



# **YAMAHA**

## **2009**

### **MOTORCYCLE**

### **SERVICE MANUAL**

**Model : YW125Y\_**

**32SF819770E0** 

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## **Spark Plug**

U22ESR-N (DENSO)

CR7E (NGK)

## **Spark plug gap**

0.7 ~ 0.8 mm (0.028 ~ 0.031in)

## **Valve Clearance (cold)**

### **Intake**

0.10 ~ 0.14mm

(0.004 ~ 0.006in)

### **Exhaust**

0.16 ~ 0.20mm

(0.006 ~ 0.008in)

EAS00000

YW125Y 2009  
SERVICE MANUAL  
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**IMPORTANT**

This manual was produced by the Yamaha Motor Taiwan Company, Ltd. primarily for use by Yamaha dealers and their qualified mechanics. It is not possible to include all the knowledge of a mechanic in one manual. Therefore, anyone who uses this book to perform maintenance and repairs on Yamaha vehicles should have a basic understanding of mechanics and the techniques to repair these types of vehicles. Repair and maintenance work attempted by anyone without this knowledge is likely to render the vehicle unsafe and unfit for use.

This model has been designed and manufactured to perform within certain specifications in regard to performance and emissions. Proper service with the correct tools is necessary to ensure that the vehicle will operate as designed. If there is any question about a service procedure, it is imperative that you contact a Yamaha dealer for any service information changes that apply to this model. This policy is intended to provide the customer with the most satisfaction from his vehicle and to conform to federal environmental quality objectives.





Yamaha Motor Taiwan Company, Ltd. is continually striving to improve all of its models. Modifications and significant changes in specifications or procedures will be forwarded to all authorized Yamaha dealers and will appear in future editions of this manual where applicable.

**TIP**

- This Service Manual contains information regarding periodic maintenance to the emission control system. Please read this material carefully.
- Designs and specifications are subject to change without notice.

**IMPORTANT MANUAL INFORMATION**

Particularly important information is distinguished in this manual by the following notations.

	<p>This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.</p>
	<p>A <b>WARNING</b> indicates a hazardous situation which, if not avoided, could result in death or serious injury.</p>
	<p>A <b>NOTICE</b> indicates special precautions that must be taken to avoid damage to the vehicle or other property.</p>
	<p>A <b>TIP</b> provides key information to make procedures easier or clearer.</p>

# HOW TO USE THIS MANUAL

This manual is intended as a handy, easy-to-read reference book for the mechanic. Comprehensive explanations of all installation, removal, disassembly, assembly, repair and check procedures are laid out with the individual steps in sequential order.

- ① The manual is divided into chapters. An abbreviation and symbol in the upper right corner of each page indicate the current chapter.] Refer to "SYMBOLS".
- ② Each chapter is divided into sections. The current section title is shown at the top of each page, except in Chapter 3 ("PERIODIC CHECKS AND ADJUSTMENTS"), where the sub-section title(s) appears.
- ③ Sub-section titles appear in smaller print than the section title.
- ④ To help identify parts and clarify procedure steps, there are exploded diagrams at the start of each removal and disassembly section.
- ⑤ Numbers are given in the order of the jobs in the exploded diagram. A circled number indicates a disassembly step.
- ⑥ Symbols indicate parts to be lubricated or replaced. Refer to "SYMBOLS".
- ⑦ A job instruction chart accompanies the exploded diagram, providing the order of jobs, names of parts, notes in jobs, etc.
- ⑧ Jobs requiring more information (such as special tools and technical data) are described sequentially.

⑥ ② ①
CYLINDER AND PISTON
ENG

Order	Job/Part	Qty	Remarks
<b>Removing the cylinder and piston</b>			
	Cylinder head		Remove the parts in the order listed. Refer to "CYLINDER HEAD".
1	Timing chain guide (exhaust side)	1	
2	Cylinder	1	
3	Dowel pin	2	
4	Cylinder gasket	1	
5	Piston pin clip	2	Refer to "REMOVING THE CYLINDER AND PISTON" and "INSTALLING THE PISTON AND CYLINDER".
6	Piston pin	1	
7	Piston	1	
8	Piston ring set	1	
For installation, reverse the removal procedure.			

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CYLINDER AND PISTON
ENG

**REMOVING THE CYLINDER AND PISTON**

1. Remove:

- piston pin clip ①
- piston pin ②
- piston ③

**NOTICE**

Do not use a hammer to drive the piston pin out.

**TIP**

- Before removing the piston pin clip, cover the crankcase opening with a clean rag to prevent the piston pin clip from falling into the crankcase.
- Before removing the piston pin, deburr the piston pin clip's groove and the piston's pin bore area.
- If both areas are deburred and the piston pin is still difficult to remove, remove it with the piston pin puller set ④.

Piston pin puller set  
90890-01304 (YU-01304)

2. Remove:

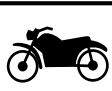









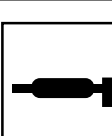
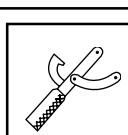
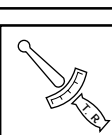

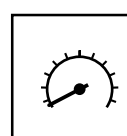
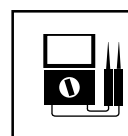




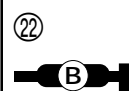
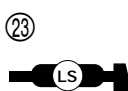
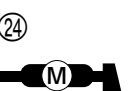


- top ring
- 2nd ring
- oil ring

**TIP**

When removing a piston ring, open the end gap with your fingers and lift the other side of the ring over the piston crown.

5-33



① GEN INFO 	② SPEC 		
③ CHK ADJ 	④ CHAS 		
⑤ ENG 	⑥ COOL 		
⑦ FI 	⑧ ELEC 		
⑨ TRBL SHTG ?	⑩ 		
⑪ 	⑫ 		
⑬ 	⑭ 		
⑮ 	⑯ 	⑰ 	
⑱ 	⑲ 	⑳ 	㉑ 
㉒ 	㉓ 	㉔ 	㉕ 
㉖ 	㉗ <b>New</b>		

EAS00008

## SYMBOLS

The following symbols are not relevant to every vehicle.

Symbols ① to ⑨ indicate the subject of each chapter.

- ① General information
- ② Specifications
- ③ Periodic checks and adjustments
- ④ Chassis
- ⑤ Engine
- ⑥ Cooling system
- ⑦ Fuel injection system
- ⑧ Electrical system
- ⑨ Troubleshooting

Symbols ⑩ to ⑰ indicate the following.

- ⑩ Serviceable with engine mounted
- ⑪ Filling fluid
- ⑫ Lubricant
- ⑬ Special tool
- ⑭ Tightening torque
- ⑮ Wear limit, clearance
- ⑯ Engine speed
- ⑰ Electrical data









Symbols ⑱ to ㉕ in the exploded diagrams indicate the types of lubricants and lubrication points.

- ⑱ Engine oil
- ⑲ Gear oil
- ⑳ Molybdenum-disulfide oil
- ㉑ Brake fluid
- ㉒ Wheel-bearing grease
- ㉓ Lithium-soap- based grease
- ㉔ Molybdenum-disulfide grease
- ㉕ Silicone grease

Symbols ㉖ to ㉗ in the exploded diagrams indicate the following.

- ㉖ Apply locking agent (LOCTITE®)
- ㉗ Replace the part

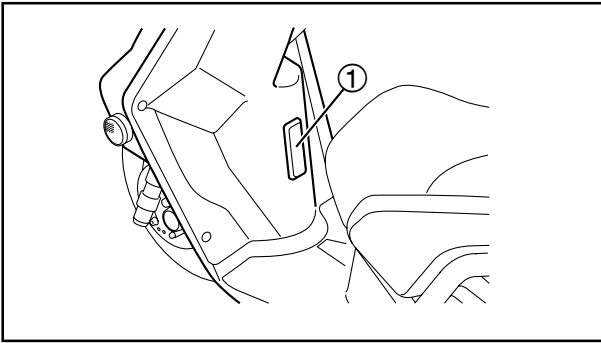
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## CHAPTER 1 GENERAL INFORMATION

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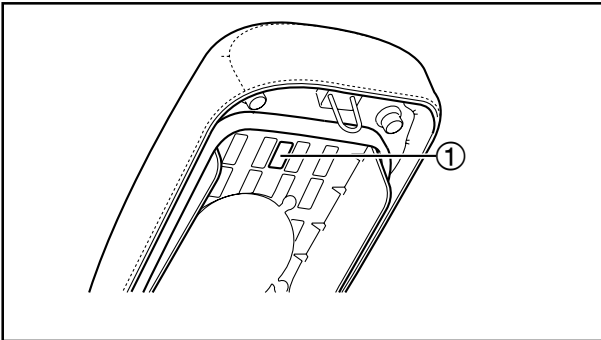
EAS00015

## GENERAL INFORMATION SCOOTER IDENTIFICATION

EAS00017

### VEHICLE IDENTIFICATION NUMBER

The vehicle identification number ① is stamped into the frame.



EAS00018

### MODEL LABEL

The model label ① is affixed to the frame under the seat. This information will be needed to order spare parts.

EAS00896

## FEATURES

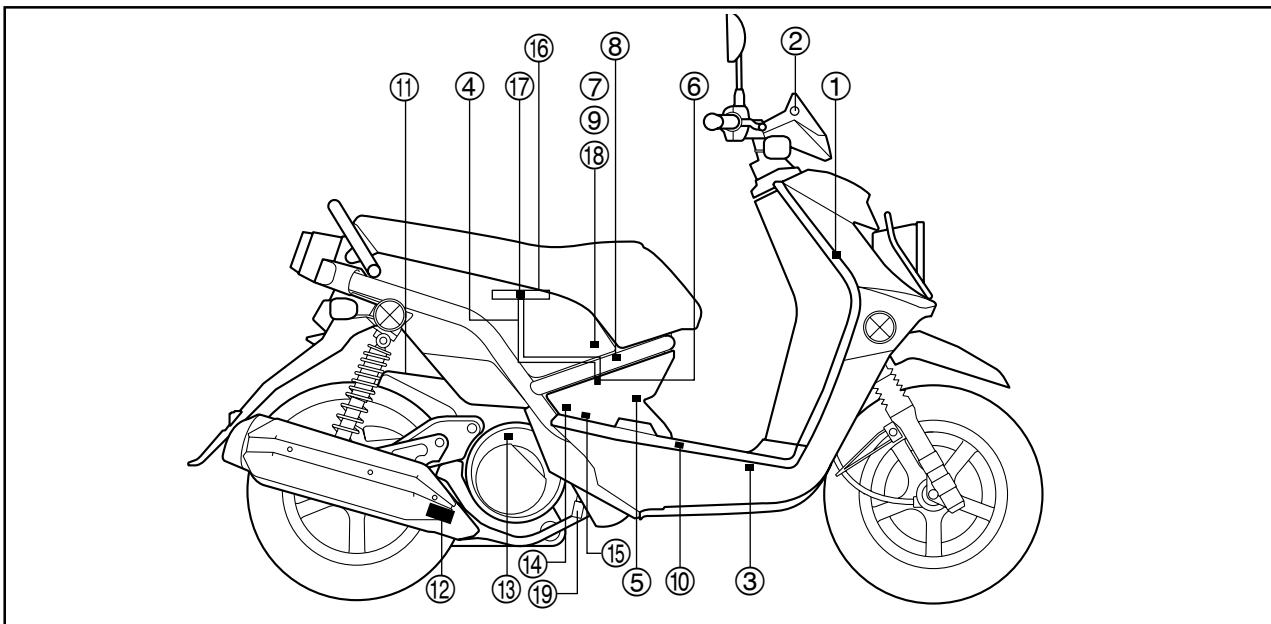
### OUTLINE OF THE FI SYSTEM

The main function of a fuel supply system is to provide fuel to the combustion chamber at the optimum air-fuel ratio in accordance with the engine operating conditions and the atmospheric temperature. In the conventional carburetor system, the air-fuel ratio of the mixture that is supplied to the combustion chamber is created by the volume of the intake air and the fuel that is metered by the jet used in the respective carburetor.

Despite the same volume of intake air, the fuel volume requirement varies by the engine operating conditions, such as acceleration, deceleration, or operation under a heavy load. Carburetors that meter the fuel through the use of jets have been provided with various auxiliary devices, so that an optimum air-fuel ratio can be achieved to accommodate the constant changes in the operating conditions of the engine.

As the requirements for the engine to deliver more performance and cleaner exhaust gases increase, it becomes necessary to control the air-fuel ratio in a more precise and finely tuned manner. To accommodate this need, this model has adopted an electronically controlled fuel injection(FI) system, in place of the conventional carburetor system. This system can achieve an optimum air-fuel ratio required by the engine at all times by using a microprocessor that regulates the fuel injection volume according to the engine operating conditions detected by various sensors.

The adoption of the FI system has resulted in a highly precise fuel supply, improved engine response, better fuel economy, and reduced exhaust emissions.



- |                                 |                              |
|---------------------------------|------------------------------|
| ① ECU                           | ⑩ Battery                    |
| ② Engine trouble warning light  | ⑪ Air filter case            |
| ③ Lean angle cut-off switch     | ⑫ Catalytic converter        |
| ④ Fuel hose                     | ⑬ Crankshaft position sensor |
| ⑤ Ignition coil                 | ⑭ Engine temperature sensor  |
| ⑥ Fuel injector                 | ⑮ Spark plug                 |
| ⑦ Intake air pressure sensor    | ⑯ Fuel tank                  |
| ⑧ ISC(idle speed control) valve | ⑰ Fuel pump                  |
| ⑨ Intake air temperature sensor | ⑱ Throttle position sensor   |
|                                 | ⑲ O <sub>2</sub> sensor      |

EAS00897

**FI SYSTEM**

The fuel pump delivers fuel to the fuel injector via the fuel filter. The pressure regulator maintains the fuel pressure that is applied to the fuel injector at only 250 kPa (2.5 kgf/cm<sup>2</sup>, 35.6 psi). Accordingly, when the energizing signal from the ECU energizes the fuel injector, the fuel passage opens, causing the fuel to be injected into the intake manifold only during the time the passage remains open. Therefore, the longer the length of time the fuel injector is energized (injection duration), the greater the volume of fuel that is supplied. Conversely, the shorter the length of time the fuel injector is energized (injection duration), the lesser the volume of fuel that is supplied.

The injection duration and the injection timing are controlled by the ECU. Signals that are input from the crankshaft position sensor, intake air pressure sensor, intake temperature sensor and engine temperature sensor enable the ECU to determine the injection duration. The injection timing is determined through the signals from the crankshaft position sensor. As a result, the volume of fuel that is required by the engine can be supplied at all times in accordance with the driving conditions.

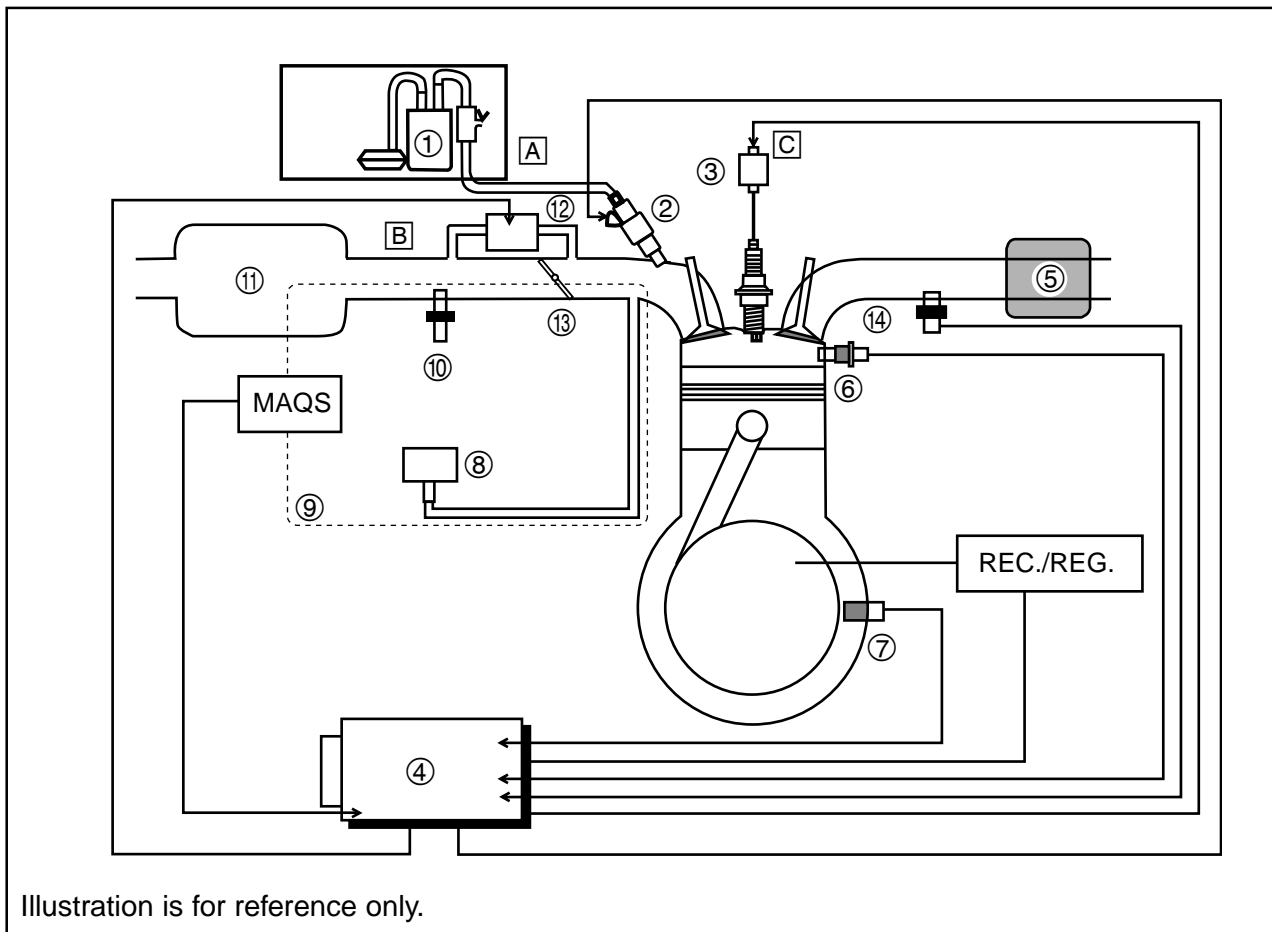
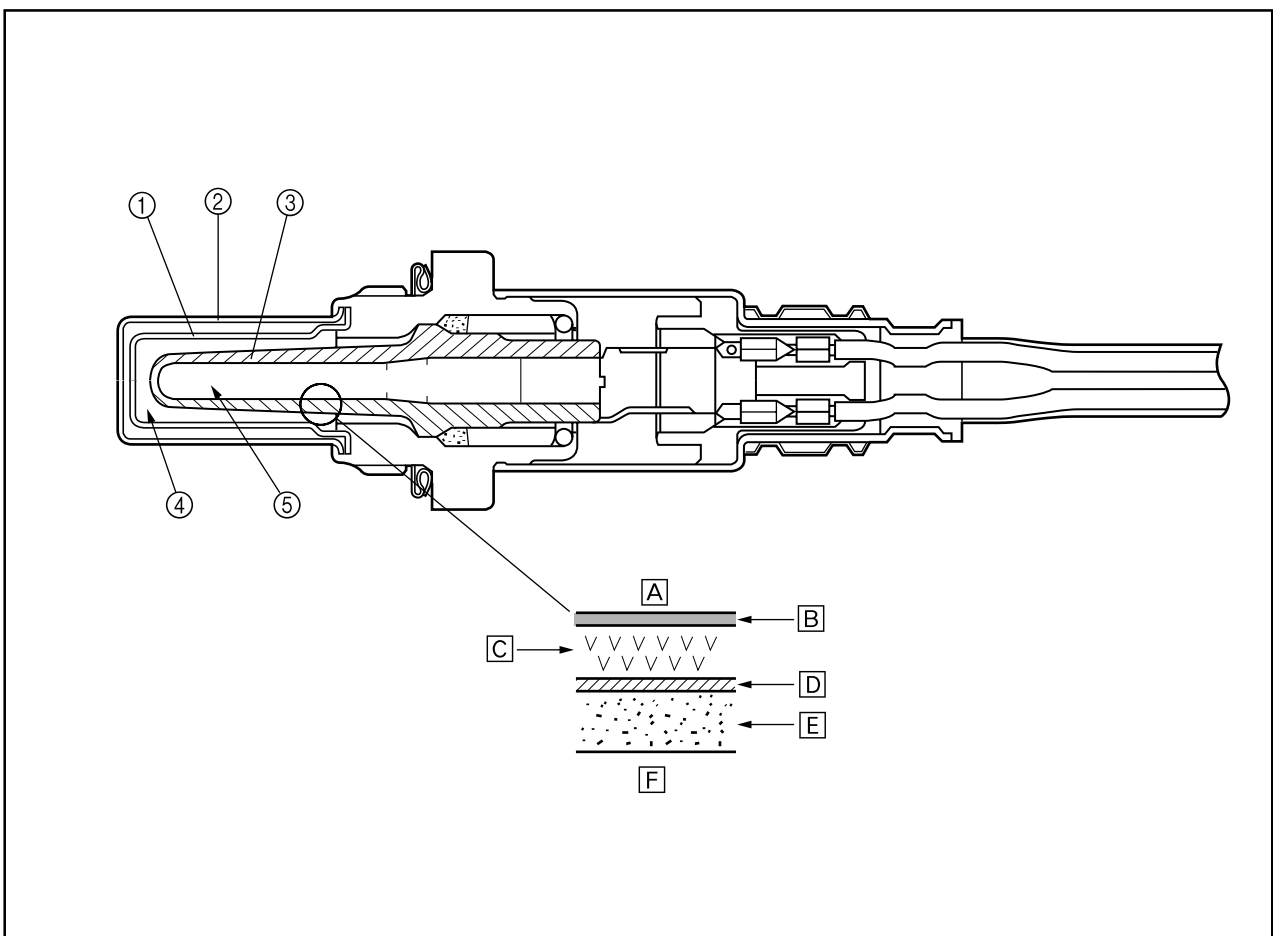


Illustration is for reference only.

- |                                 |                                  |
|---------------------------------|----------------------------------|
| ① Fuel pump                     | ⑪ Air filter case                |
| ② Fuel injector                 | ⑫ ISC (idle speed control) valve |
| ③ Ignition coil                 | ⑬ Throttle position sensor       |
| ④ ECU                           | ⑭ O <sub>2</sub> sensor          |
| ⑤ Catalytic converter           | A Fuel system                    |
| ⑥ Engine temperature sensor     | B Air system                     |
| ⑦ Crankshaft position sensor    | C Control system                 |
| ⑧ Intake air pressure sensor    |                                  |
| ⑨ Throttle body assembly        |                                  |
| ⑩ Intake air temperature sensor |                                  |

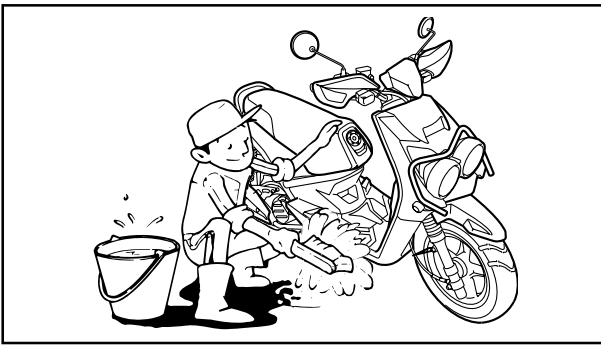
**O<sub>2</sub> sensor**

The O<sub>2</sub> sensor has been adopted to enable the catalyst to function at a high degree of efficiency by maintaining the air-fuel mixture near the stoichiometric ratio (14.7:1). This sensor, which is a zirconia type, utilizes the oxygen ion conductivity of the solid electrolyte for detecting the oxygen concentration levels. In actual operation, a zirconia tube made of solid electrolyte is exposed in the exhaust gas, so that the exterior of the zirconia tube is in contact with the exhaust gas and the interior is in contact with the atmosphere whose oxygen concentration level is known. When a difference in the oxygen concentration level is created between the outside and the inside of the zirconia tube, the oxygen ion passes through the zirconia element and generates an electromotive force. The electromotive force increases when the oxygen concentration level is low (rich air-fuel ratio) and the electromotive force decreases when the oxygen concentration level is high (lean air-fuel ratio). As electromotive force is generated in accordance with the concentration of the exhaust gas, the resultant voltage is input into the ECU in order to correct the duration of the injection of fuel.



- ① Inner cover
- ② Outer cover
- ③ Zirconia tube
- ④ Exhaust gas
- ⑤ Atmosphere

- A Atmosphere
- B Inner electrode
- C Zirconia element
- D Outer electrode
- E Porous ceramic layer
- F Exhaust gas

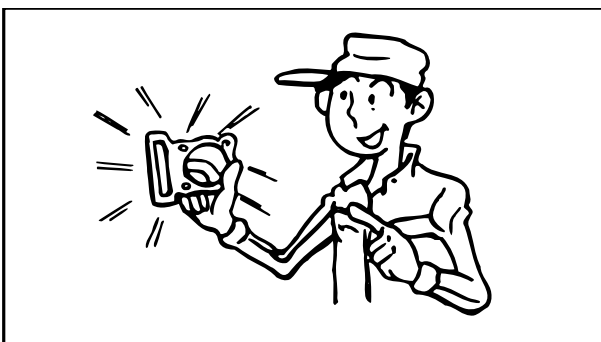


EAS00020

**IMPORTANT INFORMATION**

**PREPARATION FOR REMOVAL AND DISASSEMBLY**

1. Before removal and disassembly, remove all dirt, mud, dust and foreign material.
  
2. Use only the proper tools and cleaning equipment.  
Refer to the "SPECIAL TOOLS".
3. When disassembling, always keep mated parts together. This includes gears, cylinders, pistons and other parts that have been "mated" through normal wear. Mated parts must always be reused or replaced as an assembly.
4. During disassembly, clean all of the parts and place them in trays in the order of disassembly. This will speed up assembly and allow for the correct installation of all parts.
5. Keep all parts away from any source of fire.



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**REPLACEMENT PARTS**

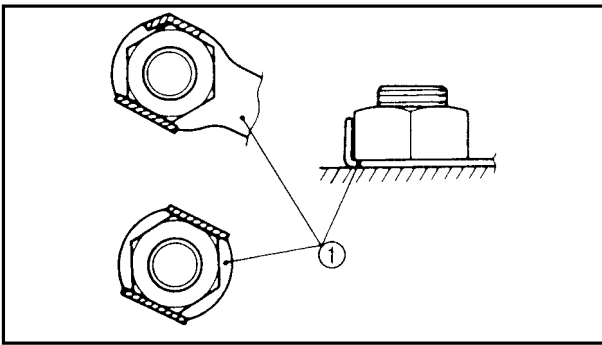
Use only genuine Yamaha parts for all replacements. Use oil and grease recommended by Yamaha for all lubrication jobs. Other brands may be similar in function and appearance, but inferior in quality.

EAS00022

**GASKETS, OIL SEALS AND O-RINGS**

1. When overhauling the engine, replace all gaskets, seals and O-rings. All gasket surfaces, oil seal lips and O-rings must be cleaned.
2. During reassembly, properly oil all mating parts and bearings and lubricate the oil seal lips with grease.

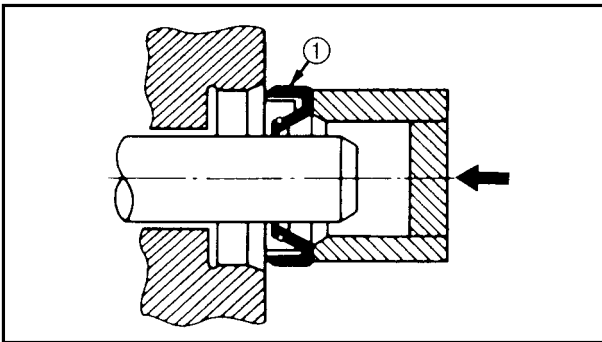




EAS00023

**LOCK WASHERS/PLATES AND COTTER PINS**

After removal, replace all lock washers/plates ① and cotter pins. After the bolt or nut has been tightened to specification, bend the lock tabs along a flat of the bolt or nut.

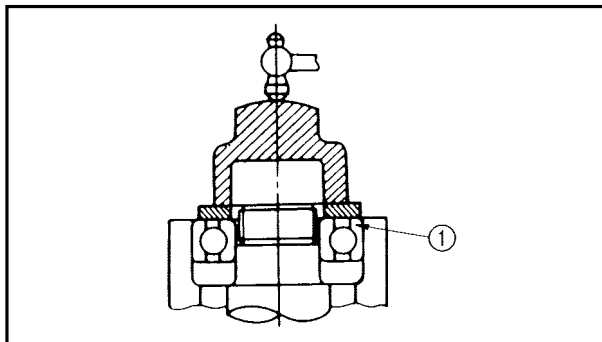


EAS00024

**BEARINGS AND OIL SEALS**

Install bearings and oil seals so that the manufacturer's marks or numbers are visible. When installing oil seals, lubricate the oil seal lips with a light coat of lithium-soap-based grease. Oil bearings liberally when installing, if appropriate.

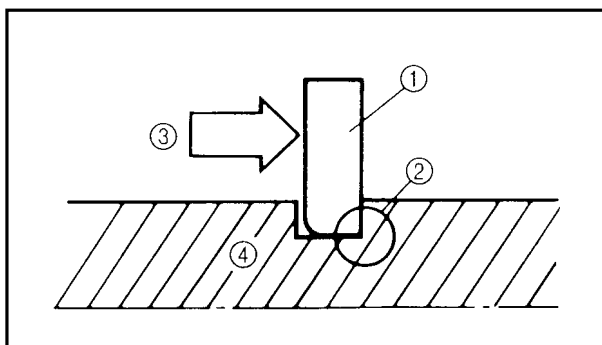
① Oil seal



**NOTICE**

Do not spin the bearing with compressed air because this will damage the bearing surfaces.

① Bearing

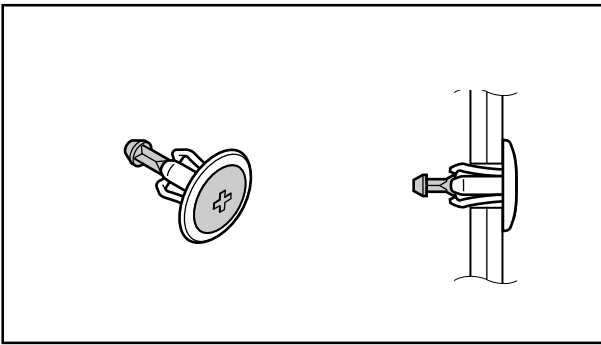


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**CIRCLIPS**

Before reassembly, check all circlips carefully and replace damaged or distorted circlips. Always replace piston pin clips after one use. When installing a circlip ①, make sure the sharp-edged corner ② is positioned opposite the thrust ③ that the circlip receives.

④ Shaft

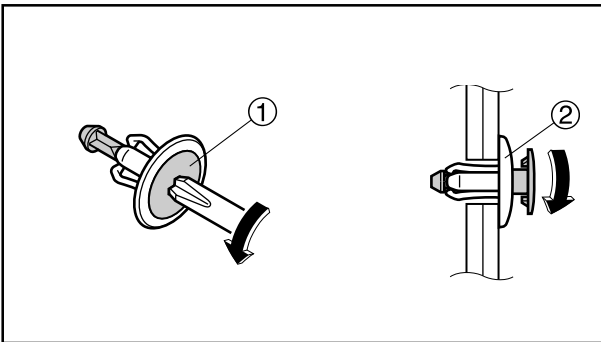


EAS00021

**EQUIPMENT PREPARATION**

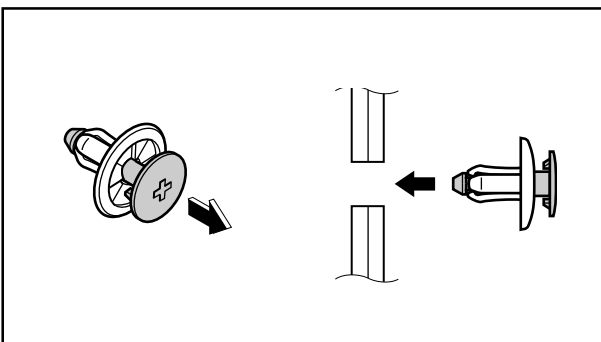
**Turn Rivet (Turn type)**

Assembly status of the turn rivet(turn type).



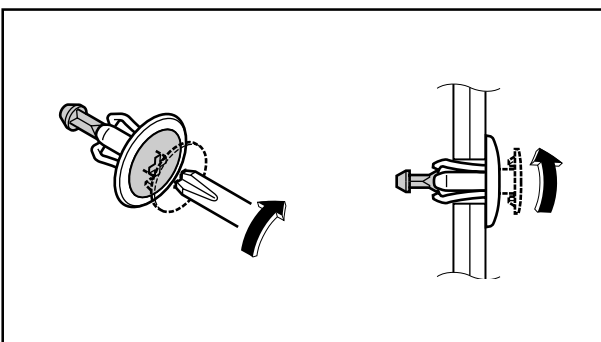
**Disassembling**

1. Press center pin① inward to release the lock.
2. Remove the push rivet main body②.



**Assembling**

1. Restore the center pin, replace the turn rivet main body.



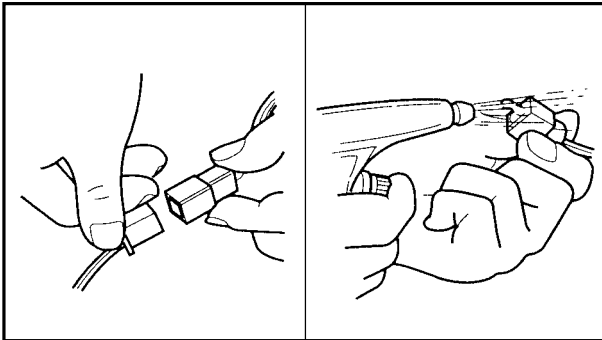
2. Turn in the center pin until leveling off with the surface position of the turn rivet main body.

EAS00026

## CHECKING THE CONNECTIONS

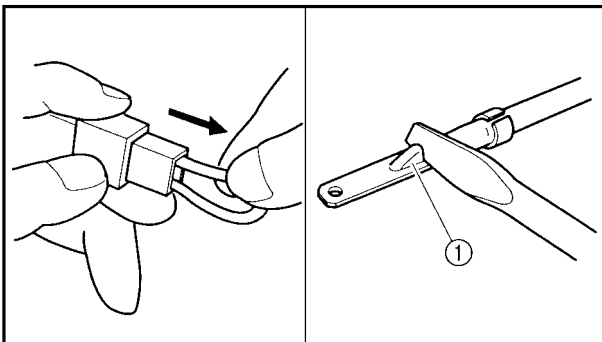
Check the leads, couplers, and connectors for stains, rust, moisture, etc.

1. Disconnect:
  - lead
  - coupler
  - connector



2. Check:
  - lead
  - coupler
  - connector

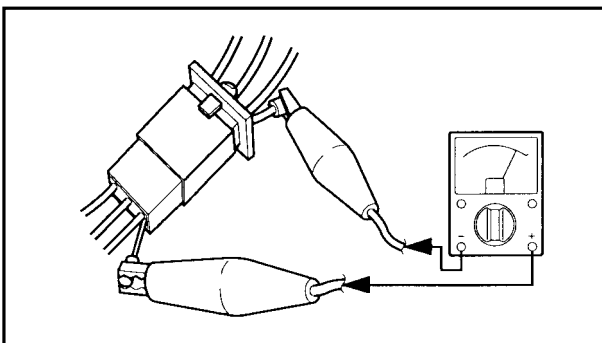
Moisture → Dry with an air blower.  
Rust/stains → Connect and disconnect several times.



3. Check:
  - all connections

Loose connection → Connect properly.

**TIP** \_\_\_\_\_  
If the pin ① on the terminal is flattened, bend it up.



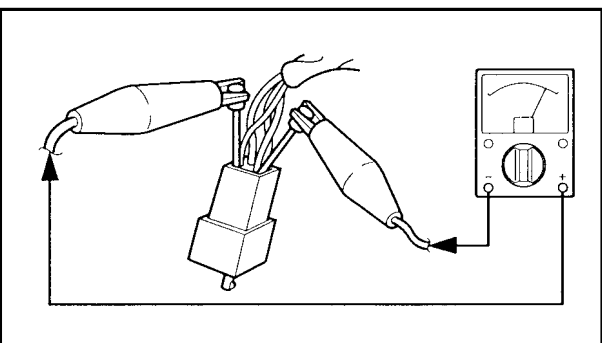
4. Connect:
  - lead
  - coupler
  - connector

**TIP** \_\_\_\_\_  
Make sure all connections are tight.

5. Check:
  - continuity  
(with the pocket tester)

	<p><b>Pocket tester</b> 90890-03112 (YU-03112-C)</p>
--	--

- TIP** \_\_\_\_\_
- If there is no continuity, clean the terminals.
  - When checking the wire harness, perform steps (1) to (3).
  - As a quick remedy, use a contact revitalizer available at most part stores.



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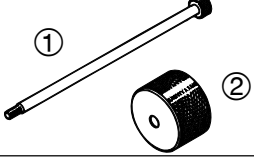

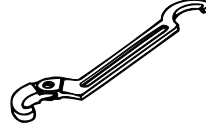
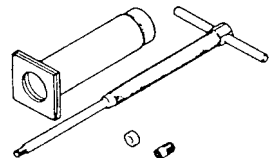
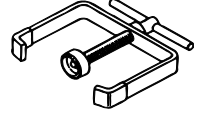
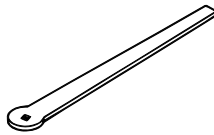
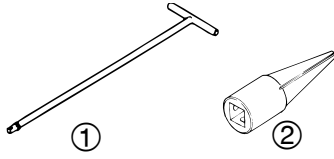
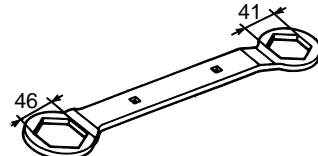
## SPECIAL TOOLS

The following special tools are necessary for complete and accurate tune-up and assembly. Use only the appropriate special tools as this will help prevent damage caused by the use of inappropriate tools or improvised techniques. Special tools, part numbers or both may differ depending on the country.

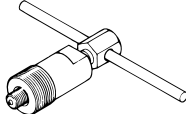
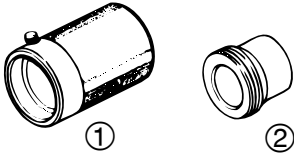

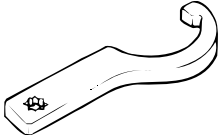
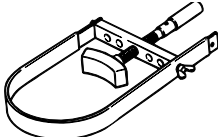
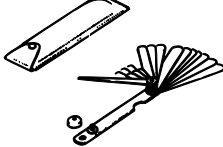
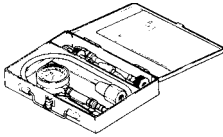
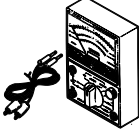
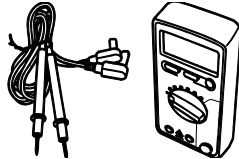

When placing an order, refer to the list provided below to avoid any mistakes.

### TIP

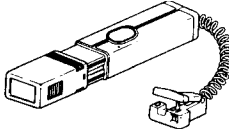

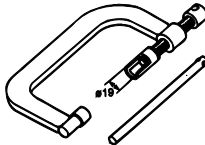
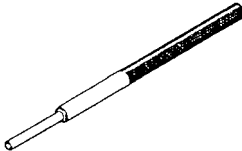
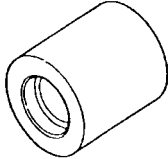
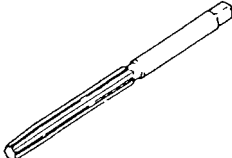
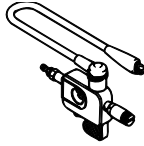
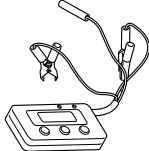
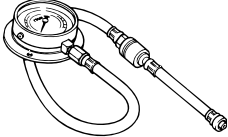

- For U.S.A. and Canada, use part number starting with "YM-", "YU-", or "ACC-".
- For others, use part number starting with "90890-".

Tool NO.	Tool name / Function	Illustration
90890-01085 (M8) YU-01083-2 90890-01084 YU-01083-3	Slide hammer bolt (8mm) ① Weight ②  These tools are needed to remove the camshaft.	
90890-01235 YU-01235	Rotor holding tool  This tool is used to hold the primary fixed sheave and secondary sheave assembly.	
90890-01268 YU-01268	Ring nut wrench  This tool is used to loosen and tighten the exhaust and steering ring nut.	
90890-01304 YU-01304	Piston pin puller set  This tool is used to remove the piston pin.	
90890-01337 YM-33285	Clutch spring holder  These tool are used for removing the nut with holding the compression spring.	
90890-01311 YM-08035-A	Valve adjusting tool  This tool is necessary for adjusting valve clearance.	
90890-01326 YM-01326 90890-01294 YM-01300-1	T-handle ① Damper rod holder ②  These tools are used to hold the damper rod when removing or installing the damper rod.	
90890-01348 YM-01348	Lock nut wrench  This tool is used when removing or installing the secondary sheave nut.	

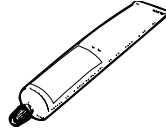


Tool NO.	Tool name / Function	Illustration
90890-01189 YM-01189	Flywheel puller  This tool is used for removing the AC mag- neto rotor.	
90890-01367 YM-A9409-7 90890-01368 YM-A9409-4	Fork seal driver weight ① Fork seal driver attachment (Ø33mm) ②  These tools are used when installing the fork seal.	
90890-01384 YM-33299	Oil seal guide  This tool is used for protecting the oil seal lip when installing the secondary sliding sheave.	
90890-01403 YU-A9472	Steering nut wrench  This tool is used to loosen and tighten the steering ring nut.	
90890-01701 YS-01880-A	Sheave holder  This tool is used for holding the secondary sheave.	
90890-03079 YM-34483	Thickness gauge  This tool is used to measure the valve cleanance.	
90890-03081 YU-33223	Compression gauge  This tool is used to measure the engine com- pression.	
90890-03112 YU-03112-C	Pocket tester  This instrument is invaluable for checking the electrical system.	
90890-03174	Digital circuit tester  This instrument is invaluable for checking the electrical system.	
90890-06760	Digital tachometer  This tool is needed for detecting engine rpm.	



Tool NO.	Tool name / Function	Illustration
90890-03141 YU-03141	Timing light  This tool is used to check the ignition timing.	
90890-04101	Valve lapper  This tool is needed to remove and install the valve lifters.	
90890-04019 YM-04019 90890-04108 YM-04108	Valve spring compressor Compressor adapter (Ø19mm)  These tools are used when removing or installing the valve and the valve spring.	
90890-04116 YM-04116	Valve guide remover (4.5mm)  This tool is used to remove or install the valve guides.	
90890-04117 YM-04117	Valve guide installer (4.5mm)  This tool is used to install the valve guides.	
90890-04118 YM-04118	Valve guide reamer (4.5mm)  This tool is used to rebore the new valve guides.	
90890-06754 YM-34487	Ignition checker  This tool is used to check the ignition system components.	
90890-03182 YU-03182	FI diagnostic tool  Execute CO adjustment, confirm fault code, self diagnosis tool.	
90890-03153 YU-03153	Pressure gauge  This tool is used to measure fuel pressure.	
90890-03186	Fuel pressure adapter  This tool is used to measure fuel pressure.	

**SPECIAL TOOLS****GEN  
INFO**

Tool NO.	Tool name / Function	Illustration
90890-85505 ACC-11001-05-01	Yamaha bond NO.1215 Sealant (Quick Gasket®)  This sealant (bond) is used to apply on crankcase mating surfaces.	 A line drawing of a tube of sealant, shown at an angle. The tube has a nozzle at one end and a cap at the other.

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**CHAPTER 2  
SPECIFICATIONS**

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## SPECIFICATIONS

### GENERAL SPECIFICATIONS

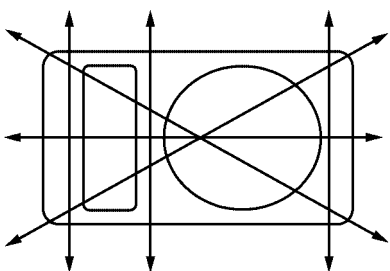
Item	Standard	Limit
<b>Model</b>		
Code	32S1 (USA) 32S2 (CAN)	... ...
<b>Dimensions</b>		
Overall length	1910mm (75.2in)	...
Overall width	765mm (30.1in)	...
Overall height	1110mm (43.7in)	...
Seat height	780mm (30.7in)	...
Wheelbase	1290mm (50.8in)	...
Minimum ground clearance	125mm (4.9in)	...
Minimum turning radius	1900mm (74.8in)	...
<b>Weight</b>		
Wet (with oil and a full fuel tank)	122kg (269lb)	...
Dry (without oil and fuel)	116kg (256lb)	...
Maximum load (total of cargo, rider, passenger, and accessories)	155kg (342lb)	...

**ENGINE SPECIFICATIONS**

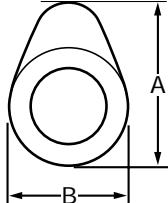
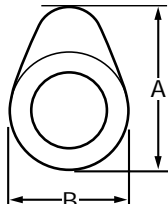
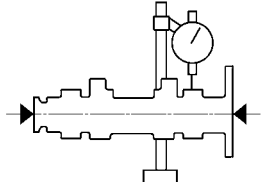
Item	Standard	Limit
<b>Engine</b>		
Engine type	Air-cooled, 4-stroke, SOHC	...
Displacement	0.125L (125cm <sup>3</sup> , 7.63cu-in)	...
Cylinder arrangement	Forward inclined single cylinder	...
Bore × stroke	52.4 × 57.9mm (2.06 × 2.28in)	...
Compression ratio	10:1	...
Engine idle speed	1700 ~ 1900r/min	...
Vacuum pressure at engine idle speed	37 ~ 47kPa (281 ~ 357mmHg, 11.06 ~ 14.05inHg) at 1800r/min	...
Standard compression pressure (at sea level)	1350kPa (13.5kgf/cm <sup>2</sup> , 192psi) at 1800r/min	...
<b>Fuel</b>		
Recommended fuel	Regular unleaded gasoline only	...
Fuel tank capacity Total	6.0L (1.59 US gal, 1.32 Imp. gal)	...
<b>Engine oil</b>		
Lubrication system	Wet sump	...
Recommended oil	SAE20W-40 or SAE10W-30 API service SG type or higher JASO standard MA	...
Quantity Periodic oil change	0.80 ~ 0.90L (0.87 ~ 0.98 US qt, 0.74 ~ 0.83 Imp. qt)	...
Total amount	0.85 ~ 0.95L (0.9 ~ 1.0 US qt, 0.75 ~ 0.84 Imp. qt)	...
<b>Final gear oil</b>		
Recommended oil	SAE10W-30 type SE motor oil	...
Periodic oil change	0.12 ~ 0.14L (0.13 ~ 0.15 US qt, 0.11 ~ 0.12 Imp. qt)	...
Total amount	0.14 ~ 0.16L (0.15 ~ 0.17 US qt, 0.12 ~ 0.14 Imp. qt)	...

# ENGINE SPECIFICATIONS

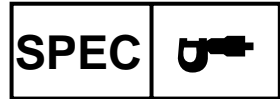


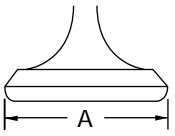
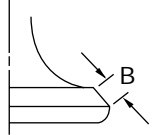
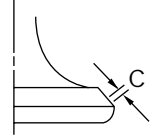
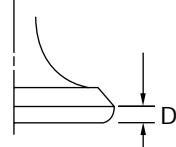
Item	Standard	Limit
<b>Oil filter</b> Oil filter type	Wire mesh	...
<b>Oil pump</b> Oil pump type Inner rotor to outer rotor tip clearance  Outer rotor to pump housing clearance	Trochoid 0.15mm (0.006in) or less  0.07 ~ 0.12mm (0.003 ~ 0.005in)	... 0.23mm (0.009in) 0.19mm (0.008in)
<b>Starting system type</b>	Electric starter	...
<b>Spark plug</b> Model (manufacturer) × quantity Spark plug gap	U22ESR-N (DENSO) × 1 0.7 ~ 0.8mm (0.028 ~ 0.031in)	... ...
<b>Cylinder head</b> Volume  Maximum warpage   I1110304	11.4 ~ 12.0cm <sup>3</sup> (0.70 ~ 0.73cu-in) ...	... 0.05mm (0.002in)



Item	Standard	Limit
<p><b>Camshaft</b></p>		
<p>Drive system Intake camshaft lobe dimensions</p>	<p>Chain drive (left)</p>	<p>...</p>
<p></p>		
<p>Measurement A</p>	<p>25.267 ~ 25.367mm (0.995 ~ 0.999in)</p>	<p>25.167mm (0.991in)</p>
<p>Measurement B</p>	<p>21.069 ~ 21.169mm (0.829 ~ 0.833in)</p>	<p>20.969mm (0.826in)</p>
<p>Exhaust camshaft lobe dimensions</p>		
<p></p>		
<p>Measurement A</p>	<p>25.275 ~ 25.375mm (0.995 ~ 0.999in)</p>	<p>25.175mm (0.991in)</p>
<p>Measurement B</p>	<p>21.069 ~ 21.169mm (0.829 ~ 0.833in)</p>	<p>20.969mm (0.826in)</p>
<p>Maximum camshaft runout</p>	<p>...</p>	<p>0.03mm (0.0012in)</p>
<p></p> <p style="text-align: right; font-size: small;">11151102</p>		

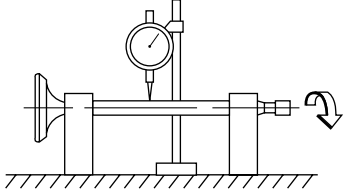
# ENGINE SPECIFICATIONS



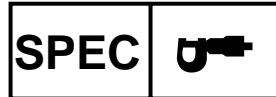
Item	Standard	Limit
<b>Timing chain</b>		
Model/number of links	Morse 92RH2005/94	...
Tensioning system	Automatic	...
<b>Valve, valve seats, valve guides</b>		
Valve clearance (cold)		
Intake	0.10 ~ 0.14mm (0.004 ~ 0.006in)	...
Exhaust	0.16 ~ 0.20mm (0.006 ~ 0.008in)	...
Valve dimensions		
 Head Diameter	 Face Width	 Seat Width
		 Margin Thickness
Valve head diameter A		
Intake	18.9 ~ 19.1mm (0.744 ~ 0.752in)	...
Exhaust	16.9 ~ 17.1mm (0.665 ~ 0.673in)	...
Valve face width B		
Intake	1.48 ~ 2.18mm (0.058 ~ 0.086in)	...
Exhaust	1.91 ~ 2.61mm (0.075 ~ 0.103in)	...
Valve seat width C		
Intake	0.9 ~ 1.1mm (0.035 ~ 0.043in)	...
Exhaust	0.9 ~ 1.1mm (0.035 ~ 0.043in)	...
Valve margin thickness D		
Intake	0.7mm (0.028in)	...
Exhaust	1.0mm (0.039in)	...
Valve stem diameter		
Intake	4.970 ~ 4.985mm (0.1956 ~ 0.1963in)	4.940mm (0.1945in)
Exhaust	4.955 ~ 4.970mm (0.1951 ~ 0.1957in)	4.925mm (0.1939in)
Valve guide inside diameter		
Intake	5.000 ~ 5.012mm (0.1969 ~ 0.1973in)	5.050mm (0.1988in)
Exhaust	5.000 ~ 5.012mm (0.1969 ~ 0.1973in)	5.050mm (0.1988in)

# ENGINE SPECIFICATIONS



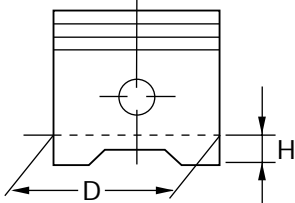
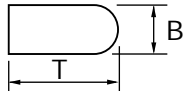
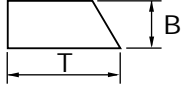
Item	Standard	Limit
Valve stem to valve guide clearance Intake  Exhaust	0.015 ~ 0.042mm (0.0006 ~ 0.0017in)  0.030 ~ 0.057mm (0.0012 ~ 0.0022in)	0.08mm (0.0031in)  0.1mm (0.0039in)
Valve stem runout  	...	0.01mm (0.0004 in)
Valve seat width Intake  Exhaust	0.9 ~ 1.1mm (0.035 ~ 0.043in)  0.9 ~ 1.1mm (0.035 ~ 0.043in)	1.6mm (0.063in)  1.6mm (0.063in)

# ENGINE SPECIFICATIONS



Item	Standard	Limit
<b>Valve springs</b>		
Free length		
Intake	41.88mm (1.649in)	39.786mm (1.566in)
Exhaust	41.88mm (1.649in)	39.786mm (1.566in)
Installed length (valve closed)		
Intake	30mm (1.18in)	...
Exhaust	30mm (1.18in)	...
Compressed spring force (installed)		
Intake	137 ~ 157N/mm (13.97 ~ 16.01kgf/mm, 30.83 ~ 35.33lbf/in)	...
Exhaust	137 ~ 157N/mm (13.97 ~ 16.01kgf/mm, 30.83 ~ 35.33lbf/in)	...
Spring tilt		
Intake	...	2.5°/1.8mm (2.5°/0.07in)
Exhaust	...	2.5°/1.8mm (2.5°/0.07in)
Winding direction (top view)		
Intake	Clockwise	...
Exhaust	Clockwise	...
Valve seat reformed	Yes	...
<b>Cylinder</b>		
Cylinder arrangement	Forward inclined single cylinder	...
Bore × stroke	52.4 × 57.9mm (2.06 × 2.28in)	...
Compression ratio	10:1	...
Bore	52.40 ~ 52.41mm (2.0630 ~ 2.0634in)	...
Maximum taper	...	0.05mm (0.002in)
Maximum out-of-round	...	0.05mm (0.002in)



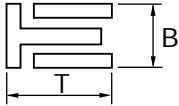
Item	Standard	Limit
<b>Piston</b>		
Piston-to-cylinder clearance	0.010 ~ 0.035mm (0.0004 ~ 0.0014in)	0.15mm (0.0059in)
Diameter D	52.375 ~ 52.390mm (2.0620 ~ 2.0626in)	...
		
Height H	7.0mm (0.28in)	...
Piston pin bore (in the piston)		
Diameter	15.002 ~ 15.013mm (0.5906 ~ 0.5911in)	15.043mm (0.5922in)
Offset	0.35 ~ 0.65mm (0.0138 ~ 0.0256in)	...
Offset direction	Intake side	...
Piston pin		
Outside diameter	14.995 ~ 15.000mm (0.5904 ~ 0.5906in)	14.975mm (0.5896in)
Piston rings		
Top ring		
		
Ring type	Barrel	...
Dimensions (B × T)	1.0 × 2.1mm (0.0394 × 0.0827in)	...
End gap (installed)	0.10 ~ 0.25mm (0.0039 ~ 0.0098in)	0.50mm (0.0197in)
Ring side clearance	0.02 ~ 0.08mm (0.0008 ~ 0.0031in)	0.13mm (0.0051in)
2nd ring		
		
Ring type	Taper	...
Dimensions (B × T)	1.0 × 2.1mm (0.0394 × 0.0827in)	...
End gap (installed)	0.25 ~ 0.40mm (0.0098 ~ 0.0157in)	0.75mm (0.0295in)
Ring side clearance	0.02 ~ 0.06mm (0.0008 ~ 0.0024in)	0.12mm (0.0047in)



# ENGINE SPECIFICATIONS

**SPEC**

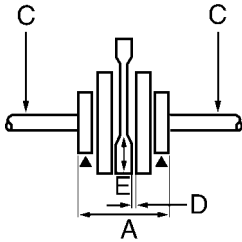


Item	Standard	Limit
Oil ring 		
Dimensions (B × T)	2.0 × 2.5mm (0.0787 × 0.0984in)	...
End gap (installed)	0.2 ~ 0.7mm (0.0079 ~ 0.0276in)	...
Ring side clearance	0.04 ~ 0.12mm (0.0016 ~ 0.0047in)	...

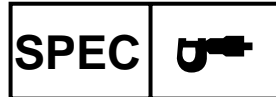
# ENGINE SPECIFICATIONS

**SPEC**



Item	Standard	Limit
<b>Rocker arm/rocker arm shaft</b> Rocker arm inside diameter Rocker arm shaft outside diameter Arm-to-shaft clearance	10.000 ~ 10.015mm (0.3937 ~ 0.3943in) 9.981 ~ 9.991mm (0.3930 ~ 0.3933in) 0.009 ~ 0.034mm (0.0004 ~ 0.0013in)	... ... ...
<b>Connecting rod</b> Connecting rod length Small end inside diameter	93.45 ~ 93.55mm (36.791 ~ 36.831in) 15.015 ~ 15.028mm (0.591 ~ 0.592in)	... ...
<b>Crankshaft</b>  Width A Maximum runout C Big end side clearance D Big end radial clearance E	45.45 ~ 45.50mm (1.789 ~ 1.791in) ... 0.15 ~ 0.45mm (0.006 ~ 0.018in) 0 ~ 0.01mm (0 ~ 0.0014in)	... 0.03mm (0.0012in) ...
<b>Clutch</b> Clutch type Clutch shoe thickness Clutch shoe spring free length Clutch housing inside diameter Compression spring free length Weight outside diameter Clutch-in revolution Clutch-stall revolution	Automatic centrifugal 3.2mm ~ 3.5mm (0.13~0.14in) 28.5mm (1.12in) 120mm (4.72in) 108mm (4.25in) 20mm (0.79in) 2700 ~ 3300r/min 5150 ~ 6150r/min	... 2.0mm (0.079in) ... 120.5mm (4.74in) ... 19.5mm (0.77in) ... ...
<b>V-belt</b> V-belt width	22mm (0.87in)	19.8mm (0.78in)

# ENGINE SPECIFICATIONS

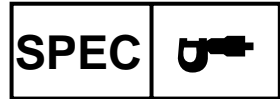


Item	Standard	Limit
<b>Transmission</b>		
Transmission type	V-belt automatic	...
Primary reduction system	Helical gear	...
Primary reduction ratio	40/15 (2.667)	...
Secondary reduction system	Spur gear	...
Secondary reduction ratio	44/11 (4.0)	...
Single speed automatic	2.398 ~ 0.823:1	...
Maximum main axle runout	...	0.04mm (0.002in)
Maximum drive axle runout	...	0.04mm (0.002in)
<b>Air filter</b>		
Type	Wet element	...
<b>Fuel pump</b>		
Pump type	Electrical	...
Model (manufacturer)	5S9 (AISAN)	...
Maximum consumption amperage	1.9A	...
Output pressure	250kPa (2.5kgf/cm <sup>2</sup> , 35.6psi)	...
<b>Throttle body</b>		
Model (manufacturer) × quantity	AC24-7 (AISAN) × 1	...
Throttle cable free play (at the flange of the throttle grip)	3 ~ 5mm (0.12 ~ 0.20in)	...
ID mark	5S91 00	...
Engine idling speed	1700 ~ 1900r/min	...
Carbon monoxide density (exhaust pipe)	1.0% or less	...
Carbon monoxide density (tail pipe)	1.0% or less	...
Oil temperature	70 ~ 110°C (158 ~ 230°F)	...

**CHASSIS SPECIFICATIONS**

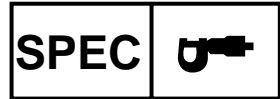
Item	Standard	Limit
<b>Frame</b>		
Frame type	Steel tube underbone	...
Caster angle	27°	...
Trail	90mm (3.54in)	...
<b>Front wheel</b>		
Wheel type	Cast wheel	...
Rim		
Size	J12 × MT2.75	...
Material	Aluminum	...
Wheel travel	78mm (3.07in)	...
Wheel runout		
Maximum radial wheel runout	...	1.0mm (0.04in)
Maximum lateral wheel runout	...	1.0mm (0.04in)
Wheel axle bending limit	...	0.25mm (0.01in)
<b>Rear wheel</b>		
Wheel type	Cast wheel	...
Rim		
Size	J12 × MT3.00	...
Material	Aluminum	...
Wheel travel	71mm (2.80in)	...
Wheel runout		
Maximum radial wheel runout	...	1.0mm (0.04in)
Maximum lateral wheel runout	...	1.0mm (0.04in)
<b>Front tire</b>		
Tire type	Tubeless	...
Size	120/70-12 51L	...
Model (manufacturer)	K761 (KENDA)	...
Tire pressure (cold)		
0 ~ 90kg (0 ~ 198lb)	175kPa (1.75kgf/cm <sup>2</sup> , 25psi)	...
90kg (198lb) ~ maximum load	200kPa (2.0kgf/cm <sup>2</sup> , 29psi)	...
Minimum tire tread depth	...	0.8mm (0.03in)

# CHASSIS SPECIFICATIONS



Item	Standard	Limit
<b>Rear tire</b>		
Tire type	Tubeless	...
Size	130/70-12 56L	...
Model (manufacturer)	K761 (KENDA)	...
Tire pressure (cold)		
0 ~ 90kg (0 ~ 198lb)	200kPa (2.0kgf/cm <sup>2</sup> , 29psi)	...
90kg (198lb)~ maximum load	225kPa (2.25kgf/cm <sup>2</sup> , 33psi)	...
Minimum tire tread depth	...	0.8mm (0.03in)
<b>Front brake</b>		
Brake type	Single-disc brake	...
Operation	Right-hand operation	...
Recommended fluid	DOT 4	...
Brake disc		
Diameter × thickness	220 × 4.0mm (8.66 × 0.16in)	220 × 3.5mm (8.66 × 0.14in)
Minimum thickness	...	3.5mm (0.14in)
Maximum deflection	...	0.15mm (0.006in)
Brake pad lining thickness-inner	5.8mm (0.23in)	0.8mm (0.03in)
Brake pad lining thickness-outer	5.8mm (0.23in)	0.8mm (0.03in)
Master cylinder inside diameter	11mm (0.43in)	...
Caliper cylinder inside diameter	35mm (1.38in)	...
<b>Rear brake</b>		
Brake type	Drum brake	...
Operation	Left-hand operation	...
Brake lever free play (at lever end)	10 ~ 20mm (0.39 ~ 0.79in)	...
Brake drum inside diameter	150mm (5.91in)	151mm (5.94in)
Lining thickness	4.0mm (0.16in)	1.0mm (0.04in)
<b>Steering system</b>		
Steering bearing type	Angular bearing	...
Lock to lock angle (left)	48°	...
Lock to lock angle (right)	48°	...

# CHASSIS SPECIFICATIONS



Item	Standard	Limit
<b>Front suspension</b>		
Suspension type	Telescopic	...
Front fork type	Coil spring/oil damper	...
Front fork travel	90mm (3.54in)	...
Spring		
Free length	252.1mm (9.93in)	247mm (9.72in)
Installed length	230.9mm (9.09in)	...
Spring rate (K1)	7.1N/mm (0.72kgf/mm, 1.60lbf/in)	...
Spring rate (K2)	15.4N/mm (1.57kgf/mm, 3.47lbf/in)	...
Spring stroke (K1)	0 ~ 66.7mm (0 ~ 2.63in)	...
Spring stroke (K2)	66.7 ~ 90mm (2.63 ~ 3.54in)	...
Optional spring available	No	...
Fork oil		
Recommended oil	Fork oil 10W or equivalent	...
Quantity (each front fork leg)	0.104L (0.11 US qt, 0.09 Imp. qt)	...
Inner tube outer diameter	33mm (1.30in)	...
Inner tube bending limit	...	0.2mm (0.008in)
<b>Rear suspension</b>		
Suspension type	Unit swing	...
Rear shock absorber assembly type	Coil spring/oil damper	...
Rear shock absorber assembly travel	70mm (2.76in)	...
Spring		
Free length	235mm (9.25in)	...
Installed length	224mm (8.82in)	...
Spring rate (K1)	9.3N/mm (0.95kgf/mm, 2.09lbf/in)	...
Spring rate (K2)	13.15N/mm (1.34kgf/mm, 2.96lbf/in)	...
Spring rate (K3)	19.23N/mm (1.96kgf/mm, 4.33lbf/in)	...
Spring stroke (K1)	0 ~ 24mm (0 ~ 0.94in)	...
Spring stroke (K2)	24 ~ 54mm (0.94 ~ 2.13in)	...
Spring stroke (K3)	54 ~ 70mm (2.13 ~ 2.76in)	...
Optional spring available	No	...



## ELECTRICAL SPECIFICATIONS

Item	Standard	Limit
<b>System voltage</b>	12V	...
<b>Ignition system</b>		
Ignition system type	Transistorized coil ignition	...
Ignition timing	5° BTDC at 1800r/min	...
Advancer type	Digital	...
Pickup coil resistance/color	248 ~ 372Ω at 20°C (68°F) /white/red - white/blue	...
<b>Ignition coil</b>		
Model (manufacturer)	2JN (T-MORIC)	...
Minimum ignition spark gap	6mm (0.24in)	...
Primary coil resistance	2.16 ~ 2.64Ω at 20°C (68°F)	...
Secondary coil resistance	8.64~12.96Ω at 20°C (68°F)	...
<b>Spark plug cap</b>		
Material	Resin	...
Resistance	8 ~ 12kΩ at 20°C (68°F)	...
<b>Charging system</b>		
System type	AC magneto	...
Model (manufacturer)	5S9 (T-MORIC)	...
Nominal output	14V 170W/5000r/min	...
Stator coil resistance/color	0.56 ~ 0.84Ω at 20°C (68°F) /white - white	...
<b>Rectifier/regulator</b>		
Model (manufacturer)	SH640E-11 (TAIGENE)	...
No load regulated voltage	14.1 ~ 14.9V	...
Rectifier capacity	25A	...
<b>Battery</b>		
Battery type (manufacturer)	YT7B-BS (YUASA)	...
Battery voltage capacity	12V 6.5AH	...
Specific gravity	1.340	...
Ten hour rate amperage	6.5AH	...
<b>Headlight type</b>	Halogen bulb	...
<b>Indicator light (voltage/wattage x quantity)</b>		
Turn signal indicator light	12V 1.7W x 1	...
High beam indicator light	12V 1.7W x 1	...
Engine trouble warning light	12V 1.7W x 1	...
<b>Bulbs (voltage/wattage x quantity)</b>		
Headlight	12V 60W/55W x 2	...
Tail/brake light	12V 5W/21W x 1	...
Front turn signal light	12V 10W x 2	...
Rear turn signal light	12V 10W x 2	...
Speedometer light	12V 1.7W x 2	...

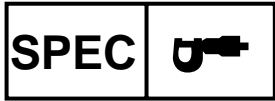
# ELECTRICAL SPECIFICATIONS



Item	Standard	Limit
<b>Electric starting system</b>		
System type	Constant mesh	...
Starter motor		
Model (manufacturer)	5S9 00 (T-MORIC)	...
Suction voltage	12V	...
Power output	0.35kW	...
Brushes		
Overall length	10.0mm (0.39in)	3.5mm (0.14in)
Quantity	2	...
Spring force	5.52 ~ 8.28N/mm (0.56 ~ 0.84kgf/mm, 1.24 ~ 1.86lbf/in)	...
Commutator diameter	22mm (0.87in)	21mm (0.83in)
Commutator resistance	0.0252 ~ 0.0308Ω at 20°C (68°F)	...
Mica undercut (depth)	1.5mm (0.06in)	...
<b>Starter relay</b>		
Model (manufacturer)	5S9 00 (SHIHLIN)	...
Amperage	100A	...
Coil resistance	3.6 ~ 4.4Ω	...
Suction voltage	DC8V	...
<b>Horn</b>		
Horn type	Plane	...
Model (manufacturer)	YF-12 (NIKKO)	...
Maximum amperage	3A	...
Performance	105 ~ 120dB/2m	...
Coil resistance	1.15 ~ 1.25Ω	...
<b>Turn signal relay</b>		
Relay type	Condenser	...
Model (manufacturer)	5XN4 (OMRON)	...
Self-cancelling device built-in	NO	...
Turn signal blinking frequency	70 ~ 100cycles/min	...
Wattage	10W × 2 + 3.4W	...
<b>Fuse (amperage × quantity)</b>		
Main fuse	20A × 1	...
Ignition fuse	10A × 1	...
Signaling system fuse	15A × 1	...
Fuel injection system fuse	10A × 1	...
Headlight fuse	10A × 1	...
Spare fuse	20A, 15A, 10A × 1	...



# ELECTRICAL SPECIFICATIONS

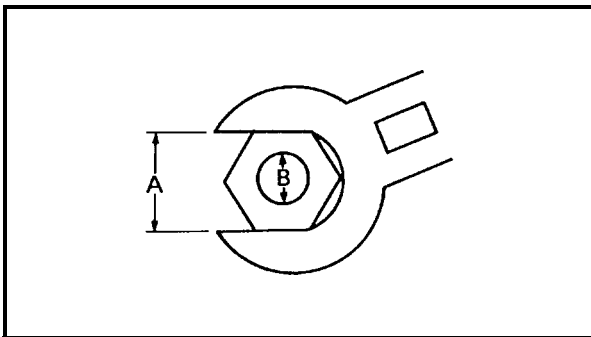


Item	Standard	Limit
<b>Fuel sender</b> Model (manufacturer) Sender unit resistance-full Sender unit resistance-empty	5S9 (AISAN) 4 ~ 10Ω 90 ~ 100Ω	... ... ...
<b>Fuel level gauge</b> Gauge type (manufacture)	Analog (CHAOLONG)	...
<b>Starting circuit cut-off relay</b> Model (manufacturer) Coil resistance Diode	4HC1 (MATSU SHITA) 72 ~ 88Ω YES	... ... ...
<b>Headlight relay</b> Model (manufacturer) Coil resistance Diode	4HM-20 (OMRON) 90 ~ 110Ω YES	... ... ...
<b>Engine temperature sensor</b> Model (manufacturer) Coil resistance at 100°C (212°F)	4P91 (PANASONIC) 0.210 ~ 0.221kΩ	... ...
<b>Intake air pressure sensor</b> Output voltage	0.789 ~ 4.0V	...
<b>Intake air temperature sensor</b> Coil resistance/color	6kΩ at 0°C (32°F)/ brown-white/black-blue	...
<b>Throttle position sensor</b> Voltage/color Output voltage (closed position)/color	5V/blue-black/blue 0.63 ~ 0.73V/yellow-black/blue	... ...
<b>ISC (idle speed control) valve</b> Resistance/color	20Ω at 20°C (68°F)/ pink-green/yellow or gray-sky blue	...
<b>Lean angle cut-off switch</b> Voltage Less than 45° More than 45°	0.4V 1.4V	... ...
<b>O<sub>2</sub> sensor</b> Model (manufacturer) Coil resistance	1B91(DENSO) 11.7 ~ 15.5Ω at 20°C (68°F)	... ...

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## GENERAL TIGHTENING TORQUE SPECIFICATIONS

This chart specifies tightening torques for standard fasteners with a standard ISO thread pitch. Tightening torque specifications for special components or assemblies are provided for each chapter of this manual. To avoid warpage, tighten multi-fastener assemblies in a crisscross pattern and progressive stages until the specified tightening torque is reached. Unless otherwise specified, tightening torque specifications require clean, dry threads. Components should be at room temperature.





A: Width across flats

B: Thread diameter


A (nut)	B (bolt)	General tightening torques		
		Nm	m•kg	ft•lb
10 mm	6 mm	6	0.6	4.3
12 mm	8 mm	15	1.5	11
14 mm	10 mm	30	3.0	22
17 mm	12 mm	55	5.5	40
19 mm	14 mm	85	8.5	61
22 mm	16 mm	130	13.0	94

**TIGHTENING TORQUES  
ENGINE**

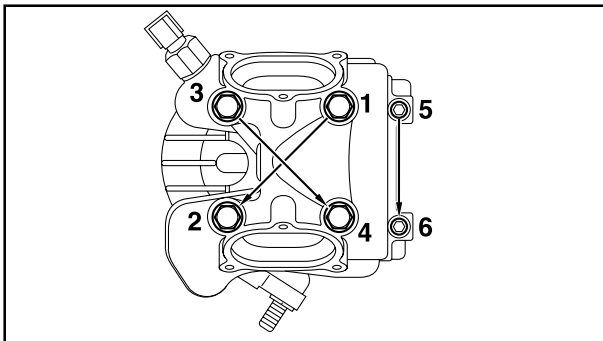
Part to be tightened	Part name	Thread size	Q'ty	Tightening torque			Remarks
				Nm	m•kgf	ft•lbf	
Cylinder head and cylinder	Nut	M8	4	22	2.2	15.9	
Spark plug	-	M10	1	13	1.3	9.4	
Cylinder head (timing chain side)	Bolt	M6	2	12	1.2	8.7	
Exhaust pipe stud bolt	-	M8	2	13	1.3	9.4	
Breather	Bolt	M6	2	7	0.7	5.1	
Valve cover	Bolt	M6	6	7	0.7	5.1	
Stopper plate (camshaft)	Bolt	M6	1	12	1.2	8.7	
Guide stopper 2	Bolt	M6	1	7	0.7	5.1	
Valve clearance adjusting screw lock nut	-	M5	4	7	0.7	5.1	
Camshaft sprocket	Bolt	M8	1	30	3.0	21.7	
Timing chain tensioner (body)	Bolt	M6	2	9	0.9	6.5	
Timing chain tensioner (plug)	Plug	M8	1	8	0.8	5.8	
Air shroud cylinder 1 and 2	Screw	6.0	5	2	0.2	1.4	
Air shroud cylinder 2 and 3	Screw	6.0	1	2	0.2	1.4	
Air shroud cylinder 3	Screw	M6	3	7	0.7	5.1	
Fan	Bolt	M6	4	9	0.9	6.5	
Guide	Screw	6.0	3	2	0.2	1.4	
Oil pump	Screw	M5	2	4	0.4	2.9	
Engine oil drain plug	-	M30	1	20	2.0	14.5	
Intake manifold	Bolt	M6	2	10	1.0	7.2	
Air filter	Screw	M6	2	7	0.7	5.1	
Fuel injector	Bolt	M6	1	12	1.2	8.7	
Intake manifold side band	Band	M4	1	3	0.3	2.2	Touching collar stop.
Air filter side band	Band	M4	1	3	0.3	2.2	
Protector	Bolt	M6	4	10	1.0	7.2	
Exhaust pipe	Nut	M8	2	13	1.3	9.4	
Muffler	Bolt	M10	1	53	5.3	38.3	
Muffler	Bolt	M8	2	31	3.1	22.4	
Crankcase (left and right)	Bolt	M6	8	13	1.3	9.4	
Crankcase (left and right)	Bolt	M6	1	13	1.3	9.4	
V-belt case	Bolt	M6	8	11	1.1	8.0	
Crankcase cover (right)	Bolt	M6	6	10	1.0	7.2	
Cover 1 (magneto base)	Bolt	M6	2	13	1.3	9.4	Crankcase (left and right) together tightening.
Cover 1 (magneto base)	Bolt	M6	1	13	1.3	9.4	
V-belt case cover	Screw	M6	3	7	0.7	5.1	
V-belt case cover	Bolt	M6	2	7	0.7	5.1	
Cylinder stud bolt	-	M8	4	13	1.3	9.4	
Drain bolt (transmission oil)	-	M8	1	23	2.3	16.6	
Drain bolt (engine oil)	-	M12	1	20	2.0	14.5	
Guide element	Screw	M6	1	7	0.7	5.1	

# TIGHTENING TORQUES

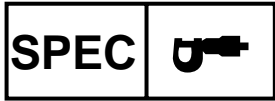


Part to be tightened	Part name	Thread size	Q'ty	Tightening torque			Remarks
				Nm	m•kgf	ft•lbf	
Plate (V-belt guide)	Bolt	M6	4	10	1.0	7.2	  Do not use the air impact wrench to tight.
Idle gear plate	Bolt	M6	2	10	1.0	7.2	
Plate	Bolt	M6	1	10	1.0	7.2	
Clutch housing	Nut	M14	1	60	6.0	43.4	
Primary fixed sheave	Nut	M12	1	45	4.5	32.5	
Starter motor	Bolt	M6	2	7	0.7	5.1	
AC magneto rotor	Nut	M12	1	70	7.0	50.6	
Stator coil	Screw	M6	3	7	0.7	5.1	
Crankshaft position sensor	Screw	M6	2	7	0.7	5.1	
Ignition coil	Screw	M6	2	7	0.7	5.1	
O <sub>2</sub> sensor	-	M18	1	44	4.4	31.8	
Engine temperature sensor	-	M10	1	18	1.8	13.0	
Clamp holder	Bolt	M6	2	10	1.0	7.2	


## Cylinder head tightening sequence



# TIGHTENING TORQUES

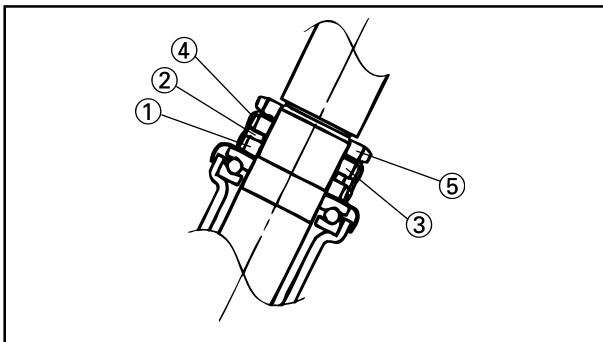


## CHASSIS

Part to be tightened	Thread size	Tightening torque			Remarks
		Nm	m·kgf	ft·lbf	
Frame and engine bracket 2	M10	32	3.2	23.1	See "TIP" 
Engine bracket 2, compression rod and engine	M10	32	3.2	23.1	
Compression rod and frame	M10	32	3.2	23.1	
Sidestand (bolt and stand)	M10	9	0.9	6.5	
Sidestand (bolt and nut)	M10	40	4.0	28.9	
Centerstand	M8	23	2.3	16.6	
Swingarm	M8	31	3.1	22.4	
Rear shock absorber and frame	M10	30	3.0	21.7	
Rear shock absorber and engine	M8	18	1.8	13.0	
Steering ring shaft	M25				
Handlebar and steering shaft	M10	60	6.0	43.4	
Brake hose and master cylinder	M10	26	2.6	18.8	
Speedometer and speedometer cable	M12	4	0.4	2.9	
Speedometer gear and speedometer cable	M12	4	0.4	2.9	
Handlebar bracket and handlebar holder	M10	48	4.8	34.7	
Upper handlebar holder	M8	28	2.8	20.3	
Handlebar bracket	M10	60	6.0	43.4	
Master cylinder holder	M6	9	0.9	6.5	
Fuel tank	M6	10	1.0	7.2	
Trunk	M6	7	0.7	5.1	
Seat hinge	M6	7	0.7	5.1	
Seat lock assembly	M6	7	0.7	5.1	
Fuel pump bracket	M5	4	0.4	2.9	
Resin part and resin cover	About M5	1.5	0.15	1.1	
Front fender	M6	5	0.5	3.6	
Leg shield assembly	M6	7	0.7	5.1	
Footrest board	M6	7	0.7	5.1	
Front wheel shaft	M12	70	7.0	50.6	
Rear wheel shaft	M14	105	10.5	75.9	
Rear brake camshaft lever	M6	10	1.0	7.2	
Rear brake pin pivot	M10	32	3.2	23.1	
Front brake caliper	M10	49	4.9	35.4	
Front brake disc rotor	M8	23	2.3	16.6	
Brake hose and front brake caliper	M10	26	2.6	18.8	
Front brake caliper and bleed screw	M7	6	0.6	4.3	

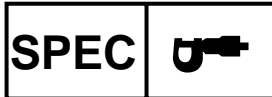
**TIP**

1. First, tighten the ring nut (lower) approximately 38Nm (3.8m • kgf, 27.5ft • lbf) by using the torque wrench, then loosen the ring nut 1/4 turn.
2. Second, tighten the ring nut (lower) approximately 14Nm (1.4m • kgf, 10.1ft • lbf) by using the torque wrench.
3. Installing the rubber washer.
4. Then finger tighten the center ring nut and touch rubber washer. Align the slots both ring nut and install the lock washer.
5. Final, hold the ring nuts (lower and center) and tighten the ring nut (upper) 75Nm (7.5m • kgf, 54.2ft • lbf) by using the torque wrench.
6. Confirm, adjust the direction handlebar to the right direction, front wheel suspend. Push direction handlebar lightly with the finger approximately 0.15Nm (0.015m • kgf, 0.11ft • lbf) ,direction handlebar should turn slowly without interference or hindrance.



- ① Lower ring nut
- ② Rubber washer
- ③ Center ring nut
- ④ Lock washer
- ⑤ Upper ring nut

# LUBRICATION POINTS AND LUBRICANT TYPES






EAS00031

## LUBRICATION POINTS AND LUBRICANT TYPES ENGINE

Lubrication Point	Lubricant
Oil seal lips	
Bearings	
O-rings (except V-belt drive unit)	
O-rings (fuel injector)	
Cylinder head tightening nut mounting surface	
Cylinder head stud bolt thread	
Cylinder head nut	
Cylinder head gasket dowel pin	
Crankshaft pin outside surface	
Crankshaft journals	
Connecting rod big end thrust surface	
Piston and piston rings	
Piston pin and connecting rod small end surface and bolt thread	
Piston (balancer) outside surface	
Piston pin (balancer) outside surface	
Rocker arm shaft outside surface (intake and exhaust)	
Rocker arm shaft and rockor arm	
Camshaft lobes	
Camshaft journals	
Valve stems (intake and exhaust)	
Valve stem seals (intake and exhaust)	
Valve stem ends (intake and exhaust)	
Oil pump inside surface	
Oil pump shaft	
V-belt case dowel pin	
Starter clutch pin and weight	
Idle gear 1 thrust surface	
Idle gear 2	

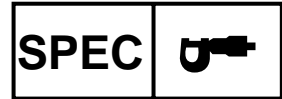
## LUBRICATION POINTS AND LUBRICANT TYPES



Lubrication Point	Lubricant
Main and drive axle serration (sprocket)	
Drive axle taper roller bearing	
Transmission bearing	
Secondary fixed sheave inner surface	BEL-RAY assembly lube®
Secondary sliding sheave torque cam ditch	BEL-RAY assembly lube®
Crankcase mating surfaces	Yamaha bond NO.1215



# LUBRICATION POINTS AND LUBRICANT TYPES



EAS00032

## CHASSIS

Lubrication Point	Lubricant
Engine mounting bolt	
Steering bearing and bearing races (upper and lower)	
Throttle grip inner surface and throttle cables	
Rear brake lever pivoting point and metal-to-metal moving parts	
Rear brake cable and brake lock lever (cable connection area)	
Front wheel oil seal	
Front wheel axle	
Speedometer gear unit	
Rear wheel axle	
Sidestand pivoting point and sliding surface metal-to-metal moving parts and bolt outer surface	
Centerstand shaft pivoting point and metal-to-metal moving parts	
Centerstand stopper pivoting point	
Centerstand and sidestand spring hook metal-to-metal moving parts	
Caliper piston seal	
Rubber parts inside the master cylinder	
Caliper piston dust seal	
Front brake lever retaining bolt	
Sliding area between brake lever and master cylinder	
Caliper bracket slide pins and/or retaining bolt	

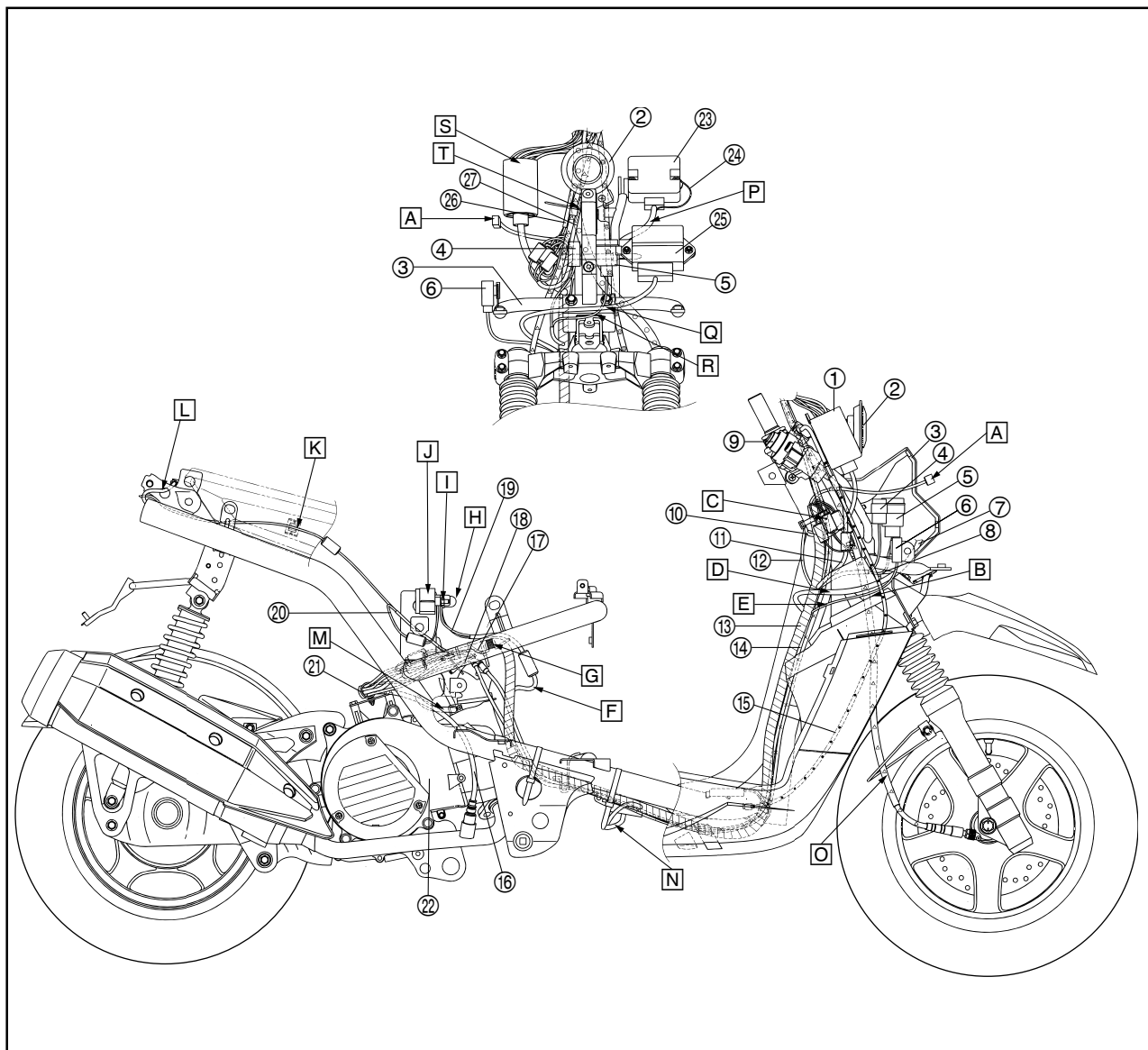


EAS00035

**CABLE ROUTING**

- ① Connector cover
- ② Horn
- ③ Front bracket
- ④ Starting circuit cut-off relay
- ⑤ Turn signal relay
- ⑥ Headlight relay
- ⑦ ECU lead
- ⑧ Turn signal relay lead
- ⑨ Main switch
- ⑩ Horn lead
- ⑪ Main switch lead
- ⑫ Rectifier/regulator lead
- ⑬ Wire harness
- ⑭ Throttle cable assembly
- ⑮ Seat lock cable
- ⑯ O<sub>2</sub> sensor lead
- ⑰ Fuel injector lead

- ⑱ Engine temperature sensor lead
- ⑲ Positive wire lead
- ⑳ Starter relay lead
- ㉑ Clamp (90464-25803)
- ㉒ Air shroud cylinder 2
- ㉓ Rectifier/regulator
- ㉔ Body earth lead
- ㉕ ECU
- ㉖ Speedometer lead
- ㉗ Left lever holder lead
- A After connect the headlight coupler, lead do not touch horn.
- B Speedometer cable passes through the right hole of inner fender.
- C Five couplers of speedometer lead and lever holder.
- D ECU lead passes by the right side of the inner fender rib.

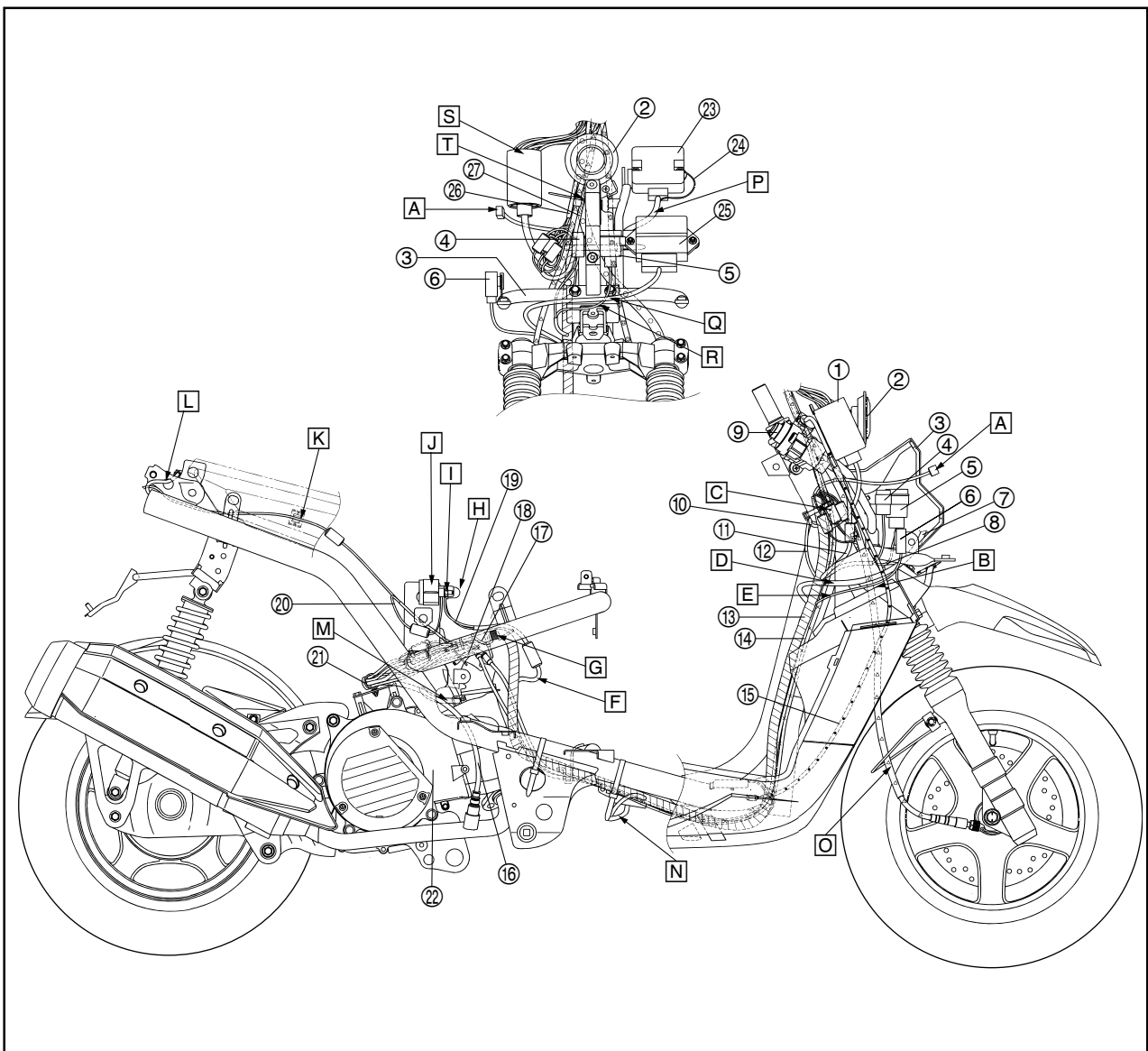


## CABLE ROUTING

**SPEC**



- E** Headlight relay lead passes by the right side of inner fender rib.
- F** Start relay sub lead to forward.
- G** Orientation: white tape.
- H** Totally cover the terminal after locking.
- I** Torque: 4Nm (0.4m • kgf, 2.9ft • lbf).
- J** Starter relay inserts into holder certainly.
- K** After connecting, press lead of tail/brake light into the holder on side cover.
- L** Seat lock cable passes through the hole of seat bracket 1.
- M** Pipe 11 passes by the open hole of air shroud cylinder 2.
- N** Fuse box passes under the wire harness.
- O** Speedometer cable passes through the wire holder.
- P** Rectifier/regulator lead passes by the back of the head pipe.
- Q** ECU lead passes under of the front bracket.
- R** Turn signal relay lead passes under of the front bracket.
- S** After connecting, put the front signal light coupler (left and right), brake light switch coupler (front and rear) and right handlebar switch lead coupler in the connector cover. Connector cover hold to leg shield 2 rib.
- T** Band the speedometer cable stopper in the top and white tape range of left lever holder lead.

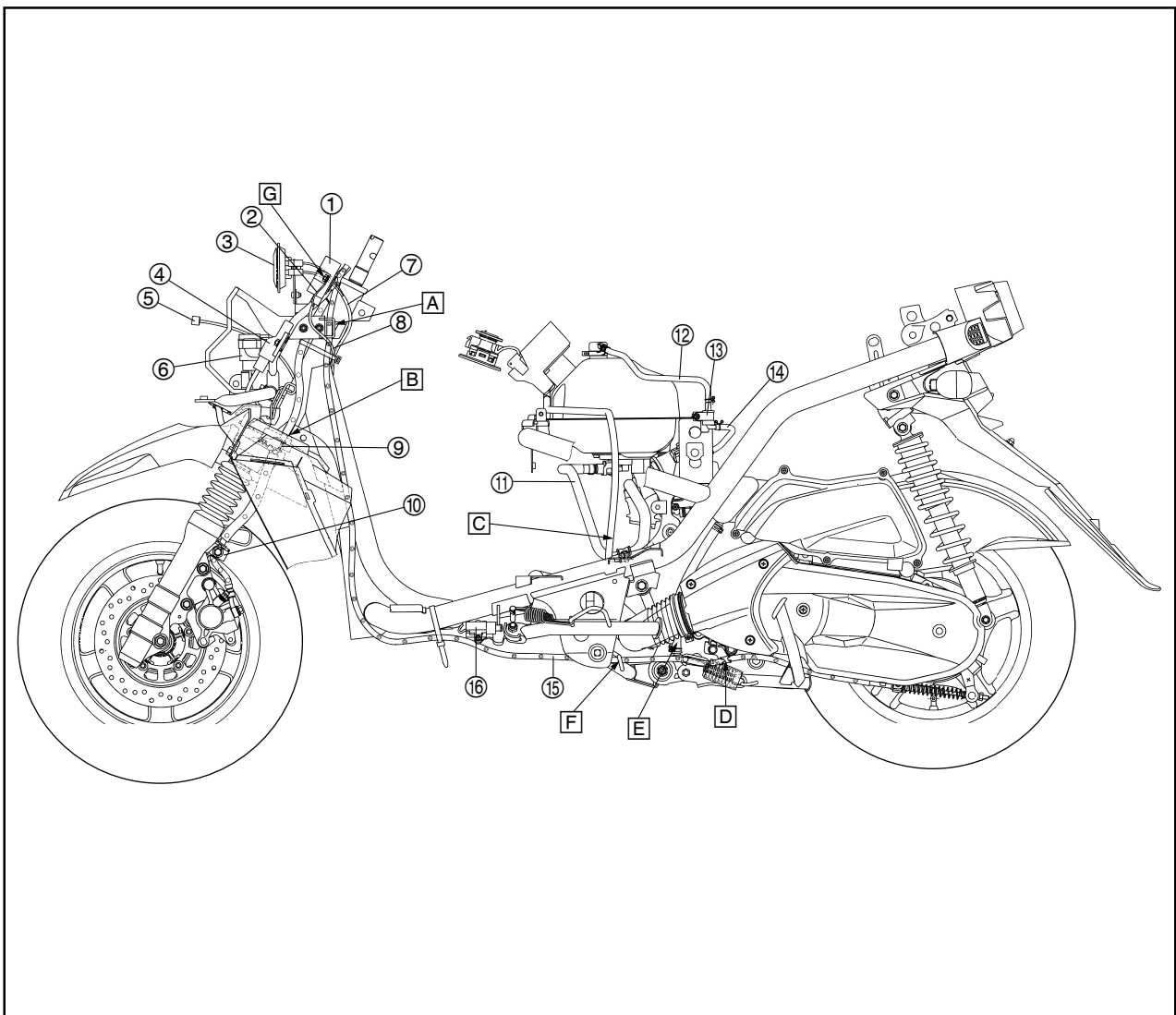


## CABLE ROUTING

SPEC



- ① Rectifier/regulator
- ② Body earth lead
- ③ Horn
- ④ ECU
- ⑤ Headlight lead
- ⑥ Turn signal relay
- ⑦ Horn lead
- ⑧ Rectifier/regulator lead
- ⑨ Brake hose holder 3
- ⑩ Brake hose holder 1
- ⑪ Fuel hose
- ⑫ Pipe 3
- ⑬ Roll over valve
- ⑭ Pipe 4
- ⑮ Rear brake cable
- ⑯ Sidestand switch
- Ⓐ Rear brake cable passes through the wire guide of front bracket.
- Ⓑ Brake hose passes through the left hole of inner fender.
- Ⓒ Locate the end of gasoline overflow pipe at between frame and air duct.
- Ⓓ Rear brake holder 2 holds the rear brake cable and covers the ultrasonic weld mark at the PVC protector.
- Ⓔ Locate at between compression rod and air duct.
- Ⓕ Rear brake cable passes through the wire guide.
- Ⓖ Tightening the body earth terminal and rectifier/regulator.

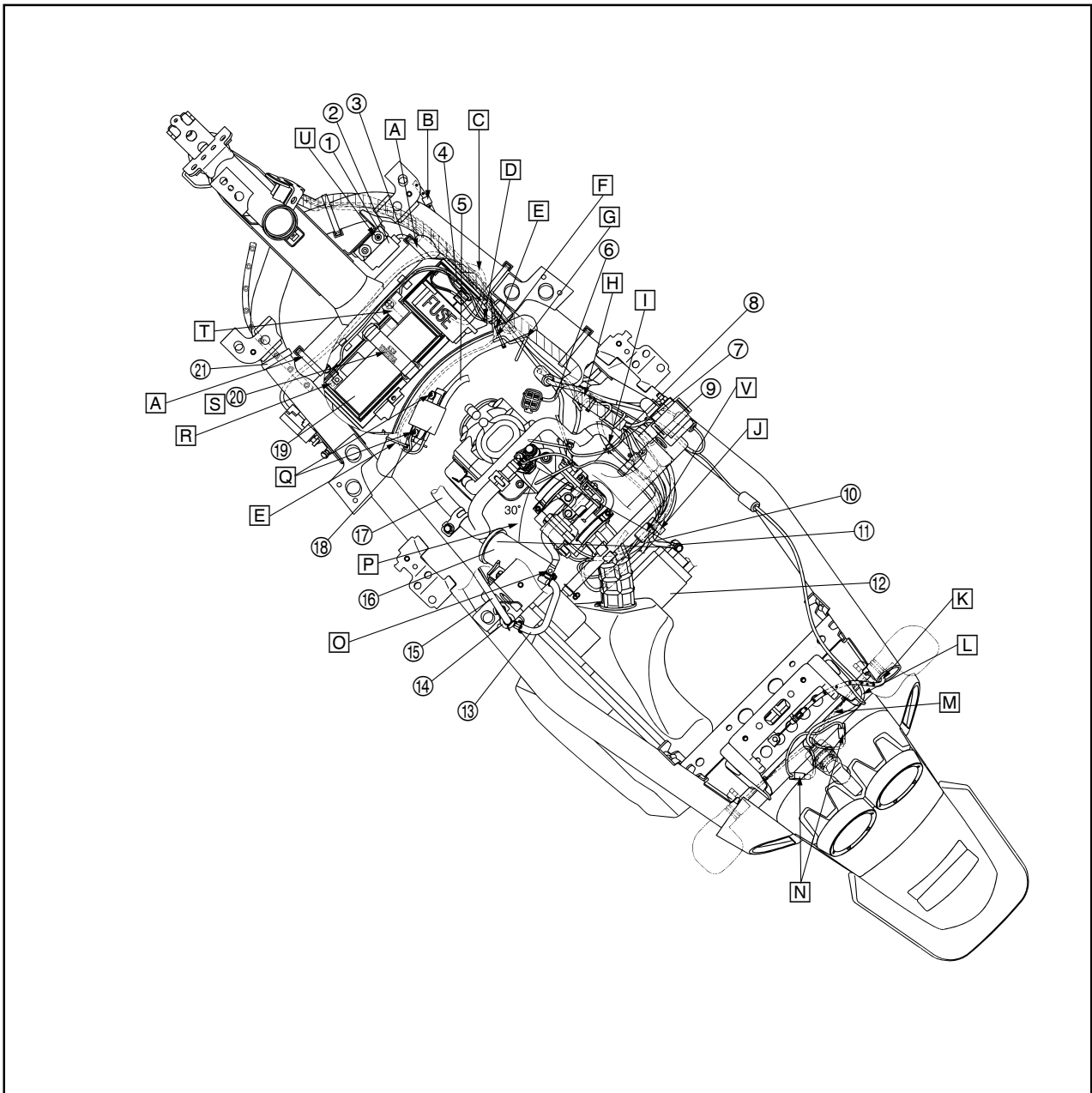


# CABLE ROUTING

**SPEC**



- ① Plain washer
- ② Lean angle cut-off switch
- ③ Lean angle cut-off switch lead
- ④ FI diagnostic tool
- ⑤ High tension cord
- ⑥ Fuel pump lead
- ⑦ Engine temperature sensor lead
- ⑧ Fuel injector lead
- ⑨ Clamp (90464-13800)
- ⑩ Starter motor positive lead
- ⑪ Starter motor negative lead
- ⑫ Starter motor
- ⑬ Pipe 4
- ⑭ Roll over valve
- ⑮ Pipe 3
- ⑯ Canister
- ⑰ Fuel hose
- ⑱ Ignition coil
- ⑲ Battery
- ⑳ Battery band
- ㉑ Clamp (90464-12812)
- A Fasten the sidestand switch lead to the frame with a plastic locking tie, point the band tip to down of car body.
- B Seat lock cable inserts into the right hole of frame, and the protector must be at the hole.
- C Fuse box lead passes under the wire harness.
- D Pass the positive and negative battery leads through the slot in the footrest board, leads and wire harness do not twine.
- E Do not cut off, point the band tip to down.

