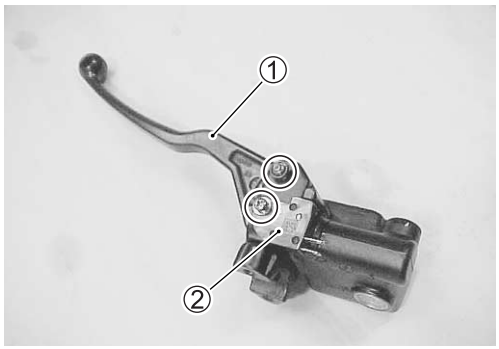
CAUTION

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

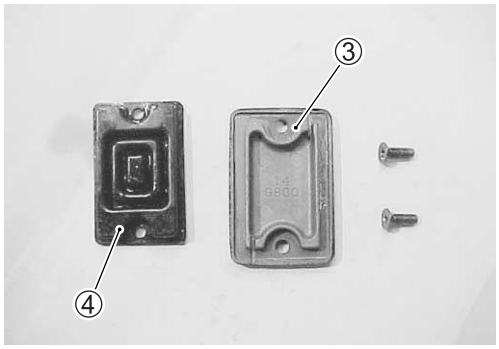


- Remove the master cylinder assembly.
- Disconnect the brake switch coupler.

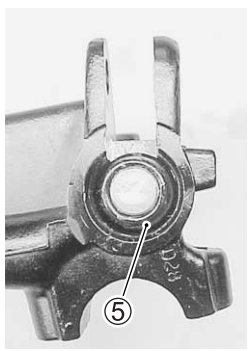
- Remove the brake lever ① and brake switch ②.

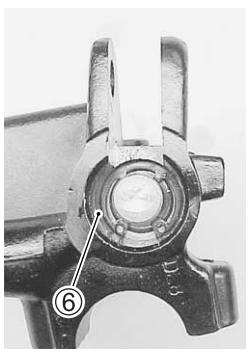


- Remove the reservoir cap ③ and diaphragm ④.
- Drain the brake fluid.



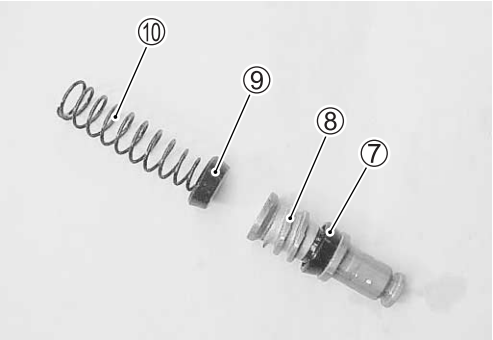
- Pull the dust boot ⑤ out and remove the snap ring ⑥.





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

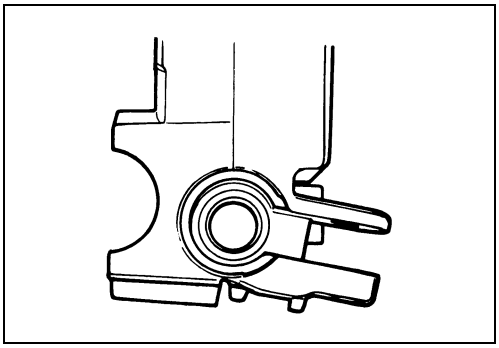
⑦ Secondary cup
⑧ Piston
⑨ Primary cup
⑩ Spring



MASTER CYLINDER INSPECTION

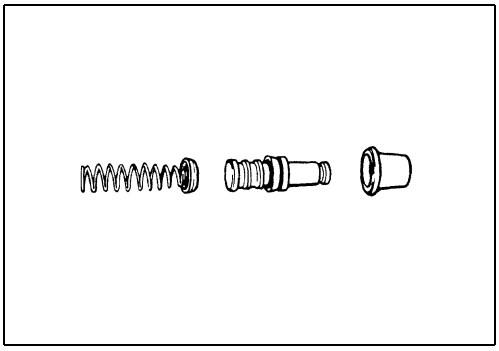
MASTER CYLINDER

Inspect the master cylinder bore for any scratches or damage. If any damages are found, replace the master cylinder with a new one.



PISTON AND RUBBER PARTS

Inspect the piston surface, primary cup, secondary cup and dust boot for any scratches, wear or damage. If any damages are found, replace them with a new one.

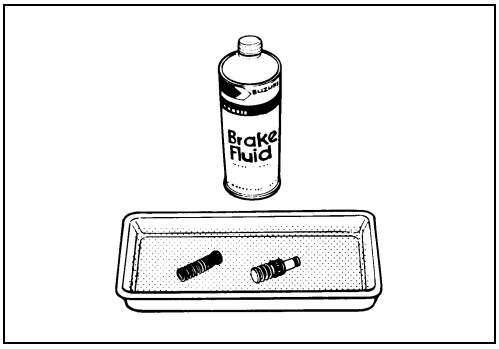


MASTER CYLINDER REASSEMBLY AND REMOUNTING

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

CAUTION

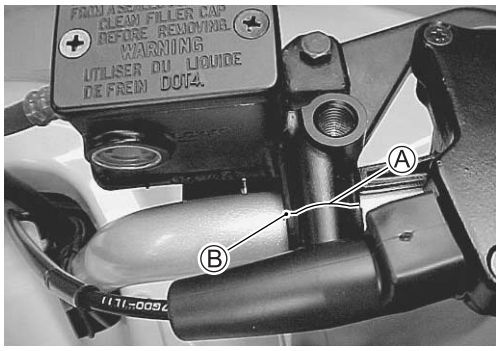
*** Wash the master cylinder components with new brake fluid before reassembly.**
*** Do not wipe the brake fluid off with a rag after washing the components.**
*** When washing the components, use the specified brake fluid. Never use different types of fluid or cleaning solvents such as gasoline, kerosine, etc.**
*** Apply brake fluid to the master cylinder bore and all the component to be inserted to the bore.**



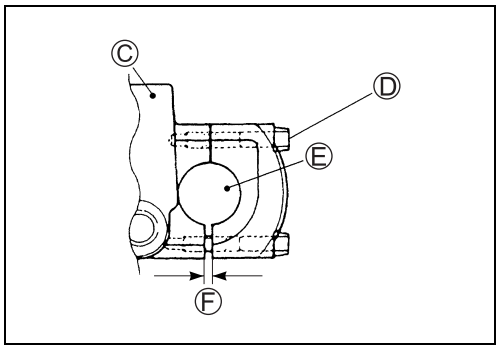
BF **Specification and classification: DOT 4**

• Align the master cylinder holder's mating surface Ⓐ with the punch mark Ⓑ on the handlebars and tighten the upper clamp bolt first.

Master cylinder clamp bolt: 10 N·m (1.0 kgf-m, 7.0 lb-ft)



Ⓒ Master cylinder
Ⓓ Master cylinder upper clamp bolt
Ⓔ Handlebar
Ⓕ Clearance



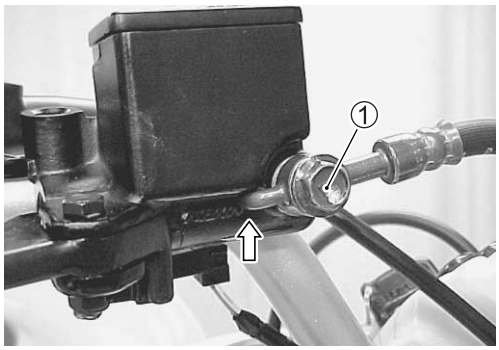
• Tighten the brake hose union bolt ① to the specified torque.

Brake hose union bolt: 23 N·m (2.3 kgf-m, 16.5 lb-ft)

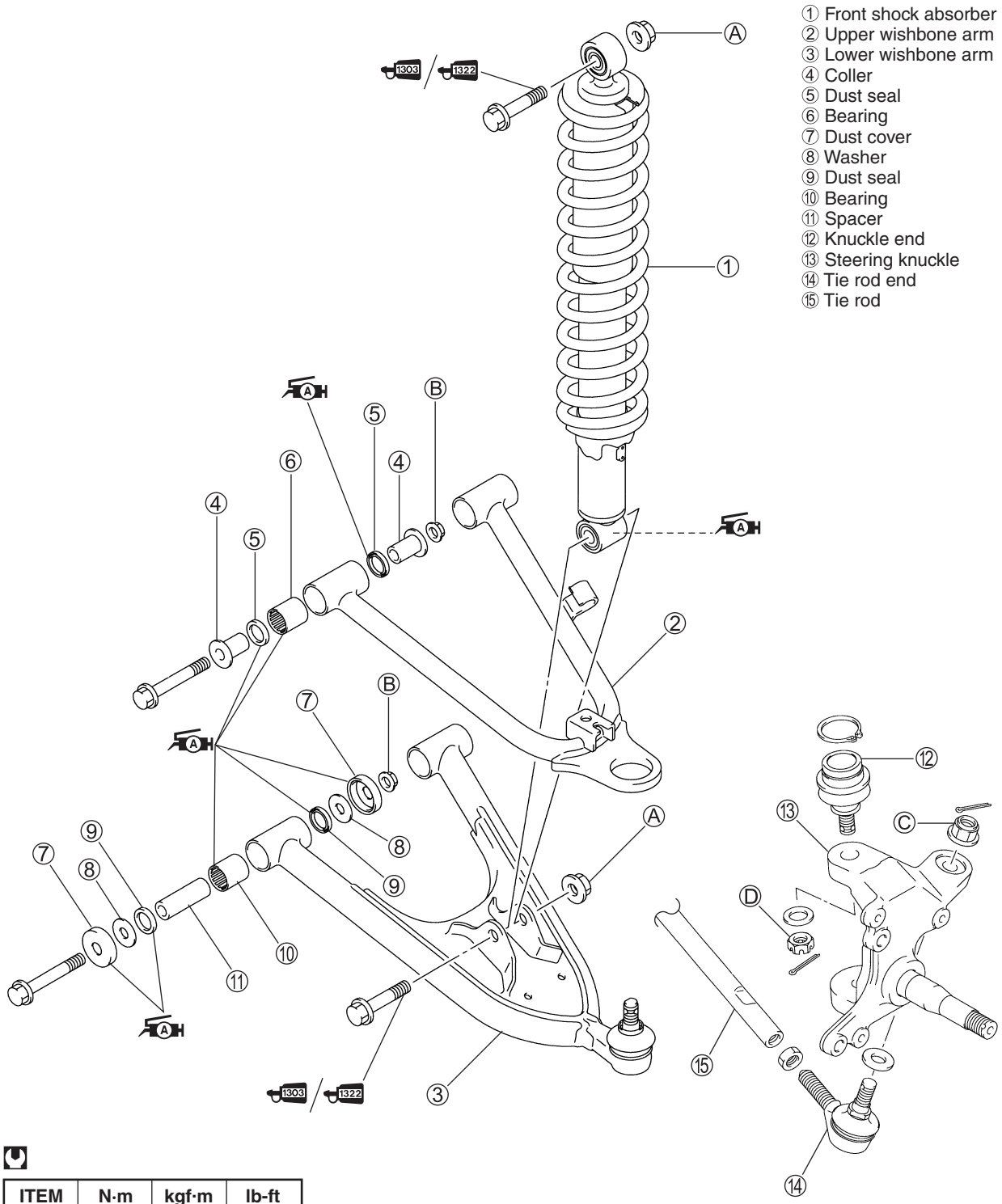
NOTE:
After touching the brake hose union to the stopper, tighten the union bolt.

CAUTION

Bleed air from the brake system after reassembling the master cylinder. (☞2-19)



FRONT SUSPENSION
CONSTRUCTION

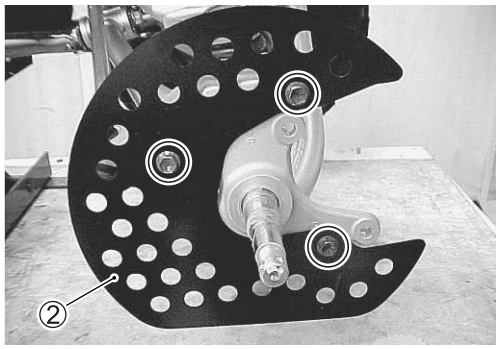


ITEM	N·m	kgf·m	lb-ft
Ⓐ	60	6.0	43.5
Ⓑ	65	6.5	47.0
Ⓒ	60	6.0	43.5
Ⓓ	43	4.3	31.0

REMOVAL

- Remove the front wheel. (☞6-10)
- Remove the front wheel hub. (☞6-10)
- Remove the brake caliper. (☞6-19)
- Remove the brake hose clamp ①.
- Disconnect the brake hose at the hose clamp.

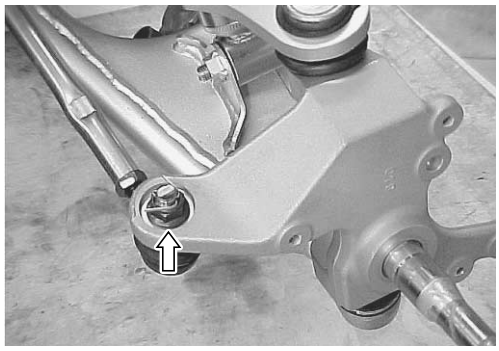
- Remove the front disc cover ②.



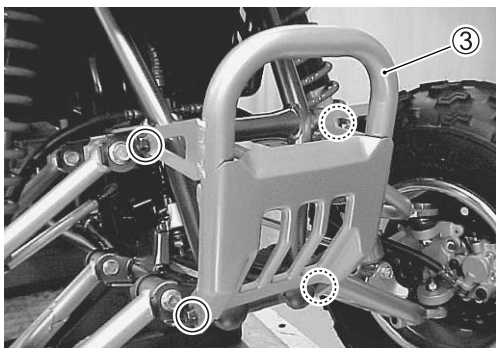
- Remove the cotter pin and tie rod end nut.

CAUTION

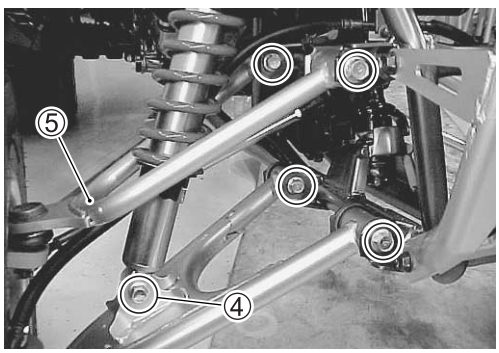
Replace the removed cotter pin with a new one.



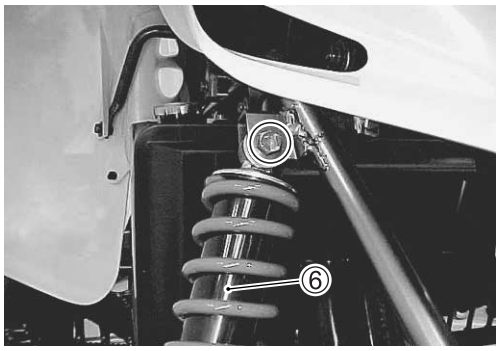
- Remove the front grip ③.



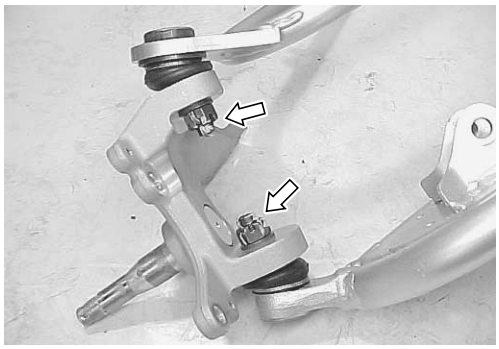
- Remove the shock absorber lower mounting bolt ④.
- Remove the wishbone arm assembly ⑤.



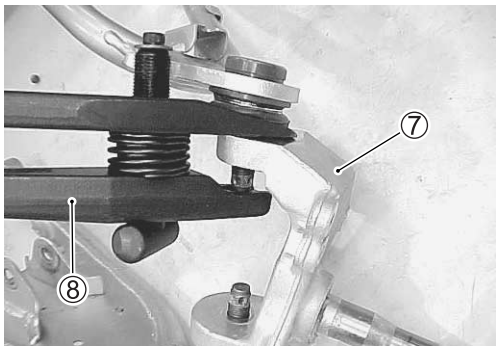
- Remove the shock absorber ⑥.



- Remove the cotter pins and nuts.



- Remove the steering knuckle ⑦ with a commercially available ball bearing joint remover ⑧.



INSPECTION AND DISASSEMBLY

FRONT SHOCK ABSORBER

Inspect the shock absorber for oil leakage or damage. If any damages are found, replace the front shock absorber with a new one.

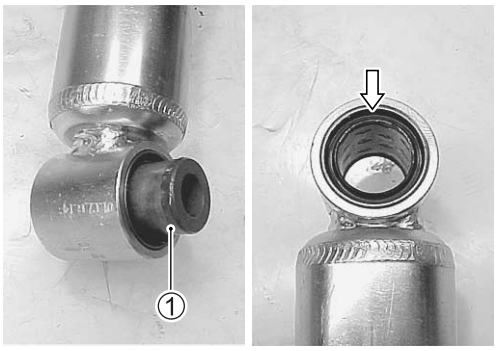
Inspect the rubber bushing for wear or damage.
If any damages are found, replace the shock absorber with a new one.

• Remove the spacer ①.

Inspect the bushing and dust seal for wear or damage. If any damages are found, replace the shock absorber with a new one.

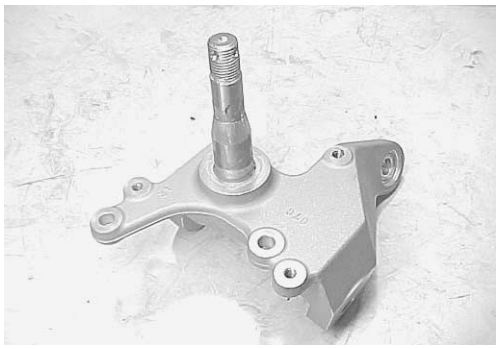
• Apply SUZUKI SUPER GREASE "A" to the bushing and dust seals before remounting.

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



KNUCKLE

Inspect the knuckle for damage. If any damages are found, replace the knuckle with a new one.

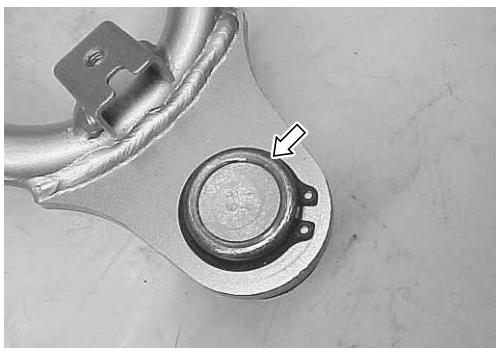


KNUCKLE END

Inspect the knuckle end boot for wear or damage. If any damages are found, replace the knuckle end with a new one.

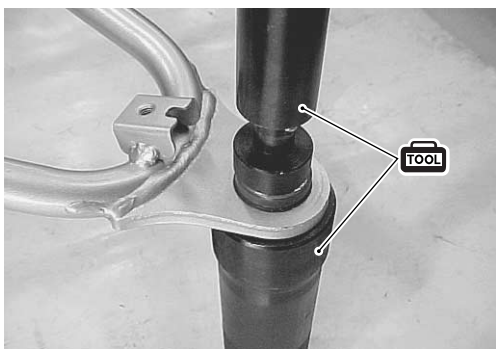
Inspect the knucle end for smooth movement. If there are any abnormalities, replace the knuckle end with a new one.

• Remove the snap ring.



• Remove the knuckle end by using the special tools.

09913-70210: Bearing installer set



WISHBONE ARM

Inspect the wishbone arm for wear or damage. If any damages are found, replace the wishbone arm with a new one.

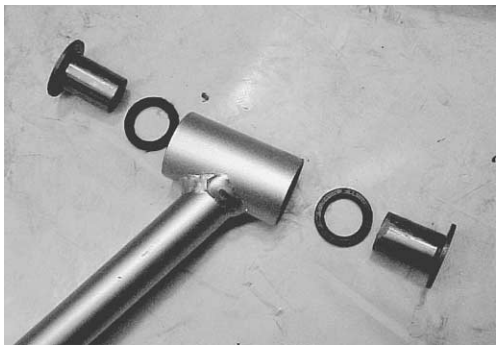
WISHBONE ARM PIVOT BEARING

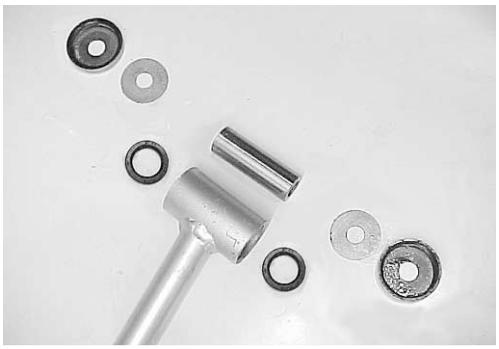
- Remove the spacer and dust seal.

Inspect the dust seal lips and spacers for wear and damage. If any damages are found, replace them with new ones.

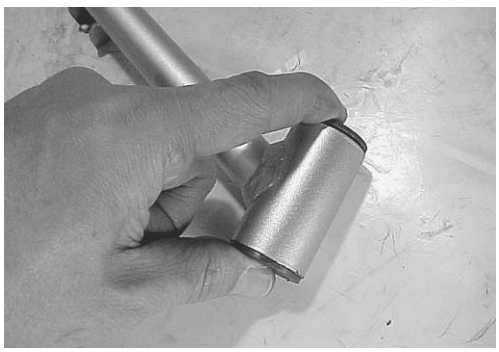
NOTE:

Full type roller bearing is equiped at wishbone arm pivot. Take notice that the rollers may fall out of bearing cage when removing the spacer.



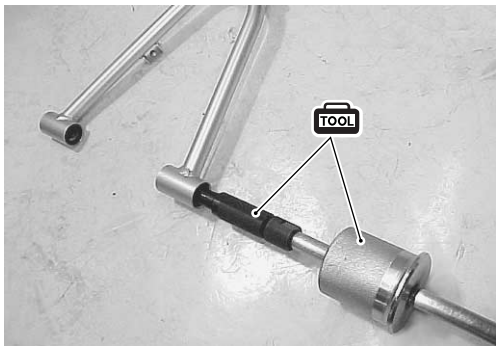


Inspect the bearings for play. If excessive play is found, replace them with a new one.



- Remove the needle bearing with the special tools.

TOOL 09923-73210: Bearing puller
09930-30104: Sliding hammer

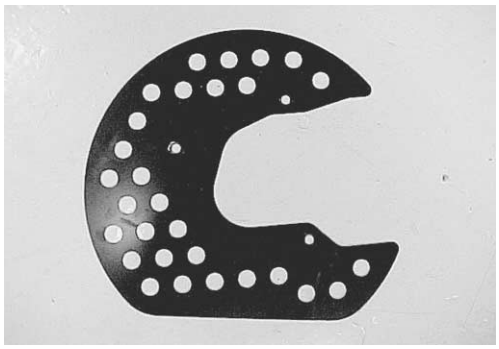


CAUTION

Do not reuse the removed bearing.

BRAKE DISC COVER

Inspect the brake disc cover for damage. If any damages are found, replace the brake disc cover with a new one.

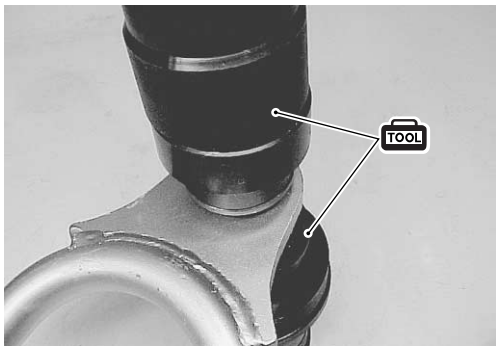


REASSEMBLY AND REMOUNTING

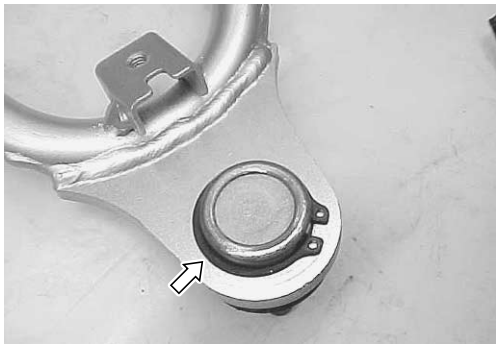
Reassemble and remount the front suspension in the reverse order of removal and disassembly. Pay attention to the following points:

- Install the knuckle end to the wishbone arm by using the special tools.

TOOL 09913-70210: Bearing installer

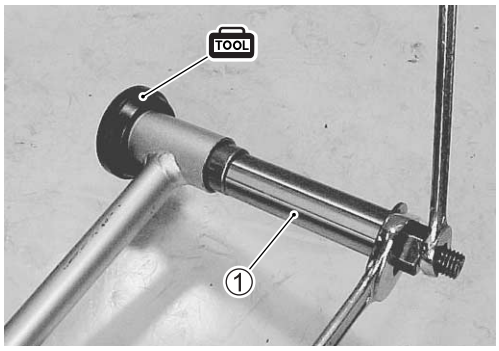


- Install the snap ring.

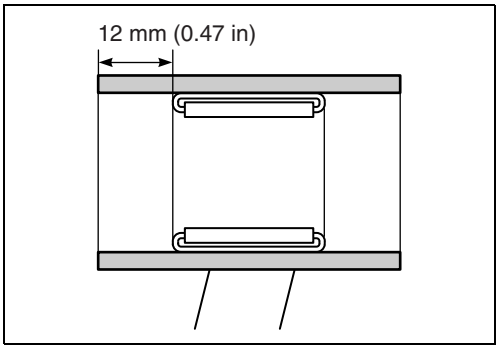


- Install the bearings to the wishbone arm to the specified depth by using the special tool and a suitable spacer ①.

TOOL 09924-84510: Bearing installer



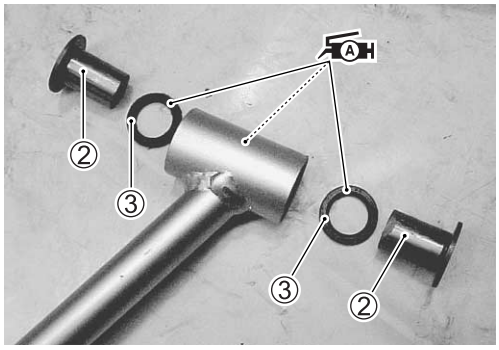
NOTE:
** Position of the bearing is shown in the illustration.*
** When installing the sealed bearing that is used at the upper wishbone pivot, make sure that the stamped side of bearing faces to the spacer ①.*



- Apply SUZUKI SUPER GREASE "A" to the dust seals and bearing.

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

- Install the bearing spacers ② and dust seals ③ into the upper wishbone arm.

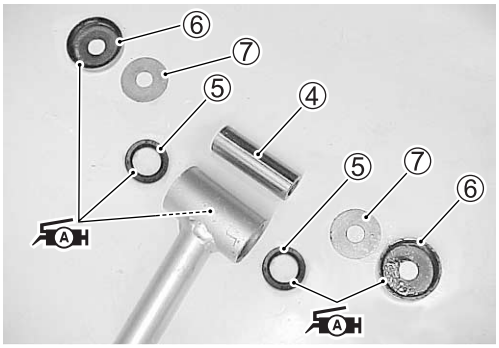


- Apply SUZUKI SUPER GREASE "A" to the dust seals, dust covers and bearing.

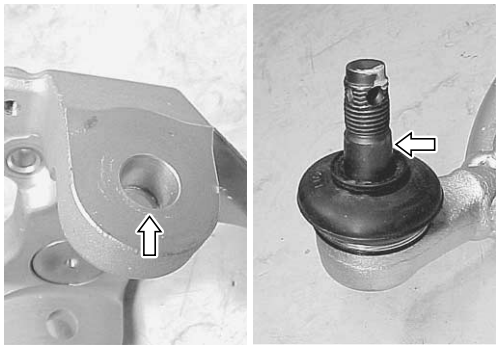
99000-25030: SUZUKI SUPER GREASE "A" (USA)
99000-25010: SUZUKI SUPER GREASE "A" (Others)

- Install the spacer ④, dust seals ⑤, dust covers ⑥ and washers ⑦ into the lower wishbone arm.

NOTE:
Stamped mark on the dust seal ⑤ must face outside.



- Degrease the tapered portion of knuckle and also knuckle end with nonflammable cleaning solvent.



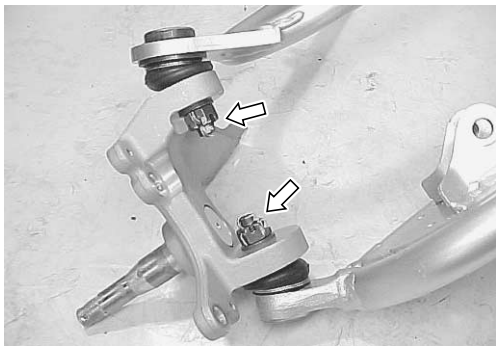
- Install the wishbone arms to the steering knuckle and tighten the knuckle end nuts to the specified torque.

Knuckle end nut: 43 N·m (4.3 kgf-m, 31.0 lb-ft)

- Install the cotter pins.

CAUTION

Replace the removed cotter pins with new ones.



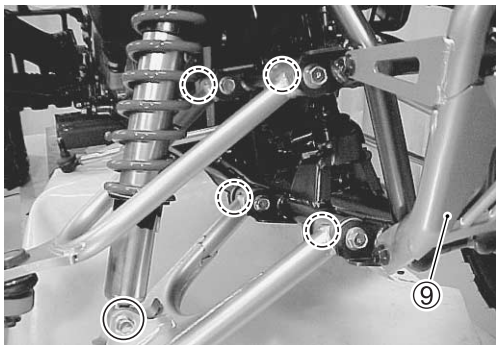
- Tighten the wishbone arm pivot nuts to the specified torque.

Wishbone arm pivot nut: 65 N·m (6.5 kgf-m, 47.0 lb-ft)

- Install the front grip ⑨ and the front shock absorber.
- Apply THREAD LOCK SUPER “1303” or “1322” to the front shock absorber mounting bolts.

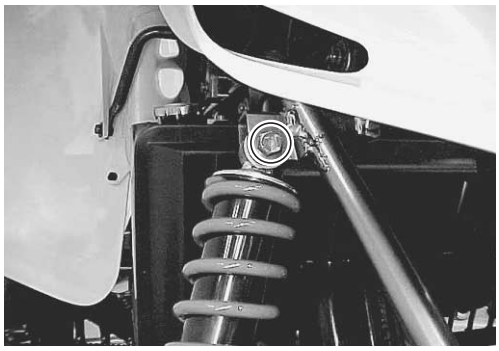
1303 99000-32030: THREAD LOCK SUPER “1303” (USA)

1322 99000-32110: THREAD LOCK SUPER “1322” (Others)



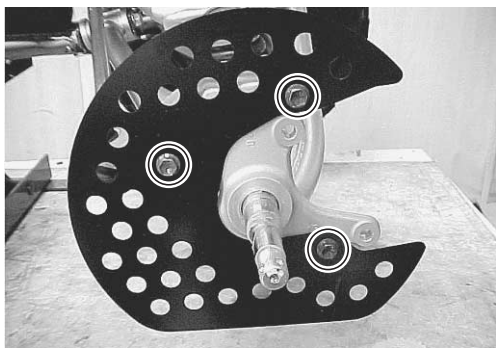
- Tighten the shock absorber mounting nut to the specified torque.

Shock absorber mounting nut (Upper and Lower): 60 N·m (6.0 kgf-m, 43.5 lb-ft)



- Apply THREAD LOCK SUPER “1360” to the disc cover mounting bolts, and then tighten the bolts.

1360 99000-32130: THREAD LOCK SUPER “1360”



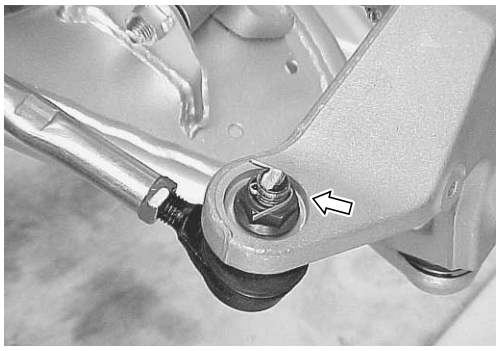
• Tighten the tie rod end nut to the specified torque.

Tie rod end nut: 60 N·m (6.0 kgf-m, 43.5 lb-ft)

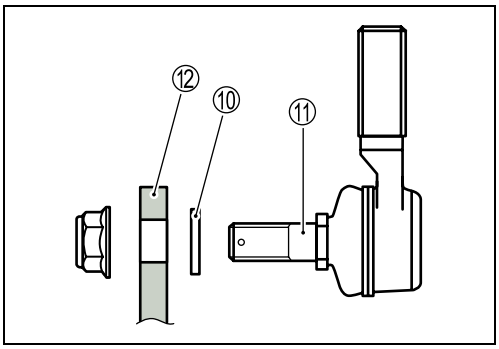
• Install the cotter pin.

CAUTION

Replace the removed cotter pin with a new one.



NOTE:
When installing the tie rod end, install the washer ⑩ between the tie rod end ⑪ and steering knuckle ⑫.

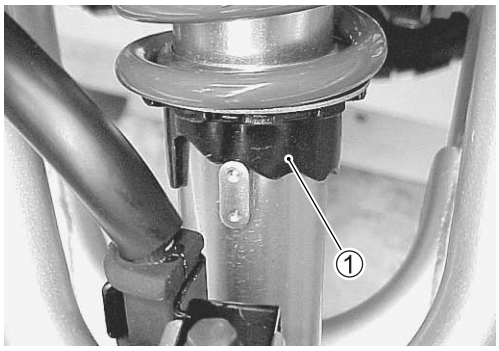


SUSPENSION SETTING

SPRING PRE-LOAD ADJUSTMENT

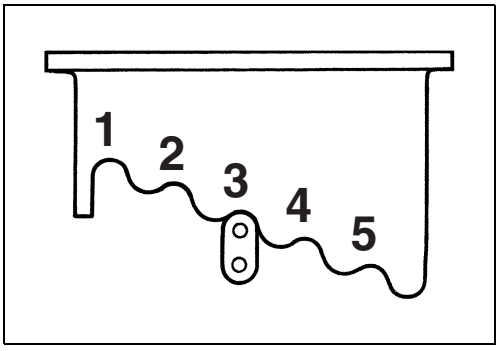
The front suspension spring preload is adjustable. The adjustment can be performed by changing the ring ① position with the adjuster tool. Position **1** provides the softest spring pre-load and position **5** provides the stiffest. The spring preload is set on position **3** at the factory.

STD POSITION: 3



⚠ WARNING

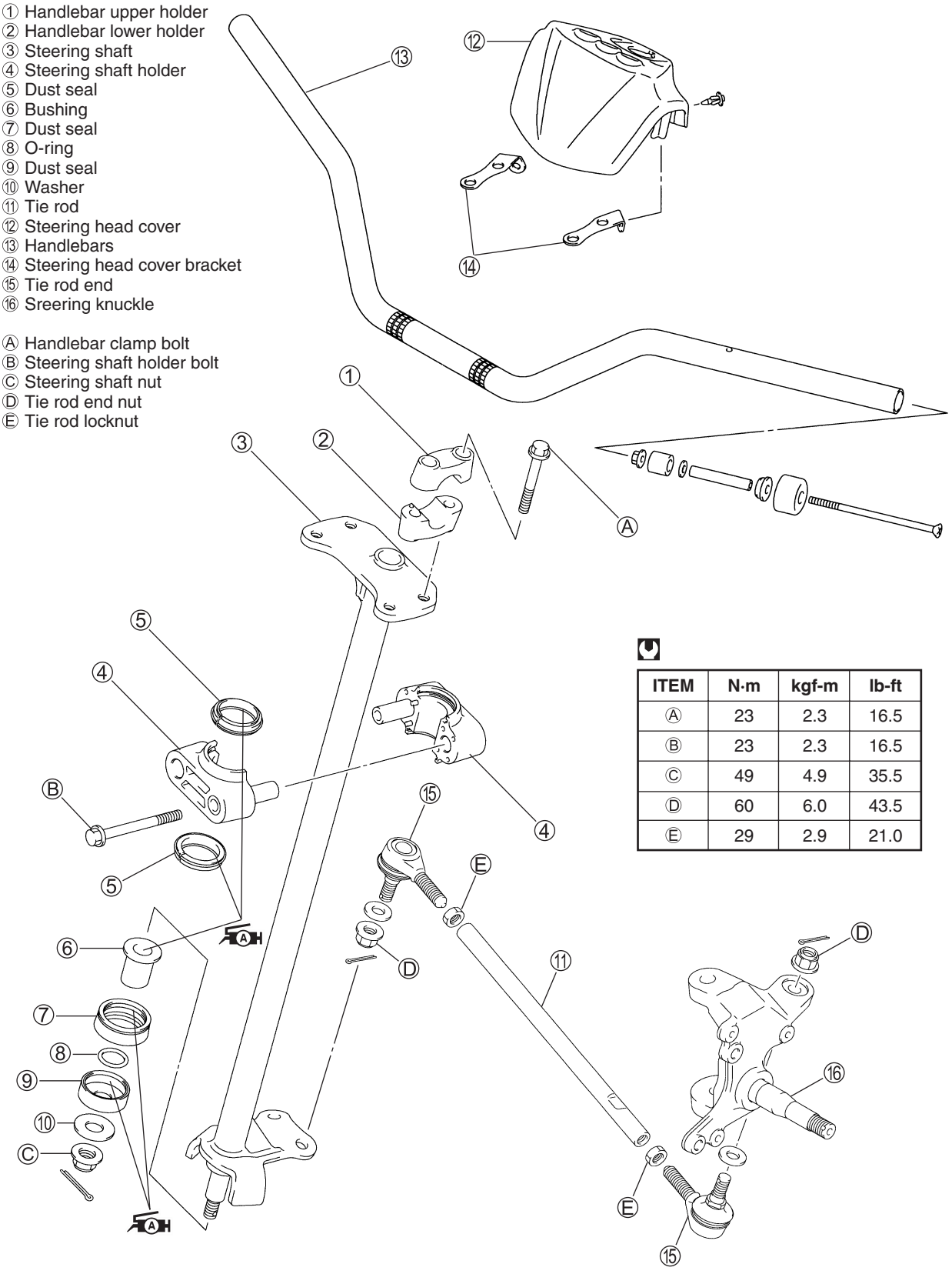
Unequal suspension adjustment can cause poor handling and loss of stability. Adjust the right and left shock absorbers to the same setting.



STEERING
CONSTRUCTION

① Handlebar upper holder
② Handlebar lower holder
③ Steering shaft
④ Steering shaft holder
⑤ Dust seal
⑥ Bushing
⑦ Dust seal
⑧ O-ring
⑨ Dust seal
⑩ Washer
⑪ Tie rod
⑫ Steering head cover
⑬ Handlebars
⑭ Steering head cover bracket
⑮ Tie rod end
⑯ Sreering knuckle

Ⓐ Handlebar clamp bolt
Ⓑ Steering shaft holder bolt
Ⓒ Steering shaft nut
Ⓓ Tie rod end nut
Ⓔ Tie rod locknut

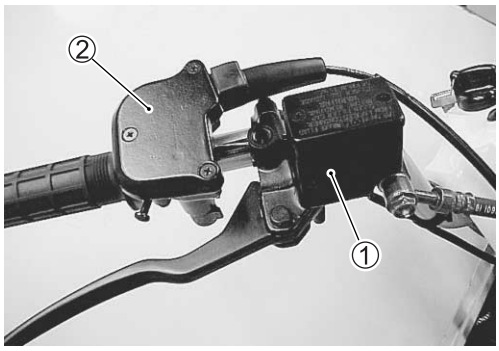


ITEM	N·m	kgf-m	lb-ft
Ⓐ	23	2.3	16.5
Ⓑ	23	2.3	16.5
Ⓒ	49	4.9	35.5
Ⓓ	60	6.0	43.5
Ⓔ	29	2.9	21.0

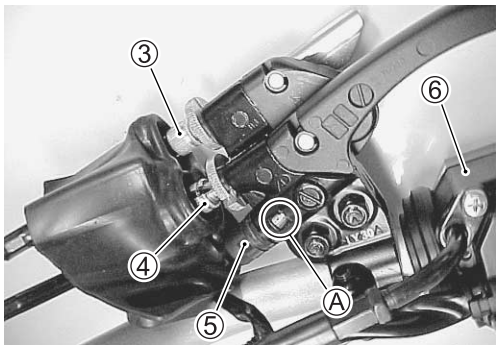
REMOVAL

HANDLEBARS

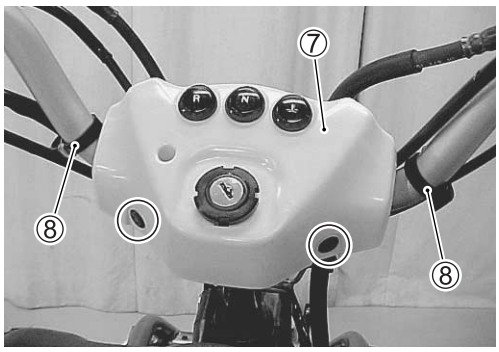
- Remove the front fender. (☞6-4)
- Remove the master cylinder assembly ① from the handlebars. (☞6-25)
- Remove the throttle lever case ②.



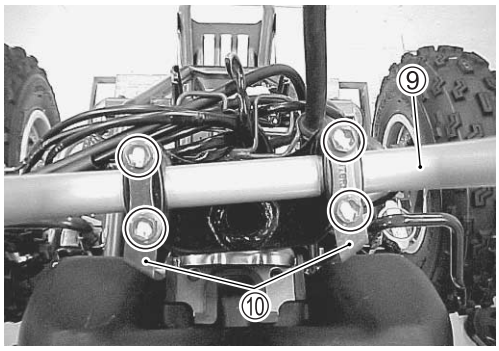
- Disconnect the rear brake cable ③ and the clutch cable ④.
- Remove the clutch switch ⑤ with the detent Ⓐ depressed.
- Remove the handlebar switch box ⑥.



- Remove the steering head cover ⑦.
- Remove the harness clamps ⑧.

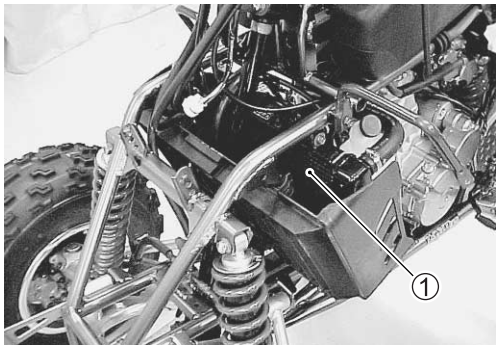


- Remove the handlebars ⑨ and the steering head cover bracket ⑩.

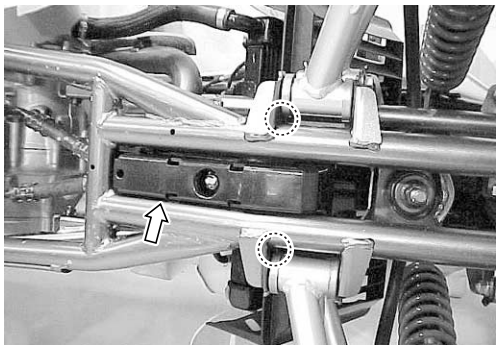


STEERING SHAFT AND TIE ROD

- Drain engine oil and coolant. (☞2-12 and 2-14)
- Remove the radiator assembly ①. (☞5-5)



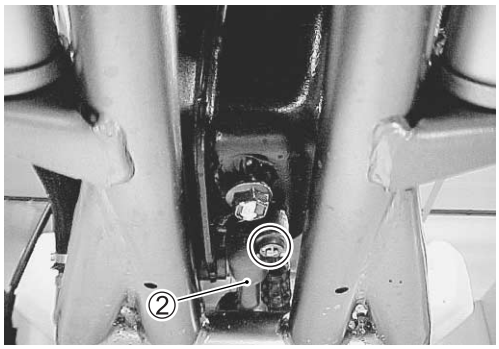
• Remove the oil hose cover by removing two fasteners.

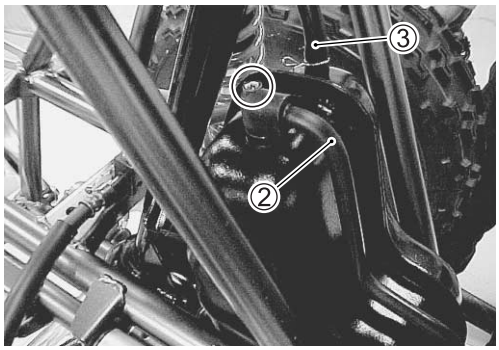


• Disconnect the oil hoses ② and breather hose ③.

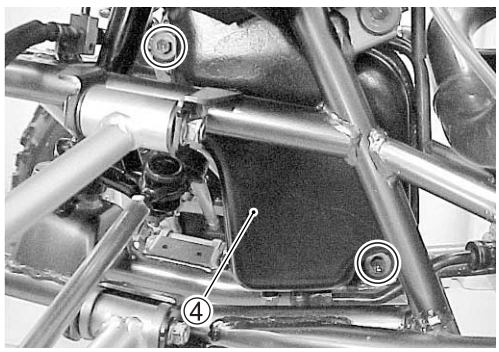
CAUTION

Do not reused the removed O-ring in order to prevent leakage of oil.





• Remove the oil tank ④.

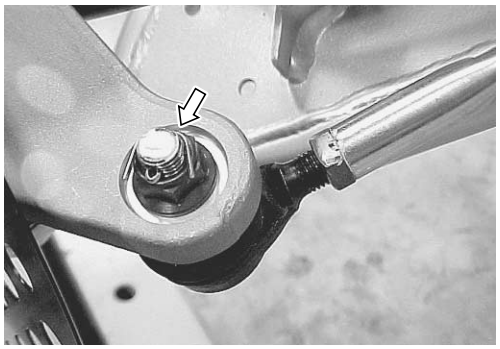


• Remove the cotter pins and tie rod end nuts.

CAUTION

Replace the removed cotter pins with new ones.

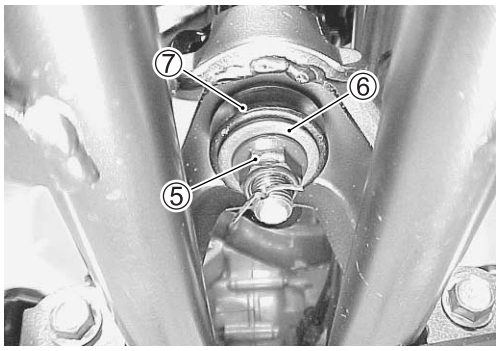
• Remove the tie rods.



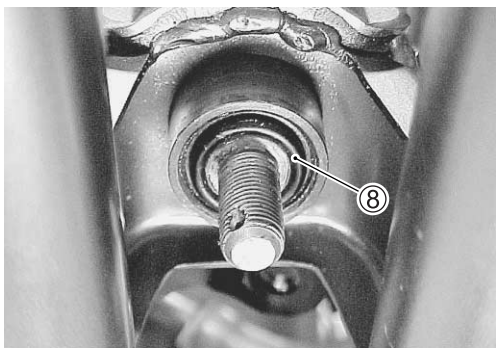
• Remove the cotter pin and steering shaft nut ⑤, washer ⑥ and dust seal ⑦.

CAUTION

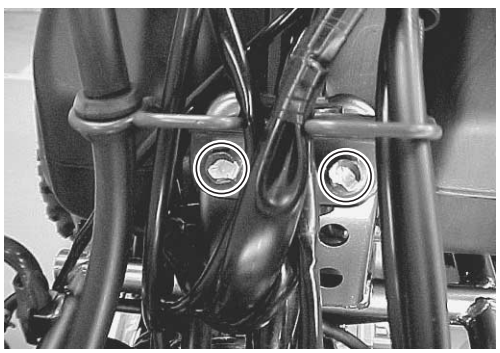
Replace the removed cotter pins with new ones.



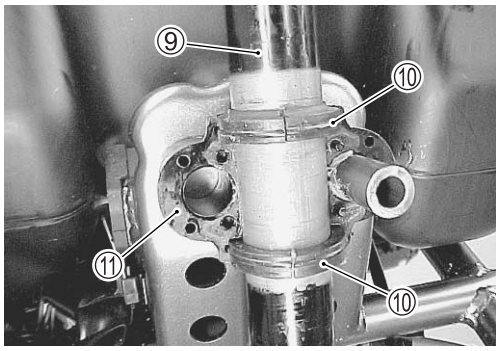
• Remove the O-ring ⑧.



