

**YAMAHA**

**YP250** 4UC-AE1

**SERVICE MANUAL**



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EB000000

**YP250**

**SERVICE MANUAL**

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**1st Edition, January 1996**

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## NOTICE

This manual was produced by the Yamaha Motor Company 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, so it is assumed that anyone who uses this book to perform maintenance and repairs on Yamaha scooter has a basic understanding of the mechanical ideas and the procedures of scooter repair. Repairs attempted by anyone without this knowledge are likely to render the scooter unsafe and unfit for use.

Yamaha Motor Company, Ltd. is continually striving to improve all 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.

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**NOTE:**

Designs and specifications are subject to change without notice.

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## IMPORTANT INFORMATION

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



The Safety Alert Symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!



Failure to follow WARNING instructions could result in severe injury or death to the scooter operator, a bystander or a person inspecting or repairing the scooter.

**CAUTION:**

A CAUTION indicates special precautions that must be taken to avoid damage to the scooter.

**NOTE:**

A NOTE provides key information to make procedures easier or clearer.

# HOW TO USE THIS MANUAL

## MANUAL ORGANIZATION

This manual consists of chapters for the main categories of subjects. (See “Illustrated symbols”)

- 1st title ①: This is the title of the chapter with its symbol on the upper right corner of each page.
- 2nd title ②: This title indicates the section of the chapter and only appears on the first page of each section. It is located in the upper left corner of the page.
- 3rd title ③: This title indicates a sub-section that is followed by step-by-step procedures accompanied by corresponding illustrations.

## EXPLODED DIAGRAMS

To help identify parts and clarify procedure steps, there are exploded diagrams at start of each removal and disassembly section.

- 1. An easy-to-see exploded diagram ④ is provided for disassembly and assembly jobs.
- 2. Numbers ⑤ are given in the order of jobs in the exploded diagram. A number that is enclosed by a circle indicates a disassembly step.
- 3. An explanation of jobs and notes is presented in an easy-to-read way by the use of symbol marks ⑥. The meanings of the symbol marks are given on the next page.
- 4. A job instruction chart ⑦ accompanies the exploded diagram, providing the order of jobs, names of parts, notes in jobs, etc.
- 5. For jobs requiring more information, the step-by-step format supplements ⑧ are given in addition to the exploded diagram and the job instruction chart.

② CYLINDER AND PISTON ENG

① CYLINDER AND PISTON

④

⑦

Order	Job name/Part name	Qty	Remarks
<b>Cylinder and piston removal</b>			
1	Cylinder head	1	Remove the parts in order. Refer to "CYLINDER HEAD" section.
2	Joint	2	
3	O-ring	2	
4	Timing chain guide (exhaust side)	1	
5	Cylinder	1	Refer to "PISTON RINGS, PISTON AND CYLINDER INSTALLATION" section.
6	Dowel pin	2	
7	Cylinder gasket	1	Refer to "PISTON AND PISTON RINGS REMOVAL" section.
8	Piston pin circlip	1	
9	Piston pin	1	Refer to "PISTON RINGS, PISTON AND CYLINDER INSTALLATION" section.
10	Piston	1	
11	Piston ring (top)	1	Reverse the removal procedure for installation.
12	Piston ring (2nd)	1	
12	Side rail/Spacer	2/1	

4-21

③

CYLINDER AND PISTON ENG

⑧

**PISTON AND PISTON RINGS REMOVAL**

1. Remove:

- Piston pin circlip ①
- Piston pin ②
- Piston ③

**NOTE:**

Before removing the piston pin circlip, cover the crankcase opening with a clean towel or rag to prevent the circlip from falling into the crankcase cavity.

2. Remove:

- Top ring
- 2nd ring
- Oil ring

**NOTE:**

When removing the piston ring, open the end gap of the ring by fingers, and push up the other side of the ring.

**CYLINDER INSPECTION**

1. Measure:

- Cylinder bore
- Out of specification → Rebore or replace

**NOTE:**

- Measure the cylinder bore with a cylinder bore gauge.
- Measure the cylinder bore in parallel to and at right angles to the crankshaft. Then, find the average of the measurements.

**Cylinder bore:**

69.000 – 69.005 mm

<Limit: 69.1 mm>

<Defferance limit between A, B and C: 0.03 mm>

















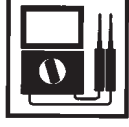







2. Measure:

- Warpaga
- Out of specification → Replace.

**Cylinder warpaga limit:**

0.03 mm

4-22

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

EB003000

## ILLUSTRATED SYMBOLS

Illustrated symbols ① to ⑨ are designed as thumb tabs to indicate the chapter's number and content.

- ① General information
- ② Specifications
- ③ Periodic inspection and adjustment
- ④ Engine
- ⑤ Cooling system
- ⑥ Carburetion
- ⑦ Chassis
- ⑧ Electrical
- ⑨ Troubleshooting

Illustrated symbols ⑩ to ⑰ are used to identify the specifications appearing in the text.

- ⑩ Possible to maintain with engine mounted
- ⑪ Filling fluid
- ⑫ Lubricant
- ⑬ Special tool
- ⑭ Tightening
- ⑮ Wear limit, clearance
- ⑯ Engine speed
- ⑰ Ω, V, A









Illustrated symbols ⑱ to ㉓ in the exploded diagrams indicate the types of lubricants and lubrication points.

- ⑱ Apply engine oil
- ⑲ Apply gear oil
- ⑳ Apply molybdenum disulfide oil
- ㉑ Apply wheel bearing grease
- ㉒ Apply lightweight lithium-soap base grease
- ㉓ Apply molybdenum disulfide grease

Illustrated symbols ㉔ to ㉕ in the exploded diagrams indicate the where to apply locking agent ㉔ and when to install new parts ㉕.

- ㉔ Apply locking agent (LOCTITE®)
- ㉕ Use new one

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	<b>SPEC</b> <b>2</b>
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	<b>INSP ADJ</b> <b>3</b>
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	<b>ENG</b> <b>4</b>
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<b>TROUBLESHOOTING</b>	<b>?</b>
	<b>TRBL SHTG</b> <b>9</b>





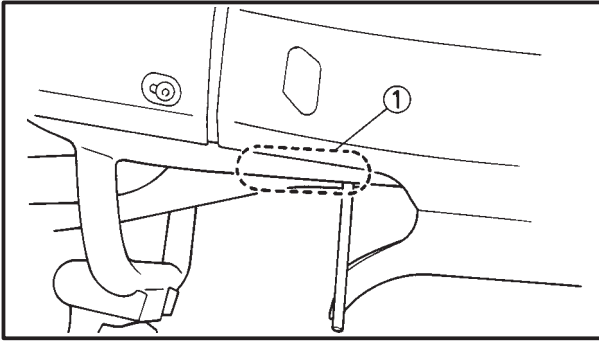
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## CHAPTER 1

### GENERAL INFORMATION

<b>SCOOTER IDENTIFICATION</b> .....	1-1
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YP100000

## GENERAL INFORMATION SCOOTER IDENTIFICATION

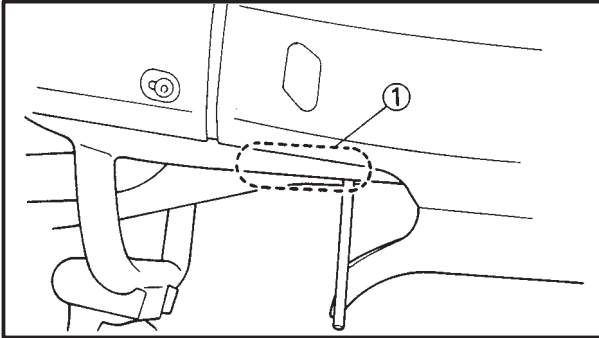
YP100010

### VEHICLE IDENTIFICATION NUMBER (for E)

The vehicle identification number ① is stamped into the right side of the frame.

#### NOTE:

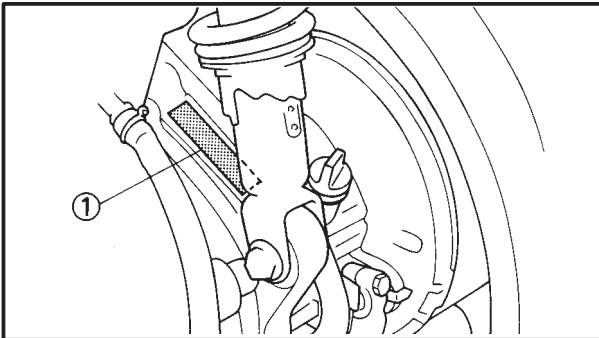
The vehicle identification number is used to identify your scooter and may be used to register your scooter with the licensing authority in your country.



YP100020

### FRAME SERIAL NUMBER (except for E)

The frame serial number ① is stamped into the right side of the frame.



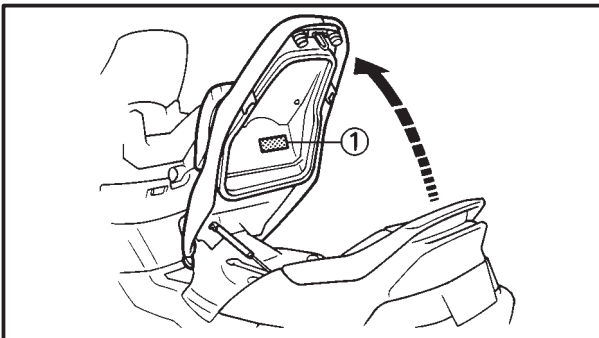
EB100030

### ENGINE SERIAL NUMBER

The engine serial number ① is stamped into the crankcase.

#### NOTE:

Designs and specifications are subject to change without notice.



### MODEL LABEL

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

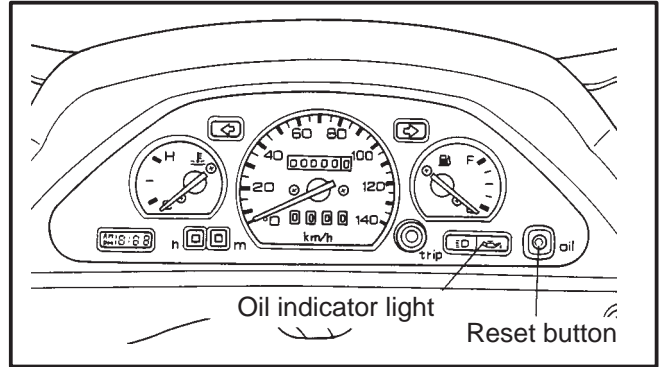
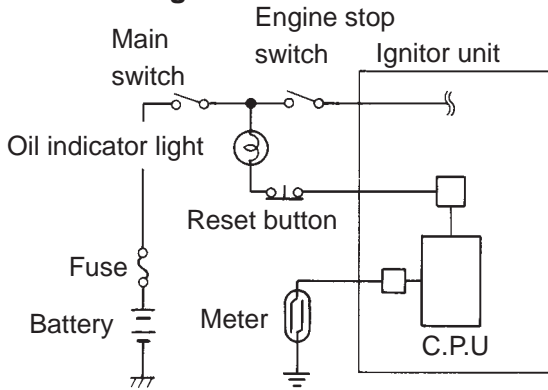
## FEATURES

### OIL INDICATOR LIGHT

• **Function**

Pulses (travel distance signals) from the speedometer are counted and cause the oil indicator light to come on at 1,000 km for the first time and thereafter every 3,000 km. In this way, this light indicates the time for oil change.

• **Circuit diagram**



• **Resetting procedure**

Travel distance can be reset if the reset button is held down for 2 to 5 seconds with the main switch “ON”.

- 1) If the “resetting” is done while the oil light is on, the oil indicator light goes off for resetting confirmation.
- 2) If the “resetting” is done while the oil light is off, the oil indicator light comes on for 1.4 seconds for resetting confirmation.

• **Failure diagnosis**

- 1) Checking oil indicator light for breakage  
This oil indicator light is kept on for 1.4 seconds immediately after the main switch is turned on, thereby checking the bulb for breakage.
- 2) In case of meter pulse failure  
If travel distance signals are not detected during running, the oil indicator light flashes and gives a warning of meter signal failure.

**NOTE:**

This circuit may be activated if the engine is accelerated without load with the mainstand put up.

• **Battery tending to discharge.**

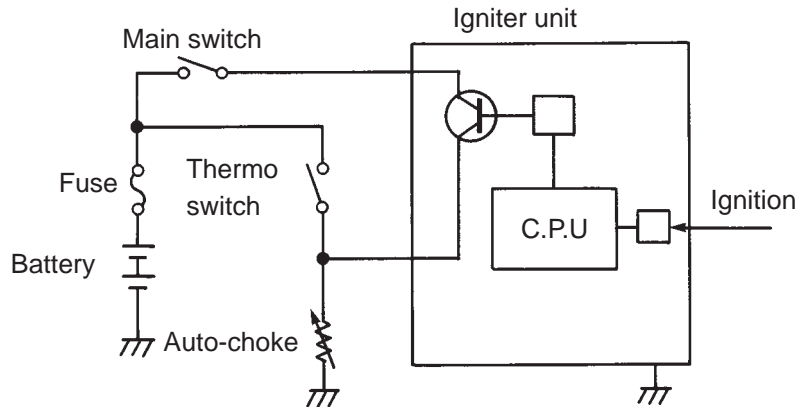
If the starting motor is run with the battery tending to discharge, the oil indicator light may come on (for 1.4 seconds), but this is noting abnormal. In this case recharge or replace battery.

**This light comes on if battery charging becomes poor, thereby causing the engine to run as low as about 200 rpm against 600 rpm or so,**

**AUTO-CHOKE SYSTEM**

This system is the parallel connection of the ignitor unit circuit and the thermo switch as shown, detecting the engine temperature, and facilitates the restarting with the warm engine.

• **Circuit diagram**



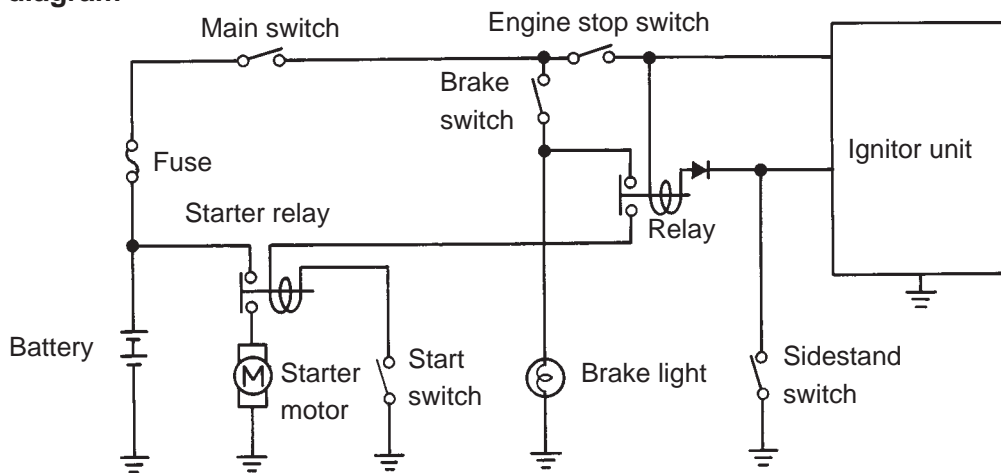
• **Auto-choke operation**

Engine condition	Start with the cold engine	Crank with the cold engine	Crank with the warm engine	Restart with the warm engine
Thermo switch	OFF	OFF	ON	ON
Ignitor unit circuit	OFF	ON	ON	OFF
Auto-choke	Activates	Activates	Not activate	Not activate

**IGNITION CIRCUIT CUT-OFF SYSTEM**

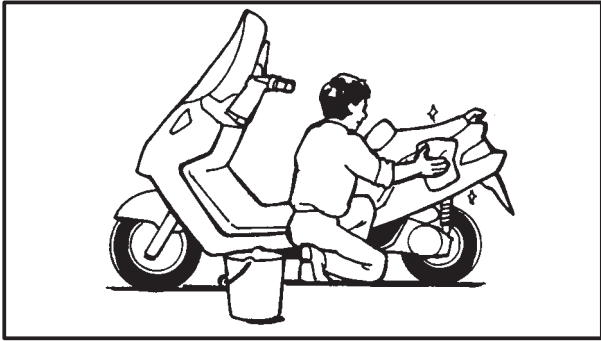
A sidestand circuit is added to the existing electric starting circuit, thereby controlling the starter motor operation and the ignition system of the ignitor unit.

• **Circuit diagram**



• **Operating mode**

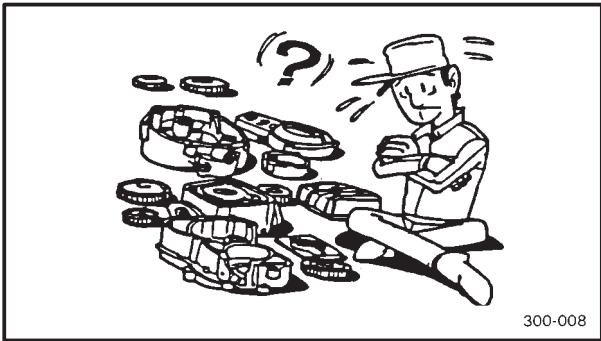
Sidestand switch	Operation of brake light	Operation of starter motor	Operation of ignitor unit control
OFF (Sidestand in use)	ON	Not operated	Misfire
	OFF	Not operated	Misfire
ON (Sidestand folded in)	ON	Operated	Ignited
	OFF	Not operated	Ignited (ridden)



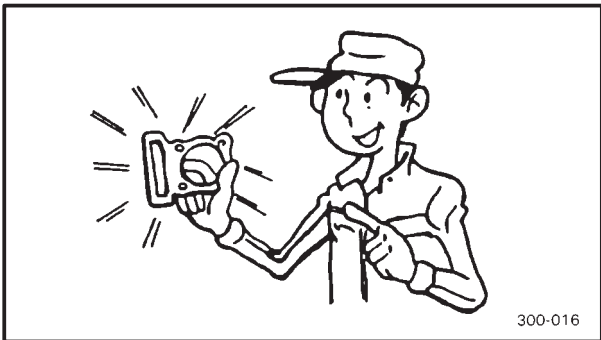
EB101000

**IMPORTANT INFORMATION  
PREPARATION FOR REMOVAL PROCE-  
DURES**

1. Remove all dirt, mud, dust and foreign material before removal and disassembly.
2. Use proper tools and cleaning equipment.
3. Refer to the "SPECIAL TOOLS" section.



4. When disassembling the machine, 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.
5. During machine disassembly, clean all 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.
6. Keep all parts away from any source of fire.



EB101010

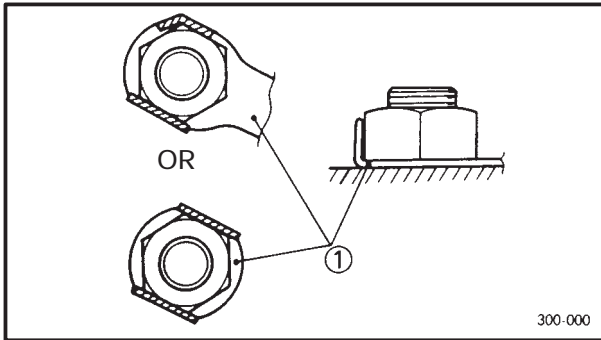
**REPLACEMENT PARTS**

1. 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.

EB101020

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

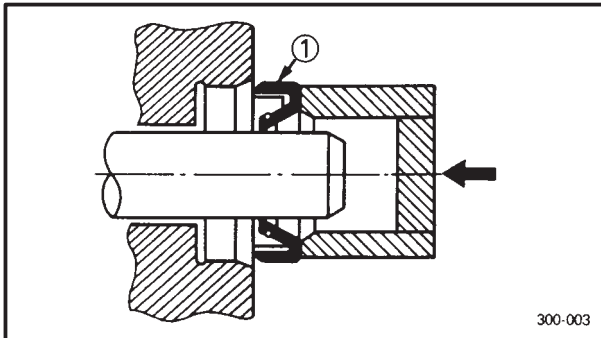
1. Replace all gaskets, seals and O-rings when overhauling the engine. All gasket surfaces, oil seal lips and O-rings must be cleaned.
2. Properly oil all mating parts and bearings during reassembly. Apply grease to the oil seal lips.



EB101030

**LOCK WASHERS/PLATES AND COTTER PINS**

1. Replace all lock washers/plates and cotter pins after removal. Bend lock tabs along the bolt or nut flats after the bolt or nut has been tightened to specification.

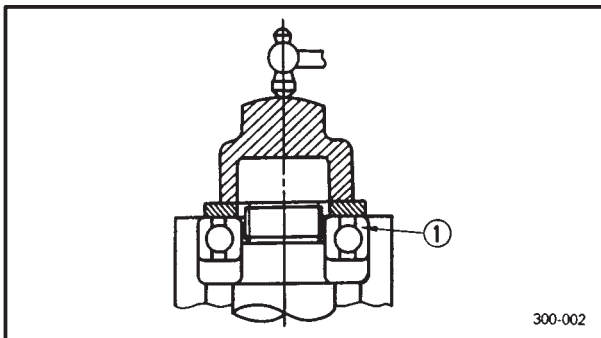


EB101040

**BEARINGS AND OIL SEALS**

Install bearings and oil seals so that the manufacturer's marks or numbers are visible. When installing oil seals, apply a light coating of lightweight lithium base grease to the seal lips. Oil bearings liberally when installing, if appropriate.

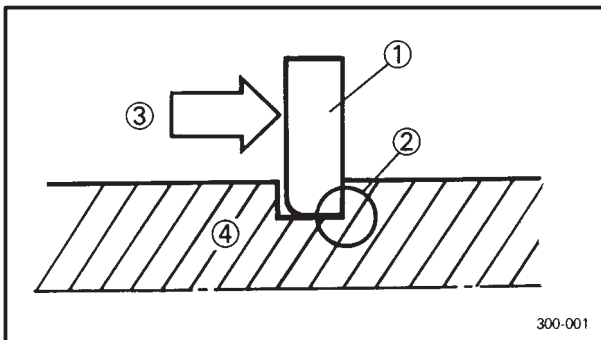
- ① Oil seal



**CAUTION:** \_\_\_\_\_

Do not use compressed air to spin the bearings dry. This will damage the bearing surfaces.

- ① Bearing



EB101050

**CIRCLIPS**

1. Check all circlips carefully before reassembly. Always replace piston pin clips after one use. Replace distorted circlips. When installing a circlip ①, make sure that the sharp-edged corner ② is positioned opposite the thrust ③ it receives. See sectional view.

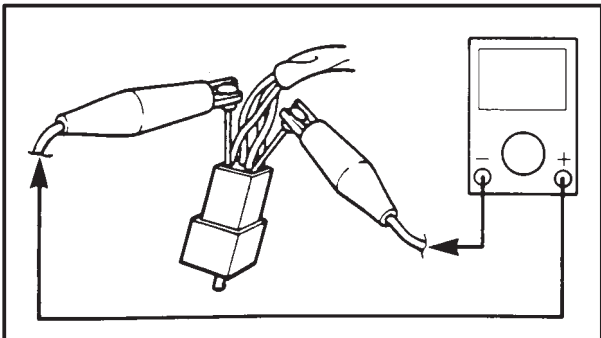
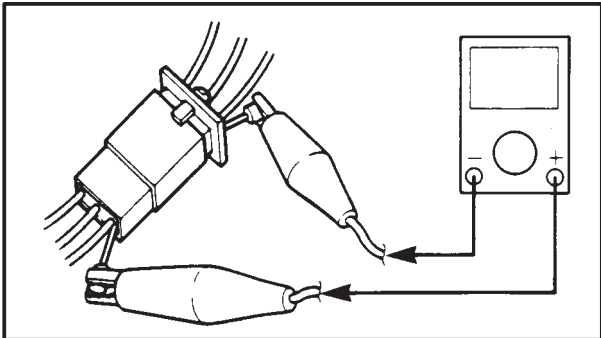
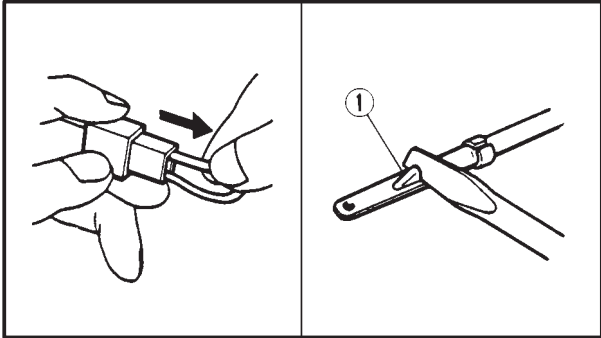
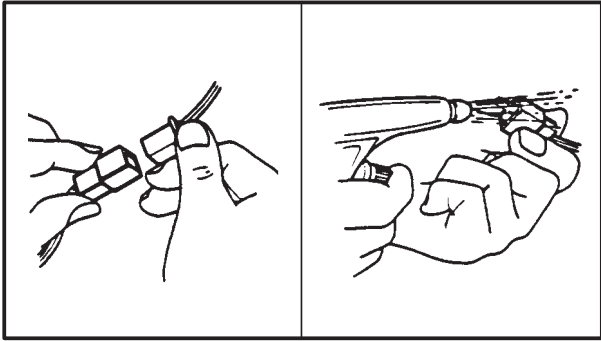
- ④ Shaft

EB801000

**CHECKING OF CONNECTIONS**

Dealing with stains, rust, moisture, etc. on the connector.

1. Disconnect:
  - Connector
2. Dry each terminal with an air blower.



3. Connect and disconnect the connector two or three.
4. Pull the lead to check that it will not come off.
5. If the terminal comes off, bend up the pin ① and reinsert the terminal into the connector.

6. Connect:
  - Connector

**NOTE:** \_\_\_\_\_  
The two connectors “click” together.

7. Check for continuity with a tester.

- NOTE:** \_\_\_\_\_
- If there is no continuity, clean the terminals.
  - Be sure to perform the steps 1 to 7 listed above when checking the wireharness.
  - For a field remedy, use a contact revitalizer available on the market.
  - Use the tester on the connector as shown.



EB201000

## HOW TO USE THE CONVERSION TABLE

All specification data in this manual are listed in SI and METRIC UNITS.

Use this table to convert METRIC unit data to IMPERIAL unit data.

Ex.

METRIC		MULTIPLIER		IMP
**mm	×	0.03937	=	** in
2 mm	×	0.03937	=	0.08 in

## CONVERSION TABLE

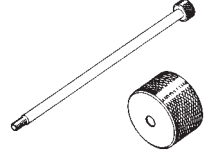
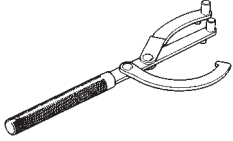
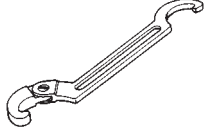
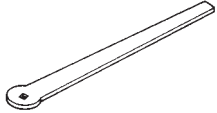

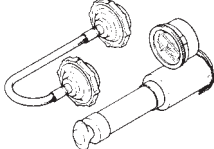
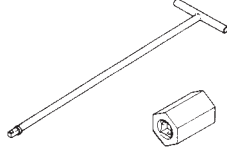
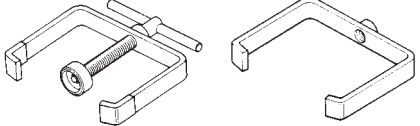
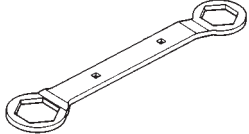
METRIC TO IMP			
	Known	Multiplier	Result
Torque	m•kg	7.233	ft•lb
	m•kg	86.794	in•lb
	cm•kg	0.0723	ft•lb
	cm•kg	0.8679	in•lb
Weight	kg	2.205	lb
	g	0.03527	oz
Distance	km/hr	0.6214	mph
	km	0.6214	mi
	m	3.281	ft
	m	1.094	yd
	cm	0.3937	in
Volume/ Capacity	mm	0.03937	in
	cc (cm <sup>3</sup> )	0.03527	oz (IMP liq.)
	cc (cm <sup>3</sup> )	0.06102	cu•in
	lit (liter)	0.8799	qt (IMP liq.)
Miscella- neous	lit (liter)	0.2199	gal (IMP liq.)
	kg/mm	55.997	lb/in
	kg/cm <sup>2</sup>	14.2234	psi (lb/in <sup>2</sup> )
	Centigrade	9/5(°C) + 32	Fahrenheit (°F)

EB102000

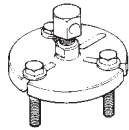
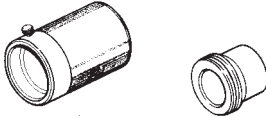

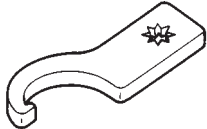
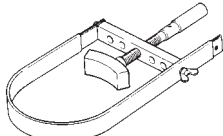
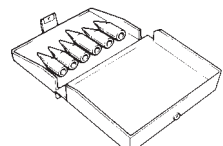
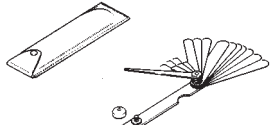
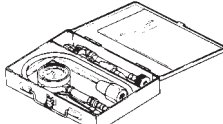
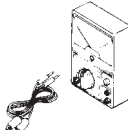
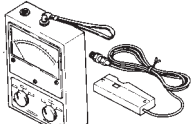
## SPECIAL TOOLS

The following special tools are necessary for complete and accurate tune-up and assembly. Use only the appropriate special tools; this will help prevent damage caused by the use of inappropriate tools or improvised techniques.

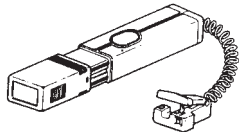
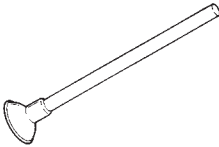
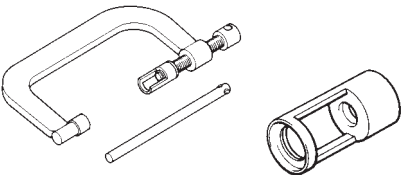
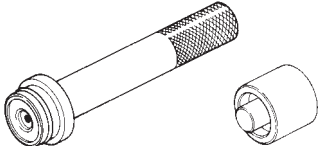
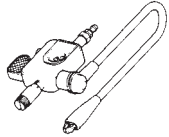
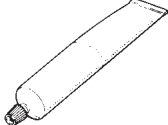
When placing an order, refer to the list provided below to avoid any mistakes.

Tool No.	Tool name/Usage	Illustration
90890-01084 -01085	Weight Rocker arm shaft puller bolt  These tools are used when removing or installing the rocker arm shafts.	
90890-01235	Rotor holding tool  This tool is used to remove the flywheel magneto.	
90890-01268	Ringnut wrench  This tool is used to loosen and tighten the exhaust and steering ringnut.	
90890-01311	Valve adjusting tool  This tool is necessary for adjusting valve clearance.	
90890-01312	Fuel level gauge  This gauge is used to measure the fuel level in the float chamber.	
90890-01325 -01352	Radiator cap tester Adaptor  These tools are used for checking the cooling system.	
90890-01326 -04084	T-handle Damper rod holder  These tool are used for holding the damper rod holder when removing or installing the damper rod holder.	
90890-01337 -01464	Clutch spring compressor Clutch spring holder arm  These tools are used for removing the nut with holding the compression spring.	
90890-01348	Locknut wrench  This tool is used when removing or installing the secondary sheave nut.	



Tool No.	Tool name/Usage	Illustration
90890-01362	Flywheel puller This tool is used for removing the rotor.	
90890-01367 -01368	Fork seal driver weight Fork seal driver attachment (ø33) This tool is used when installing the fork seal.	
90890-01384	Oil seal guide This tool is used for protecting the oil seal lip when installing the secondary sliding sheave.	
90890-01403	Ring nut wrench This tool is used to loosen and tighten the steering ring nut.	
90890-01701	Sheave holder This tool is used for holding the secondary sheave.	
90890-01996	Cylinder cup installer set This tool is used for installing the cylinder cup to the master cylinder piston.	
90890-03079	Thickness gauge This tool is used to measure the valve clearance.	
90890-03081	Compression gauge These tools are used to measure the engine compression.	
90890-03112	Pocket tester These instruments are invaluable for checking the electrical system.	
90890-03113	Engine tachometer This tool is needed for detecting engine rpm.	



Tool No.	Tool name/Usage	Illustration
90890-03141	Timing light This tool is needed for detecting ignition timing.	
90890-04101	Valve lapper This tool is used for removing and installing the lifter and for lapping the valve.	
90890-04019 -04108	Valve spring compressor Attachment These tools are used when removing or installing the valve and the valve spring.	
90890-04058 -04078	Middle shaft bearing driver Mechanical seal installer These tools are used for installing mechanical seal.	
90890-06754	Ignition checker This instrument is necessary for checking the ignition system components.	
90890-85505	Yamaha bond No. 1215 This sealant (bond) is used for crankcase mating surface, etc.	

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**CHAPTER 2.  
SPECIFICATIONS**

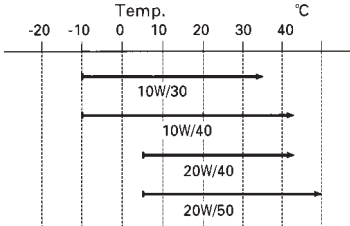
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**SPECIFICATIONS**

**GENERAL SPECIFICATIONS**

Model	YP250
Model code:	4UC 1 (except for CH, A) 4UD1 (for CH, A)
Dimensions:	
Overall length	2,110 mm
Overall width	750 mm
Overall height	1,330 mm
Seat height	700 mm
Wheelbase	1,500 mm
Minimum ground clearance	115 mm
Minimum turning radius	2,600 mm
Basic weight:	
With oil and full fuel tank	158 kg
Engine:	
Engine type	Liquid-cooled 4-stroke, SOHC
Cylinder arrangement	Forward-inclined single cylinder
Displacement	0.249L (249 cm <sup>3</sup> )
Bore × stroke	69.0 × 66.8 mm
Compression ratio	10 : 1
Compression pressure (STD)	1,400 kPa (14 kg/cm <sup>2</sup> , 14 bar) at 500 r/min
Starting system	Electric starter
Lubrication system:	Wet sump
Oil type or grade:	
Engine oil	<div style="display: flex; align-items: center;">  <div style="margin-left: 20px;"> <p>API STANDERD: SE or higher grade</p> </div> </div>
Periodic oil change	1.2 L
Total amount	1.4 L
Transmission oil	
Total amount	0.25 L
Radiator capacity	
Total amount (including all routes)	1.4 L
Air filter: Carburetor side	Wet type element
Crankcase side	Dry type element
Fuel:	
Type	Regular unleaded gasoline
Fuel tank capacity	11 L

## GENERAL SPECIFICATIONS

**SPEC**



Model	YP250
Carburetor: Type/quantity Manufacturer	Y28V-1A/1 TEIKEI
Spark plug: Type Manufacturer Spark plug gap	DR8EA NGK 0.6 ~ 0.7 mm
Clutch type:	Dry, centrifugal automatic
Transmission: Primary reduction system Primary reduction ratio Secondary reduction sytem Secondary reduction ratio Transmission type Operation Single speed automatic	Helical gear 40/15 (2.666) Sper gear 37/16 (2.312) Single speed automatic (V-belt type) Centrifugal automatic type 2.20 ~ 0.88:1
Chassis: Frame type Caster angle Trail	Steel tube underbone 28° 103 mm
Tire: Type Size front rear Manufacturer front rear Type front rear	Tubeless 110/90-12 64J 130/70-12 62L IRC/CHENG SHIN IRC/CHENG SHIN MB61/C922 MB61/C940
Tire pressure (cold tire): Maximum load-except motorcycle Loading condition A* front rear Loading condition B* front rear High-speed riding front rear	197 kg 0 ~ 90 kg 175 kPa (1.75 kg/cm <sup>2</sup> , 1.75 bar) 200 kPa (2.0 kg/cm <sup>2</sup> , 2.0 bar) 90 ~ 205 kg 200 kPa (2.0 kg/cm <sup>2</sup> , 2.0 bar) 225 kPa (2.25 kg/cm <sup>2</sup> , 2.25 bar)  200 kPa (2.0 kg/cm <sup>2</sup> , 2.0 bar) 250 kPa (2.5 kg/cm <sup>2</sup> , 2.5 bar)

\*Load is the total weight of cargo, rider, passenger, and accessories.



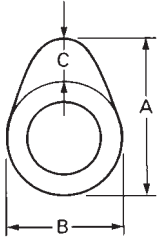
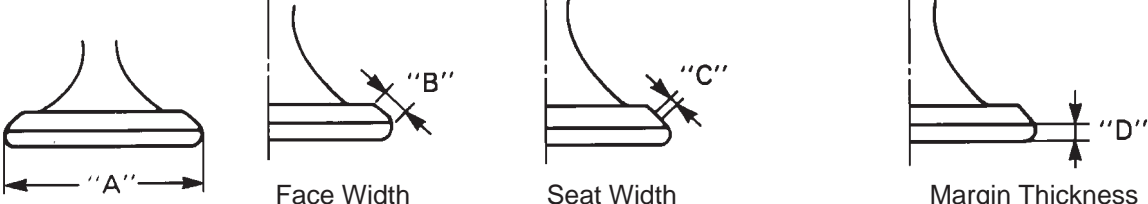
## GENERAL SPECIFICATIONS

**SPEC**



Model	YP250
<b>Brake:</b> Front brake      type operation Rear brake      type operation	Single disc brake Right hand operation Drum brake Left hand operation
<b>Suspension:</b> Front suspension Rear suspension	Telescopic fork Unit swing
<b>Shock absorber:</b> Front shock absorber Rear shock absorber	Coil spring/Oil damper Coil spring/Oil damper
<b>Wheel travel:</b> Front wheel travel Rear wheel travel	85 mm 90 mm
<b>Electrical:</b> Ignition system Generator system Battery type Battery capacity	T.C.I. (Digital) A.C. magneto GT7B-5 12 V 6 AH
<b>Headlight type:</b>	Quartz bulb (Halogen)
<b>Bulb wattage × quantity:</b> Headlight Marker light Tail/brake light Flasher light Meter light High beam indicator light Oil indicator light Turn indicator light License light	12V 60 W/55 W × 1 12V 4 W × 1 12V 5 W/21 W × 1 12V 21W × 4 12V 1.7W × 4 12V 3.4 W × 1 12V 1.7 W × 1 12V 3.4 W × 2 12V 5 W × 1

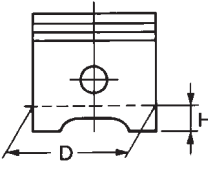
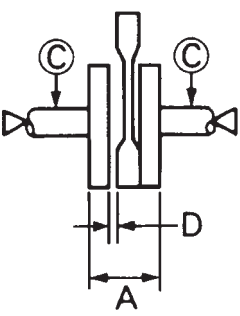
**MAINTENANCE SPECIFICATIONS**  
**ENGINE**

Item	Standard	Limit
Cylinder head: Warp limit	•••	0.03 mm
Cylinder: Bore size Out of round limit	69.000 ~ 69.005 mm •••	69.1 mm 0.03 mm
Camshaft: Cam dimensions Intake "A" "B" "C" Exhaust "A" "B" "C" Camshaft runout limit	 36.545 ~ 36.645 mm 30.021 ~ 30.121 mm 6.524 mm 36.547 ~ 36.647 mm 30.067 ~ 30.167 mm 6.48 mm •••	36.45 mm 29.92 mm ••• 36.45 mm 29.97 mm ••• 0.03 mm
Cam chain: Cam chain type/No. of links	DID SC•A-0404A SDH/104	•••
Rocker arm/rocker armshaft: Rocker arm inside diameter Rocker shaft outside diameter Rocker arm-to-rocker armshaft clearance	12.000 ~ 12.018 mm 11.981 ~ 11.991 mm 0.009 ~ 0.012 mm	12.03 mm 11.995 mm •••
Valve, valve seat, valve guide: Valve clearance (cold) IN EX Valve dimensions	0.08 ~ 0.12 mm 0.16 ~ 0.20 mm	••• •••
	Face Width Seat Width Margin Thickness	
"A" head diameter IN EX "B" face width IN EX "C" seat width IN EX "D" margin thickness IN EX Stem outside diameter IN EX Guide inside diameter IN EX	33.9 ~ 34.1 mm 28.4 ~ 28.6 mm 3.394 ~ 3.960 mm 3.394 ~ 3.960 mm 0.9 ~ 1.1 mm 0.9 ~ 1.1 mm 0.8 ~ 1.2 mm 0.8 ~ 1.2 mm 5.975 ~ 5.990 mm 5.960 ~ 5.975 mm 6.000 ~ 6.012 mm 6.000 ~ 6.012 mm	••• ••• ••• ••• ••• ••• ••• ••• 5.94 mm 5.92 mm 6.05 mm 6.05 mm

# MAINTENANCE SPECIFICATIONS

**SPEC**



Item	Standard	Limit
Stem-to-guide clearance	IN EX	0.010 ~ 0.037 mm 0.025 ~ 0.052 mm
Stem runout limit	•••	0.01 mm
Valve seat width	IN EX	0.9 ~ 1.1 mm 0.9 ~ 1.1 mm
<b>Valve spring:</b>		
Free length (Inner)	IN/EX	38.1 mm
(Outer)	IN/EX	36.93 mm
Set length (valve closed)	(Inner) IN/EX	30.1 mm
	(Outer) IN/EX	31.6 mm
Compressed pressure	(Inner) IN/EX	7.8 ~ 9.0 kg
	(Outer) IN/EX	37.22 ~ 42.83 kg
Tilt limit (Inner)	IN/EX	•••
(Outer)	IN/EX	•••
<b>Piston:</b>		
Piston to cylinder clearance		0.02 ~ 0.04 mm
Piston size "D"		68.965 ~ 68.980 mm
Measuring point "H"		5 mm
Piston pin bore inside diameter		17.004 ~ 17.015 mm
Piston pin outside diameter		16.991 ~ 17.000 mm
<b>Piston rings:</b>		
<b>Top ring:</b>		
Type	Barrel	•••
End gap (installed)	0.15 ~ 0.30 mm	0.45 mm
Side clearance (installed)	0.04 ~ 0.08 mm	0.12 mm
<b>2nd ring:</b>		
Type	Taper	•••
End gap (installed)	0.30 ~ 0.45 mm	0.7 mm
Side clearance	0.03 ~ 0.07 mm	0.12 mm
<b>Oil ring:</b>		
End gap (installed)	0.2 ~ 0.7 mm	•••
<b>Crankshaft:</b>		
		
Crank width "A"		59.95 ~ 60.00 mm
Runout limit "C"		0.03 mm
Big end side clearance "D"		0.35 ~ 0.85 mm

## MAINTENANCE SPECIFICATIONS

**SPEC**


Item	Standard	Limit
Automatic centrifugal clutch:		
Clutch shoe thickness	3.0 mm	2.0 mm
Clutch housing inside diameter	135 mm	135.5 mm
Clutch shoe spring free length	28.1 mm	...
Weight outside diameter	20 mm	19.5 mm
Clutch – in revolution	2,100 ~ 2,700 r/min	...
Clutch – stall revolution	3,700 ~ 4,700 r/min	...
V-belt:		
V-belt width	22.6 mm	21.0 mm
Carburetor:		
Type	Y28V-1B-1	
I.D. mark	4UC 00 [4UD 00 (CH, A)]	...
Ventury outside diameter	ø28	...
Main jet (M.J)	#130	...
Main air jet (M.A.J)	ø0.9	...
Jet needle (J.N)	5D32-3/5	...
Throttle valve size (Th.V)	11°	...
Pilot air jet (P.A.J.1)	ø1.2	...
Needle jet (N.J)	ø2.585	...
Pilot outlet (P.O)	ø0.8	...
Pilot jet (P.J)	#44	...
Bypass (B.P)	0.7 × 4	...
Pilot screw (P.S)	17/8	...
Valve seat size (V.S)	1.4	...
Starter jet 1 (G.S.1)	ø0.45	...
Starter jet 2 (G.S.2)	ø0.5	...
Float height (F.H)	27 mm	...
Engine idle speed	1,450 ~ 1,550 r/min	...
Intake vacuum	220 ~ 260 mmHg	...
Oil temperature	65 ~ 75°C	...
Cooling water temperature	80°C	...
Fuel pump:		
Type	Vaccum type	...
Model/manufacturer	4HC/MIKUNI	...
Oil pump:		
Type	Trochoid type	...
Tip clearance	0.1 ~ 0.34 mm	0.4 mm
Side clearance	0.013 ~ 0.036 mm	0.15 mm
Housing and rotor clearance	0.04 ~ 0.09 mm	0.15 mm

## MAINTENANCE SPECIFICATIONS

**SPEC**





Item	Standard	Limit
<b>Radiator:</b>		
Type	Cooling fin with electric fan	•••
Width/height/thickness	140/238/24 mm	•••
Radiator cap opening pressure	110 ~ 140 kPa (1.1 ~ 1.4 kg/cm <sup>2</sup> , 1.1 ~ 1.4 bar)	•••
Radiator capacity	1.4 L	•••
Reservoir tank capacity	0.35 L	•••
<b>Thermostatic valve:</b>		
Type/manufacturer	4HC/NIHON THERMOSTAT	
Valve opening temperature	80.5 ~ 83.5°C	
Valve full open temperature	95°C	
Valve full open lift	3 mm	

Item	Size
<b>Bearings and oil seals:</b>	
Big end bearing	32 × 40 × 20 (needle bearing)
Crankshaft bearing (left)	6306
Crankshaft bearing (right)	63/28
Crankshaft oil seal (left)	SD-30-45-5
Crankshaft oil seal (right)	S7-14-27-6
Water pump bearing	6000
Water pump oil seal	S-10-21-5
Main axle bearing (left)	15NQ2815
Main axle bearing (right)	15NQ2815
Drive axle bearing (left)	6303
Drive axle bearing (right)	6272
Drive axle oil seal	SD8-32-52-7
Camshaft bearing (left)	6005
Camshaft bearing (right)	6202Z
Primary drive gear bearing (left)	6205
Primary drive gear bearing (right)	6302
Primary drive gear oil seal	SD8-32-52-7







**TIGHTENING TORQUES**

ENGINE

Part to be tightened	Part name	Thread size	Q'ty	Tightening torque		Remarks
				Nm	m•kg	
Oil check bolt	—	M6	1	7	0.7	
Exhaust pipe stud bolt	—	M8	2	13	1.3	
Spark plug	—	M12	1	18	1.8	
Cam sprocket cover	Bolt	M6	2	10	1.0	
Cylinder head and cylinder	Nut	M8	4	22	2.2	
Cylinder head and cylinder (Cam chain side)	Bolt	M6	2	10	1.0	
Valve cover	Bolt	M6	5	10	1.0	
Rotor	Nut	M16	1	80	8.0	
Valve adjuster locknut	Nut	M6	2	14	1.4	
Cam shaft bearing stopper	Bolt	M6	2	8	0.8	
Cam sprocket	Bolt	M10	1	60	6.0	
Cam chain tensioner (Body)	Bolt	M6	2	10	1.0	
(Plug)	Bolt	M8	1	8	0.8	
Guide stopper 2	Bolt	M6	1	10	1.0	
Water pump housing cover	Bolt	M6	3	10	1.0	
Hose joint	—	M6	2	7	0.7	
Thermostatic valve cover	Bolt	M6	2	10	1.0	
Filler neck supporting	Bolt	M5	1	5	0.5	
Oil pump	Screw	M6	2	7	0.7	
Oil pump cover	Bolt	M3	1	1	0.1	
Drain plug	Bolt	M35	1	32	3.2	
Carburetor joint	Bolt	M6	2	10	1.0	
Carburetor joint and carburetor	Nut	M6	2	10	1.0	
Air filter assembly	Bolt	M6	2	7	0.7	
Air filter cover	Screw	M5	5	1	0.1	
Fuel pump	—	M6	2	10	1.0	
Exhaust pipe assembly	Nut	M8	2	20	2.0	
Muffler	Bolt	M10	3	53	5.3	
Muffler and exhaust pipe	Bolt	M8	1	20	2.0	
Protector (Muffler)	Screw	M6	3	10	1.0	
Protector (Exhaust pipe)	Screw	M6	2	10	1.0	
Crankcase (left and right)	Bolt	M6	9	10	1.0	
Drain bolt	Bolt	M8	1	22	2.2	
Oil filler	Bolt	M14	1	3	0.3	
Transmission case cover	Bolt	M8	6	16	1.6	
Crankcase cover (left)	Bolt	M6	11	10	1.0	
Crankcase filter cover	—	M6	3	7	0.7	
Crankcase cover protector	Bolt	M6	2	7	0.7	
Magnet cover	—	M6	10	10	1.0	