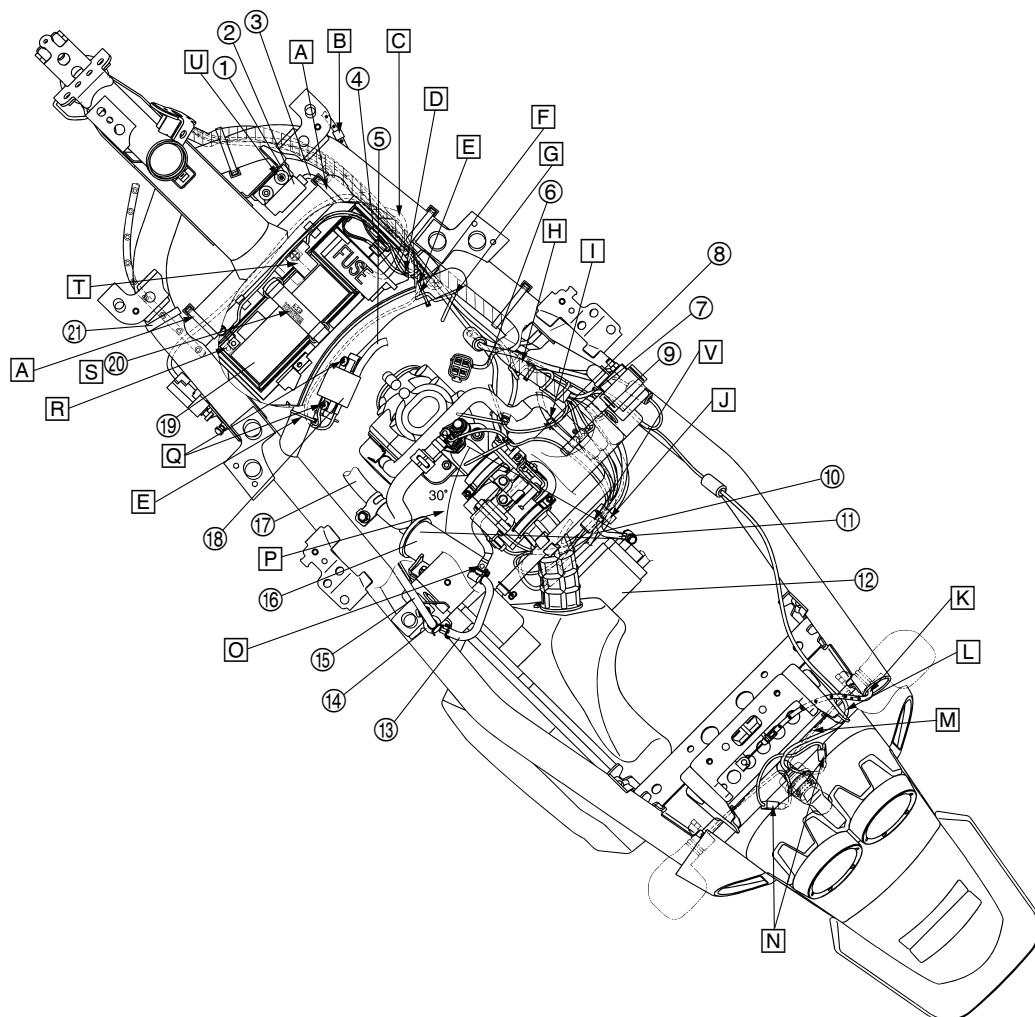


## CABLE ROUTING

**SPEC**



- F** Ignition coil lead passes under the cross tube.
- G** Pass the throttle cable assembly through wire guide.
- H** Locate the white tape of wire harness in the holder.
- I** Clamp (90464-10800) the O<sub>2</sub> sensor lead.
- J** Clamp (90464-25803) the starter motor lead, AC magneto lead, ISC (idle speed control) valve lead, sensor module (MAQS) lead, fuel injector lead and O<sub>2</sub> sensor lead.
- K** Seat lock cable passes through the hole of seat bracket.
- L** Tail/brake light lead pass under the seat lock cable.
- M** Turn signal light lead pass through the hole at license bracket and combine with tail/brake light lead.
- N** After combining the couplers, insert them into the sockets at tail/brake light.
- O** Yellow mark to up of pipe 11.
- P** Assembly range of starter motor negative lead terminal.
- Q** Torque: 7Nm (0.7m • kgf, 5.1ft • lbf).
- R** The terminal of battery negative pole (black lead) shall touch the left surface of battery box at least.
- S** Battery band buckles the rear side and then front.
- T** The terminal of battery positive pole (red lead) shall be aimed at the center of mark "⊕" at footrest board.
- U** Torque: 5Nm (0.5m • kgf, 3.6ft • lbf).
- V** After combining the fuel injector coupler, align the coupler (forward side) with the clamp (inside).



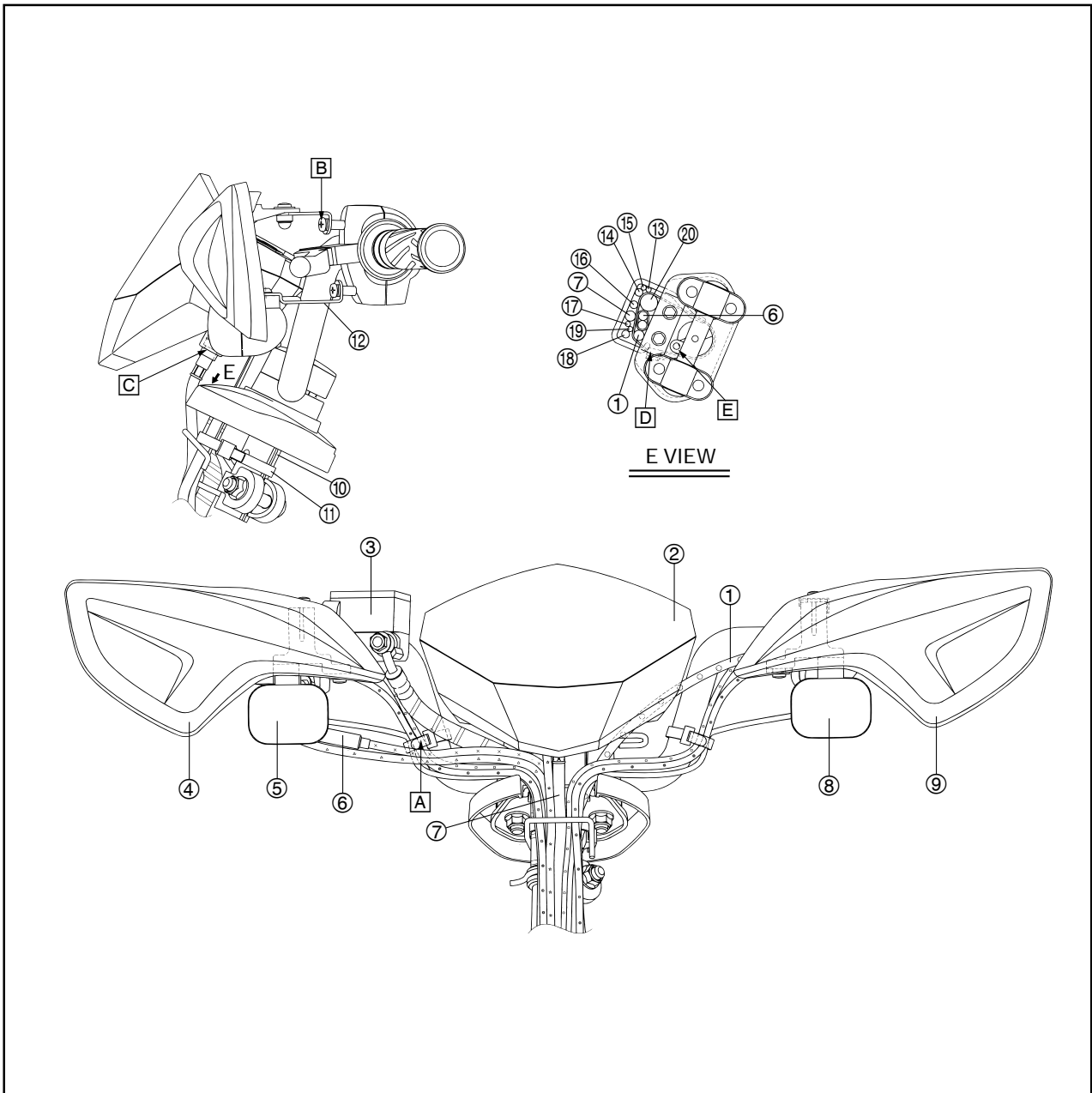
# CABLE ROUTING

**SPEC**



- ① Rear brake cable
- ② Speedometer
- ③ Front master cylinder
- ④ Brush guard (right)
- ⑤ Turn signal light (right)
- ⑥ Throttle cable assembly
- ⑦ Speedometer cable
- ⑧ Turn signal light (left)
- ⑨ Brush guard (left)
- ⑩ Handlebar bracket
- ⑪ Clamp (90464-12812)
- ⑫ Bracket
- ⑬ Turn signal light lead (right)
- ⑭ Right handlebar switch lead
- ⑮ Front brake light switch lead
- ⑯ Speedometer lead

- ⑰ Rear brake light switch lead
- ⑱ Left lever holder lead
- ⑲ Turn signal light lead (left)
- ⑳ Brake hose
- A** Fasten the right handlebar switch lead, front brake light switch lead and right turn signal light lead to the handlebar.
- B** Upper screw tighten first.
- C** Torque: 4Nm (0.4m • kgf, 2.9ft • lbf).
- D** Band holds the wires and hoses with finger clearance, and cut off the surplus until 5mm left. Band is above the pin of handlebar bracket.
- E** When assemble the lower handlebar holder, the position point is in the front.



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## CHAPTER 3 PERIODIC CHECKS AND ADJUSTMENTS

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EAS00036

## PERIODIC CHECKS AND ADJUSTMENTS

### INTRODUCTION

This chapter includes all information necessary to perform recommended checks and adjustments. If followed, these preventive maintenance procedures will ensure more reliable vehicle operation, a longer service life and reduce the need for costly overhaul work. This information applies to vehicles already in service as well as to new vehicles that are being prepared for sale. All service technicians should be familiar with this entire chapter.

### PERIODIC MAINTENANCE AND ADJUSTMENT

EAU17570

#### Periodic maintenance chart for the emission control system

NO.	ITEM	ROUTINE	INITIAL	ODOMETER READING					
			1000 km (600 mi) or 1 month	4000 km (2000 mi) or 6 months	7000 km (4000 mi) or 12 months	10000 km (6000 mi) or 18 months	13000 km (8000 mi) or 24 months	16000 km (10000 mi) or 30 months	
1	* Fuel line	<ul style="list-style-type: none"> <li>• Check fuel hoses for cracks or damage.</li> <li>• Replace if necessary.</li> </ul>		√	√	√	√	√	√
2	* Spark plug	<ul style="list-style-type: none"> <li>• Check condition.</li> <li>• Adjust gap and clean.</li> <li>• Replace at 7000 km (4000 mi) or 12 months and thereafter every 6000 km (4000 mi) or 12 months.</li> </ul>		√	Replace.	√	Replace.	√	√
3	* Valve clearance	<ul style="list-style-type: none"> <li>• Check and adjust valve clearance when engine is cold.</li> </ul>	√	√	√	√	√	√	√
4	* Crankcase breather system	<ul style="list-style-type: none"> <li>• Check breather hose for cracks or damage.</li> <li>• Replace if necessary.</li> </ul>		√	√	√	√	√	√
5	* Fuel injection	<ul style="list-style-type: none"> <li>• Check engine idle speed.</li> </ul>	√	√	√	√	√	√	√
6	* Exhaust system	<ul style="list-style-type: none"> <li>• Check for leakage.</li> <li>• Tighten if necessary.</li> <li>• Replace gasket(s) if necessary.</li> </ul>	√	√	√	√	√	√	√

\* Since these items require special tools, data and technical skills, have a Yamaha dealer perform the service.

# PERIODIC MAINTENANCE AND ADJUSTMENT



EAU32115

## Genela maintenance and lubrication chart

NO.	ITEM	ROUTINE	INITIAL	ODOMETER READING					
			1000 km (600 mi) or 1 month	4000 km (2000 mi) or 6 months	7000 km (4000 mi) or 12 months	10000 km (6000 mi) or 18 months	13000 km (8000 mi) or 24 months	16,000 km (10,000 mi) or 30 months	
1	Air filter element	• Replace.		√		√		√	
2	V-belt case air filter element	• Clean		√	√	√	√	√	
3	* Front brake	• Check operation, fluid level, and for fluid leakage. • Replace brake pads if necessary.	√	√	√	√	√	√	
4	* Rear brake	• Check operation. • Adjust cable and replace brake shoes if necessary.	√	√	√	√	√	√	
5	* Brake hose	• Check for cracks or damage. • Replace.		√	√	√	√	√	
6	* Wheels	• Check runout and for damage. • Replace if necessary.		√	√	√	√	√	
7	* Tires	• Check tread depth and for damage. • Replace if necessary. • Check air pressure. • Correct if necessary.		√	√	√	√	√	
8	* Wheel bearings	• Check bearings for smooth operation. • Replace if necessary.		√	√	√	√	√	
9	* Steering bearings	• Check bearing assemblies for looseness. • Moderately repack with lithium-soap-based grease every 13000 km (8000 mi) or 24 months.	√	√	√	√	Repack.	√	
10	* Chassis fasteners	• Check all chassis fitting and fasteners. • Correct if necessary.		√	√	√	√	√	
11	Front brake lever pivot shaft	• Apply silicone grease lightly.		√	√	√	√	√	
12	Rear brake lever pivot shaft	• Apply lithium-soap-based grease lightly.		√	√	√	√	√	
13	* Centerstand and sidestand pivots	• Check operation. • Apply lithium-soap-based grease lightly.		√	√	√	√	√	
14	* Sidestand switch	• Check operation and replace if necessary.	√	√	√	√	√	√	
15	* Front fork	• Check operation and for oil leakage. • Replace if necessary.		√	√	√	√	√	
16	* Shock absorber assemblies	• Check operation and for oil leakage. • Replace if necessary.		√	√	√	√	√	
17	Engine oil	• Change (warm engine before draining). • Check oil level and vehicle for oil leakage.	√	√	√	√	√	√	
18	* Engine oil strainer	• Clean.	√		√		√		
19	Final transmission oil	• Check vehicle for oil leakage. • Change.	√		√		√		
20	* V-belt	• Replace.		Every 18000 km (12000 mi)					
21	* Front and rear brake switches	• Check operation.	√	√	√	√	√	√	
22	* Control and meter cables	• Apply Yamaha chain and cable lube or engine oil thoroughly.	√	√	√	√	√	√	
23	* Throttle grip housing and cable	• Check operation and free play. • Adjust the throttle cable free play if necessary. • Lubricate the throttle grip housing and cable.		√	√	√	√	√	
24	* Lights, signals and switches	• Check operation. • Adjust headlight beam.	√	√	√	√	√	√	

## PERIODIC MAINTENANCE AND ADJUSTMENT



- \* Since these items require special tools, data and technical skills, have a Yamaha dealer perform the service.

### TIP

From 19000 km (12000 mi) or 36 months, repeat the maintenance intervals starting from 7000 km (4000 mi) or 12 months.

EAUT2710

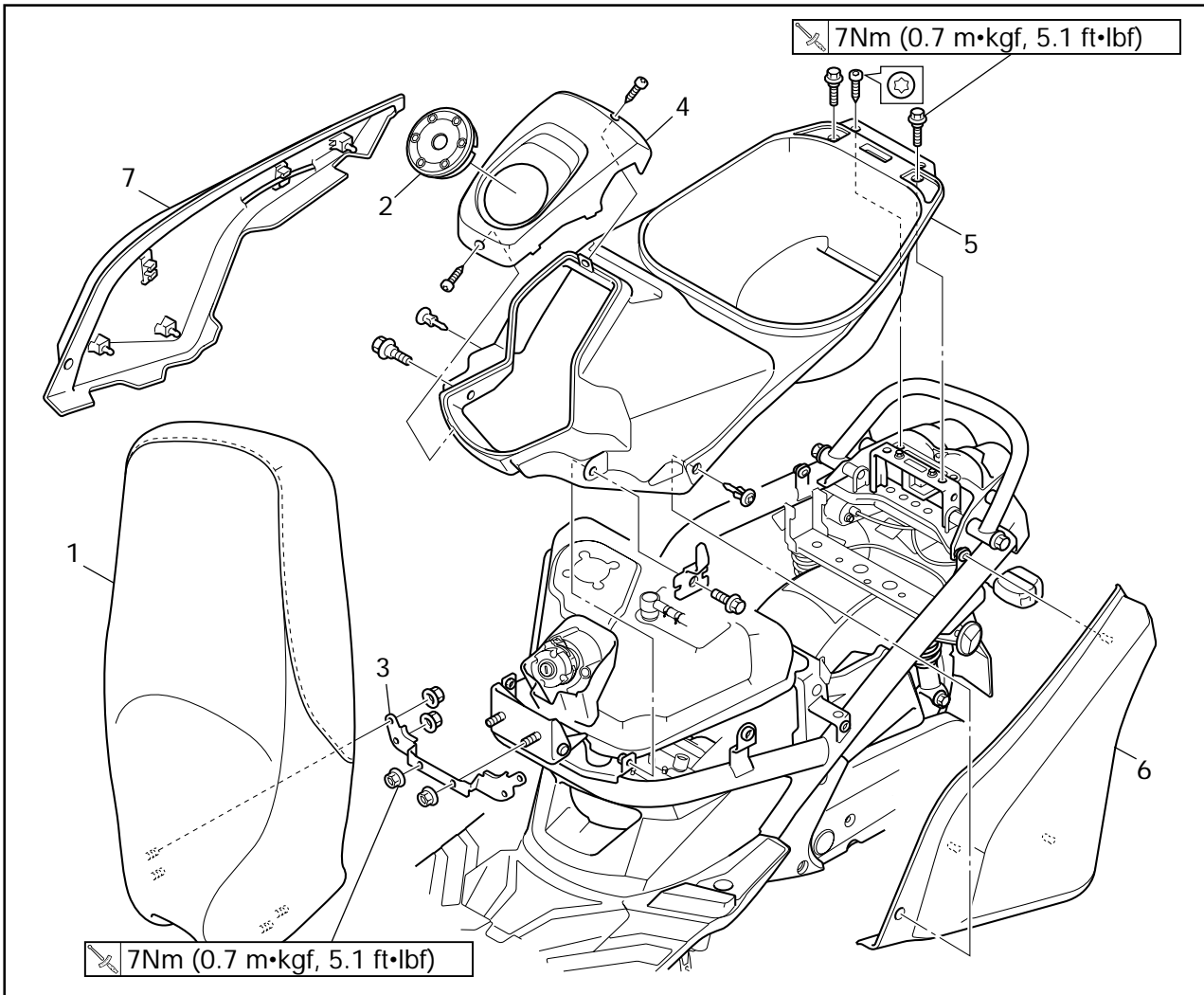
### TIP

- Air filter and V-belt filter
  - This model's air filter is equipped with a disposable oil-coated paper element, which must not be cleaned with compressed air to avoid damaging it.
  - The air filter element needs to be replaced and V-belt filter needs to be serviced more frequently when riding in unusually wet or dusty areas.
- Hydraulic brake service
  - After disassembling the brake master cylinder and caliper, always change the fluid. Regularly check the brake fluid level and fill the reservoir as required.
  - Every two years replace the internal components of the brake master cylinder and caliper, and change the brake fluid.  
Replace the brake hose every four years and if cracked or damaged.



EAS00038

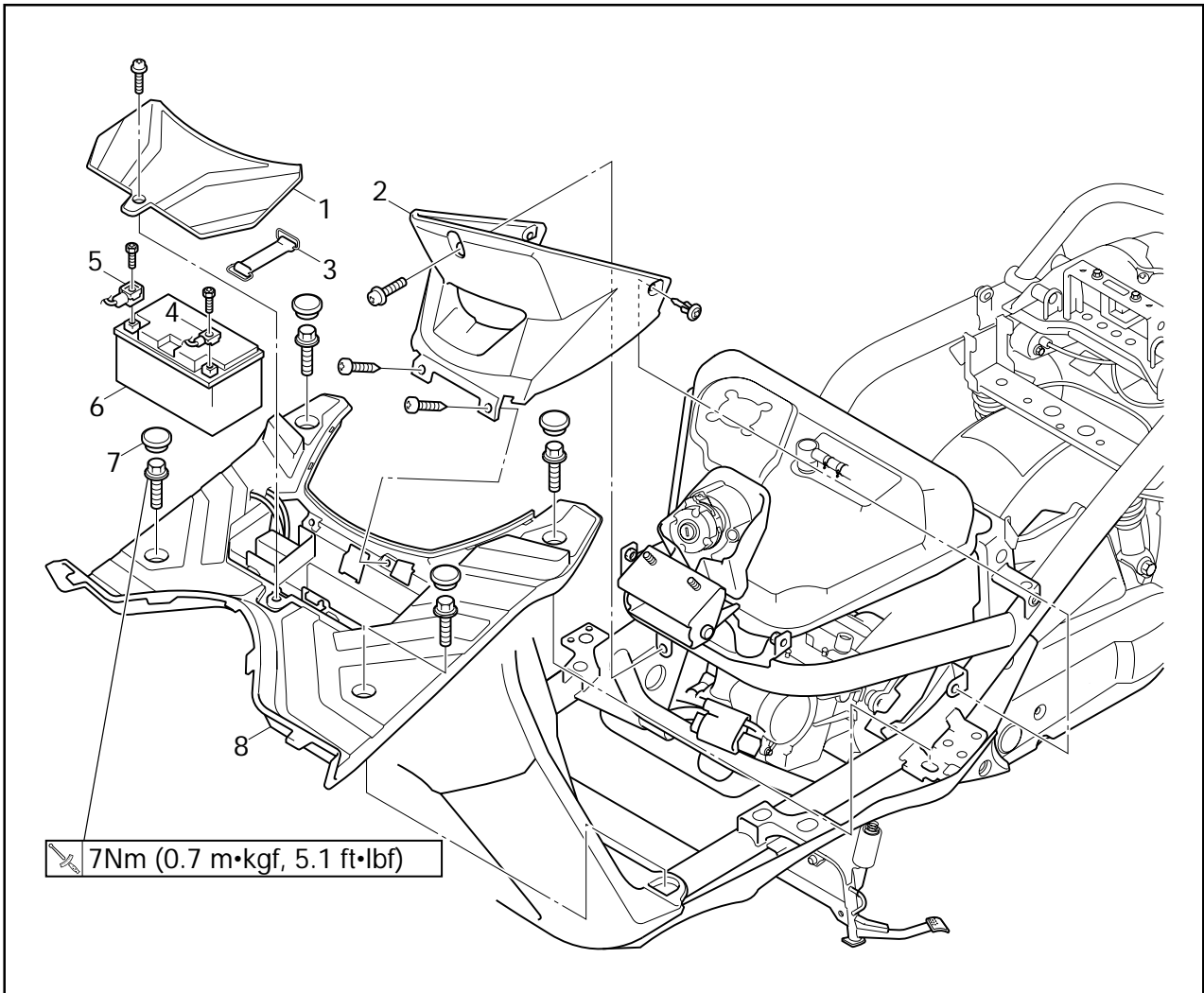
**COVER AND PANEL  
SEAT AND TRUNK**



Order	Job/Part	Q'ty	Remarks
	<b>Removing the seat and trunk</b>		Remove the parts in the order listed.
1	Seat	1	
2	Fuel tank cap cover	1	
3	Seat hinge	1	
4	Upper cover	1	
5	Trunk	1	
6	Side cover (left)	1	
7	Side cover (right)	1	
			For installation, reverse the removal procedure.

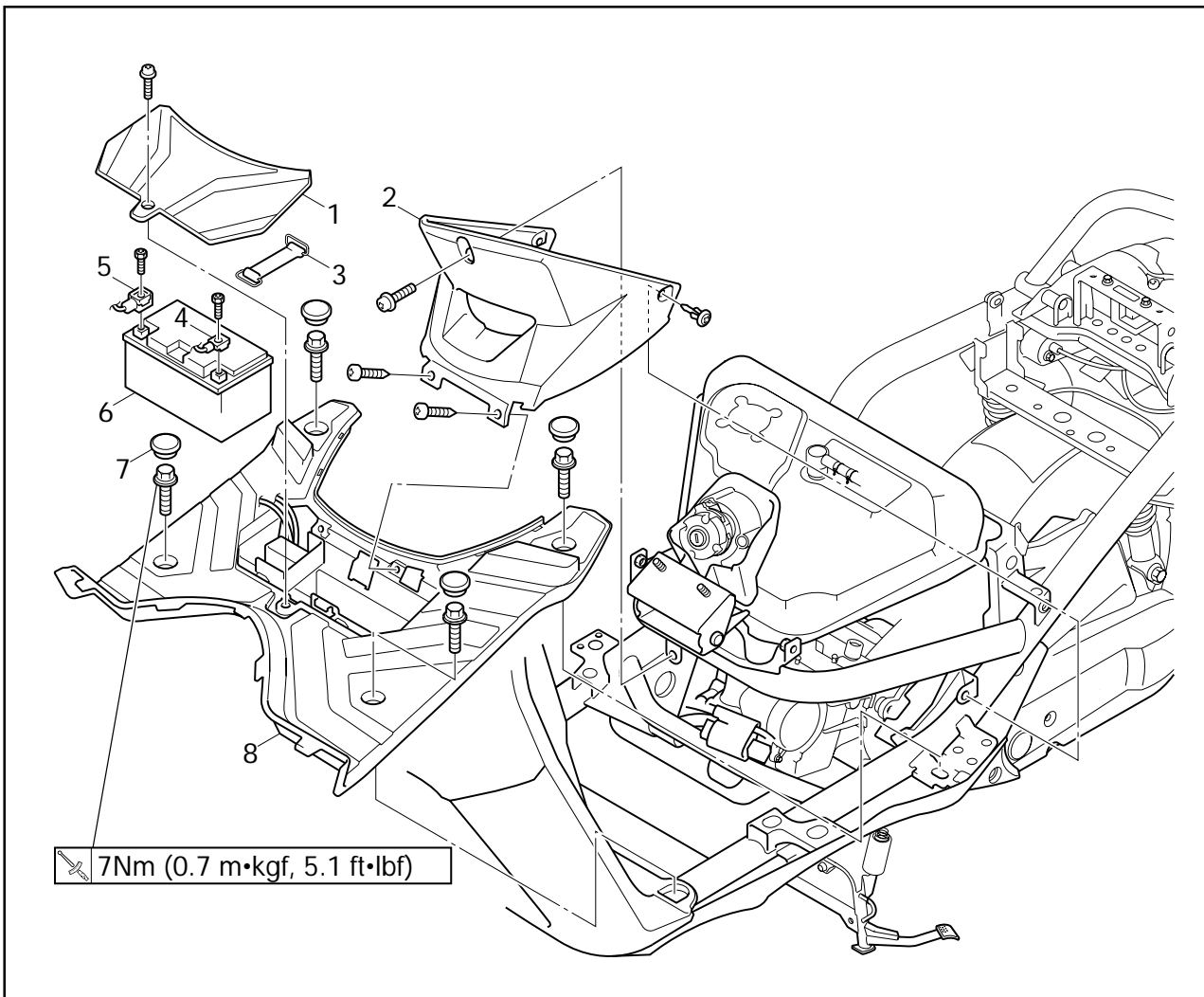


FOOTREST BOARD



7Nm (0.7 m•kgf, 5.1 ft•lbf)

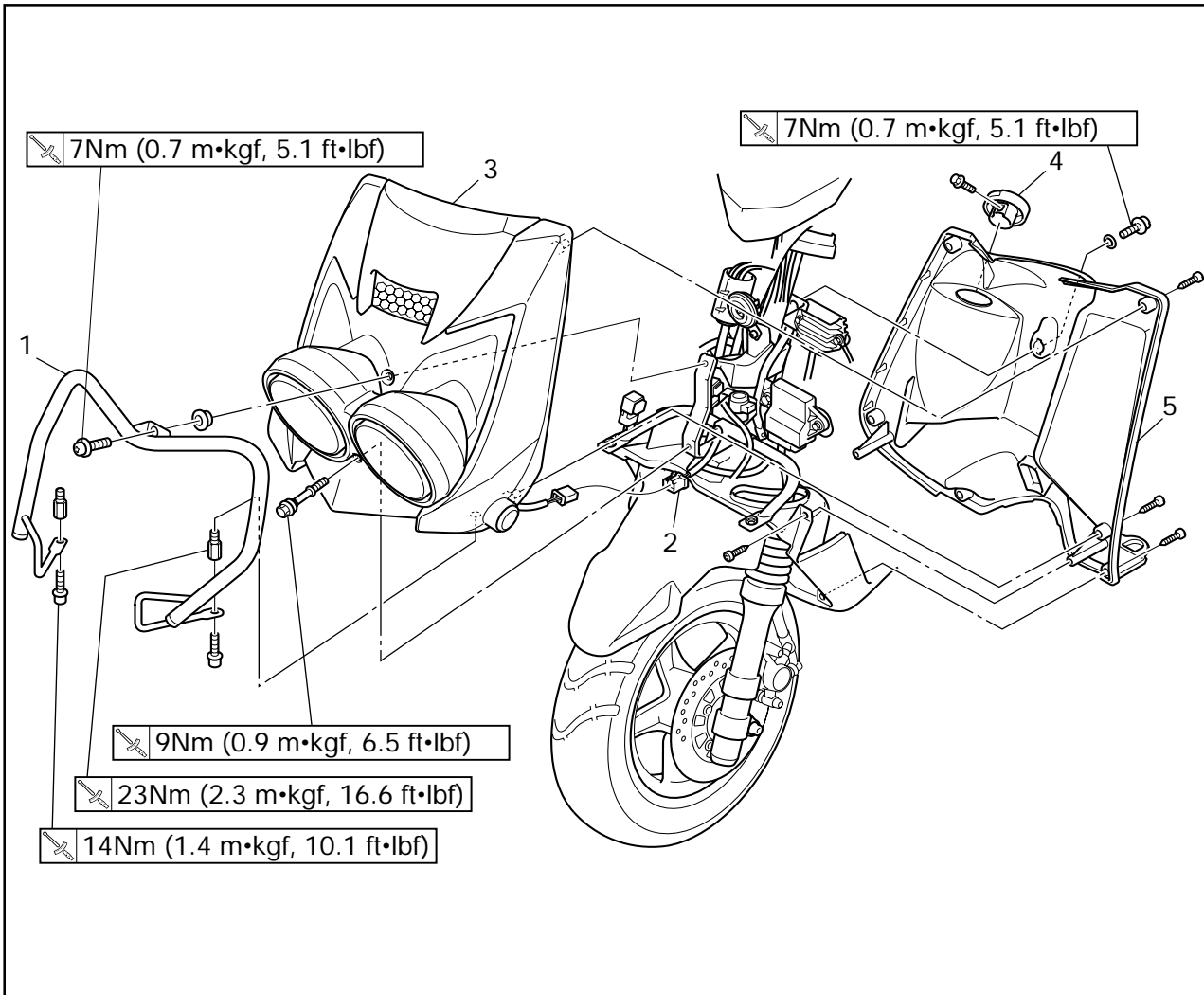
Order	Job/Part	Q'ty	Remarks
	<b>Removing the footrest board</b>		Remove the parts in the order listed.
1	Battery box cover	1	<p><b>NOTICE</b></p> <p>First, disconnect the negative battery lead, and then the positive battery lead.</p> <p>After installing the battery be sure to turn the main switch from "ON" to "OFF" three times in 3 seconds intervals to initialize the idle speed control system.</p>
2	Front cover	1	
3	Band	1	
4	Battery negative lead	1	
5	Battery positive lead	1	
6	Battery	1	
7	Cap	4	



Order	Job/Part	Q'ty	Remarks
8	Footrest board	1	<p><b>TIP</b> While installing, the fuse box should be installed to the correct position.</p> <hr/> <p>For installation, reverse the removal procedure.</p>

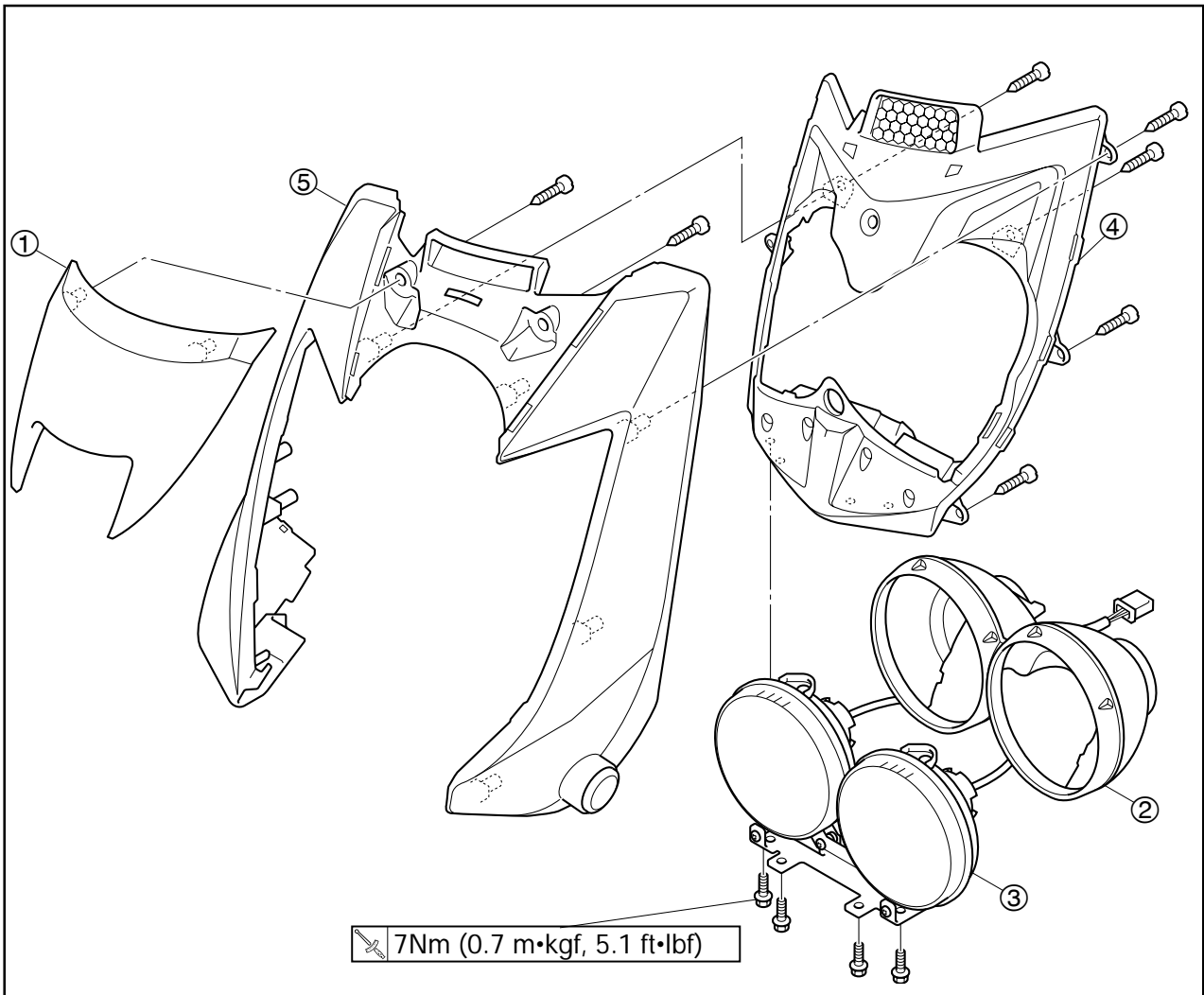


LEG SHIELD 1 ASSEMBLY AND LEG SHIELD 2



Order	Job/Part	Q'ty	Remarks
	<b>Removing the leg shield 1 assembly and leg shield 2</b>		Remove the parts in the order listed. Refer to "FOOTREST BOARD".
	Footrest board		
1	Safeguard	1	
2	Headlight coupler	1	Disconnect.
3	Leg shield 1 assembly	1	
4	Main switch cover	1	
5	Leg shield 2	1	
			For installation, reverse the removal procedure.





Order	Job/Part	Q'ty	Remarks
	<b>Disassembling the leg shield 1 assembly</b>		Remove the parts in the order listed.
①	Panel	1	
②	Headlight cover	1	
③	Headlight assembly	1	
④	Panel (leg shield 1)	1	
⑤	Leg shield 1	1	
			For assembly, reverse the disassembly procedure.

EAS00049

**ENGINE****ADJUSTING THE VALVE CLEARANCE**

The following procedure applies to all of the valves.

**TIP**

- Valve clearance adjustment should be made on a cold engine, at room temperature.
- When the valve clearance is to be measured or adjusted, the piston must be at top dead center (TDC) on the compression stroke.

## 1. Remove:

- battery box cover
- front cover

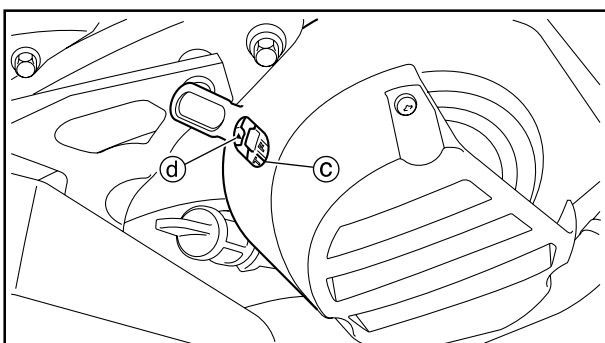
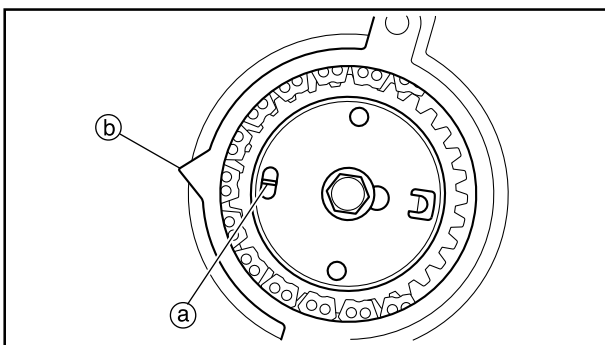
Refer to "COVER AND PANEL".

## 2. Remove:

- spark plug cap
- spark plug
- ignition coil
- valve cover (intake and exhaust)
- breather

## 3. Measure:

- valve clearance
- Out of specification → Adjust.

**Valve clearance (cold)****Intake valve**

**0.10 ~ 0.14mm (0.004 ~ 0.006in)**

**Exhaust valve**

**0.16 ~ 0.20mm (0.006 ~ 0.008in)**



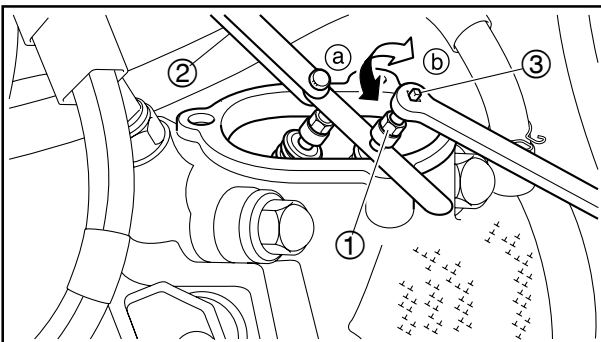
- Turn the crankshaft counterclockwise.
- When the piston is at TDC on the compression stroke, align the punch mark (a) in the camshaft sprocket with the stationary (b) on the cylinder head.

# ADJUSTING THE VALVE CLEARANCE

**CHK**  
**ADJ**



- c. Align the TDC mark ㉔ on the AC magneto rotor with the stationary pointer ㉕ on the crankcase.
- d. Measure the valve clearance with a thickness gauge.  
Out of specification → Adjust.




- 4. Adjust:
  - valve clearance




- a. Loosen the locknut ㉑.
- b. Insert a thickness gauge ㉒ between the end of the adjusting screw and the valve tip.
- c. Turn the adjusting screw ㉓ in direction ㉔ or ㉕ until the specified valve clearance is obtained.

Direction ㉔	Valve clearance is increased.
Direction ㉕	Valve clearance is decreased.

	<b>Valve adjusting tool</b> 90890-01311 (YM-08035-A)
---	---

- d. Hold the adjusting screw to prevent it from moving and tighten the locknut to specification.


	<b>Locknut</b> 7Nm (0.7m • kgf, 5.1ft • lbf)
---	---




- e. Measure the valve clearance again.
- f. If the valve clearance is still out of specification, repeat all of the valve clearance adjustment steps until the specified clearance is obtained.




- 5. Install:
  - breather

	7Nm (0.7m • kgf, 5.1ft • lbf)
---	-------------------------------


- valve cover (intake and exhaust)

	7Nm (0.7m • kgf, 5.1ft • lbf)
---	-------------------------------

- ignition coil

	7Nm (0.7m • kgf, 5.1ft • lbf)
---	-------------------------------

- spark plug

	13Nm (1.3m • kgf, 9.4ft • lbf)
---	--------------------------------

- 6. Install:
  - front cover
  - battery box coverRefer to "COVER AND PANEL".

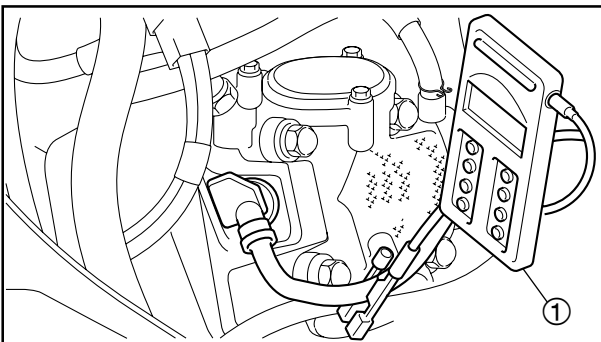
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## CHECKING THE ENGINE IDLING SPEED

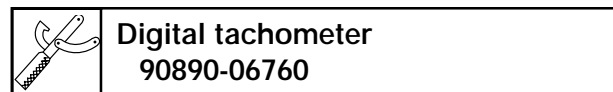
### TIP

Prior to checking the engine idling speed, the air filter element should be clean, and the engine should have adequate compression.

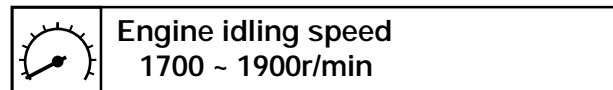
1. Start the engine and let it warm up for several minutes.
2. Remove:
  - battery box cover
  - front cover
 Refer to "COVER AND PANEL".



3. Connect:
  - digital tachometer ①  
(onto the spark plug lead of cylinder)



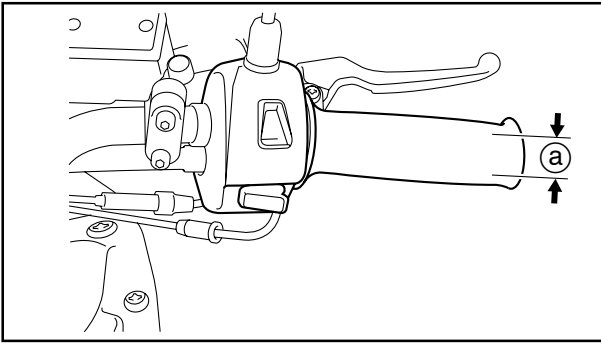
4. Check:
  - engine idling speed
 Out of specification → Replace the throttle body.



5. Install:
  - front cover
  - battery box cover
 Refer to "COVER AND PANEL".

# ADJUSTING THE THROTTLE CABLE FREE PLAY

**CHK**  
**ADJ**



EAS00056

## ADJUSTING THE THROTTLE CABLE FREE PLAY

### TIP

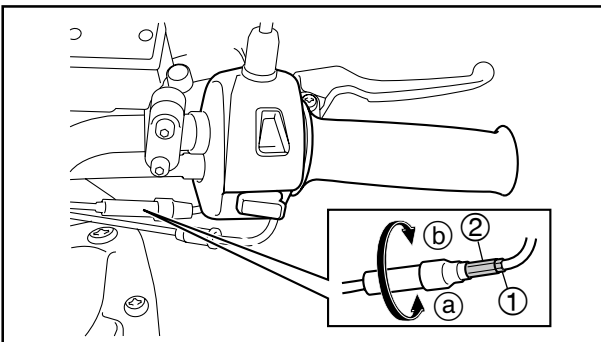
Prior to adjusting the throttle cable free play, the engine idling speed should be checked properly.

### 1. Check:

- throttle cable free play (a)  
Out of specification → Adjust.



**Throttle cable free play (at the flange of the throttle grip)**  
3 ~5mm (0.12 ~ 0.20in)



### 2. Adjust:

- throttle cable free play



- Loosen the locknut (1).
- Turn the adjusting nut (2) in direction (a) or (b) until the specified throttle cable free play is obtained.

Direction (a)	Throttle cable free play is increased.
Direction (b)	Throttle cable free play is decreased.

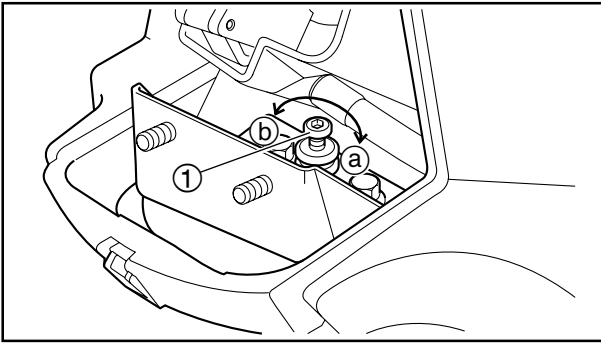
- Tighten the locknut.

### **⚠ WARNING**

After adjusting the throttle cable free play, start the engine and turn the handlebar to the right and to the left to ensure that this does not cause the engine idling speed to change.



## ADJUSTING THE SEAT SPRING FORCE



### ADJUSTING THE SEAT SPRING FORCE

#### TIP

When open the seat and seat will not fold up automatically, adjust the spring force.

1. Remove:
  - seat
  - upper cover
2. Adjust:
  - screw ①

Direction (a)	Spring force is increased.
Direction (b)	Spring force is decreased.

3. Install:
  - upper cover
  - seat



EAS00060

## CHECKING THE SPARK PLUG

1. Remove:
  - battery box cover
  - front cover
 Refer to "COVER AND PANEL".
2. Disconnect:
  - spark plug cap

**⚠ WARNING**

Remove the spark plug cap, the engine is extremely hot.

3. Remove:
  - spark plug

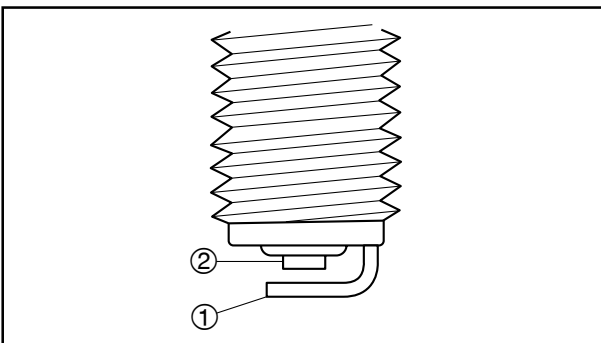
**NOTICE**

Before removing the spark plug, blow away any dirt accumulated in the spark plug well with compressed air to prevent it from falling into the cylinder.

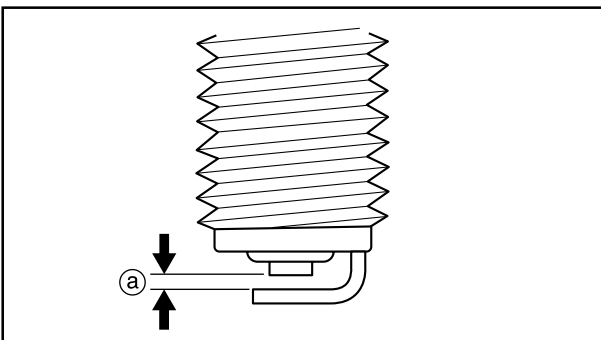
4. Check:
  - spark plug type
 Incorrect → Change.



**Spark plug type (manufacturer)**  
**U22ESR-N (DENSO)**



5. Check:
  - electrode ①
  - Damage/wear → Replace the spark plug.
  - insulator ②
  - Abnormal color → Replace the spark plug.
  - Normal color is medium-to-light tan.
6. Clean:
  - spark plug
  - (with a spark plug cleaner or wire brush)



7. Measure:
  - spark plug gap @
  - (with a wire Thickness gauge)
  - Out of specification → Regap.



**Spark plug gap**  
**0.7 ~ 0.8mm (0.028 ~ 0.031in)**




## CHECKING THE SPARK PLUG

---



8. Install:
  - spark plug

 13Nm(1.3m • kgf, 9.4ft • lbf)

**TIP** \_\_\_\_\_  
Before installing the spark plug, clean the spark plug and gasket surface.

---

9. Connect:
  - spark plug cap
10. Install:
  - front cover
  - battery box coverRefer to "COVER AND PANEL".



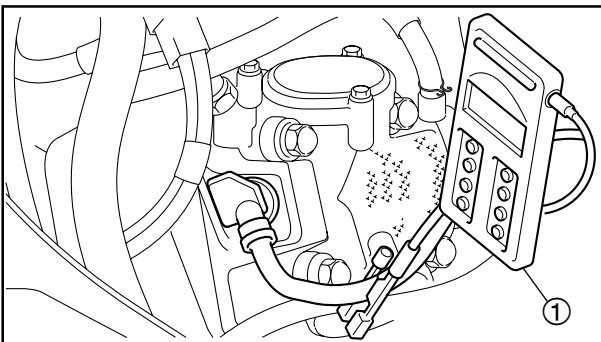
EAS00062

## CHECKING THE IGNITION TIMING

### TIP

Prior to checking the ignition timing, check the wiring connections of the entire ignition system. Make sure all connections are tight and free of corrosion.

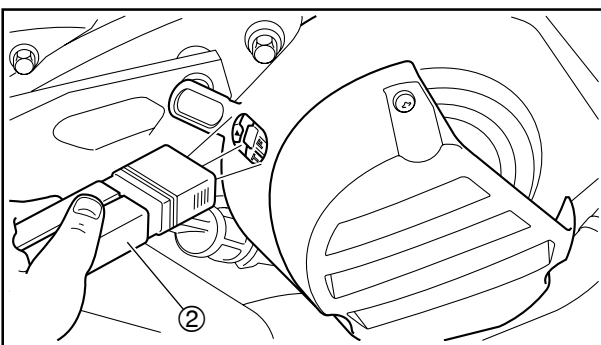
1. Remove:
  - battery box cover
  - front cover
 Refer to "COVER AND PANEL".



2. Attach:
  - digital tachometer ①  
(onto the spark plug lead of cylinder)
  - timing light ②



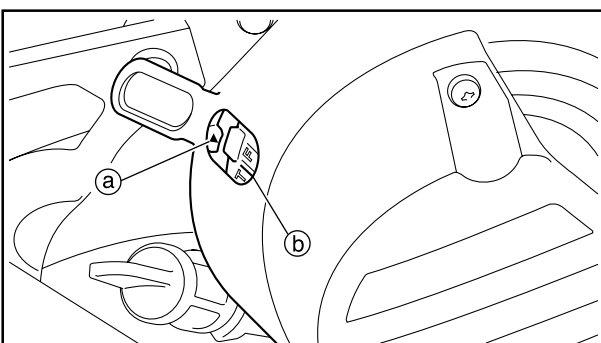
**Timing light**  
**90890-03141 (YU-03141)**  
**Digital tachometer**  
**90890-06760**



3. Check:
  - ignition timing



- a. Start the engine, warm it up for several minutes, and then let it run at the specified engine idling speed.



## CHECKING THE IGNITION TIMING

CHK  
ADJ



Engine idling speed  
1700 ~ 1900r/min

- b. Check that the mark (a) on the AC magneto rotor is within the firing range (b) on the crankcase.  
Incorrect firing range → Check the ignition system.

### TIP

The ignition timing is not adjustable.



4. Remove:
  - timing light
  - digital tachometer
5. Install:
  - front cover
  - battery box coverRefer to "COVER AND PANEL".

EAS00067

## MEASURING THE COMPRESSION PRESSURE

### TIP

Insufficient compression pressure will result in a loss of performance.

1. Measure:
  - valve clearance  
Out of specification → Adjust  
Refer to "ADJUSTING THE VALVE CLEARANCE".
2. Start the engine, warm it up for several minutes, and then turn it off.
3. Remove:
  - battery box cover
  - front cover  
Refer to "COVER AND PANEL".
4. Disconnect:
  - spark plug cap

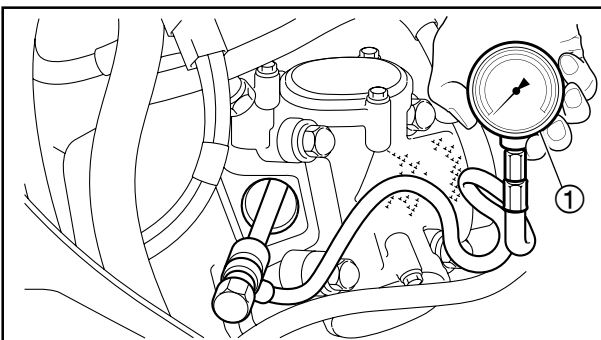
### WARNING

Remove the spark plug cap, the engine is extremely hot.


5. Remove:
  - spark plug

### NOTICE

Before removing the spark plug, use compressed air to blow away any dirt accumulated in the spark plug well to prevent it from falling into the cylinder.



6. Install:
  - compression gauge ①

	<b>Compression gauge</b> 90890-03081 (YU-33223)
---	--



7. Measure:

- compression pressure

Out of specification → Refer to steps (c) and (d).



**Compression pressure (at sea level)**

**Minimum**

1175kPa(11.8kgf/cm<sup>2</sup>, 167psi) at 1800r/min

**Standard**

1350kPa(13.5kgf/cm<sup>2</sup>, 192psi) at 1800r/min

**Maximum**

1512kPa(15.1kgf/cm<sup>2</sup>, 215psi) at 1800r/min



- Set the main switch to "ON".
- With the throttle wide open, crank the engine until the reading on the compression gauge stabilizes.

**! WARNING**

**To prevent sparking, ground the spark plug lead before cranking the engine.**

- If the compression pressure is above the maximum specification, check the cylinder head, valve surfaces, and piston crown for carbon deposits.  
Carbon deposits → Eliminate.
- If the compression pressure is below the minimum specification, pour a teaspoonful engine oil into the spark plug bore and measure again.  
Refer to the following table.

Compression pressure (with oil applied into the cylinder)	
Reading	Diagnosis
Higher than without oil	Piston ring(s) wear or damage → Repair.
Same as without oil	Piston, valves, cylinder head gasket or piston possibly defective → Repair.




## MEASURING THE COMPRESSION PRESSURE

---



8. Remove:
  - compression gauge
9. Install:
  - spark plug

 13Nm(1.3m • kgf, 9.4ft • lbf)

10. Connect:
  - spark plug cap
11. Install:
  - front cover
  - battery box coverRefer to "COVER AND PANEL".

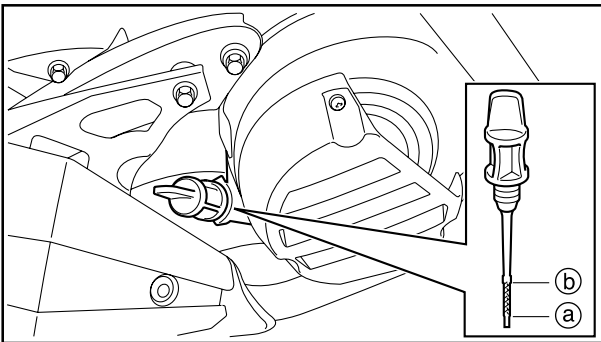
EAS00069

## CHECKING THE ENGINE OIL LEVEL

1. Stand the scooter on a level surface.

### TIP

- Place the scooter on a suitable stand.
- Make sure the scooter is upright.



2. Start the engine, warm it up for several minutes, and then turn it off.

3. Check:

- engine oil level

The engine oil level should be between the minimum level mark (a) and maximum level mark (b).

Below the minimum level mark → Add the recommended engine oil to the proper level.



**Recommended engine oil type**

**SAE20W-40 or SAE10W-30**

**Recommended engine oil grade**

**API service SG type or higher**

**JASO standard MA**

### NOTICE

Do not allow foreign materials to enter the crankcase.

### TIP

Before checking the engine oil level, wait a few minutes until the oil has settled.

4. Start the engine, warm it up for several minutes, and then turn it off.
5. Check the engine oil level again.

### TIP

Before checking the engine oil level, wait a few minutes until the oil has settled.

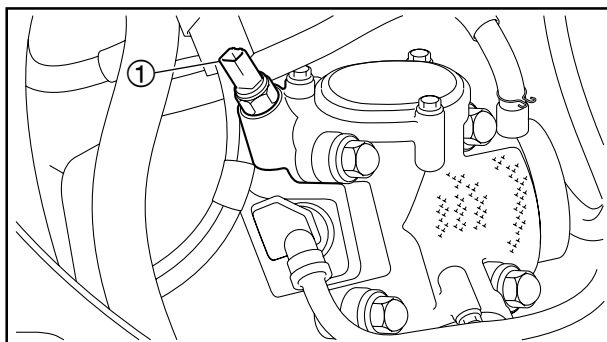






**Quantity**  
**Total amount**  
 0.85 ~ 0.95L (0.9 ~ 1.0 US qt, 0.75 ~ 0.84 Imp. qt)  
**Periodic oil change**  
 0.80 ~ 0.90L (0.87 ~ 0.98 US qt, 0.74 ~ 0.83 Imp. qt)

- 8. Install:
  - engine oil filler cap
- 9. Start the engine, warm it up for several minutes, and then turn it off.
- 10. Check:
  - engine  
(for engine oil leaks)
- 11. Check:
  - engine oil level  
Refer to "CHECKING THE ENGINE OIL LEVEL".



- 12. Check:
  - engine oil pressure



- a. Disconnect the engine temperature sensor coupler.
- b. Slightly loosen the engine temperature sensor ①.
- c. Start the engine and keep it idling until engine oil starts to seep from the engine temperature sensor. If no engine oil comes out after one minute, turn the engine off so that it will not seize.
- d. Check the engine oil passages, the oil filter cartridge and the oil pump for damage or leakage. Refer to "OIL PUMP" in chapter 5.
- e. Start the engine after solving the problem(s) and check the engine oil pressure again.
- f. Tighten the engine temperature sensor to specification.



**Engine temperature sensor**  
 18Nm (1.8m • kgf, 13.0ft • lbf)

- g. Connect the engine temperature sensor coupler.



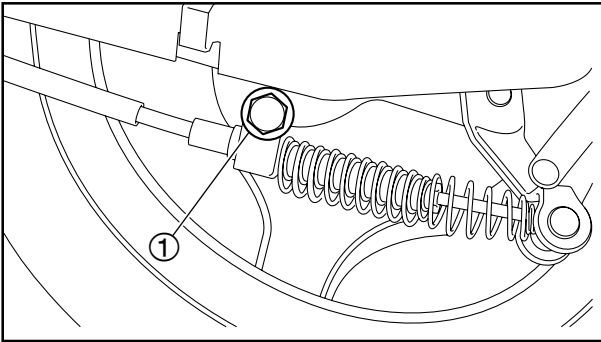


## CHANGING THE TRANSMISSION OIL

1. Stand the scooter on a level surface.

### TIP

- Stand the scooter on a suitable stand.
- Make sure that the scooter is upright.



2. Start the engine, warm it up for several minutes, and then turn it off.
3. Place a container under the transmission oil drain bolt.
4. Remove:
  - transmission oil fill cap
  - transmission oil drain bolt ①
5. Drain:
  - transmission oil (completely from the transmission case)
6. Install:
  - transmission oil drain bolt

23Nm(2.3m • kgf, 16.6ft • lbf)

7. Fill:
  - transmission case (with the specified amount of the recommended transmission oil)



### Recommended oil

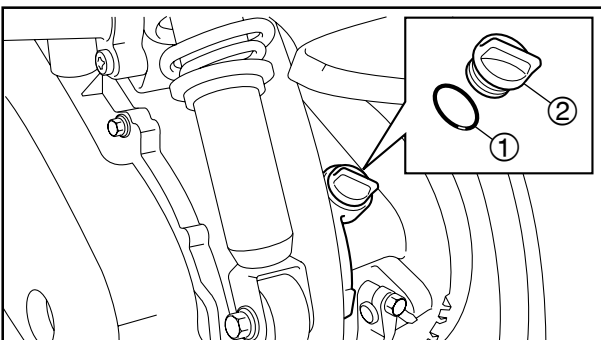
SAE10W-30 type SE motor oil

### Total amount

0.14 ~ 0.16L (0.15 ~ 0.17 US qt, 0.12 ~ 0.14 Imp. qt)

### Periodic oil change

0.12 ~ 0.14L (0.13 ~ 0.15 US qt, 0.11 ~ 0.12 Imp. qt)



8. Install:
  - O-ring ①
  - transmission oil fill cap ②
9. Start the engine for several minutes to warm it up and check for the oil leakage.
10. Check:
  - transmission case (for transmission oil leaks)

EAS00077

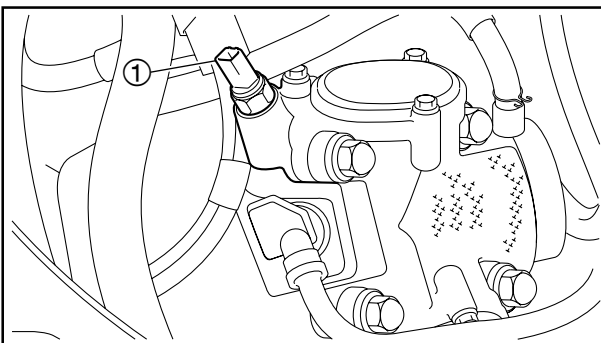
## MEASURING THE ENGINE OIL PRESSURE

1. Check:
  - engine oil level  
Below the minimum level mark → Add the recommended engine oil to the proper level.  
Refer to "CHECKING THE ENGINE OIL LEVEL".
2. Start the engine, warm it up for several minutes, and then turn it off.

### NOTICE

When the engine is cold, the engine oil will have a higher viscosity, causing the engine oil pressure to increase. Therefore, be sure to measure the engine oil pressure after warming up the engine.

3. Remove:
  - battery box cover
  - front cover  
Refer to "COVER AND PANEL".
4. Disconnect:
  - engine temperature sensor coupler



5. Loosen:
  - engine temperature sensor ①

### ⚠ WARNING

The engine, muffler and engine oil are extremely hot.

6. Check:
  - engine oil pressure




- a. Start the engine and keep it idling until engine oil starts to seep from the engine temperature sensor. If no engine oil comes out after one minute, turn the engine off so that it will not seize.
- b. Check the engine oil passages, the oil filter and oil pump for damage or leakage. Refer to "OIL PUMP" in chapter 5.



- c. Start the engine after solving the problem(s) and check the engine oil pressure again.



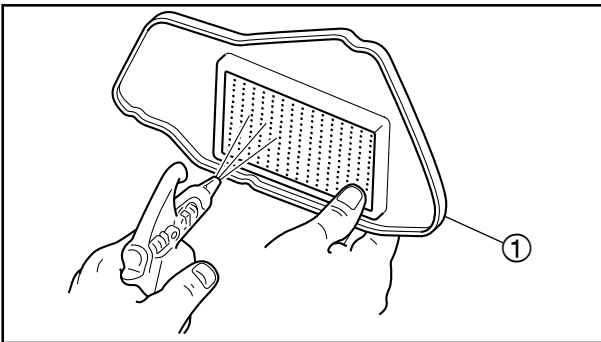
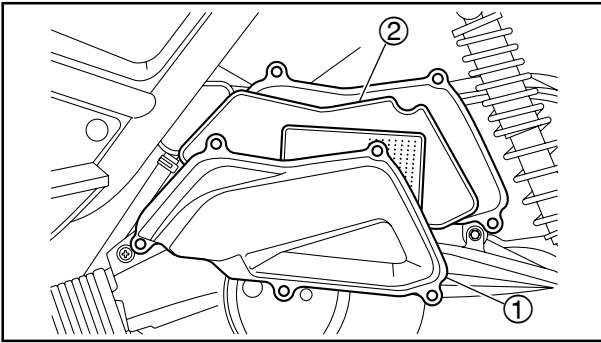
- 7. Tighten:
  - engine temperature sensor

 18Nm(1.8m • kgf, 13.0ft • lbf)

- 8. Connect:
  - engine temperature sensor coupler
- 9. Install:
  - front cover
  - battery box coverRefer to "COVER AND PANEL".

## CLEANING THE AIR FILTER ELEMENT

CHK  
ADJ



EAS00086

### CLEANING THE AIR FILTER ELEMENT

1. Remove:
    - air filter case cover ①
    - air filter element ②
  2. Clean:
    - air filter element ①Apply compressed air to the outer surface of the air filter element.
  3. Check:
    - air filter elementDamage → Replace.
- TIP**
- Replace the air filter element every 6000km (3500mi).
  - The air filter needs more frequent service if you are riding in unusually wet or dusty areas.
4. Install:
    - air filter element
    - air filter case cover

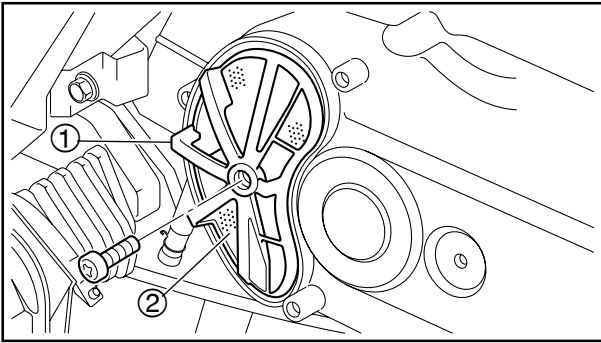
### **NOTICE**

Never operate the engine without the air filter element installed. Unfiltered air will cause rapid wear of engine parts and may damage the engine. Operating the engine without the air filter element will also affect the carburetor tuning, leading to poor engine performance and possible overheating.

### **TIP**

When installing the air filter element into the air filter case cover, make sure their sealing surfaces are aligned to prevent any air leaks.

# CLEANING THE V-BELT CASE AIR FILTER ELEMENT



EAS00090

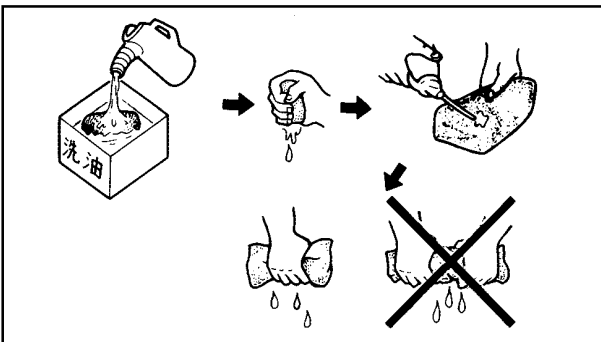
## CLEANING THE V-BELT CASE AIR FILTER ELEMENT

1. Remove:
  - V-belt case cover
  - V-belt case air filter guide ①
  - V-belt case air filter element ②
2. Clean:
  - V-belt case air filter element (with solvent)

### TIP

After cleaning, carefully pat the V-belt case air filter element on a clean cloth to remove the excess solvent.

3. Check:
  - V-belt case air filter element  
Damage → Replace.



4. Apply the recommended oil to the entire surface of the V-belt case air filter element and then carefully pat the V-belt case air filter element on a clean cloth to remove the excess oil. The V-belt case air filter element should be wet but not dripping.



**Recommended oil**  
**Engine oil**

5. Install:
  - V-belt case air filter element
  - V-belt case air filter guide



7Nm (0.7m • kgf, 5.1ft • lbf)

- V-belt case cover



7Nm (0.7m • kgf, 5.1ft • lbf)

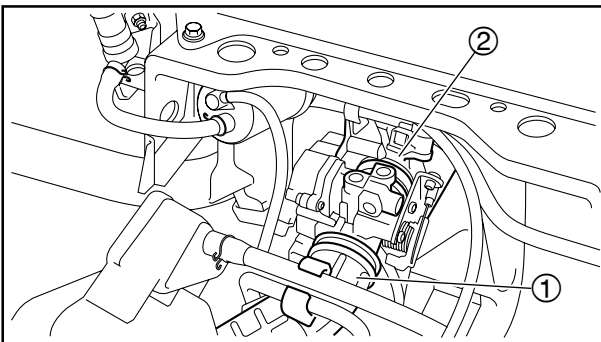
## CHECKING THE THROTTLE BODY JOINT AND INTAKE MANIFOLD/CHECKING THE FUEL HOSE



EAS00094

### CHECKING THE THROTTLE BODY JOINT AND INTAKE MANIFOLD

1. Remove:
  - seat
  - trunk
  - battery box cover
  - front coverRefer to "COVER AND PANEL".
2. Remove:
  - fuel tankRefer to "REMOVING THE FUEL TANK" in chapter 6.



3. Check:
  - throttle body joint ①
  - intake manifold ②Cracks/damage → Replace.  
Refer to "CYLINDER HEAD" in chapter 5.
4. Install:
  - fuel tankRefer to "INSTALLING THE FUEL TANK AND FUEL HOSE" in chapter 6.
5. Install:
  - front cover
  - battery box cover
  - trunk
  - seatRefer to "COVER AND PANEL".

EAS00096

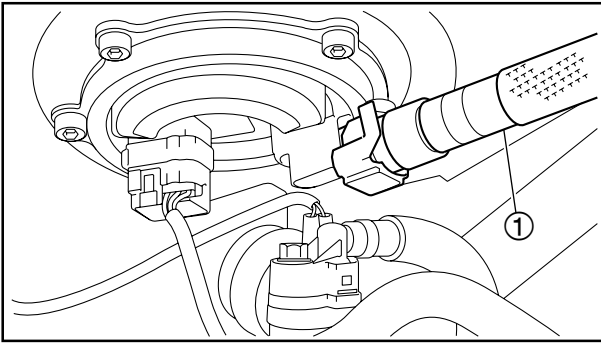
### CHECKING THE FUEL HOSE

The following procedure applies to all of the fuel and impulse hoses.

1. Remove:
  - seat
  - trunk
  - battery box cover
  - front coverRefer to "COVER AND PANEL".

## CHECKING THE FUEL HOSE/CHECKING THE BREATHER HOSES

CHK  
ADJ

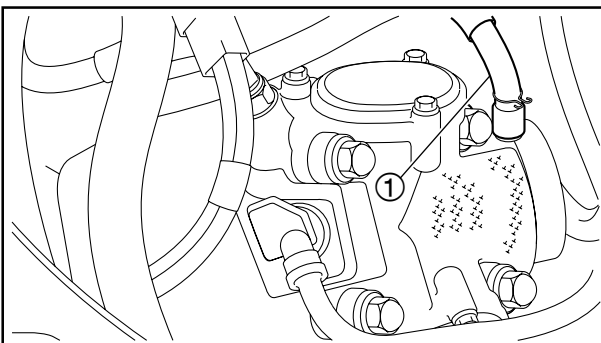


2. Check:
  - fuel hose ①  
Cracks/damage → Replace.  
Loose connection → Connect properly.
3. Install:
  - front cover
  - battery box cover
  - trunk
  - seatRefer to "COVER AND PANEL".

EAS00098

### CHECKING THE BREATHER HOSES

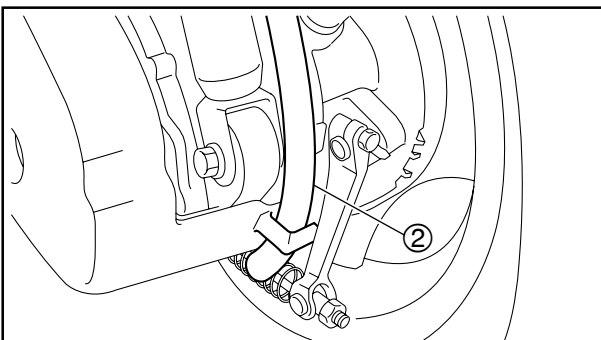
1. Remove:
  - seat
  - trunk
  - battery box cover
  - front coverRefer to "COVER AND PANEL".



2. Check:
  - crankcase breather hose ①
  - transmission case breather hose ②Cracks/damage → Replace.  
Loose connection → Connect properly.

#### **NOTICE**

Make sure the breather hoses are routed correctly.



3. Install:
  - front cover
  - battery box cover
  - trunk
  - seatRefer to "COVER AND PANEL".





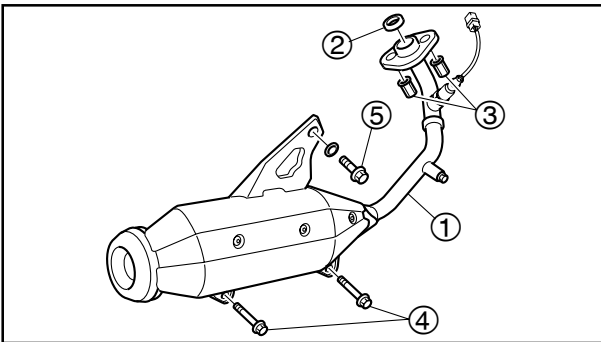
EAS00099

## CHECKING THE EXHAUST SYSTEM

The following procedure applies to all of the muffler and gasket.

1. Remove:
  - O<sub>2</sub> sensor coupler
  - muffler

Refer to "REAR SHOCK ABSORBER ASSEMBLIES AND SWINGARM" in chapter 4.



2. Check:
  - muffler ①  
Crack/damage → Replace.
  - gasket ②  
Exhaust gas leak → Replace.
3. Check:
  - tightening torque



### Exhaust pipe nut ③

13Nm (1.3m • kgf, 9.4ft • lbf)

### Muffler and swingarm bolt ④

31Nm (3.1m • kgf, 22.4ft • lbf)

### Muffler and swingarm bolt ⑤

53Nm (5.3m • kgf, 38.3ft • lbf)

4. Install:
  - muffler
  - O<sub>2</sub> sensor coupler

Refer to "REAR SHOCK ABSORBER ASSEMBLIES AND SWINGARM" in chapter 4.

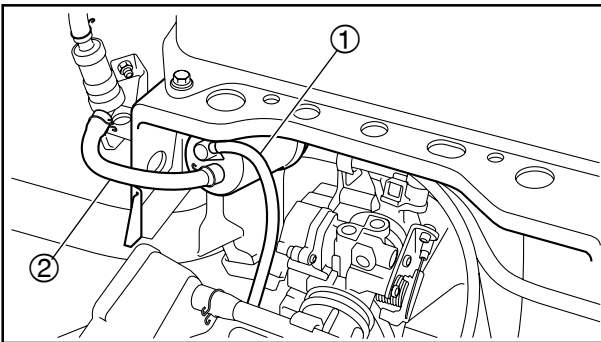
## CHECKING THE CANISTER AND ROLL OVER VALVE

The following procedure applies to all of the canister and roll over valve.

1. Remove:

- seat
- trunk

Refer to "COVER AND PANEL".

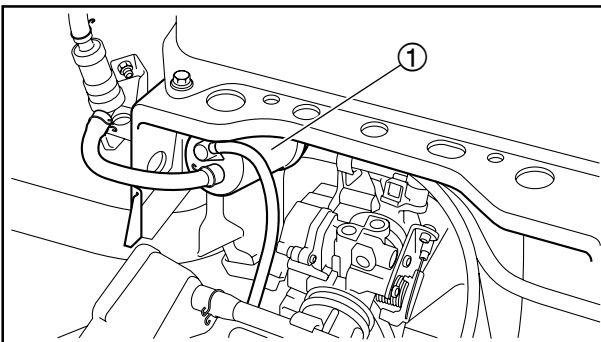


2. Check:

- hose (to throttle body) ①
- hose (to roll over valve) ②

Cracks/damage → Replace.

Loose connection → Connect properly.



3. Remove:

- canister ①

4. Check:

- canister

Cracks/damage → Replace.

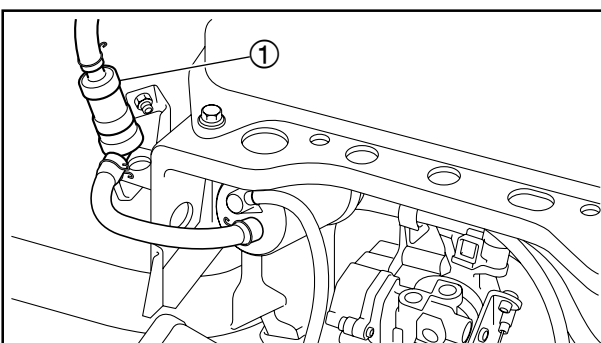
Obstruction → Blow out with compressed air.

5. Install:

- canister

**TIP**

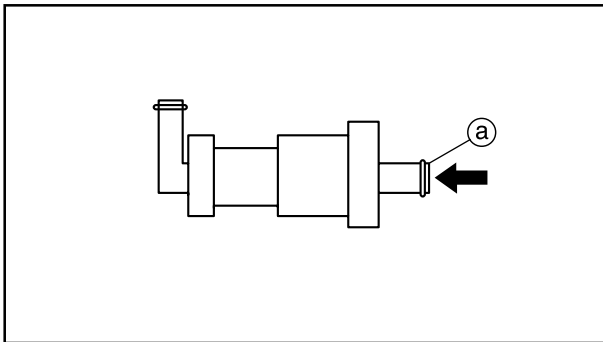
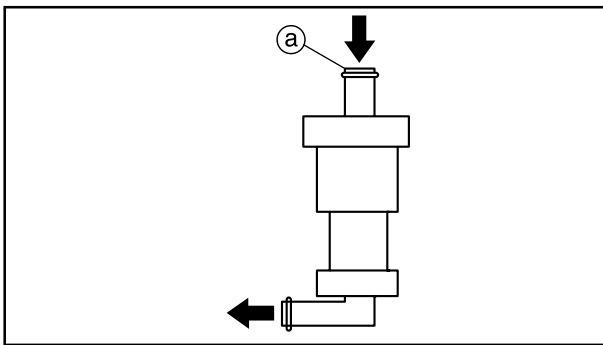
While installing, make sure the canister is routed correctly.



6. Remove:

- roll over valve ①

# CHECKING THE CANISTER AND ROLL OVER VALVE



- 7. Check:
  - roll over valve



- a. Remove the roll over valve.
- b. Put roll over valve with the vertical angle.
- c. Connect the hose to direction ① and blow air in the hose.

Unobstructed → Normal.
Obstruction → Replace.

- d. Put roll over valve with the horizontal angle.
- e. Connect the hose to direction ① and blow air in the hose.

Unobstructed → Replace.
Obstruction → Normal.



- 8. Install:
  - roll over valve

**TIP** \_\_\_\_\_  
 Roll over valve should be installed on the frame with the vertical angle. If roll over valve to slope or the horizontal (more than about 45 degrees) installation, will make the scooter unable to start.

- 9. Install:
  - trunk
  - seat
 Refer to “COVER AND PANEL”.



EAS00108

## CHASSIS

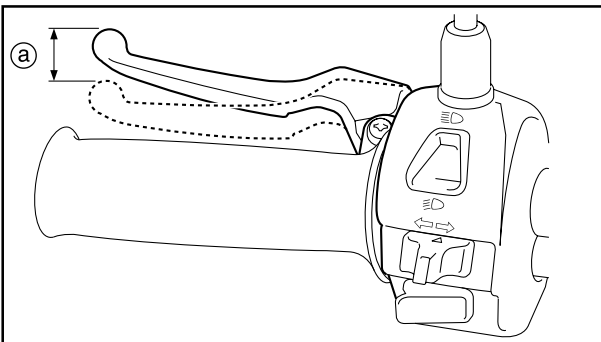
### CHECKING THE FRONT BRAKE

#### TIP

The brake lever free play is not adjustable.

#### ⚠ WARNING

A soft or spongy feeling in the brake lever can indicate the presence of air in the brake system. Before the vehicle is operated, the air must be removed by bleeding the brake system. Air in the brake system will considerably reduce braking performance and could result in loss of control and possibly an accident. Therefore, check and, if necessary, bleed the brake system.



EAS00114

### ADJUSTING THE REAR BRAKE

#### 1. Check:

- brake lever free play (a)  
Out of specification → Adjust.



**Brake lever free play**  
10 ~ 20mm (0.39 ~ 0.79in)

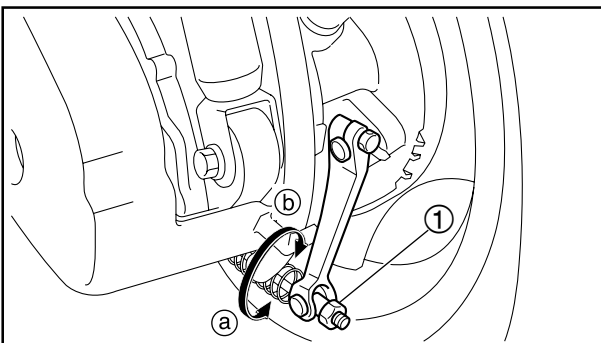
#### 2. Adjust:

- brake lever free play



- a. Turn the adjusting nut (1) in direction (a) or (b) until the specified brake lever free play is obtained.

Direction (a)	Brake lever free play is increased.
Direction (b)	Brake lever free play is decreased.



#### NOTICE

After adjusting the brake lever free play, make sure there is no brake drag.



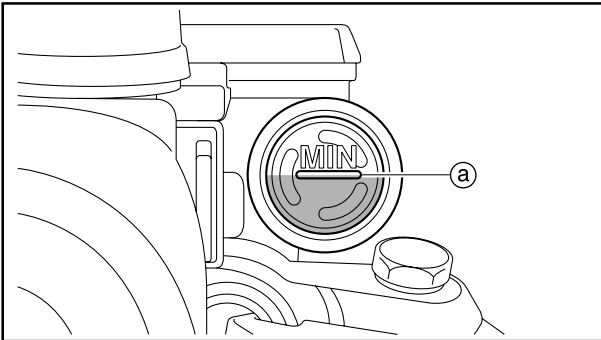
EAS00116

## CHECKING THE BRAKE FLUID LEVEL

1. Stand the scooter on a level surface.

### TIP

- Place the scooter on a suitable stand.
- Make sure the scooter is upright.



2. Check:

- brake fluid level

Below the minimum level mark (a) → Add the recommended brake fluid to the proper level.



Recommended brake fluid  
DOT 4

### ⚠ WARNING

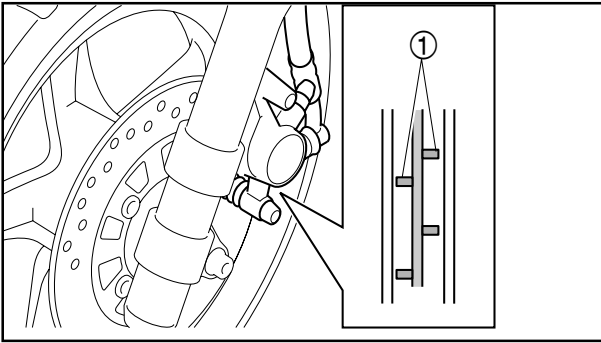
- Use only the designated brake fluid. Other brake fluids may cause the rubber seals to deteriorate, causing leakage and poor brake performance.
- Refill with the same type of brake fluid that is already in the system. Mixing brake fluids may result in a harmful chemical reaction, leading to poor brake performance.
- When refilling, be careful that water does not enter the brake fluid reservoir. Water will significantly lower the boiling point of the brake fluid and could cause vapor lock.

### NOTICE

Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt brake fluid immediately.

### TIP

In order to ensure a correct reading of the brake fluid level, make sure the top of the brake fluid reservoir is horizontal.

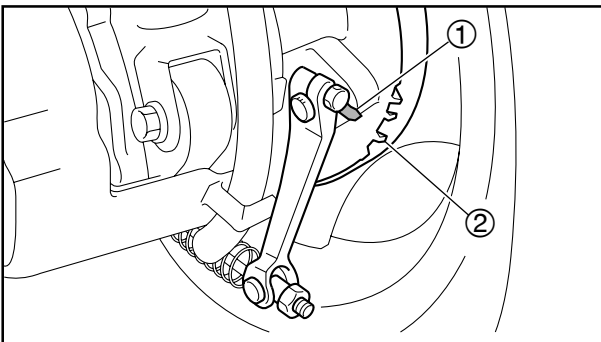


EAS00117

### CHECKING THE FRONT BRAKE PADS

The following procedure applies to all of the brake pads.

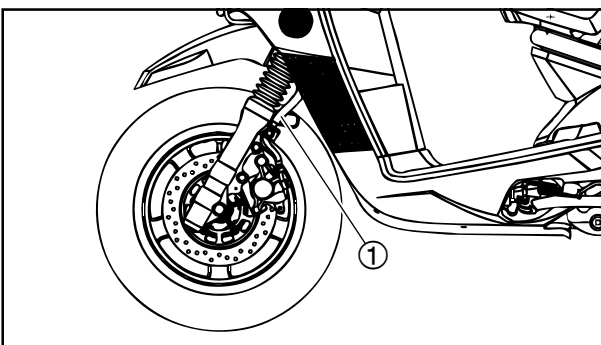
1. Operate the brake.
2. Check:
  - front brake pad  
Wear indicators ① almost touch the brake disc → Replace the brake pads as a set.  
Refer to "REPLACING THE FRONT BRAKE PADS" in chapter 4.



EAS00126

### CHECKING THE REAR BRAKE SHOES

1. Operate the brake.
2. Check:
  - wear indicator ①  
Reaches the wear limit line ② → Replace the brake shoes as a set.  
Refer to "REAR WHEEL AND REAR BRAKE" in chapter 4.



EAS00130

### CHECKING THE FRONT BRAKE HOSE

1. Check:
  - brake hose ①  
Cracks/damage/wear → Replace.
2. Check:
  - brake hose holder  
Loose connection → Tighten the holder bolt.
3. Hold the scooter upright and apply the front brake several times.
4. Check:
  - brake hose  
Brake fluid leakage → Replace the damaged hose.  
Refer to "FRONT BRAKE" in chapter 4.

EAS00133

## BLEEDING THE HYDRAULIC BRAKE SYSTEM

### **WARNING**

Bleed the hydraulic brake system whenever:

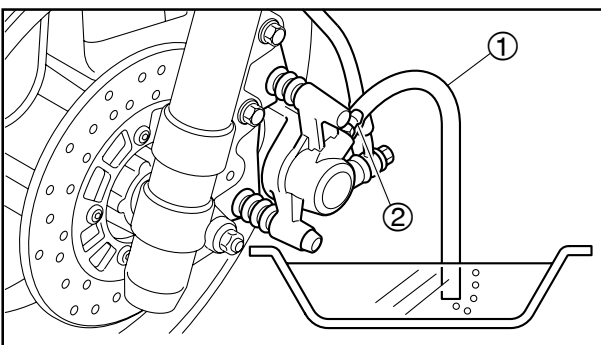
- the system is disassembled.
- a brake hose is loosened, disconnected or replaced.
- the brake fluid level is very low.
- brake operation is faulty.

1. Remove:

- brake master cylinder reservoir cap

### **TIP**

- Be careful not to spill any brake fluid or allow the brake master cylinder reservoir to overflow.
- When bleeding the hydraulic brake system, make sure there is always enough brake fluid before applying the brake. Ignoring this precaution could allow air to enter the hydraulic brake system, considerably lengthening the bleeding procedure.
- If bleeding is difficult, it may be necessary to let the brake fluid settle for a few hours. Repeat the bleeding procedure when the tiny bubbles in the hose have disappeared.



2. Bleed:

- hydraulic brake system



- a. Fill the brake fluid reservoir to the proper level with the recommended brake fluid.
- b. Install the brake master cylinder reservoir diaphragm.
- c. Connect a clear plastic hose ① tightly to the bleed screw ②.
- d. Place the other end of the hose into a container.
- e. Slowly apply the brake lever several times.
- f. Fully pull the brake lever without releasing it.
- g. Loosen the bleed screw.



**TIP**

Loosening the bleed screw will release the pressure and cause the brake lever to contact the throttle grip.

- h. Tighten the bleed screw and then release the brake lever.
- i. Repeat steps (e) to (h) until all of the air bubbles have disappeared from the brake fluid in the plastic hose.
- j. Tighten the bleed screw to specification.



<b>Bleed screw</b> <b>6Nm (0.6m • kgf, 4.3ft • lbf)</b>
--

- k. Fill the brake fluid reservoir to the proper level with the recommended brake fluid. Refer to "CHECKING THE BRAKE FLUID LEVEL".

**⚠ WARNING**

After bleeding the hydraulic brake system, check the brake operation.



- 3. Install:
  - brake master cylinder reservoir cap

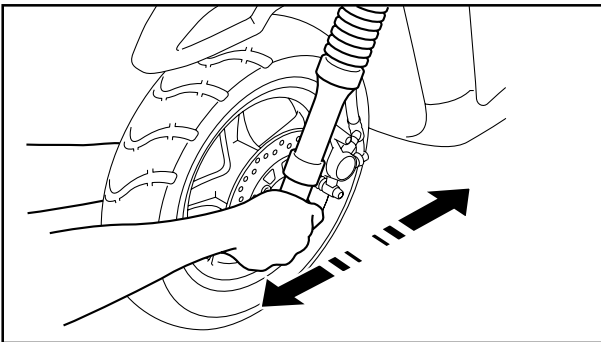
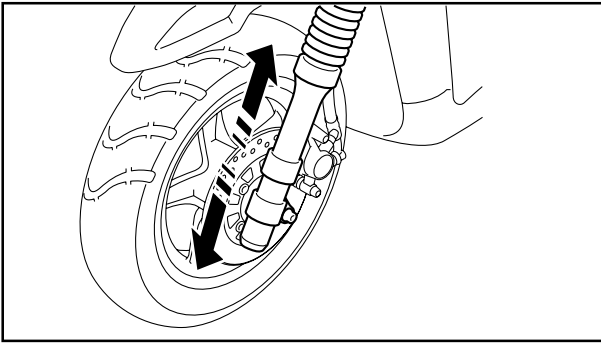


<b>1.6Nm (0.16m • kgf, 1.5ft • lbf)</b>
---



# CHECKING AND ADJUSTING THE STEERING HEAD

CHK  
ADJ



EAS00148

## CHECKING AND ADJUSTING THE STEERING HEAD

1. Stand the scooter on a level surface.

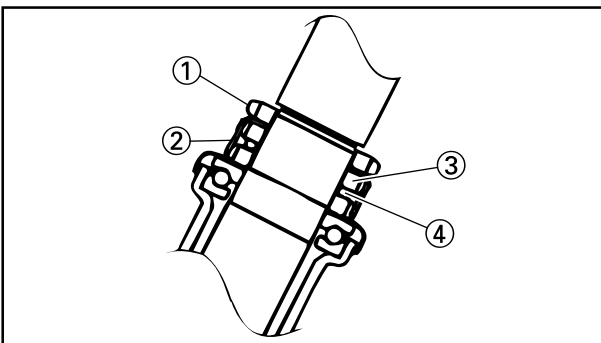
### **WARNING**

Securely support the scooter so that there is no danger of it falling over.

### **TIP**

Place the scooter on a suitable stand so that the front wheel is elevated.

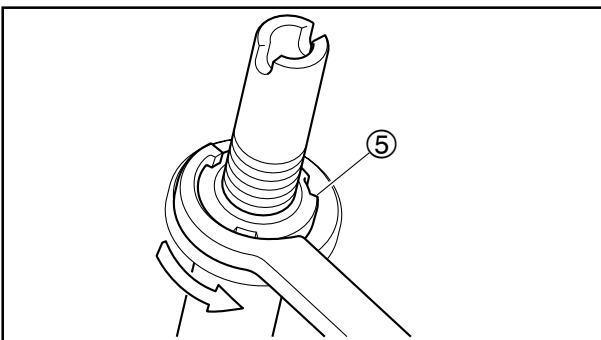
2. Check:
  - steering head  
Grasp the bottom of the front fork legs and gently rock the front fork.  
Binding/looseness → Adjust the steering head.
3. Remove:
  - leg shield 1  
Refer to "COVER AND PANEL".



4. Adjust:
  - steering head



- a. Remove the upper ring nut ①, lock washer ②, the center ring nut ③ and the rubber washer ④.
- b. Loosen the lower ring nut ⑤ and then tighten it to specification with the ring nut wrench ⑥.



### **TIP**

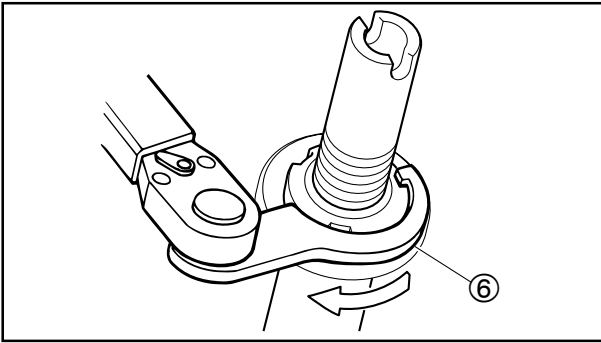
Set the torque wrench at a right angle to the ring nut wrench.



**Ring nut wrench**  
90890-01403 (YU-A9472)

# CHECKING AND ADJUSTING THE STEERING HEAD

**CHK**  
**ADJ**

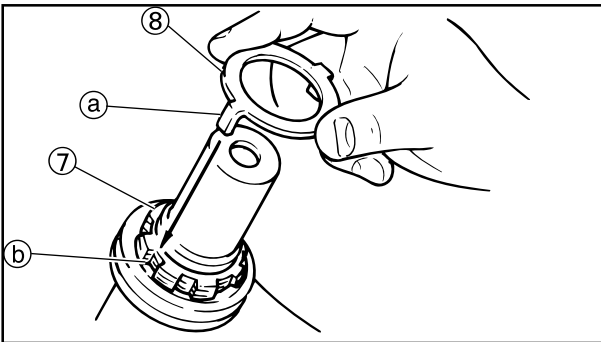


**Lower ring nut (initial tightening torque)**  
38Nm (3.8m • kgf, 27.5ft • lbf)

- c. Loosen the lower ring nut completely and then tighten it to specification with a steering nut wrench.

**⚠ WARNING**

**Do not over tighten the lower ring nut.**



**Lower ring nut (final tightening torque)**  
14Nm (1.4m • kgf, 10.1ft • lbf)

- d. Check the steering head for looseness or binding by turning the front fork all the way in both directions. If any binding is felt, remove the lower bracket and check the upper and lower bearings. Refer to "STEERING HEAD" in chapter 4.
- e. Install the rubber washer.
- f. Install the center ring nut ⑦.
- g. Finger tighten the center ring nut, then align the slots of both ring nuts. If necessary, hold the lower ring nut and tighten the center ring nut until their slots are aligned.
- h. Install the lock washer ⑧.

**TIP**

Make sure the lock washer tabs ① sit correctly in the ring nut slots ②.

- i. Hold the lower and center ring nuts with a ring nut wrench and tighten the upper ring nut with a steering nut wrench.



**Steering nut wrench**  
90890-01403 (YU-A9472)



**Ring nut wrench**  
90890-01268 (YU-01268)



**Upper ring nut**  
75Nm (7.5m • kgf, 54.2ft • lbf)



- 5. Install:
  - leg shield 1
 Refer to "COVER AND PANEL".

EAS00151

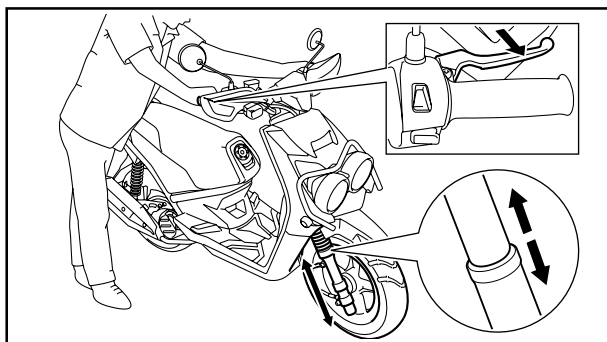
## CHECKING THE FRONT FORK

1. Stand the scooter on a level surface.

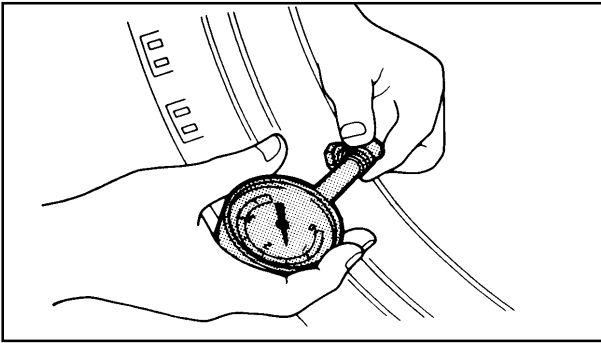
### **WARNING**

Securely support the scooter so that there is no danger of it falling over.

2. Check:
  - inner tube  
Damage/scratches → Replace.
  - oil seal  
Oil leakage → Replace.
3. Hold the scooter upright and apply the front brake.



4. Check:
  - front fork operation  
Push down hard on the handlebar several times and check if the front fork rebounds smoothly.  
Rough movement → Repair.  
Refer to "FRONT FORK" in chapter 4.



EAS00163

## CHECKING THE TIRES

The following procedure applies to both of the tires.

1. Check:
  - tire pressure  
Out of specification → Regulate.

### **WARNING**

- The tire pressure should only be checked and regulated when the tire temperature equals the ambient air temperature.
- The tire pressure and the suspension must be adjusted according to the total weight (including cargo, rider, passenger and accessories) and the anticipated riding speed.
- Operation of an overloaded scooter could cause tire damage, an accident or an injury.

**NEVER OVERLOAD THE SCOOTER.**

Basic weight (with oil and a full fuel tank)	122 kg(269lb)	
Maximum load*	155 kg(342lb)	
cold tire pressure	Front	Rear
Up to 90kg (198lb)	175 kPa (1.75 kgf/cm <sup>2</sup> , 25 psi)	200 kPa (2.00 kgf/cm <sup>2</sup> , 25 psi)
90kg(198lb)~ m a x i m u m load*	200 kPa (2.00 kgf/cm <sup>2</sup> , 29 psi)	225 kPa (2.25 kgf/cm <sup>2</sup> , 33 psi)

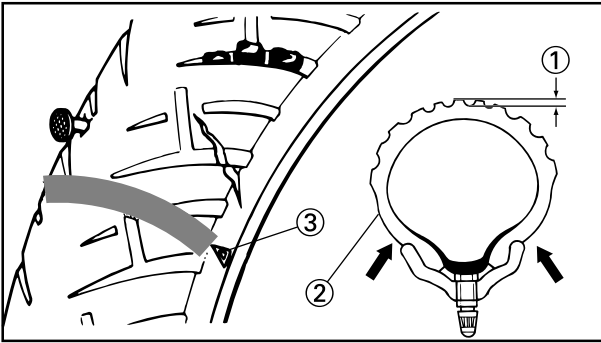
\* Total weight of rider, passenger, cargo and accessories

### **WARNING**

It is dangerous to ride with a worn-out tire. When the tire tread reaches the wear limit, replace the tire immediately.

## CHECKING THE TIRES

CHK  
ADJ



2. Check:
  - tire surfaces
  - Damage/wear → Replace the tire.

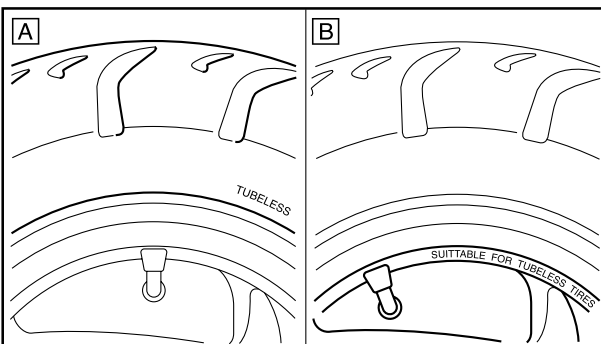


Minimum tire tread depth  
0.8mm (0.03in)

- ① Tire tread depth
- ② Sidewall
- ③ Wear indicator

### ⚠ WARNING

- Do not use a tubeless tire on a wheel designed only for tube tires to avoid tire failure and personal injury from sudden deflation.
- When using tube tires, be sure to install the correct tube.
- Always replace a new tube tire and a new tube as a set.
- To avoid pinching the tube, make sure the wheel rim band and tube are centered in the wheel groove.
- Patching a punctured tube is not recommended. If it is absolutely necessary to do so, use great care and replace the tube as soon as possible with a good quality replacement.



- A Tire
- B Wheel

Tube wheel	Tube tire only
Tubeless wheel	Tube or tubeless tire

- After extensive tests, the tires listed below have been approved by Yamaha Motor Taiwan Co., Ltd. for this model. The front and rear tires should always be by the same manufacturer and of the same design. No guarantee concerning handling characteristics can be given if a tire combination other than one approved by Yamaha is used on this scooter.