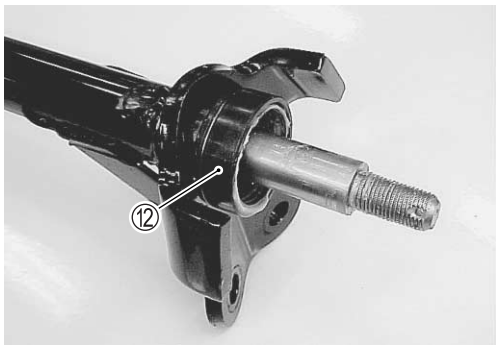
• Remove the steering shaft holder bolts.
• Remove the cable/hose guide and the steering shaft holder half.



- Remove the steering shaft ⑨.
- Remove the dust seals ⑩ from the steering shaft.
- Remove the steering shaft holder half ⑪.



- Remove the dust seal ⑫ from the steering shaft.



INSPECTION AND DISASSEMBLY

Inspect the removed parts for the following abnormalities.

* Handlebar distortion

* Handlebar clamp wear

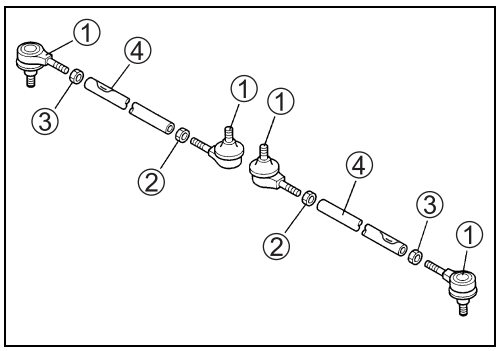
DUST SEALS AND O-RING

Inspect the dust seals and O-ring for wear or damage. If any damages are found, replace the dust seals with new ones.

TIE ROD

Inspect the tie rod for distortion or damage. If any damages are found, replace the tie rod with a new one.

① Tie rod end
② Locknut
③ Locknut
④ Tie rod



CAUTION

The locknuts ② with a yellow finished surface have left-hand threads.

TIE ROD END

Inspect the tie rod ends for smooth movement. If there are any abnormalities, replace the tie rod end with a new one.
Inspect the tie rod end boot for wear or damage.
If any damages are found, replace the tie rod end with a new one.

STEERING SHAFT

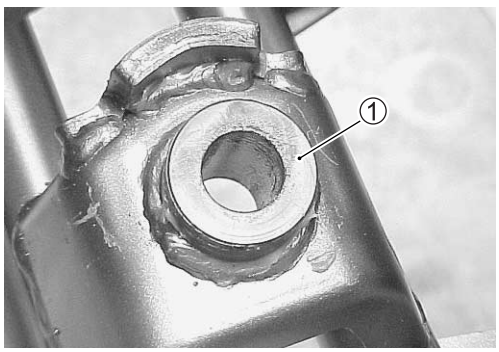
Inspect the steering shaft for distortion or bends. If any damages are found, replace the steering shaft with a new one.

STEERING SHAFT HOLDER

Inspect the steering shaft holders for wear or damage. If any damages are found, replace the steering shaft holders with new ones.

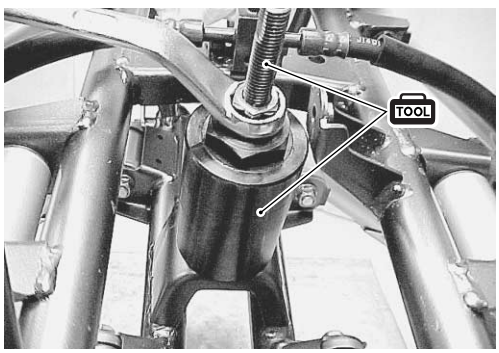
STEERING SHAFT BUSHING

Inspect the steering shaft bushing ① for wear and damage. If any damages are found, replace it with a new one.



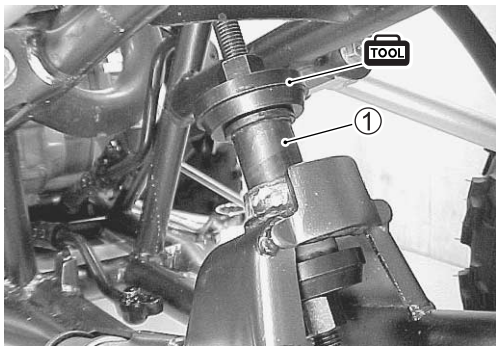
- Remove the steering shaft bushing with the special tools.

TOOL **09924-84510: Bearing installer set**
09930-30721: Remover, rotor



• Install the steering shaft bushing ① with the special tool.

TOOL 09924-84510: Bearing installer set



REASSEMBLY AND REMOUNTING

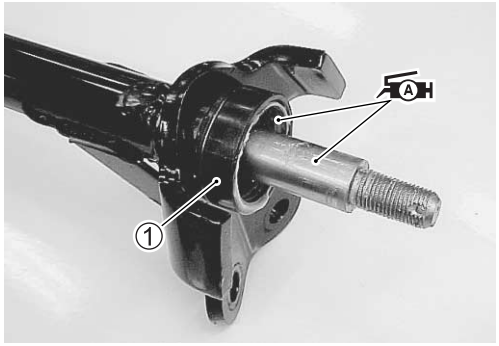
Reassemble and remount the steering sfaft in the reverse order of removal and disassembly. Pay attention to the following points:

STEERING SHAFT

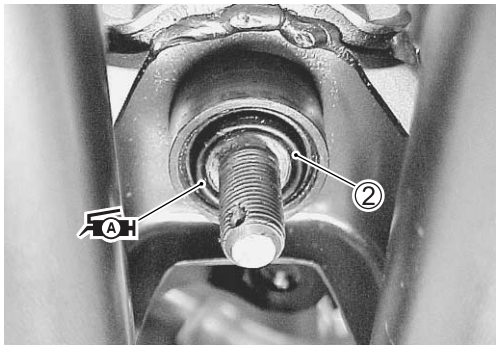
• Apply SUZUKI SUPER GREASE "A" to the O-ring, dust seals and steering shaft before remounting the steering shaft.

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

• Install the dust seal ① to the steering shaft.



• Install the new O-ring ② and dust seal to the steering shaft.



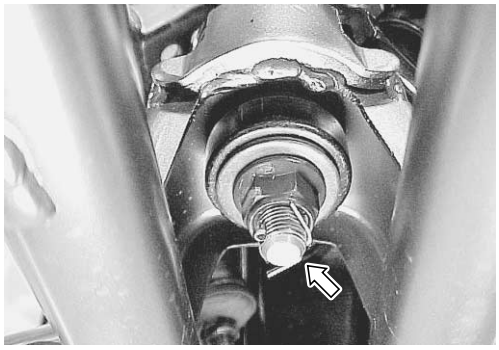
• Tighten the steering shaft nut to the specified torque.

Steering shaft nut: 49 N·m (4.9 kgf-m, 35.5 lb-ft)

• Install the cotter pin.

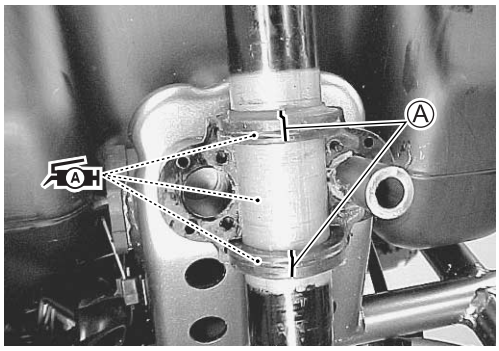
CAUTION

Replace the removed cotter pin with a new one.



• Apply SUZUKI SUPER GREASE “A” to the dust seal lip and sliding surface of the steering shaft holders before remounting the steering shaft holders.

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

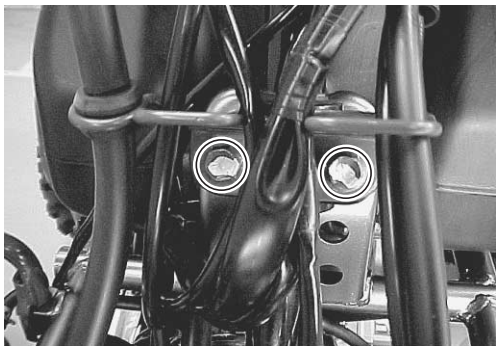


CAUTION

To prevent the entry of dirt, the dust seal end Ⓐ must face forward when installing the dust seal to the steering shaft.

• Tighten the steering shaft holder bolts to the specified torque.

Steering shaft holder bolt: 23 N·m (2.3 kgf-m, 16.5 lb-ft)

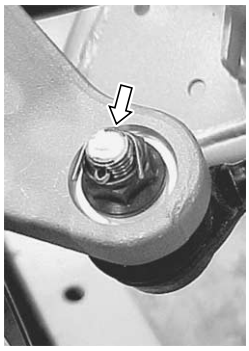


NOTE:
Make sure that the wiring harness, cables and brake hose routing are properly. (☞8-11 to 8-20)

TIE ROD

• Tighten the tie rod end nuts to the specified torque.

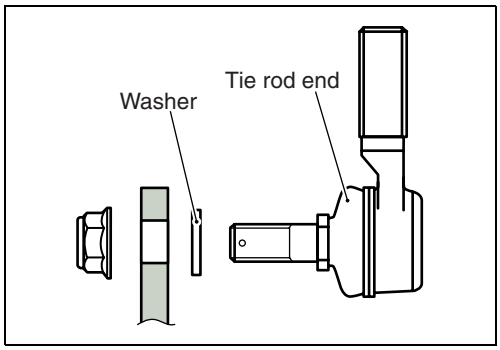
Tie rod end nut: 60 N·m (6.0 kgf-m, 43.5 lb-ft)



• Install the cotter pins.

CAUTION

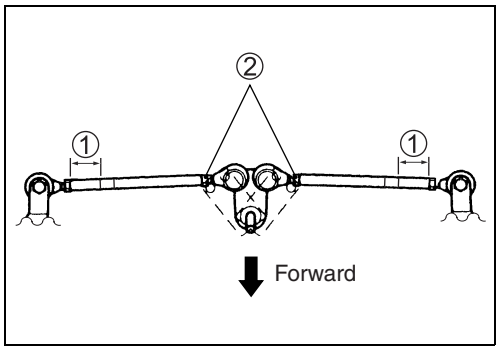
Replace the removed cotter pins with new ones.



NOTE:
When installing the tie rod, make sure the narrow end ① of the tie rod comes out.

CAUTION

The locknuts ② with a yellow finished surface have left-hand threads.



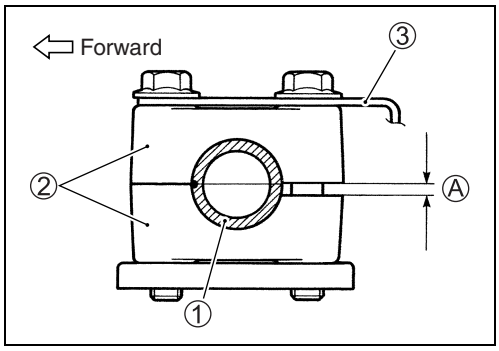
OIL TANK AND RADIATOR

- Install the oil tank. (☞5-53)
- Reinstall the radiator assembly. (☞5-6)
- Pour engine oil. (☞2-12)
- Pour engine coolant and bleed air from the cooling circuit. (☞2-14)

HANDLEBARS

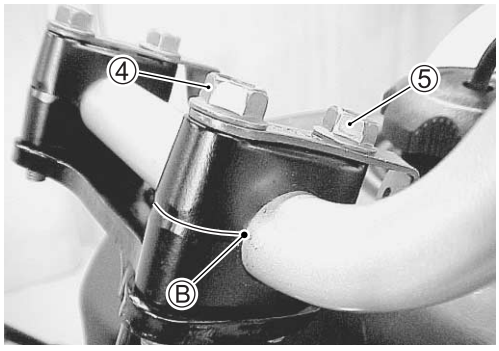
- Assemble the handlebars ①, handle holder ② and steering head cover bracket ③.

NOTE:
The higher portion of handlebar holder must face forward, so that the clearance Ⓐ of holder is in back of the handlebars.



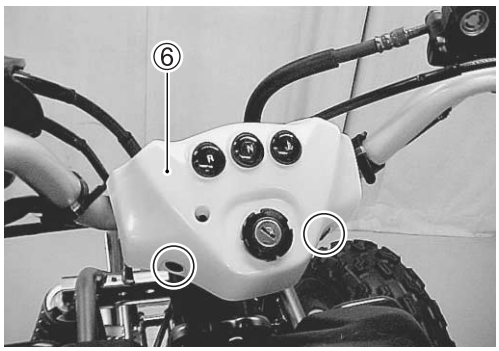
- Align the punch mark Ⓑ on the handlebars with the mating surface of handlebar holder.
- First tighten the bolt ④ to the specified torque and then tighten the bolt ⑤ to the specified torque.

Handlebar clamp bolt: 23 N·m (2.3 kgf-m, 16.5 lb-ft)



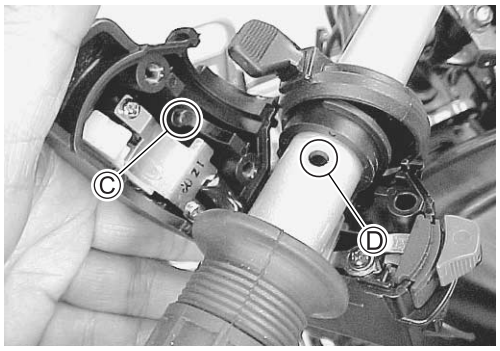
- Install the steering head cover ⑥.

NOTE:
The indicator light position on the steering head cover is described on page 7-22.

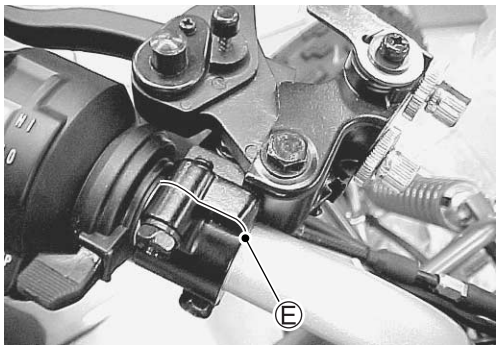


- Install the handle switch box with the lug Ⓒ on the switch half inserted into the hole Ⓓ on the handlebars.

NOTE:
When installing the handlebars, make sure that the cable, wiring harness and brake hose routing are proper. (☞8-11 to 8-20)



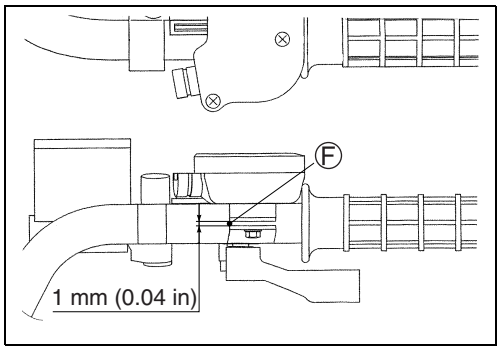
- Install the clutch lever assembly to the handlebars with the mating surface of clutch lever holder aligned with punch mark Ⓔ on the handlebars.
- Connect the clutch cable, rear brake cable and clutch switch.
- Adjust each cable play. (☞2-16 and 2-17)



- Install the throttle case to the handlebars with the mating surface of throttle case aligned with the punch mark Ⓕ.
- Tighten the throttle case bolts to the specified torque.

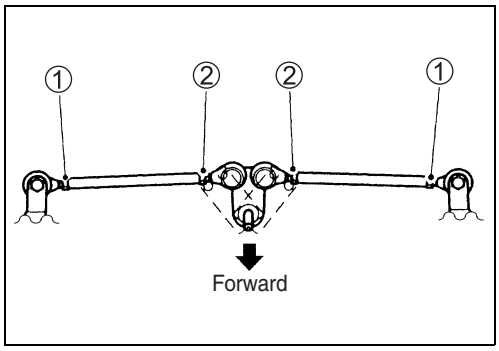
Throttle case bolt: 5 N·m (0.5 kgf-m, 3.7 lb-ft)

- Install the brake master cylinder. (☞6-27)



TOE-IN ADJUSTMENT

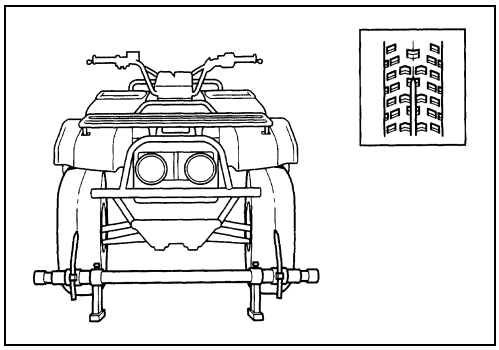
Adjust the toe-in as follows:



- Place the vehicle on level ground and set the handlebars straight.
  Make sure all the tires are inflated to the standard pressure. (☞2-20)
- Place 75 kg (165 lbs) of weight on the seat.
- Loosen the locknuts (①, ②) on each tie rod.

CAUTION

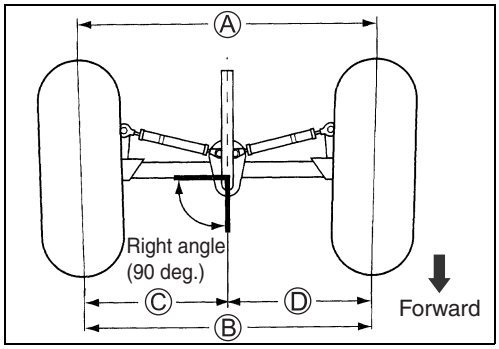
The locknuts ② have left-hand threads.



- Measure the distances (Ⓐ and Ⓑ) between the front wheels. Subtract the measurements of Ⓐ from the measurements of Ⓑ to find the toe-in. If the toe-in is not within specification, adjust the tie rod to the right or left until the toe-in is within the specified range.
  Ⓐ – Ⓑ = Toe-in

DATA Toe-in

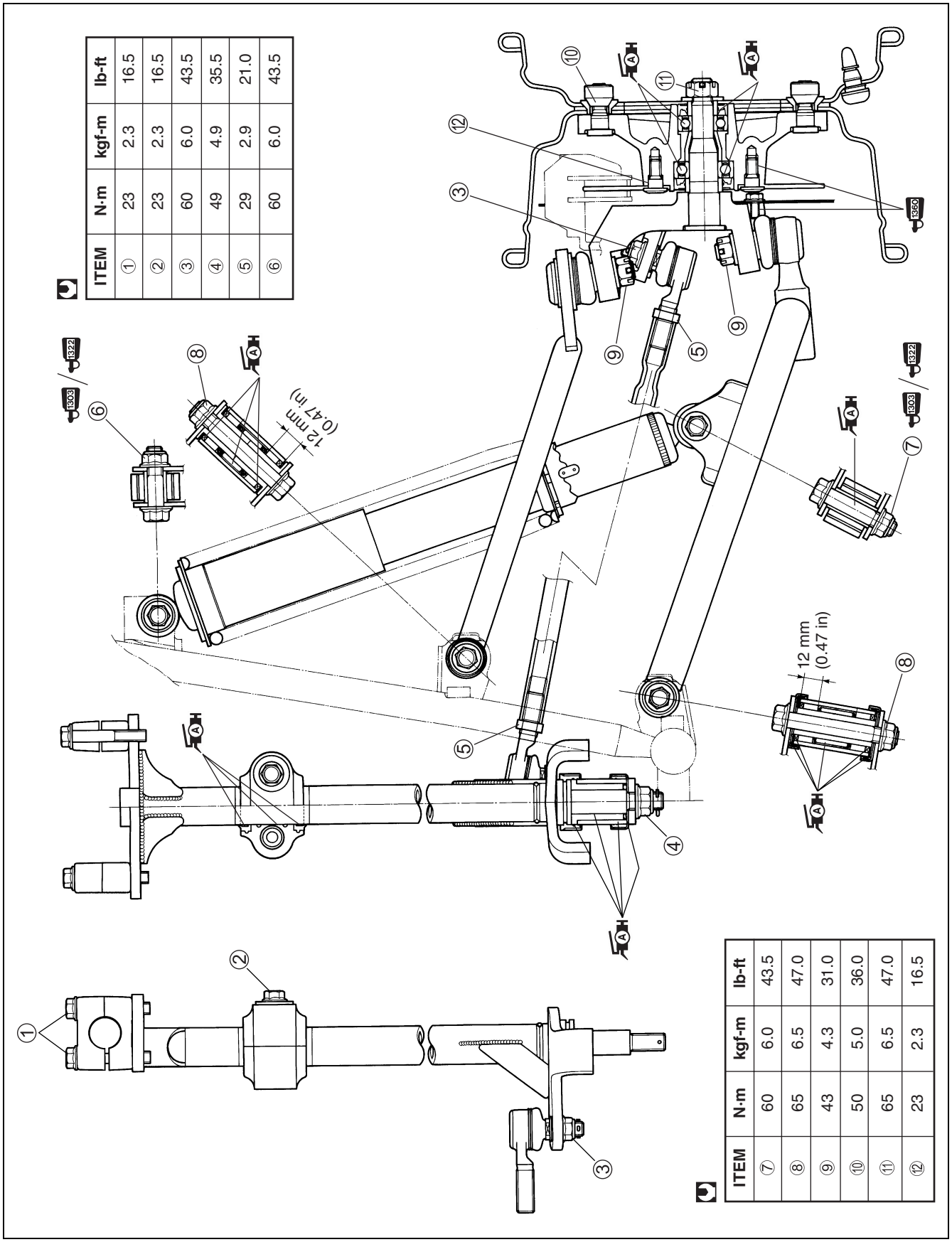
Standard: 5 ± 4 mm (0.20 ± 0.16 in)



- Temporarily tighten the four locknuts.
- Check that the distances (Ⓒ and Ⓓ) are equal, as shown. If the distances are not equal, adjust the tie rod to the right or left until the toe-in is within specification. Check the toe-in again by measuring distances Ⓐ and Ⓑ.
- If the toe-in is not within specification, repeat the adjustment as above until the proper toe-in is obtained and distances Ⓒ and Ⓓ become equal.
- After adjustment has been made, tighten the four locknuts ① to the specified torque.

Tie rod locknut: 29 N·m (2.9 kgf-m, 21.0 lb-ft)

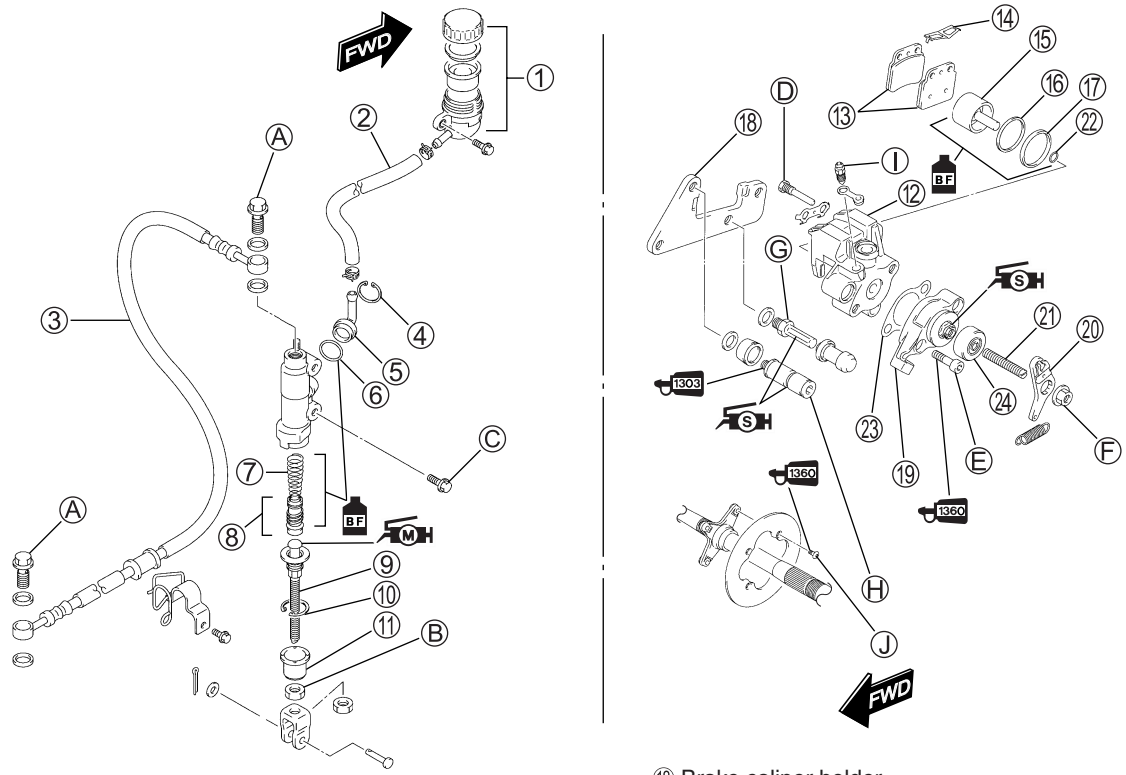
FRONT WHEEL, FRONT BRAKE, FRONT SUSPENSION AND STEERING REASSEMBLING INFORMATION



ITEM	N·m	kgf-m	lb-ft
①	23	2.3	16.5
②	23	2.3	16.5
③	60	6.0	43.5
④	49	4.9	35.5
⑤	29	2.9	21.0
⑥	60	6.0	43.5

ITEM	N·m	kgf-m	lb-ft
⑦	60	6.0	43.5
⑧	65	6.5	47.0
⑨	43	4.3	31.0
⑩	50	5.0	36.0
⑪	65	6.5	47.0
⑫	23	2.3	16.5

REAR BRAKE
CONSTRUCTION



ITEM	N·m	kgf-m	lb-ft
Ⓐ	23	2.3	16.5
Ⓑ	18	1.8	13.0
Ⓒ	10	1.0	7.0
Ⓓ	18	1.8	13.0
Ⓔ	28	2.8	20.5
Ⓕ	18	1.8	13.0
Ⓖ	18	1.8	13.0
Ⓗ	23	2.3	16.5
Ⓘ	7.5	0.75	5.5
Ⓙ	23	2.3	16.5

① Reservoir tank
② Reservoir tank hose
③ Brake hose
④ Snap ring
⑤ Connector
⑥ O-ring
⑦ Spring
⑧ Piston/cup set
⑨ Push rod
⑩ Snap ring
⑪ Boot
⑫ Caliper
⑬ Pad
⑭ Spring
⑮ Piston
⑯ Dust seal
⑰ Piston seal
⑱ Brake caliper holder
⑲ Parking brake
⑳ Parking brake lever
㉑ Adjuster
㉒ O-ring
㉓ Gasket
㉔ Boot

Ⓐ Brake hose union bolt
Ⓑ Brake master cylinder rod locknut
Ⓒ Brake master cylinder mounting bolt
Ⓓ Pad mounting pin
Ⓔ Parking brake bolt
Ⓕ Parking brake adjuster locknut
Ⓖ Brake caliper holder pin
Ⓗ Brake caliper slide pin
Ⓘ Air bleeder valve
Ⓙ Disc bolt

⚠ WARNING

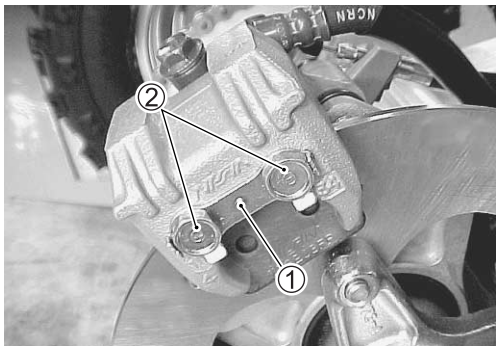
*** This brake system is filled with an ethylene glycol-based DOT 4 brake fluid. Do not use or mix different types of fluid such as silicone-based or petroleum-based.**
*** Do not use any brake fluid taken from old, used or unsealed containers. Never reuse brake fluid left over from the last servicing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

CAUTION

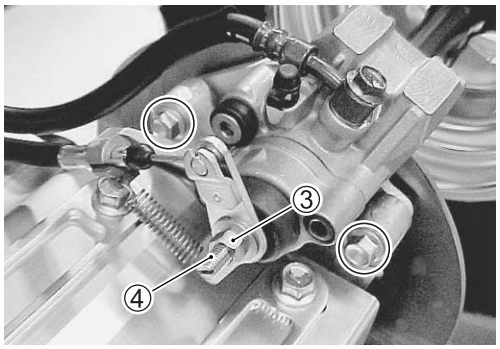
Handle brake fluid with care: the fluid reacts chemically with paint, plastics, rubber materials etc. and will damage them severly.

BRAKE PAD REPLACEMENT

- Flatten the lock washer ①, and then slightly loosen the pad mounting pins ②.



- Loosen the locknut ③ and turn out the parking brake adjuster ④ several turns.
- Remove the caliper.
- Remove the brake pads by removing the pad mounting pins.



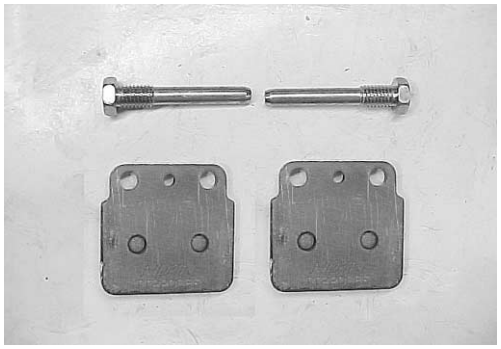
CAUTION

*** Do not operate the brake pedal while dismounting the pads.**
*** Replace the brake pads as a set, otherwise braking performance will be adversely affected.**

- Install the new brake pad.

NOTE:

** Before installing the new pads, inspect the pad mounting pins for wear. If excessive wear is found, replace them with new ones.*
** Be sure to loosen the parking brake adjuster before installing the pads.*

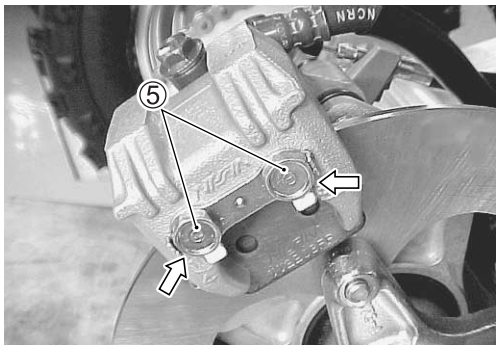


- Tighten the pad mounting pins ⑤ to the specified torque, and then bend the lock washer.

Pad mounting pin: 18 N·m (1.8 kgf-m, 13.0 lb-ft)

NOTE:

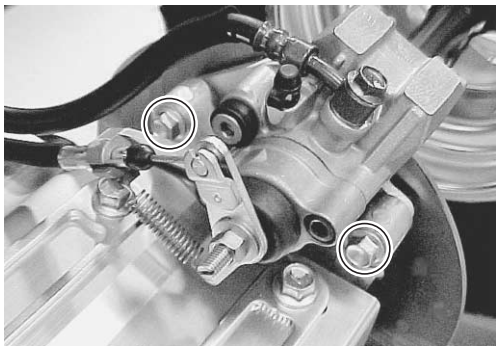
After replacing the brake pads, pump the brake pedal several times to check for proper brake operation and then check the brake fluid level.



- Tighten the caliper mounting bolts to the specified torque.

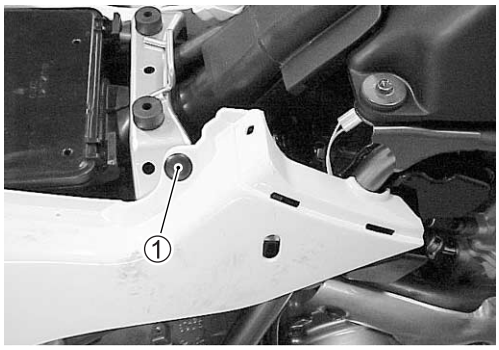
Brake caliper mounting bolt:
26 N·m (2.6 kgf-m, 19.0 lb-ft)

- Adjust the parking brake. (☞2-17)



BRAKE FLUID REPLACEMENT

- Place the vehicle on a level surface.
- Remove the seat. (☞6-4)
- Remove the fuel tank right side cover. (☞6-4)
- Remove the fastener ①.

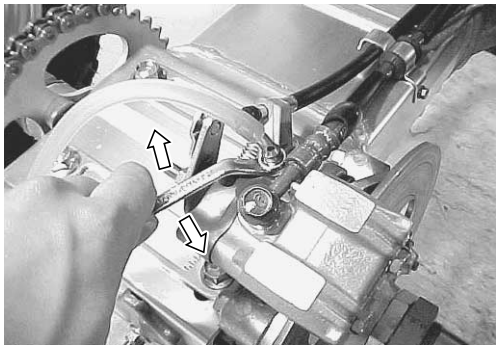


- Remove the master cylinder reservoir cap ② and diaphragm.
- Suck up the old brake fluid as much as possible.
- Fill the reservoir with new brake fluid.

Specification and classification: DOT 4

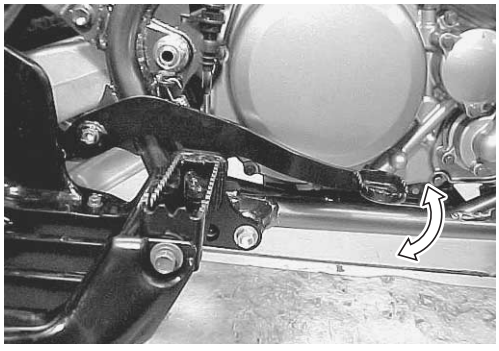
- Connect a clear hose to the air bleeder valve and insert the other end of the hose into a receptacle.
- Loosen the air bleeder valve and pump the brake pedal until the old brake fluid is completely out of the brake system.
- Close the air bleeder valve and disconnect the clear hose. Fill the reservoir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

Brake air bleeder valve: 7.5 N·m (0.75 kgf-m, 5.5 lb-ft)



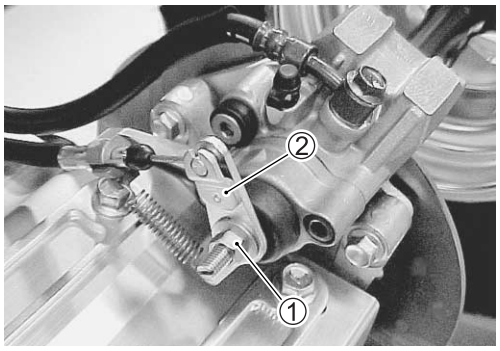
CAUTION

*** Never reuse the brake fluid left over from previous servicing and which has been stored for long periods of time.**
*** Bleed air from the brake system. (☞2-19)**



BRAKE CALIPER REMOVAL AND DISASSEMBLY

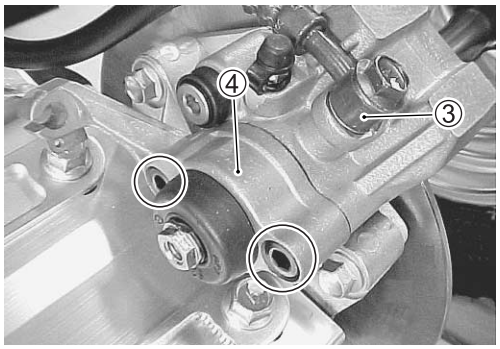
- Disconnect the parking brake cable by removing the locknut ① and lever ②.



- Disconnet the brake hose ③ and allow the brake fluid to drain into a suitable receptacle.
- Remove the parking brake housing ④.

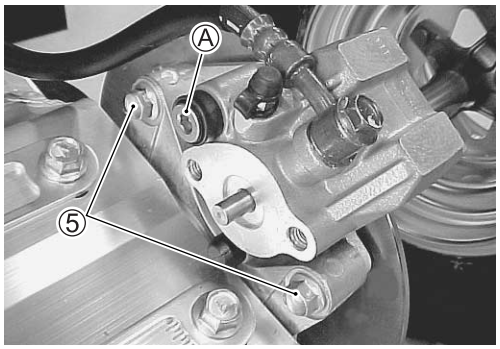
⚠ WARNING

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

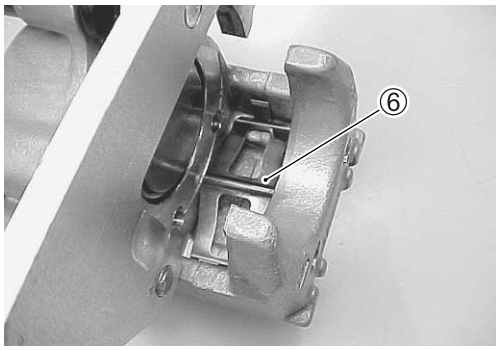


- Remove the brake caliper by removing the caliper mounting bolts ⑤.

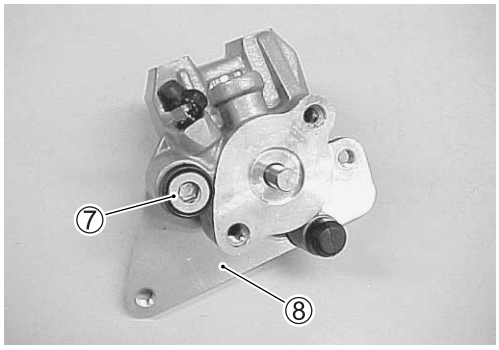
NOTE:
Before removing the caliper, slightly loosen the caliper holder slide pin Ⓐ to facilitate later disassembly.



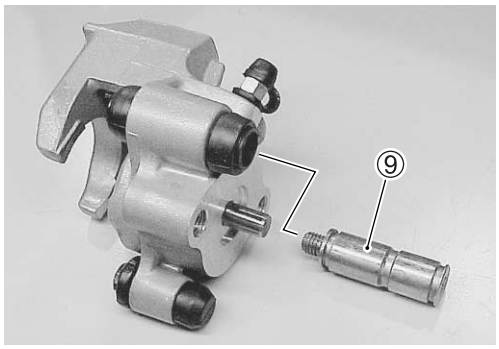
- Remove the pad. (☞6-50)
- Remove the pad spring ⑥.



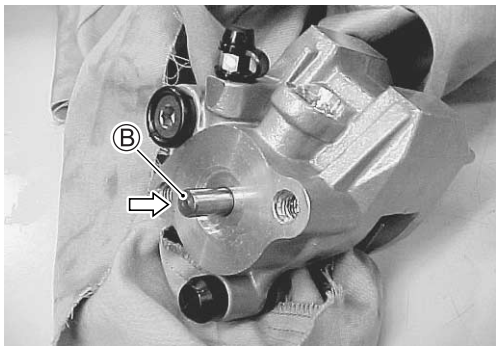
- Loosen the caliper holder slide pin ⑦, and then remove the caliper holder ⑧.



- Remove the caliper holder slide pin ⑨.



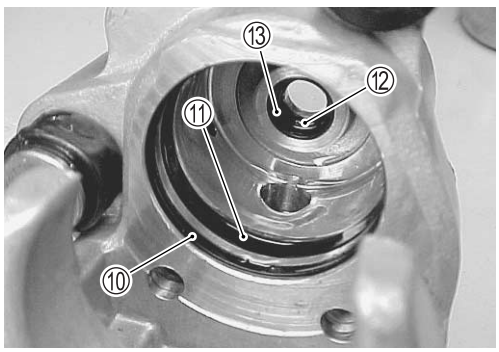
- Place a rag over the brake caliper piston to prevent the piston from popping out.
- Force out the piston by pushing the piston pin Ⓑ.

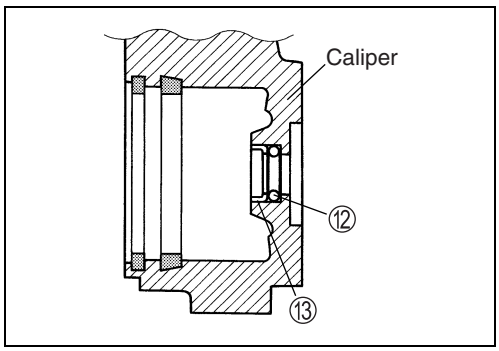


- Remove the dust seal ⑩, piston seal ⑪ and O-ring ⑫.

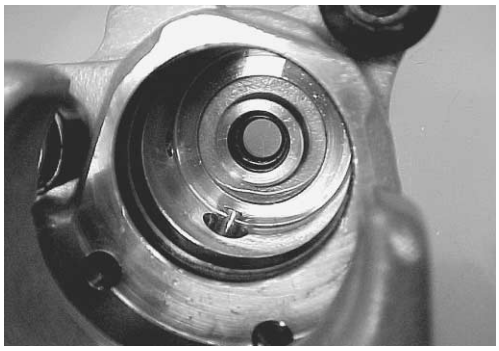
CAUTION

*** Do not reuse the dust seal, piston seal and O-ring to prepent leakage of brake fluid.**
*** Do not attempt to remove the retainer ⑬.**





BRAKE CALIPER INSPECTION

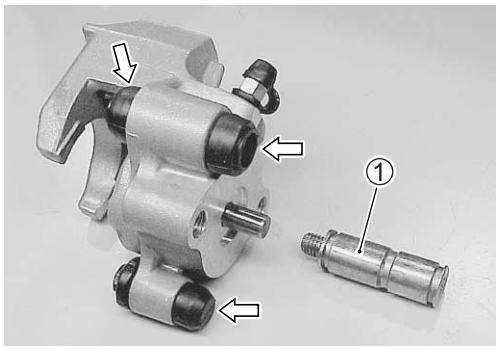


BRAKE CALIPER

Inspect the brake caliper cylinder wall for nicks, scratches or other damage. If any damages are found, replace the brake caliper with a new one.

BRAKE CALIPER PISTON

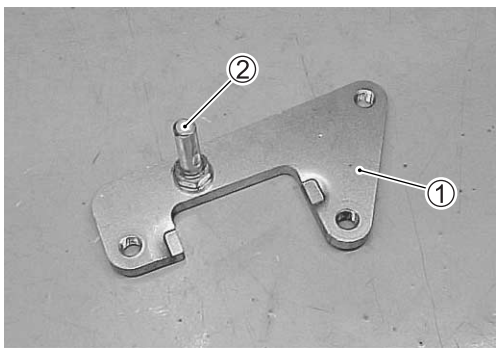
Inspect the brake caliper piston for any scratches or other damage. If any damages are found, replace the piston with a new one.



RUBBER PARTS AND SLIDE PIN

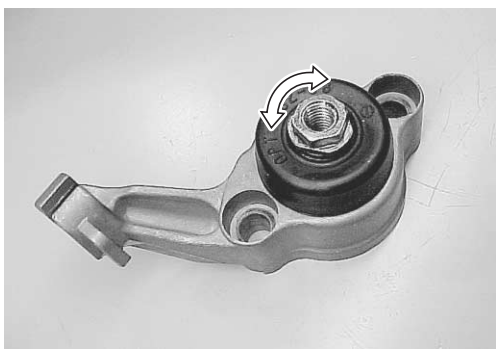
Inspect the rubber parts for damage. If any damages are found, replace them with new ones.

Inspect the slide pin ① for damage. If any damages are found, replace it with a new one.



CALIPER HOLDER

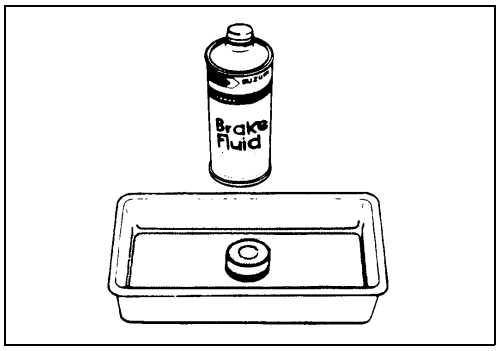
Inspect the caliper holder ① and pin ② for damage. If any damages are found, replace them with new ones.



PARKING BRAKE

Inspect the parking brake for any damages and smooth rotation by turning the axle. If there is anything unusual, replace the parking brake with a new one.

BRAKE CALIPER REASSEMBLY AND REMOUNTING



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

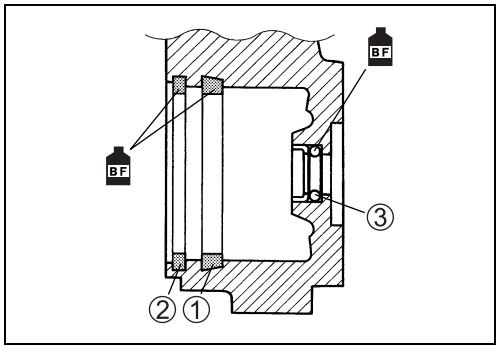
- Wash the caliper bore and piston with the specified brake fluid. Thoroughly wash the dust seal grooves and piston seal grooves.

BF Specification and classification: DOT 4

CAUTION

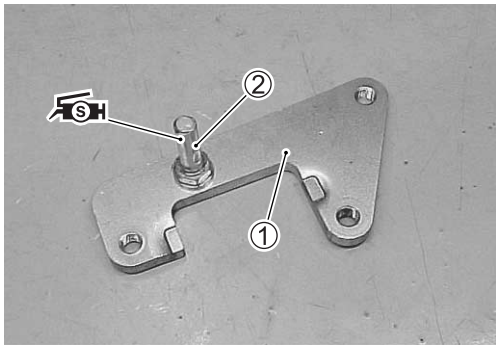
*** Wash the brake caliper components with new brake fluid before reassembly.**
*** Do not wipe the brake fluid off with a rag after washing the components.**
*** When washing the components, use the specified brake fluid. Never use different types of fluid or cleaning solvents such as gasoline, kerosine, etc.**
*** Replace the removed piston seals and dust seals with new ones.**
*** Apply brake fluid to all of the seals, brake caliper bores and pistons before reassembly.**

PISTON SEALS



- Install the piston seal ①, dust seal ② and O-ring ③ as shown in illustration.

BRAKE CALIPER HOLDER



- Tighten the pin ② to the caliper holder ① to the specified torque.

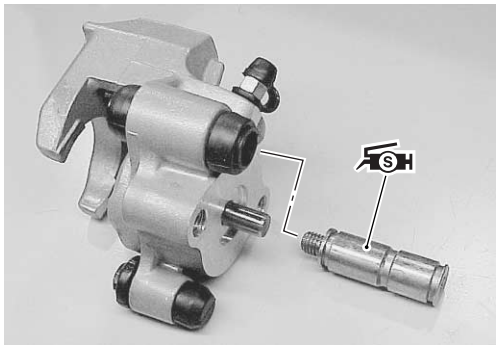
Caliper holder pin: 18 N·m (1.8 kgf-m, 13.0 lb-ft)

- Apply SUZUKI SILICONE GREASE to the brake caliper holder pin ②.

SH 99000-25100: SUZUKI SILICONE GREASE

- Apply SUZUKI SILICONE GREASE to the caliper holder slide pin.
- Install the slide pin into the caliper.

99000-25100: SUZUKI SILICONE GREASE



- Install the pin ③, washer ④ and caliper holder ⑤ to the caliper.
- Apply THREAD LOCK SUPER “1303” to the pin ③.

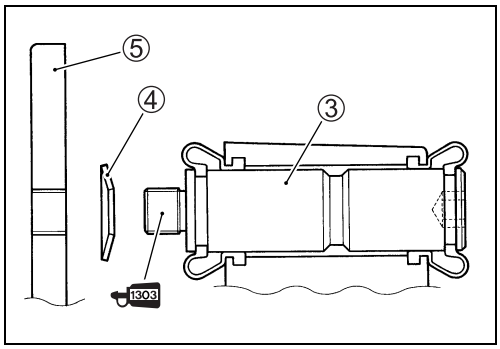
99000-32030: THREAD LOCK SUPER “1303”

- Tighten the pin ③ to the specified torque.

Caliper holder slide pin: 23 N·m (2.3 kgf-m, 16.5 lb-ft)

- Install the pad spring and pads. (☞6-50)

NOTE:
When installing the slide pin ③ and washer ④, the convex of washer must face slide pin as shown in illustration.



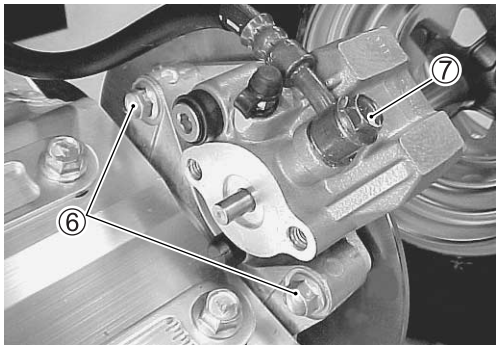
- Tighten the caliper mounting bolts ⑥ and brake hose union bolt ⑦.

Brake caliper mounting bolt: 26 N·m (2.6 kgf-m, 19.0 lb-ft)
Brake hose union bolt: 23 N·m (2.3 kgf-m, 16.5 lb-ft)

NOTE:
Before remounting the brake caliper, push the brake caliper piston all the way into the caliper.