## MAINTENANCE SPECIFICATIONS



Part to be tightened	Part name	Thread size	Q'ty	Tightening torque		Remarks
				Nm	m•kg	
Cover (oil pump)	Bolt	M6	2	12	1.2	
Timing check plug	Plug	M16	1	8	0.8	
One way clutch	—	M8	3	30	3.0	
Clutch housing	Bolt	M14	1	60	6.0	
Grease stopper (Primary sheave)	—	M4	4	3	0.3	
Primary fixed sheave	—	M14	1	60	6.0	
Clutch carrier assembly	—	M36	1	90	9.0	
Stator	—	M5	3	7	0.7	
Pick up coil	—	M5	2	7	0.7	
Starter motor	Bolt	M6	2	10	1.0	
Thermo switch	—	M16	2	23	2.3	
Thermo unit	—	Pt 1/8	1	8	0.8	



CHASSIS

Item	Standard	Limit
Steering system: Steering bearing type	Ball bearing	•••
Front suspension: Front fork travel Fork spring free length Spring rate (K1) Stroke (K1) Oil capacity Oil level Oil grade Inner tube vend limit	100 mm 265.8 mm 5.7 N/mm (0.57 kg/mm) 0 ~ 100 mm 0.142 L (142 cm <sup>3</sup> ) 80 mm Fork oil 15 WT or equivalent •••	••• 263.5 mm ••• ••• ••• ••• ••• 0.2 mm
Rear suspension: Shock absorber stroke Spring free length Fitting length Spring rate (K1) (K2) (K3) Stroke (K1) (K2) (K3)	106 mm 265 mm 317 mm 7.7 N/mm (0.77 kg/mm) 10.9 N/mm (1.09 kg/mm) 17.6 N/mm (1.76 kg/mm) 0 ~ 40 mm 40 ~ 75 mm 75 ~ 106 mm	••• 260 mm ••• ••• ••• ••• ••• ••• •••
Front wheel: Type Rim size Rim material Rim runout limit radial lateral	Cast wheel MT2.75 × 12 Aluminum ••• •••	••• ••• ••• 2 mm 2 mm
Rear wheel: Type Rim size Rim material Rim runout limit radial lateral	Cast wheel MT3.50 × 12 Aluminum ••• •••	••• ••• ••• 2 mm 2 mm
Front disc brake: Type Disc outside diameter × thickness Pad thickness Master cylinder inside diameter Caliper cylinder outside diameter Brake fluid type	Single 245 × 4 mm 5.4 mm 12.7 mm 25.4 + 30.1 mm DOT #4	••• ••• 0.8 mm ••• ••• •••



## MAINTENANCE SPECIFICATIONS

**SPEC**




Item	Standard	Limit
Rear drum brake:		
Type	Leading, trailing	•••
Drum inside diameter	160 mm	161 mm
Shoe thickness	4 mm	2 mm
Brake lever:		
Brake lever free play (front at lever side)	2 ~ 5 mm	•••
Brake lever free play (rear)	10 ~ 20 mm	•••
Throttle cable free play	3 ~ 5 mm	•••

Item	Size
Bearings and oil seals:	
Front wheel bearing (left)	6302RS
Front wheel bearing (right)	6302RS
Front wheel oil seal (left)	SD-22-42-7-1
Meter gear oil seal (right)	SDD-47-58-7
Rear wheel bearing (left)	6302RS
Rear wheel oil seal (inner)	SDO-28-35-4
Rear wheel oil seal (outer)	DD-26-42-8



**TIGHTENING TORQUES**

**CHASSIS**

Part to be tightened	Thread size	Tightening torque		Remarks
		Nm	m•kg	
Frame and engine bracket	M12 × 1.25	59	5.9	See "NOTE"
Engine bracket, compression rod and engine	M10 × 1.25	32	3.2	
Compression rod and frame	M10 × 1.25	64	6.4	
Sidestand (bolt and frame)	M10 × 1.25	40	4.0	
Sidestand (bolt and nut)	M10 × 1.25	40	4.0	
Rear footrest bracket	M 6 × 1.0	7	0.7	
Swingarm	M 8 × 1.25	23	2.3	
Rear shock absorber and frame	M10 × 1.25	40	4.0	
Rear shock absorber and engine	M 8 × 1.25	19	1.9	
Steering ring nut	M25 × 1.0	22	2.2	
Handle holder and steering shaft	M20 × 1.5	139	13.9	
Handle upper holder and lower holder	M 8 × 1.25	23	2.3	
Brake hose and master cylinder	M10 × 1.25	26	2.6	
Fuel tank				
(font)	M 6 × 1.0	10	1.0	
(rear)	M 6 × 1.0	7	0.7	
Fuel cock	M 6 × 1.0	7	0.7	
Fuel sender	M 5 × 0.8	3	0.3	
Filter	M 6 × 1.0	7	0.7	
Roll over valve	M 5 × 0.8	4	0.4	
Box	M 6 × 1.0	7	0.7	
Handle seat	M 6 × 1.0	10	1.0	
Sheet lock assembly	M 6 × 1.0	7	0.7	
Plastic parts & cover	M 5	2	0.2	
Cowling stay	M 8 × 1.25	16	1.6	
Side cover 1	M 6 × 1.0	7	0.7	
Cowling body	M 6 × 1.0	7	0.7	
Footrest board	M 6 × 1.0	7	0.7	
Headlight assembly	M 6 × 1.0	7	0.7	
Tail light assembly	M 6 × 1.0	7	0.7	
Front wheel axle and nut	M14 × 1.5	70	7.0	
Rear wheel axle and nut	M14 × 1.5	135	13.5	
Rear brake cam lever	M 6 × 1.0	10	1.0	
Rear pivot pin	M10 × 1.25	32	3.2	
Front brake caliper and front fork	M10 × 1.25	49	4.9	
Brake disc and hub	M 8 × 1.25	23	2.3	
Brake hose and caliper	M10 × 1.25	26	2.6	
Brake caliper and bleed screw	M 7 × 1.0	6	0.6	
Windscreen	M 5	0.4	0.04	



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**NOTE:**

1. First, tighten the ring nut (lower) approximately 38 Nm (3.8 m•kg) by using the torque wrench, then loosen the ring nut 1/4 turn.
  2. Second, tighten the ring nut (lower) approximately 22 Nm (2.2 m•kg) by using the torque wrench, then finger tighten the ring nut (center). Align the slots both ring nut and install the lock washer.
  3. Final, hold the ring nuts (lower and center) and tighten the ring nut (upper) 75 Nm (7.5 m•kg) by using the torque wrench.
-



**ELECTRICAL**

Item	Standard	limit
Ignition timing: Ignition timing (B.T.D.C.) Advanced timing (B.T.D.C.) Advanced type	10° at 1,500 r/min 32° at 5,000 r/min Electrical type	... ... ...
T.C.I.: Pickup coil resistance/color T.C.I. unit model/manufacture	168 ~ 252 Ω at 20°C/ Yellow – Black J4T069/MITSUBISHI	... ...
Ignition coil: Model/manufacture Minimum spark gap Primary winding resistance Secondary winding resistance	F6T507/MITSUBISHI 6 mm 3.6 ~ 4.8 Ω at 20°C 10.7 ~ 14.5 kΩ at 20°C	... ... ... ...
Spark plug cap: Type Resistance	Resin type 5 kΩ	... ...
Charging system: Type Model/manufacture Normal output Stator coil resistance/color	A.C. magneto 4HC/MITSUBISHI 14 V 16 A at 5,000 r/min 0.8 ~ 1.0 Ω at 20°C/ White – White	... ... ... ...
Rectifier/regulator: Model/manufacture No load regulated voltage Capacity Withstand voltage	SH640D-12/SHINDENGEN 14.7 V 20 A 200 V	... ... ... ...
Battery: Specific gravity	1.310	...
Electric starter system: Type Starter motor: Model/manufacture/ID number Operation voltage Output Armature coil resistance Brush overall length Brush quantity Spring force Commutator diameter Mica undercut (depth)	Constant mesh type SM-13/MITSUBA/SM-13454 12 V 0.65 kW 0.0012 ~ 0.0022 Ω at 20°C 12.5 mm 2 pcs. 570 ~ 920 g 28 mm 0.7 mm	... ... ... ... 4 mm ... 570 g 27 mm ...

## MAINTENANCE SPECIFICATIONS

**SPEC**

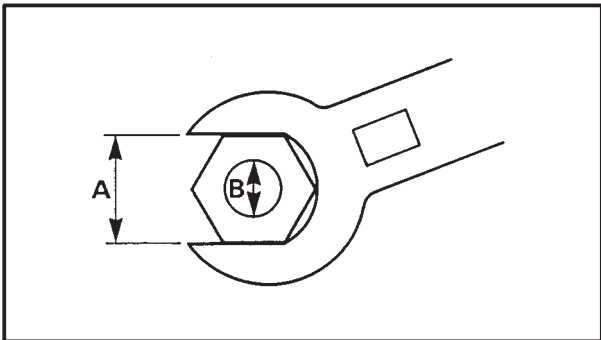


Item	Standard	limit
Starter relay:		
Model/manufacture	4FL/JIDECO	...
Amperage rating	100 A	...
Coil winding resistance	4.2 ~ 4.6 Ω at 20°C	...
Horn:		
Model/manufacture	YF-12/NIKKO	...
Maximum amperage	2.5 A	...
Flasher relay:		
Type	Full transistor type	...
Model/manufacture	4MY/NIPPONDENSO	...
Flasher frequency	75 ~ 95 cycle/min	...
Fuel gage:		
Model/manufacture	4HC/NIPPON SEIKI	...
Sender unit resistance – full	4 ~ 10 Ω	...
– empty	90 ~ 100 Ω	...
Starting circuit cut-off relay:		
Model/manufacture	4HC/MATSUSHITA	...
Coil winding resistance	72 ~ 88 Ω	...
Electric fan motor:		
Model/manufacture	4HC/MITSUBA	...
Thermo switch (electric fan):		
Model/manufacture	3LN/NIHON THERMOSTAT	...
Thermo switch (auto choke):		
Model/manufacture	4HC/NIHON THERMOSTAT	...
Thermo unit:		
Model/manufacture	2YK/NIPPON SEIKI	...
Circuit breaker:		
Type	Fuse	...
MAIN	20 A × 1 pc.	...
FAN	3 A × 1 pc.	...
Reserve	20 A × 1 pc.	...
	3 A × 1 pc.	...

**GENERAL TORQUE SPECIFICATIONS**

This chart specifies torque for standard fasteners with standard I.S.O. pitch threads. Torque specifications for special components or assemblies are included in the applicable sections of this book. To avoid warpage, tighten multi-fastener assemblies in a crisscross fashion, in progressive stages, until full torque is reached. Unless otherwise specified, torque specifications call for clean, dry threads. Components should be at room temperature.

A (Nut)	B (Bolt)	General torque specifications	
		Nm	m•kg
10 mm	6 mm	6	0.6
12 mm	8 mm	15	1.5
14 mm	10 mm	30	3.0
17 mm	12 mm	55	5.5
19 mm	14 mm	85	8.5
22 mm	16 mm	130	13.0



A: Distance across flats  
 B: Outside thread diameter














**LUBRICATION POINT AND GRADE OF LUBRICANT  
ENGINE**

Lubrication Point	Symbol
Oil seal lips	
O-ring (Except V-belt drive unit)	
Cylinder head tightening nut mounting surface	
Crankshaft pin outside	
Connecting rod big end thrust surface	
Rotary filter inner surface	
Drive gear inner surface	
Cam chain outside sprocket inner surface	
Piston pin	
Piston outside and ring groove	
Camshaft cam profile	
Valve stem (IN, EX)	
Valve stem end (IN, EX)	
Rocker shaft	
Valve rocker arm inner surface	
Shaft	
Shaft (Oil pump assembly)	
Gasket (Oil pump assembly)	
Holder	
Idle gear 1 thrust surfaces	
Shaft 1	
Idle gear 2 thrust surfaces	
Idle gear 2 inner surface	
Main axle thrust surfaces	
Crankcase mating surfaces	Yamaha bond No. 1215
Crankcase breather plug	
Stator grommet	Yamaha bond No. 1215
Suction pipe	

## LUBRICATION POINT AND GRADE OF LUBRICANT



### CHASSIS

Lubrication Point	Symbol
Front wheel oil seal lips (left/right)	
Swingarm oil seal lips (left/right)	
Steering head pipe bearing (upper/lower)	
Steering head pipe dust seal lips (upper/lower)	
Tube guide (throttle grip) inner surface	
Brake cable (brake lever)	
Brake lever and lever holder bolt sliding surface	
Sidestand sliding surface	
Centerstand sliding surface and mounting bolt	
Centerstand stopper pivot shaft	
Brake cam pivot shaft and cam surface	





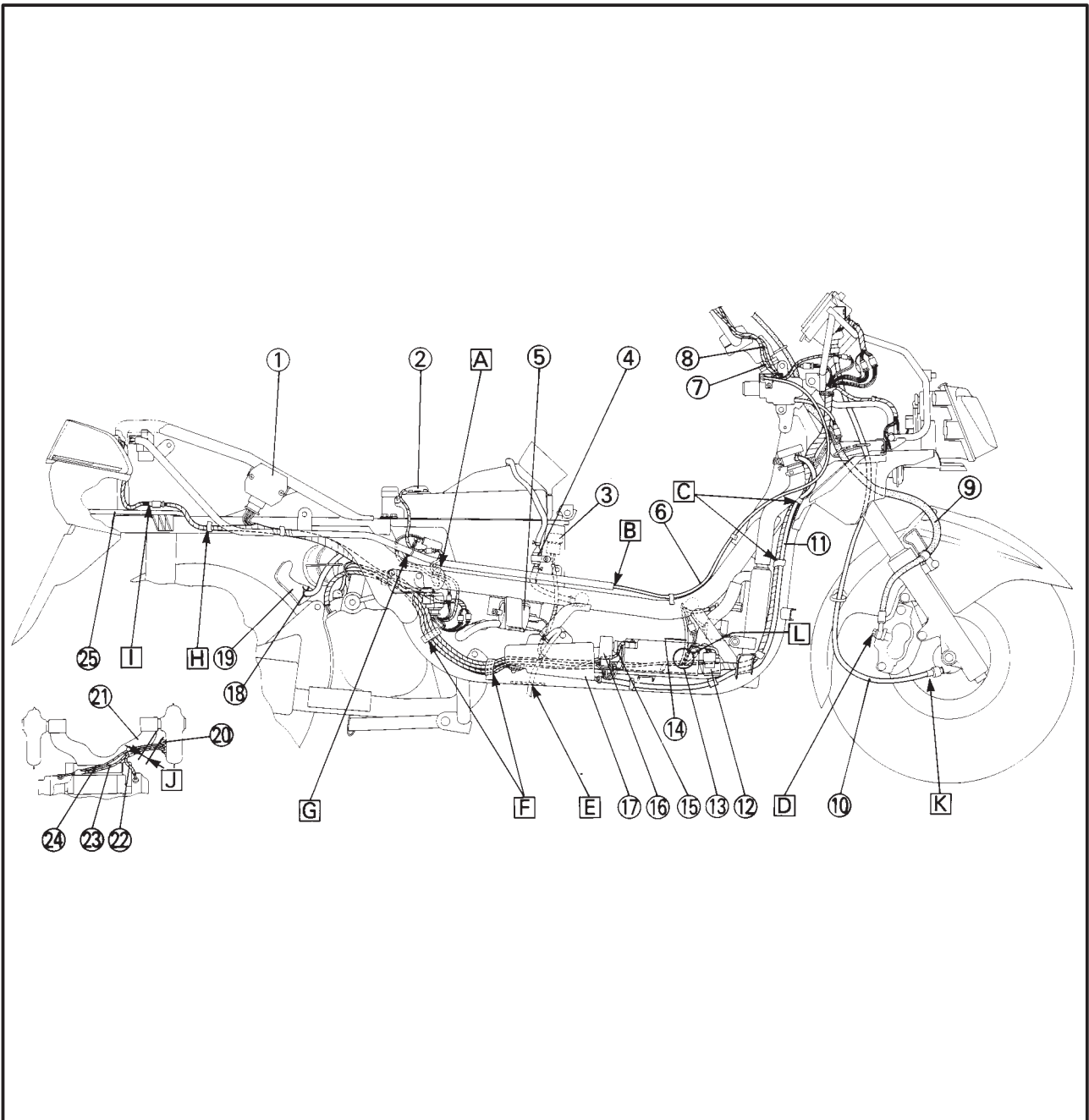
**CABLE ROUTING**

- ① Rectifier regulator
- ② Fuel sender
- ③ Fuse (fan)
- ④ Roll over valve
- ⑤ Ignition coil
- ⑥ Seat lock cable
- ⑦ Handlebar switch 3 lead (right)
- ⑧ Front brake switch lead
- ⑨ Brake hose
- ⑩ Speedometer cable
- ⑪ Radiator overflow hose
- ⑫ Starter relay/Fuse (main)
- ⑬ Battery
- ⑭ Battery positive (+) lead

- ⑮ Battery negative (-) lead
- ⑯ Flasher relay
- ⑰ Reservoir tank
- ⑱ Breather hose
- ⑲ Air filter
- ⑳ Mainharness
- ㉑ Link (engine bracket)
- ㉒ A.C. magneto lead
- ㉓ Starter motor lead
- ㉔ Engine earth lead
- ㉕ Mudguard

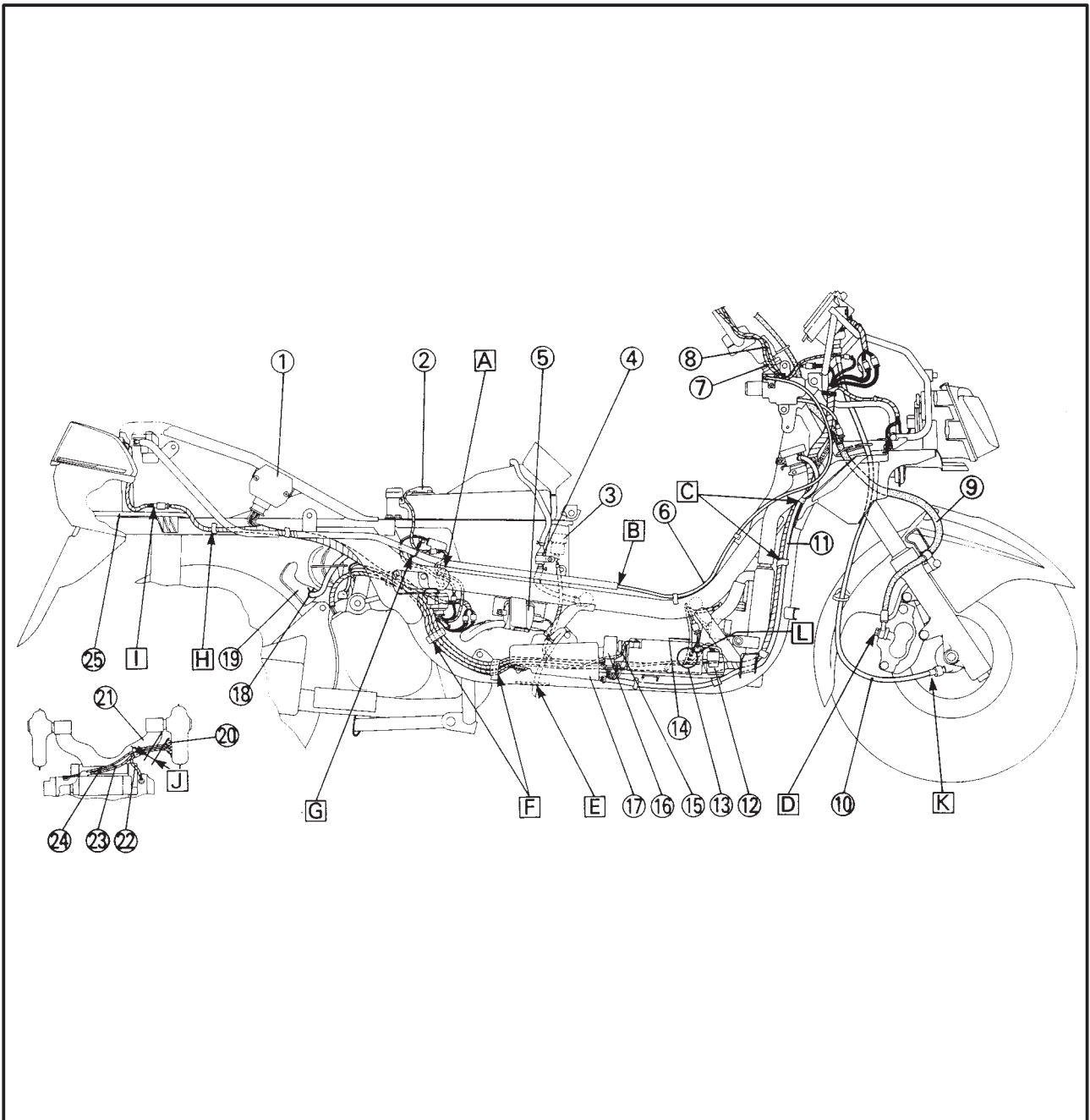
- ⓑ Pass the seat lock cable through the protection pipe.
- ⓒ Clamp the mainharness and radiator over flow hose together to the frame.
- ⓓ Install the brake hose to the brake caliper with its marking facing to the tire side.

- ⓐ Clamp the fuel sender lead and auto choke lead to the frame.





- E** Pass the overflow hose from the reservoir tank through the clamp inside the frame.
- F** Clamp the mainharness, battery (+) lead and (-) lead to clamp of the frame.
- G** Clamp the fuel sender lead to the pipe.
- H** The mainharness connecting to the taillight assembly to the frame.
- I** Connect the taillight assembly lead to the mainharness over the mudguard.
- J** Keep the clamping clearance over 5 mm. (Bend the metal clamp to keep the clearance between the metal clamp and link over 5 mm.)
- K** Install the meter cable with its sheaved side facing to the meter gear.
- L** Separate the thermo switch lead and ather lead forward inside the frame.



## CABLE ROUTING

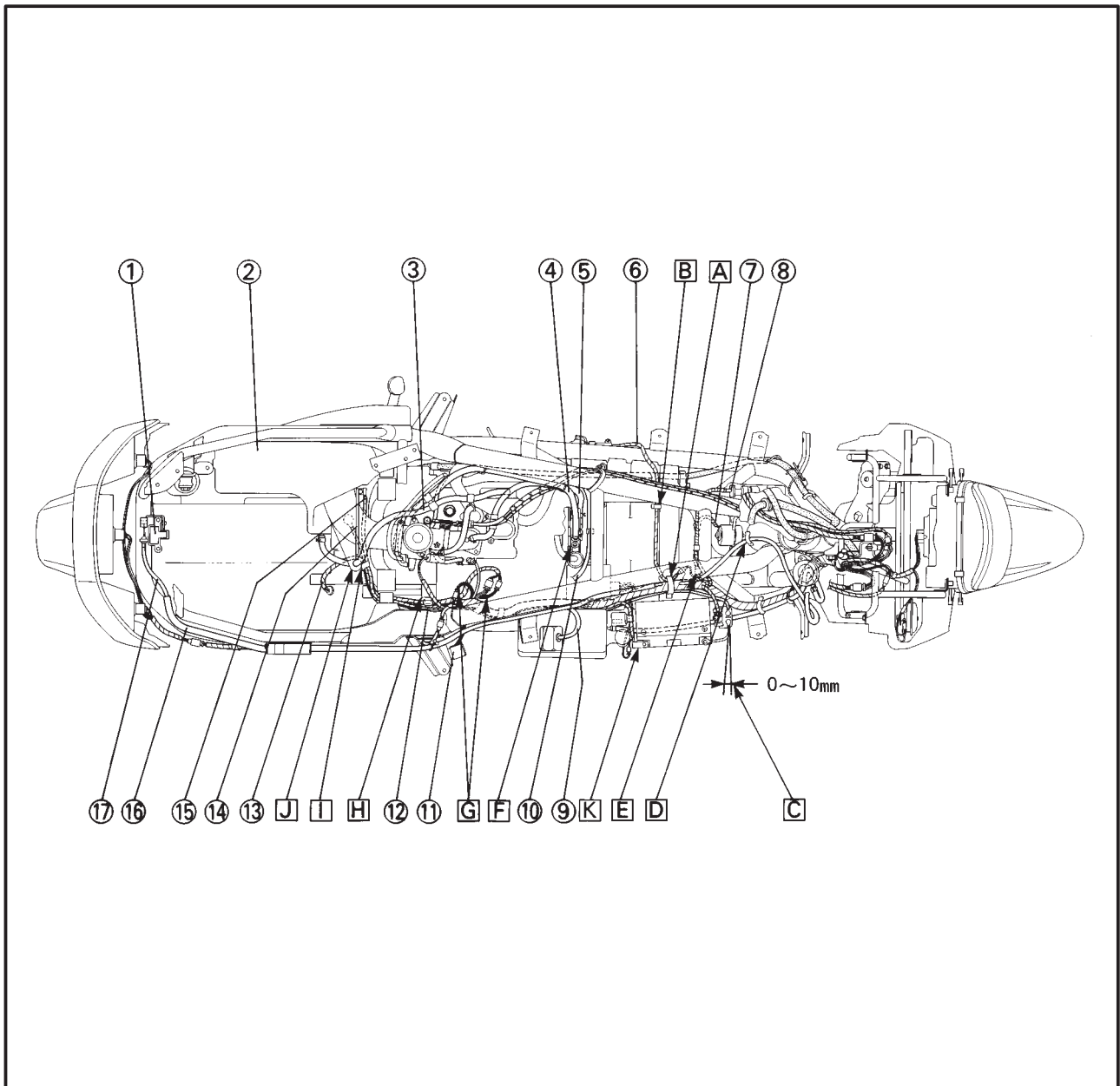
SPEC



- ① Seat lock
- ② Air filter case
- ③ Breather hose
- ④ Fuel hose
- ⑤ Vacuum hose
- ⑥ Sidestand switch lead
- ⑦ Thermo switch lead
- ⑧ Fan motor lead ,
- ⑨ Breather hose
- ⑩ Overflow hose (fuel tank)
- ⑪ Relay
- ⑫ Auto choke lead
- ⑬ A.C. magneto lead
- ⑭ Starter motor lead
- ⑮ Engine earth lead
- ⑯ Protector (pipe)
- ⑰ Seat lock cable

- A Clamp the mainharness and sidestand switch lead together the frame.
- B Clamp the sidestand switch lead.
- C Install the positive (+) lead between the battery and the starter relay to the starter relay along the chassis.
- D Clamp the seat lock cable to the the frame.
- E Clamp the thermo switch lead and fan motor lead the frame.
- F Clamp the overflow hose to the metal clamp on the frame.
- G Put the coupler of the A.C. magneto lead and the auto choke lead along the frame pipe after connection.

- H Clamp the mainharness, A.C. magneto lead, starter motor lead and engine earth lead together inside the frame.
- I Clamp the A.C. magneto lead, starter motor lead and engine earth lead to the link.
- J Pass the breather hose through the hole of the air filter case.



# CABLE ROUTING

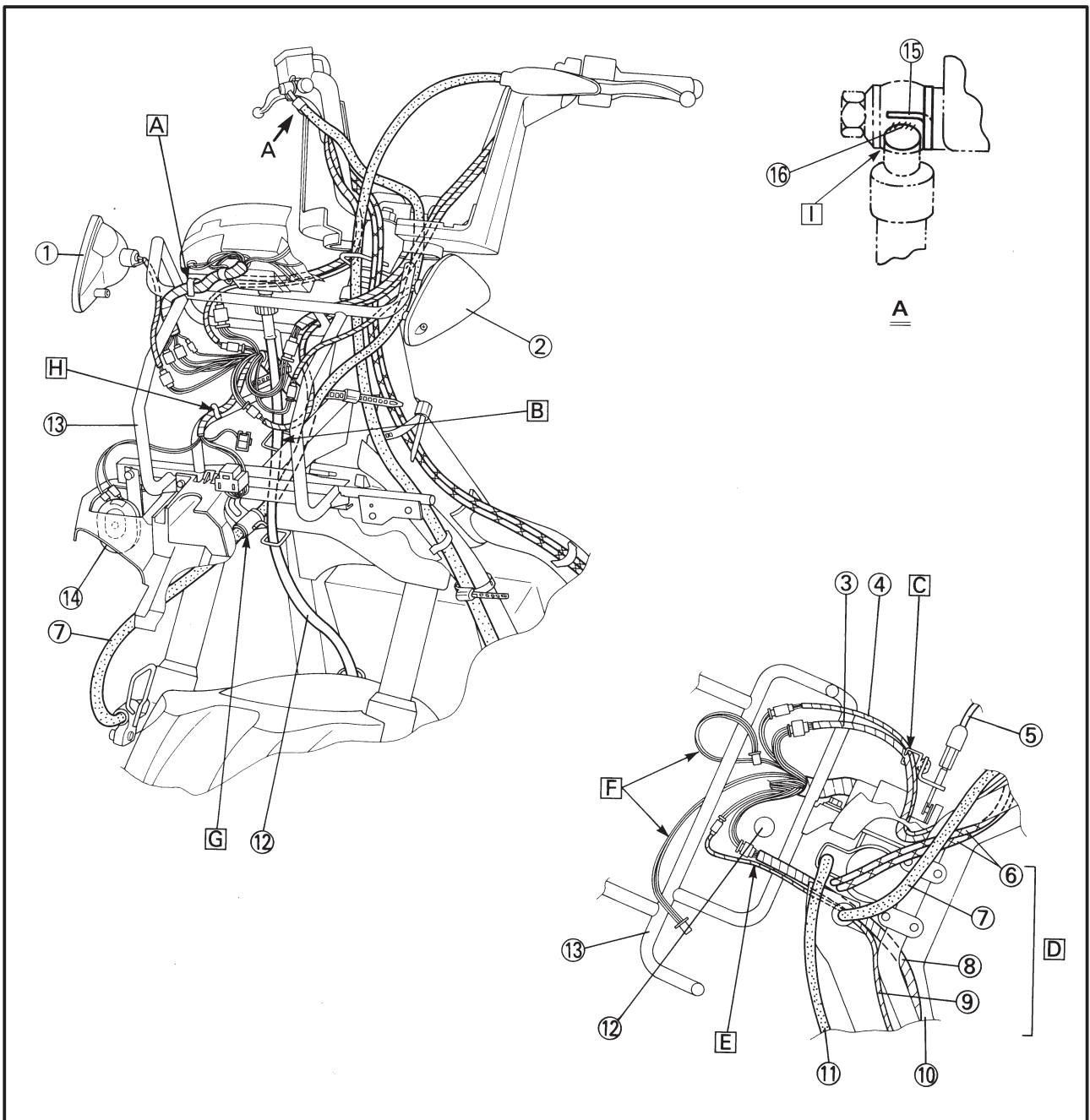
**SPEC**



- ① Front flasher light (right)
- ② Front flasher light (left)
- ③ Handlebar switch (right) lead
- ④ Front brake switch lead
- ⑤ Seat lock cable
- ⑥ Throttle cable
- ⑦ Brake hose
- ⑧ Handlebar switch (left) lead
- ⑨ Rear brake switch lead
- ⑩ Handlebar under cover
- ⑪ Brake cable 2
- ⑫ Speedometer cable
- ⑬ Stay 1
- ⑭ Horn

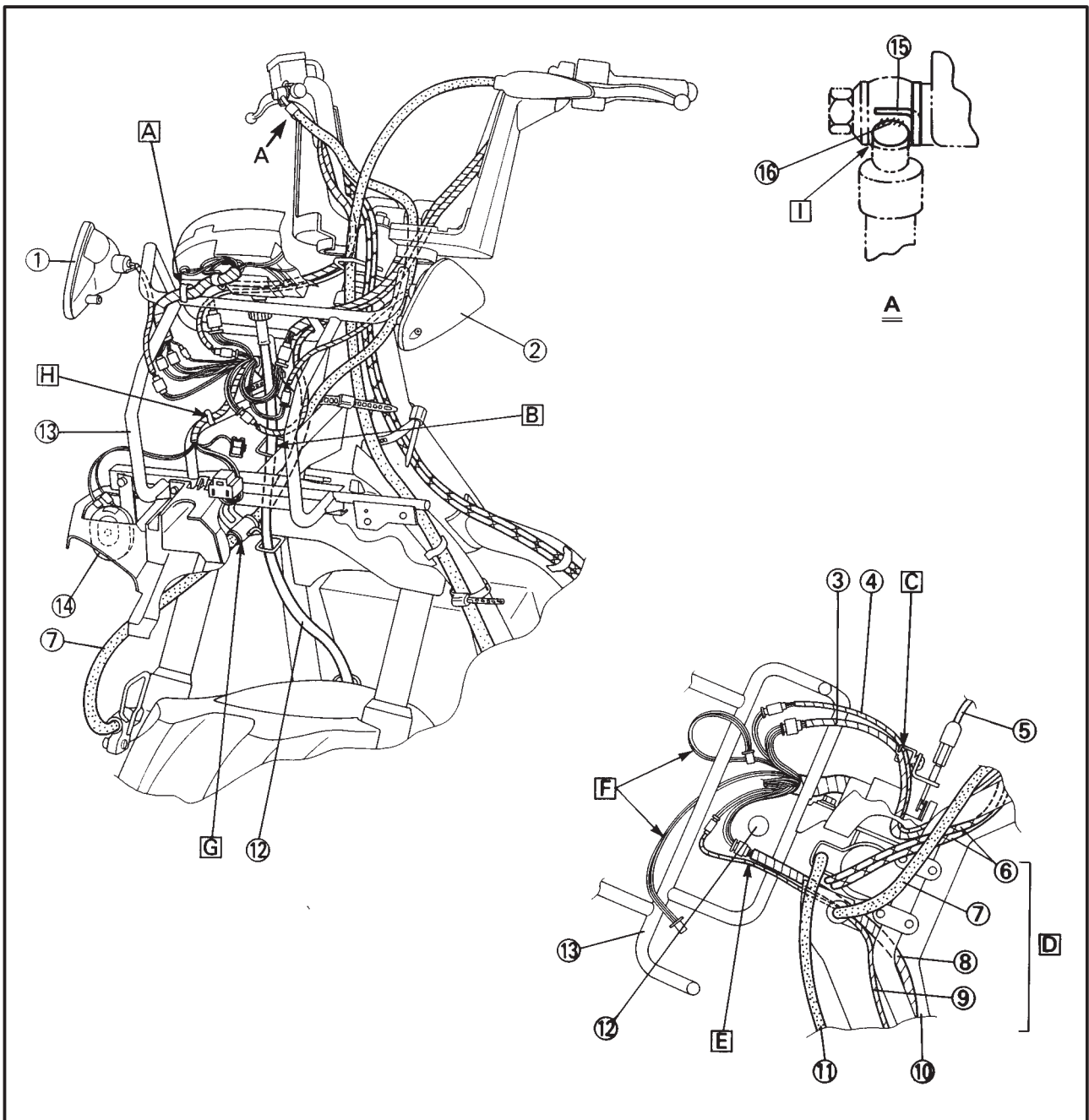
- ⑮ Brake hose stopper
- ⑯ Marking
- A Clamp the speedometer lead the stay 1.
- B Pass the speedometer cable and the brake hose through the clamps on the frame. (Front : Speedometer cable Rear : Brake hose)
- C Pass the handlebar switch (right) lead and front brake switch lead through the plastic "U" clamp.

- D Do not interfere each other after installing the handlebar upper cover.
- E Pass the handlebar switch (left) lead and rear brake switch lead on the left of the speedometer cable, then connect to the mainharness.
- F Hook the left and right front flasher light leads on the pipe of stay 1. (Put the leads down inside of the cowling body after connection.)





- G Pass the brake hose through the hose holder and clamp.
- H Clamp the headlight lead and horn lead from mainharness to the stay 1.
- I Install the brake hose with its marking facing to the stopper side.



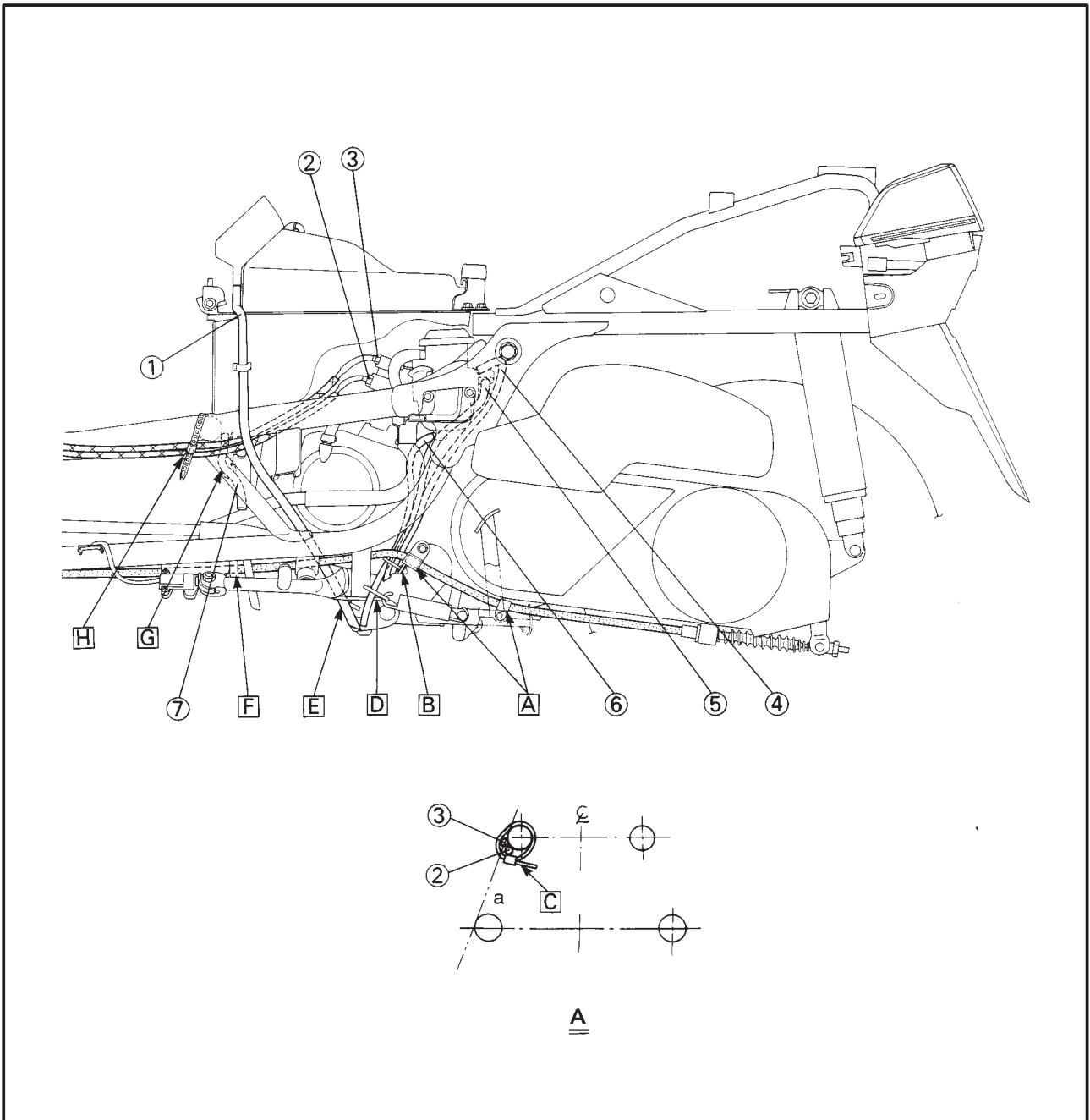


- ① Fuel overflow hose (filler neck)
- ② Throttle cable 1 (nut white)
- ③ Throttle cable 2 (nut black)
- ④ Air vent hose (carburetor)
- ⑤ Coolant drain hose (carburetor)
- ⑥ Fuel drain hose (carburetor)
- ⑦ Fuel overflow hose (fuel tank)

- A Pass the brake cable 2 through the holder and clamp to the crankcase.
- B Pass the air vent hose, coolant drain hose, and fuel drain

- hose through the "U" clamp on the holder.
- C Put the lock of the band to the center from the line "a".
- D Pass the drain hose through the clamp (spring hook).
- E Pass the overflow hoses from the filler neck and the fuel tank through the clamp.
- F Pass the brake cable 2 through the guide ring.
- G Pass the overflow hose from the tank through the clamp inside the frame pipe.

- H Band the throttle cable to the frame, noting the band direction.





## CABLE ROUTING

**SPEC**



- ① Steering head pipe
- ② Brake cable 2
- ③ Mainharness
- ④ Downtube
- ⑤ Throttle cable
- ⑥ Radiator
- ⑦ Stay 1

- A** Pass the brake cable 2 through the clamp on the handlebar holder.
- B** Band the brake cable 2 to the steering head pipe, noting the band direction. (view A)
- C** Band the throttle cable and the right mainharness to the

downtube, noting the band direction. (view B)

- D** Band the brake cable 2 to the frame at the upper part of the radiator, noting the band direction. (view C)

- E** Band the brake cable 2 at the left front of the steering head pipe and set the rest of the band to the left.

- F** Set the lock of the band in this range.

- G** Clamp the brake cable in front of the pipe.

- H** Put the rest of the band end to the side.

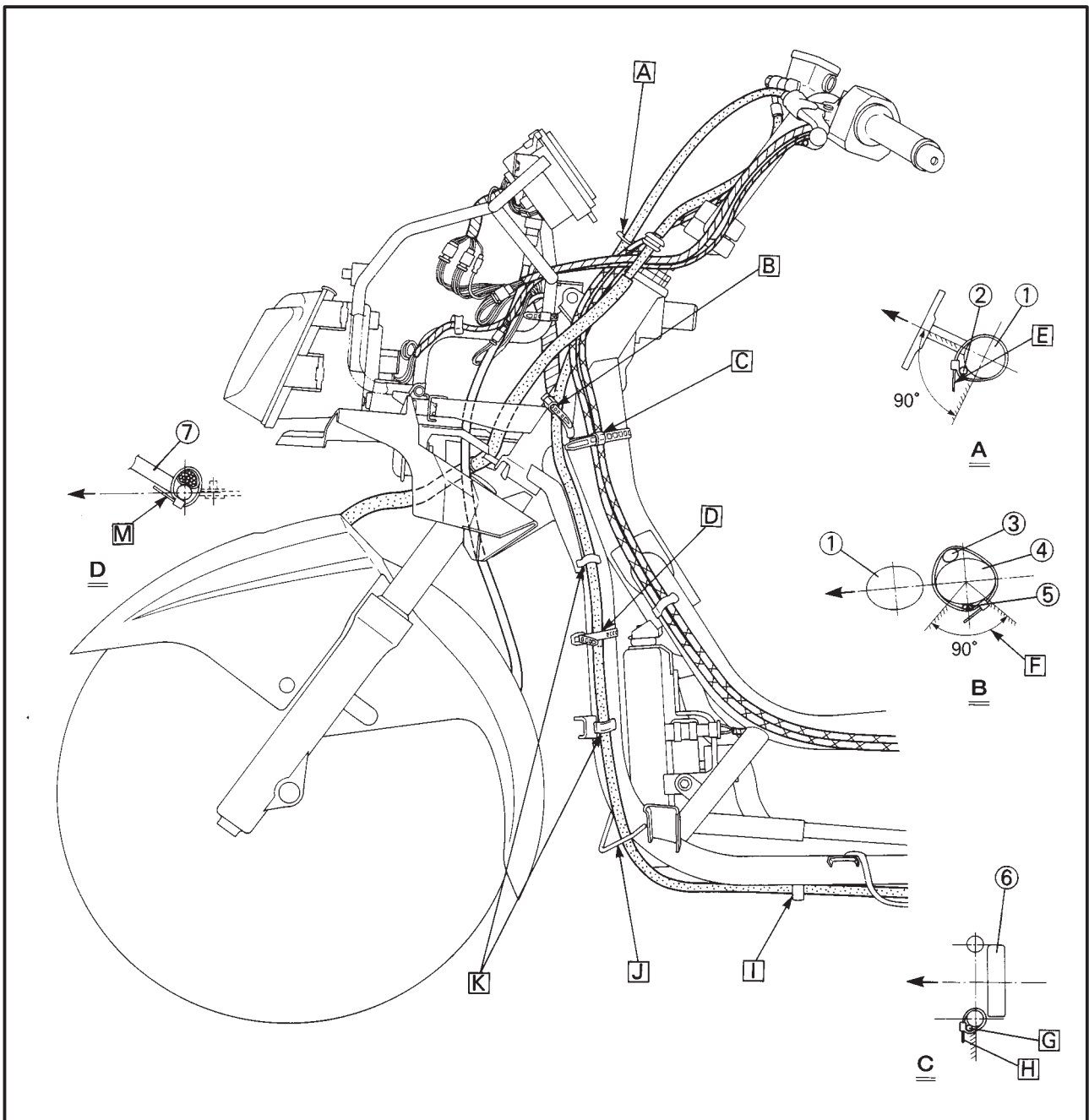
- I** Pass the brake cable through the guide ring.

- J** Pass the brake cable 2 through the guide on the frame.

- K** Clamp the brake cable 2 to the frame.

(Up and down)

Align the locating mark of the brake cable 2 with the under clamp.







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## CHAPTER 3.

### PERIODIC INSPECTION AND ADJUSTMENT

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## PERIODIC INSPECTIONS AND ADJUSTMENTS

### INTRODUCTION

This chapter includes all information necessary to perform recommended inspections and adjustments. These preventive maintenance procedures, if followed, will ensure more reliable vehicle operation and a longer service life. The need for costly overhaul work will be greatly reduced. 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.

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### PERIODIC MAINTENANCE/LUBRICATION INTERVALS

NO.	ITEM	ROUTINE	TYPE	BREAK-IN	EVERY	
				1,000 km	6,000 km or 6 months	12,000 km or 12 months
1	* Valve clearance	• Check and adjust valve clearance when engine is cooled	—	Every 12,000 km		
2	Spark plug	• Check condition. • Adjust gap and clean.	Refer to SPARK PLUG INSPECTION	○	○	○
3	* Fuel line	• Check fuel hose and vacuum pipe for cracks or damage.	—		○	○
4	* Idle speed	• Check and adjust engine idle speed. • Adjust throttle cable free play.	—	○	○	○
5	* Engine oil	• Replace.	Refer to ENGINE OIL INSPECTION	Replace	Replace every 3,000 km.	
6	Oil strainer	• Clean with solvent.	—	Clean	Clean every 3,000 km.	
7	Transmission oil	• Replace.	Same as engine oil	Replace	Replace every 10,000 km.	
8	Air filter	• Clean with solvent and dampen with oil.	Same as engine oil		○	○
9	Crankcase filter	• Clean with compressed air	—		○	○
10	Cooling system	• Check hose for cracks or damage. Replace if necessary.	—		○	○
		• Replace coolant.	Ethylene glycol antifreeze	Replace every 24 months.		
11	* Front brake system	• Adjust free play. • Check and replace if necessary. • Replace brake fluid every 24,000km or 24 months.	Brake fluid; DOT 4	○	○	○
12	* Rear brake system	• Adjust lever free play. • Check and replace shoes if necessary.	—	○	○	○
13	* Control cables	• Apply oil lightly.	Same as engine oil	○	○	○
14	Brake lever pivot	• Apply oil lightly.	Same as engine oil		○	○

## PERIODIC MAINTENANCE/LUBRICATION INTERVALS



NO.	ITEM	ROUTINE	TYPE	BREAK-IN	EVERY	
				1,000 km	6,000 km or 6 months	12,000 km or 12 month
15	Centerstand and sidestand pivot	• Check operation and lubricate.	Same as engine oil		○	○
16	* Sidestand switch	• Check and clean or replace if necessary.	—	○	○	○
17	* Front fork	• Check operation and for oil leakage.	—		○	○
18	* Steering bearings	• Check bearing assembly for looseness.	—		○	○
19	* Wheel bearings	• Check bearing for smooth rotation	—		○	○

Items marked with an asterisk (\*) require special tools data and technical skills for servicing. Take the scooter to a Yamaha dealer.