## CHECKING THE TIRES

CHK  
ADJ

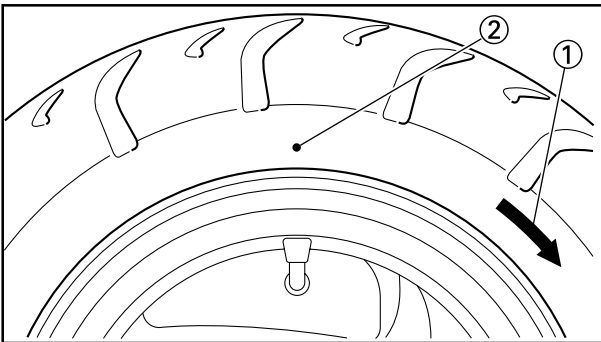


### Front tire

Manufacturer	Model	Size
KENDA	K761	120/70-12 51L

### Rear tire

Manufacturer	Model	Size
KENDA	K761	130/70-12 56L



### **⚠ WARNING**

New tires have a relatively low grip on the road surface until they have been slightly worn. Therefore, approximately 100 km should be traveled at normal speed before any high-speed riding is done.

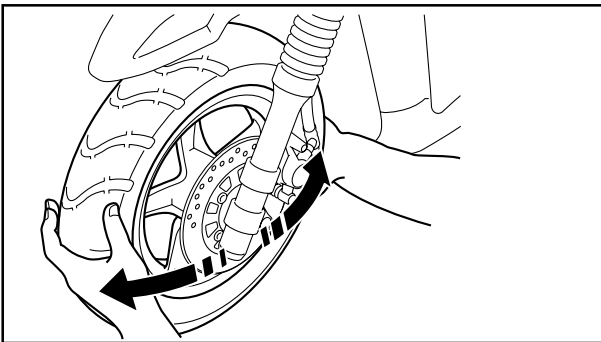
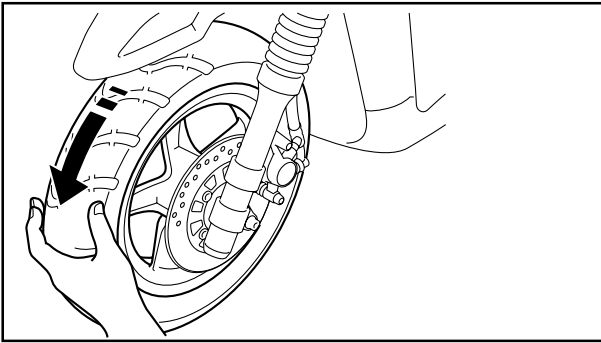
### **TIP**

For tires with a direction of rotation mark ①:

- Install the tire with the mark pointing in the direction of wheel rotation.
- Align the mark ② with the valve installation point.

## CHECKING THE WHEELS/ CHECKING AND LUBRICATING THE CABLES

CHK  
ADJ



EAS00168

### CHECKING THE WHEELS

The following procedure applies to both of the wheels.

1. Check:
  - wheel  
Damage/out-of-round → Replace.

#### **WARNING**

Never attempt to make any repairs to the wheel.

#### **TIP**

After a tire or wheel has been changed or replaced, always balance the wheel.

EAS00170

### CHECKING AND LUBRICATING THE CABLES

The following procedure applies to all of the inner and outer cables.

#### **WARNING**

Damaged outer cable may cause the cable to corrode and interfere with its movement. Replace damaged outer cable and inner cables as soon as possible.

1. Check:
  - outer cable  
Damage → Replace.
2. Check:
  - cable operation  
Rough movement → Lubricate.



**Recommended lubricant**  
Engine oil or a suitable cable  
lubricant

#### **TIP**

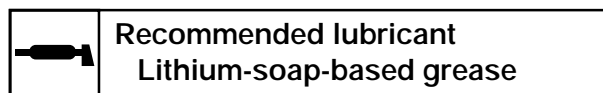
Hold the cable end upright and pour a few drops of lubricant into the cable sheath or use a suitable lubricating device.



EAS00171

### LUBRICATING THE LEVERS

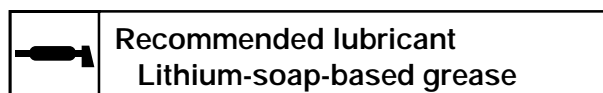
Lubricate the pivoting point and metal-to-metal moving parts of the levers.



EAS00172

### LUBRICATING THE SIDESTAND

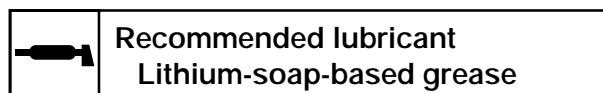
Lubricate the pivoting point and metal-to-metal moving parts of the sidestand.



EAS00173

### LUBRICATING THE CENTERSTAND

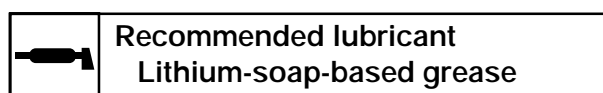
Lubricate the pivoting point and metal-to-metal moving parts of the centerstand.



EAS00174

### LUBRICATING THE REAR SUSPENSION

Lubricate the pivoting point and metal-to-metal moving parts of the rear suspension.







**BATTERY INSTRUCTION**


This is a sealed type 12 volt battery. No liquid level inspection is ever needed and no refilling water will be required.


**IMPORTANT:**


- Never interfere with the sealed state of the battery.
- Check the charging condition with a voltmeter (Normal charging voltage should be above 12.8V).
- This battery may be installed in a vehicle only if it replaces a similar sealed type battery.


  
FLAMMABLES

  
SHIELD EYES

  
KEEP OUT OF THE REACH OF CHILDREN

  
DANGER OF SULFURIC ACID

  
READ INSTRUCTION MANUAL CAREFULLY

  
EXPLOSIVE

**⚠ DANGER**

- Do not use at the places near fire. Hydrogen gas generated from battery may cause fire and explosion.
- This 12V battery is only for starting engine. Do not apply for other uses.
- Keep out of the reach of children or the personnel who do not understand the manual. It may cause blindness or severe burn.
- When using the battery, wear safety glasses and rubber gloves. Sulfuric acid may cause blindness or severe burn.

EAS00179

## ELECTRICAL SYSTEM

### CHECKING AND CHARGING THE BATTERY

#### **⚠ WARNING**

Batteries generate explosive hydrogen gas and contain electrolyte which is made of poisonous and highly caustic sulfuric acid. Therefore, always follow these preventive measures:

- Wear protective eye gear when handling or working near batteries.
- Charge batteries in a well-ventilated area.
- Keep batteries away from fire, sparks or open flames (e.g., welding equipment, lighted cigarettes).
- DO NOT SMOKE when charging or handling batteries.
- KEEP BATTERIES AND ELECTROLYTE OUT OF REACH OF CHILDREN.
- Avoid bodily contact with electrolyte as it can cause severe burns or permanent eye injury.

#### FIRST AID IN CASE OF BODILY CONTACT: EXTERNAL

- Skin — Wash with water.
- Eyes — Flush with water for 15 minutes and get immediate medical attention.

#### INTERNAL

- Drink large quantities of water or milk followed with milk of magnesia, beaten egg or vegetable oil. Get immediate medical attention.

#### **NOTICE**

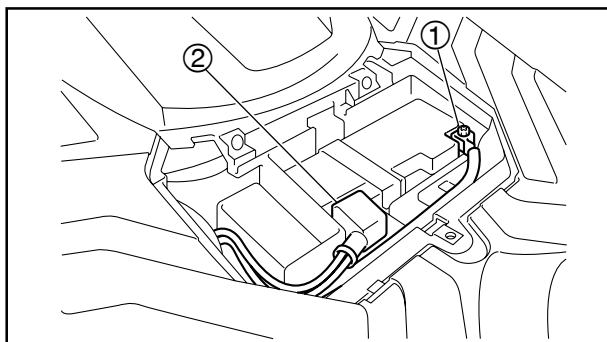
- This is a sealed battery. Never remove the sealing caps because the balance between cells will not be maintained and battery performance will deteriorate.
- Charging time, charging amperage and charging voltage for an MF battery are different from those of conventional batteries. The MF battery should be charged as explained in the charging method illustrations. If the battery is overcharged, the electrolyte level will drop considerably. Therefore, take special care when charging the battery.



**TIP**

Since MF batteries are sealed, it is not possible to check the charge state of the battery by measuring the specific gravity of the electrolyte. Therefore, the charge of the battery has to be checked by measuring the voltage at the battery terminals.

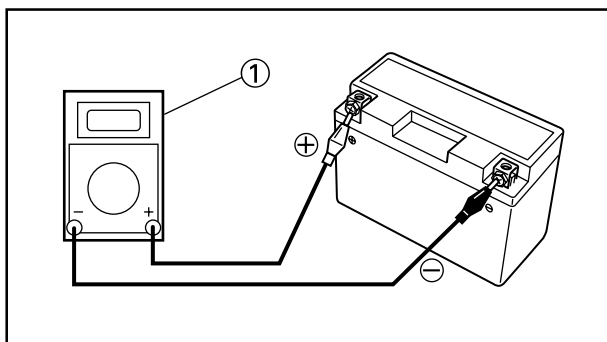
1. Remove:
  - battery box cover
 Refer to "COVER AND PANEL".



2. Disconnect:
  - battery leads
 (from the battery terminals)

**NOTICE**

**First, disconnect the negative battery lead ①, and then the positive battery lead ②.**



3. Remove:
  - band
  - battery
4. Check:
  - battery charge



- a. Connect a digital circuit tester ① to the battery terminals.



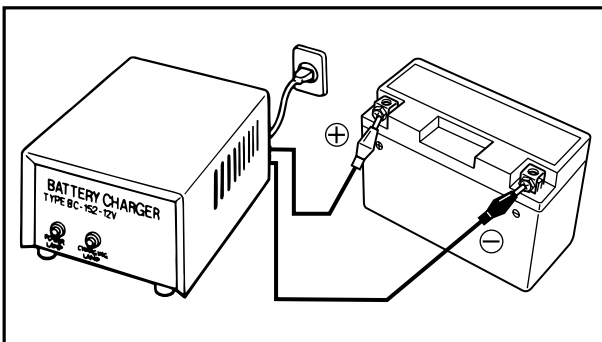
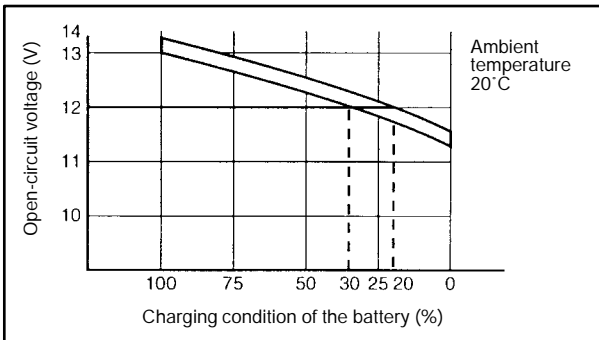
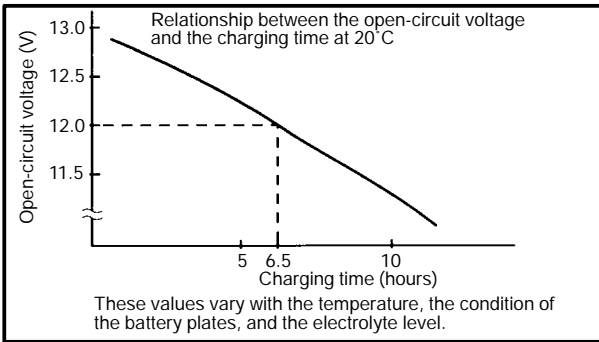
**Digital circuit tester**  
90890-03174

Positive tester probe → positive battery terminal
Negative tester probe → negative battery terminal

**TIP**

- The charge state of an MF battery can be checked by measuring its open-circuit voltage (i.e., the voltage when the positive terminal is disconnected).

# CHECKING AND CHARGING THE BATTERY



- No charging is necessary when the open-circuit voltage equals or exceeds 12.8 V.

- Check the charge of the battery, as shown in the charts and the following example.

### Example

- Open-circuit voltage = 12.0 V
- Charging time = 6.5 hours
- Charge of the battery = 20 ~ 30%



- Charge:
  - battery (refer to the appropriate charging method illustration)

### WARNING

Do not quick charge a battery.

### NOTICE

- Never remove the MF battery sealing caps.
- Do not use a high-rate battery charger since it forces a high-amperage current into the battery quickly and can cause battery overheating and battery plate damage.
- If it is impossible to regulate the charging current on the battery charger, be careful not to overcharge the battery.
- When charging a battery, be sure to remove it from the scooter. (If charging has to be done with the battery mounted on the scooter, disconnect the negative battery lead from the battery terminal.)
- To reduce the chance of sparks, do not plug in the battery charger until the battery charger leads are connected to the battery.

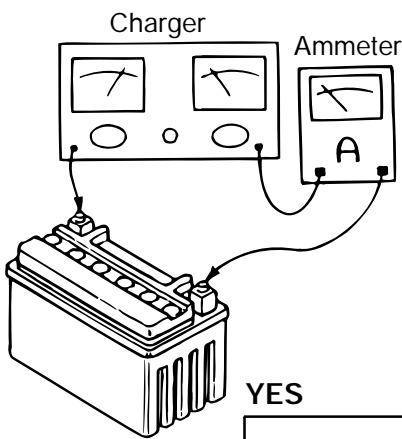


- Before removing the battery charger lead clips from the battery terminals, be sure to turn off the battery charger.
  - Make sure the battery charger lead clips are in full contact with the battery terminal and that they are not shorted. A corroded battery charger lead clip may generate heat in the contact area and a weak clip spring may cause sparks.
  - If the battery becomes hot to the touch at any time during the charging process, disconnect the battery charger and let the battery cool before reconnecting it. Hot batteries can explode!
  - As shown in the following illustration, the open-circuit voltage of an MF battery stabilizes about 30 minutes after charging has been completed. Therefore, wait 30 minutes after charging is completed before measuring the open-circuit voltage.
-

# CHECKING AND CHARGING THE BATTERY



## Charging method using a variable-current (voltage) charger



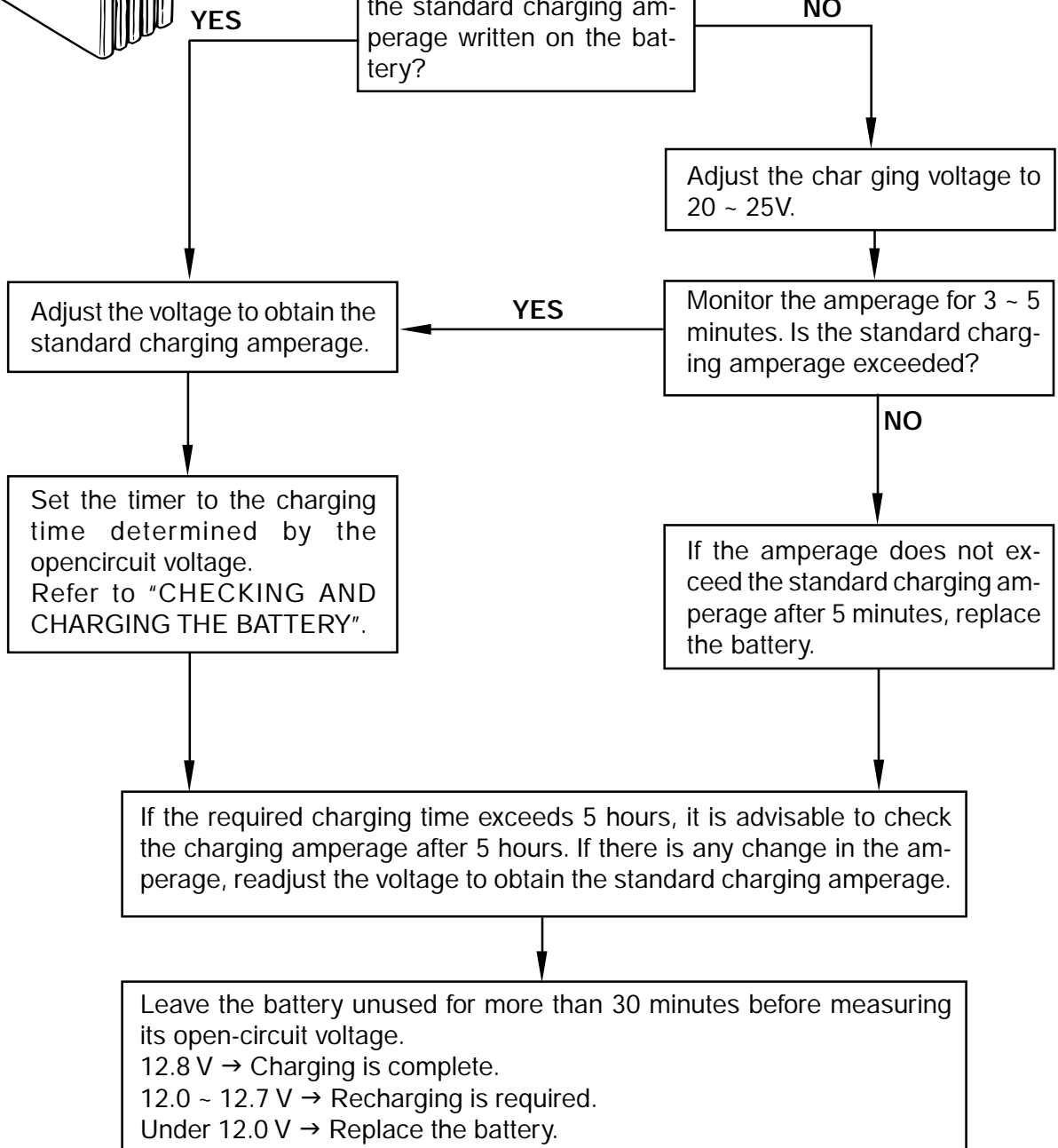
Measure the open-circuit voltage prior to charging.

Connect a charger and ammeter to the battery and start charging.

Is the amperage higher than the standard charging amperage written on the battery?

**TIP**  
Leave the battery unused for more than 30 minutes before measuring its open-circuit voltage.

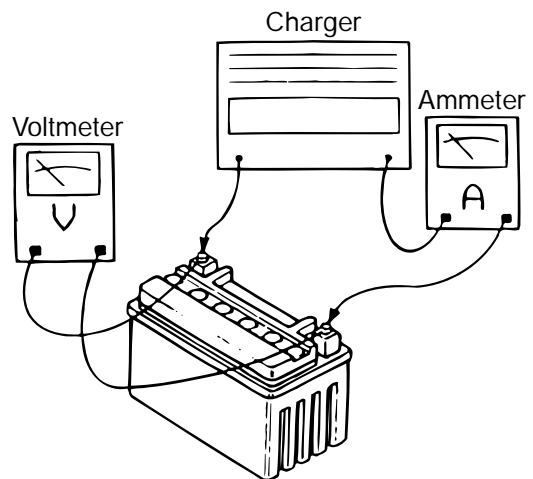
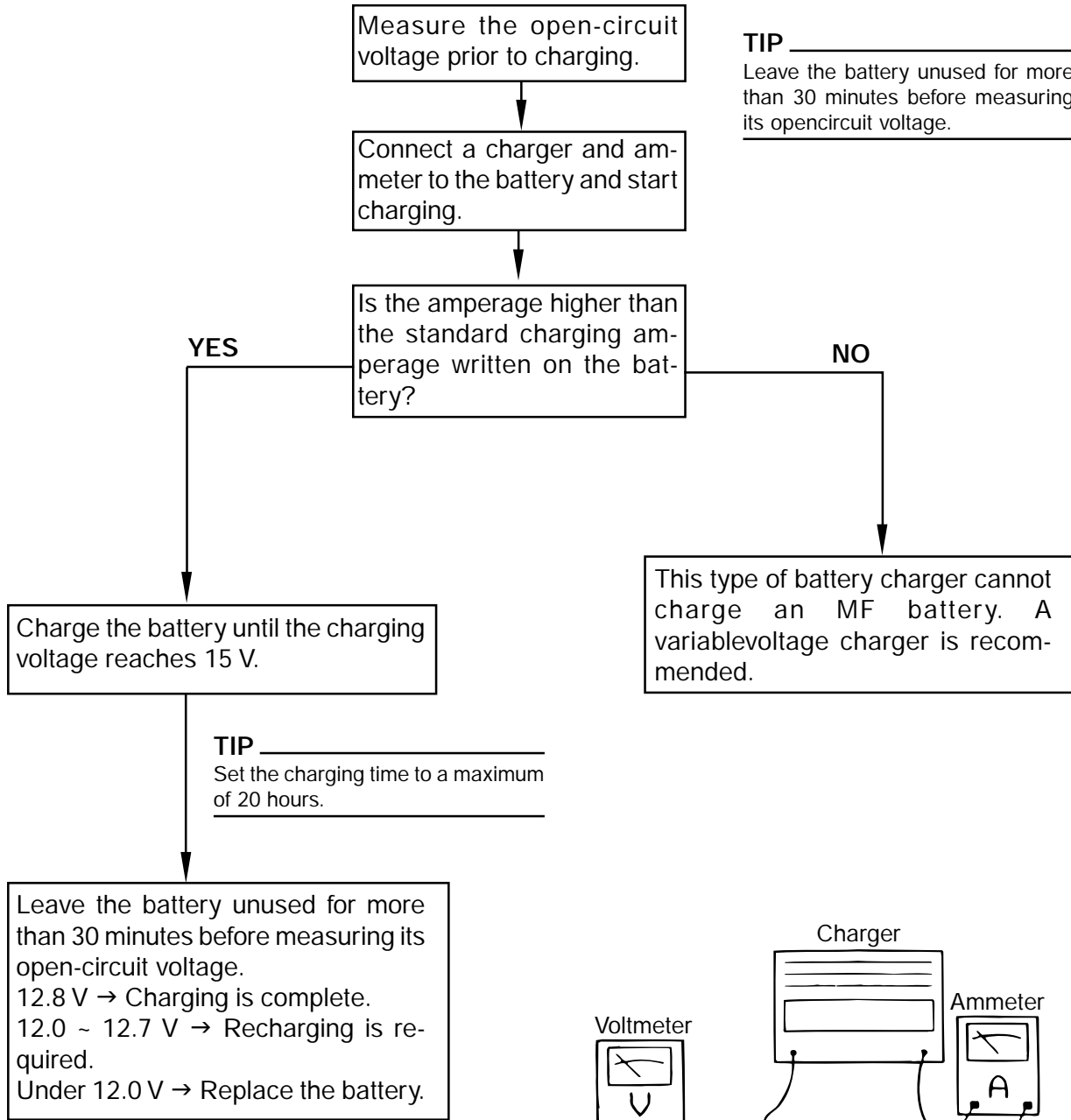
**TIP**  
Set the charging voltage to 16-17 V. (If the charging voltage is lower charging will be insufficient, if it is higher, the battery will be over-charged.)



# CHECKING AND CHARGING THE BATTERY

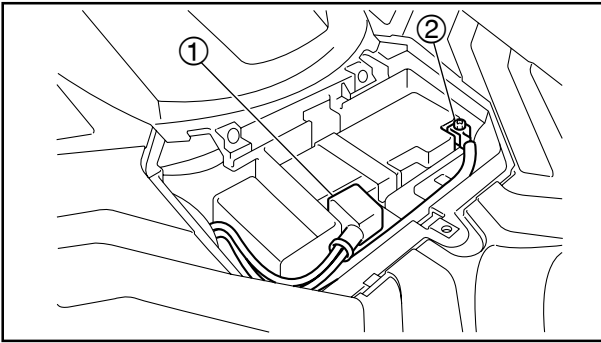


## Charging method using a constant voltage charger



## CHECKING AND CHARGING THE BATTERY

CHK  
ADJ



6. Install:
  - battery
  - band
7. Connect:
  - battery leads  
(to the battery terminals)

### NOTICE

First, connect the positive battery lead ①, and then the negative battery lead ②.

8. Check:
  - battery terminals  
Dirt → Clean with a wire brush.  
Loose connection → Connect properly.
9. Lubricate:
  - battery terminals



Recommended lubricant  
Dielectric grease

10. Install:
  - battery box cover  
Refer to "COVER AND PANEL".

EAS00181

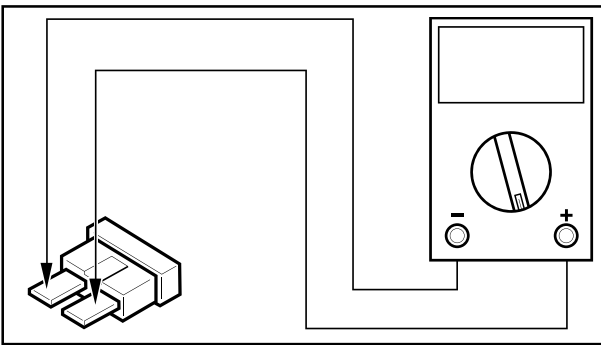
## CHECKING THE FUSES

The following procedure applies to all of the fuses.

### NOTICE

To avoid a short circuit, always set the main switch to "OFF" when checking or replacing a fuse.

1. Remove:
  - battery box cover
 Refer to "COVER AND PANEL".



2. Check:
  - fuse



- a. Connect the pocket tester to the fuse and check the continuity.

### TIP

Set the pocket tester selector to " $\Omega \times 1$ ".



**Pocket tester**  
90890-03112 (YU-03112-C)

- b. If the pocket tester indicates " $\infty$ ", replace the fuse.



3. Replace:
  - blown fuse



- a. Set the main switch to "OFF".
- b. Install a new fuse of the correct amperage rating.
- c. Set on the switches to verify if the electrical circuit is operational.
- d. If the fuse immediately blows again, check the electrical circuit.



## CHECKING THE FUSES



Fuses	Amperage rating	Q'ty
Main	20A	1
Headlight	10A	1
Signaling system	15A	1
Ignition	10A	1
Fuel injection system	10A	1
Reserve	20A	1
	15A	1
	10A	1

### **WARNING**

Never use a fuse with an amperage rating other than that specified. Improvising or using a fuse with the wrong amperage rating may cause extensive damage to the electrical system, cause the lighting and ignition systems to malfunction and could possibly cause a fire.



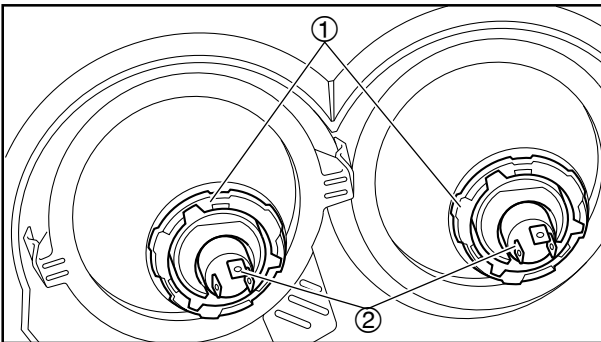
4. Install:
  - battery box coverRefer to "COVER AND PANEL".

EAS00183

## REPLACING THE HEADLIGHT BULBS

The following procedure applies to both of the headlight bulbs.

1. Remove:
  - safeguard
  - leg shield 1
 Refer to "COVER AND PANEL".
2. Disconnect:
  - headlight coupler
3. Remove:
  - dust boot
  - headlight bulb holder ①
  - headlight bulb ②



### **WARNING**

Since the headlight bulb gets extremely hot, keep flammable products and your hands away from the bulb until it has cooled down.

4. Install:
  - headlight bulb **New**
 Secure the new headlight bulb with the headlight bulb holder.

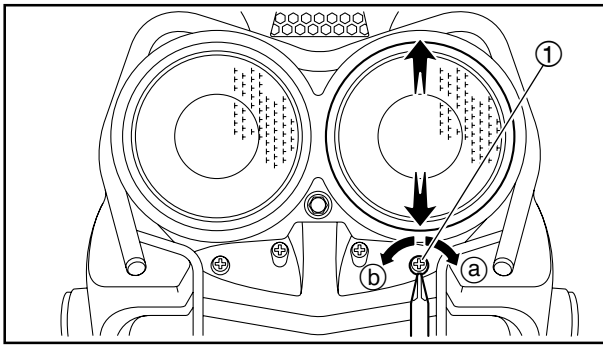
### **NOTICE**

Avoid touching the glass part of the headlight bulb to keep it free from oil, otherwise the transparency of the glass, the life of the bulb and the luminous flux will be adversely affected. If the headlight bulb gets soiled, thoroughly clean it with a cloth moistened with alcohol or lacquer thinner.

5. Install :
  - headlight bulb holder
  - dust boot
6. Connect:
  - headlight coupler
7. Install:
  - leg shield 1
  - safeguard
 Refer to "COVER AND PANEL".

# ADJUSTING THE HEADLIGHT BEAMS

**CHK**  
**ADJ**



EAS00185

## ADJUSTING THE HEADLIGHT BEAMS

The following procedure applies to both of the headlights.

1. Adjust:
  - headlight beam (vertically)

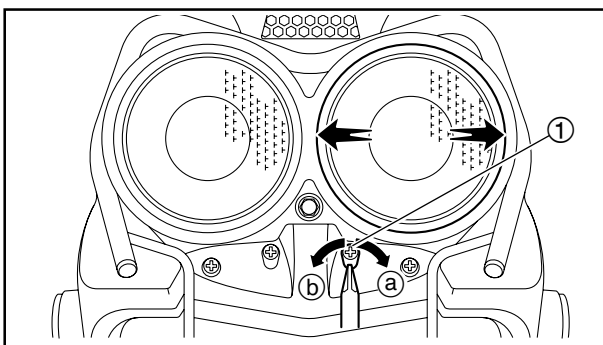
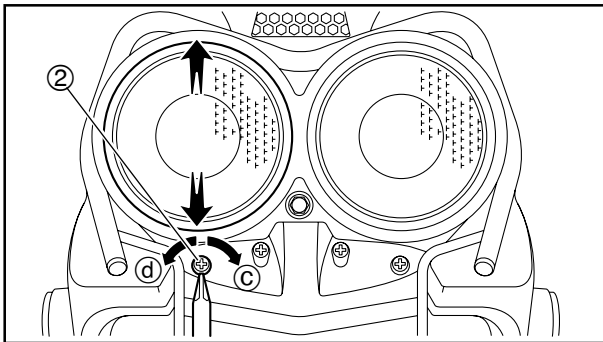


- a. Turn the low beam light adjusting screw ① in direction ① or ②.

Direction ①	Headlight beam is raised.
Direction ②	Headlight beam is lowered.

- b. Turn the high beam light adjusting screw ② in direction ③ or ④.

Direction ③	Headlight beam is raised.
Direction ④	Headlight beam is lowered.



2. Adjust:
  - headlight beam (horizontally)

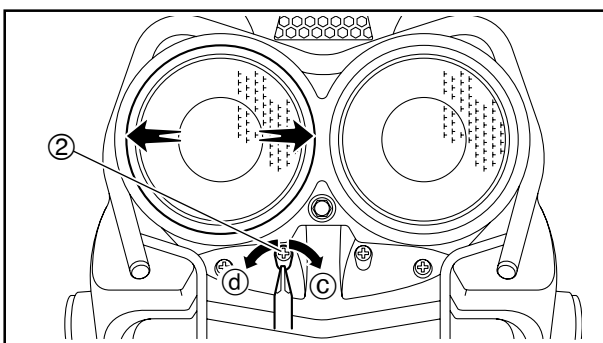


- a. Turn the low beam light adjusting screw ① in direction ① or ②.

Direction ①	Headlight beam moves to the right.
Direction ②	Headlight beam moves to the left.

- b. Turn the high beam light adjusting screw ② in direction ③ or ④.

Direction ③	Headlight beam moves to the left.
Direction ④	Headlight beam moves to the right.



**CHAPTER 4  
CHASSIS**

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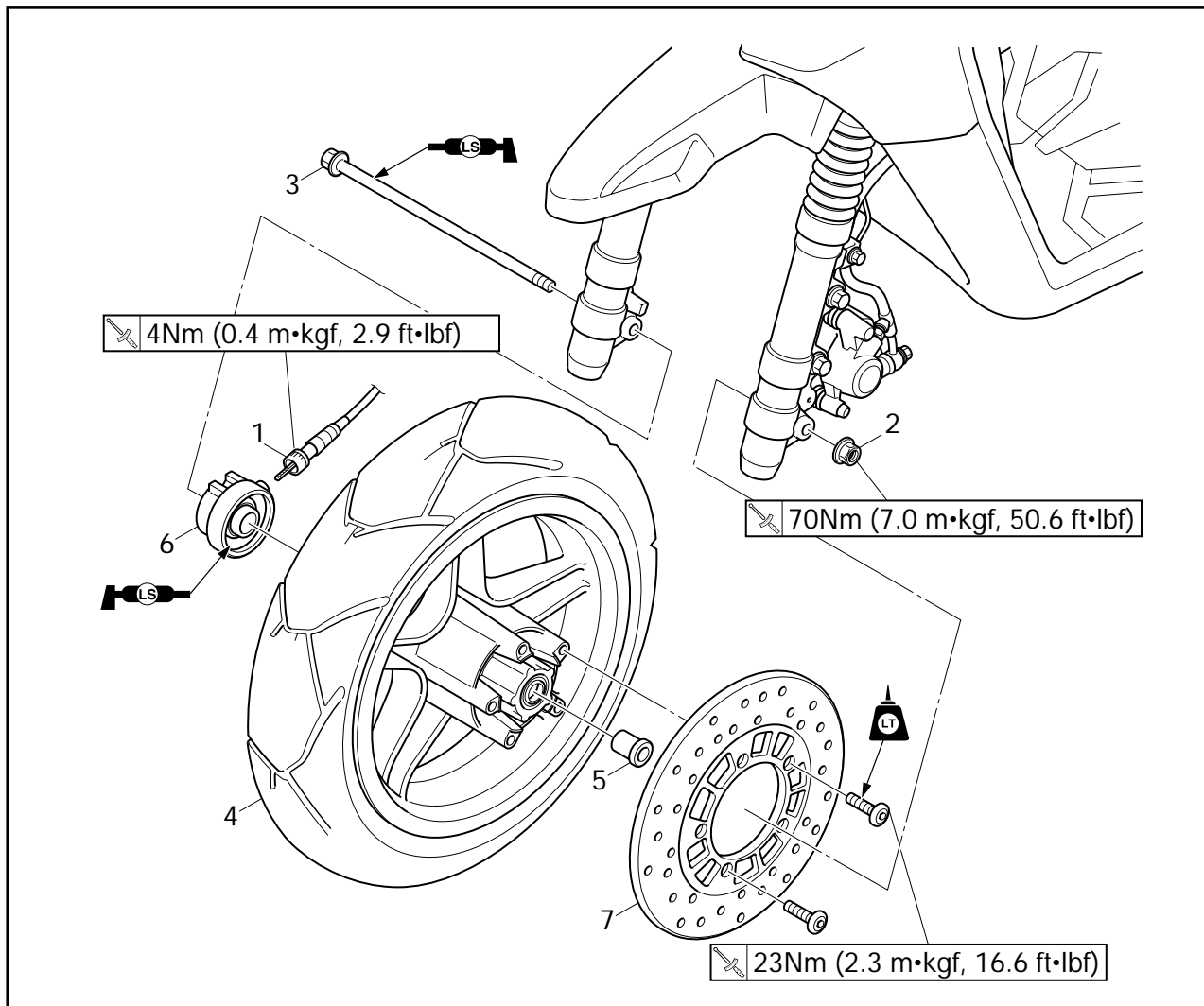
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EAS00513

CHASSIS

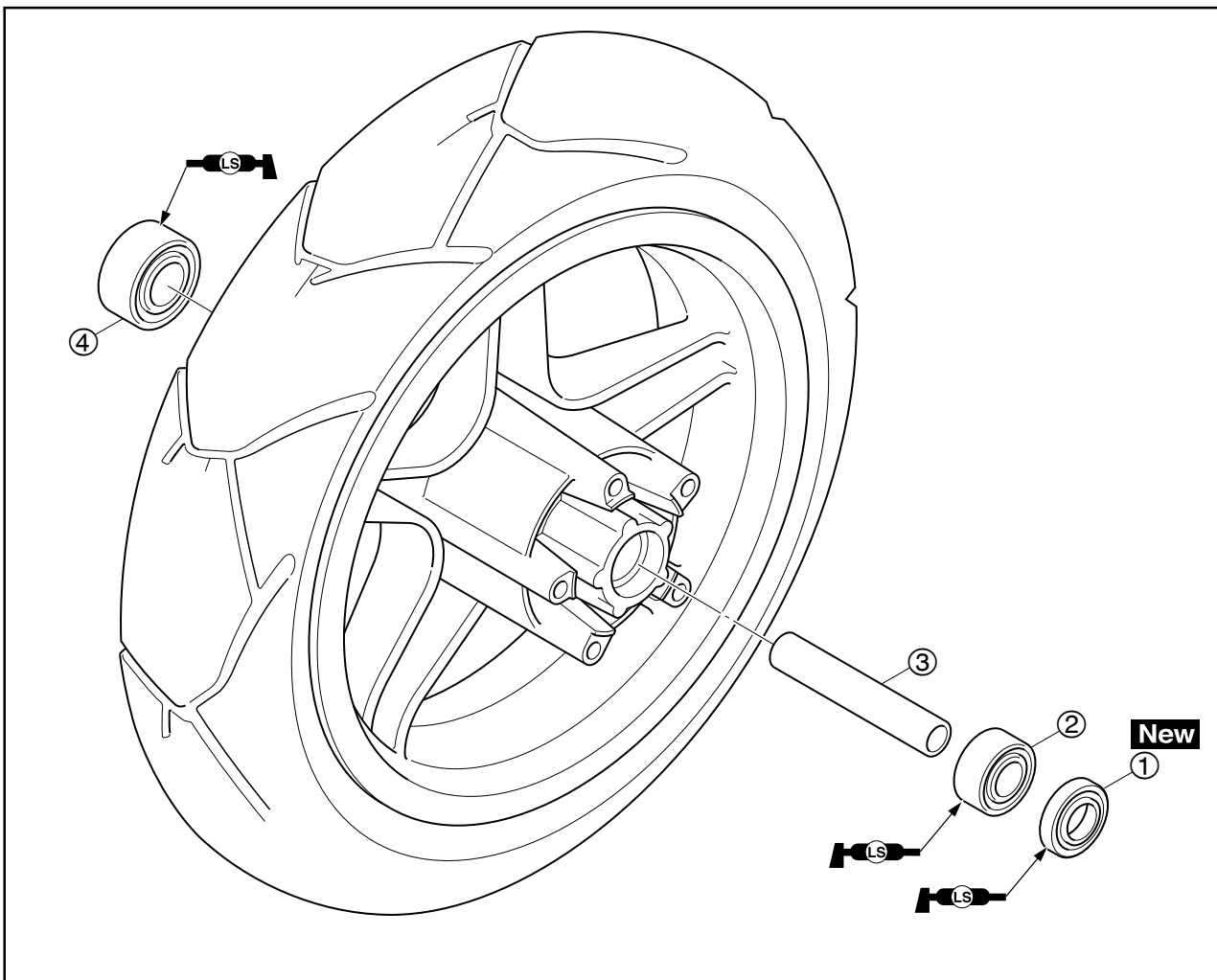
FRONT WHEEL AND BRAKE DISC



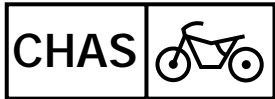
Order	Job/Part	Q'ty	Remarks
	<b>Removing the front wheel and brake disc</b>		Remove the parts in the order listed.
			<b>TIP</b> _____ Place the scooter on a suitable stand so that the front wheel is elevated.
1	Speedometer cable	1	Disconnect. } Refer to "REMOVING THE FRONT WHEEL" and "INSTALLING THE FRONT WHEEL".
2	Wheel axle nut	1	
3	Wheel axle	1	
4	Front wheel	1	
5	Collar	1	
6	Speedometer gear unit	1	
7	Front brake disc	1	
			For installation, reverse the removal procedure.

EAS00518

FRONT WHEEL



Order	Job/Part	Q'ty	Remarks
	<b>Disassembling the front wheel</b>		Remove the parts in the order listed.
①	Oil seal	1	
②	Bearing	1	
③	Spacer	1	
④	Bearing	1	
			For assembly, reverse the disassembly procedure.



EAS00520

## REMOVING THE FRONT WHEEL

1. Stand the scooter on a level surface.

### **WARNING**

Securely support the scooter so that there is no danger of it falling over.

---

### **TIP**

Place the scooter on a suitable stand so that the front wheel is elevated.

---

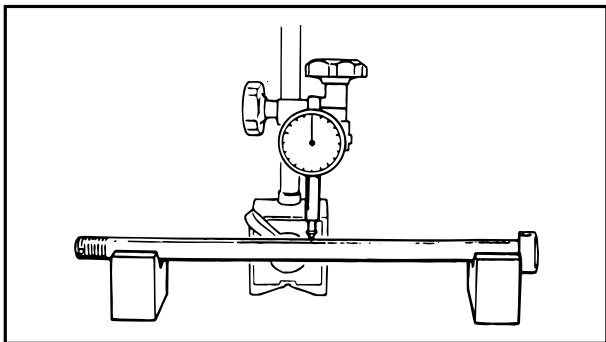
2. Remove:
  - speedometer cable
  - front wheel axle nut
  - front wheel axle
  - front wheel
  - collar
  - speedometer gear unit

### **TIP**

Do not apply the brake lever when removing the front wheel .

---





EAS00525

## CHECKING THE FRONT WHEEL

1. Check:
  - wheel axle  
Roll the wheel axle on a flat surface.  
Bends → Replace.

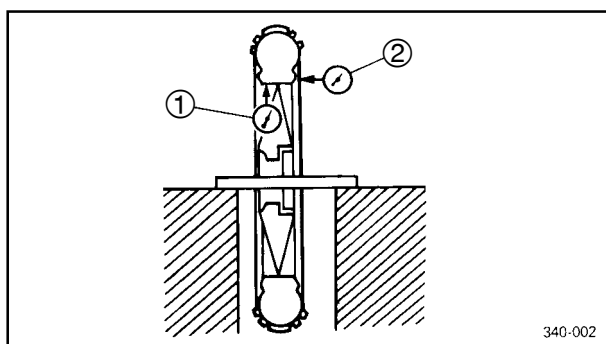


**Wheel axle bending limit**  
**0.25mm (0.01in)**



**WARNING**  
Do not attempt to straighten a bent wheel axle.

2. Check:
  - tire
  - front wheel  
Damage/wear → Replace.  
Refer to “CHECKING THE TIRES” and “CHECKING THE WHEELS” in chapter 3.

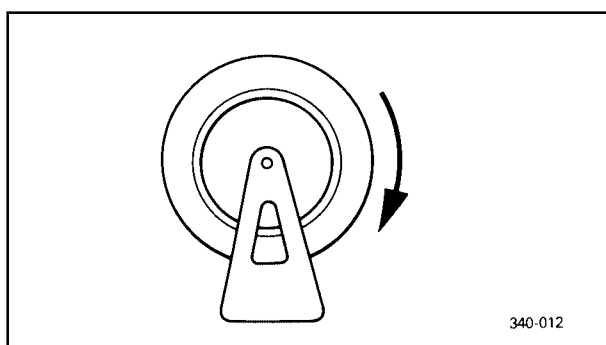


340-002

3. Measure:
  - radial wheel runout ①
  - lateral wheel runout ②  
Over the specified limits → Replace.



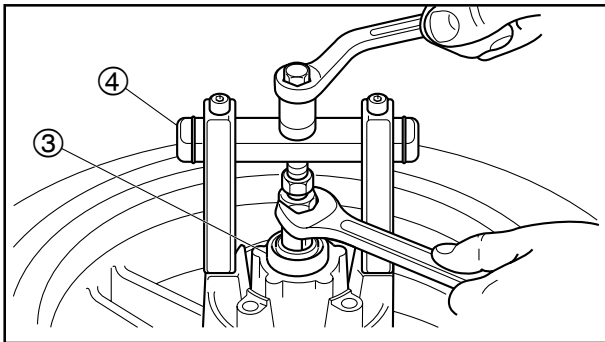
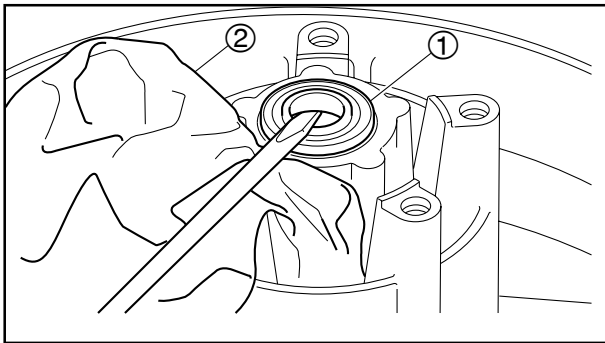
**Radial wheel runout limit**  
**1.0mm (0.04in)**  
**Lateral wheel runout limit**  
**1.0mm (0.04in)**



340-012

4. Check:
  - wheel bearings  
Front wheel turns roughly or is loose → Replace the wheel bearings.
  - oil seal  
Damage/wear → Replace.

# FRONT WHEEL AND BRAKE DISK



5. Replace:
- wheel bearings **New**
  - oil seal **New**



- a. Clean the outside of the front wheel hub.
- b. Remove the oil seal ① with a flat-head screwdriver.

### TIP


To prevent damaging the wheel, place a rag ② between the screwdriver and the wheel surface.

- c. Remove the wheel bearings ③ with a general bearing puller ④.
- d. Install the new wheel bearings and oil seal in the reverse order of disassembly.

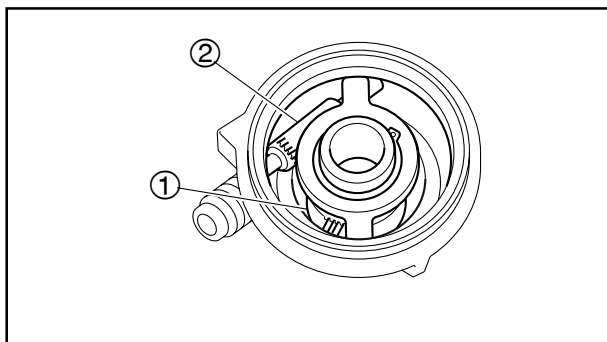




**TIP** \_\_\_\_\_  
Tighten the brake disc bolts in stages and in a crisscross pattern.

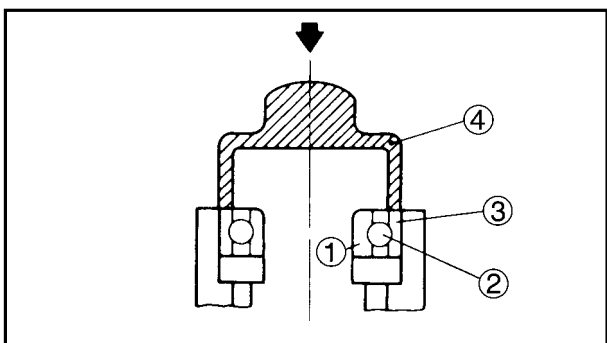
	<p><b>Brake disc bolt</b> 23Nm (2.3m • kgf, 16.6ft • lbf) LOCTITE®</p>
---	--

- d. Measure the brake disc deflection.
- e. If out of specification, repeat the adjustment steps until the brake disc deflection is within specification.
- f. If the brake disc deflection cannot be brought within specification, replace the brake disc.



EAS00535  
**CHECKING THE SPEEDOMETER GEAR UNIT**

1. Check:
  - speedometer clutch  
Bends/damage/wear → Replace.
2. Check:
  - speedometer drive gear ①
  - speedometer driven gear ②  
Damage/wear → Replace.



EAS00539  
**ASSEMBLING THE FRONT WHEEL**

1. Install:
  - wheel bearing
  - spacer
  - oil seal **New**



- a. Install the new wheel bearings and oil seal in the reverse order of disassembly.

**NOTICE** \_\_\_\_\_  
Do not contact the wheel bearing inner race ① or balls ②. Contact should be made only with the outer race ③.

**TIP** \_\_\_\_\_  
Use a socket ④ that matches the diameter of the wheel bearing outer race and oil seal.





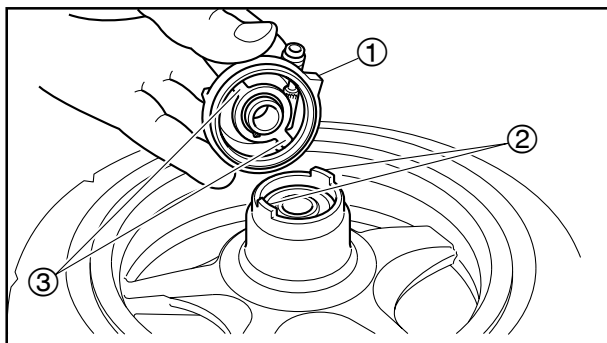
EAS00542

**INSTALLING THE FRONT WHEEL**

1. Lubricate:
  - wheel axle
  - wheel bearings
  - oil seal lip
  - speedometer gear unit



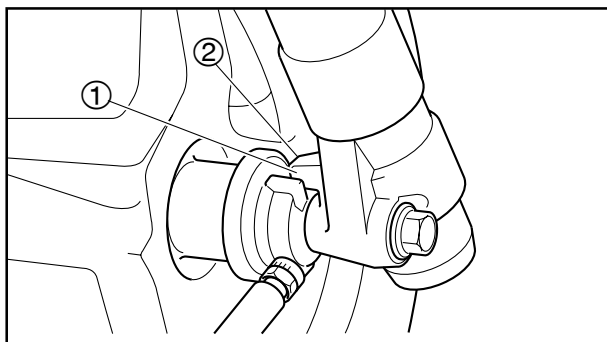
**Recommended lubricant**  
Lithium-soap-based grease



2. Install:
  - speedometer gear unit (1)

**TIP**

Make sure the speedometer gear unit and the wheel hub are installed with the two projections (2) meshed into the speedometer clutch (3) respectively.



3. Install:
  - front wheel

**TIP**

Make sure the slot (1) in the speedometer gear unit fits over the stopper (2) on the outer tube.

4. Tighten:
  - wheel axle



70Nm (7.0m • kgf, 50.6ft • lbf)

**NOTICE**

Before tightening the wheel axle nut, push down hard on the handlebar several times and check if the front fork rebounds smoothly.

5. Install:
  - speedometer cable



4Nm (0.4m • kgf, 2.9ft • lbf)

EAS00548

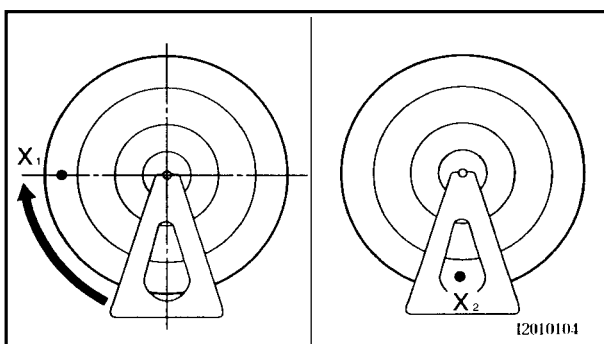
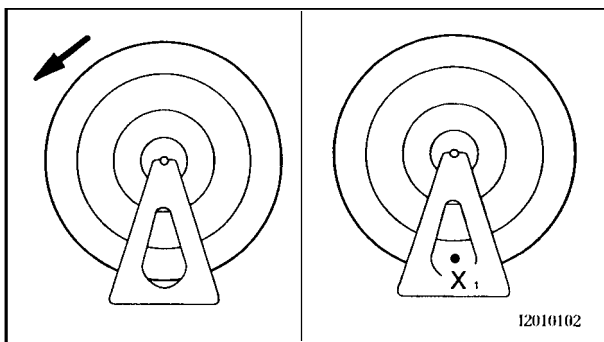
## ADJUSTING THE FRONT WHEEL STATIC BALANCE

### TIP

- After replacing the tire, wheel or both, the front wheel static balance should be adjusted.
- Adjust the front wheel static balance with the brake disc installed.

### 1. Remove:

- balancing weight(s)



### 2. Find:

- front wheel's heavy spot

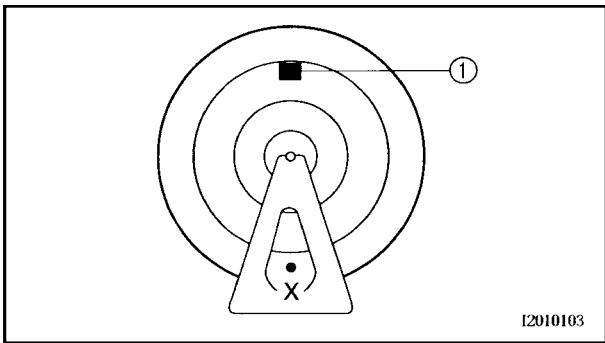
### TIP

Place the front wheel on a suitable balancing stand.



- Spin the front wheel.
- When the front wheel stops, put an "X<sub>1</sub>" mark at the bottom of the wheel.
- Turn the front wheel 90° so that the "X<sub>1</sub>" mark is positioned as shown.
- Release the front wheel.
- When the wheel stops, put an "X<sub>2</sub>" mark at the bottom of the wheel.
- Repeat steps (d) through (f) several times until all the marks come to rest at the same spot.
- The spot where all the marks come to rest is the front wheel's heavy spot "X".



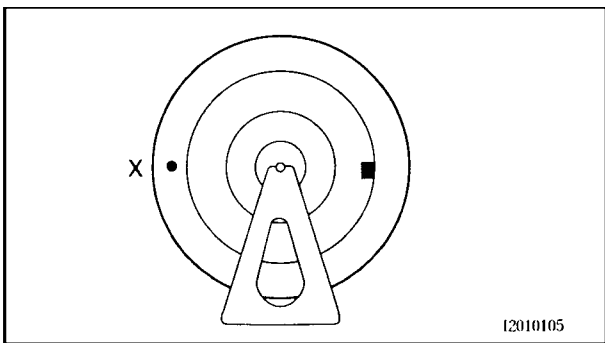


3. Adjust:
- front wheel static balance

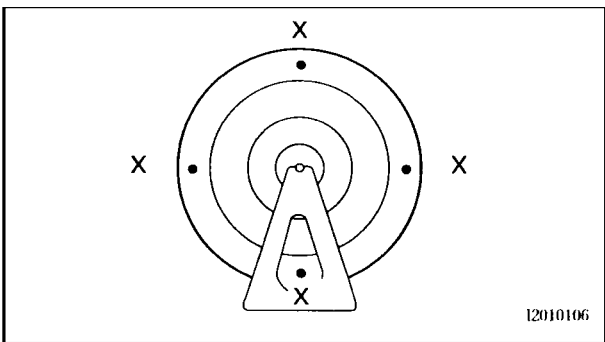


- a. Install a balancing weight ① onto the rim exactly opposite the heavy spot "X".

**TIP** \_\_\_\_\_  
Start with the lightest weight.



- b. Turn the front wheel 90° so that the heavy spot is positioned as shown.  
c. If the heavy spot does not stay in that position, install a heavier weight.  
d. Repeat steps (b) and (c) until the front wheel is balanced.



4. Check:
- front wheel static balance

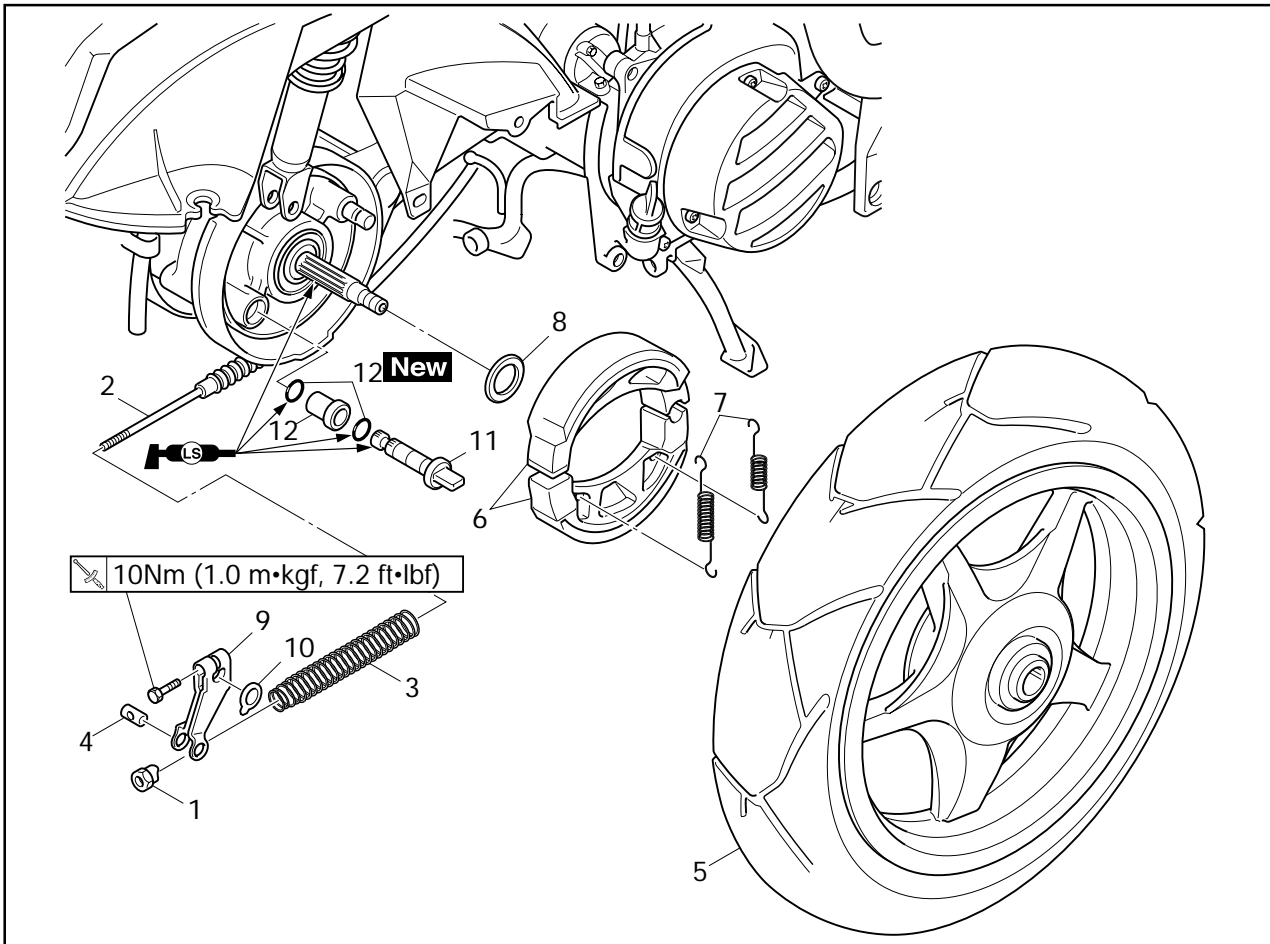


- a. Turn the front wheel and make sure it stays at each position shown.  
b. If the front wheel does not remain stationary at all of the positions, rebalance it.



EAS00555

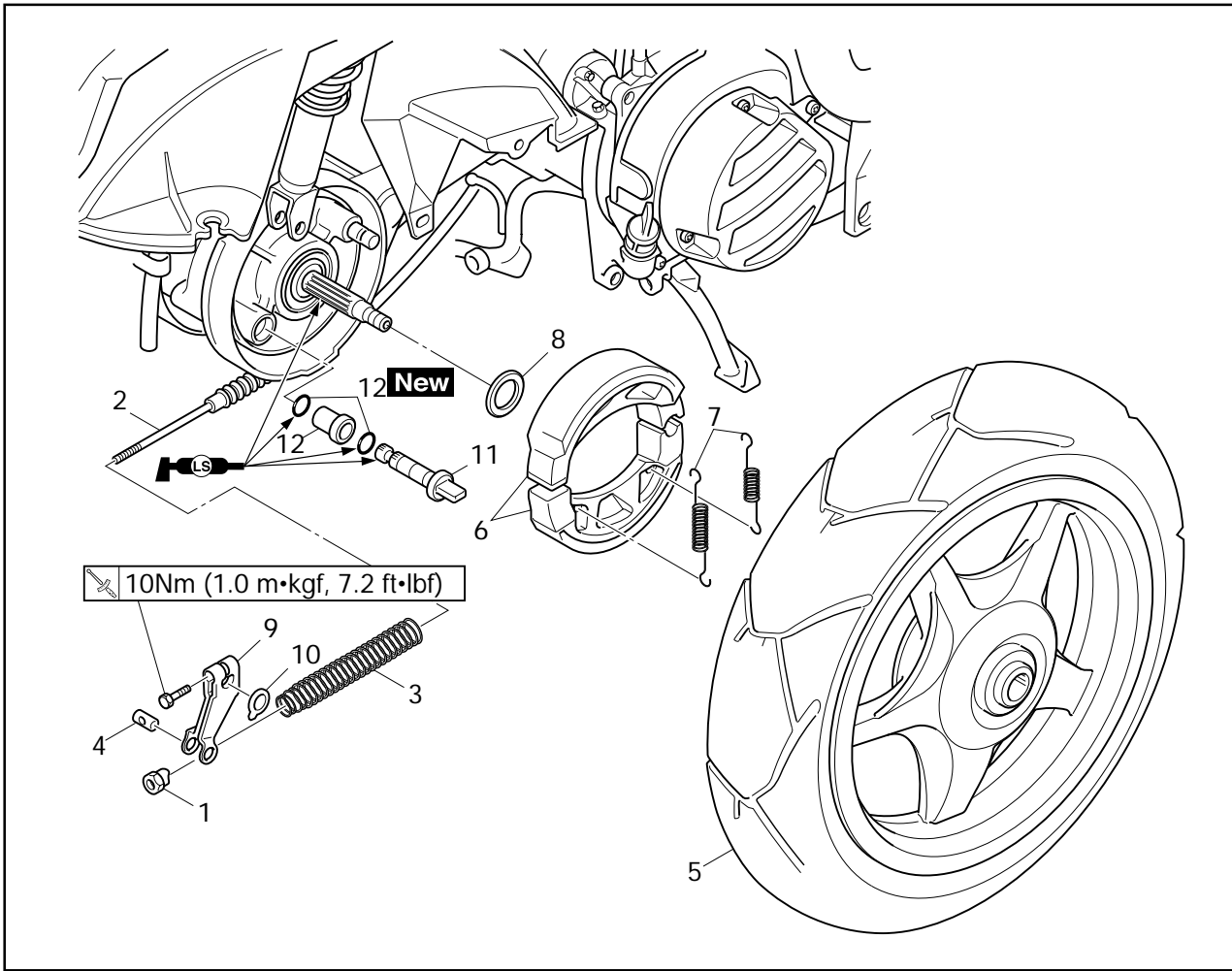
REAR WHEEL AND REAR BRAKE



Order	Job/Part	Q'ty	Remarks
	<b>Removing the rear wheel and rear brake</b>		Remove the parts in the order listed.
	O <sub>2</sub> sensor coupler		Refer to "REAR SHOCK ABSORBER ASSEMBLIES AND SWINGARM".
	Muffler		
	Swingarm		Refer to "ASSEMBLING THE BRAKE SHOES".
1	Brake adjuster	1	
2	Brake cable	1	
3	Compression spring	1	
4	Pin	1	
5	Rear wheel	1	
6	Brake shoe kit	1	
7	Tension spring	2	
8	Plate washer	1	
9	Camshaft lever	1	
10	Brake shoe wear indicator	1	
11	Brake camshaft/O-ring	1/2	



# REAR WHEEL AND REAR BRAKE



Order	Job/Part	Q'ty	Remarks
12	Collar	1	For installation, reverse the removal procedure.

EAS00564

## REMOVING THE REAR WHEEL

1. Stand the scooter on a level surface.

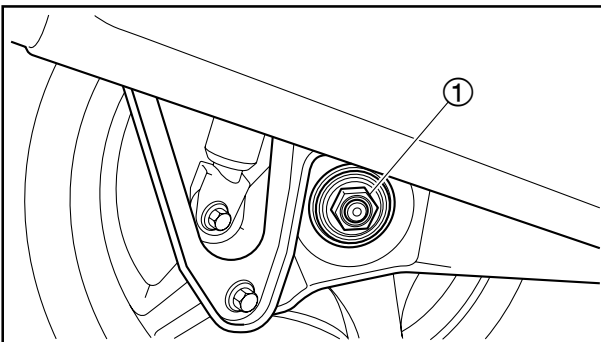
### **WARNING**

Securely support the scooter so that there is no danger of it falling over.

### **TIP**

Place the scooter on a suitable stand so that the rear wheel is elevated.

2. Disconnect:
  - O<sub>2</sub> sensor coupler



3. Remove:
  - muffler
  - wheel axle nut ①
  - swingarm

Refer to "REAR SHOCK ABSORBER ASSEMBLIES AND SWINGARM".

4. Loosen:
  - brake adjuster
5. Remove:
  - rear wheel
6. Remove:
  - brake shoe kit
  - brake camshaft lever

EAS00565

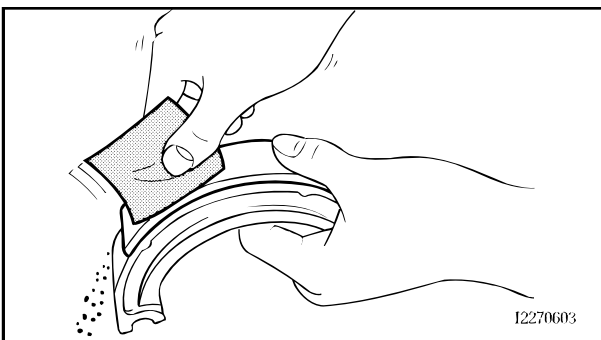
## CHECKING THE REAR WHEEL

1. Check:
  - tire
  - rear wheel  
Damage/wear → Replace.  
Refer to "CHECKING THE TIRES "and"  
CHECKING THE WHEELS" in chapter 3.
2. Measure:
  - radial wheel runout
  - lateral wheel runout  
Refer to "CHECKING THE FRONT  
WHEEL".

EAS00567

## CHECKING THE REAR WHEEL DRIVE HUB

1. Check:
  - rear wheel drive hub  
Cracks/damage → Replace the rear  
wheel.



EAS00569

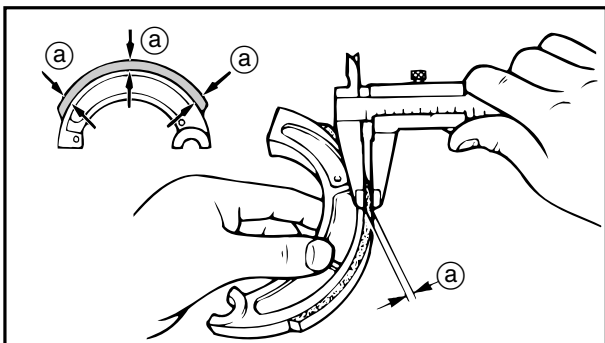
## CHECKING THE BRAKE

The following procedure applies to all of the brake shoes.


1. Check:
  - brake shoe lining  
Glazed areas → Repair.  
Sand the glazed areas with course sand-  
paper.

### TIP

After sanding the glazed areas, clean the brake shoe with a cloth.



2. Measure:
  - brake shoe lining thickness (a)
  - Out of specification → Replace.

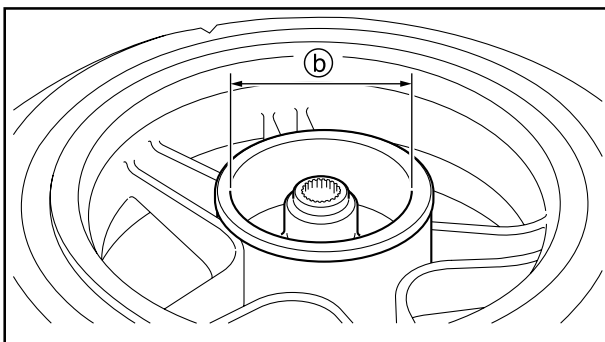
	<b>Brake shoe lining thickness limit (minimum)</b> 1.0mm (0.04in)
---	--

**WARNING**


Do not allow oil or grease to contact the brake shoes.

**TIP**

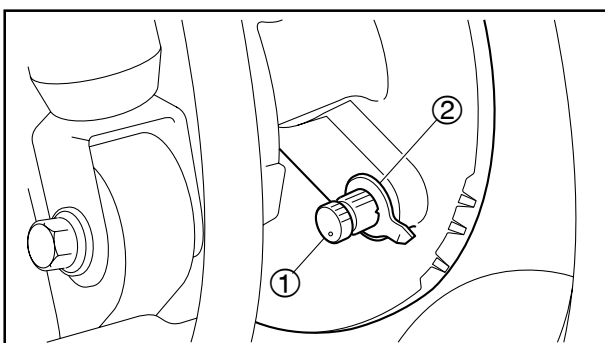
Replace the brake shoes as a set, if either is worn to the wear limit.



3. Measure:
  - brake drum inside diameter (b)
  - Out of specification → Replace the wheel.

	<b>Brake drum inside diameter limit (maximum)</b> 151mm (5.94in)
---	---

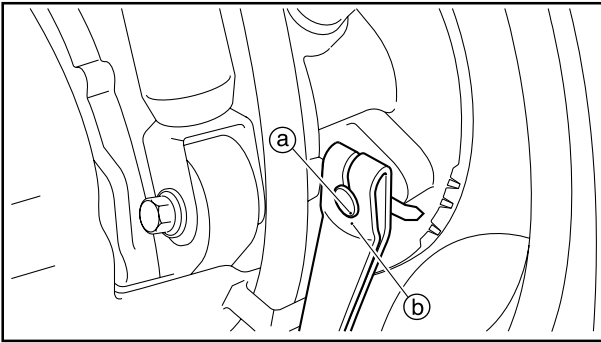
4. Check:
  - brake drum inner surface
  - Oil deposits → Clean.
  - Remove the oil with a rag soaked in lacquer thinner or solvent.
  - Scratches → Repair.
  - Lightly and evenly polish the scratches with an emery cloth.
5. Check:
  - brake camshaft
  - Damage/wear → Replace.



EAS00570

## ASSEMBLING THE BRAKE SHOES

1. Install:
  - O-rings **New**
  - brake camshaft ①
  - brake shoe wear indicator ②



**TIP**  
Lubricate the brake camshaft and O-rings with lithium-soap-based grease.


**⚠ WARNING**  
After installing the brake camshaft and O-rings, remove any excess grease.

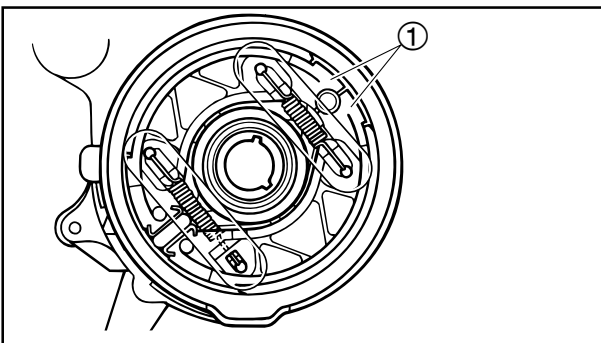


- a. Install the brake camshaft so its punch mark ① is positioned as shown.
- b. Align the projection ② on the brake camshaft lever with the notch in the brake shoe camshaft.
- c. Check that the brake shoes are properly positioned.



2. Tighten:
  - brake camshaft lever

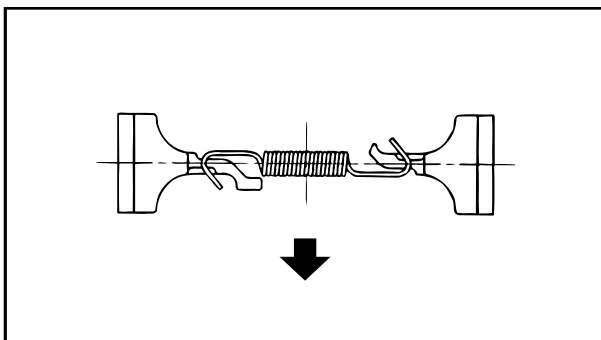
	10Nm(1.0m • kgf, 7.2ft • lbf)
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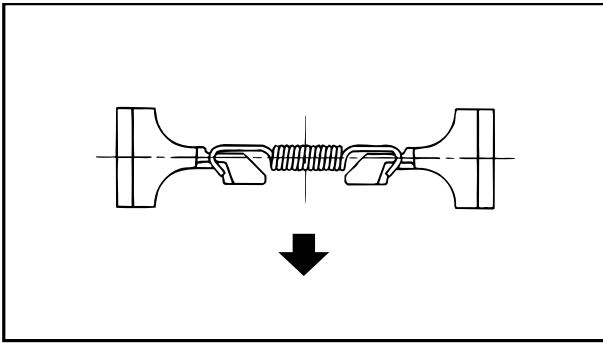


3. Install:
  - brake shoe kit ①
  - tension springs

**NOTICE**

- Do not put lubricating oil on the brake lining.
- Change the tension spring at the same time of changing the brake shoe.
- Refer to the direction in the illustration when assembling the brake shoe and spring.
- Refer to the illustration with regards to the assembly direction of tension spring, and do not let the spring hook and coil to be damaged by the pliers.

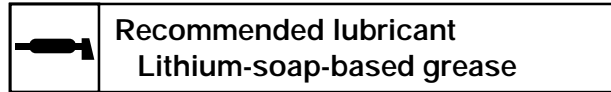




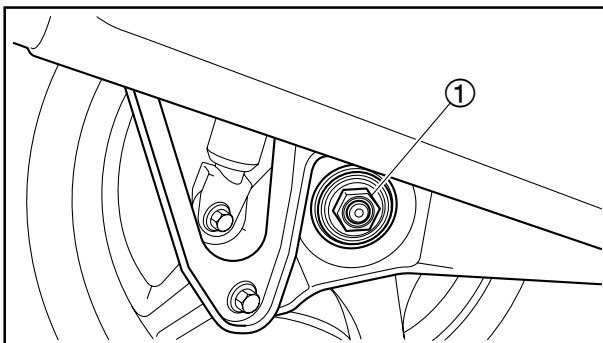
EAS00574

## INSTALLING THE REAR WHEEL

1. Lubricate:
  - wheel axle



2. Install:
  - rear wheel



3. Install:
  - swingarm
  - wheel axle nut ①
  - muffler

Refer to "REAR SHOCK ABSORBER ASSEMBLIES AND SWINGARM".

4. Connect:
  - O<sub>2</sub> sensor coupler
5. Adjust:
  - brake lever free play

Refer to "ADJUSTING THE REAR BRAKE" in chapter 3.



EAS00575

## ADJUSTING THE REAR WHEEL STATIC BALANCE

### TIP

---

- After replacing the tire, wheel or both, the rear wheel static balance should be adjusted.
  - Adjust the rear wheel static balance with the rear wheel drive hub installed.
- 

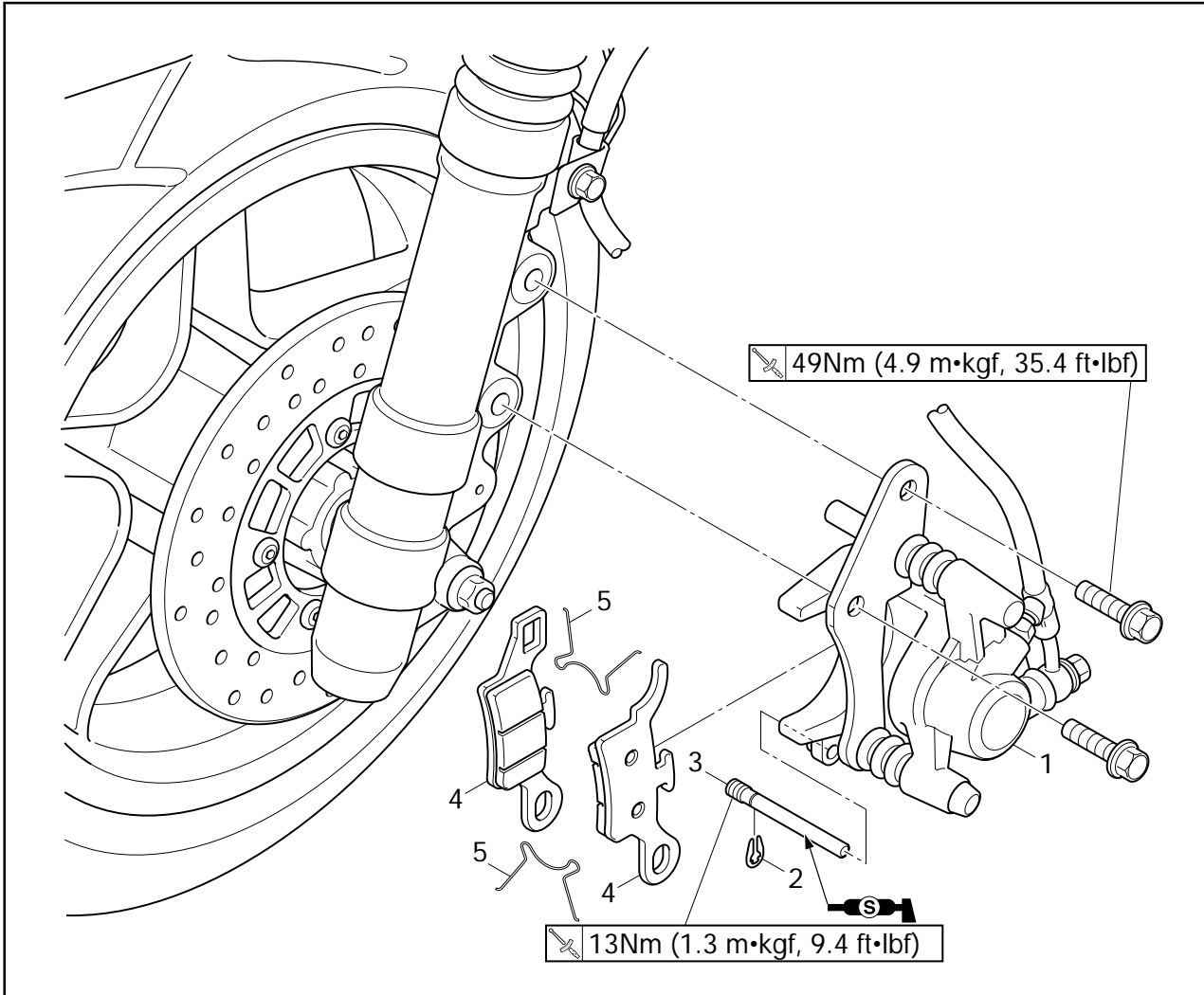
### 1. Adjust:

- rear wheel static balance

Refer to "ADJUSTING THE FRONT WHEEL STATIC BALANCE".

EAS00576

**FRONT BRAKE**  
**FRONT BRAKE PADS**



Order	Job/Part	Q'ty	Remarks
	<b>Removing the front brake pads</b>		
1	Brake caliper	1	Remove the parts in the order listed. Disconnect. } Refer to "REPLACING THE FRONT BRAKE PADS". For installation, reverse the removal procedure.
2	Circlip	1	
3	Brake pad retaining bolt	1	
4	Brake pad	2	
5	Brake pad spring	2	



EAS00579

**NOTICE**

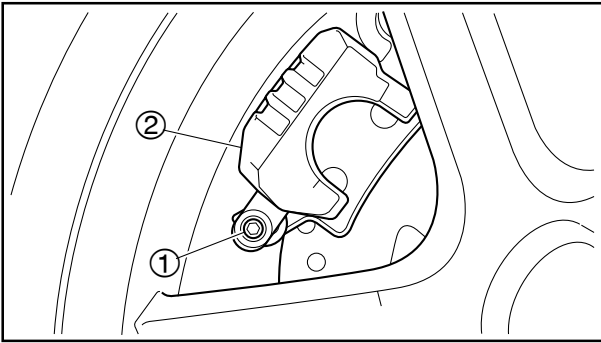
Disc brake components rarely require disassembly.

Therefore, always follow these preventive measures:

- Never disassemble brake components unless absolutely necessary.
- If any connection on the hydraulic brake system is disconnected, the entire brake system must be disassembled, drained, cleaned, properly filled, and bled after reassembly.
- Never use solvents on internal brake components.
- Use only clean or new brake fluid for cleaning brake components.
- Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt brake fluid immediately.
- Avoid brake fluid coming into contact with the eyes as it can cause serious injury.

**FIRST AID FOR BRAKE FLUID ENTERING THE EYES:**

- Flush with water for 15 minutes and get immediate medical attention.



EAS00581

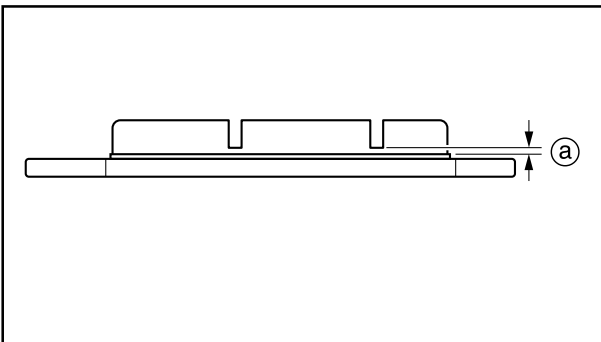
## REPLACING THE FRONT BRAKE PADS

**TIP**

When replacing the brake pads, it is not necessary to disconnect the brake hose or disassemble the brake caliper.

1. Loosen:
  - brake pad retaining bolt ①
2. Remove:
  - brake caliper ②
3. Remove:
  - circlip
  - brake pad retaining bolt
  - brake pads
  - brake pad springs
4. Measure:
  - brake pad wear limit ③

Out of specification → Replace the brake pads as a set.



**Brake pad wear limit**  
0.8mm (0.03in)

5. Install:
  - brake pad springs
  - brake pads

**TIP**

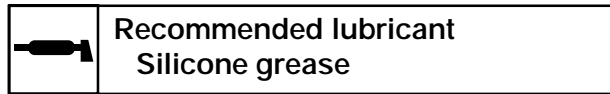
Always install new brake pads and a new brake pad springs as a set.

**TIP**

Make sure the brake pad springs is installed correctly as shown.

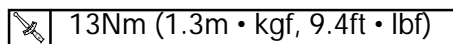


6. Lubricate:
- brake pad retaining bolt

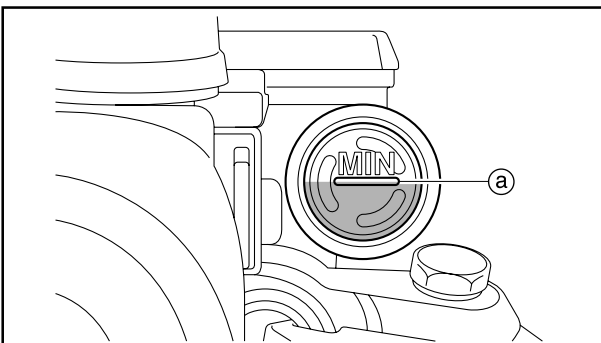
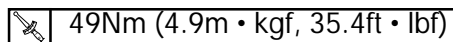
**NOTICE**

- Do not allow grease to contact the brake pads.
- Remove any excess grease.

7. Install:
- brake pad retaining bolt



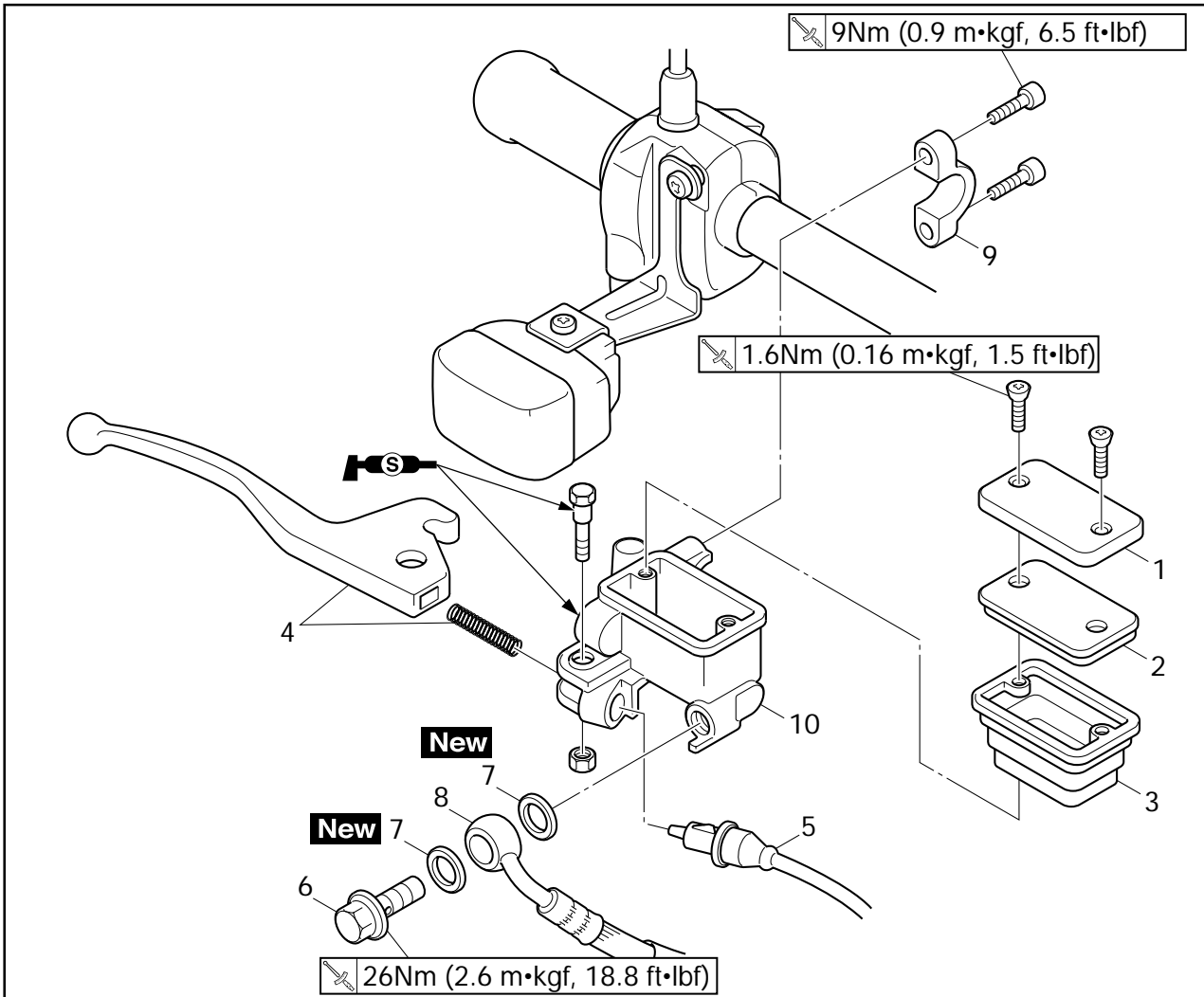
- circlip
- brake caliper



8. Check:
- brake fluid level  
Below the level mark (a) → Add the recommended brake fluid to the proper level. Refer to "CHECKING THE BRAKE FLUID LEVEL" in chapter 3.
9. Check:
- brake lever operation  
Soft or spongy feeling → Bleed the brake system. Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM" in chapter 3.

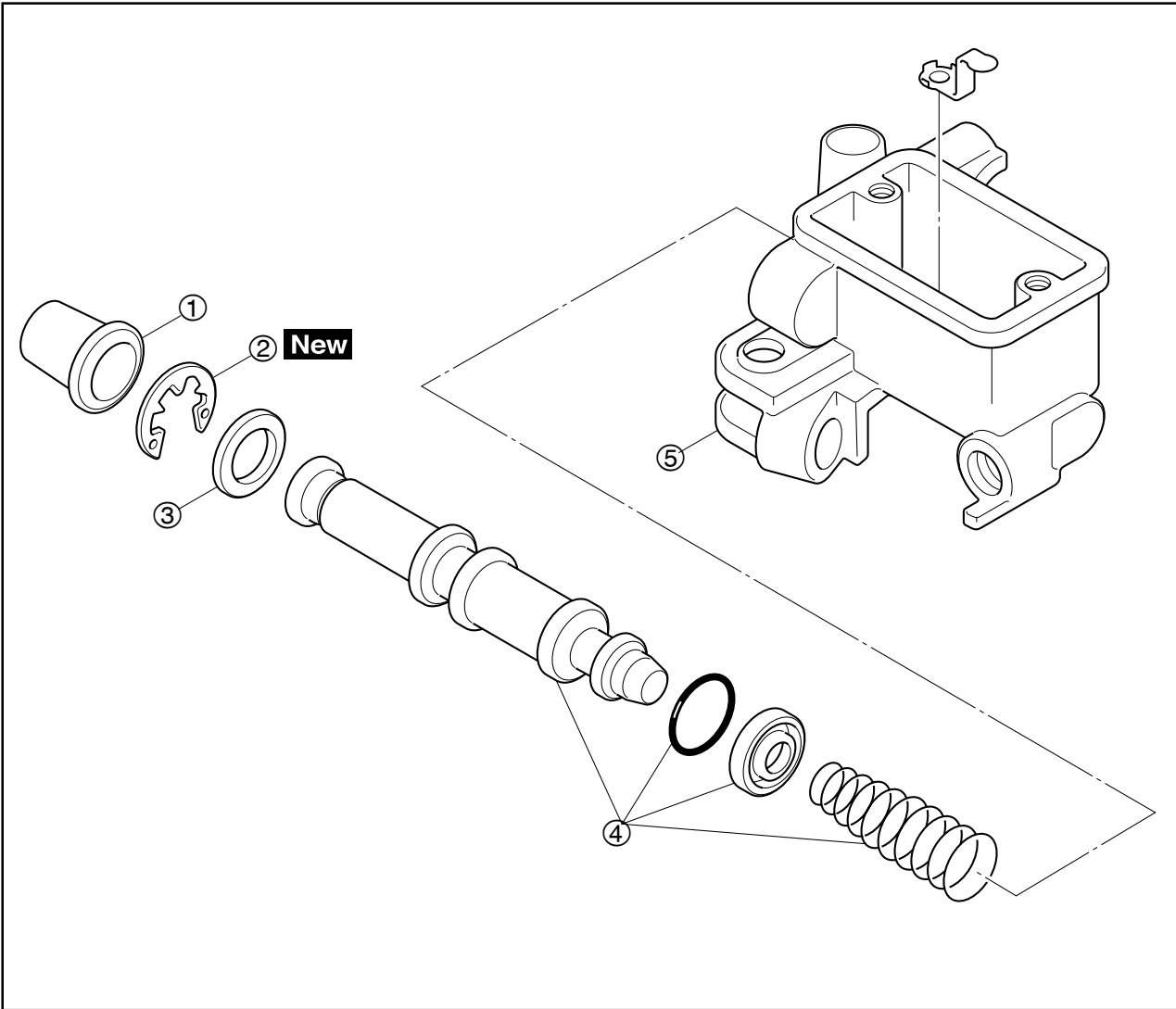
EAS00584

**FRONT BRAKE MASTER CYLINDER**



Order	Job/Part	Q'ty	Remarks
	<b>Removing the front brake master cylinder</b>		Remove the parts in the order listed.
	Brush guard (right)		Refer to "HANDLEBAR".
	Brake fluid		Drain.
1	Brake master reservoir cap	1	Refer to "DISASSEMBLING THE FRONT BRAKE MASTER CYLINDER" and "ASSEMBLING AND INSTALLING THE FRONT BRAKE MASTER CYLINDER". For installation, reverse the removal procedure.
2	Brake master reservoir holder	1	
3	Brake master reservoir diaphragm	1	
4	Brake lever/compress spring	1/1	
5	Front brake light switch	1	
6	Union bolt	1	
7	Copper washer	2	
8	Brake hose	1	
9	Brake master cylinder holder	1	
10	Brake master cylinder	1	

EAS00585



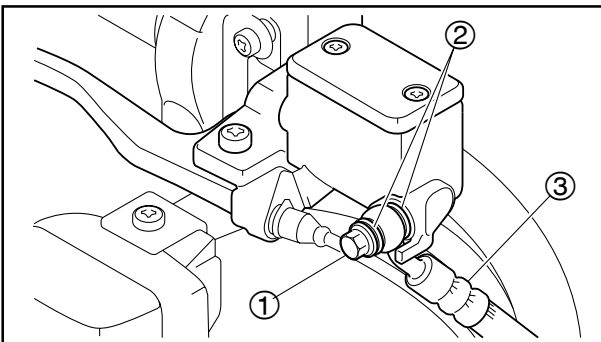
Order	Job/Part	Q'ty	Remarks
	<b>Disassembling the front brake master cylinder</b>		Remove the parts in the order listed.
①	Dust boot	1	
②	Circlip	1	
③	Washer	1	
④	Brake master cylinder kit	1	
⑤	Brake master cylinder body	1	
			For assembly, reverse the disassembly procedure.

EAS00588

**DISASSEMBLING THE FRONT BRAKE MASTER CYLINDER****TIP**

Before disassembling the front brake master cylinder, drain the brake fluid from the entire brake system.

1. Remove:
  - brush guard (right)  
Refer to "HANDLEBAR".

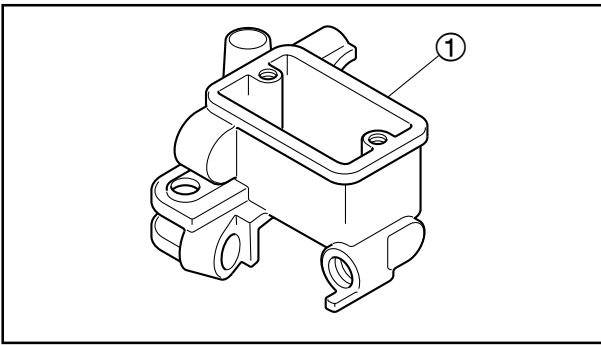


2. Remove:
  - brake lever/compress spring
  - front brake light switch
  - union bolt ①
  - copper washers ②
  - brake hose ③

**TIP**

To collect any remaining brake fluid, place a container under the master cylinder and the end of the brake hose.

3. Remove:
  - brake master cylinder holder
  - brake master cylinder
4. Remove:
  - dust boot
  - circlip
  - washer
  - brake master cylinder kit

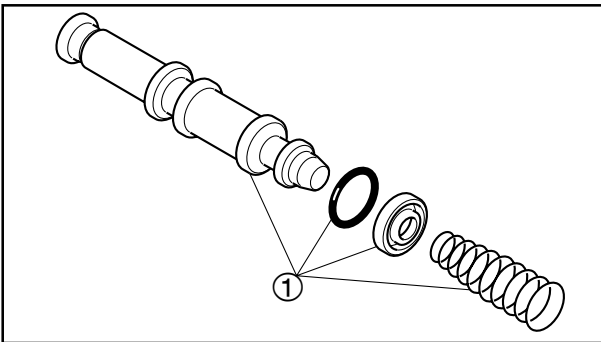


EAS00590

### CHECKING THE FRONT BRAKE MASTER CYLINDER

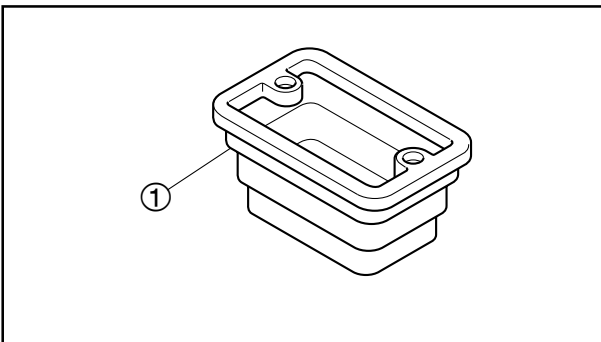
#### 1. Check:

- brake master cylinder ①  
Damage/scratches/wear → Replace.
- brake fluid delivery passages  
(brake master cylinder body)  
Obstruction → Blow out with compressed air.



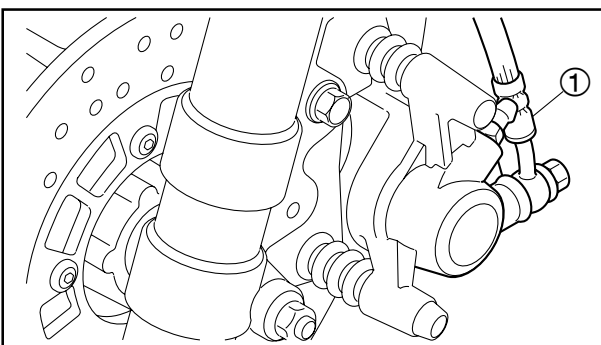
#### 2. Check:

- brake master cylinder kit ①  
Damage/scratches/wear → Replace.



#### 3. Check:

- brake master cylinder reservoir  
Cracks/damage → Replace.
- brake master cylinder reservoir diaphragm ①  
Damage/wear → Replace.



#### 4. Check:

- brake hose ①  
Cracks/damage/wear → Replace.




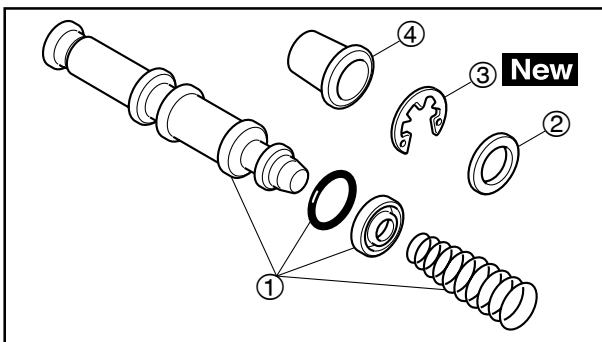
EAS00597

## ASSEMBLING AND INSTALLING THE FRONT BRAKE MASTER CYLINDER

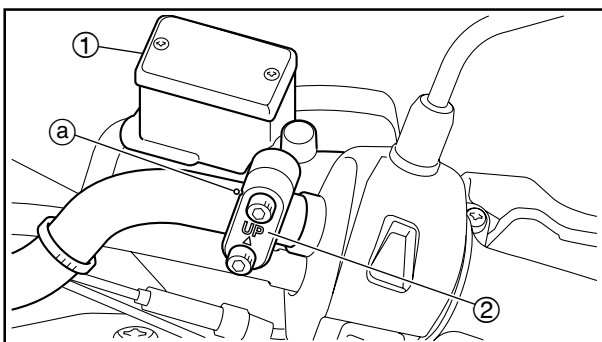
### WARNING

- Before installation, all internal brake components should be cleaned and lubricated with clean or new brake fluid.
- Never use solvents on internal brake components.


 Recommended brake fluid  
DOT 4



1. Install:
  - brake master cylinder kit ①
  - washer ②
  - circlip ③ **New**
  - dust boot ④



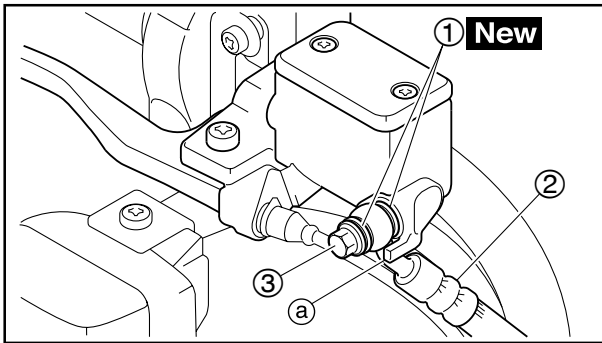
2. Install:
  - brake master cylinder ①
  - brake master cylinder holder ②

 9Nm (0.9m • kgf, 6.5ft • lbf)

### TIP


- Install the brake master cylinder holder with the "UP" mark facing up.
- Align the end of the brake master cylinder holder with the punch mark (a) in the handlebar.
- First, tighten the upper bolt, then the lower bolt.





3. Install:

- copper washers ① **New**
- brake hose ②
- union bolt ③

 26Nm (2.6m • kgf, 18.8ft • lbf)

**NOTICE**

When installing the brake hose onto the brake master cylinder, make sure the brake hose touch the projection **a** on the brake master cylinder.

**WARNING**


Proper brake hose routing is essential to insure safe scooter operation. Refer to "CABLE ROUTING" in chapter 2.

**TIP**

- While holding the brake hose, tighten the union bolt as shown.
- Turn the handlebar to the left and right to make sure the brake hose does not touch other parts (e.g., wire harness, cables, leads). Correct if necessary.

4. Fill:

- brake fluid reservoir  
(with the specified amount of the recommended brake fluid)

 **Recommended brake fluid**  
DOT 4

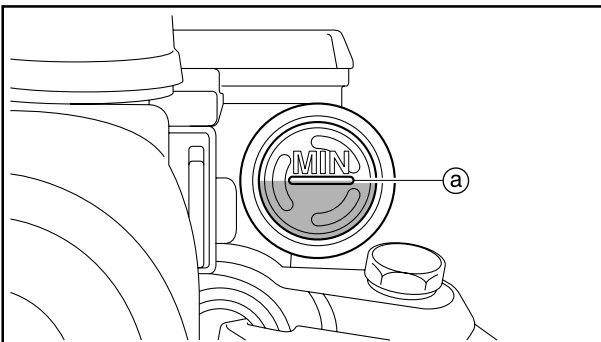
**WARNING**

- Use only the designated brake fluid. Other brake fluids may cause the rubber seals to deteriorate, causing leakage and poor brake performance.
- Refill with the same type of brake fluid that is already in the system. Mixing brake fluids may result in a harmful chemical reaction, leading to poor brake performance.
- When refilling, be careful that water does not enter the brake fluid reservoir. Water will significantly lower the boiling point of the brake fluid and could cause vapor lock.

**NOTICE**

Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt brake fluid immediately.