CAUTION

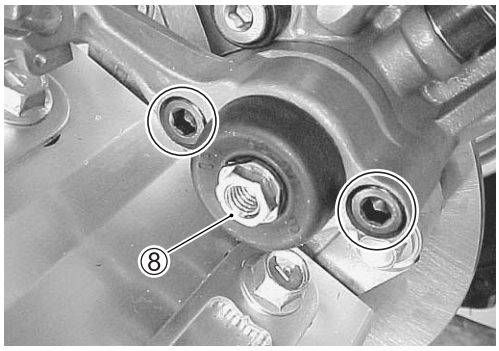
*** The removed brake hose washers should be replaced with new ones in order to prevent leakage of brake fluid.**
*** Bleed air from the system after reassembling the brake caliper. (☞2-19)**



- Install the parking brake housing ⑧ and new gasket.
- Apply THREAD LOCK SUPER “1360” to the parking brake bolts and tighten them to the specified torque.

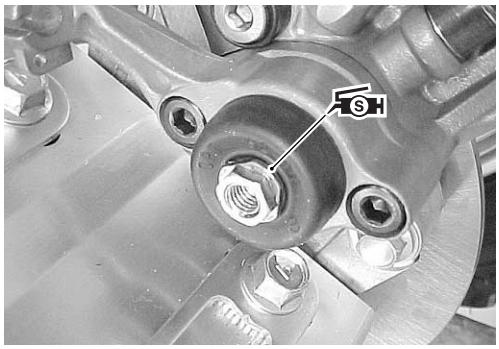
99000-32130: THREAD LOCK SUPER “1360”

Parking brake bolt: 28 N·m (2.8 kgf-m, 20.5 lb-ft)

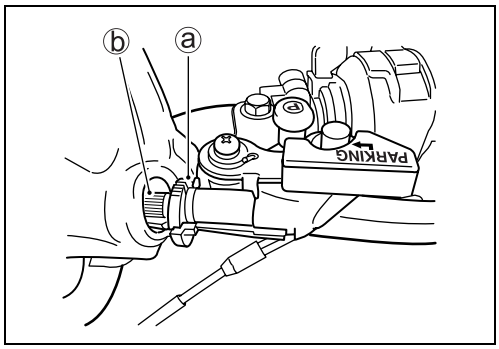


- When replacing the boot with a new one, apply SUZUKI SILICONE GREASE to the groove of parking brake axle.

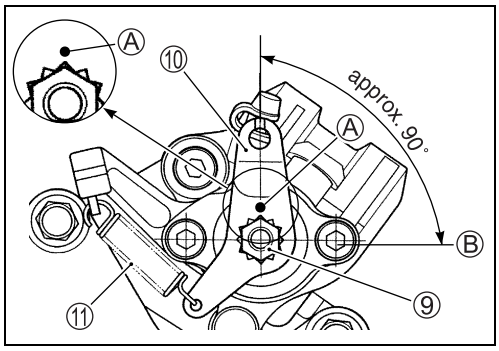
99000-25100: SUZUKI SILICONE GREASE



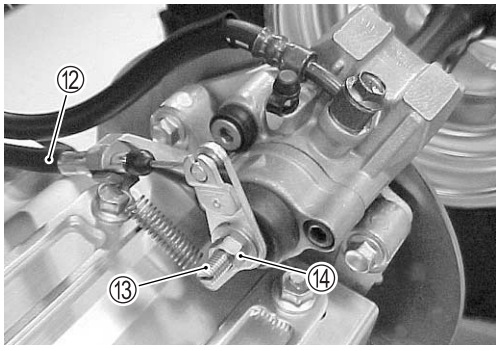
- Loosen the locknut ⓐ and turn the adjuster ⓑ in completely, so that the cable play is maximum.



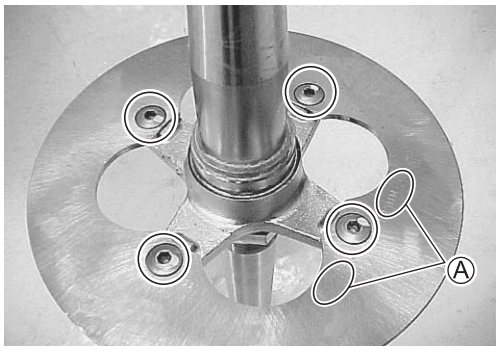
- Set the parking brake shaft ⑨ in neutral position by rotating the shaft.
- Install the parking lever ⑩ onto the parking brake shaft ⑨ with the punch mark Ⓐ aligned with corner of hexagon on the shaft ⑨, so that parking lever ⑩ is at angle of approx. 90 degrees to the line Ⓑ as shown in illustration.
- Hook the return spring ⑪ on the parking lever with the spring end faced the caliper as shown in illustration.



- Connect the parking cable ⑫.
- Install the adjuster ⑬ and the locknut ⑭.
- Adjust the parking brake. (☞2-17)



BRAKE DISC REMOVAL AND REMOUNTING



- Remove the rear wheel. (☞6-10)
- Remove the rear axle. (☞6-80)
- Remove the brake disc.
- Install the brake disc to the rear axle with the punch mark Ⓐ showed up.

NOTE:
Make sure that the disc is free of any greasey matter.

- Apply THREAD LOCK SUPER “1360” to the brake disc bolts and tighten them to the specified torque.

1360 99000-32130: THREAD LOCK SUPER “1360”

Brake disc bolt: 23 N·m (2.3 kgf-m, 16.5 lb-ft)

- Install the rear axle. (☞6-86)
- Install the rear wheel. (☞6-14)

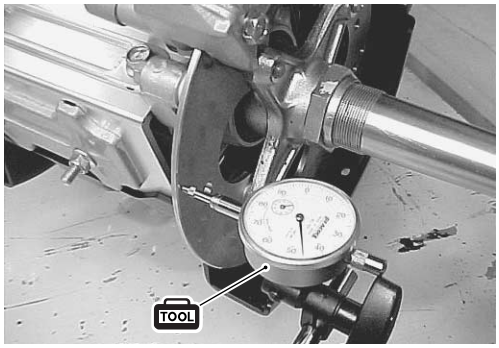
BRAKE DISC INSPECTION

Inspect the brake disc for cracks or damage and measure the thickness using the micrometer. If any damages are found or if the thickness is less than the service limit, replace the brake disc with a new one.

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

DATA Brake disc thickness
Service Limit: 3.5 mm (0.13 in)

Measure the runout using the dial gauge. If the runout exceeds the service limit, replace the brake disc with a new one.

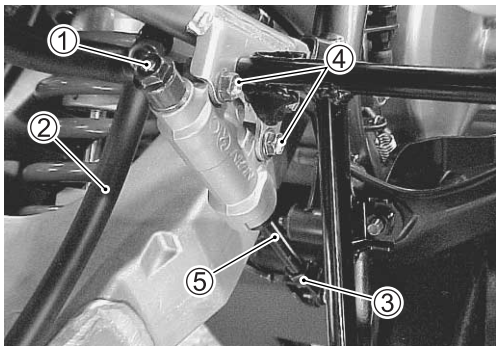


TOOL 09900-20607: Dial gauge (1/100 mm)
09900-20701: Magnetic stand

DATA Brake disc runout
Service Limit: 0.3 mm (0.012 in)

- If either measurement exceeds the service limit, replace the brake disc with a new one.

MASTER CYLINDER REMOVAL AND DISASSEMBLY

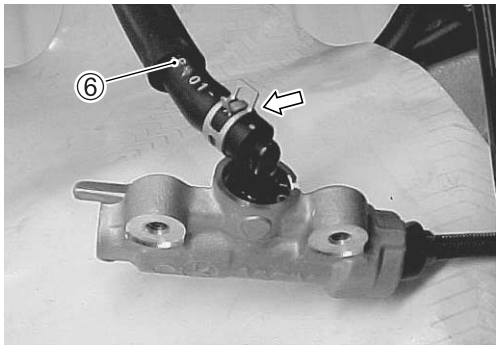


- Drain the brake fluid. (☞6-51)
- Place a rag underneath the brake hose union bolt on the mastercylinder to catch any split brake fluid. Remove the brake hose union bolt ① and disconnect the brake hose ②.

CAUTION

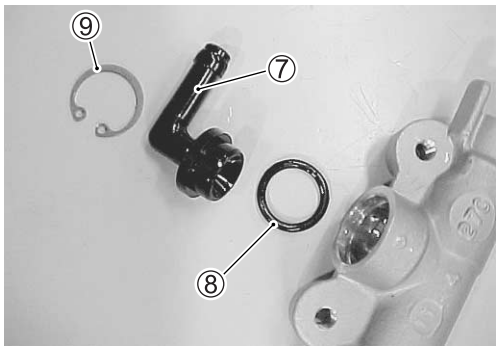
Immediately wipe off any brake fluid contacting any part of the vehicle. The brake fluid reacts chemically with paint, plastics, rubber materials, etc., and will damage them severely.

- Loosen the locknut ③.
- Remove the master cylinder mounting bolt ④.
- Remove the master cylinder by turning the master cylinder rod ⑤.

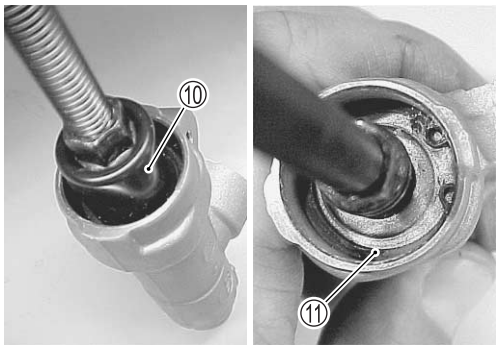


- Disconnect the reservoir tank hose ⑥.

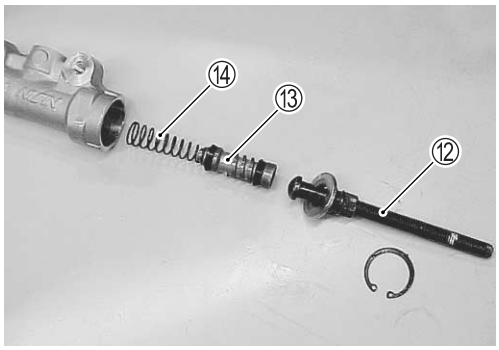
- Remove the connector ⑦ and O-ring ⑧ by removing the snap ring ⑨.



- Remove the dust boot ⑩.
- Remove the snap ring ⑪.



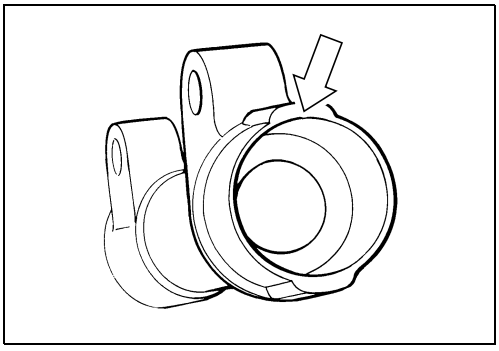
- Remove the push rod ⑫, piston/primary cup ⑬ and spring ⑭.



MASTER CYLINDER INSPECTION

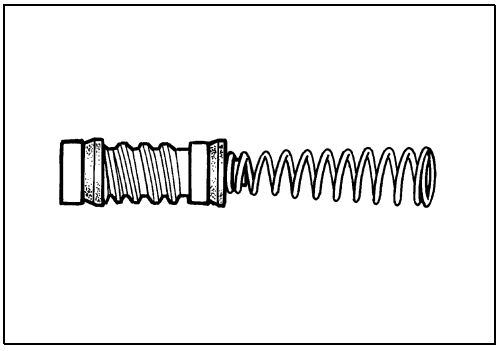
MASTER CYLINDER

Inspect the master cylinder bore for any scratches or damage. If any damages are found, replace the master cylinder with a new one.



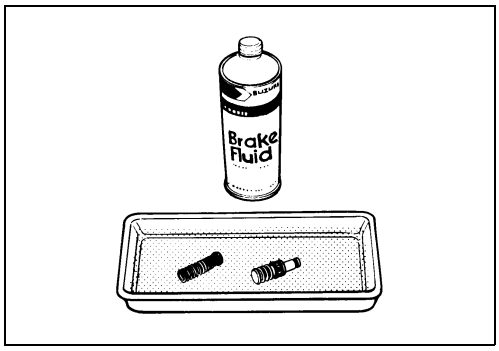
PISTON AND RUBBER PARTS

Inspect the piston surface, primary cup, secondary cup and dust boot for any scratches, wear or damage. If any damages are found, replace them with a new one.



MASTER CYLINDER REASSEMBLY AND REMOUNTING

Reassemble and remount the master cylinder in the reverse order of removal and disassembly. Pay attention to the follwing point:



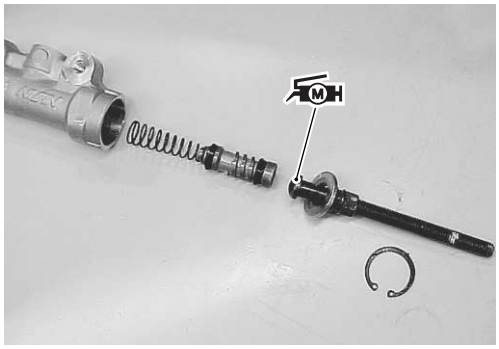
CAUTION

*** Wash the master cylinder components with new brake fluid before reassembly.**
*** Do not wipe the brake fluid off with a rag after washing the components.**
*** When washing the components, use the specified brake fluid. Never use different types of fluid or cleaning solvents such as gasoline, kerosine, etc.**
*** Apply brake fluid to the master cylinder bore and all the component to be inserted to the bore.**

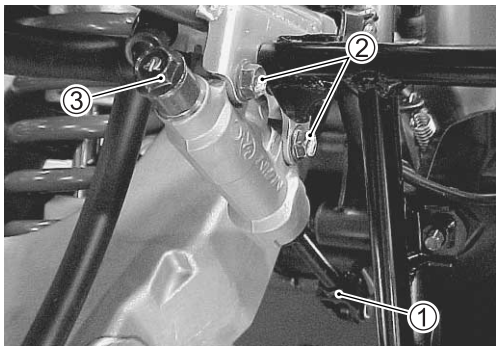
Specification and classification: DOT 4

- Apply SUZUKI MOLY PASTE to the master cylinder rod.

99000-25140: SUZUKI MOLY PASTE



- Tighten the master cylinder rod locknut ①, master cylinder mounting bolts ② and brake hose union bolt ③ to the specified torque.

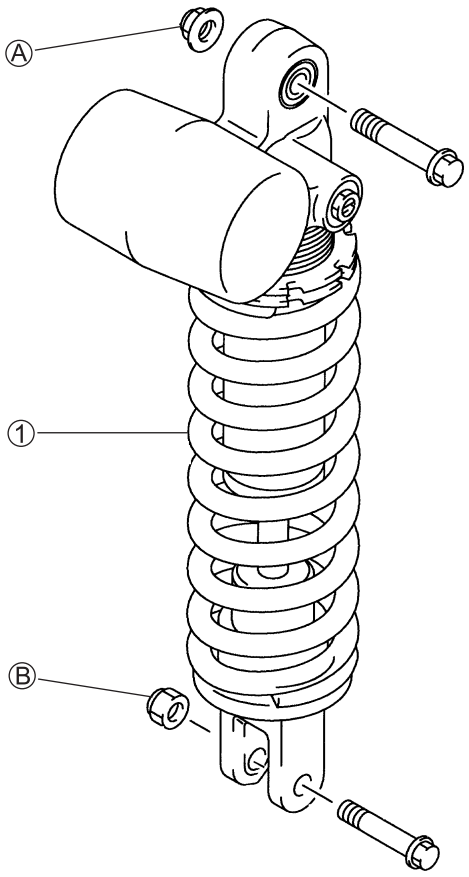


Master cylinder rod locknut ①:
18 N·m (1.8 kgf-m, 13.0 lb-ft)
Master cylinder mounting bolt ②:
10 N·m (1.0 kgf-m, 7.0 lb-ft)
Brake hose union bolt ③: 23 N·m (2.3 kgf-m, 16.5 lb-ft)

CAUTION

*** The removed brake hose washers should be replaced with new ones.**
*** Bleed air from the system after reassembling the brake master cylinder. (☞2-19)**

REAR SHOCK ABSORBER
CONSTRUCTION



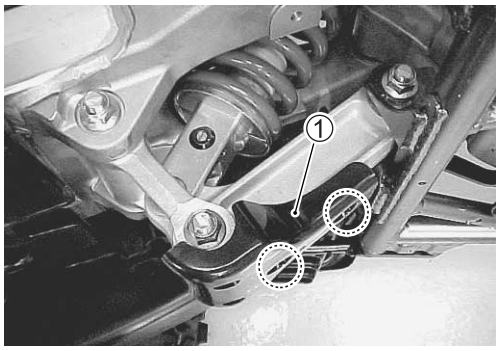
① Rear shock absorber

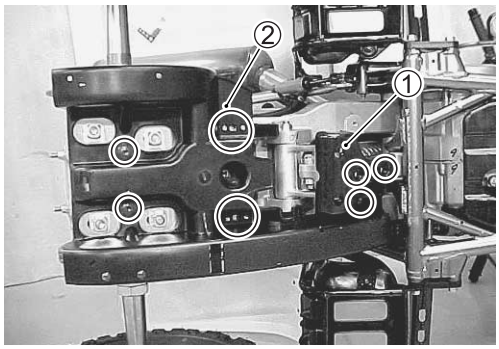
Ⓐ Rear shock absorber upper mounting nut
Ⓑ Rear shock absorber lower mounting nut

ITEM	N·m	kgf·m	lb-ft
Ⓐ	60	6.0	43.5
Ⓑ	55	5.5	40.0

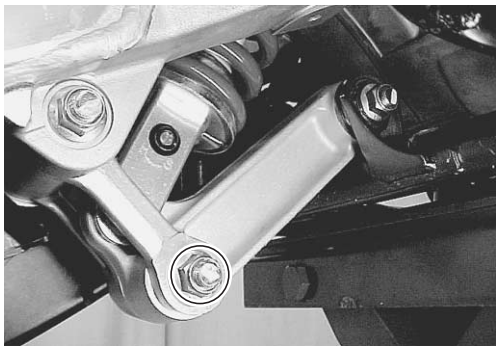
REMOVAL

- Raise the rear wheel off the ground and support the vehicle with jack or wooden block.
- Remove the cushion lever cover ①.
- Remove the swingarm under cover ②.

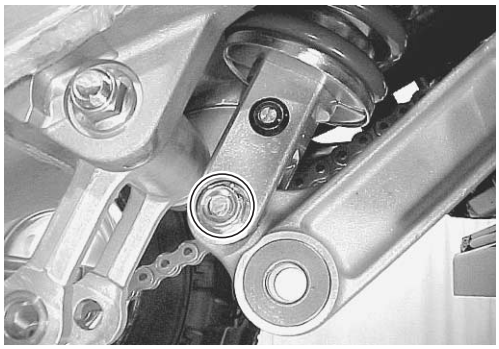


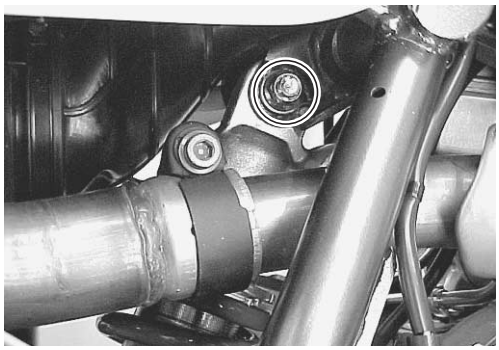


- Remove the cushion rod lower bolt/nut.

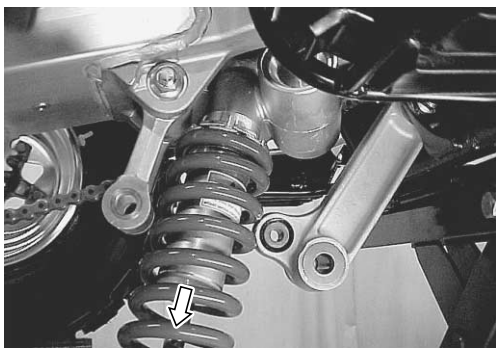


- Remove the rear shock absorber mounting bolts/nuts.





- Remove the rear shock absorber by lifting up the swingarm.

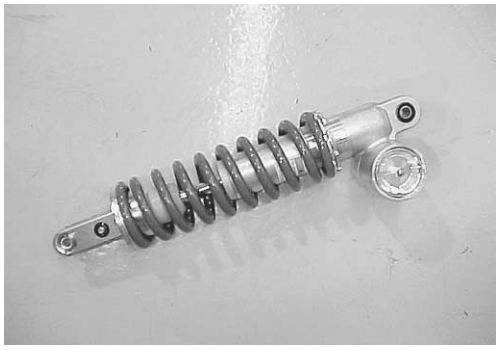


INSPECTION

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

CAUTION

Do not attempt to disassemble the rear shock absorber. It is unserviceble.



REAR SHOCK ABSORBER DISPOSAL

⚠ WARNING

*** The rear shock absorber unit contains high-pressure nitrogen gas.**
*** Mishandling can cause explosion.**
*** Keep away from fire and heat. High gas pressure caused by heat can cause an explosion.**
*** Release gas pressure before disposing.**

GAS PRESSURE RELEASE

- Remove the valve cap.
- Press the valve with a screwdriver to bleed out the nitrogen gas.

⚠ WARNING

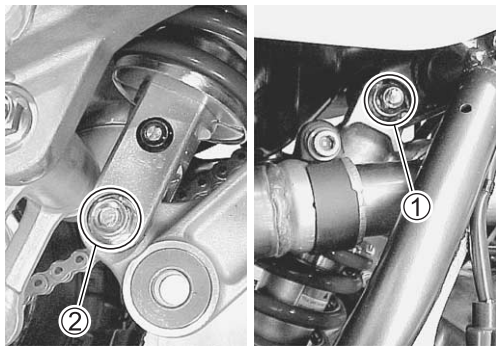
*** Releasing high pressure gas from the rear shock absorber unit can be hazardous. Never perform any servicing until the nitrogen gas pressure has been released from the rear shock absorber unit.**
*** When releasing the gas pressure, place a reg over the gas valve and use the tip of a screwdriver to press the valve. Do not use your finger to depress the gas valve, and be sure to direct the valve away from your face and body.**
*** Be sure to always wear eye protection when performing this procedure.**

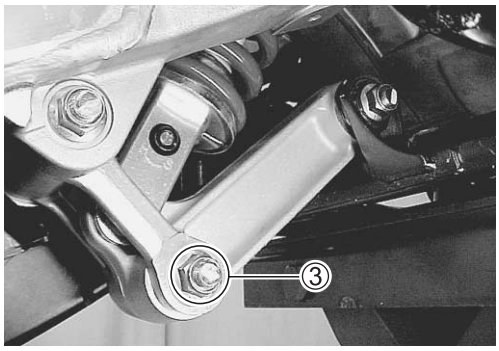
REMOUNTING

Remounting the rear shock absorber in the reverse order of removal. Pay attention to the following points:

- Tigten each bolt/nut to the specified torque.

Rear shock absorber nut (Upper) ①:
60 N·m (6.0 kgf-m, 43.5 lb-ft)
Rear shock absorber nut (Lower) ②:
55 N·m (5.5 kgf-m, 40.0 lb-ft)
Rear cushion rod nut ③: 78 N·m (7.8 kgf-m, 56.5 lb-ft)





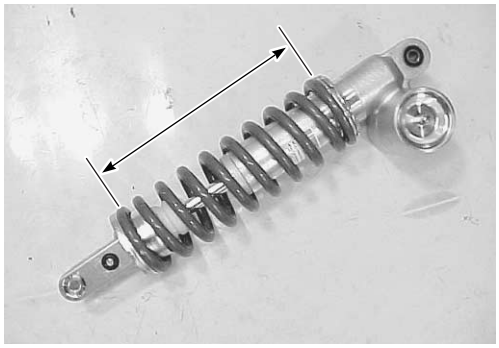
SUSPENSION SETTING

SPRING PRE-LOAD ADJUSTMENT

The rear suspension spring pre-load is adjustable. This adjustment is performed by changing spring set length.

SPRING SET LENGTH

STANDARD	MAXIMUM (SOFTEST)	MINIMUM (STIFFEST)
233 mm (9.17 in)	238 mm (9.37 in)	228.5 mm (9.00 in)



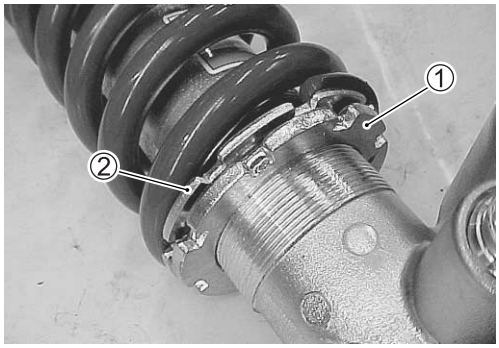
CAUTION

Do not set the spring length out of the specified range.

- Remove the rear shock absorber. (☞6-62)
- Loosen the locknut ①.
- Adjust the spring set length by turning the adjuster ②.
- Tighten the locknut ① to the specified torque.

Rear shock absorber locknut:
88 N·m (8.8 kgf-m, 63.5 lb-ft)

- Remount the rear shock absorber. (☞above)



DAMPING FORCE ADJUSTMENT

The rebound and compression damping force are adjustable for rider's preference, rider's weight and field condition.

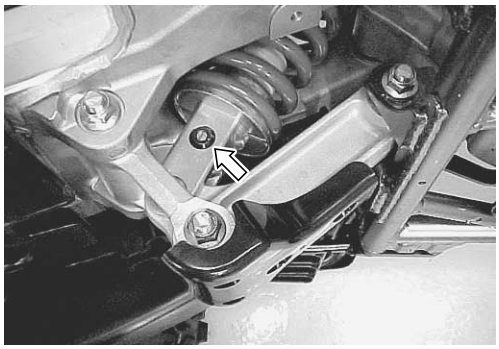
NOTE:
Do not turn the adjuster screws more than given position, or the adjuster may be damaged.

REBOUND DAMPING FORCE ADJUSTMENT

Fully turn the damping force adjuster clockwise. It is at stiffest position and turn it out to standard position.

DATA Standard setting position: 16 clicks out

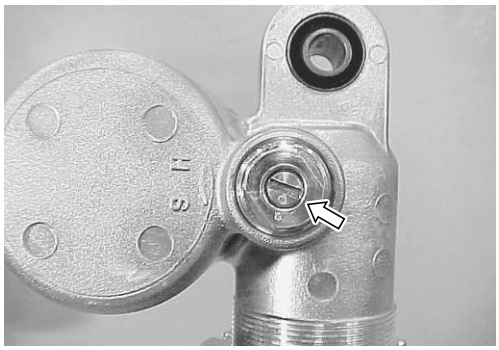
NOTE:
Make sure to check the 1st click position by last sound when turning in the adjuster.



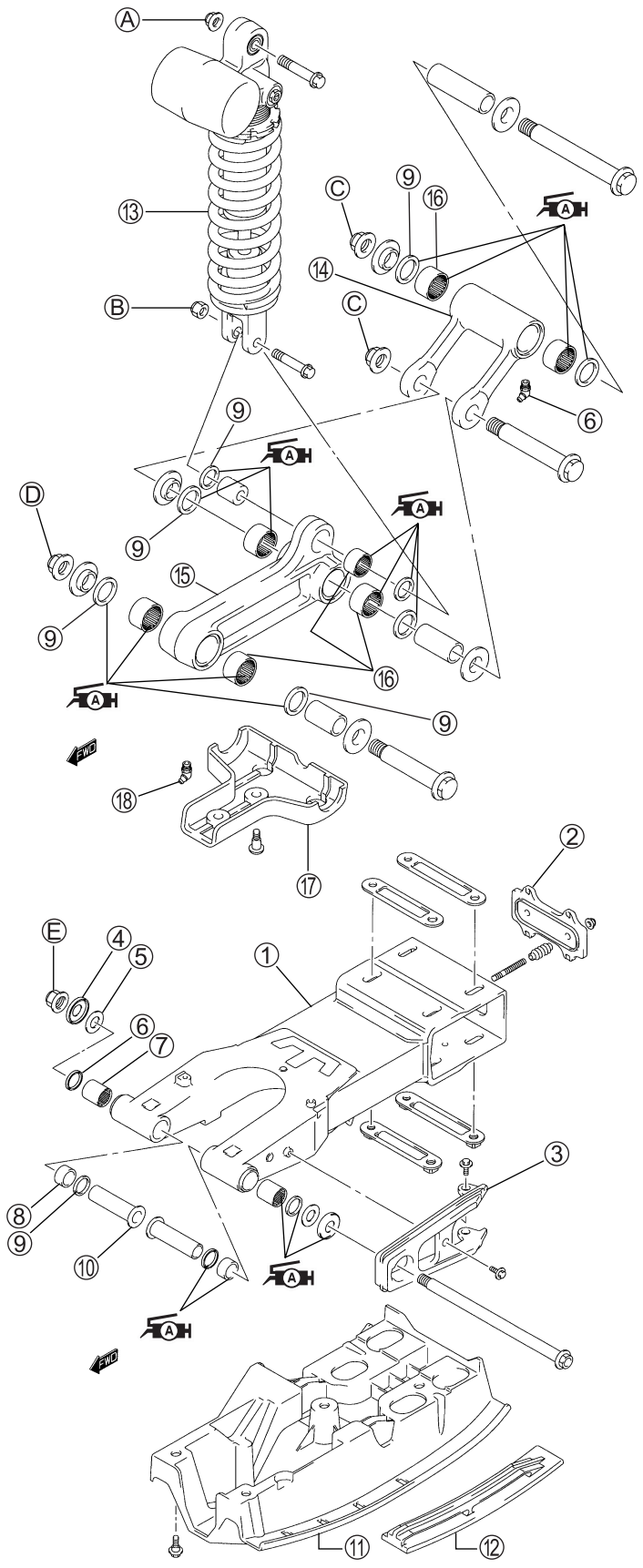
COMPRESSION DAMPING FORCE ADJUTMENT

Fully turn the damping force adjuster clockwise. It is at stiffest position and turn it out to standard position.

DATA Standard setting position: 2 turns out



REAR SUSPENSION
CONSTRUCTION



① Swingarm
② Chain adjuster plate
③ Chain buffer
④ Dust cover
⑤ Washer
⑥ Dust seal
⑦ Bearing
⑧ Bushing
⑨ Dust seal
⑩ Collar
⑪ Swingarm under cover
⑫ Chain buffer
⑬ Rear shock absorber
⑭ Cushion rod
⑮ Cushion lever
⑯ Bearing
⑰ Cushion lever cover
⑱ Grease nipple

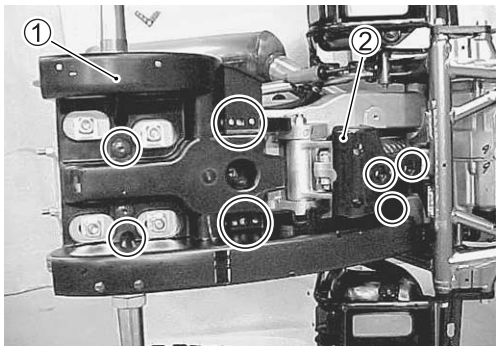
Ⓐ Rear shock absorber upper mounting nut
Ⓑ Rear shock absorber lower mounting nut
Ⓒ Cushion rod nut
Ⓓ Cushion lever nut
Ⓔ Rear swingarm pivot nut

ITEM	N·m	kgf-m	lb-ft
Ⓐ	60	6.0	43.5
Ⓑ	55	5.5	40.0
Ⓒ	78	7.8	56.5
Ⓓ	78	7.8	56.5
Ⓔ	84	8.4	61.0

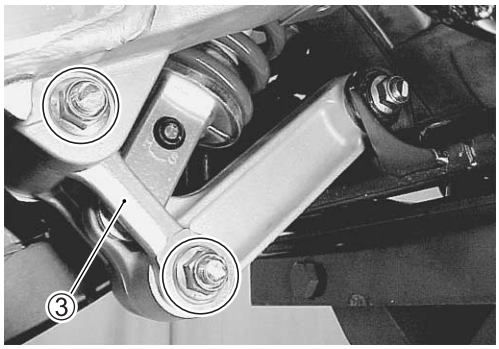
REMOVAL

CUSHION LEVER AND CUSHION ROD

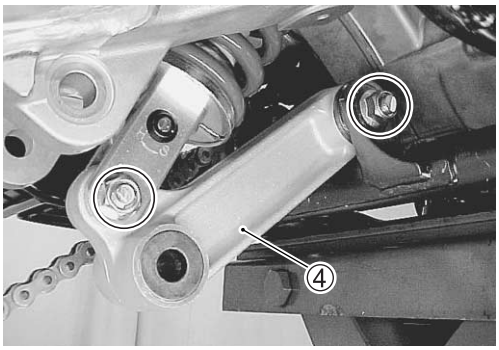
- Place the vehicle on the level ground and support the vehicle with a jack or wooden block.
- Remove the swingarm under cover ①.
- Remove the cushion lever cover ②.



- Remove the cushion rod ③.



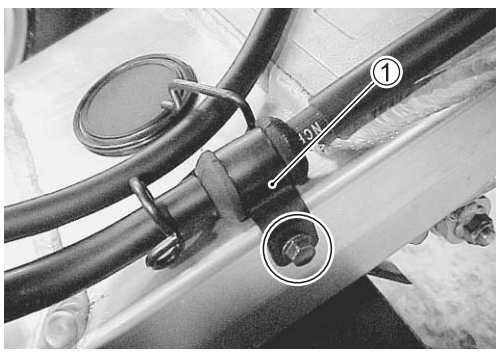
- Remove the cushion lever ④.



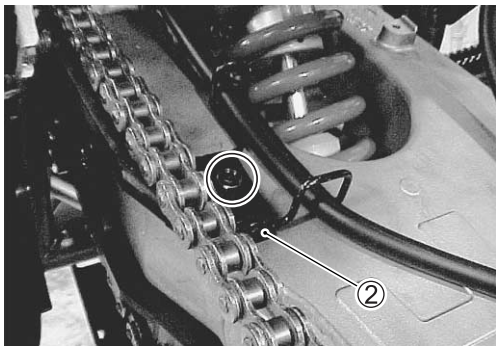
REAR SWINGARM

- Remove the cushion rod and cushion lever. (☞ above)
- Remove the rear shock absorber. (☞6-62)
- Remove the rear wheels. (☞6-10)
- Remove the rear axle and axle housing. (☞6-80)

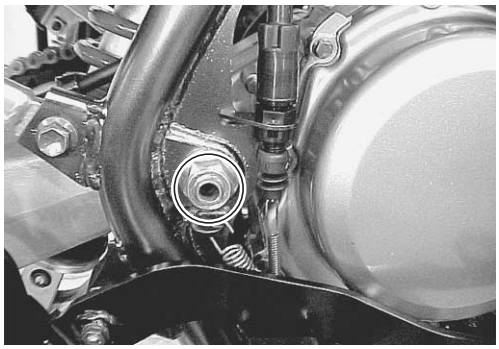
- Remove the brake hose guide ①.



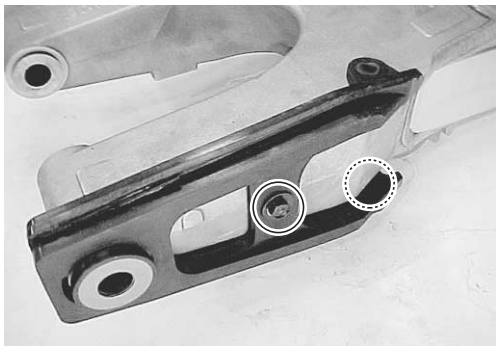
- Remove the parking cable guide ②.



- Loosen the swingarm pivot nut and remove the swingarm pivot shaft.
- Remove the swingarm assembly.



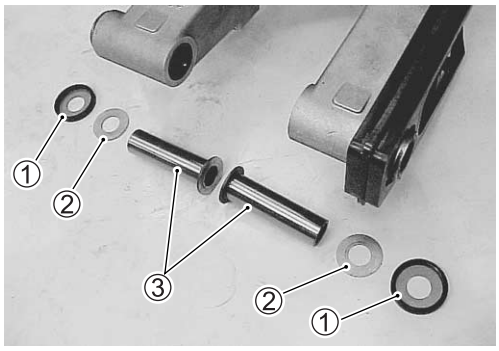
- Remove the chain buffer ③.

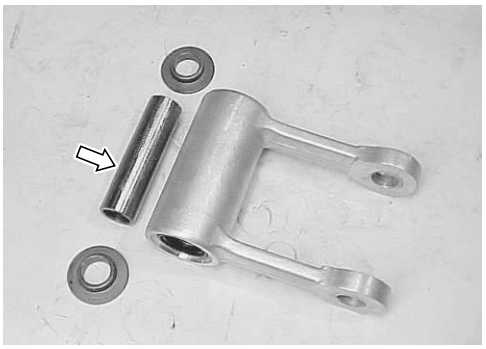


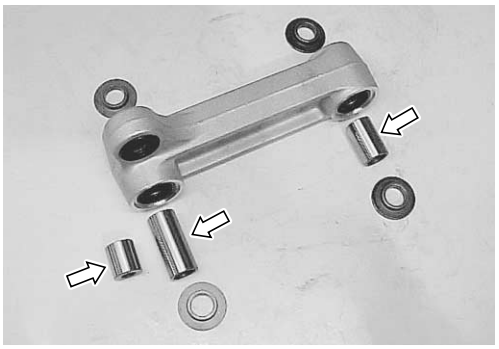
INSPECTION AND DISASSEMBLY

SPACER

- Remove the dust covers ①, washers ② and spacers ③ from the swingarm.
- Remove the spacers from the cushion lever and cushion rod.
- Inspect the spacers for any flaws or other damage. If any defects are found, replace the spacers with new ones.

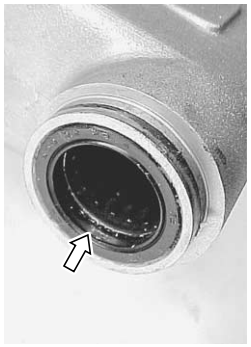


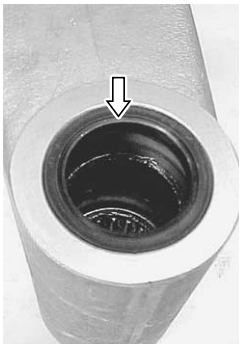


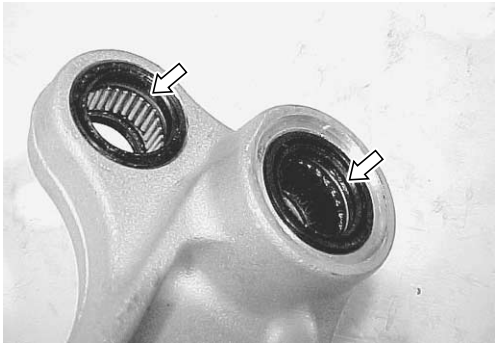


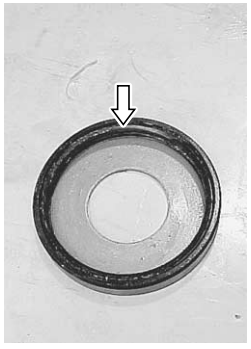
DUST SEAL

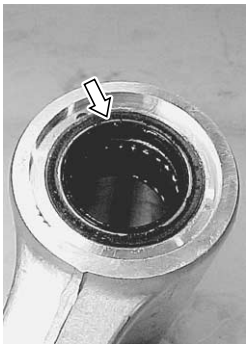
- Inspect the dust seals for wear or damage. If any defect are found, replace them with new ones.





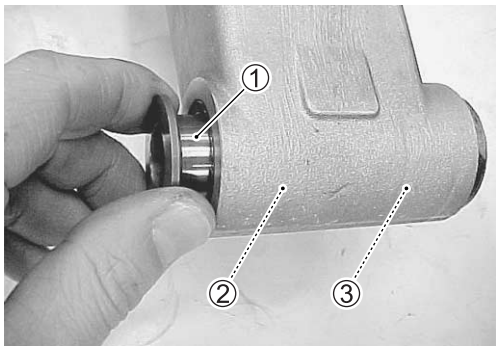


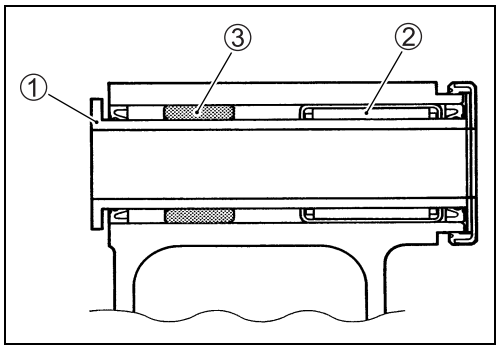




SWINGARM BEARING AND BUSHING

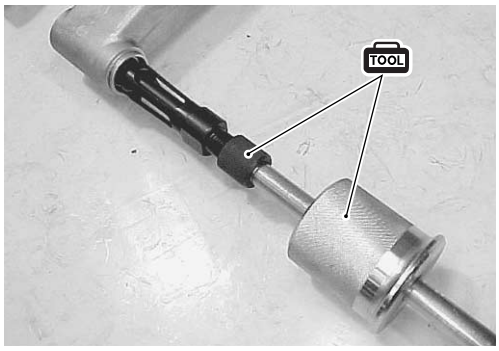
Insert the spacer ① into the bearing ②, bushing ③ and then check the play when moving the spacer up and down.
If excessive play is noted, replace the bearing and bushing with a new one.





- Remove the dust seals.
- Remove the pivot bearings with special tools.

TOOL 09923-74511: Bearing remover
09930-30104: Sliding shaft

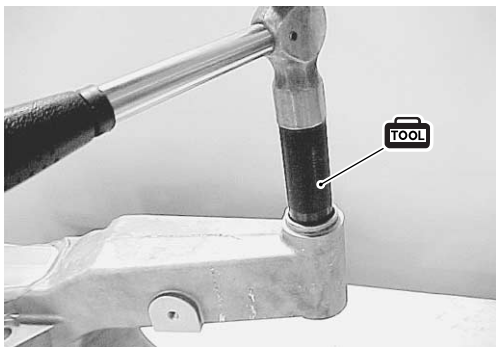


CAUTION

The removed bearings must be replaced with new ones.

- Remove the pivot bushing with special tool.

TOOL 09913-70210: Bearing installer set



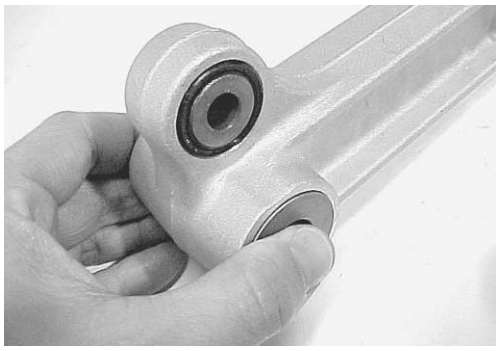
CAUTION

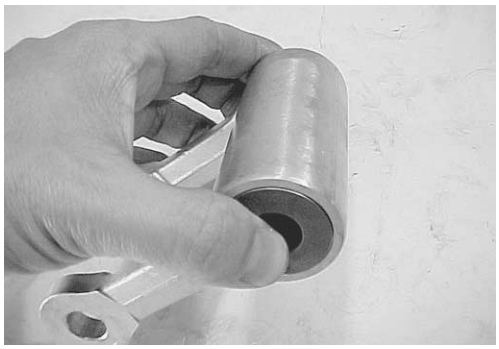
The removed bushings must be replaced with new ones.

CUSHION LEVER BEARING AND CUSHION ROD BEARING

Insert the spacer into the bearing, and then check the play when moving the spacer up and down.

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

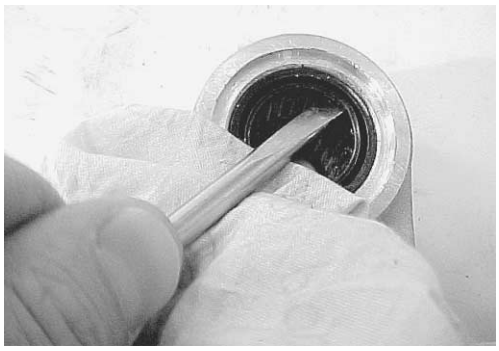




- Remove the dust seals.

CAUTION

Do not reuse the removed dust seals.

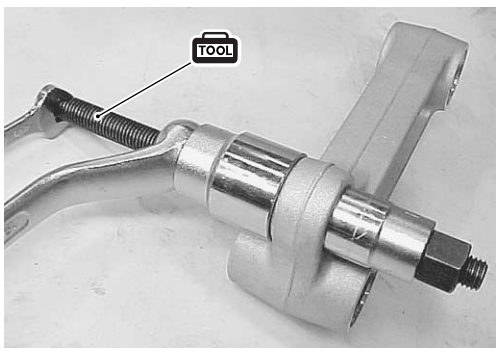


- Remove the cushion lever bearings by using the special tool and suitable tool.

TOOL 09924-84510: Bearing installer set

CAUTION

Do not reuse the removed bearings.

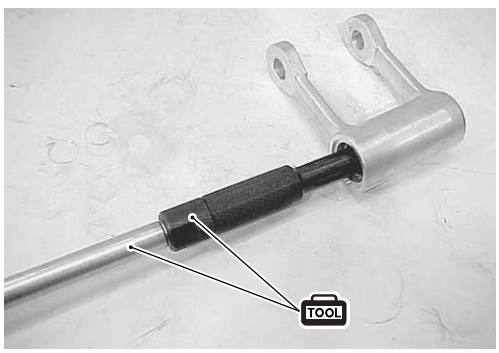


- Remove the cushion rod bearings with the special tool.

TOOL 09923-73210: Bearing puller
09930-30104: Sliding shaft

CAUTION

Do not reuse the removed bearings.

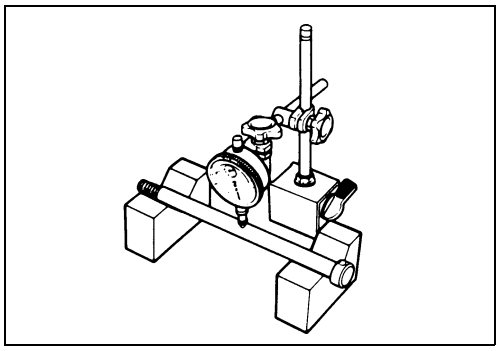


SWINGARM PIVOT SHAFT

Using a dial gauge, check the pivot shaft runout. If the runout exceeds service limit, replace the pivot shaft with a new one.

TOOL 09900-20607: Dial gauge (1/100 mm, 10 mm)
09900-20701: Magnetic stand
09900-21304: V-block (100 mm)

DATA Swingarm pivot shaft runout:
Service Limit: 0.3 mm (0.01 in)



CUSHION LEVER AND ROD BOLT

Inspect the cushion lever and rod bolts for damage or bend. If any defect are noted, replace them with new ones.

CHAIN BUFFER

Inspect the chain buffer for wear and damage.

If any defects are found, replace the chain buffer with a new one.

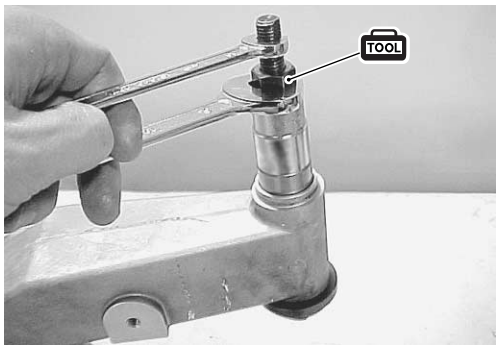
REASSEMBLY

Reassemble the cushion lever, cushion rod and swingarm in the reverse order of disassembly and removal. Pay attention to the following points:

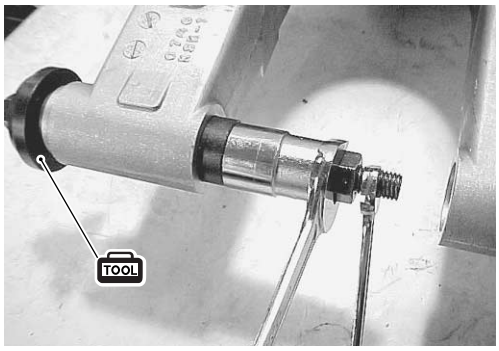
SWINGARM BEARING AND DUST SEAL

- Press the bearing into the swingarm pivot with special tool to the depth of 5 mm (0.2 in). (☞6-75)

09924-84510: Bearing installer set

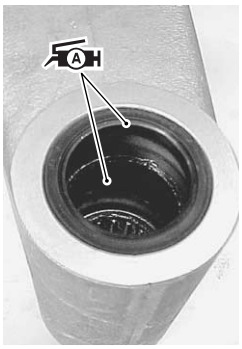


- Press the bushing into the swingarm pivot with special tool to the depth of 12 mm (0.47 in). (☞6-75)



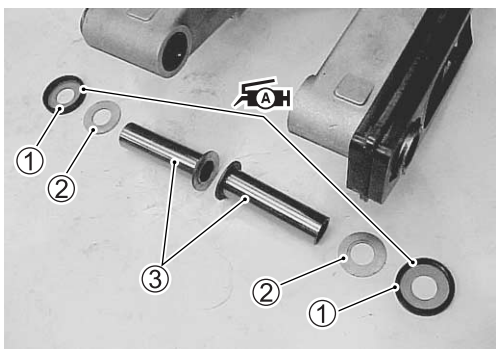
- Install the dust seals into the swingarm pivot with the stamped mark showed up.
- Apply SUZUKI SUPER GREASE "A" to the bearings, bushings and lips of dust seal.