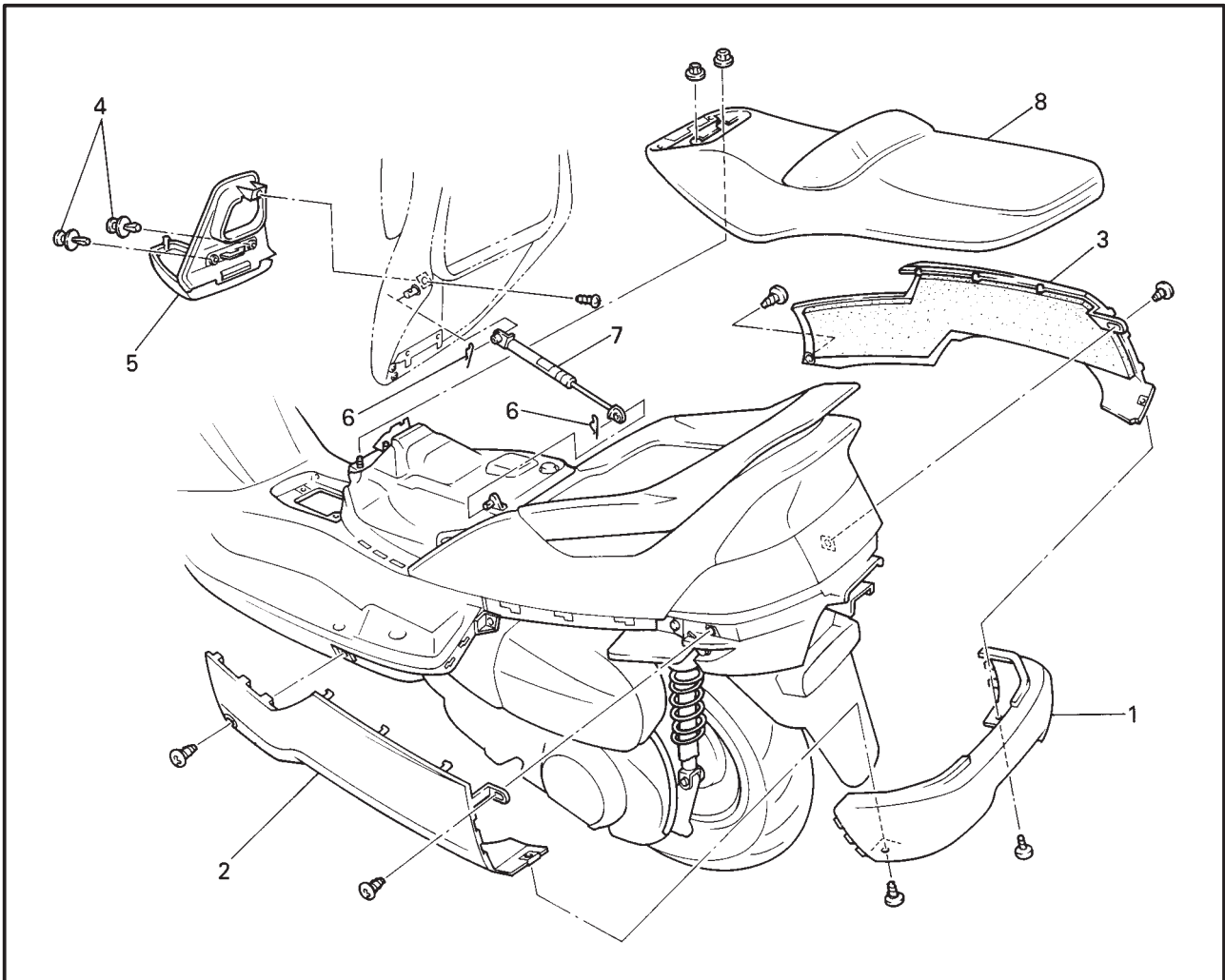
**NOTE:** \_\_\_\_\_

- The air filter needs more frequent service if you are riding in unusually wet or dusty areas.
- Brake fluid replacement:
  1. Replace the brake fluid after disassembling the master cylinder or caliper cylinder. Check the brake fluid level and add fluid as required.
  2. Replace the master cylinder and caliper cylinder oil seals every two years.
  3. Replace the brake hoses every four years, or if cracked or damaged.



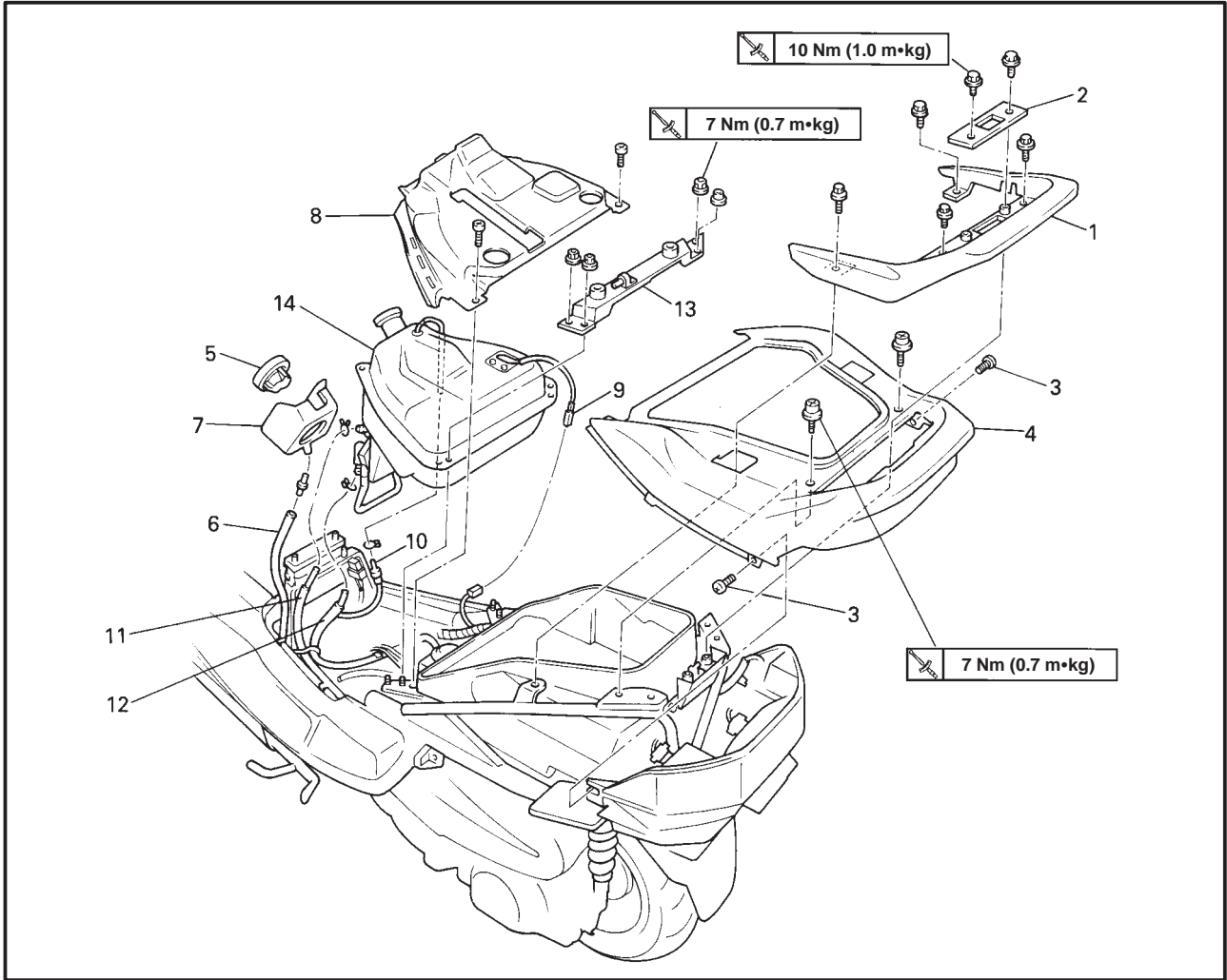
## COVER AND PANEL

### SIDE PANEL AND SEAT

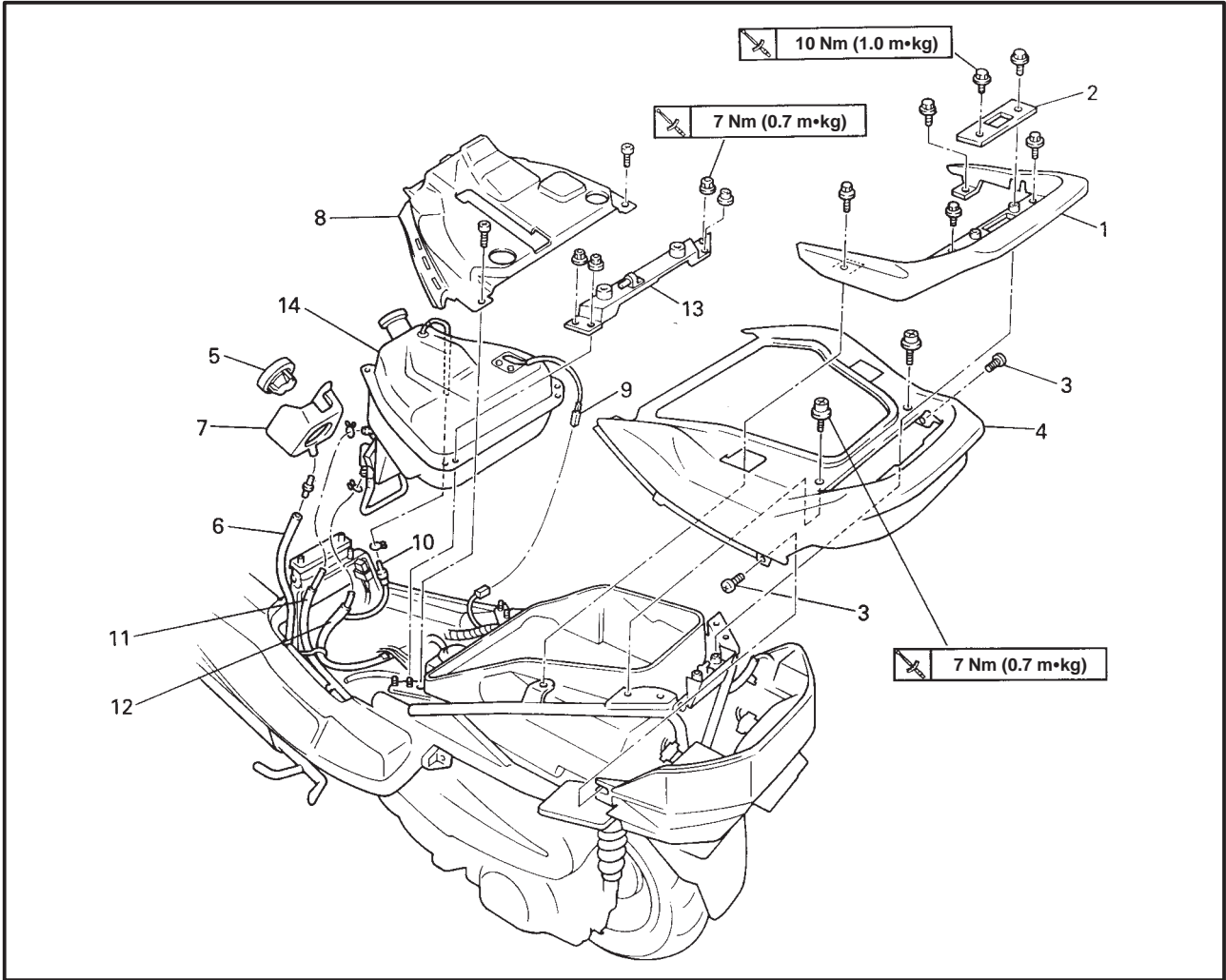


Order	Job name/Part name	Q'ty	Remarks
	<b>Side panel and seat removal</b>		Remove the parts in order.
1	Rear panel	1	
2	Side panel (left)	1	
3	Side panel (right)	1	
4	Rivet	2	
5	Front panel	1	
6	Clip	2	
7	Damper assembly	1	<b>NOTE:</b> _____ Install the damper assembly to the body with its rod side backward and labels upward.
8	Seat	1	Reverse the removal procedure for installation.

TAIL COVER AND FUEL TANK



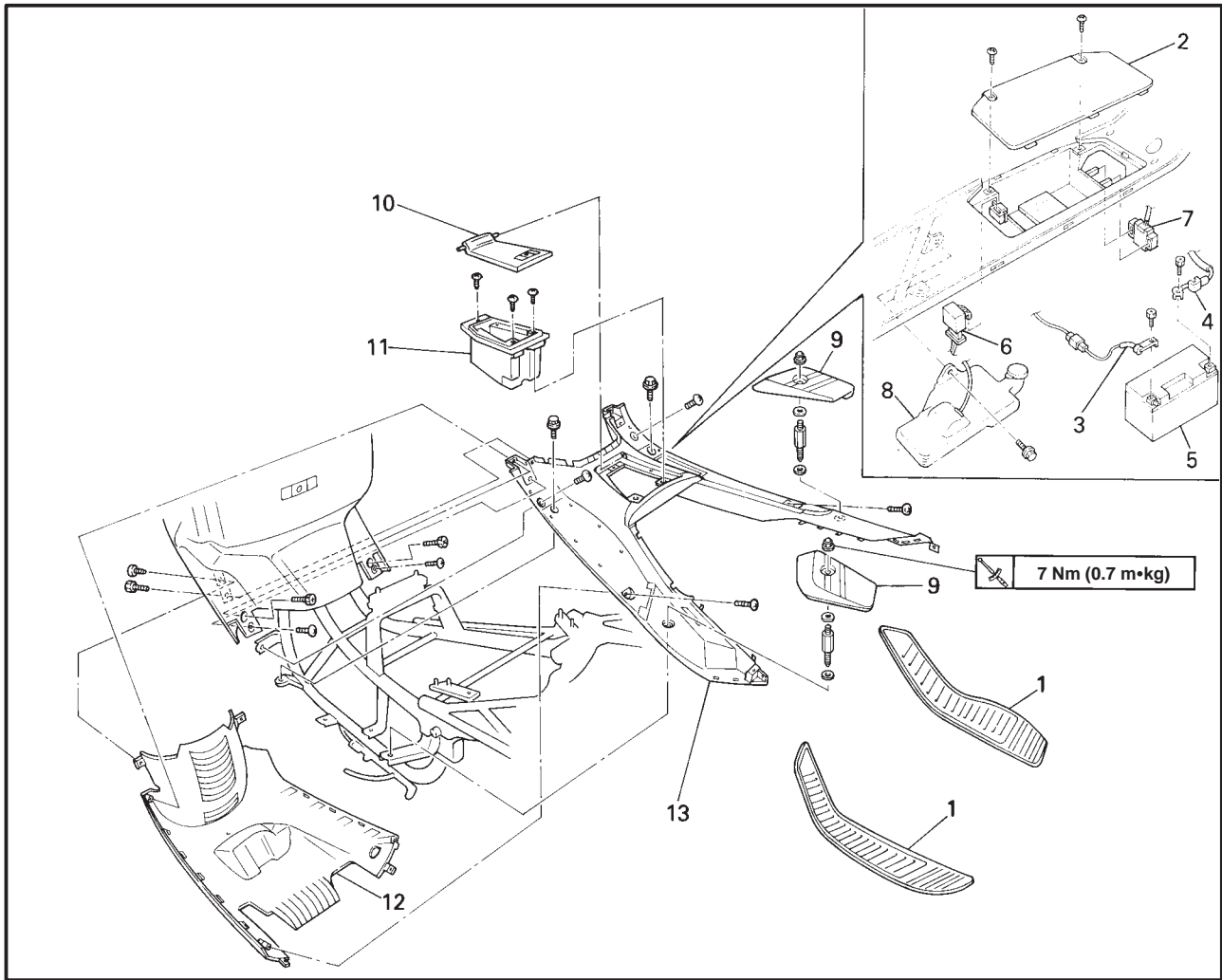
Order	Job name/Part name	Q'ty	Remarks
	<b>Tail cover and fuel tank removal</b>		Remove the parts in order.
1	Grab bar	1	Tail cover
2	Seat lock bracket	1	
3	Screw	2	
4	Tail cover	1	
5	Fuel tank cap	1	Fuel tank
6	Fuel overflow hose	1	
7	Cover	1	
8	Fuel tank cover	1	
9	Coupler (fuel sender lead)	1	
10	Fuel overflow hose	1	<b>NOTE:</b> _____
11	Fuel hose	1	_____



Order	Job name/Part name	Q'ty	Remarks
12	Vacuum hose	1	Fuel tank
13	Bracket	1	
14	Fuel tank	1	
			Reverse the removal procedure for installation.



## FOOTREST BOARD AND LOWER COVER

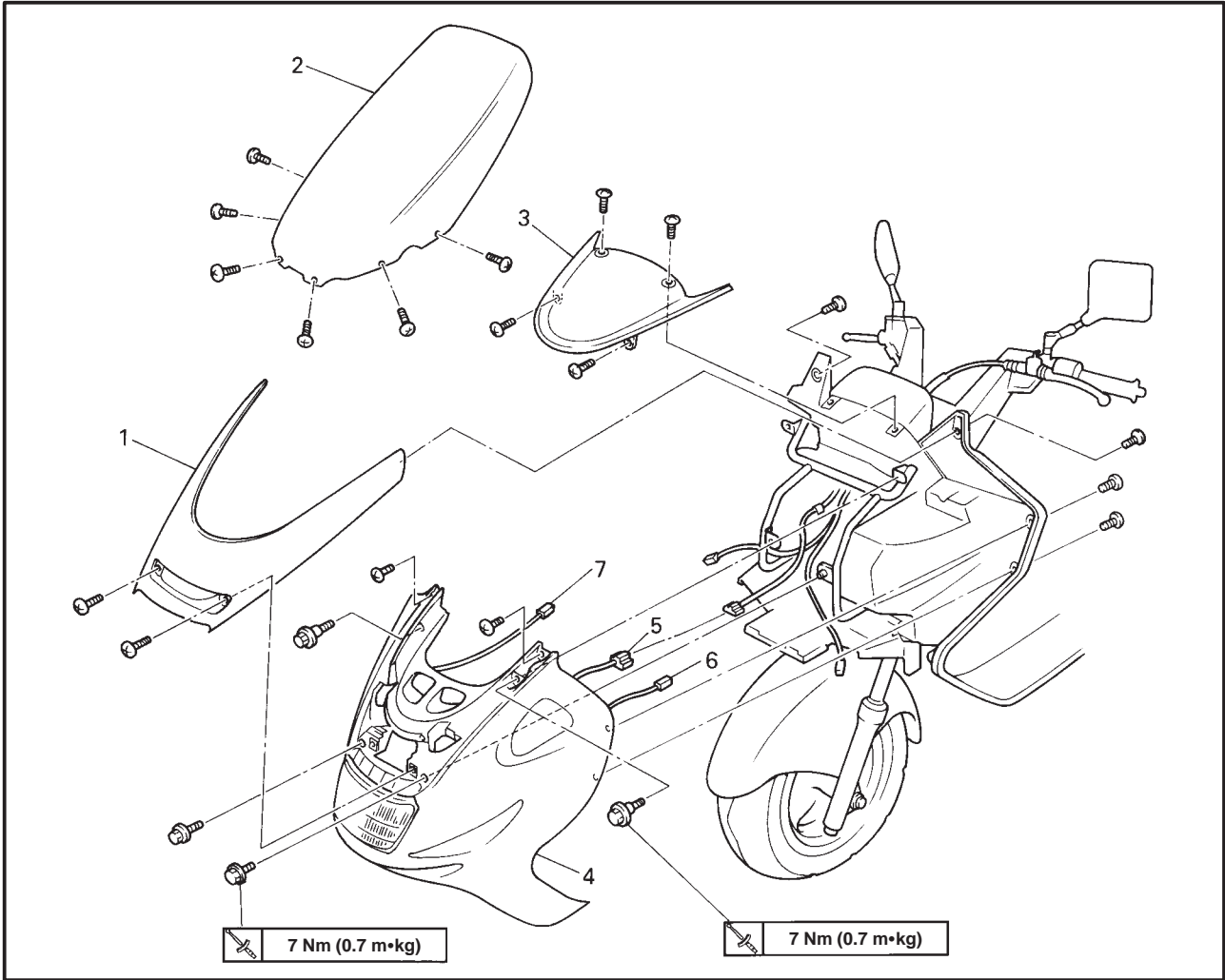


Order	Job name/Part name	Q'ty	Remarks
	<b>Footrest board and lower cover removal</b>		Remove the parts in order.
1	Mat (footrest board) (left/right)	1/1	
2	Cover 2	1	
3	Battery negative (-) lead	1	
4	Battery positive (+) lead	1	
5	Battery	1	
6	Flasher relay	1	
7	Starter relay	1	
8	Reservoir tank	1	
9	Footrest	2	
10	Lid	1	
11	Box	1	
12	Lower cover	1	
13	Footrest board	1	Reverse the removal procedure for installation.



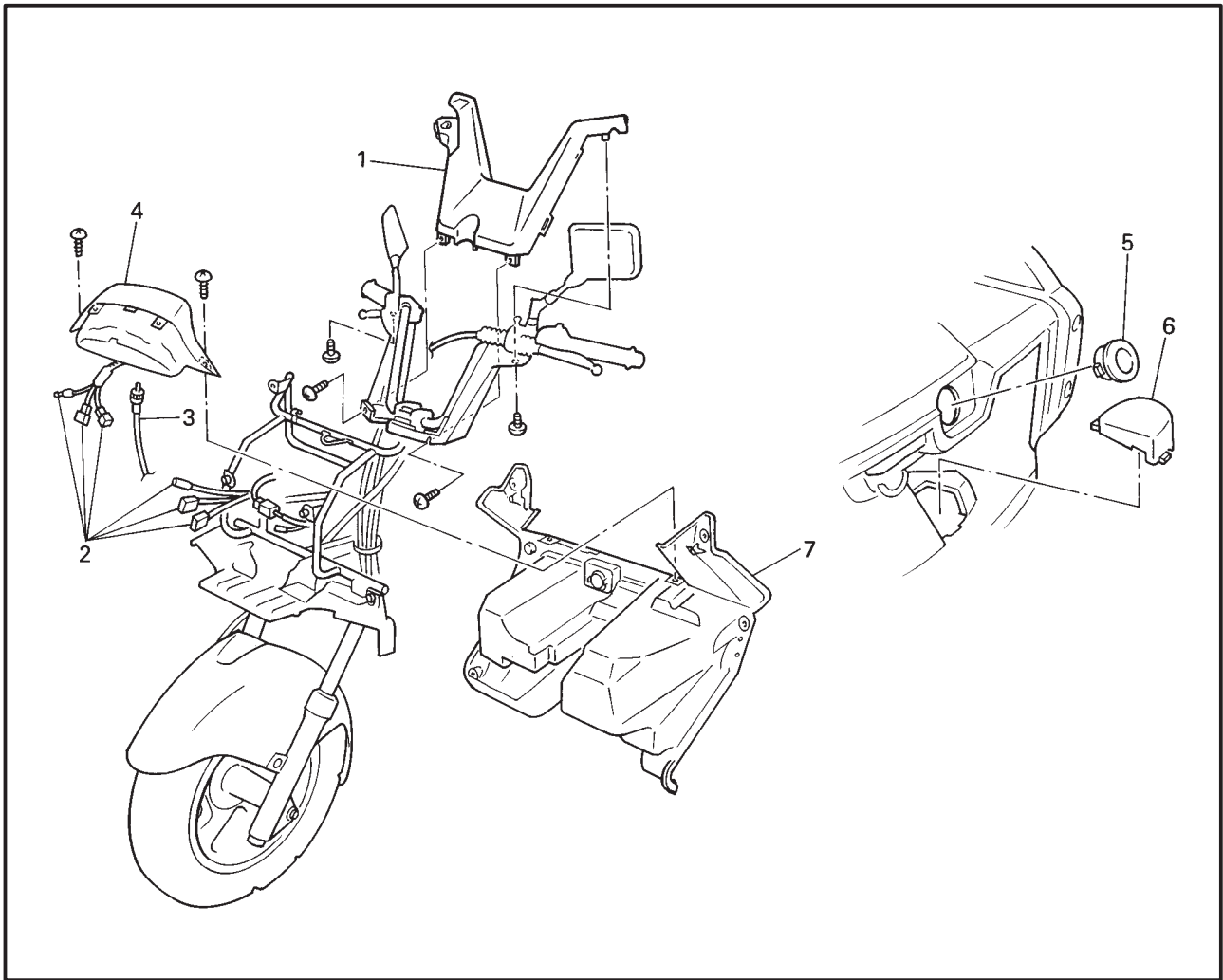


COWLING



Order	Job name/Part name	Q'ty	Remarks
	<b>Cowling removal</b>		Remove the parts in order.
1	Upper cover		<b>NOTE:</b> _____ Disconnect the couplers. _____ Reverse the removal procedure for installation.
2	Wind screen	1	
3	Inner panel	1	
4	Cowling body	1	
5	Coupler (headlight lead)	1	
6	Coupler (front flasher light lead (left))	1	
7	Coupler (front flasher light lead (right))	1	

HANDLE COVER, METER ASSEMBLY AND LEGSHIELD



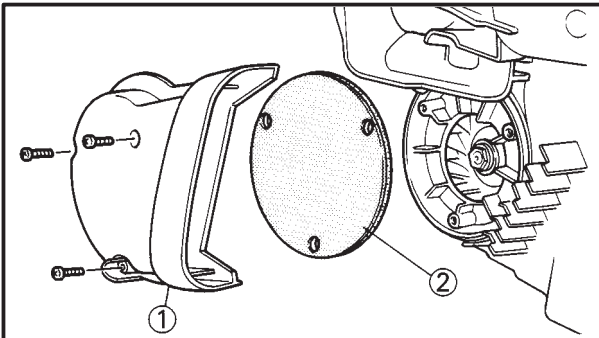
Order	Job name/Part name	Q'ty	Remarks
	<b>Handle cover, meter assembly and legshield removal</b>		Remove the parts in order.
1	Handle cover	1	<b>NOTE:</b> _____ Disconnect the couplers. _____ Reverse the removal procedure for installation.
2	Coupler (meter lead)	1	
3	Meter cable	1	
4	Meter assembly	2	
5	Main switch cover	1	
6	Cover	2	
7	Legshield	1	

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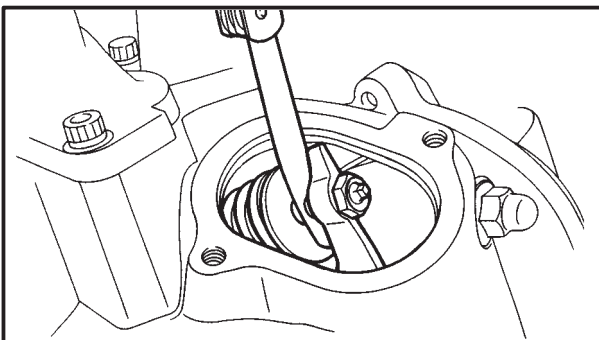
## ENGINE VALVE CLEARANCE ADJUSTMENT

### NOTE:

Valve clearance adjustment should be made with the engine cool, at room temperature. When the valve clearance is to be measured or adjusted, the piston must be at Top Dead Center (T.D.C.) on the compression stroke.



1. Remove:
  - Side panels
  - Tail cover
  - Fuel tank
 Refer to "COVER AND PANEL" section.
2. Remove:
  - Crankcase filter cover ①
  - Crankcase filter cover seal
  - Crankcase filter element ②
3. Remove:
  - Spark plug
  - Valve cover (intake side)
  - Valve cover (exhaust side)
4. Remove:
  - Timing check plug



5. Measure:
  - Valve clearance
 Out of specification → Adjust.



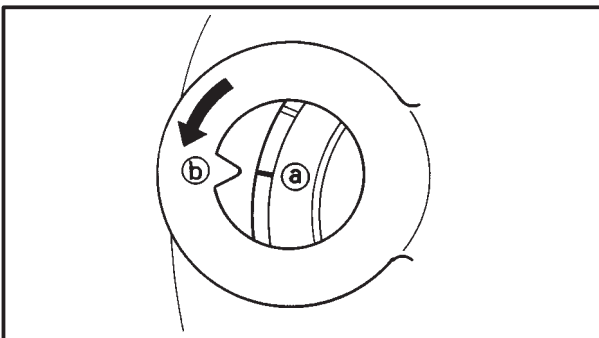
**Valve clearance (cold):**  
 Intake valve 0.08 × 0.12 mm  
 Exhaust valve 0.16 × 0.20 mm

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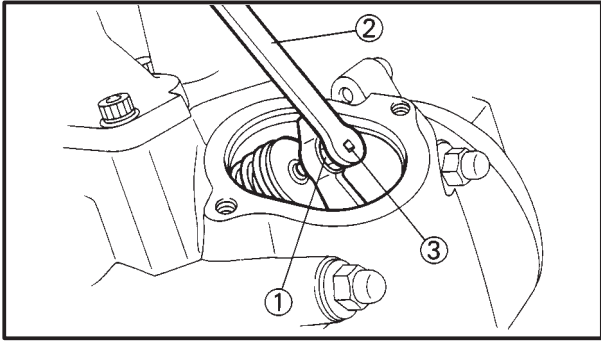
### Measurement steps:

- Rotate the primary fixed sheave counter-clockwise to align the slit (a) on the rotor with the stationary pointer (b) on the crankcover 1 when the piston is Top Dead Center (TDC).
- Measure the valve clearance by using a feeler gauge.  
 Out of specification → Adjust clearance.

\*\*\*\*\*



# VALVE CLEARANCE ADJUSTMENT/ IDLING SPEED ADJUSTMENT



6. Adjust:
- Valve clearance

\*\*\*\*\*


### Adjustment steps:

- Loosen the locknut (1).
- Turn the adjuster (3) in or out with the valve adjusting tool (2) until specified clearance is obtained.

Turning in → Valve clearance is decreased.
Turning out → Valve clearance is increased.

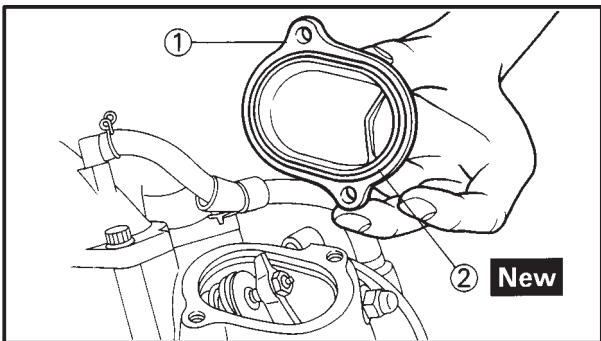
 Valve adjusting tool: 90890-01311
--

- Hold the adjuster to prevent it from moving and tighten the locknut.

 14 Nm (1.4 m•kg)
--


- Measure the valve clearance.
- If the clearance is incorrect, repeat above steps until specified clearance is obtained.

\*\*\*\*\*




### 7. Install:


- Valve cover (intake side) (1) 


 10 Nm (1.0 m•kg)
--
- O-ring (2)

### 8. Install:

- Valve cover (exhaust side) 

 10 Nm (1.0 m•kg)
--
- O-ring
- Spark plug 

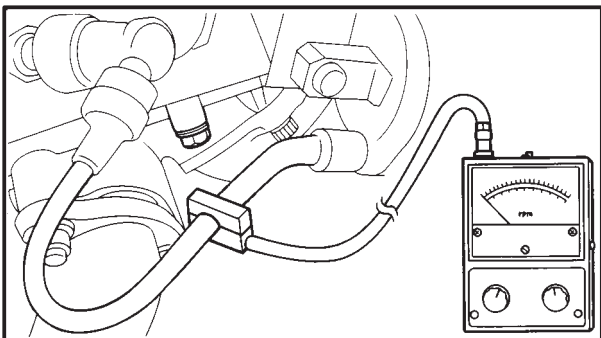
 18 Nm (1.8 m•kg)
--
- Timing check window screw
- Crankcase filter element
- Crankcase filter cover seal
- Crankcase filter cover 

 7 Nm (0.7 m•kg)
---

YP303022

### IDLING SPEED ADJUSTMENT

1. Start the engine and let it warm up for several minutes.
2. Attach:
  - Inductive tachometer to the spark plug lead.



 Inductive tachometer: 90890-03113
--

# IDLING SPEED ADJUSTMENT/ THROTTLE CABLE ADJUSTMENT



3. Check:
  - Engine idling speed  
Out of specification → Adjust.

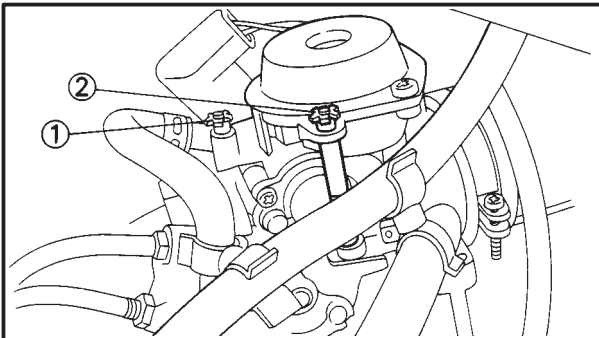
	<b>Engine idling speed:</b> <b>1,450 × 1,550 r/min</b>
--	---

4. Adjust:
  - Engine idle speed

\*\*\*\*\*

**Adjustment steps:**

- Turn the pilot screw ① until it is lightly seated.
- Turn the pilot screw out by the specified number of turns.



	<b>Pilot screw:</b> <b>1-7/8 turns out</b>
--	---

- Turn the throttle stop screw ② in or out until the specified idling speed is obtained.

<b>Turning in → Idling speed is increased.</b>
<b>Turning out → Idling speed is decreased.</b>

\*\*\*\*\*

5. Adjust:
  - Throttle cable free play  
Refer to “THROTTLE CABLE FREE PLAY ADJUSTMENT” section.

YP303032

**THROTTLE CABLE ADJUSTMENT**

**NOTE:** \_\_\_\_\_

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

1. Check:
  - Throttle cable free play ①  
Out of specification → Adjust.

	<b>Free play (throttle cable):</b> <b>3 × 5 mm at throttle grip flange</b>
--	---

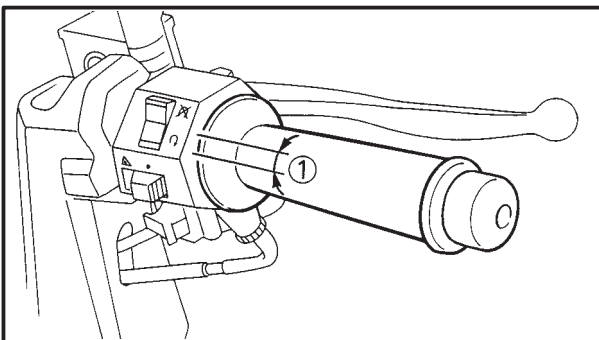
2. Adjust:
  - Throttle cable free play

\*\*\*\*\*

**Adjustment steps:**

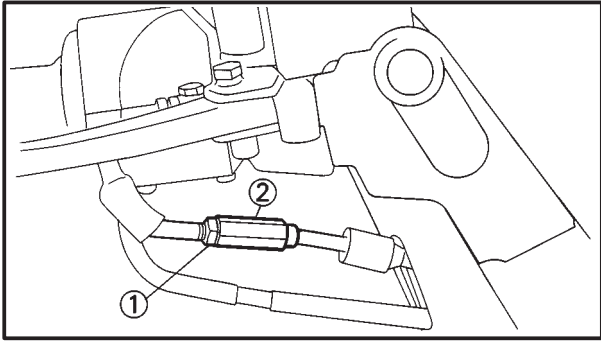
**NOTE:** \_\_\_\_\_

Never accelerate the throttle when stopping the engine.



## THROTTLE CABLE ADJUSTMENT/ SPARK PLUG INSPECTION

**INSP  
ADJ**



- Loosen the locknut ① on the throttle cable.
- Turn the adjuster ② in or out until specified free play is obtained.

**Turning in → Free play is increased.**

**Turning out → Free play is decreased.**

- Tighten the locknut.

### **⚠ WARNING**

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

\*\*\*\*\*

EB303040

## SPARK PLUG INSPECTION

1. Remove:
  - Spark plug cap
  - Spark plug

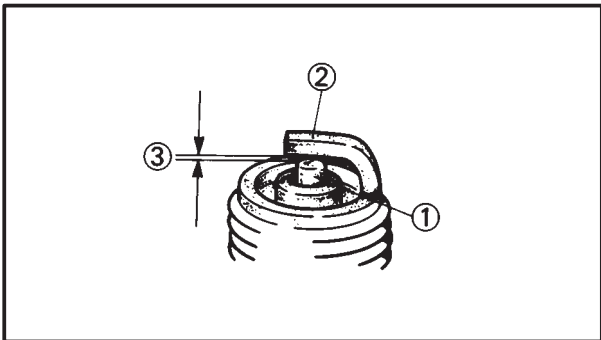
### **CAUTION:**

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

1. Check:
  - Spark plug type  
Incorrect → Replace.



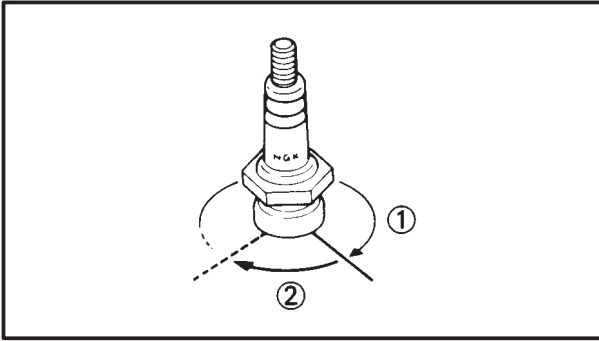
**Standard spark plug:  
DR8EA (NGK)**



2. Inspect:
  - Electrode ①  
Wear/damage → Replace.
  - Insulator ②  
Abnormal color → Replace.  
Normal color is a medium-to-light tan color.
2. Clean:
  - Spark plug  
(with spark plug cleaner or wire brush)
3. Measure:
  - Spark plug gap ③  
(with a wire gauge)  
Out of specification → Adjust gap.

# SPARK PLUG INSPECTION/ IGNITION TIMING CHECK

**INSP  
ADJ**



**Spark plug gap:**  
**0.6 × 0.7 mm**

6. Install:

- Spark plug  **18 Nm (1.8 m•kg)**

**NOTE:** \_\_\_\_\_

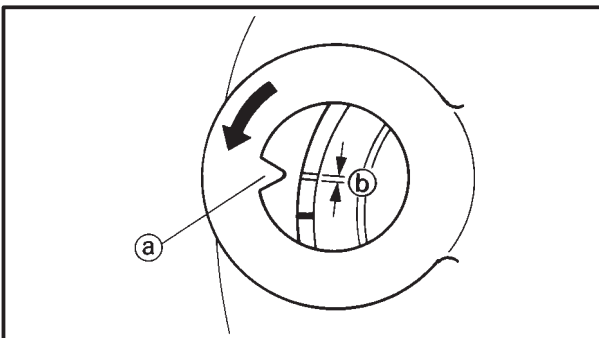
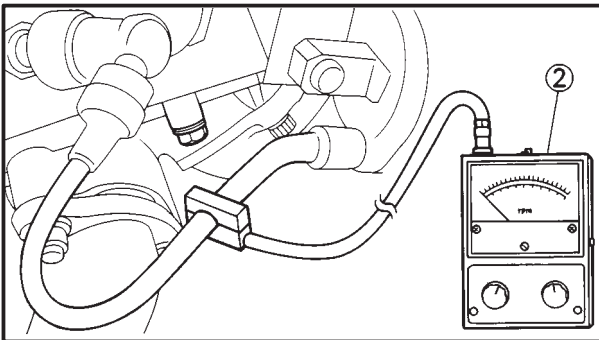
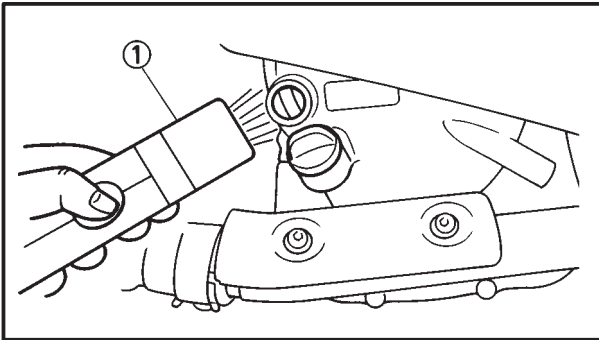
Before installing a spark plug, clean the gasket surface and plug surface.

YP303052

## IGNITION TIMING CHECK

**NOTE:** \_\_\_\_\_

Prior to checking the ignition timing, check all electrical connections related to the ignition system. Make sure all connections are tight and free of corrosion and that all ground connections are tight.



1. Remove:

- Timing check plug

2. Attach:

- Timing light ①
- Engine tachometer ②  
(to the spark plug lead)



**Timing light:**  
**90890-03141**  
**Engine tachometer:**  
**90890-03113**

3. Check:

- Ignition timing

\*\*\*\*\*

### Checking steps:

- Start the engine and let it warm up for several minutes. Let the engine run at the specified speed.



**Engine idling speed:**  
**1,450 × 1,550 r/min**

- Visually check the stationary pointer (a) to verify it is within the required firing range (b) indicated on the flywheel.  
Incorrect firing range → Check the ignition system.

\*\*\*\*\*



**NOTE:** \_\_\_\_\_

Ignition timing is not adjustable.

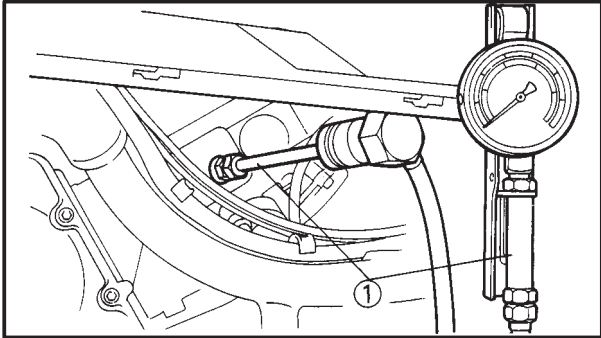
3. Install:
  - Timing check plug

YP303060

## COMPRESSION PRESSURE MEASUREMENT

**NOTE:** \_\_\_\_\_

Insufficient compression pressure will result in performance loss.



1. Remove:
  - Side panels  
Refer to "COVER AND PANEL" section.
2. Check:
  - Valve clearance  
Out of specification → Adjust.  
Refer to "VALVE CLEARANCE ADJUSTMENT" section.
3. Start the engine and let it warm up for several minutes.
4. Turn off the engine.
5. Remove:
  - Spark plug

**CAUTION:** \_\_\_\_\_

**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. Attach:
  - Compression gauge ①



**Compression gauge:  
90890-03081**

7. Measure:
  - Compression pressure  
If it exceeds the maximum pressure allowed → Inspect the cylinder head, valve surfaces and piston crown for carbon deposits.  
If it is below the minimum pressure → Squirt a few drops of oil into the affected cylinder and measure again.  
Follow the table below.





Compression pressure (With oil applied into cylinder)	
Reading	Diagnosis
Higher than without oil	Worn or damaged pistons
Same as without oil	Possible defective ring(s), valves, cylinder head gasket or piston → Repair.

	Compression pressure (at sea level): Standard: 1,400 kPa (14 kg/cm <sup>2</sup> , 14 bar)
	Minimum: 1,120 kPa (11.2 kg/cm <sup>2</sup> , 11.2 bar)

\*\*\*\*\*

**Measurement steps:**

- Crank the engine with the throttle wideopen until the reading on the compression gauge stabilizes.

**⚠ WARNING**

**Before cranking the engine, ground all spark plug leads to prevent sparking.**

\*\*\*\*\*

8. Install:

- Spark plug 18 Nm (1.8 m•kg)

9. Install:

- Side panels  
Refer to “COVER AND PANEL” section.

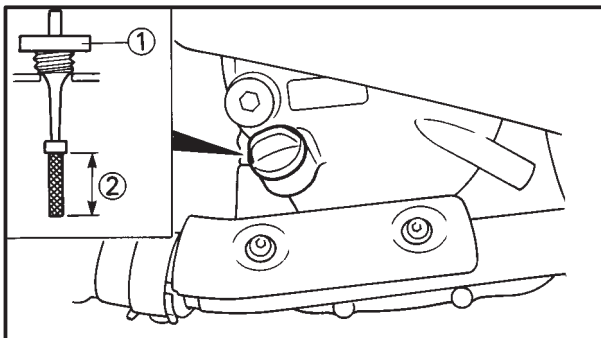
YP303070

**ENGINE OIL LEVEL INSPECTION**

- Stand the scooter on a level surface.

**NOTE:**

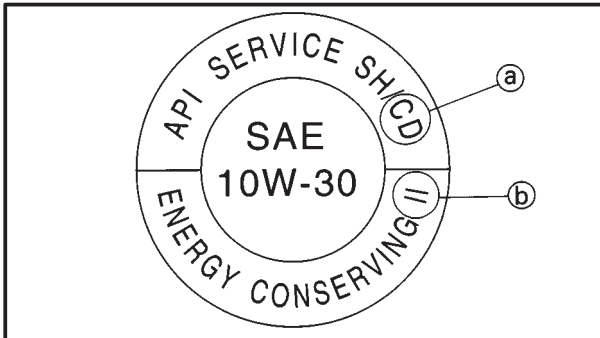
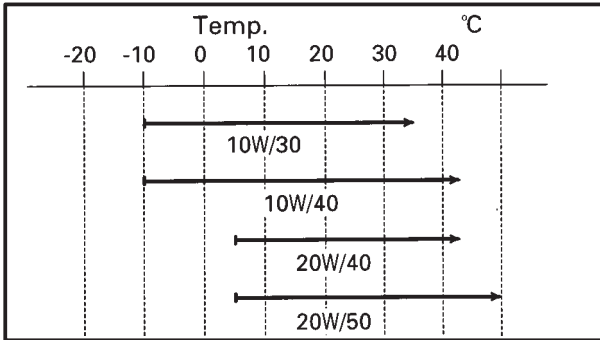
Make sure the scooter is upright when inspecting the oil level.



- Start the engine and let it warm up for a few minutes.
- Turn off the engine.
- Inspect:
  - Engine oil level  
Oil level should be between maximum ① and minimum ② marks.  
Oil level is below the minimum mark → Add oil up to the proper level.

# ENGINE OIL LEVEL INSPECTION/ ENGINE OIL REPLACEMENT

**INSP  
ADJ**



## RECOMMENDED ENGINE OIL

Refer to the chart for selection of the oils suited to the atmospheric temperature.



### API STANDARD:

**API SE or higher grade**

### CAUTION:

- Do not put in any chemical additives or use oils with a grade of CD <sup>(a)</sup> or higher.
- Be sure not to use oils labeled "ENERGY CONSERVING II" <sup>(b)</sup> or higher. Engine oil also lubricates the clutch and additives could cause clutch slippage.
- Be sure no foreign material enters the crankcase.