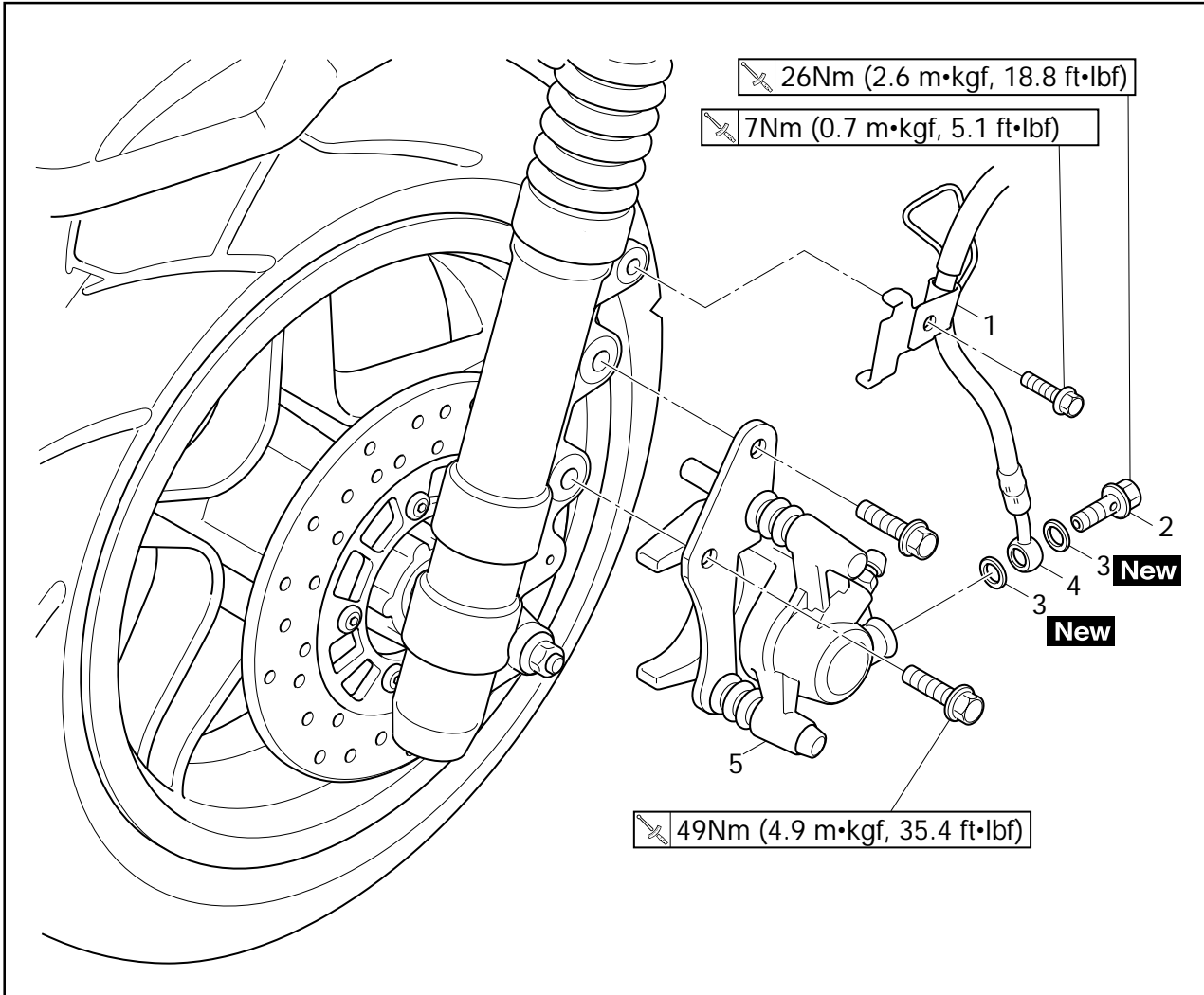
5. Bleed:
  - brake system  
Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM" in chapter 3.



6. Check:
  - brake fluid level  
Below the minimum level mark (a) → Add the recommended brake fluid to the proper level.  
Refer to "CHECKING THE BRAKE FLUID LEVEL" in chapter 3.
7. Check:
  - brake lever operation  
Soft or spongy feeling → Bleed the brake system.  
Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM" in chapter 3.
8. Install:
  - brush guard (right)  
Refer to "HANDLEBAR".

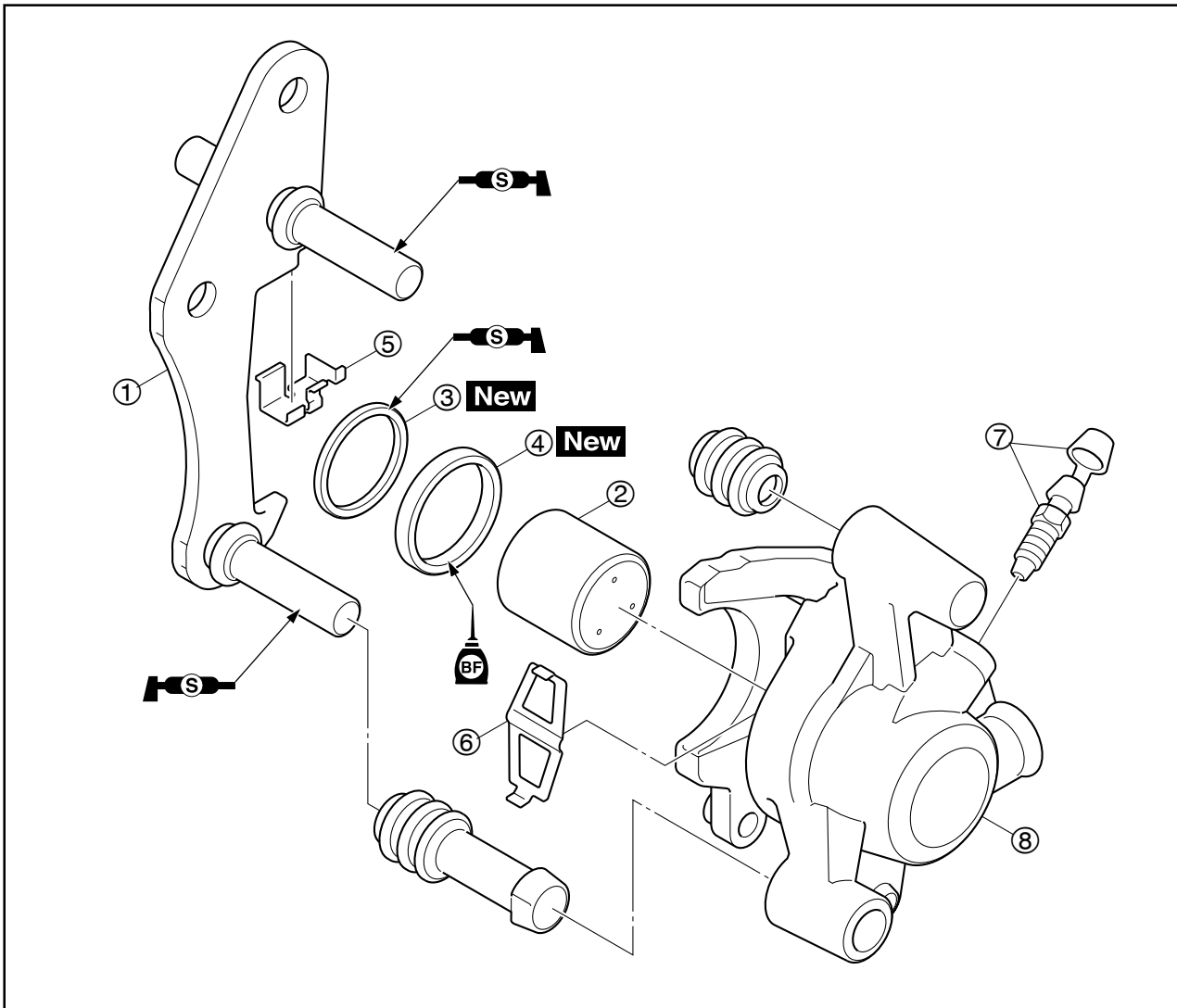
EAS00612

**FRONT BRAKE CALIPER**



Order	Job/Part	Q'ty	Remarks
	<b>Removing the front brake caliper</b>		Remove the parts in the order listed. Drain.
1	Brake fluid		
1	Brake hose holder 1	1	
2	Union bolt	1	
3	Copper washer	2	
4	Brake hose	1	Disconnect.
5	Brake caliper	1	For installation, reverse the removal procedure.

EAS00614



Order	Job/Part	Q'ty	Remarks
	<b>Disassembling the front brake caliper</b>		Remove the parts in the order listed.
	Brake pad		Refer to "REPLACING THE FRONT BRAKE PADS".
	Brake pad spring		
①	Brake caliper bracket	1	Refer to "DISASSEMBLING THE FRONT BRAKE CALIPER" and "ASSEMBLING AND INSTALLING THE FRONT BRAKE CALIPER".
②	Brake caliper piston	1	
③	Brake caliper dust seal	1	
④	Brake caliper piston seal	1	
⑤	Spring	1	
⑥	Spring seat	1	
⑦	Bleed screw/cap	1/1	
⑧	Brake caliper body	1	
			For assembly, reverse the disassembly procedure.

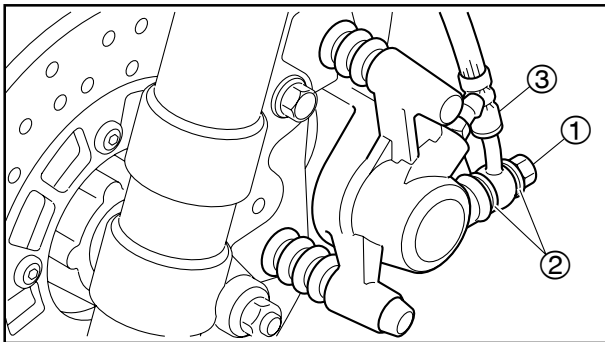


EAS00619

## DISASSEMBLING THE FRONT BRAKE CALIPER

### TIP

Before disassembling the brake caliper, drain the brake fluid from the entire brake system.

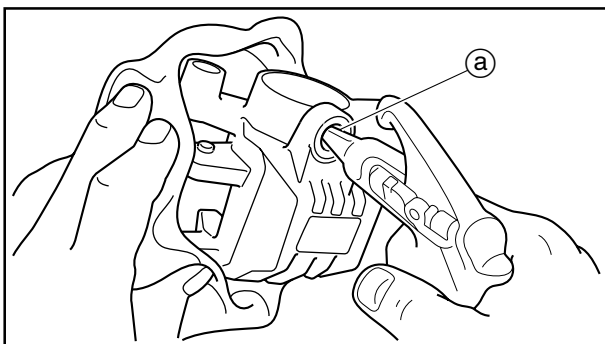


1. Remove:

- union bolt ①
- copper washers ②
- brake hose ③

### TIP

Put the end of the brake hose into a container and pump out the brake fluid carefully.



2. Remove:

- brake caliper piston
- brake caliper dust seal
- brake caliper piston seal
- spring
- spring seat



a. Blow compressed air into the brake hose joint opening @ to force out the pistons from the brake caliper.

### **WARNING**

- Cover the brake caliper piston with a rag. Be careful not to get injured when the piston are expelled from the brake caliper.
- Never try to pry out the brake caliper piston.

b. Remove the brake caliper piston seal and dust seal.

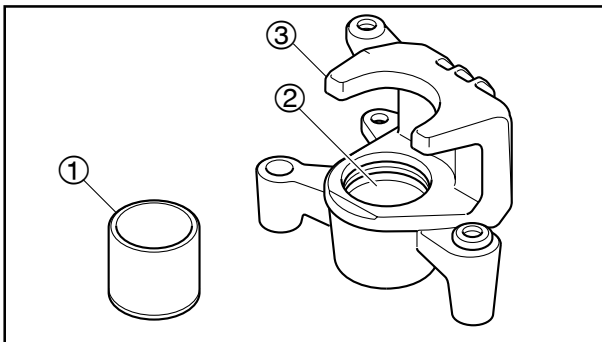




EAS00631

## CHECKING THE FRONT BRAKE CALIPER

Recommended brake component replacement schedule	
Brake pads	If necessary
Piston seal	Every two years
Brake hose	Every four years
Brake fluid	Every two years and whenever the brake is disassembled



## 1. Check:

- brake caliper piston ①  
Rust/scratches/wear → Replace the brake caliper piston.
- brake caliper cylinder ②  
Scratches/wear → Replace the brake caliper assembly.
- brake caliper body ③  
Cracks/damage → Replace the brake caliper assembly.
- brake fluid delivery passages (brake caliper body)  
Obstruction → Blow out with compressed air.

**⚠ WARNING**

Whenever a brake caliper is disassembled, replace the piston seal and dust seal.

## 2. Check:

- brake caliper bracket  
Cracks/damage → Replace.



EAS00637

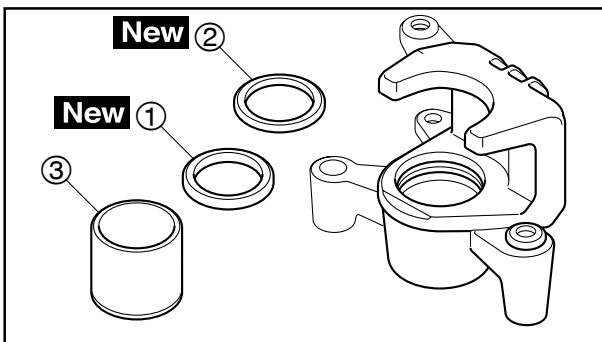
## ASSEMBLING AND INSTALLING THE FRONT BRAKE CALIPER

### WARNING

- Before installation, all internal brake components should be cleaned and lubricated with clean or new brake fluid.
- Never use solvents on internal brake components as they will cause the piston seal to swell and distort.
- Whenever a brake caliper is disassembled, replace the brake caliper piston seal and dust seal.



Recommended brake fluid  
DOT 4



#### 1. Install:

- brake caliper piston seal ① **New**
- brake caliper dust seal ② **New**
- brake caliper piston ③

#### 2. Lubricate:

- brake caliper piston seal
- brake caliper dust seal



Recommended lubricant  
Brake caliper piston seal  
Brake fluid  
Brake caliper dust seal  
Silicone grease

#### 3. Install:

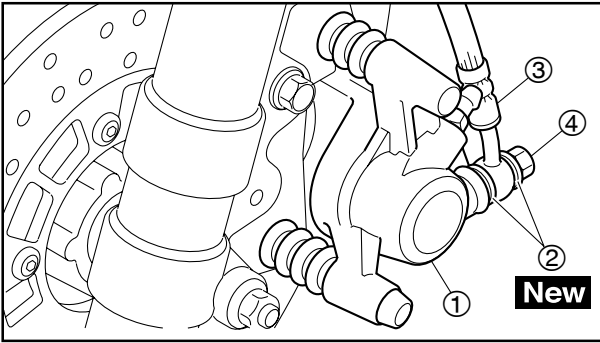
- brake caliper bracket

#### 4. Lubricate:

- brake caliper guide bar



Recommended lubricant  
Silicone grease



5. Install:
- brake caliper ① (temporarily)
  - copper washers ② **New**
  - brake hose ③
  - union bolt ④

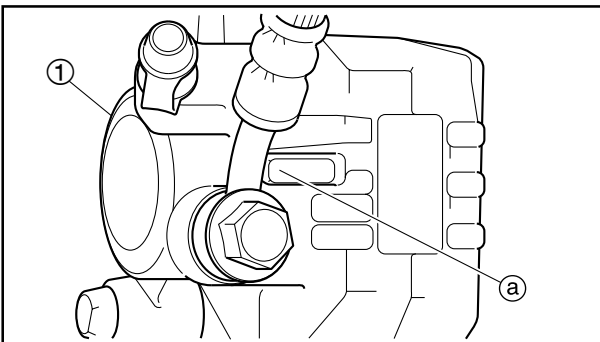
26Nm (2.6m • kgf, 18.8ft • lbf)

- brake hose holder 1

7Nm (0.7m • kgf, 5.1ft • lbf)

**⚠ WARNING**

Proper brake hose routing is essential to insure safe scooter operation. Refer to "CABLE ROUTING" in chapter 2.



**NOTICE**

When installing the brake hose onto the brake caliper ①, make sure the brake pipe touch the projection (a) on the brake caliper.

6. Remove:
- brake caliper
7. Install:
- spring seat
  - spring
  - brake pads
  - brake pad springs
  - brake caliper retaining bolt

13Nm (1.3m • kgf, 9.4ft • lbf)

- circlip
- brake caliper

49Nm (4.9m • kgf, 35.4ft • lbf)

Refer to "REPLACING THE BRAKE PADS".





## 8. Fill:

- brake fluid reservoir  
(with the specified amount of the recommended brake fluid)



Recommended brake fluid  
DOT 4

**WARNING**

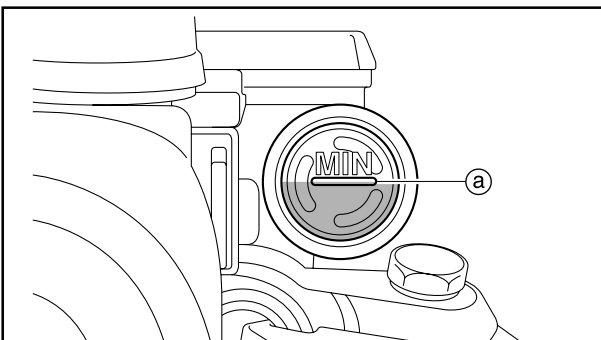
- Use only the designated brake fluid. Other brake fluids may cause the rubber seals to deteriorate, causing leakage and poor brake performance.
- Refill with the same type of brake fluid that is already in the system. Mixing brake fluids may result in a harmful chemical reaction, leading to poor brake performance.
- When refilling, be careful that water does not enter the brake fluid reservoir. Water will significantly lower the boiling point of the brake fluid and could cause vapor lock.

**NOTICE**

Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt brake fluid immediately.

## 9. Bleed:

- brake system  
Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM" in chapter 3.



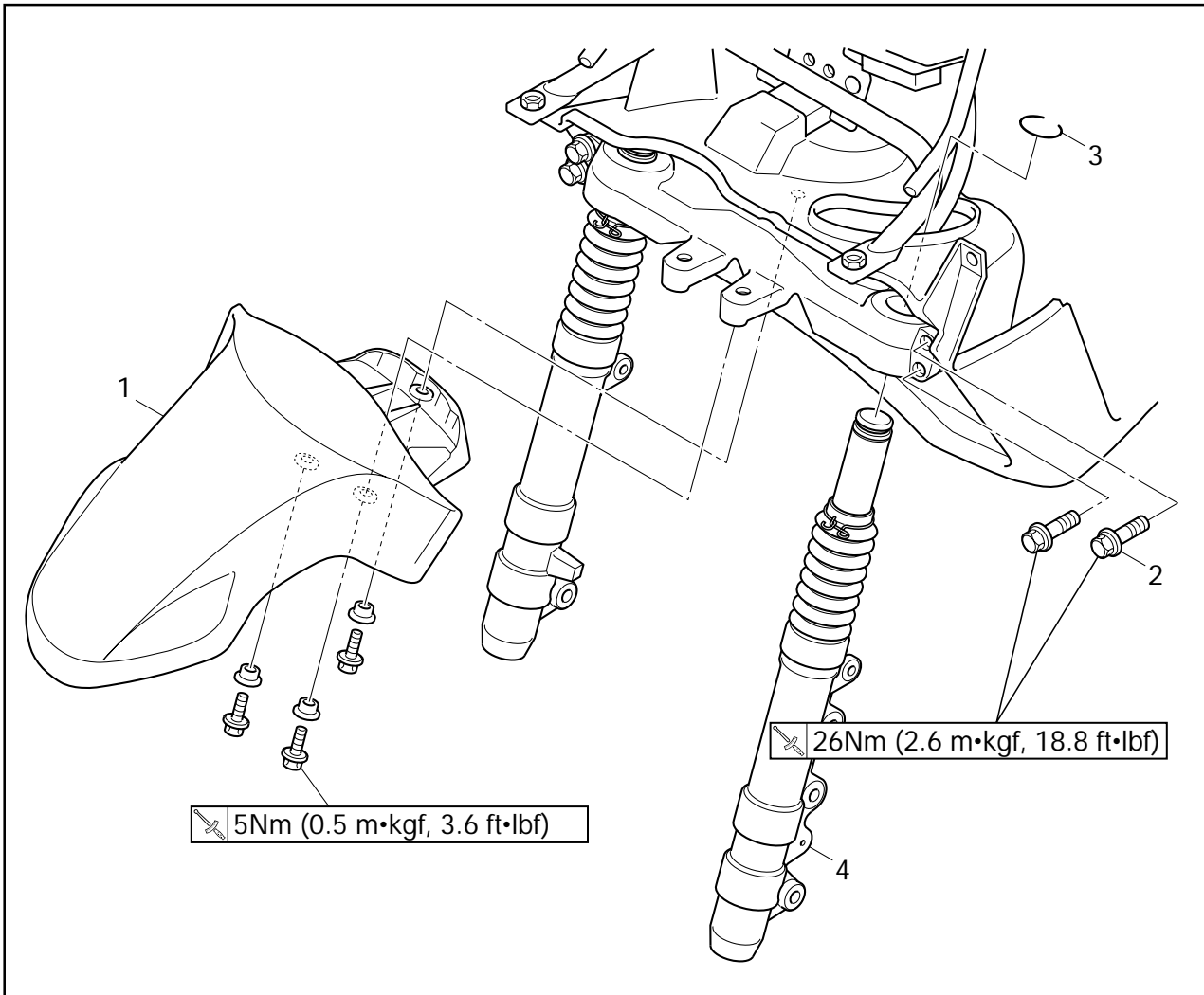
## 10. Check:

- brake fluid level  
Below the level mark (a) → Add the recommended brake fluid to the proper level. Refer to "CHECKING THE BRAKE FLUID LEVEL" in chapter 3.

11. Check:
  - brake lever operation  
Soft or spongy feeling → Bleed the brake system.  
Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM" in chapter 3.

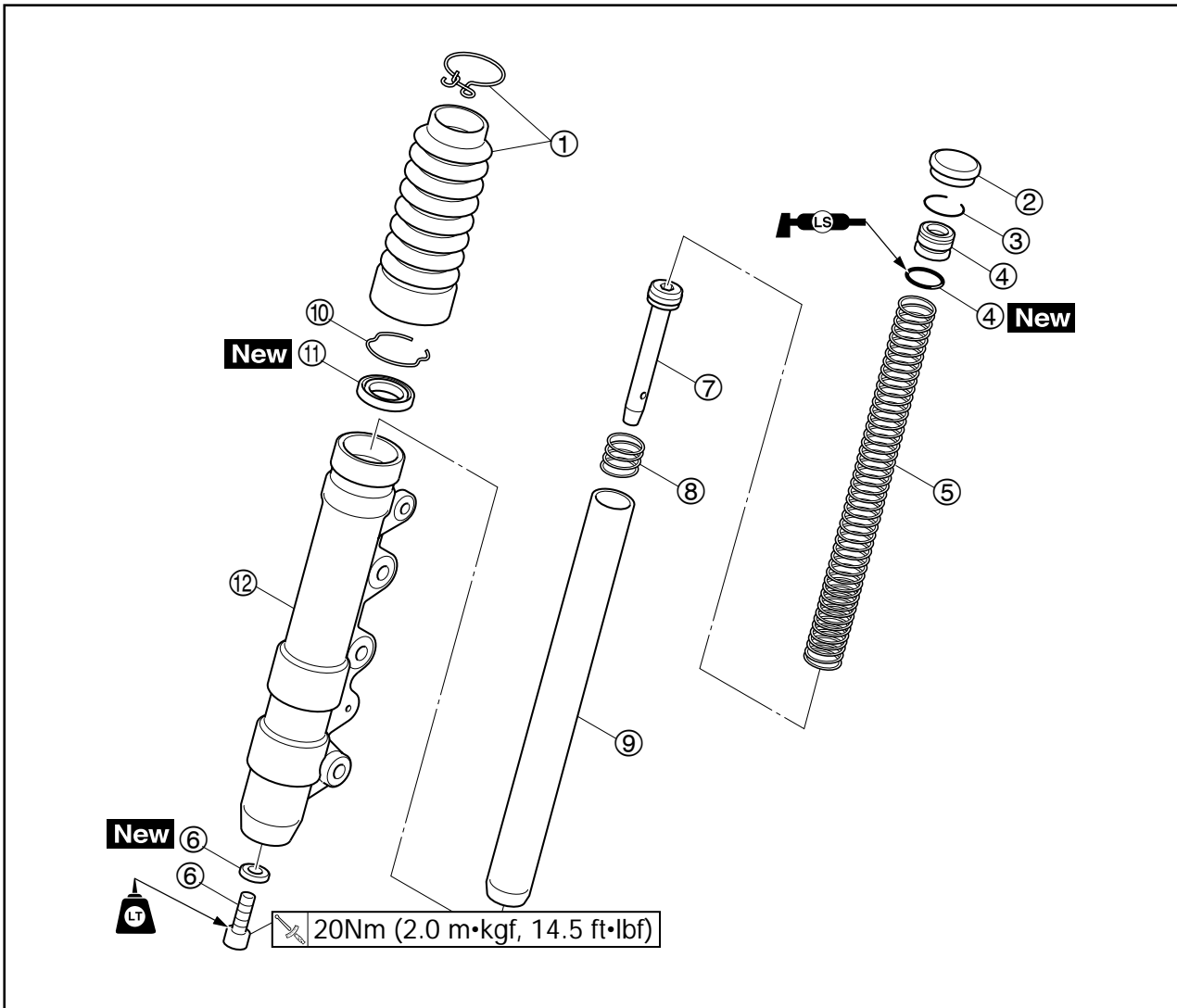
EAS00646

**FRONT FORK**

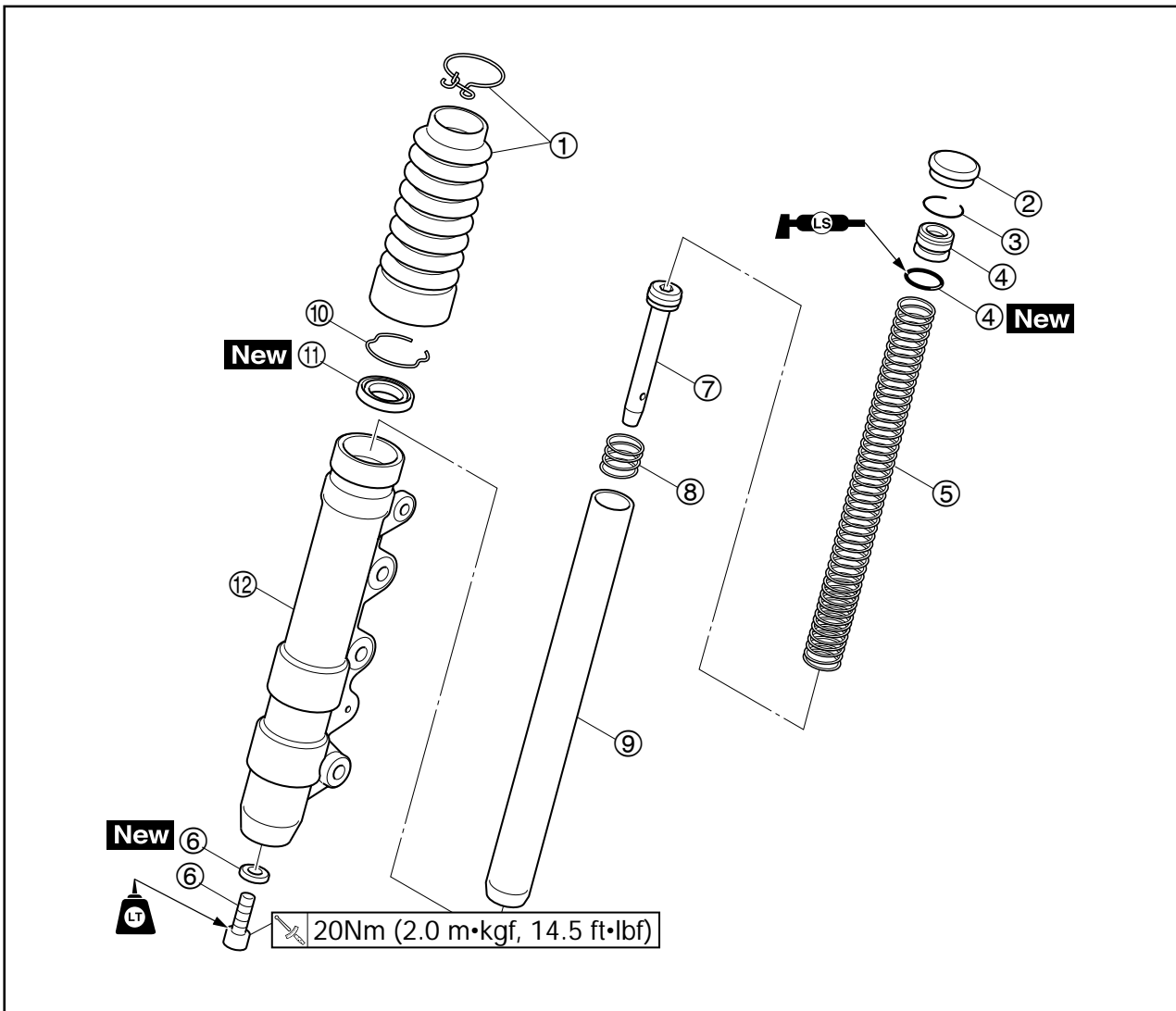


Order	Job/Part	Q'ty	Remarks
	<b>Removing the front fork legs</b>		Remove the parts in the order listed. The following procedure applies to both of the front fork legs.
	Leg shield 1		Refer to "COVER AND PANEL" in chapter 3.
	Front wheel		Refer to "FRONT WHEEL AND BRAKE DISC".
	Brake hose holder 1		Refer to "FRONT BRAKE".
	Brake caliper		
1	Front fender	1	Loosen. Refer to "REMOVING THE FRONT FORK LEGS" and "INSTALLING THE FRONT FORK LEGS". For installation, reverse the removal procedure.
2	Lower bracket pinch bolt	2	
3	Stopper ring	1	
4	Front fork leg	1	

EAS00648



Order	Job/Part	Q'ty	Remarks
	<b>Disassembling the front fork legs</b>		Remove the parts in the order listed. The following procedure applies to both of the front fork legs.
①	Clamp/boot	1/1	Refer to "DISASSEMBLING THE FRONT FORK LEGS" and "ASSEMBLING THE FRONT FORK LEGS".
②	Cap	1	
③	Stopper ring	1	
④	Collar/O-ring	1/1	
⑤	Fork spring	1	
⑥	Damper rod bolt/copper washer	1/1	
⑦	Damper rod	1	
⑧	Rebound spring	1	
⑨	Inner tube	1	
⑩	Oil seal clip	1	
⑪	Oil seal	1	
⑫	Outer tube	1	



Order	Job/Part	Q'ty	Remarks
			For assembly, reverse the disassembly procedure.



EAS00651

**REMOVING THE FRONT FORK LEGS**

The following procedure applies to both of the front fork legs.

1. Stand the scooter on a level surface.

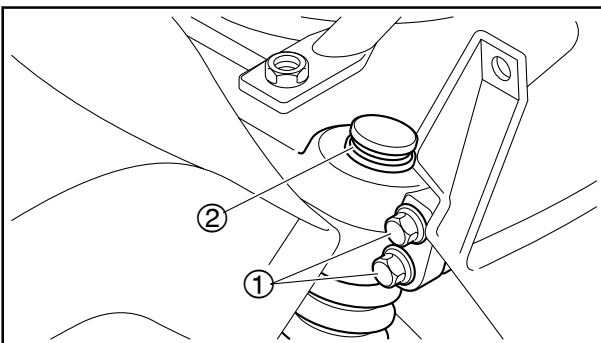
**⚠ WARNING**

Securely support the scooter so that there is no danger of it falling over.

**TIP**

Place the scooter on a suitable stand so that the front wheel is elevated.

2. Remove:
  - leg shield 1  
Refer to "COVER AND PANEL" in chapter 3.
  - brake hose holder 1
  - brake caliper  
Refer to "FRONT BRAKE".
  - front wheel  
Refer to "FRONT WHEEL AND BRAKE DISC".



3. Loosen:
  - lower bracket pinch bolt ①
4. Remove:
  - stopper ring ②

**⚠ WARNING**

Before loosening the lower bracket pinch bolts, support the front fork leg.

5. Remove:
  - front fork leg

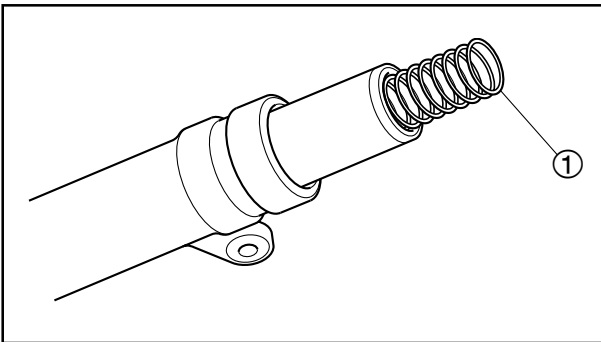


EAS00653

**DISASSEMBLING THE FRONT FORK LEGS**

The following procedure applies to both of the front fork legs.

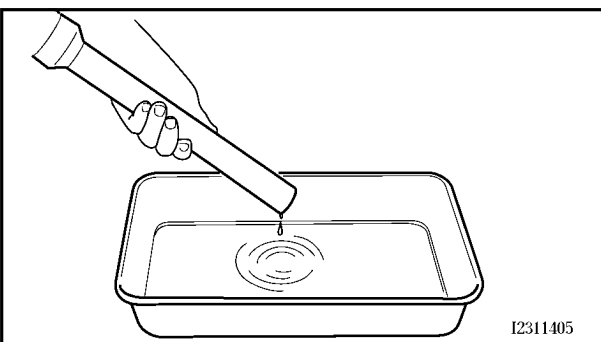
1. Remove:
  - clamp/boot



2. Remove:
  - cap
  - stopper ring
  - collar/O-ring
  - fork spring ①

**NOTICE**

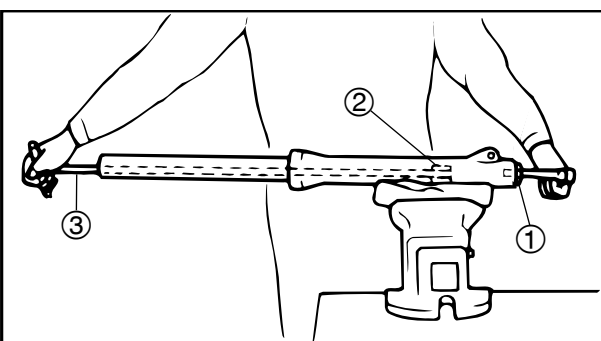
The collar/O-ring and fork spring jump out after removing stopper ring.



3. Drain:
  - fork oil

**TIP**

Stoke the outer tube several times while draining the fork oil.



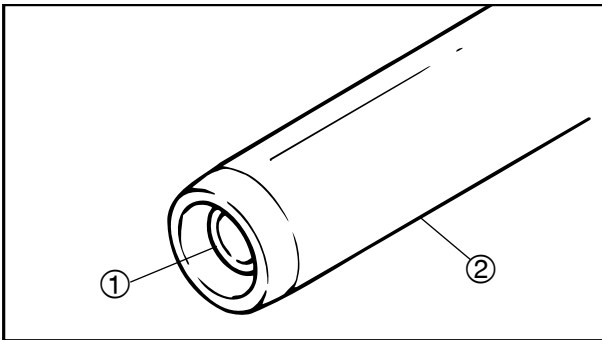
4. Remove:
  - damper rod assembly bolt ①
  - copper washer

**TIP**

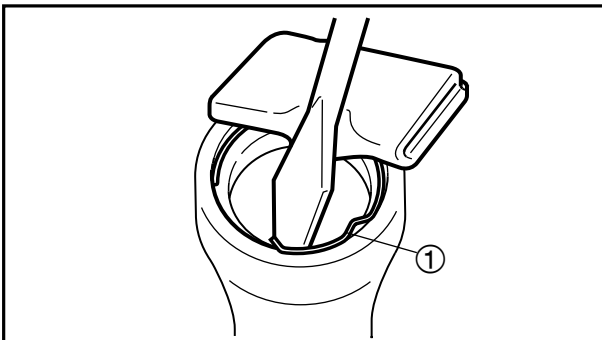
While holding the damper rod with the damper rod holder ② and T-handle ③, loosen the damper rod assembly bolt.



Damper rod holder  
 90890-01294 (YM-01300-1)  
 T-handle  
 90890-01326 (YM-01326)



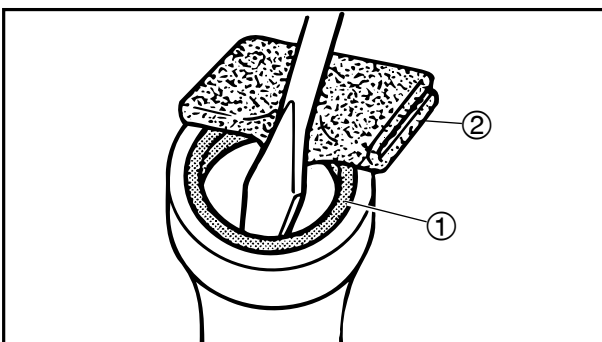
5. Remove:
- damper rod ①
  - rebound spring
  - inner tube ②



6. Remove:
- oil seal clip ①  
 (with a flat-head screwdriver)

**NOTICE**

Do not scratch the inner tube.



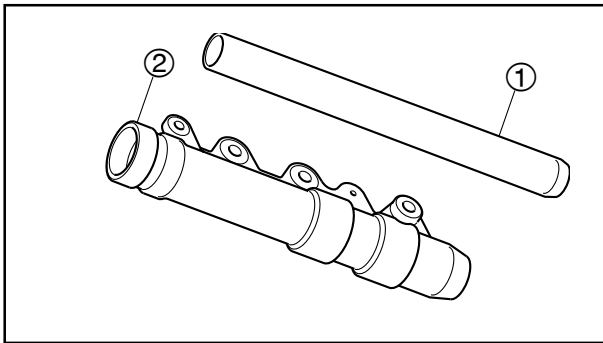
7. Remove:
- oil seal ①

**NOTICE**

Never reuse the oil seal.

- Rag ②





EAS00656

**CHECKING THE FRONT FORK LEGS**

The following procedure applies to both of the front fork legs.

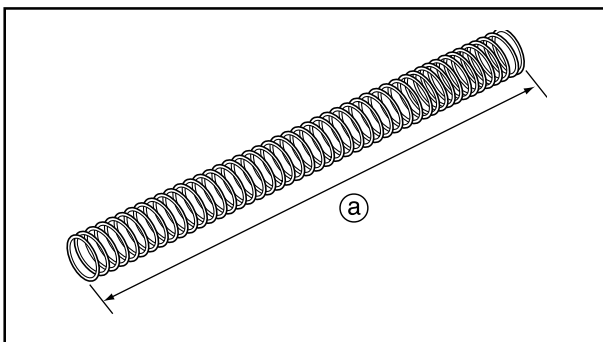
## 1. Check:

- inner tube ①
- outer tube ②

Bends/damage/scratches → Replace.

**WARNING**

**Do not attempt to straighten a bent inner tube as this may dangerously weaken it.**



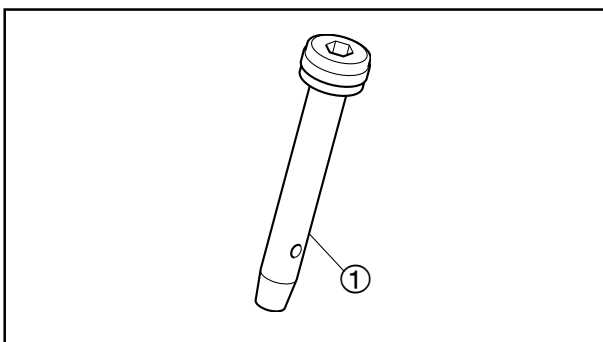
## 2. Measure:

- spring free length (a)
- Out of specification → Replace.

**Spring free length**

252.1mm (9.93in)

&lt;Limit&gt; :247mm (9.72in)

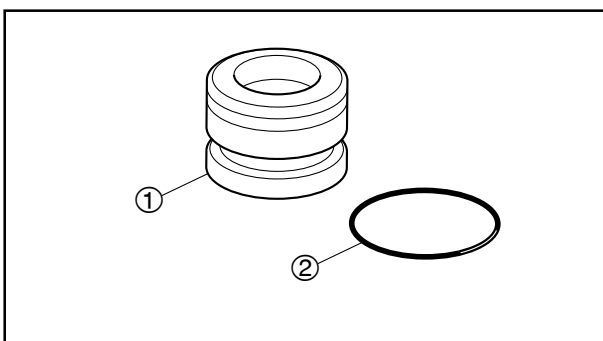


## 3. Check:

- damper rod ①

Damage/wear → Replace.

Obstruction → Blow out all of the oil passages with compressed air.



## 4. Check:

- collar ①
- O-ring ②

Damage/wear → Replace.



EAS00658

**ASSEMBLING THE FRONT FORK LEGS**

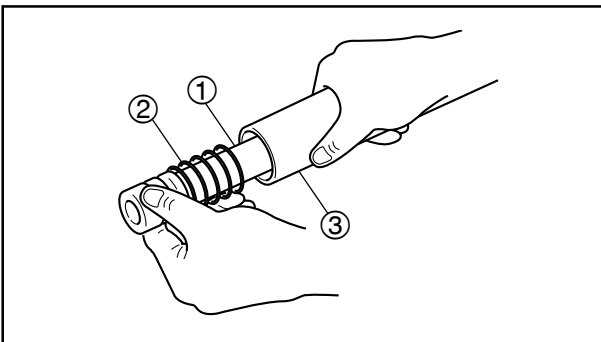
The following procedure applies to both of the front fork legs.

**WARNING**

- Make sure the oil levels in both front fork legs are equal.
- Uneven oil levels can result in poor handling and a loss of stability.

**TIP**

- When assembling the front fork leg, be sure to replace the following parts:
  - oil seal
- Before assembling the front fork leg, make sure all of the components are clean.



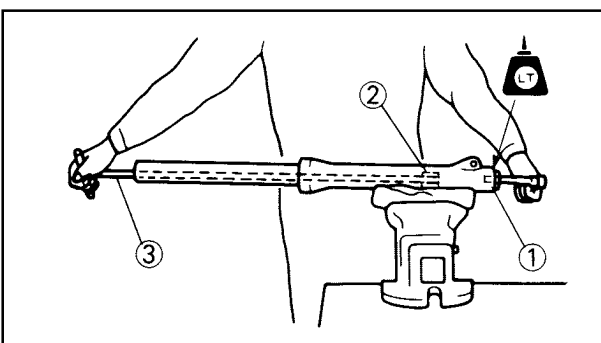
1. Install:
  - damper rod assembly ①
  - rebound spring ②

**NOTICE**

Allow the damper rod assembly to slide slowly down the inner tube ③ until it protrudes from the bottom of the inner tube. Be careful not to damage the inner tube.

2. Lubricate:
  - inner tube's outer surface

	<b>Recommended lubricant</b> Fork oil 10W or equivalent
--	--



3. Tighten:
  - copper washer **New**
  - damper rod assembly bolt ①

	<b>20Nm (2.0m • kgf, 14.5ft • lbf)</b> <b>LOCTITE®</b>
--	---

**TIP**

While holding the damper rod assembly with the damper rod holder ② and T-handle ③, tighten the damper rod assembly bolt.

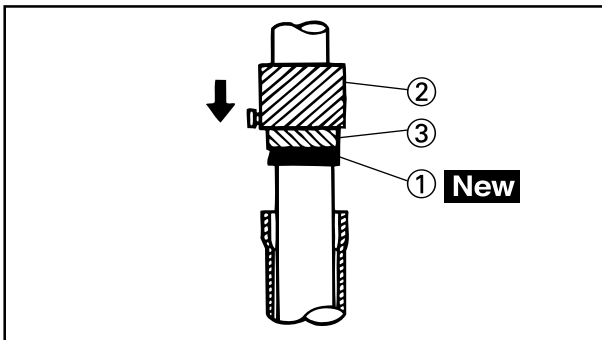


**Damper rod holder**

90890-01294 (YM-01300-1)

**T-handle**

90890-01326 (YM-01326)



## 4. Install:

- oil seal ① **New**  
(with the fork seal driver weight ② and adapter ③)



**Fork seal driver weight**

90890-01367 (YM-A9409-7)

**Adapter**

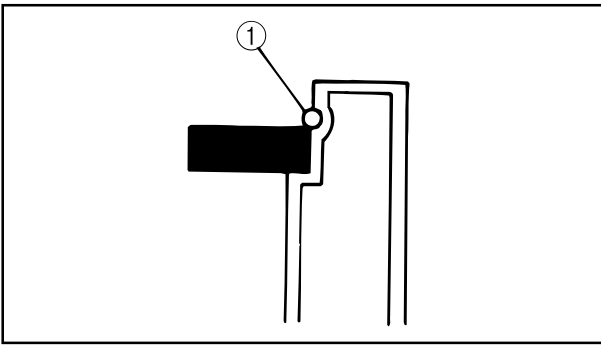
90890-01368 (YM-A9409-4)

**NOTICE**

Make sure the numbered side of the oil seal faces up.

**TIP**

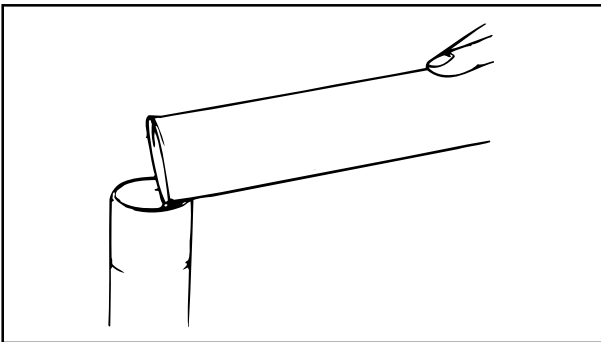
- Before installing the oil seal, lubricate its lips with lithium soap base grease.
- Lubricate the outer surface of the inner tube with fork oil.
- Before installing the oil seal, cover the top of the front fork leg with a plastic bag ④ to protect the oil seal during installation.



5. Install:
- oil seal clip ①

**TIP**

Adjust the oil seal clip so that it fits into the outer tube's groove.



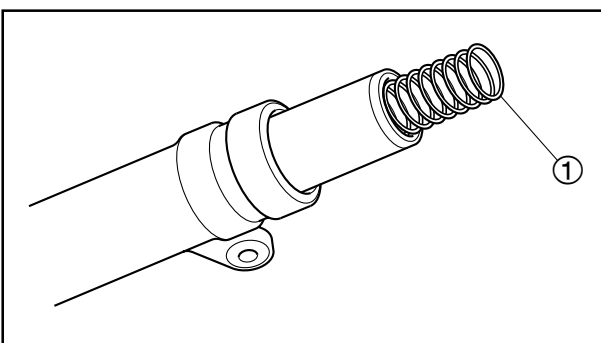
6. Fill:
- front fork leg  
(with the specified amount of the recommended fork oil)



Quantity (each front fork leg)  
0.104L (0.11 US qt, 0.09 Imp. qt)  
Recommended oil  
Fork oil 10W or equivalent

**TIP**

- While filling the front fork leg, keep it upright.
- After filling, slowly pump the front fork leg up and down to distribute the fork oil.

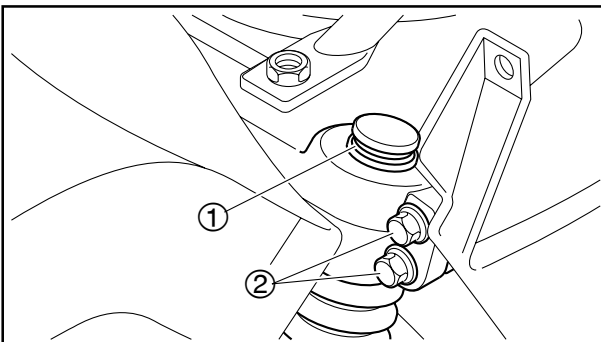


7. Install:
- fork spring ①
  - collar
  - O-ring **New**
  - stopper ring
  - cap

**TIP**

- Install the spring with the smaller pitch facing down.
- Before installing the collar, lubricate its O-ring with grease.
- Press down the collar/O-ring, adjust the stopper ring so that it fits into the inner tube's groove.

8. Install:
  - clamp/boot



EAS00663

**INSTALLING THE FRONT FORK LEGS**


The following procedure applies to both of the front fork legs.

1. Install:
  - front fork leg
  - stopper ring ①

**TIP**

Pull up the inner tube until it stops, then install the stopper ring.

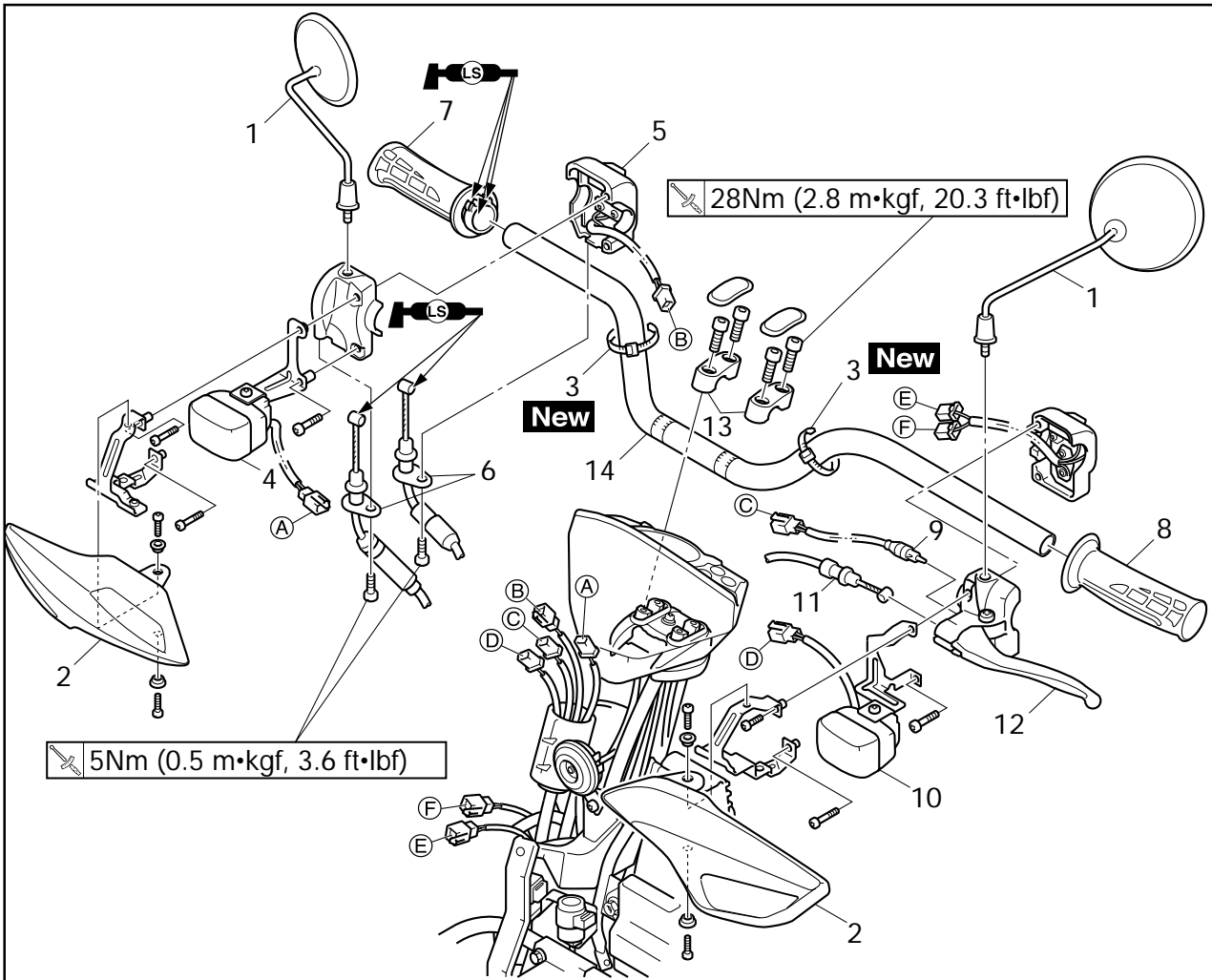
2. Tighten:
  - lower bracket pinch bolt ②

	26Nm (2.6m • kgf, 18.8ft • lbf)
---	---------------------------------

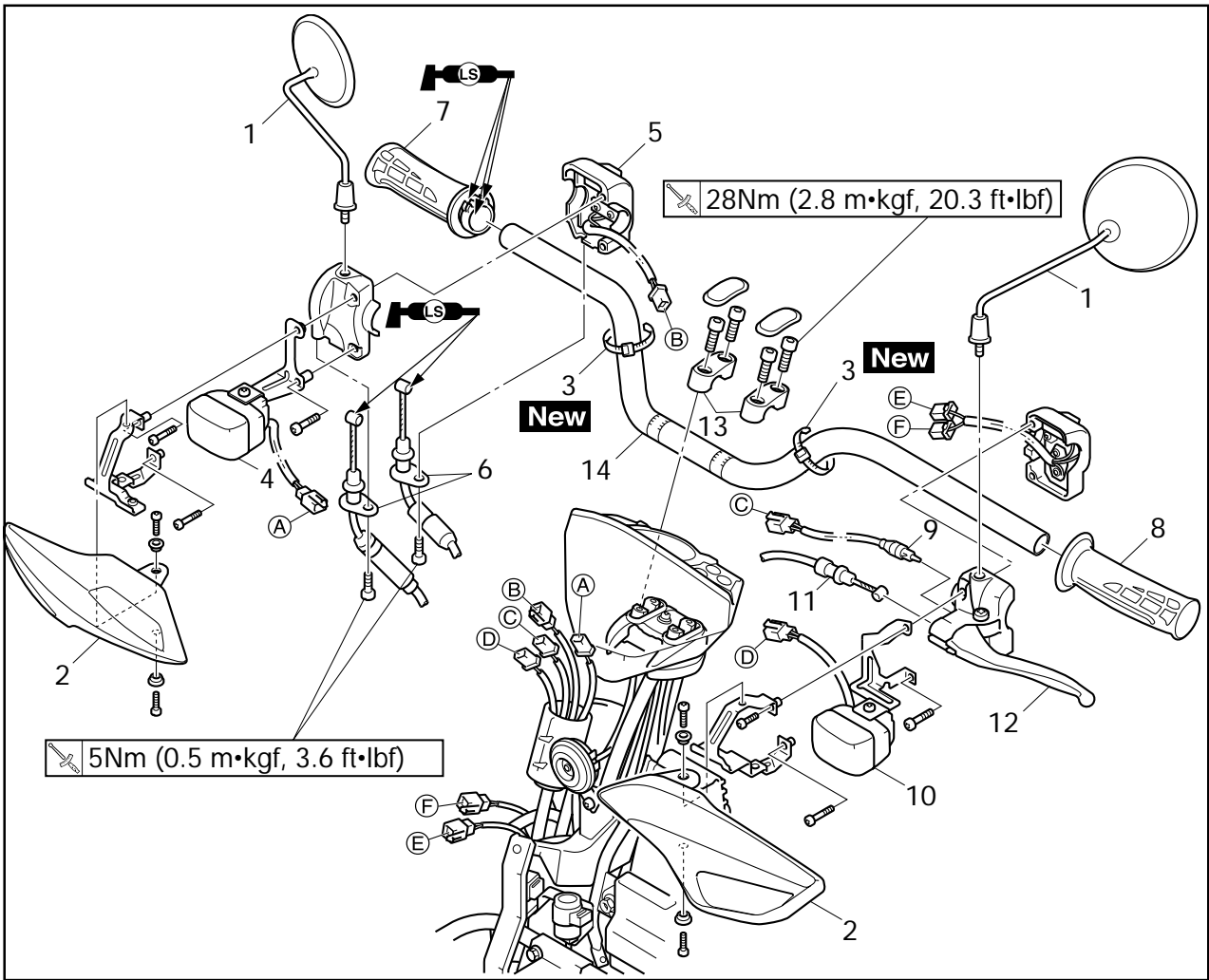
3. Install:
  - front wheel  
Refer to "FRONT WHEEL AND BRAKE DISC".
  - brake caliper
  - brake hose holder 1  
Refer to "FRONT BRAKE".
  - leg shield 1  
Refer to "COVER AND PANEL" in chapter 3.

EAS00664

**HANDLEBAR**



Order	Job/Part	Q'ty	Remarks
	<b>Removing the handlebar</b>		Remove the parts in the order listed.
	Leg shield 1		Refer to "COVER AND PANEL" in chapter 3.
	Leg shield 2		Disconnect.
	Brake master cylinder		Refer to "FRONT BRAKE".
1	Rear view mirror (left and right)	1/1	
2	Brush guard (left and right)	1/1	
3	Band	2	Cut.
4	Front turn signal light (right)	1	
5	Right handlebar switch	1	
6	Throttle cable assembly	1	Disconnect.
7	Throttle grip assembly	1	
8	Handlebar grip	1	
9	Brake light switch (rear)	1	
10	Front turn signal light (left)	1	Refer to "REMOVING THE HANDLEBAR" and "INSTALLING THE HANDLEBAR".
11	Rear brake cable	1	Disconnect.
12	Left lever holder	1	



Order	Job/Part	Q'ty	Remarks
13	Upper handlebar holder	2	For installation, reverse the removal procedure.
14	Handlebar	1	



EAS00666

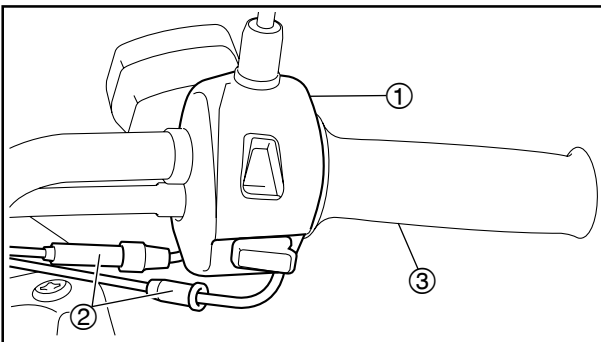
**REMOVING THE HANDLEBAR**

1. Stand the scooter on a level surface.

**WARNING**

Securely support the scooter so that there is no danger of it falling over.

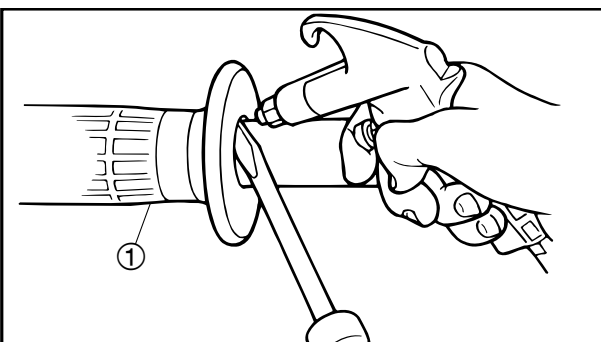
2. Remove:
  - leg shield 1
  - leg shield 2
 Refer to "COVER AND PANEL" in chapter 3.
  - rear view mirror (left and right)
  - brush guard (left and right)
  - band
3. Disconnect:
  - brake master cylinder
 Refer to "FRONT BRAKE".



4. Remove:
  - front turn signal light (right)
  - right handlebar switch ①
  - throttle cable assembly ②
  - throttle grip assembly ③

**TIP**

While removing the right handlebar switch, pull back the rubber cover.

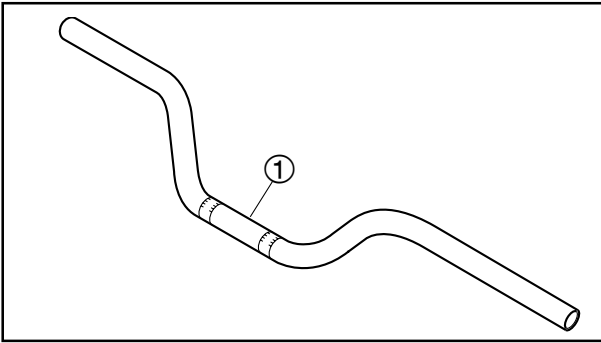


5. Remove:
  - rear brake cable
  - brake light switch (rear)
  - front turn signal light (left)
  - left lever holder
  - handlebar grip ①
  - upper handlebar holder
  - handlebar

**TIP**

Blow compressed air between the handlebar and the handlebar grip, and gradually push the grip off the handlebar.





EAS00668

**CHECKING THE HANDLEBAR**

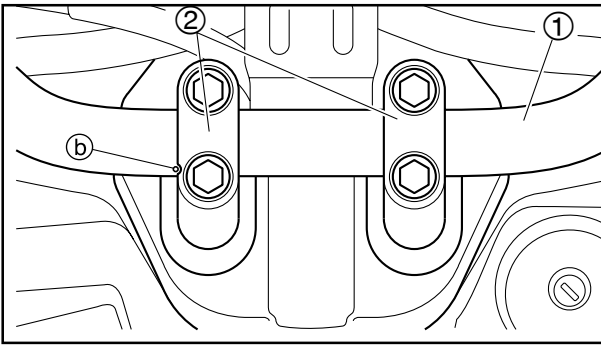
1. Check:

- handlebar ①

Bends/cracks/damage → Replace.

**⚠ WARNING**

Do not attempt to straighten a bent handlebar as this may dangerously weaken it.



EAS00673


## INSTALLING THE HANDLEBAR

1. Stand the scooter on a level surface.

### **WARNING**

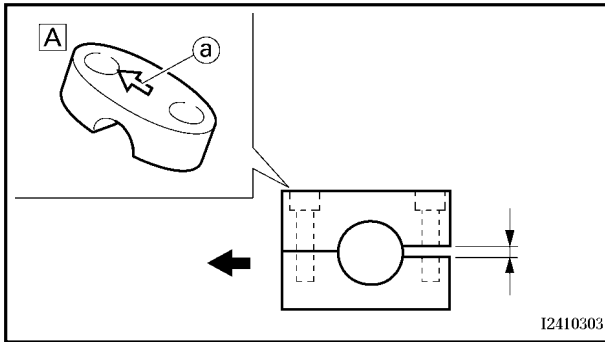
Securely support the scooter so that there is no danger of it falling over.

2. Install:
  - handlebar ①
  - upper handlebar holders ②

 28Nm(2.8m • kgf, 20.3ft • lbf)

### **NOTICE**

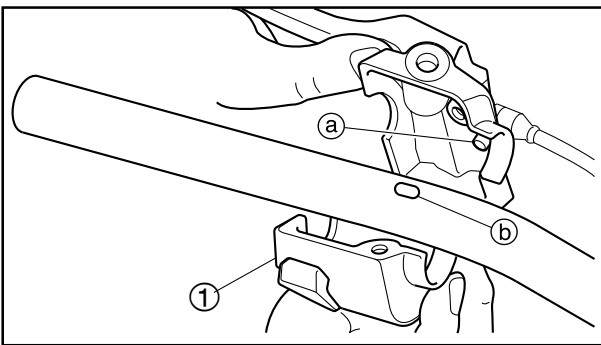
First, tighten the bolts on the front side of the handlebar holders, and then on the rear side.



I2410303

### **TIP**

- The upper handlebar holders should be installed with the arrow marks (a) facing forward [A].
- Align the match marks (b) on the handlebar with the upper surface of the handlebar lower holder.



3. Install:
  - left lever holder ①

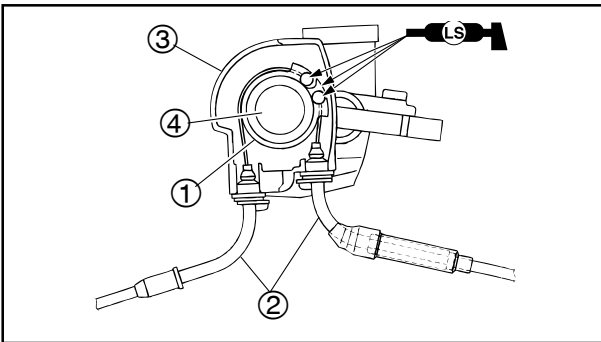
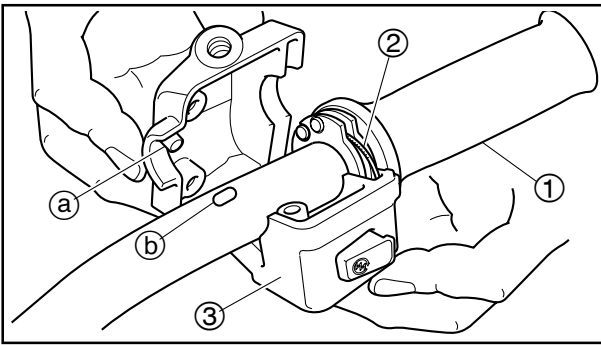
### **TIP**

Align the projection (a) on the left handlebar switch with the hole (b) in the handlebar.

4. Install:
  - handlebar grip

### **TIP**

Before installing the handlebar grip, apply the bond.



5. Install:
- throttle grip assembly ①
  - throttle cable assembly ②
  - right handlebar switch ③

**TIP**

- Lubricate the inside of the throttle grip assembly with a thin coat of lithium-soap-based grease and install it onto the handlebar ④.
- Align the projection ① on the right handlebar switch with the hole ② in the handlebar.

**WARNING**

Make sure the throttle grip operates smoothly.

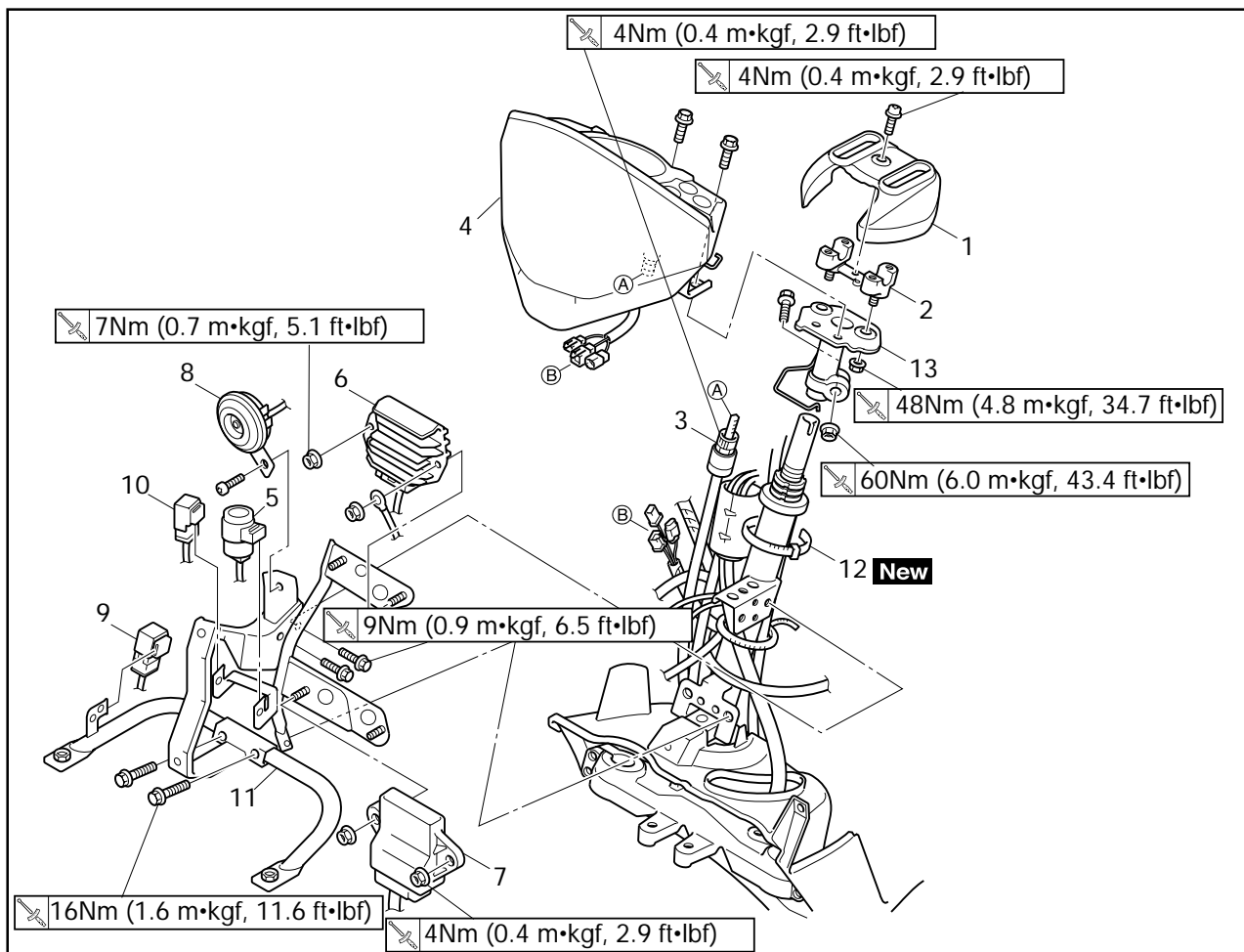
6. Install:
- brake master cylinder  
Refer to "FRONT BRAKE".
7. Install:
- band **New**
  - brush guard (left and right)
  - rear view mirror (left and right)
8. Install:
- leg shield 2
  - leg shield 1  
Refer to "COVER AND PANEL" in chapter 3.
9. Adjust:
- throttle cable free play  
Refer to "ADJUSTING THE THROTTLE CABLE FREE PLAY" in chapter 3.



Throttle cable free play (at the flange of the throttle grip)  
3 ~5mm (0.12 ~ 0.20in)

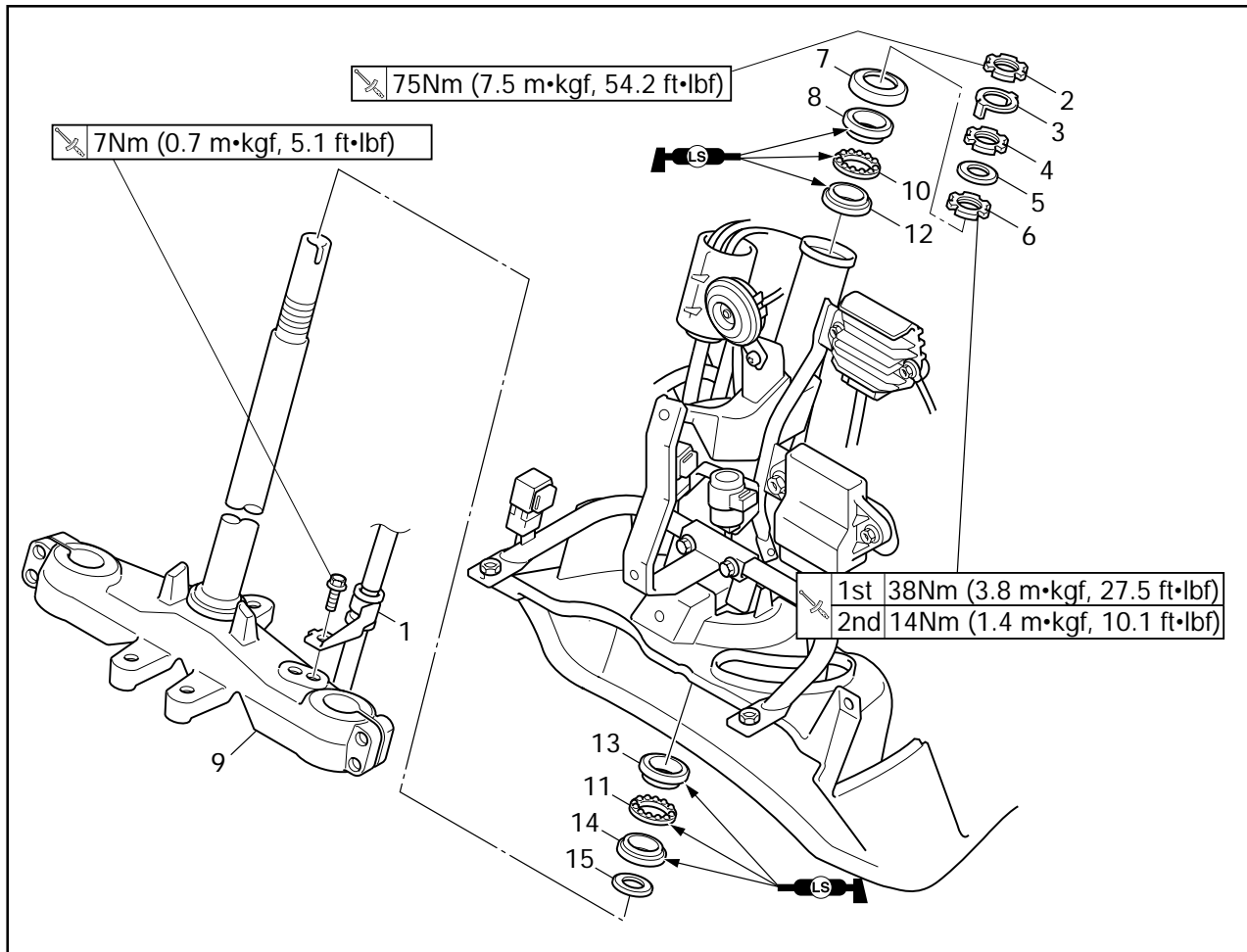
EAS00675

**STEERING HEAD  
HANDLEBAR BRACKET AND FRONT BRACKET**

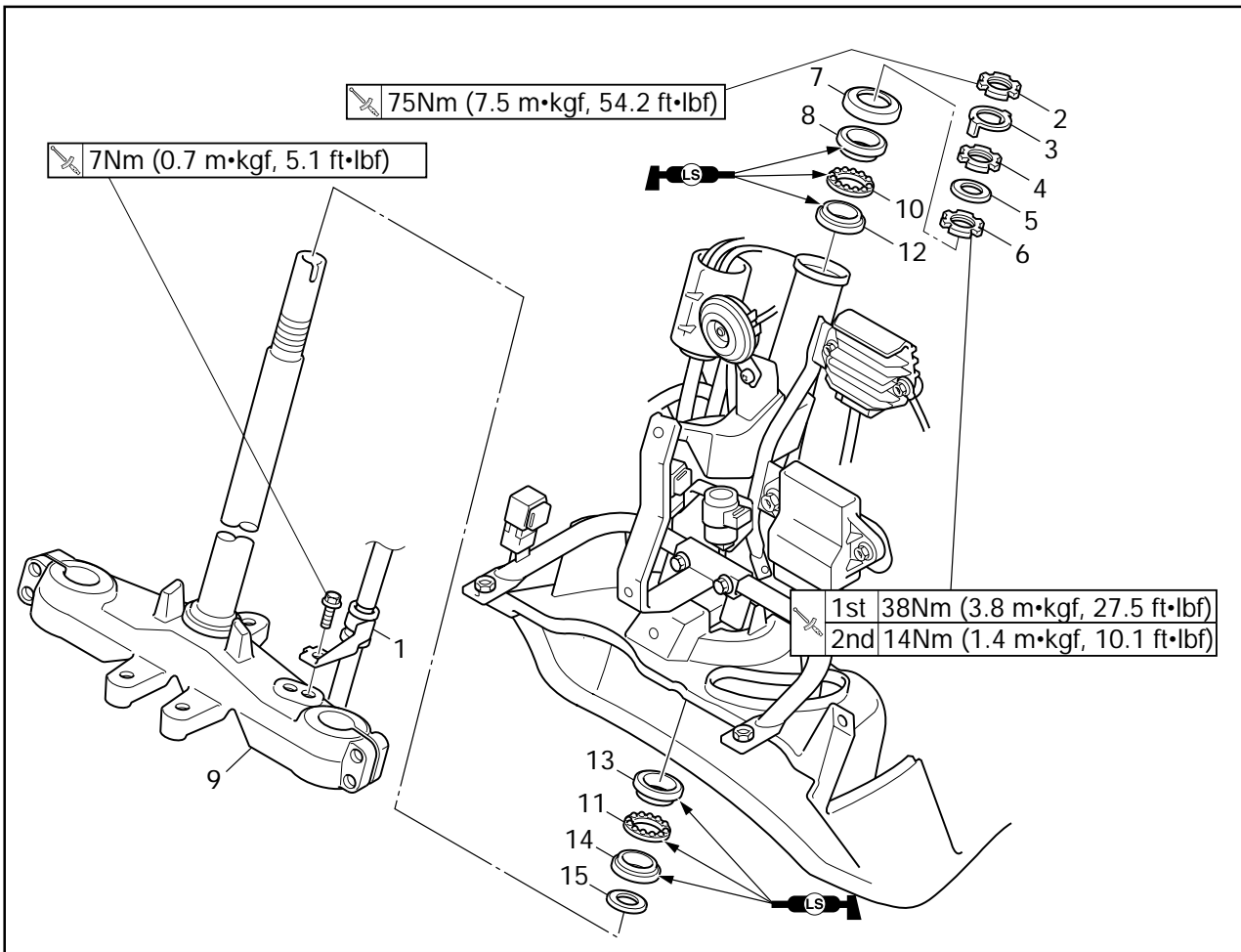


Order	Job/Part	Q'ty	Remarks
	<b>Removing the handlebar bracket and front bracket</b>		Remove the parts in the order listed.
	Handlebar		Refer to "HANDLEBAR".
1	Handlebar cover	1	
2	Lower handlebar holder	1	
3	Speedometer cable	1	Disconnect.
4	Speedometer	1	
5	Turn signal relay	1	Disconnect.
6	Rectifier/regulator	1	Disconnect.
7	ECU	1	Disconnect.
8	Horn	1	Disconnect.
9	Headlight relay	1	Disconnect.
10	Starting circuit cut-off relay	1	Disconnect.
11	Front bracket	1	
12	Band	1	Cut.
13	Handlebar bracket	1	
			For installation, reverse the removal procedure.

**LOWER BRACKET**



Order	Job/Part	Q'ty	Remarks
	<b>Removing the lower bracket</b>		Remove the parts in the order listed.
	Leg shield 1		Refer to "COVER AND PANEL" in chapter 3.
	Leg shield 2		
	Front wheel		Refer to "FRONT WHEEL AND BRAKE DISC".
	Brake caliper		Refer to "FRONT BRAKE".
	Front fork legs		Refer to "FRONT FORK".
	Handlebar		Refer to "HANDLEBAR".
	Handlebar bracket		Refer to "HANDLEBAR BRACKET AND FRONT BRACKET".
1	Brake hose holder 2	1	
2	Upper ring nut	1	
3	Lock washer	1	
4	Center ring nut	1	
5	Rubber washer	1	
6	Lower ring nut	1	
7	Bearing race cover	1	Refer to "REMOVING THE LOWER BRACKET" and "INSTALLING THE STEERING HEAD".
8	Upper bearing inner race	1	
9	Lower bracket	1	
10	Upper bearing	1	



Order	Job/Part	Q'ty	Remarks
11	Lower bearing	1	For installation, reverse the removal procedure.
12	Upper bearing outer race	1	
13	Lower bearing outer race	1	
14	Lower bearing inner race	1	
15	Dust seal	1	



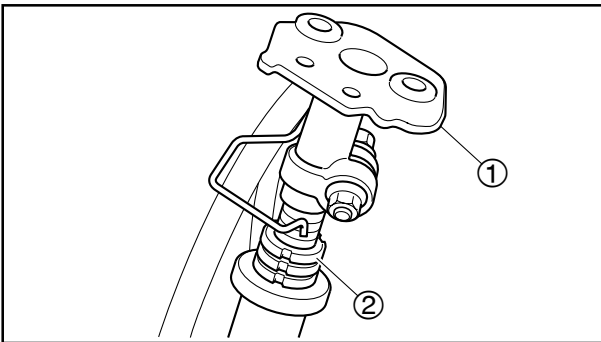
EAS00678

**REMOVING THE LOWER BRACKET**

1. Stand the scooter on a level surface.

**⚠ WARNING**

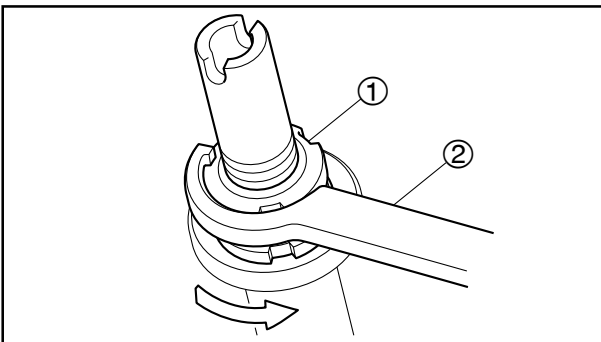
Securely support the scooter so that there is no danger of it falling over.



2. Remove:
  - brake hose holder 2
  - handlebar bracket ①

**TIP**

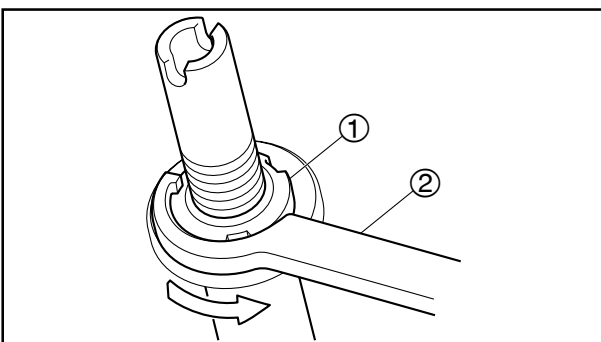
Remove the handlebar bracket by loosening the ring nut ② gradually.



3. Remove:
  - upper ring nut ①  
(with the ring nut wrench ②)
  - lock washer
  - center ring nut
  - rubber washer



**Ring nut wrench**  
90890-01268 (YU-01268)



4. Remove:
  - lower ring nut ①  
(with the ring nut wrench ②)



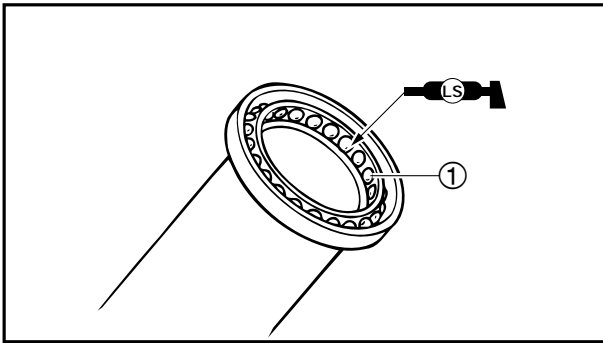
**Ring nut wrench**  
90890-01268 (YU-01268)

**⚠ WARNING**

Securely support the lower bracket so that there is no danger of it falling.






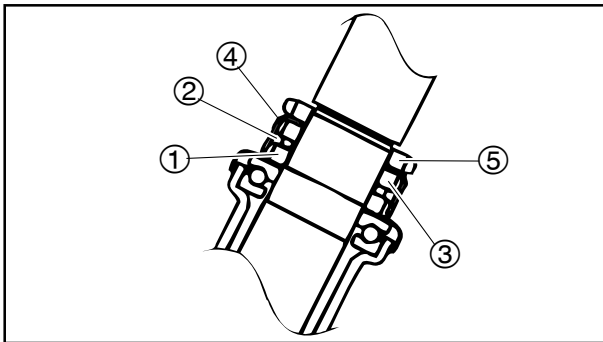


EAS00684

**INSTALLING THE STEERING HEAD**

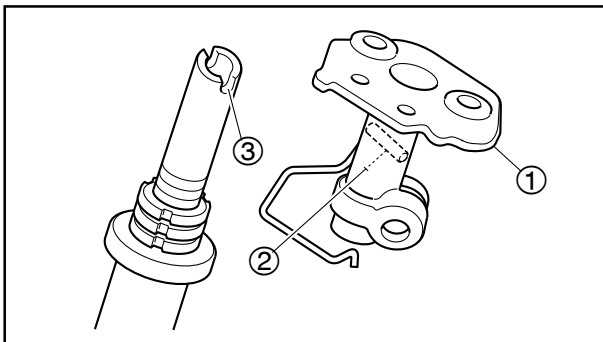
1. Lubricate:
  - bearings ①
  - bearing races

	<p><b>Recommended lubricant</b> Lithium-soap-based grease</p>
---	---




2. Install:
  - lower ring nut ①
  - rubber washer ②
  - center ring nut ③
  - lock washer ④
  - upper ring nut ⑤

Refer to "CHECKING THE STEERING HEAD" in chapter 3.




3. Install:
  - handlebar bracket ①


 60Nm (6.0m • kgf, 43.4ft • lbf)

**TIP** \_\_\_\_\_  
Align the handlebar bracket across rod ② on the lower bracket concave ③ .

4. Tighten:
  - brake hose holder 2

 7Nm (0.7m • kgf, 5.1ft • lbf)

- lower handlebar holder

 48Nm (4.8m • kgf, 34.7ft • lbf)

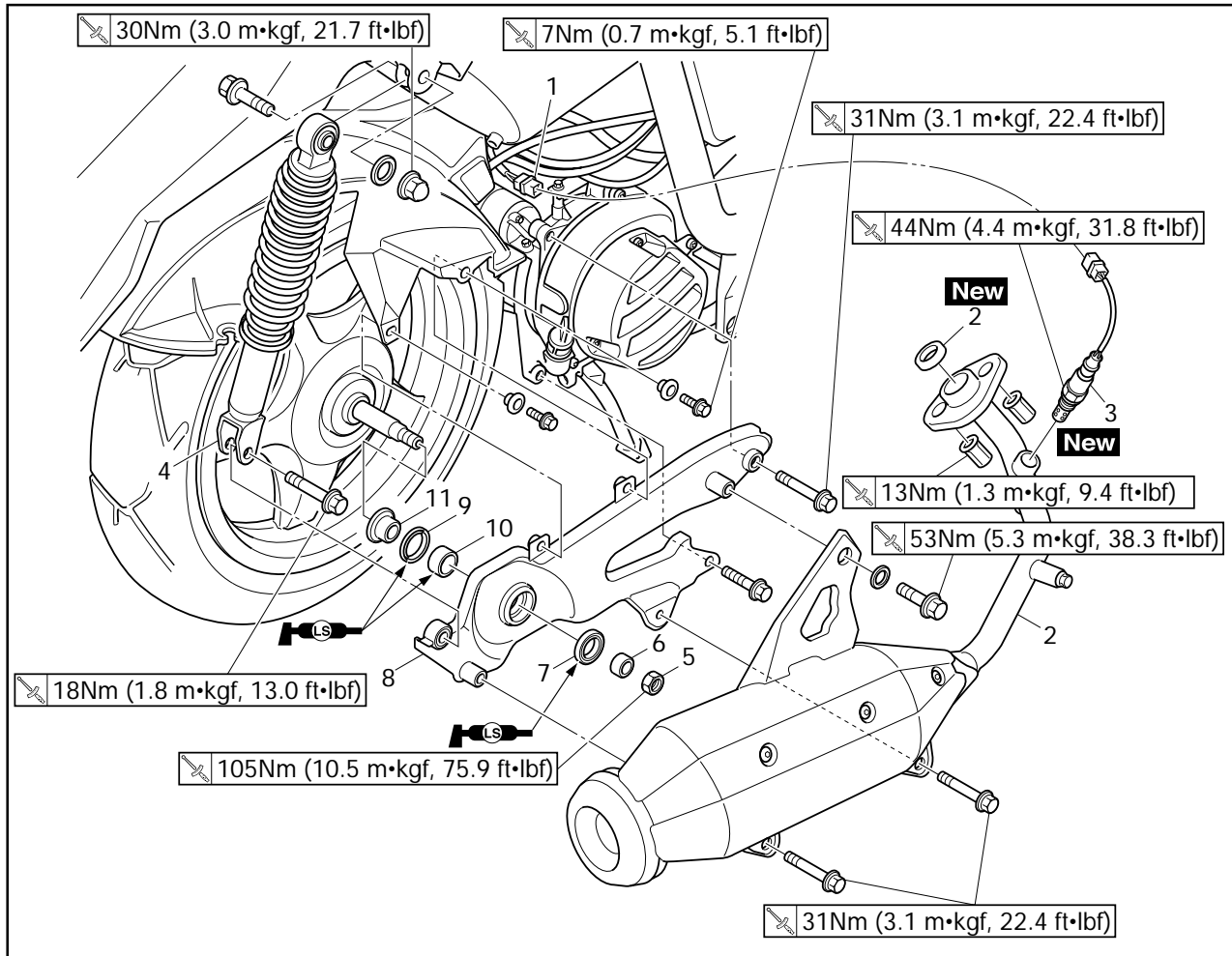
# REAR SHOCK ABSORBER ASSEMBLIES AND SWINGARM

CHAS



EAS00685

## REAR SHOCK ABSORBER ASSEMBLIES AND SWINGARM



Order	Job/Part	Q'ty	Remarks
	<b>Removing the rear shock absorber assemblies and swingarm</b>		Remove the parts in the order listed.
1	O <sub>2</sub> sensor coupler	1	Disconnect.
2	Muffler/gasket	1/1	
3	O <sub>2</sub> sensor	1	
4	Rear shock absorber assembly (left and right)	1/1	
5	Rear wheel axle nut	1	
6	Spacer	1	
7	Oil seal	1	
8	Swingarm	1	
9	Oil seal	1	
10	Bearing	1	
11	Collar	1	
			For installation, reverse the removal procedure.

EAS00693

## REMOVING THE REAR SHOCK ABSORBER ASSEMBLIES

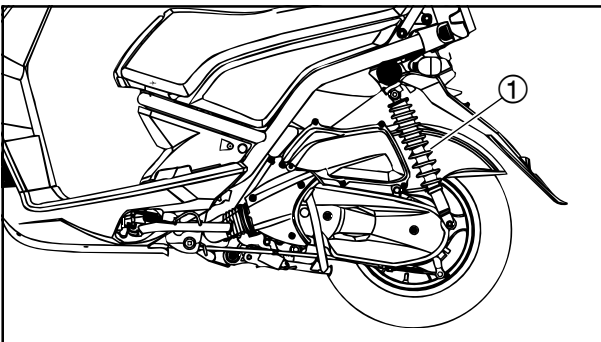
1. Stand the scooter on a level surface.

### **WARNING**

Securely support the scooter so that there is no danger of it falling over.

### **TIP**

Place the scooter on a suitable stand so that the rear wheel is elevated.



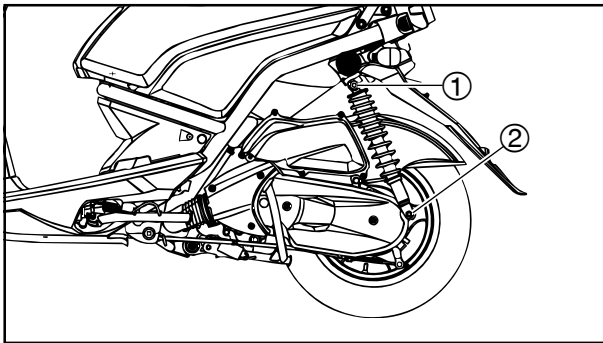
2. Remove:
  - rear shock absorber assemblies ①

EAS00695

## CHECKING THE REAR SHOCK ABSORBER ASSEMBLY

The following procedure applies to both of the rear shock absorber assemblies.

1. Check:
  - rear shock absorber rod  
Bends/damage → Replace the rear shock absorber assembly.
  - rear shock absorber  
Oil leaks → Replace the rear shock absorber assembly.
  - spring  
Damage/wear → Replace the rear shock absorber assembly.
  - bushings  
Damage/wear → Replace.
  - dust seals  
Damage/wear → Replace.
  - bolts  
Bends/damage/wear → Replace.




EAS00699


## INSTALLING THE REAR SHOCK ABSORBER ASSEMBLIES

1. Install:

- rear shock absorber assembly upper nuts  
①

 30Nm (3.0m • kgf, 21.7ft • lbf)

- rear shock absorber assembly lower bolts  
②

 18Nm (1.8m • kgf, 13.0ft • lbf)

EAS00702

## REMOVING THE SWINGARM

1. Stand the scooter on a level surface.

### **WARNING**

Securely support the scooter so that there is no danger of it falling over.

### **TIP**

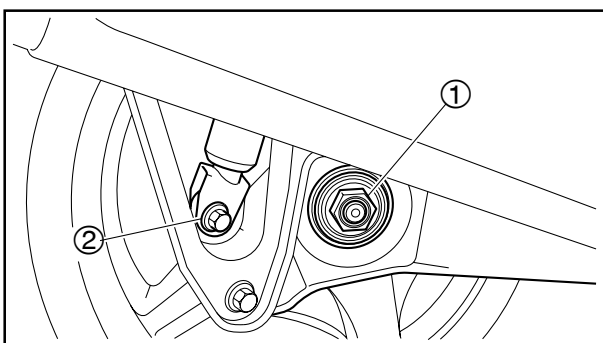
Place the scooter on a suitable stand so that the rear wheel is elevated.

2. Disconnect:

- O<sub>2</sub> sensor coupler

3. Remove:

- muffler

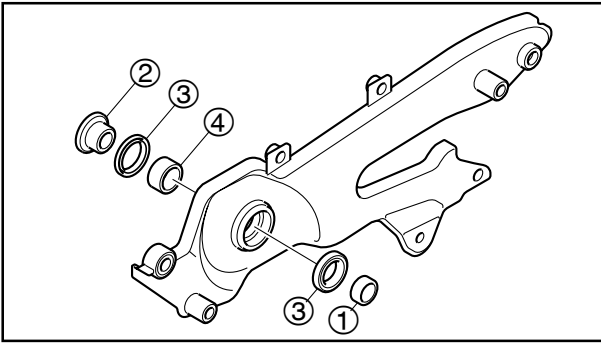


4. Remove:

- rear wheel axle nut ①
- rear shock absorber assembly lower bolt (right) ②

5. Remove:

- swingarm



EAS00708


## CHECKING THE SWINGARM

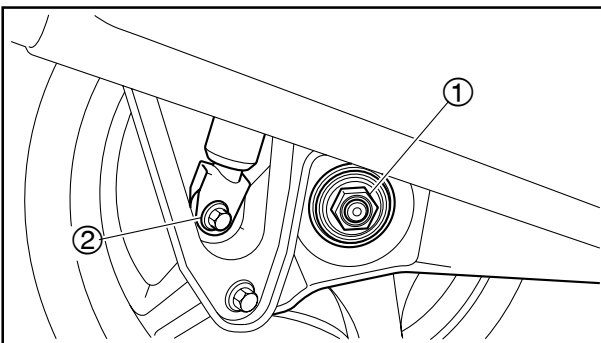
1. Check:
  - swingarm  
Bends/cracks/damage → Replace.
2. Check:
  - spacer ①
  - collar ②
  - oil seals ③
  - bearing ④
 Damage/wear → Replace.

EAS00711


## INSTALLING THE SWINGARM

1. Lubricate:
  - bearing
  - oil seal lips
  - rear wheel axle splines


	<b>Recommended lubricant</b> Lithium-soap-based grease
---	---




2. Install:
  - swingarm

 31Nm (3.1m • kgf, 22.4ft • lbf)

- rear wheel axle nut ①

 105Nm (10.5m • kgf, 75.9ft • lbf)


- rear shock absorber assembly lower bolt (right) ②

 18Nm (1.8m • kgf, 13.0ft • lbf)


3. Install:
  - muffler




4. Tighten:
- exhaust pipe nut

 13Nm (1.3m • kgf, 9.4ft • lbf)

- muffler and swingarm bolt

 31Nm (3.1m • kgf, 22.4ft • lbf)

- muffler and swingarm bolt

 53Nm (5.3m • kgf, 38.3ft • lbf)

5. Connect:
- O<sub>2</sub> sensor coupler

**CHAPTER 5  
ENGINE**

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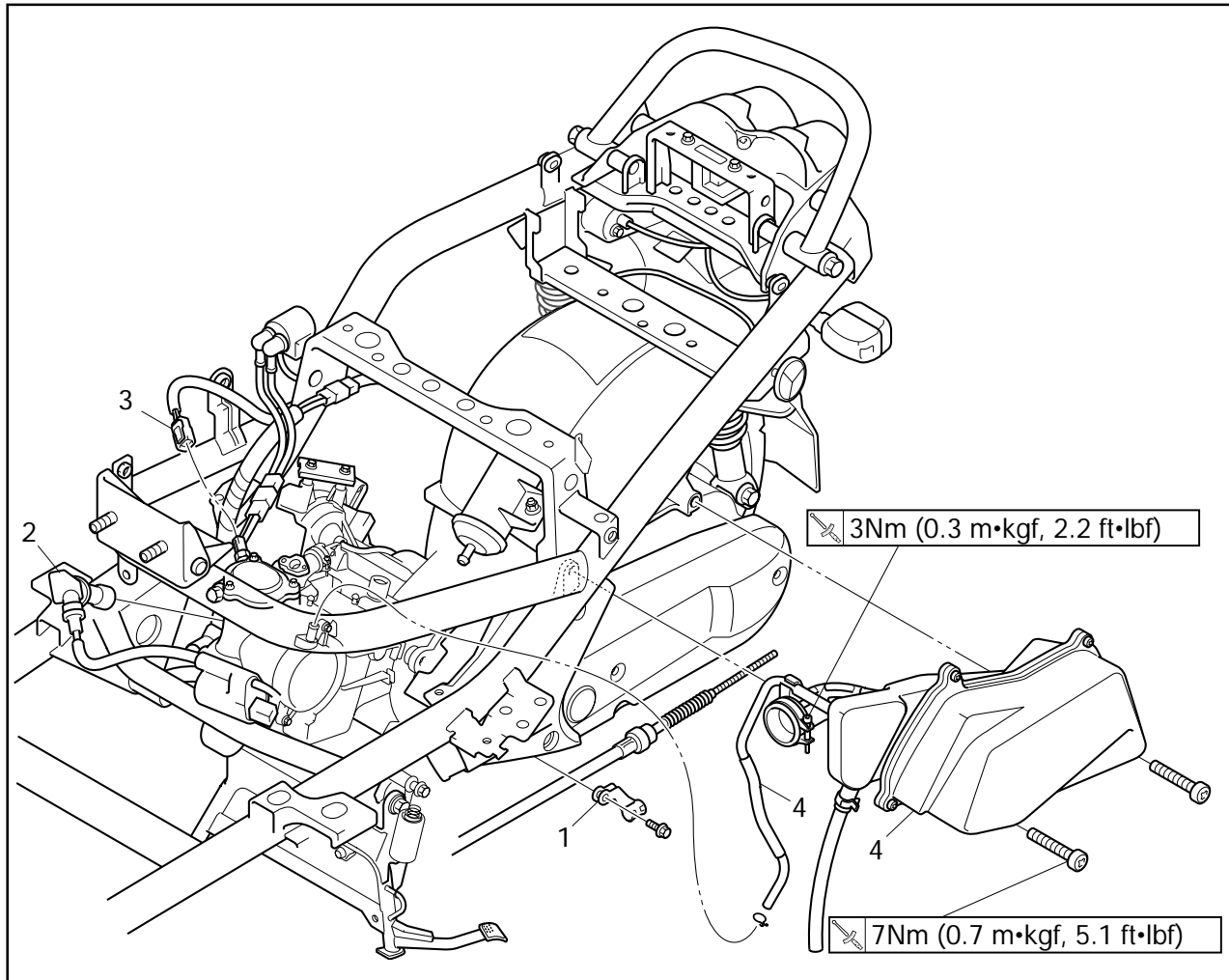
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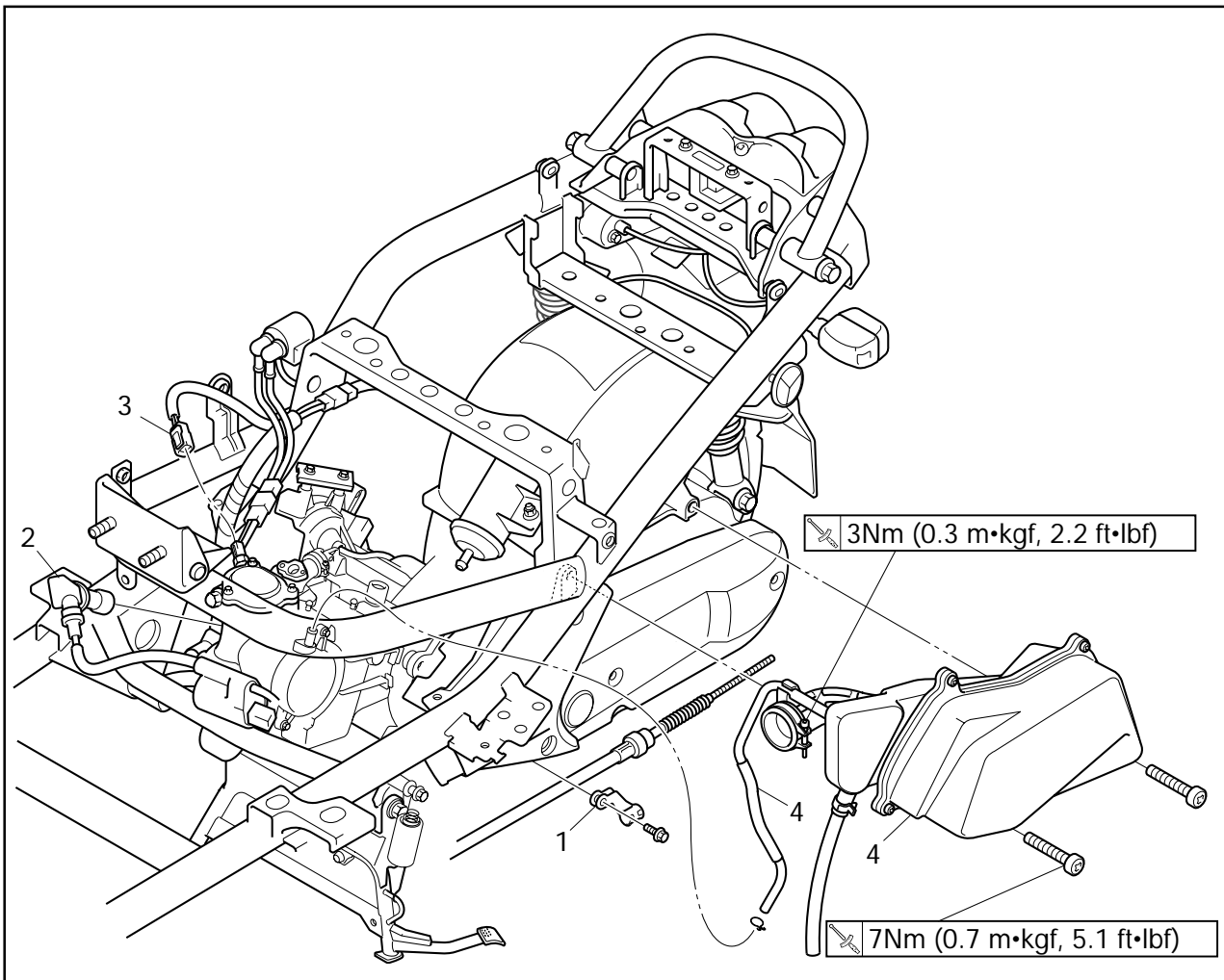
EAS00188

# ENGINE

## ENGINE REMOVAL LEADS AND HOSES



Order	Job/Part	Q'ty	Remarks
	<b>Removing the leads and hoses</b> Seat/trunk Battery box cover/front cover Side cover (left and right) Battery/footrest board Rear brake cable/adjuster/spring/pin  O <sub>2</sub> sensor coupler Muffler  Air duct Crankshaft position sensor/stator coil assembly coupler Throttle body and fuel injector  Starter motor		Remove the parts in the order listed.  Refer to "COVER AND PANEL" in chapter 3.  Refer to "REAR WHEEL AND REAR BRAKE" in chapter 4. Refer to "REAR SHOCK ABSORBER ASSEMBLIES AND SWINGARM" in chapter 4. Refer to "BELT DRIVE". Refer to "STARTER CLUTCH AND AC MAGNETO". Refer to "THROTTLE BODY AND FUEL INJECTOR " in chapter 6. Refer to "ELECTRIC STARTING SYS-

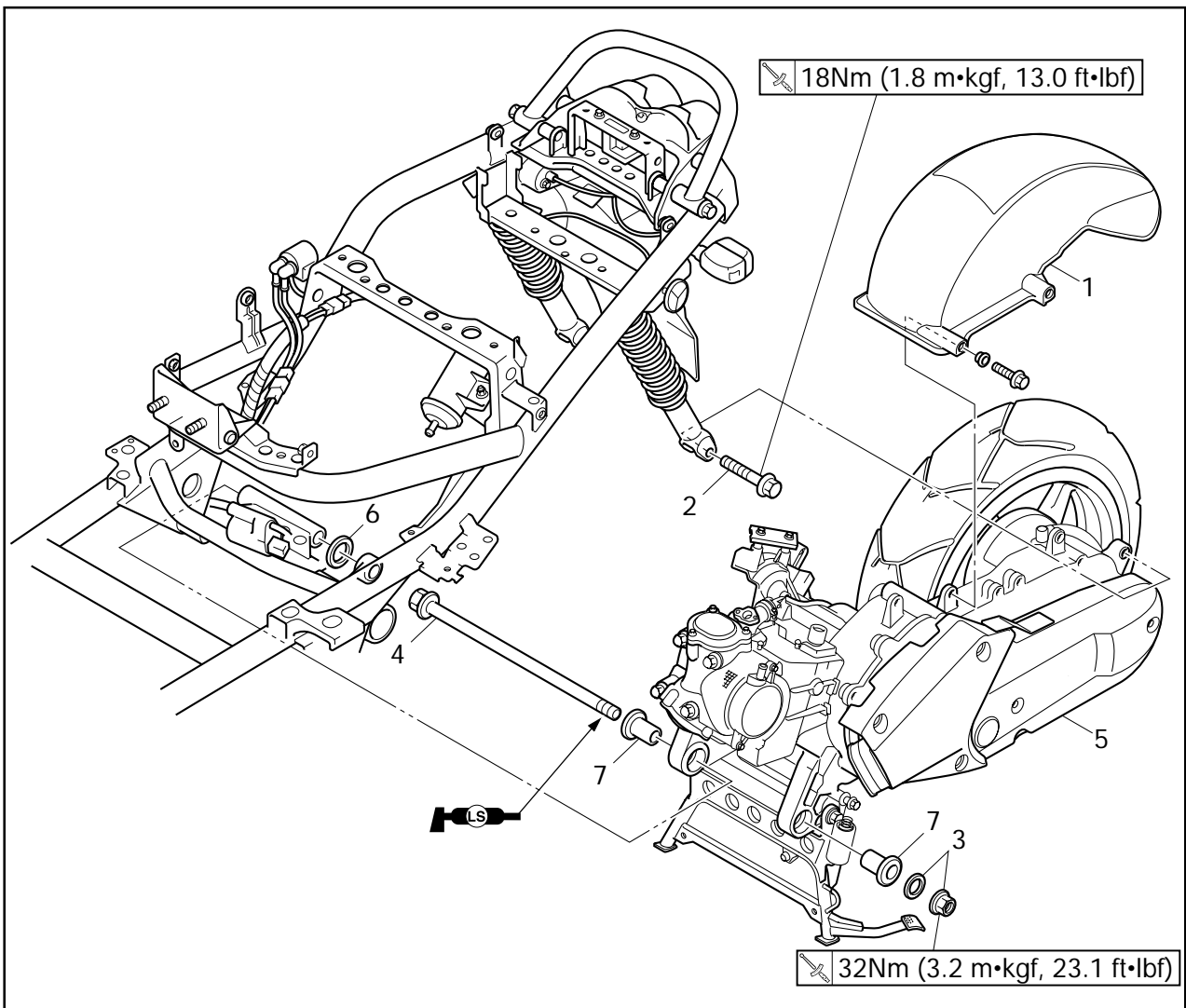


Order	Job/Part	Q'ty	Remarks
1	Rear brake cable holder	1	TEM" in chapter 7.
2	Spark plug cap	1	Disconnect.
3	Engine temperature sensor coupler	1	Disconnect.
4	Air filter/breather hose	1/1	For installation, reverse the removal procedure.