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

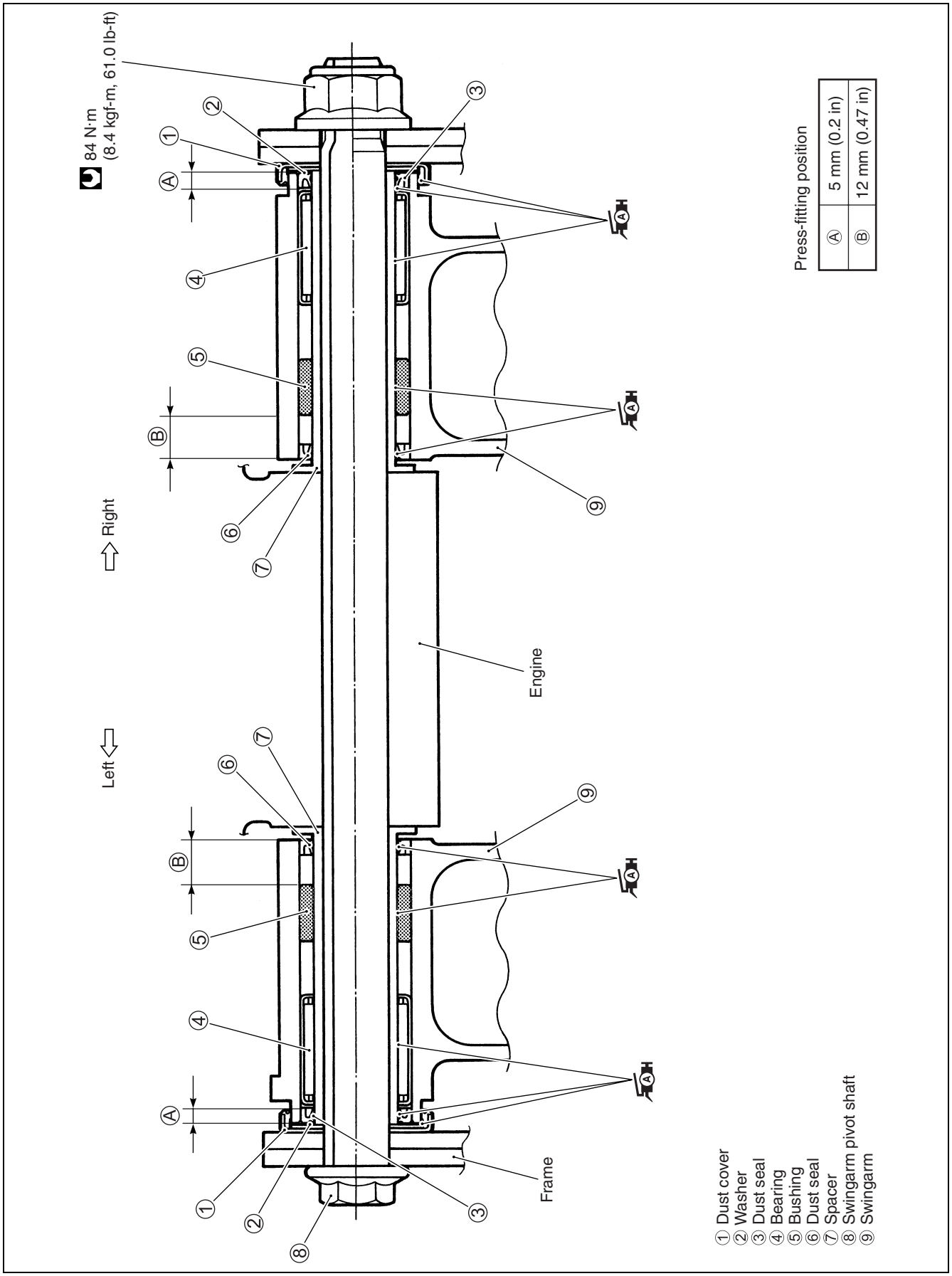


- Apply SUZUKI SUPER GREASE "A" to lip of the dust covers ①.
- Install the dust covers ①, washers ② and spacers ③ to the swingarm.

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



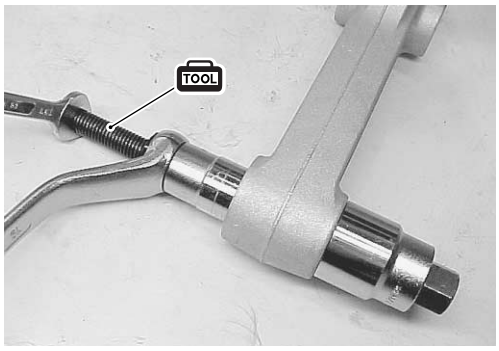
SWINGARM PIVOT ASSEMBLY INFORMATION

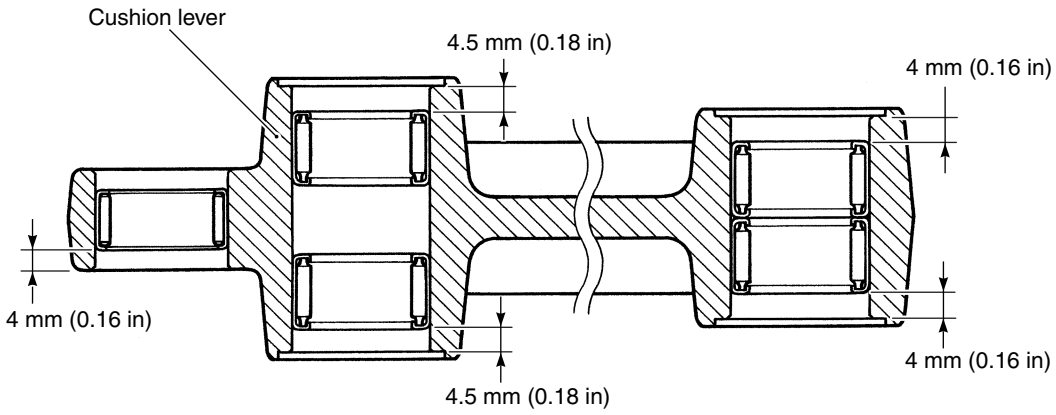


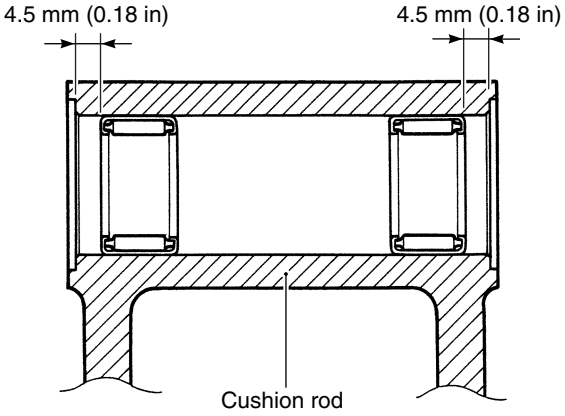
CUSHION ROD/LEVER BEARING AND DUST SEAL

- Install the bearings into the cushion rod/lever with the special tool to the specified depth shown in the illustration below.

TOOL 09924-84510: Bearing installer set







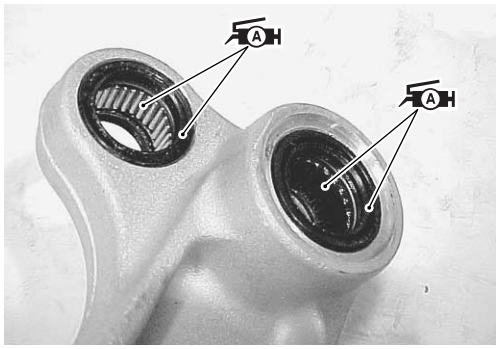
- Install the dust seals into the cushion rod/lever.
- Apply SUZUKI SUPER GREASE “A” to the bearings and lips of dust seal.

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

NOTE:

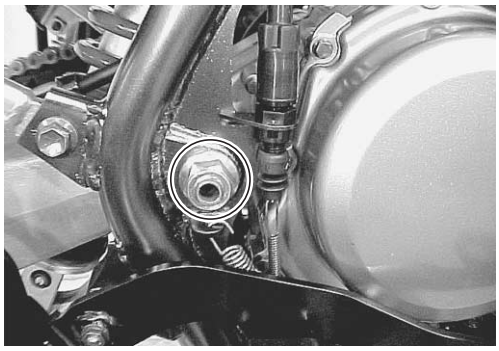
** The stamped mark of dust seal must face outside.*

** Refer to 6-78 for the grease nipple installation.*



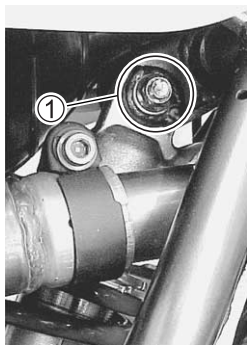
REMOUNTING

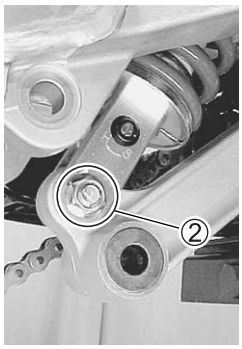
Remount the cushion lever, cushion rod and swingarm in reverse order of removal. Pay attention to the following points:



- Install the swingarm and pivot shaft.
- Tighten the swingarm pivot nut to the specified torque.

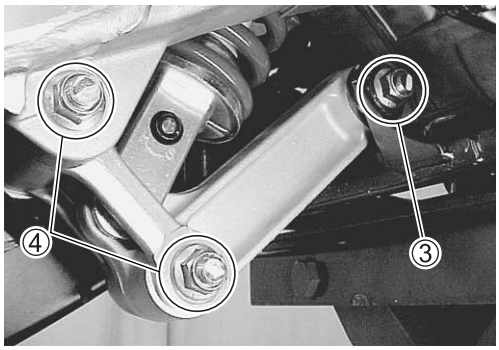
Swingarm pivot nut: 84 N·m (8.4 kgf-m, 61.0 lb-ft)





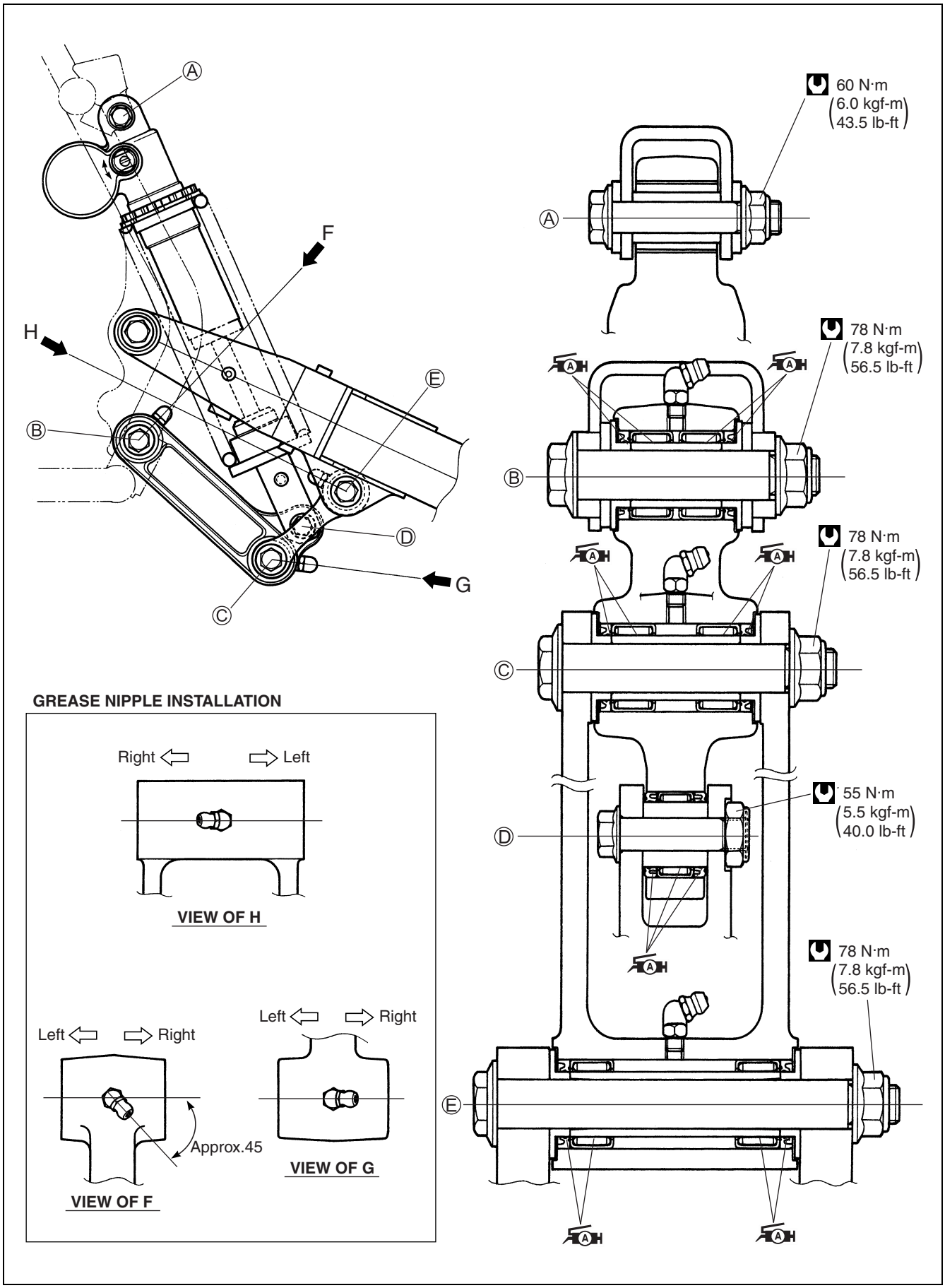
- Install the rear shock absorber and cushion lever.
- Tigten the rear shock absorber mounting nuts to the specified torque.

Rear shock absorber nut (Upper) ①:
60 N·m (6.0 kgf-m, 43.5 lb-ft)
Rear shock absorber nut (Lower) ②:
55 N·m (5.5 kgf-m, 40.0 lb-ft)

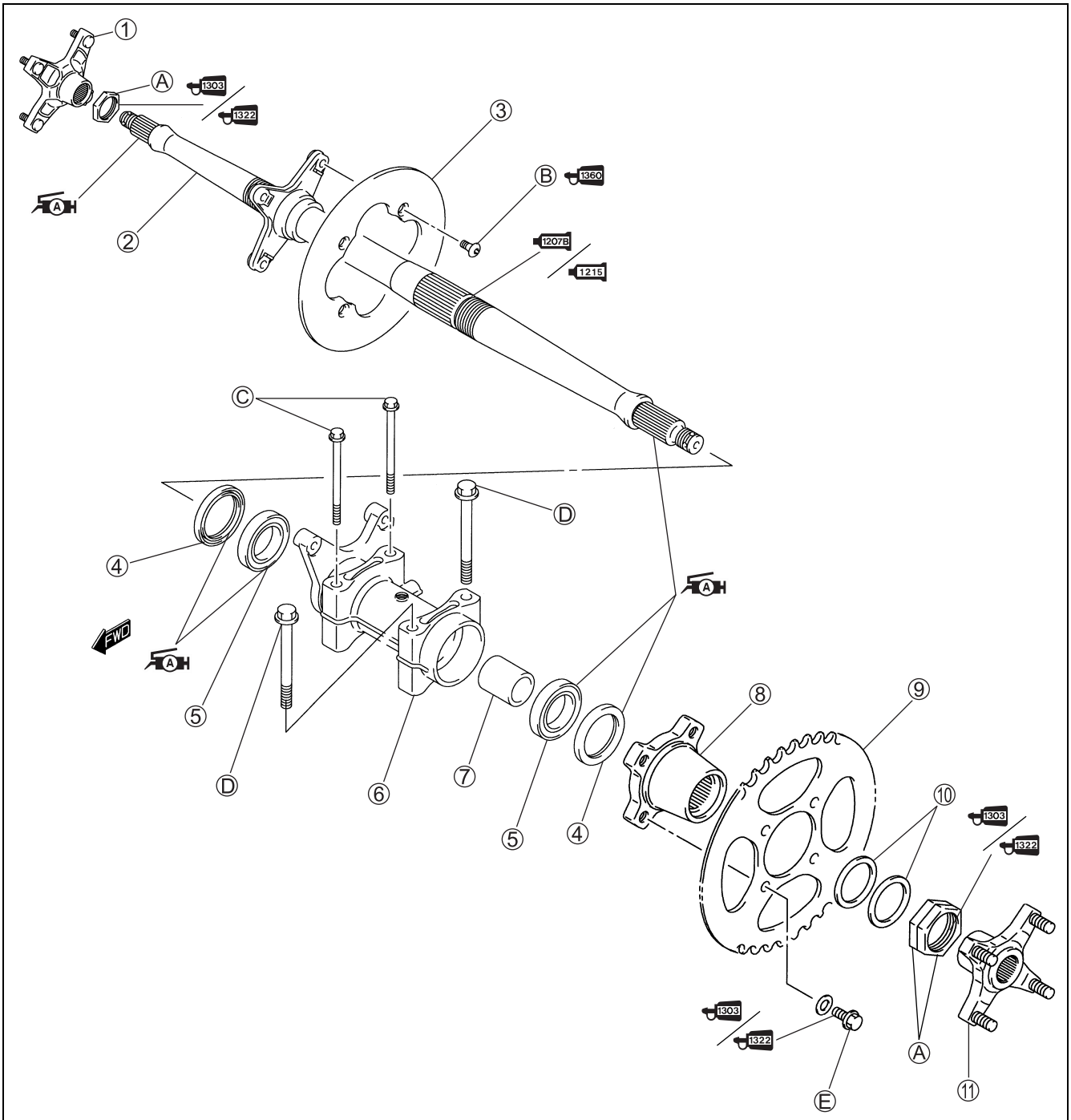


- Tigten the cushion rod nut and cushion lever nut to the specified torque.

Cushion lever nut ③: 78 N·m (7.8 kgf-m, 56.5 lb-ft)
Cushion rod nut ④: 78 N·m (7.8 kgf-m, 56.5 lb-ft)


A
F
H
E
B
D
G
C
60 N·m
(6.0 kgf-m)
(43.5 lb-ft)
78 N·m
(7.8 kgf-m)
(56.5 lb-ft)
78 N·m
(7.8 kgf-m)
(56.5 lb-ft)
55 N·m
(5.5 kgf-m)
(40.0 lb-ft)
78 N·m
(7.8 kgf-m)
(56.5 lb-ft)
GREASE NIPPLE INSTALLATION
Right
Left
VIEW OF H
Left
Right
Approx.45
VIEW OF F
Left
Right
VIEW OF G

REAR AXLE
CONSTRUCTION



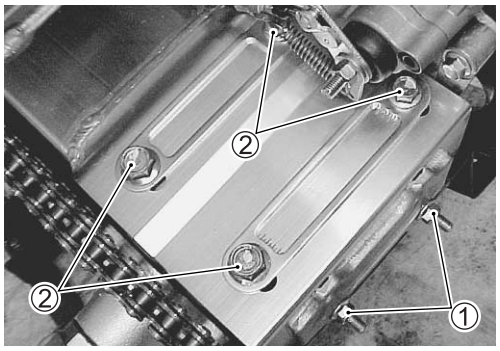
① Rear wheel right hub
② Rear axle
③ Rear brake disc
④ Dust seal
⑤ Bearing
⑥ Rear axle housing
⑦ Spacer
⑧ Sprocket flange
⑨ Sprocket
⑩ Washer
⑪ Rear wheel left hub

Ⓐ Rear axle nut
Ⓑ Disc bolt
Ⓒ Rear axle housing bolt (M10)
Ⓓ Rear axle housing bolt (M12)
Ⓔ Sprocket mounting bolt

ITEM	N·m	kgf-m	lb-ft
Ⓐ	180	18.0	130.0
Ⓑ	23	2.3	16.5
Ⓒ	73	7.3	53.0
Ⓓ	100	10.0	72.5
Ⓔ	54	5.4	39.0

REMOVAL

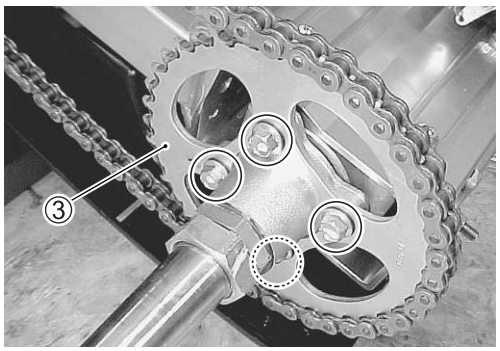
- Place the vehicle on the level ground and support the vehicle with a jack or wooden block.



SPROCKET

- Remove the left rear wheel. (☞6-10)
- Remove the left rear wheel hub. (☞6-11)
- Remove the rear caliper.
- Loosen the chain adjust nuts ① and the rear axle housing bolts ②.

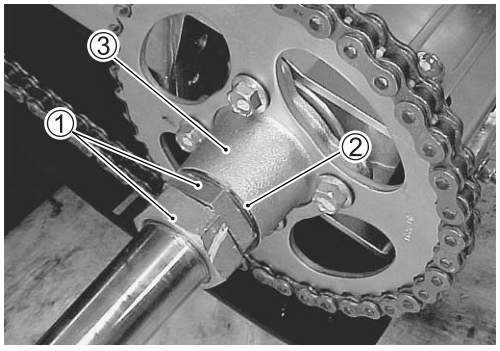
- Loosen the sprocket mounting bolts, and remove the sprocket ③.



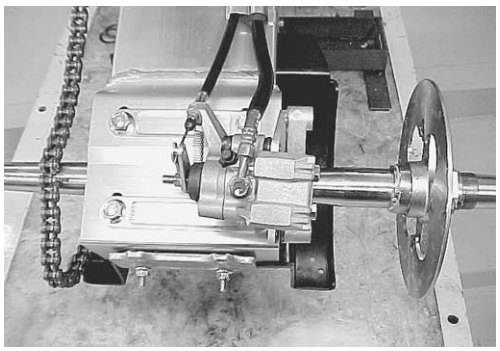
REAR AXLE SHAFT

- Remove the rear wheels. (☞6-10)
- Remove the rear wheel hubs. (☞6-11)
- Loosen the axle nuts ① with the special tool by applying the rear brake.
- Remove the axle nuts and concave washers ②.
- Remove the sprocket flange ③.

TOOL 09940-92450: Rear axle nut holder



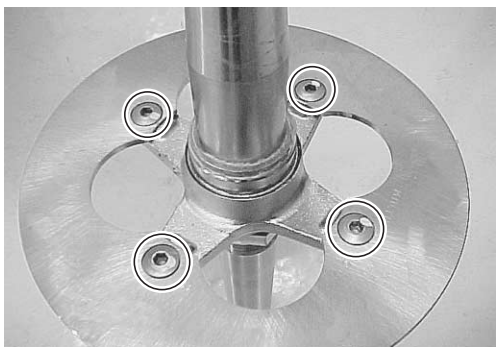
- Remove the caliper.
- Draw out the rear axle shaft to the right.



- Remove the brake disc.

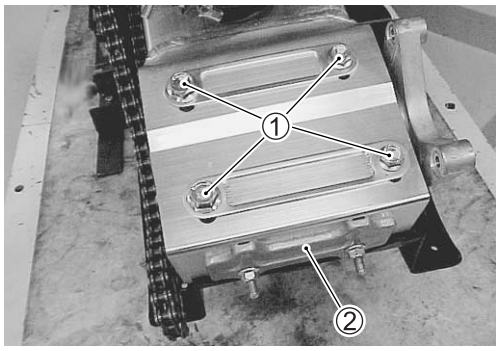
CAUTION

Do not attempt to remove the brake disc flange from the rear axle shaft.
The rear axle shaft is available only as an assembly.

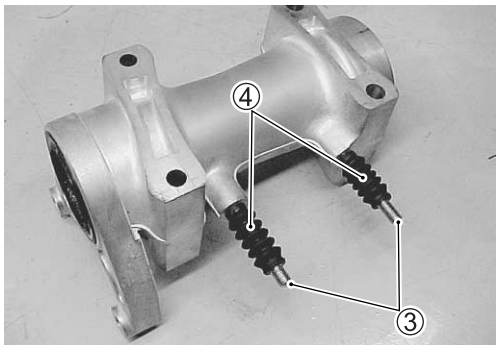


REAR AXLE HOUSING

- Remove the axle housing bolts ①.
- Remove the chain adjuster plate ②.
- Remove the axle housing from the swingarm.



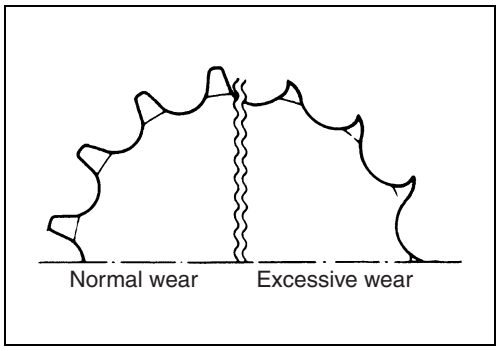
- Remove the chain adjuster stud bolts ③ and boots ④.



INSPECTION AND DISASSEMBLY

SPROCKET

Inspect the sprocket teeth for wear. If they are worn as shown, replace the engine sprocket, rear sprocket and drive chain as a set.

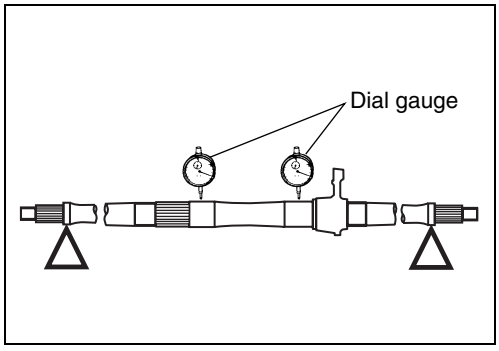


REAR AXLE SHAFT

Measure the rear axle shaft runout. If the runout exceeds the service limit, replace the rear axle shaft with a new one.

DATA **Rear axle shaft runout**
Service limit: 6 mm (0.24 in)

TOOL **09900-20607: Dial gauge (1/100 mm)**
09900-20701: Magnetic stand
09900-21304: V-block set (100 mm)



NOTE:
When measuring the runout, support the rear axle shaft at 32 mm (1.26 in) diameter of the rear axle shaft as shown in illustration.
Measure the runout at 40 mm (1.57 in) diameter of the rear axle shaft as shown in illustration.

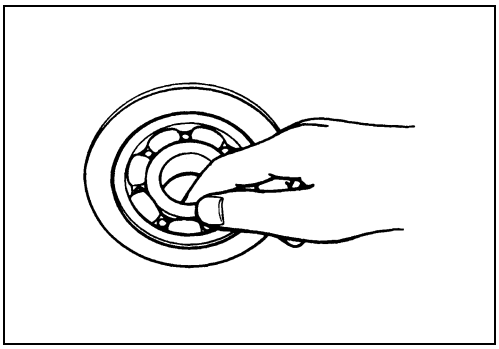
DUST SEAL

Inspect the dust seals for wear or damage. If any defect are founds, replace the dust seal with a new one.

AXLE BEARINGS

Inspect the play of the wheel bearings by finger while they are in the axle housing. Rotate the inner race by finger to inspect for abnormal noise and smooth rotation.

Replace the bearing with a new one, if there is anything unusual.

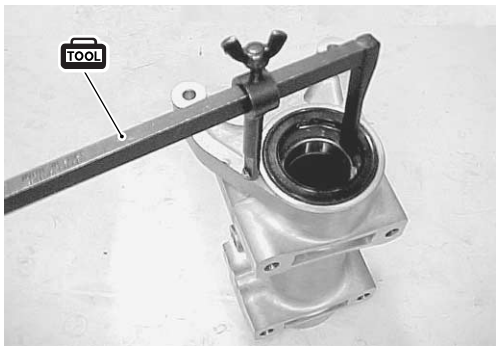


- Remove the dust seals with the special tool.

TOOL 09913-50121: Oil seal remover

CAUTION

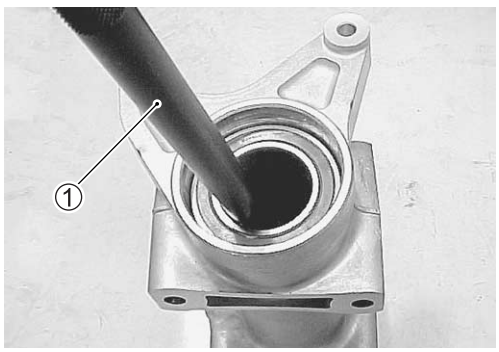
Do not reuse the removed dust seals.



- Remove the bearings with appropriate bar ① and remove the bearing spacer.

CAUTION

Do not reuse the removed bearings.



REASSEMBLY AND REMOUNTING

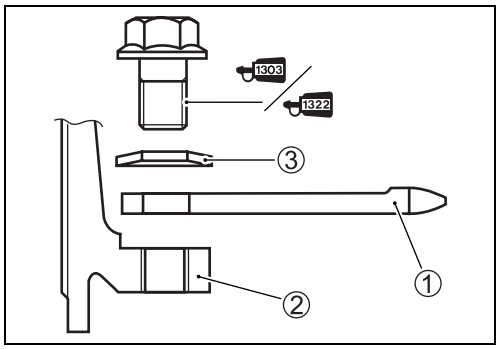
Reassemble the rear axle shaft and rear axle housing in the reverse order of removal and disassembly. Pay attention to the following points:

REAR SPROKET

- Install the rear sprocket ① to the sprocket flange ②.
- Apply THREAD LOCK SUPER "1303" or "1322" to the sprocket mounting bolts.

1303 99000-32030: THREAD LOCK SUPER "1303" (USA)

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



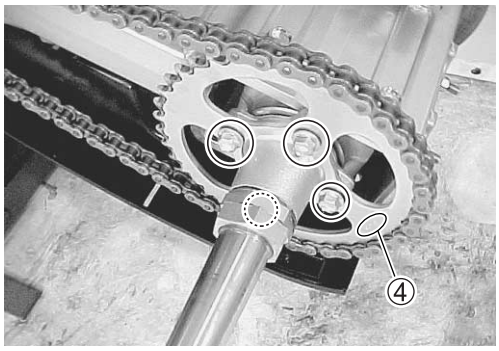
- Tighten the sprocket mounting bolts to the specified torque.

Sprocket mounting bolt: 54 N·m (5.4 kgf-m, 39.0 lb-ft)

NOTE:

** The concave side of washer ③ must face to the sprocket.*

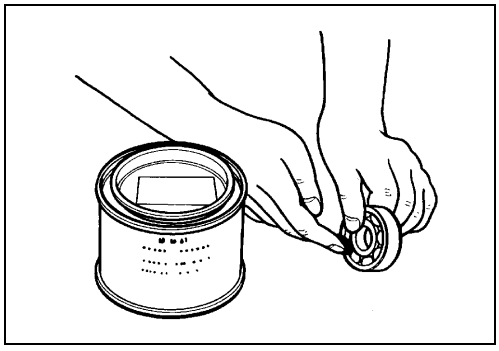
** The stamped mark ④ must face to left of the vehicle.*



AXLE HOUSING

- Apply SUZUKI SUPER GREASE "A" to the bearings and dust seals before installing.

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

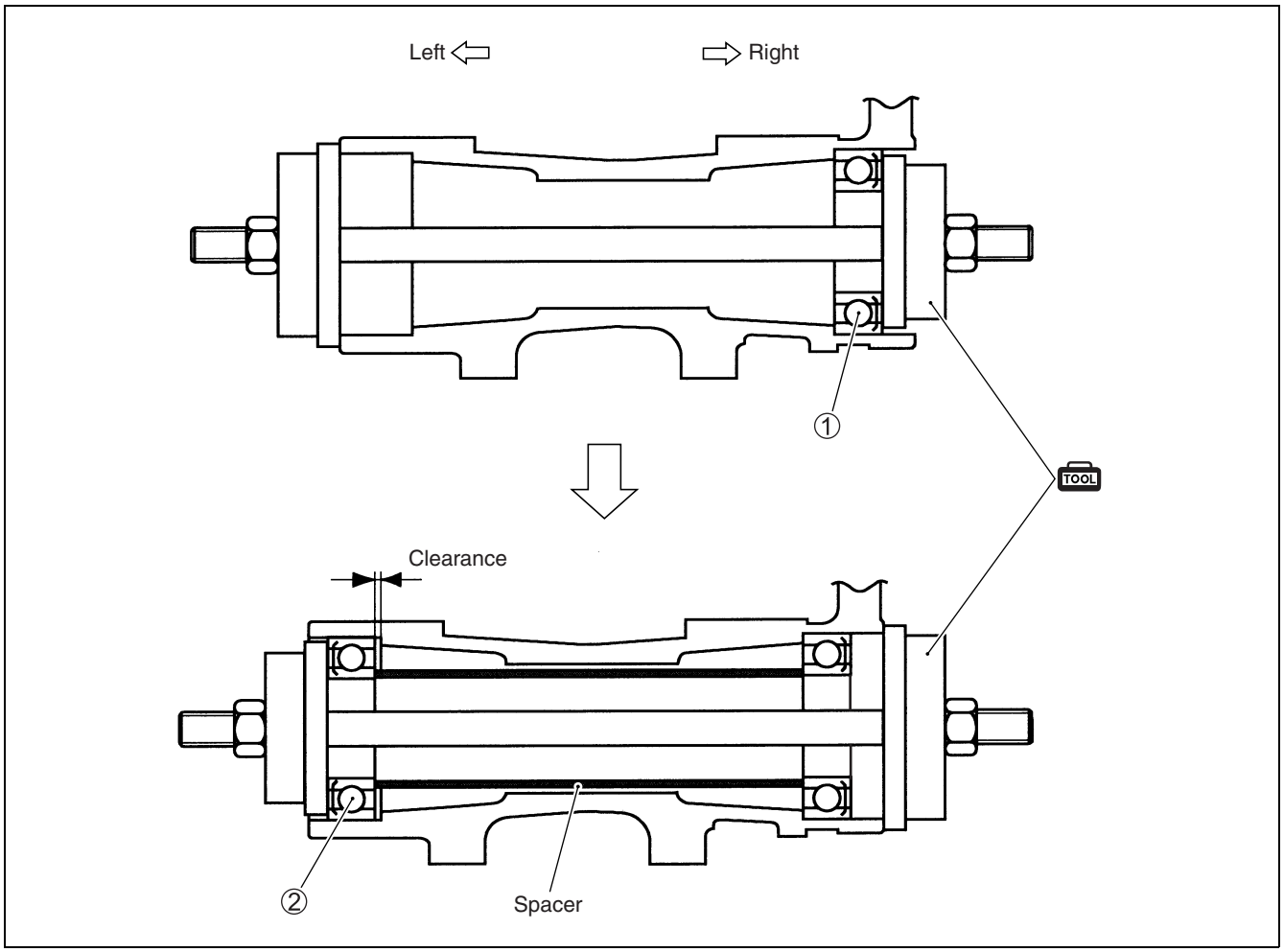


• Install the bearings to the axle housing with the special tool.

TOOL 09941-34513: Bearing installer set
09913-70210: Bearing installer set

CAUTION

*** First install the right bearing ① to the bottom, and then install the spacer and left bearing ②.**
*** The sealed cover of the bearing must face outside.**



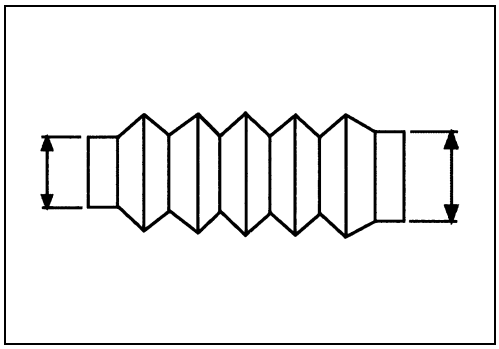
• Install the dust seals ③ with the special tool.

TOOL 09913-70210: Bearing installer set

NOTE:
Make sure that the stamped mark on the dust seal faces to the bearing.

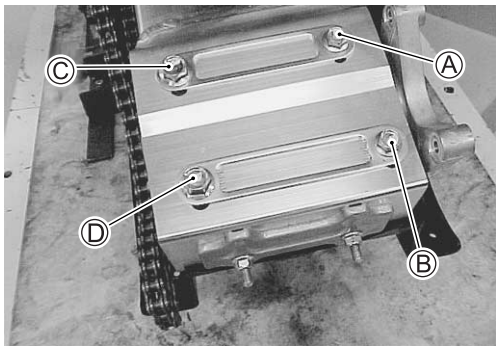
- Install the chain adjuster stud bolts and boots.

NOTE:
The smaller diameter portion of the boot must face to the axle housing.



- Install the axle housing into the swingarm.
- Tighten the axle housing bolts temporarily.

NOTE:
The axle housing bolts are unequal in size. Refer to table below.



	Ⓐ	Ⓑ	Ⓒ	Ⓓ
Diameter (mm)	10	10	12	12
Length (mm)	118	110	122	112
Washer	—		with a washer	

REAR AXLE SHAFT

When the rear axle shaft is replaced with a new one, install the right axle nut onto the new axle shaft.

- Apply THREAD LOCK SUPER “1303” or “1322” to the axle shaft.

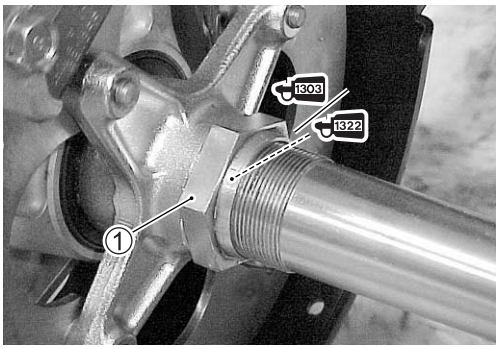
1303 99000-32030: THREAD LOCK SUPER “1303” (USA)
1322 99000-32110: THREAD LOCK SUPER “1322” (Others)

- Tighten the axle nut ① to the specified torque.

Rear axle nut (right) : 180 N·m (18.0 kgf-m, 130.0 lb-ft)

TOOL 09940-92450: Rear axle nut holder

NOTE:
When tightening the axle nut with the special tool, the reading torque on the torque wrench is smaller than actual torque that is applied to the axle nut. Therefore convert the tightening torque. (☞6-88)

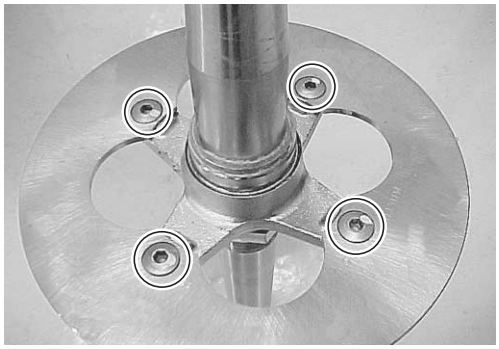


- Install the brake disc to the rear axle shaft.
- Apply THREAD LOCK SUPER “1360” to the disc bolts and tighten them to the specified torque.

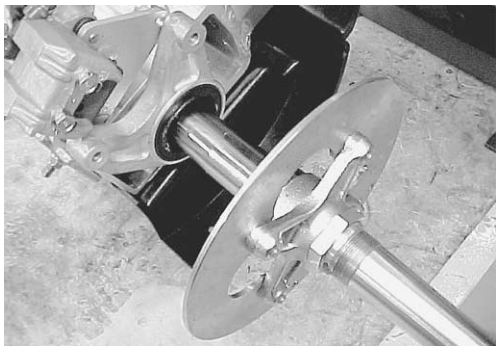
1360 99000-32130: THREAD LOCK SUPER “1360”

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

NOTE:
Make sure that the brake disc is clean and free of any grease matter.

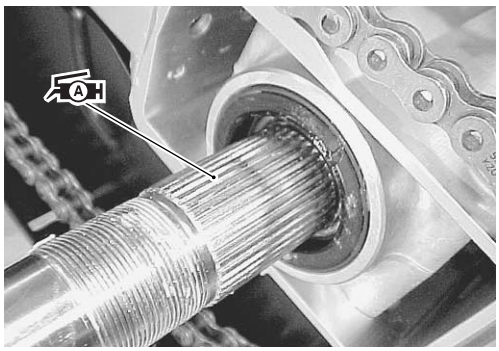


- Install the rear axle shaft into the axle shaft housing.



- Apply SUZUKI SUPER GREASE “A” to the spline of the axle shaft.

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

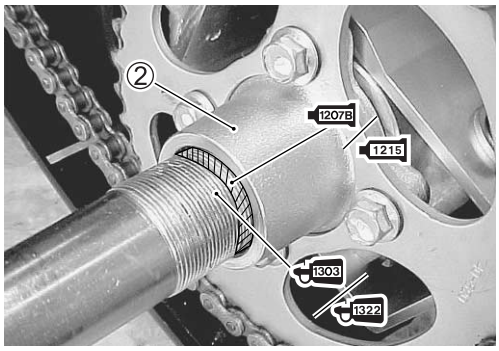


- Install the sprocket flange ② to the axle shaft.
- Apply SUZUKI BOND “1207B” or “1215” to the axle shaft.

1207B 99104-31140: SUZUKI BOND “1207B” (USA)
1215 99000-31110: SUZUKI BOND “1215” (Others)

- Apply THREAD LOCK SUPER “1303” or “1322” to the thread portion of the rear axle shaft.

1303 99000-32030: THREAD LOCK SUPER “1303” (USA)
1322 99000-32110: THREAD LOCK SUPER “1322” (Others)

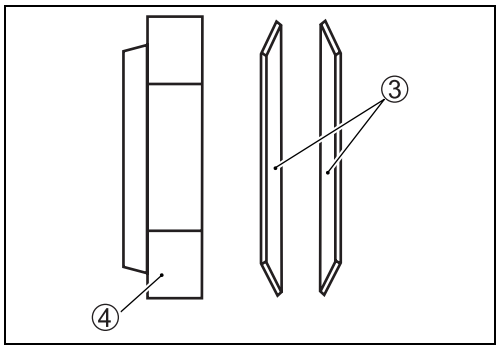


- Install the concave washers ③ and tighten the inner axle shaft nut inner ④ to the specified torque with the special tool.

Axle shaft nut (inner): 180 N·m (18.0 kgf-m, 130.0 lb-ft)

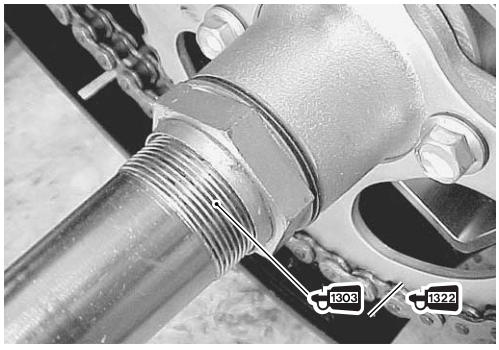
TOOL 09940-92450: Rear axle nut holder

NOTE:
When tightening the axle nut with the special tool, the reading torque on the torque wrench is smaller than actual torque that is applied to the axle nut. Therefore convert the tightening torque. (☞6-88)



- Apply THREAD LOCK SUPER “1303” or “1322” to the thread portion of the rear axle shaft.

1303 99000-32030: THREAD LOCK SUPER “1303” (USA)
1322 99000-32110: THREAD LOCK SUPER “1322” (Others)

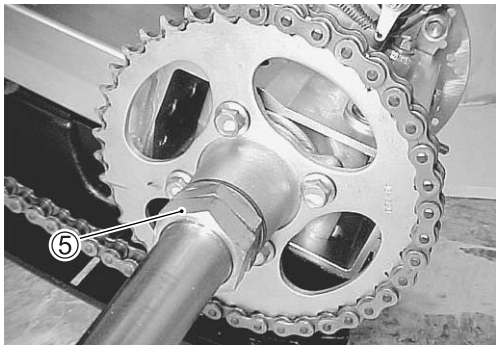


- Tighten the rear axle outer nut ⑤ to the specified torque with special tool.

Axle shaft nut (outer): 180 N·m (18.0 kgf-m, 130.0 lb-ft)

TOOL 09940-92450: Rear axle nut holder

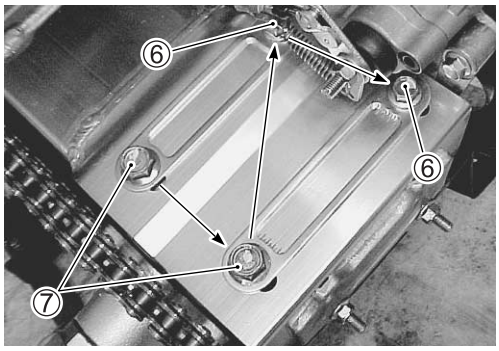
NOTE:
When tightening the axle nut with the special tool, the reading torque on the torque wrench is smaller than actual torque that is applied to the axle nut. Therefore convert the tightening torque. (☞6-88)



- Install the rear wheel hubs. (☞6-14)
- Install the rear wheels. (☞6-14)
- Adjust the chain slack. (☞2-22)
- Tighten the rear axle housing bolts to the specified torque in the described order. (☞2-23)

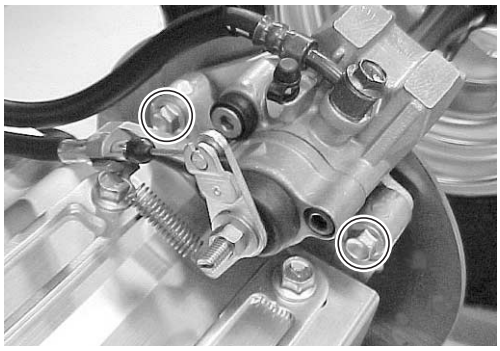
Rear axle housing bolt (M10) ⑥:
73 N·m (7.3 kgf-m, 53.0 lb-ft)

Rear axle housing bolt (M12) ⑦:
100 N·m (10.0 kgf-m, 72.5 lb-ft)



- Install the rear caliper and tighten the caliper mounting bolts to the specified torque.

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



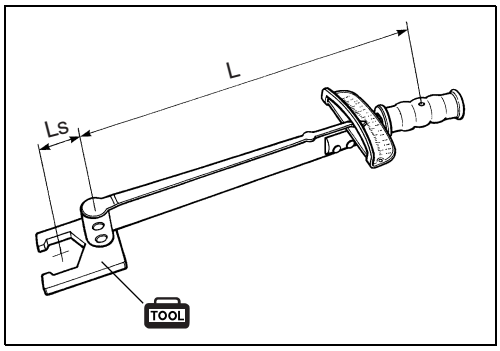
REAR AXLE NUT TIGHTENING TORQUE

Measure the effective length L of the torque wrench.
Calculate the reading torque on the torque wrench by use of the formula shown below.