5. Start the engine and let it warm up for a few minutes.
6. Turn off the engine.

### NOTE:

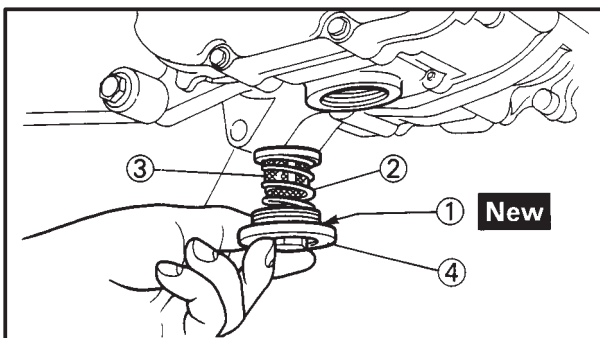
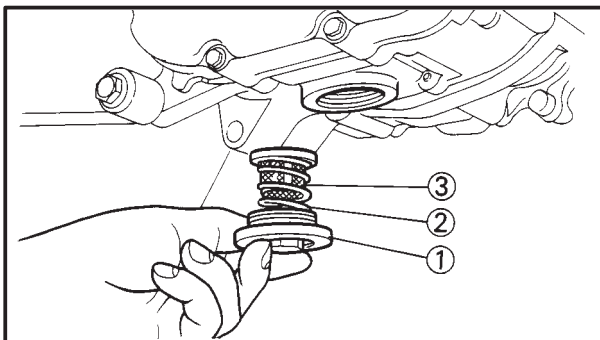
Wait a few minutes until the oil settles before inspecting the oil level.

YP\*\*\*\*\*

## ENGINE OIL REPLACEMENT

1. Start the engine and let it warm up for several minutes.
2. Turn off the engine and place an oil pan under the engine.
3. Remove:
  - Oil filler plug
  - Drain plug ①
  - Compression spring ②
  - Oil strainer ③
  - O-ring

Drain the crankcase of its oil.
4. Install:
  - O-ring ① **New**
  - Compression spring ②
  - Oil strainer ③
  - Drain plug ④ **32 Nm (3.2 m•kg)**
  - Oil filler plug



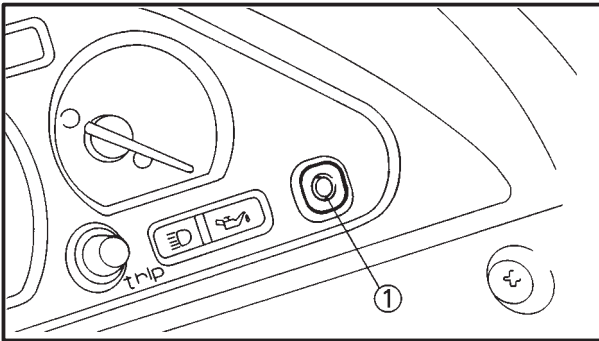
### NOTE:

Check the O-ring (drain plug). If damaged, replace it with a new one.

5. Fill:
- Crankcase

	<b>Oil quantity:</b> <b>1.4L</b>
---	-------------------------------------

6. Check:
- Engine oil level  
Refer to “ENGINE OIL LEVEL INSPECTION” section.
7. Reset:
- Engine oil warning circuit



\*\*\*\*\*

**Resetting steps:**

- Turn the main switch to on.
- Push and hold in the reset button for 2 to 5 seconds.
- Release the reset button ① and the oil indicator light will go off.

**NOTE:**

If the oil is changed before the oil indicator light comes on (i.e. before the 3,000 km oil change interval is reached), be sure to reset the oil indicator light after changing the oil, so that it will come on at the correct time to indicate the next 3,000 km oil replacement.

To reset the oil indicator light before it comes on: Release the reset button and the oil indicator light will come on for 1.4 seconds.

\*\*\*\*\*

YP\*\*\*\*

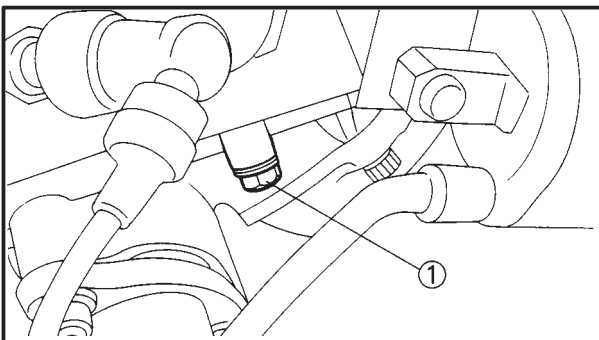
**ENGINE OIL PRESSURE INSPECTION**

1. Remove:
- Side panels  
Refer to the “COVER AND PANEL” section.
2. Inspect:
- Oil pressure

\*\*\*\*\*

**Inspection steps:**


- Slightly loosen the oil check bolt ①.
- Start the engine and keep it idling until the oil begins to seep from the oil check bolt.  
If no oil comes out after one minute, turn the engine off so it will not seize.
- Check oil passages and oil pump for damage or leakage.



# ENGINE OIL PRESSURE INSPECTION/ TRANSMISSION OIL REPLACEMENT



- Start the engine after solving the problem(s), and recheck the oil pressure.
- Tighten the oil check bolt to specification.

 10 Nm (1.0 m•kg)

**CAUTION:** \_\_\_\_\_

- Start the engine and check the oil pressure with the oil check bolt loosened.
- Do not apply at high speeds more than specified when checking the pressure.

**NOTE:** \_\_\_\_\_

Wipe any spilled oil off the engine.

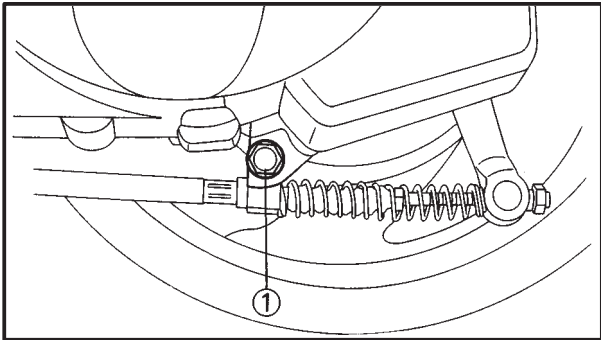
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YP\*\*\*\*\*


## TRANSMISSION OIL REPLACEMENT

**NOTE:** \_\_\_\_\_

Make sure the scooter is upright when replacing the oil.

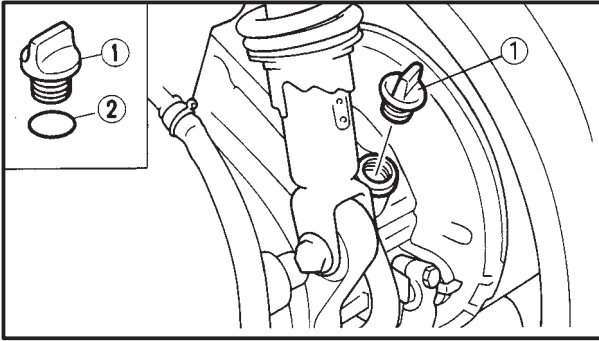


1. Stand the scooter on a level surface.
2. Start the engine for several minutes to warm it up and then stop.
3. Place an oil pan under the crankcase.
4. Remove:
  - Oil filler cap
  - Drain bolt ①
 Drain the oil.
5. Tighten:
  - Drain bolt  22 Nm (2.2 m•kg)
6. Fill:
  - Crankcase

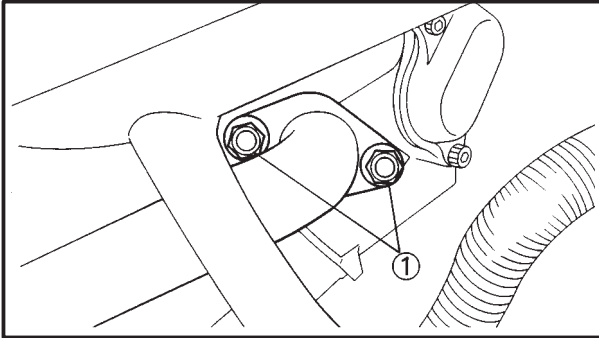
	<b>Recommended oil:</b>
	<b>SAE 10W30 motor oil</b>
	<b>Oil quantity:</b>
	<b>0.25 L</b>

**CAUTION:** \_\_\_\_\_

Wipe any spilled oil off the tire or the wheel.






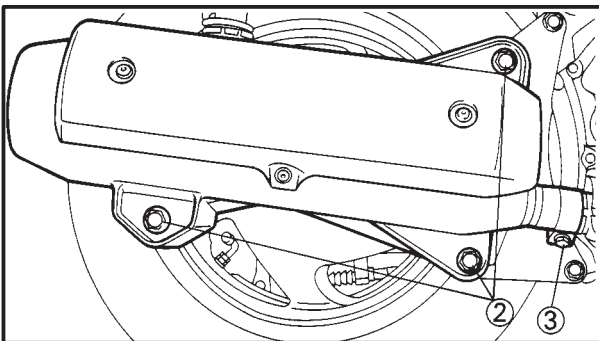
7. Install:
  - Oil filler cap ①
  - O-ring ②
8. Start the engine for several minutes to warm it up and check for the oil leakage.



YP\*\*\*\*\*

**EXHAUST SYSTEM INSPECTION**

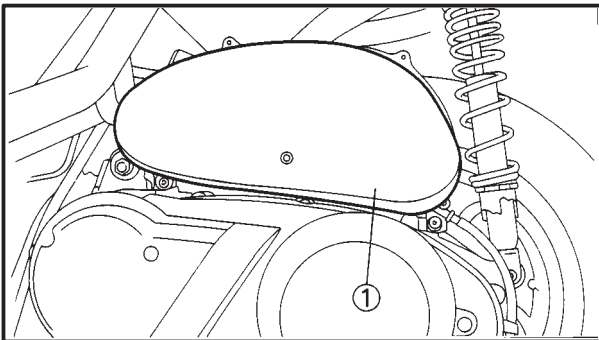
1. Remove:
  - Side panels  
Refer to “COVER AND PANEL” section.
2. Inspect:
  - Nut ① (exhaust pipe)  20 Nm (2.0 m•kg)  
Loose/Damage → Tighten/replace.
  - Gasket (exhaust pipe)  
Exhaust gas leaks → Tighten/replace.
3. Inspect:
  - Bolt ② (muffler)  53 Nm (5.3 m•kg)
  - Connecting bolt ③ (muffler)  20 Nm (2.0 m•kg)  
Loose/Damage → Tighten/replace.



YP303123

**AIR FILTER CLEANING**

1. Remove:
  - Side panels
  - Air filter case cover  
Refer to “COVER AND PANEL” section.
2. Remove:
  - Air filter element ①

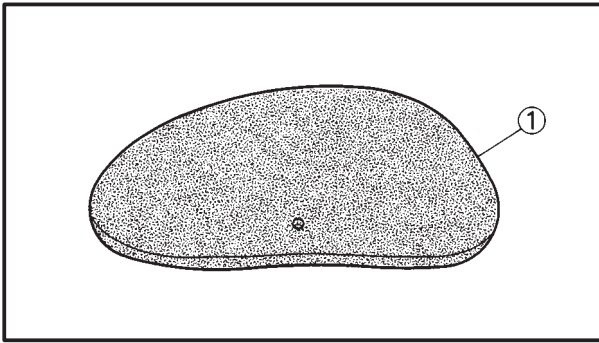


**CAUTION:** \_\_\_\_\_

**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 filter element will also affect the carburetor tuning, leading to poor engine performance and possible overheating.**

## AIR FILTER CLEANING/ CRANKCASE FILTER CLEANING

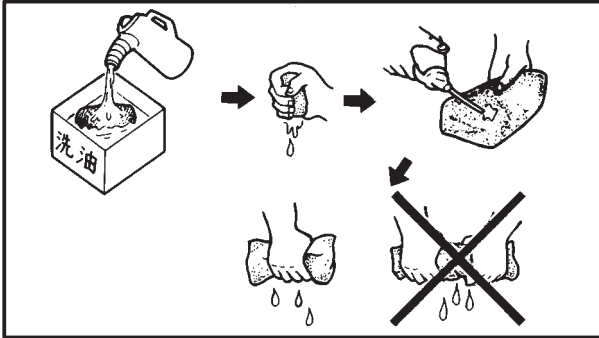
INSP  
ADJ



3. Inspect:
  - Air filter element  
Damaged → Replace.
4. Clean:
  - Air filter element ①  
Use solvent to clean the element

**NOTE:** \_\_\_\_\_

After cleaning, remove the remaining solvent by squeezing the element.



**CAUTION:** \_\_\_\_\_

Do not twist the element when squeezing the element.


5. Apply the recommended oil to the entire surface of the filter and squeeze out the excess oil. The element should be wet but not dripping.



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

**WARNING** \_\_\_\_\_

Never use low flash point solvents such as gasoline to clean the air filter element. Such solvents may cause a fire or an explosion.

6. Install:
  - Air filter element
  - Air filter case cover  7 Nm (0.7 m•kg)
  - Side panels  
Refer to “ENGINE REMOVAL” section in chapter 4.

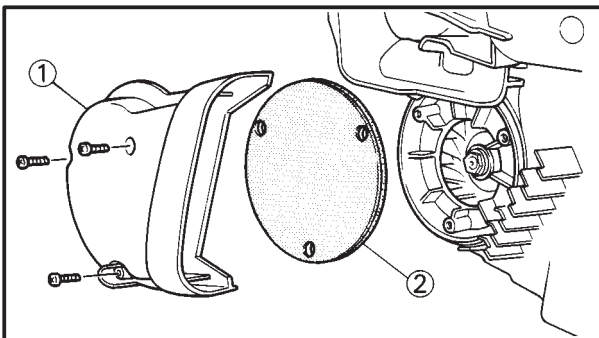
YP\*\*\*\*\*

## CRANKCASE FILTER CLEANING

1. Remove:
  - Crankcase filter cover ①
  - Crankcase filter cover seal
  - Crankcase filter element ②

**NOTE:** \_\_\_\_\_

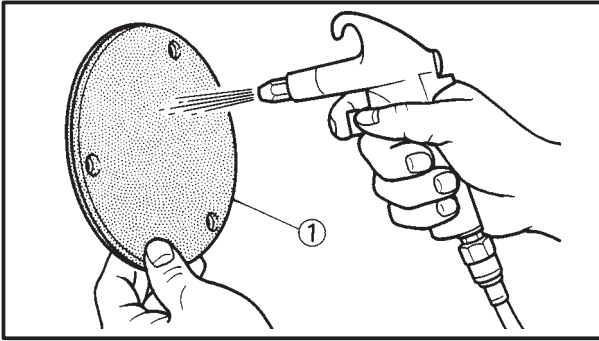
When installing the element in its case, be sure its sealing surface matches the sealing surface of the case so there is no air leak.



2. Inspect:
  - Crankcase filter element  
Damaged → Replace.

## CRANKCASE FILTER CLEANING/ COOLANT LEVEL INSPECTION

INSP  
ADJ



### CAUTION:


This element is a dry type.

Be careful not to stain with grease or water.

#### 3. Clean:

- Crankcase filter element ①  
Blow out the dust in the element from the outer surface using compressed air.

#### 4. Install:

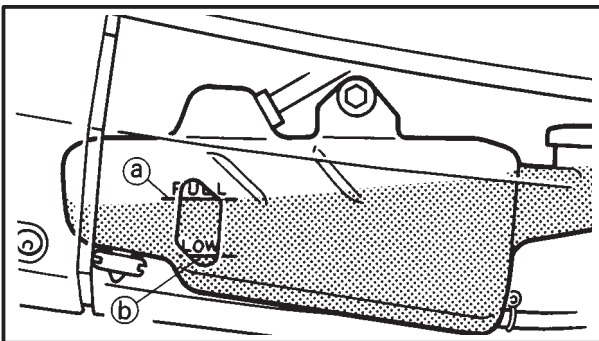
- Crankcase filter element
- Crankcase filter cover seal
- Crankcase filter cover  7 Nm (0.7 m•kg)

YP303170

## COOLANT LEVEL INSPECTION

### NOTE:

Make sure the scooter is upright when inspecting the coolant level.



1. Stand the scooter on a level surface.
2. Stand the scooter on its centerstand.
3. Inspect:

- Coolant level  
Coolant level should be between the maximum (a) and minimum (b) marks  
Coolant level is below the "LOWER" level line → Add soft water (tap water) up to the proper level.

### CAUTION:

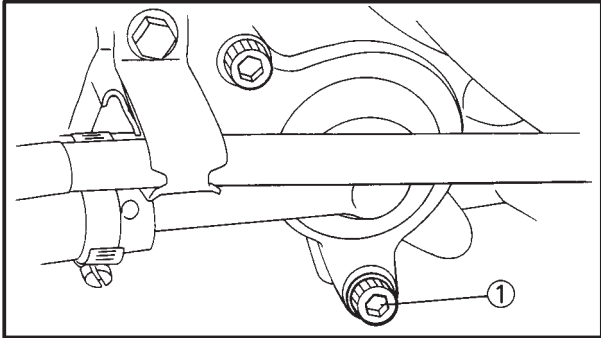
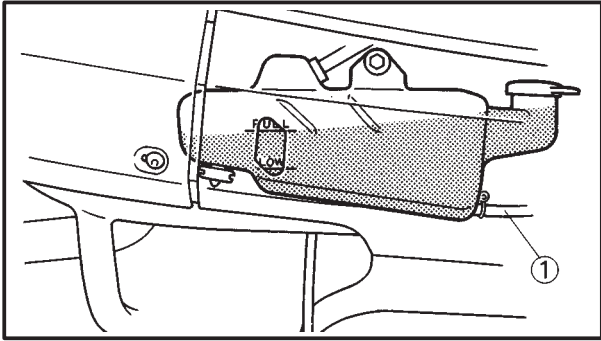
Hard water or salt water is harmful to engine parts. Use only distilled water if soft water is not available. If you use tap water, make sure it is soft water.

4. Start the engine and let it warm up for several minutes.
5. Turn off the engine and inspect the coolant level again.

### NOTE:

Wait a few minutes until the coolant settles before inspecting the coolant level.





YP303180

## COOLANT REPLACEMENT

1. Remove:
  - Side panels
  - Fuel tank
 Refer to the “COVERS AND PANEL” section.
2. Remove:
  - Hose ① (reservoir tank)
 Drain the reservoir tank of its coolant.
3. Remove:
  - Drain bolt ①
  - Radiator cap
 Open the front trunk, remove the cover, slowly loosen to remove the radiator cap and drain the coolant.

### **⚠ WARNING**

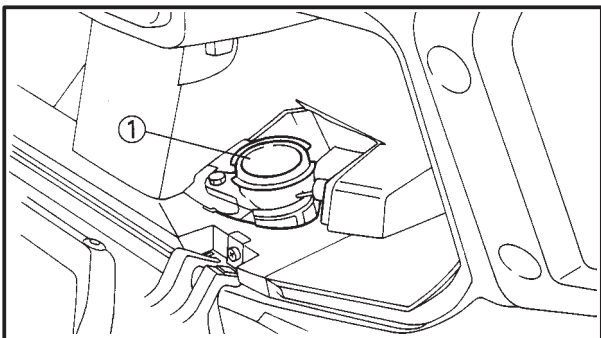
**Do not remove the radiator cap when the engine and radiator are hot. Scalding hot fluid and steam may be blown out under pressure, which could cause serious injury. When the engine has cooled, open the radiator cap as follows:**

**Place a thick rag or a towel over the radiator cap. Slowly rotate the cap counterclockwise toward the detent. This allows any residual pressure to escape. When the hissing sound has stopped, press down on the cap while turning counterclockwise and remove it.**

### **NOTE:**

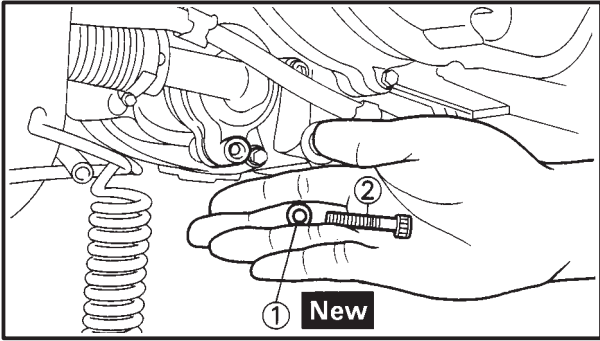
- Remove the radiator cap after removing the drain bolt.
- Place the scooter upright on a level surface when draining the coolant completely.

4. Clean:
  - Radiator
 Fill soft water into the filler neck support ① (reservoir tank).



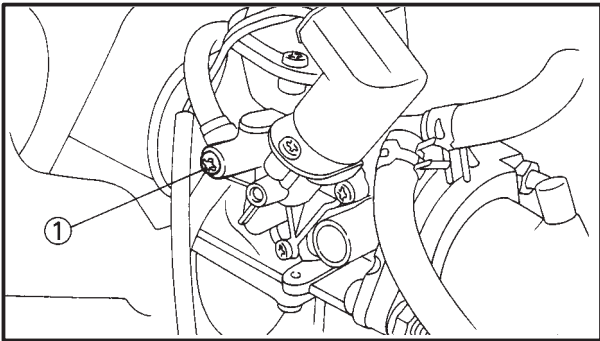


# COOLANT REPLACEMENT



5. Install:

- Gasket ① **New**
- Drain bolt ② 10 Nm (1.0 m•kg)

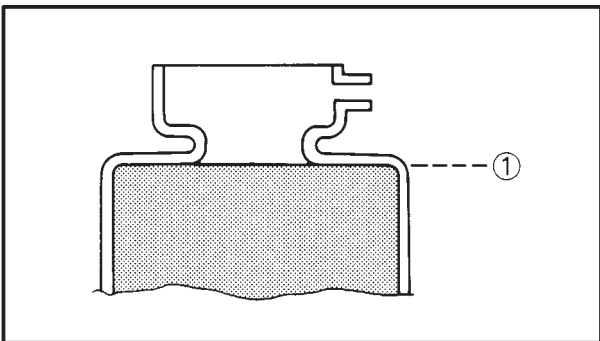


6. Loosen:

- Screw ① (carburetor bleed)

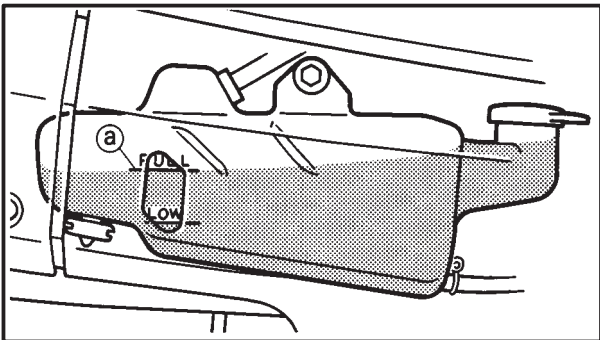
7. Connect:

- Hose (reservoir tank)



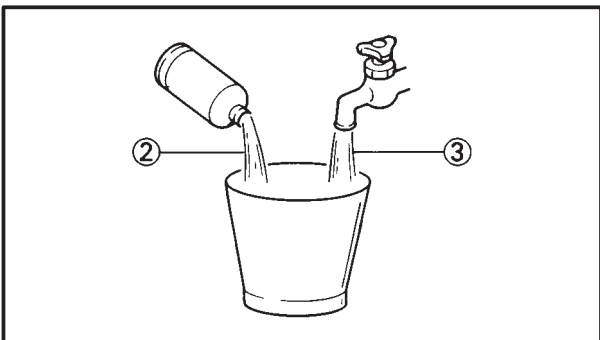
8. Fill:

- Radiator (to specified level ①)  
Fill the coolant slowly, until the coolant comes out from the carburetor drain pipe.
- Reservoir tank (to maximum level ②)



**Recommended coolant:**  
High quality ethylene glycol anti-freeze containing corrosion inhibitors for aluminium engine.

**Coolant ② and water ③ (soft water):**  
**Mixed ratio: 50%/50%**  
**Total amount: 1.4 L**  
**Reservoir tank capacity: 0.35 L**



\*\*\*\*\*  
Handling notes for coolant:  
Coolant is potentially harmful and should be handled with special care.



**⚠ WARNING**

- If coolant splashes in your eyes: thoroughly wash your eyes with water and consult a doctor.
- If coolant splashes on your clothes: quickly wash it away with water and then with soap and water.
- If coolant is swallowed: quickly make the person who has swallowed it vomit and then take him to a doctor.

\*\*\*\*\*

**CAUTION:**

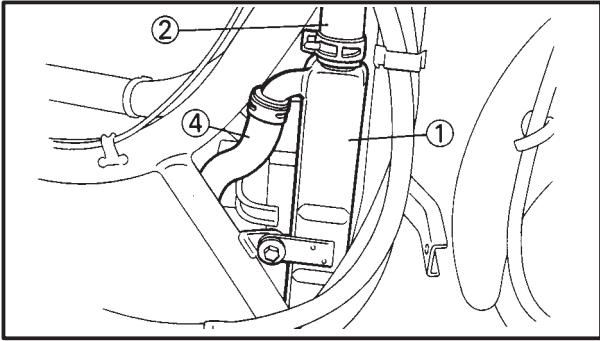
- Hard water or salt water is harmful to engine parts. Use only distilled water if soft water is not available.
- If you use tap water, make sure it is soft water.
- Do not use water containing impurities or oil.
- Take care that no coolant splashes onto painted surfaces. If it does, wash them straightaway with water.
- Do not mix different types of ethylene glycol antifreeze containing corrosion inhibitors for aluminum engines.

9. Tighten:
  - Screw (carburetor bleed)  
Fill the coolant slowly to the specified level.
10. Install:
  - Radiator cap
11. Start the engine and let it warm up for several minutes.
12. Stop the engine and inspect the level.  
Refer to "COOLANT LEVEL INSPECTION" section.

**NOTE:**

Wait a few minutes until the coolant settles before inspecting the coolant level.

13. Install:
  - Fuel tank
  - Side panels  
Refer to "COVER AND PANEL" section.



YP303190

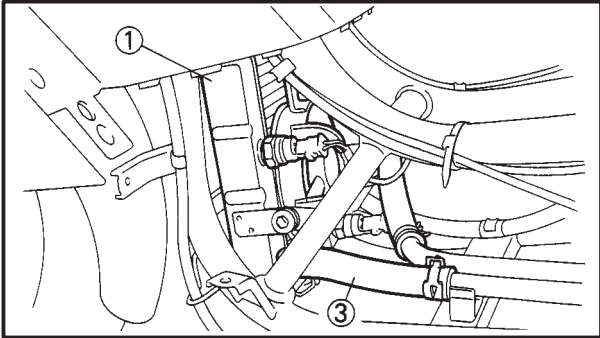
## COOLING SYSTEM INSPECTION

### 1. Inspect:

- Radiator ①
- Filler hose (radiator) ②
- Outlet hose (radiator) ③
- Pipe
- Outlet hose (radiator) ④

Cracks/Damage → Replace.


Refer to “COOLING SYSTEM” section in chapter 5.



EB304002

**CHASSIS**  
**FRONT BRAKE ADJUSTMENT**

1. Check:
  - Brake lever free play (a)
 Out of specification → Adjust.

	<b>Free play (brake lever):</b> <b>2 × 5 mm (at brake lever end)</b>
---	---

2. Adjust:
  - Brake lever free play

\*\*\*\*\*

**Adjustment steps:**

- Loosen the locknut (2).
- Turn the adjuster (3) in or out until the specified free play is obtained.

<b>Turning in → Free play is decreased.</b>
<b>Turning out → Free play is increased.</b>

- Tighten the locknut.

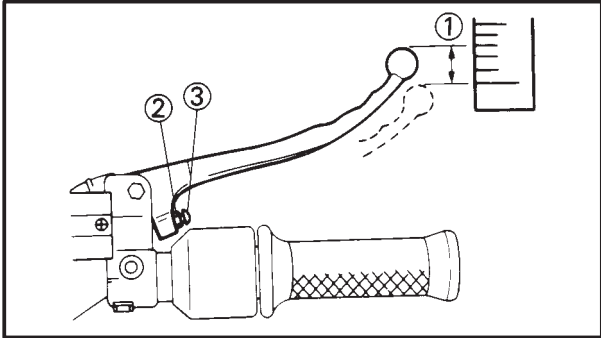
**CAUTION:** \_\_\_\_\_

Make sure that there is no brake drag after adjusting the front brake lever free play.

**WARNING** \_\_\_\_\_

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

\*\*\*\*\*



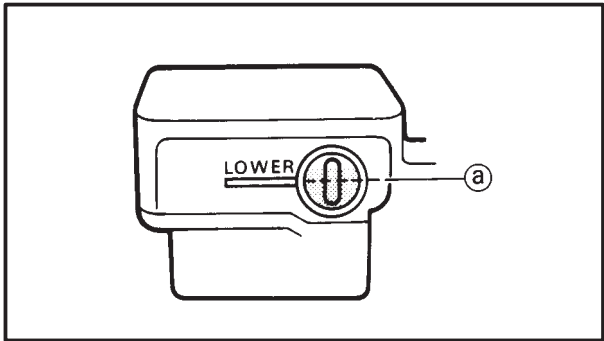
YP304020

**BRAKE FLUID LEVEL INSPECTION**

1. Stand the scooter on a level surface.

**NOTE:** \_\_\_\_\_

Make sure the scooter is upright when inspecting the brake fluid level.



2. Stand the scooter on its centerstand.

3. Inspect:

- Brake fluid level

Brake fluid level is below the “LOWER” level line (a) → Fill to proper level.

	<b>Recommended brake fluid: DOT#4</b>
---	---

**NOTE:** \_\_\_\_\_

- For a correct reading of the brake fluid level, make sure the top of the handlebar brake fluid reservoir is horizontal.
- If DOT#4 is not available, DOT#3 can be used.

**CAUTION:** \_\_\_\_\_

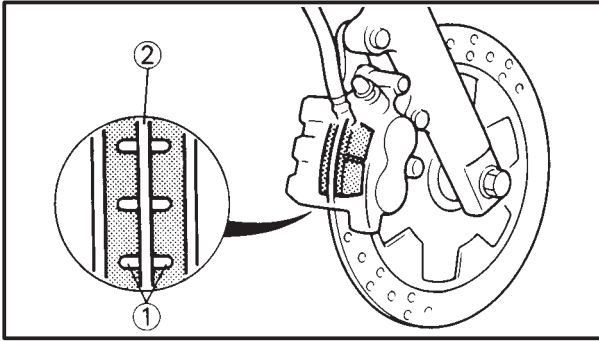
Brake fluid may corrode painted surfaces or plastic parts. Always clean up any split fluid immediately.

**⚠ WARNING** \_\_\_\_\_

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

## BRAKE PAD INSPECTION/ AIR BLEEDING (HYDRAULIC BRAKE SYSTEM)

INSP  
ADJ



YP304030

### BRAKE PAD INSPECTION

1. Operate the brake lever.
2. Inspect:
  - Brake pad (front)  
Wear indicators ① almost touch the brake disc → Replace the brake pads as a set.  
Refer to "FRONT AND REAR BRAKE" in CHAPTER 7.

YP304070

### AIR BLEEDING (HYDRAULIC BRAKE SYSTEM)

#### **⚠ WARNING**

Bleed the brake system whenever:

- The system is disassembled
- A brake hose is loosened or removed
- The brake fluid level is very low
- Brake operation is faulty

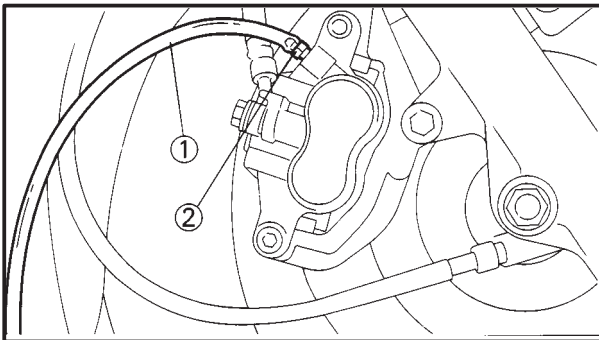
Loss of braking performance may occur if the brake system is not properly bled.

1. Bleed:
  - Brake system

\*\*\*\*\*

#### Air bleeding steps:

- a. Fill the reservoir with the proper brake fluid.
- b. Install the diaphragm. Be careful not to spill any fluid or allow the reservoir to overflow.
- c. Connect a clear plastic hose ① tightly to the caliper bleed screw ②.
- d. Place the other end of the hose into a container.
- e. Slowly apply the brake lever several times.
- f. Pull the lever in. Hold the lever in position.
- g. Loosen the bleed screw and allow the lever to travel towards its limit.
- h. Tighten the bleed screw when the lever limit has been reached, then release the lever.
- i. Repeat steps (e) to (h) until all air bubbles have disappeared from the brake fluid.



**NOTE:** \_\_\_\_\_

When bleeding the brake system, make sure that there is always enough brake fluid in the brake fluid reservoir before applying the brake lever. Ignoring this precaution could allow air to enter the brake system, considerably lengthening the bleeding procedure.

j. Tighten the bleed screw.

- Bleed screw  **6 Nm (0.6 m•kg)**

**NOTE:** \_\_\_\_\_

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 brake system have disappeared.

k. Fill the brake fluid reservoir to the proper level.

Refer to “BRAKE FLUID LEVEL INSPECTION”.

**⚠ WARNING** \_\_\_\_\_

Check brake operation after bleeding the brake system.

\*\*\*\*\*  
YP\*\*\*\*\*

**REAR BRAKE ADJUSTMENT**

1. Check:

- Brake lever free play ① (rear)  
Out of specification → Adjust.

	<b>Free play:</b> <b>10 × 20 mm</b>
---	--

2. Adjust:

- Brake lever free play

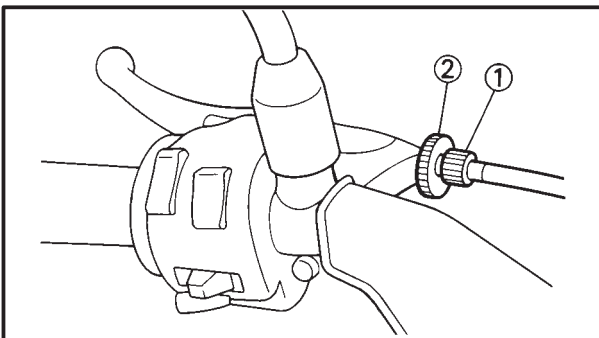
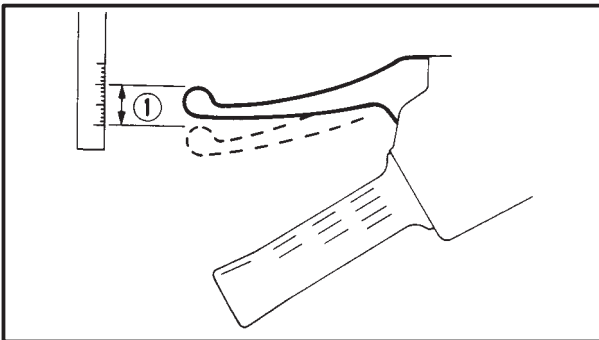
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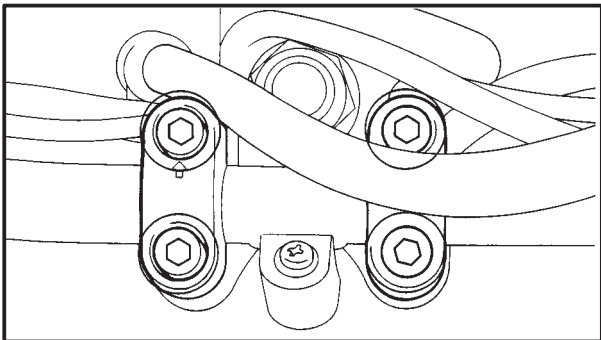
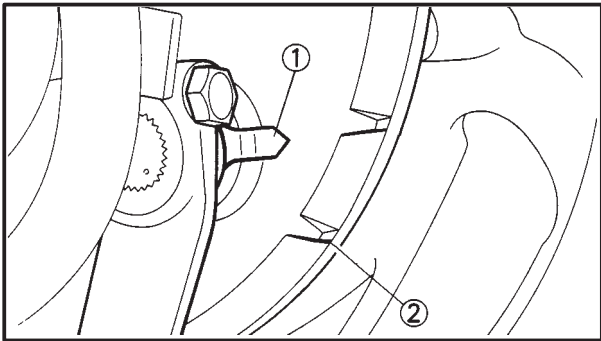
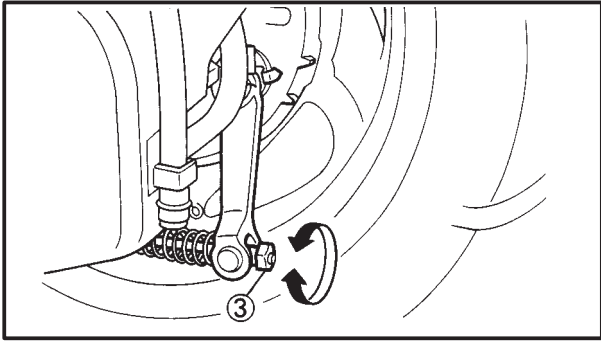
**Adjustment steps:**

Handlebar side:

- Loosen the locknut (s) ①.
- Turn the adjuster (s) ② in or out until the specified free play is obtained.

<b>Turning in → Free play is increased.</b>
<b>Turning out → Free play is decreased.</b>





- Tighten the locknut (s).
- Rear wheel side:
- Turn the adjuster ③ in or out until the specified free play is obtained.

**Turning in → Free play is decreased.**

**Turning out → Free play is increased.**

**CAUTION:** \_\_\_\_\_

**Make sure that the brake does not drag after adjusting it.**

\*\*\*\*\*

YP304040

**BRAKE SHOE INSPECTION**

1. Operate the brake lever.
2. Inspect:
  - Brake shoes

Wear indicator ① reaches the wear limit line ② → Replace the brake shoes as a set.

Refer to “REAR WHEEL” in CHAPTER 6.

YP304130

**STEERING HEAD INSPECTION**

**⚠ WARNING** \_\_\_\_\_

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

1. Stand the scooter on a level surface.

**NOTE:** \_\_\_\_\_

Stand the scooter on its centerstand.

2. Elevate the front wheel by placing a suitable stand under the engine.
3. Check:
  - Steering assembly bearings

Grasp the bottom of the lower front fork tubes and gently rock the fork assembly. Looseness → Adjust the steering head.
4. Remove:
  - Handlebar cover

Refer to “COVER AND PANEL” section.

  - Handlebar


Refer to “HANDLEBAR” section in chapter 7.



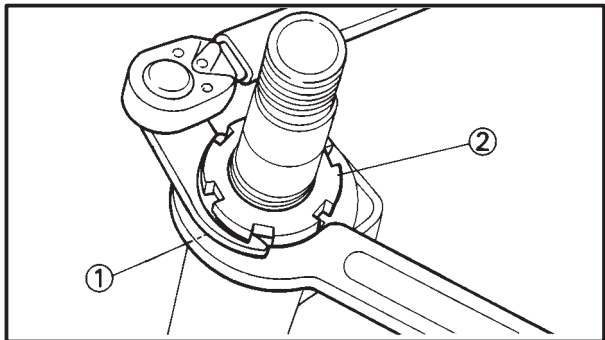
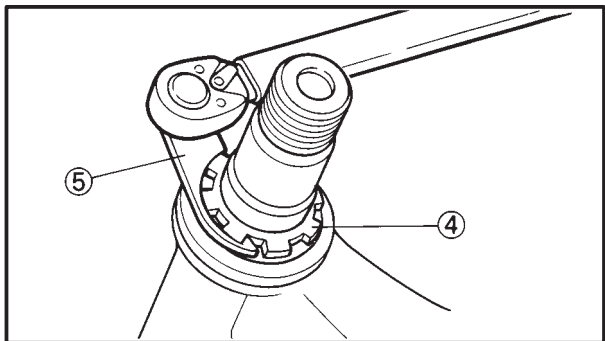
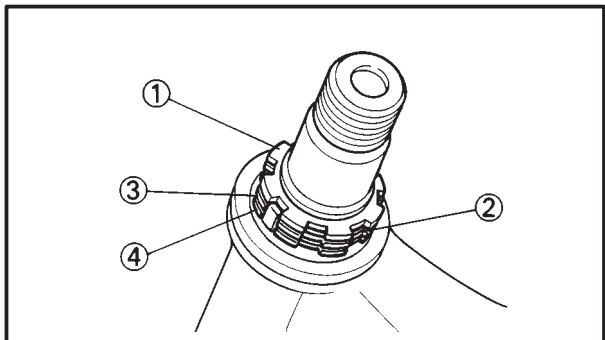
5. Remove:
  - Handlebar lower holder
  - Woodruff key
 Refer to "STEERING" section in chapter 7.
6. Adjust:
  - Steering head

\*\*\*\*\*


**Adjustment steps:**

- Remove the ring nut (upper) ①, lock washer ②, the ring nut (center) ③ and the rubber washer.
- Loosen the ring nut ④ (lower).
- Tighten the ring nut (lower) using the ring nut wrench ⑤.  **38 Nm (3.8 m•kg)**

**NOTE:** \_\_\_\_\_  
Set the torque wrench at right angles to the ring nut wrench.

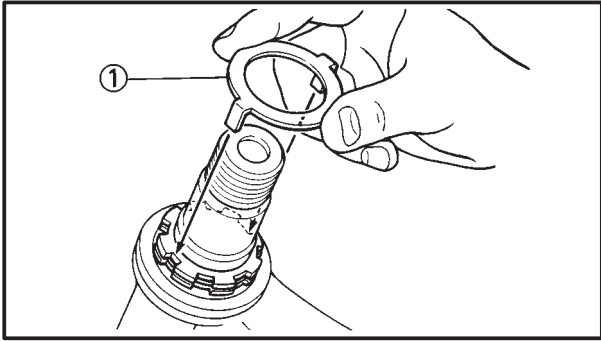


	<b>Ring nut wrench:</b> <b>90890-01403</b>
--	---

- Loosen the ring nut (lower) ④ completely, then tighten it to specification.
-  **22 Nm (2.2 m•kg)**

**⚠ WARNING** \_\_\_\_\_  
Do not overtighten.

- Check the steering head for looseness or binding by turning it all the way in both directions. If it binds, remove the steering stem assembly and inspect the steering bearings. Refer to "STEERING HEAD" in CHAPTER 7.
- Install the rubber washer.
- Install the ring nut (center) ②.
- Finger tighten the ring nut (center), then align the slots of both ring nuts. If necessary, hold the ring nut (lower) ① and tighten the ring nut (center) ② until their slots are aligned.




- Install the lock washer ①.

**NOTE:** \_\_\_\_\_

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

- Hold the ring nut (under and center), using the exhaust and ring nut wrench, and tighten the ring nut (upper) using the ring nut wrench.

 75 Nm (7.5 m•kg)



**Exhaust and ring nut wrench:  
90890-01268**

\*\*\*\*\*

8. Install:

- Woodruff key
- Handlebar lower holder  
Refer to “STEERING” section in CHAPTER 7.
- Handlebar  
Refer to “HANDLEBER” section in CHAPTER 7.

9. Install:

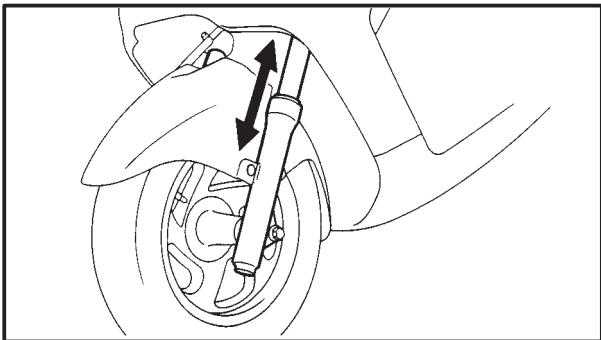
- Handlebar cover  
Refer to “COVER AND PANEL” section.

YP304140

## FRONT FORK INSPECTION

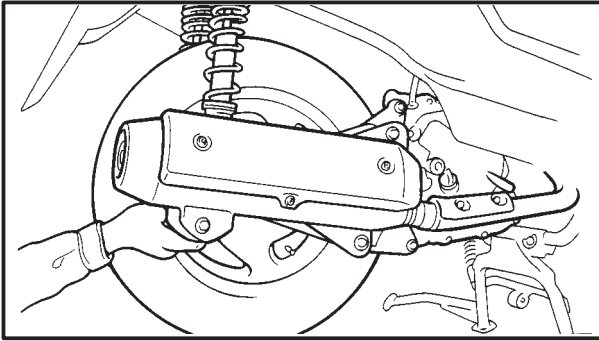
**⚠ WARNING** \_\_\_\_\_

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



1. Stand the scooter on a level surface.
2. Check:
  - Inner tube  
Scratches/damage → Replace.
  - Oil seal  
Excessive oil leakage → Replace.  
Hold the scooter upright and apply the front brake.
3. Check:
  - Operation  
Push down hard on the handlebars several times.  
Unsmooth operation → Repair.  
Refer to “FRONT FORK” in CHAPTER 7.

# SWINGARM INSPECTION/ REAR SHOCK ABSORBER INSPECTION/ REAR SHOCK ABSORBER ADJUSTMENT



yp\*\*\*\*\*

## SWINGARM INSPECTION

### **⚠ WARNING**

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

1. Place the scooter on the level place.
2. Check:
  - Operation  
Grasp the end of the swingarm and gently rock the swingarm assembly back and forth.  
Unsmooth operation → Repair.  
Refer to “REAR SHOCK ABSORBER AND SWINGARM” section in CHAPTER 7.

yp\*\*\*\*\*

## REAR SHOCK ABSORBER INSPECTION

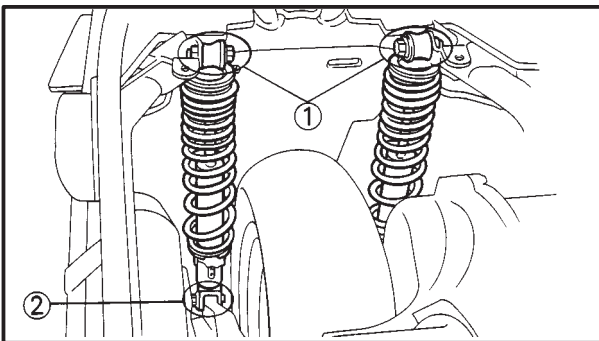
1. Remove:
  - Side panel
  - Fuel tank
  - Box  
Refer to “COVER AND PANEL” section.
2. Check:
  - Rear shock absorber mount  
Looseness → Tighten.  
Bolt (upper) ① 

	40 Nm (4.0 m•kg)
--	------------------

  
Bolt (lower) ② 

	16 Nm (1.6 m•kg)
--	------------------

  
Refer to “REAR SHOCK ABSORBER AND SWINGARM” section in chapter 7.



YP304160

## REAR SHOCK ABSORBER ADJUSTMENT

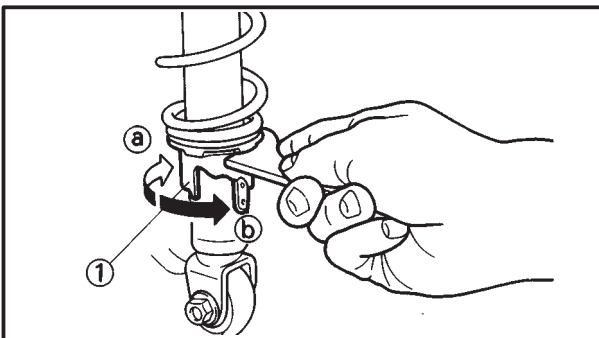
### **⚠ WARNING**

- Always adjust each rear shock absorber preload to the same setting. Uneven adjustment can cause poor handling and loss of stability.
- Securely support the scooter so there is no danger of it falling over.

1. Adjust:
  - Spring preload  
Turn the adjuster ring ① to direction Ⓐ or Ⓑ.

### **NOTE:**

Use the special wrench included in the owner's tool kit to adjust the spring preload.



\*\*\*\*\*

**Adjustment steps:**

- Turn the adjuster ring in or out.

Turning toward (a) → Spring preload is increased.
Turning toward (b) → Spring preload is decreased.