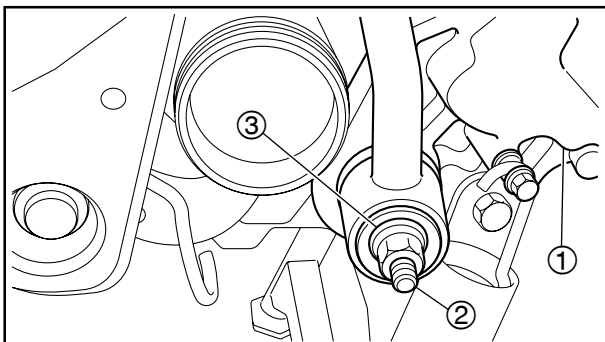


EAS00191

### ENGINE



Order	Job/Part	Q'ty	Remarks
	<b>Removing the engine</b>		Remove the parts in the order listed.
			<b>TIP</b> _____ Place a suitable stand under the frame and engine.
1	Rear fender	1	Refer to "INSTALLING THE ENGINE".
2	Rear shock absorber assembly lower bolt	2	
3	Engine mounting nut/washer	1/1	
4	Engine mounting bolt	1	
5	Engine	1	
6	Washer	1	
7	Collar	2	
			For installation, reverse the removal procedure.



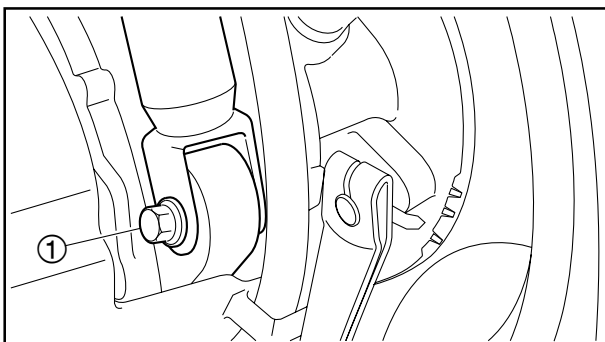
EAS00192

**INSTALLING THE ENGINE**

1. Install:
  - engine ①
  - engine mounting bolt ②
  - engine mounting nut ③

**TIP**

- Apply lithium-soap-based grease to the unthreaded portion of the engine mounting bolt shaft.
- Do not fully tighten the engine mounting bolt..




2. Install:
  - rear shock absorber assembly lower bolts ①


**TIP**

Do not fully tighten the bolts.

3. Tighten:
  - engine mounting bolt

 32Nm(3.2m • kgf, 23.1ft • lbf)

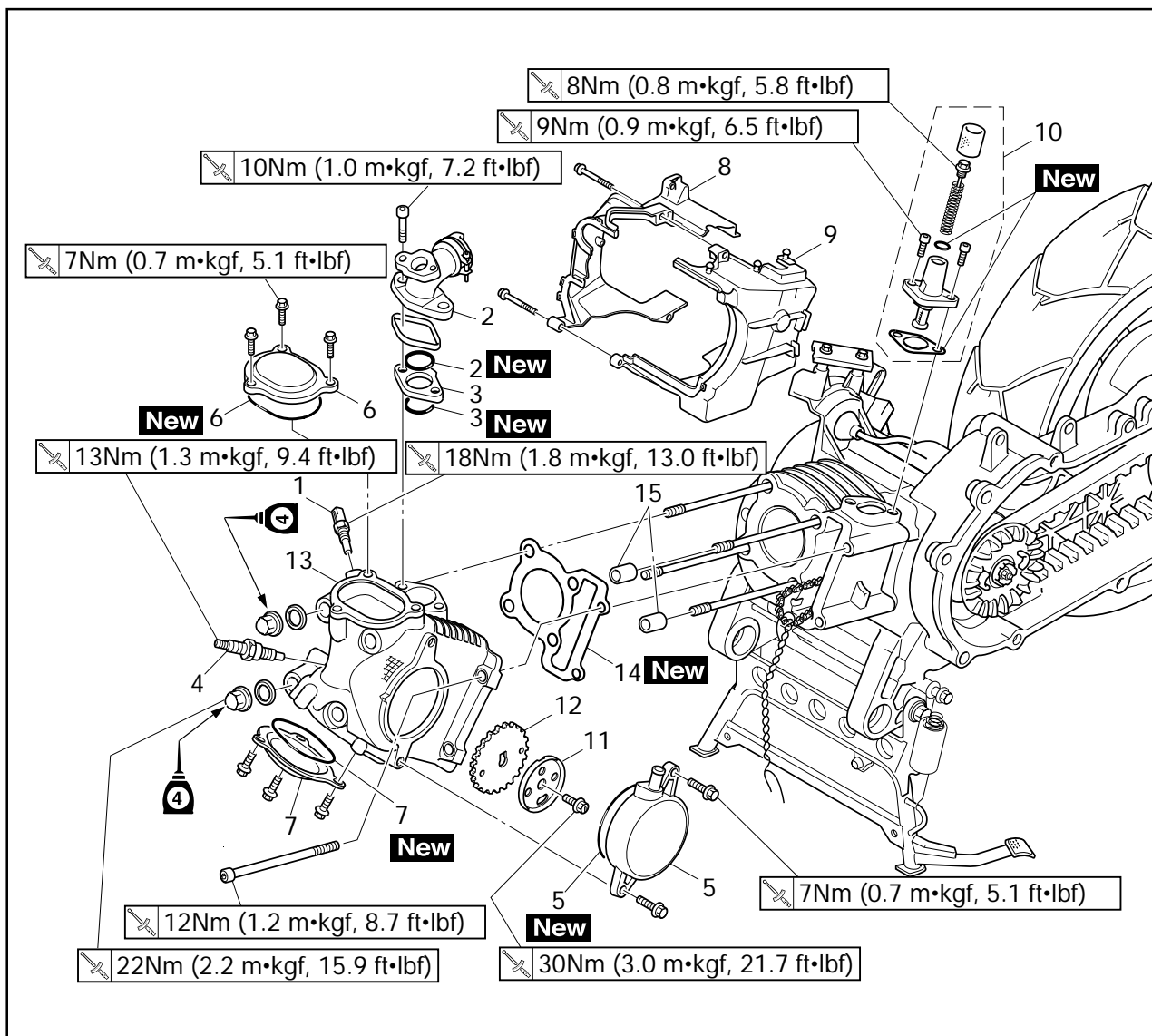
- rear shock absorber assembly lower bolts

 18Nm(1.8m • kgf, 13.0ft • lbf)

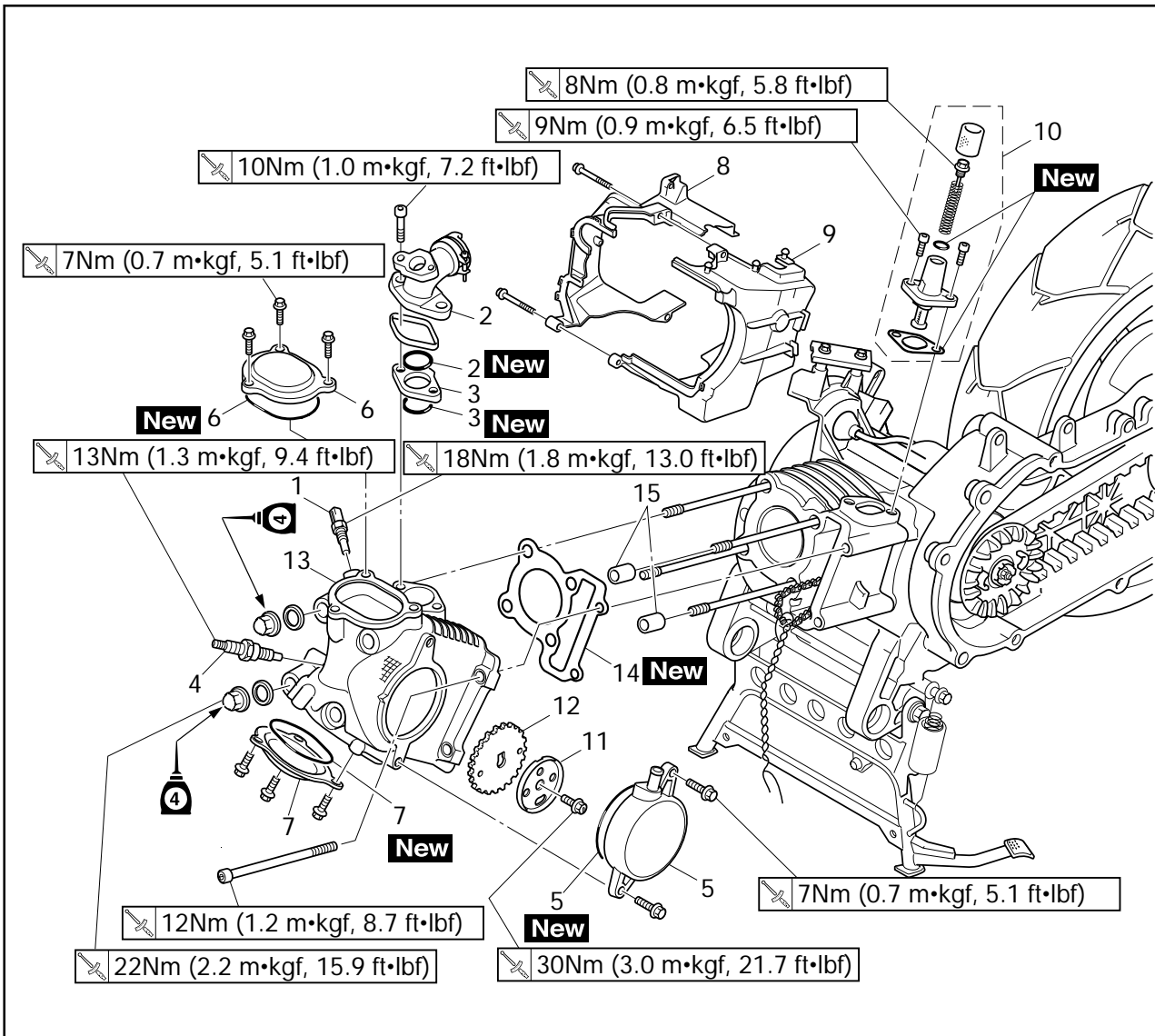


EAS00221

CYLINDER HEAD



Order	Job/Part	Q'ty	Remarks
	<b>Removing the cylinder head</b>		Remove the parts in the order listed.
	Air guide		Refer to "STARTER CLUTCH AND AC MAGNETO".
	Air shroud cylinder 3		Refer to "BELT DRIVE".
	V-belt case		Refer to "REAR SHOCK ABSORBER ASSEMBLIES AND SWINGARM" in chapter 4.
	Muffler		
1	Engine temperature sensor	1	
2	Intake manifold/O-ring	1/1	
3	Joint/O-ring	1/1	
4	Spark plug	1	
5	Breather/O-ring	1/1	
6	Valve cover (intake)/O-ring	1/1	Refer to "REMOVING THE CYLINDER HEAD" and "INSTALLING THE CYLINDER HEAD".
7	Valve cover (exhaust)/O-ring	1/1	
8	Air shroud cylinder 2	1	



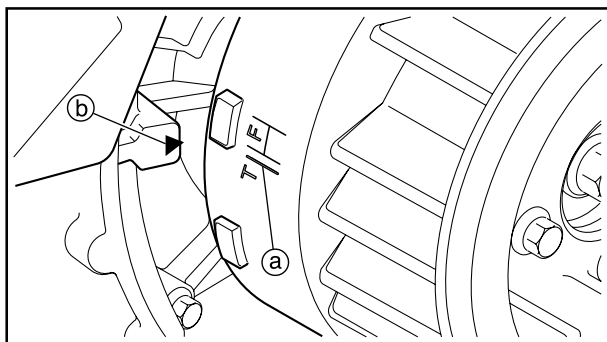
Order	Job/Part	Q'ty	Remarks
9	Air shroud cylinder 1	1	For installation, reverse the removal procedure.
10	Timing chain tensioner	1	
11	Camshaft sprocket plate	1	
12	Camshaft sprocket	1	
13	Cylinder head	1	
14	Cylinder head gasket	1	
15	Dowel pin	2	



EAS00225

## REMOVING THE CYLINDER HEAD

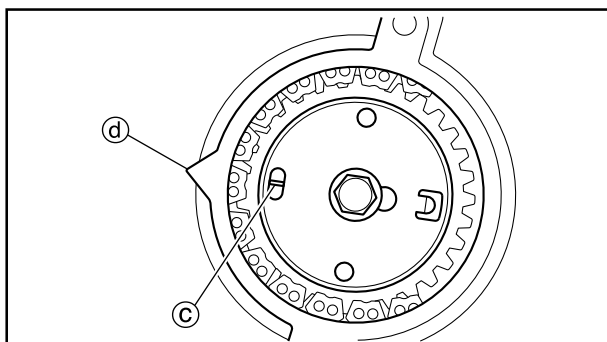
1. Remove :
  - air guide
  - air shroud cylinder 3  
Refer to "STARTER CLUTCH AND AC MAGNETO".
  - V-belt case  
Refer to "BELT DRIVE".
  - muffler  
Refer to "REAR SHOCK ABSORBER ASSEMBLIES AND SWINGARM" in chapter 4.
2. Remove :
  - breather/O-ring
  - valve cover (intake)/O-ring
  - valve cover (exhaust)/O-ring



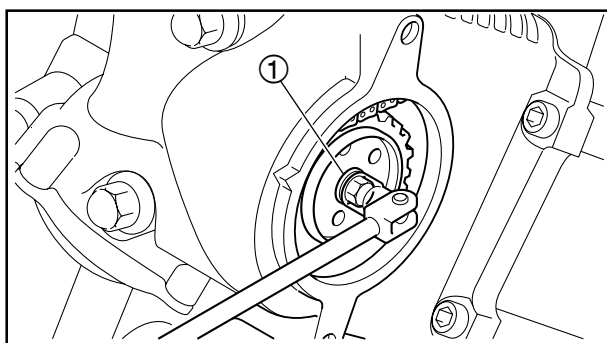
3. Align:
  - "I" mark (a) on the AC magneto rotor  
(with the stationary pointer (b) on the crankcase)



- a. Turn the primary fixed sheave counterclockwise.
- b. When the piston is at TDC on the compression stroke, align the "I" mark (c) on the camshaft sprocket with the mark (d) on the cylinder head.



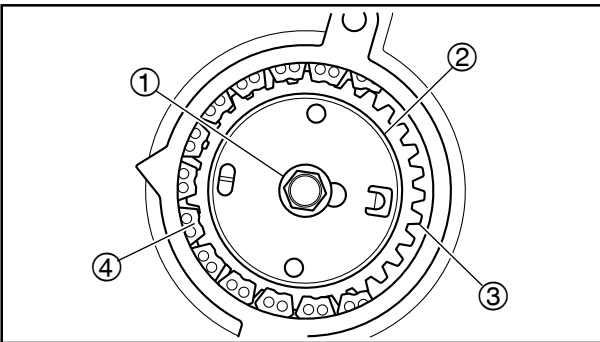
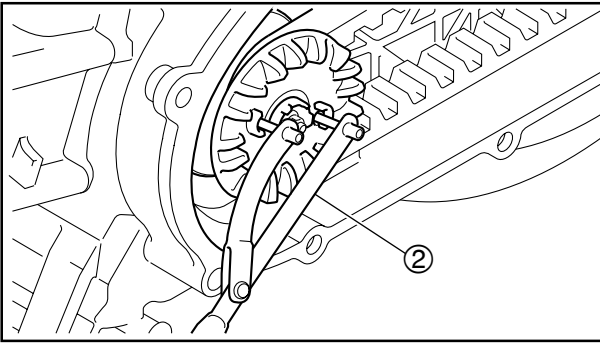
4. Remove :
  - air shroud cylinder 2
  - air shroud cylinder 1



5. Loosen:
  - timing chain tensioner cap bolt
  - camshaft sprocket bolt (1)  
While holding the primary fixed sheave with a rotor holding tool (2), remove the camshaft sprocket bolt.



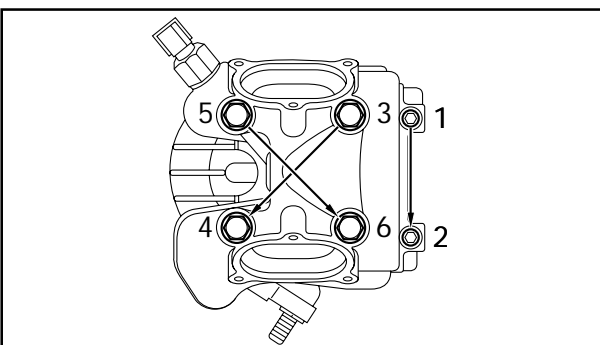
**Rotor holding tool**  
90890-01235(YU-01235)



6. Remove:
- timing chain tensioner (along with the gasket)
  - camshaft sprocket bolt ①
  - camshaft sprocket plate ②
  - camshaft sprocket ③
  - timing chain ④

**TIP**

To prevent the timing chain from falling into the crankcase, fasten it with a wire.

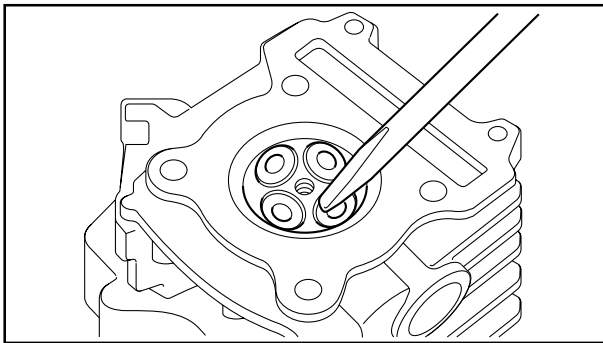


7. Remove:
- cylinder head

**TIP**

- Loosen the nuts in the proper sequence as shown.
- Loosen each nut 1/2 of a turn at a time. After all of the nuts are fully loosened, remove them.





EAS00227

**CHECKING THE CYLINDER HEAD**

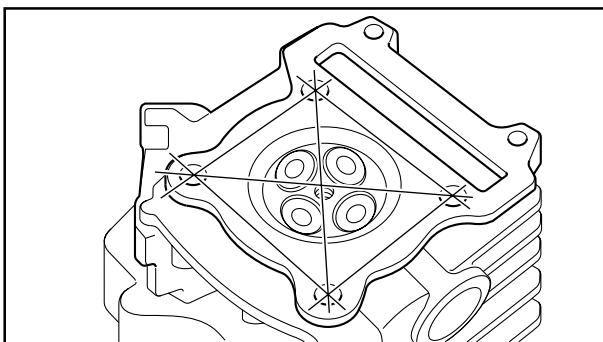
1. Eliminate:
  - combustion chamber carbon deposits (with a rounded scraper)

**TIP**

Do not use a sharp instrument to avoid damaging or scratching:

- spark plug bore thread
- valve seats

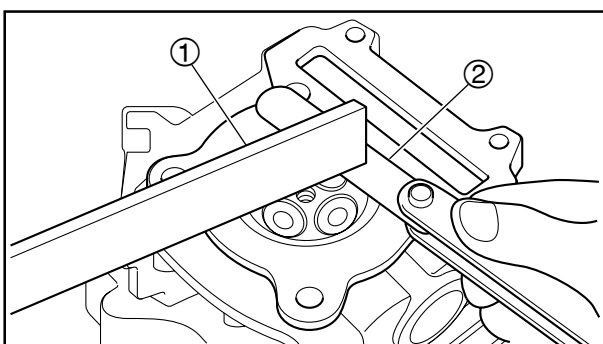
2. Check:
  - cylinder head  
Damage/scratches → Replace.



3. Measure:
  - cylinder head warpage  
Out of specification → Resurface the cylinder head.



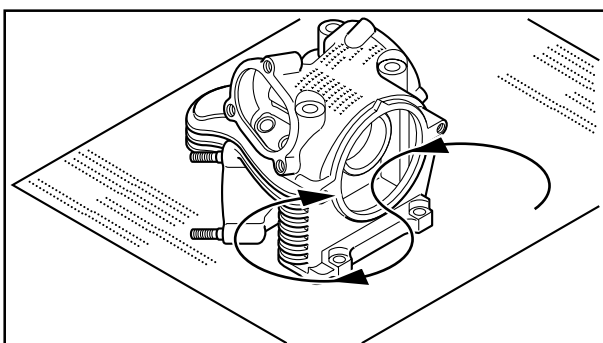
**Maximum cylinder head warpage  
Less than 0.05mm (0.002in)**

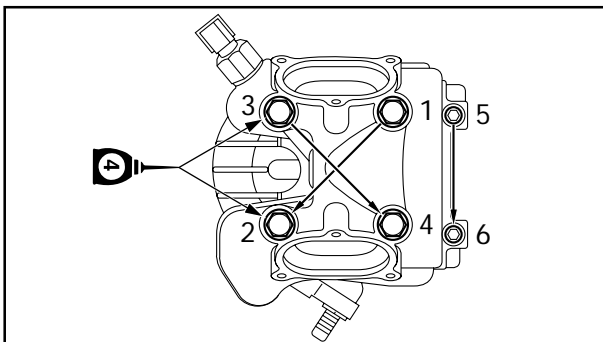


- a. Place a straightedge ① and a thickness gauge ② across the cylinder head.
- b. Measure the warpage.
- c. If the limit is exceeded, resurface the cylinder head as follows.
- d. Place a 400 ~ 600 grit wet sandpaper on the surface plate and resurface the cylinder head using a figure-eight sanding pattern.

**TIP**

To ensure an even surface, rotate the cylinder head several times.





EAS00231

**INSTALLING THE CYLINDER HEAD**

1. Install:
  - gasket **New**
  - dowel pins
2. Install:
  - cylinder head
3. Tighten:
  - cylinder head nuts

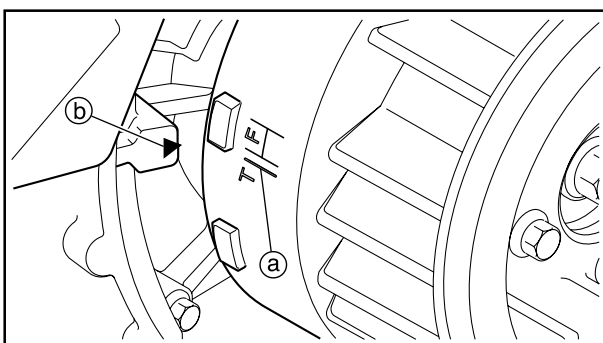
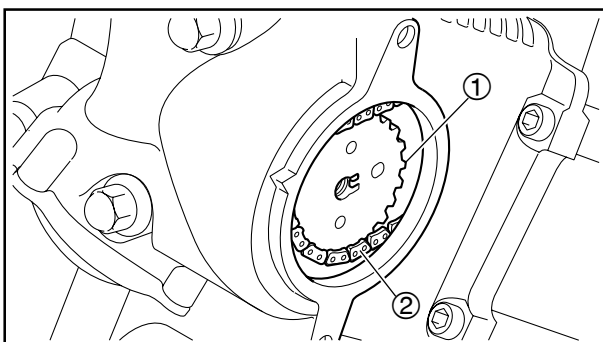
22 Nm (2.2 m • kgf, 15.9 ft • lbf)

- cylinder head bolts

12 Nm (1.2 m • kgf, 8.7 ft • lbf)

**TIP**

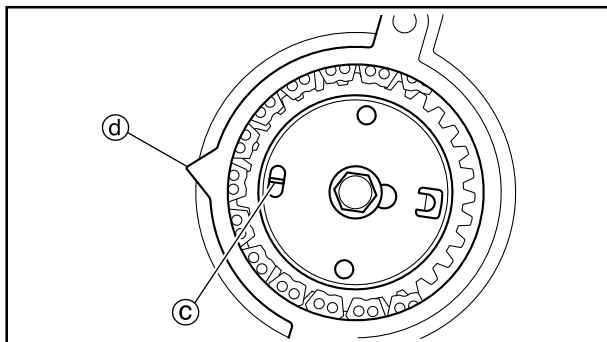
- Lubricate the cylinder head nuts with engine oil.
- Tighten the cylinder head nuts and bolts in the proper tightening sequence as shown and torque them in two stages.



4. Install:
  - camshaft sprocket ①
  - timing chain ②



- a. Turn the primary fixed sheave counterclockwise.
- b. Align the "I" mark (a) on the AC magneto rotor with the stationary pointer (b) on the crankcase.
- c. Align the "I" mark (c) on the camshaft sprocket with the stationary pointer (d) on the cylinder head.
- d. Install the timing chain onto the camshaft sprocket, and then install the camshaft sprocket onto the camshaft.



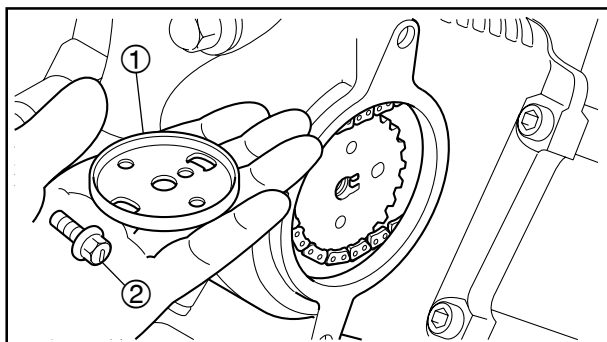
**TIP**

- When installing the camshaft sprocket, be sure to keep the timing chain as tight as possible on the exhaust side.
- Align the slot on the camshaft with the tab in the camshaft sprocket.

**NOTICE**

Do not turn the crankshaft when installing the camshaft to avoid damage or improper valve timing.

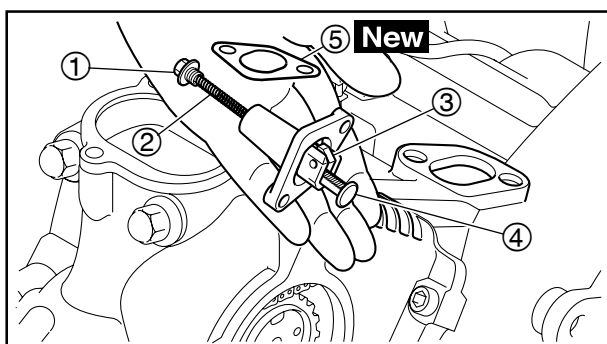
- Remove the wire from the timing chain.



- Install
  - camshaft sprocket plate ①
  - camshaft sprocket bolt ②

**TIP**

While holding the camshaft and install the camshaft sprocket plate, temporarily tighten the camshaft sprocket bolt.



- Install:
  - timing chain tensioner gasket **New**
  - timing chain tensioner



- Remove the cap bolt ① and spring ②.
- Release the timing chain tensioner one-way cam ③ and push the timing chain tensioner rod ④ all the way into the timing chain tensioner housing.
- Install the timing chain tensioner and gasket ⑤ onto the cylinder.



**Timing chain tensioner bolt**  
**9 Nm (0.9 m • kgf, 6.5 ft • lbf)**

- Install the spring ② and cap bolt ①.

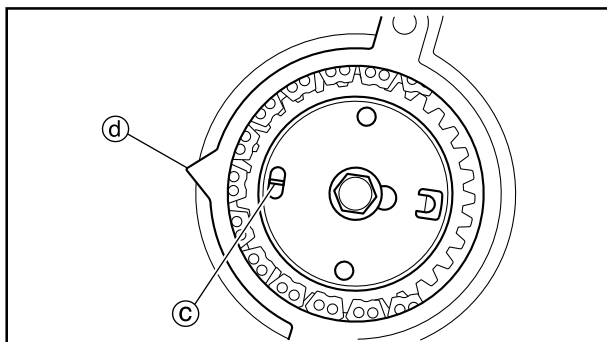
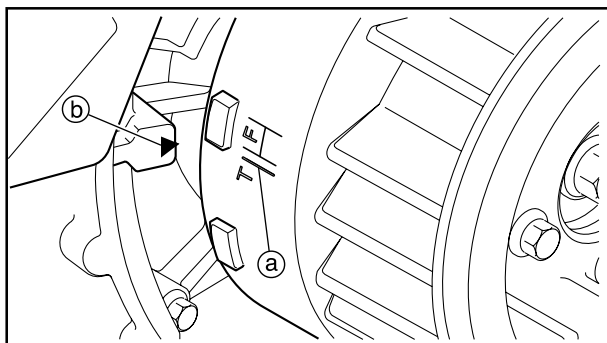


Cap bolt

8 Nm (0.8 m • kgf, 5.8 ft • lbf)



7. Turn:
- crankshaft  
(several turns counterclockwise)



8. Check:
- "I" mark (a)  
Align the "I" mark on the AC magneto rotor with the stationary pointer (b) on the crankcase.
  - "I" mark (c)  
Align the "I" mark on the camshaft sprocket with the stationary pointer (d) on the cylinder head.  
Out of alignment → Correct.  
Refer to the installation steps above.
9. Tighten:
- camshaft sprocket bolt



30 Nm (3.0 m • kgf, 21.7 ft • lbf)

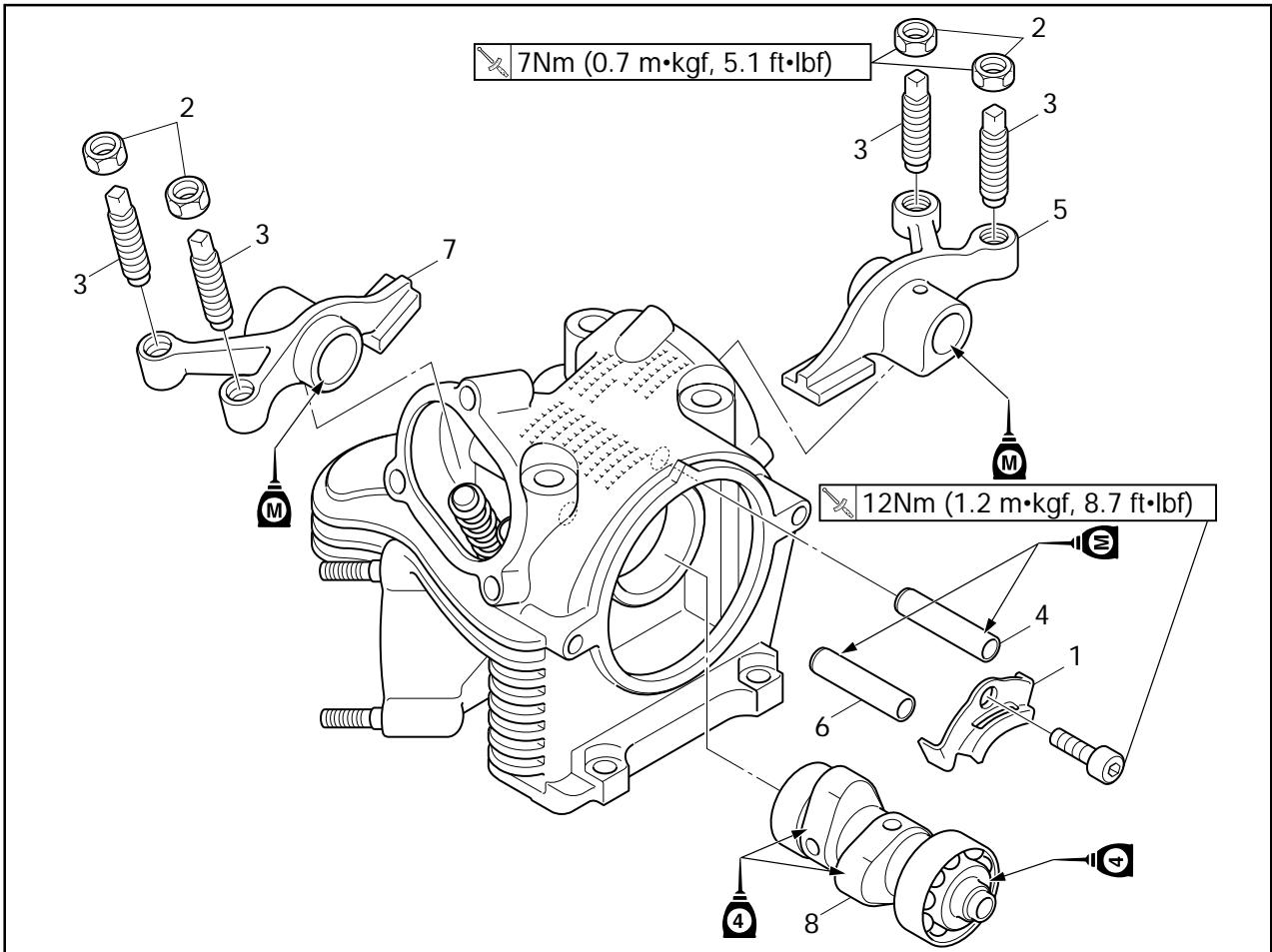
**NOTICE**

Be sure to tighten the camshaft sprocket bolt to the specified torque to avoid the possibility of the bolts coming loose and damaging the engine.

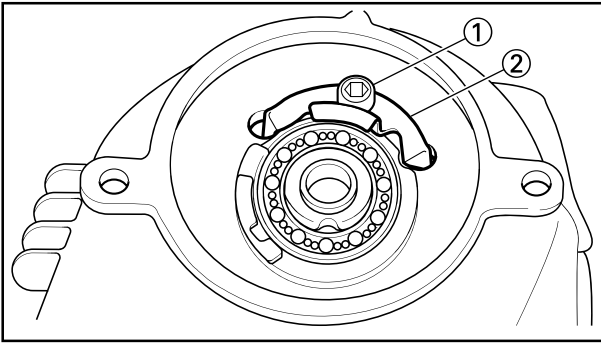
10. Measure:
- valve clearance  
Out of specification → Adjust.  
Refer to "ADJUSTING THE VALVE CLEARANCE" in chapter 3.



THE ROCKER ARMS AND CAMSHAFT



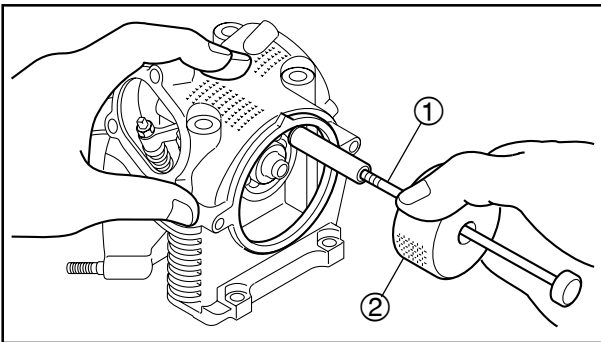
Order	Job/Part	Q'ty	Remarks
	<b>Removing the rocker arms and camshaft</b>		Remove the parts in the order listed.
	Cylinder head		Refer to "CYLINDER HEAD".
1	Stopper plate	1	Refer to "REMOVING THE ROCKER ARMS AND CAMSHAFT" and "INSTALLING THE CAMSHAFT AND ROCKER ARMS".
2	Locknut	4	
3	Adjusting screw	4	
4	Rocker arm shaft (intake)	1	
5	Rocker arm (intake)	1	
6	Rocker arm shaft (exhaust)	1	
7	Rocker arm (exhaust)	1	
8	Camshaft	1	
			For installation, reverse the removal procedure.



EAS00202

## REMOVING THE ROCKER ARMS AND CAMSHAFT

1. Remove:
  - locknut ①
  - stopper plate ②



2. Remove:
  - intake rocker arm shaft
  - exhaust rocker arm shaft
  - intake rocker arm
  - exhaust rocker arm

### TIP

Remove the rocker arm shafts with the slide hammer bolt ① and weight ②.

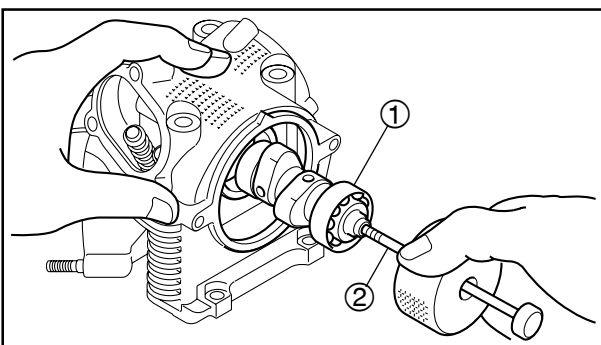


**Slide hammer bolt**

90890-01085 (YU-01083-2)

**Weight**

90890-01084 (YU-01083-3)



3. Remove:
  - camshaft ①

### TIP

Slide hammer bolt ② into the threaded end of the camshaft and then pull out the camshaft.

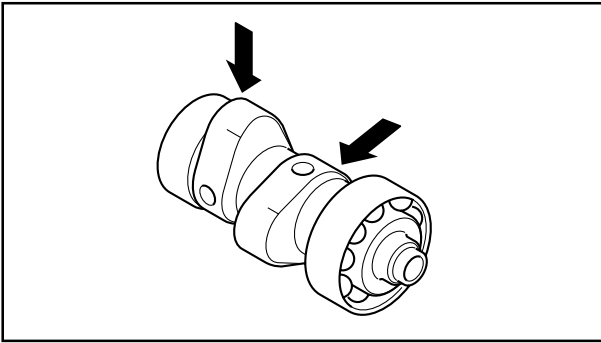


**Slide hammer bolt**

90890-01085 (YU-01083-2)

**Weight**

90890-01084 (YU-01083-3)

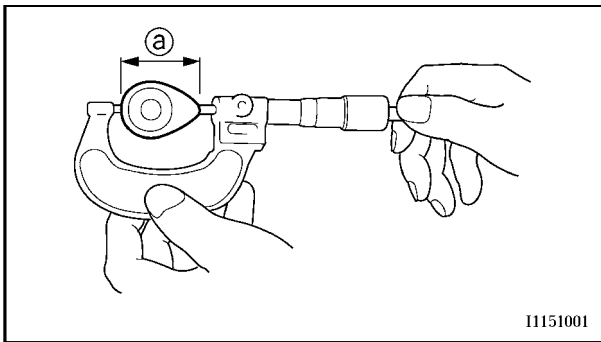


EAS00205

## CHECKING THE CAMSHAFT

### 1. Check:

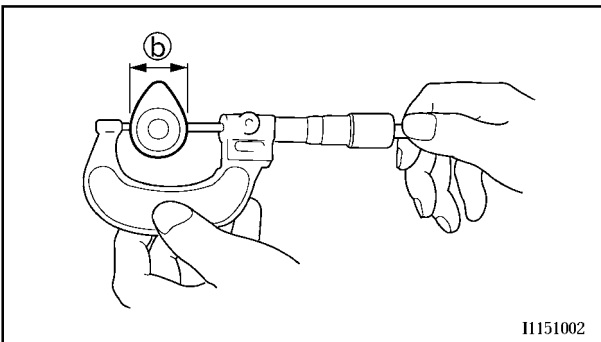
- camshaft lobes  
Blue discoloration/pitting/scratches → Replace the camshaft.



11151001

### 2. Measure:

- camshaft lobe dimensions (a) and (b)  
Out of specification → Replace the camshaft.



11151002



### Camshaft lobe dimension limit

#### Intake

(a) 25.267 ~ 25.367mm (0.995 ~ 0.999in)

<Limit>: 25.167mm (0.991in)

(b) 21.069 ~ 21.169mm (0.829 ~ 0.833in)

<Limit>: 20.969mm (0.826in)

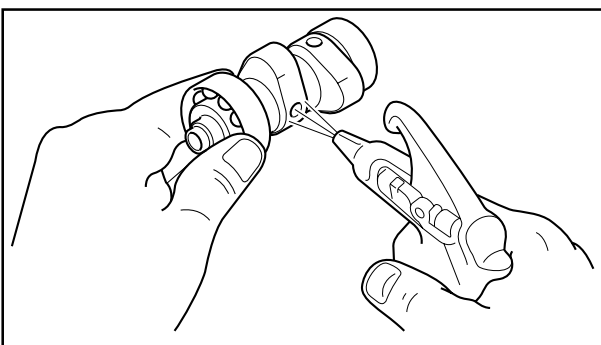
#### Exhaust

(a) 25.275 ~ 25.375mm (0.995 ~ 0.999in)

<Limit>: 25.175mm (0.991in)

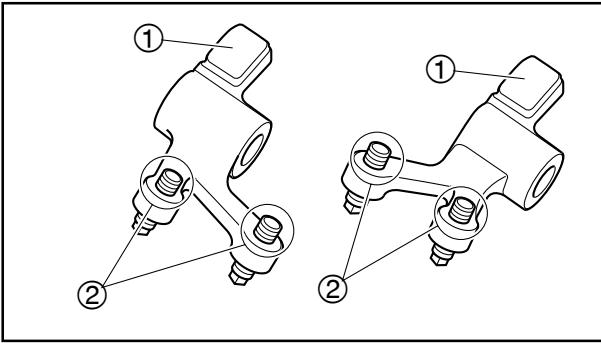
(b) 21.069 ~ 21.169mm (0.829 ~ 0.833in)

<Limit>: 20.969mm (0.826in)



### 3. Check:

- camshaft oil passage  
Obstruction → Blow out with compressed air.

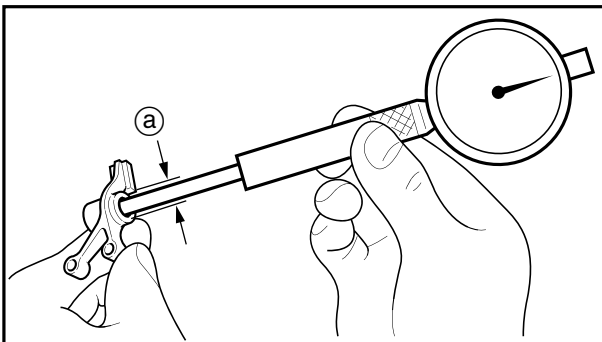


EAS00206

## CHECKING THE ROCKER ARMS AND ROCKER ARM SHAFTS

The following procedure applies to all of the rocker arms and rocker arm shafts.

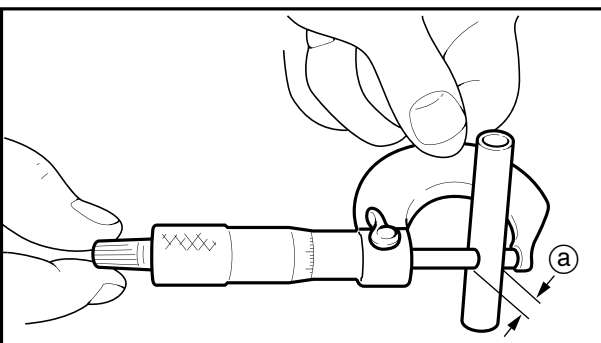
1. Check:
  - rocker arm (camshaft touch surface)①
  - rocker arm (valve touch surface)②
 Damage/wear → Replace.
2. Check:
  - rocker arm shaft
 Blue discoloration/excessive wear/pitting/scratches → Replace or check the lubrication system.
3. Check:
  - camshaft lobe
 Excessive wear → Replace the camshaft.



4. Measure:
  - rocker arm inside diameter (a)
 Out of specification → Replace.



**Rocker arm inside diameter**  
10.000 ~ 10.015mm (0.3937 ~ 0.3943in)



5. Measure:
  - rocker arm shaft outside diameter (a)
 Out of specification → Replace.



**Rocker arm shaft outside diameter**  
9.981 ~ 9.991mm (0.3930 ~ 0.3933in)

6. Calculate:
  - rocker-arm-to-rocker-arm-shaft clearance

### TIP

Calculate the clearance by subtracting the rocker arm shaft outside diameter from the rocker arm inside diameter.



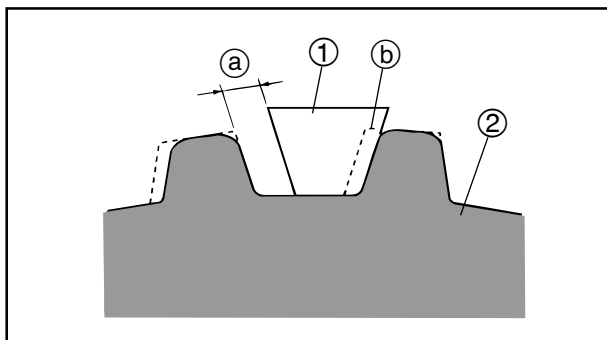


Above 0.034mm (0.0013in) → Replace the defective part(s).



**Rocker-arm-to-rocker-arm-shaft clearance**

0.009 ~ 0.034mm (0.0004 ~ 0.0013in)

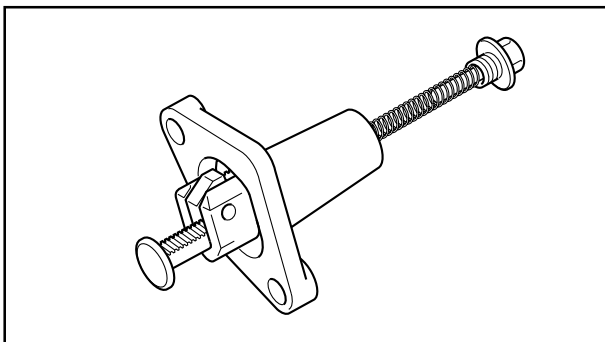


EAS00207

## CHECKING THE TIMING CHAIN, CAMSHAFT SPROCKET AND TIMING CHAIN GUIDES

The following procedure applies to all of the camshaft sprocket and timing chain guides.

1. Check:
    - timing chain  
Damage/stiffness → Replace the timing chain and camshaft sprocket as a set.
  2. Check:
    - camshaft sprocket  
More than 1/4 tooth wear (a) → Replace the camshaft sprocket and the timing chain as a set.
- (a) 1/4 tooth  
 (b) Correct  
 ① Timing chain roller  
 ② Camshaft sprocket
3. Check:
    - timing chain guide (exhaust side)
    - timing chain guide (intake side)  
Damage/wear → Replace the defective part(s).



EAS00210

## CHECKING THE TIMING CHAIN TENSIONER

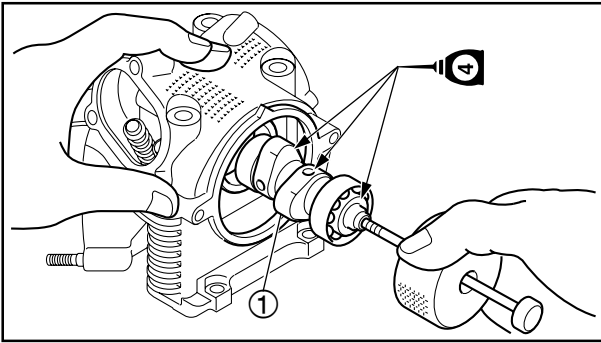
- Check:
  - timing chain tensioner  
Cracks/damage → Replace.
- Check:
  - one-way cam operation  
Rough movement → Replace the timing chain tensioner.
- Check:
  - cap bolt
  - O-ring **New**
  - spring
  - one-way cam
  - gasket **New**
  - timing chain tensioner rod  
Damage/wear → Replace the defective part(s).



- Removing the spring and cap bolt.
- Return cam chain tensioner one way cam.  
Press tensioner rod to the cam chain tensioner housing.
- Installing the spring and cap bolt.
- Loosen the front end of cam chain tensioner slowly.
- Make sure to return to the front end of cam chain tensioner.




# THE ROCKER ARMS AND CAMSHAFT




EAS00220

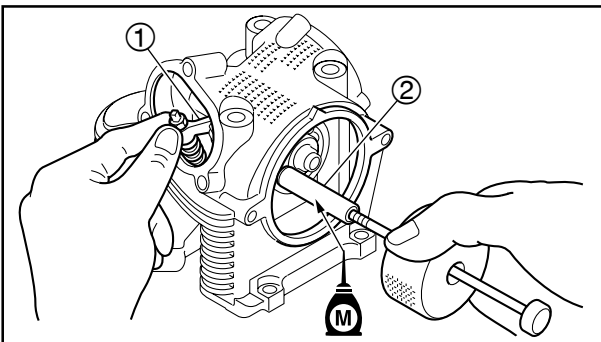
## INSTALLING THE CAMSHAFT AND ROCKER ARMS

- Lubricate:
  - camshaft ①

	Recommended lubricant
	Camshaft
	Engine oil
	Camshaft bearing
	Engine oil

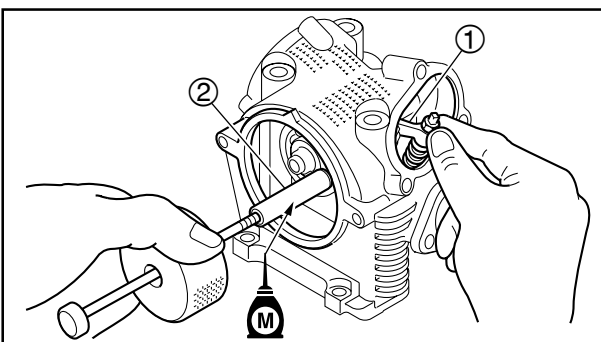
- Lubricate:
  - rocker arms
  - rocker arm shafts

	Recommended lubricant
	Molybdenum disulfide oil



- Install:
  - exhaust rocker arm ①
  - exhaust rocker arm shaft ②

**TIP** \_\_\_\_\_  
 Make sure the exhaust rocker arm shaft is completely pushed into the cylinder head.



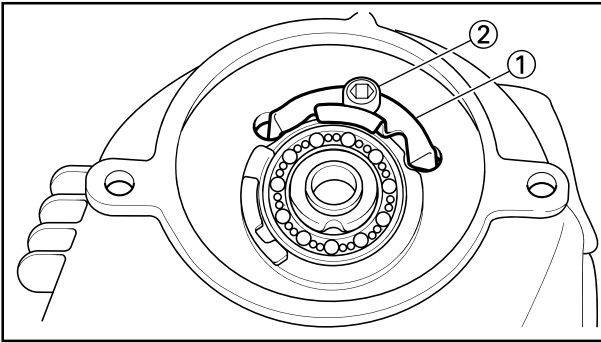
- Install:
  - intake rocker arm ①
  - intake rocker arm shaft ②

**TIP** \_\_\_\_\_  
 Make sure the intake rocker arm shaft is completely pushed into the cylinder head.


**NOTICE** \_\_\_\_\_  
 Make sure the threaded part of the rocker arm shaft faces out.

## THE ROCKER ARMS AND CAMSHAFT

ENG



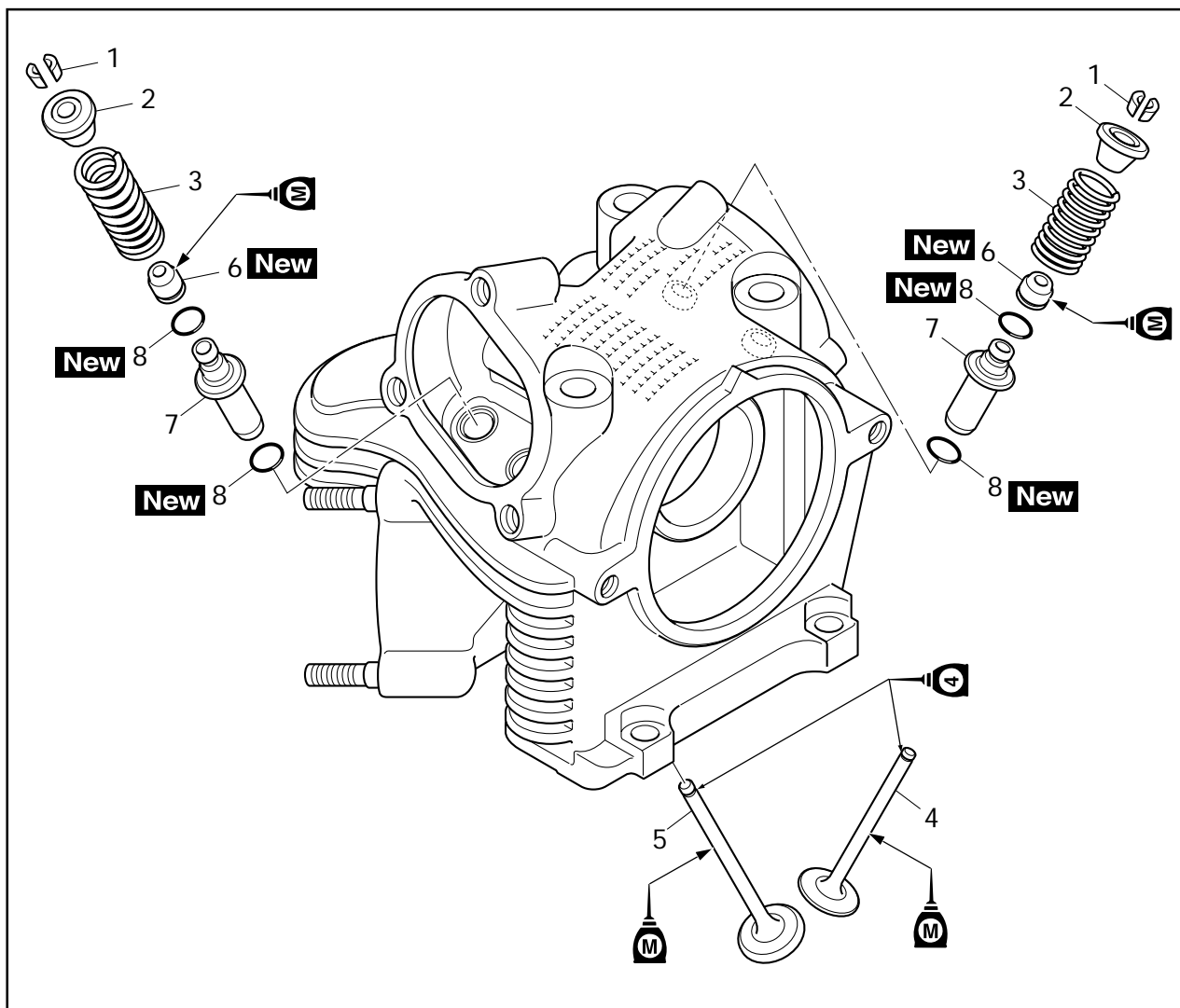
5. Install:
- stopper plate ①
  - locknut ②

 12Nm (1.2m • kgf, 8.7ft • lbf)

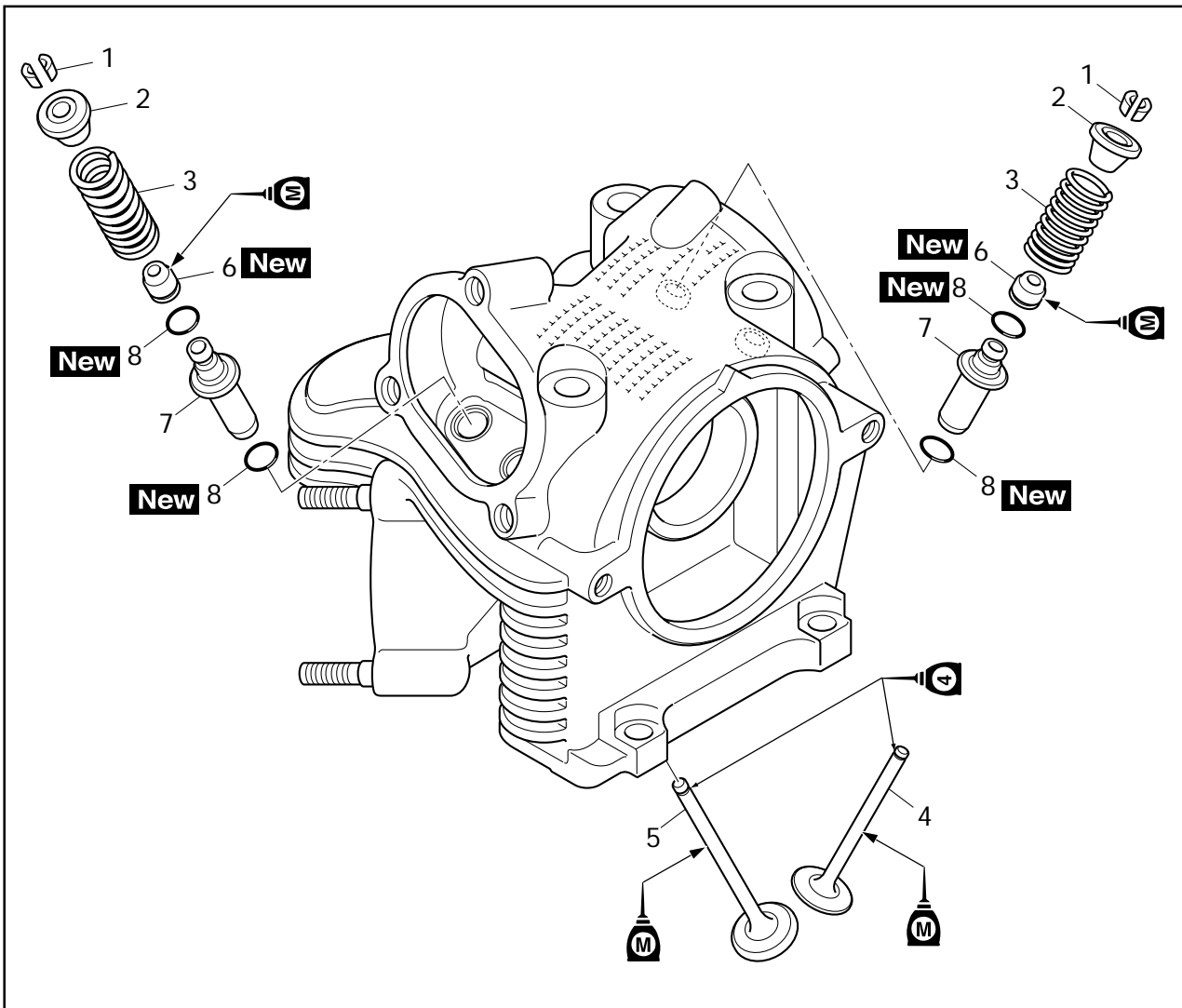


EAS00236

VALVES AND VALVE SPRINGS



Order	Job/Part	Q'ty	Remarks
	<b>Removing the valves and valve springs</b>		Remove the parts in the order listed.
	Cylinder head		Refer to "CYLINDER HEAD".
	Rocker arms		Refer to "REMOVING THE ROCKER ARMS AND CAMSHAFT" and "INSTALLING THE CAMSHAFT AND ROCKER ARMS".
	Rocker arm shafts		
	Camshaft		
1	Valve cotter	8	
2	Valve spring retainer	4	
3	Valve spring	4	
4	Valve (intake)	2	Refer to "REMOVING THE VALVES" and "INSTALLING THE VALVES".
5	Valve (exhaust)	2	
6	Valve stem seal	4	
7	Valve stem seat/valve guide	4	
8	O-ring	8	



Order	Job/Part	Q'ty	Remarks
			For installation, reverse the removal procedure.



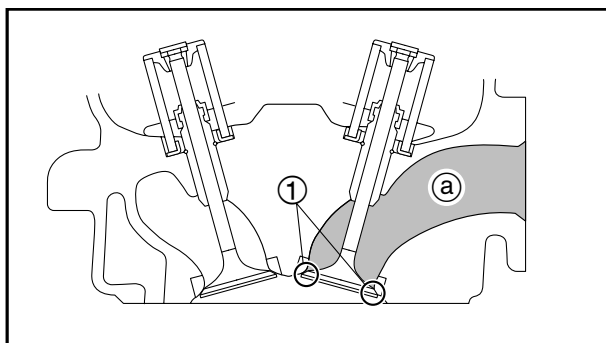
EAS00237

## REMOVING THE VALVES

The following procedure applies to all of the valves and related components.

### TIP

Before removing the internal parts of the cylinder head (e.g., valves, valve springs, valve seats), make sure the valves properly seal.



### 1. Check:

- valve sealing

Leakage at the valve seat → Check the valve face, valve seat, and valve seat width.

Refer to "CHECKING THE VALVE SEATS".



- Pour a clean solvent (a) into the intake and exhaust ports.
- Check that the valves properly seal.

### TIP

There should be no leakage at the valve seat ①.

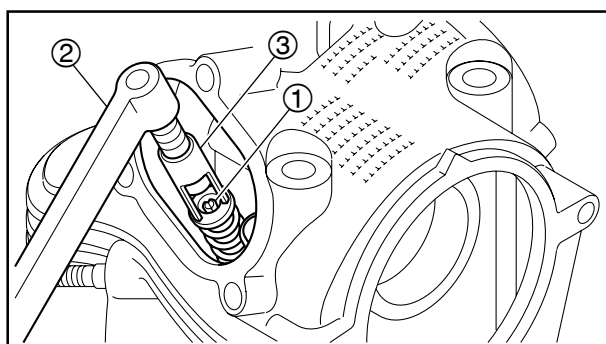


### 2. Remove:

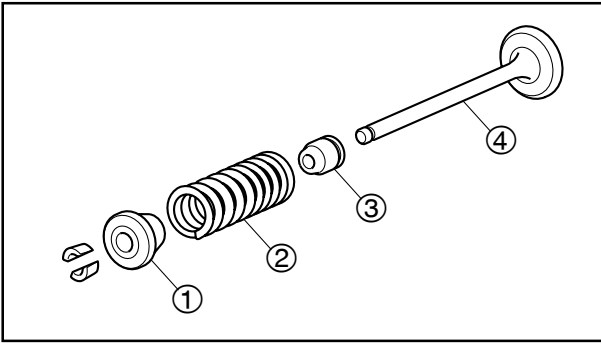
- valve cotters ①

### TIP

Remove the valve cotters by compressing the valve spring with the valve spring compressor ② and the valve spring compressor attachment ③.

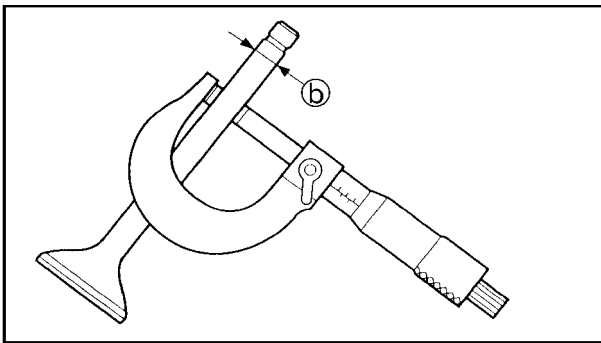
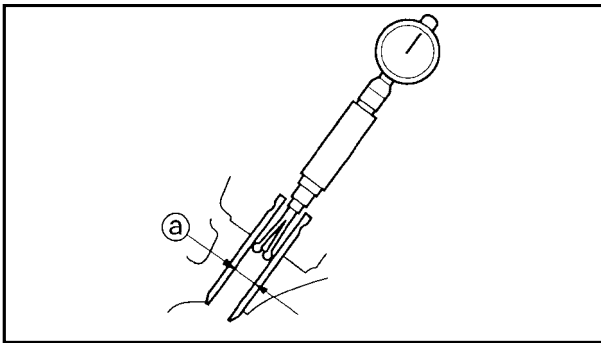


	<p><b>Valve spring compressor</b> 90890-04019 (YM-04019)</p>
	<p><b>Valve spring compressor attachment</b> 90890-04108 (YM-04108)</p>



3. Remove:
- valve spring retainer ①
  - valve spring ②
  - valve stem seal ③
  - valve ④

**TIP** \_\_\_\_\_  
 Identify the position of each part very carefully so that it can be reinstalled in its original place.



EAS00239

## CHECKING THE VALVES AND VALVE GUIDES

The following procedure applies to all of the valves and valve guides.

1. Measure:
- valve-stem-to-valve-guide clearance

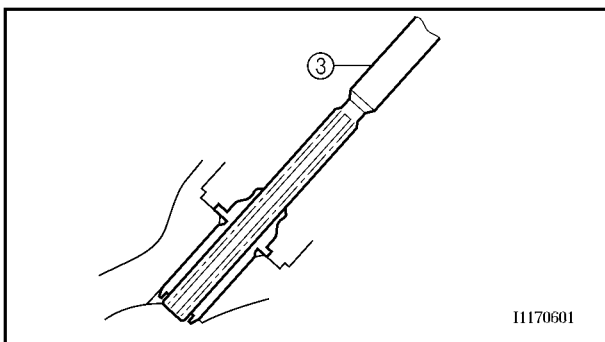
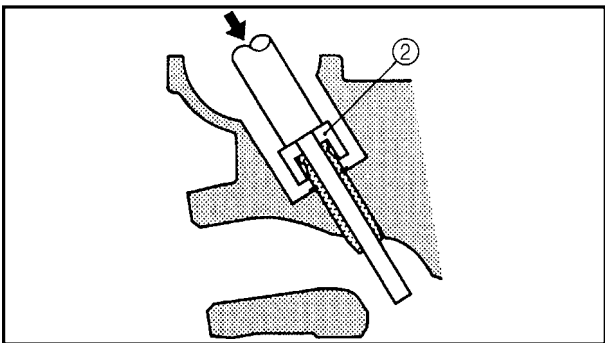
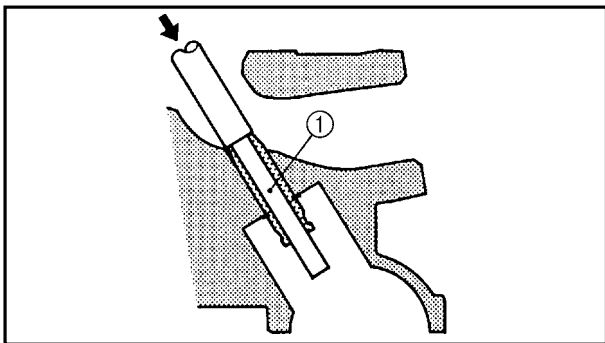
$$\text{Valve-stem-to-valve-guide clearance} = \text{Valve guide inside diameter (a)} - \text{Valve stem diameter (b)}$$

Out of specification → Replace the valve guide.



<b>Valve-stem-to-valve-guide clearance</b>	
<b>Intake</b>	0.015 ~ 0.042mm (0.0006 ~ 0.0017in)
	<Limit>: 0.08mm (0.0031in)
<b>Exhaust</b>	0.030 ~ 0.057mm (0.0012 ~ 0.0022in)
	<Limit>: 0.10mm (0.0039in)





11170601

2. Replace:
  - valve guide

**TIP**

To ease valve guide removal and installation, and to maintain the correct fit, heat the cylinder head to 100°C (212°F) in an oven.



- a. Remove the valve guide with the valve guide remover ①.
- b. Install the new valve guide with the valve guide installer ② and valve guide remover ①.
- c. After installing the valve guide, bore the valve guide with the valve guide reamer ③ to obtain the proper valve-stem-to-valve-guide clearance.

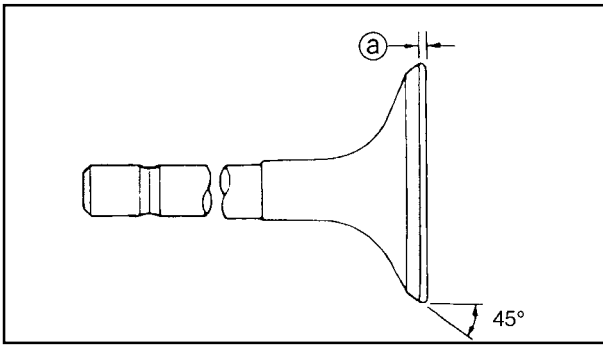
**TIP**

After replacing the valve guide, reface the valve seat.

	<p><b>Valve guide remover (4.5mm)</b> 90890-04116 (YM-04116)</p> <p><b>Valve guide installer (4.5mm)</b> 90890-04117 (YM-04117)</p> <p><b>Valve guide reamer (4.5mm)</b> 90890-04118 (YM-04118)</p>
--	---



3. Eliminate:
  - carbon deposits  
(from the valve face and valve seat)
4. Check:
  - valve face  
Pitting/wear → Grind the valve face.
  - valve stem end  
Mushroom shape or diameter larger than the body of the valve stem → Replace the valve.



5. Measure:

- valve margin thickness (a)

Out of specification → Replace the valve.

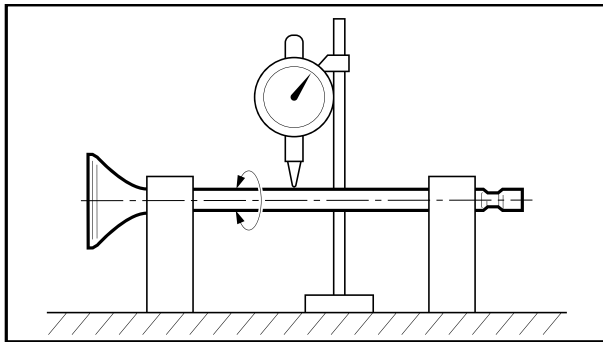


**Valve margin thickness (intake)**

**0.7mm (0.028in)**

**Valve margin thickness (exhaust)**

**1.0mm (0.039in)**



6. Measure:

- valve stem runout

Out of specification → Replace the valve.

**TIP**

- When installing a new valve, always replace the valve guide.
- If the valve is removed or replaced, always replace the oil seal..



**Valve stem runout**

**0.01mm (0.0004in)**

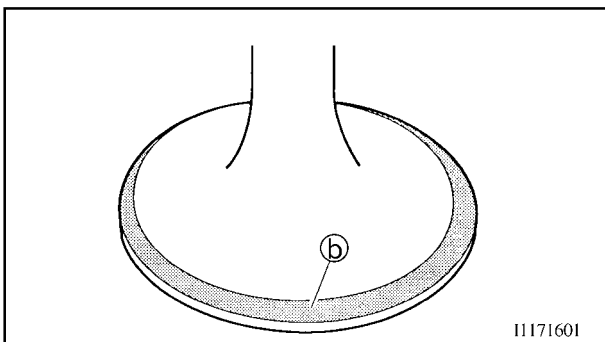
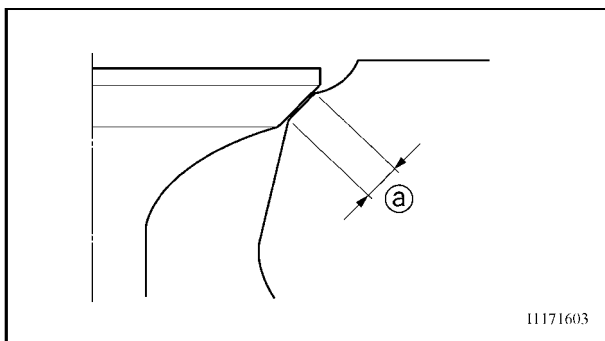


EAS00240

## CHECKING THE VALVE SEATS

The following procedure applies to all of the valves and valve seats.

1. Eliminate:
  - carbon deposits  
(from the valve face and valve seat)
2. Check:
  - valve seat  
Pitting/wear → Replace the cylinder head.
3. Measure:
  - valve seat width (a)  
Out of specification → Replace the cylinder head.



### Valve seat width

Intake: 0.9 ~ 1.1mm (0.035 ~ 0.043in)

<Limit>: 1.6mm (0.063in)

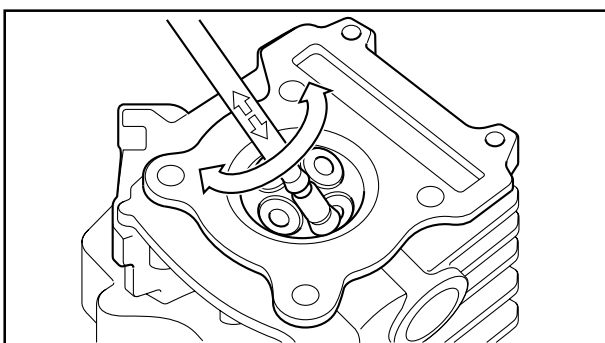
Exhaust: 0.9 ~ 1.1mm (0.035 ~ 0.043in)

<Limit>: 1.6mm (0.063in)

- a. Apply Mechanic's blueing dye (Dykem) (b) onto the valve face.
- b. Install the valve into the cylinder head.
- c. Press the valve through the valve guide and onto the valve seat to make a clear impression.
- d. Measure the valve seat width.

### TIP

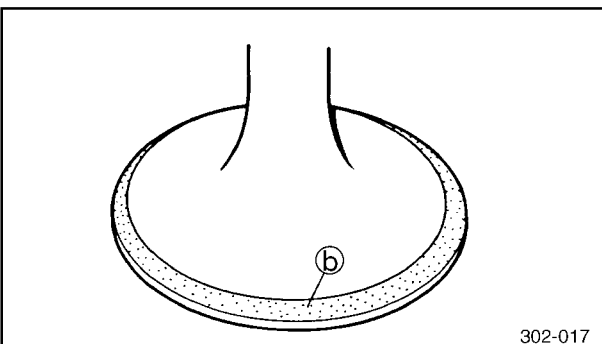
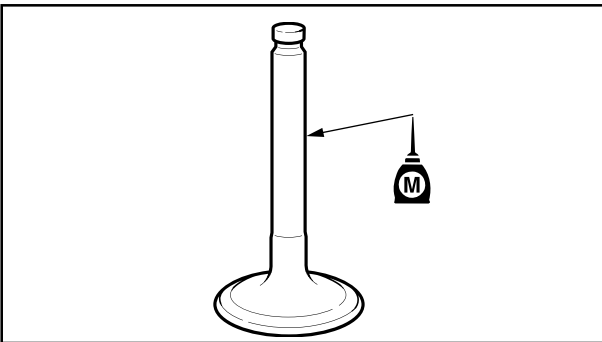
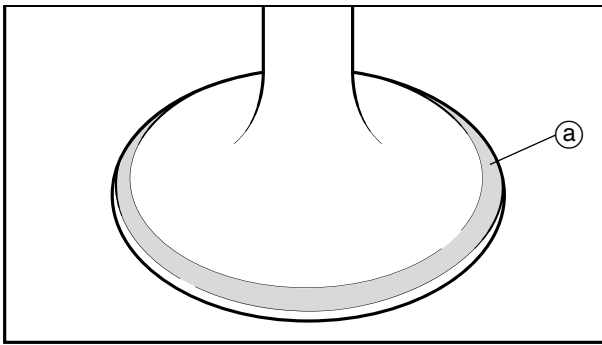
Where the valve seat and valve face contacted one another, the blueing will have been removed.



4. Lap:
  - valve face
  - valve seat

### TIP

After replacing the cylinder head or replacing the valve and valve guide, the valve seat and valve face should be lapped.



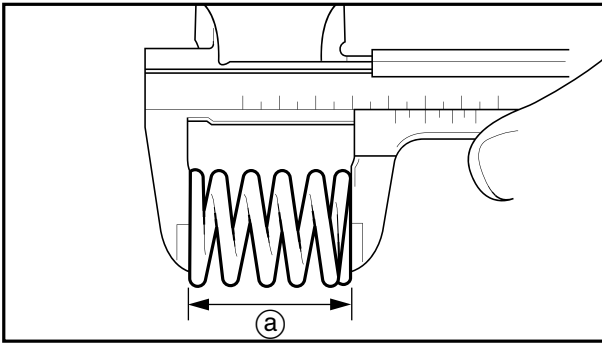
- a. Apply a coarse lapping compound (a) to the valve face.

**NOTICE** Do not let the lapping compound enter the gap between the valve stem and the valve guide.

- b. Apply molybdenum disulfide oil onto the valve stem.
- c. Install the valve into the cylinder head.
- d. Turn the valve until the valve face and valve seat are evenly polished, then clean off all of the lapping compound.

**TIP** For the best lapping results, lightly tap the valve seat while rotating the valve back and forth between your hands.

- e. Apply a fine lapping compound to the valve face and repeat the above steps.
- f. After every lapping procedure, be sure to clean off all of the lapping compound from the valve face and valve seat.
- g. Apply Mechanic's blueing dye (Dykem) (b) onto the valve face.
- h. Install the valve into the cylinder head.
- i. Press the valve through the valve guide and onto the valve seat to make a clear impression.
- j. Measure the valve seat width again. If the valve seat width is out of specification, reface and lap the valve seat.



EAS00241

## CHECKING THE VALVE SPRINGS

The following procedure applies to all of the valve springs.

1. Measure:

- valve spring free length (a)

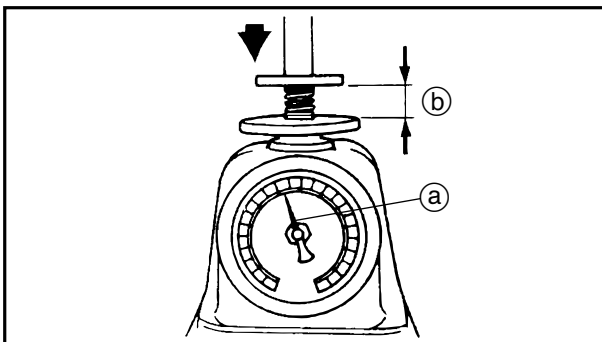
Out of specification → Replace the valve spring.



**Valve spring free length**

41.88mm (1.649in)

<Limit>: 39.786mm (1.566in)



2. Measure:

- compressed valve spring force (a)

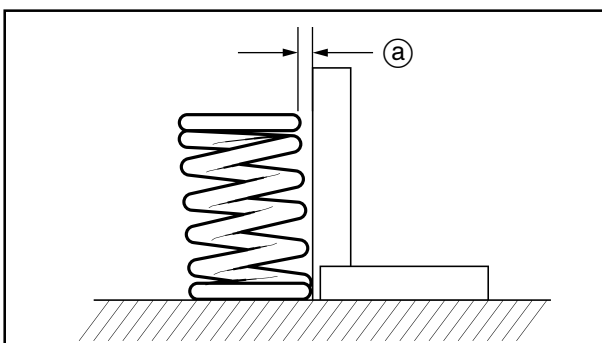
Out of specification → Replace the valve spring.

(b) Installed length



**Compressed valve spring force (installed)**

137 ~ 157N/mm (13.97 ~ 16.01kgf/mm, 30.83 ~ 35.33lbf/in) at 30mm (1.18in)



3. Measure:

- valve spring tilt (a)

Out of specification → Replace the valve spring.



**Spring tilt limit**

2.5°/1.8mm (2.5°/0.07in)

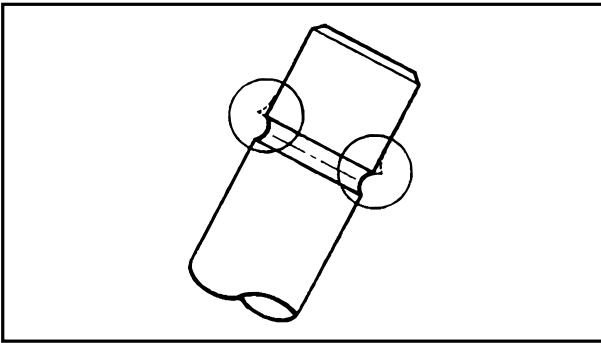


EAS00245

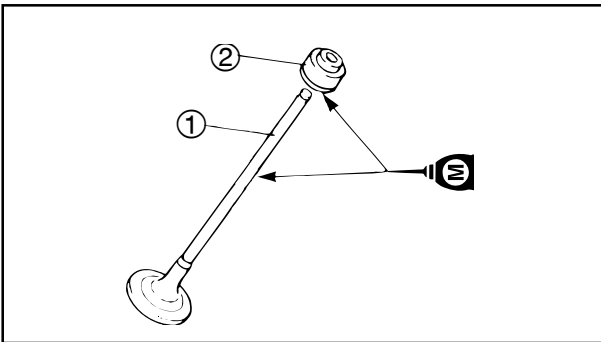
## INSTALLING THE VALVES


The following procedure applies to all of the valves and related components.

1. Deburr:
  - valve stem end  
(with an oil stone)

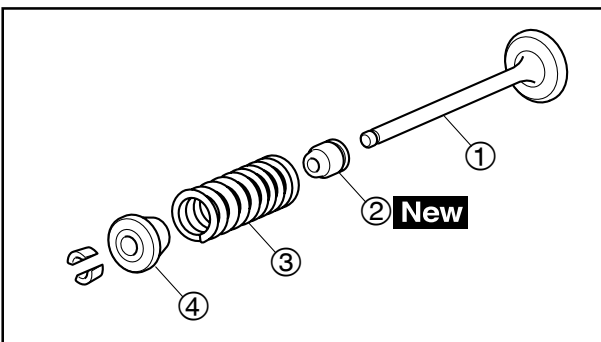


2. Lubricate:
  - valve stem ①
  - valve stem seal ②  
(with the recommended lubricant)



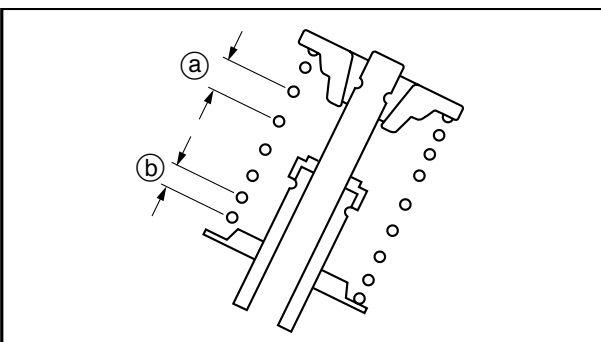
	<b>Recommended lubricant</b> <b>Molybdenum disulfide oil</b>
---	---

3. Install:
  - valve ①
  - valve stem seal ② **New**
  - valve spring ③
  - valve spring retainer ④  
(into the cylinder head)

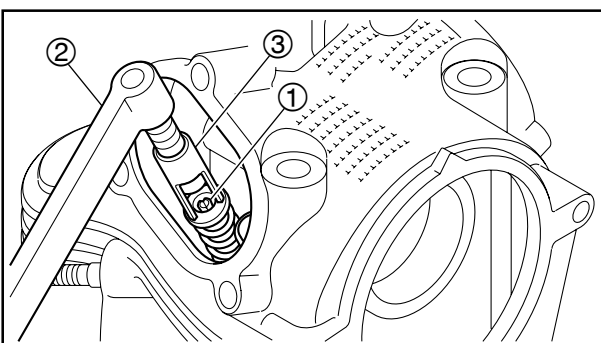


**TIP** \_\_\_\_\_  
 Install the valve spring with the larger pitch (a) facing up.

- (b) Smaller pitch



4. Install:
  - valve cotters ①



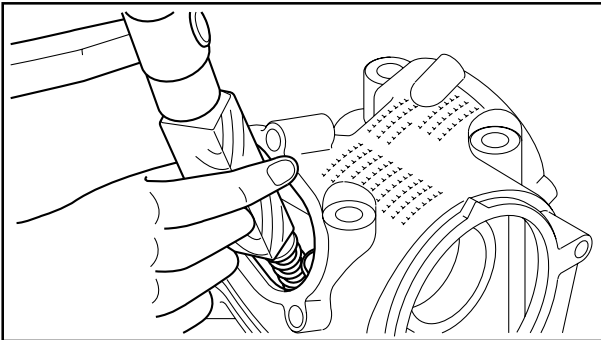
**TIP** \_\_\_\_\_  
 Install the valve cotters by compressing the valve spring with the valve spring compressor ② and the valve spring compressor attachment ③.



Valve spring compressor  
90890-04019 (YM-04019)

Valve spring compressor attachment

90890-04108 (YM-04108)



5. To secure the valve cotteners onto the valve stem, lightly tap the valve tip with a soft-face hammer.

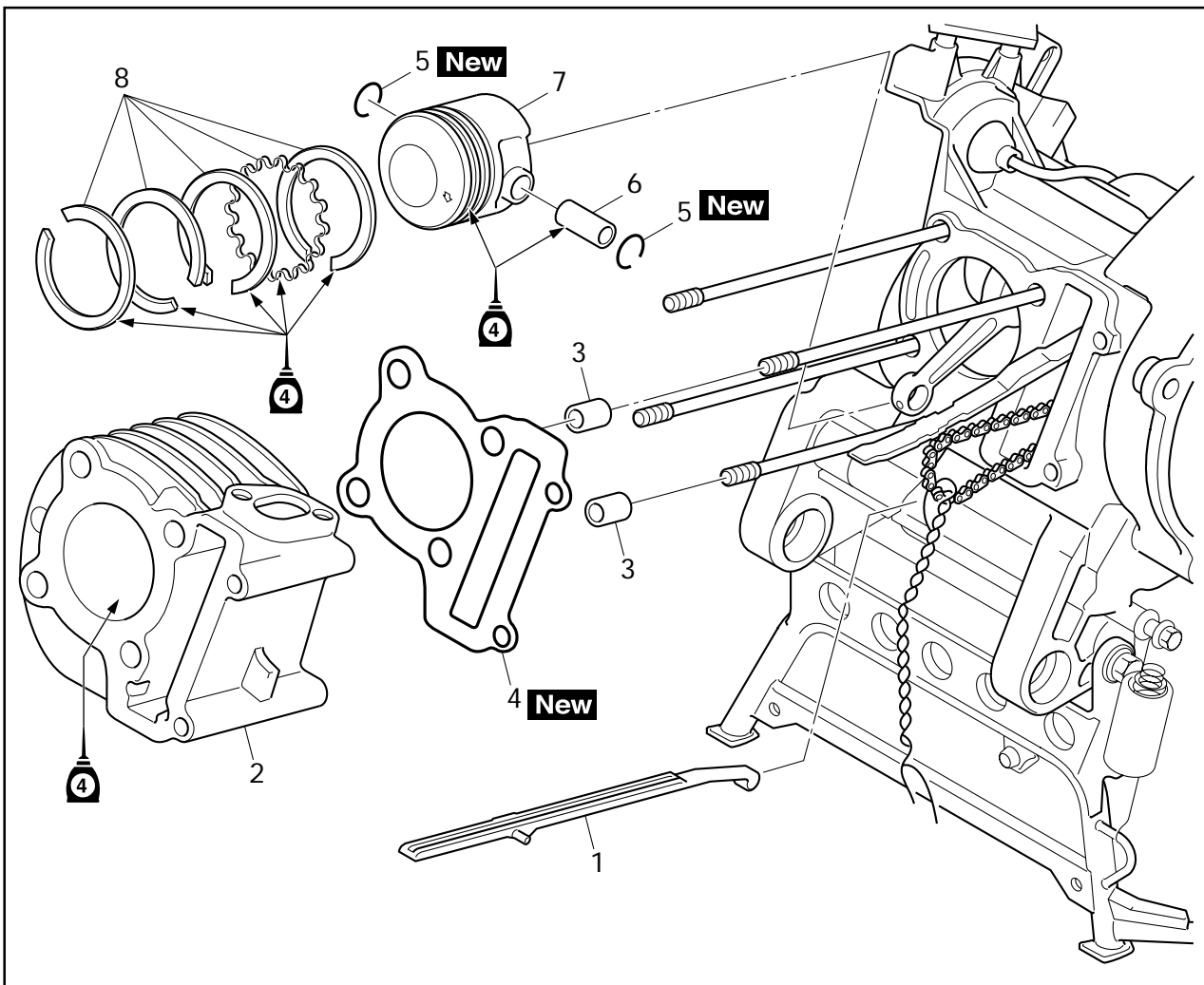
**NOTICE**

Hitting the valve tip with excessive force could damage the valve.



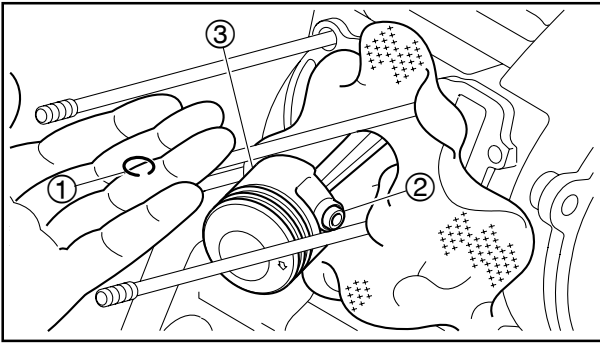
EAS00251

CYLINDER AND PISTON



Order	Job/Part	Q'ty	Remarks
	<b>Removing the cylinder and piston</b>		
	Cylinder head		Remove the parts in the order listed. Refer to "CYLINDER HEAD".
1	Timing chain guide (exhaust side)	1	
2	Cylinder	1	
3	Dowel pin	2	
4	Cylinder gasket	1	
5	Piston pin clip	2	Refer to "REMOVING THE CYLINDER AND PISTON" and "INSTALLING THE PISTON AND CYLINDER".
6	Piston pin	1	
7	Piston	1	
8	Piston ring set	1	
			For installation, reverse the removal procedure.





EAS00253

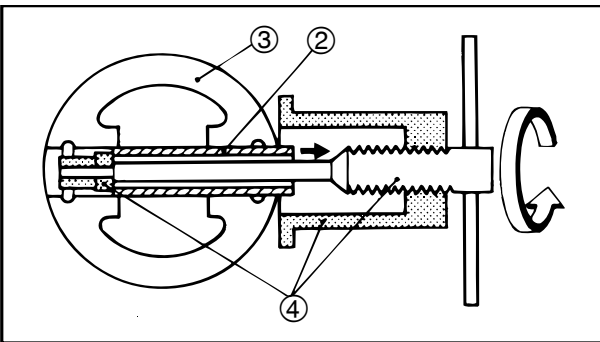
**REMOVING THE CYLINDER AND PISTON**

1. Remove:

- piston pin clip ①
- piston pin ②
- piston ③

**NOTICE**

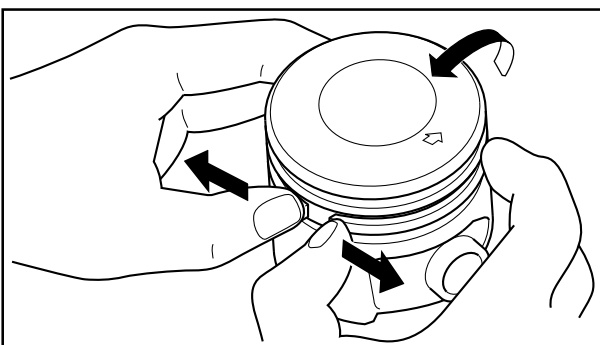
Do not use a hammer to drive the piston pin out.

**TIP**

- Before removing the piston pin clip, cover the crankcase opening with a clean rag to prevent the piston pin clip from falling into the crankcase.
- Before removing the piston pin, deburr the piston pin clip's groove and the piston's pin bore area.
- If both areas are deburred and the piston pin is still difficult to remove, remove it with the piston pin puller set ④.



**Piston pin puller set**  
90890-01304 (YU-01304)



2. Remove:

- top ring
- 2nd ring
- oil ring

**TIP**

When removing a piston ring, open the end gap with your fingers and lift the other side of the ring over the piston crown.



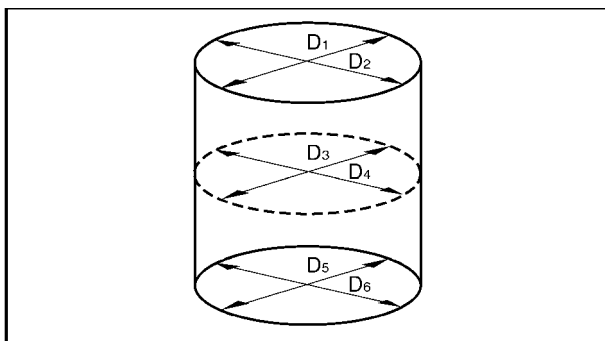
EAS00255

### CHECKING THE CYLINDER AND PISTON

1. Check:

- piston wall
- cylinder wall

Vertical scratches → Rebore or replace the cylinder, and replace the piston and piston rings as a set.



2. Measure:

- piston-to-cylinder clearance



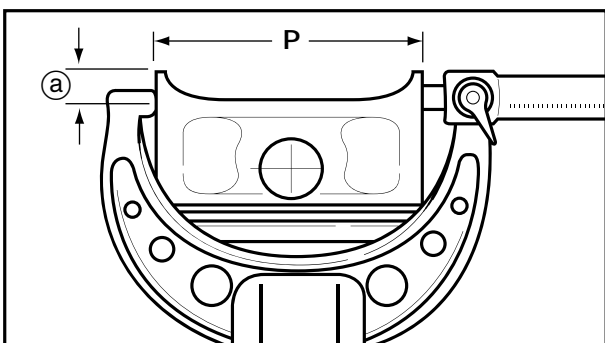
- a. Measure cylinder bore "C" with the cylinder bore gauge.

#### TIP

Measure cylinder bore "C" by taking side-to-side and front-to-back measurements of the cylinder. Then, find the average of the measurements.

Cylinder bore "C"	52.40 ~ 52.41mm (2.0630~2.0634in)
Taper limit "T"	0.05mm (0.002in)
Out-of-round "R"	0.05mm (0.002in)
"C" = maximum of D <sub>1</sub> ~ D <sub>2</sub>	
"T" = maximum of D <sub>1</sub> or D <sub>2</sub> - maximum of D <sub>5</sub> or D <sub>6</sub>	
"R" = maximum of D <sub>1</sub> , D <sub>3</sub> or D <sub>5</sub> - minimum of D <sub>2</sub> , D <sub>4</sub> or D <sub>6</sub>	

- b. If out of specification, rebore or replace the cylinder, and replace the piston and piston rings as a set.
- c. Measure piston skirt diameter "P" with the micrometer.



- ① 7mm (0.28in) from the bottom edge of the piston

	Piston size "P"
Standard	52.375 ~ 52.390mm (2.0620 ~ 2.0626in)

- d. If out of specification, replace the piston and piston rings as a set.



- e. Calculate the piston-to-cylinder clearance with the following formula.

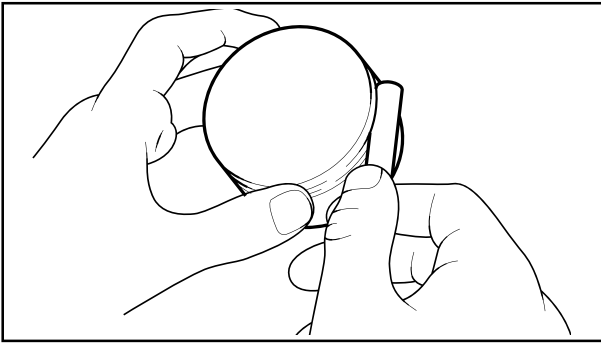
Piston-to-cylinder clearance =  
Cylinder bore "C" -  
Piston skirt diameter "P"



**Piston-to-cylinder clearance**  
**0.010 ~ 0.035mm (0.0004**  
**~0.0014in)**  
**<Limit>: 0.15mm (0.0059in)**

- f. If out of specification, rebore or replace the cylinder, and replace the piston and piston rings as a set.





EAS00263

### CHECKING THE PISTON RINGS

1. Measure:

- piston ring side clearance  
Out of specification → Replace the piston and piston rings as a set.

**TIP**

Before measuring the piston ring side clearance, eliminate any carbon deposits from the piston ring grooves and piston rings.



#### Piston ring side clearance

##### Top ring

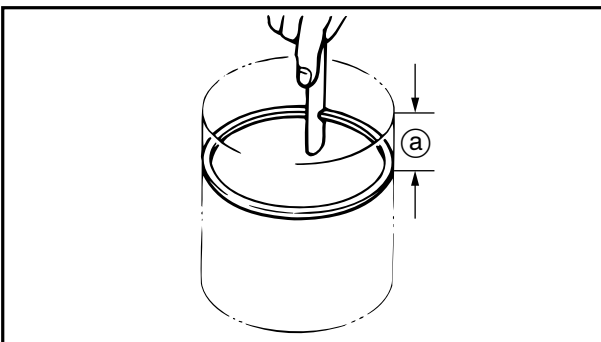
0.02 ~ 0.08mm (0.0008 ~ 0.0031in)

<Limit>: 0.13mm (0.0051in)

##### 2nd ring

0.02 ~ 0.06mm (0.0008 ~ 0.0024in)

<Limit>: 0.12mm (0.0047in)



2. Install:

- piston ring  
(into the cylinder)

**TIP**

Level the piston ring into the cylinder with the piston crown.

Ⓐ 20mm (0.79in)

3. Measure:

- piston ring end gap  
Out of specification → Replace the piston ring.

**TIP**

The oil ring expander spacer's end gap cannot be measured. If the oil ring rail's gap is excessive, replace all three piston rings.