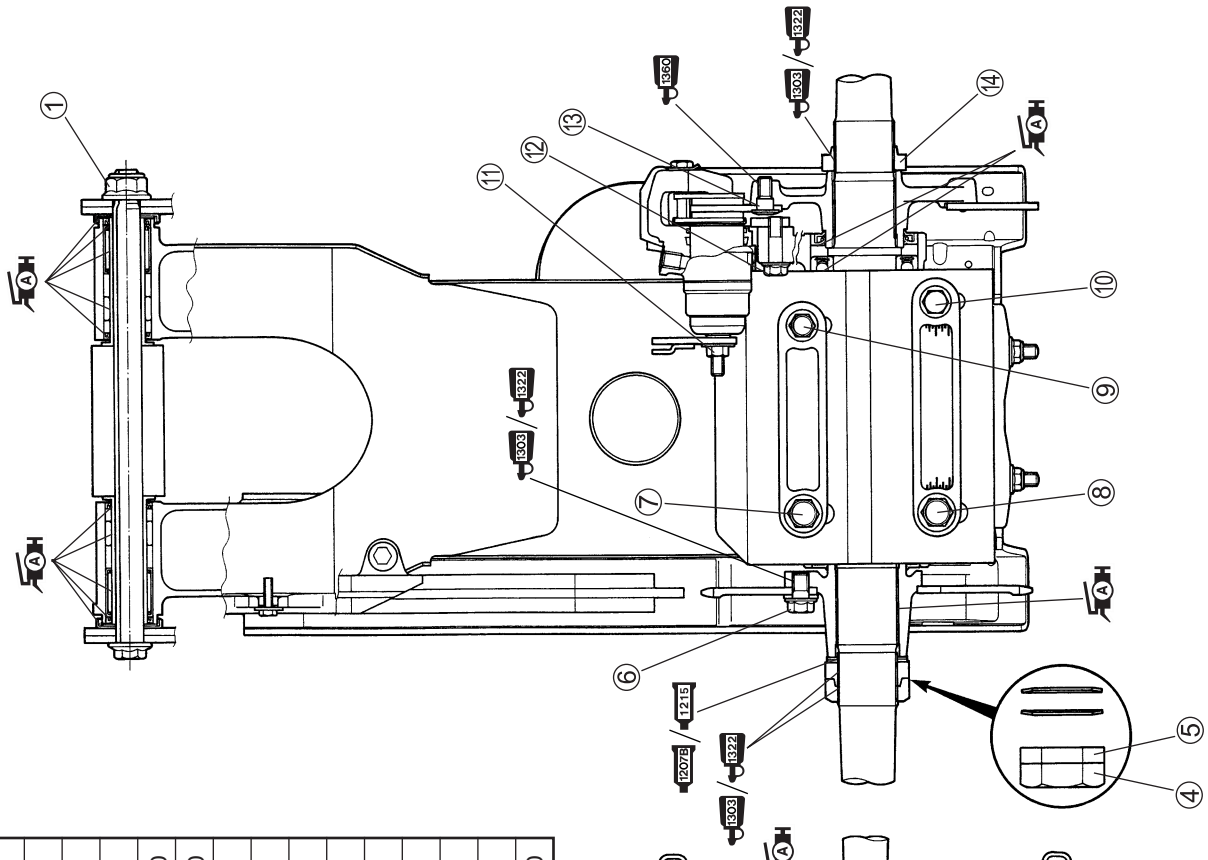
$$T = \frac{L \times Ts}{L + Ls}$$

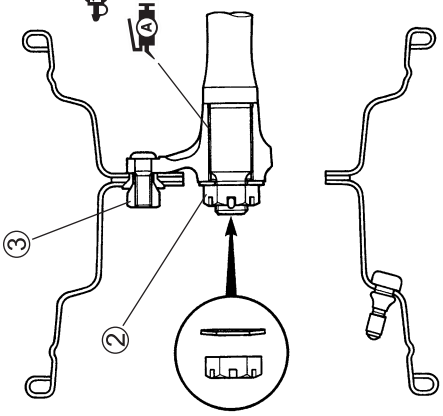
T: Reading torque on the torque wrench
Ts: Specified torque
Ls: 0.046 m (1.81 in)
Off-set of the specified special tool (09940-92450)
L: Effective length of the torque wrench

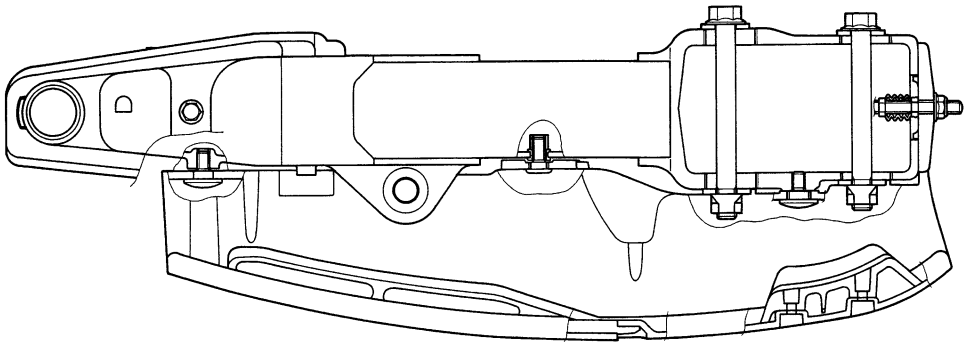
TOOL 09940-92450: Rear axle nut holder



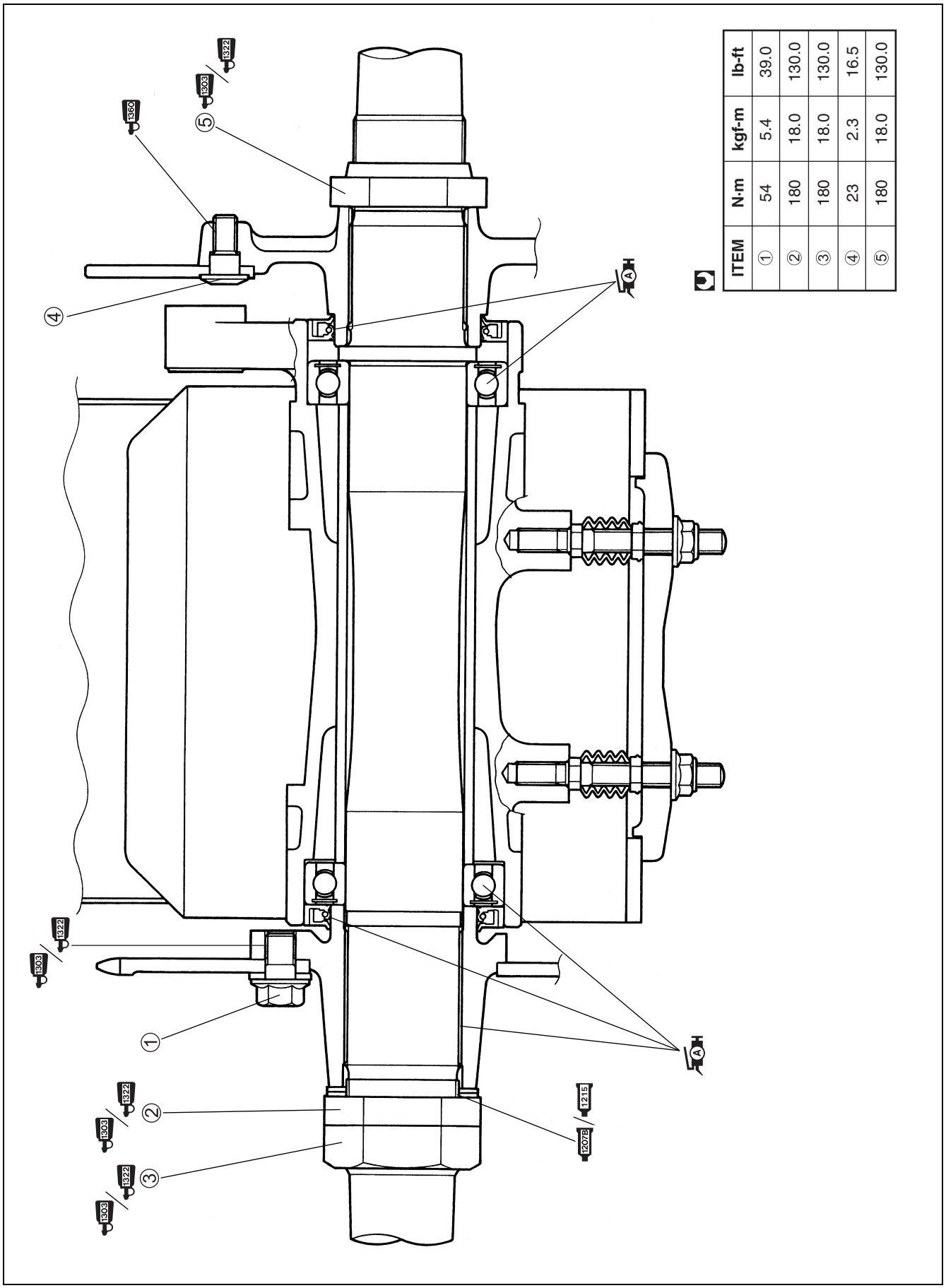
REAR WHEEL, REAR BRAKE, REAR SUSPENSION, REAR SWINGARM AND REAR AXLE SHAFT REASSEMBLING INFORMATION







ITEM	N·m	kgf-m	lb-ft
①	84	8.4	61.0
②	100	10.0	72.5
③	50	5.0	36.0
④	180	18.0	130.0
⑤	180	18.0	130.0
⑥	54	5.4	39.0
⑦	100	10.0	72.5
⑧	100	10.0	72.5
⑨	73	7.3	53.0
⑩	73	7.3	53.0
⑪	18	1.8	13.0
⑫	26	2.6	19.0
⑬	23	2.3	16.5
⑭	180	18.0	130.0

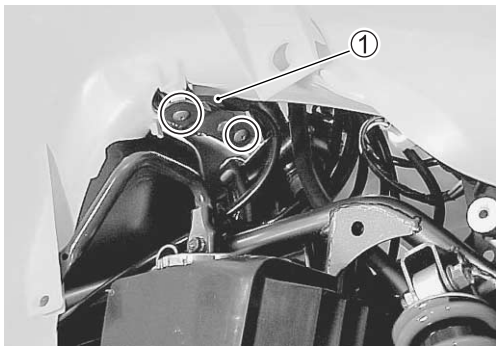


ITEM	N·m	kgf-m	lb-ft
①	54	5.4	39.0
②	180	18.0	130.0
③	180	18.0	130.0
④	23	2.3	16.5
⑤	180	18.0	130.0

REVERSE LOCK RELEASE CABLE

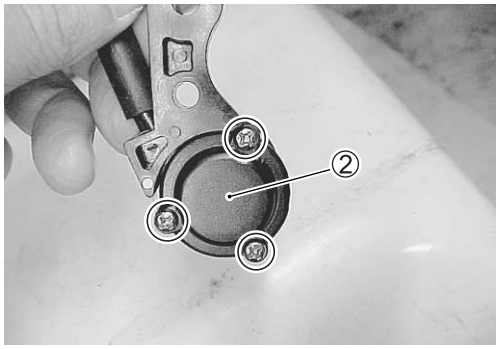
REMOVAL

- Remove the reverse lock release knob ① from the front fender.

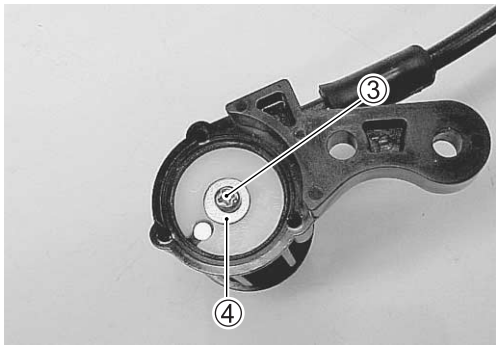


- Remove the bracket.

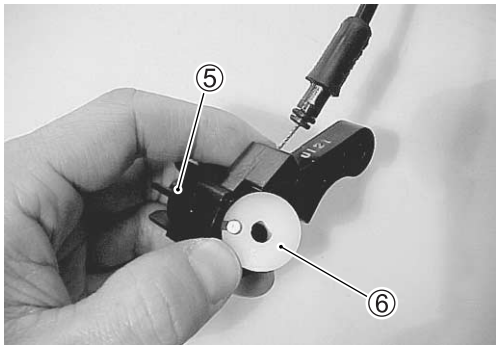
- Remove the cap ②.



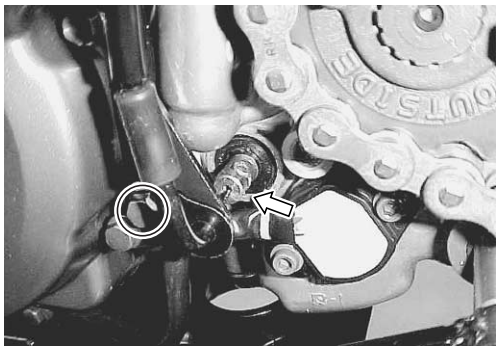
- Remove the screw ③ and washer ④.



- Remove the knob ⑤.
- Disconnect the cable by removing the rotor ⑥.



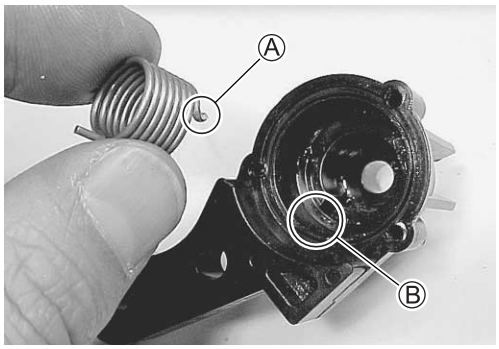
- Remove the engine sprocket cover. (☞3-5)
- Disconnect the cable by removing the cable mounting bolt.



REMOUNTING

Remount the reverse lock release cable in the reverse order removal. Pay attention to the following points:

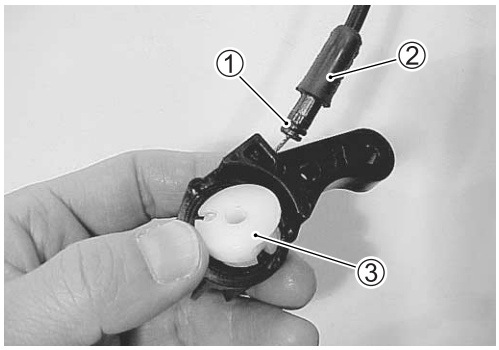
- Install the spring with the spring end Ⓐ matched the groove Ⓑ on the housing.



- Apply SUZUKI SUPER GREASE “A” to the O-ring ①.

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

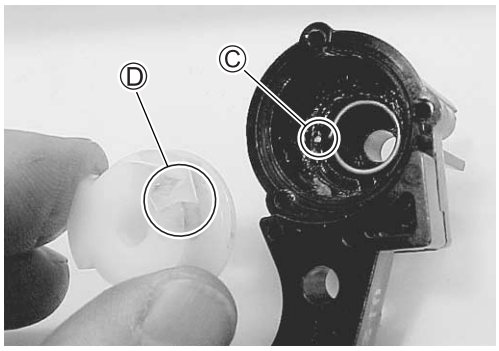
- Install the O-ring ① to the reverse lock release cable ②.
- Connect the cable to the rotor ③ through the hole of the housing.



NOTE:

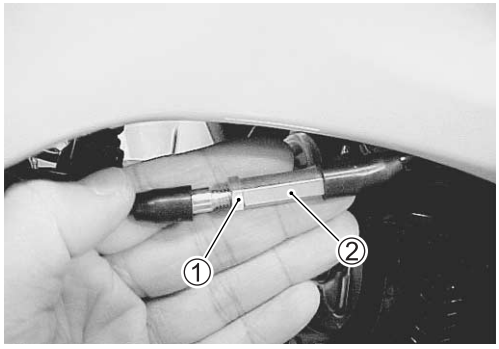
** When installing the rotor, hook the spring end Ⓒ on the concave portion Ⓓ of the rotor.*

** Make sure that the reverse lock release cable is routed correctly.*

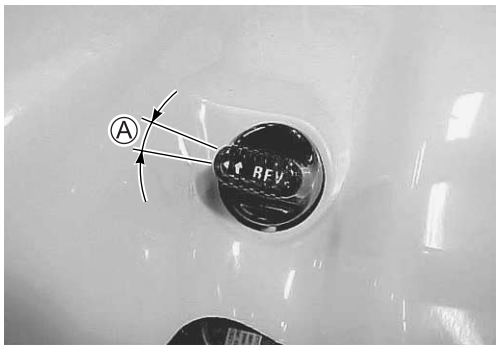


CABLE PLAY ADJUSTMENT

After installing the reverse lock release cable, adjust the cable play. The cable adjuster is located at inside of the fuel tank right side cover.



- Loosen the locknut ①.
- Turn the adjuster ② in or out until the cable play Ⓐ should be 1 – 2 mm (0.04 – 0.08 in) at the reverse lock release knob.
- Tighten the locknut ① securely.



- After adjustment, be sure to check for reverse lock function.

ELECTRICAL SYSTEM

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- COUPLERS 7- 2
- CLAMPS 7- 2
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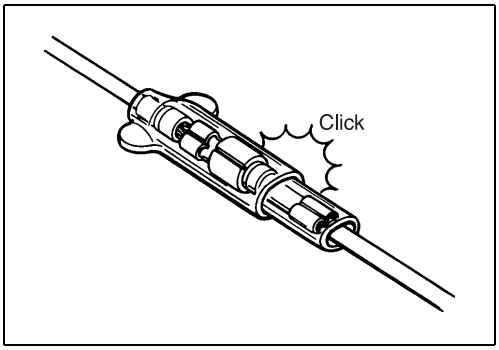
CAUTIONS IN SERVICING

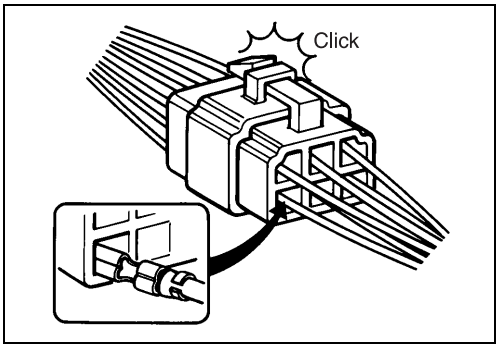
CONNECTORS

- When disconnecting a connector, be sure to hold the terminals; do not pull the lead wires.
- When connecting a connector, push it in so it is firmly attached.
- Inspect the connector for corrosion, contamination and any breakage in the cover.



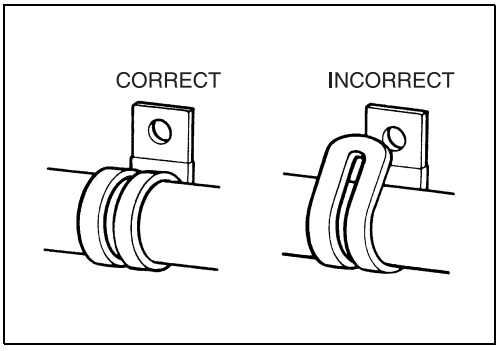
COUPLERS

- With a lock-type coupler, be sure to release the lock before disconnecting it. When connecting a coupler, push it in until the lock clicks shut.
- When disconnecting a coupler, be sure to hold the coupler; do not pull the lead wires.
- Inspect each terminal on the coupler for looseness or bends.
- Inspect each terminal for corrosion and contamination.



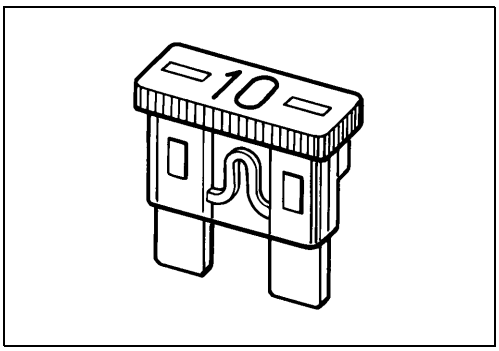
CLAMPS

- Refer to the “WIRE HARNESS ROUTING” section for proper clamping procedures. (☞8-11 to 8-12)
- Bend the clamp properly, as shown in the illustration.
- When clamping the wire harness, do not allow it to hang down.
- Do not use wire or any substitutes for the band-type clamp.



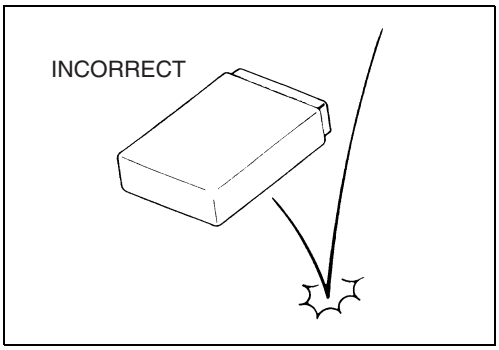
FUSES

- When a fuse blows, always investigate the cause, correct the problem, and then replace the fuse.
- Do not use a fuse of a different capacity.
- Do not use any substitutes for the fuse (e.g., wire).



SEMI-CONDUCTOR EQUIPPED PARTS

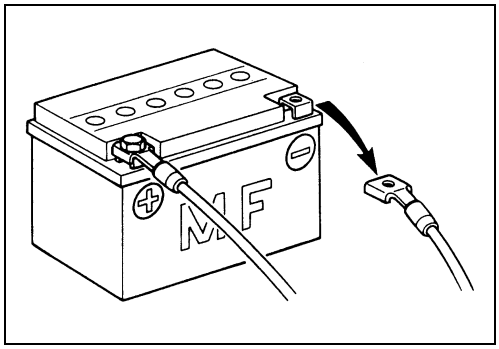
- Do not drop any part that contains a semi-conductor (e.g., CDI unit, regulator/rectifier).
- When inspecting the part, follow the inspection instructions carefully. Neglecting proper procedures may cause this part to be damaged.



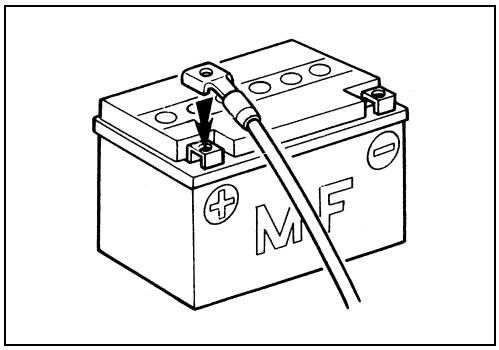
BATTERY

- The MF battery used in this vehicle does not require maintenance (e.g., electrolyte level inspection, distilled water replenishment).
- During normal charging, no hydrogen gas is produced. However, if the battery is overcharged, hydrogen gas may be produced. Therefore, be sure there are no fire or spark sources (e.g., short circuit) nearby when charging the battery.
- Be sure to recharge the battery in a well-ventilated and open area.
- Note that the charging system for the MF battery is different from that of a conventional battery. Do not replace the MF battery with a conventional battery.

CONNECTING THE BATTERY



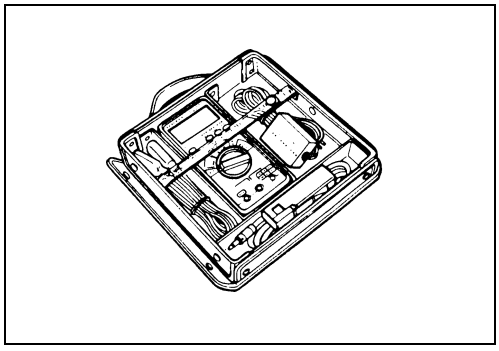
- When disconnecting terminals from the battery for disassembly or servicing, be sure to disconnect the ⊖ battery lead wire, first.
- When connecting the battery lead wires, be sure to connect the ⊕ battery lead wire, first.
- If the terminal is corroded, remove the battery, pour warm water over it and clean it with a wire brush.
- After connecting the battery, apply a light coat of grease to the battery terminals.
- Install the cover over the ⊕ battery terminal.



WIRING PROCEDURE

- Properly route the wire harness according to the “WIRE ROUTING” section. (☞8-11)

USING THE MULTI CIRCUIT TESTER

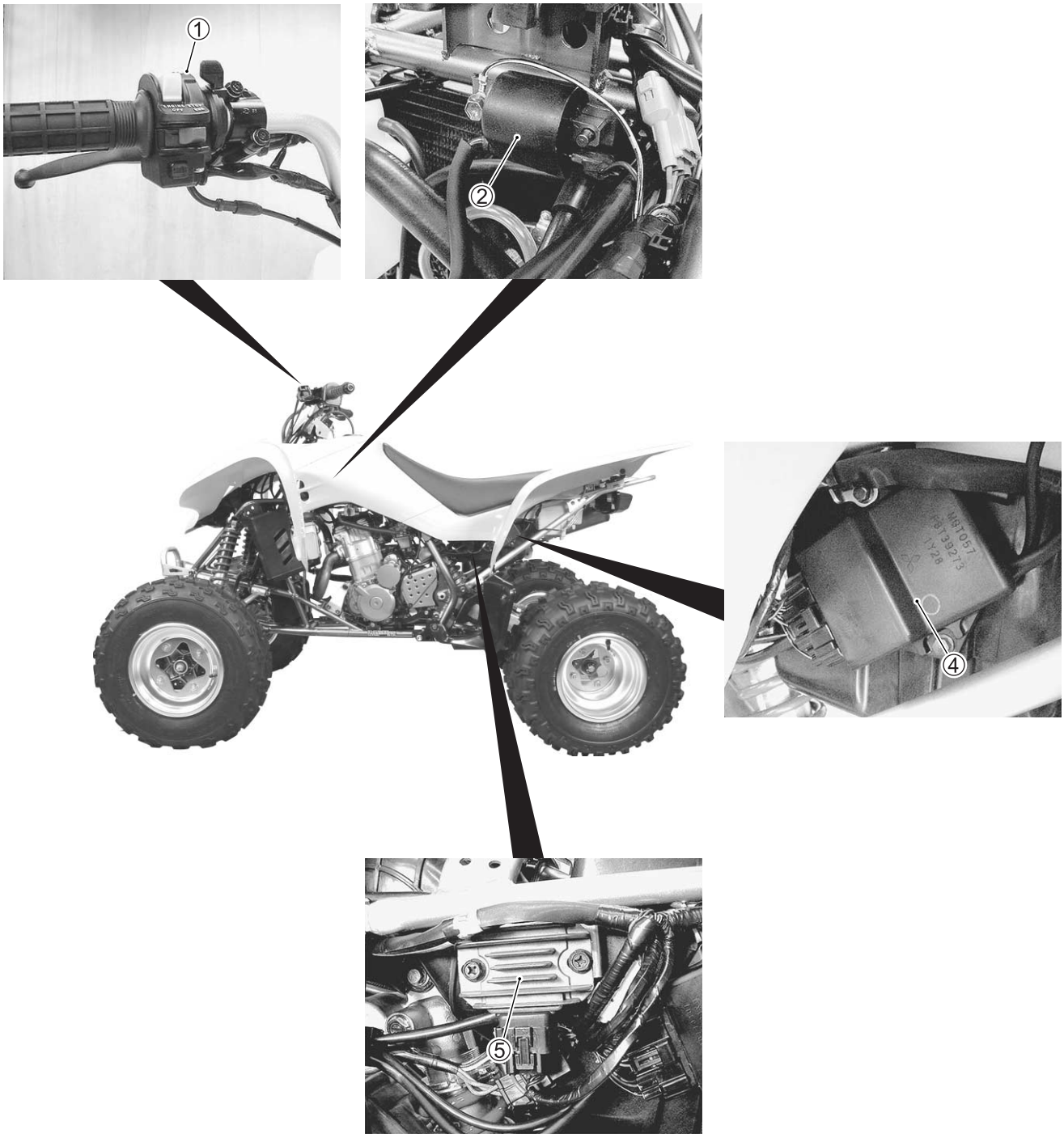


- Properly use the multi circuit tester ⊕ and ⊖ probes. Improper use can cause damage to the vehicle and tester.
- If the voltage and current values are not known, begin measuring in the highest range.
- When measuring the resistance, make sure no voltage is applied. If voltage is applied, the tester will be damaged.
- After using the tester, be sure to turn the switch to the OFF position.

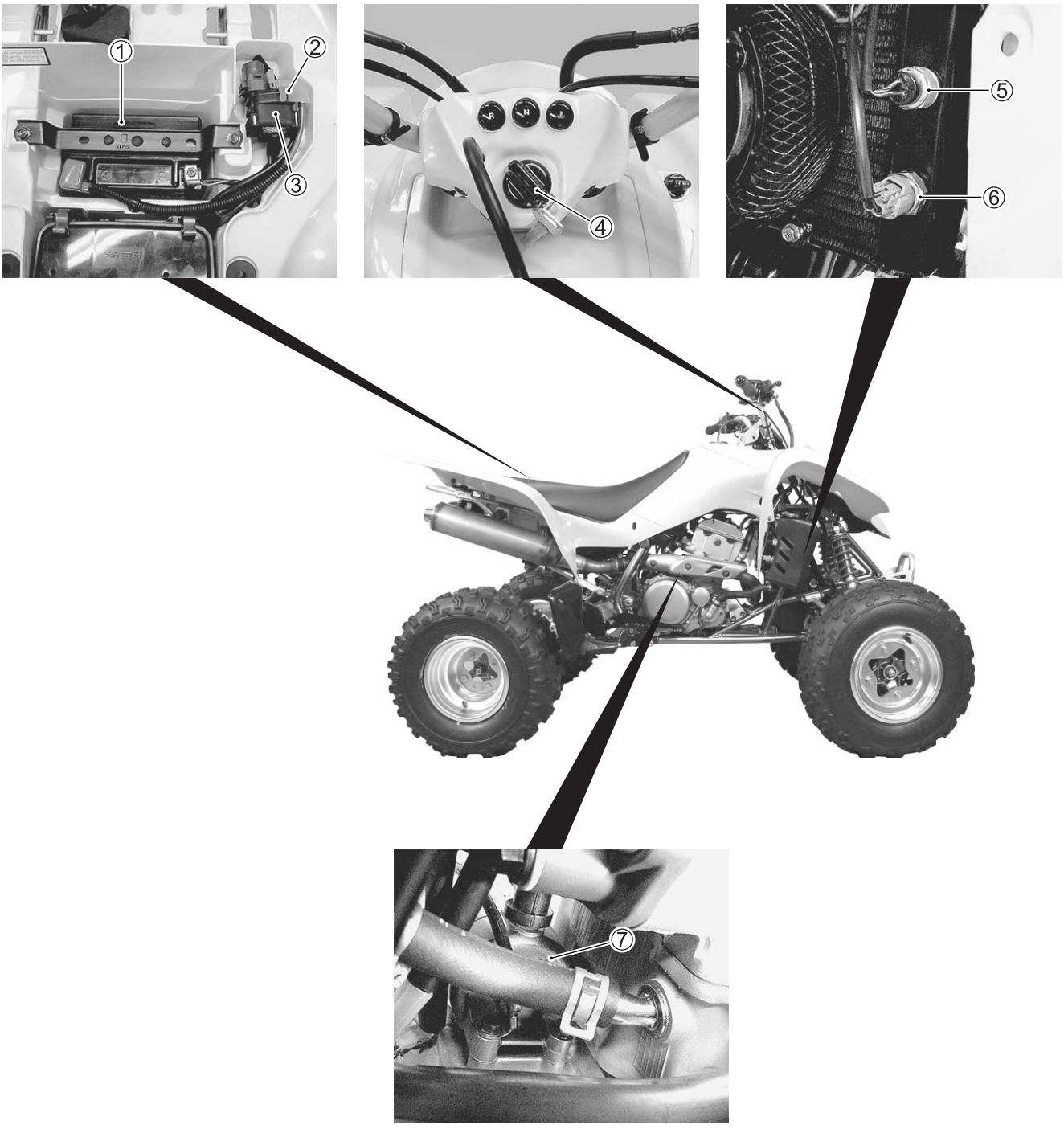
CAUTION

Before using the multi circuit tester, read its instruction manual.

LOCATION OF ELECTRICAL COMPONENTS

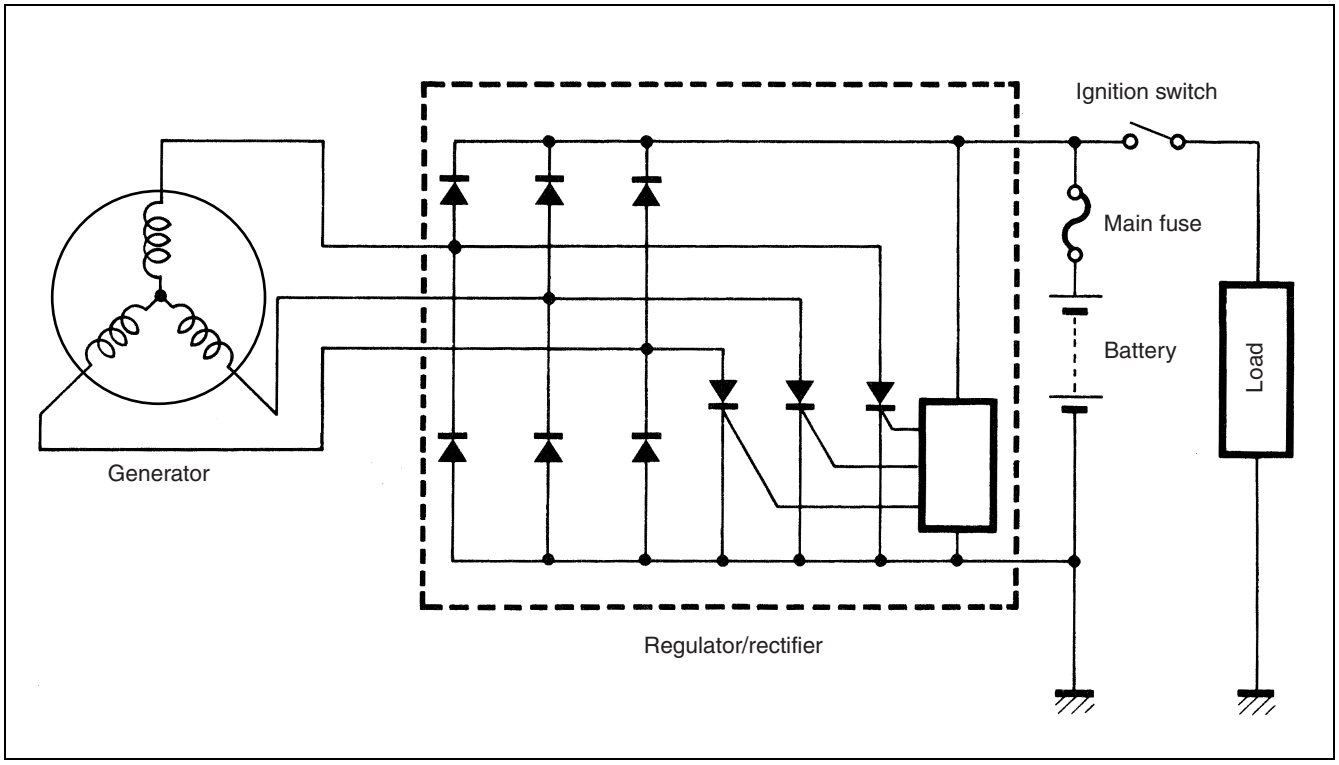


① Handlebar switch
② Ignition coil
④ CDI unit
⑤ Regulator/rectifier



① Battery
② Main fuse
③ Starter relay
④ Ignition switch
⑤ Engine coolant temp. switch (☞5-10)
⑥ Cooling fan thermo-switch (☞5-9)
⑦ Starter motor

CHARGING SYSTEM



TROUBLESHOOTING

Battery runs down quickly.

Check accessories which use excessive amounts of electricity.
- Accessories are installed → • Remove accessories

No accessories

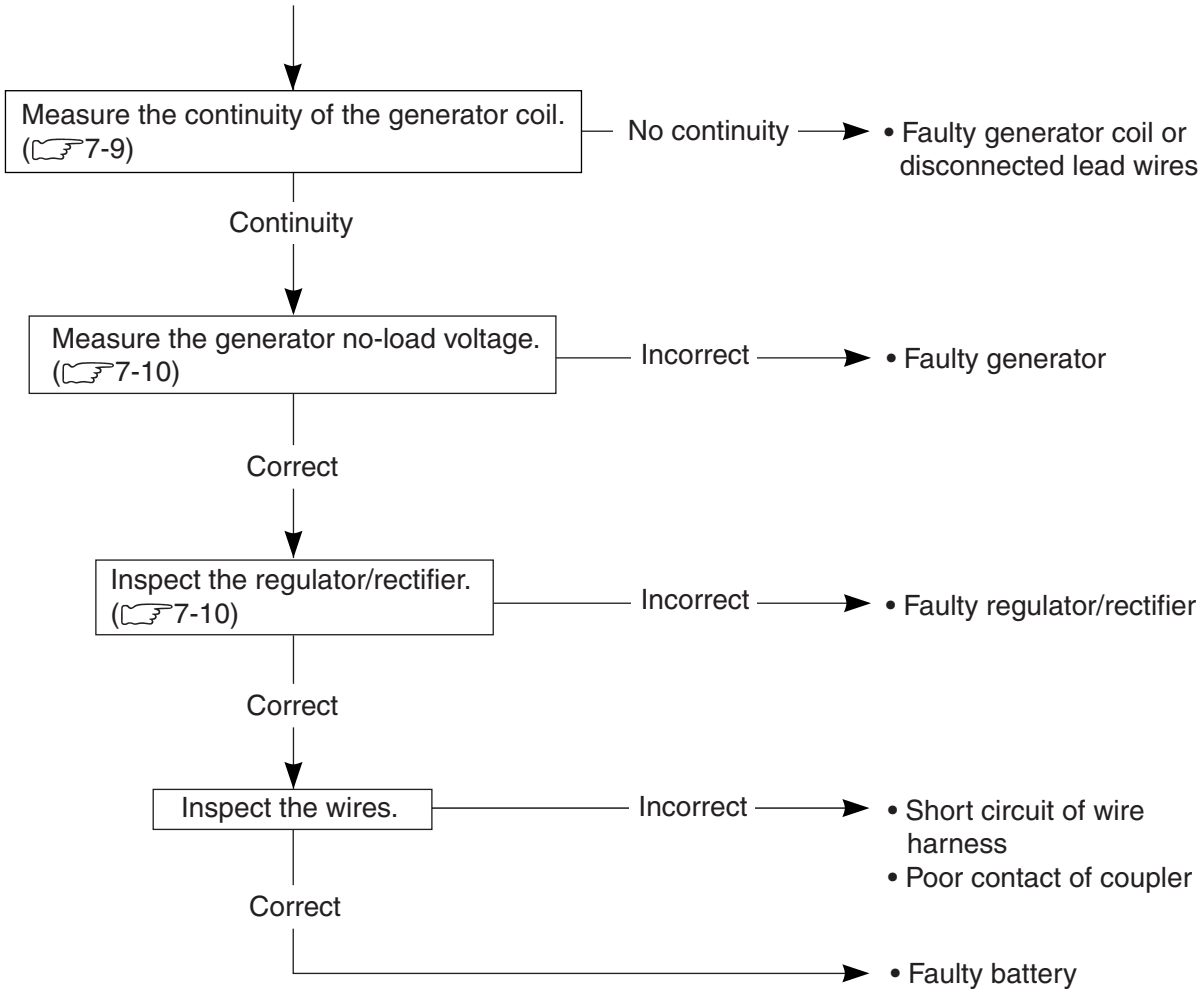
Check the battery for current leaks. (☞7-8)
- Current leaks → • Short circuit of wire harness
  • Faulty electrical equipment

No current leaks

Measure the charging voltage between the battery terminals. (☞7-9)
- Correct → • Faulty battery
  • Abnormal driving condition

Incorrect

Continued on next page



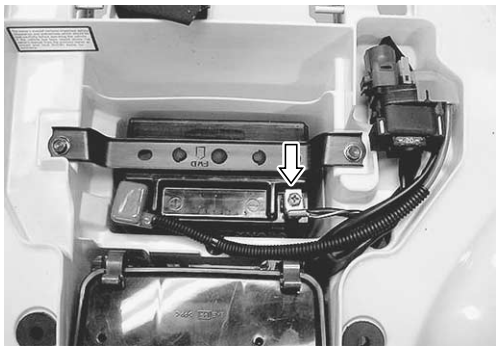
Others

Battery overcharges	• Faulty regulator/rectifier • Faulty battery • Poor contact of generator lead wire coupler

INSPECTION

BATTERY CURRENT LEAKAGE

- Remove the seat. (☞6-4)
- Turn the ignition switch to the “OFF” position.
- Disconnect the ⊖ battery lead wire.

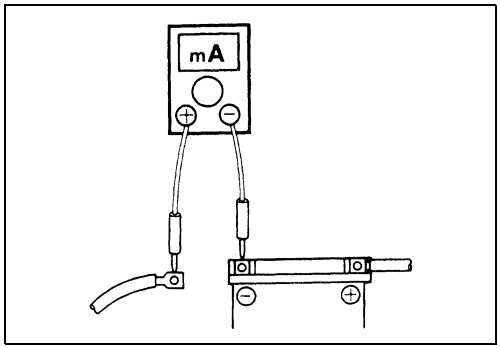


Measure the current between ⊖ battery terminal and the ⊖ battery lead wire using the multi circuit tester. If the reading exceeds the specified value, leakage is evident.

09900-25008: Multi circuit tester set

Tester knob indication: Current (⎓, 20 mA)

Battery current (leak): Under 1.0 mA

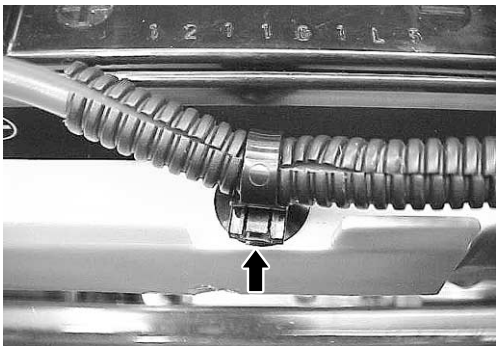


CAUTION

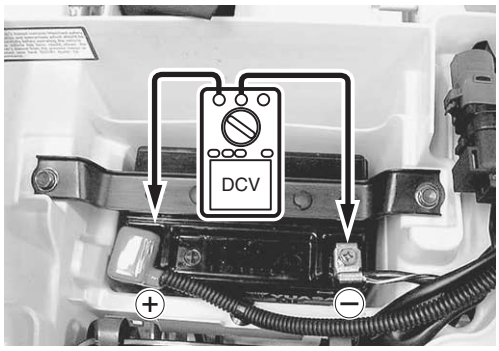
*** Because the current leak might be large, turn the tester to the high range first to avoid tester damage.**
*** Do not turn the ignition switch to the “ON” position when measuring current.**

When checking to find the excessive current leakage, remove the couplers and connectors, one by one, checking each part.

NOTE:
When removing the ⊕ battery lead wire release the hook of clamp.



REGULATED VOLTAGE



- Remove the seat. (☞6-4)
- Start the engine, turn the ignition switch to LIGHT (☼) and the dimmer switch to HI and run the engine at 5 000 r/min.

Measure the DC voltage between the ⊕ and ⊖ battery terminals using the multi circuit tester. If the voltage is not within the specified value, inspect the generator and regulator/rectifier. (☞7-9 and 7-10)

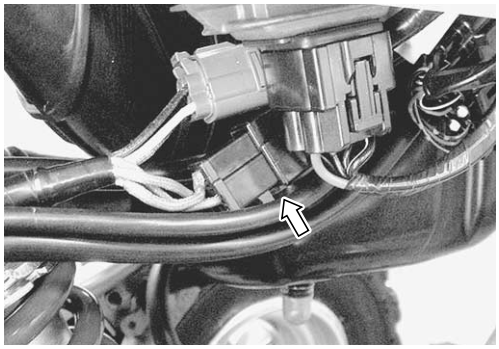
NOTE:
When making this test, be sure that the battery is in fully-charged condition.

TOOL 09900-25008: Multi circuit tester set
09900-26006: Tachometer

Tester knob indication: Voltage (⎓)

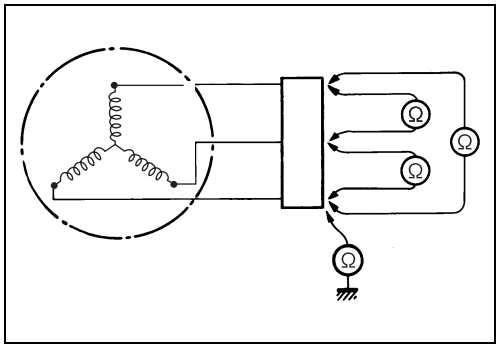
DATA Regulated voltage: 14.0 – 15.5 V at 5 000 r/min

GENERATOR COIL RESISTANCE



- Disconnect the generator coupler.

Measure the resistance between the three lead wires.
If the resistance is not specified value, replace the stator coil with a new one.
Also, check that the generator core is insulated.

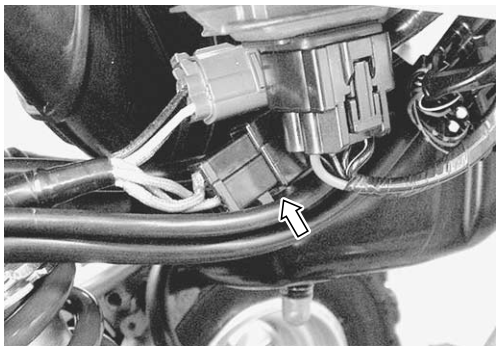


TOOL 09900-25008: Multi circuit tester set

Tester knob indication: Resistance (Ω)

DATA Generator coil resistance:
0.1 – 1.5 Ω (Brown – Brown) ∞ Ω (Brown – Ground)

GENERATOR NO-LOAD PERFORMANCE



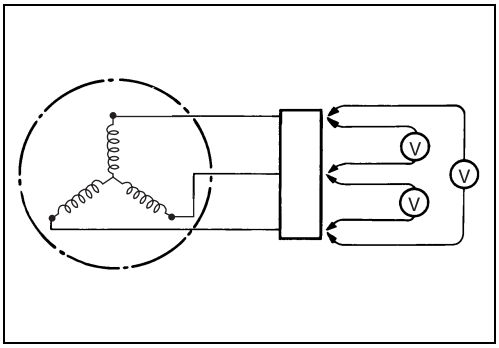
- Disconnect the generator lead wire coupler.
- Start the engine and run it at 5 000 r/min.

Measure the AC voltage between the lead wires of the generator using the multi circuit tester.
If the voltage is under the specified value, replace the AC generator with a new one.

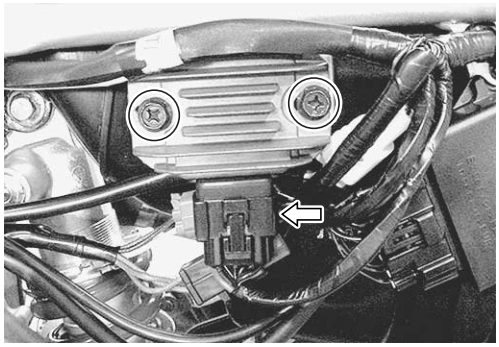
09900-25008: Multi circuit tester set
09900-26006: Tachometer

Tester knob indication: Voltage (~)

Generator no-load performance (when engine is cold):
More than 65 V (AC) at 5 000 r/min



REGULATOR/RECTIFIER



- Remove the rear fender. (☞6-7)
- Remove the regulator/rectifier.

Measure the voltage between the terminals using the multi circuit tester, as indicated in the table below.
If the voltage is not within the specified value, replace the regulator/rectifier with a new one.

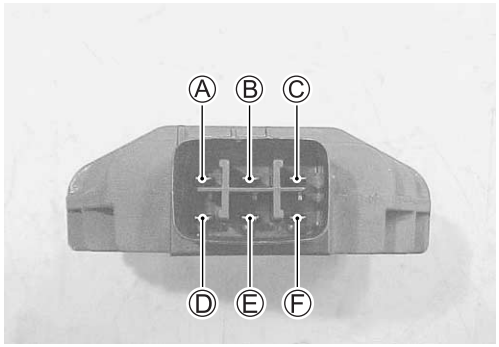
09900-25008: Multi circuit tester set

Tester knob indication: Diode test (⊣◀)

Unit: V

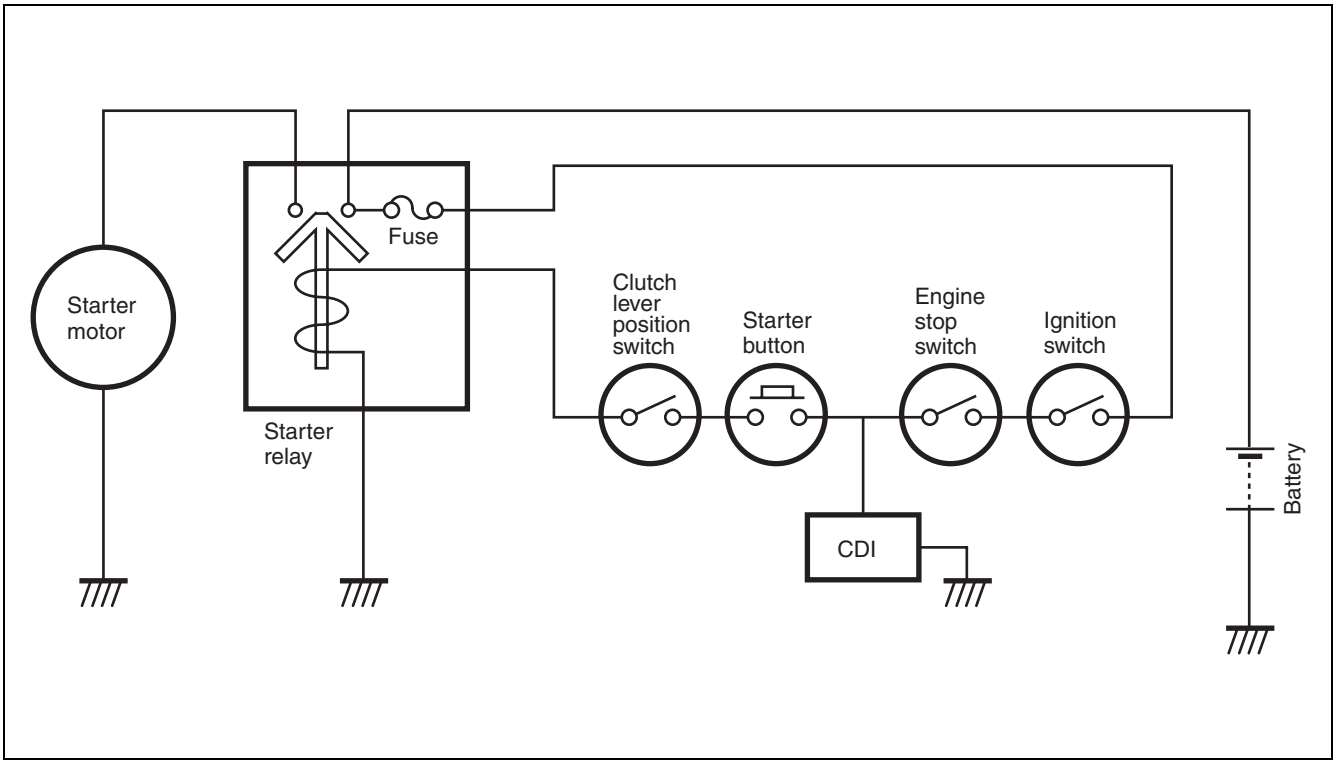
⊖ Tester probe / ⊕ Tester probe	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ	Ⓕ
Ⓐ		✻	0.5–1.2	0.4–0.7	0.4–0.7	0.4–0.7
Ⓑ	✻		✻	✻	✻	✻
Ⓒ	✻	✻		✻	✻	✻
Ⓓ	✻	✻	0.4–0.7		✻	✻
Ⓔ	✻	✻	0.4–0.7	✻		✻
Ⓕ	✻	✻	0.4–0.7	✻	✻	

✻ More than 1.4 V (tester's battery voltage)



NOTE:
If the tester reads under 1.4 V when the tester probes are not connected, replace the battery of multi circuit tester.