	<b>Hard</b>		<b>Standard</b>	<b>Soft</b>	
<b>Adjusting position:</b>	5	4	3	2	1

**CAUTION:** \_\_\_\_\_

- Never turn the adjuster beyond the maximum or minimum setting.
- Always adjust each shock absorber to the same setting.

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EB304171

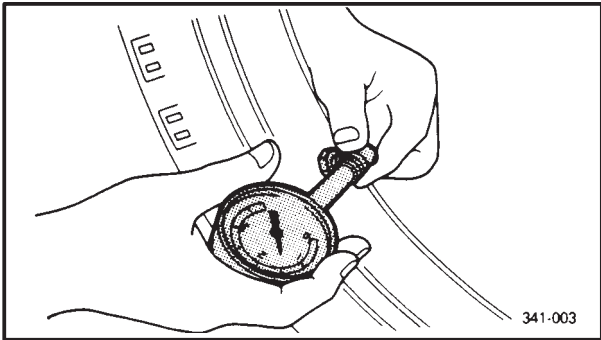
**TIRE INSPECTION**

1. Measure:

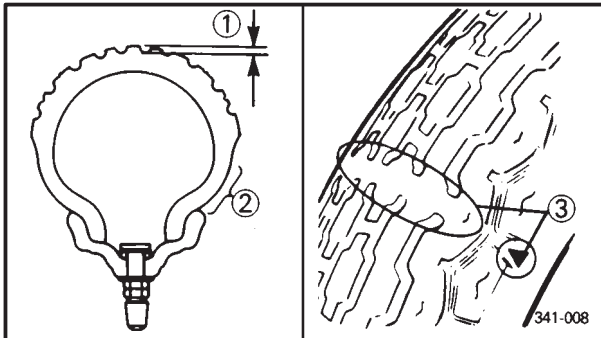
- Tire inflation pressure  
Out of specification → Adjust.

**⚠ WARNING** \_\_\_\_\_

- Tire inflation pressure should only be checked and adjusted when the tire temperature equals the ambient air temperature. Tire inflation pressure and suspension must be adjusted according to the total weight of the cargo, rider, passenger and accessories (fairing, saddlebags, etc. if approved for this model), and according to whether the scooter will be operated at high speed or not.  
**NEVER OVERLOAD THE SCOOTER.**
- Operation of an overloaded scooter could cause tire damage, accident or injury.



# TIRE INSPECTION



Basic weight: With oil and full fuel tank	158 kg	
Maximum load*	197 kg	
Cold tire pressure	Front	Rear
Up to 90 kg load*	175 kPa <small>(1.75 kg/cm<sup>2</sup>, 1.75 bar)</small>	200 kPa <small>(2.0 kg/cm<sup>2</sup>, 2.0 bar)</small>
90 kg × maximum. load*	200 kPa <small>(2.0 kg/cm<sup>2</sup>, 2.0 bar)</small>	225 kPa <small>(2.25 kg/cm<sup>2</sup>, 2.25 bar)</small>
High speed riding	200 kPa <small>(2.0 kg/cm<sup>2</sup>, 2.0 bar)</small>	250 kPa <small>(2.50 kg/cm<sup>2</sup>, 2.50 bar)</small>

\* Load is the total weight of the cargo, rider, passenger and accessories.

2. Inspect:

- Tire surfaces  
Wear/damage → Replace.

**Minimum tire tread depth  
(front and rear):  
1.6 mm**

- ① Tread depth
- ② Side wall
- ③ Wear indicator

## ⚠ WARNING

- It is dangerous to ride with a worn-out tire. When the tire tread begins to show signs of wear, replace the tire immediately.
- Do not use tubeless tires on a wheel designed for tube type tires only. Tire failure and personal injury may result from sudden deflation.

Tube type wheel → Tube type tire only  
Tubeless type wheel → Tube type or tubeless tire.

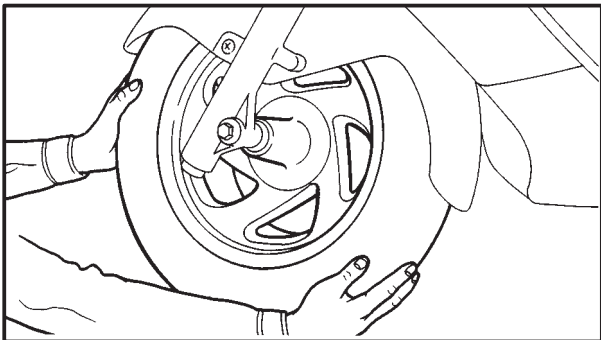
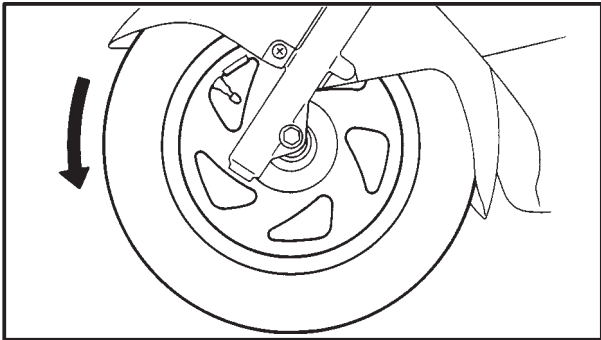
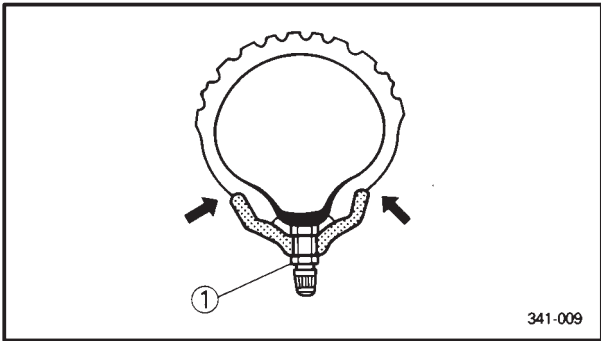
- Be sure to install the correct tube when using tube type tires.
- After extensive tests, the tires listed below have been approved by Yamaha Motor Co., Ltd. for this model. No guarantee concerning handling characteristics can be given if a tire combination other than one approved by Yamaha is used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

FRONT:

Manufacture	Size	Type
IRC	110/90-12 64J	MB61
CHENG SHIN	110/90-12 64J	C922

REAR:

Manufacture	Size	Type
IRC	130/70-12 62L	MB61
CHENG SHIN	130/70-12 62L	C940



**⚠ WARNING**

After mounting a tire, ride conservatively for a while to give the tire time to seat itself properly in the rim. Failure to do so could lead to an accident with possible injury to the rider or damage to the scooter.

- After a tire repair or replacement, be sure to tighten the valve stem locknut ① to specification.

EB304180

**WHEEL INSPECTION**

- Inspect:
  - Wheels
 Damage/Bends → Replace.

**NOTE:**

Always balance the wheel when a tire or wheel has been changed or replaced.

**⚠ WARNING**

Never attempt to make any repairs to the wheel.



YP305000

## ELECTRICAL BATTERY INSPECTION

### NOTE:

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

### CAUTION:

#### CHARGING METHOD

- This is a sealed type battery. Never remove the sealing caps. If the sealing caps have been removed, the balance will not be maintained and battery performance will deteriorate.
- Charging time, charging current and charging voltage for the MF battery are different from those of batterie of general type.
- The MF battery should be charged as explained in "CHARGING METHOD". if the battery is overcharged, the electrolyte level will drop considerably. Therefore, take special care when charging the battery.

### ⚠ WARNING

Battery electrolyte is dangerous; it contains sulfuric acid which is poisonous and highly caustic.

- Always follow these preventive measures:
- Avoid bodily contact with electrolyte as it can cause severe burns or permanent eye injury.
- Wear protective eye gear when handling or working near batteries.

#### Antidote (EXTERNAL):

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

#### Antidote (INTERNAL):

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



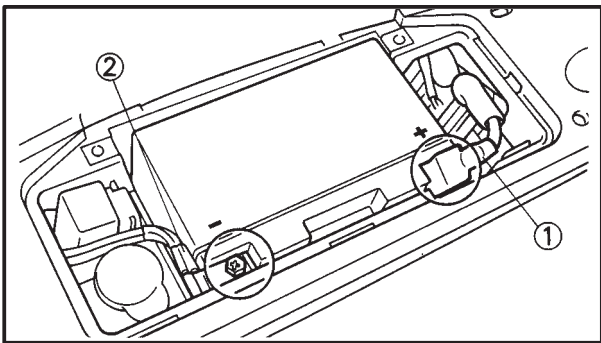
- Batteries generate explosive hydrogen gas. Always follow the following preventive measures:
- Charge batteries in a well-ventilated area.
- Keep batteries away from fire, sparks or open flames (e.g., welding equipment, lighted cigarettes, etc.)
- DO NOT SMOKE when charging or handling batteries.

**KEEP BATTERIES AND ELECTROLYTE OUT OF REACH OF CHILDREN.**

1. Remove:
  - Mat (right)
  - Cover (battery case)  
Refer to "COVER AND PANEL" section.
2. Disconnect:
  - Battery leads

**CAUTION:**

Disconnect the negative lead ① first and then disconnect the positive lead ②.



3. Remove:
  - Battery
4. Check:
  - Battery condition

\*\*\*\*\*

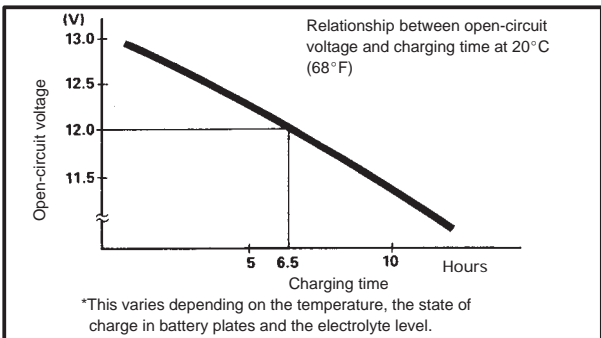
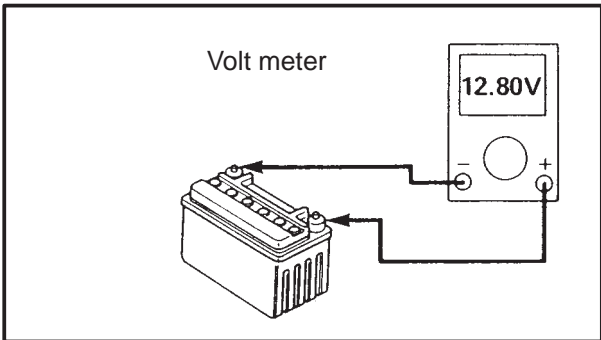
**Battery condition checking steps:**

- Connect a digital voltmeter to the battery terminals.

Tester (+) lead → Battery (+) terminal  
Tester (-) lead → Battery (-) terminal

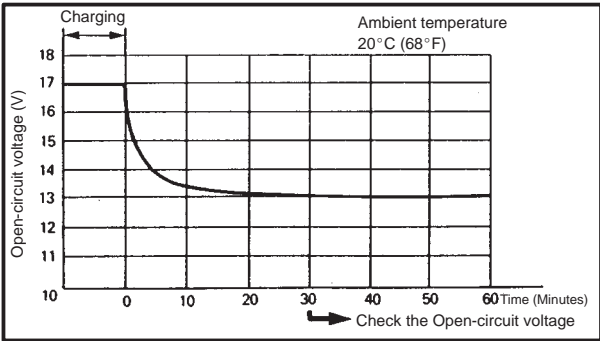
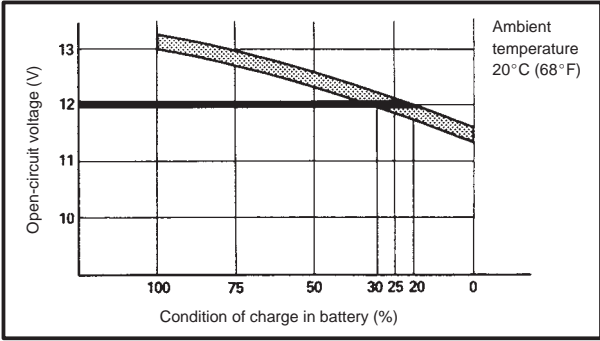
**NOTE:**

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



Open circuit voltage	Charging time
12.8 V or more	No charging is necessary.





- Check the condition of the battery using the charts.

**Example:**

Open-circuit voltage = 12.0 V

Charging time = 6.5 hours

Charge condition of the battery =  $20 \times 30\%$

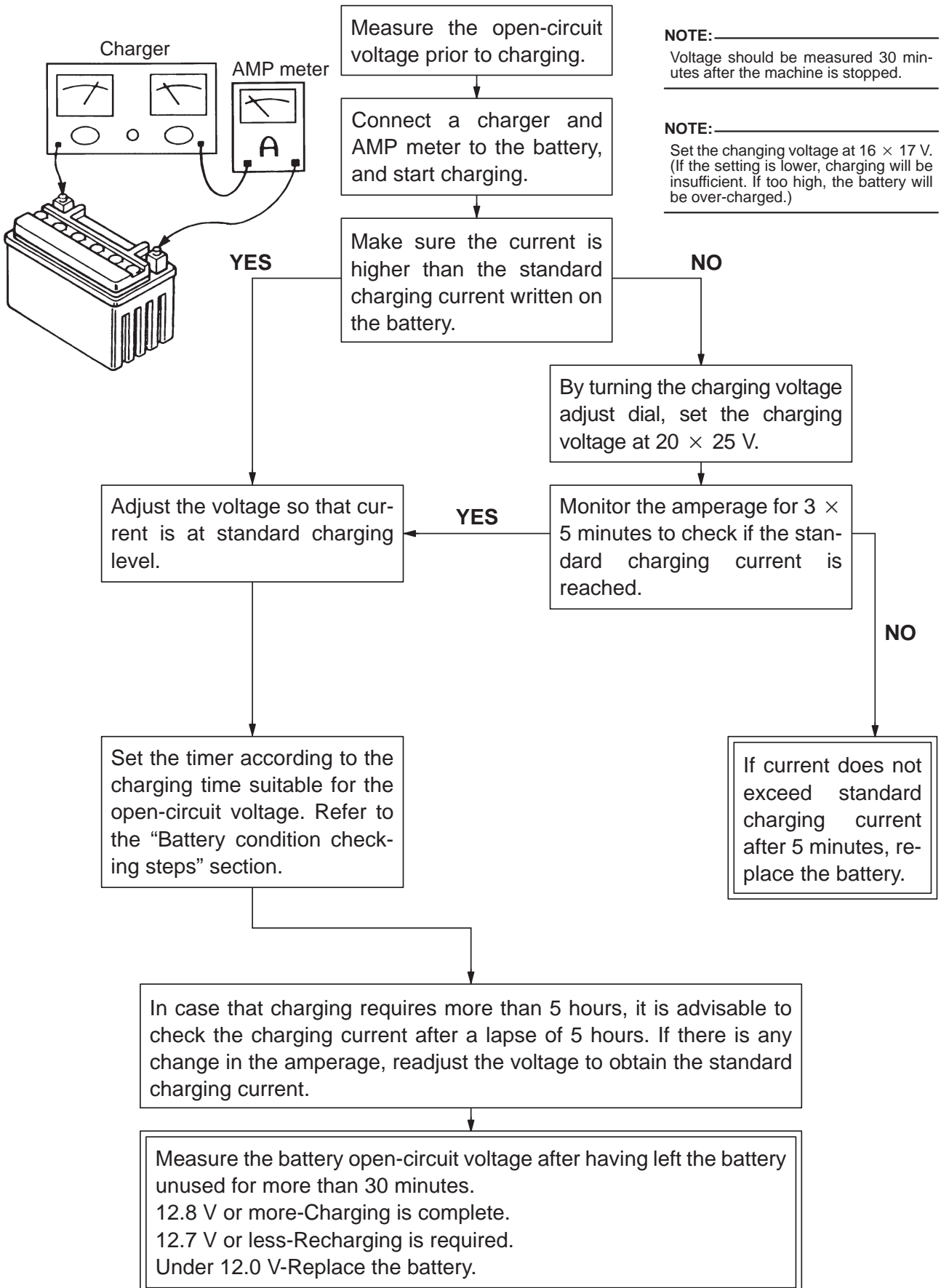
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## 5. Charging method for MF batteries

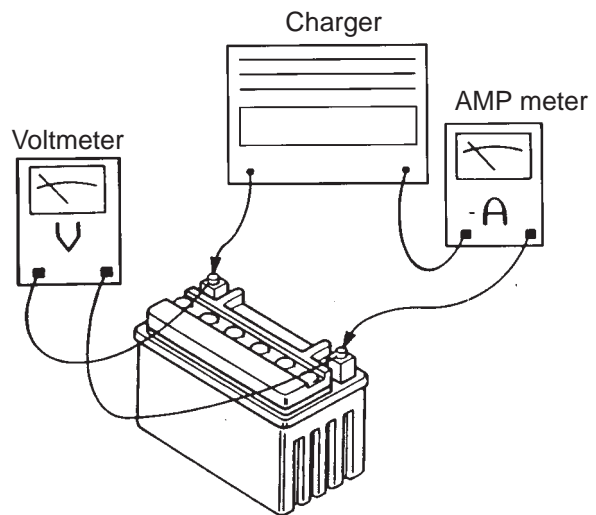
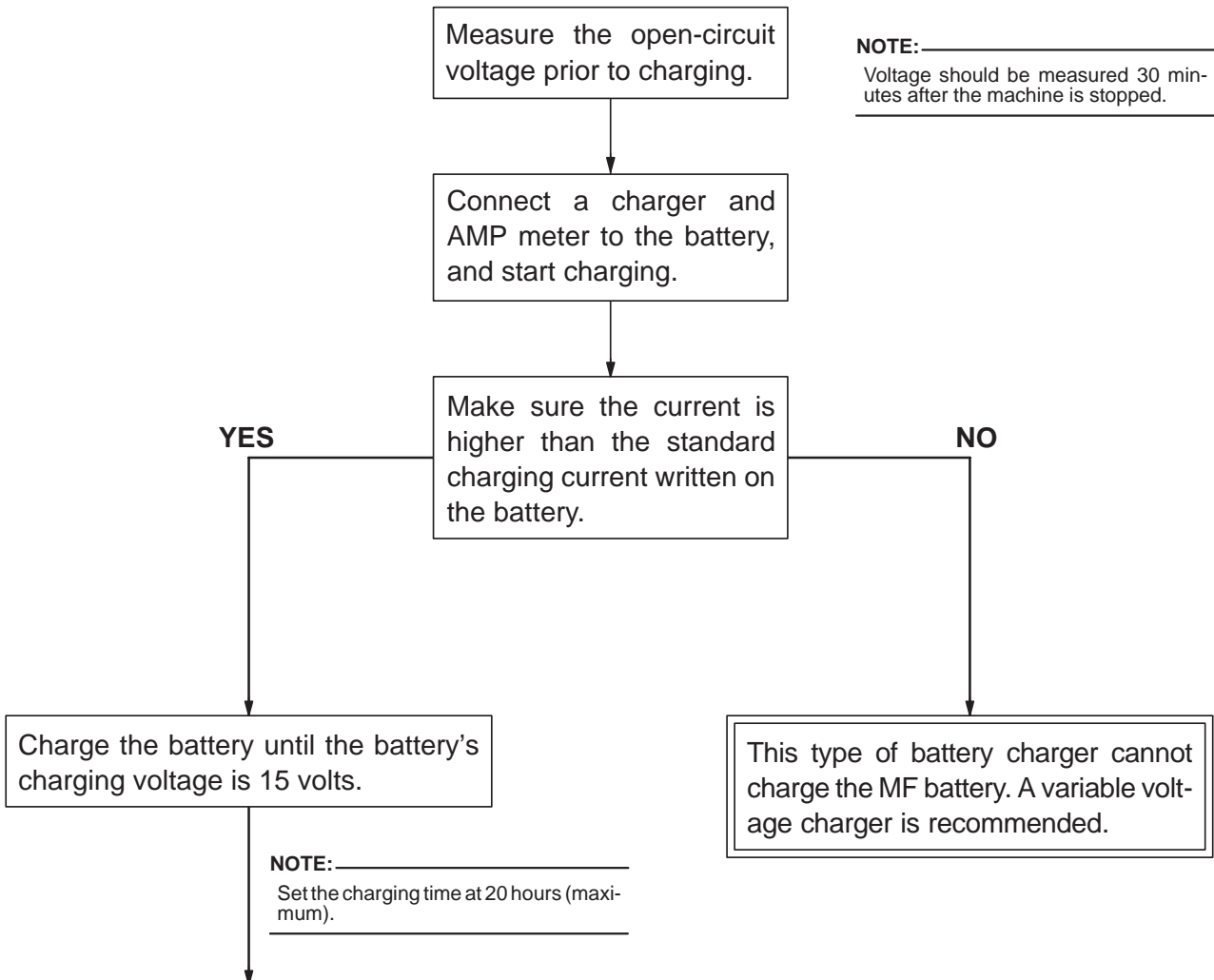
### CAUTION:

- If it is impossible to set the standard charging current, be careful not to over-charge.
- When charging the battery, be sure to remove it from the motorcycle. (If charging has to be done with the battery mounted on the motorcycle, be sure to disconnect the wire at the negative terminal.)
- Never remove the sealing caps of an MF battery.
- Make sure that the charging clips are in full contact with the terminal and that they are not shorted together. (A corroded clip on the charger may cause the battery to generate heat in the contact area. A weak clip spring may cause sparks.)
- Before removing the clips from the battery terminals, be sure to turn off the charger's power switch.
- The open-circuit voltage variation for the MF battery after charging is shown below. As shown in the figure, the open-circuit voltage stabilizes about 30 minutes after charging has been completed.
- Therefore, wait 30 minutes after charging is completed before measuring the open-circuit voltage.

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



**Charging method using a constant-voltage type charger**



**Charging method using a constant-current type charger**

This type charger cannot charge the MF battery.

6. Inspect:
  - Battery terminals  
Dirty terminal → Clean with wire brush.  
Poor connection → Correct.

**NOTE:** \_\_\_\_\_  
After cleaning the terminals, grease them lightly.

7. Install:
  - Battery
8. Connect:
  - Battery leads

**CAUTION:** \_\_\_\_\_  
Connect the positive lead first and then connect the negative lead.

9. Install:
  - Cover (battery case)
  - Mat (right)Refer to “COVER AND PANEL” section.

YP305010

## FUSE INSPECTION

**CAUTION:** \_\_\_\_\_  
Always turn off the main switch when checking or replacing the fuse. Otherwise, a short circuit may occur.

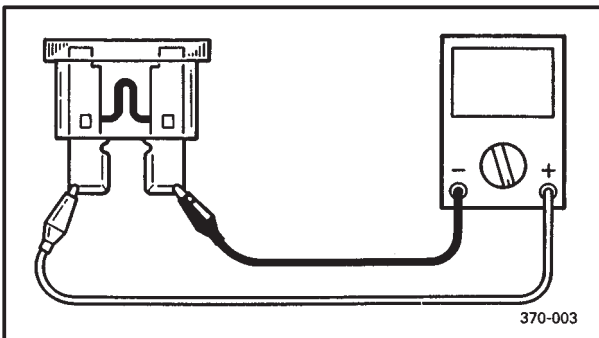
1. Remove:
  - Mat (right)
  - Cover (battery case)Refer to “COVER AND PANEL” section.
2. Inspect:
  - Fuse


\*\*\*\*\*

### Inspection steps:

- Connect the Pocket tester to the fuse and check it for continuity.

**NOTE:** \_\_\_\_\_  
Set the tester selector to “Ω × 1” position.



	<b>Pocket tester: 90890-03112</b>
---	---------------------------------------

- If the tester is indicated at ∞. Replace the fuse.

\*\*\*\*\*

3. Replace:
  - Blown fuse

\*\*\*\*\*

**Replacement steps:**

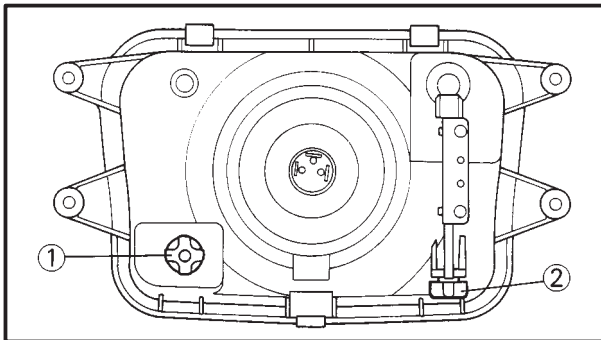
- Turn off the main switch.
- Install a new fuse with the proper current rating.
- Turn on switches to verify operation of related electrical devices.
- If the fuse blows again immediately, check the electrical circuit.

**⚠ WARNING**

**Never use a fuse with a rating other than that specified. Never use other materials in place of a fuse. An improper fuse may cause extensive damage to the electrical system, malfunction of lighting and ignition systems and could possibly cause a fire.**

\*\*\*\*\*

4. Install:
  - Side panel
  - Panels
 Refer to "COVER AND PANEL" section.



EB305022

**HEADLIGHT BEAM ADJUSTMENT**

1. Adjust
  - Headlight beam (vertical)  
Turn the adjuster ① in or out.

<b>Turning in → Headlight beam moves lower.</b>
<b>Turning out → Headlight beam moves higher.</b>

2. Adjust:
  - Headlight beam (horizontal)  
Turn the adjuster ② in or out.

<b>Turning in → Headlight beam moves right.</b>
<b>Turning out → headlight beam moves left.</b>

INSP  
ADJ



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## CHAPTER 4.

### ENGINE

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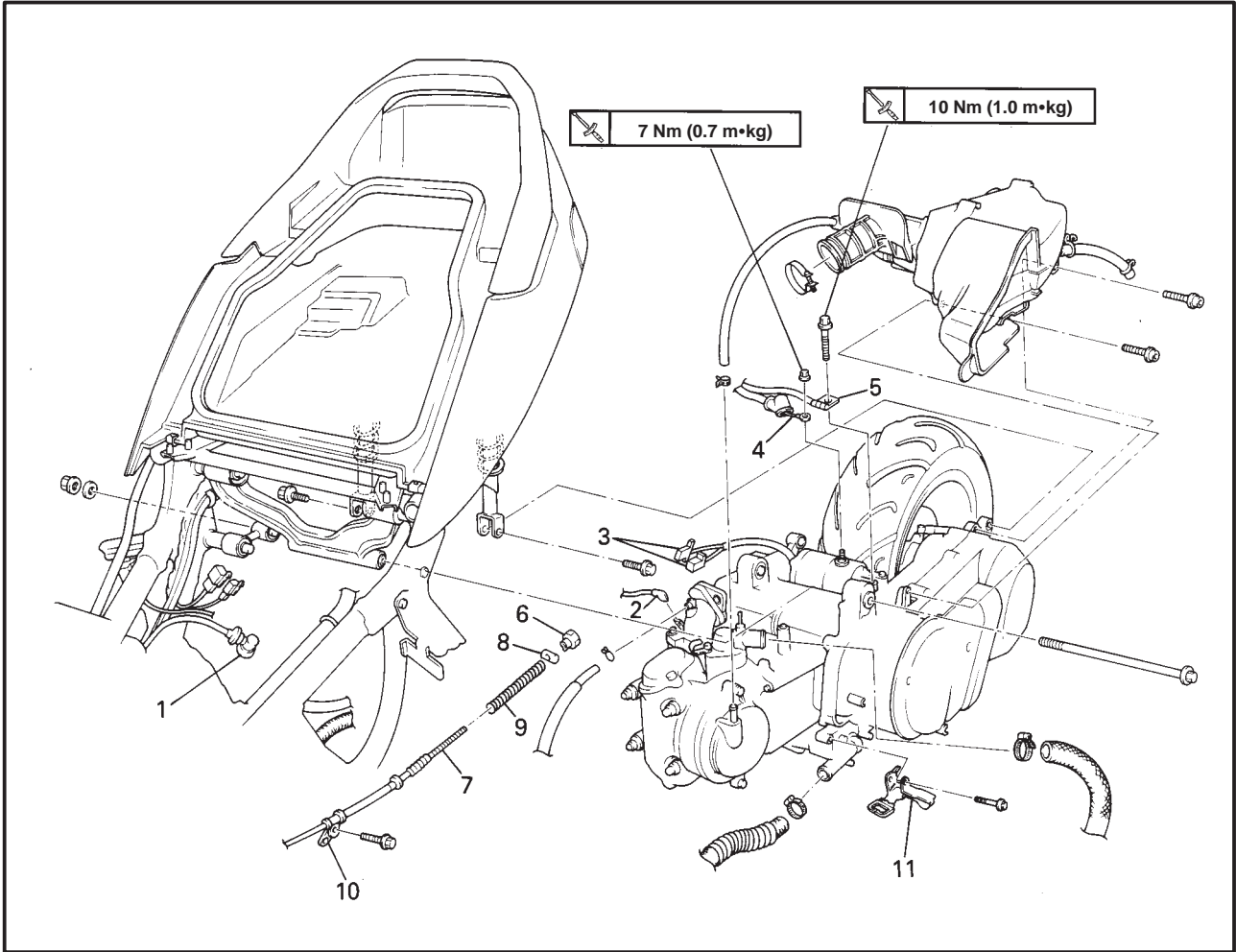




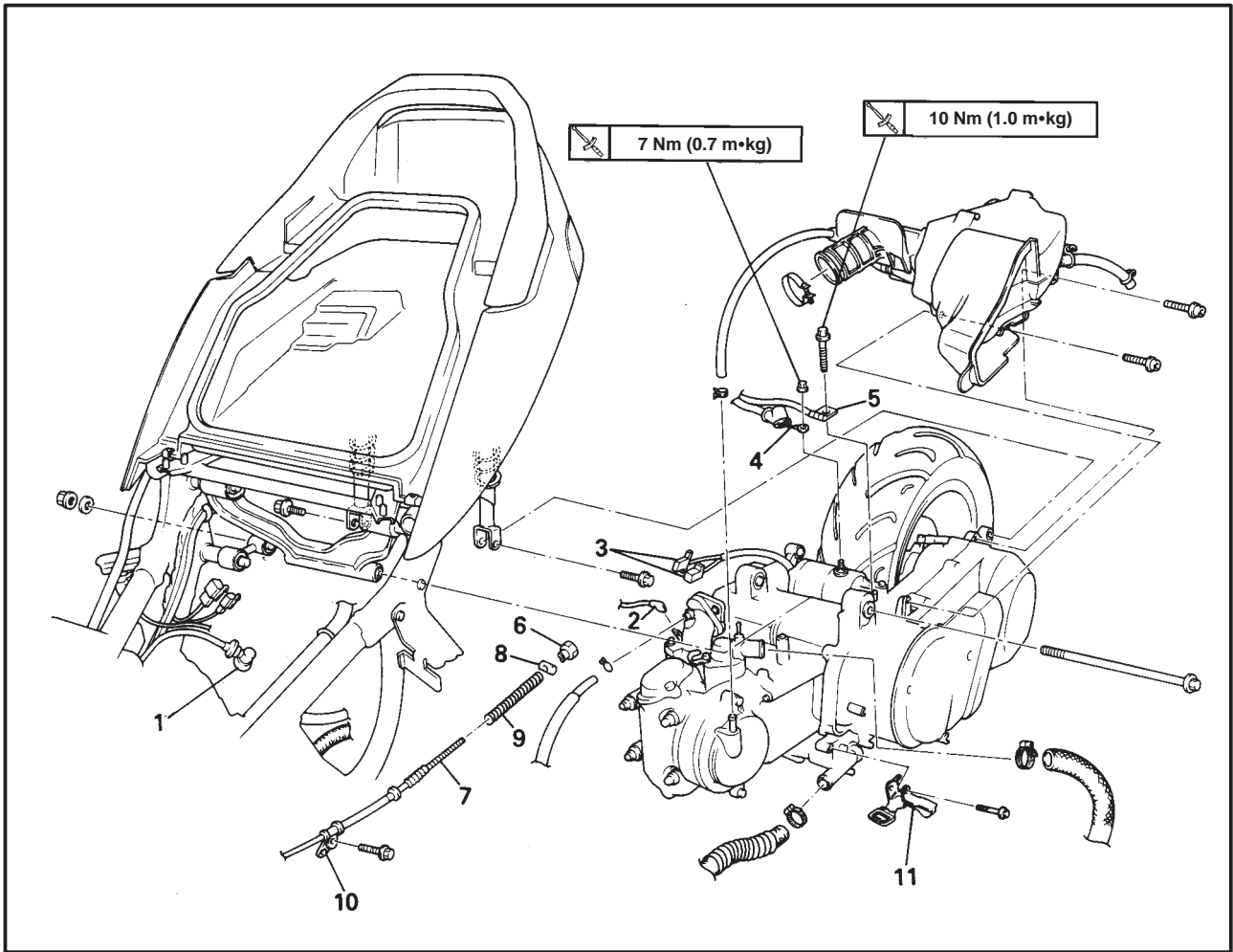
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# ENGINE OVERHAUL

## ENGINE REMOVAL WIREHARNESS, CABLE



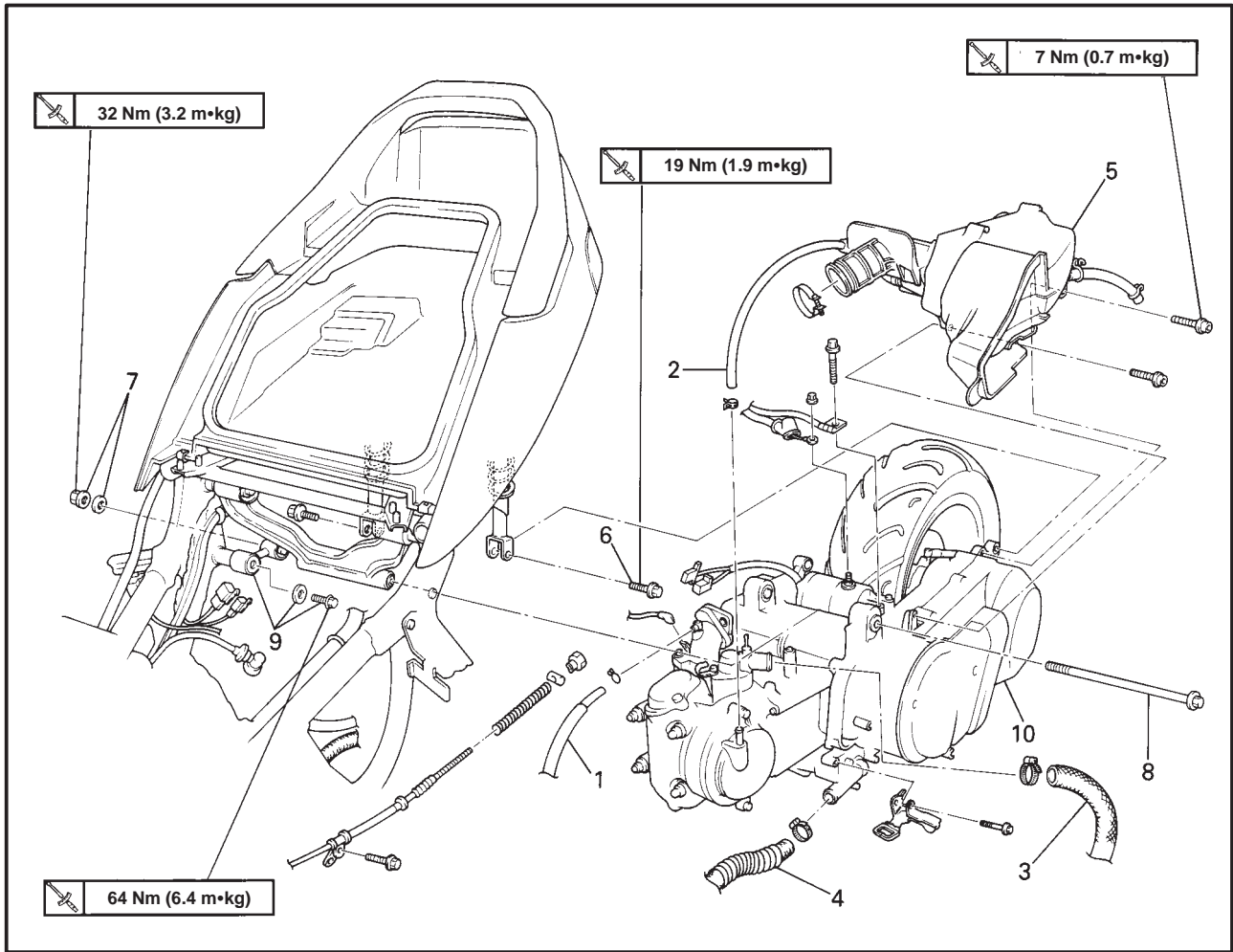
Order	Job name/Part name	Q'ty	Remarks
	<b>Wireharness and cables removal</b>		Remove the parts in order.
	Side panel		Refer to "COVER AND PANEL" section in CHAPTER 3.
	Footrest board		
	Fuel tank		
	Drain the coolant.		
	Carburetor		
			Refer to "CARBURETOR" section in CHAPTER 6.
1	Spark plug cap	1	
2	Thermo unit lead	1	
3	Stator coil/Pick up coil lead	1/1	
4	Starting motor lead	1	
5	Earth lead	1	
6	Adjuster	1	
7	Brake cable	1	



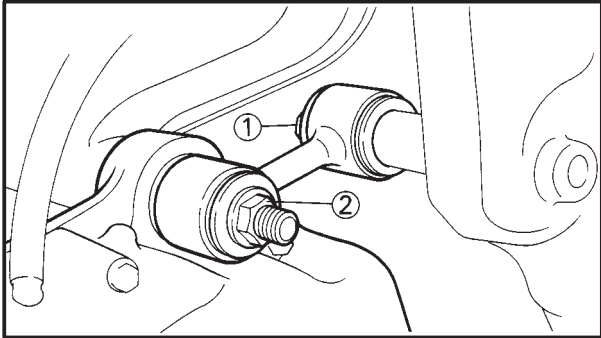
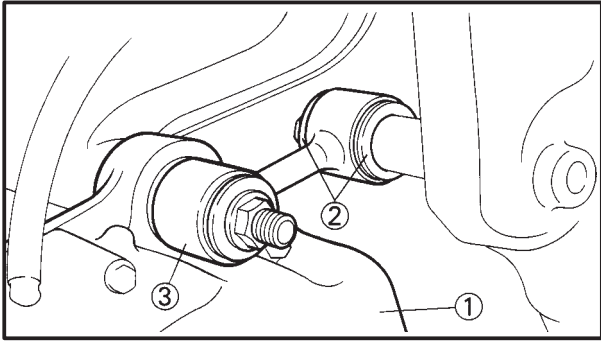
Order	Job name/Part name	Q'ty	Remarks
8	Pin	1	
9	Compression spring	1	
10	Cable holder	1	
11	Cable holder	1	
			Reverse the removal procedure for installation.



HOSES, AIR FILTER CASE, ENGINE MOUNTING BOLT AND ENGINE



Order	Job name/Part name	Q'ty	Remarks
	<b>Hoses, air filter, engine mounting bolt and engine removal</b>		Remove the parts in order.
1	Vacuum hose	1	
2	Crankcase breather hose	1	
3	Inlet hose (water pump)	1	
4	Outlet hose (cylinder head)	1	
5	Air filter case assembly	1	
6	Bolt	2	(Rear shock absorber – lower)
7	Self locknut/Plane washer	1/1	
8	Bolt	1	Refer to “ENGINE REMOUNTING” section.
9	Bolt/Plane washer/Rod assembly	1/2/1	
10	Engine	1	Reverse the removal procedure for installation.



YP\*\*\*\*\*

## ENGINE REMOUNTING

When remounting the engine, reverse the removal procedure in job instruction chart.


Note the following points:

1. Install:
  - Engine ①
  - Plane washer ②
  - Rod ③


### NOTE:

Temporarily install the rod and engine, and then tighten the bolts and nuts to specifications.

2. Tighten:

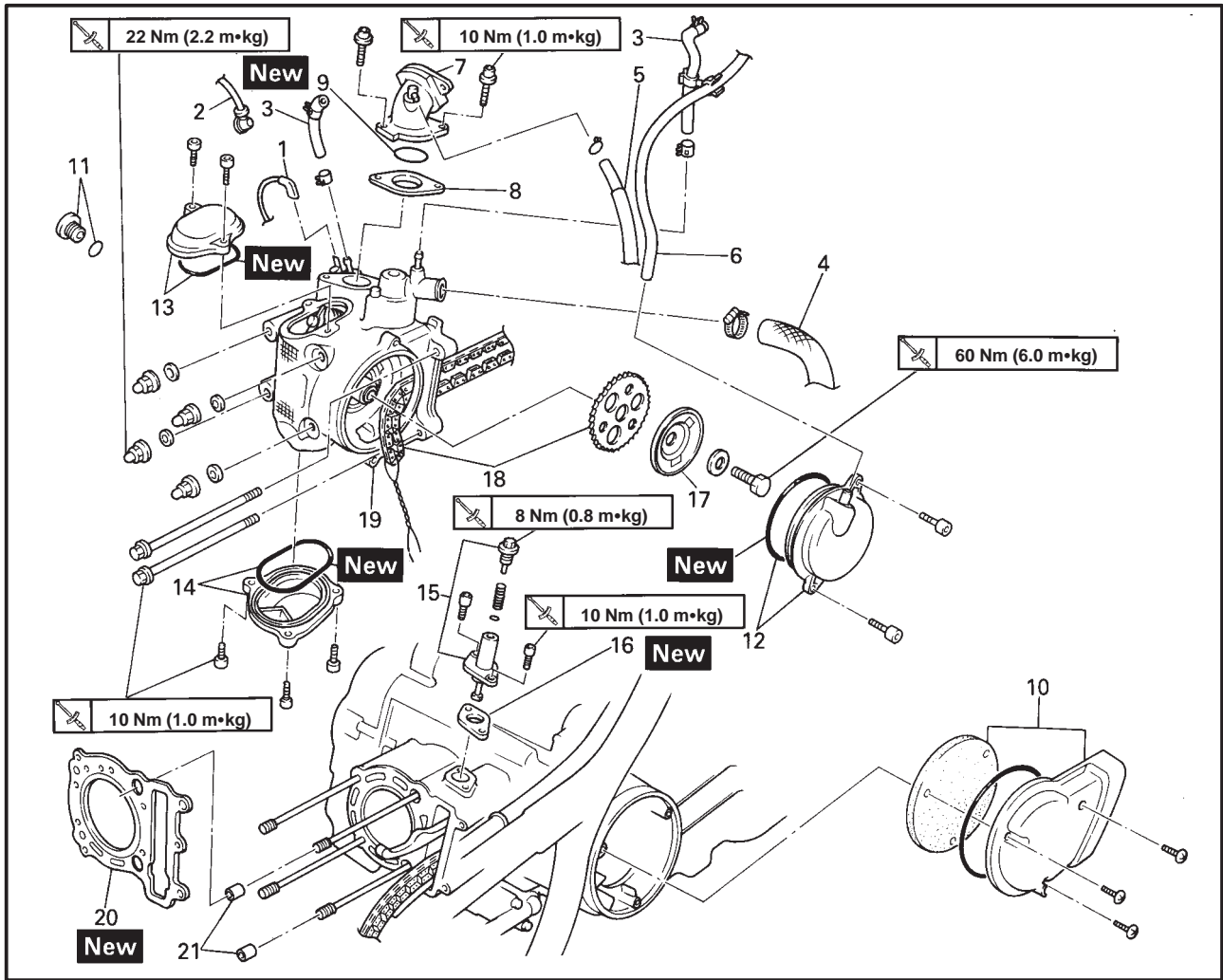
• Bolt ①  64 Nm (6.4 m•kg)

• Self locknut (engine and swingarm) ②

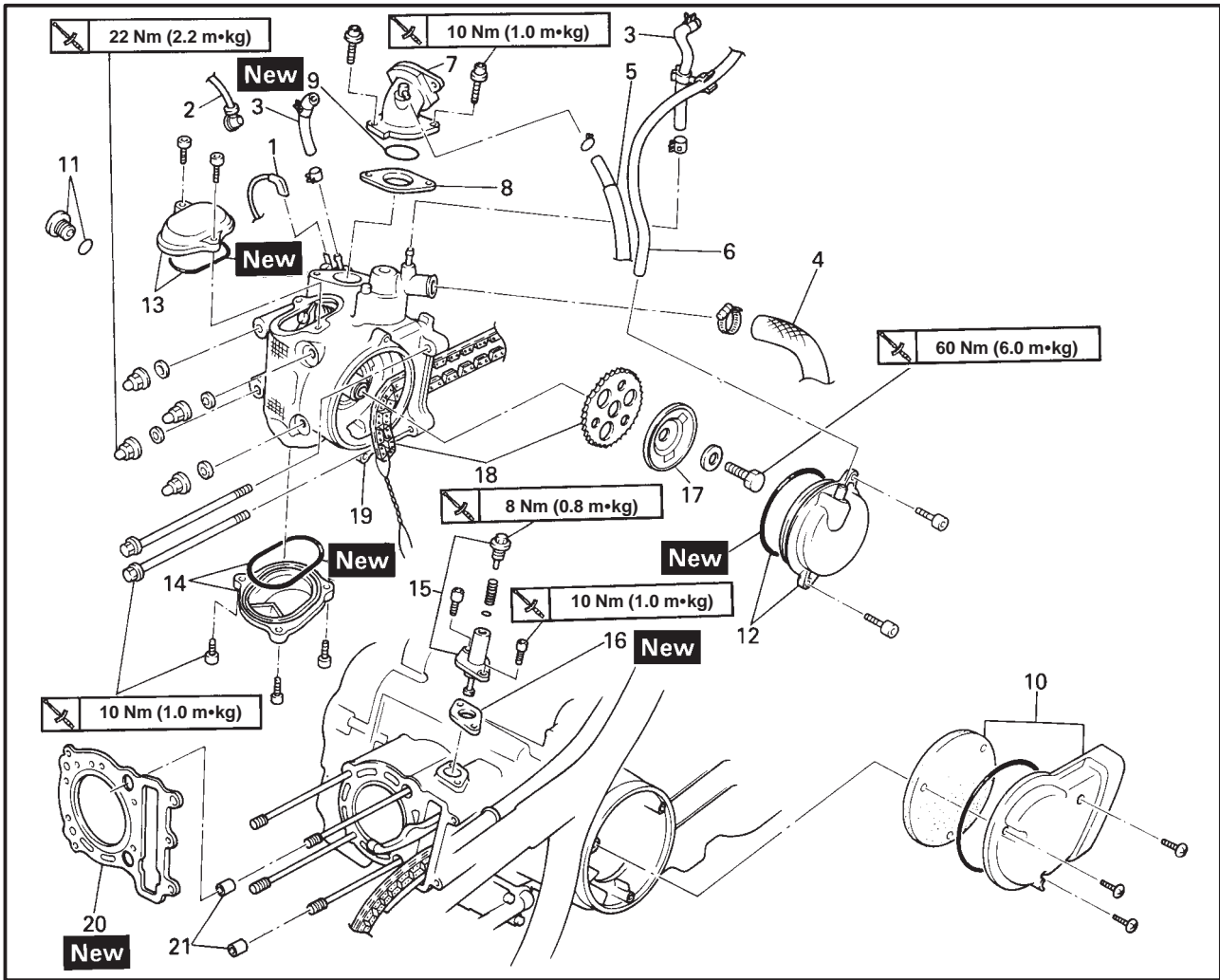
 32 Nm (3.2 m•kg)



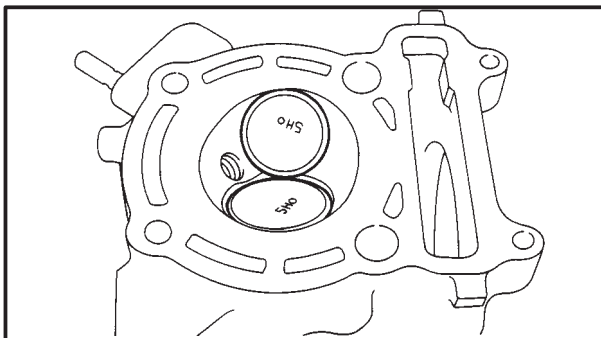
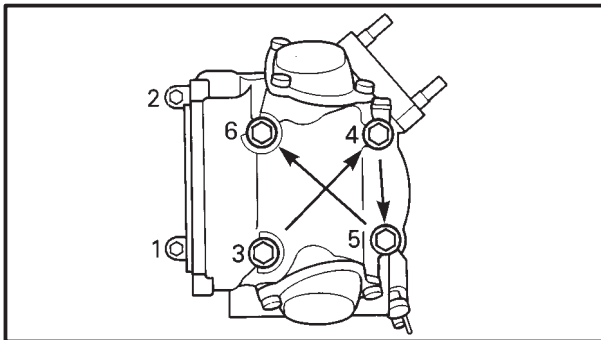
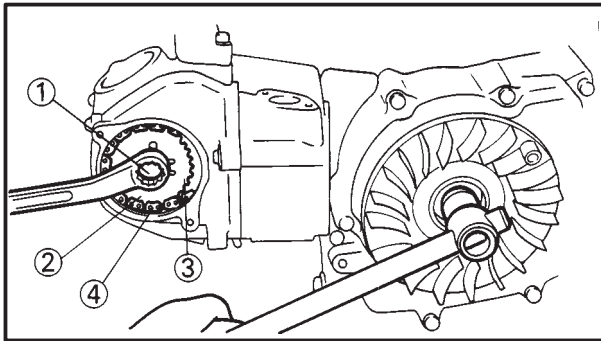
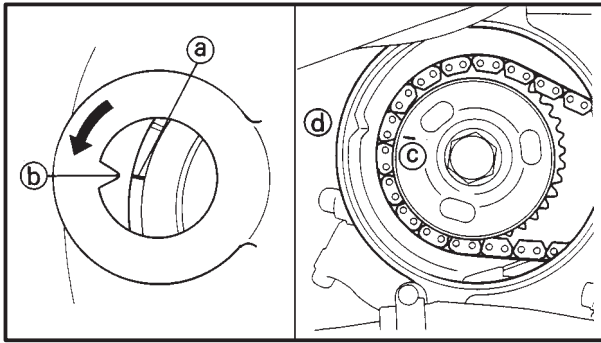
CYLINDER HEAD



Order	Job name/Part name	Q'ty	Remarks
	<b>Cylinder head removal</b>		Remove the parts in the order.
	Drain the coolant.		Refer to the "COVER AND PANELS" section in CHAPTER 3.
	Side panel		
	Footrest board		
	Fuel tank		
	Carburetor		
	Refer to "CARBURETOR" section in CHAPTER 6.		
1	Thermo unit lead	1	
2	Plug cap	1	
3	Crankcase breather hose	2	
4	Outlet hose (cylinder head)	1	
5	Vacuum hose	1	
6	Breather hose (crankcase)	1	
7	Carburetor joint	1	
8	Joint	1	
9	O-ring	2	



Order	Job name/Part name	Q'ty	Remarks
10	Crankcase filter cover/seal/element	1/1/1	Refer to "CYLINDER HEAD REMOVAL AND INSTALLATION" section.
11	Plug/O-ring	1/1	
12	Cam sprocket cover/O-ring	1/1	
13	Valve cover (intake side)/O-ring	1/1	
14	Valve cover (exhaust side)/O-ring	1/1	
15	Timing chain tensioner assembly	1	
16	Timing chain tensioner gasket	1	
17	Breather plate	1	
18	Cam sprocket/Timing chain	1/1	
19	Cylinder head	1	
20	Cylinder head gasket	1	Reverse the removal procedure for installation.
21	Dowel pin	2	



YP401030

**CYLINDER HEAD REMOVAL**

## 1. Align:

- "I" mark (a) on the rotor  
(with stationary pointer (b) on the crank case cover)

**NOTE:**

Turn the primary sheave counterclockwise with a wrench and align the "I" mark (c) with the cylinder head match mark (d) when the piston is at TDC on the compression stroke.