#### Piston ring end gap

##### Top ring

0.10 ~ 0.25mm (0.0039 ~ 0.0098in)

<Limit>: 0.50mm (0.0197in)

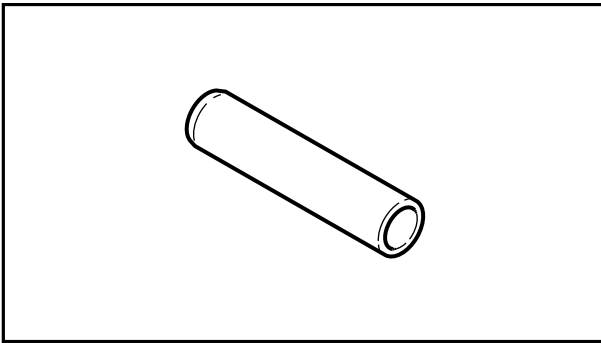
##### 2nd ring

0.25 ~ 0.40mm (0.0098 ~ 0.0157in)

<Limit>: 0.75mm (0.0295in)

##### Oil ring

0.20 ~ 0.70mm (0.0079 ~ 0.0276in)



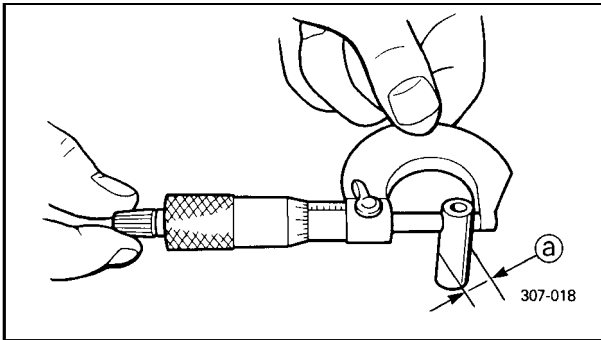
EAS00265

### CHECKING THE PISTON PIN

1. Check:

- piston pin

Blue discoloration/grooves → Replace the piston pin and then check the lubrication system.



2. Measure:

- piston pin outside diameter (a)

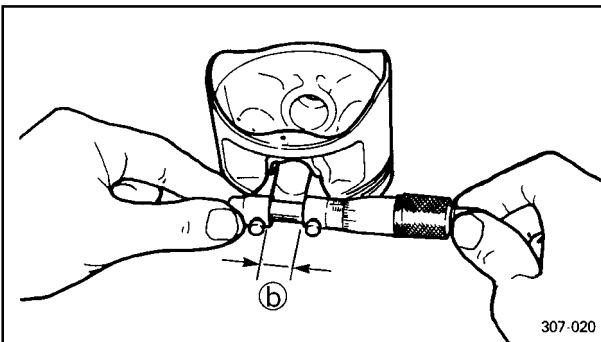
Out of specification → Replace the piston pin.



**Piston pin outside diameter**

14.995 ~ 15.000mm (0.5904 ~ 0.5906in)

<Limit>: 14.975mm (0.5896in)



3. Measure:

- piston pin bore diameter (b)

Out of specification → Replace the piston.



**Piston pin bore diameter**

15.002 ~ 15.013mm (0.5906 ~ 0.5911in)

<Limit>: 15.043mm (0.5922in)

4. Calculate:

- piston-pin-to-piston-pin-bore clearance

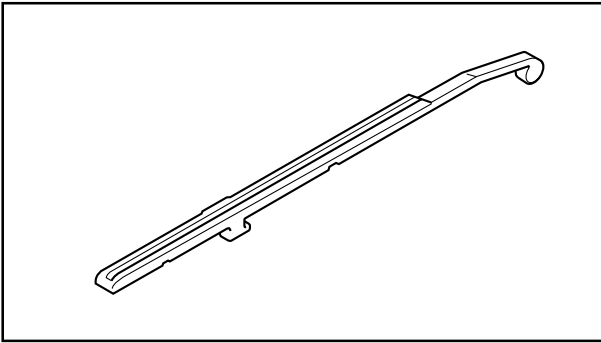
Out of specification → Replace the piston pin and piston as a set.

Piston-pin-to-piston-pin-bore clearance =  
Piston pin bore diameter (b) -  
Piston pin outside diameter (a)



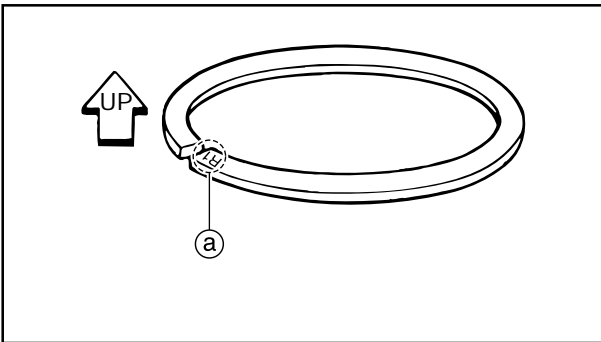
**Piston-pin-to-piston clearance**

0.002 ~ 0.018mm (0.00008 ~ 0.0007in)



### CHECKING THE TIMING CHAIN GUIDE (EXHAUST SIDE)

1. Check:
  - timing chain guide (exhaust side)
  - Damage/wear → Replace



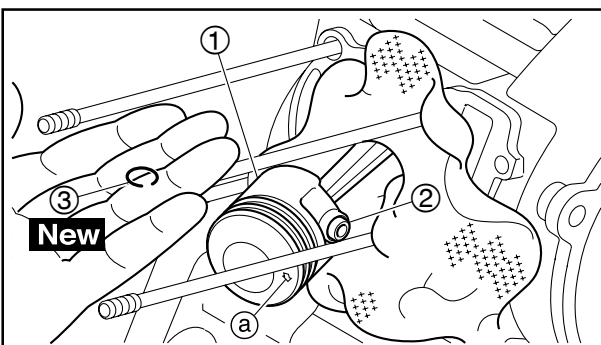
EAS00267

### INSTALLING THE PISTON AND CYLINDER

1. Install:
  - oil ring expander
  - oil ring rail
  - 2nd ring
  - top ring

#### TIP

Be sure to install the piston rings so that the manufacturer's marks or numbers (a) face up.



2. Install:
  - piston ①
  - piston pin ②
  - piston pin clip ③ **New**

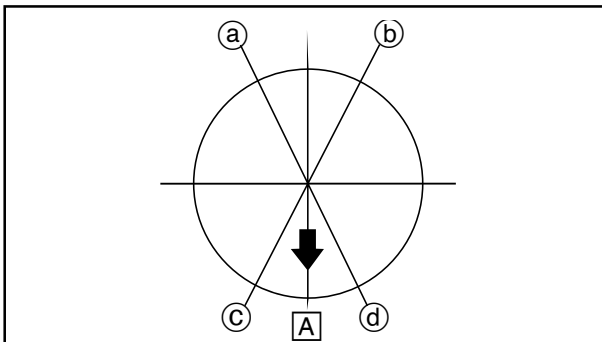
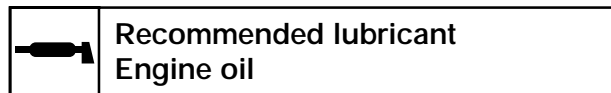
#### TIP

- Apply engine oil the piston pin.
- Make sure the arrow mark (a) on the piston points towards the exhaust side of the cylinder.
- Before installing the piston pin clip, cover the crankcase opening with a clean rag to prevent the clip from falling into the crankcase.



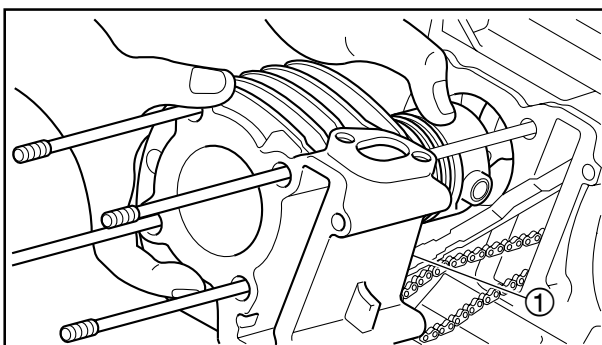
3. Install:
- gasket **New**
  - dowel pins

4. Lubricate:
- piston
  - piston rings
  - cylinder  
(with the recommended lubricant)



5. Offset:
- piston ring end gaps

- (a) Top ring
- (b) Lower oil ring rail
- (c) Upper oil ring rail
- (d) 2nd ring
- (A) Exhaust side



6. Install:
- cylinder ①

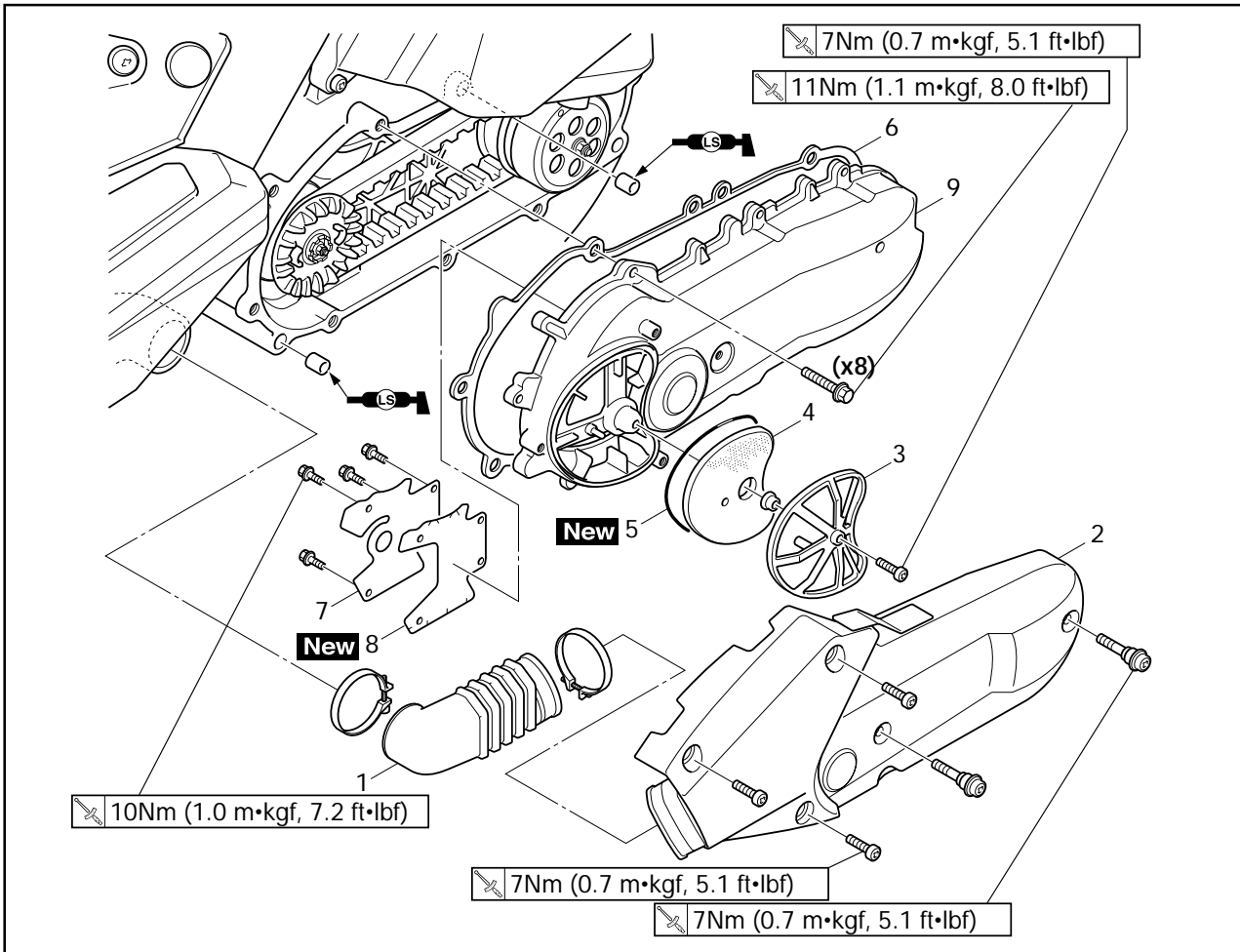
**TIP**

- While compressing the piston rings with one hand, install the cylinder with the other hand.
- Pass the timing chain and timing chain guide (exhaust side) through the timing chain cavity.



EAS00316

**BELT DRIVE**  
**V-BELT CASE**

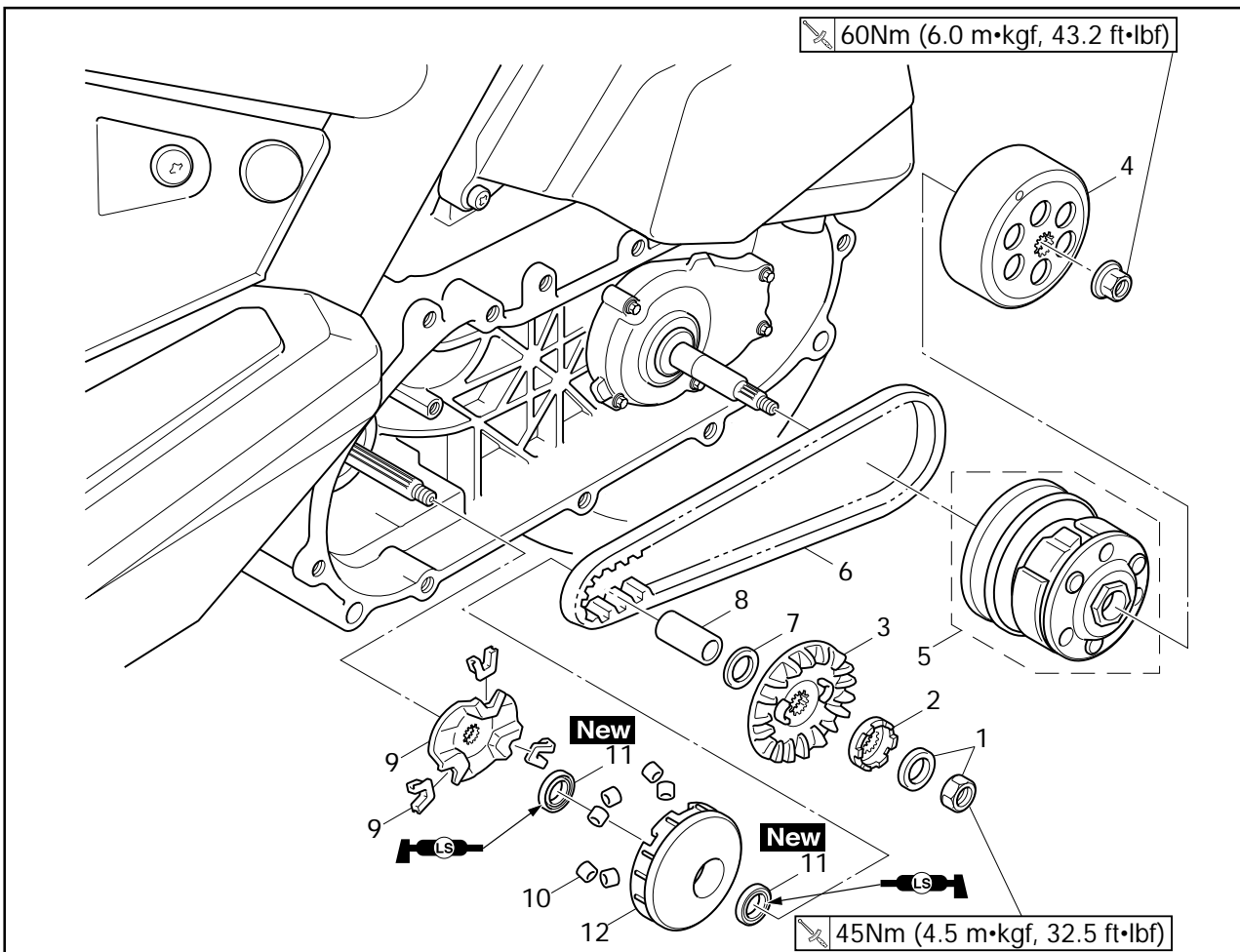


Order	Job/Part	Q'ty	Remarks
	<b>Removing the V-belt case</b>		Remove the parts in the order listed.
1	Air duct	1	
2	V-belt case cover	1	
3	V-belt case filter guide	1	
4	V-belt case filter element	1	
5	O-ring	1	
6	Gasket (V-belt case)	1	
7	Plate	1	
8	Gasket (plate)	1	
9	V-belt case	1	
			For installation, reverse the removal procedure.





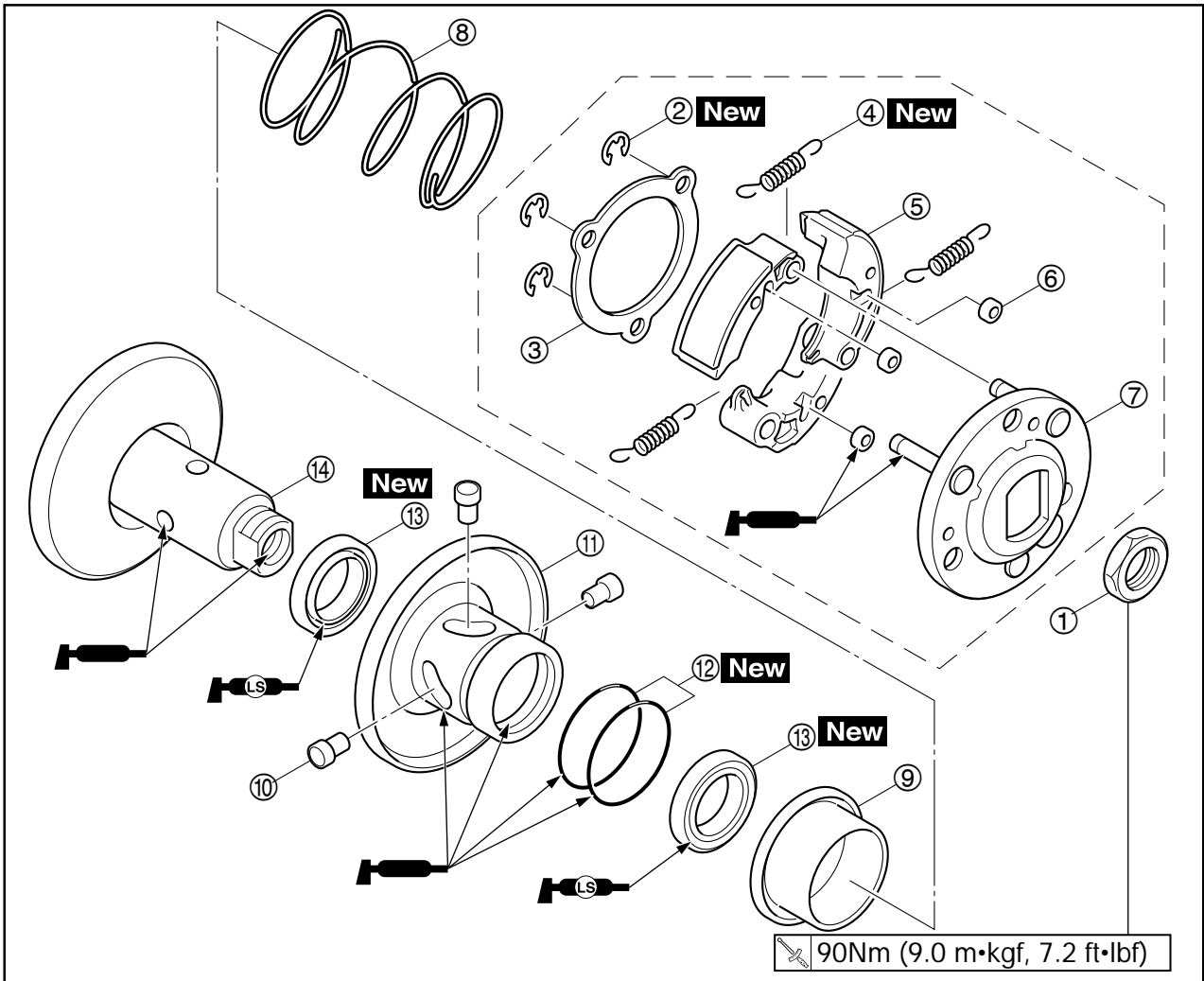
V-BELT AND PRIMARY/SECONDARY SHEAVE



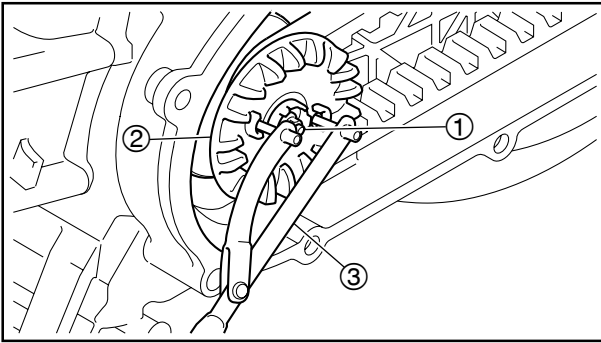
Order	Job/Part	Q'ty	Remarks	
	<b>Removing the V-belt and primary/sec- ondary sheave</b>		Remove the parts in the order listed.	
	V-belt case		Refer to "V-BELT CASE".	
1	Primary fixed sheave nut/plate washer	1/1	Refer to "REMOVING THE PRIMARY SHEAVE" and "INSTALLING THE SECONDARY SHEAVE, V-BELT AND PRIMARY SHEAVE".	
2	Oneway clutch	1		
3	Primary fixed sheave	1		
4	Clutch housing	1	Refer to "REMOVING THE SECONDARY SHEAVE AND V-BELT" and "INSTALLING THE SECONDARY SHEAVE, V-BELT AND PRIMARY SHEAVE".	
5	Secondary sheave	1		
6	V-belt	1		
7	Plate washer	1		
8	Collar	1		
9	Cam/slider	1/3		
10	Primary sheave weight	6		
11	Oil seal	2		
12	Primary sliding sheave	1		
				For installation, reverse the removal procedure.



SECONDARY SHEAVE



Order	Job/Part	Q'ty	Remarks
	<b>Disassembling the secondary sheave</b>		Disassemble the parts in the order listed.
①	Clutch carrier nut	1	
②	Clip	3	
③	Plate	1	
④	Clutch shoe spring	3	
⑤	Clutch shoe	3	
⑥	Damper	3	
⑦	Clutch carrier	1	
⑧	Compression spring	1	
⑨	Spring seat	1	
⑩	Guide pin	3	
⑪	Secondary sliding sheave	1	
⑫	O-ring	2	
⑬	Oil seal	2	
⑭	Secondary fixed sheave	1	
			For assembly, reverse the disassembly procedure.



EAS00317

**REMOVING THE PRIMARY SHEAVE**

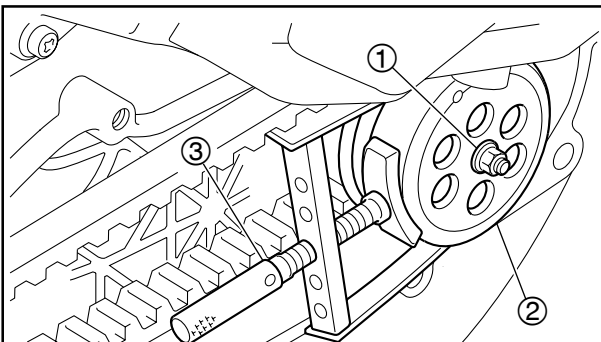
1. Remove:
  - V-belt case
  - Refer to "V-BELT CASE".
2. Remove:
  - primary fixed sheave nut ①
  - plate washer
  - oneway clutch
  - primary fixed sheave ②

**TIP**

While holding the primary fixed sheave with the rotor holding tool ③, loosen the primary fixed sheave nut.



**Rotor holding tool**  
90890-01235 (YU-01235)



EAS00318

**REMOVING THE SECONDARY SHEAVE AND V-BELT**

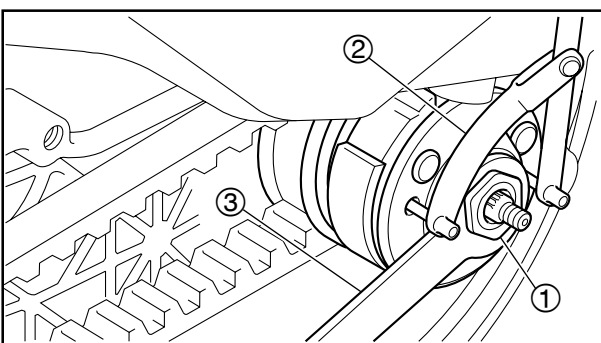
1. Remove:
  - secondary sheave nut ①
  - clutch housing ②

**TIP**

While holding the clutch housing with the sheave holder ③, loosen the secondary sheave nut.



**Sheave holder**  
90890-01701 (YS-01880-A)



2. Loosen:
  - clutch carrier nut ①

**NOTICE**

Do not remove the clutch carrier nut at this stage.

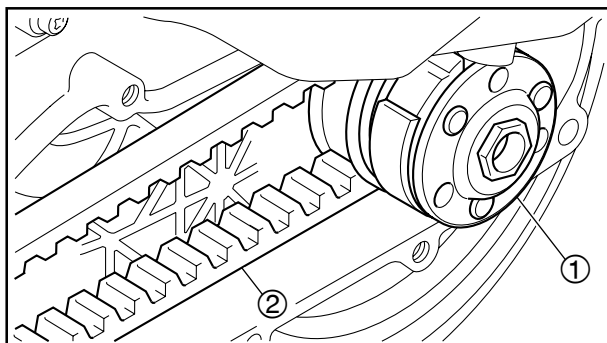


**TIP**

While holding the clutch carrier with the rotor holding tool ②, loosen the clutch carrier nut one full turn with the locknut wrench ③.



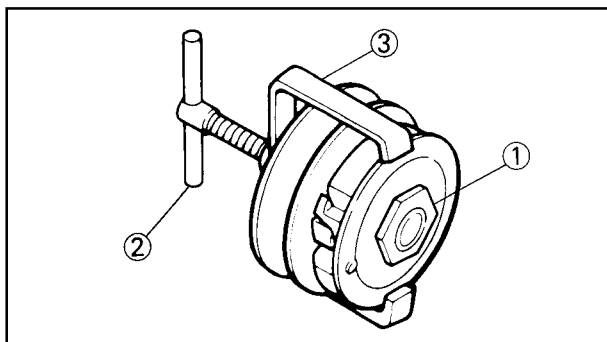
**Rotor holding tool**  
90890-01235 (YU-01235)  
**Locknut wrench**  
90890-01348 (YM-01348)



3. Remove:
  - secondary sheave ①
  - V-belt ②

**TIP**

Remove the V-belt and secondary sheave from the primary sheave side.



EAS00319

**DISASSEMBLING THE SECONDARY SHEAVE**

1. Remove:
  - clutch carrier nut ①

**TIP**

Install the clutch spring holder ② and clutch spring holder arm ③ onto the secondary sheave as shown. Then, compress the spring, and remove the clutch carrier nut.



**Clutch spring holder**  
90890-01337 (YM-33285)

**CHECKING THE CLUTCH SHOES**

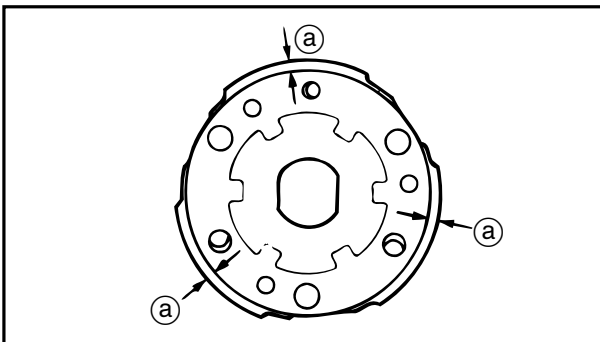
The following procedure applies to all of the clutch shoes.

1. Check:
  - clutch shoe
    - Damage/wear → Replace the clutch shoes and springs as a set.
    - Glazed areas → Sand with coarse sandpaper.



**TIP**

After sanding the glazed areas, clean the clutch with a cloth.



2. Measure:

- clutch shoe thickness

Out of specification → Replace the clutch shoes and springs as a set.



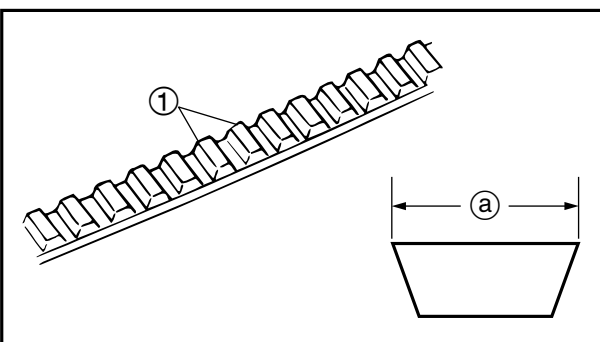
**Clutch shoe thickness**

3.2 ~ 3.5mm (0.13 ~ 0.14in)

<Limit>: 2.0mm (0.079in)

**TIP**

- Inspect clutch shoes (a).
- After removing the clutch shoe spring, do not use them again.
- Replace the all three as a set.



EAS00320

**CHECKING THE V-BELT**

1. Check:

- V-belt ①

Cracks/damage/wear → Replace.

Grease/oil → Clean the primary and secondary sheave.

2. Measure:

- V-belt width (a)

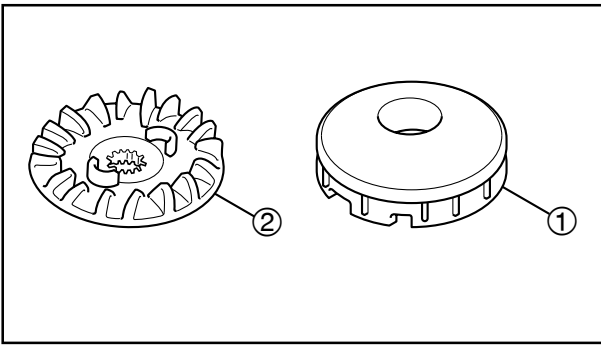
Out of specification → Replace.



**V-belt width**

22mm (0.87in)

<Limit>: 19.8mm (0.78in)

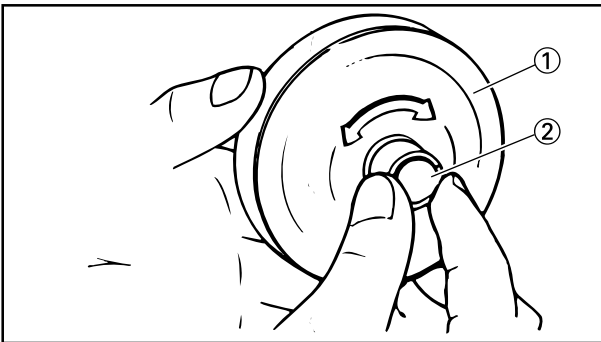


**CHECKING THE PRIMARY SHEAVE**

1. Check:

- primary sliding sheave ①
- primary fixed sheave ②

Cracks/damage/wear → Replace the primary sliding sheave, primary fixed sheave and V-belt.



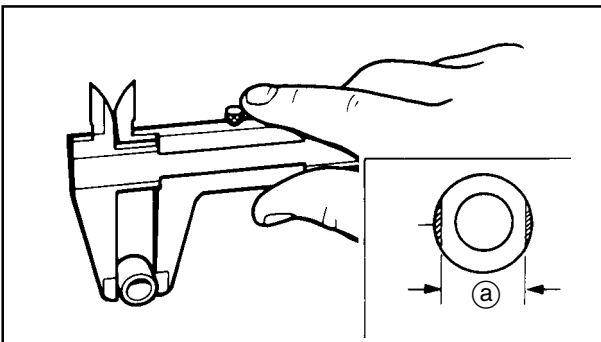
2. Check:

- free movement

Stick or excessive play → Replace the primary sliding sheave, collar or both.

**TIP**

Insert the collar ② into the primary sliding sheave ①, and check for free movement.



EAS00321

**CHECKING THE PRIMARY SHEAVE WEIGHTS**

The following procedure applies to all of the primary sheave weights.

1. Check:

- primary sheave weight

Cracks/damage/wear → Replace.

2. Measure:

- primary sheave weight outside diameter ①

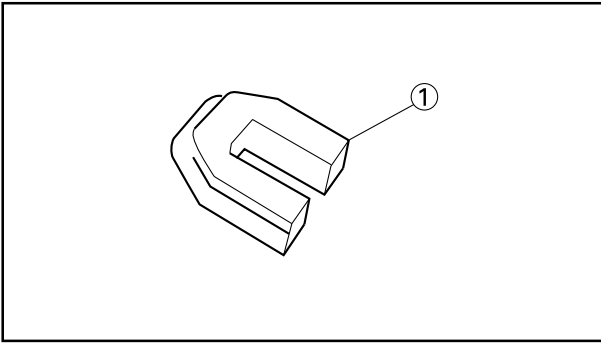
Out of specification → Replace.



**Primary sheave weight outside diameter**

20mm (0.79in)

<Limit>: 19.5mm (0.77in)



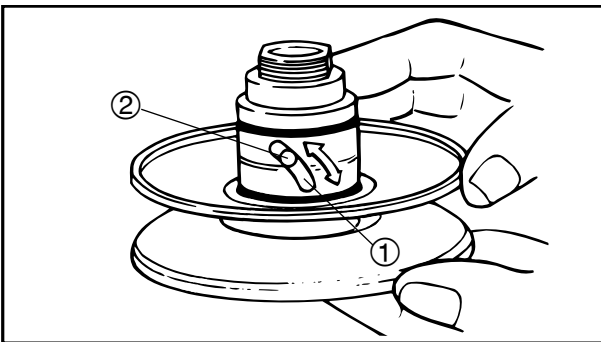
**CHECKING THE SLIDER**

1. Check:
  - slider ①  
Damage/wear → Replace

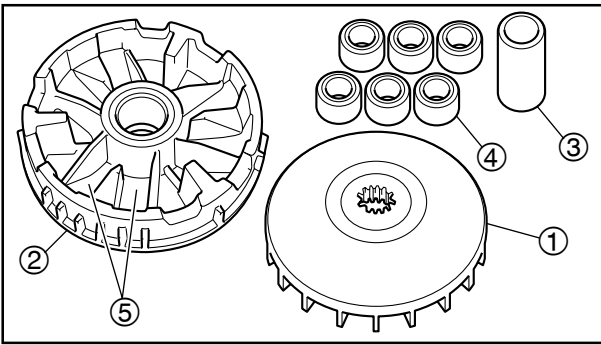
EAS00322

**CHECKING THE SECONDARY SHEAVE**

1. Check:
  - secondary fixed sheave
  - secondary sliding sheave  
Cracks/damage/wear → Replace the secondary fixed and sliding sheaves as a set.



2. Check:
  - torque cam groove ①  
Damage/wear → Replace the secondary fixed and sliding sheaves as a set.
3. Check:
  - guide pin ②  
Damage/wear → Replace the secondary fixed and sliding sheaves as a set.



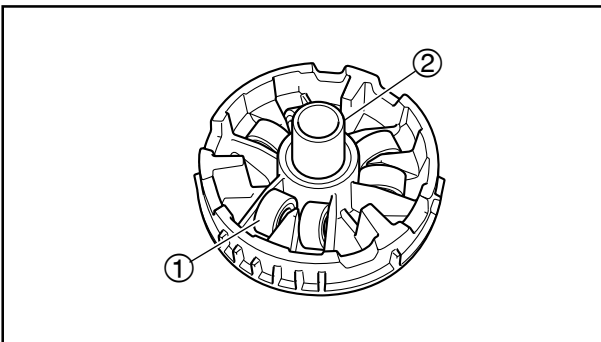
EAS00323

**ASSEMBLING THE PRIMARY SHEAVE**

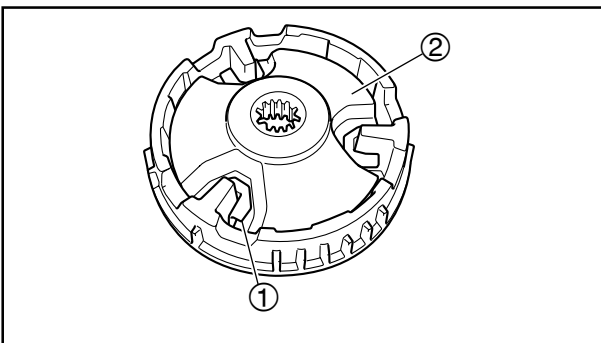
1. Clean:
  - primary fixed sheave ①
  - primary sliding sheave ②
  - collar ③
  - primary sheave weights ④

**TIP**

Use thinner to clean up grease, dirt on the primary sliding sheave cam side ⑤.

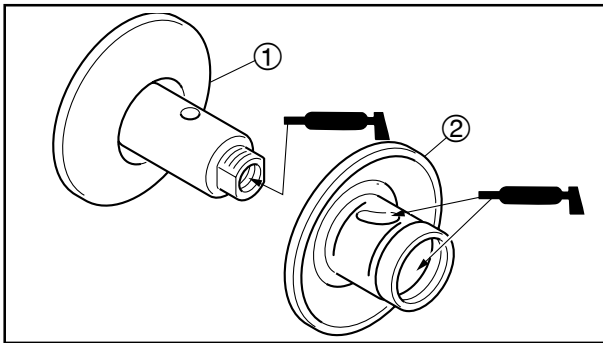


2. Install:
  - primary sheave weights ①
  - collar ②



3. Install:
  - sliders ①
  - cam ②



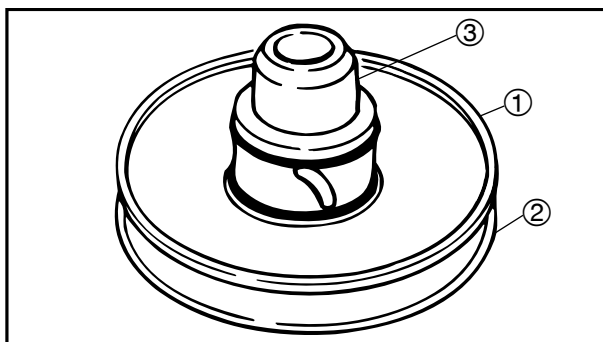


EAS00324

**ASSEMBLING THE SECONDARY SHEAVE**

1. Lubricate:
  - secondary fixed sheave's inner surface ①
  - secondary sliding sheave's inner surface ②
  - oil seals
  - bearings (with the recommended lubricant)

	<p><b>Recommended lubricant</b>  <b>BEL-RAY assembly lube®</b></p>
--	--

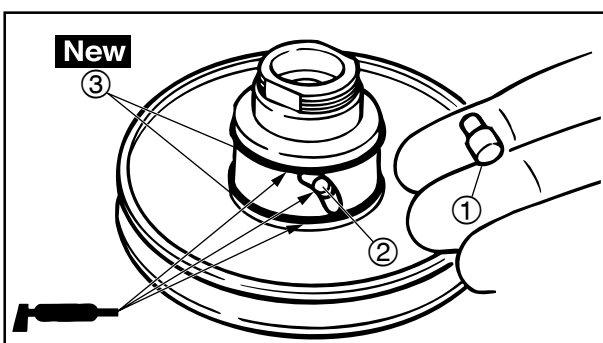


2. Install:
  - secondary sliding sheave ①

**TIP**

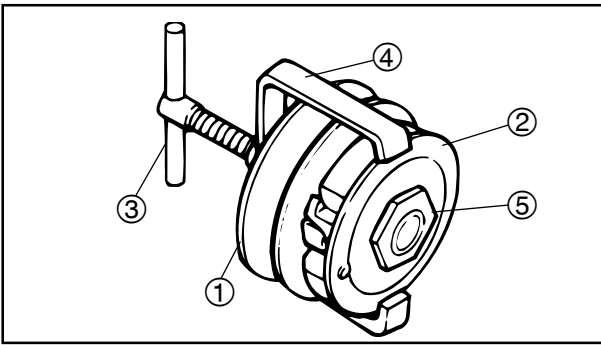
Install the secondary sliding sheave onto the secondary fixed sheave ② with the oil seal guide ③.

	<p><b>Oil seal guide</b>  <b>90890-01384 (YM-33299)</b></p>
--	---



3. Install:
  - guide pin ①
4. Lubricate:
  - guide pin groove ②
  - O-ring ③ **New** (with the recommended lubricant)

	<p><b>Recommended lubricant</b>  <b>BEL-RAY assembly lube®</b></p>
--	--



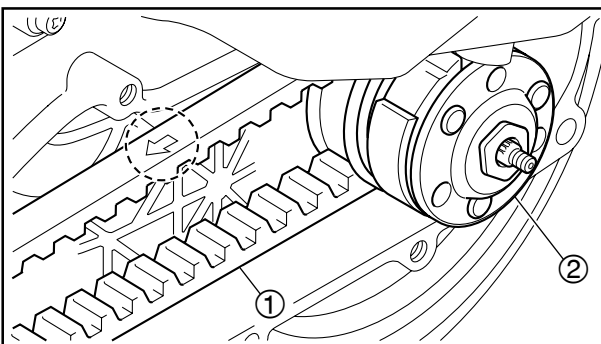
5. Install:
- secondary sheave ①
  - spring
  - clutch carrier ②

**TIP**

Attach the clutch spring holder ③ and clutch spring holder arm ④ onto the secondary sheave as shown. Then, compress the spring, and tighten the clutch carrier nut ⑤.



**Clutch spring holder**  
90890-01337 (YM-33285)



EAS00325

**INSTALLING THE SECONDARY SHEAVE, V-BELT AND PRIMARY SHEAVE**

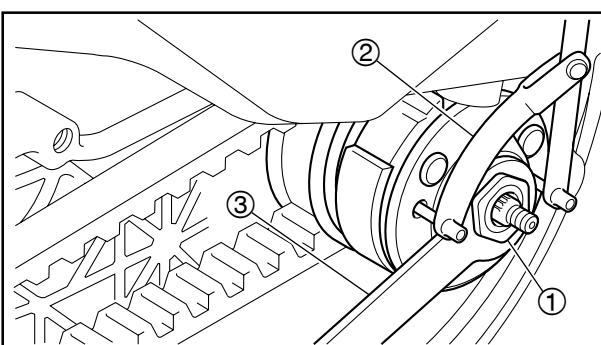
1. Install:
- V-belt ①
  - secondary sheave ②

**NOTICE**

Do not allow grease to contact the V-belt and secondary sheave.

**TIP**

- Install the V-belt onto the primary sheave side.
- Install the V-belt with printed arrow mark on the V-belt facing in the direction shown in the illustration.



2. Install:
- clutch carrier nut ①



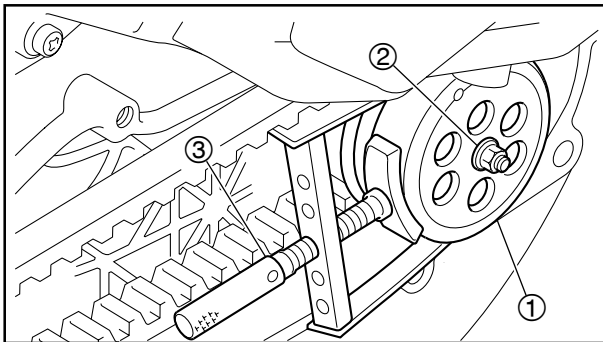
90Nm(9.0m • kgf, 65.1ft • lbf)

**TIP**


While holding the clutch carrier with the rotor holding tool ②, tighten the clutch carrier nut with the locknut wrench ③.



**Rotor holding tool**  
 90890-01235 (YU-01235)  
**Locknut wrench**  
 90890-01348 (YM-01348)



3. Install:
- clutch housing ①
  - secondary sheave nut ②

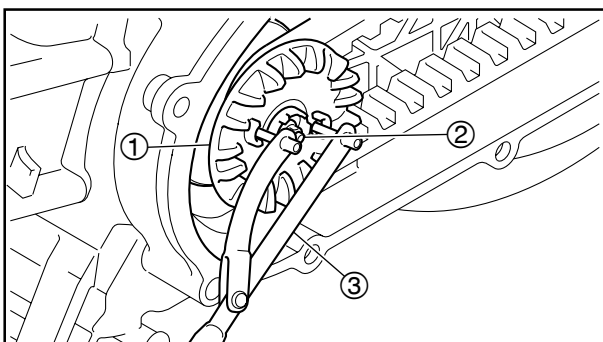
 60Nm(6.0m • kgf, 43.4ft • lbf)

**TIP**


Tighten the secondary sheave nut with the sheave holder ③.



**Sheave holder**  
 90890-01701 (YS-01880-A)



4. Install:
- primary fixed sheave ①
  - oneway clutch
  - plate washer
  - primary fixed sheave nut ②

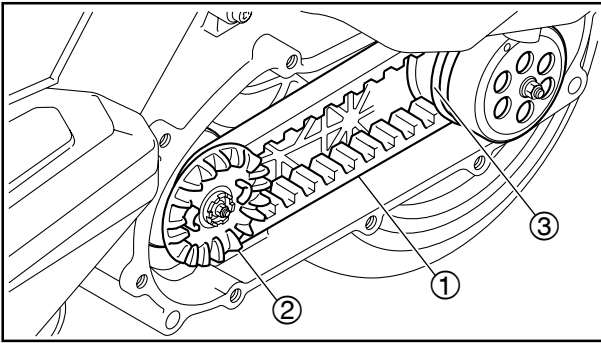
 45Nm(4.5m • kgf, 32.5ft • lbf)

**TIP**

While holding the primary fixed sheave with the rotor holding tool ③, tighten the primary fixed sheave nut.



**Rotor holding tool**  
 90890-01235 (YU-01235)



5. Position:  
● V-belt ①

**TIP**

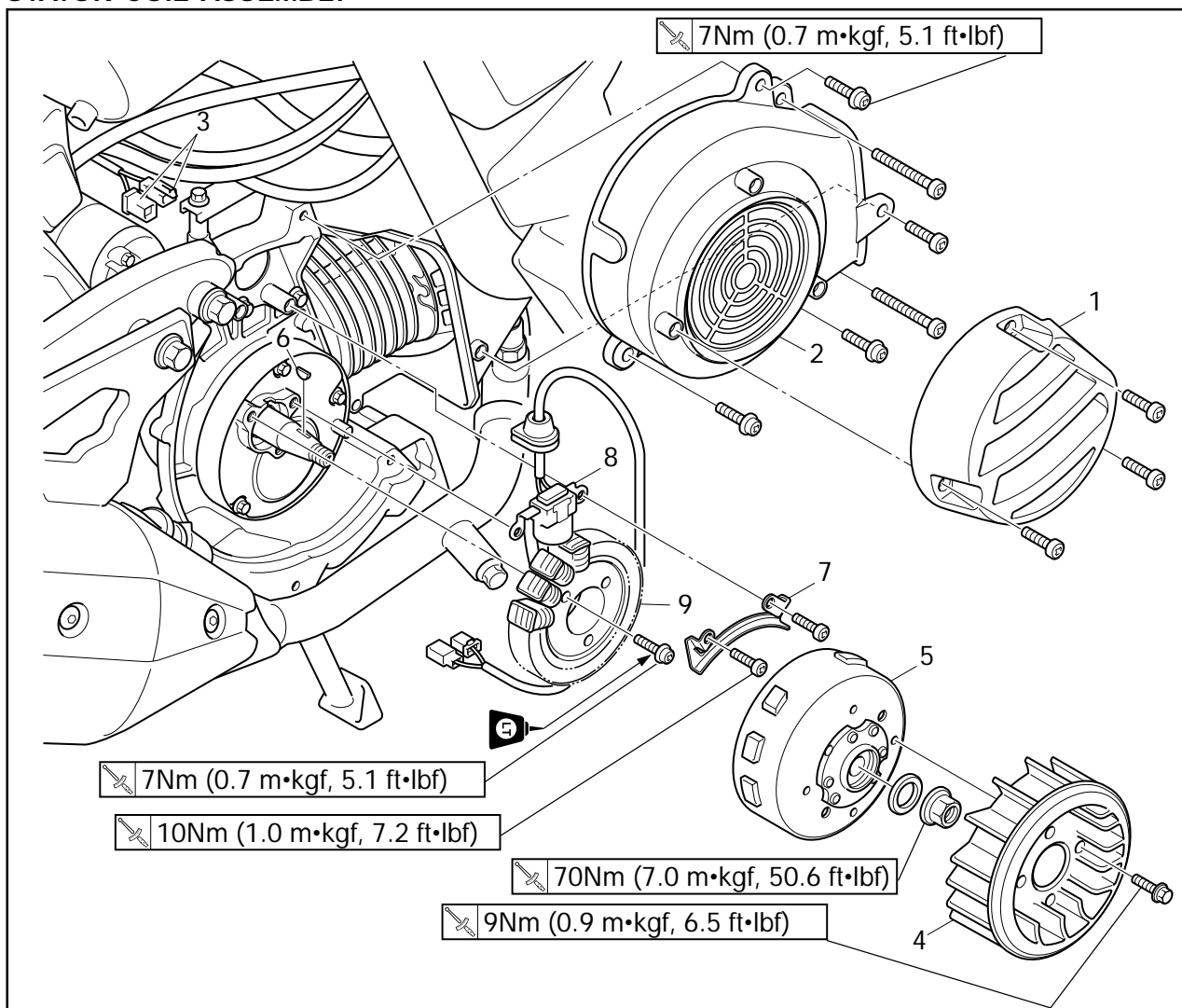
Position the V-belt in the primary sheave ② (when the pulley is at its widest position) and in the secondary sheave ③ (when the pulley is at its narrowest position), and make sure the V-belt is tight.

6. Install:  
● V-belt case  
Refer to "V-BELT CASE".



EAS00341

**STARTER CLUTCH AND AC MAGNETO  
STATOR COIL ASSEMBLY**

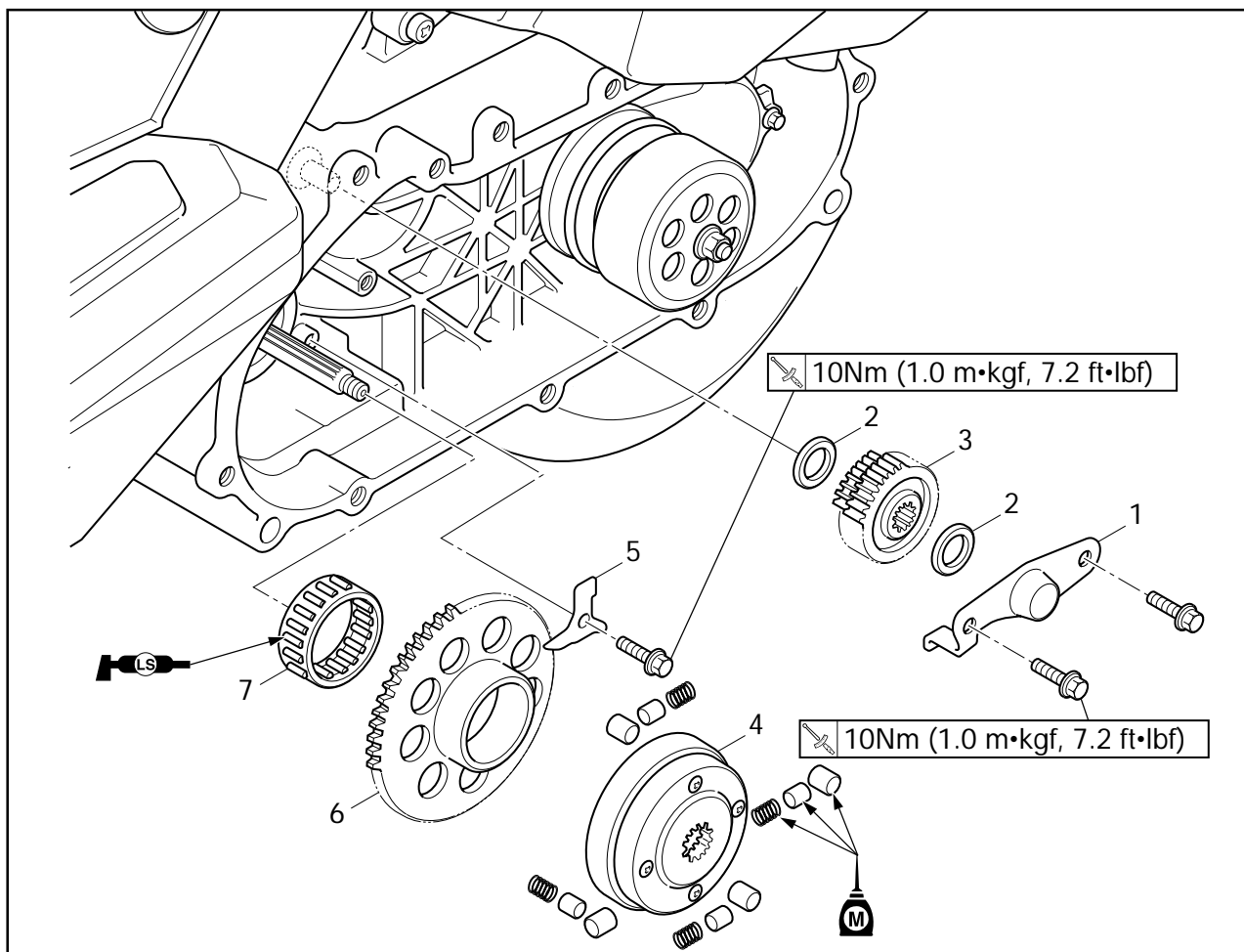


Order	Job/Part	Q'ty	Remarks
	<b>Removing the stator coil assembly</b>		Remove the parts in the order listed.
1	Air guide	1	
2	Air shroud cylinder 3	1	
3	Pickup coil/stator coil assembly coupler	1/1	Disconnect.
4	Fan	1	
5	AC magneto rotor	1	
6	Woodruff key	1	
7	Lock plate	1	
8	Pickup coil	1	
9	Stator coil assembly	1	
			For installation, reverse the removal procedure.

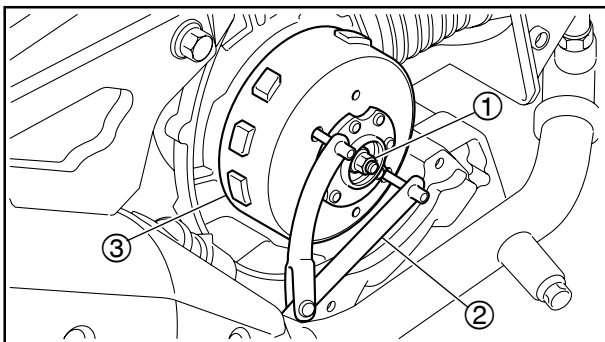


EAS00342

STARTER CLUTCH



Order	Job/Part	Q'ty	Remarks
	<b>Removing the starter clutch</b>		
	V-belt case		Remove the parts in the order listed.
	Primary fixed sheave		Refer to "V-BELT CASE".
	Primary sliding sheave		Refer to "V-BELT AND PRIMARY/SECONDARY SHEAVE".
1	Idle gear plate	1	
2	Plate washer	2	
3	Idle gear	1	
4	Starter clutch	1	
5	Starter wheel gear holder	1	
6	Starter wheel gear	1	
7	Roller	1	
			For installation, reverse the removal procedure.



EAS00347

## REMOVING THE AC MAGNETO

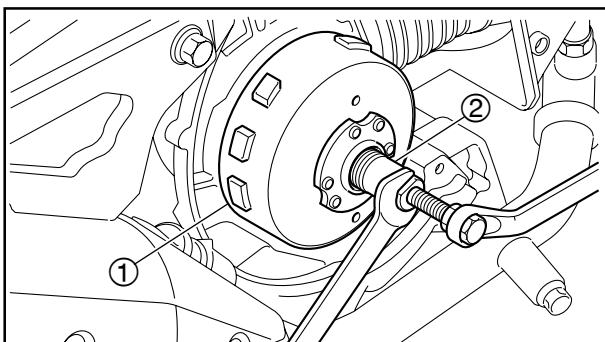
1. Remove:
  - air guide
  - air shroud cylinder 3
2. Remove:
  - fan
  - AC magneto rotor nut ①
  - washer

### TIP

While holding the AC magneto rotor ③ with the rotor holding tool ②, loosen the AC magneto rotor nut.



**Rotor holding tool**  
90890-01235 (YU-01235)



3. Remove:
  - AC magneto rotor ①  
(with the flywheel puller ②)
  - woodruff key
  - stator coil assembly

### NOTICE

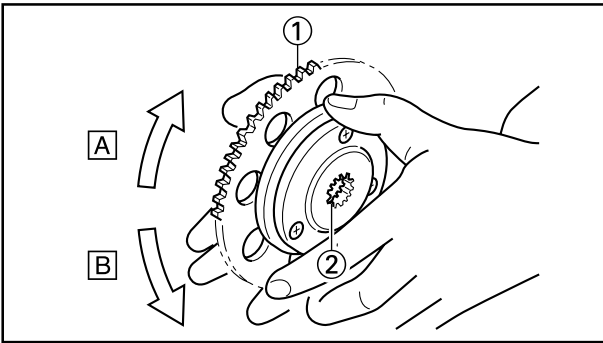
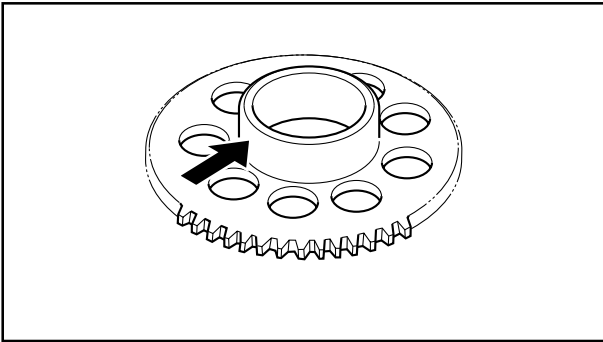
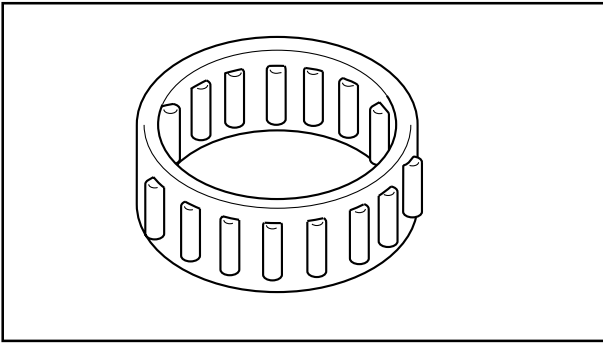
To protect the end of the crankshaft, place an appropriate sized socket between the flywheel puller set's center bolt and the crankshaft.

### TIP

Make sure the flywheel puller set is centered over the AC magneto rotor.



**Flywheel puller**  
90890-01189 (YM-01189)



EAS00351

**CHECKING THE STARTER CLUTCH**

1. Check:
  - starter clutch roller  
Damage/wear → Replace.
2. Check:
  - starter clutch idle gear
  - starter wheel gear  
Burrs/chips/roughness/wear → Replace the defective part(s).
3. Check:
  - starter wheel gear's contacting surfaces  
Damage/pitting/wear → Replace the starter wheel gear.
4. Check:
  - starter clutch operation



- a. Install the starter wheel gear ① onto the starter clutch ② and hold the starter clutch.
- b. When turning the starter wheel gear clockwise [A], the starter clutch and the starter wheel gear should engage, otherwise the starter clutch is faulty and must be replaced.
- c. When turning the starter wheel gear counterclockwise [B], it should turn freely, otherwise the starter clutch is faulty and must be replaced.







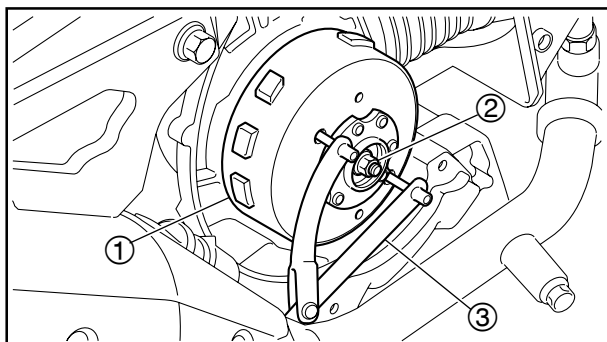
EAS00354

**INSTALLING THE AC MAGNETO**


1. Install:
  - stator coil assembly
  - crankshaft position sensor
  - woodruff key
  - AC magneto rotor
  - washer
  - AC magneto rotor nut

**TIP**

- Clean the tapered portion of the crankshaft and the AC magneto rotor hub.
- When installing the AC magneto rotor, make sure the woodruff key is properly seated in the keyway of the crankshaft.



2. Tighten:
  - AC magneto rotor nut (2)


	70 Nm (7.0 m • kgf, 50.6 ft • lbf)
---	------------------------------------

**TIP**

While holding the AC magneto rotor (1) with the rotor holding tool (3), tighten the AC magneto rotor nut.

	<b>Rotor holding tool</b> 90890-01235 (YU-01235)
---	---

3. Install:
  - fan

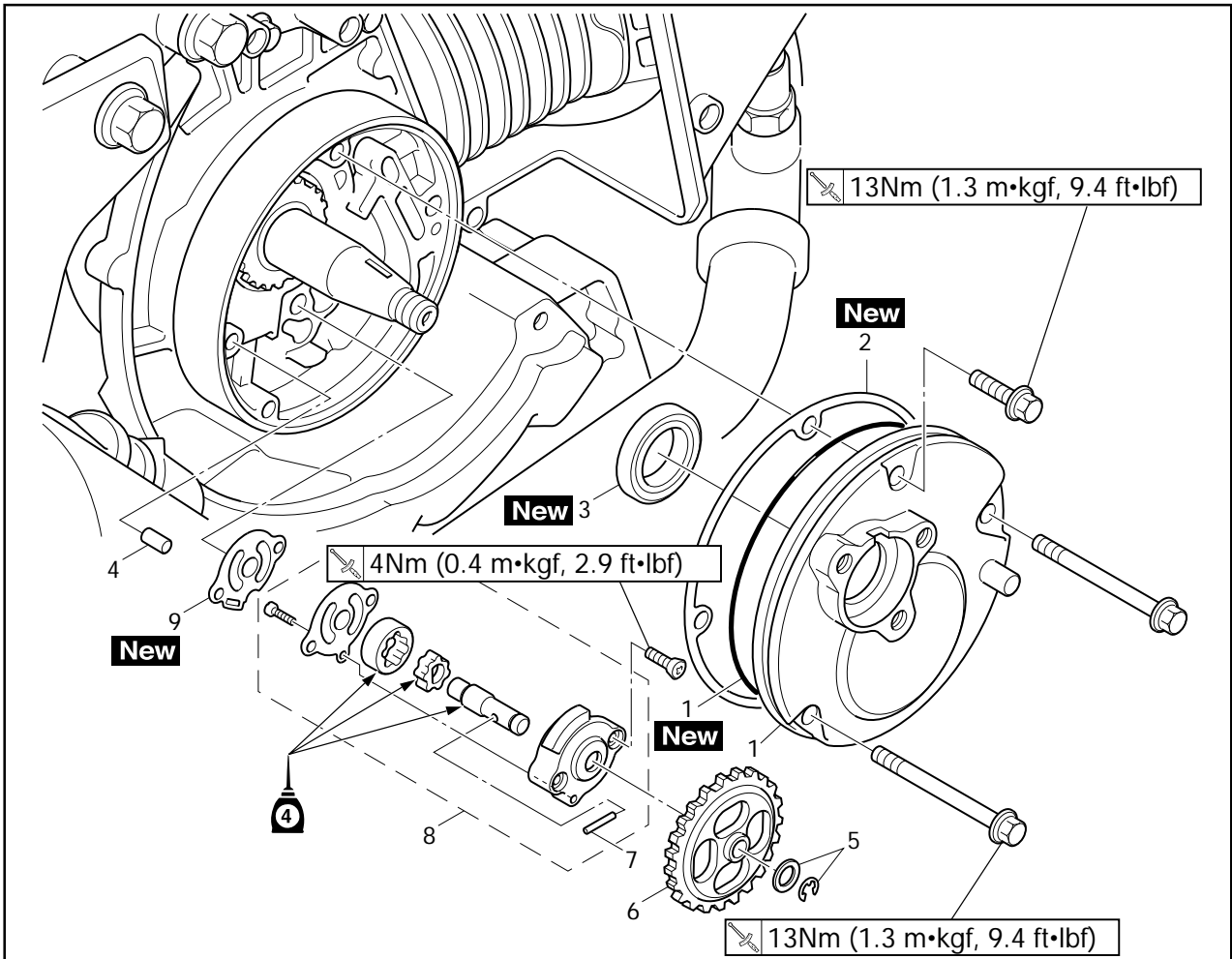
	9Nm (0.9m • kgf, 6.5ft • lbf)
---	-------------------------------

4. Install:
  - air shroud cylinder 3
  - air guide

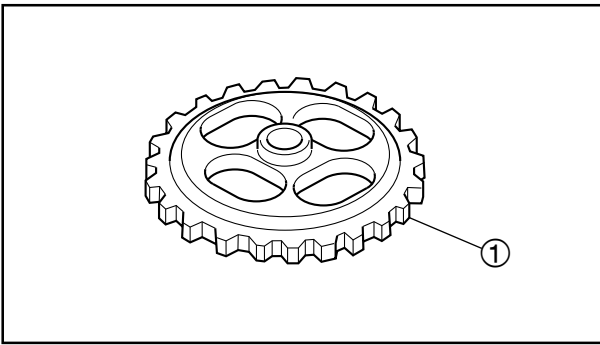


EAS00360

OIL PUMP



Order	Job/Part	Q'ty	Remarks
	<b>Removing the oil pump</b>		
	AC magneto rotor		Remove the parts in the order listed. Refer to "STARTER CLUTCH AND AC MAGNETO".
	Stator coil assembly		
	1 Cover/O-ring	1/1	
2	Gasket	1	
3	Oil seal	1	
4	Dowel pin	1	
5	Circlip/plate washer	1/1	
6	Oil pump driven gear	1	
7	Dowel pin	1	
8	Oil pump	1	
9	Gasket	1	
			For installation, reverse the removal procedure.

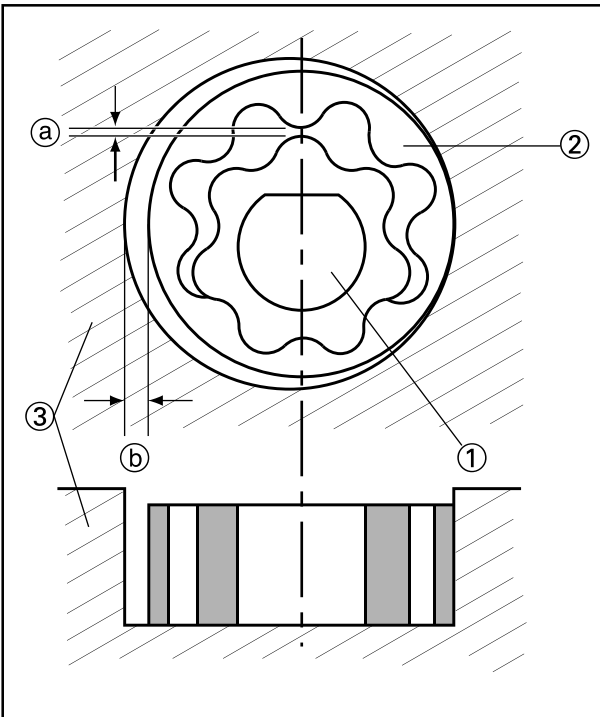


EAS00364

**CHECKING THE OIL PUMP**

## 1. Check:

- oil pump drive gear
  - oil pump driven gear ①
  - oil pump housing
  - oil pump housing cover
- Cracks/damage/wear → Replace the defective part(s).



## 2. Measure:

- inner-rotor-to-outer-rotor-tip clearance (a)
  - outer-rotor-to-oil-pump-housing clearance (b).
- Out of specification → Replace the oil pump.

- ① Inner rotor
- ② Outer rotor
- ③ Oil pump housing

**Inner-rotor-to-outer-rotor-tip clearance**

0.15mm (0.006in) or less  
<Limit>: 0.23mm (0.009in)

**Outer-rotor-to-oil-pump-housing clearance**

0.07 ~ 0.12mm (0.003 ~ 0.005in)  
<Limit>: 0.19mm (0.008in)

## 3. Check:

- oil pump operation
- Rough movement → Repeat steps (1) and (2) or replace the defective part(s).



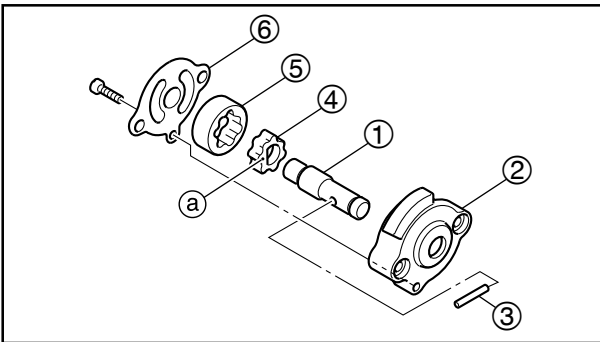
EAS00375

**ASSEMBLING THE OIL PUMP**

- Lubricate:
  - inner rotor
  - outer rotor
  - oil pump shaft  
(with the recommended lubricant)



**Recommended lubricant**  
Engine oil

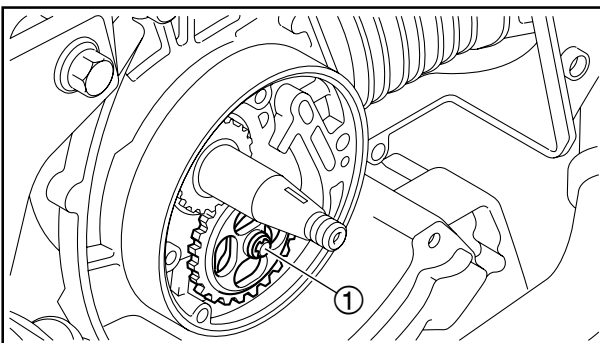


- Install:
  - oil pump shaft ①  
(to the oil pump housing ②)
  - pin ③
  - inner rotor ④
  - outer rotor ⑤
  - oil pump housing cover ⑥
  - oil pump housing screw

**TIP**

When installing the inner rotor, align the pin ③ in the oil pump shaft with the groove ③ in the inner rotor ④.

- Check:
  - oil pump operation  
Refer to "CHECKING THE OIL PUMP".



EAS00376

**INSTALLING THE OIL PUMP**

- Install:
  - gasket **New**
  - oil pump ①



4 Nm (0.4 m • kgf, 2.9 ft • lbf)

**NOTICE**

After tightening the bolts, make sure the oil pump turns smoothly.

- Install:
  - O-ring **New**
  - cover

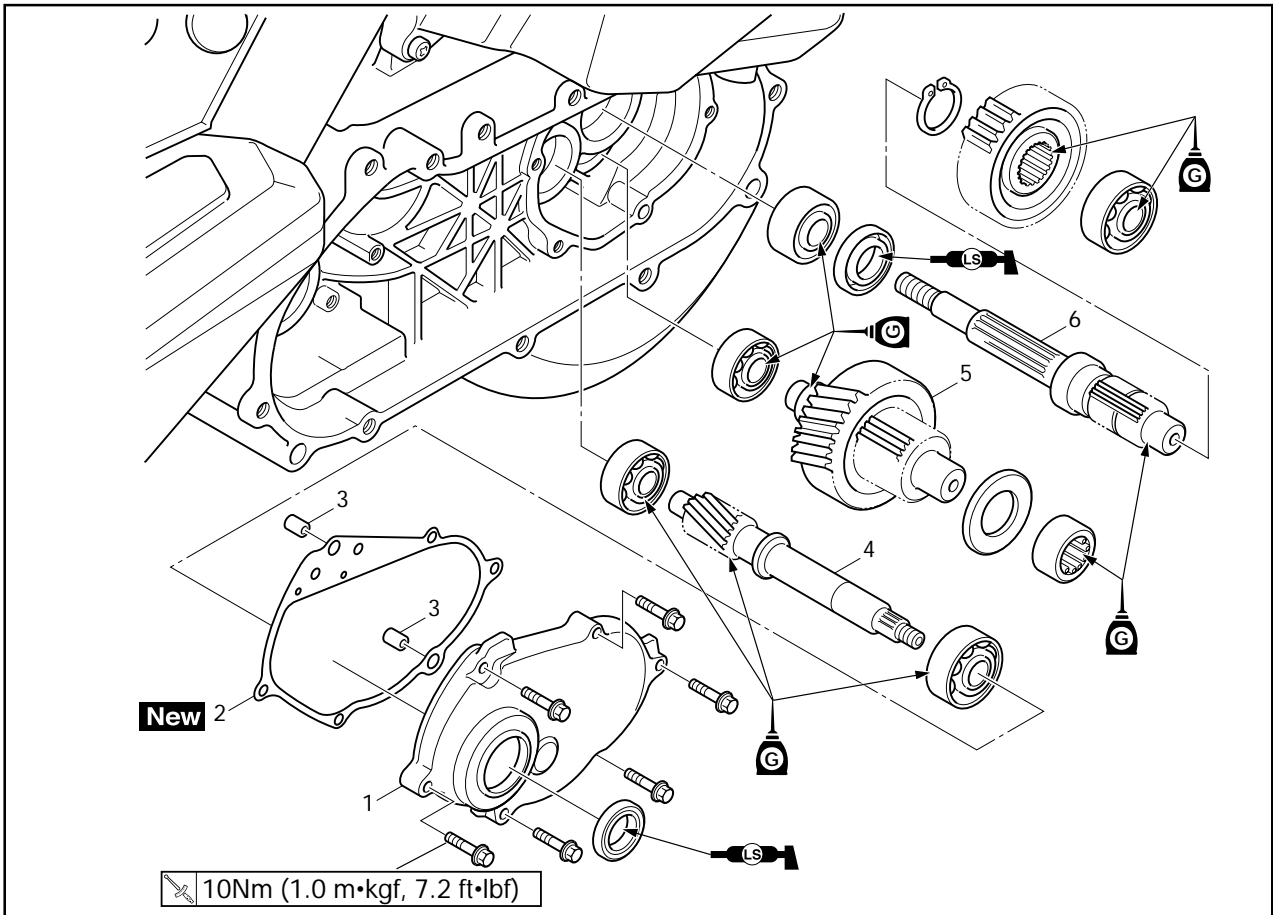


13 Nm (1.3 m • kgf, 9.4 ft • lbf)

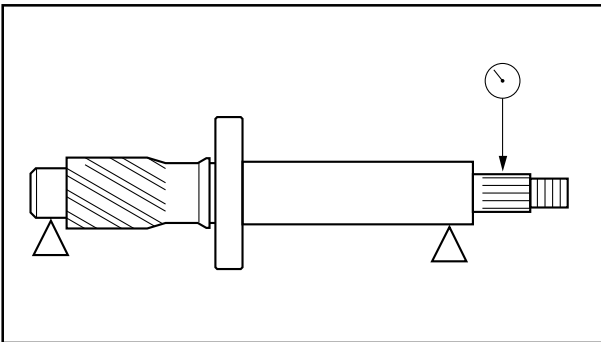
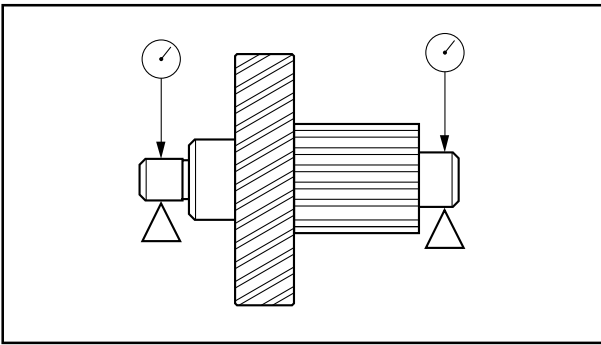


EAS00419

TRANSMISSION



Order	Job/Part	Q'ty	Remarks
	<b>Removing the transmission</b>		Remove the parts in the order listed.
	Transmission oil		Drain.
	Muffler		Refer to "REAR SHOCK ABSORBER ASSEMBLIES AND SWINGARM" in chapter 4.
	Swingarm		
	Rear wheel		Refer to "REAR WHEEL AND REAR BRAKE" in chapter 4.
	V-belt case		Refer to "BELT DRIVE".
	V-belt		
	Secondary sheave		
1	Right crankcase cover	1	
2	Right crankcase cover gasket	1	
3	Dowel pin	2	
4	Primary drive gear shaft	1	
5	Main axle	1	
6	Drive axle	1	
			For installation, reverse the removal procedure.



EAS00425

**CHECKING THE TRANSMISSION**

## 1. Measure:

- main axle runout

(with a centering device and dial gauge )

Out of specification → Replace the main axle.



**Main axle runout limit**  
**0.04mm (0.002in)**

## 2. Measure:

- drive axle runout

(with a centering device and dial gauge )

Out of specification → Replace the drive axle.



**Drive axle runout limit**  
**0.04mm (0.002in)**

## 3. Check:

- transmission gears

Blue discoloration/pitting/wear → Replace the defective gear(s).

- transmission gear dogs

Cracks/damage/rounded edges → Replace the defective gear(s).

## 4. Check:

- transmission gear engagement

(each pinion gear to its respective wheel gear)

Incorrect → Reassemble the transmission axle assemblies.

## 5. Check:

- transmission gear movement

Rough movement → Replace the defective part(s).

## 6. Check:

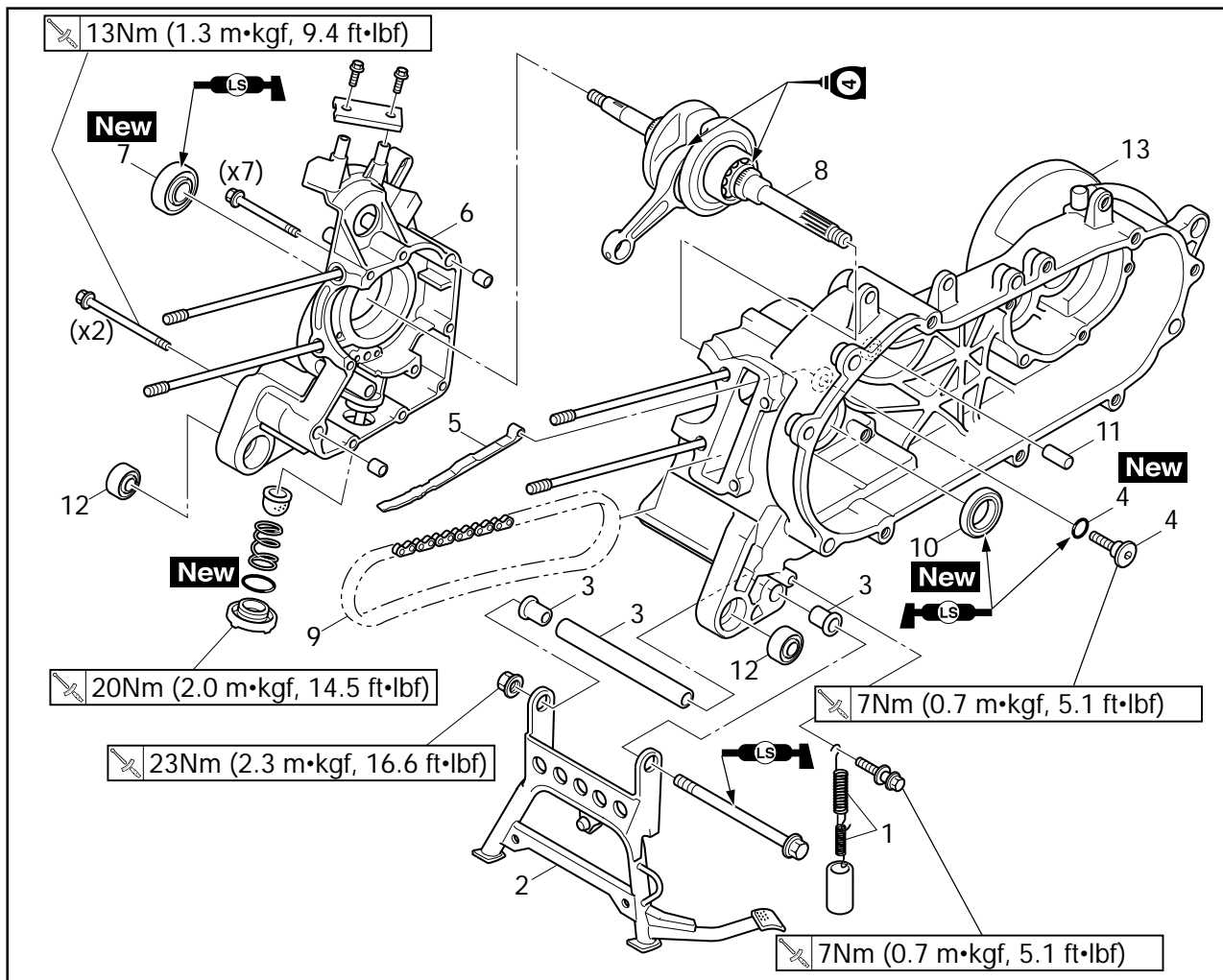
- circlip

Bends/damage/looseness → Replace.

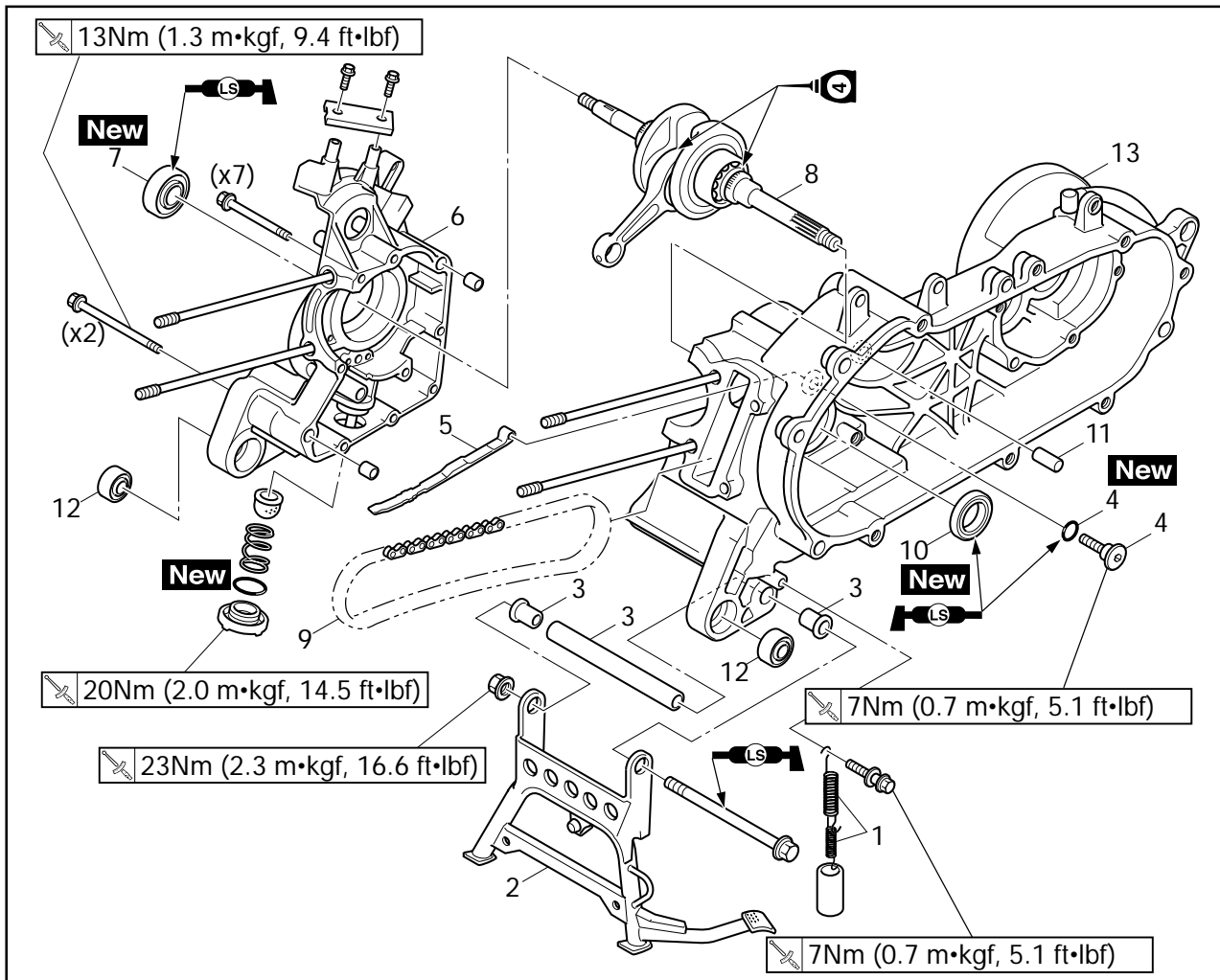


EAS00381

**CRANKSHAFT**  
**CRANKSHAFT ASSEMBLY**



Order	Job/Part	Q'ty	Remarks
	<b>Removing the crankshaft assembly</b>		
	Engine		Remove the parts in the order listed. Refer to "ENGINE REMOVE".
	Cylinder head		Refer to "CYLINDER HEAD".
	Cylinder and piston		Refer to "CYLINDER AND PISTON".
	V-belt case		
	V-belt and primary/secondary sheave		Refer to "BELT DRIVE".
	Starter clutch		
	AC magneto		Refer to "STARTER CLUTCH AND AC MAGNETO".
	Oil pump		Refer to "OIL PUMP".
	Muffler		
	Swingarm		Refer to "REAR SHOCK ABSORBER ASSEMBLIES AND SWINGARM" in chapter 4.
	Rear wheel		Refer to "Refer to "REAR WHEEL AND REAR BRAKE" in chapter 4."
1	Tension spring	2	
2	Centerstand	1	
3	Spacer/collar	1/2	
4	Bolt/O-ring	1/1	



Order	Job/Part	Q'ty	Remarks
5	Timing chain guide (intake side)	1	For installation, reverse the removal procedure.
6	Crankcase (right)	1	
7	Oil seal	1	
8	Crankshaft assembly	1	
9	Timing chain	1	
10	Oil seal	1	
11	Shaft	1	
12	Bearing	2	
13	Crankcase (left)	1	

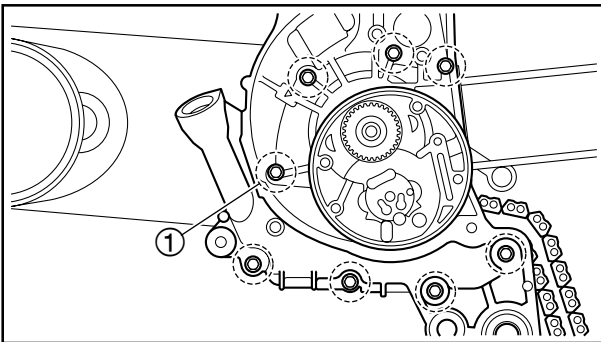




EAS00385

**DISASSEMBLING THE CRANKCASE**

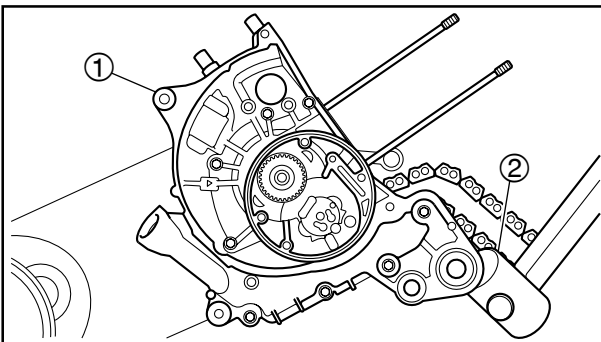
1. Remove:
  - centerstand



2. Remove:
  - crankcase bolts ①

**TIP**

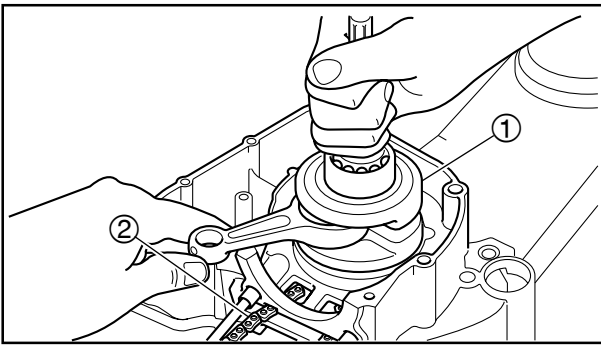
Loosen each bolt 1/4 of a turn at a time, in stages and in a crisscross pattern. After all of the bolts are fully loosened, remove them.



3. Remove:
  - right crankcase ①

**NOTICE**

Tap on one side of the crankcase with a soft-face hammer ②. Tap only on reinforced portions of the crankcase, not on the crankcase mating surfaces. Work slowly and carefully and make sure the crankcase halves separate evenly.



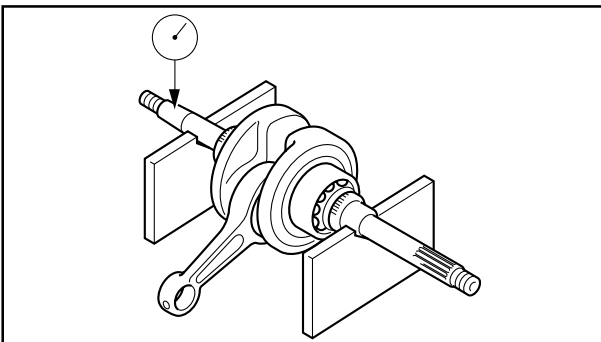
EAS00389

## REMOVING THE CRANKSHAFT ASSEMBLY

1. Remove:
  - crankshaft assembly ①
  - timing chain ②

### TIP

- Before removing the crankshaft assembly, remove the timing chain from the crankshaft sprocket.
- The crankshaft assembly cannot be removed if the timing chain is attached onto the crankshaft sprocket.



EAS00394

## CHECKING THE CRANKSHAFT AND CONNECTING ROD

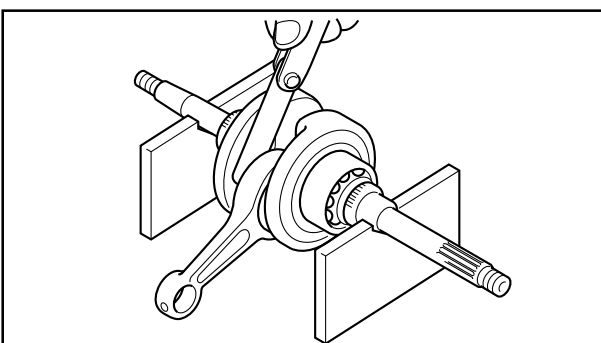
1. Measure:
  - crankshaft runout
 Out of specification → Replace the crankshaft, bearing or both.

### TIP

Turn the crankshaft slowly.



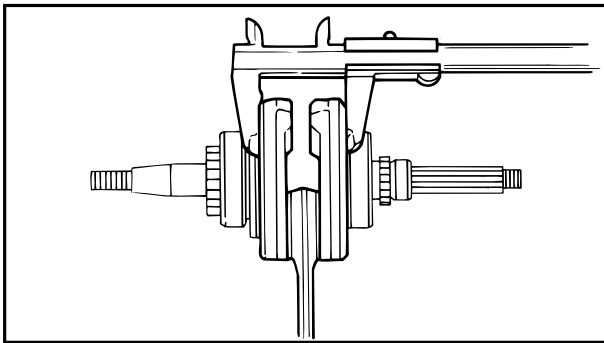
**Maximum crankshaft runout**  
0.03mm (0.0012in)



2. Measure:
  - big end side clearance
 Out of specification → Replace the big end bearing, crankshaft pin, or connecting rod.



**Big end side clearance**  
0.15 ~ 0.45mm (0.006 ~ 0.018in)

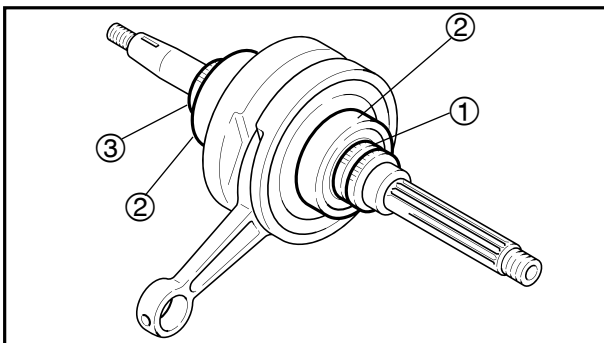


3. Measure:
  - crankshaft width
  - Out of specification → Replace the crankshaft.

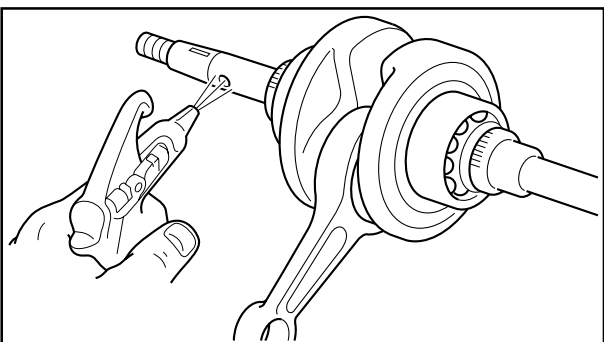


### Crankshaft width

45.45 ~ 45.50mm (1.789 ~ 1.791in)



4. Check:
  - crankshaft sprocket ①
  - Damage/wear → Replace the crankshaft.
  - bearing ②
  - Cracks/damage/wear → Replace the crankshaft.
  - oil pump drive gear ③
  - Damage/wear → Replace the crankshaft.

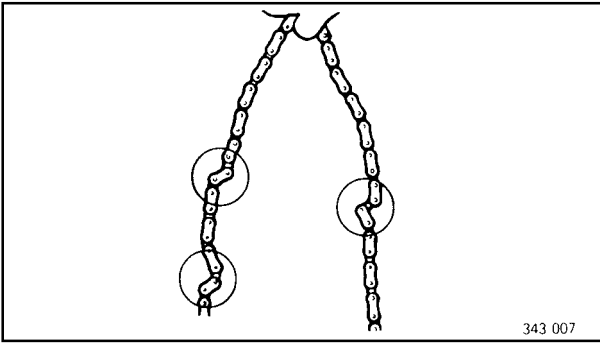


5. Check:
  - crankshaft journal
  - Scratches/wear → Replace the crankshaft.
  - crankshaft journal oil passage
  - Obstruction → Blow out with compressed air.

EAS00399

## CHECKING THE CRANKCASE

1. Thoroughly wash the crankcase halves in a mild solvent.
2. Thoroughly clean all the gasket surfaces and crankcase mating surfaces.
3. Check:
  - crankcase
  - Cracks/damage → Replace.
  - oil delivery passages
  - Obstruction → Blow out with compressed air.



EAS00207

**CHECKING THE TIMING CHAIN AND TIMING CHAIN GUIDE (INTAKE SIDE)**

## 1. Check:

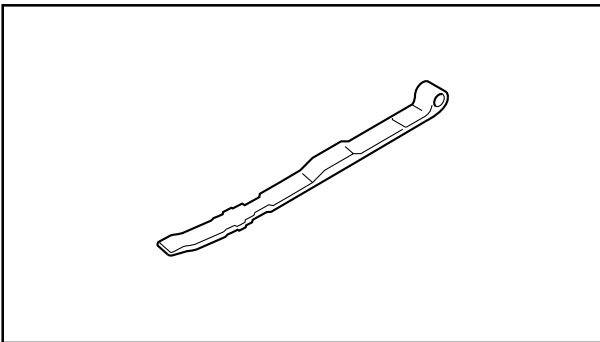
- timing chain

Damage/stiffness → Replace the timing chain and camshaft sprocket as a set.

## 2. Check:

- timing chain guide (intake side)

Damage/wear → Replace.



EAS00401

**CHECKING THE BEARINGS AND OIL SEALS**

## 1. Check:

- bearings

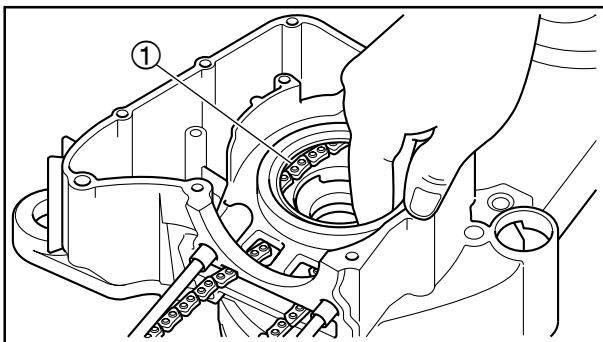
Clean and lubricate the bearings, then rotate the inner race with your finger.

Rough movement → Replace.

## 2. Check:

- oil seals

Damage/wear → Replace.



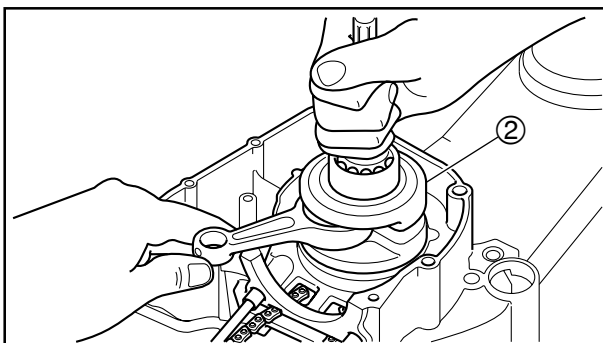
EAS00408

## INSTALLING THE CRANKSHAFT ASSEMBLY

1. Install:
  - timing chain ①
  - crankshaft assembly ②

### TIP

Install the timing chain so it is not visible through the opening in the left crankcase.

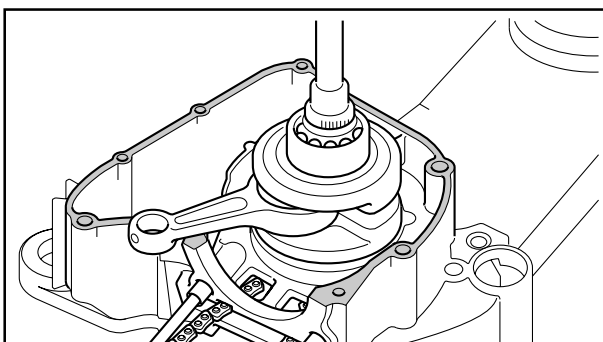


### NOTICE

To avoid scratching the crankshaft and to ease the installation procedure, lubricate the oil seal lips with lithium-soap-based grease and each bearing with engine oil.

### TIP

Put the timing chain in parallel into the crankcase, then use hands to place the crankshaft assembly into the crankcase. Manually rotate the crankshaft to check whether it is tightly engaged with the timing chain. (if not, install again)



EAS00418

## ASSEMBLING THE CRANKCASE

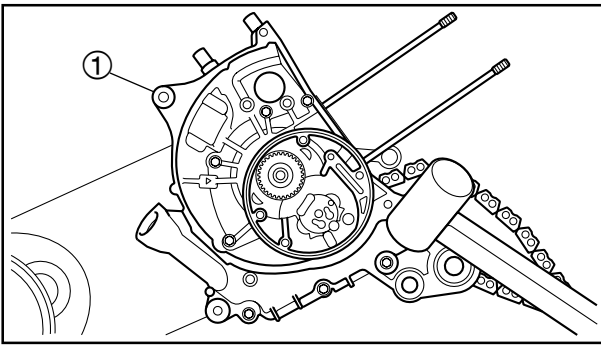
1. Thoroughly clean all the gasket mating surfaces and crankcase mating surfaces.
2. Apply:
  - sealant  
(onto the crankcase mating surfaces)



**Yamaha bond No. 1215**  
90890-85505 (ACC-11001-05-01)

### TIP

Do not allow any sealant to come into contact with the oil gallery.




3. Install:
  - dowel pins
  - right crankcase ①

**TIP**

Tap lightly on the right crankcase with a soft-face hammer.

4. Tighten:
  - crankcase bolts

 13Nm(1.3m • kgf, 9.4ft • lbf)

**TIP**

Tighten the crankcase bolts in stages and in a crisscross pattern.

5. Apply:
  - engine oil  
(onto the crankshaft pin, bearing and oil delivery hole)
6. Check:
  - crankshaft operation  
Rough movement → Repair.