STARTER SYSTEM



TROUBLESHOOTING

Starter motor will not run.

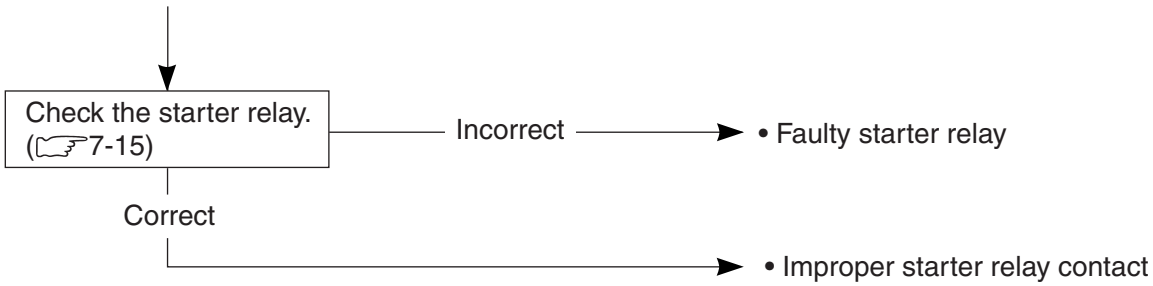
The transmission is in neutral. Turn on the ignition switch with the engine stop switch in the "RUN" position. Listen for a click from the starter relay when the starter button is pushed.

- Clicks → Check if the starter motor runs when its terminal is connected to the ⊕ battery terminal (Do not use a thin wire because a large amount of current flows.)
  - Runs →
    - Faulty starter relay
    - Loose or disconnected starter motor lead wire
  - Does not run →
    - Faulty starter motor
- No click →

Measure the starter relay voltage at the starter relay connectors (between Y/B ⊕ and B/W ⊖) when the starter button is pushed.

- No voltage →
  - Faulty ignition switch
  - Faulty engine stop switch
  - Faulty neutral switch
  - Faulty starter button
  - Improper connector contact
  - Open circuit in wire harness
- Voltage →

Continued on next page



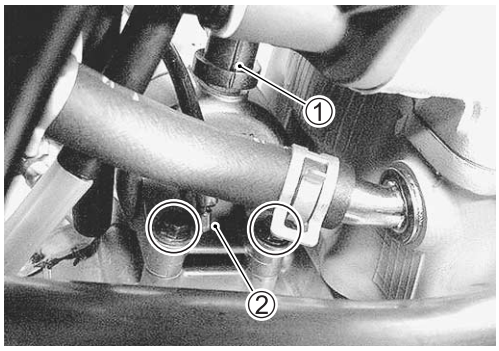
The starter motor runs when the transmission is in neutral, but does not run when the transmission is in any position other than neutral, with the parking brake lever grasp firmly.

Others

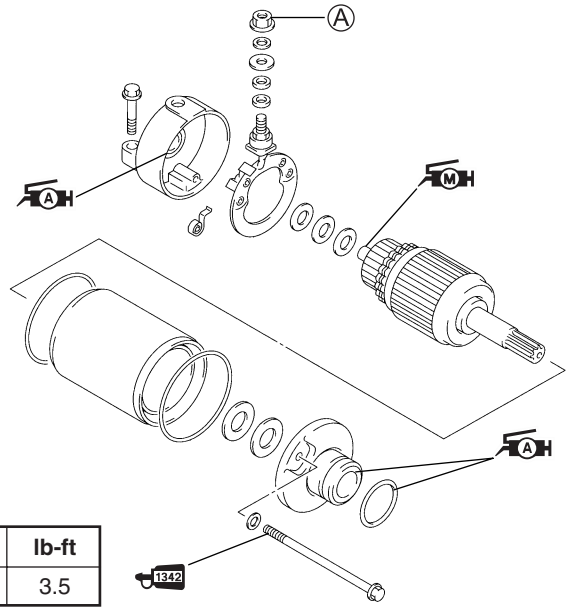
Engine does not turn though the starter motor runs.	• Faulty starter clutch

STARTER MOTOR REMOVAL AND DISASSEMBLY

- Disconnect the starter motor lead wire ① and engine ground lead wire ②.
- Remove the starter motor.



• Disassembly the starter motor, as shown.

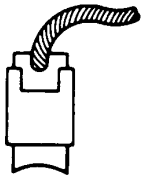


ITEM	N·m	kgf-m	lb-ft
Ⓐ	5	0.5	3.5

STARTER MOTOR INSPECTION

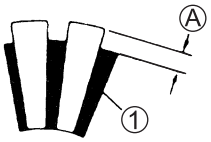
CARBON BRUSHES

Inspect the carbon brushes for abnormal wear, cracks, or smoothness in the brush holder.
If any damages are found, replace the brush assembly with a new one.



COMMUTATOR

Inspect the commutator for discoloration, abnormal wear or undercut Ⓐ.
If abnormal wear is found, replace the armature with a new one.
If the commutator surface is discolored, polish it with #400 sandpaper and wipe it using a clean, dry cloth.
If there is no undercut, scrape out the insulator ① with a saw blade.

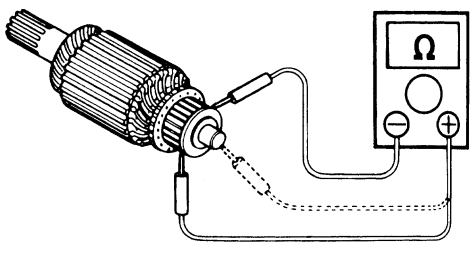


ARMATURE COIL INSPECTION

Check for continuity between each segment and between each segment and the armature shaft using the multi circuit tester.
If there is no continuity between the segments or there is continuity between the segments and shaft, replace the armature with a new one.

TOOL 09900-25008: Multi circuit tester set

Tester knob indication: Continuity test (•))))



OIL SEAL
Check the seal lip for damage or leakage. If any damages are found, replace the starter motor with a new one.

STARTER MOTOR REASSEMBLY AND REMOUNTING

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

CAUTION

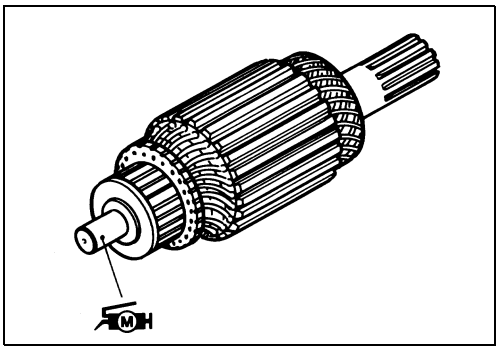
Replace the removed O-rings with new ones to prevent oil leakage and moisture.

- Apply SUZUKI SUPER GREASE "A" to the lip of the oil seal.

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

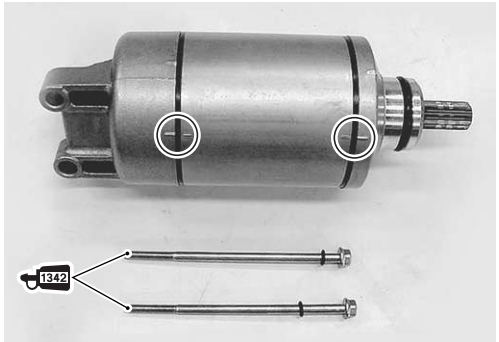
- Apply a small quantity of SUZUKI MOLY PASTE to the armature shaft.

99000-25140: SUZUKI MOLY PASTE



- Align the match marks on the starter motor case with the match mark on the housing end.
- Apply a small quantity of THREAD LOCK "1342" to the starter motor housing bolts and tighten it sequrely.

99000-32050: THREAD LOCK "1342"

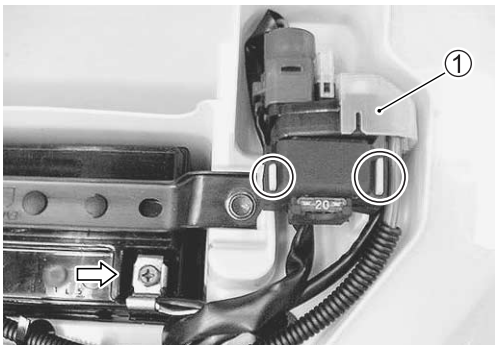


• Apply SUZUKI SUPER GREASE “A” to the O-ring .

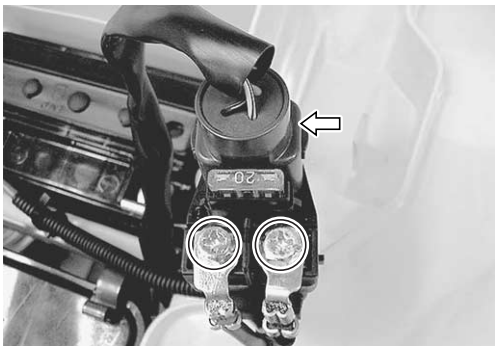
99000-25030: SUZUKI SUPER GREASE “A” (USA)
99000-25010: SUZUKI SUPER GREASE “A” (Others)

STARTER RELAY INSPECTION

• Remove the seat. (☞6-4)
• Disconnect the battery ⊖ lead wire at battery terminal.
• Remove the starter relay cover ①.



• Disconnect the starter motor lead wire, battery lead wire and starter relay coupler at the starter relay.



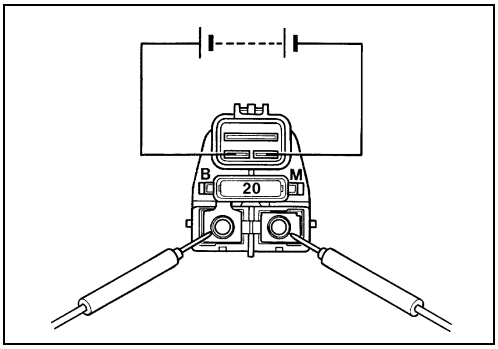
Apply 12 V to the terminals and check for continuity between the positive and negative terminals using the multi circuit tester. If the starter relay clicks and continuity is found, the relay is ok.

09900-25008: Multi circuit tester set

Tester knob indication: Continuity test (•))))

CAUTION

Do not apply a battery voltage to the starter relay for more than five seconds.
This may overheat and damage the relay coil.

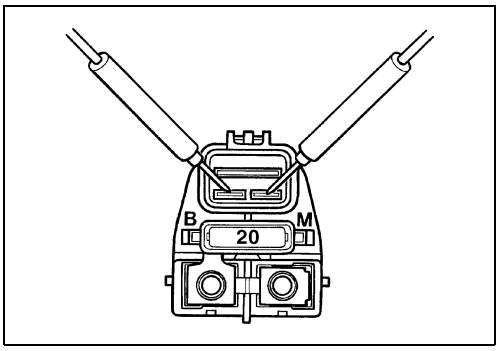


Measure the relay coil resistance between the terminals using the multi circuit tester. If the resistance is not within the specified value, replace the starter relay with a new one.

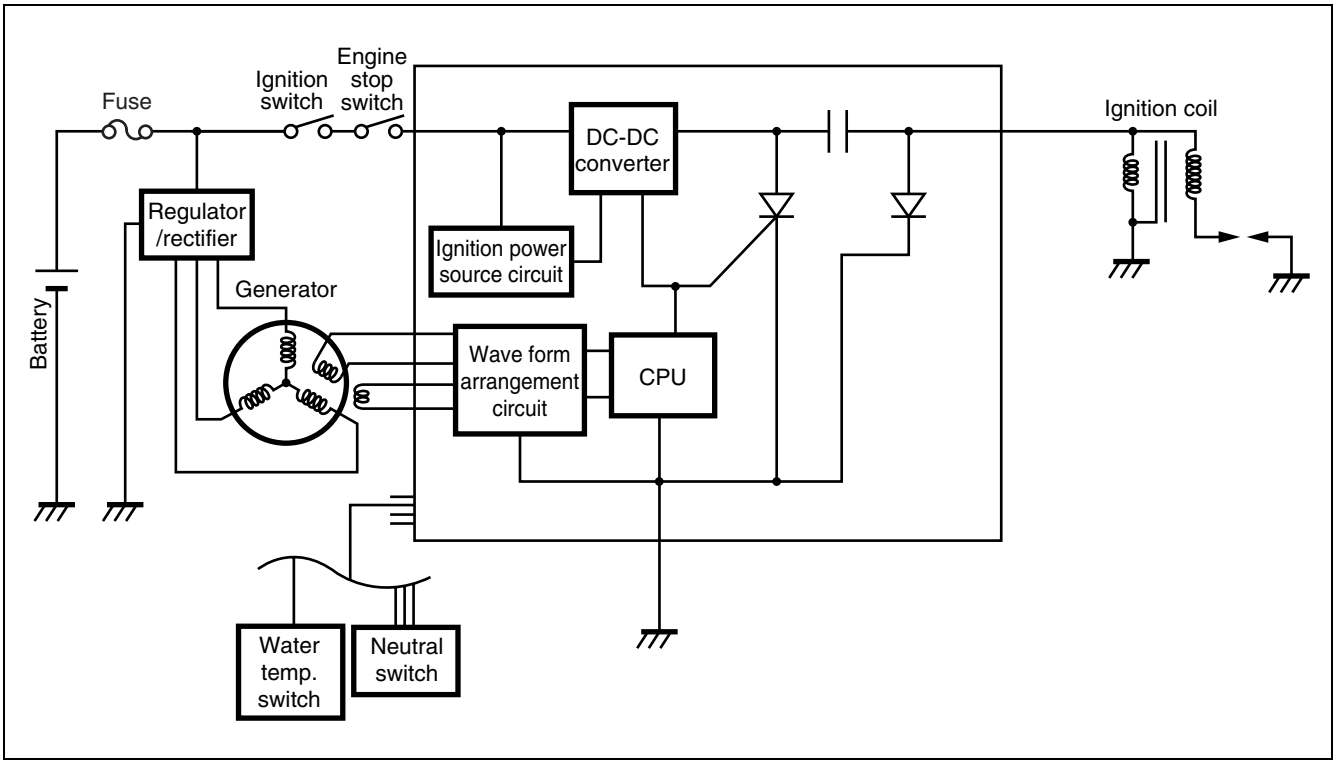
09900-25008: Multi circuit tester set

Tester knob indication: Resistance (Ω)

Starter relay resistance
Standard: 3 – 6 Ω



IGNITION SYSTEM



TROUBLESHOOTING

✻ Make sure the transfer is in the neutral position and the engine stop switch is in the “RUN” position. Also, make sure the fuse is not blown and the battery is fully-charged before diagnosing.

No spark or poor spark

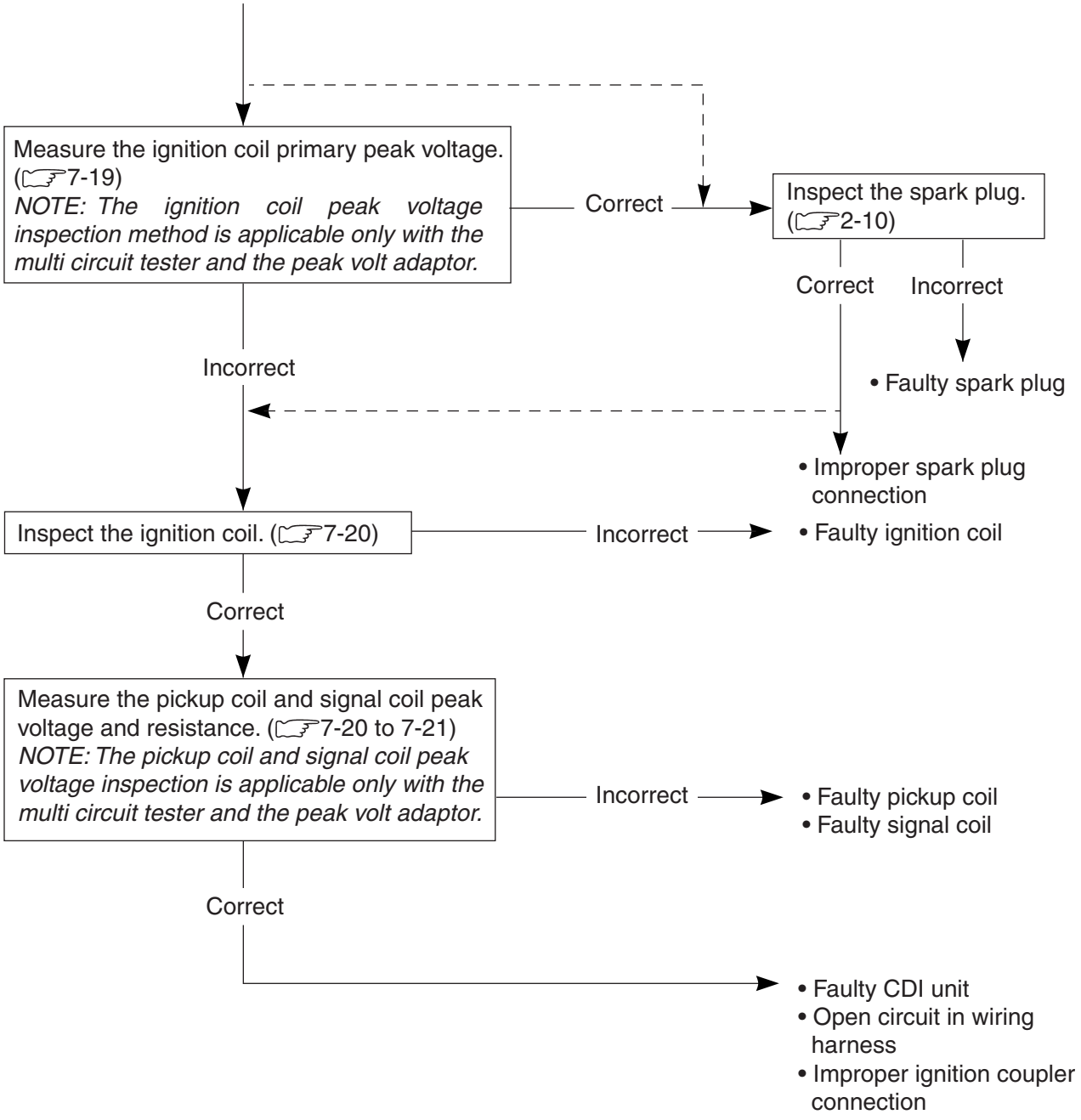
Check ignition system couplers for poor connections.
- Looseness → • Improper coupler connection

Correct

Measure the battery voltage between input lead wires (B/O and B/W) at the CDI unit with the ignition switch in the “ON” position.
- Incorrect → • Faulty ignition switch
  • Faulty engine stop switch
  • Broken wire harness or poor connection of related circuit couplers

Correct

Continued on next page

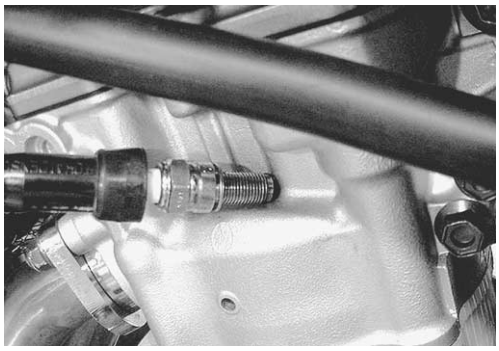

Measure the ignition coil primary peak voltage. (☞7-19)
NOTE: The ignition coil peak voltage inspection method is applicable only with the multi circuit tester and the peak volt adaptor.
Correct
Inspect the spark plug. (☞2-10)
Correct
Incorrect
• Faulty spark plug
Incorrect
• Improper spark plug connection
Inspect the ignition coil. (☞7-20)
Incorrect
• Faulty ignition coil
Correct
Measure the pickup coil and signal coil peak voltage and resistance. (☞7-20 to 7-21)
NOTE: The pickup coil and signal coil peak voltage inspection is applicable only with the multi circuit tester and the peak volt adaptor.
Incorrect
• Faulty pickup coil
• Faulty signal coil
Correct
• Faulty CDI unit
• Open circuit in wiring harness
• Improper ignition coupler connection

INSPECTION

IGNITION COIL PRIMARY PEAK VOLTAGE

- Remove the front fender, side cover, fuel tank. (☞6-4)
- Remove the spark plug cap.
- Connect a new spark plug to spark plug cap and ground it to the cylinder head.

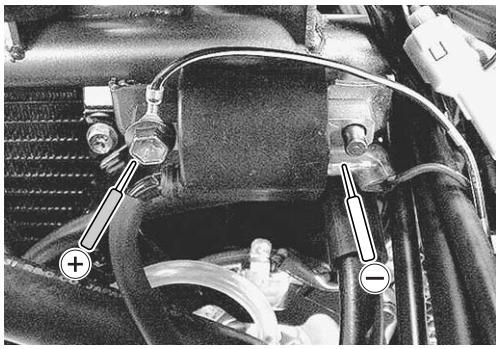
NOTE:
Make sure that the spark plug cap and spark plug are connected properly and the battery is fully-charged.



Measure ignition coil primary peak voltage using the multi circuit tester in the following procedure.

- Connect the multi circuit tester with the peak voltage adaptor as follows.

⊕ Probe: Black/White lead wire or Ground
⊖ Probe: Black

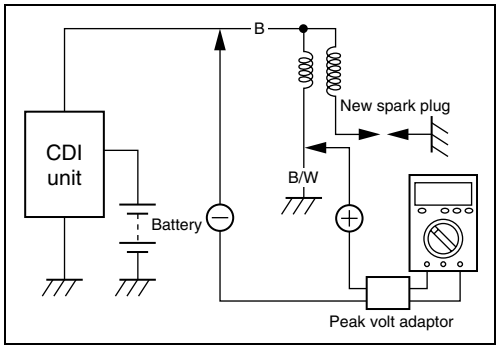


NOTE:
Do not disconnect the ignition coil primary wire.

TOOL 09900-25008: Multi circuit tester set

CAUTION

When using the multi circuit tester and peak volt adaptor, refer to the appropriate instruction manual.



- Shift the transfer to the neutral position and turn the ignition switch to the “ON” position.
- Press the starter button and allow the engine to crank for a few seconds, and then measure the ignition coil primary peak voltage.
- Repeat the above procedure a few times and measure the highest ignition coil primary peak voltage.

Tester knob indication: Voltage (⎓)

DATA Ignition coil primary peak voltage: More than 130 V

⚠ WARNING

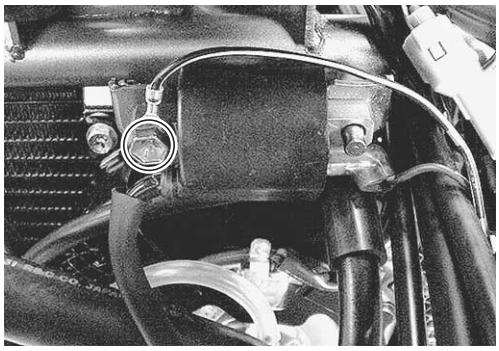
While testing, do not touch the tester probes and spark plug to prevent receiving an electric shock.

If the voltage is lower than the standard values, inspect the ignition coil. (☞7-20)

IGNITION COIL RESISTANCE

- Remove the front fender, side cover, fuel tank. (☞6-4)
- Disconnect the ignition coil lead wires and spark plug cap, and remove the ignition oil.

Measure the ignition coil resistance in both the primary and secondary windings using the multi circuit tester. If the resistance in both the primary and secondary windings is close to the specified values, the windings are in sound condition.

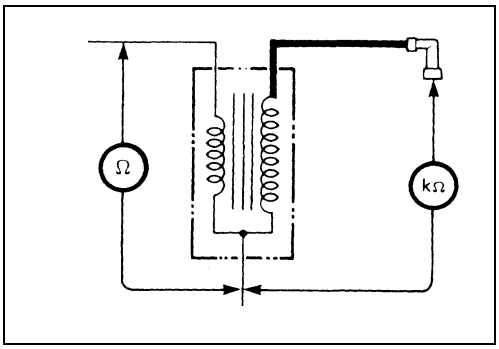


TOOL 09900-25008: Multi circuit tester set

Tester knob indication: Resistance (Ω)

DATA Ignition coil resistance

Primary: 0.1 – 1.0 Ω (⊕Terminal – ⊖Ground)
Secondary: 12 – 20 kΩ (Spark plug cap – ⊕Terminal)



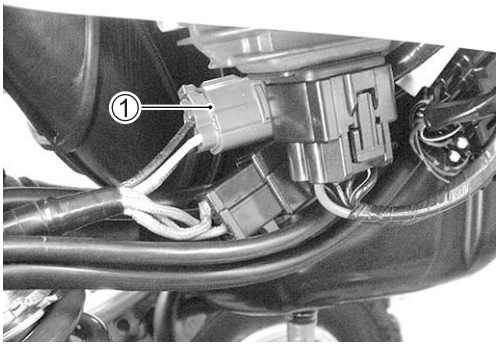
PICKUP COIL AND SIGNAL COIL PEAK VOLTAGE

NOTE:
Make sure that all of the couplers are connected properly.

- Disconnect the wire harness coupler ①.

Measure the pickup coil and signal coil peak voltage in the following procedure.

- Connect the multi circuit tester with the peak volt adaptor as follows.

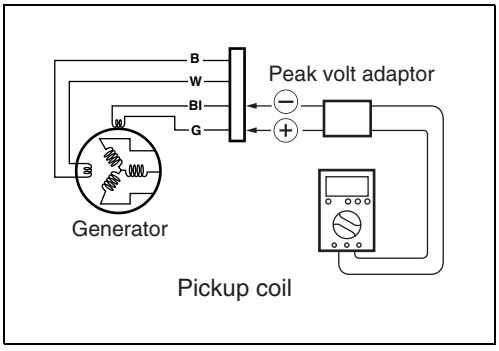


Pickup coil: Blue (⊖ probe) – Green (⊕ probe)
Signal coil: Black (⊖ probe) – White (⊕ probe)

TOOL 09900-25008: Multi circuit tester set

CAUTION

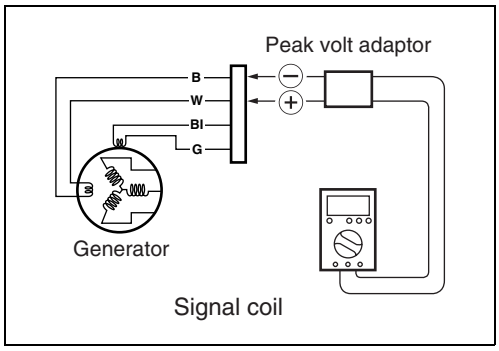
When using the multi circuit tester and peak volt adaptor, refer to the appropriate instruction manual.



- Shift the transmission to the neutral position, turn the ignition switch to the “ON” position.
- Press the starter button and allow the engine to turn for a few seconds, and then measure the pickup coil and signal coil peak voltage.
- Repeat the above procedure a few times and measure the highest pickup coil and signal coil peak voltage.

Tester knob indication: Voltage (⎓)

Pickup coil peak voltage: More than 2.0 V
Signal coil peak voltage: More than 0.1 V



PICKUP COIL AND SIGNAL COIL RESISTANCE

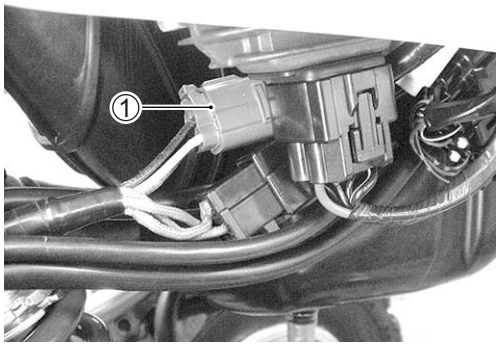
- Disconnect the generator coupler ①.

Measure the resistance between the lead wires using the multi circuit tester. If the resistance is not within the spcified value, the pickup coil and signal coil must be replaced.

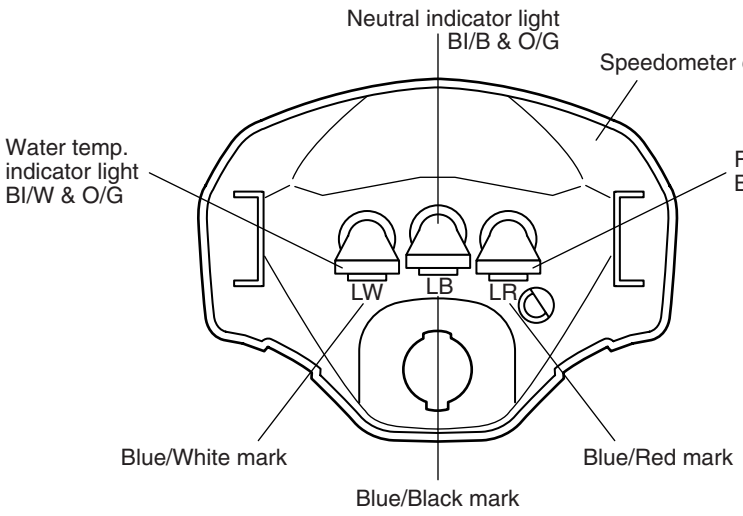
09900-25008: Multi circuit tester set

Tester knob indication: Resistance (Ω)

Pickup coil resistance: 350 – 670 Ω (Blue – Green)
Signal coil resistance: 0.09 – 0.5 Ω (Black – White)

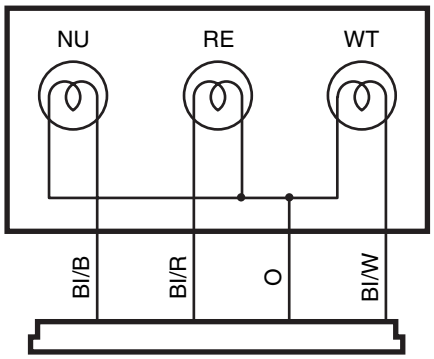


INDICATOR LIGHT POSITION



WIRE COLOR
Bl/B: Blue with Black tracer
Bl/W: Blue with White tracer
Bl/R: Blue with Red tracer
O/G: Orange with Green tracer

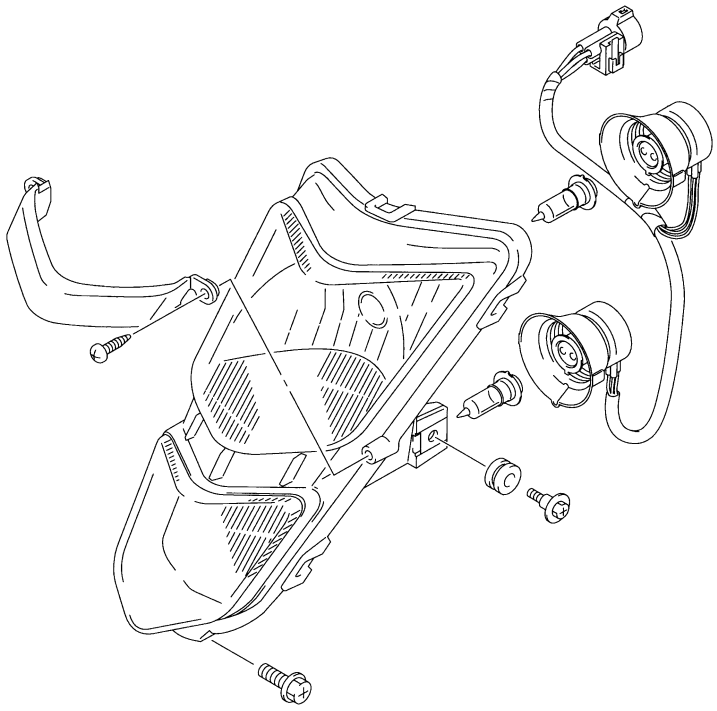
INSPECTION



ITEM	⊕	⊖
WT: Water temp. warning	O	Bl/W
RE: Reverse indicator light	O	Bl/R
NU: Neutral indicator light	O	Bl/B

WIRE COLOR
Bl/B : Blue with Black tracer
Bl/R : Blue with Red tracer
Bl/W: Blue with White tracer
O : Orange

LAMPS
HEADLIGHT

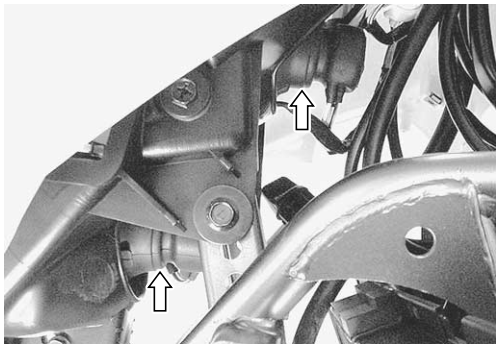


CAUTION

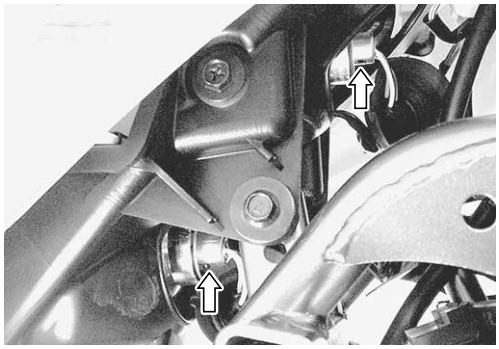
If you touch the bulb with your bare hands, clean the bulb with a cloth moistened with alcohol or soapy water to prevent premature bulb failure.

HEADLIGHT BULB REPLACEMENT

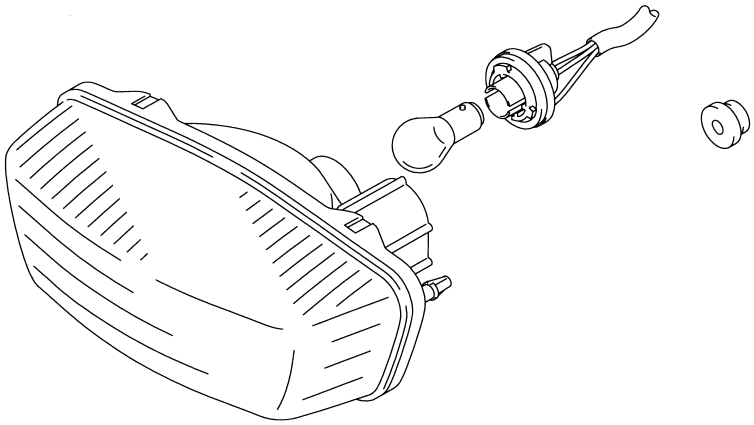
- Remove the cover.



- Remove the socket.
- Remove the bulb.
- Install the new bulb in the reverse order of removal.



BRAKE LIGHT/TAILLIGHT



Brake light/taillight: 12 V 21/5 W

CAUTION

If you touch the bulb with your bare hands, clean the bulb with a cloth moistened with alcohol or soapy water to prevent premature bulb failure.

BULB REPLACEMENT

- Remove the socket.
- Remove the bulb.
- Install the new bulb in the reverse order of removal.

SWITCHES

Measure each switch for continuity using a multi circuit tester. If any abnormality is found, replace the respective switch assemblies with a new one.

TOOL 09900-25008: Multi circuit tester set

IGNITION SWITCH

Position \ Color	R	O	Gr
LIGHT (☼)	○	○	○
ON	○	○	
OFF		○	○

DIMMER SWITCH

Position \ Color	Y	W	Gr
HI	○		○
LO		○	○

ENGINE STOP SWITCH

Position \ Color	O	O/W
OFF		
RUN	○	○

STARTER BUTTON

Position \ Color	O/W	B
•		
PUSH	○	○

NEUTRAL SWITCH

Position \ Color	R	Bl	W	B
R	○			○
N		○		○
F			○	○

REAR BRAKE SWITCH

Position \ Color	O	W/B
ON	○	○
OFF		

FRONT BRAKE SWITCH

Position \ Color	O	W/B
ON	○	○
OFF		

COOLING FAN THERMO SWITCH

☞5-10

ENGINE COOLANT TEMPERATURE SWITCH

☞5-11

WIRE COLOR

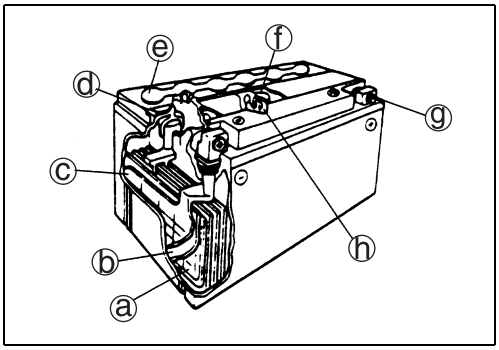
B : Black
Bl : Blue
Gr : Gray
O : Orange
R : Red
W : White
Y : Yellow
O/W : Orange with White tracer
W/B : White with Black tracer

BATTERY

SPECIFICATIONS

Type designation	YTX9-BS
Capacity	12V, 28.8 kC (8 Ah)/10HR

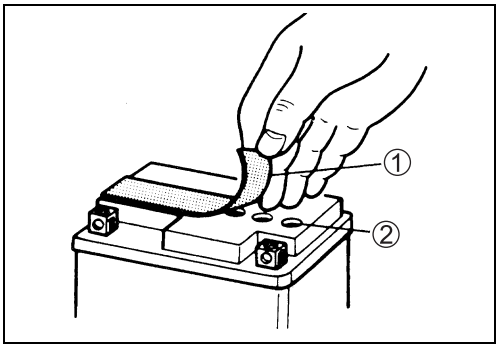
ⓐ Anode plates
ⓑ Separator (fiberglass plate)
ⓒ Cathode plates
ⓓ Upper cover breather
ⓔ Stopper
ⓕ Filter
ⓖ Terminal
ⓗ Safty valve



INITIAL CHARGING

FILLING ELECTROLYTE

- Remove the aluminum tape ① which seals the battery filler holes ②.

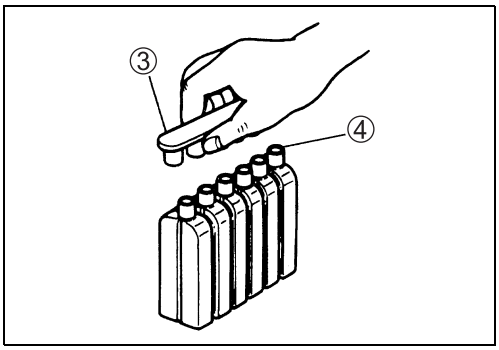


- Remove the caps ③ from the electrolyte container.

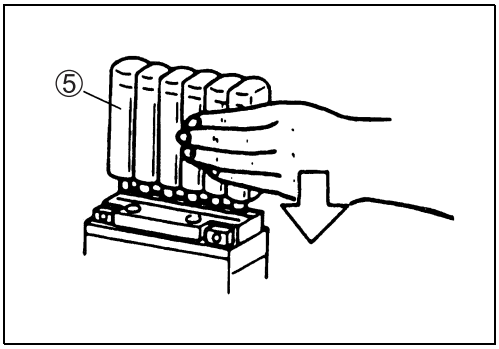
NOTE:

** Do not remove or pierce the sealed areas ④ of the electrolyte container.*

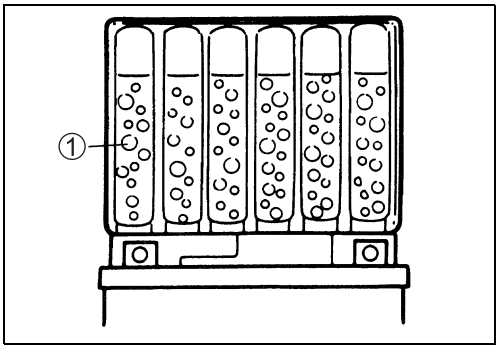
** After completely filling the battery with electrolyte, use the caps ③ from the electrolyte container to seal the battery filler holes.*



- Insert the nozzles of the electrolyte container ⑤ into the electrolyte filler holes of the battery. Hold the electrolyte container firmly so that it does not fall. Do not allow any of the electrolyte to spill.

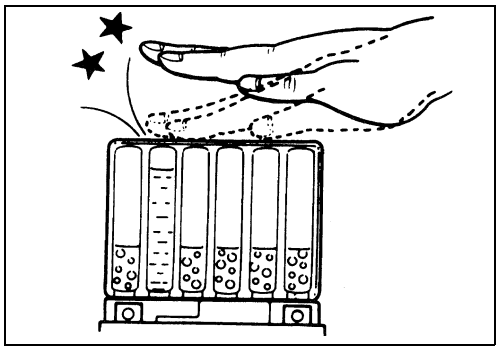


- Make sure the air bubbles ① rise to the top of each electrolyte container and leave the electrolyte container in this position for more than 20 minutes.



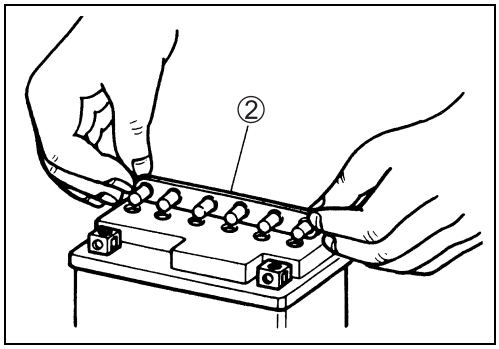
NOTE:
If air bubbles do not rise from any one of the filler ports, tap the bottom of the electrolyte container two or three times.
Never remove the electrolyte container from the battery while there is still electrolyte in the container.

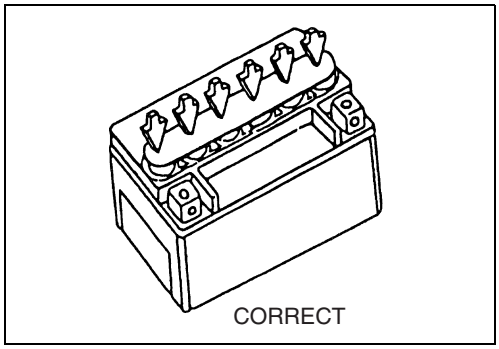
- After the electrolyte container is completely empty, remove it from the battery and wait about 20 minutes.
- Insert the caps ② firmly into the filler holes, so that the top of the caps do not protrude above the upper surface of the top cover of the battery.

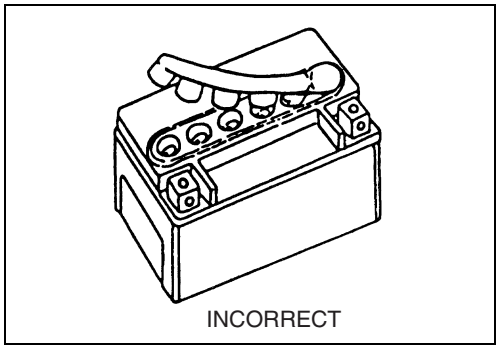


CAUTION

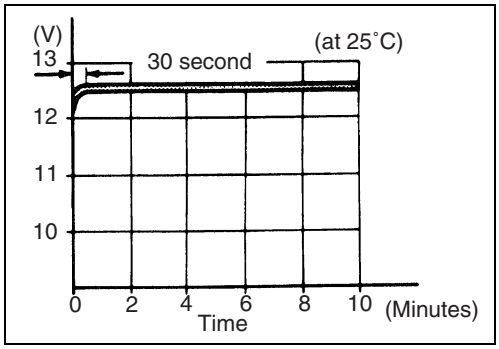
*** Never use anything except the specified battery.**
*** Once install the caps to the battery; do not remove the caps.**
*** Do not tap the caps with a hammer when installing them.**




CORRECT


INCORRECT

Measure the battery voltage using multi circuit tester. The tester should indicate more than 12.5 – 12.6 V (DC) as shown in the Fig. If the battery voltage is lower than the specification, charge the battery with a battery charger. (Refer to the recharging operation)



CAUTION

Do not remove the caps on the battery top while charging.

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

SERVICING

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

RECHARGING OPERATION

Measure the battery voltage using the multi circuit tester. If the voltage reading is less than the 12 V (DC), recharge the battery with a battery charger.

CAUTION

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

NOTE:
While recharging, do not remove the caps on the top of the battery.

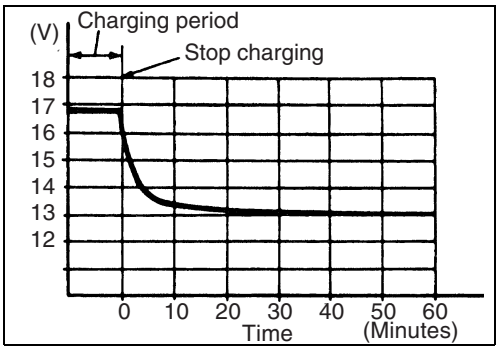
Recharging time: 1.4 A for 5 to 10 hours or 6 A for 1 hour.

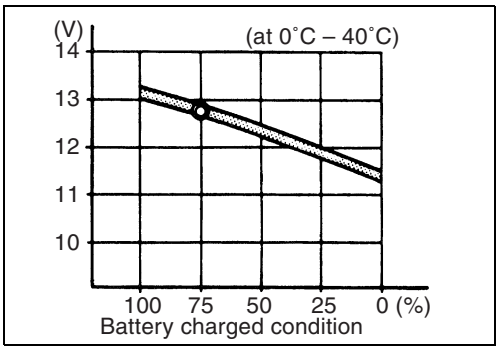
CAUTION

Be careful not to permit the charging current to exceed 6 A at any time.

After recharging, wait at least 30 minutes and then measure the battery voltage using the multi circuit tester. If the battery voltage is less than 12.5 V, recharge the battery again. If the battery voltage is still less than 12.5 V after recharging, replace the battery with a new one.

When a battery is left unused for a long time, its voltage needs to be regularly measured. When the vehicle is not used for more than one month (especially during the winter season), measure the battery voltage at least once a month.





SERVICING INFORMATION

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TROUBLESHOOTING
ENGINE

Complaint	Symptom and possible causes	Remedy
Engine will not start or is hard to start.	**Compression too low**	
	1. Worn cylinder.	Replace.
	2. Worn piston ring.	Replace.
	3. Worn valve guide or improper valve seating.	Repair or replace.
	4. Loose spark plug.	Tighten.
	5. Broken, cracked or damaged piston.	Replace.
	6. Slow cranking starter motor.	See electrical section.
	7. Mistimed valves.	Adjust.
	8. Tappet clearance out of adjustment.	Adjust.
	Spark plug not sparking	
	1. Damaged spark plug.	Replace.
	2. Damaged spark plug cap.	Replace.
	3. Fouled spark plug.	Clean or replace.
	4. Wet spark plug.	Clean and dry or replace.
	5. Defective ignition coil.	Replace.
	6. Open or short in high-tension cord.	Replace.
	7. Defective generator.	Replace.
	8. Defective CDI unit.	Replace.
	No fuel reaching the carburetor	
	1. Clogged fuel tank vent hose.	Clean or replace.
	2. Clogged or defective fuel valve.	Clean or replace.
	3. Defective carburetor needle valve.	Replace.
	4. Clogged fuel hose.	Clean or replace.
	5. Clogged fuel filter.	Clean or replace.
Engine stalls easily.	1. Fouled spark plug.	Clean or replace.
	2. Defective generator.	Replace.
	3. Defective CDI unit.	Replace.
	4. Clogged or defective fuel valve.	Clean or replace.
	5. Clogged carburetor jet.	Clean.
	6. Tappet clearance out of adjustment.	Adjust.