## 2. Loosen:

- Bolt (1)

## 3. Remove:

- Timing chain tensioner assembly
- Timing chain tensioner gasket

## 4. Remove:

- Breather plate (2)
- Cam sprocket (3)
- Timing chain (4)

**NOTE:**

- Fasten a safety wire to the timing chain to prevent it from falling into the crankcase.
- Remove the bolt (1) while holding the rotor mounting bolt with a wrench.

## 5. Remove:

- Cylinder head

**NOTE:**

- Loosen the nuts in their proper loosening sequence.
- Start by loosening each nut 1/2 turn until all are loose.

YP402000

**CYLINDER HEAD INSPECTION**

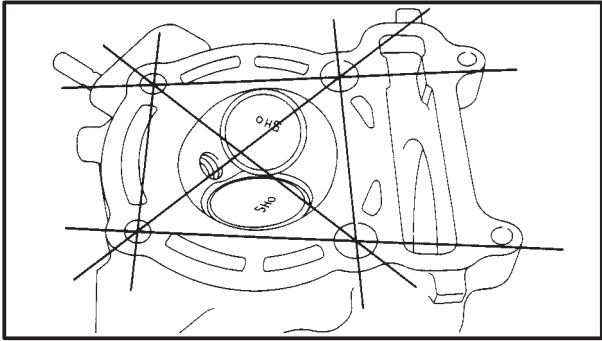
## 1. Eliminate:

- Carbon deposits  
(from combustion chambers)  
Use a rounded scraper.


**NOTE:**

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

- Spark plug threads
- Valve seats



2. Inspect:
  - Cylinder head
  - Scratches/damage → Replace.
3. Measure:
  - Cylinder head warpage
  - Out of specification → Resurface.

 **Cylinder head warpage:**  
**Less than 0.03 mm**

\*\*\*\*\*

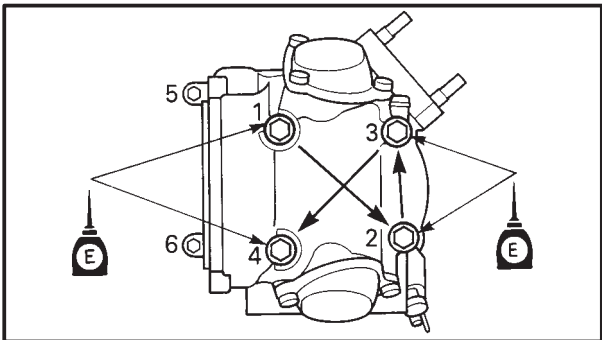
**Warpage measurement and resurfacement steps:**

- Place a straightedge and a feeler gauge across the cylinder head.
- Measure the warpage.  
If the warpage is out of specification, resurface the cylinder head.
- Place a 400 × 600 grit wet abrasive paper on the surface plate, and resurface the head using a figure-eight sanding pattern.

**NOTE:** \_\_\_\_\_

Rotate the cylinder head several times for an even resurfacement.

\*\*\*\*\*





YP404190

**CYLINDER HEAD INSTALLATION**

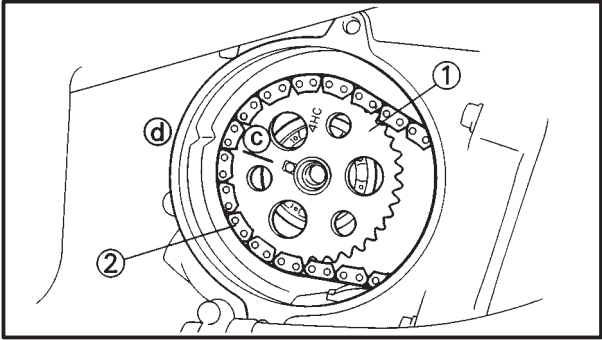
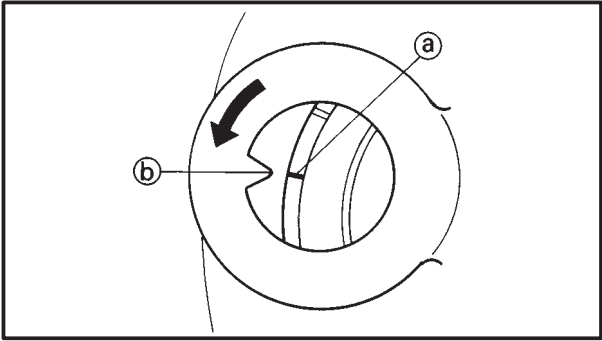
1. Install:
  - Gasket (cylinder head) **New**
  - Dowel pins
  - Cylinder head

**NOTE:** \_\_\_\_\_

- Apply engine oil onto the nut threads.
- Tighten the nuts in a crisscross pattern.

2. Tighten:
  - Nuts (cylinder head)  **22 Nm (2.2 m•kg)**
  - Bolts (cylinder)  **10 Nm (1.0 m•kg)**





3. Install:
- Cam sprocket ①
  - Timing chain ②

\*\*\*\*\*

**Installing steps:**

- Turn the primary sheave counterclockwise until the TDC mark (a) matches the stationary pointer (b).
- Align the “I” mark (c) on the cam sprocket with the stationary pointer (d) on the cylinder head.
- Fit the timing chain onto cam sprocket and install the cam sprocket on the camshaft.

**NOTE:**

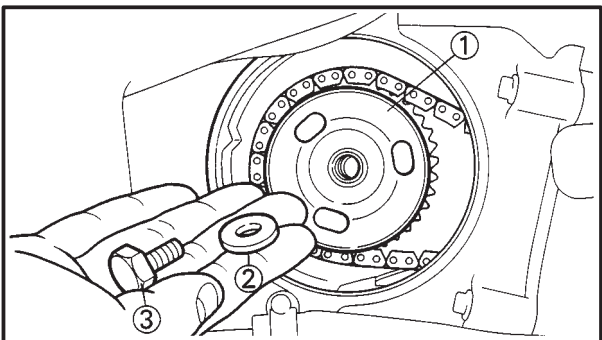
- When installing the cam sprocket, keep the timing chain as tense as possible on the exhaust side.
- Align the match mark (c) on the cam sprocket with the stationary pointer (d) on the cylinder head.
- Align the pin on the camshaft with the slot in the cam sprocket.

**CAUTION:**

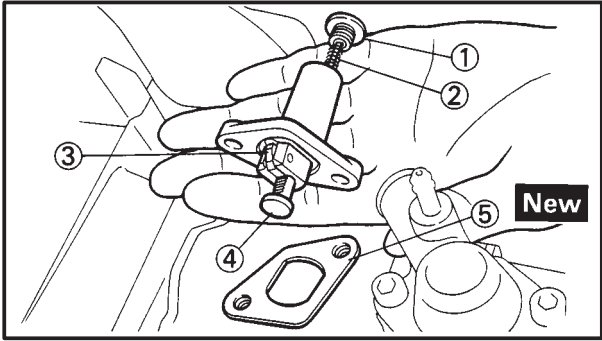
**Do not turn the crankshaft during installation of the camshaft. Damage or improper valve timing will result.**

- While holding the camshaft, temporarily tighten the bolts.
- Remove the safety wire from the timing chain.

\*\*\*\*\*



4. Install:
- Breather plate ①
  - Plane washer ②




5. Install:
- Timing chain tensioner


\*\*\*\*\*

**Installation steps:**

- Remove the tensioner cap bolt ① and springs ②.
- Release the timing chain tensioner one-way cam ③ and push the tensioner rod ④ all the way in.
- Install the tensioner with a new gasket ⑤ onto the cylinder.
- Install the springs ② and cap bolt ①.
- Tighten the bolt (with gasket) to the specified torque.

Bolt (chain tensioner)  10 Nm (1.0 m•kg)

Cap bolt (timing chain tensioner)

 8 Nm (0.8 m•kg)

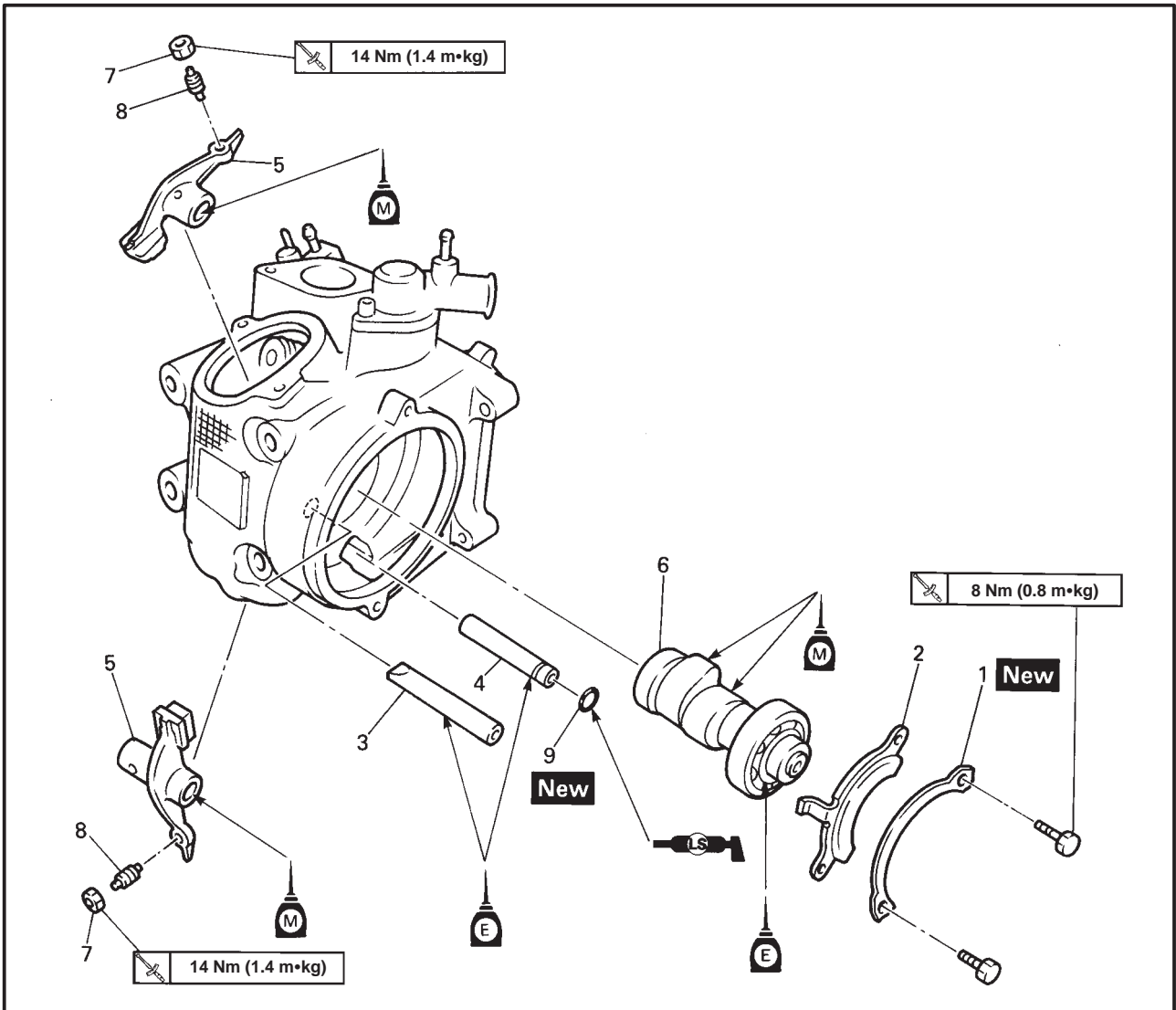
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6. Tighten:
- Bolt (cam sprocket)  60 Nm (6.0 m•kg)

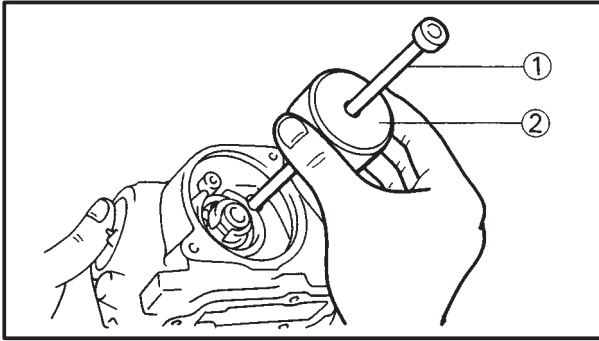
7. Check:
- Valve timing  
Out of alignment → Adjust.  
Refer to the above steps 3 × 5.

8. Check:
- Valve clearance  
Out of specification → Adjust.  
Refer to the “VALVE CLEARANCE ADJUSTMENT” section in CHAPTER 3.

CAMSHAFT AND ROCKER ARMS 



Order	Job name/Part name	Q'ty	Remarks
	<b>Camshaft and rocker arms removal</b>		Remove the parts in order.
	Cylinder head		Refer to "CYLINDER HEAD" section.
1	Lock washer	1	Refer to "ROCKER ARM AND ROCKER SHAFT REMOVAL AND INSTALLATION" section.
2	Plate	1	
3	Rocker arm shaft (intake)	1	
4	Rocker arm shaft (exhaust)	1	
5	Rocker arm	2	
6	Camshaft	1	Refer to "CAMSHAFT INSTALLATION" section.
7	Locknut	2	
8	Adjuster	2	
9	O-ring	1	
			Reverse the removal procedure for installation.



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## ROCKER ARM AND ROCKER ARM SHAFT REMOVAL

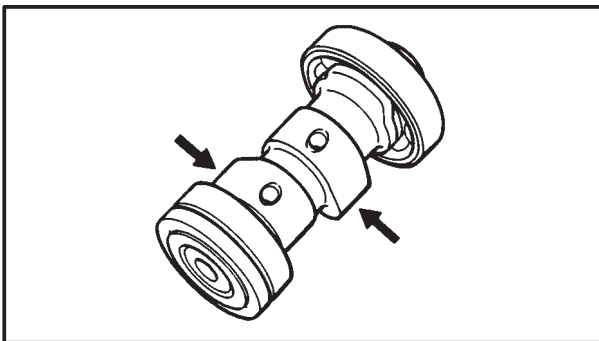
- Remove:
  - Rocker arm shaft (intake)
  - Rocker arm shaft (exhaust)

### NOTE:

Attach a rocker arm shaft puller bolt ① and weight ② to the rocker arm shaft and slide out the shaft.



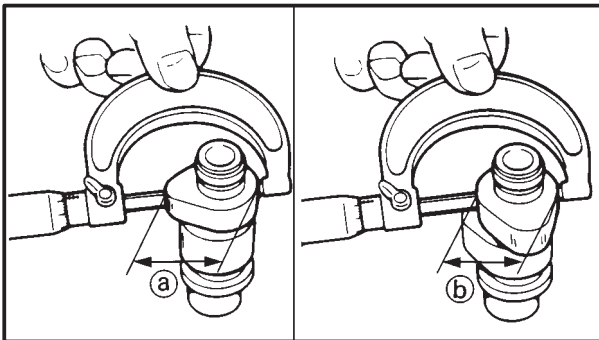
**Rocker arm shaft puller bolt:**  
**90890-01085**  
**Weight:**  
**90890-01084**



YP402052

## CAMSHAFT INSPECTION

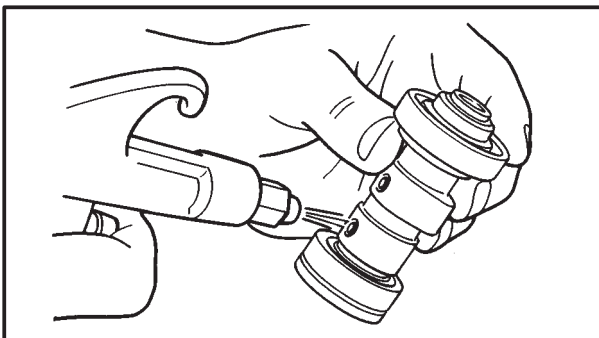
- Inspect:
  - Cam lobes  
 Pitting/Scratches/Blue discoloration  
 → Replace.



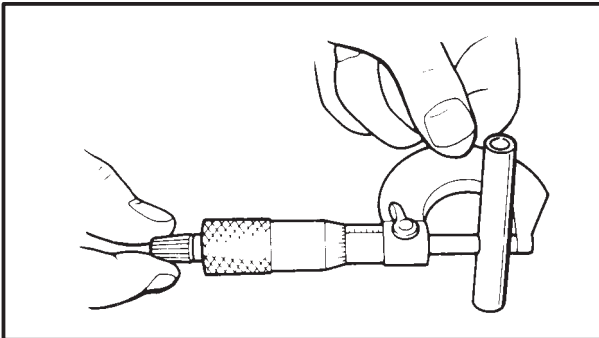
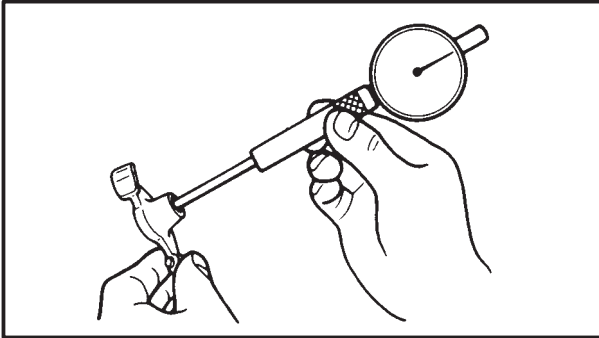
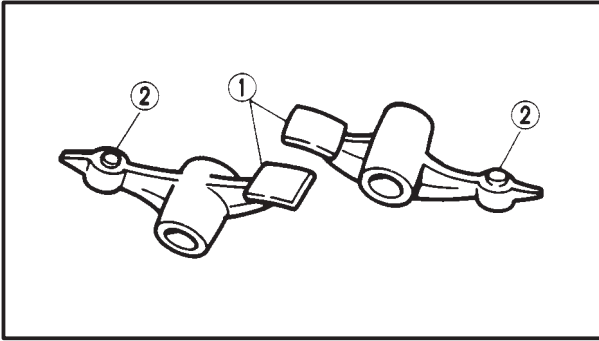
- Measure:
  - Cam lobes length ① and ②.  
 Out of specification → Replace.



**Cam lobes length:**  
**Intake:**  
 ① 36.545 × 36.645 mm  
 <Limit: 36.45 mm>  
 ② 30.021 × 30.121 mm  
 <Limit: 29.92 mm>  
**Exhaust:**  
 ① 36.547 × 36.647 mm  
 <Limit: 36.45 mm>  
 ② 30.067 × 30.167 mm  
 <Limit: 29.17 mm>



- Inspect:
  - Camshaft oil passage  
 Stuffed → Blow out oil passage with compressed the air.



YP402060

## ROCKER ARMS AND ROCKER ARM SHAFTS INSPECTION

### 1. Inspect:

- Cam lobe contact surface ①
- Adjuster surface ②

Wear/Pitting/Scratches/Blue discoloration → Replace.

\*\*\*\*\*

### Inspection steps:

- Inspect the two contact areas on the rocker arms for signs of unusual wear.
- Rocker arm shaft hole.
- Cam-lobe contact surface.  
Excessive wear → Replace.
- Inspect the surface condition of the rocker arm shafts.  
Pitting/scratches/blue discoloration → Replace or check lubrication.
- Measure the inside diameter a of the rocker arm holes.  
Out of specification → Replace.



#### Inside diameter (rocker arm):

12.000 × 12.018 mm

<Limit: 12.030 mm>

- Measure the outside diameter b of the rocker arm shafts.  
Out of specification → Replace.

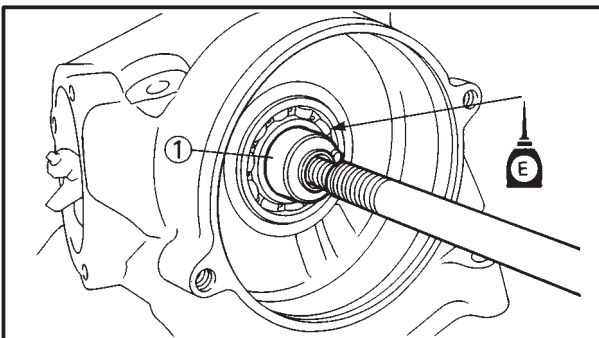


#### Outside diameter (rocker arm shaft):

11.981 × 11.991 mm

<Limit: 11.995 mm>

\*\*\*\*\*



YP\*\*\*\*\*

## CAMSHAFT AND ROCKER ARM INSTALLATION

### 1. Lubricate:

- Camshaft ①

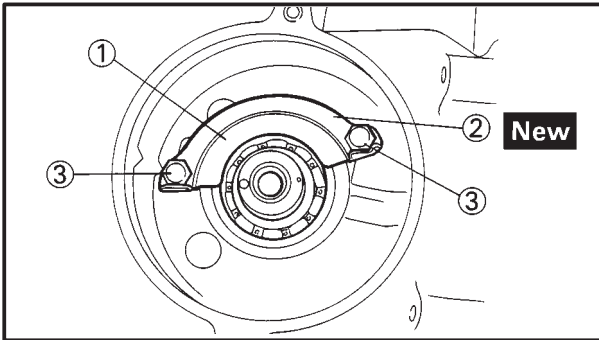



#### Camshaft:

Molybdenum disulfide oil

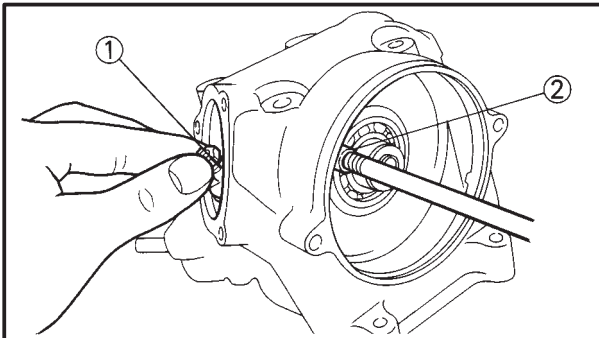
#### Camshaft bearing:

Engine oil

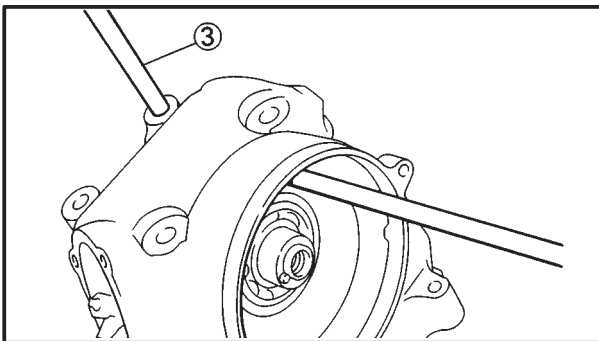


2. Install:
- Plate ①
  - Lock washer ② **New**
  - Bolt ③  8 Nm (0.8 m•kg)

**NOTE:** \_\_\_\_\_  
 Bend the lock washer tabs along the bolt ③ flats.

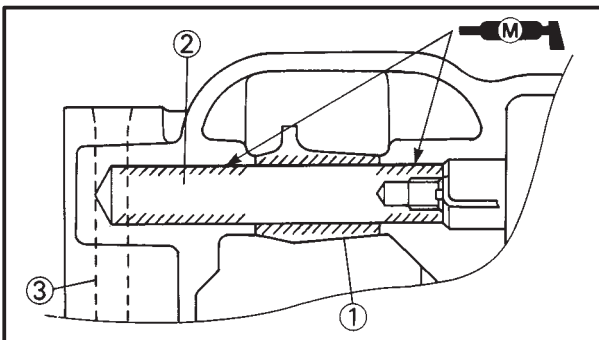


3. Apply:
- Molybdenum disulfide oil (onto the rocker arm and rocker arm shaft)



4. Install:
- Rocker arm ①
  - Rocker arm shaft ② (exhaust)

**NOTE:** \_\_\_\_\_  
 Exhaust:  
 Install the rocker arm shaft (exhaust) completely pushed in.



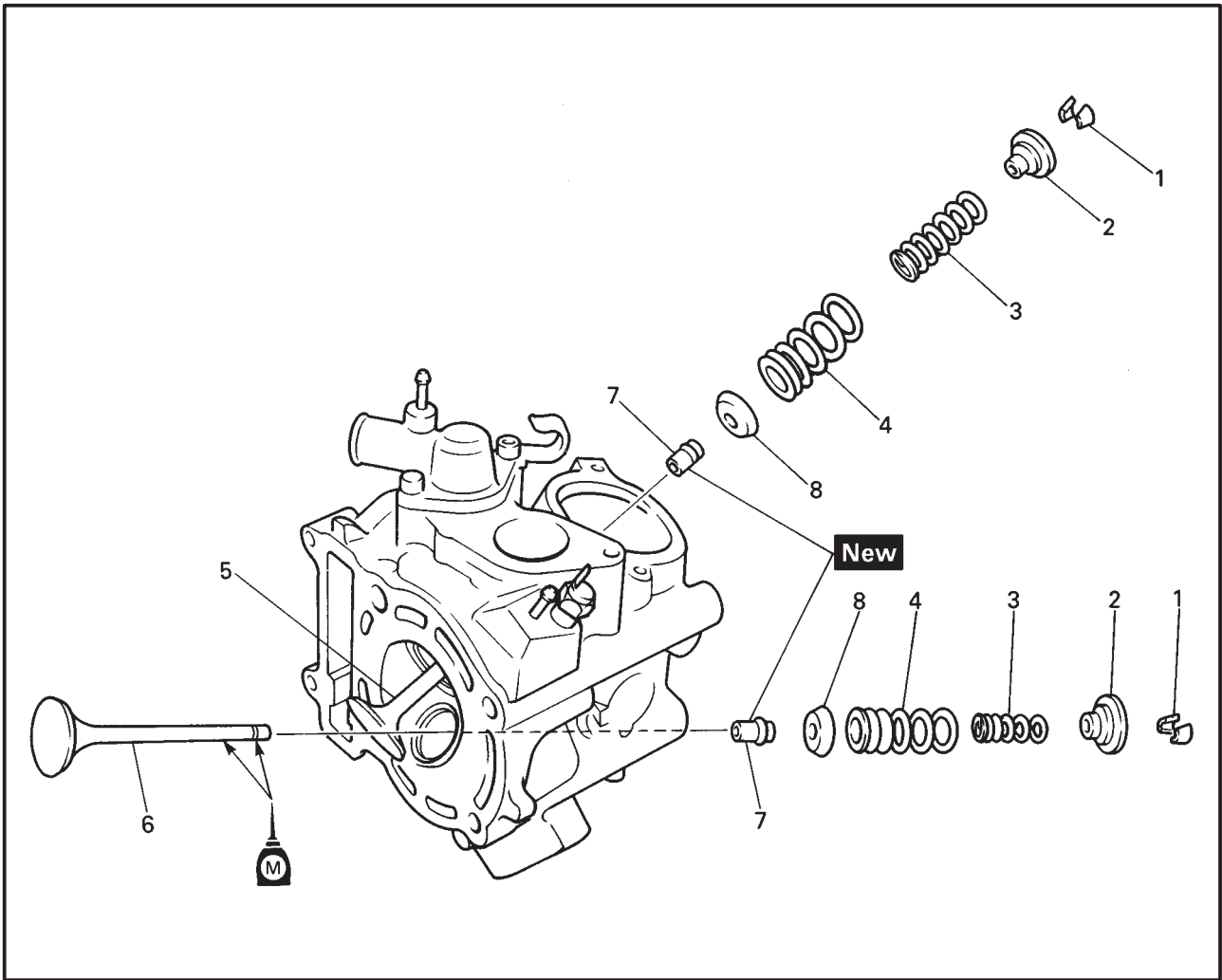
5. Install:
- Rocker arm ①
  - Rocker arm shaft ② (intake)

**NOTE:** \_\_\_\_\_  
 Intake:  
 Insert the guide shaft (8 mm) ③ into the stud bolt hole on the cylinder head to the rocker arm shaft (intake).

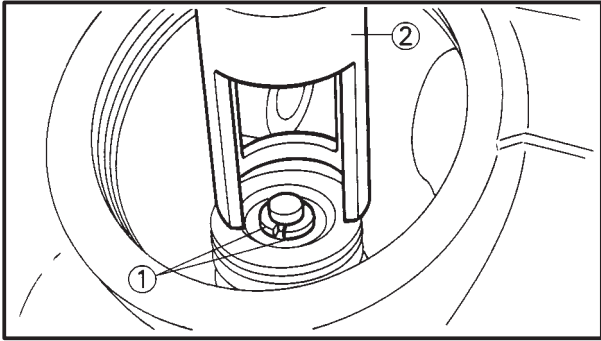
**CAUTION:** \_\_\_\_\_

Do not confuse the installation direction of rocker arm shaft. Be sure to install the threaded part facing outward.

VALVES AND VALVE SPRINGS



Order	Job name/Part name	Q'ty	Remarks
	<b>Valves and valve springs removal</b>		Remove the parts in order.
	Cylinder head		Refer to "CYLINDER HEAD" section.
	Rocker arm, rocker arm shaft		Refer to "ROCKER ARM SHAFT AND ROCKER ARMS" section.
1	Valve cotters	4	Refer to "VALVES AND VALVE SPRINGS REMOVAL/INSTALLATION" section
2	Spring retainer	2	Refer to "VALVES AND VALVE SPRINGS INSTALLATION" section  Reverse the removal procedure for installation.
3	Valve spring (inner)	2	
4	Valve spring (outer)	2	
5	Valve (intake)	1	
6	Valve (exhaust)	1	
7	Valve guide	2	
8	Spring seat	2	



YP401150

## VALVES AND VALVE SPRINGS REMOVAL

- Remove:
  - Valve cotters ①

### NOTE:

Attach a valve spring compressor and attachment ② between the valve spring retainer and cylinder head to remove the valve cotters.

### CAUTION:

Do not compress so much as to avoid damage to the valve spring.



Valve spring compressor:

90890-04019

Attachment:

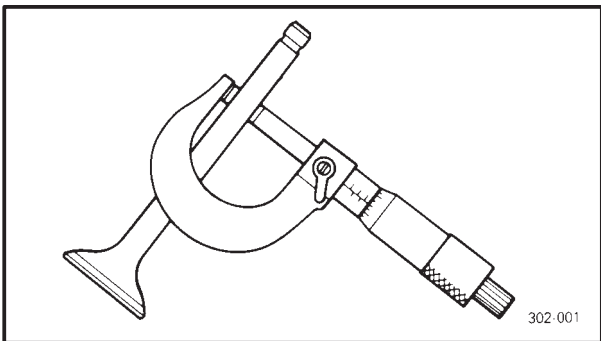
90890-04108

YP\*\*\*\*\*

## VALVES AND VALVE SPRINGS INSPECTION

- Measure:
  - Valve stem diameter

Out of specification → Replace.



302-001



Valve stem diameter:

Intake:

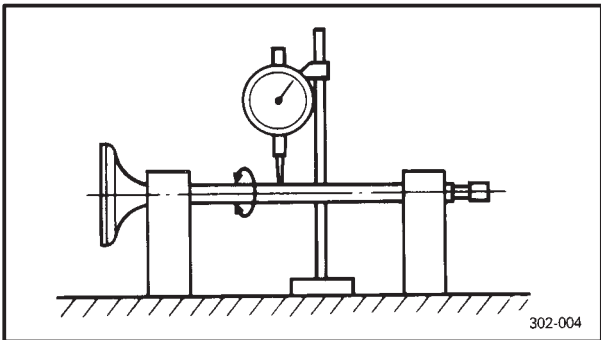
5.975 × 5.990 mm

<Limit: 5.94 mm>

Exhaust:

5.960 × 5.975 mm

<Limit: 5.92 mm>



302-004

YP402010

- Measure:
  - Runout (valve stem)

Out of specification → Replace.



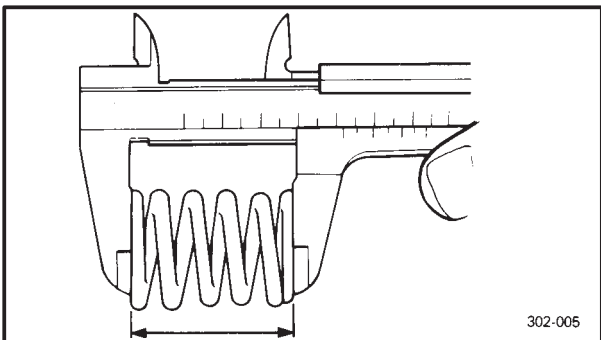
Runout limit:

0.01 mm

YP402030

- Measure:
  - Free length (valve spring)

Out of specification → Replace.



302-005



Valve spring free length:

Inner spring:

38.1 mm

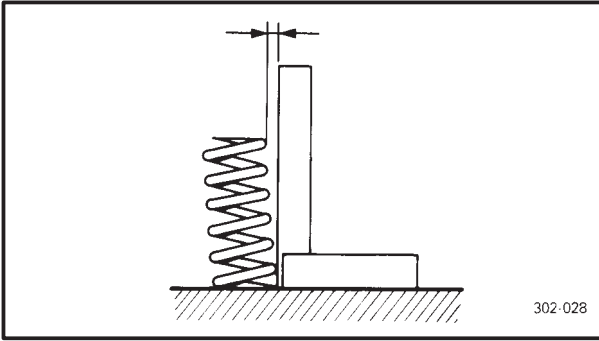
<Limit: 36.1 mm>

Outer spring:

36.93 mm

<Limit: 35.0 mm>



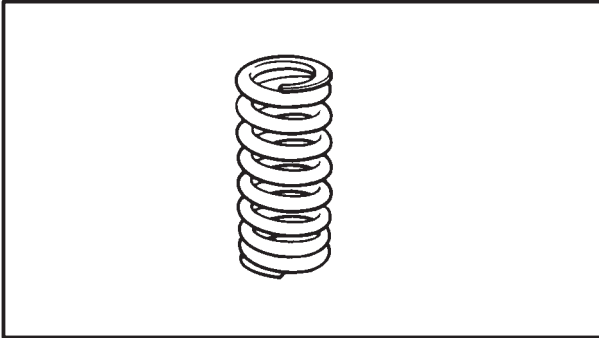


YP402030

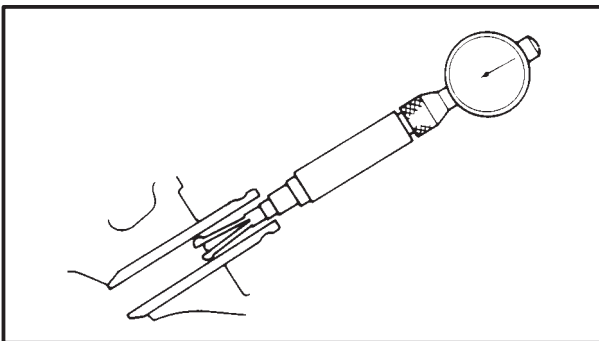
4. Measure:
- Spring tilt  
Out of specification → Replace.



**Spring tilt limit:**  
**1.7 mm (2.5°)**



5. Inspect:
- Spring contact face  
Wear/Pitting/Scratches → Replace.



6. Measure:
- Valve guide inside diameter  
Out of specification → Replace.



**Valve guide inside diameter:**

**Intake:**

**6.000 × 6.012 mm**

**<Limit: 6.05 mm>**

**Exhaust:**

**6.000 × 6.012 mm**

**<Limit: 6.05 mm>**

YP402010

7. Measure:

**Stem-to-guide clearance =**  
**Valve guide inside diameter –**  
**Valve stem diameter**

Out of specification → Replace the valve guide.



**Stem-to-guide clearance limit:**

**Intake:**

**0.08 mm**

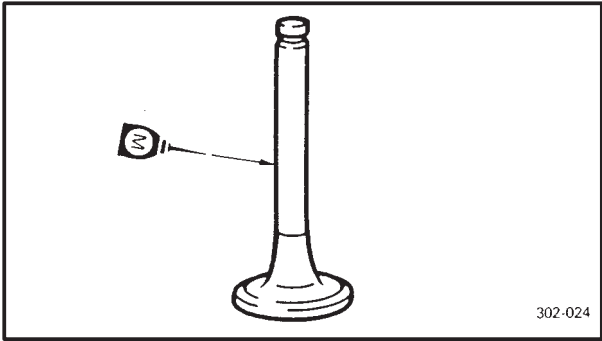
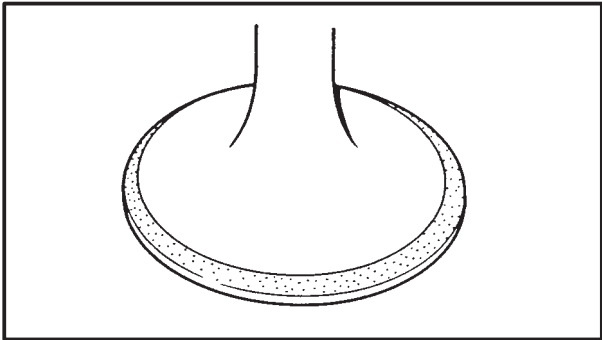
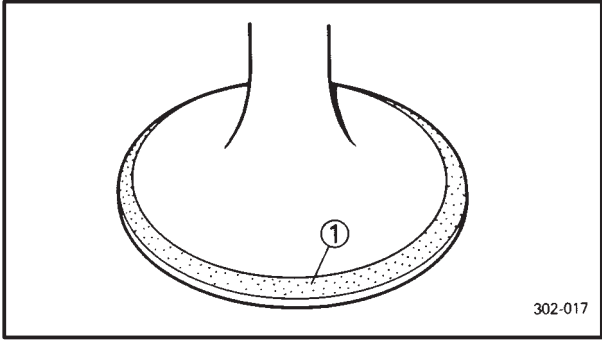
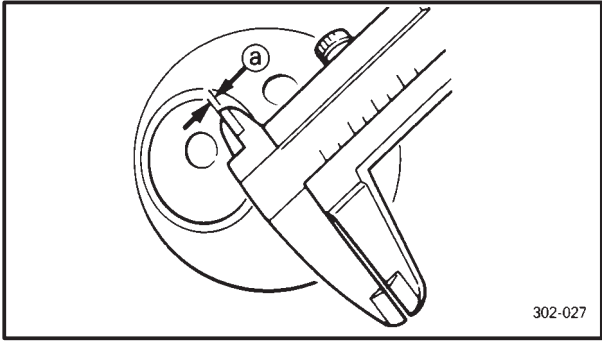
**Exhaust:**

**0.10 mm**

EB402020


## VALVE SEATS INSPECTION

1. Eliminate:
  - Carbon deposits  
(from the valve face and valve seat)
2. Inspect:
  - Valve seats  
Pitting/wear → Reface the valve seat.



3. Measure:

- Valve seat width (a)
- Out of specification → Reface the valve seat.



**Valve seat width:**

**Intake:**  
 $0.9 \times 1.1 \text{ mm}$   
 <Limit: 1.6 mm>

**Exhaust:**  
 $0.9 \times 1.1 \text{ mm}$   
 <Limit: 1.6 mm>

\*\*\*\*\*

**Measurement steps:**

- Apply Mechanic's blueing dye (Dykem) (1) to the valve face.
- Install the valve into the cylinder head.
- Press the valve through the valve guide and onto the valve seat to make a clear pattern.
- Measure the valve seat width. Where the valve seat and valve face made contact, blueing will have been removed.
- If the valve seat is too wide, too narrow, or the seat is not centered, the valve seat must be replaced.

\*\*\*\*\*

EB402020

4. Lap:

- Valve face
- Valve seat

**NOTE:** \_\_\_\_\_

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

\_\_\_\_\_

\*\*\*\*\*

**Lapping steps:**

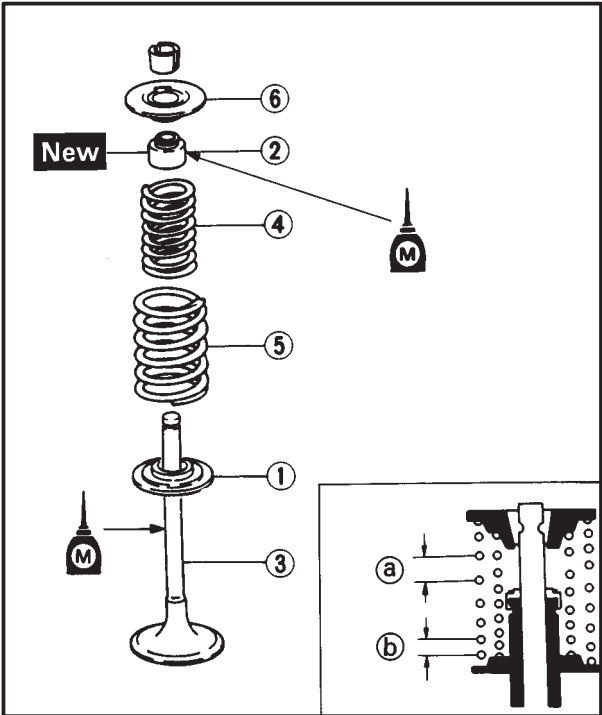
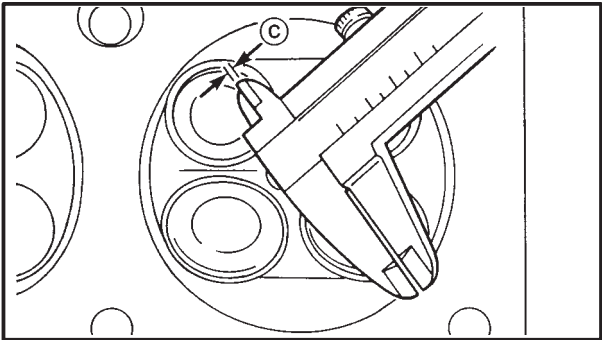
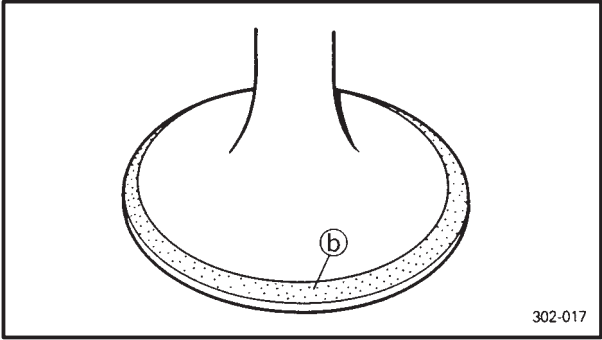
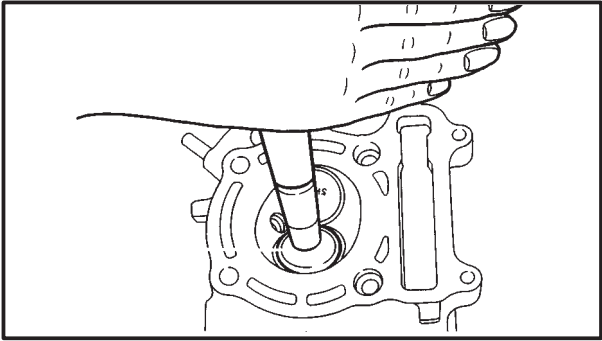
- Apply a coarse lapping compound (a) to the valve face.

**CAUTION:** \_\_\_\_\_

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

\_\_\_\_\_

- Apply molybdenum disulfide oil to the valve stem.
- Install the valve into the cylinder head.



- Turn the valve until the valve face and valve seat are evenly polished, then clean off all compound.

**NOTE:** \_\_\_\_\_  
 For best lapping results, lightly tap the valve seat while rotating the valve back and forth between your hand.

- Apply a fine lapping compound to the valve face and repeat the above steps.

**NOTE:** \_\_\_\_\_  
 Make sure to clean off all compound from the valve face and valve seat after every lapping operation.