**CHAPTER 6**  
**FUEL INJECTION SYSTEM**

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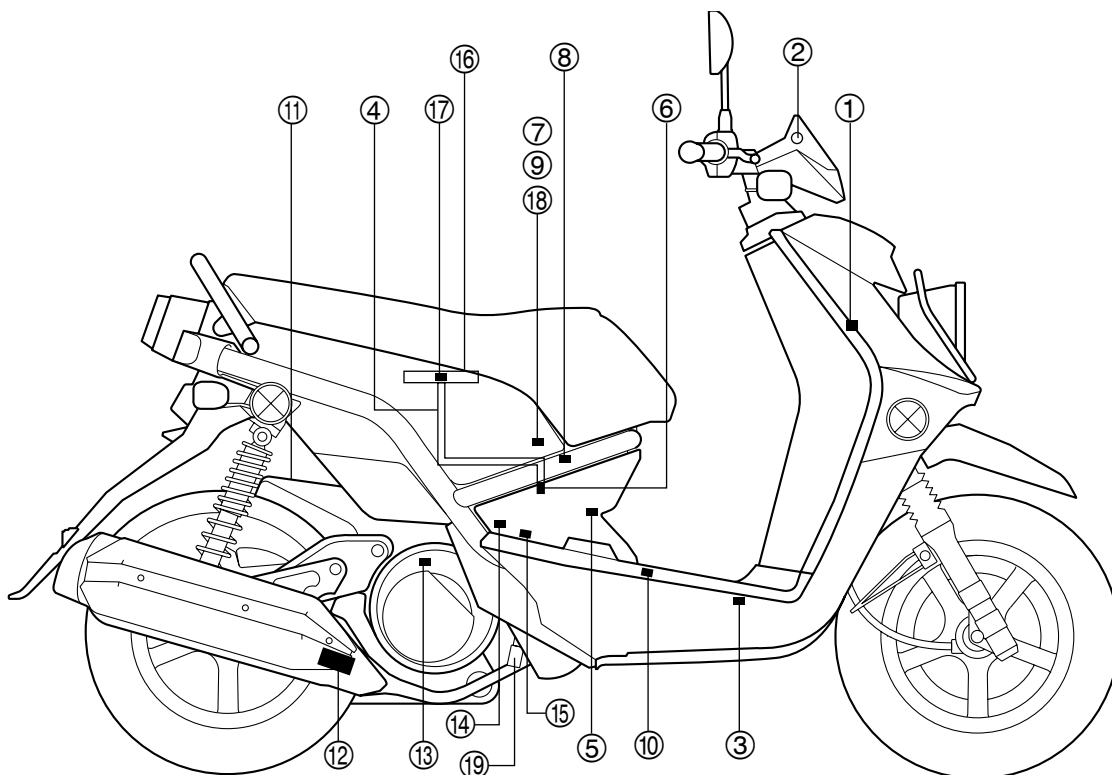


EAS00894

## FUEL INJECTION SYSTEM

### FUEL INJECTION SYSTEM

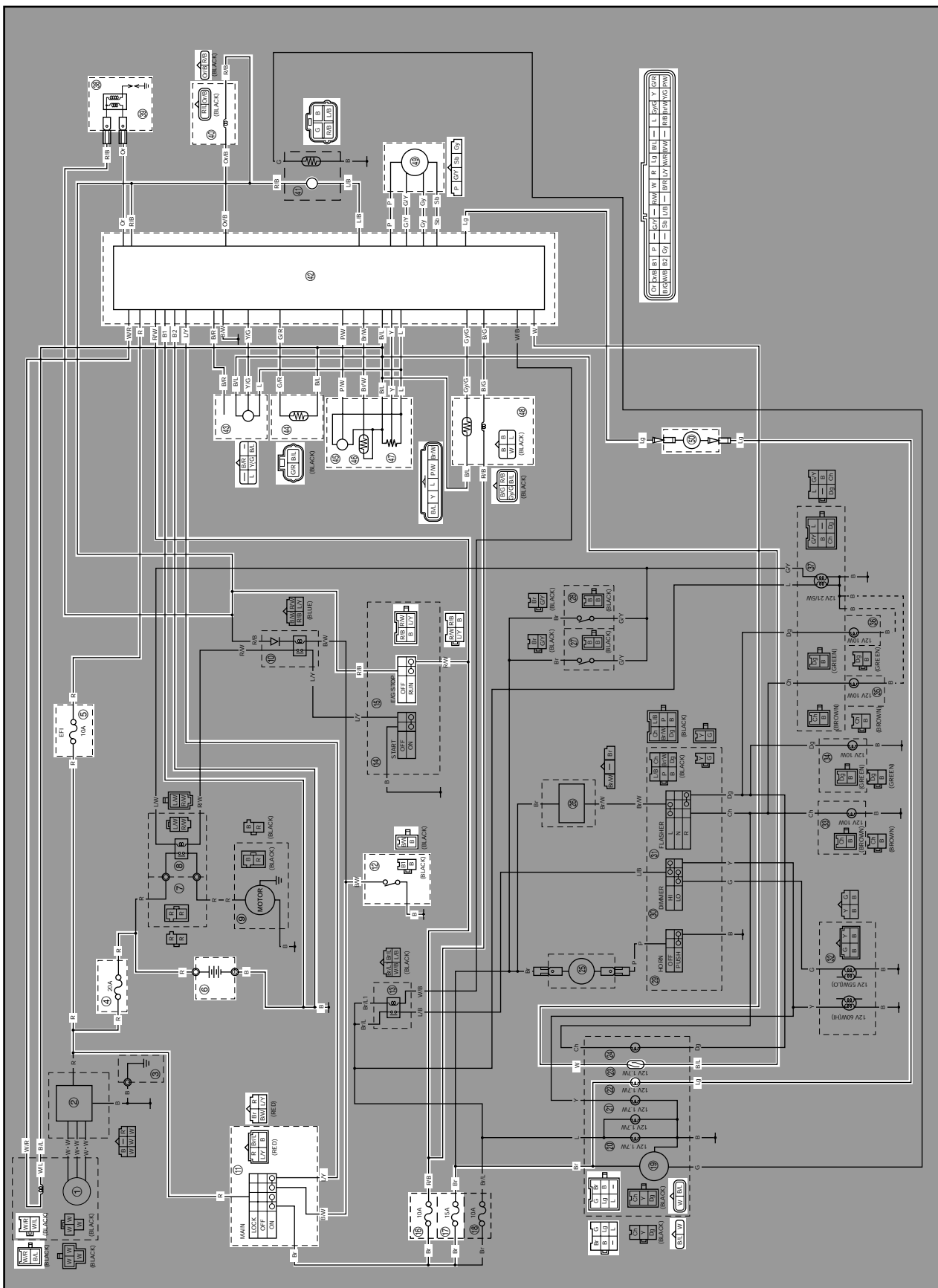
- |                                  |                              |
|----------------------------------|------------------------------|
| ① ECU                            | ⑪ Air filter case            |
| ② Engine trouble warning light   | ⑫ Catalytic converter        |
| ③ Lean angle cut-off switch      | ⑬ Crankshaft position sensor |
| ④ Fuel hose                      | ⑭ Engine temperature sensor  |
| ⑤ Ignition coil                  | ⑮ Spark plug                 |
| ⑥ Fuel injector                  | ⑯ Fuel tank                  |
| ⑦ Intake air pressure sensor     | ⑰ Fuel pump                  |
| ⑧ ISC (idle speed control) valve | ⑱ Throttle position sensor   |
| ⑨ Intake air temperature sensor  | ⑲ O <sub>2</sub> sensor      |
| ⑩ Battery                        |                              |





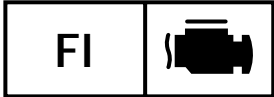


## WIRING DIAGRAM



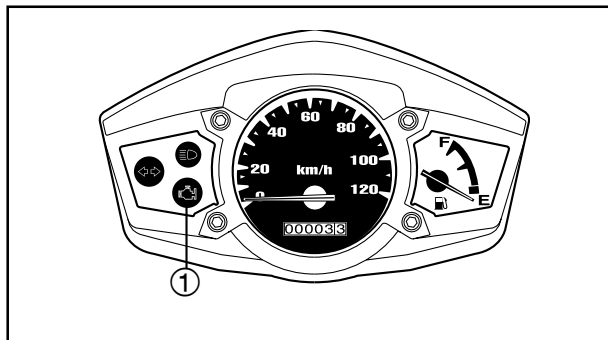


- ① Crankshaft position sensor
- ④ Main fuse
- ⑤ Fuel injection system fuse
- ⑥ Battery
- ⑪ Main switch
- ⑫ Sidestand switch
- ⑮ Engine stop switch
- ⑯ Ignition fuse
- ⑰ Signaling system fuse
- ⑳ Engine trouble warning light
- ㉓ Speed sensor
- ㉘ Ignition coil
- ㉙ Spark plug
- ㉚ Fuel injector
- ㉛ Fuel pump
- ㉜ ECU
- ㉝ Lean angle cut-off switch
- ㉞ Engine temperature sensor
- ㉟ Intake air pressure sensor
- ㊱ Intake air temperature sensor
- ㊲ Throttle position sensor
- ㊳ O<sub>2</sub> sensor
- ㊴ ISC (idle speed control) valve
- ㊵ FI diagnostic tool



**ECU'S SELF-DIAGNOSTIC FUNCTION**

The ECU is equipped with a self-diagnostic function in order to ensure that the engine control system is operating normally. If this function detects a malfunction in the system, it immediately operates the engine under substitute characteristics and illuminates the engine trouble warning light to alert the rider that a malfunction has occurred in the system. Once a malfunction has been detected, a fault code is stored in the memory of the ECU.



① Engine trouble warning light

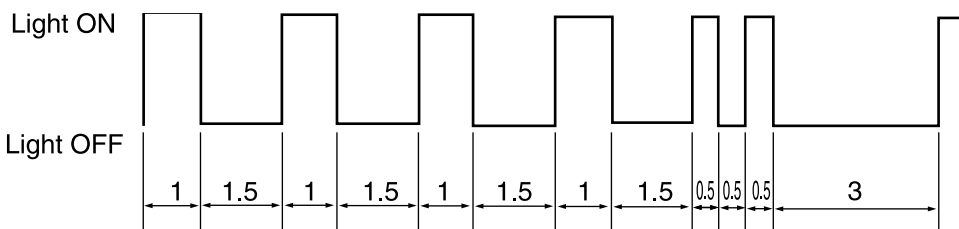
- To inform the rider that the fuel injection system is not functioning correctly, the engine trouble warning light flashes when the start switch is being pushed to start the engine.
- If a malfunction is detected in the system by the self-diagnostic function, this mode provides an appropriate substitute characteristic operation, and alerts the rider of the detected malfunction by illuminating the engine trouble warning light.
- After the engine has been stopped, the lowest fault code number appears on the engine trouble warning light (or displayed on the FI diagnostic tool). It remains stored in the memory of the ECU until it is deleted.

**Engine trouble warning light fault code indication**

Digit of 10: Cycles of 1 sec. ON and 1.5 sec. OFF.

Digit of 1: Cycles of 0.5 sec, ON and 0.5 sec. OFF.

<Example> 42



EAS00900

**Engine trouble warning light indication and FI system operating condition**

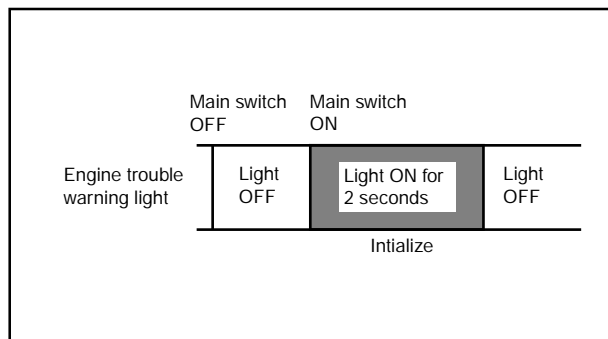
Engine condition	Warning light indication	FI operation	Vehicle operation
Operate (cranking with electric starter)	Flashing	Operation stopped	Unable
	Remains ON	Operated with substitute characteristics in accordance with the description of the malfunction	Able
Stop	Flashing (indicate the fault code)	-	-



EAS00901

## CHECKING FOR A DEFECTIVE ENGINE TROUBLE WARNING LIGHT BULB

The engine trouble warning light comes on for 2 seconds after the main switch has been turned "ON" and when the start switch is being pushed. If the warning light does not come on under these conditions, the warning light bulb may be defective.



EAS00902

## SELF-DIAGNOSTIC FUNCTION TABLE

If the ECU detects an abnormal signal from a sensor while the vehicle is being driven, the ECU illuminates the engine trouble warning light and provides the engine with alternate operating instructions that are appropriate for the type of malfunction.

When an abnormal signal is received from a sensor, the ECU processes the specified values that are programmed for each sensor in order to provide the engine with alternate operating instructions that enable the engine to continue to operate or stop operating, depending on the conditions.

The ECU takes fail-safe actions in two ways: one in which the sensor output is set to a prescribed value, and the other in which the ECU directly operates an actuator. Details on the fail-safe actions are given in the table below.

### Self-diagnostic function table

Fault code No.	Item	Symptom	Engine startability	Vehicle driveability
12	Crankshaft position sensor	No normal signals are received from the crankshaft position sensor.	Unable	Unable
13 14	Intake air pressure sensor (open or short circuit system)	Intake air pressure sensor-open or short circuit detected. Faulty intake air pressure sensor system.	Able	Able
15 16	Throttle position sensor (open or short circuit)(stuck)	Throttle position sensor-open or short circuit detected. A stuck throttle position sensor is detected.	Able	Able
19	Broken or disconnected sidestand lead of the ECU	Open circuit in the input line (sidestand) of the ECU is detected.	Unable	Unable
22	Intake air temperature sensor	Intake air temperature sensor-open or short circuit is detected.	Able	Able
24	O <sub>2</sub> sensor	No normal signal is received from the O <sub>2</sub> sensor.	Able	Able
28	Engine temperature sensor	Engine temperature sensor-open or short circuit detected.	Able	Able
33	Faulty ignition	Open circuit detected in the primary lead of the ignition coil.	Unable	Unable
37	ISC (idle speed control) valve (stuck fully open)	Engine speed is high when the engine is idling.	Able	Able

## FUEL INJECTION SYSTEM

FI

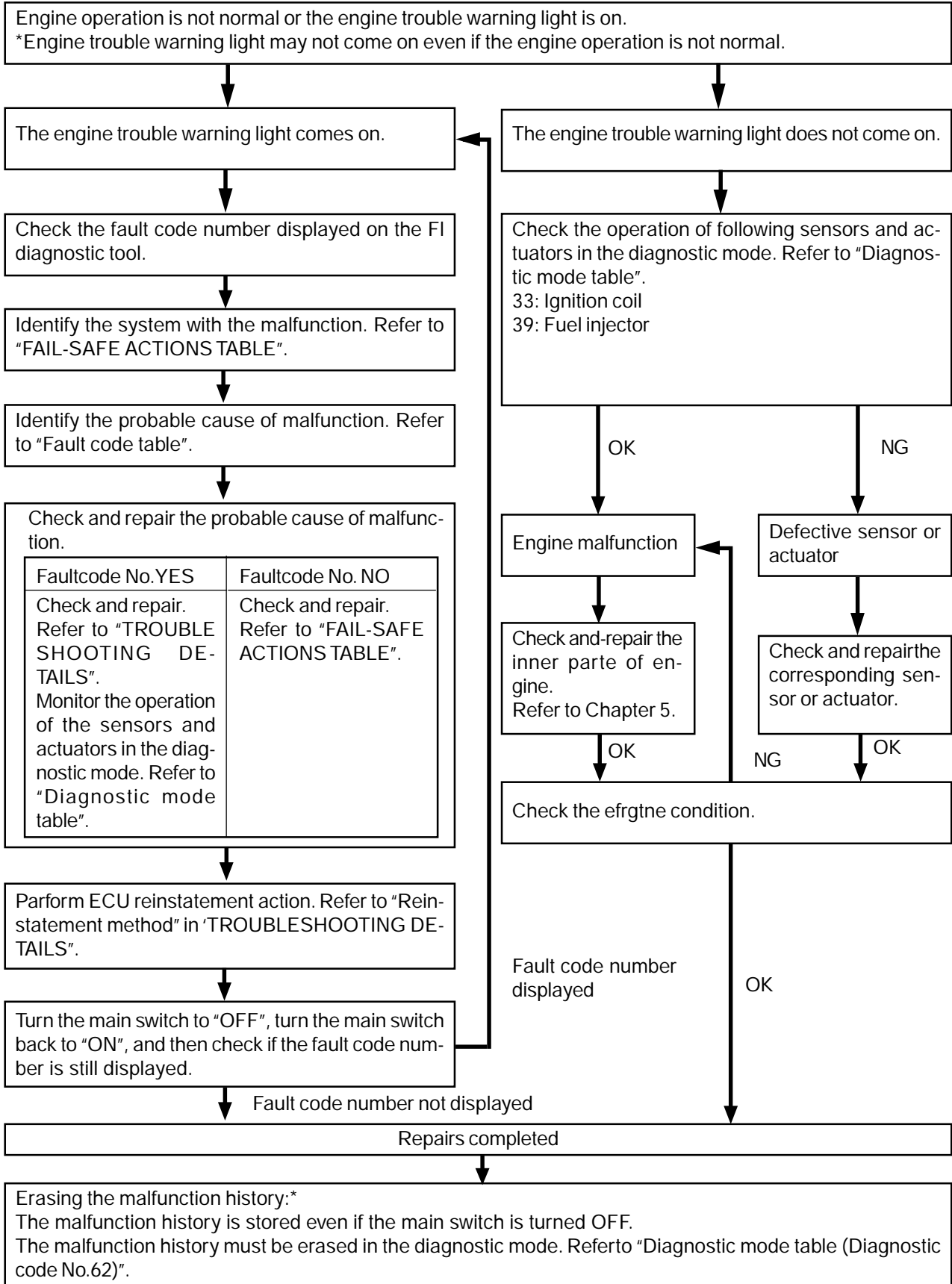


Fault code No.	Item	Symptom	Engine startability	Vehicle driveability
39	Fuel injector	Fuel injector open or short circuit is detected.	Unable	Unable
30 41	Lean angle cut-off switch (latch up detected) (open or short circuit)	The vehicle has overturned. Lean angle cut-off switch-open or short circuit is detected.	Unable	Unable
42	Speed sensor	No normal signals are received from the speed sensor.	Able	Able
43	Fuel system voltage (monitoring voltage)	Power supply to fuel injector, fuel pump and ignition coil are not normal.	Able	Able
44	Error in reading from or writing on EEPROM	An error is detected while reading from or writing on EEPROM (CO adjustment value, code re-registering key code, and throttle valve fully closed notification value).	Able	Able
46	Vehicle system power supply (monitoring voltage)	Power supply to FI system is not normal.(red lead)	Able	Able
50	ECU internal malfunction (memory check error)	Faulty ECU memory. When this malfunction is detected, the code number might not appear on the engine trouble warning light or displayed on FI diagnostic tool.	Unable	Unable
61	ISC (idle speed control) valve unit (open or short circuit)	ISC (idle speed control) valve unit-open or short circuit detected.	Able	Able
_	Start unable warning Engine trouble warning light flashes when the start switch is turned ON.	Relay is not activated even if the crank signal is input while the start switch is pushed.	Unable	Unable



EAS00904

## TROUBLESHOOTING CHART



\* Operated when the engine trouble warning light is on.



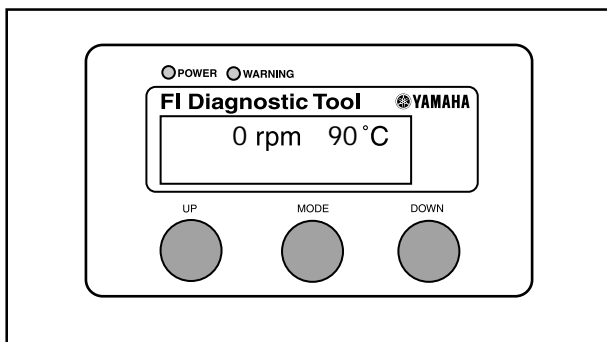
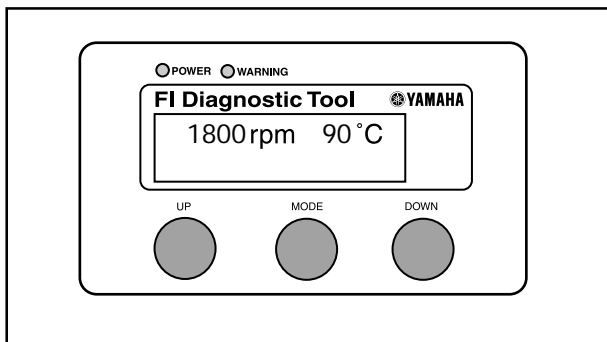
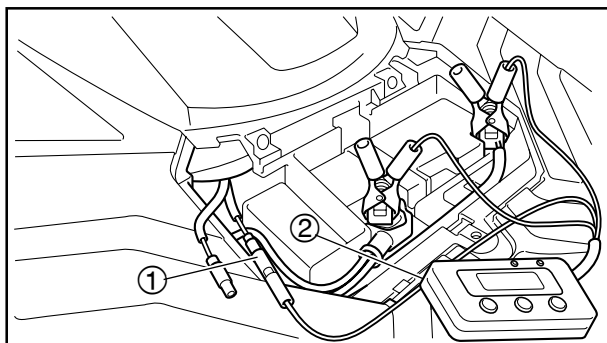
EAS00905

## DIAGNOSTIC MODE

It is possible to monitor the sensor output data or check the activation of actuators with connecting the FI diagnostic tool to the normal mode or the diagnostic monitoring mode.



**FI diagnostic tool**  
90890-03182 (YU-03182)



## Setting the normal mode

### TIP

The engine speed, engine temperature, and fault code, if detected, can be displayed on the LCD of the FI diagnostic tool when the tool is connected to the vehicle and is set to the normal mode.

1. Turn the main switch to "OFF".
2. Disconnect the self diag signal connector ①, and then connect the FI diagnostic tool ② as shown.
3. Turn the main switch to "ON" and start the engine.

### TIP

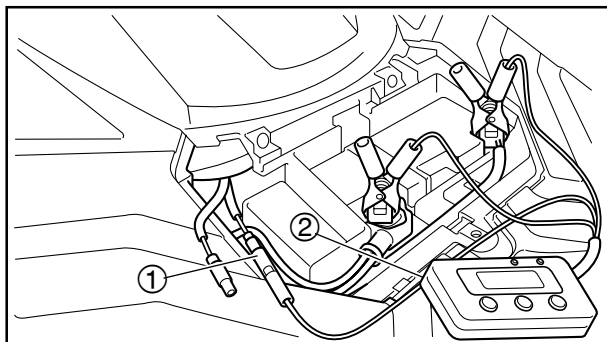
- Engine temperature and engine revolution appears on the LCD of the FI diagnostic tool.
- "POWER" LED (Green) comes on.
- If a malfunction is detected in the system, "WARNING" LED (Orange) comes on. However the fault code is not appears on the LCD of FI diagnostic tool.

4. Stop the engine.

### TIP

If a malfunction is detected in the system, the fault code appears on the LCD of the FI diagnostic tool. And also, "WARNING" LED (Orange) comes on.

5. Turn the main switch to "OFF" to cancel the normal mode.
6. Disconnect the FI diagnostic tool and connect the self diag signal connector.



## Setting the diagnostic mode

1. Turn the main switch to "OFF".
2. Disconnect the self diag signal connector ①, and then connect the FI diagnostic-tool ② as shown.
3. While press the "MODE" button, turn the main switch to "ON".

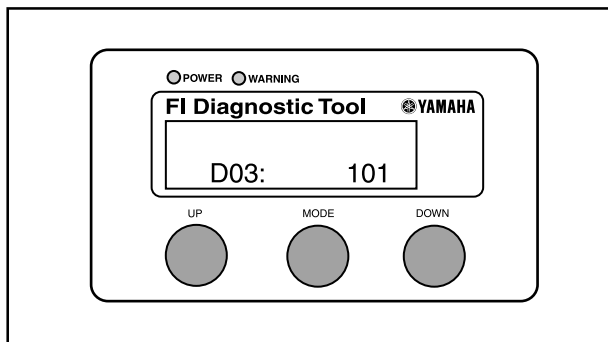
### TIP

- "DIAG" appears on the LCD of the FI diagnostic tool.
- "POWER" LED (Green) comes on.

4. Press the "UP" button to select the CO adjustment mode "CO" or the diagnostic mode "DIAG".
5. After selecting "DIAG", press the "MODE" button.
6. Select the diagnostic code number that applies to the item that was verified with the fault code number by pressing the "UP" and "DOWN" buttons.

### TIP

- The diagnostic code number appears on the LCD (D01-D70).
- To decrease the selected diagnostic code number, press the "DOWN" button. Press the "DOWN" button for 1 second or longer to automatically decrease the diagnostic code numbers.
- To increase the selected diagnostic code number, press the "UP" button. Press the "UP" button for 1 second or longer to automatically increase the diagnostic code numbers.



7. Verify the operation of the sensor or actuator.
  - Sensor operation  
The data representing the operating conditions of the sensor appears on the LCD.
  - Actuator operation  
Press the "MODE" button to operate the actuator.
8. Turn the main switch to "OFF" to cancel the diagnostic mode.
9. Disconnect the FI diagnostic tool and connect the self diag signal connector.




**Fault code table**

Fault codeNo.	Symptom	Probable cause of malfunction	Diagnostic code
12	No normal signals are received from the crankshaft position sensor.	<ul style="list-style-type: none"> <li>• Open or short circuit in wiring harness.</li> <li>• Defective crankshaft position sensor.</li> <li>• Malfunction in pickup rotor.</li> <li>• Improperly installed sensor lead connector in the coupler.</li> </ul>	-
13	Intake air pressure sensor-open or short circuit detected.	<ul style="list-style-type: none"> <li>• Open or short circuit in wiring sub lead.</li> <li>• Open or short circuit in wiring harness.</li> <li>• Defective intake air pressure sensor.</li> <li>• Improperly installed sensor lead connector in the coupler.</li> </ul>	D03
14	Faulty intake air pressure sensor system	<ul style="list-style-type: none"> <li>• Intake air pressure sensor is disconnected, or clogged.</li> </ul>	D03
15	Throttle position sensor-open or short circuit detected.	<ul style="list-style-type: none"> <li>• Open or short circuit in wiring sub lead.</li> <li>• Open or short circuit in wiring harness.</li> <li>• Defective throttle position sensor.</li> <li>• Improperly installed throttle position sensor lead connector in the coupler.</li> </ul>	D01
16	A stuck throttle position sensor is detected.	<ul style="list-style-type: none"> <li>• Stuck throttle position sensor.</li> <li>• Defective throttle position sensor.</li> </ul>	D01
19	Open circuit in the input line (sidestand lead) of ECU is detected when the start switch is pressed.	<ul style="list-style-type: none"> <li>• Open circuit in wiring harness (ECU coupler).</li> </ul>	D20
22	Intake air temperature sensor-open or short circuit detected.	<ul style="list-style-type: none"> <li>• Open or short circuit in wire sub lead.</li> <li>• Open or short circuit in wiring harness.</li> <li>• Defective intake temperature sensor.</li> <li>• Improperly installed sensor lead connector in the coupler.</li> </ul>	D05
24	No normal signal is received from the O <sub>2</sub> sensor.	<ul style="list-style-type: none"> <li>• Open or short circuit in wiring harness.</li> <li>• Defective O<sub>2</sub> sensor.</li> <li>• Improperly installed sensor.</li> </ul>	-
28	Engine temperature sensor-open or short circuit detected.	<ul style="list-style-type: none"> <li>• Open or short circuit in wiring harness.</li> <li>• Defective engine temperature sensor.</li> <li>• Improperly installed lead connector in the coupler.</li> </ul>	D11
30	The vehicle has overturned.	<ul style="list-style-type: none"> <li>• Overturned condition.</li> </ul>	D08
33	Open circuit is detected in the primary lead of the ignition coil.	<ul style="list-style-type: none"> <li>• Open circuit in wiring harness.</li> <li>• Malfunction in ignition coil.</li> <li>• Improperly installed primary lead connector in the coupler.</li> </ul>	D30
37	The ISC (idle speed control) valve is stuck fully open.	<ul style="list-style-type: none"> <li>• Malfunction in throttle body.</li> <li>• Malfunction in throttle cables.</li> <li>• ISC (idle speed control) valve is stuck fully open.</li> </ul>	D54
39	Fuel injector open or short circuit is detected.	<ul style="list-style-type: none"> <li>• Open or short circuit in wiring harness.</li> <li>• Defective fuel injector.</li> <li>• Improperly installed lead connector in the coupler.</li> </ul>	D36
41	Lean angle cut-off switch-open or short circuit detected.	<ul style="list-style-type: none"> <li>• Open or short circuit in wiring harness.</li> <li>• Defective lean angle cut-off switch.</li> <li>• Improperly installed lead connector in the coupler.</li> </ul>	D08
42	No normal signals are received from the speed sensor.	<ul style="list-style-type: none"> <li>• Open or short circuit in wiring harness.</li> <li>• Defective speed sensor.</li> <li>• Improperly installed lead connector in the coupler.</li> </ul>	D07
43	Power supply to the fuel injector, fuel pump and ignition coil are not normal.	<ul style="list-style-type: none"> <li>• Open or short circuit in wiring harness.</li> </ul>	D09
44	An error is detected while reading or writing on EEPROM.	<ul style="list-style-type: none"> <li>• Malfunction in ECU. (The CO adjustment value, code reregistering key code, and throttle valve fully closed notification value are not properly written on or read from the internal memory.)</li> </ul>	D60
46	Power supply to FI system is not normal.(red lead)	<ul style="list-style-type: none"> <li>• Malfunction in charging system.</li> </ul>	-
50	Faulty ECU memory. When this malfunction is detected, the code number might not appear on the engine trouble warning light or displayed on FI diagnostic tool.	<ul style="list-style-type: none"> <li>• Malfunction in ECU. (The program and data are not properly written on or read from the internal memory.)</li> </ul>	-
61	ISC (idle speed control) valve open or short circuit is detected.	<ul style="list-style-type: none"> <li>• Open or short circuit in wiring harness.</li> <li>• Improperly installed lead connector in the coupler.</li> </ul>	D54



EAS00907

## Diagnostic mode table

### TIP

- Check the intake air temperature and engine temperature as close as possible to the intake air temperature sensor and the engine temperature sensor respectively.
- If it is not possible to check the intake air temperature, use the ambient temperature as reference.

Diagnostic code	Item	Description of action	Data displayed on FI diagnostic tool (reference value)
D01	Throttle angle	Displays the throttle angle. • Check with throttle fully closed. • Check with throttle fully open.	0-125 degrees • Fully closed position (14-20) • Fully open position (97-107)
D03	Intake air pressure	Displays the intake air pressure. • Check the pressure in the intake manifold.	Compare it to the value displayed on the FI diagnostic tool.
D05	Intake air temperature	Displays the intake air temperature. • Check the temperature in the intake manifold.	Compare it to the value displayed on the FI diagnostic tool.
D07	Vehicle speed pulse	Displays the accumulation of the vehicle pulses that are generated when the tire is spun.	(0-999; resets to 0 after 999) OK if the numbers appear on the FI diagnostic tool.
D08	Lean angle cut-off switch	Displays the lean angle cut-off switch values.	Upright: 0.4 V Overturned: 1.4V
D09	Fuel system voltage (battery voltage)	Displays the fuel system voltage (battery voltage).	0-18.7 V Normally, approximately 12.0 V
D11	Engine temperature sensor	Displays the engine temperature sensor. • Check the engine temperature sensor in the cylinder head.	Compare it to the value displayed on the FI diagnostic tool.
D20	Sidestand switch	Displays that the switch is ON or OFF.	Stand retracted: ON Stand extended: OFF
D30	Ignition coil	When the "MODE" button is pressed, the ignition coil is actuated five times per second and the "WARNING" LED (orange) comes on. • Connect an ignition checker.	Check that spark is generated, 5 times with the "MODE" button press.
D36	Fuel injector	When the "MODE" button is pressed, the fuel injector is actuated five times per second and the "WARNING" LED (orange) comes on.	Check the operating sound of the fuel injector five times with "MODE" button press.
D52	Headlight relay	When the "MODE" button is pressed, the headlight relay is actuated five times every 5 seconds and the engine trouble warning light comes on. (ON 2 seconds, OFF 3 seconds)	Check the headlight relay operating 5 times with the "MODE" button is pressed.
D54	ISC (idle speed control) valve	When the the "MODE" button is pressed, the ISC (idle speed control) valve fully closes, and then it opens until it is at the standby opening position when the engine is started. This operation takes approximately 3 seconds until it is completed.	The ISC (idle speed control) valve unit vibrates when the ISC (idle speed control) valve operates.
D60	EEPROM fault code display.	• Transmits the abnormal portion of the data in the E2PROM that has been detected as a fault code 44. • If multiple malfunctions have been detected, different codes are displayed at 2-second intervals, and this process is repeated.	01 CO adjustment value is detected. (00) Displays when there is no malfunction.
D61	Malfunction history code display	• Displays the codes of the history of the self-diagnosis malfunctions (i.e., a code of a malfunction that occurred once and which has been corrected). • If multiple malfunctions have been detected, different codes are displayed at 2-second intervals, and this process is repeated.	12-61 (00) Displays when there is no malfunction.
D62	Malfunction history code erasure	• Displays the total number of codes that are being detected through self diagnosis and the fault codes in the past history. • Erases only the history codes when the "MODE" button is pressed.	00-18 (00) Displays when there is no malfunction.
D70	Control number	Displays the program control number.	00-254



## Communication error with the FI diagnostic tool

LCD Display	Sympton	Probable cause of malfunction
Waiting for connection...	No signals are received from the ECU.	<ul style="list-style-type: none"> <li>• Improper installed lead connector in the coupler.</li> <li>• The main switch is OFF position.</li> <li>• Malfunction in FI diagnostic tool.</li> <li>• Malfunction in ECU.</li> </ul>
ERROR 4	Commands from the FI diagnostic tool are not accepted by the ECU.	<ul style="list-style-type: none"> <li>• Turn the main switch to "OFF" once, and then turn it back to CO adjustment mode or diagnostic mode.</li> <li>• Vehicle battery is insufficiently charged.</li> <li>• Malfunction in FI diagnostic tool.</li> <li>• Malfunction in ECU.</li> </ul>

EAS00908

### TROUBLESHOOTING DETAILS

This section describes the countermeasures per fault code number displayed on the FI diagnostic tool. Check and service the items or components that are the probable cause of the malfunction following the order given.

After the check and service of the malfunctioned part has been completed, reset the FI diagnostic tool display according to the "Reinstatement method".

**Fault code No.:**

Fault code number displayed on the FI diagnostic tool when the engine failed to work normally.

Refer to "Fault code table".

**Diagnostic code No.:**

Diagnostic code number to be used when the diagnostic mode is operated. Refer to "DIAGNOSTIC MODE".

# FUEL INJECTION SYSTEM

FI



Fault code No. | 12 | Symptom | No normal signals are received from the crankshaft position sensor.

Used diagnostic code No. --

Order	Inspection operation item and probable cause	Operation item and countermeasure	Reinstatement method
1	Installed condition of sensor.	Check the installed area for looseness or pinching.	Reinstated by cranking the engine.
2	<p>Connected condition of connector.</p> <p>Inspect the coupler for any pins that may have pulled out.</p> <p>Check that the coupler is connected securely.</p> <p><b>TIP</b> _____ Set the main switch to OFF before connecting or disconnecting the connector.</p>	<p>If there is a malfunction, repair it and connect it securely.</p> <p>Crankshaft position sensor coupler</p> <p>Main wiring harness ECU coupler</p>	
3	Open or short circuit in wiring harness.	<p>Repair or replace if there is an open or short circuit between the main wiring harnesses.</p> <p>Between sensor coupler and ECU coupler.</p> <p>white/red</p> <p>black/blue</p>	
4	Defective crankshaft position sensor.	Replace if defective.	

# FUEL INJECTION SYSTEM

FI



Fault code No. 13 Symptom Intake air pressure sensor-open or short circuit detected.

Used diagnostic code No. D03 (intake air pressure sensor)

Order	Inspection operation item and probable cause	Operation item and countermeasure	Reinstatement method
1	<p>Connected condition of connector                      Inspect the coupler for any pins that may have pulled out.                      Check the locking condition of the coupler.</p> <p><b>TIP</b>                      Set the main switch to OFF before connecting or disconnecting the connector.</p>	<p>If there is a malfunction, re-per it and connect it securely.                      Intake air pressure sensor coupler                      Main wiring harness ECU coupler</p>	<p>Reinstated by turning the main switch ON.</p>
2	<p>Open or short circuit in wiring harness.</p>	<p>Repair or replace if there is an open or short circuit.                      Between sensor coupler and ECU coupler                      black/blue - black/blue                      pink/white - pink/white                      blue- blue</p>	
3	<p>Defective intake air pressure sensor.</p>	<p>Execute the diagnostic mode (code No. D03)                      Replace the throttle body.</p> <p><b>TIP</b>                      Do not remove the sensor module.</p> <p>1. Connect the digital circuit tester to the intake air pressure sensor coupler as shown.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>Positive tester probe → pink/white ①                      Negative tester probe → black/blue ②</p> </div> <p>2. Set the main switch to "ON".                      3. Measure the intake air pressure sensor output voltage.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p><b>Intake air pressure sensor output voltage</b>                      0.789~4.0V</p> </div> <p>4. Is the intake air pressure sensor OK?</p>	

# FUEL INJECTION SYSTEM

FI



Fault code No.	14	Symptom	Intake air pressure sensor system malfunction (clogged or detached).	
Used diagnostic code No. D03 (intake air pressure sensor)				
Order	Inspection operation item and probable cause	Operation item and countermeasure	Reinstatement method	
1	Connected state of connector Intake air pressure sensor coupler Main wiring harness ECU coupler	Check the coupler for any pins that may have pulled out. Check that the coupler is connected securely. If there is a malfunction, repair it and connect it securely.	Reinstated by starting the engine and operating it at idle.	
2	Defective intake air pressure sensor.	Execute the diagnostic mode (code No. D03) Replace the throttle body.  <b>TIP</b> _____ Do not remove the sensor module. _____ Refer to "Fault code No. 13".		

Fault code No.	15	Symptom	Throttle position sensor-open or short circuit detected.	
Used diagnostic code No. D01 (throttle position sensor)				
Order	Inspection operation item and probable cause	Operation item and countermeasure	Reinstatement method	
1	Installed condition of throttle position sensor.	Check the installed area for looseness or pinching. Check that it is installed in the specified position. Refer to "THROTTLE BODY AND FUEL INJECTOR".	Reinstated by turning the main switch ON.	
2	Connected condition of connector Inspect the coupler for any pins that may have pulled out. Check the locking condition of the coupler.	If there is a malfunction, repair it and connect it securely. Throttle position sensor coupler Main wiring harness ECU coupler		
3	Open or short circuit in wiring harness.	Repair or replace if there is an open or short circuit. Between sensor coupler and ECU coupler black/blue - black/blue yellow - yellow blue -blue		
4	Defective throttle position sensor.	Execute the diagnostic mode (code No. D01) Replace the throttle body.  <b>TIP</b> _____ Do not remove the sensor module. _____ Refer to "THROTTLE BODY AND FUEL INJECTOR".		

# FUEL INJECTION SYSTEM

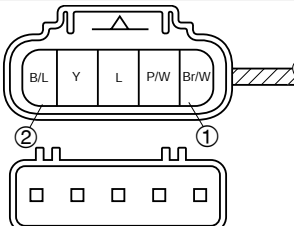

FI



Fault code No.	16	Symptom	Stuck throttle position sensor detected.	
Used diagnostic code No. D01 (throttle position sensor)				
Order	Inspection operation item and probable cause	Operation item and countermeasure	Reinstatement method	
1	Installed condition of throttle position sensor.	Check the installed area for looseness or pinching. Check that it is installed in the specified position. Refer to "THROTTLE BODY AND FUEL INJECTOR".	Reinstated by starting the engine, operating it at idle, and then racing it.	
2	Defective throttle position sensor	Execute the diagnostic mode (code No. 01) Replace the throttle body.  <b>TIP</b> Do not remove the sensor module.  Refer to "THROTTLE BODY AND FUEL INJECTOR".		
3	When fault code No.15 has been detected	Refer to "Fault code No.15".	Refer to "Fault code No. 15".	

Fault code No.	19	Symptom	Open circuit in the input line of ECU (sidestand lead) detected.	
Used diagnostic code No. D20 (sidestand switch)				
Order	Inspection operation item and probable cause	Operation item and countermeasure	Reinstatement method	
1	Connected state of connector Main wiring harness ECU coupler (sidestand connector)	Execute the diagnostic mode (code No. D20) Check the coupler for any pins that may have pulled out. Check the locking condition of the coupler. If there is a malfunction, repair it and connect it securely.	Reinstated by reconnecting the wiring and retracting the sidestand.	
2	Open or short circuit in wiring harness.	Between main switch coupler and ECU coupler. black/yellow - blue/yellow Sidestand switch and main switch coupler. black/white - black/white		



Fault code No.	22	Symptom	Intake air temperature sensor open or short circuit is detected.
Used diagnostic code No. D05 (intake air temperature sensor)			
Order	Inspection operation item and probable cause	Operation item and countermeasure	Reinstatement method
1	Installed condition of sensor	Check the installed area for looseness or pinching.	Reinstated by turning the main switch ON.
2	Connected condition of connector Inspect the coupler for any pins that may have pulled out. Check the locking condition of the coupler.	If there is a malfunction, repair it and connect it securely. Intake air temperature sensor coupler Main wiring harness ECU coupler	
3	Open or short circuit in wiring harness.	Repair or replace if there is an open or short circuit. Between sensor coupler and ECU coupler black/blue - black/blue brown/white - brown/white	
4	Defective intake air temperature sensor.	<p>Execute the diagnostic mode (code No. D05) Replace the throttle body.</p> <p><b>TIP</b> _____ Do not remove the sensor module.</p> <p>1. Connect the digital circuit tester to the intake air temperature sensor terminal as shown.</p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p><b>Positive tester probe → brown/white ①</b> <b>Negative tester probe → black/blue ②</b></p>  </div> <p>2. Measure the intake air temperature sensor resistance.</p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;">  <p><b>Intake air temperature sensor resistance</b> <b>6kΩ at 20°C (68°F)</b></p> </div> <p><b>⚠ WARNING</b> _____</p> <ul style="list-style-type: none"> <li>● Handle the intake air temperature sensor with special care.</li> <li>● Never subject the intake air temperature sensor to strong shocks. If the intake air temperature sensor is dropped, replace it.</li> </ul> <hr/> <p>3. Is the intake air temperature sensor OK?</p>	



# FUEL INJECTION SYSTEM

FI



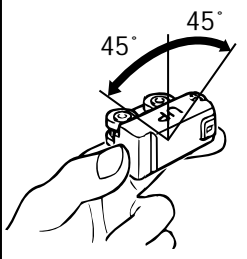
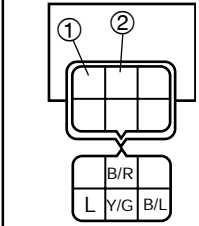
Fault code No.   24   Symptom		No normal signal is received from the O <sub>2</sub> sensor.	
Used diagnostic code No. --			
Order	Inspection operation item and probable cause	Operation item and countermeasure	Reinstatement method
1	Defective O <sub>2</sub> sensor.	Replace if defective.	Reinstated by starting the engine, operating it at idle, and then racing it after it has warmed up.
2	Open or short circuit in wiring harness.	Repair or replace if there is there is an open or short circuit. Main wiring harness black/blue – gray/green red/black – black/green	
3	Installed state of O <sub>2</sub> sensor.	Check the installed area for looseness or pinching.	
4	Connected state of connector Inspect the coupler for any pins that may have pulled out. Check the locking condition of the coupler.	If there is a malfunction, repair and connect it securely. O <sub>2</sub> sensor coupler Main wiring ECU harness coupler	
5	Check fuel pressure	Refer to "CHECKING THE FUEL PUMP AND PRESSURE REGULATOR OPERATION.	

Fault code No.   28   Symptom		Engine temperature sensor open or short circuit is detected.	
Used diagnostic code No. D11 (engine temperature sensor)			
Order	Inspection operation item and probable cause	Operation item and countermeasure	Reinstatement method
1	Installed condition of sensor	Check the installed area for looseness or pinching.	Reinstated by turning the main switch ON.
2	Connected condition of connector Inspect the coupler for any pins that may have pulled out. Check the locking condition of the coupler.	If there is a malfunction, repair it and connect it securely. Engine temperature sensor coupler Main wiring harness ECU coupler	
3	Open or short circuit in wiring harness.	Repair or replace if there is an open or short circuit. Between sensor coupler and ECU coupler black/blue-black/blue green/red - green/red	
4	Defective engine temperature sensor.	Execute the diagnostic mode (code No.D11) Replace if defective.	

# FUEL INJECTION SYSTEM

FI



Fault code No.   30   Symptom		The vehicle has overturned.	
Used diagnostic code No. D08 (lean angle cut-off switch)			
Order	Inspection operation item and probable cause	Operation item and countermeasure	Reinstatement method
1	The vehicle has overturned.	Raise the vehicle upright.	Reinstated by turning the main switch ON (however, the engine cannot be restarted unless the main switch is first turned OFF).
2	Installed condition of the lean angle cut-off switch	Check the installed area for looseness or pinching.	
3	Connected condition of connector Inspect the coupler for any pins that may have pulled out. Check the locking condition of the coupler.	If there is a malfunction, repair it and connect it securely. Lean angle cut-off switch coupler Main wiring harness ECU coupler	
4	Defective lean angle cut-off switch	Execute the diagnostic mode (code No. D08) Replace if defective. 1. Remove the lean angle cut-off switch from the vehicle. 2. Connect the lean angle cut-off switch coupler to the wire harness. 3. Connect the digital circuit tester to the lean angle cut-off switch terminals as shown.  <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p>Positive tester probe → blue ① Negative tester probe → yellow/green ②</p> </div> <div style="display: flex; justify-content: space-around; align-items: center;">   </div> 4. When turning the lean angle cut-off switch approximately 45°, the voltage reading change from 0.4 V to 1.4 V. 5. Is the lean angle cut-off switch OK?	

# FUEL INJECTION SYSTEM

FI



Fault codeNo.   33   Symptom		Open circuit detected in the primary lead of the ignition coil.	
Used diagnostic code No. D30			
Order	Inspection operation item and probable cause	Operation item and countermeasure	Reinstatement method
1	Connected condition of connector Inspect the coupler for any pins that may have pulled out. Check the locking condition of the coupler.	If there is a malfunction, repair it and connect it securely. Ignition coil primary side coupler - orange Main wiring harness ECU coupler	Reinstated by starting the engine and operating it at idle.
2	Open or short circuit in lead.	Repair or replace if there is an open or short circuit. Between ignition coil coupler and ECU coupler/main harness orange - orange	
3	Defective ignition coil (test the primary and secondary coils for continuity).	Execute the diagnostic mode (code No. D30) Replace if defective. Refer to "IGNITION SYSTEM" in chapter 7.	

Fault code No.   37   Symptom		Engine speed is high when the engine is idling.	
Used diagnostic code No. D54 (ISC (idle speed control) valve)			
Order	Inspection operation item and probable cause	Operation item and countermeasure	Reinstatement method
1	Throttle valve does not fully close	Check the throttle body. Refer to "THROTTLE BODY AND FUEL INJECTOR". Check the throttle cable assembly. Refer to "ADJUSTING THE THROTTLE CABLE FREE PLAY" in chapter 3.	Reinstated if the engine idle speed is within specification after starting the engine.
2	ISC (idle speed control) valve stuck fully open	The ISC (idle speed control) valve is stuck fully open if it does not operate when the main switch is set to OFF. (Touch the ISC (idle speed control) valve unit with your hand and check if it is vibrating to confirm if the ISC (idle speed control) valve is operating.)  <b>TIP</b> _____ Do not remove the ISC (idle speed control) valve unit. _____	
3	ISC (idle speed control) valve not moving correctly	Execute the diagnostic mode (code No. D54) After the ISC (idle speed control) valve is fully closed, it opens until it is at the standby opening position when the engine is started. This operation takes approximately 3 seconds until it is completed. Start the engine. If the error recurs, replace the throttle body assembly.	

# FUEL INJECTION SYSTEM

FI



**Fault code No. | 39 | Symptom | Fuel injector open or short circuit is detected.**

Used diagnostic code No. D36 (fuel injector)

Order	Inspection operation item and probable cause	Operation item and countermeasure	Reinstatement method
1	Connected condition of connector Inspect the coupler for any pins that may have pulled out. Check the locking condition of the coupler.	If there is a malfunction, repair it and connect it securely. Fuel injector coupler - orange/black Main wiring harness ECU coupler	Reinstated by starting the engine.
2	Open or short circuit in lead wire.	Repair or replace if there is an open or short circuit. Between fuel injector coupler and ECU coupler/main harness orange/black - orange/black	
3	Defective fuel injector	Execute the diagnostic mode (code No. D36) Replace if defective.	

**Fault code No. | 41 | Symptom | Lean angle cut-off switch open or short circuit is detected.**

Used diagnostic code No. D08 (lean angle cut-off switch)

Order	Inspection operation item and probable cause	Operation item and countermeasure	Reinstatement method
1	Connected condition of connector Inspect the coupler for any pins that may have pulled out. Check the locking condition of the coupler.	If there is a malfunction, repair it and connect it securely. Lean angle cut-off switch coupler Main wiring harness ECU coupler	Reinstated by turning the main switch ON.
2	Open or short circuit in wiring harness.	Repair or replace if there is an open or short circuit. Between switch coupler and ECU coupler black/blue - black/blue yellow/green - yellow/green blue- blue	
3	Defective lean angle cut-off switch	Execute the diagnostic mode (code No. D08) Replace if defective. Refer to Fault code No. 30.	

# FUEL INJECTION SYSTEM

FI



Fault code No. 42		Symptom No normal signals are received from the speed sensor.	
Used diagnostic code No. D07 (speed sensor)			
Order	Inspection operation item and probable cause	Operation item and countermeasure	Reinstatement method
1	<p>Connected condition of speedometer connector</p> <p>Inspect the coupler for any pins that may have pulled out.</p> <p>Check the locking condition of the coupler.</p>	<p>If there is a malfunction, repair it and connect it securely.</p> <p>Speedometer coupler</p> <p>Main wiring harness ECU coupler</p>	<p>Reinstated by inputting the vehicle speed signals by turning the front wheel.</p>
2	<p>Open or short circuit in speedometer lead.</p>	<p>Repair or replace if there is an open or short circuit.</p> <p>Between speedometer coupler and ECU coupler</p> <p>white - white</p> <p>black/blue - black/blue</p>	
3	<p>Breakage speedometer cable or speedometer gear unit.</p>	<p>Execute the diagnostic mode (code No.D07)</p> <p>Checking the speedometer cable breakage and loose connection.</p> <p>Checking the movement of the speedometer gear unit ①.</p> <p>Checking the breakage of the wheel hub projections ② and speedometer clutch ③.</p>	
4	<p>Defective speed sensor</p>	<p>Execute the diagnostic mode (code No. D07)</p> <p>Replace the meter assembly.</p>	

# FUEL INJECTION SYSTEM

FI



Fault code No.	43	Symptom	Power supply to the fuel injector, fuel pump and ignition coil are not normal.	
Used diagnostic code No. D09 (fuel system voltage)				
Order	Inspection operation item and probable cause	Operation item and countermeasure	Reinstatement method	
1	Connected condition of connector Inspect the coupler for any pins that may have pulled out. Check the locking condition of the coupler.	If there is a malfunction, repair it and connect it securely. ECU coupler	Reinstated by starting the engine and operating it at idle.	
2	Faulty battery	Replace or charge the battery. Refer to "CHECKING AND CHARGING THE BATTERY" in chapter 3.		
3	Open or short circuit in wiring harness.	Execute the diagnostic mode (code No. D09)  <b>TIP</b> _____ When the leads are disconnected, the voltage check by the code No. D09 is impossible.  Repair or replace if there is an open or short circuit. <ul style="list-style-type: none"> <li>● Between battery and main switch red-red</li> <li>● Between main switch and handlebar switch (engine stop switch) black/white-red/black</li> <li>● Between handlebar switch (engine stop switch) and ECU red/white-red/white</li> </ul>		

Fault code No.	44	Symptom	An error is detected while reading from or writing on EEPROM (CO adjustment value, code re-registering key code, and throttle valve fully closed notification value).	
Used diagnostic code No. D60 (EEPROM improper cylinder indication)				
Order	Inspection operation item and probable cause	Operation item and countermeasure	Reinstatement method	
1	Malfunction in ECU	Execute the diagnostic mode (code No. D60) <ul style="list-style-type: none"> <li>● 01 is displayed on meter. Readjust the CO of the displayed cylinder. Replace ECU if defective.</li> </ul>	Reinstated by turning the main switch ON.	

# FUEL INJECTION SYSTEM

FI



Fault code No.   46		Symptom   Power supply to FI system is not normal. (red lead)	
Used diagnostic code No. --			
Order	Inspection operation item and probable cause	Operation item and countermeasure	Reinstatement method
1	Connected condition of connector Inspect the coupler for any pins that may have pulled out. Check the locking condition of the coupler.	If there is a malfunction, repair it and connect it securely. ECU coupler	Reinstated by starting the engine and operating it at idle.
2	Faulty battery	Replace or charge the battery. Refer to "CHECKING AND CHARGING THE BATTERY" in chapter 3.	
3	Malfunction in rectifier/ regulator	Replace if defective. Refer to "CHARGING SYSTEM" in chapter 7.	
4	Open or short circuit in wiring harness.	Repair or replace if there is an open or short circuit. Between battery and ECU red-red	

Fault code No.   50		Symptom   Faulty ECU memory. (when this malfunction is detected in the ECU, the fault code number might not appear on the meter.)	
Used diagnostic code No. --			
Order	Inspection operation item and probable cause	Operation item and countermeasure	Reinstatement method
1	Malfunction in ECU	Replace the ECU.	Reinstated by turning the main switch ON.

# FUEL INJECTION SYSTEM

FI



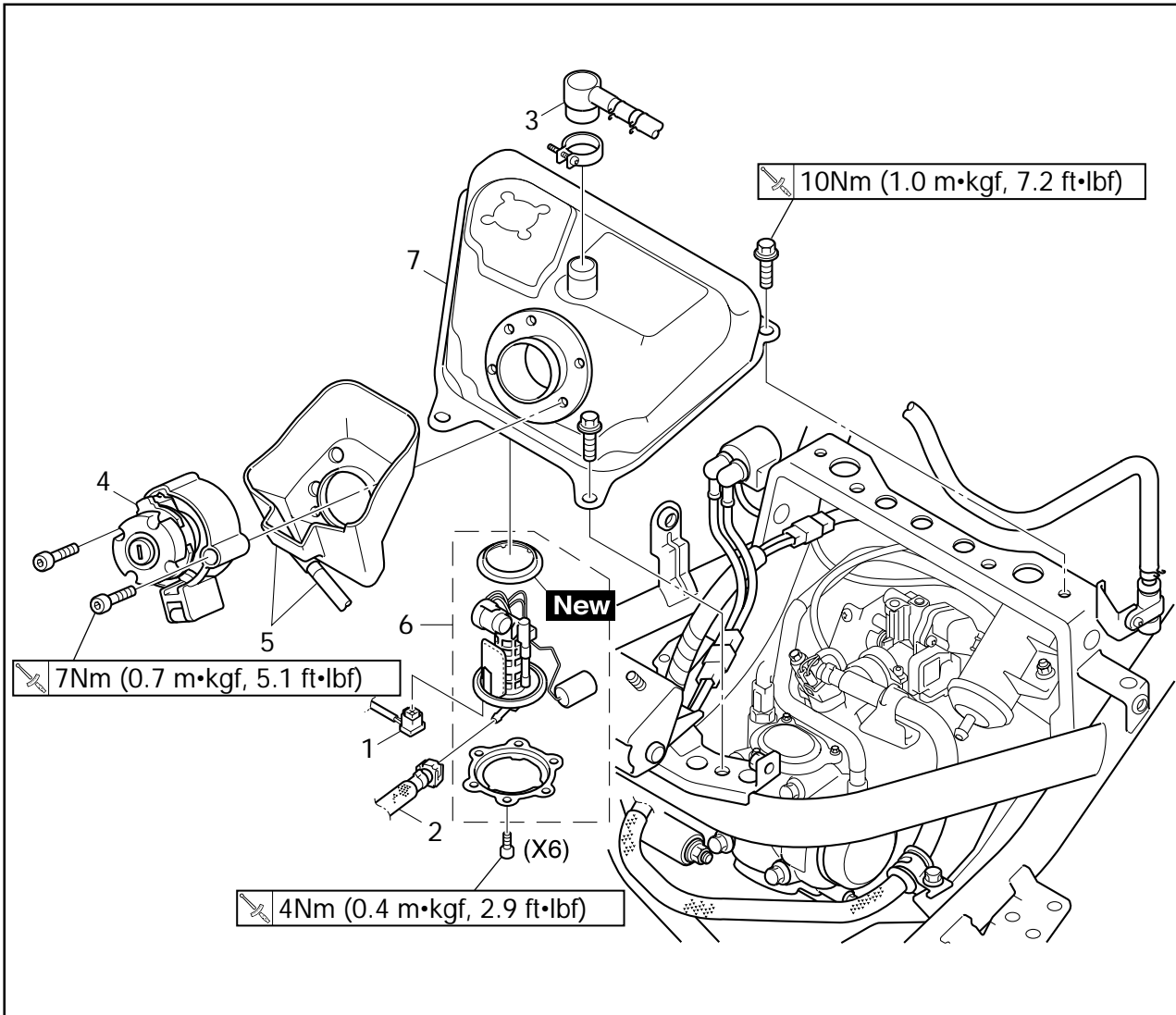
Fault code No.   61   Symptom		ISC (idle speed control) valve open or short circuit is detected.	
Used diagnostic code No. D54 (ISC (idle speed control)valve)			
Order	Inspection operation item and probable cause	Operation item and countermeasure	Reinstatement method
1	<p>Connected condition of connector</p> <p>Inspect the coupler for any pins that may have pulled out.</p> <p>Check the locking condition of the coupler.</p>	<p>If there is a malfunction, repair it and connect it securely.</p> <p>ISC (idle speed control) valve coupler</p> <p>Main wiring harness ECU coupler</p>	<p>Reinstated by setting the main switch to ON, The ISC (idle speed control) valve fully closes, and then it opens until it is at the standby opening position when the engine is started.</p>
2	<p>Open or short circuit in lead.</p>	<p>Repair or replace if there is an open or short circuit.</p> <p>Between ISC (idle speed control) valve and ECU coupler/main harness</p> <p>pink- pink</p> <p>green/yellow-green/yellow</p> <p>gray - gray</p> <p>sky blue-sky blue</p>	
3	<p>Detective ISC (idle speed control) valve</p>	<p>Execute diagnostic mode (code No.D54)</p> <p>Replace the throttle body.</p> <p><b>TIP</b> _____</p> <p>Do not remove the ISC (idle speed control) valve.</p> <p>_____</p> <p>Refer to "THROTTLE BODY AND FUEL INJECTOR".</p>	





EAS00909

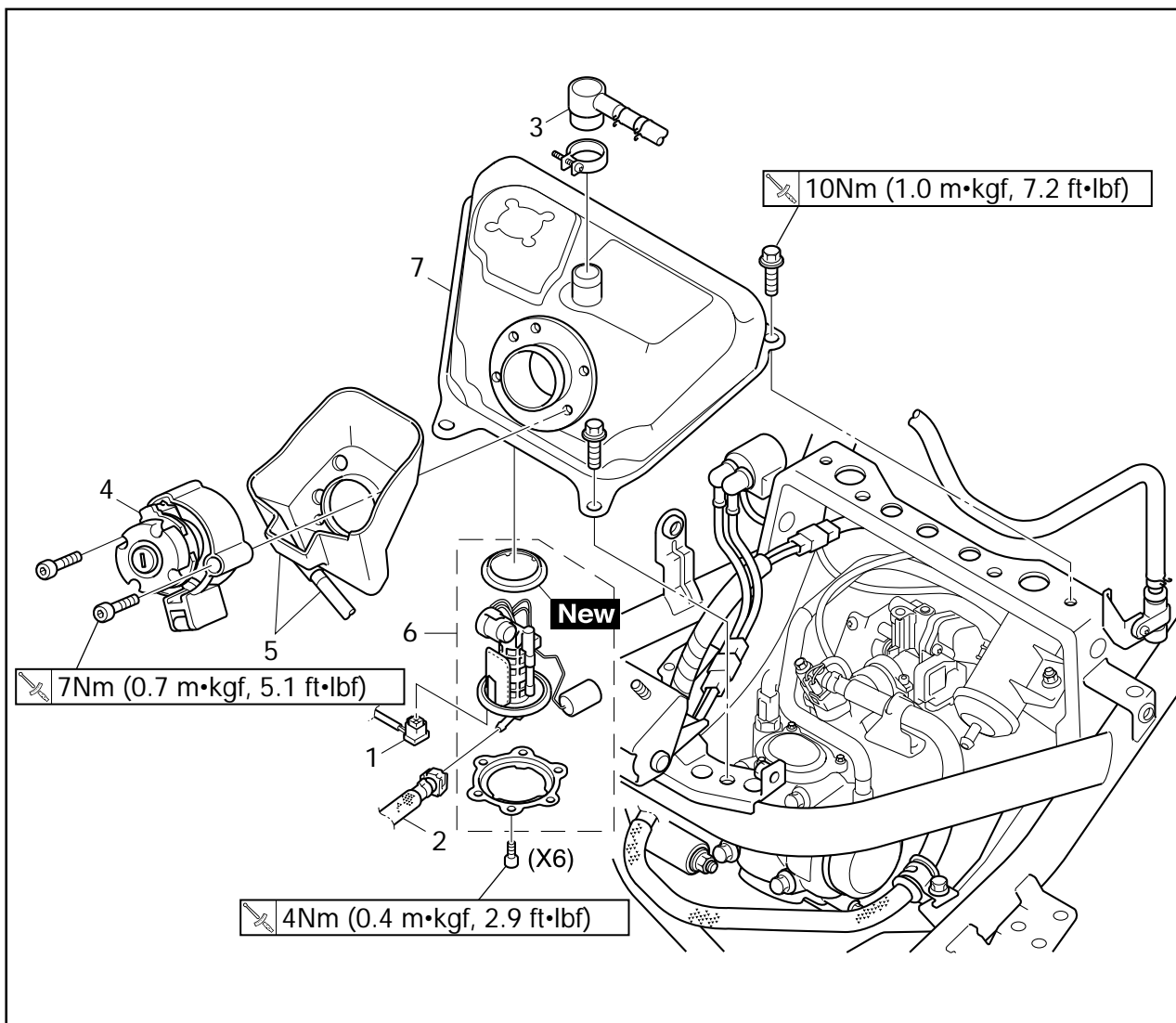
## THROTTLE BODY AND FUEL INJECTOR FUEL TANK



Order	Job/Part	Q'ty	Remarks
	<b>Removing the fuel tank</b>		Remove the parts in the order listed.
	Seat/trunk		<b>TIP</b> _____
	Battery box cover/front cover		Place the scooter on a suitable stand.
	Side cover (left and right)		Refer to "COVER AND PANEL" in chapter 3.
	Fuel		Drain.
1	Fuel pump coupler	1	Disconnect.
2	Fuel hose	1	Disconnect.
3	Fuel return hose	1	Disconnect.
4	Fuel tank cap	1	
5	Filler cover/overflow pipe	1/1	

# THROTTLE BODY AND FUEL INJECTOR

FI



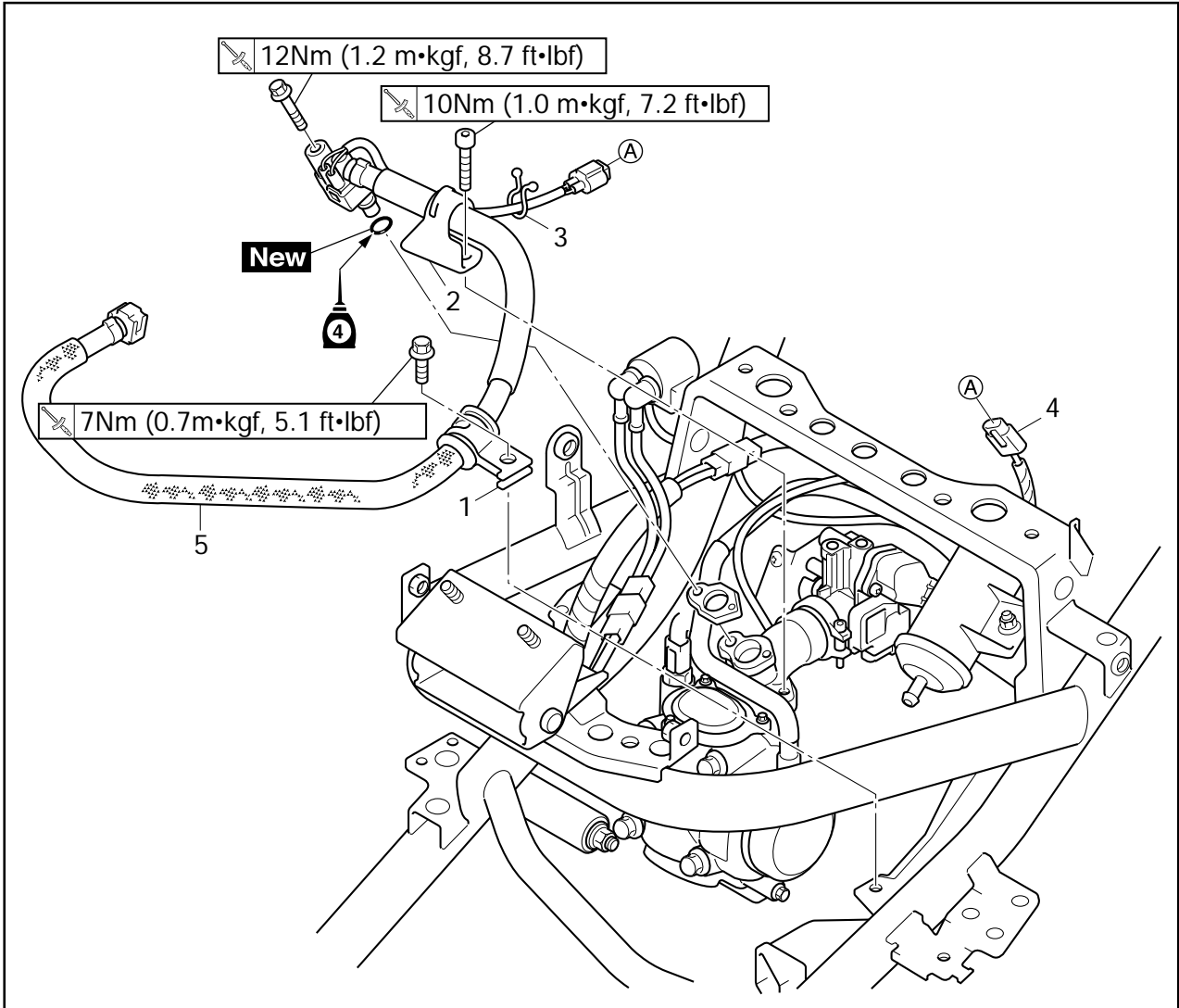
Order	Job/Part	Q'ty	Remarks
6	Fuel pump	1	Refer to "REMOVING THE FUEL PUMP" and "INSTALLING THE FUEL PUMP".
7	Fuel tank	1	Refer to "REMOVING THE FUEL TANK" and "INSTALLING THE FUEL TANK AND FUEL HOSE". For installation, reverse the removal procedure.

# THROTTLE BODY AND FUEL INJECTOR

FI



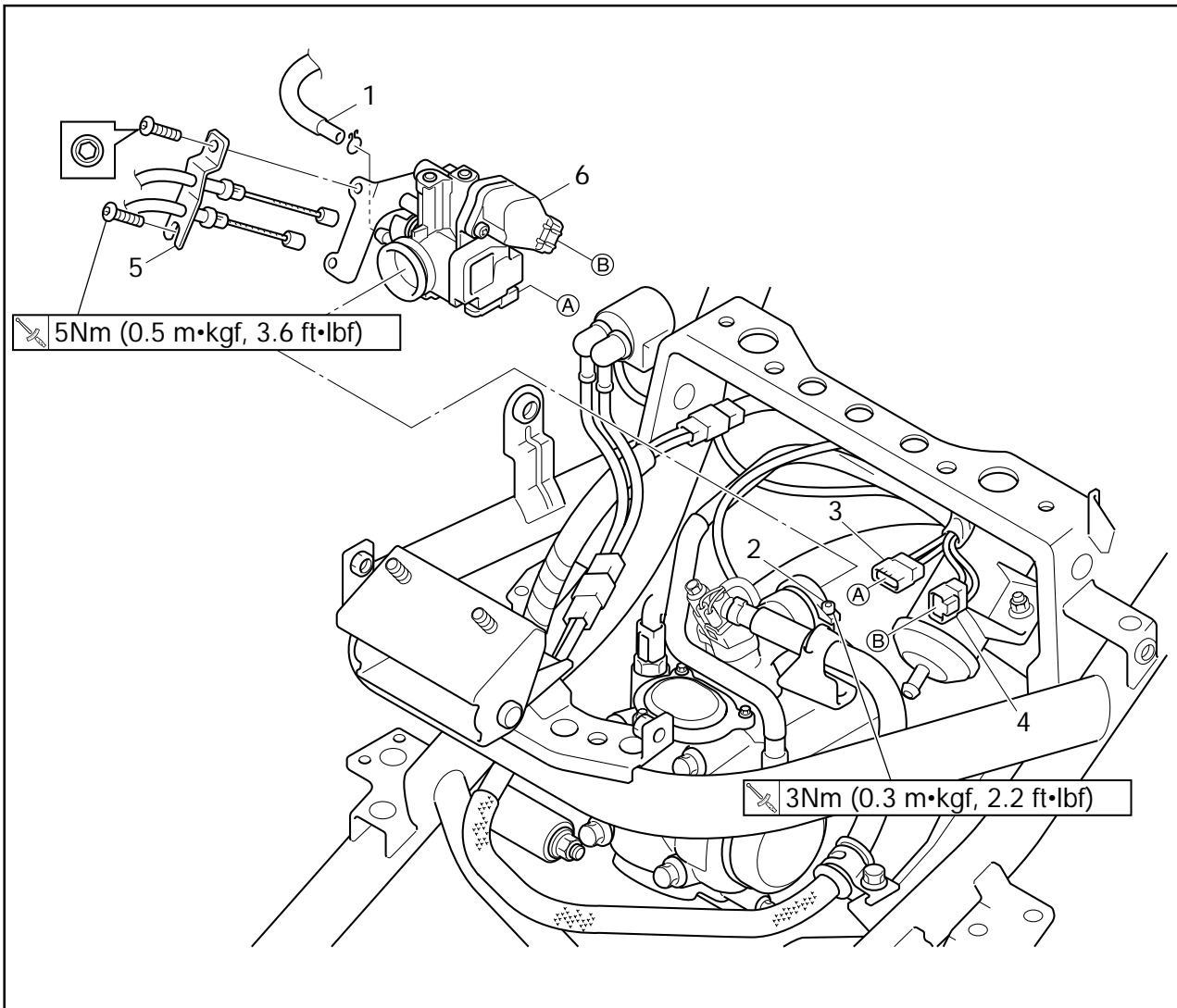
## FUEL INJECTOR AND FUEL HOSE



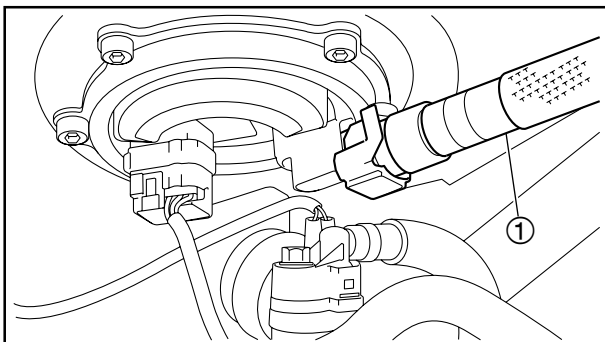
Order	Job/Part	Q'ty	Remarks
	<b>Removing the fuel injector and fuel hose</b>		Remove the parts in the order listed.
	Fuel tank		Refer to "REMOVING THE FUEL TANK".
1	Fuel hose holder (to frame)	1	
2	Fuel hose holder (to intake manifold)	1	
3	Clamp	1	
4	Fuel injector coupler	1	Disconnect.
5	Fuel injector and fuel hose	1	For installation, reverse the removal procedure.



## THROTTLE BODY



Order	Job/Part	Q'ty	Remarks
	<b>Removing the throttle body</b>		Remove the parts in the order listed.
	Air filter/breather hose		Refer to "ENGINE REMOVAL" in chapter 5.
	Fuel tank		Refer to "FUEL TANK".
1	Fuel pipe (to throttle body)	1	Disconnect.
2	Throttle body clamp screw	1	Loosen.
3	Sensor module coupler	1	Disconnect.
4	ISC (idle speed control) valve coupler	1	Disconnect.
5	Throttle cable assembly	1	Disconnect.
6	Throttle body	1	
			For installation, reverse the removal procedure.

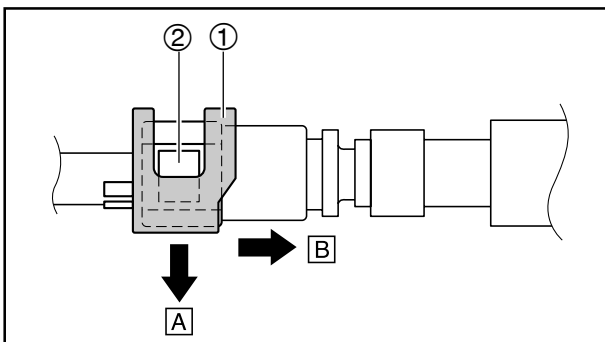


## REMOVING THE FUEL TANK

1. Extract the fuel in the fuel tank through the fuel tank cap with a pump.
2. Remove :
  - fuel return hose
  - fuel hose ①

### NOTICE

- Be sure to disconnect the fuel hose by hand. Do not forcefully disconnect the hose with tools.
- Although the fuel has been removed from the fuel tank be careful when removing the fuel hose, since there may be fuel remaining in it.
- Do not disconnect the fuel hose from the fuel hose connector. Disconnect the connector from the fuel pump.



### TIP

- Before removing the hose, place a few rags in the area under where it will be removed.
- Hold fuel hose connector ① draw down, press tenon ② draw backward and then, can remove the fuel hose.

**A** Draw down

**B** Draw backward

3. Disconnect :
  - fuel pump coupler
4. Remove :
  - fuel tank

### TIP

Do not set the fuel tank down so that the installation surface of the fuel pump is directly under the tank. Be sure to lean the fuel tank in an upright position.



## REMOVING THE FUEL PUMP

1. Remove:
  - fuel tank  
Refer to "REMOVING THE FUEL TANK".
2. Remove:
  - fuel pump

**NOTICE**

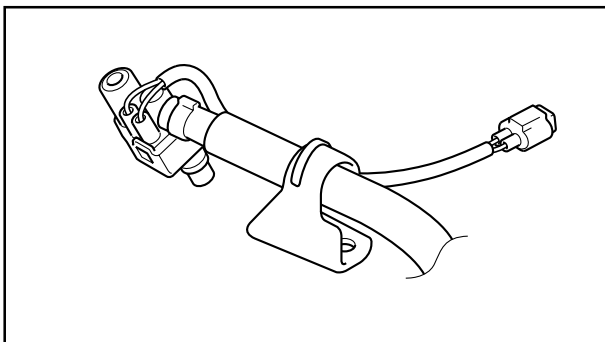
- Do not drop the fuel pump or give it a strong shock.
  - Do not touch the base section of the fuel sender.
- 

EAS00911

**NOTICE**

**The fuel pump should not be disassembled.**

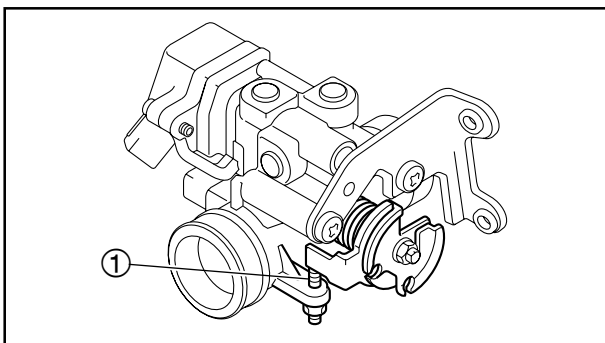
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EAS00912

## CHECKING THE FUEL INJECTOR

1. Check:
  - fuel injector  
Damage → Replace.



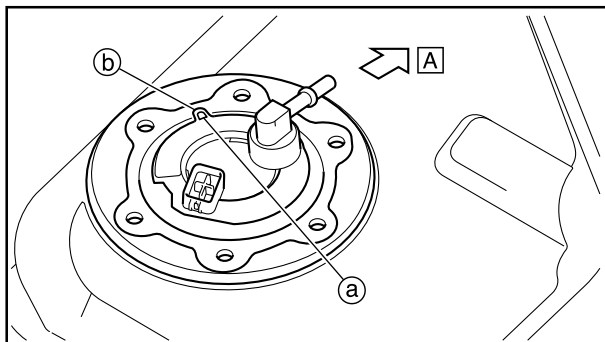
EAS00913

## CHECKING THE THROTTLE BODY

1. Check:
  - throttle body  
Cracks/damage → Replace the throttle body.
2. Check:
  - butterfly valve  
Damage/scratches/wear → Replace.

### NOTICE

- Do not adjust the stop screw ①.
- Do not clean the throttle body ass'y using carburetor cleaner or compressed air.
- When replace the throttle body the main switch is operated three times turn ON and OFF position.  
(ON position : 3 seconds more, OFF position : 3seconds more). And then, start the engine and keep idling at 10 minutes more.



## INSTALLING THE FUEL PUMP

1. Install :
  - fuel pump

4Nm (0.4m • kgf, 2.9ft • lbf)

### TIP

- Do not damage the installation surface of the fuel tank when installing the fuel pump.
- Always use a new fuel pump gasket.
- Align the projection (a) on the fuel pump with the alignment mark (b) on the fuel tank.
- Tighten the fuel pump bolts in the proper tightening sequence as shown and torque them in two stages.

**A** Forward

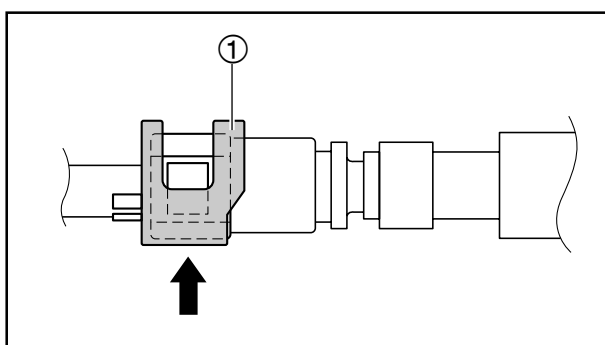
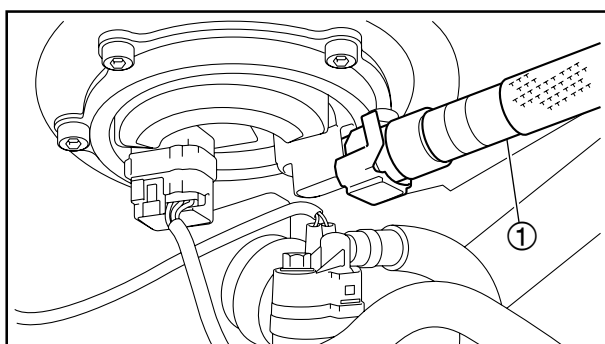
## INSTALLING THE FUEL TANK AND FUEL HOSE

1. Install :
  - fuel tank

10Nm (1.0m • kgf, 7.2ft • lbf)

2. Connect :
  - fuel pump coupler

3. Install :
  - fuel hose ①
  - fuel return hose



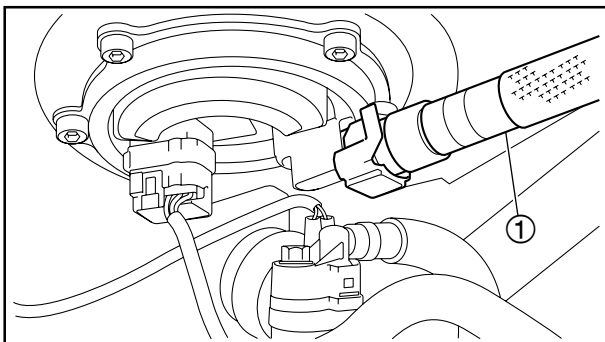
### NOTICE

When installing the fuel hose, make sure that it is securely connected, and that the fuel hose holders are in the correct position, otherwise the fuel hose will not be properly installed.

### TIP

- Install the fuel hose connector securely onto the fuel tank until a distinct "click" is heard, and then make sure that it does not come loose.
- After installing the fuel hose, hold fuel hose connector ① push to the bottom up and make sure that it is installed securely.





EAS00915

## CHECKING THE FUEL PUMP AND PRESSURE REGULATOR OPERATION

1. Check:
  - pressure regulator operation



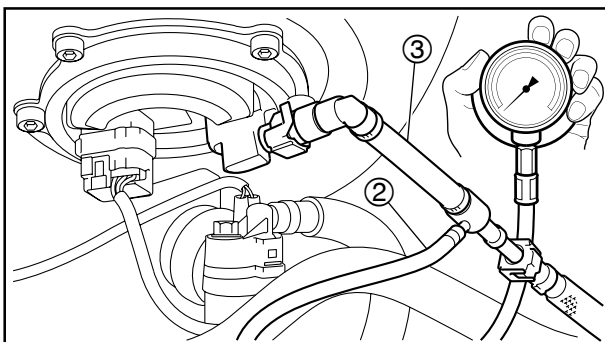
- a. Remove the battery box cover and front cover.  
Refer to "COVER AND PANEL" in chapter 3.
- b. Remove the fuel hose ① from the fuel pump.

### NOTICE

Although the fuel has been removed from the fuel tank, be careful when removing the fuel hose, since there may be fuel remaining in it.

### TIP

Before removing the hose, place a few rags in the area under where it will be removed.



- c. Connect the pressure gauge ② and adapter ③ onto the fuel hose.



**Pressure gauge**  
90890-03153 (YU-03153)  
**Adapter**  
90890-03186

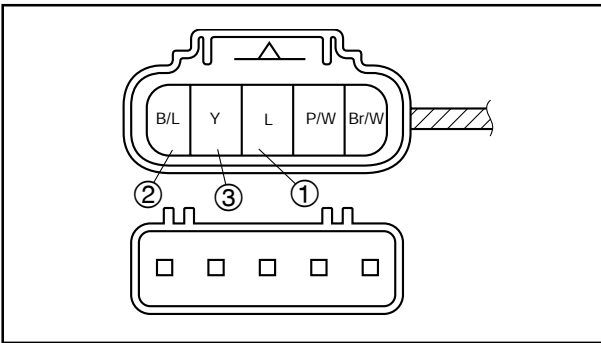
- d. Start the engine.
- e. Measure the fuel pressure.



**Fuel pressure**  
250kPa (2.5kgf/cm<sup>2</sup>, 35.6psi)

Faulty → Replace the fuel pump.





EAS00916

## CHECKING THE THROTTLE POSITION SENSOR

1. Check:
  - throttle position sensor



- a. Connect the digital circuit tester to the terminals of the throttle position sensor.

Positive tester probe → blue terminal ①  
 Negative tester probe → black/blue terminal ②



Digital circuit tester  
 90890-03174

- b. Measure the throttle position sensor voltage.  
 Out of specification → Replace or repair the wire harness.



Throttle position sensor voltage  
 5V  
 (blue-black/blue)

- c. Connect the digital circuit tester to the terminals of the throttle position sensor.

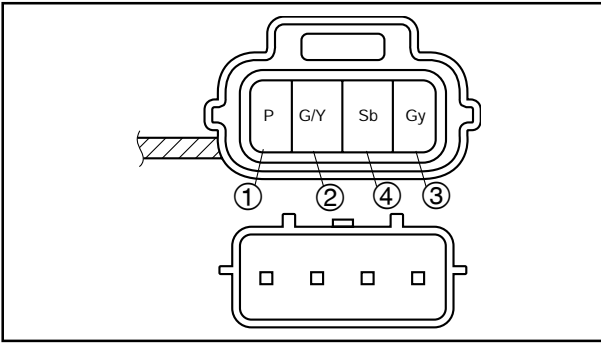
Positive tester probed → yellow terminal ③  
 Negative tester probe → black/blue terminal ②

- d. While slowly opening the throttle, check that the throttle position sensor voltage is increased.  
 Voltage does not change or it changes abruptly → Replace the throttle body.  
 Out of specification (closed position) → Replace the throttle body.



Throttle position sensor voltage  
 (closed position)  
 0.63 ~ 0.73 V  
 (yellow-black/blue)





EAS00916

## CHECKING THE ISC (IDLE SPEED CONTROL) VALVE

### TIP

Do not remove the ISC (idle speed control) valve unit completely from the throttle body assembly.

1. Check:
  - ISC (idle speed control) valve



- a. Disconnect the ISC (idle speed control) valve coupler from the ISC (idle speed control) valve.
- b. Connect the digital circuit tester to the terminals of the ISC (idle speed control) valve.

Positive tester probe → pink terminal ①  
 Negative tester probe → green/yellow terminal ②

Positive tester probe → gray terminal ③  
 Negative tester probe → sky blue terminal ④



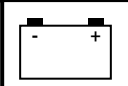
Digital circuit tester  
 90890-03174

- c. Measure the ISC (idle speed control) valve resistance.  
 Out of specification → Replace the throttle body.



ISC (idle speed control) valve resistance  
 20 Ω at 20°C(68°F)





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## CHAPTER 7 ELECTRICAL SYSTEM

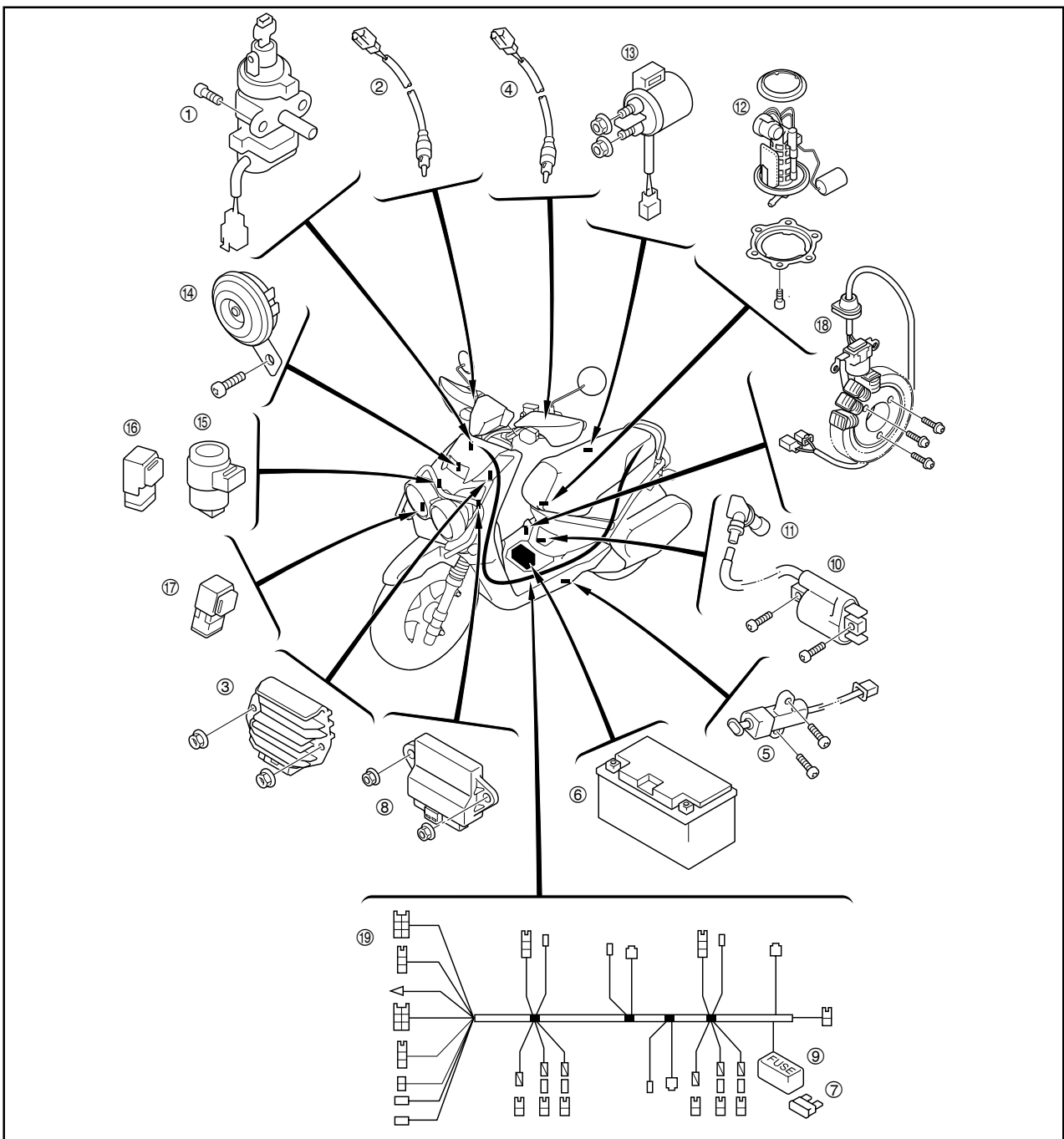
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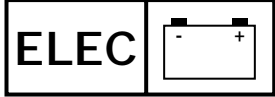
EAS00729

# ELECTRICAL SYSTEM

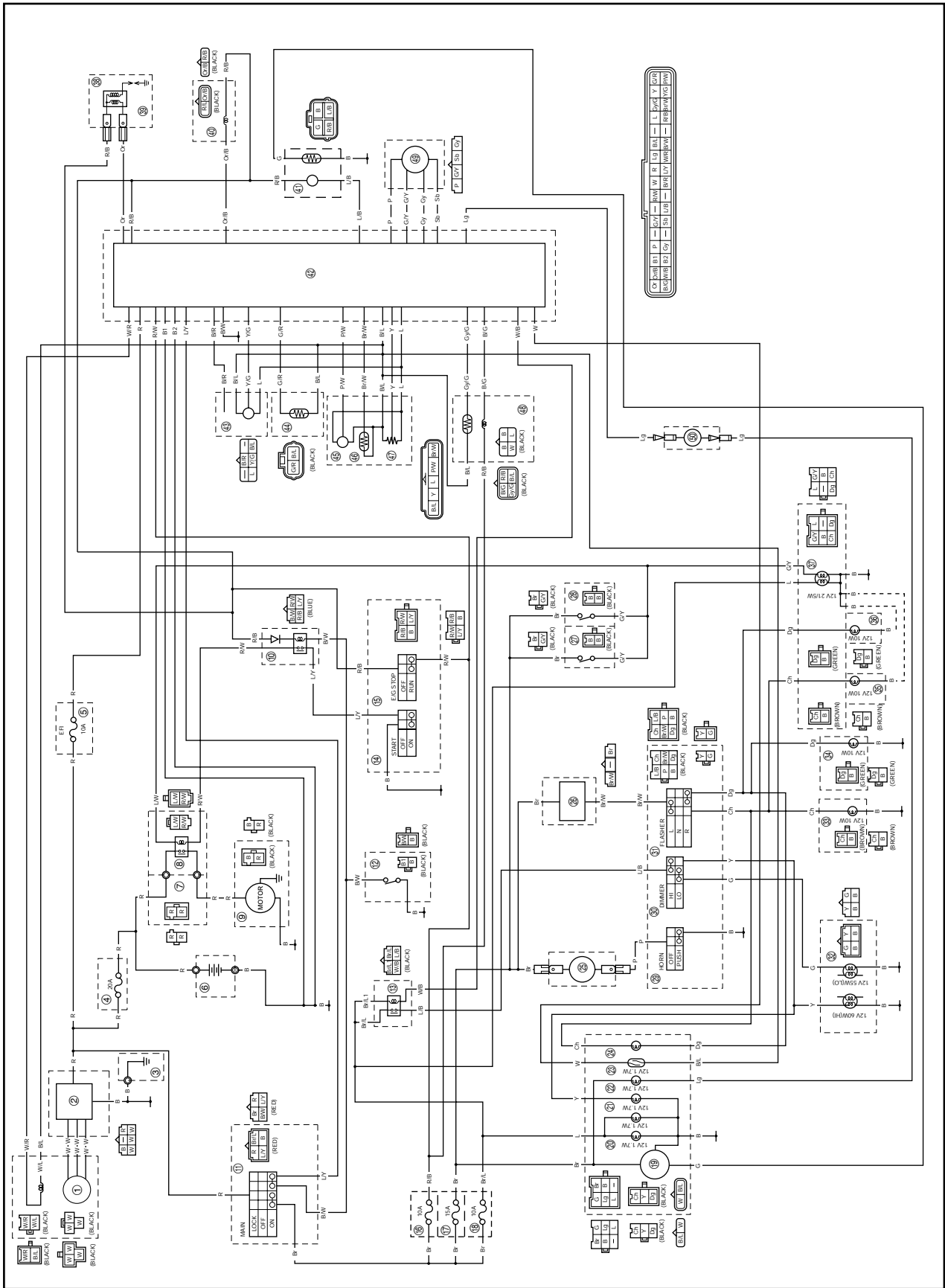
## ELECTRICAL COMPONENTS

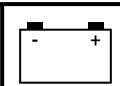
- |                            |                                  |
|----------------------------|----------------------------------|
| ① Main switch              | ⑪ Spark plug cap                 |
| ② Front brake light switch | ⑫ Fuel pump                      |
| ③ Rectifier/regulator      | ⑬ Starter relay                  |
| ④ Rear brake light switch  | ⑭ Horn                           |
| ⑤ Sidestand switch         | ⑮ Turn signal relay              |
| ⑥ Battery                  | ⑯ Starting circuit cut-off relay |
| ⑦ Main fuse                | ⑰ Headlight relay                |
| ⑧ ECU                      | ⑱ Stator coil                    |
| ⑨ Fuse box                 | ⑲ Wire harness                   |
| ⑩ Ignition coil            |                                  |





# WIRING DIAGRAM

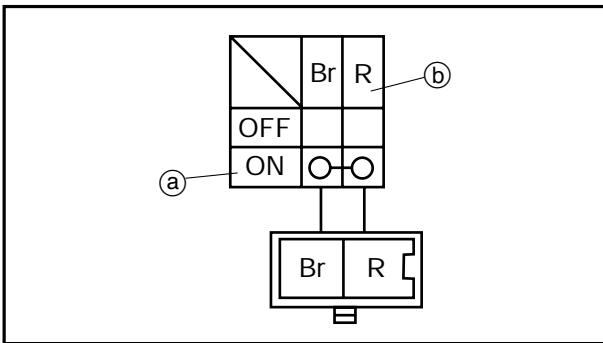
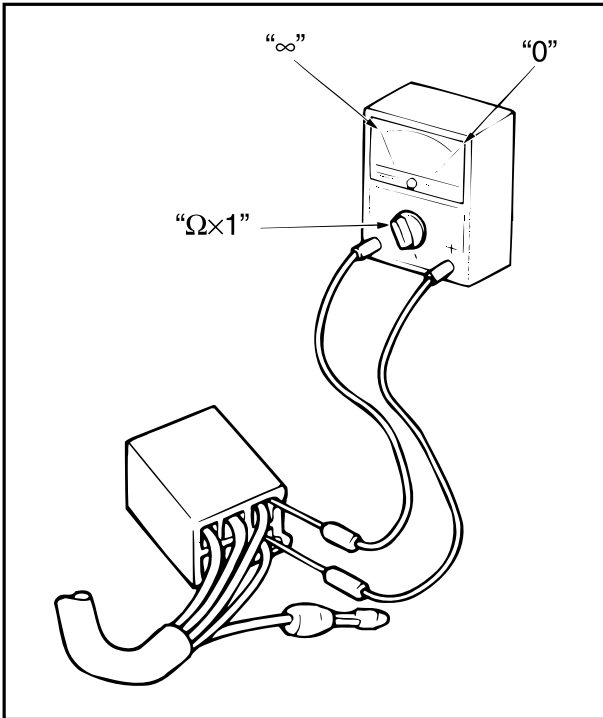
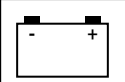




- ① AC magneto
- ② Rectifier/regulator
- ③ Body earth
- ④ Main fuse
- ⑤ Fuel injection system fuse
- ⑥ Battery
- ⑦ Wire lead
- ⑧ Starter relay
- ⑨ Starter motor
- ⑩ Starting circuit cut-off relay
- ⑪ Main switch
- ⑫ Sidestand switch
- ⑬ Headlight relay
- ⑭ Start switch
- ⑮ Engine stop switch
- ⑯ Ignition fuse
- ⑰ Signaling system fuse
- ⑱ Headlight fuse
- ⑲ Fuel level gauge
- ⑳ Speedometer light
- ㉑ High beam indicator light
- ㉒ Engine trouble warning light
- ㉓ Speed sensor
- ㉔ Turn signal indicator light
- ㉕ Horn
- ㉖ Turn signal relay
- ㉗ Front brake light switch
- ㉘ Rear brake light switch
- ㉙ Horn switch
- ㉚ Dimmer switch
- ㉛ Turn signal switch
- ㉜ Headlight
- ㉝ Front turn signal light (left)
- ㉞ Front turn signal light (right)
- ㉟ Rear turn signal light (left)
- ㊱ Rear turn signal light (right)
- ㊲ Tail/brake light
- ㊳ Ignition coil
- ㊴ Spark plug
- ㊵ Fuel injector
- ㊶ Fuel pump
- ㊷ ECU
- ㊸ Lean angle cut-off switch
- ㊹ Engine temperature sensor
- ㊺ Intake air pressure sensor
- ㊻ Intake air temperature sensor
- ㊼ Throttle position sensor
- ㊽ O<sub>2</sub> sensor
- ㊾ ISC (idle speed control) valve
- ㊿ FI diagnostic tool

Color Code

- B ..... Black
- Br ..... Brown
- Ch ..... Chocolate
- Dg ..... Dark green
- G ..... Green
- Gy ..... Gray
- L ..... Blue
- Lg ..... Light green
- Or ..... Orange
- P ..... Pink
- R ..... Red
- Sb ..... Sky blue
- W ..... White
- Y ..... Yellow
- B/L ..... Black/Blue
- B/G ..... Black/Green
- B/R ..... Black/Red
- B/W ..... Black/White
- G/R ..... Green/Red
- G/Y ..... Green/Yellow
- L/B ..... Blue/Black
- L/W ..... Blue/White
- L/Y ..... Blue/Yellow
- Or/B ..... Orange/Black
- P/W ..... Pink/White
- R/B ..... Red/Black
- R/L ..... Red/Blue
- R/W ..... Red/White
- W/B ..... White/Black
- W/L ..... White/Blue
- W/R ..... White/Red
- Y/G ..... Yellow/Green
- Br/L ..... Brown/Blue
- Br/W ..... Brown/White
- Gy/G ..... Gray/Green



EAS00730

## CHECKING SWITCH CONTINUITY

Check each switch for continuity with the pocket tester. If the continuity reading is incorrect, check the wiring connections and if necessary, replace the switch.

### NOTICE

Never insert the tester probes into the coupler terminal slots (a). Always insert the probes from the opposite end of the coupler, taking care not to loosen or damage the leads.



Pocket tester  
90890-03112 (YU-03112-C)

### TIP

- Before checking for continuity, set the pocket tester to "0" and to the " $\Omega \times 1$ " range.
- When checking for continuity, switch back and forth between the switch positions a few times.

The terminal connections for switches (e.g., main switch, engine stop switch) are shown in an illustration similar to the one on the left. The switch positions (a) are shown in the far left column and the switch lead colors (b) are shown in the top row in the switch illustration.

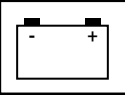
### TIP

"O-O" indicates a continuity of electricity between switch terminals (i.e., a closed circuit at the respective switch position).

The example illustration on the left shows that:

There is continuity between red and brown when the switch is set to "ON".





EAS00731

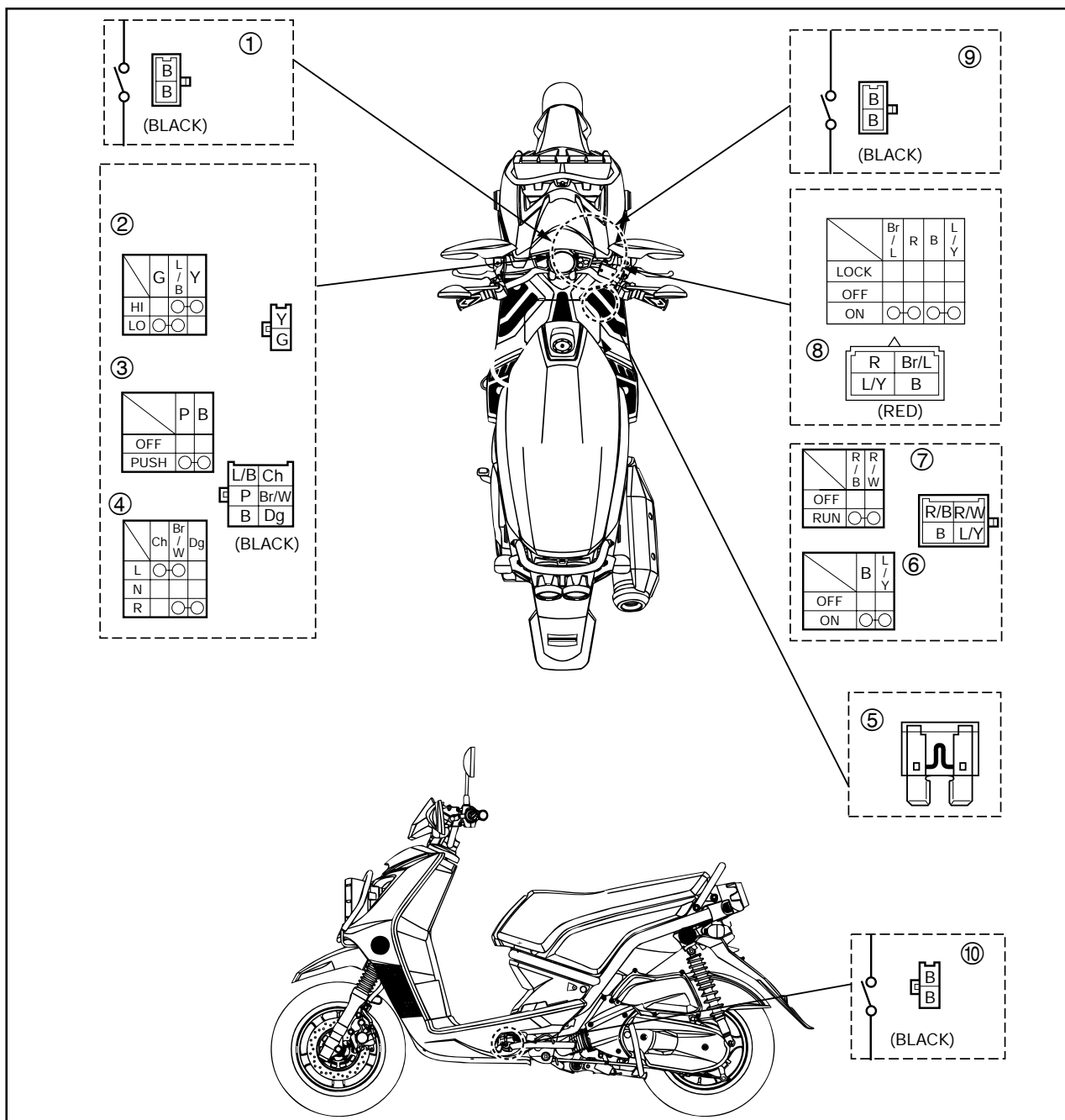
## CHECKING THE SWITCHES

Check each switch for damage or wear, proper connections, and also for continuity between the terminals. Refer to "CHECKING SWITCH CONTINUITY".