Complaint	Symptom and possible causes	Remedy
Engine is noisy.	**Excessive valve chatter**	
	1. Excessive tappet clearance.	Adjust.
	2. Weak or broken valve spring.	Replace.
	3. Worn camshaft.	Replace.
	4. Worn or burnt camshaft journal.	Replace.
	Noise seems to come from the piston	
	1. Worn piston.	Replace.
	2. Worn cylinder.	Replace.
	3. Carbon buildup in combustion chamber.	Clean.
	4. Worn piston pin or piston pin bore.	Replace.
	5. Worn piston ring or ring groove.	Replace.
	Noise seems to come from the cam chain	
	1. Stretched cam chain.	Replace cam chain and sprockets.
	2. Worn cam chain sprocket.	Replace cam chain and sprockets.
	3. Improperly working cam chain tensioner.	Repair or replace.
	Noise seems to come from the clutch	
	1. Worn countershaft spline.	Replace countershaft.
	2. Worn clutch hub spline.	Replace clutch hub.
	3. Worn clutch plate teeth.	Replace clutch plate.
	4. Distorted clutch plate.	Replace.
	5. Weak clutch damper.	Replace primary driven gear.
	6. Weak clutch spring.	Replace.
	Noise seems to come from the crankshaft	
	1. Rattling bearing.	Replace.
	2. Worn or burnt crank pin bearing.	Replace.
	3. Worn or burnt journal bearing.	Replace.
	4. Excessive thrust clearance.	Replace thrust bearing.
	Noise seems to come from the transmission	
	1. Worn or rubbing gear.	Replace.
	2. Worn countershaft spline.	Replace countershaft.
	3. Worn driveshaft spline.	Replace driveshaft.
	4. Worn or rubbing primary gear.	Replace.
	5. Worn bearing.	Replace.
Clutch slips.	1. Clutch cable out of adjustment.	Adjust.
	2. Weak or broken clutch spring.	Replace.
	3. Worn or distorted clutch pressure plate.	Replace.
	4. Distorted clutch plate.	Replace.
Clutch drags.	1. Clutch cable out of adjustment.	Adjust.
	2. Some clutch springs are weak, while others are not.	Replace.
	3. Worn or distorted clutch pressure plate.	Replace.
	4. Distorted clutch plate.	Replace.
Transmission will not shift.	1. Broken gearshift cam.	Replace.
	2. Distorted gearshift fork.	Replace.
	3. Worn gearshift pawl.	Replace.
	4. Clutch cable out of adjustment.	Adjust.
Transmission will not shift back.	1. Broken gearshift shaft return spring.	Replace.
	2. Rubbing or stuck gearshift shaft.	Repair or replace.
	3. Worn or distorted gearshift fork.	Replace.
	4. Clutch cable out of adjustment.	Adjust.

Complaint	Symptom and possible causes	Remedy
Transmission jumps out of gear.	1. Worn gear.	Replace.
	2. Worn or distorted gearshift fork.	Replace.
	3. Weakened gearshift stopper spring.	Replace.
	4. Worn gearshift pawl.	Replace.
Engine idles poorly.	1. Tappet clearance out of adjustment.	Adjust.
	2. Improper valve seating.	Repair or replace.
	3. Worn valve guide.	Replace.
	4. Worn camshaft.	Replace.
	5. Excessive spark plug gap.	Adjust or replace.
	6. Defective ignition coil.	Replace.
	7. Defective generator.	Replace.
	8. Defective CDI unit.	Replace.
	9. Incorrect float chamber fuel level.	Adjust float height.
	10. Clogged carburetor jet.	Clean.
Engine runs poorly in high-speed range.	1. Weak valve spring.	Replace.
	2. Worn camshaft.	Replace.
	3. Insufficient spark plug gap.	Regap or replace.
	4. Mistimed valves.	Adjust.
	5. Ignition not advanced sufficiently due to poorly working timing advance circuit.	Replace CDI unit.
	6. Defective ignition coil.	Replace.
	7. Defective generator.	Replace.
	8. Defective CDI unit.	Replace.
	9. Low float chamber fuel level.	Adjust float height.
	10. Dirty air cleaner element.	Clean or replace.
	11. Clogged fuel hose, resulting in inadequate fuel supply to carburetor.	Clean and prime.
Exhaust smoke is dirty or thick.	1. Excessive amount of engine oil.	Check level and drain.
	2. Worn cylinder.	Rebore or replace.
	3. Worn piston ring.	Replace.
	4. Worn valve guide.	Replace.
	5. Scored or scuffed cylinder wall.	Replace.
	6. Worn valve stem.	Replace valve.
	7. Defective valve stem oil seal.	Replace.
	8. Worn oil ring side rail.	Replace oil ring.
Engine lacks power.	1. Insufficient tappet clearance.	Adjust.
	2. Weak valve spring.	Replace.
	3. Mistimed valves.	Adjust.
	4. Worn cylinder.	Replace.
	5. Worn piston ring.	Replace.
	6. Improper valve seating.	Repair or replace.
	7. Fouled spark plug.	Clean or replace.
	8. Incorrect spark plug.	Replace.
	9. Clogged carburetor jet.	Clean.
	10. Incorrect float chamber fuel level.	Adjust float height.
	11. Dirty air cleaner element.	Clean or replace.
	12. Air leakage from intake pipe.	Tighten or replace.
	13. Excessive amount of engine oil.	Check level and drain.

Complaint	Symptom and possible causes	Remedy
Engine overheats.	1. Carbon buildup on piston crown.	Clean.
	2. Insufficient amount of engine oil.	Check level and add.
	3. Defective oil pump.	Replace.
	4. Clogged oil circuit.	Clean.
	5. Float chamber fuel level too low.	Adjust float height.
	6. Air leakage from intake pipe.	Tighten or replace.
	7. Incorrect engine oil.	Change.
	8. Defective cooling system.	See radiator section.

RADIATOR

Complaint	Symptom and possible causes	Remedy
Engine overheats.	1. Not enough engine coolant.	Add coolant.
	2. Radiator core clogged.	Clean.
	3. Defective temperature switch.	Replace.
	4. Clogged engine coolant passage.	Clean.
	5. Air trapped in the cooling circuit.	Bleed out air.
	6. Defective water pump.	Replace.
	7. Incorrect engine coolant.	Replace.
	8. Defective cooling fan thermo-switch.	Replace.
	9. Defective thermostat.	Replace.
Engine overcools.	1. Extremely low ambient temperature.	Install radiator cover.
	2. Defective cooling fan thermo-switch.	Replace.
	3. Defective thermostat.	Replace.

CARBURETOR

Complaint	Symptom and possible causes	Remedy
Starting difficulty.	1. Clogged starter jet.	Clean.
	2. Clogged starter jet passage.	Clean.
	3. Air leaking from joint between starter body and carburetor.	Tighten, adjust, or replace gasket.
	4. Air leaking from carburetor joint or vacuum hose joint.	Tighten or replace defective part.
	5. Improper working starter (enricher) plunger.	Adjust.
Idling or low-speed trouble.	1. Clogged or loose pilot jet.	Clean or tighten.
	2. Clogged or loose pilot air jet.	Clean or tighten.
	3. Air leaking from carburetor joint, vacuum pipe joint, or starter.	Tighten or replace defective part.
	4. Clogged pilot outlet port.	Clean.
	5. Clogged bypass port.	Clean.
	6. Starter (enricher) plunger not fully closed.	Adjust.
Medium or high-speed trouble.	1. Clogged main jet.	Clean.
	2. Clogged main air jet.	Clean.
	3. Clogged needle jet.	Clean.
	4. Improper working throttle valve.	Adjust.
	5. Clogged fuel filter.	Clean or replace.
Overflow and fuel level fluctuations.	1. Worn or damaged needle valve.	Replace.
	2. Broken needle valve spring.	Replace.
	3. Improper working float.	Adjust or replace.
	4. Foreign matter on the needle valve.	Clean or replace with needle valve seat.
	5. Incorrect float chamber fuel level.	Adjust float height.

CHASSIS

Complaint	Symptom and possible causes	Remedy
Handling is too heavy or stiff.	1. Improper front wheel alignment. 2. Insufficiently lubricated. 3. Low air pressure in front tires. 4. Tie rod ends tending to seize. 5. Linkage connections tending to seize.	Adjust. Lubricate. Adjust. Replace. Repair or replace.
Steering wobbles.	1. Unequally inflated tires. 2. Loose front wheel hub nuts. 3. Damaged or worn front wheel hub bearings. 4. Worn or loose tie rod ends. 5. Defective or incorrect front tires. 6. Damaged or worn wishbone arms and related bearings. 7. Distorted front wheels. 8. Loose chassis nuts and bolts.	Regulate. Tighten. Replace. Replace or tighten. Replace. Replace. Replace. Replace. Tighten.
Steering pulls to one side.	1. Unequally inflated tires. 2. Improper front wheel alignment. 3. Worn front wheel hub bearings. 4. Distorted frame or wishbone. 5. Defective shock absorber.	Regulate. Adjust. Replace. Repair or replace. Replace.
Shocks felt in the steering.	1. High tire pressure. 2. Worn steering linkage connections. 3. Loose suspension system bolts.	Regulate. Replace. Tighten.
Tires rapidly or unevenly wear.	1. Worn or loose front wheel hub bearings. 2. Improper front wheel alignment.	Replace. Adjust.
Steering too noisy.	1. Loose nuts and bolts. 2. Damaged or worn front wheel hub bearings. 3. Insufficiently lubricated.	Tighten. Replace. Lubricate.
Front suspension too soft.	1. Weakened spring. 2. Shock absorber leaks oil.	Replace. Replace.
Front suspension too stiff.	1. Worn upper or lower wishbone arms and related bearings. 2. Bent shock absorber rod.	Tighten. Replace.
Suspension too noisy.	1. Loose suspension system bolts. 2. Worn wishbone arms and related bearings. 3. Worn swingarm and suspension bearings.	Tighten. Replace. Replace.
Rear suspension too soft.	1. Weakened spring of shock absorber. 2. Leakage oil or gas of shock absorber. 3. Improperly set rear spring pre-load adjuster. 4. Improperly set damping force adjuster.	Replace. Replace. Adjust. Adjust.
Rear suspension too stiff.	1. Bend shock absorber rod. 2. Bent swingarm. 3. Worn swingarm and rear suspension bearings. 4. Improperly set rear spring pre-load adjuster. 5. Improperly set damping force adjuster. 6. Improper chain adjustment.	Replace. Replace. Replace. Adjust. Adjust. Adjust.

Complaint	Symptom and possible causes	Remedy
Rear wheels wobble.	1. Distorted rear wheel rims.	Replace.
	2. Damage or worn rear axel housing bearings.	Replace.
	3. Defective or incorrect rear tires.	Replace.
	4. Loose rear wheel hub nuts.	Tighten.
	5. Distorted rear axle.	Replace.
	6. Loosen rear axle housing mounting bolts.	Tighten.
	7. Improper rear brake adjustment.	Adjust.
	8. Damaged or worn rear swingarm and related bearings.	Replace.
	9. Rear shock absorber leaks oil.	Replace.
	10. Loose rear swingarm nut.	Tighten.

BRAKES

Complaint	Symptom and possible causes	Remedy
Poor braking.	1. Insufficient brake fluid.	Refill to level mark.
	2. Air in brake fluid circuit.	Bleed air out.
	3. Worn pads.	Replace.
	4. Worn disc.	Replace.
	5. Improper parking brake adjustment.	Adjust.
Insufficient brake power.	1. Leakage of brake fluid from hydraulic system.	Repair or replace.
	2. Worn pads.	Replace.
	3. Oil adhesion on engaging surface of pads.	Clean disc and pads.
	4. Worn disc.	Replace.
	5. Air in hydraulic system.	Bleed.
Brake squeaks.	1. Carbon adhesion on pad surface.	Repair surface with emery paper.
	2. Titled pad.	Modify pad fitting or replace.
	3. Loose front wheel axle or rear wheel axle.	Tighten to specified torque.
	4. Worn brake pads.	Replace.
	5. Foreign material in brake fluid.	Replace brake fluid.
	6. Clogged return port of master cylinder.	Disassemble and clean master cylinder.
	7. Caliper binding on caliper axles.	Clean and lubricate.
Excessive brake lever stroke.	1. Air in hydraulic system.	Bleed.
	2. Insufficient brake fluid.	Replenish fluid to specified level and bleed air.
	3. Improper quality of brake fluid.	Replace with correct fluid.
Brake fluid leakage.	1. Insufficient tightening of connection joints.	Tighten to specified torque and add brake fluid.
	2. Cracked hose.	Replace.
	3. Worn piston and/or cup.	Replace piston and/or cup.
Brake drags	1. Rusty part.	Clean and lubricate.
	2. Insufficient brake lever or brake pedal pivot lubrication.	Lubricate.
	3. Improper parking brake adjustment.	Adjust.

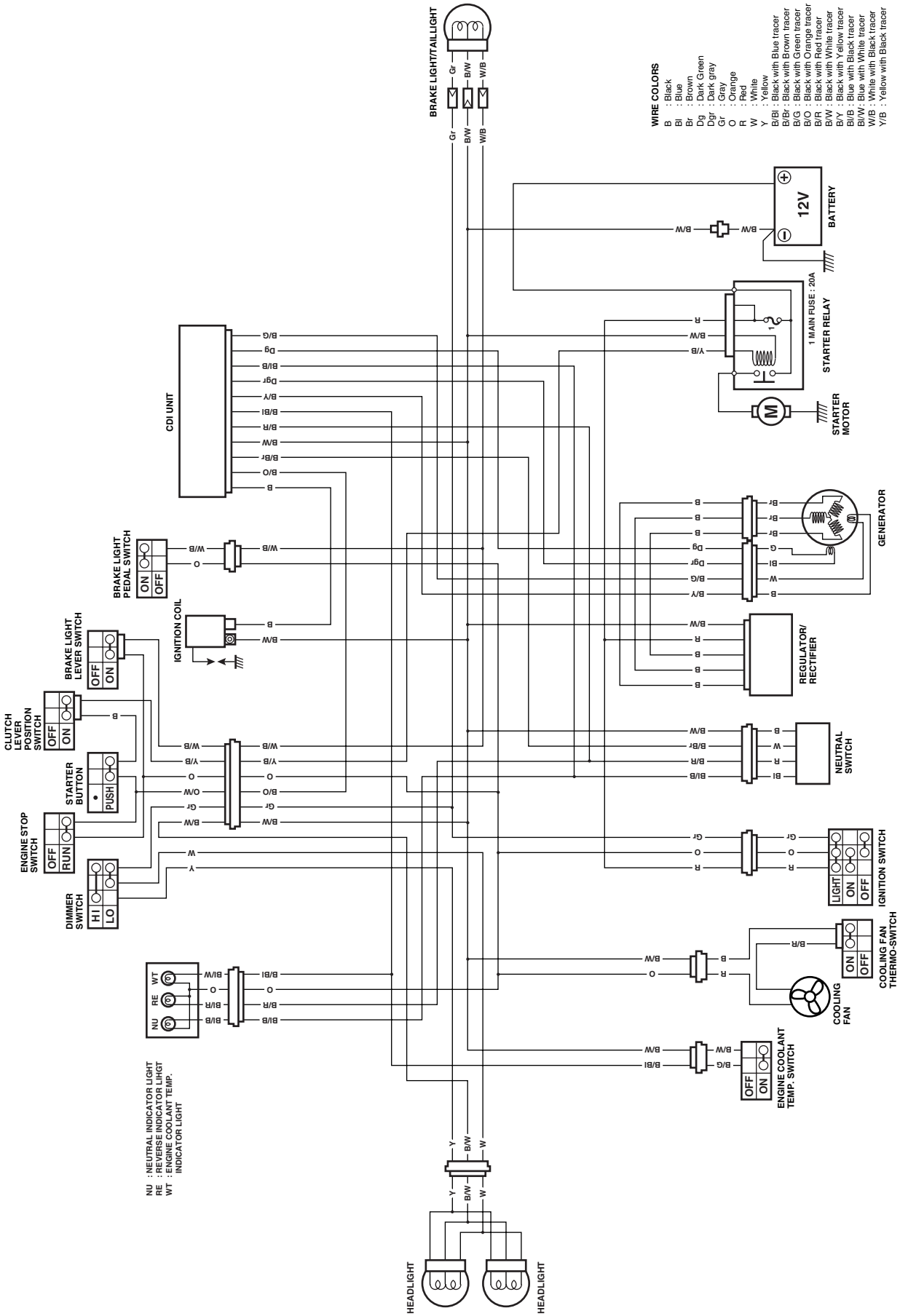
ELECTRICAL

Complaint	Symptom and possible causes	Remedy
No sparking or poor sparking.	1. Defective ignition coil. 2. Defective spark plug. 3. Defective generator. 4. Defective CDI unit. 5. Defective pickup coil.	Replace. Replace. Replace. Replace. Replace.
Spark plug is wet or quickly becomes fouled with carbon.	1. Excessively rich air/fuel mixture. 2. Excessively high idling speed. 3. Incorrect gasoline. 4. Dirty air cleaner element. 5. Incorrect spark plug (cold type).	Adjust carburetor. Adjust carburetor. Change. Clean or replace. Change to standard spark plug.
Spark plug quickly becomes fouled with oil or carbon.	1. Worn piston ring. 2. Worn piston. 3. Worn cylinder. 4. Excessive valve-stem-to-valve-guide clearance. 5. Worn valve stem oil seal.	Replace. Replace. Replace. Replace. Replace.
Spark plug electrodes overheat or burn.	1. Incorrect spark plug. 2. Overheated engine. 3. Loose spark plug. 4. Excessively lean air/fuel mixture.	Change to cold type spark plug. Turn-up. Tighten. Adjust carburetor.
Generator does not charge.	1. Open or short in lead wires, or loose lead connections. 2. Shorted, grounded or open generator coil. 3. Shorted or punctured regulator/rectifier.	Repair, replace or connect properly. Replace. Replace.
Generator charges but charging rate is below specification.	1. Lead wires tend to get shorted, open-circuited, or loosely connected at terminal. 2. Grounded or open-circuited stator coils or generator. 3. Defective regulator/rectifier.	Repair or tighten. Replace. Replace.
Generator over-charges.	1. Internal short-circuit in the battery. 2. Damaged or defective regulator/rectifier.	Replace battery. Replace.
Unstable charging.	1. Lead wire insulation frayed due to vibration, resulting in intermittent shorting. 2. Internally shorted generator. 3. Defective regulator/rectifier.	Repair or replace. Replace. Replace.
Starter button does not work.	1. Run down battery. 2. Defective switch contact. 3. Brushes do not seat properly on the commutator in the starter motor. 4. Defective starter relay. 5. Defective neutral relay. 6. Defective engine stop switch. 7. Defective neutral switch. 8. Defective clutch lever position switch. 9. Wiring connections loose or disconnected.	Recharge or replace. Replace. Repair or replace. Replace. Replace. Replace. Replace. Replace. Connect, tighten or repair.

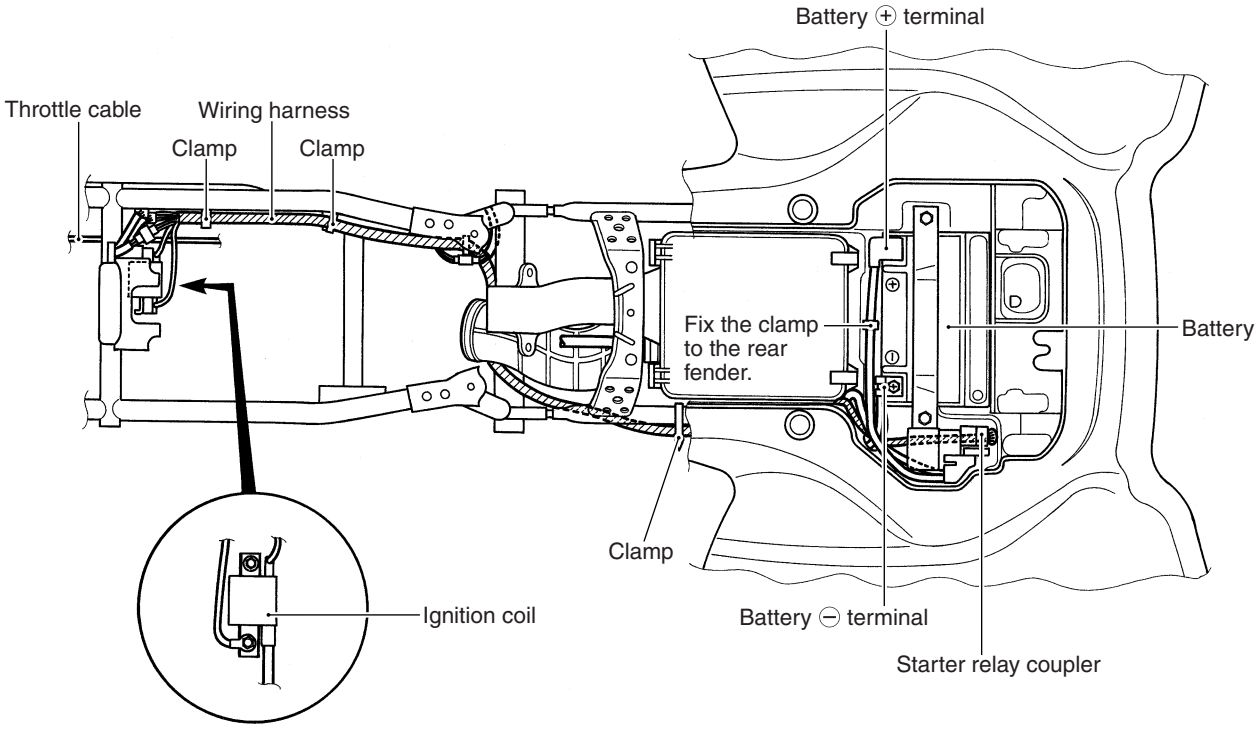
BATTERY

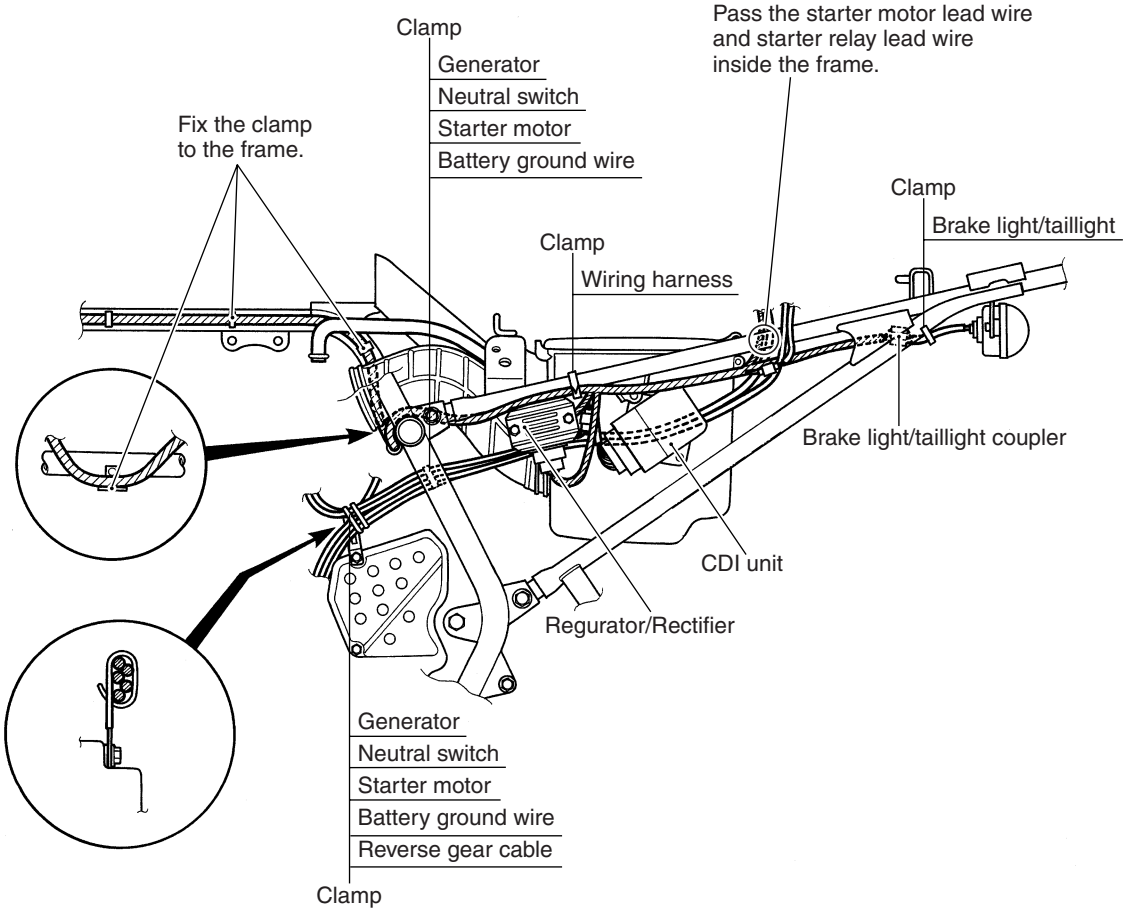
Complaint	Symptom and possible causes	Remedy
Sulfation or spots on surfaces of cell plates.	1. Cracked battery case. 2. Battery has been left in a run-down condition for a long time.	Replace. Replace.
Battery runs down quickly.	1. Incorrect charging method. 2. Battery cell plates have lost much of their active material as a result of overcharging. 3. Internally shorted battery. 4. Old battery.	Check the generator, and regulator/rectifier circuit connections, and make necessary adjustments to obtain specified charging operation. Replace the battery and correct the charging system. Replace. Replace.
Reversed battery polarity.	1. Improperly connected battery leads. (i.e., ⊖ to ⊕ and ⊕ to ⊖)	Replace the battery and be sure to connect it properly.
Battery discharged too rapidly.	1. Dirty container top and sides. 2. Old battery.	Clean. Replace.
Battery sulfation.	1. Incorrect charging rate. (When not in use, the battery should be checked at least once a month and properly charged if necessary, to avoid sulfation.) 2. The battery was left unused in a cold climate for too long.	Replace. Replace the battery if badly sulfated.

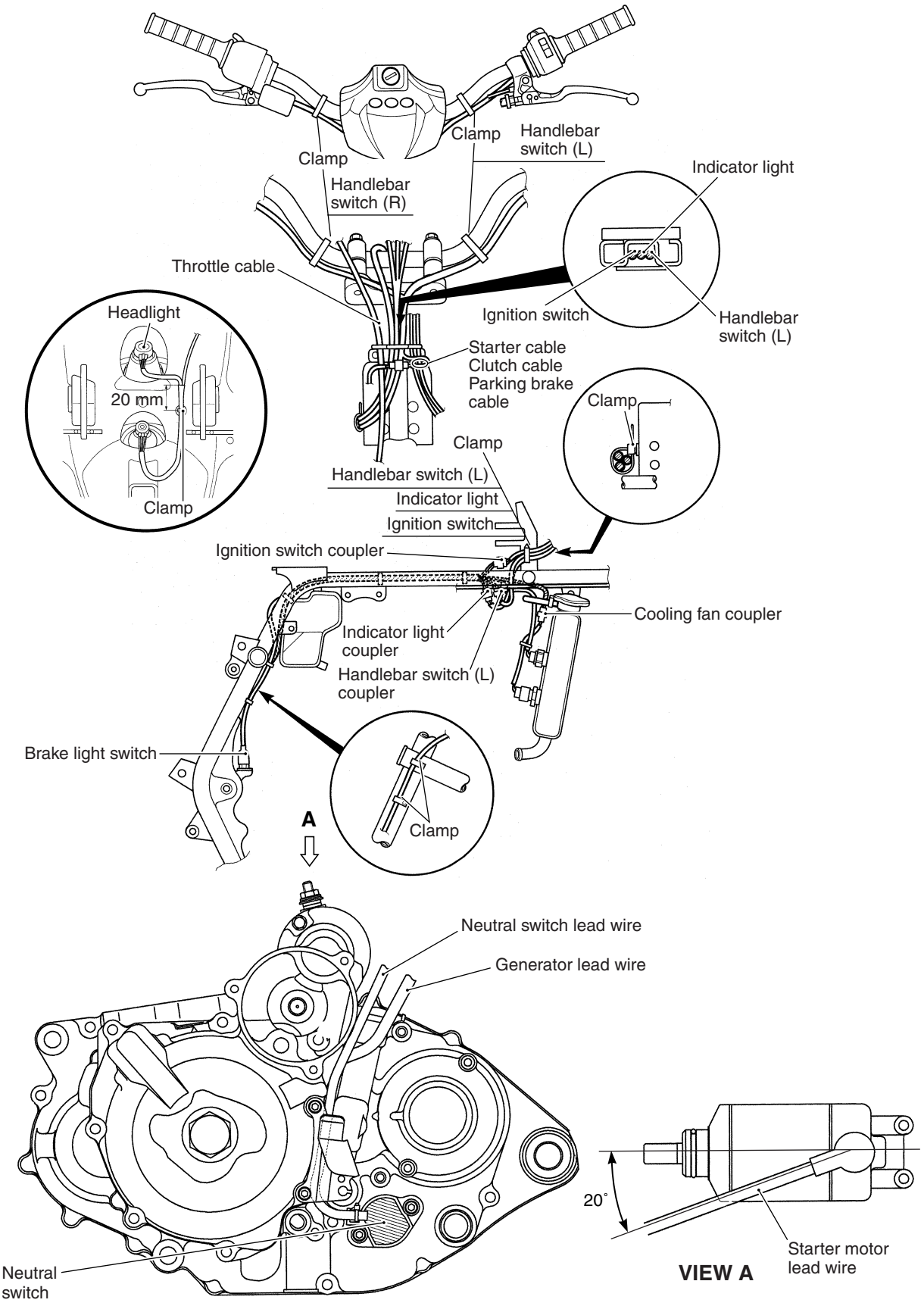
WIRING DIAGRAM



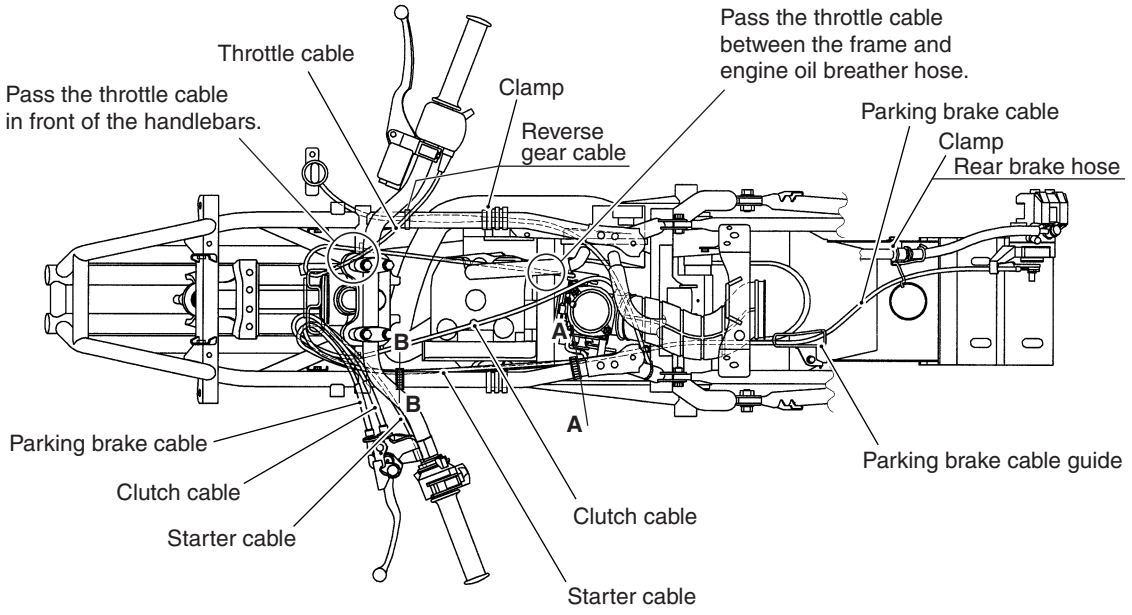
WIRING HARNESS, CABLE AND HOSE ROUTING
WIRING HARNESS ROUTING

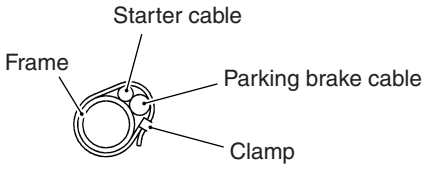





Clamp
Clamp
Handlebar switch (L)
Handlebar switch (R)
Indicator light
Throttle cable
Ignition switch
Handlebar switch (L)
Headlight
20 mm
Clamp
Starter cable
Clutch cable
Parking brake cable
Clamp
Clamp
Handlebar switch (L)
Indicator light
Ignition switch
Ignition switch coupler
Cooling fan coupler
Indicator light coupler
Handlebar switch (L) coupler
Brake light switch
A
Clamp
Neutral switch lead wire
Generator lead wire
Neutral switch
20°
Starter motor lead wire
VIEW A

CABLE ROUTING





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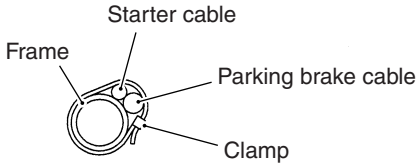
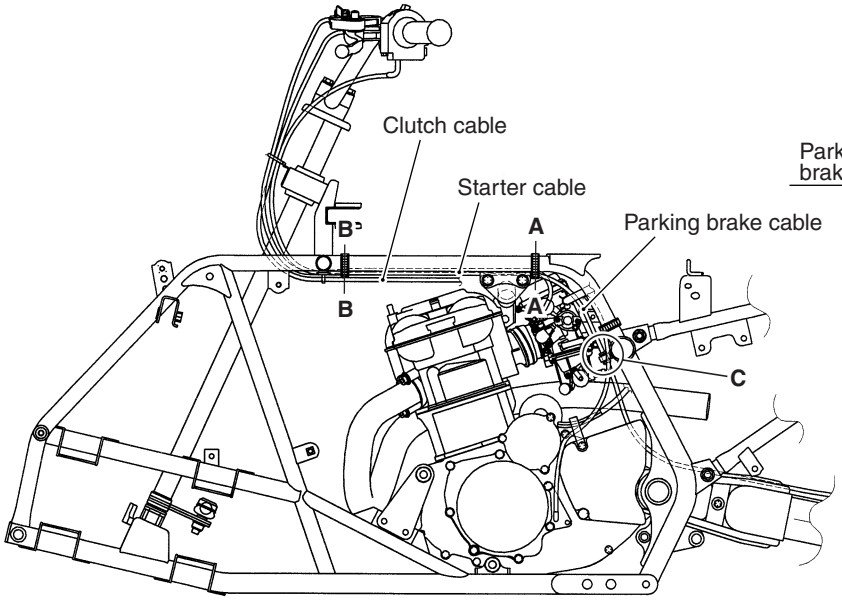
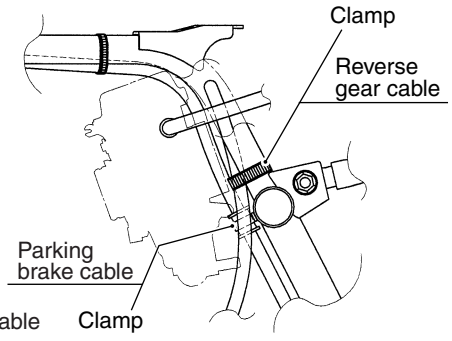


SECT B – B





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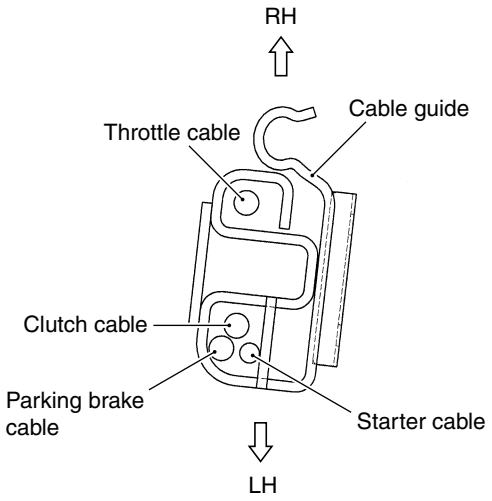

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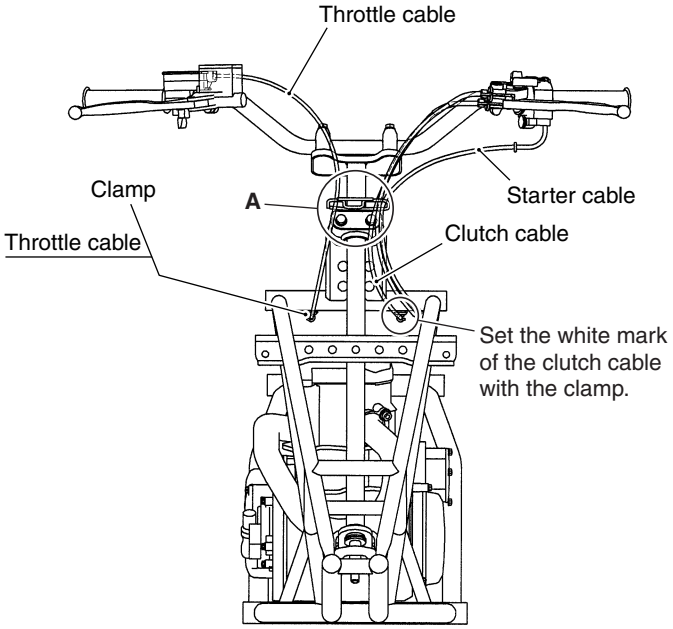

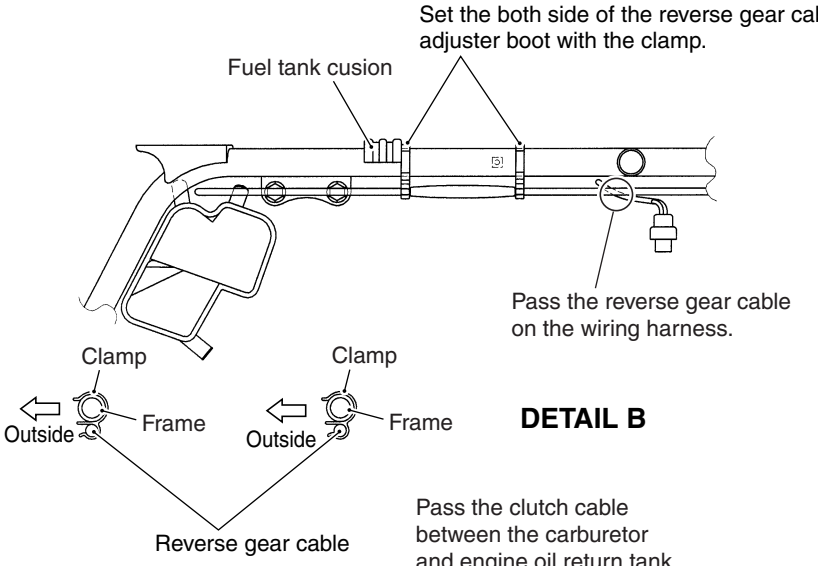

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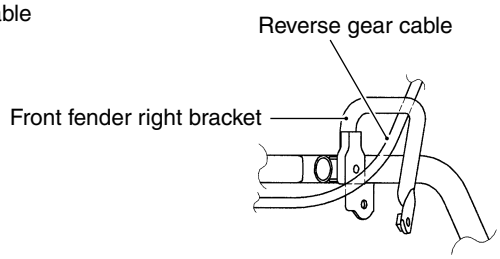

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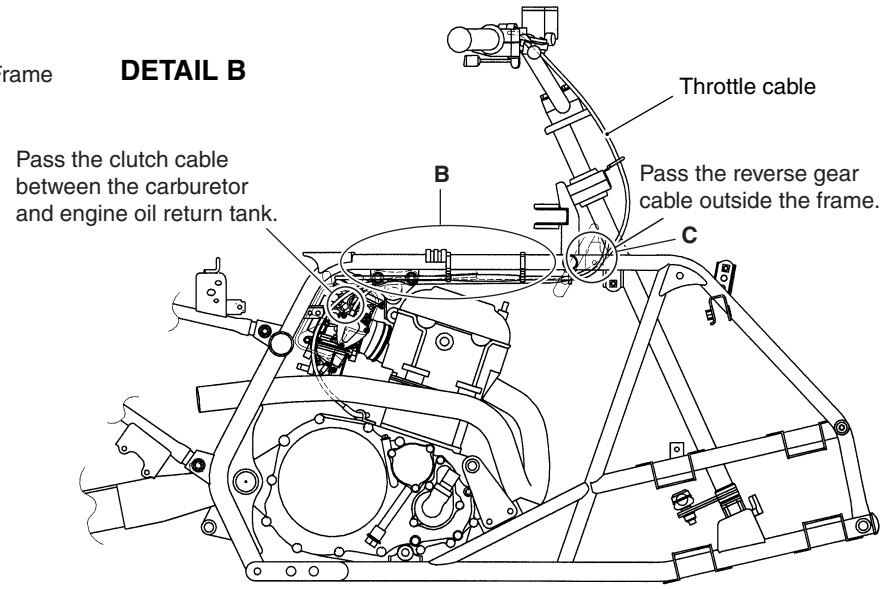
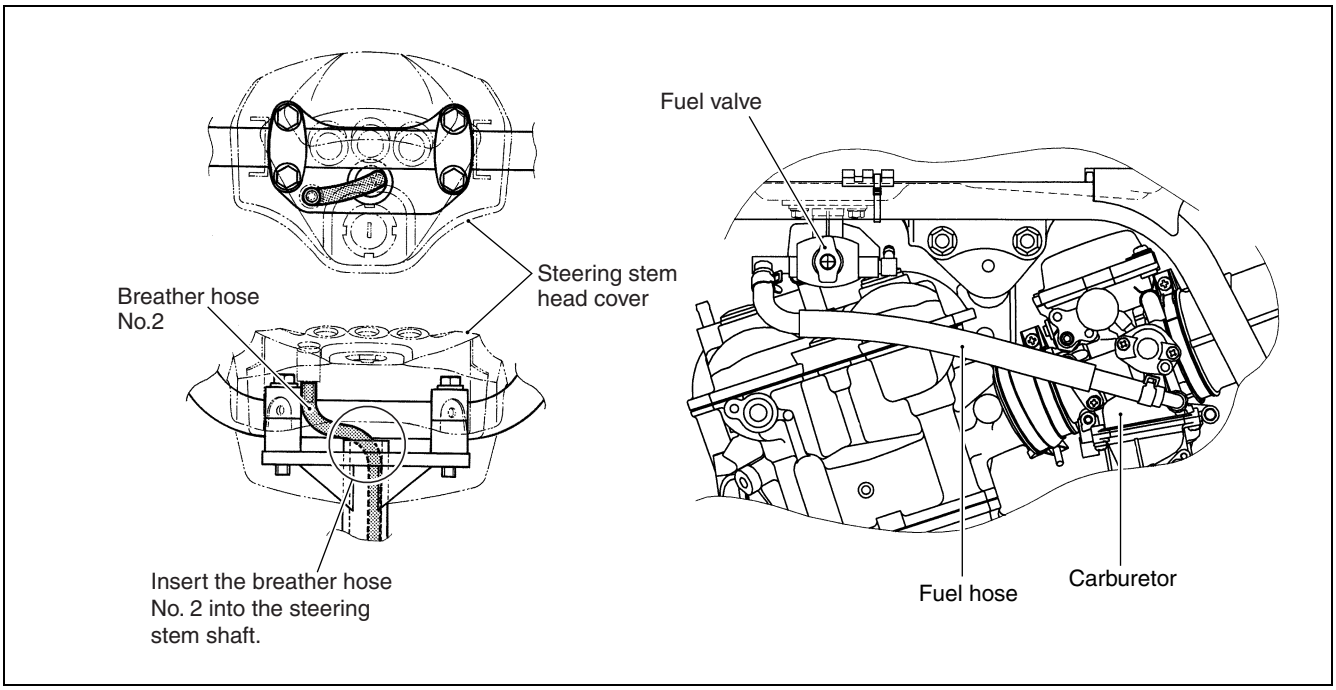
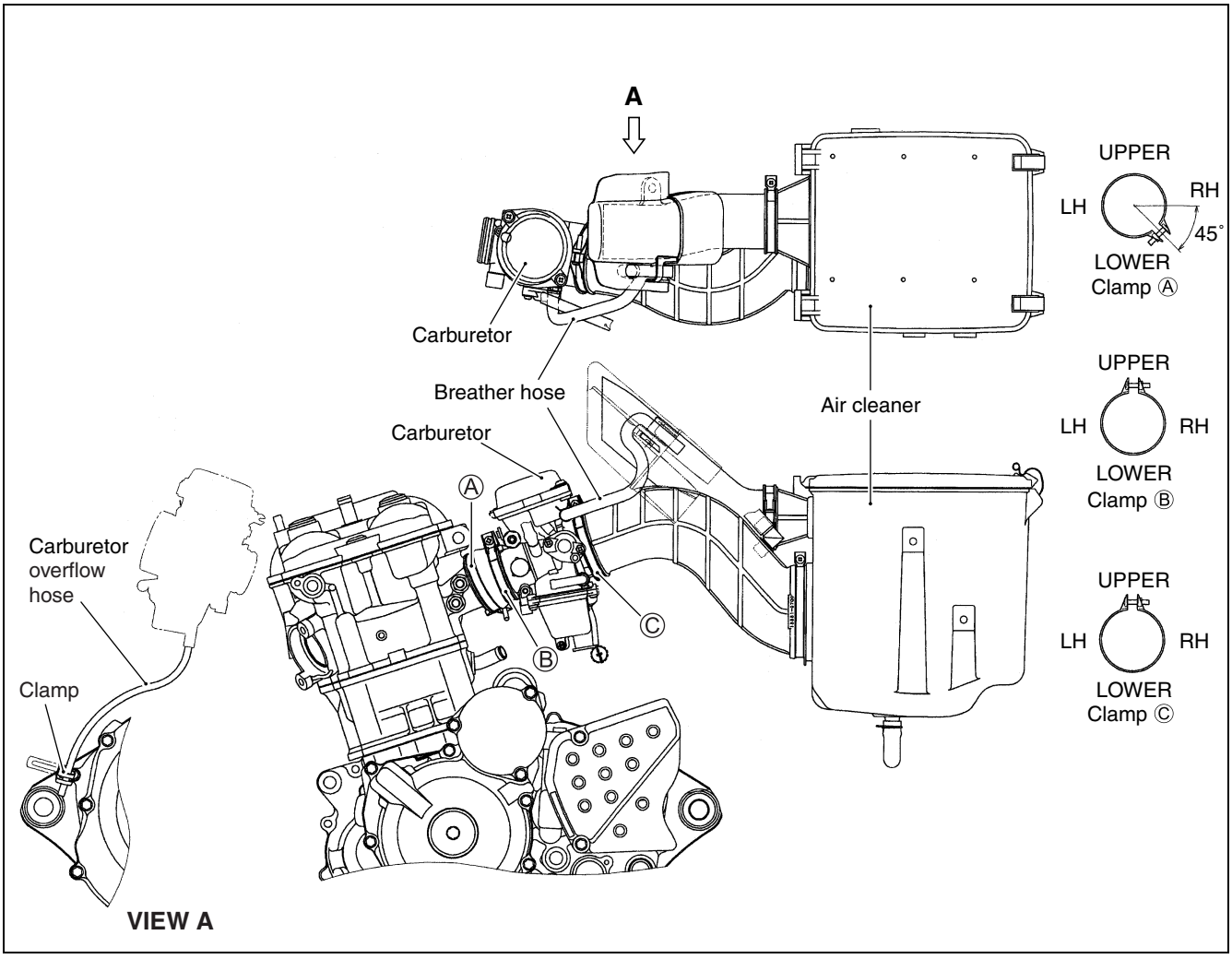
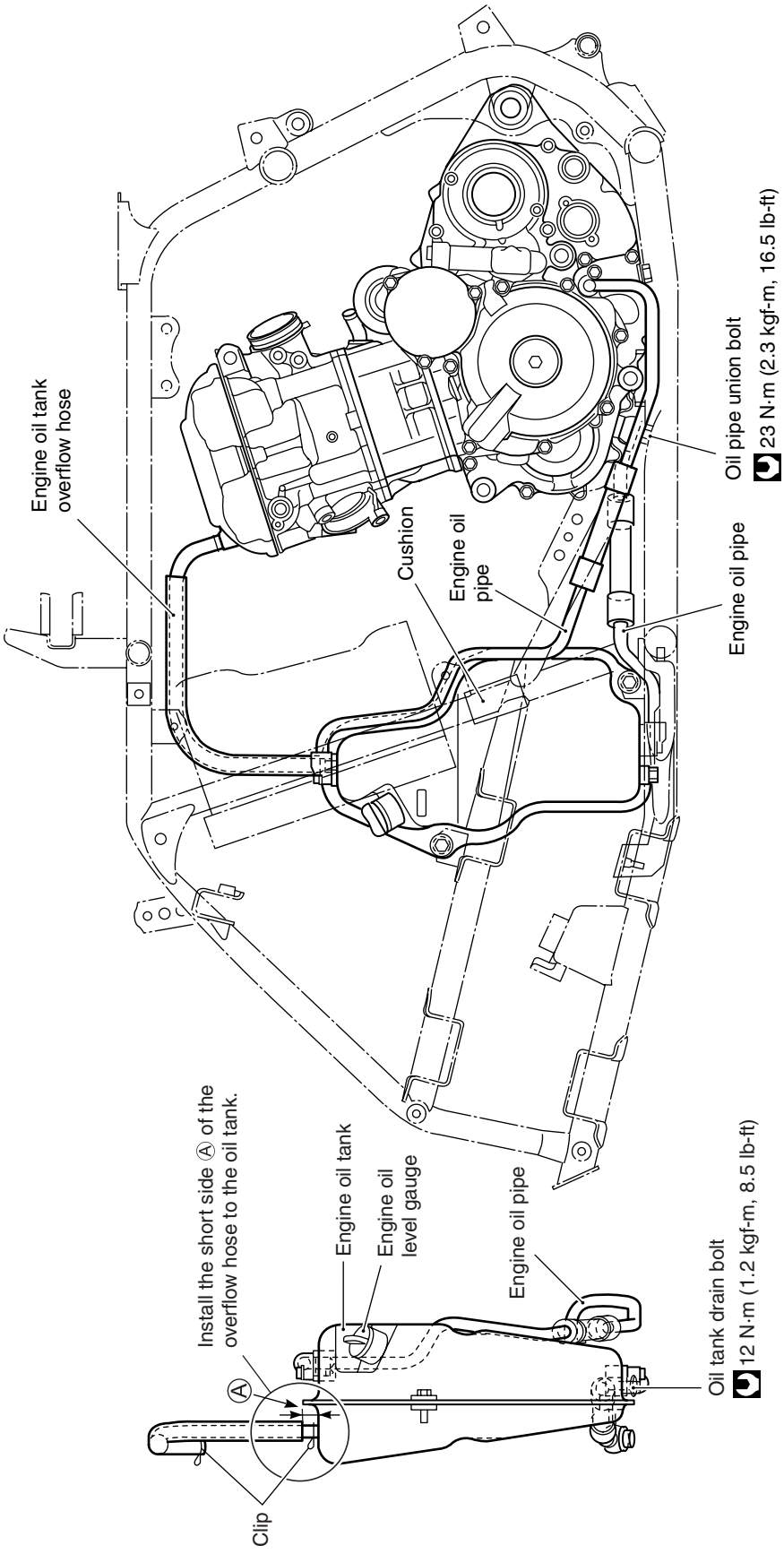