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

\*\*\*\*\*

EB404032

## VALVES AND VALVE SPRINGS INSTALLATION

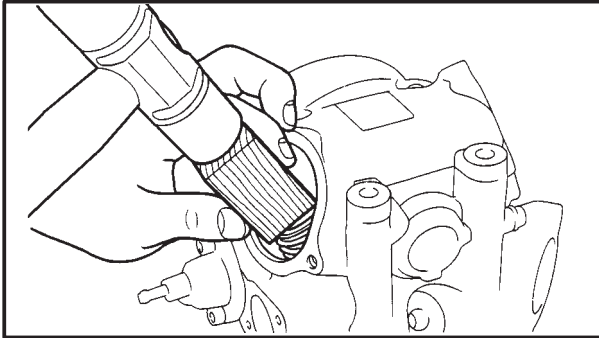
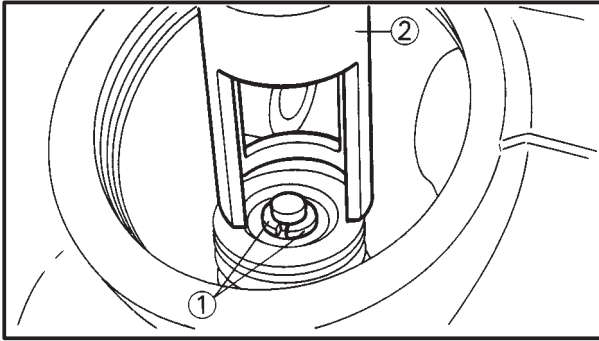
1. Deburr:
  - Valve stem end
  - Use an oil stone to smooth the stem end.
2. Apply:
  - Molybdenum disulfide oil
  - (onto the valve stem (3) and oil seal (2))



3. Install:
  - Valve spring seat (1)
  - Valve stem seal (2) **New**
  - Valve (3)
  - (into the cylinder head)
  - Valve spring (inner) (4)
  - Valve spring (outer) (5)
  - Spring retainer (6)

**NOTE:** \_\_\_\_\_  
 Install the valve spring with the larger pitch (a) facing upwards.

(b) Smaller pitch



4. Install:  
• Valve cotters ①

**NOTE:** \_\_\_\_\_  
Install the valve cotters while compressing the valve spring with a valve spring compressor and attachment ②.

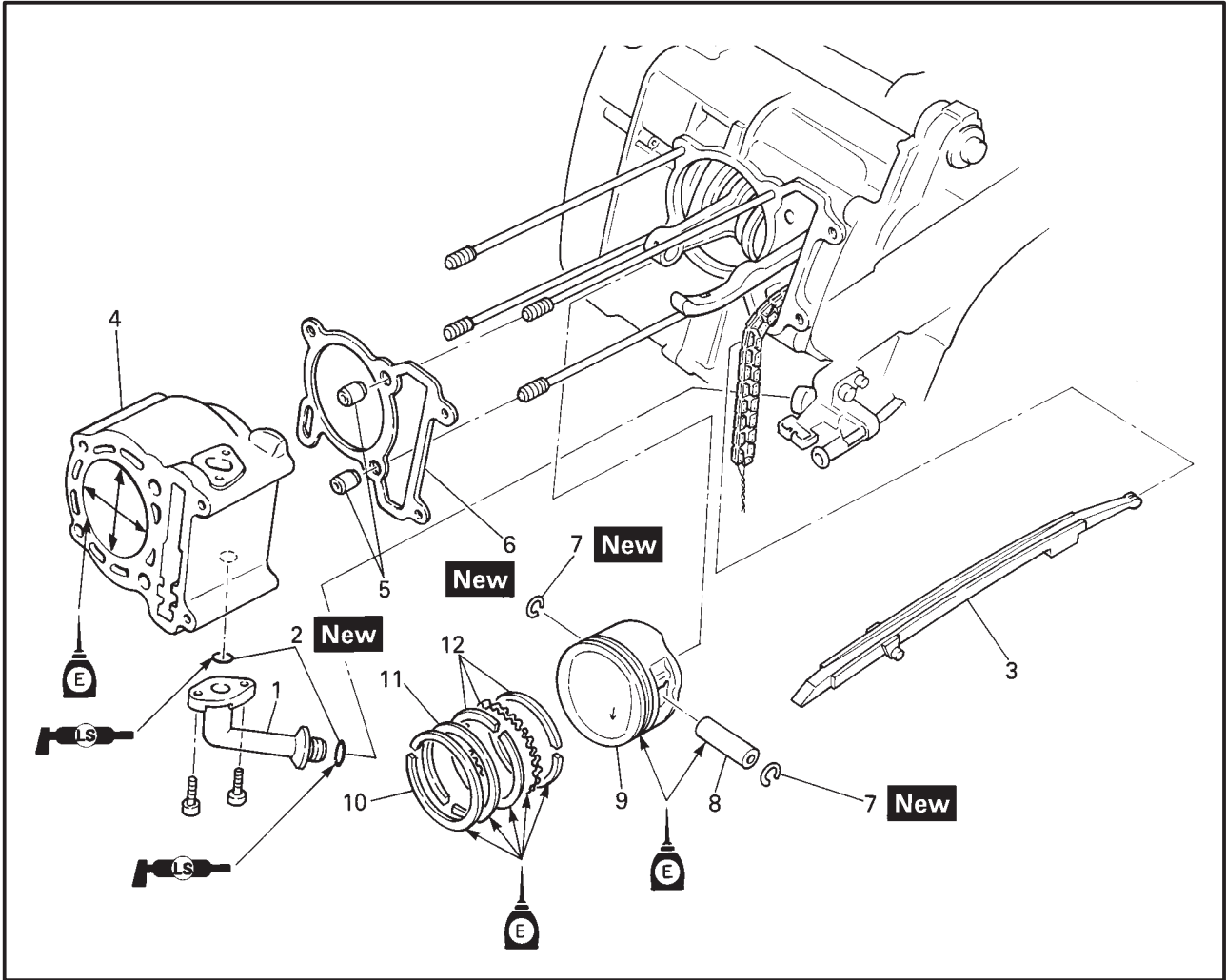


**Valve spring compressor:**  
90890-04019  
**Attachment:**  
90890-04108

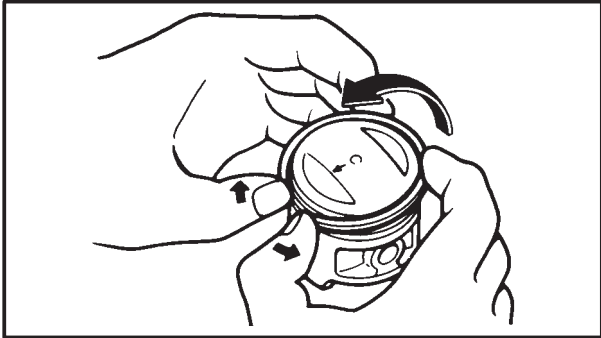
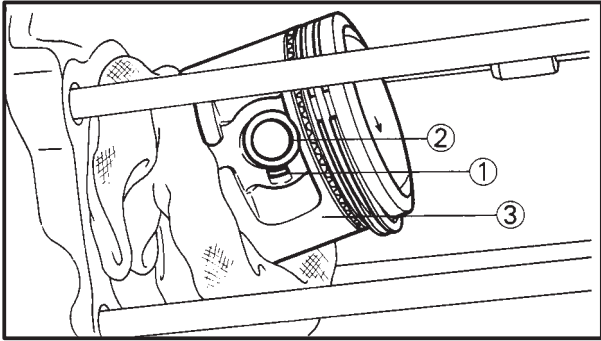
5. Secure the valve cotters onto the valve stem by tapping lightly with a piece of wood.

**CAUTION:** \_\_\_\_\_  
**Do not hit so much as to damage the valve.**

CYLINDER AND PISTON 



Order	Job name/Part name	Q'ty	Remarks
	<b>Cylinder and piston removal</b>		Remove the parts in order. Refer to "CYLINDER HEAD" section.
1	Joint	1	Refer to "PISTON RINGS, PISTON AND CYLINDER INSTALLATION" section.
2	O-ring	2	
3	Timing chain guide (exhaust side)	1	
4	Cylinder	1	
5	Dowel pin	2	Refer to "PISTON AND PISTON RINGS REMOVAL" section.
6	Cylinder gasket	1	
7	Piston pin circlip	2	Refer to "PISTON RINGS, PISTON AND CYLINDER INSTALLATION" section.
8	Piston pin	1	
9	Piston	1	
10	Piston ring (top)	1	Reverse the removal procedure for installation.
11	Piston ring (2nd)	1	
12	Side rail/Spacer	2/1	



YP\*\*\*\*\*

**PISTON AND PISTON RINGS REMOVAL**

1. Remove:
  - Piston pin circlip ①
  - Piston pin ②
  - Piston ③

**NOTE:**

Before removing the piston pin circlip, cover the crankcase opening with a clean towel or rag to prevent the circlip from falling into the crankcase cavity.

2. Remove:
  - Top ring
  - 2nd ring
  - Oil ring

**NOTE:**

When removing the piston ring, open the end gap of the ring by fingers, and push up the other side of the ring.

YP402100

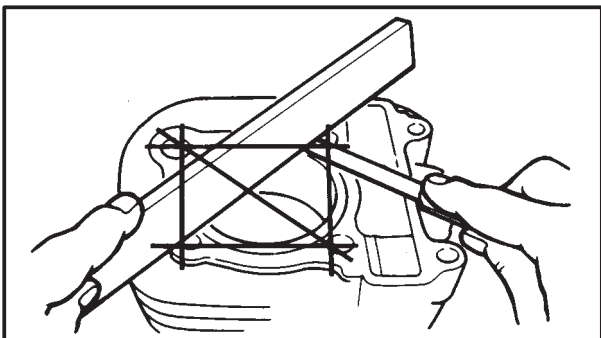
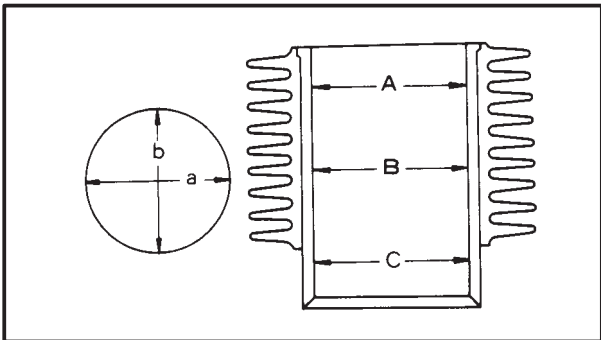
**CYLINDER INSPECTION**

1. Measure:
  - Cylinder bore

Out of specification → Rebore or replace

**NOTE:**

- Measure the cylinder bore with a cylinder bore gauge.
- Measure the cylinder bore in parallel to and at right angles to the crankshaft. Then, find the average of the measurements.

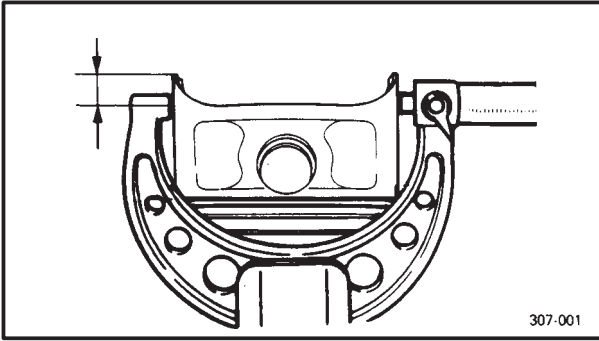


	<p><b>Cylinder bore:</b>  <math>69.000 \times 69.005 \text{ mm}</math>                      &lt;Limit: 69.1 mm&gt;                      &lt;Defferance limit between A, B and C: 0.03 mm&gt;</p>
--	--

2. Measure:
  - Warpage

Out of specification → Replace.

	<p><b>Cylinder warpage limit:</b>                      0.03 mm</p>
--	--



307-001

yp\*\*\*\*\*

## PISTON AND PISTON PIN INSPECTION

1. Measure:
    - Piston skirt diameter  
Out of specification → Replace.
- Ⓐ 5.0 mm from the piston bottom edge



**Piston skirt diameter:**  
**68.965 × 68.980 mm**  
**Oversize (2)**  
**69.5 mm**  
**Oversize (4)**  
**70.0 mm**

2. Calculate:
  - Piston-to-cylinder clearance

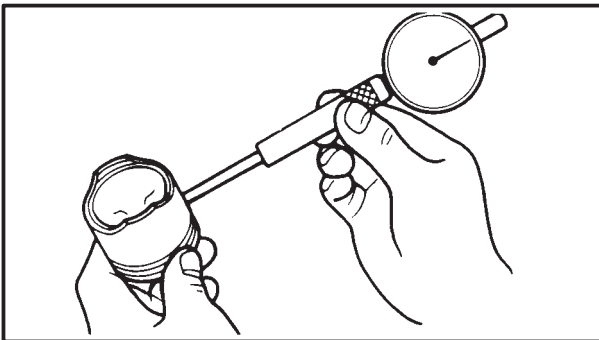
**Piston-to-cylinder clearance =  
 Cylinder bore – Piston skirt diameter**

Refer to “CYLINDER” section for cylinder bore measurement.

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



**Piston-to-cylinder clearance:**  
**0.02 X 0.04 mm**



3. Measure:
  - Piston pin bore diameter  
Out of specification → Replace.

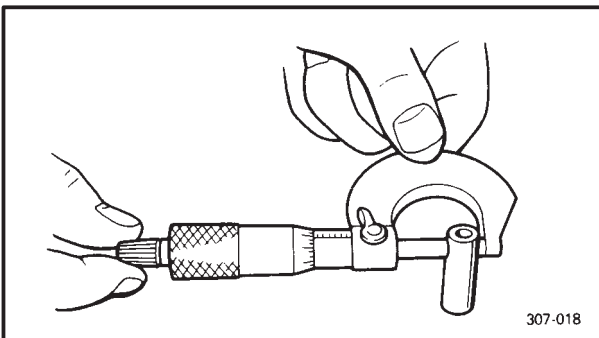


**Piston pin bore diameter:**  
**17.004 × 17.015 mm**  
**<Limit: 17.045 mm>**

4. Measure:
  - Piston pin outside diameter  
Out of specification → Replace.



**Piston pin outside diameter:**  
**16.991 × 17.000 mm**  
**<Limit: 16.975 mm>**



307-018

5. Inspect:
  - Piston pin  
Blue discoloration/groove → Clean or replace.



YP402111

## PISTON RINGS INSPECTION

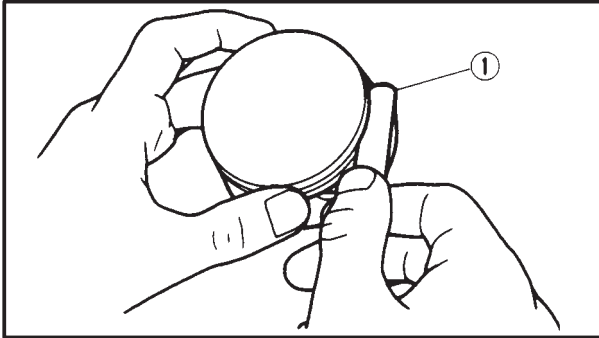
### 1. Measure:

- Side clearance

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

### NOTE:

Eliminate the carbon deposits from the piston ring grooves and rings before measuring the side clearance.



### Side clearance (piston ring):

#### Top ring:

**0.04 × 0.08 mm**

<Limit: 0.12 mm>

#### 2nd ring:

**0.03 × 0.07 mm**

<Limit: 0.12 mm>

### 2. Position:

- Piston ring  
(into the cylinder)

### NOTE:

Push the ring with the piston crown so that the ring will be at a right angle to the cylinder bore.

Ⓐ 5.0 mm

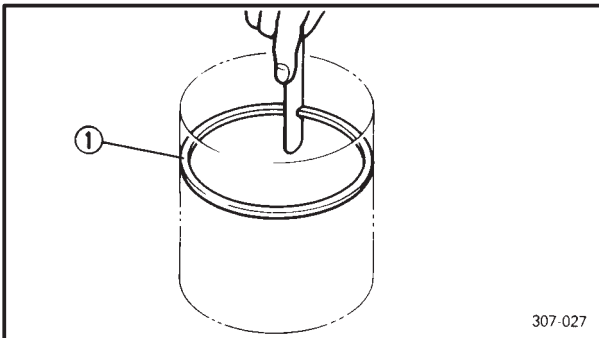
### 3. Measure:

- End gap

Out of specification → Replace.

### NOTE:

You cannot measure the end gap on the expander spacer of the oil ring. If the oil ring rails show excessive gap, replace all three rings.



### End gap:

#### Top ring:

**0.15 × 0.30 mm**

<Limit: 0.45 mm>

#### 2nd ring:

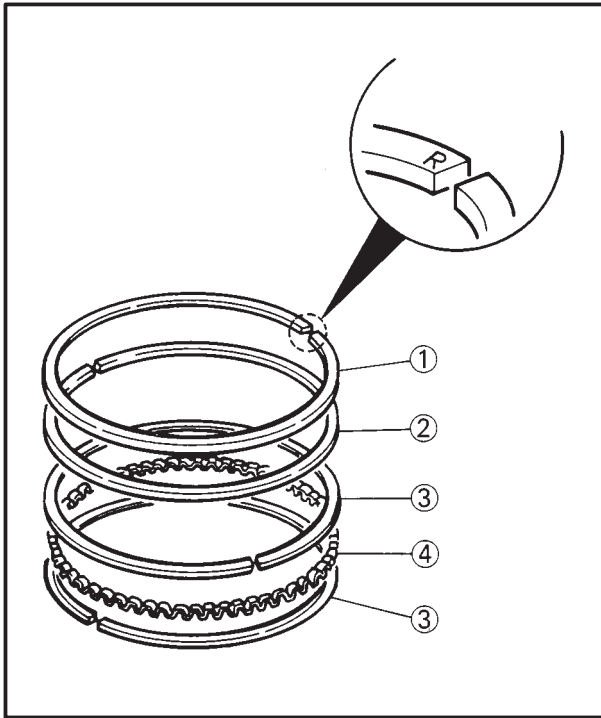
**0.30 × 0.45 mm**

<Limit: 0.70 mm>

#### Oil ring:

**0.20 × 0.70 mm**





EB404184

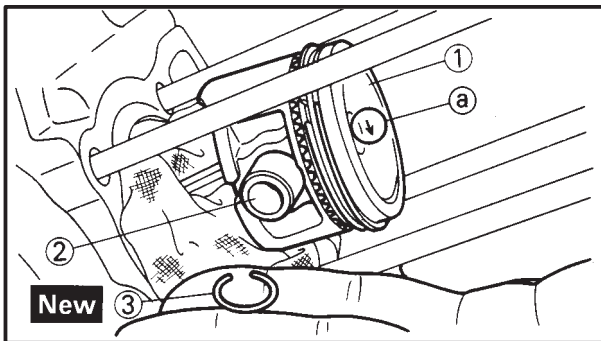
### PISTON RINGS, PISTON AND CYLINDER INSTALLATION

#### 1. Install:

- Top ring ①
- 2nd ring ②
- Side rails (oil ring) ③
- Expander spacer (oil ring) ④

#### NOTE:

- Make sure to install the piston rings so that the manufacturer's marks or numbers are located on the upper side of the rings.
- Lubricate pistons and piston rings liberally with engine oil.



#### 2. Install:

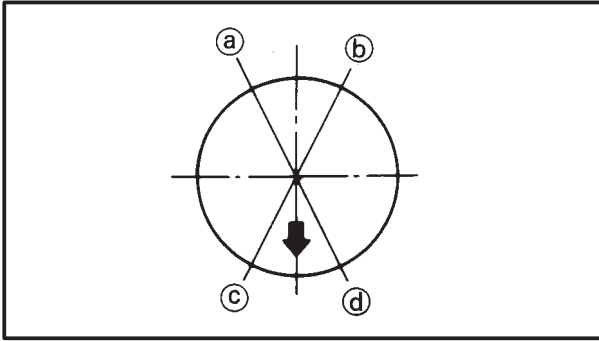
- Piston ①
- Piston pin ②
- Piston pin clip ③ **New**

#### NOTE:

- Apply engine oil onto the piston pins.
- The "→" mark ① on the piston must face the exhaust side of the cylinder.
- Before installing the piston pin clip, cover the crankcase opening with a clean rag to prevent the piston pin clip from falling into the crankcase.
- Make sure to install each piston in its respective cylinder.

#### 3. Install:

- Gasket (cylinder) **New**
- Dowel pins



4. Position:
- Piston rings

**NOTE:** \_\_\_\_\_

Offset the piston ring end gaps as shown.

- Ⓐ Top ring end
- Ⓑ Oil ring end (lower)
- Ⓒ Oil ring end (upper)
- Ⓓ 2nd ring end

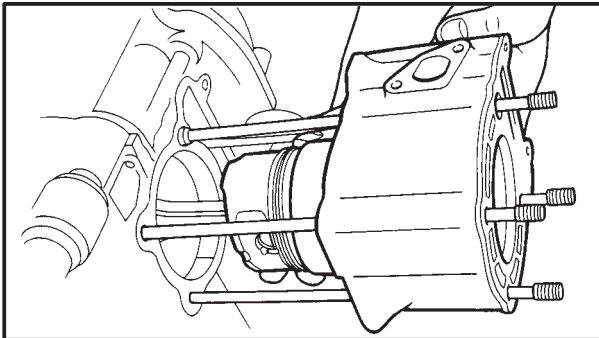
5. Lubricate:
- Piston outer surface
  - Piston ring
  - Cylinder inner surface



6. Install:
- Cylinder

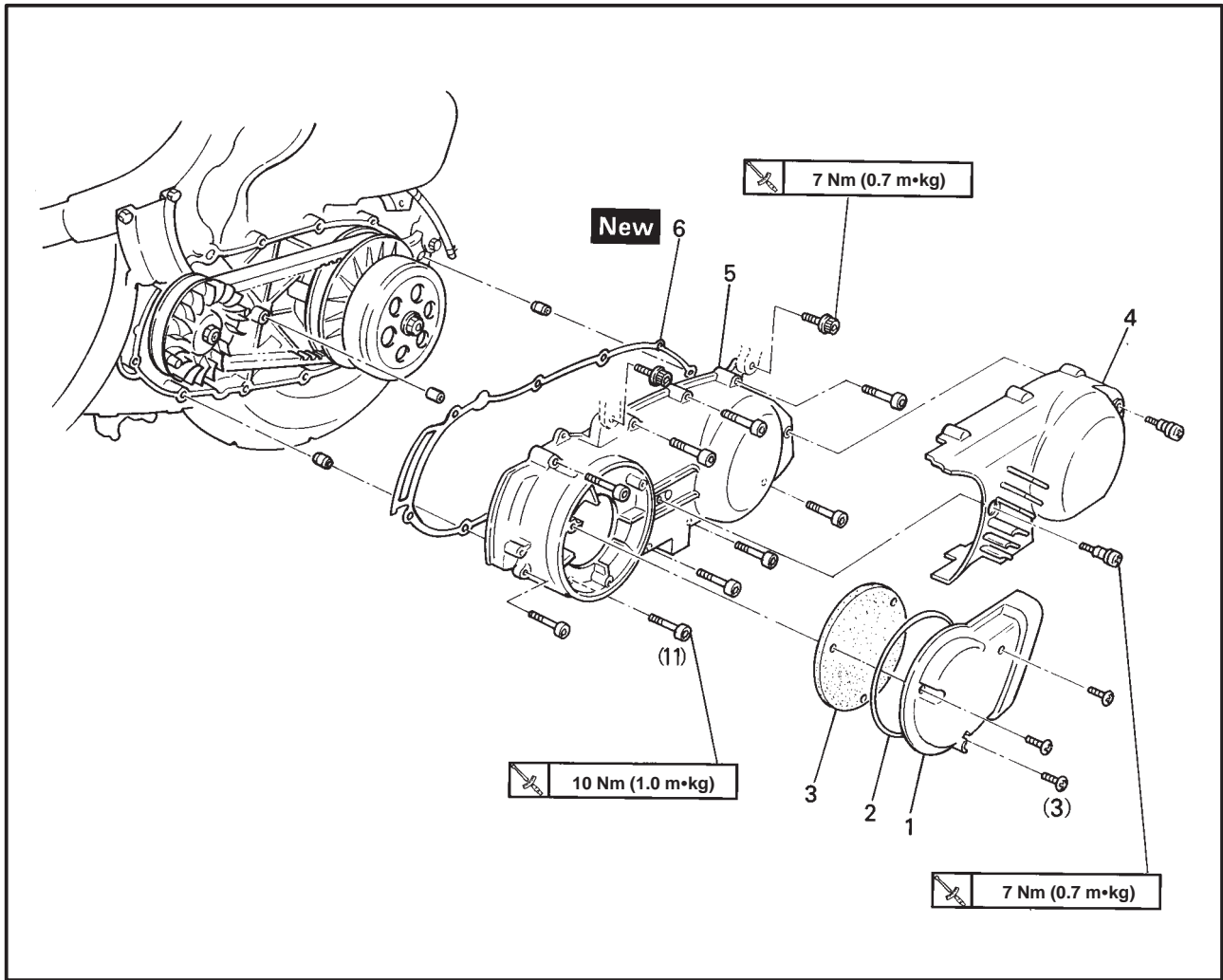
**NOTE:** \_\_\_\_\_

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





V-BELT, CLUTCH AND SECONDARY/PRIMARY SHEAVE  
CRANKCASE FILTER COVER AND CRANKCASE COVER (LEFT)



Order	Job name/Part name	Q'ty	Remarks
	<b>Crankcase filter cover and crankcase cover (left)removal</b> Side panel		Remove the parts in order.  Refer to "COVER AND PANEL" section in CHAPTER 3.
1	Crankcase filter cover	1	
2	Crankcase filter cover seal	1	
3	Crankcase filter element	1	
4	Crankcase cover protector	1	
5	Crankcase cover (left)	1	
6	Crankcase cover gasket	1	
			Reverse the removal procedure for installation.

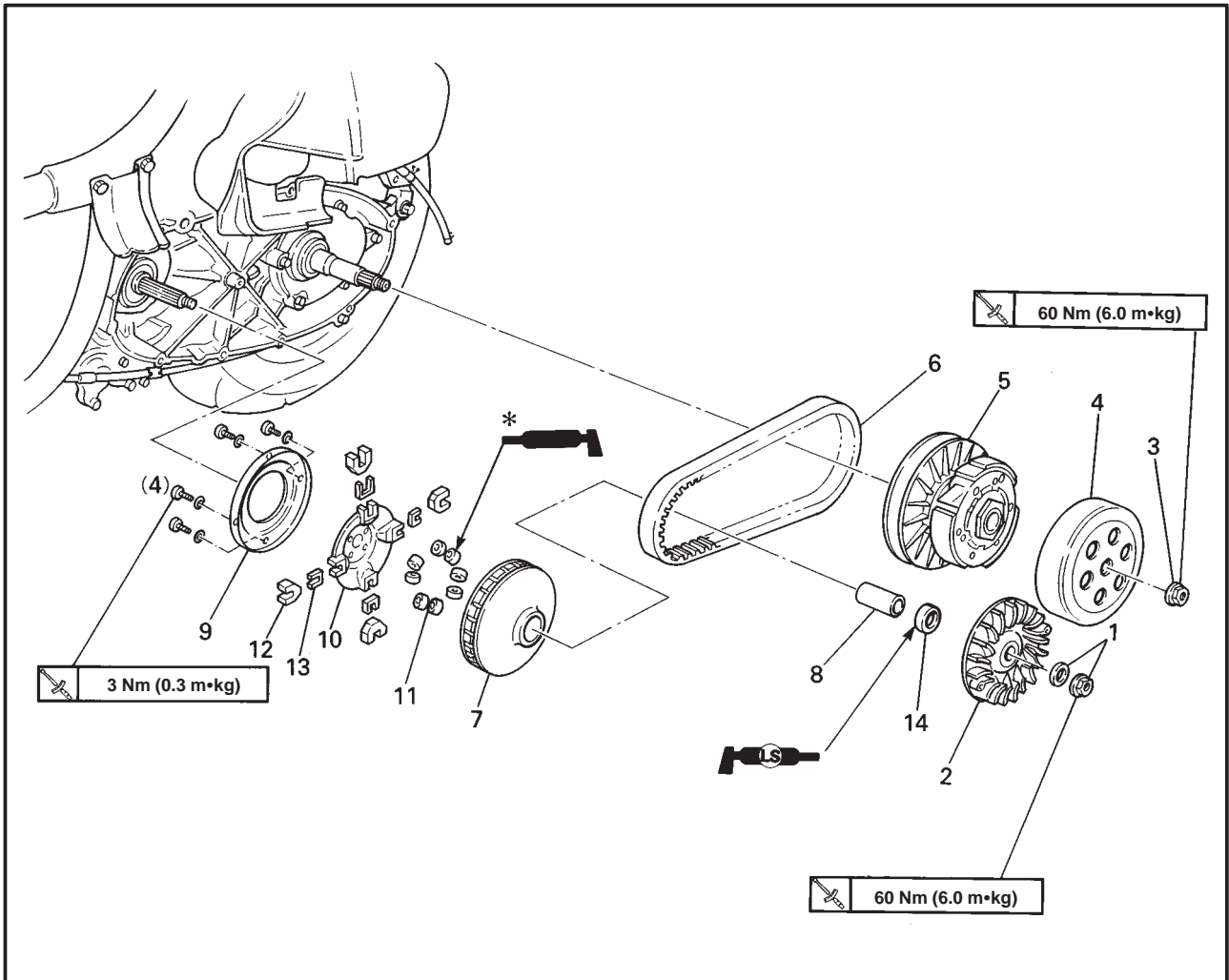
# V-BELT, CLUTCH AND SECONDARY/PRIMARY SHEAVE



## V-BELT, CLUTCH AND SECONDARY/PRIMARY SHEAVE



\*Shell BT grease No. 3 (90890-69927)

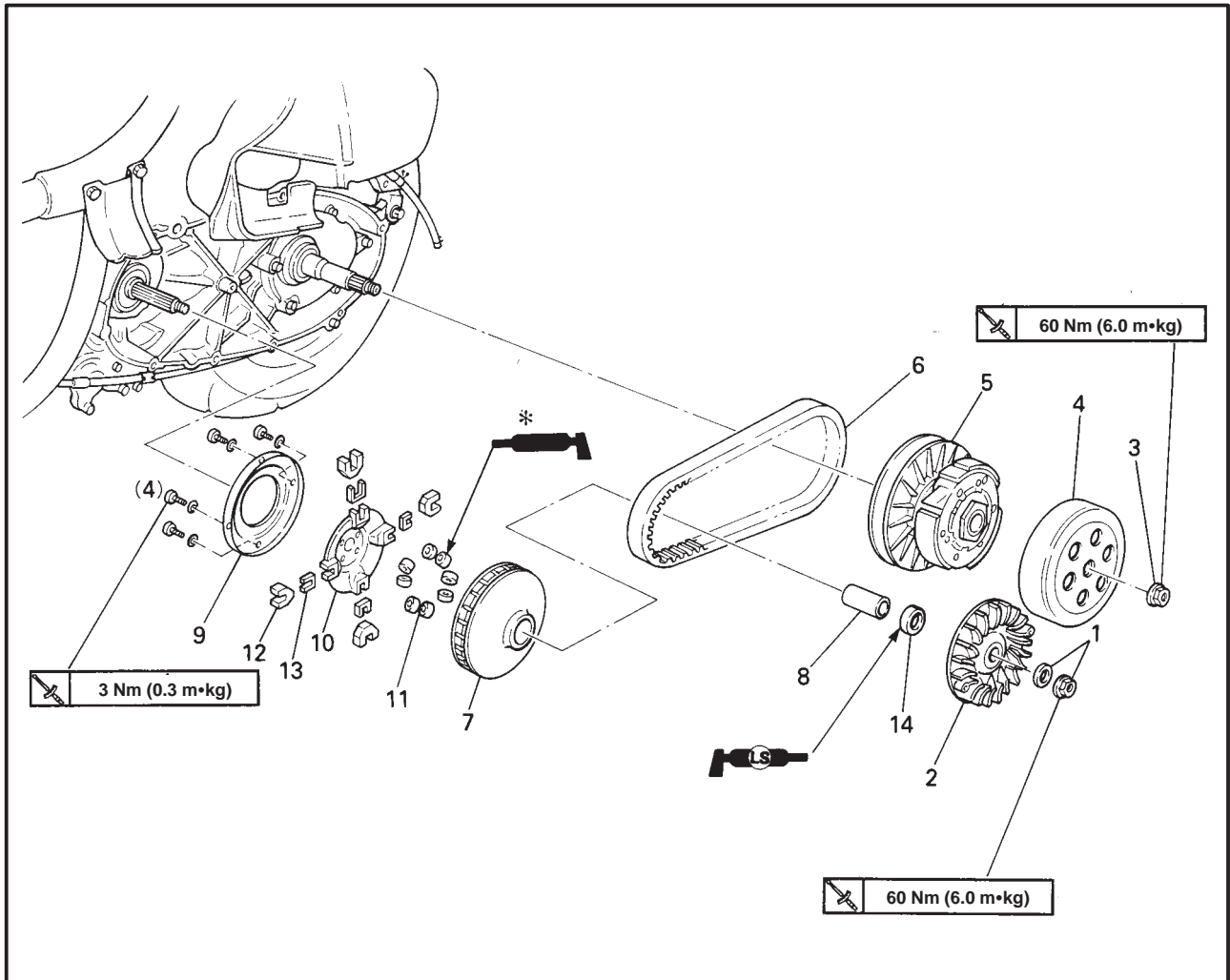


Order	Job name/Part name	Q'ty	Remarks
	<b>V-belt, clutch and secondary/primary sheave removal</b>		Remove the parts in order.
1	Nut/Plain washer	1/1	Refer to "PRIMARY SHEAVE REMOVAL" section.
2	Primary fixed sheave	1	
3	Nut	1	Refer to "SECONDARY SHEAVE AND V-BELT REMOVAL" section.
4	Clutch housing	1	
5	Clutch assembly	1	Refer to "SECONDARY SHEAVE INSTALLATION" section.
6	V-belt	1	
7	Primary sliding sheave	1	Refer to "PRIMARY SHEAVE ASSEMBLY" section.
8	Collar	1	
9	Primary sheave cap	1	

# V-BELT, CLUTCH AND SECONDARY/PRIMARY SHEAVE



\*Shell BT grease No. 3 (90890-69927)

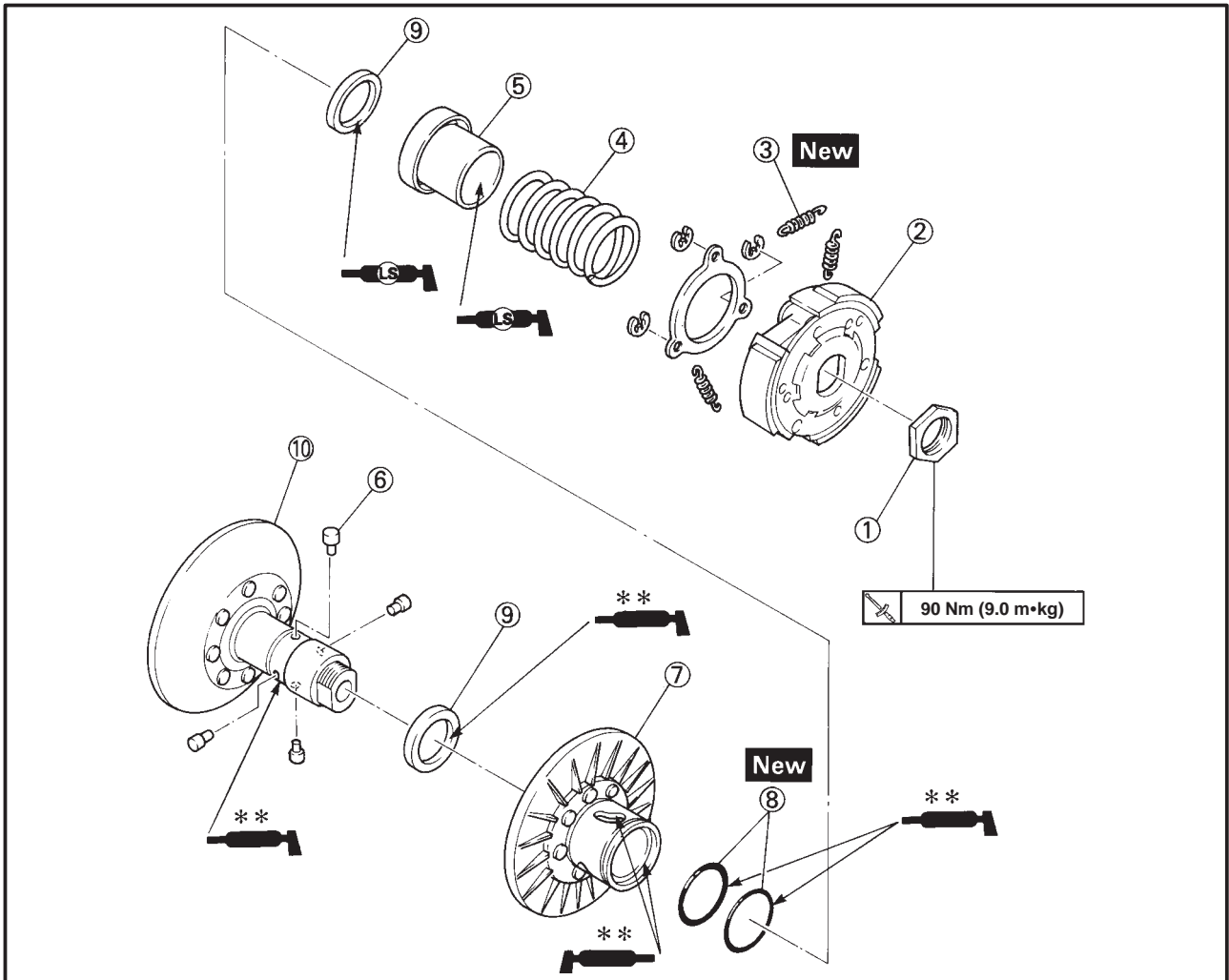


Order	Job name/Part name	Q'ty	Remarks
10	Cam	1	Refer to "PRIMARY SHEAVE ASSEMBLY" section.
11	Weight	8	
12	Slider	4	
13	Spacer	4	
14	Oil seal	1	
			Reverse the removal procedure for installation.



## SECONDARY SHEAVE

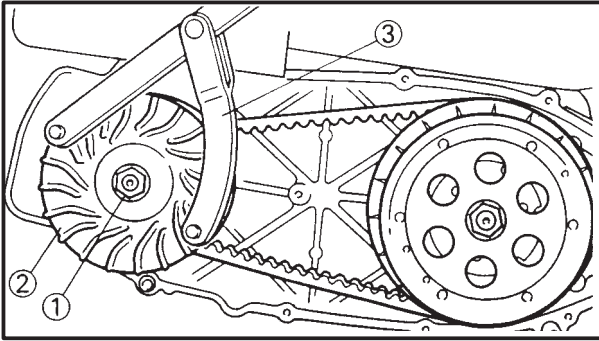
\*\*Apply BEL-RAY assembly lube®



Order	Job name/Part name	Q'ty	Remarks
	Secondary sheave disassembly		Disassemble the parts in order.
①	Nut	1	Refer to "SECONDARY SHEAVE DISASSEMBLY" section. Refer to "SECONDARY SHEAVE INSTALLATION" section. Refer to "SECONDARY SHEAVE INSTALLATION" section. Reverse the disassembly procedure for assembly.
②	Clutch carrier	1	
③	Clutch shoe spring	3	
④	Compression spring	1	
⑤	Spring seat	1	
⑥	Guide pin	4	
⑦	Secondary sliding sheave	1	
⑧	O-ring	2	
⑨	Oil seal	2	
⑩	Secondary fixed sheave	1	

# V-BELT, CLUTCH AND SECONDARY/PRIMARY SHEAVE

ENG



yp\*\*\*\*\*

## PRIMARY SHEAVE REMOVAL

1. Remove:
  - Nut ① (primary sheave)
  - Plate washer
  - Primary fixed sheave ②

### NOTE:

Loosen the nut (primary fixed sheave) while holding the primary fixed sheave with the rotor holder ③.



**Rotor holder:**  
90890-01235

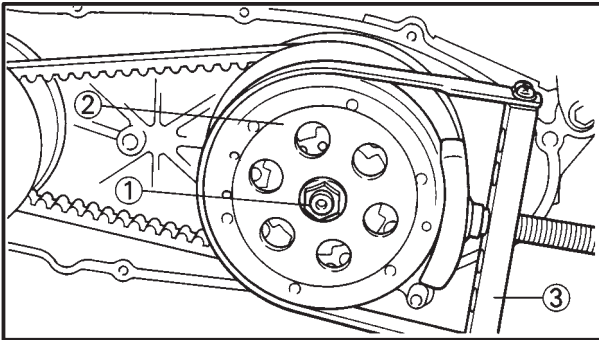
yp\*\*\*\*\*

## SECONDARY SHEAVE AND V-BELT REMOVAL

1. Remove:
  - Nut ① (secondary sheave)
  - Clutch housing ②

### NOTE:

Loosen the nut (secondary sheave) while holding the clutch housing with the sheave holder ③.



**Sheave holder:**  
90890-01701

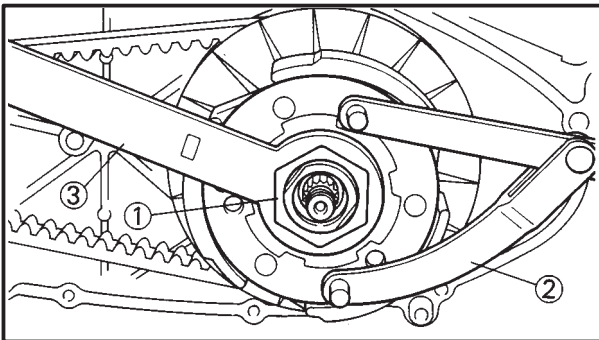
2. Remove:
  - Nut ① (clutch carrier)

### CAUTION:

Do not remove the nut (clutch carrier) yet.

### NOTE:

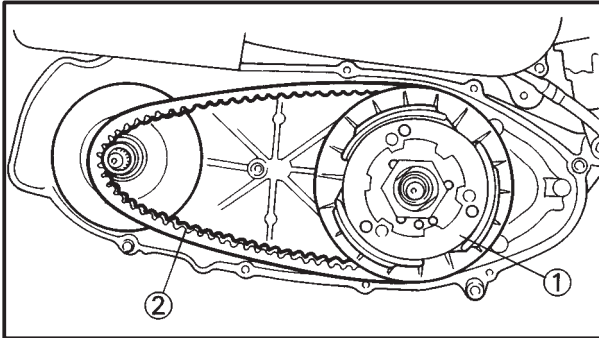
Loosen the nut (clutch carrier) one turn using the locknut wrench ③ while holding the clutch carrier with the rotor holder ②.



**Rotor holder:**  
90890-01235  
**Locknut wrench:**  
90890-01348

## V-BELT, CLUTCH AND SECONDARY/PRIMARY SHEAVE

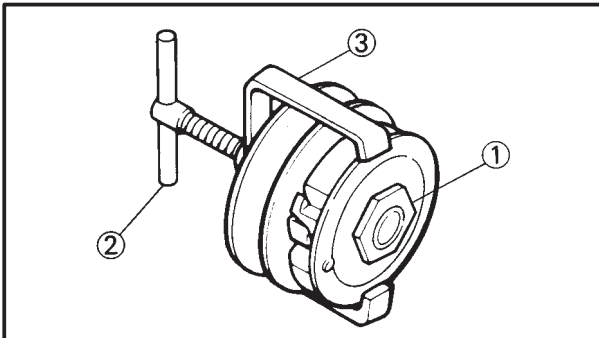
ENG



3. Remove:
  - Clutch assembly ①
  - V-belt ②

### NOTE:

Remove the V-belt from the primary sheave side with clutch assembly.



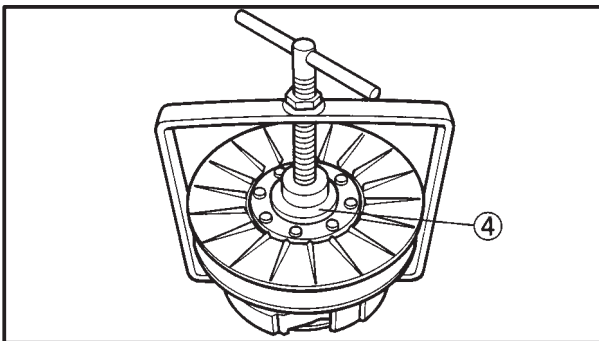
YP\*\*\*\*\*

### SECONDARY SHEAVE DISASSEMBLY

1. Remove:
  - Nut ① (secondary sheave)

### NOTE:

Loosen the nut ① while attaching the clutch spring compressor ② and clutch spring holder arm ③ and release the compressed spring after removing the nut.



### CAUTION:

Use the spacer ④ (ø 30 mm, thickness: 2 × 3 mm).

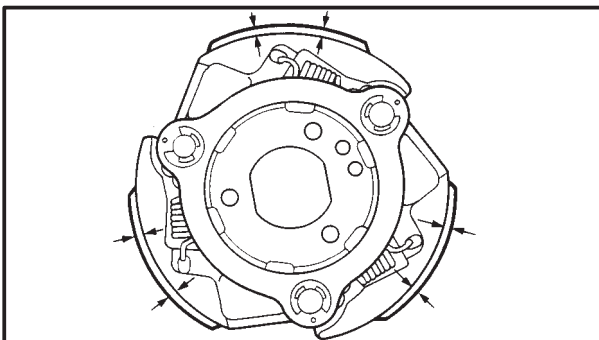


Clutch spring holder:

90890-01337

Clutch spring holder arm:

90890-01464



YP\*\*\*\*\*

### CLUTCH INSPECTION

1. Measure:
  - Clutch shoe thicknessScratches → Glaze using coarse sandpaper.  
Wear/Damage → Replace



Clutch shoe thickness:

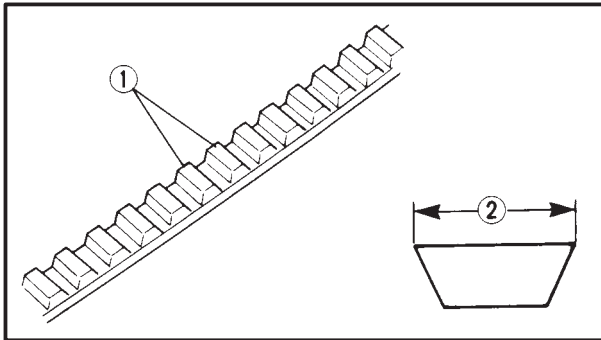
3.0 mm

<Limit: 2.0 mm>

### NOTE:

- After using the sandpaper, clean off the polished particles.
- Inspect the other clutch shoes.
- Replace the all three as a set.





yp\*\*\*\*\*

## V-BELT INSPECTION

1. Inspect:
  - V-belt ①  
Cracks/Wear/Scaling/Chipping → Replace.  
Oil/Grease → Check primary sheave and secondary sheave.
2. Measure:
  - V-belt width ②  
Out of specification → Replace

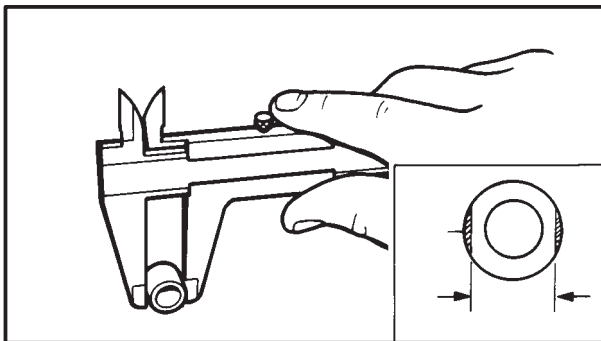


**V-belt width:**  
22.6 mm  
<Limit: 21.0 mm>

yp\*\*\*\*\*

## WEIGHT INSPECTION

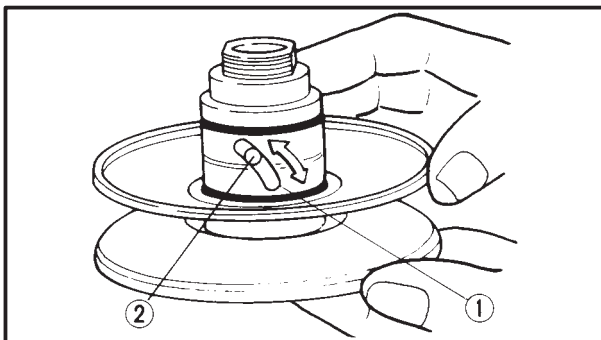
1. Inspect:
  - Weight minimum outside diameter  
Cracks/Wear/Scaling/Chipping → Replace.  
Out of specification → Replace.