Damage/wear → Repair or replace.

Improperly connected → Properly connect.

Incorrect continuity reading → Replace the switch.



- ① Rear brake light switch
- ② Dimmer switch
- ③ Horn switch
- ④ Turn signal switch
- ⑤ Main fuse

- ⑥ Start switch
- ⑦ Engine stop switch
- ⑧ Main switch
- ⑨ Front brake light switch
- ⑩ Sidestand switch

EAS00733

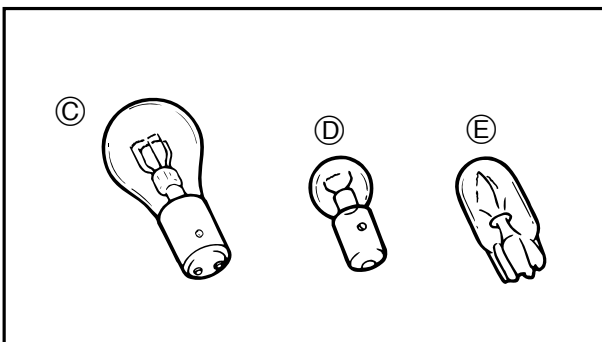
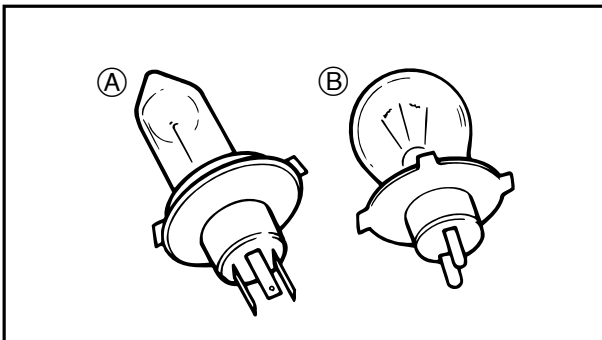
## CHECKING THE BULBS AND BULB SOCKETS

Check each bulb and bulb socket for damage or wear, proper connections, and also for continuity between the terminals.

Damage/wear → Repair or replace the bulb, bulb socket or both.

Improperly connected → Properly connect.

No continuity → Repair or replace the bulb, bulb socket or both.



### TYPES OF BULBS

The bulbs used on this scooter are shown in the illustration on the left.

- Bulbs (A) and (B) are used for the headlights and usually use a bulb holder that must be detached before removing the bulb. The majority of these types of bulbs can be removed from their respective socket by turning them counterclockwise.
- Bulbs (C) is used for turn signal and tail/brake lights and can be removed from the socket by pushing and turning the bulb counterclockwise.
- Bulbs (D) and (E) are used for meter and indicator lights and can be removed from their respective socket by carefully pulling them out.

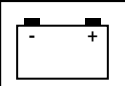
### CHECKING THE CONDITION OF THE BULBS

The following procedure applies to all of the bulbs.

1. Remove:
  - bulb

### **⚠ WARNING**

**Since the headlight bulb gets extremely hot, keep flammable products and your hands away from the bulb until it has cooled down.**



### NOTICE

- Be sure to hold the socket firmly when removing the bulb. Never pull the lead, otherwise it may be pulled out of the terminal in the coupler.
- Avoid touching the glass part of the headlight bulb to keep it free from oil, otherwise the transparency of the glass, the life of the bulb, and the luminous flux will be adversely affected. If the headlight bulb gets soiled, thoroughly clean it with a cloth moistened with alcohol or lacquer thinner.

### 2. Check:

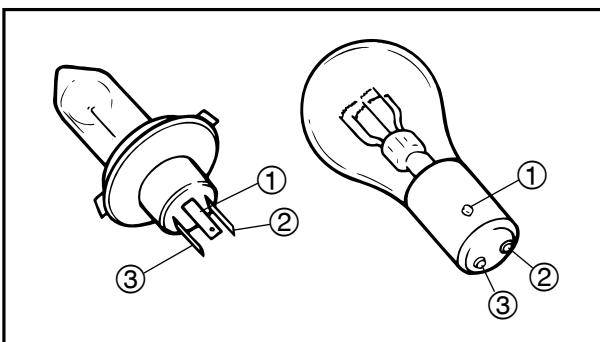
- bulb (for continuity)  
(with the pocket tester)  
No continuity → Replace.



**Pocket tester**  
**90890-03112 (YU-03112-C)**

### TIP

Before checking for continuity, set the pocket tester to "0" and to the " $\Omega \times 1$ " range.



- a. Connect the positive tester probe to terminal ① and the negative tester probe to terminal ②, and check the continuity.
- b. Connect the positive tester probe to terminal ① and the negative tester probe to terminal ③, and check the continuity.
- c. If either of the readings indicate no continuity, replace the bulb.

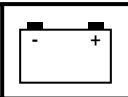
### CHECKING THE CONDITION OF THE BULB SOCKETS

The following procedure applies to all of the bulb sockets.

1. Check:
  - bulb socket (for continuity)  
(with the pocket tester)  
No continuity → Replace.

## CHECKING THE BULBS AND BULB SOCKETS

**ELEC**



**Pocket tester**  
**90890-03112 (YU-03112-C)**

### **TIP**

Check each bulb socket for continuity in the same manner as described in the bulb section; however, note the following.

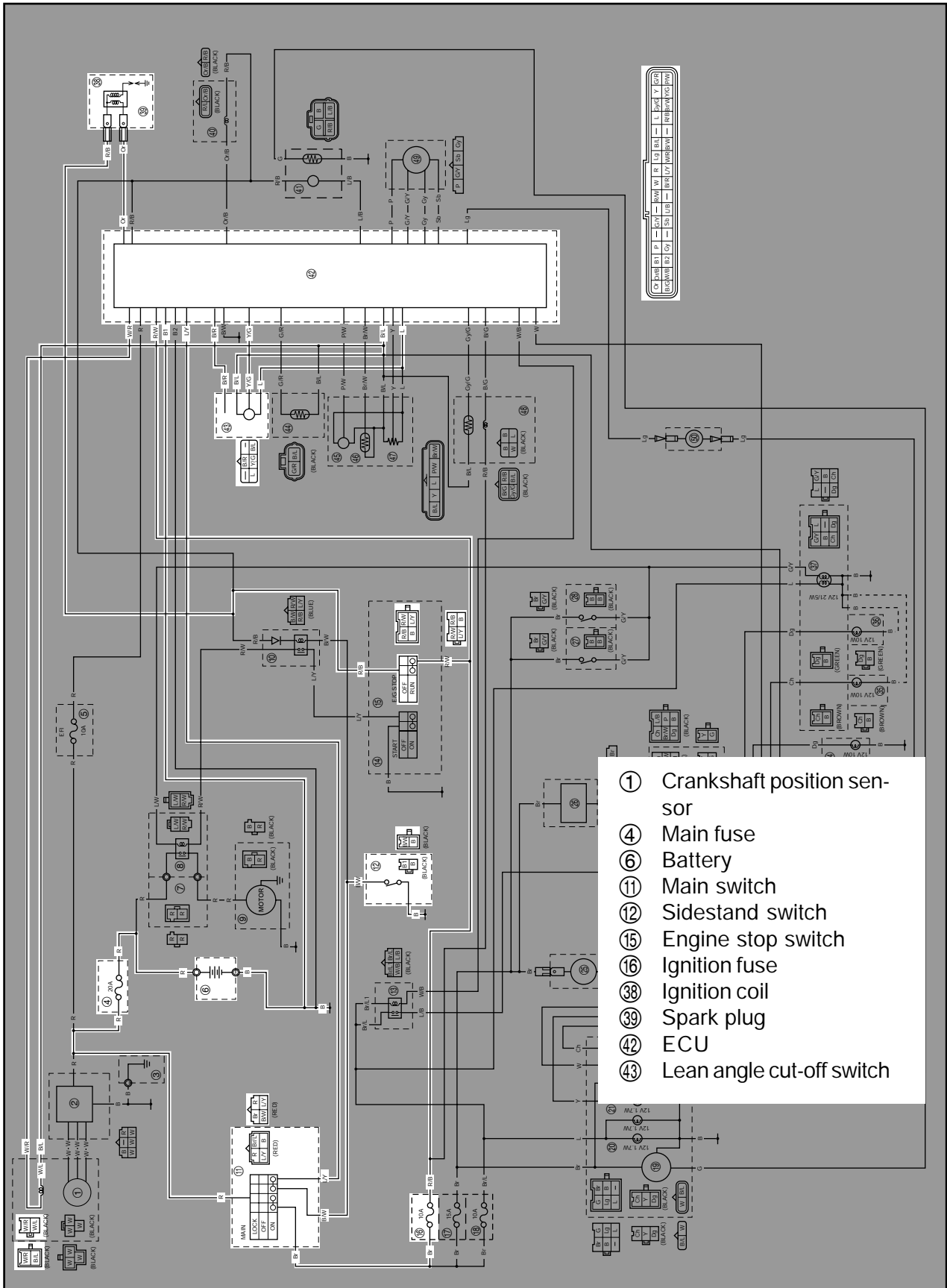


- a. Install a good bulb into the bulb socket.
- b. Connect the pocket tester probes to the respective leads of the bulb socket.
- c. Check the bulb socket for continuity. If any of the readings indicate no continuity, replace the bulb socket.



EAS00734

**IGNITION SYSTEM  
CIRCUIT DIAGRAM**



- ① Crankshaft position sensor
- ④ Main fuse
- ⑥ Battery
- ⑪ Main switch
- ⑫ Sidestand switch
- ⑮ Engine stop switch
- ⑯ Ignition fuse
- ⑳ Ignition coil
- ㉑ Spark plug
- ㉒ ECU
- ㉓ Lean angle cut-off switch

EAS00736

## TROUBLESHOOTING


The ignition system fails to operate (no spark or intermittent spark).

Check:

1. main and ignition fuses
2. battery
3. spark plug
4. ignition spark gap
5. spark plug cap resistance
6. ignition coil resistance
7. crankshaft position sensor resistance
8. main switch
9. engine stop switch
10. sidestand switch
11. lean angle cut-off switch
12. wiring connections  
(of the entire ignition system)

### TIP

- Before troubleshooting, remove the following part(s):
  1. battery box cover
  2. front cover
  3. leg shield 1
  4. footrest board
- Troubleshoot with the following special tool(s).



**Ignition checker**  
90890-06754 (YM-34487)

**Pocket tester**  
90890-03112(YU-03112-C)

EAS00738

**1. Main and ignition fuses**

- Check the main and ignition fuses for continuity. Refer to "CHECKING THE FUSES" in chapter 3.
- Are the main and ignition fuses OK?




Replace the fuse(s)

EAS00739

**2. Battery**

- Check the condition of the battery. Refer to "CHECKING AND CHARGING THE BATTERY" in chapter 3.



**Minimum open-circuit voltage**  
12.8 V or more at 20°C (68°F)

- Is the battery OK?




- Clean the battery terminals.
- Recharge or replace the battery.

EAS00740

**3. Spark plug**

- Check the condition of the spark plug.
- Check the spark plug type.
- Measure the spark plug gap. Refer to "CHECKING THE SPARK PLUG" in chapter 3.



**Standard spark plug**  
U22ESR-N (DENSO)

**Spark plug gap**  
0.7 ~ 0.8 mm (0.028 ~ 0.031in)

- Is the spark plug in good condition, is it of the correct type, and is its gap within specification?

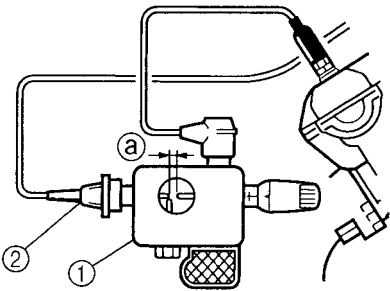


Re-gap or replace the spark plug.

EAS00742

## 4. Ignition spark gap

- Disconnect the spark plug cap from the spark plug.
- Connect the ignition checker ① as shown.
- ② Spark plug cap
- Set the main switch to "ON".
- Measure the ignition spark gap ③.
- Crank the engine by pushing the starter switch and gradually increase the spark gap until a misfire occurs.



**Minimum ignition spark gap**  
6 mm (0.24in)

- Is there a spark and is the spark gap within specification?

↓ NO

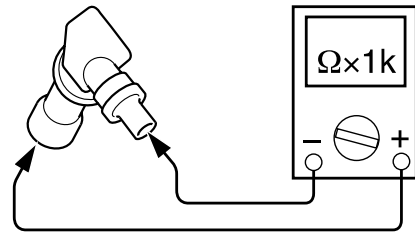
↓ YES

The ignition system is OK.

EAS00744

## 5. Spark plug cap resistance

- Remove the spark plug cap from the spark plug lead.
- Connect the pocket tester ("Ω × 1k" range) to the spark plug cap as shown.
- Measure the spark plug cap resistance.



**Spark plug cap resistance**  
8~12 kΩ at 20°C (68°F)

- Is the spark plug cap OK?

↓ YES

↓ NO

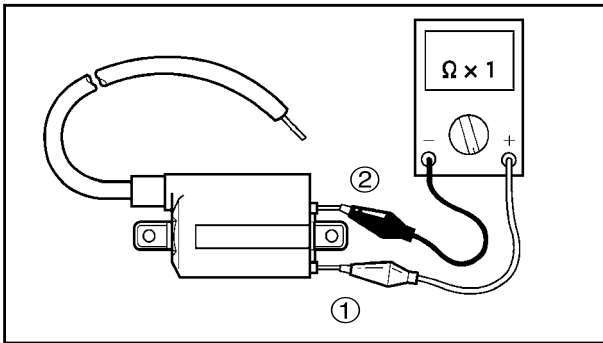
Replace the spark plug cap.

EAS00746


## 6. Ignition coil resistance

- Disconnect the ignition coil connectors from the ignition coil terminals.
- Connect the pocket tester (Ω × 1) to the ignition coil as shown.

Positive tester probe → orange ①  
Negative tester probe → red/black ②

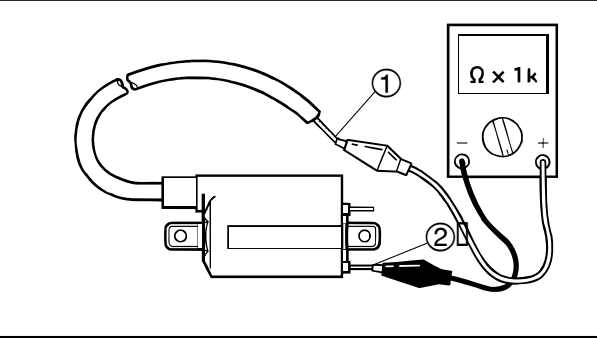


- Measure the primary coil resistance.

 **Primary coil resistance**  
2.16 ~ 2.64 Ω at 20°C (68°F)

- Connect the pocket tester (Ω × 1k) to the ignition coil as shown.

Negative tester probe → orange ②  
Positive tester probe → spark plug lead ①



- Measure the secondary coil resistance.

 **Secondary coil resistance**  
8.64 ~ 12.96 kΩ at 20°C (68°F)

- Is the ignition coil OK?

↓ YES

↓ NO

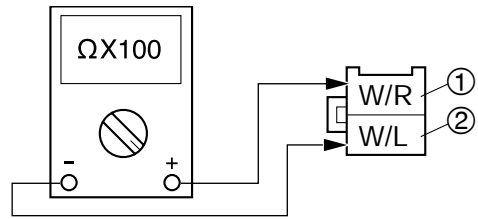
Replace the ignition coil.

EAS00748

7. Crankshaft position sensor resistance

- Disconnect the crankshaft position sensor coupler from the wire harness.
- Connect the pocket tester (Ω × 100) to the crankshaft position sensor coupler as shown.

Positive tester probe → white/red ①  
Negative tester probe → white/blue ②



- Measure the crankshaft position sensor resistance.

 **Crankshaft position sensor resistance**  
248 ~ 372Ω at 20°C (68°F)  
(between white/red and white/blue)

- Is the crankshaft position sensor OK?

↓ YES

↓ NO

Replace the crankshaft position sensor/stator assembly.



EAS00749

8. Main switch

- Check the main switch for continuity. Refer to "CHECKING THE SWITCHES".
- Is the main switch OK?



Replace the main switch.

EAS00750

9. Engine stop switch

- Check the engine stop switch for continuity. Refer to "CHECKING THE SWITCHES".
- Is the engine stop switch OK?



Replace the right handlebar switch.

EAS00752

10. Sidestand switch

- Check the sidestand switch for continuity. Refer to "CHECKING THE SWITCHES".
- Is the sidestand switch OK?

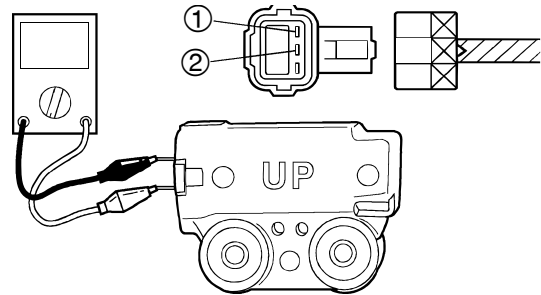


Replace the sidestand switch.

11. Lean angle cut-off switch

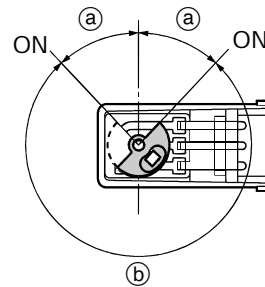
- Remove the lean angle cut-off switch.
- Connect the pocket tester ( $\Omega \times 1$ ) to the lean angle cut-off switch terminals as shown.

Positive tester probe → blue ①  
Negative tester probe → yellow/green ②

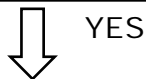


Lean angle cut-off switch voltage

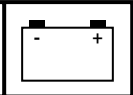
Less than 45° (a) → 0.4V  
More than 45° (b) → 1.4V



- Is the lean angle cut-off switch OK?



Replace the lean angle cut-off switch.



EAS00754

12. Wiring

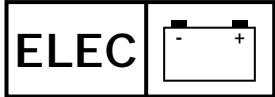
- Check the entire ignition system's wiring. Refer to "CIRCUIT DIAGRAM".
- Is the ignition system's wiring properly connected and without defects?

↓ YES

Replace the ECU.

↓ NO

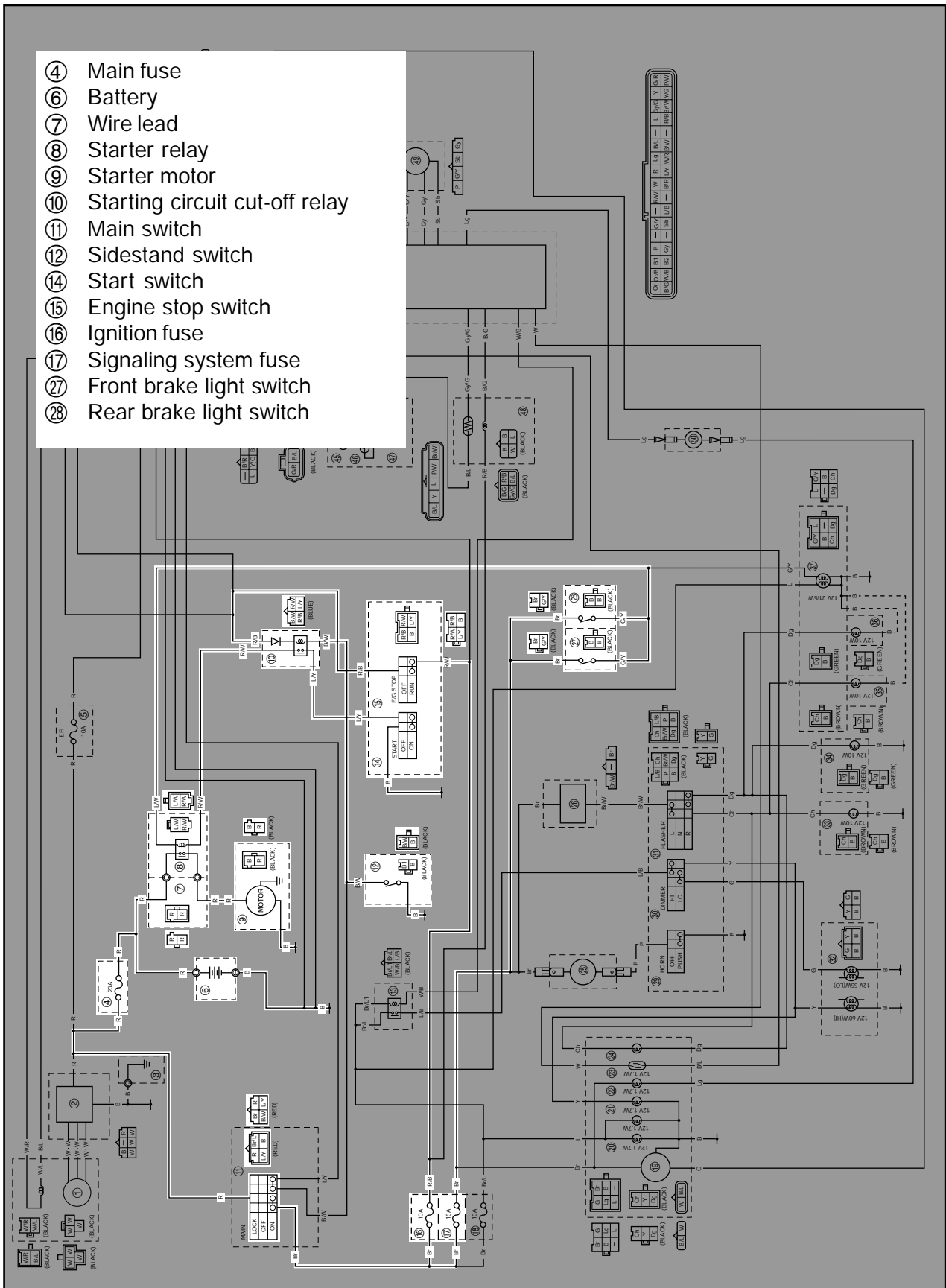
Properly connect or repair the ignition system's wiring.

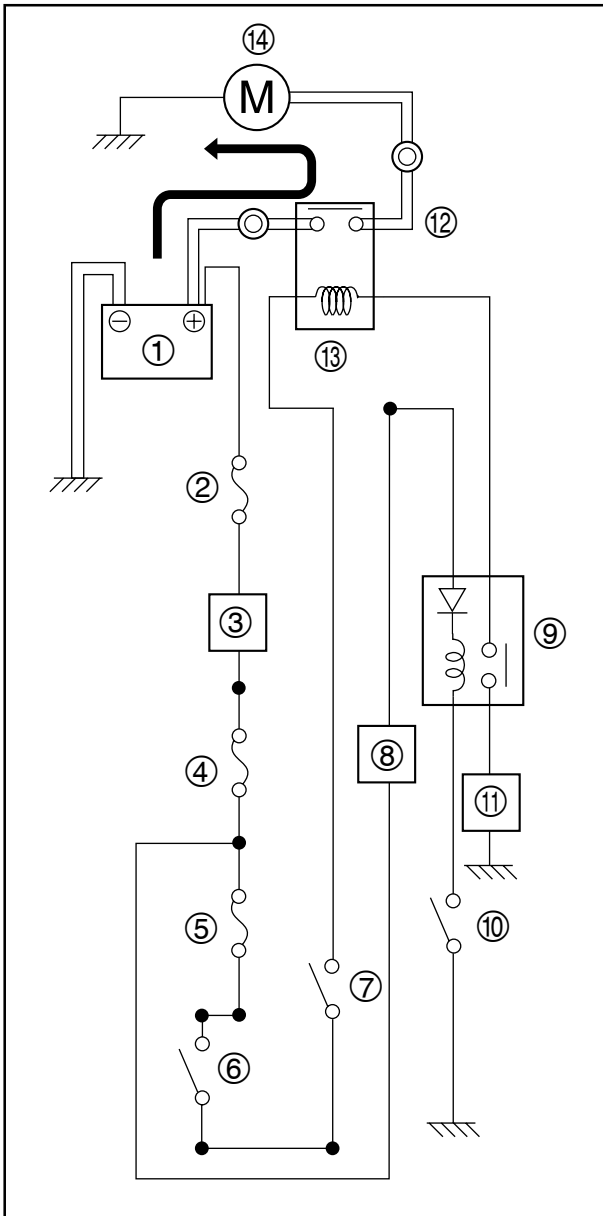


EAS00755

## ELECTRIC STARTING SYSTEM CIRCUIT DIAGRAM

- ④ Main fuse
- ⑥ Battery
- ⑦ Wire lead
- ⑧ Starter relay
- ⑨ Starter motor
- ⑩ Starting circuit cut-off relay
- ⑪ Main switch
- ⑫ Sidestand switch
- ⑭ Start switch
- ⑮ Engine stop switch
- ⑯ Ignition fuse
- ⑰ Signaling system fuse
- ⑲ Front brake light switch
- ⑳ Rear brake light switch





EAS00756

## STARTING CIRCUIT CUT-OFF SYSTEM OPERATION

If the engine stop switch is set to "O" and the main switch is set to "ON" (both switches are closed), the starter motor can only operate if at least one of the following conditions is met:

- The brake lever (front or rear) is pulled to the handlebar (the brake light switch is closed) and the sidestand is up (the sidestand switch is closed).

- ① Battery
- ② Main fuse
- ③ Main switch
- ④ Ignition fuse
- ⑤ Signaling system fuse
- ⑥ Front brake light switch
- ⑦ Rear brake light switch
- ⑧ Engine stop switch
- ⑨ Starting circuit cut-off relay
- ⑩ Sidestand switch
- ⑪ Start switch
- ⑫ Wire lead
- ⑬ Starter relay
- ⑭ Starter motor

EAS00757

## TROUBLESHOOTING

**The starter motor fails to turn.**

Check:

1. main, signal and ignition fuses
2. battery
3. starter motor
4. starting circuit cut-off relay
5. starter relay
6. main switch
7. engine stop switch
8. brake light switch (front and rear)
9. sidestand switch
10. start switch
11. wiring connections  
(of the entire starting system)

### TIP

- Before troubleshooting, remove the following part(s):

1. battery box cover/front cover
2. seat/trunk
3. side cover (right)
4. leg shield 1
  - Troubleshoot with the following special tool(s).



**Pocket tester**  
90890-03112 (YU-03112-C)

EAS00738

### 1. Main, signal and ignition fuses

- Check the main, signal and ignition fuses for continuity. Refer to "CHECKING THE FUSES" in chapter 3.
- Are the main, signal and ignition fuses OK?



Replace the fuse(s).

EAS00739

### 2. Battery

- Check the condition of the battery. Refer to "CHECKING AND CHARGING THE BATTERY" in chapter 3.



**Minimum open-circuit voltage**  
12.8 V or more at 20°C(68°F)

- Is the battery OK?

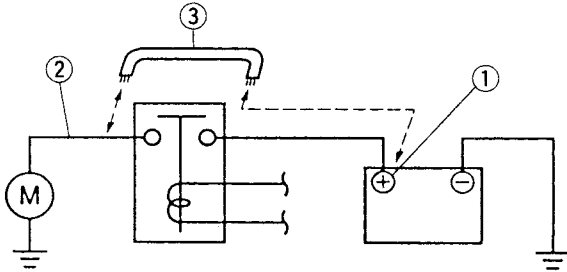


- Clean the battery terminals.
  - Recharge or replace the battery.

EAS00758

### 3. Starter motor

- Connect the positive battery terminal ① and starter motor lead ② with a jumper lead ③.



#### **⚠ WARNING**

- A wire that is used as a jumper lead must have at least the same capacity or more as that of the battery lead, otherwise the jumper lead may burn.
- This check is likely to produce sparks, therefore make sure nothing flammable is in the vicinity.

- Does the starter motor turn?

↓ YES

↓ NO

Repair or replace the starter motor.

EAS00759

### 4. Starting circuit cut-off relay

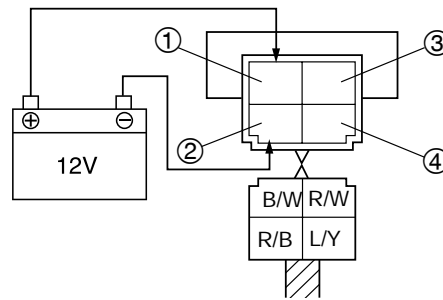
- Disconnect the starting circuit cut-off relay coupler from the wire harness.
- Connect the pocket tester ( $\Omega \times 1$ ) and battery (12 V) to the starting circuit cut-off relay coupler as shown.

Positive battery terminal → red/black ①

Negative battery terminal → black/white ②

Positive tester probe → blue/yellow ③

Negative tester probe → red/white ④



- Does the starting circuit cut-off relay have continuity between blue/yellow and red/white?

↓ YES

↓ NO

Replace the starting circuit cut-off relay.

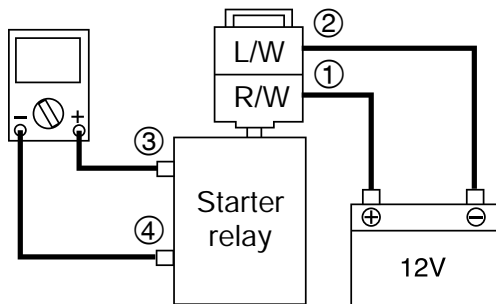
EAS00761

## 5. Starter relay

- Disconnect the starter relay coupler from the coupler.
- Connect the pocket tester ( $\Omega \times 1$ ) and battery (12 V) to the starter relay coupler as shown.

Positive battery terminal → red/white ①  
 Negative battery terminal → blue/white ②

Positive tester probe → red ③  
 Negative tester probe → red ④



- Does the starter relay have continuity between red ③ and red ④?

↓ YES      ↓ NO

Replace the starter relay.

EAS00749

## 6. Main switch

- Check the main switch for continuity. Refer to "CHECKING THE SWITCHES".
- Is the main switch OK?

↓ YES      ↓ NO

Replace the main switch.

EAS00750

## 7. Engine stop switch

- Check the engine stop switch for continuity. Refer to "CHECKING THE SWITCHES".
- Is the engine stop switch OK?

↓ YES      ↓ NO

Replace the right handlebar switch.

EAS00751

## 8. Brake light switch (front and rear)

- Check the brake light switches for continuity. Refer to "CHECKING THE SWITCHES".
- Is each brake light switch OK?

↓ YES      ↓ NO

Replace the brake light switch(es).

EAS00752

## 9. Sidestand switch

- Check the sidestand switch for continuity. Refer to "CHECKING THE SWITCHES".
- Is the sidestand switch OK?

↓ YES      ↓ NO

Replace the sidestand switch.

EAS00764

<b>10. Start switch</b>
<ul style="list-style-type: none"><li>• Check the start switch for continuity. Refer to "CHECKING THE SWITCHES".</li><li>• Is the start switch OK?</li></ul>

↓ YES

↓ NO

Replace the right handlebar switch.
-------------------------------------

EAS00766

<b>11. Wiring</b>
<ul style="list-style-type: none"><li>• Check the entire starting system's wiring. Refer to "CIRCUIT DIAGRAM".</li><li>• Is the starting system's wiring properly connected and without defects?</li></ul>

↓ YES

↓ NO

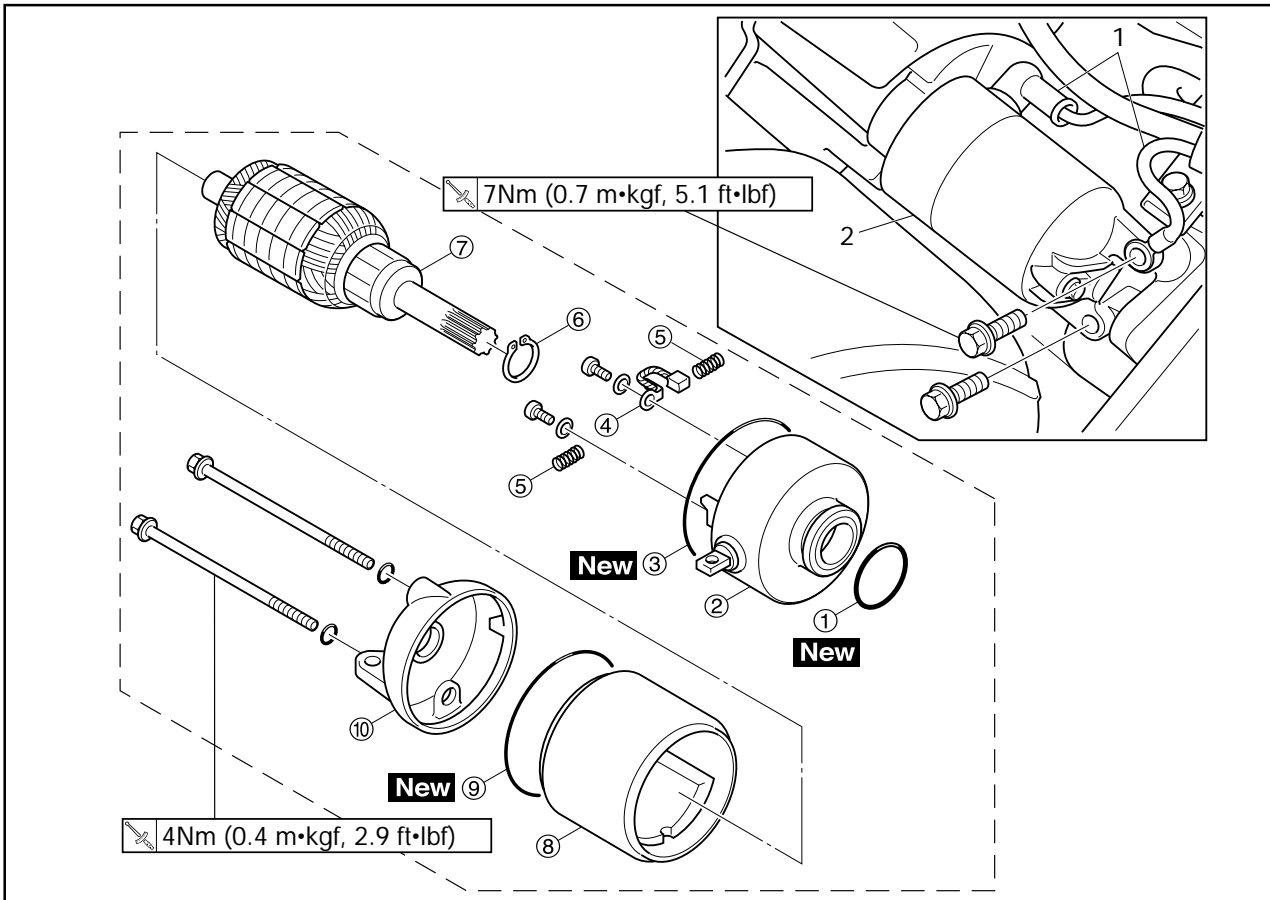
The starting system circuit is ok.
------------------------------------

Properly connect or repair the starting system's wiring.
--

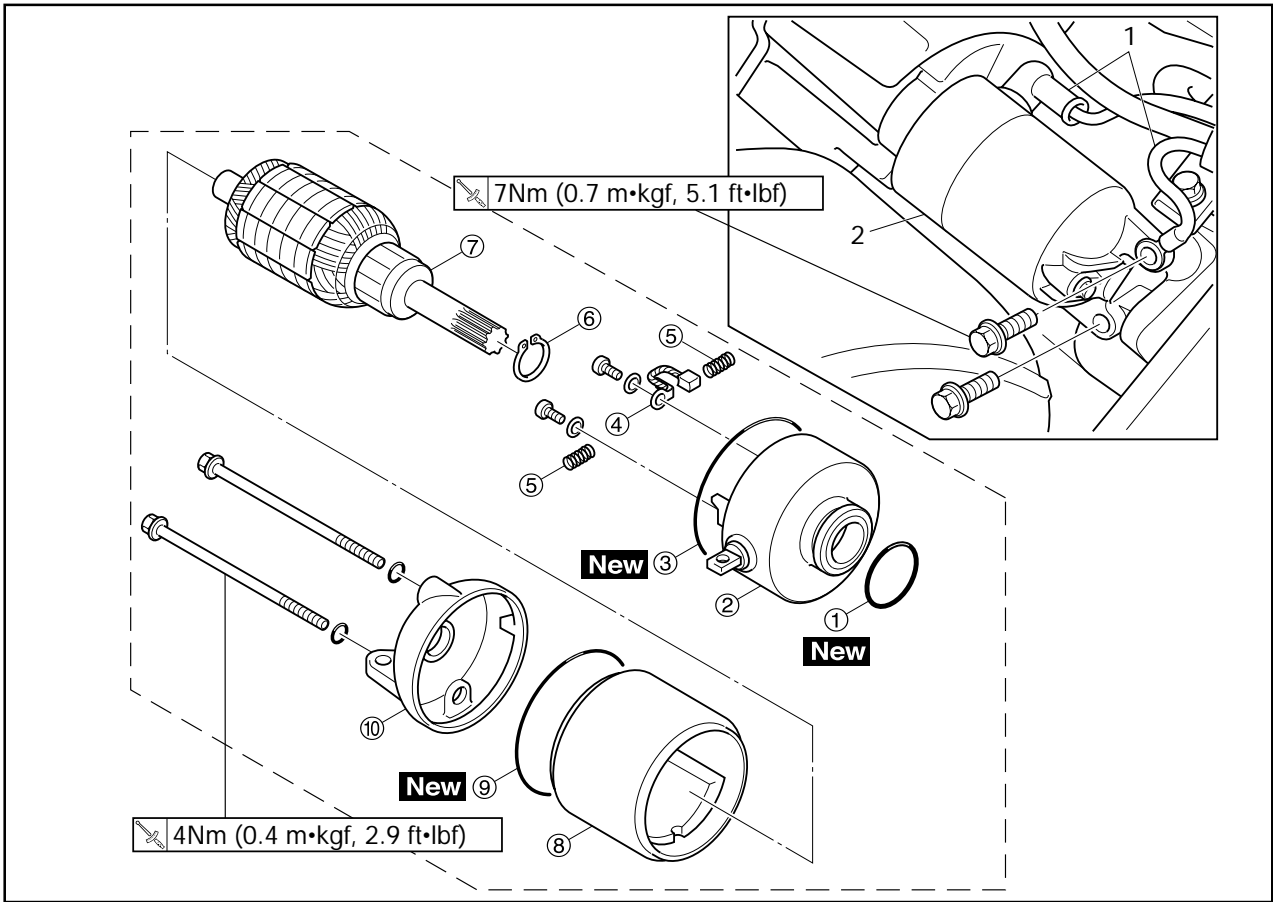


EAS00767

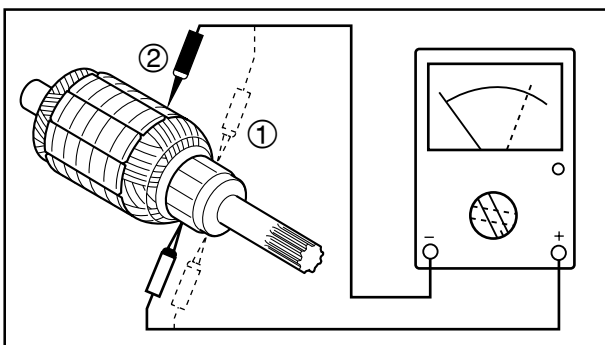
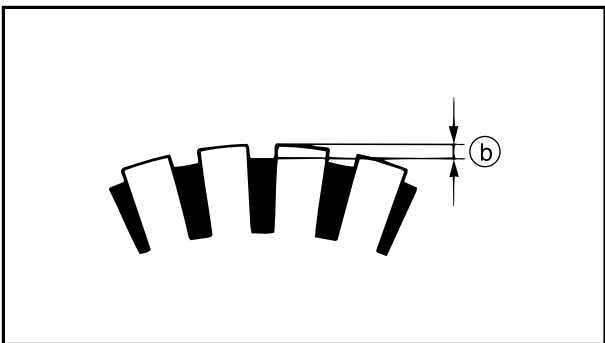
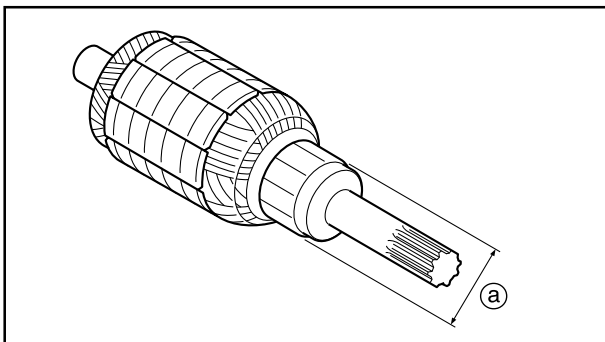
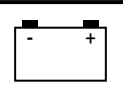
STARTER MOTOR



Order	Job/Part	Q'ty	Remarks
1	<b>Removing the starter motor</b> Seat/trunk		Remove the parts in the order listed. Refer to "COVER AND PANEL" in chapter 3.
2	Air filter/breather hose		Refer to "ENGINE REMOVAL" in chapter 5.
1	Starter motor lead/earth lead	1/1	Disconnect.
2	Starter motor	1	For installation, reverse the removal procedure.
①	<b>Disassembling the starter motor</b> O-ring	1	Disassemble the parts in the order listed.  Refer to "ASSEMBLING THE STARTER MOTOR".
②	Starter motor front cover	1	
③	O-ring	1	
④	Brush	2	
⑤	Brush Spring	2	
⑥	Circlip	1	
⑦	Armature	1	
⑧	Stator	1	
⑨	O-ring	1	
⑩	Starter motor rear cover	1	



Order	Job/Part	Q'ty	Remarks
			For assembly, reverse the disassembly procedure.



EAS00769

**CHECKING THE STARTER MOTOR**

1. Check:
  - commutator  
Dirt → Clean with 600-grit sandpaper.
2. Measure:
  - commutator diameter Ⓐ  
Out of specification → Replace the starter motor.



**Commutator wear limit**  
**21 mm (0.83in)**

3. Measure:
  - mica undercut Ⓑ  
Out of specification → Scrape the mica to the proper measurement with a hack-saw blade that has been grounded to fit the commutator.



**Mica undercut**  
**1.5 mm (0.06in)**

**TIP**

The mica of the commutator must be undercut to ensure proper operation of the commutator.

4. Measure:
  - armature assembly resistances (commutator and insulation)  
Out of specification → Replace the starter motor.



- a. Measure the armature assembly resistances with the pocket tester.



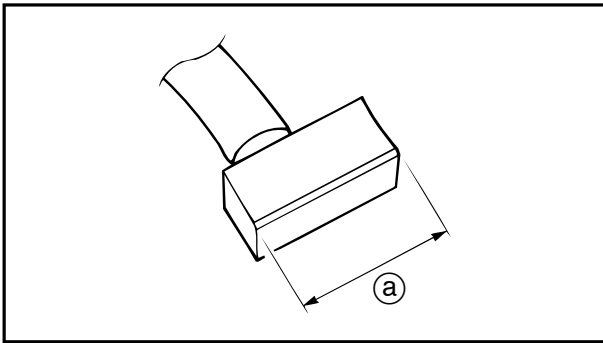
**Pocket tester**  
**90890-03112 (YU-03112-C)**




**Armature coil**  
**Commutator resistance ①**  
**0.0252 ~ 0.0308 Ω at 20°C (68°F)**  
**Insulation resistance ②**  
**Above 1 MΩ at 20°C (68°F)**

- b. If any resistance is out of specification, replace the starter motor.






5. Measure:
- brush length ①
- Out of specification → Replace the brushes as a set.



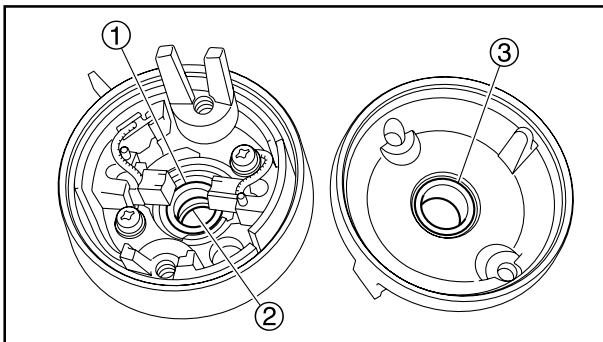
**Brush length wear limit**  
3.5 mm (0.14in)

6. Measure:
- brush spring force
- Out of specification → Replace the brush springs as a set.

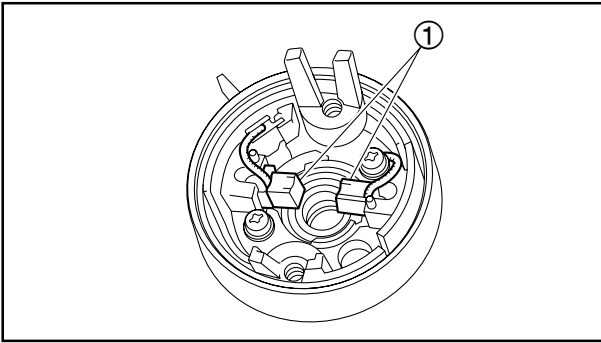
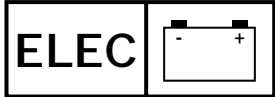


**Brush spring force**  
5.52 ~ 8.28 N/mm (0.56 ~ 0.84kgf/mm, 1.24 ~ 1.86lbf/in)

7. Check:
- gear teeth
- Damage/wear → Replace the gear.



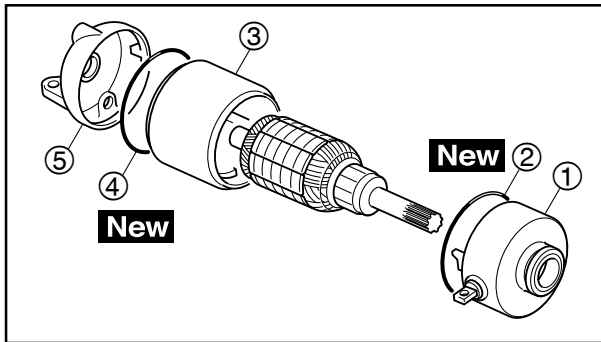
8. Check:
- bearing ①
  - oil seal ②
  - bush ③
- Damage/wear → Replace.



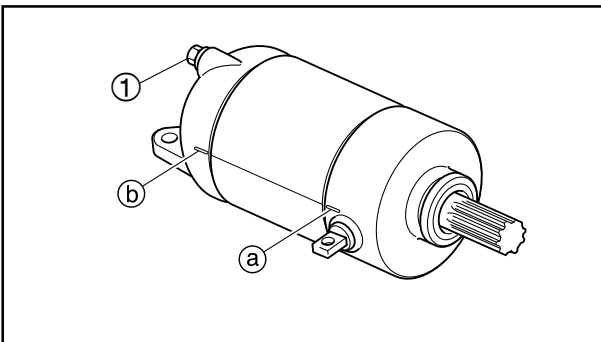
EAS00772

## ASSEMBLING THE STARTER MOTOR

1. Install:
  - brush spring
  - brush ①



2. Install:
  - armature
  - starter motor front cover ①
  - O-ring ② **New**
  - stator ③
  - O-ring ④ **New**
  - starter motor rear cover ⑤

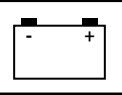


3. Install:
  - O-rings **New**
  - bolts ①

4Nm (0.4m • kgf, 2.9ft • lbf)

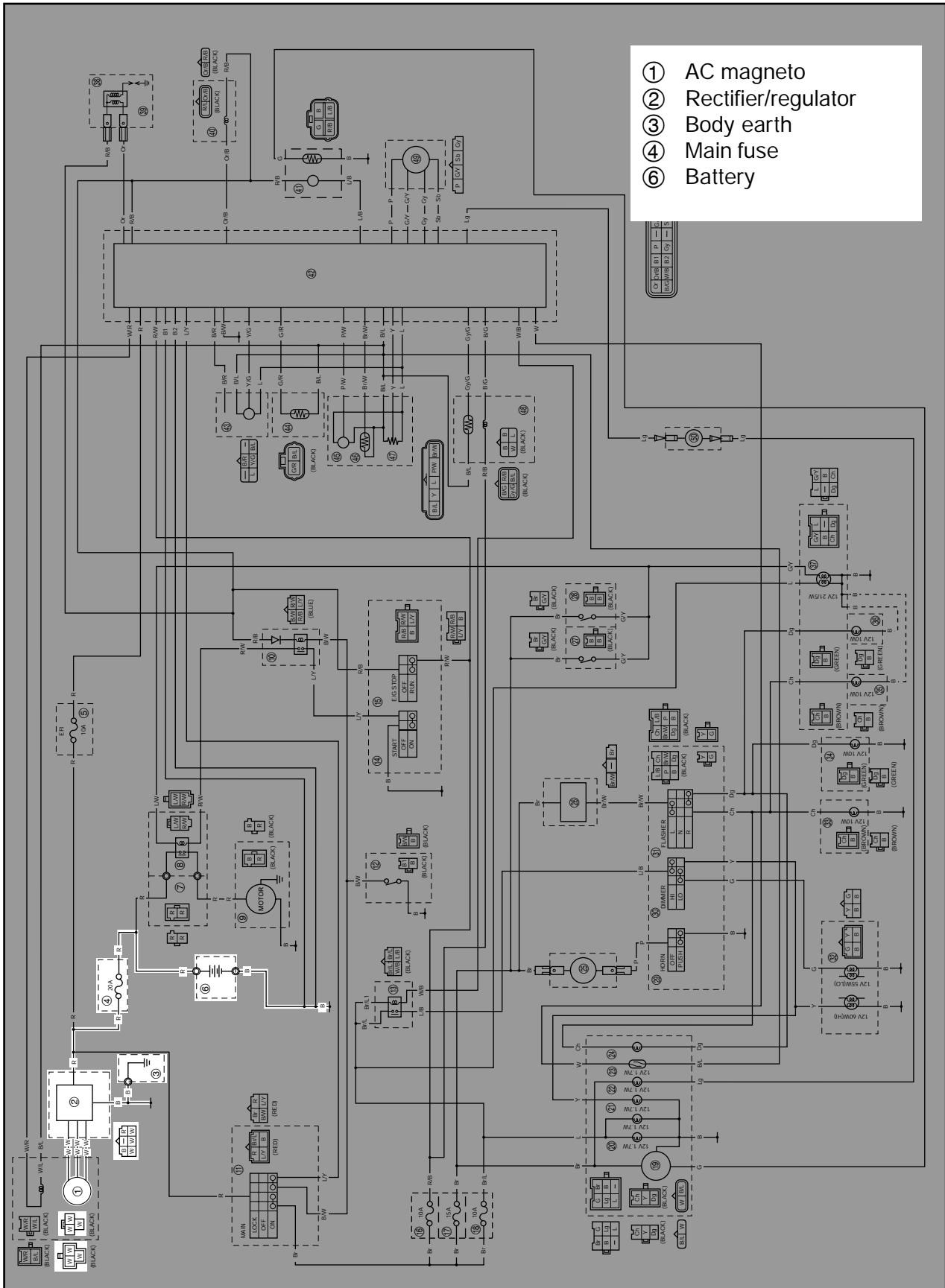
### TIP

Align the match marks (a) on the stator with the match marks (b) on the front and starter motor rear covers.



EAS00773

**CHARGING SYSTEM  
CIRCUIT DIAGRAM**



- ① AC magneto
- ② Rectifier/regulator
- ③ Body earth
- ④ Main fuse
- ⑥ Battery

EAS00774

## TROUBLESHOOTING


**The battery is not being charged.**

Check:

1. main fuse
2. battery
3. charging voltage
4. stator coil resistance
5. wiring connections  
(of the entire charging system)

### TIP

- Before troubleshooting, remove the following part(s):
  1. battery box cover
  2. front cover
  3. leg shield 1
- Troubleshoot with the following special tool(s).



**Digital tachometer**  
90890-06760

**Pocket tester**  
90890-03112 (YU-03112-C)

EAS00738

### 1. Main fuse

- Check the main fuse for continuity. Refer to "CHECKING THE FUSES" in chapter 3.
- Is the main fuse OK?



YES



NO

Replace the fuse.

EAS00739

### 2. Battery

- Check the condition of the battery. Refer to "CHECKING AND CHARGING THE BATTERY" in chapter 3.



**Minimum open-circuit voltage**  
12.8 V or more at 20°C (68°F)

- Is the battery OK?



YES



NO

- Clean the battery terminals.
- Recharge or replace the battery.

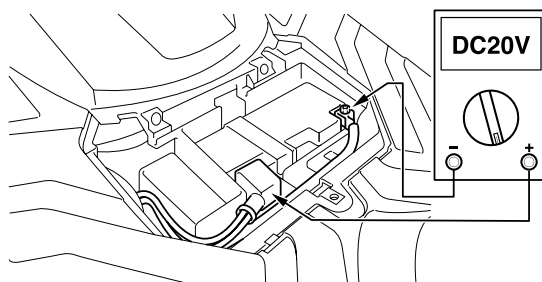
EAS00775

### 3. Charging voltage

- Connect the digital tachometer to the spark plug lead of cylinder.
- Connect the pocket tester (DC 20 V) to the battery as shown.

**Positive tester probe → positive battery terminal**

**Negative tester probe → negative battery terminal**



- Start the engine and let it run at approximately 5,000 r/min.
- Measure the charging voltage.



**Charging voltage**  
14 V at 5000r/min

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

● Is the charging voltage within specification?

↓ YES      ↓ NO

The charging circuit is OK.

EAS00779

**5. Wiring**

- Check the wiring connections of the entire charging system. Refer to "CIRCUIT DIAGRAM".
- Is the charging system's wiring properly connected and without defects?

↓ YES      ↓ NO

Replace the rectifier/regulator.

Properly connect or repair the charging system's wiring.

EAS00776

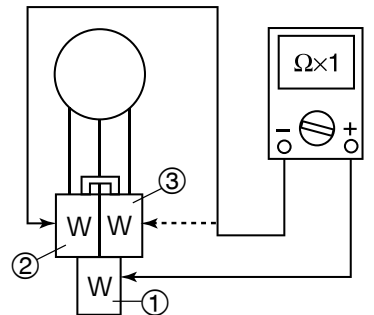
**4. Stator coil resistance**

- Disconnect the starter coil coupler from the wire harness.
- Connect the pocket tester ( $\Omega \times 1$ ) to the stator coil as shown.


Positive tester probe → white ①  
Negative tester probe → white ②

Positive tester probe → white ①  
Negative tester probe → white ③

Positive tester probe → white ②  
Negative tester probe → white ③



- Measure the stator coil resistances.

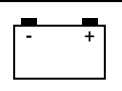
 **Stator coil resistance**  
0.28 ~ 0.42  $\Omega$  at 20°C (68°F)

● Is the stator coil OK?

↓ YES      ↓ NO

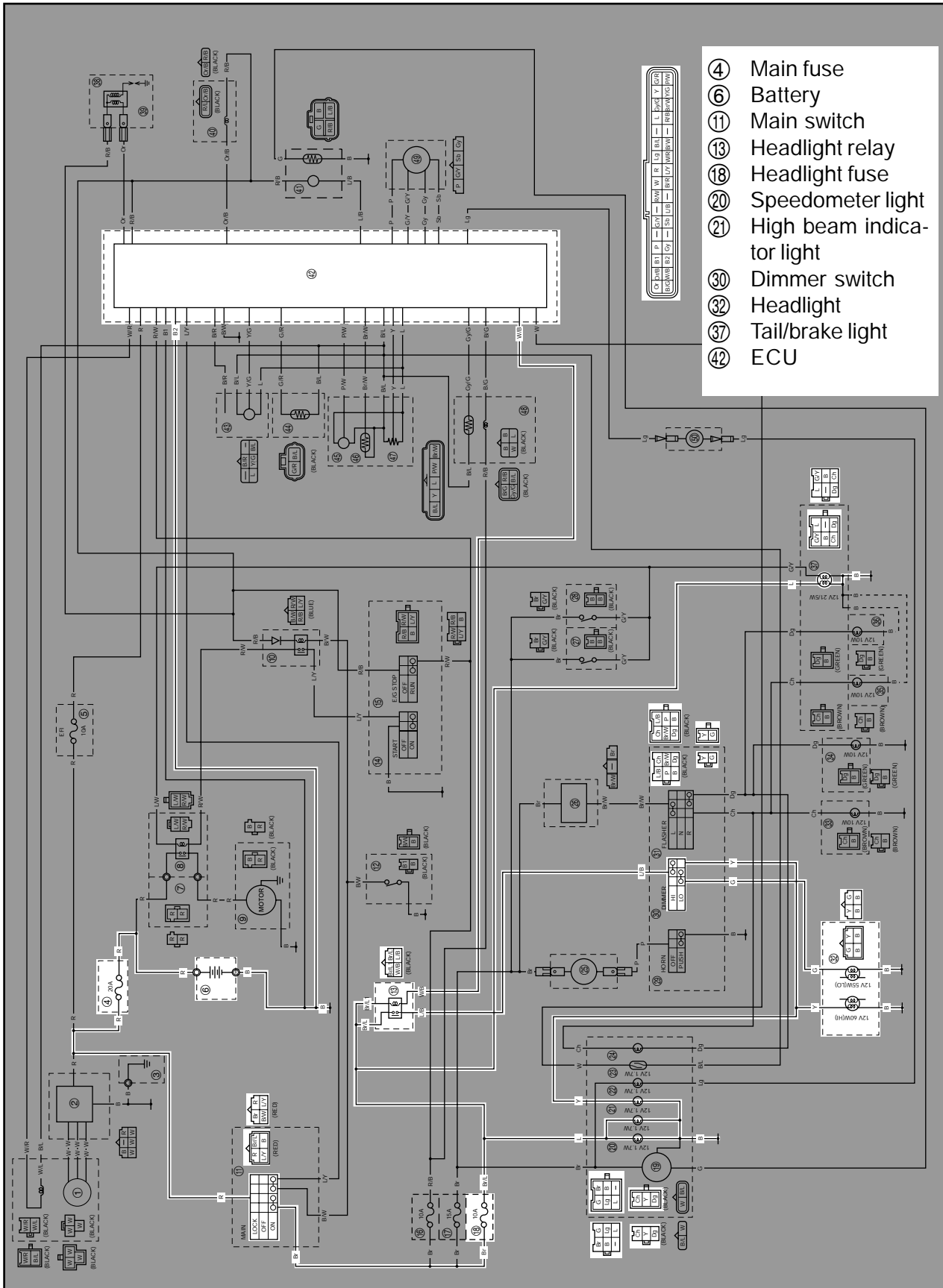
Replace the crankshaft position sensor/stator coil assembly.





EAS00780

LIGHTING SYSTEM  
CIRCUIT DIAGRAM



- ④ Main fuse
- ⑥ Battery
- ⑪ Main switch
- ⑬ Headlight relay
- ⑱ Headlight fuse
- ⑳ Speedometer light
- ㉑ High beam indicator light
- ⑳ Dimmer switch
- ㉓ Headlight
- ㉗ Tail/brake light
- ㉙ ECU

EAS00781

**TROUBLESHOOTING**


Any of the following fail to light: headlight, high beam indicator light, taillight or meter light.

Check:

1. main and headlight fuses
2. battery
3. main switch
4. dimmer switch
5. headlight relay
6. wiring connections (of the entire lighting system)

**TIP**

- Before troubleshooting, remove the following part(s):
  1. battery box cover
  2. front cover
  3. leg shield 1
- Troubleshoot with the following special tool(s).

	<p><b>Pocket tester</b> 90890-03112 (YU-03112-C)</p>
---	--

EAS00738




<p><b>1. Main and headlight fuses</b></p> <ul style="list-style-type: none"> <li>• Check the main and headlight fuses for continuity. Refer to "CHECKING THE FUSES" in chapter 3.</li> <li>• Are the fuses OK?</li> </ul>
---

↓ YES

↓ NO

Replace the fuse(s).

EAS00739

<p><b>2. Battery</b></p> <ul style="list-style-type: none"> <li>• Check the condition of the battery. Refer to "CHECKING AND CHARGING THE BATTERY" in chapter 3.</li> </ul>		
<table border="1"> <tr> <td style="text-align: center;"></td> <td> <p><b>Minimum open-circuit voltage</b> 12.8 V or more at 20°C (68°F)</p> </td> </tr> </table>		<p><b>Minimum open-circuit voltage</b> 12.8 V or more at 20°C (68°F)</p>
	<p><b>Minimum open-circuit voltage</b> 12.8 V or more at 20°C (68°F)</p>	
<ul style="list-style-type: none"> <li>• Is the battery OK?</li> </ul>		

↓ YES

↓ NO

• Clean the battery terminals.  
• Recharge or replace the battery.

EAS00749

<p><b>3. Main switch</b></p> <ul style="list-style-type: none"> <li>• Check the main switch for continuity. Refer to "CHECKING THE SWITCHES".</li> <li>• Is the main switch OK?</li> </ul>
--

↓ YES

↓ NO

Replace the main switch.

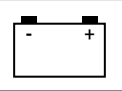
EAS00784

<p><b>4. Dimmer switch</b></p> <ul style="list-style-type: none"> <li>• Check the dimmer switch for continuity. Refer to "CHECKING THE SWITCHES".</li> <li>• Is the dimmer switch OK?</li> </ul>
--

↓ YES

↓ NO

The dimmer switch is faulty. Replace the left handlebar switch.

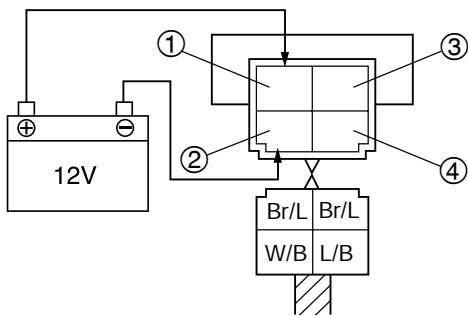


5. Headlight relay

- Disconnect the headlight relay coupler from the wire harness.
- Connect the pocket tester ( $\Omega \times 1$ ) and battery (12 V) to the headlight relay coupler as shown.

Positive battery terminal → white/black ①  
 Negative battery terminal → brown/blue ②

Positive tester probe → blue/black ③  
 Negative tester probe → brown/blue ④



- Does the headlight relay have continuity between blue/black and brown/blue?

↓ YES

↓ NO

Replace the headlight relay.

EAS00788

CHECKING THE LIGHTING SYSTEM

1. The headlight and the high beam indicator light fail to come on.

1. Headlight bulb and socket

- Check the headlight bulb and socket for continuity. Refer to "CHECKING THE BULBS AND BULB SOCKETS"
- Are the headlight bulb and socket OK?

↓ YES

↓ NO

Replace the headlight bulb, socket or both.

2. High beam indicator light bulb and socket

- Check the high beam indicator light bulb and socket for continuity. Refer to "CHECKING THE BULBS AND BULB SOCKETS"
- Are the high beam indicator light bulb and socket OK?

↓ YES

↓ NO

Replace the high beam indicator light bulb, socket or both.

EAS00787

6. Wiring

- Check the entire lighting system's wiring. Refer to "CIRCUIT DIAGRAM".
- Is the lighting system's wiring properly connected and without defects?

↓ YES

↓ NO

Check the condition of each of the lighting system's circuits. Refer to "CHECKING THE LIGHTING SYSTEM".

Properly connect or repair the lighting system's wiring.

3. Voltage

- Connect the pocket tester (DC 20 V) to the headlight and high beam indicator light couplers as shown.

**A** When the dimmer switch is set to "☰D"

**B** When the dimmer switch is set to "☷D"

**Headlight**

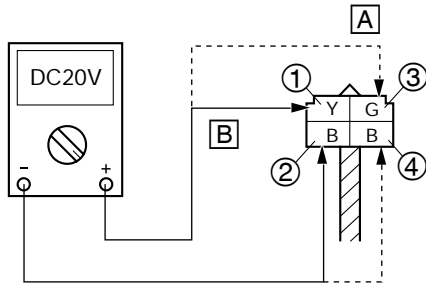
Positive tester probe → yellow ①

Negative tester probe → black ②

Positive tester probe → green ③

Negative tester probe → black ④

**Headlight coupler**

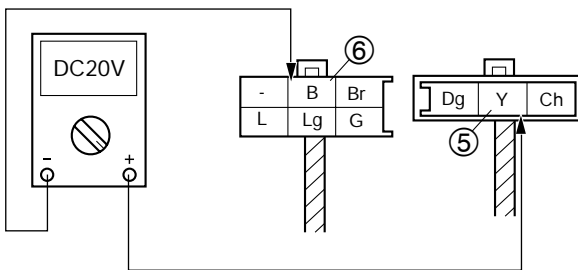


**High beam indicator light**

Positive tester probe → yellow ⑤

Negative tester probe → black ⑥

**Meter assembly coupler**



- Set the main switch to "ON".
- Set the engine stop switch to "Q".
- Start the engine.
- Set the dimmer switch to "☰D" or "☷D".
- Measure the voltage (DC 12 V) of yellow ① or green ③ on the headlight coupler (wire harness side) and yellow ⑤ on the meter assembly coupler (wire harness side).
- Is the voltage within specification?

YES  
↓

This circuit is OK.

NO  
↓

The wiring circuit from the main switch to the headlight coupler or meter assembly coupler is faulty and must be repaired. Refer to "CIRCUIT DIAGRAM".

EAS00789

2. The meter light fails to come on.

1. Meter light bulb and socket

- Check the meter light bulb and socket for continuity. Refer to "CHECKING THE BULBS AND BULB SOCKETS"
- Are the meter light bulb and socket OK?

↓ YES

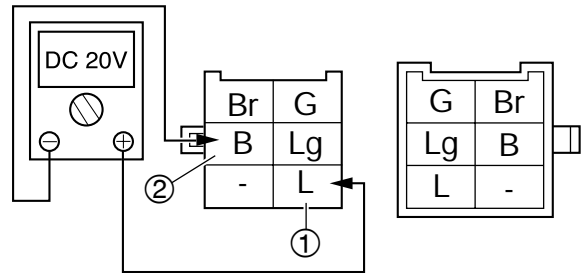
↓ NO

Replace the meter light bulb, socket or both.

2. Voltage

- Connect the pocket tester (DC 20 V) to the meter light coupler (wire harness side) as shown.

Positive tester probe → blue ①  
Negative tester probe → black ②



- Set the main switch to "ON".
- Measure the voltage (DC 12 V) of blue ① on the meter light coupler (wire harness side).
- Is the voltage within specification?

↓ YES

↓ NO

This circuit is OK.

The wiring circuit from the main switch to the meter light coupler is faulty and must be repaired. Refer to "CIRCUIT DIAGRAM".

EAS00790

3. The tail/brake light fails to come on.

1. Tail/brake light bulb and socket

- Check the tail/brake light bulb and socket for continuity.  
Refer to "CHECKING THE BULBS AND BULB SOCKETS"
- Are the tail/brake light bulb and socket OK?

↓ YES

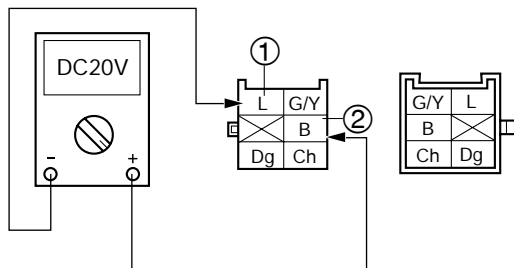
↓ NO

Replace the tail/brake light bulb, socket or both.

2. Voltage

- Connect the pocket tester (DC 20 V) to the tail/brake light coupler (wire harness side) as shown.

Positive tester probe → blue ①  
Negative tester probe → black ②



- Set the main switch to "ON".
- Measure the voltage (DC 12 V) of blue ① on the meter light coupler (wire harness side).
- Is the voltage within specification?

↓ YES

↓ NO

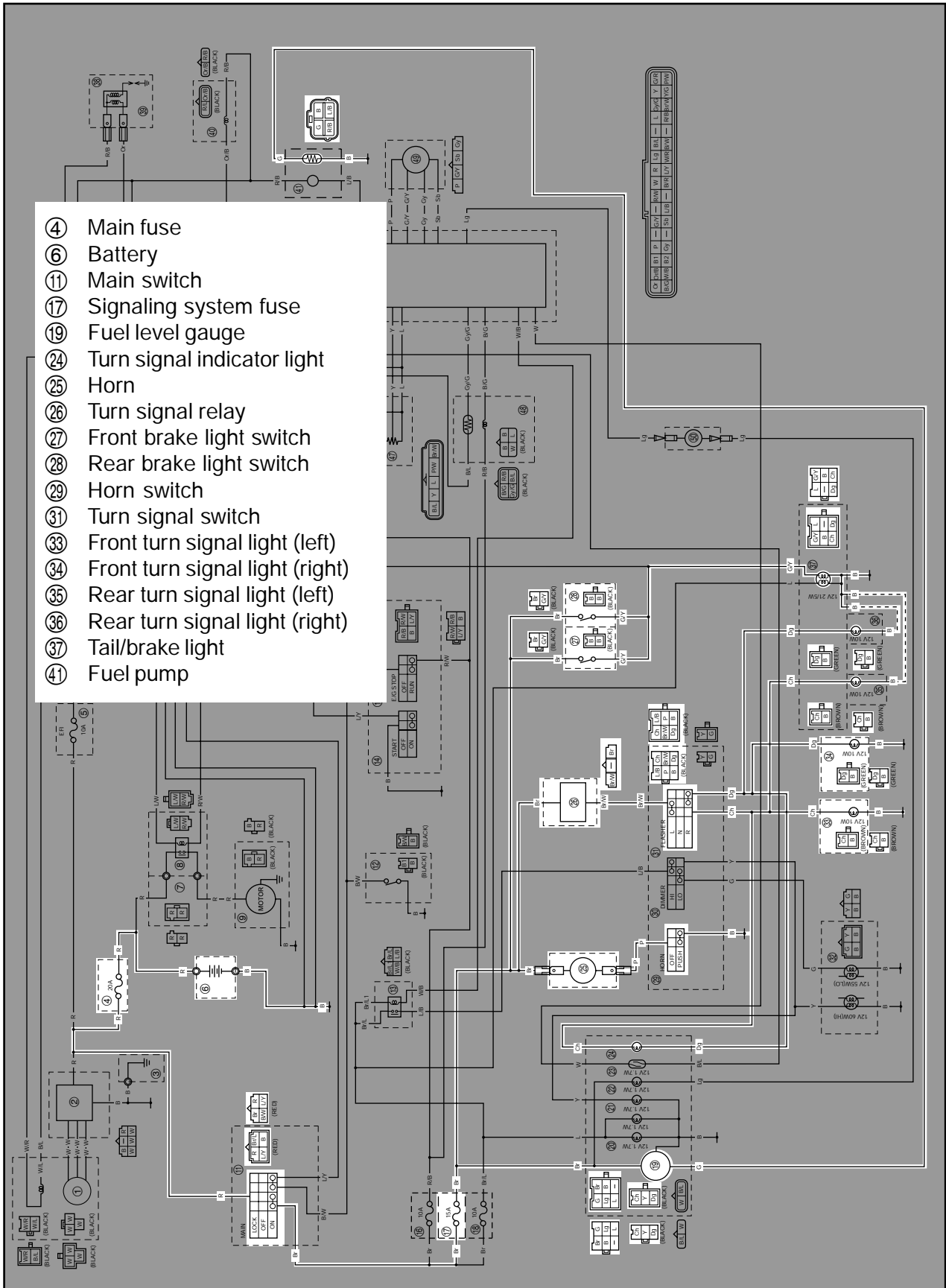
This circuit is OK.

The wiring circuit from the main switch to the tail/brake light coupler is faulty and must be repaired. Refer to "CIRCUIT DIAGRAM".

EAS00793

**SIGNALING SYSTEM**  
**CIRCUIT DIAGRAM**

- ④ Main fuse
- ⑥ Battery
- ⑪ Main switch
- ⑰ Signaling system fuse
- ⑲ Fuel level gauge
- ⑳ Turn signal indicator light
- ㉑ Horn
- ㉒ Turn signal relay
- ㉓ Front brake light switch
- ㉔ Rear brake light switch
- ㉕ Horn switch
- ㉖ Turn signal switch
- ㉗ Front turn signal light (left)
- ㉘ Front turn signal light (right)
- ㉙ Rear turn signal light (left)
- ㉚ Rear turn signal light (right)
- ㉛ Tail/brake light
- ㉜ Fuel pump



EAS00794

**TROUBLESHOOTING**


- Any of the following fail to light: turn signal light, brake light or an indicator light.
- The horn fails to sound.

Check:

1. main and signaling fuses
2. battery
3. main switch
4. wiring connections (of the entire signaling system)

**TIP**

- Before troubleshooting, remove the following part(s):
  1. battery box cover
  2. front cover
  3. leg shield 1
- Troubleshoot with the following special tool(s).



**Pocket tester**  
90890-03112 (YU-03112-C)

EAS00739

**2. Battery**

- Check the condition of the battery. Refer to "CHECKING AND CHARGING THE BATTERY" in chapter 3.



**Minimum open-circuit voltage**  
12.8 V or more at 20°C (68°F)

- Is the battery OK?



YES



NO

- Clean the battery terminals.
  - Recharge or replace the battery.

EAS00749

**3. Main switch**

- Check the main switch for continuity. Refer to "CHECKING THE SWITCHES".
- Is the main switch OK?



YES



NO

Replace the main switch.

EAS00738

**1. Main and signaling fuses**

- Check the main and signaling fuses for continuity. Refer to "CHECKING THE FUSES" in chapter 3.
- Are the main and signaling fuses OK?



YES



NO

Replace the fuse(s).

EAS00795

**4. Wiring**

- Check the entire signal system's wiring. Refer to "CIRCUIT DIAGRAM".
- Is the signal system's wiring properly connected and without defects?



YES



NO

Check the condition of each of the signaling system's circuits. Refer to "CHECKING THE SIGNALING SYSTEM".

Properly connect or repair the signaling system's wiring.



EAS00796

**CHECKING THE SIGNALING SYSTEM**

1. The horn fails to sound.

**1. Horn switch**

- Check the horn switch for continuity. Refer to "CHECKING THE SWITCHES".
- Is the horn switch OK?

↓ YES

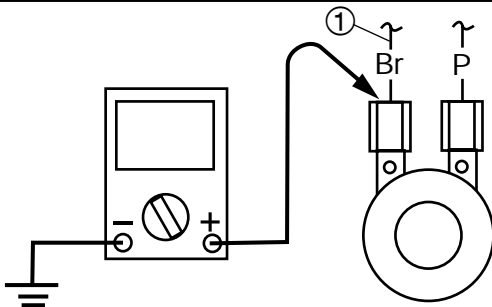
↓ NO

Replace the left handlebar switch.

**2. Voltage**

- Connect the pocket tester (DC 20 V) to the horn connector at the horn terminal as shown.

Positive tester probe → brown ①  
Negative tester probe → ground



- Set the main switch to "ON".
- Push the horn switch.
- Measure the voltage (DC 12 V) of brown at the horn terminal.
- Is the voltage within specification?

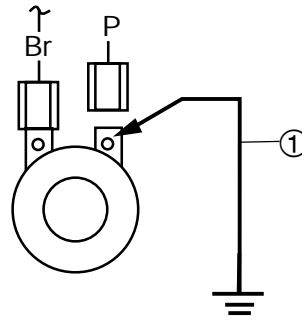
↓ YES

↓ NO

The wiring circuit from the main switch to the horn connector is faulty and must be repaired. Refer to "CIRCUIT DIAGRAM".

**3. Horn**

- Disconnect the pink connector at the horn terminal.
- Connect a jumper lead ① to the horn terminal and ground the jumper lead.
- Set the main switch to "ON".
- Push the horn switch.
- Does the horn sound?



↓ NO

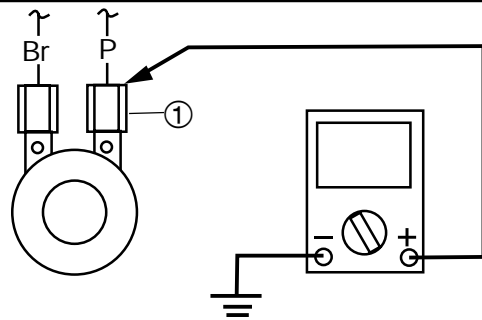
↓ YES

The horn is OK.

**4. Voltage**

- Connect the pocket tester (DC 20 V) to the horn connector at the pink terminal as shown.

Positive tester probe → pink ①  
Negative tester probe → ground



- Set the main switch to "ON".
- Measure the voltage (DC 12 V) of pink ① at the horn terminal.
- Is the voltage within specification?

↓ YES

↓ NO

Repair or replace the horn.

Replace the horn.



EAS00798

2. The tail/brake light fails to come on.

1. Tail/brake light bulb and socket

- Check the tail/brake light bulb and socket for continuity. Refer to "CHECKING THE BULBS AND BULB SOCKETS"
- Are the tail/brake light bulb and socket OK?

↓ YES

↓ NO

Replace the tail/brake light bulb, socket or both.

2. Brake light switches

- Check the brake light switches for continuity. Refer to "CHECKING THE SWITCHES".
- Is the brake light switch OK?

↓ YES

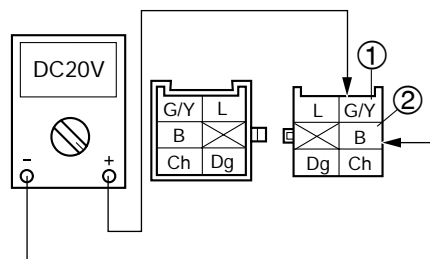
↓ NO

Replace the brake light switch.

3. Voltage

- Connect the pocket tester (DC 20 V) to the tail/brake light coupler (wire harness side) as shown.

Positive tester probe → green/yellow ①  
Negative tester probe → black ②



- Set the main switch to "ON".
- Pull in the brake levers.
- Measure the voltage (DC 12 V) of green/yellow ① on the tail/brake light coupler (wire harness side).
- Is the voltage within specification?

↓ YES

↓ NO

This circuit is OK.

The wiring circuit from the main switch to the tail/brake light coupler is faulty and must be repaired. Refer to "CIRCUIT DIAGRAM".

EAS00799

3. The turn signal light, turn signal indicator light or both fail to blink.

1. Turn signal indicator light bulb and socket

- Check the turn signal indicator light bulb and socket for continuity. Refer to "CHECKING THE BULBS AND BULB SOCKETS"
- Are the turn signal indicator light bulb and socket OK?

↓ YES

↓ NO

Replace the turn signal indicator light bulb, socket or both.

2. Turn signal light bulb and socket

- Check the turn signal light bulb and socket for continuity. Refer to "CHECKING THE BULBS AND BULB SOCKETS"
- Are the turn signal light bulb and socket OK?

↓ YES

↓ NO

Replace the turn signal light bulb, socket or both.

3. Turn signal switch

- Check the turn signal switch for continuity. Refer to "CHECKING THE SWITCHES".
- Is the turn signal switch OK?

↓ YES

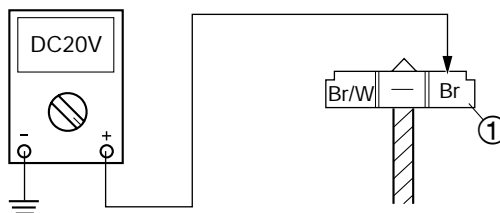
↓ NO

Replace the left handlebar switch.

4. Voltage

- Connect the pocket tester (DC 20 V) to the turn signal relay coupler (wire harness side) as shown.

Positive tester probe → brown ①  
Negative tester probe → ground



- Set the main switch to "ON".
- Measure the voltage (DC 12 V) on brown ① at the turn signal relay coupler (wire harness side).
- Is the voltage within specification?

↓ YES

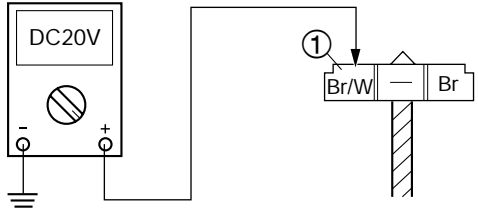
↓ NO

The wiring circuit from the main switch to the turn signal relay coupler is faulty and must be repaired. Refer to "CIRCUIT DIAGRAM".

5. Voltage

- Connect the pocket tester (DC 20 V) to the turn signal relay coupler (wire harness side) as shown.

Positive tester probe → brown/white ①  
 Negative tester probe → ground



- Set the main switch to "ON".
- Measure the voltage (DC 12 V) on brown/white ① at the turn signal relay coupler (wire harness side).
- Is the voltage within specification?

↓ YES

↓ NO

The turn signal relay is faulty and must be replaced.

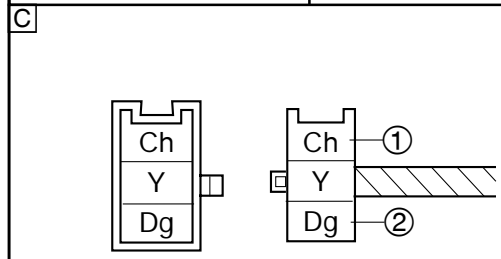
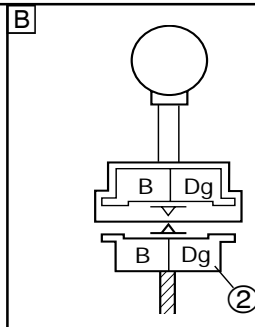
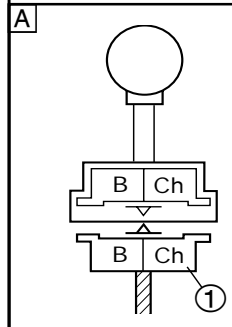
6. Voltage

- Connect the pocket tester (DC 20 V) to the turn signal light coupler or meter assembly coupler (wire harness side) as shown.

- A** Left turn signal light (front and rear)
- B** Right turn signal light (front and rear)
- C** Turn signal indicator light

Left turn signal light  
 Positive tester probe → chocolate ①  
 Negative tester probe → ground

Right turn signal light  
 Positive tester probe → dark green ②  
 Negative tester probe → ground



- Set the main switch to "ON".
- Set the turn signal switch to "←" or "→".
- Measure the voltage (DC 12 V) of the chocolate ① or dark green ② at the turn signal light coupler (wire harness side).
- Is the voltage within specification?

↓ YES

↓ NO

This circuit is OK.

The wiring circuit from the turn signal switch to the turn signal light coupler is faulty and must be repaired.

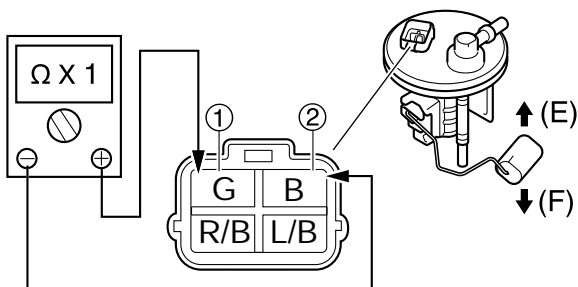
EAS00804

4. The fuel level gauge fails to operate.

1. Fuel sender

- Remove the fuel pump from the fuel tank.
- Connect the pocket tester ( $\Omega \times 1$ ) to the fuel sender coupler (wire harness side) as shown.

Positive tester probe → green ①  
 Negative tester probe → black ②



- Measure the fuel sender resistances.



Fuel sender resistance (up position "F") ( $\Omega \times 1$ )

4~10 $\Omega$  at 20°C (68°F)

Fuel sender resistance (down position "E") ( $\Omega \times 10$ )

90~100  $\Omega$  at 20°C (68°F)

- Is the fuel sender OK?

↓ YES

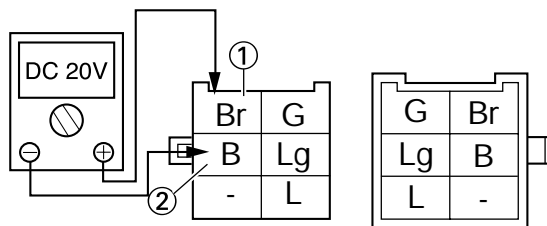
↓ NO

Replace the fuel pump.

2. Voltage

- Connect the pocket tester (DC 20 V) to the meter light coupler (wire harness side) as shown.

Positive tester probe → brown ①  
 Negative tester probe → black ②

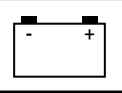


- Set the main switch to "ON".
- Measure the voltage (DC 12 V) of brown ① on the meter light coupler (wire harness side).
- Is the voltage within specification?

↓ YES

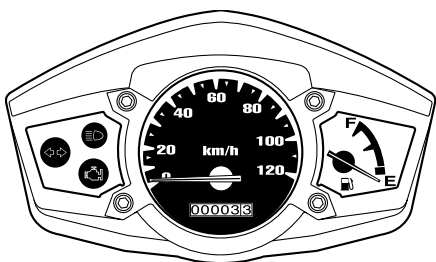
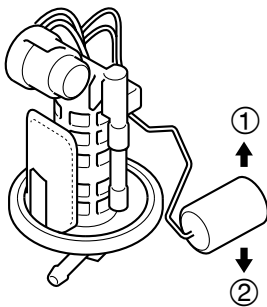
↓ NO

Check the wiring coupler of the entire signaling system. Refer to "CIRCUIT DIAGRAM".



3. Fuel level gauge

- Set the main switch to "ON".
- Move the float up ① or down ②.



- Check that the fuel level gauge needle moves to "F" or "E".

**TIP**

Before reading the fuel level gauge, leave the float in one position (either up or down) for at least three minutes.

- Does the fuel level gauge needle move appropriately?



This circuit is OK.

Replace the speedometer.

4. Wiring

Check the entire signaling system's wiring.

---

## CHAPTER 8 TROUBLE SHOOTING

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## TROUBLESHOOTING

### TIP

The following guide for troubleshooting does not cover all the possible causes of trouble. It should be helpful, however, as a guide to basic troubleshooting. Refer to the relative procedure in this manual for checks, adjustments, and replacement of parts.

## STARTING FAILURE/HARD STARTING

### ENGINE

#### Cylinder and cylinder head

- Loose spark plug
- Loose cylinder head or cylinder
- Damaged cylinder head gasket
- Damaged cylinder gasket
- Worn or damaged cylinder
- Incorrect valve clearance
- Improperly sealed valve
- Incorrect valve-to-valve-seat contact
- Incorrect valve timing
- Faulty valve spring
- Seized valve

#### Piston and piston ring

- Improperly installed piston ring
- Damaged, worn or fatigued piston ring
- Seized piston ring
- Seized or damaged piston

#### Air filter

- Improperly installed air filter
- Clogged air filter element

#### Crankcase and crankshaft

- Improperly assembled crankcase
- Seized crankshaft

### FUEL SYSTEM

#### Fuel tank

- Empty fuel tank
- Clogged fuel tank cap breather hole
- Deteriorated or contaminated fuel
- Clogged or damaged fuel hose

#### Fuel pump

- Faulty fuel pump
- Improperly routed hose

#### Throttle body

- Deteriorated or contaminated fuel
- Sucked-in air

### ELECTRICAL SYSTEMS

#### Battery

- Discharged battery
- Faulty battery

#### Fuse(s)

- Blown, damaged or incorrect fuse
- Improperly installed fuse

#### Spark plug

- Incorrect spark plug gap
- Incorrect spark plug heat range
- Fouled spark plug
- Worn or damaged electrode
- Worn or damaged insulator
- Faulty spark plug cap

#### Ignition coil

- Cracked or broken ignition coil body
- Broken or shorted primary or secondary coil
- Faulty spark plug lead

#### Ignition system

- Faulty ECU
- Faulty crankshaft position sensor
- Broken AC magneto rotor woodruff key

#### Switches and wiring

- Faulty main switch
- Faulty engine stop switch
- Broken or shorted wiring
- Faulty front, rear or both brake light switches
- Faulty start switch
- Faulty sidestand switch
- Improperly grounded circuit
- Loose connections

#### Starting system

- Faulty starter motor
- Faulty starter relay
- Faulty starting circuit cut-off relay
- Faulty starter clutch



# INCORRECT ENGINE IDLING SPEED/POOR MEDIUM- AND-HIGH-SPEED PERFORMANCE

TRBL  
SHTG



EAS00847

## INCORRECT ENGINE IDLING SPEED

### ENGINE

#### Cylinder and cylinder head

- Incorrect valve clearance
- Damaged valve train components

#### Air filter

- Clogged air filter element

### FUEL SYSTEM

#### Throttle body

- Damaged or loose throttle body joint
- Improperly ISC (idle speed control) valve
- Improper throttle cable free play
- Flooded throttle body

### ELECTRICAL SYSTEMS

#### Battery

- Discharged battery
- Faulty battery

#### Spark plug

- Incorrect spark plug gap
- Incorrect spark plug heat range
- Fouled spark plug
- Worn or damaged electrode
- Worn or damaged insulator
- Faulty spark plug cap

#### Ignition coil

- Faulty spark plug lead

#### Ignition system

- Faulty ECU
- Faulty crankshaft position sensor

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## POOR MEDIUM-AND-HIGH- SPEED PERFORMANCE

Refer to "STARTING FAILURE/HARD START-  
ING".

### ENGINE

#### Air filter

- Clogged air filter element

### FUEL SYSTEM

#### Throttle body

- Faulty diaphragm

#### Fuel pump

- Faulty fuel pump

EAS00853

## FAULTY CLUTCH

ENGINE OPERATES BUT SCOOTER WILL NOT MOVE

### V-belt

- Bent, damaged or worn V-belt
- Slipping V-belt

### Primary pulley cam and primary pulley slider

- Damaged or worn primary pulley cam
- Damaged or worn primary pulley slider

### Clutch spring(s)

- Damaged clutch spring

### Transmission gears

- Damaged transmission gear

## CLUTCH SLIPS

### Clutch shoe springs

- Damaged, loose or worn clutch shoe spring

### Clutch shoes

- Damaged or worn clutch shoe

### Primary sliding sheave

- Seized primary sliding sheave

## POOR STARTING PERFORMANCE

### V-belt

- V-belt slips
- Oil or grease on the V-belt

### Primary sliding sheave

- Faulty operation
- Worn pin groove
- Worn pin

### Clutch shoes

- Bent, damaged or worn clutch shoe

## POOR SPEED PERFORMANCE

### V-belt

- Worn V-belt
- Oil or grease on the V-belt

### Primary pulley weight(s)

- Faulty operation

- Worn primary pulley weight

### Primary fixed sheave

- Worn primary fixed sheave

### Primary sliding sheave

- Worn primary sliding sheave

### Secondary fixed sheave

- Worn secondary fixed sheave

### Secondary sliding sheave

- Worn secondary sliding sheave

EAS00855

## OVERHEATING

### ENGINE

#### Clogged coolant passages

- Heavy carbon buildup in cylinder head and piston

#### Engine oil

- Incorrect oil level
- Incorrect oil viscosity
- Inferior oil quality

## FUEL SYSTEM

### Throttle body

- Faulty throttle body
- Damaged or loose throttle body joint

### Air filter

- Clogged air filter element

## CHASSIS

### Brake(s)

- Dragging brake

## ELECTRICAL SYSTEMS

### Spark plug

- Incorrect spark plug gap
- Incorrect spark plug heat range

### Ignition system

- Faulty ECU
- Faulty engine temperature sensor

# POOR BRAKING PERFORMANCE/FAULTY FRONT FORK LEGS/UNSTABLE HANDLING

TRBL  
SHTG



EAS00859

## POOR BRAKING PERFORMANCE

### Disc brake

- Worn brake pad
- Worn brake disc
- Air in hydraulic brake system
- Leaking brake fluid
- Faulty brake caliper kit
- Faulty brake caliper seal
- Loose union bolt
- Damaged brake hose
- Oil or grease on the brake disc
- Oil or grease on the brake pad
- Incorrect brake fluid level

### Drum brake

- Worn brake shoe
- Worn or rusty brake drum
- Incorrect brake lever position
- Incorrect brake lever free play
- Incorrect brake camshaft lever position
- Incorrect brake shoe position
- Damaged or fatigued brake shoe spring
- Oil or grease on the brake shoe
- Oil or grease on the brake drum

EAS00861

## FAULTY FRONT FORK LEGS

### LEAKING OIL

- Bent, damaged or rusty inner tube
- Cracked or damaged outer tube
- Improperly installed oil seal
- Damaged oil seal lip
- Incorrect oil level (high)
- Loose damper rod assembly bolt
- Damaged damper rod assembly bolt copper washer
- Cracked or damaged cap bolt O-ring

### MALFUNCTION

- Bent or damaged inner tube
- Bent or damaged outer tube
- Damaged fork spring
- Worn or damaged outer tube bushing
- Bent or damaged damper rod
- Incorrect oil viscosity
- Incorrect oil level

EAS00862

## UNSTABLE HANDLING

### Handlebar

- Bent or improperly installed handlebar

### Steering head components

- Improperly installed handlebar bracket
- Improperly installed lower bracket (improperly tightened ring nut)
- Bent steering stem
- Damaged ball bearing or bearing race

### Front fork leg(s)

- Uneven oil levels (both front fork legs)
- Unevenly tensioned fork spring (both front fork legs)
- Broken fork spring
- Bent or damaged inner tube
- Bent or damaged outer tube

### Swingarm

- Worn bearing or bushing
- Bent or damaged swingarm

### Rear shock absorber assemblies

- Faulty rear shock absorber spring
- Leaking oil

### Tire(s)

- Uneven tire pressures (front and rear)
- Incorrect tire pressure
- Uneven tire wear

### Wheel(s)

- Incorrect wheel balance
- Deformed cast wheel
- Damaged wheel bearing
- Bent or loose wheel axle
- Excessive wheel runout

### Frame

- Bent frame
- Damaged steering head pipe
- Improperly installed bearing race

EAS00866

**FAULTY LIGHTING OR SIGNALING SYSTEM**

**HEADLIGHT DOES NOT COME ON**

- Wrong headlight bulb
- Too many electrical accessories
- Hard charging
- Incorrect connection
- Improperly grounded circuit
- Poor contacts (main switch)
- Burnt-out headlight bulb
- Faulty headlight relay

**HEADLIGHT BULB BURNT OUT**

- Wrong headlight bulb
- Faulty battery
- Faulty rectifier/regulator
- Improperly grounded circuit
- Faulty main switch
- Faulty headlight relay
- Headlight bulb life expired

**TAIL/BRAKE LIGHT DOES NOT COME ON**

- Wrong tail/brake light bulb
- Too many electrical accessories
- Incorrect connection
- Burnt-out tail/brake light bulb

**TAIL/BRAKE LIGHT BULB BURNT OUT**

- Wrong tail/brake light bulb
- Faulty battery
- Faulty front or rear brake light switch
- Tail/brake light bulb life expired

**TURN SIGNAL DOES NOT COME ON**

- Faulty turn signal switch
- Faulty turn signal relay
- Burnt-out turn signal bulb
- Incorrect connection
- Damaged or faulty wire harness
- Improperly grounded circuit
- Faulty battery
- Blown, damaged or incorrect fuse

**TURN SIGNAL BLINKS SLOWLY**

- Faulty turn signal relay
- Faulty main switch
- Faulty turn signal switch
- Incorrect turn signal bulb
- Faulty battery

**TURN SIGNAL REMAINS LIT**

- Faulty turn signal relay
- Burnt-out turn signal bulb

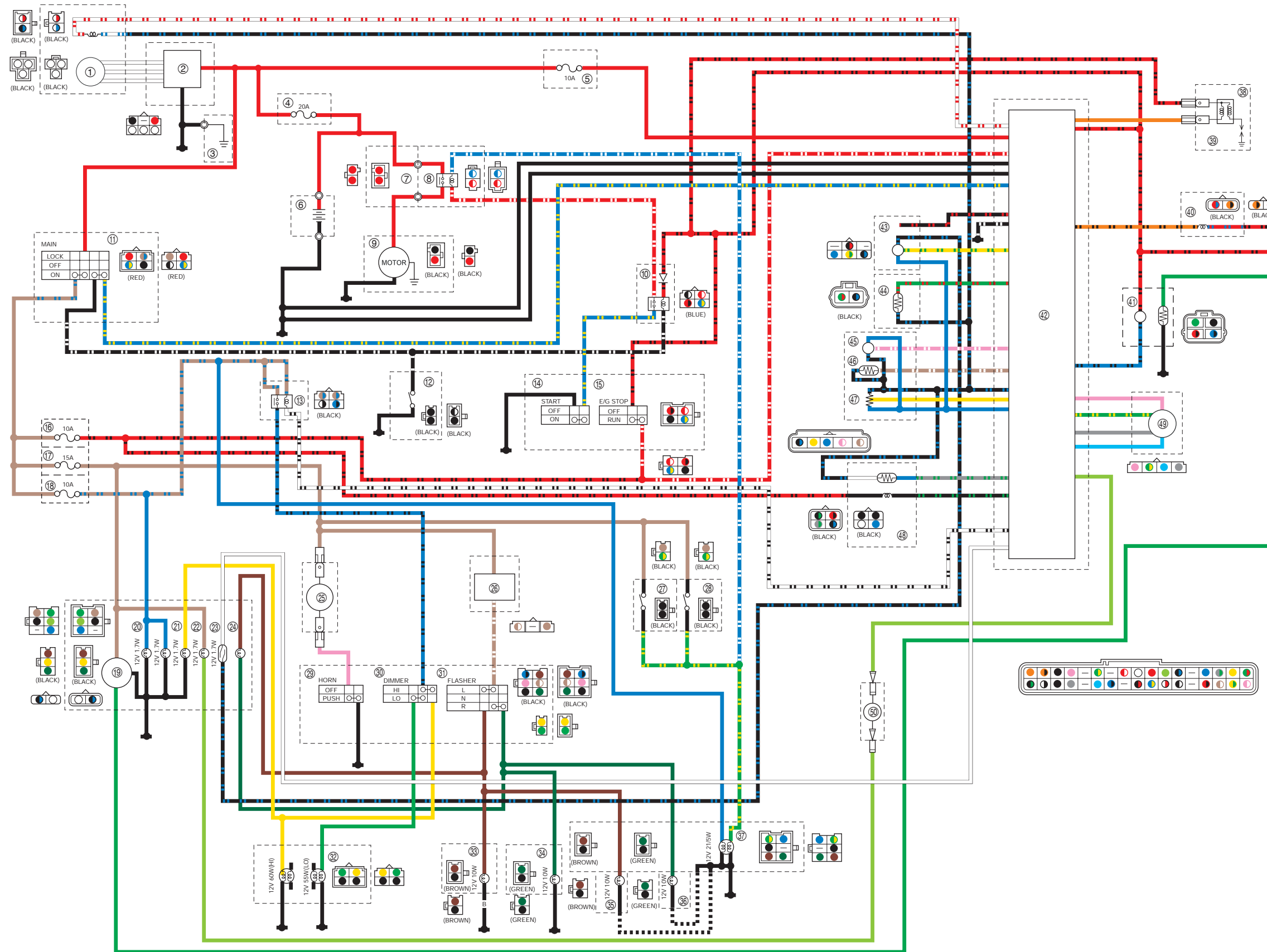
**TURN SIGNAL BLINKS QUICKLY**

- Incorrect turn signal bulb
- Faulty turn signal relay
- Burnt-out turn signal bulb

**HORN DOES NOT SOUND**

- Improperly adjusted horn
- Damaged or faulty horn
- Faulty main switch
- Faulty horn switch
- Faulty battery
- Blown, damaged or incorrect fuse
- Faulty wire harness

# YW125Y WIRING DIAGRAM



- ① AC magneto
- ② Rectifier/regulator
- ③ Body earth
- ④ Main fuse
- ⑤ Fuel injection system fuse
- ⑥ Battery
- ⑦ Wire lead
- ⑧ Starter relay
- ⑨ Starter motor
- ⑩ Starting circuit cut-off relay
- ⑪ Main switch
- ⑫ Sidestand switch
- ⑬ Headlight relay
- ⑭ Start switch
- ⑮ Engine stop switch
- ⑯ Ignition fuse
- ⑰ Signaling system fuse
- ⑱ Headlight fuse
- ⑲ Fuel level gauge
- ⑳ Speedometer light
- ㉑ High beam indicator light
- ㉒ Engine trouble warning light
- ㉓ Speed sensor
- ㉔ Turn signal indicator light
- ㉕ Horn
- ㉖ Turn signal relay
- ㉗ Front brake light switch
- ㉘ Rear brake light switch
- ㉙ Horn switch
- ㉚ Dimmer switch
- ㉛ Turn signal switch
- ㉜ Headlight
- ㉝ Front turn signal light (left)
- ㉞ Front turn signal light (right)
- ㉟ Rear turn signal light (left)
- ㊱ Rear turn signal light (right)
- ㊲ Tail/brake light
- ㊳ Ignition coil
- ㊴ Spark plug
- ㊵ Fuel injector
- ㊶ Fuel pump
- ㊷ ECU
- ㊸ Lean angle cut-off switch
- ㊹ Engine temperature sensor
- ㊺ Intake air pressure sensor
- ㊻ Intake air temperature sensor
- ㊼ Throttle position sensor
- ㊽ O<sub>2</sub> sensor
- ㊾ ISC (idle speed control) valve
- ㊿ FI diagnostic tool

MARK	EXPLANATION
	COLOR CORD
	CONNECTING WITH GND. WIRE
	GND.
	CONNECTOR SYMBOL

	Black		Red		Yellow
	Green		Brown		Dark green
	Blue		Chocolate		Sky blue
	Orange		Pink		Brown/White
	Gray		Light green		Red/White
	Brown/Blue		White/Blue		Blue/Yellow
	Red/Black		Blue/White		Black/White
	Blue/Black		Black/Red		Black/Blue
	Gray/Green		Black/Green		Green/Red
	Green/Yellow		White/Black		White/Red
	Red/Blue		Pink/White		Orange/Black
	Yellow/Green		White		

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