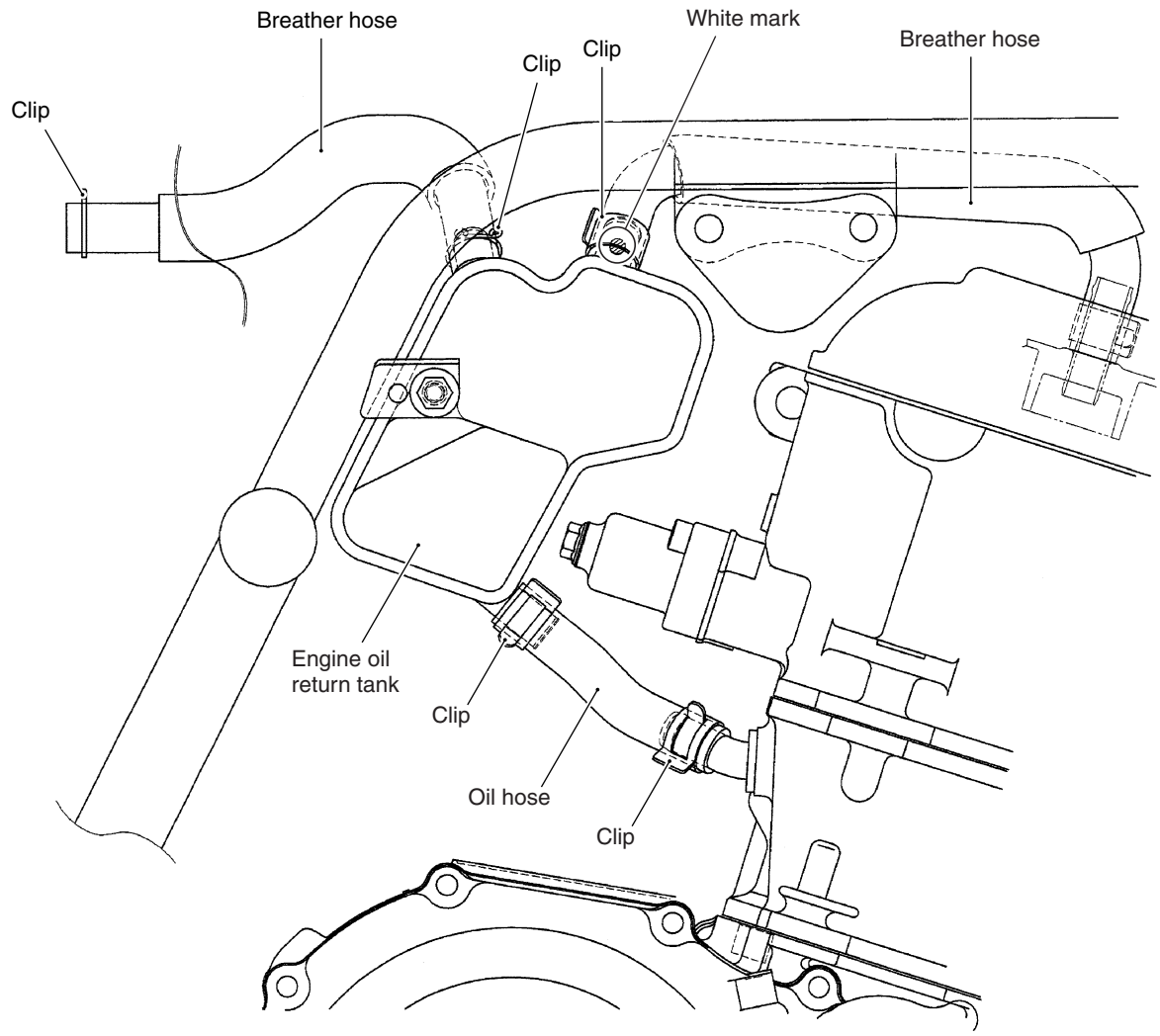
FUEL HOSE ROUTING



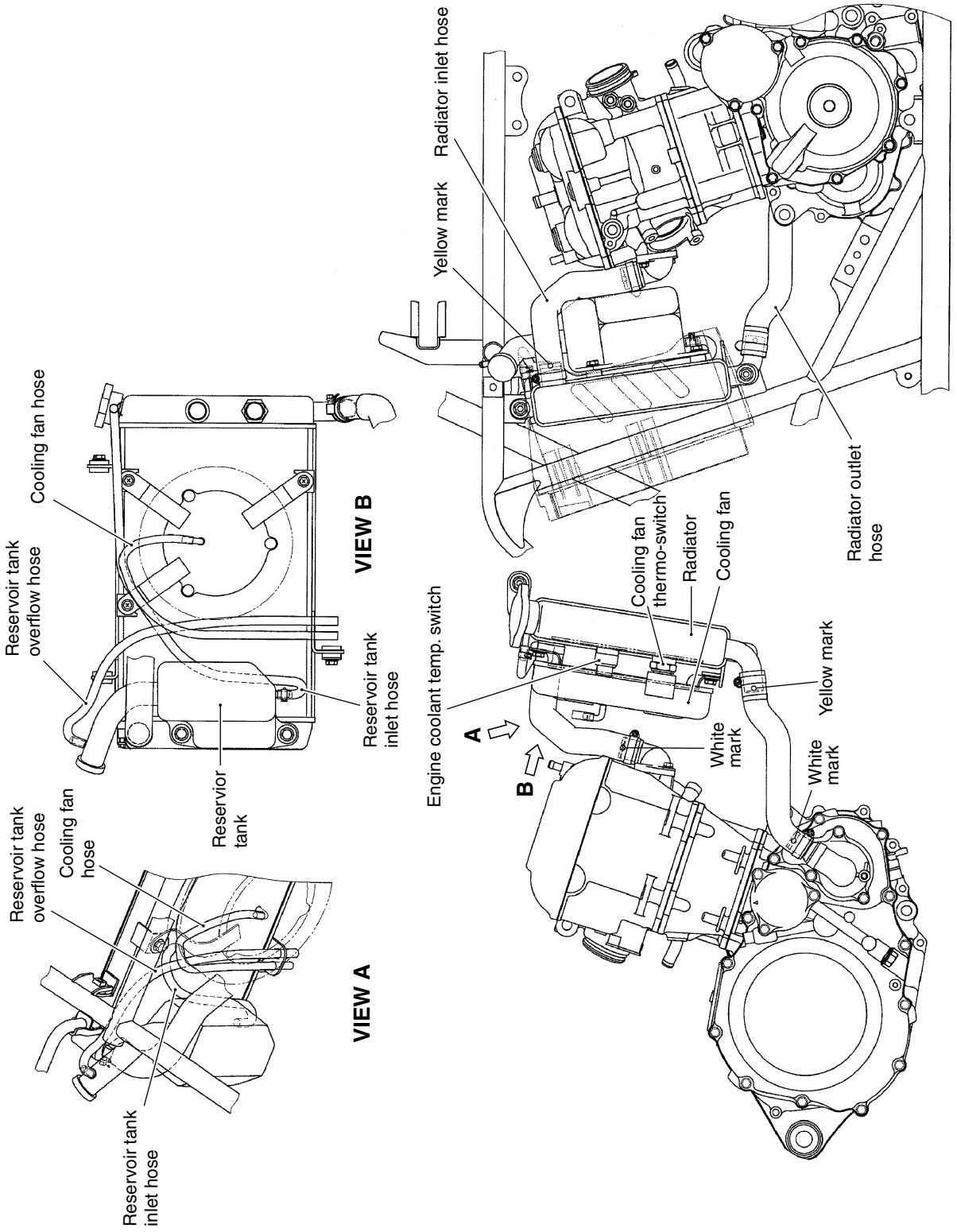


ENGINE OIL HOSE AND PIPE ROUTING

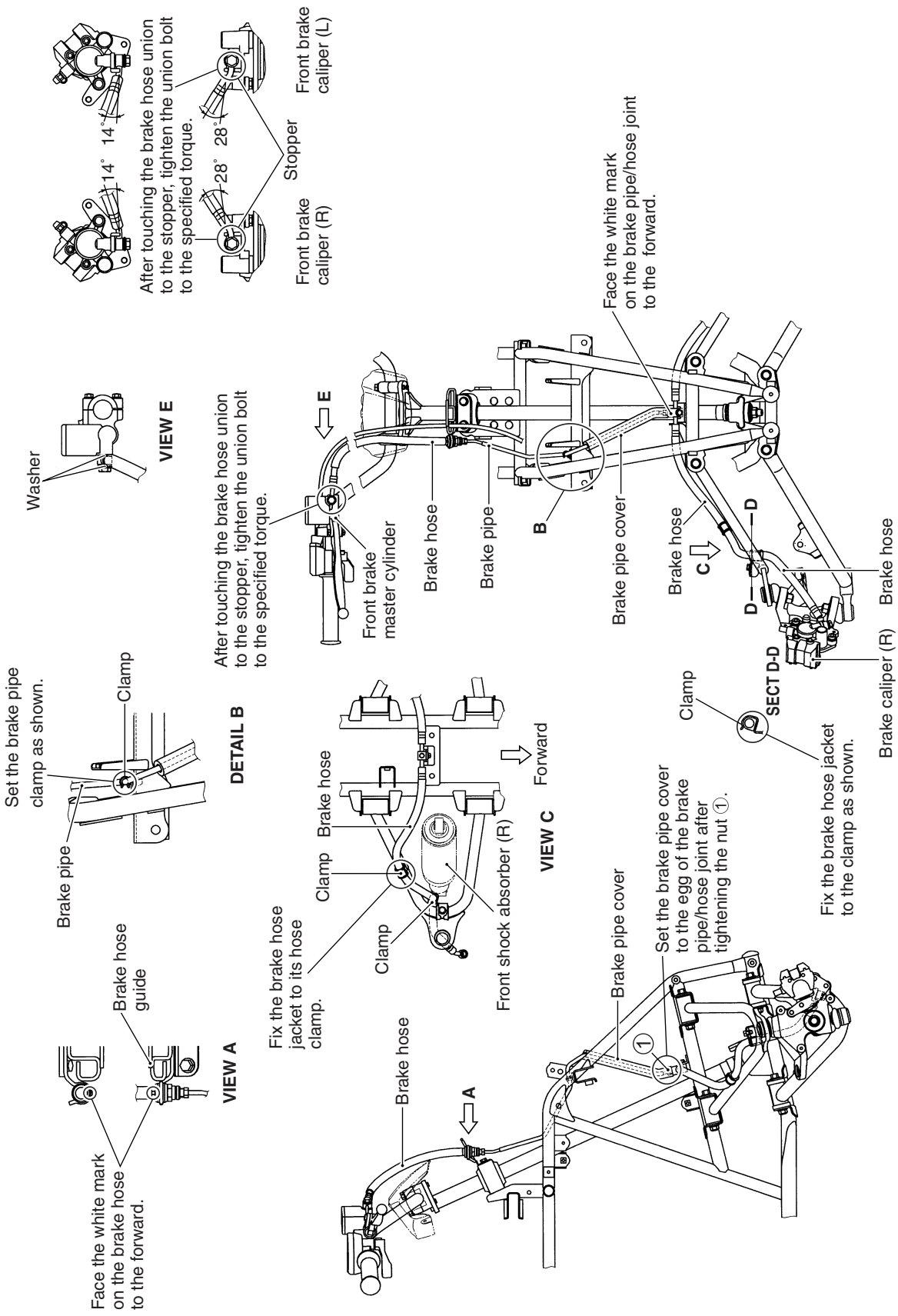



Breather hose
White mark
Clip
Clip
Clip
Breather hose
Clip
Engine oil
return tank
Clip
Oil hose
Clip

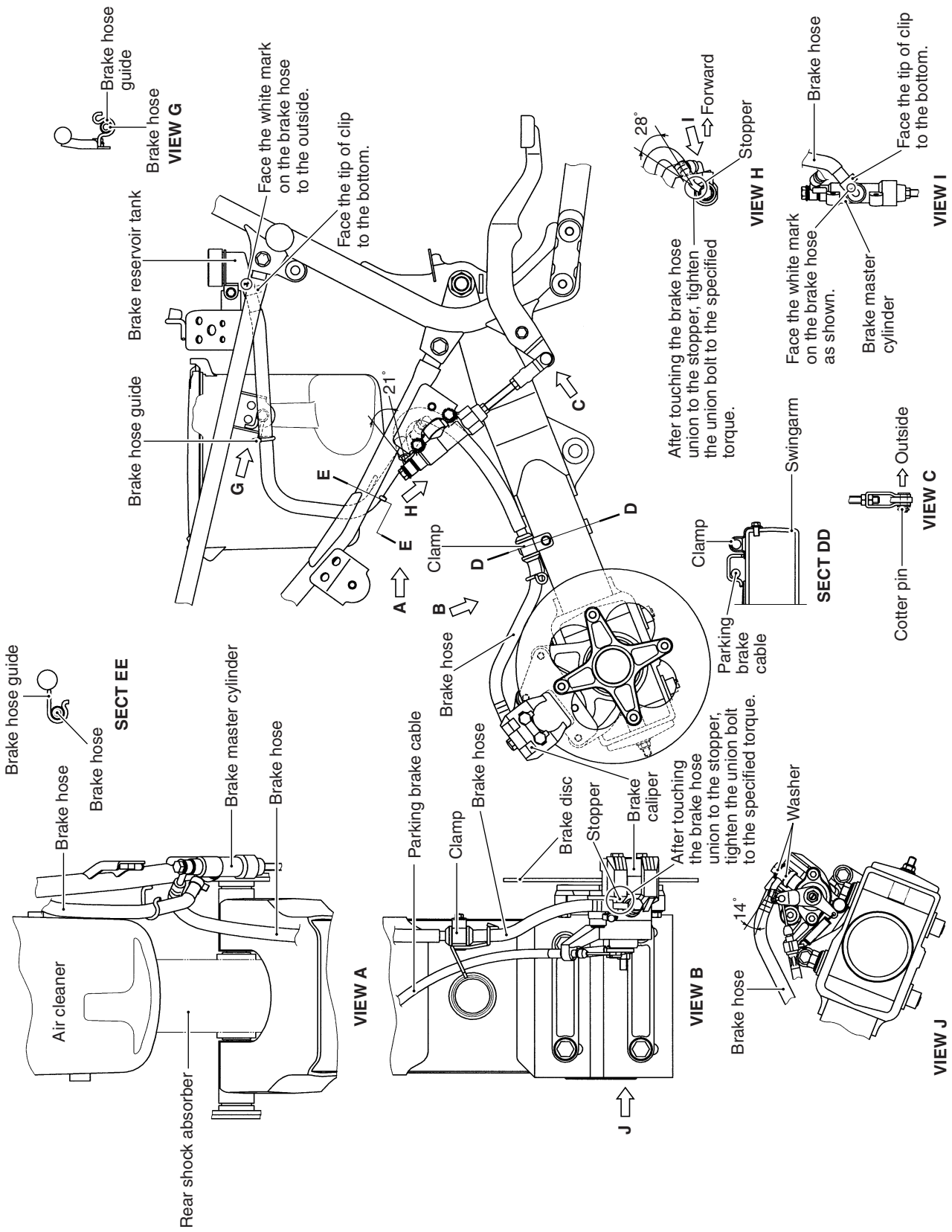
COOLING SYSTEM HOSE ROUTING



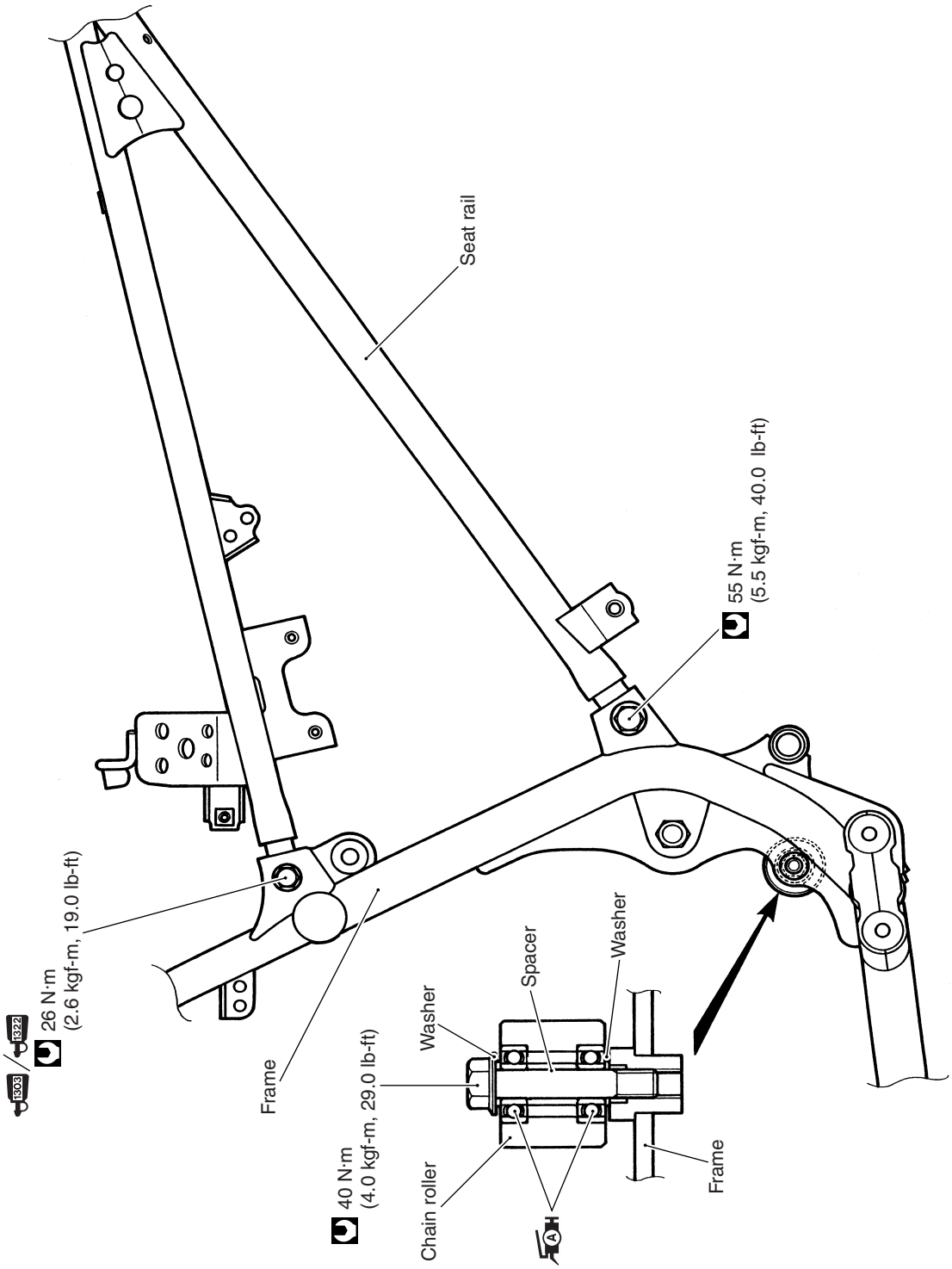
FRONT BRAKE HOSE ROUTING



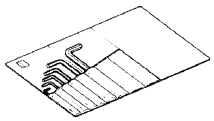
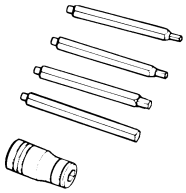
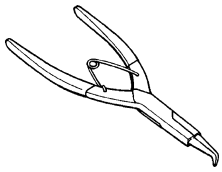
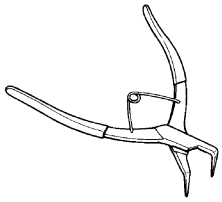
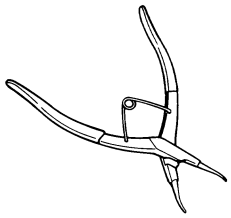
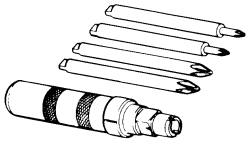
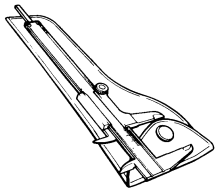
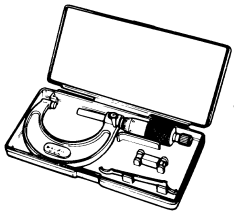
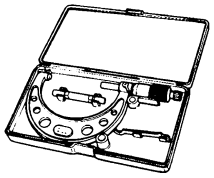
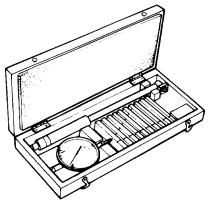
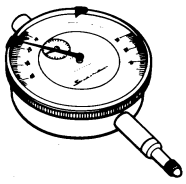
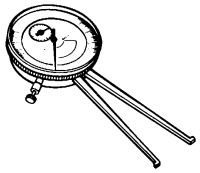
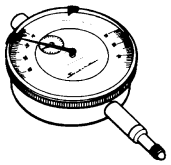
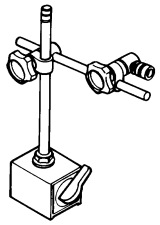
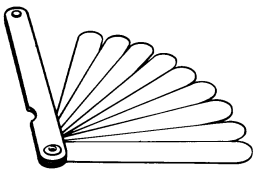
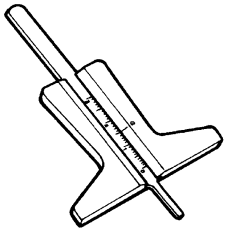
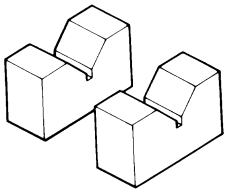
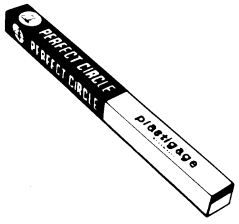
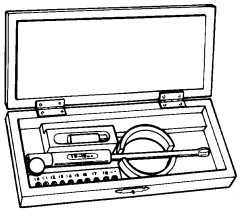
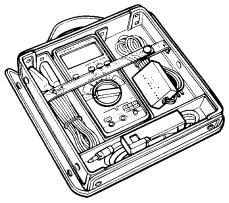
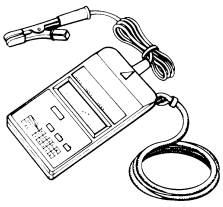
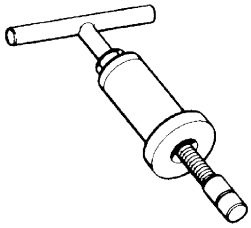
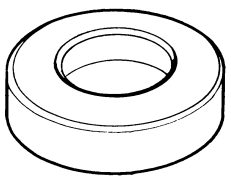
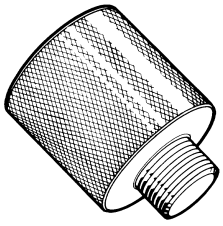
REAR BRAKE HOSE ROUTING

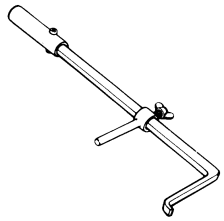
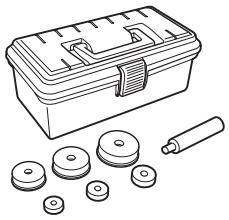
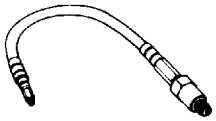
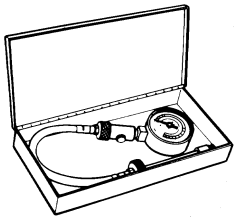
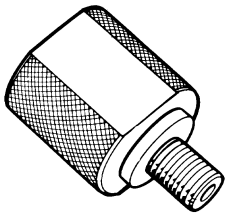
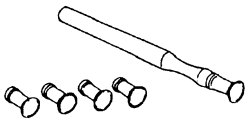
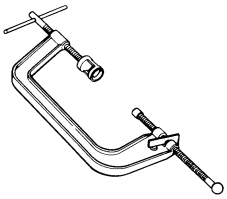
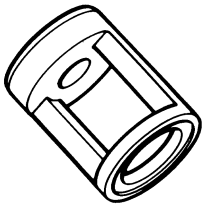
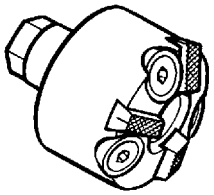
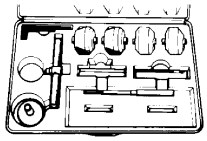
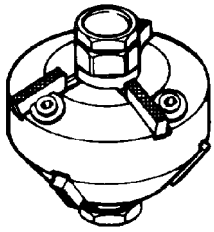
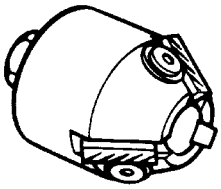
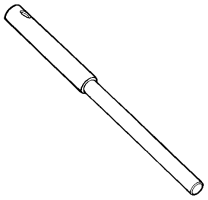
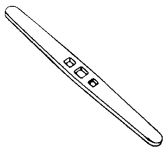
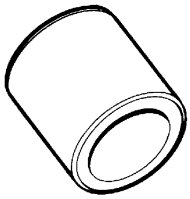
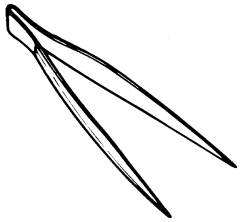
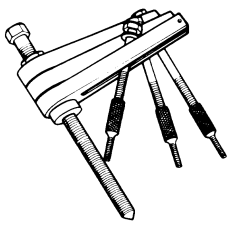
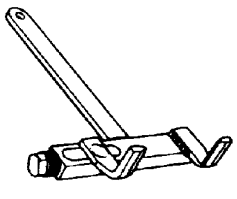
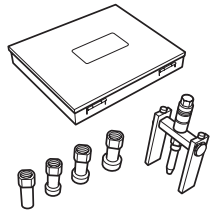
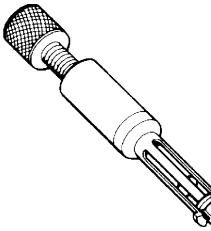


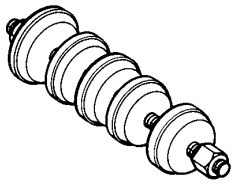
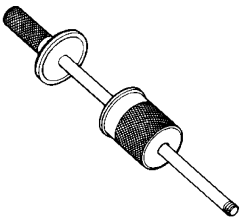
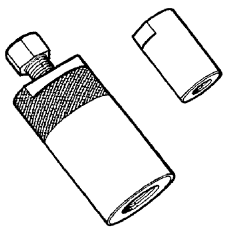
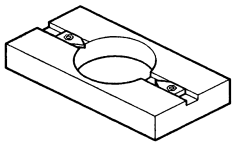
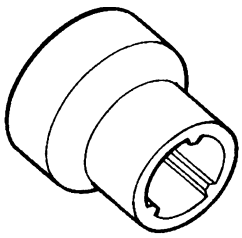
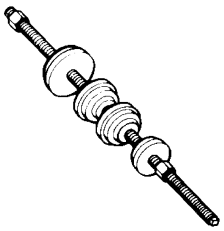
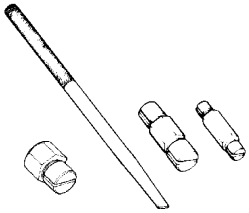
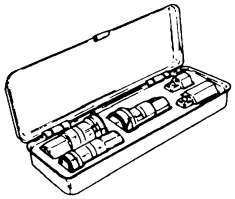
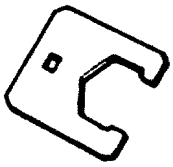
SEAT RAIL AND CHAIN ROLLER INSTALLATION



SPECIAL TOOLS

				
09900-00401 **Hexagon wrench set**	**09900-00410** **Hexagon wrench set**	**09900-06104** **Snap ring pliers**	**09900-06105** **Snap ring pliers**	**09900-06108** **Snap ring pliers**
				
09900-09004 **Impact driver set**	**09900-20101** **Vernier calipers**	**09900-20202** **Micrometer** **(25 – 50 mm)**	**09900-20204** **Micrometer** **(75 – 100 mm)**	**09900-20205** **Micrometer** **(0 – 25 mm)**
				
09900-20508 **Cylinder gauge set**	**09900-20602** **Dial gauge** **(1/1000 mm)**	**09900-20605** **Dial calipers** **(1/100 mm,** **10 – 34 mm)**	**09900-20606** **Dial gauge** **(1/100 mm)**	**09900-20701** **Magnetic stand**
				
09900-20803 **Tickness gauge**	**09900-20805** **Tire depth gauge**	**09900-21304** **V-block set** **(100 mm)**	**09900-22301** **09900-22302** **Plastigauge**	**09900-22403** **Small bore gauge** **(18 – 35 mm)**
				
09900-25008 **Multi circuit tester set**	**09900-26006** **Tachometer**	**09910-32812** **Crankshaft installer**	**09910-32820** **Universal clamp wrench**	**09911-11310** **Attachment**

				
09913-50121 **Oil seal remover**	**09913-70210** **Bearing installer set**	**09915-63310** **Adaptor**	**09915-64512** **Compression gauge set**	**09915-74511** **Oil pressure gauge set**
				
09915-74532 **Adaptor**	**09916-10911** **Valve lapper set**	**09916-14510** **Valve lifter**	**09916-14910** **Attachment**	**09916-20610** **Seat cutter (N-121)**
				
09916-21111 **Valve seat Cutter set**	**09916-22420** **Valve seat cutter (N-128)**	**09916-22430** **Valve seat cutter (N-114)**	**09916-24311** **Solid pilot (N-100-5.0)**	**09916-34542** **Reamer handle**
				
09916-34570 **Valve guide reamer (5.0 mm)**	**09916-34580** **Valve guide reamer (10.8 mm)**	**09916-44310** **Valve guide remover**	**09916-53360** **Valve guide installer attachment**	**09916-84511** **Tweezers**
				
09920-13120 **Crankcase separating tool**	**09920-53740** **Clutch sleeve hub holder**	**09921-20240** **Bearing remover set**	**09921-74511** **Bearing remover**	**09923-73210** **Bearing remover**

				
09924-84510 **Bearing installer set**	**09930-30104** **Sliding hammer**	**09930-31921** **Rotor remover set**	**09930-73170** **Starter torque limiter holder**	**09930-73180** **Starter torque limiter socket**
				
09941-34513 **Bearing installer**	**09941-50111** **Bearing remover**	**09930-10121** **Spark plug wrench set**	**09940-92450** **Rear axle nut holder**	

TIGHTENING TORQUE
ENGINE

ITEM	N·m	kgf-m	lb-ft
Cylinder head cover bolt	14	1.4	10.0
Spark plug	11	1.1	8.0
Cylinder head bolt (M10)	46	4.6	33.5
(M6)	10	1.0	7.0
Cylinder head side bolt	14	1.4	10.0
Cylinder nut	10	1.0	7.0
Camshaft journal holder bolt	10	1.0	7.0
Balancer driven gear nut	50	5.0	36.0
Primary drive gear nut	140	14.0	101.5
Generator rotor nut	120	12.0	87.0
Clutch sleeve hub nut	70	7.0	50.5
Gearshift arm stopper	19	1.9	13.5
Gearshift cam driven gear bolt	24	2.4	17.5
Cam chain tension adjuster bolt	10	1.0	7.0
Cam chain tensioner mounting bolt	10	1.0	7.0
Cam chain tension spring holder bolt	30	3.0	21.5
Engine oil drain plug (on the crankcase)	21	2.1	15.0
Engine oil drain bolt (on the oil tank)	12	1.2	8.5
Engine oil level bolt	5.5	0.55	4.0
Crankcase bolt	11	1.1	8.0
Neutral switch bolt	6.5	0.65	4.7
Oil hose union bolt (on the crankcase)	23	2.3	16.5
Starter motor lead wire nut	6	0.6	4.5
Starter motor ground wire bolt	10	1.0	7.0
TDC plug	23	2.3	16.5
Engine mounting nut and bolt	66	6.6	47.5
Engine mounting bracket bolt	26	2.6	19.0
Exhaust pipe nut	23	2.3	16.5
Muffler connection bolt	23	2.3	16.5
Muffler mounting bolt	23	2.3	16.5
Engine sprocket bolt	10	1.0	7.0
Fuel valve mounting bolt	4.6	0.46	3.3
Cooling fan thermo-switch	20	2.0	14.5
Engine coolant temp. switch	13	1.3	9.5

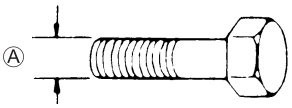
CHASSIS

ITEM	N·m	kgf-m	lb-ft
Handlebar clamp bolt	23	2.3	16.5
Steering shaft holder bolt	23	2.3	16.5
Steering shaft nut	49	4.9	35.5
Steering knuckle nut (Upper & Lower)	43	4.3	31.0
Tie rod end nut	60	6.0	43.5
Tie rod locknut	29	2.9	21.0
Front shock absorber mounting nut (Upper & Lower)	60	6.0	43.5
Wishbone arm pivot nut	65	6.5	47.0
Wheel hub nut (Front)	65	6.5	47.0
(Rear)	100	10.0	72.5
Wheel set nut (Front & Rear)	50	5.0	36.0
Brake hose union bolt	23	2.3	16.5
Brake disc bolt (Front & Rear)	23	2.3	16.5
Brake air bleeder valve	7.5	0.75	5.5
Brake caliper mounting bolt (Front & Rear)	26	2.6	19.0
Brake master cylinder mounting bolt (Front & Rear)	10	1.0	7.0
Front brake caliper holder pin	18	1.8	13.0
Front brake caliper holder slide pin	23	2.3	16.5
Front brake pipe nut	16	1.6	11.5
Front brake pad mounting pin	18	1.8	13.0
Rear brake master cylinder rod locknut	18	1.8	13.0
Rear brake pedal nut	11	1.1	8.0
Rear brake pad mounting pin	18	1.8	13.0
Rear brake caliper holder pin	18	1.8	13.0
Rear brake caliper holder slide pin	23	2.3	16.5
Parking brake bolt	28	2.8	20.5
Parking brake adjuster locknut	18	1.8	13.0
Footrest mounting bolt	55	5.5	40.0
Seat rail monting bolt (M8)	26	2.6	19.0
(M10)	55	5.5	40.0
Rear sprocket mounting bolt	54	5.4	39.0
Rear axle nut	180	18.0	130.0
Rear axle housing bolt (M10)	73	7.3	53.0
(M12)	100	10.0	72.5
Rear swingarm pivot nut	84	8.4	61.0
Rear shock absorber mounting nut (Upper)	60	6.0	43.5
(Lower)	55	5.5	40.0
Cushion lever nut	78	7.8	56.5
Cushion rod nut	78	7.8	56.5

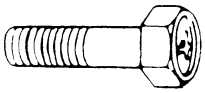
TIGHTENING TORQUE CHART

For other nuts and bolts not listed in the preceding page, refer to this chart:

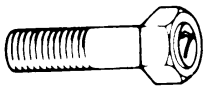
Bolt Diameter Ⓐ (mm)	Conventional or "4" marked bolt			"7" marked bolt		
	N·m	kgf-m	lb-ft	N·m	kgf-m	lb-ft
4	1.5	0.15	1.0	2.3	0.23	1.5
5	3	0.3	2.0	4.5	0.45	3.0
6	5.5	0.55	4.0	10	1.0	7.0
8	13	1.3	9.5	23	2.3	16.5
10	29	2.9	21.0	50	5.0	36.0
12	45	4.5	32.5	85	8.5	61.5
14	65	6.5	47.0	135	13.5	97.5
16	105	10.5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



Conventional bolt



"4" marked bolt



"7" marked bolt

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.	0.10 – 0.20 (0.0039 – 0.0078)	—
	EX.	0.20 – 0.30 (0.0078 – 0.0118)	—
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 (0.1969 – 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 seat width	IN. & EX.	0.9 – 1.1 (0.035 – 0.043)	—
Valve head radial runout	IN. & EX.	—	0.03 (0.001)
Valve spring free length	IN. & EX.	—	38.8 (1.53)
Valve spring tension	IN. & EX.	182 – 210 N (18.6 – 21.4 kgf, 41.0 – 47.2 lbs) at length 31.5 mm (1.24 in)	—

CAMSHAFT + CYLINDER HEAD

Unit: mm (in)

ITEM	STANDARD		LIMIT
Cam height	IN.	36.320 – 36.370 (1.4299 – 1.4319)	36.020 (1.4181)
	EX.	35.200 – 35.250 (1.3858 – 1.3878)	34.900 (1.3740)
Camshaft journal oil clearance	IN. & EX.	0.019 – 0.053 (0.0007 – 0.0021)	0.150 (0.0059)
Camshaft journal holder I.D.	IN. & EX.	22.012 – 22.025 (0.8666 – 0.8671)	—
Camshaft journal O.D.	IN. & EX.	21.972 – 21.993 (0.8653 – 0.8659)	—
Camshaft runout	—		0.10 (0.004)
Cam chain pin (at arrow "3")	15th 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)	1 000 kPa (10.0 kgf/cm^2, 142 psi)			—
Piston to cylinder clearance	0.030 – 0.040 (0.0012 – 0.0016)			0.120 (0.0047)
Cylinder bore	90.000 – 90.015 (3.5433 – 3.5439)			Nicks or Scratches
Piston diam.	89.965 – 89.980 (3.5419 – 3.5425) Measure at 15 mm (0.6 in) from the skirt end.			89.880 (3.5386)
Cylinder distortion	—			0.05 (0.002)
Piston ring free end gap	1st	R	Approx. 6.9 (0.27)	5.5 (0.22)
	2nd	R	Approx. 11.5 (0.45)	9.2 (0.36)
Piston ring end gap	1st		0.08 – 0.20 (0.003 – 0.008)	0.50 (0.020)
	2nd		0.08 – 0.20 (0.003 – 0.008)	0.5 (0.020)
Piston ring to groove clearance	1st		—	0.180 (0.007)
	2nd		—	0.150 (0.006)
Piston ring groove width	1st		0.78 – 0.80 (0.0307 – 0.0315)	—
			1.30 – 1.32 (0.0512 – 0.0520)	—
	2nd		0.81 – 0.83 (0.0319 – 0.0327)	—
	Oil		2.01 – 2.03 (0.0791 – 0.0799)	—

ITEM	STANDARD		LIMIT
Piston ring thickness	1st	0.71 – 0.76 (0.0280 – 0.0299)	—
		1.08 – 1.10 (0.0425 – 0.0433)	—
	2nd	0.77 – 0.79 (0.0303 – 0.0311)	—
Piston pin bore	20.002 – 20.008 (0.7875 – 0.7877)		20.030 (0.7886)
Piston pin O.D.	19.995 – 20.000 (0.7872 – 0.7874)		19.980 (0.7866)

CONROD + CRANKSHAFT

Unit: mm (in)

ITEM	STANDARD	LIMIT
Conrod small end I.D.	20.010 – 20.018 (0.7878 – 0.7881)	20.040 (0.7890)
Conrod deflection	—	3.0 (0.12)
Conrod big end side clearance	0.30 – 0.65 (0.012 – 0.026)	1.0 (0.04)
Conrod big end width	21.95 – 22.00 (0.864 – 0.866)	—
Crank web to web width	62.0 ± 0.1 (2.441 ± 0.004)	—
Crankshaft runout	—	0.08 (0.003)
Balancer spring free length	—	10.3 (0.41)

OIL PUMP

ITEM	STANDARD	LIMIT
Oil pressure (at 60°C, 140°F)	Above 20 kPa (0.2 kgf/cm^2, 2.8 psi) Below 60 kPa (0.6 kgf/cm^2, 8.5 psi) at 3 000 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)	2.92 – 3.08 (0.115 – 0.121)	2.62 (0.103)
Drive plate claw width (No. 1 & No. 2)	13.7 – 13.8 (0.539 – 0.543)	13.2 (0.520)
Driven plate distortion	—	0.10 (0.004)
Clutch spring free length	—	49.9 (1.96)

DRIVE TRAIN + DRIVE CHAIN

Unit: mm (in) Except ratio

ITEM		STANDARD		LIMIT
Primary reduction ratio		2.960 (74/25)		—
Final reduction ratio		2.857 (40/14)		—
Gear ratios	Low	2.538 (33/13)		—
	2nd	1.666 (30/18)		—
	3rd	1.238 (26/21)		—
	4th	1.000 (23/23)		—
	Top	0.846 (22/26)		—
	Reverse	2.153 (28/13)		—
Shift fork to groove clearance		0.1 – 0.3 (0.004 – 0.012)		0.5 (0.020)
Shift fork groove width		No.1, No.2 & No.3	5.0 – 5.1 (0.197 – 0.201)	—
Shift fork thickness		No.1, No.2 & No.3	4.8 – 4.9 (0.189 – 0.193)	—
Drive chain		Type	RK520KZO	—
		Links	96	—
		20-pitch length	—	319.4 (12.57)
Drive chain slack		30 – 40 (1.2 – 1.6)		—

CARBRETOR

ITEM		SPECIFICATION	
		E-03, 28	E-33
Carburetor type		MIKUNI BSR36	←
Bore size		36 mm	←
I.D. No.		07G0	07G1
Idle r/min.		1 500 ± 100 r/min.	←
Float height		13.0 ± 1.0 mm (0.51 ± 0.04 in)	←
Main jet	(M.J.)	#130	#130
Jet needle	(J.N.)	5E26-1	←
Needle jet	(N.J.)	P-0M	P-0M
Pilot jet	(P.J.)	#22.5	#22.5
Pilot screw	(P.S.)	2¼ turns back	PRE-SET
Throttle cable play		3 – 5 mm (0.12 – 0.20 in)	←
Starter (enricher) cable play		0.5 – 1.0 mm (0.02 – 0.04 in)	←

THERMOSTAT + RADIATOR + FAN + COOLANT

ITEM	STANDARD/SPECIFICATION		LIMIT
Thermostat valve opening temperature	73.5 – 76.5 °C (164 – 170 °F)		—
Thermostat valve lift	Over 6 mm (0.24 in) at 90°C (194 °F)		—
Radiator cap valve opening pressure	108 – 137 kPa (1.1 – 1.4 kgf/cm², 15.6 – 19.9 psi)		—
Engine coolant temp. indicator light switch operating temperature	ON→OFF	Approx. 120 °C (248 °F)	—
	ON→OFF	Approx. 113 °C (235 °F)	—
Cooling fan thermo-switch operating temperature	ON→OFF	Approx. 88 °C (190 °F)	—
	ON→OFF	Approx. 82 °C (180 °F)	—
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 including reserve	1 200 ml (1.3/1.1 US/Imp qt)		—

ELECTRICAL

Unit: mm (in)

ITEM		SPECIFICATION		NOTE
Spark plug		Type	NGK: CR7E DENSO: U22ESR-N	
		Gap	0.7 – 0.8 (0.028 – 0.031)	
Spark performance		Over 8 mm (0.3) at 1 atm.		
Ignition coil resistance		Primary	0.1 – 1.0 Ω	Terminal – Ground
		Secondary	12 – 20 kΩ	Plug cap – Terminal
Ignition coil primary peak voltage		More than 130 V		⊕: B/W, ⊖: B
Generator coil resistance		Pick-up	350 – 670 Ω	G – BI
		Signal	0.09 – 0.50 Ω	W – B
		Charging	0.1 – 1.5 Ω	Br – Br
Pick-up coil peak voltage		More than 2.0 V		⊕: G, ⊖:BI
Generator no-load voltage (When engine is cold)		More than 65 V (AC)		
Generator Max. output		Approx. 150 W at 5 000 r/min		
Regulated voltage		14.0 – 15.5 V at 5 000 r/min		
Starter relay resistance		3 – 6 Ω		
Battery	Type designation	YTX9-BS		
	Capacity	12 V 28.8 kC (8 Ah)/10 HR		
Fuze size		20 A		

WATTAGE

Unit: W

ITEM		SPECIFICATION
Headlight	HI	30 × 2 pcs.
	LO	30 × 2 pcs.
Brake light/Taillight		21/5
Reverse indicator light		3
Neutral indicator light		3
Engine coolant temp. indicator light		3

BRAKE + WHEEL

Unit: mm (in)

ITEM	STANDARD/SPECIFICATION		LIMIT
Rear brake pedal height	0 – 10 (0 – 0.4)		—
Brake caliper cylinder bore	Front	32.03 – 32.08 (1.2610 – 1.2630)	—
	Rear	33.96 – 34.01 (1.3370 – 1.3390)	—
Brake caliper piston diam.	Front	31.948 – 31.998 (1.2578 – 1.2598)	—
	Rear	33.878 – 33.928 (1.3338 – 1.3357)	—
Brake fluid type	DOT 4		—
Brake disc thickness	Front	2.8 – 3.2 (0.110 – 0.126)	2.5 (0.098)
	Rear	3.8 – 4.2 (0.150 – 0.165)	3.5 (0.138)
Brake disc runout (Front & Rear)	—		0.30 (0.012)
Master cylinder bore	Front	12.700 – 12.743 (0.5000 – 0.5017)	—
	Rear	14.000 – 14.043 (0.5512 – 0.5529)	—
Master cylinder piston diam.	Front	12.657 – 12.684 (0.4983 – 0.4994)	—
	Rear	13.957 – 13.984 (0.5495 – 0.5506)	—
Turning radius	3.1 m (10.2 ft)		
Toe-in (with 75 kg, 165 lbs)	5 ± 4 (0.20 ± 0.16)		
Chamber	– 0.9°		
Caster	8.5°		

ITEM		STANDARD/SPECIFICATION	LIMIT
Wheel rim size	Front	10 × 5.5 AT	—
	Rear	9 × 8.0 AT	—
Tire size	Front	AT22 × 7R10 ☆☆	—
	Rear	AT20 × 10R9 ☆☆	—
Tire type	Front	DUNLOP: KT331	—
	Rear	DUNLOP: KT335	—
Tire tread depth	Front	—	4.0 (0.16)
	Rear	—	4.0 (0.16)
Wheel axle runout	Rear	—	6.0 (0.24)

TIRE PRESSURE

COLD INFLATION TIRE PRESSURE	kPa	kgf/cm²	psi
FRONT	30	0.30	4.4
REAR	27.5	0.275	4.0

VEHICLE LOAD CAPACITY LIMIT: 110 kg (243 lbs)

FUEL + OIL

ITEM		SPECIFICATION		NOTE
Fuel type		Use only unleaded gasoline of at least 87 pump octane ($\frac{R+M}{2}$) or 91 octane or higher rated by the research method. Gasoline containing MTBE (Methyl Tertiary Butyl Ether), less than 10 % ethanol, or less than 5 % methanol with appropriate cosolvents and corrosion inhibitor is permissible.		
Fuel tank including	reserve	10.0 L (2.6/2.2 US/Imp qt)		
	reserve	2.7 L (0.7/0.6 US/Imp qt)		
Engine oil type		SAE 10W-40, API SF or SG		
Engine oil capacity		Change	2 000 ml (2.1/1.8 US/Imp qt)	
		Filter change	2 100 ml (2.2/1.8 US/Imp qt)	
		Overhaul	2 200 ml (2.3/1.9 US/Imp qt)	

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