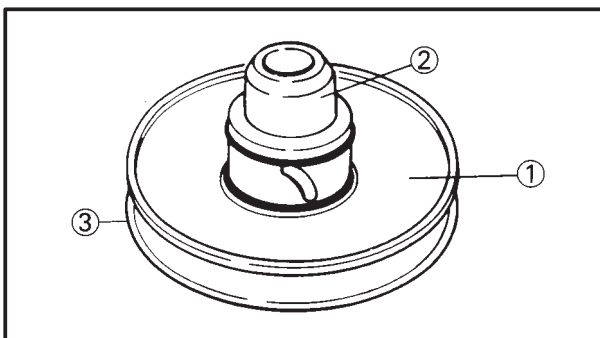
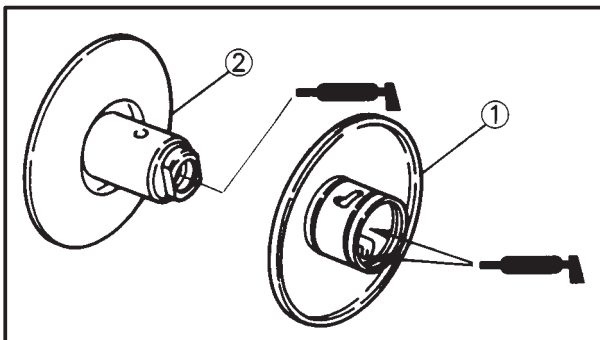
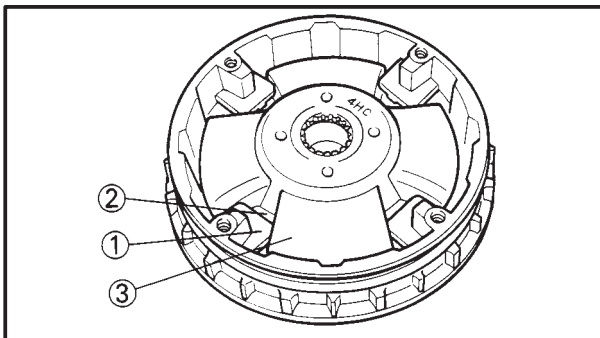
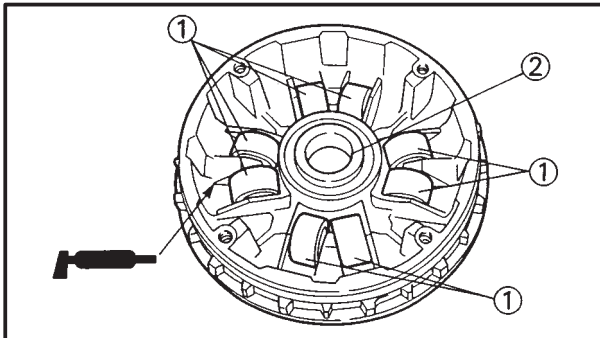
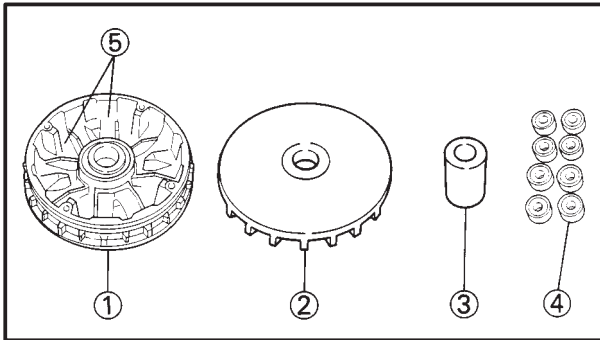


**Weight out side diameter:**  
20.0 mm  
<Limit: 19.5 mm>

## SECONDARY SHEAVE INSPECTION

1. Inspect:
  - Secondary fixed sheave smooth operation
  - Secondary sliding sheave smooth operation  
Scratches/Damage → Replace as a set.
2. Inspect:
  - Torque cam groove ①  
Wear/Damage → Replace.
3. Inspect:
  - Guide pin ②  
Wear/Damage → Replace.





YP\*\*\*\*\*

## PRIMARY SHEAVE ASSEMBLY

### 1. Clean:

- Primary sliding sheave face ①
- Primary fixed sheave face ②
- Collar ③
- Weight ④
- Primary sliding sheave cam face ⑤

### NOTE:

Remove any excess grease.

### 2. Install:


- Weight ①
- Collar ②

### NOTE:

- Apply Shell BT grease No. 3 (90890-69927) to the all of the outside of the weight and install.
- Apply Shell BT grease No. 3 (90890-69927) to the inside of the collar.

### 3. Install:

- Spacer ①
- Slider ②
- Cam ③
- Primary sliding sheave cap.

 3 Nm (0.3 m•kg)

## SECONDARY SHEAVE INSTALLATION

### 1. Apply:

- BEL-RAY assembly lube<sup>®</sup> (to the secondary sliding sheave ① inner surface, grease nipple groove, and oil seals)
- BEL-RAY assembly lube<sup>®</sup> (to the bearings, oil seals and inner surface of the secondary fixed sheave ②)

### 2. Install:

- Secondary sliding sheave ①

### NOTE:

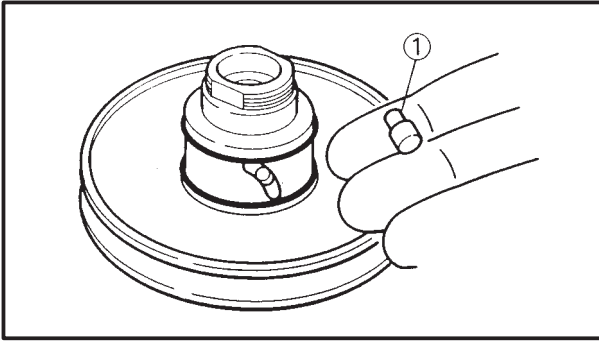
Install the secondary sliding sheave ① using the oil seal guide ② to the secondary fixed sheave ③.



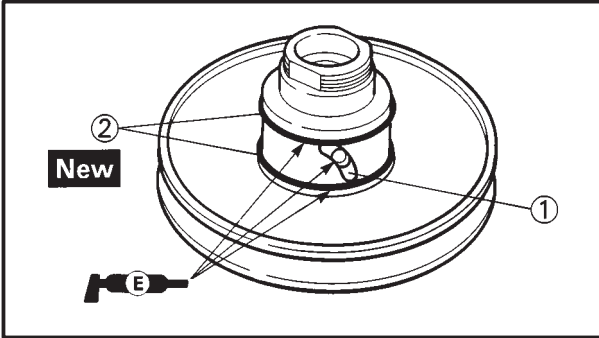
**Oil seal guide:**  
90890-01384

## V-BELT, CLUTCH AND SECONDARY/PRIMARY SHEAVE

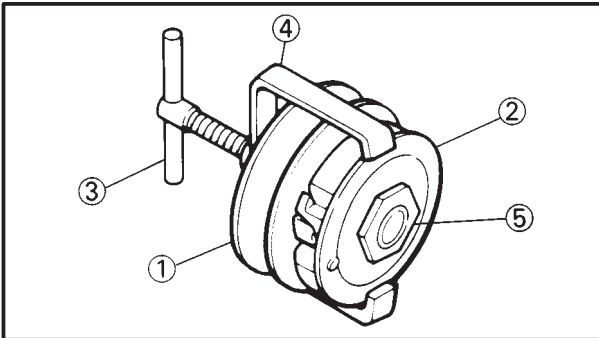
ENG



3. Install:
- Guide pin ①



4. Apply:
- BEL-RAY assembly lube<sup>®</sup>  
(to the guide pin sliding groove ①, and  
and oil seal ② **New** )



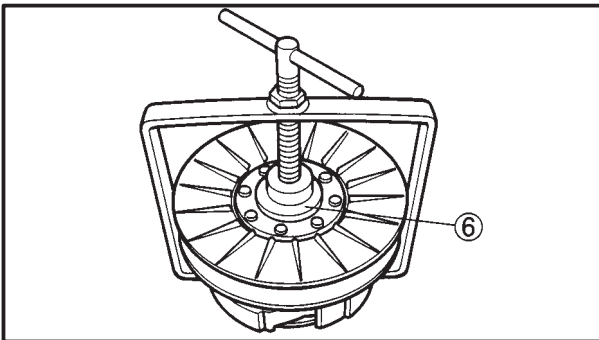
5. Install:
- Secondary sheave complete ①
  - Compression spring
  - Clutch carrier ②

**NOTE:** \_\_\_\_\_

Temporarily tighten the nut ⑤ while attaching the clutch spring holder ③ and clutch spring holder arm ④ and compress the spring.

**CAUTION:** \_\_\_\_\_

Use the spacer ⑥ (ø 30 mm, thickness: 2 × 3 mm).



Clutch spring holder:  
90890-01337

Clutch spring holder arm:  
90890-01464

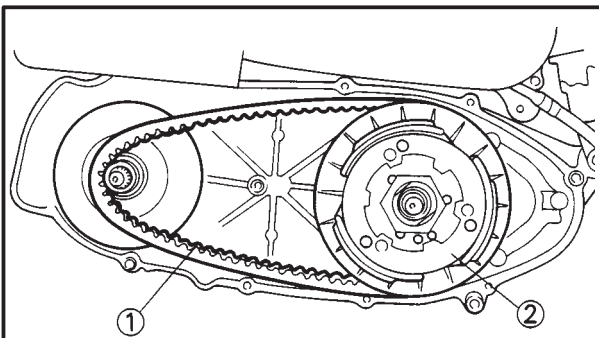
6. Install:
- V-belt ①
  - Clutch assembly ②

**NOTE:** \_\_\_\_\_

Install the V-belt with the clutch assembly to the primary sheave side.

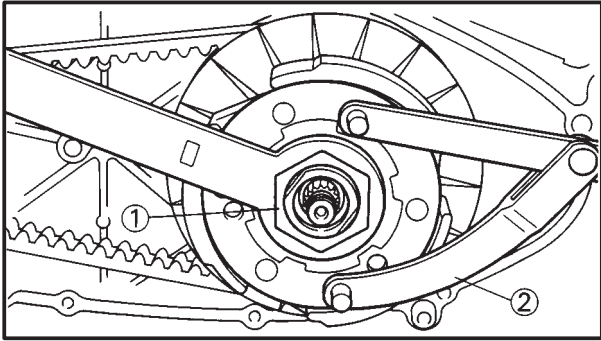
**CAUTION:** \_\_\_\_\_

Never smear grease to the V-belt, secondary sheave and clutch.




## V-BELT, CLUTCH AND SECONDARY/PRIMARY SHEAVE

ENG

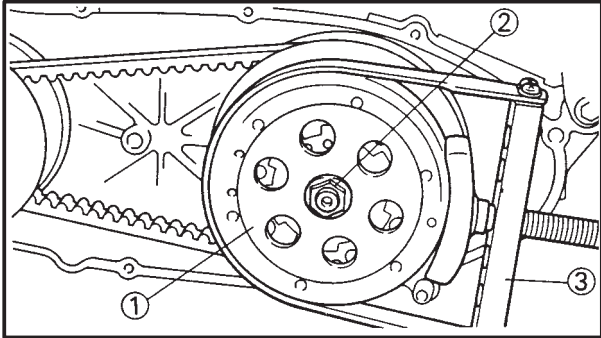


7. Install:

- Nut ① (clutch carrier)  90 Nm (9.0 m•kg)

**NOTE:** \_\_\_\_\_

Tighten the nut (clutch carrier), using the locknut wrench ③ while holding the clutch carrier with the rotor holder ②.

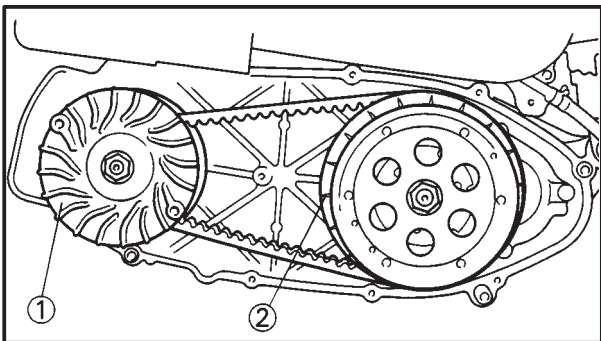


8. Install:

- Clutch housing ①
- Nut ② (clutch housing)

**NOTE:** \_\_\_\_\_

Tighten the nut (clutch housing), using the sheave holder ③.



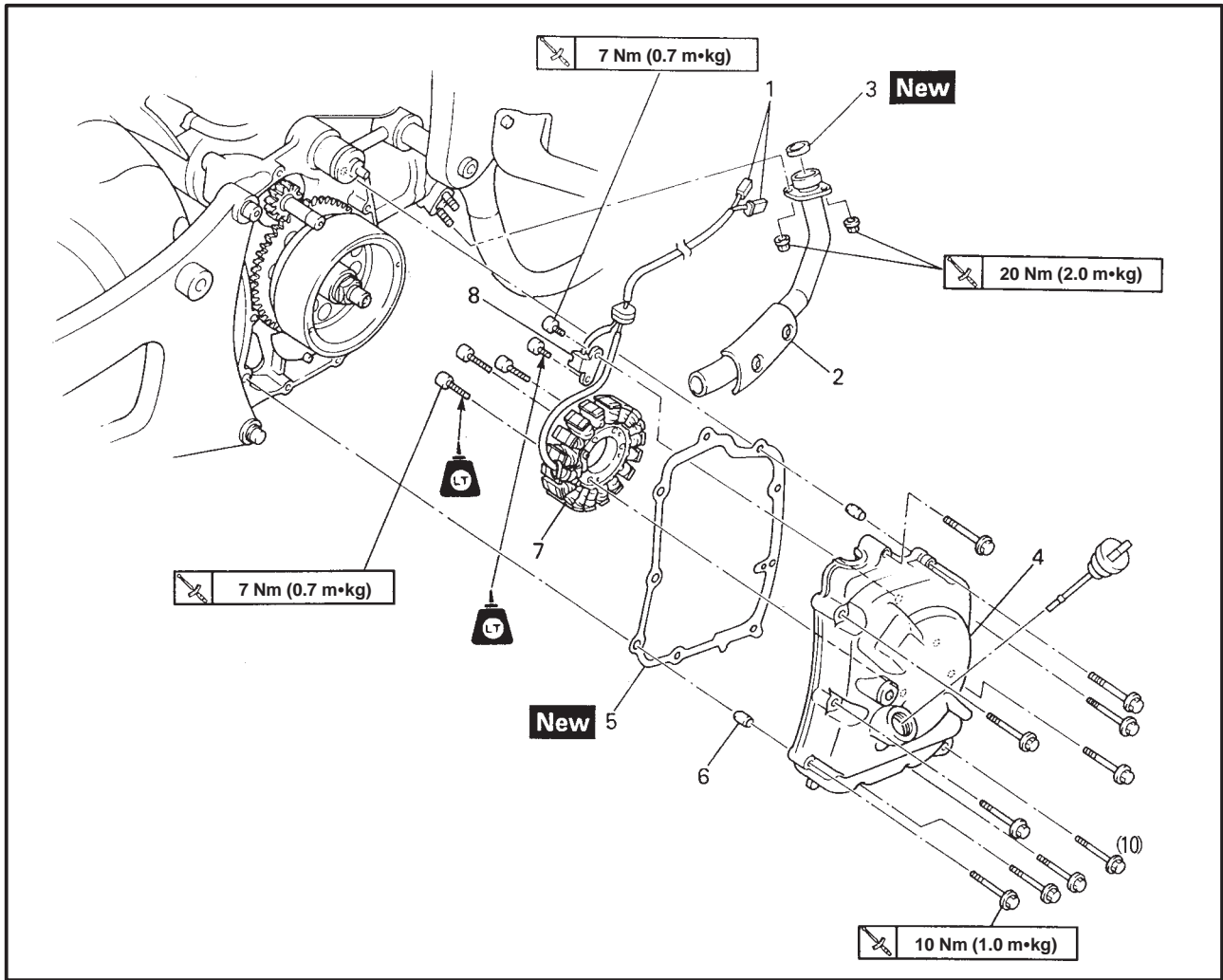
9. Set:

- V-belt ①

**NOTE:** \_\_\_\_\_

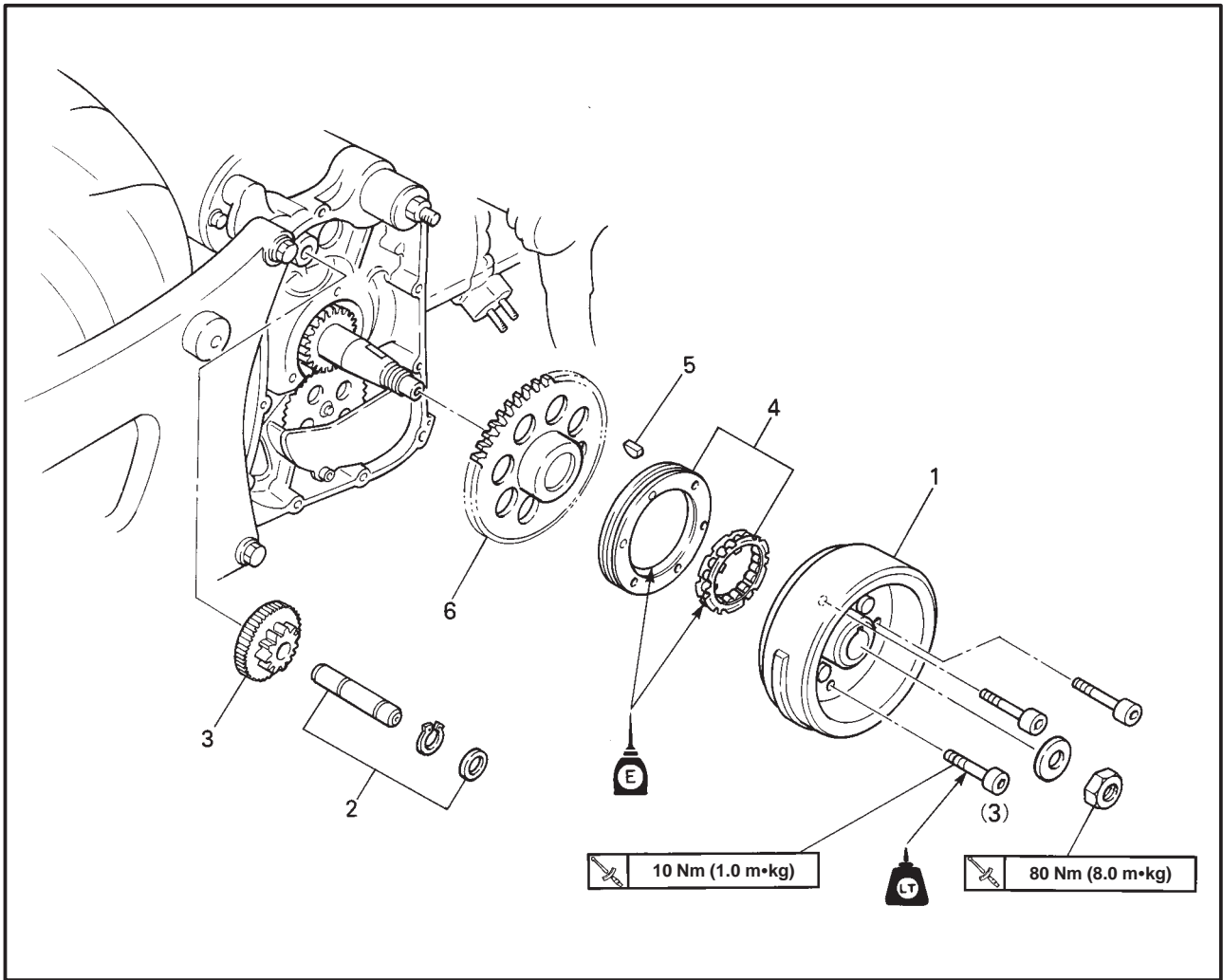
Move the V-belt to minimum diameter of the primary sheave ①, maximum diameter of the secondary sheave ② and make the V-belt tense.

**A.C. MAGNETO AND STARTER CLUTCH**  
MAGNETO COVER AND STARTOR COIL

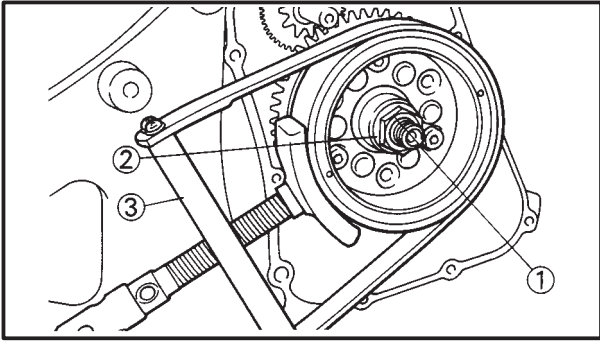


Order	Job name/Part name	Q'ty	Remarks
	<b>Magneto cover and startor coil removal</b> Drain the engine oil. Side panels		Remove the parts in order.  Refer to "ENGINE OIL REPLACEMENT" section in CHAPTER 3. Refer to "COVER AND PANEL" section in CHAPTER 3. <b>NOTE:</b> _____
1	Couplers (A.C. magneto lead)	2	Disconnect the couplers.
2	Exhaust pipe	1	
3	Exhaust pipe gasket	1	
4	Magneto cover	2	
5	Gasket (magneto cover)	1	
6	Dowel pins	2	
7	Startor coil	1	
8	Pick up coil	1	
			Reverse the removal procedure for installation.

A.C. MAGNETO AND STARTER CLUTCH



Order	Job name/Part name	Q'ty	Remarks
	<b>A.C. magneto and starter clutch removal</b>		Remove the parts in order.
1	Rotor	1	Refer to "A.C. MAGNETO ROTOR REMOVAL/INSTALLATION" section.
2	Shaft (idle gear)	1	
3	Idler gear	1	
4	Starter one way clutch assembly	1	
5	Woodruff key	1	
6	Starter wheel gear	1	
			Refer to "ROTOR INSTALLATION" section.
			Reverse the removal procedure for installation.



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## A.C. MAGNETO ROTOR REMOVAL

1. Remove:

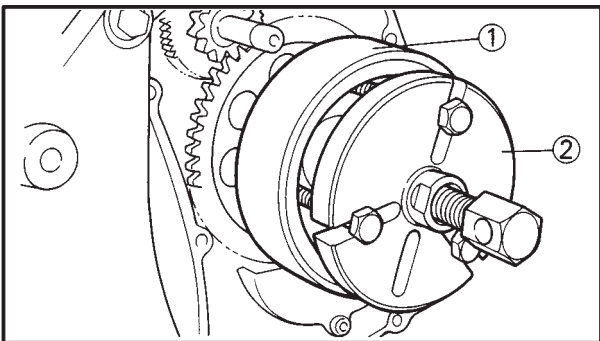
- Nut ① (rotor)
- Plain washer ②

**NOTE:** \_\_\_\_\_

- Loosen the nut (rotor) ① while holding the rotor with a sheave holder ③.
- Do not allow the sheave holder to touch the projection on the rotor.



**Sheave holder:**  
90890-01701



2. Remove:

- Rotor ①
- Woodruff key

**NOTE:** \_\_\_\_\_

- Remove the rotor ② using the flywheel puller.
- Center the flywheel puller over the rotor. Make sure after installing the holding bolts that the clearance between the flywheel puller and the rotor is the same everywhere. If necessary, one holding bolt maybe turned out slightly to adjust the flywheel puller's position.

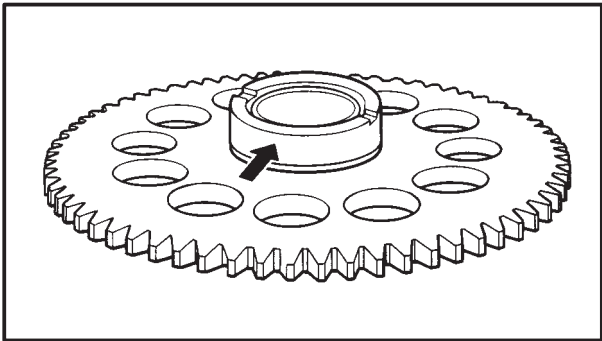
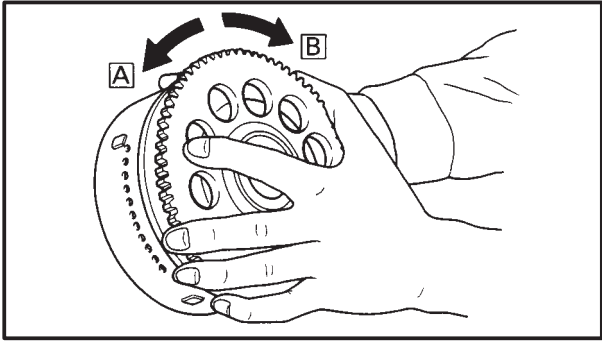
**CAUTION:** \_\_\_\_\_

Cover the crankshaft end with the box wrench for protection.



**Flywheel puller:**  
90890-01362





YP402163

**STARTER DRIVE GEAR INSPECTION**

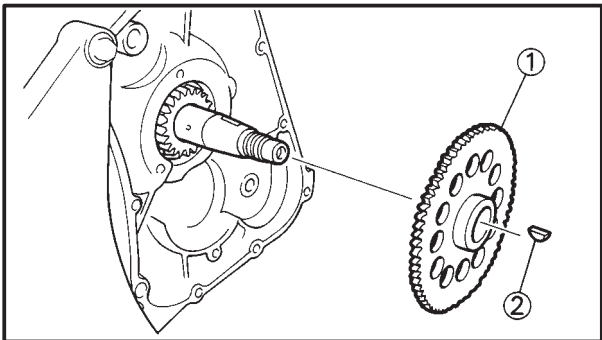
1. Inspect:
  - Starter idle gear teeth
  - Starter drive gear teeth
  - Starter wheel gear teeth
 Burrs/chips/roughness/wear → Replace.
2. Check:
  - Starter clutch operation
 Push the dowel pins to the arrow direction.  
 Unsmooth operation → Replace.

\*\*\*\*\*

**Checking steps:**

- Hold the starter clutch.
- When turning the starter wheel gear clockwise [A], the starter clutch and the starter wheel gear should be engaged.
- If not, the starter clutch is faulty. Replace it.
- When turning the starter wheel gear counter-clockwise, [B], it should turn freely.
- If not, the starter clutch is faulty. Replace it.

\*\*\*\*\*

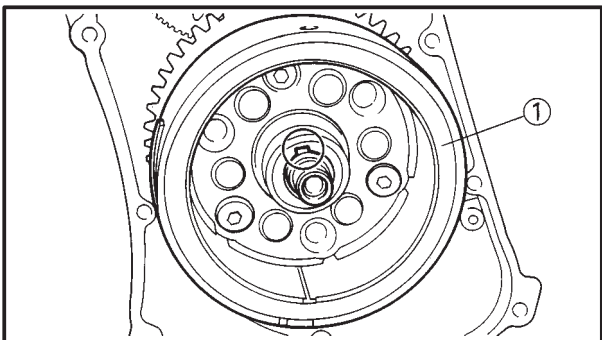


YP404131

**A.C. MAGNETO ROTOR INSTALLATION**

1. Install:
  - Starter wheel gear ①
  - Woodruff key ②

**NOTE:** \_\_\_\_\_  
 Install the starter wheel gear ①, then install the woodruff key ②.



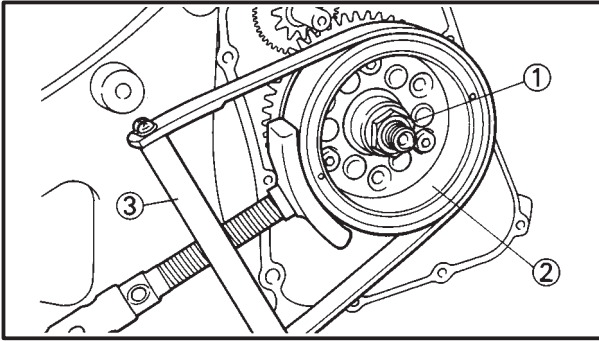
2. Install:
  - Plain washer
  - Rotor ①

**NOTE:** \_\_\_\_\_  
 • Clean the tapered portion of the crankshaft and the rotor hub.  
 • When installing the magneto rotor, make sure the woodruff key is properly seated in the key way of the crankshaft.



## A.C. MAGNETO AND STARTER CLUTCH

ENG



3. Tighten:

- Nut (rotor) ①  80 Nm (8.0 m•kg)

**NOTE:**

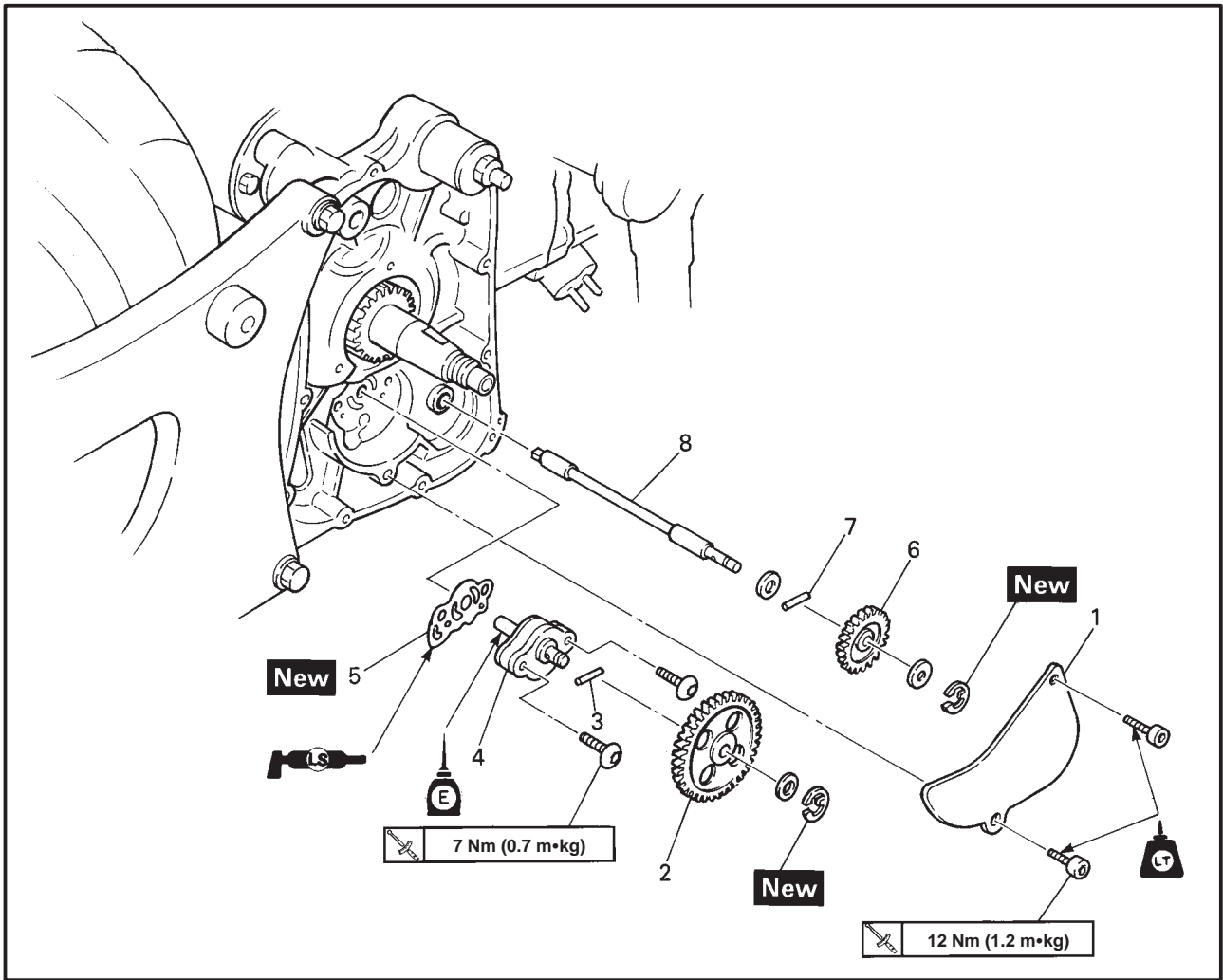
Tighten the nut (rotor) ① while holding the magneto rotor ② with a sheave holder ③.



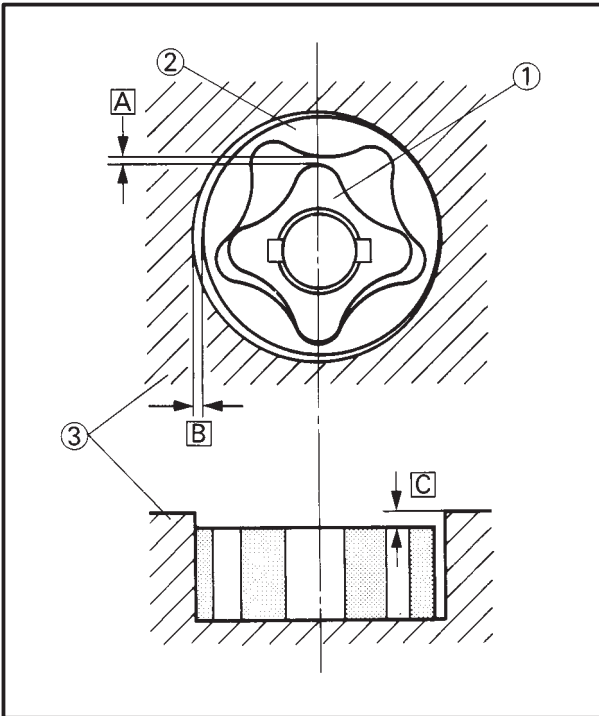
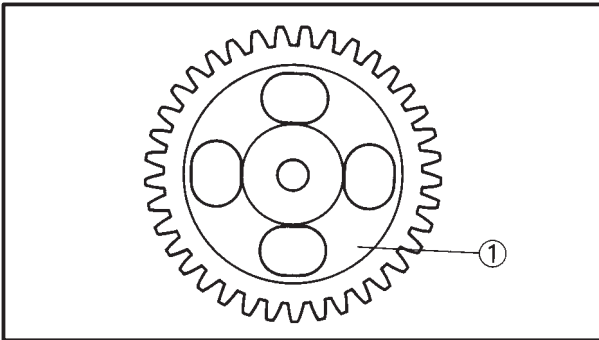
**Sheave holder:**  
90890-01701



OIL PUMP



Order	Job name/Part name	Q'ty	Remarks
	<b>Oil pump removal</b> A.C. magneto		Remove the parts in order. Refer to the "A.C. MAGNETO AND STARTER CLUTCH" section.
1	Cover	1	
2	Pump driven gear	1	
3	Dowel pin	1	
4	Oil pump assembly	1	
5	Gasket	1	
6	Impeller shaft gear	1	
7	Dowel pin	1	
8	Shaft	1	
			Reverse the removal procedure for installation.



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**OIL PUMP INSPECTION**

## 1. Inspect:

- Drive gear (oil pump)
  - Driven gear (oil pump) ①
  - Pump housing
  - Pump housing cover
- Wear/cracks/damage → Replace

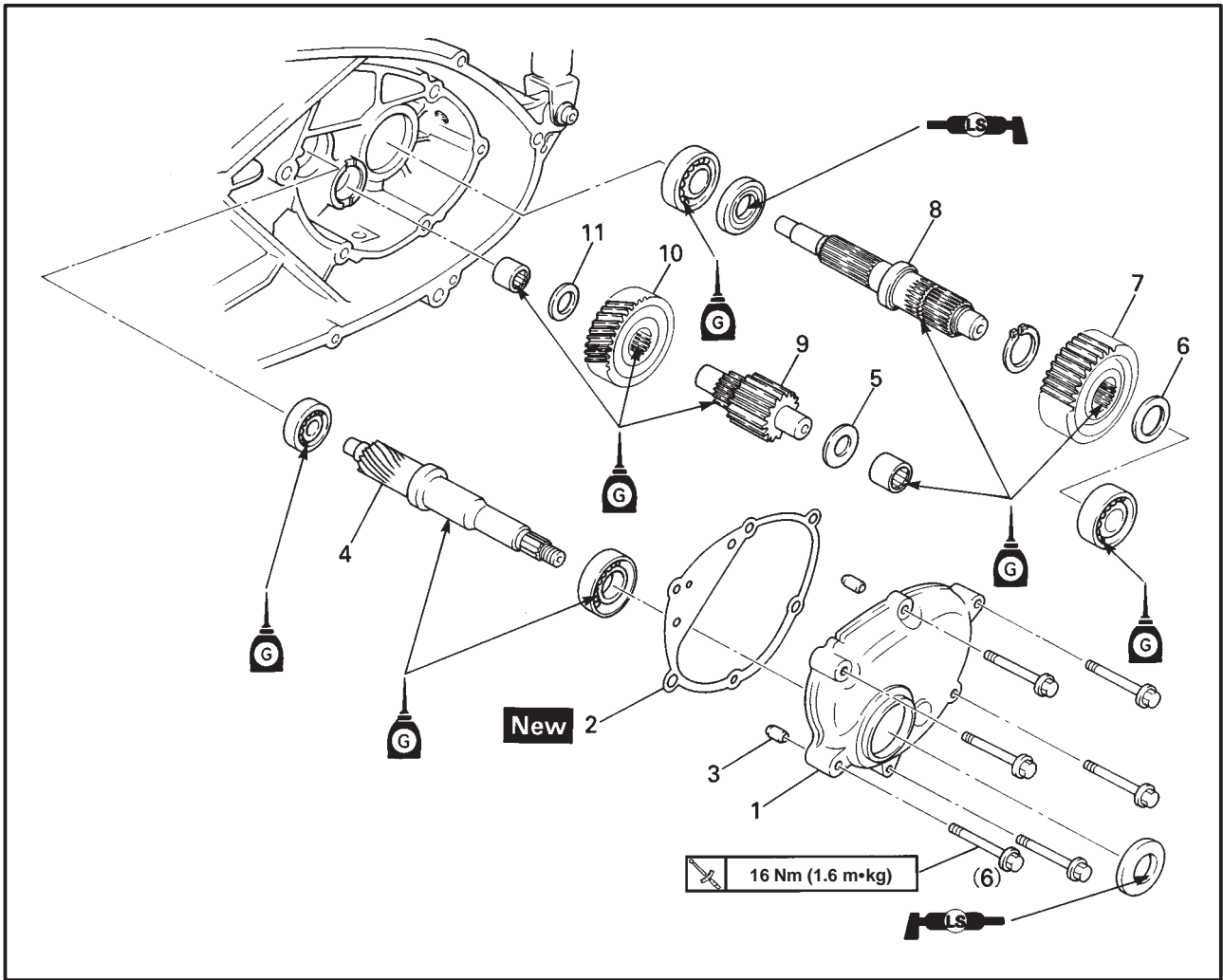
## 2. Measure:

- Tip clearance **A**  
(between the inner rotor ① and the outer rotor ②)
- Side clearance **B**  
(between the outer rotor ② and the pump housing ③)  
Out of specification → Replace the oil pump assembly.
- Housing and rotor clearance **C**  
(between the pump housing ③ and the rotors ① ②)  
Out of specification → Replace the oil pump assembly.

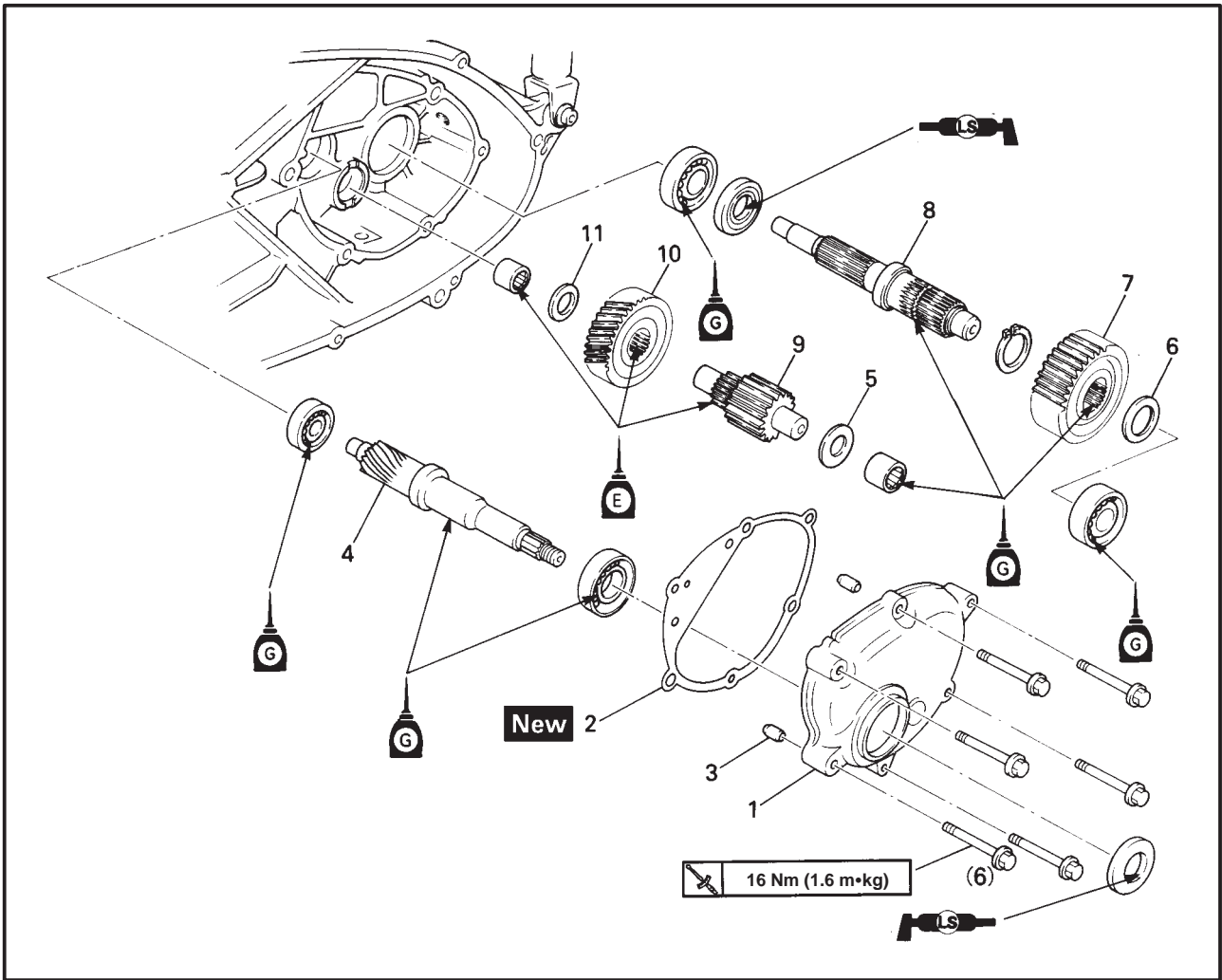
**Tip clearance **A**:****0.10 × 0.34 mm <Limit: 0.40 mm>****Side clearance **B**:****0.013 × 0.036 mm  
<Limit: 0.15 mm>****Housing and rotor clearance **C**:****0.04 × 0.09 mm <Limit: 0.15 mm>**



TRANSMISSION

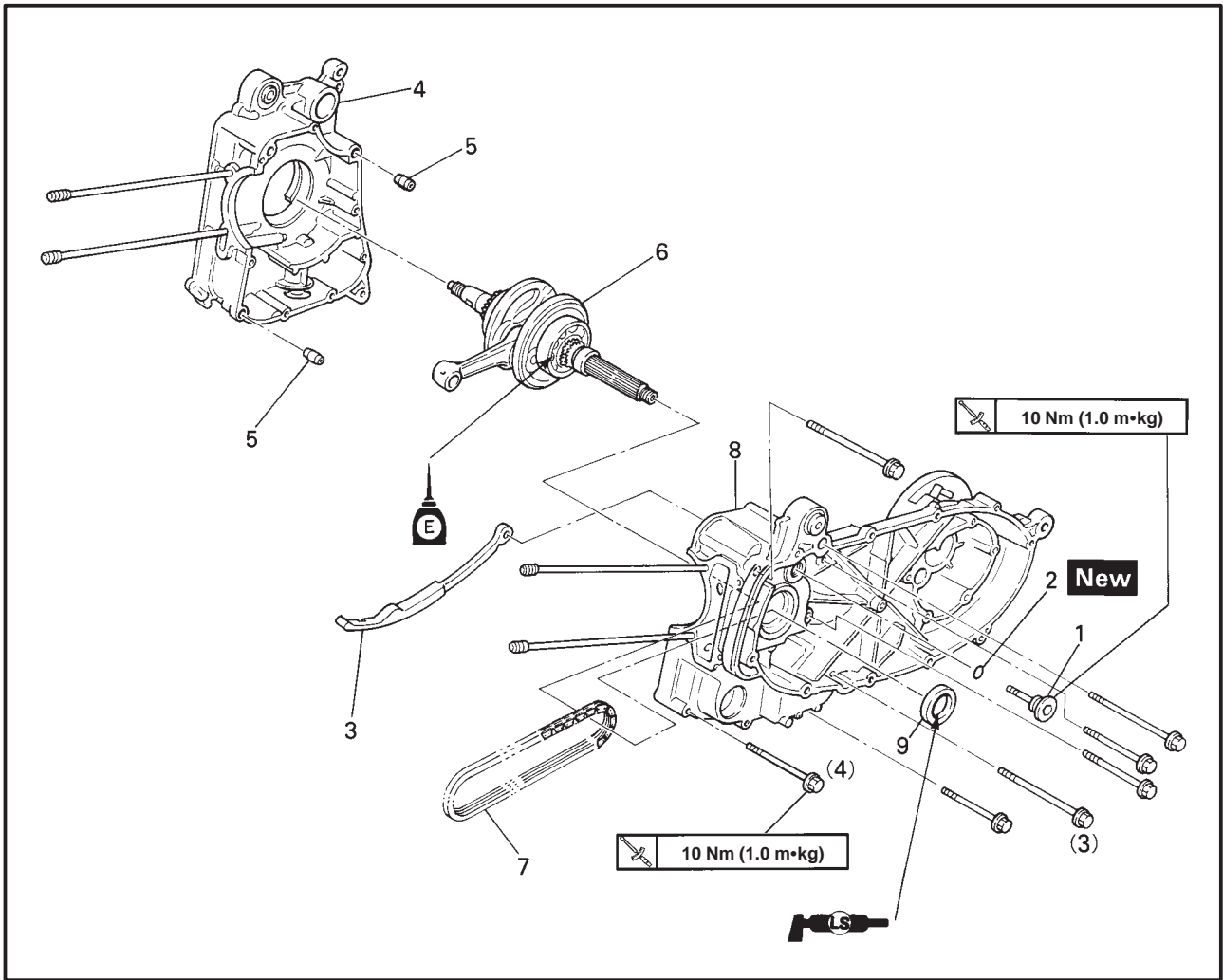


Order	Job name/Part name	Q'ty	Remarks
	<b>Transmission removal</b>		Remove the parts in order.
	Rear wheel		Refer to "REAR WHEEL/REAR BRAKE" section in CHAPTER 7.
	Crankcase cover (left)		Refer to "V-BELT, CLUTCH, SECONDARY/PRIMARY SHEAVE" section.
	Drain the transmission oil.		Refer to "TRANSMISSION OIL REPLACEMENT" section in CHAPTER 3.
1	Transmission case cover	1	
2	Gasket (transmission case cover)	1	
3	Dowel pin	2	
4	Primary drive gear	1	
5	Plain washer	1	
6	Plain washer	1	
7	1st wheel gear	1	

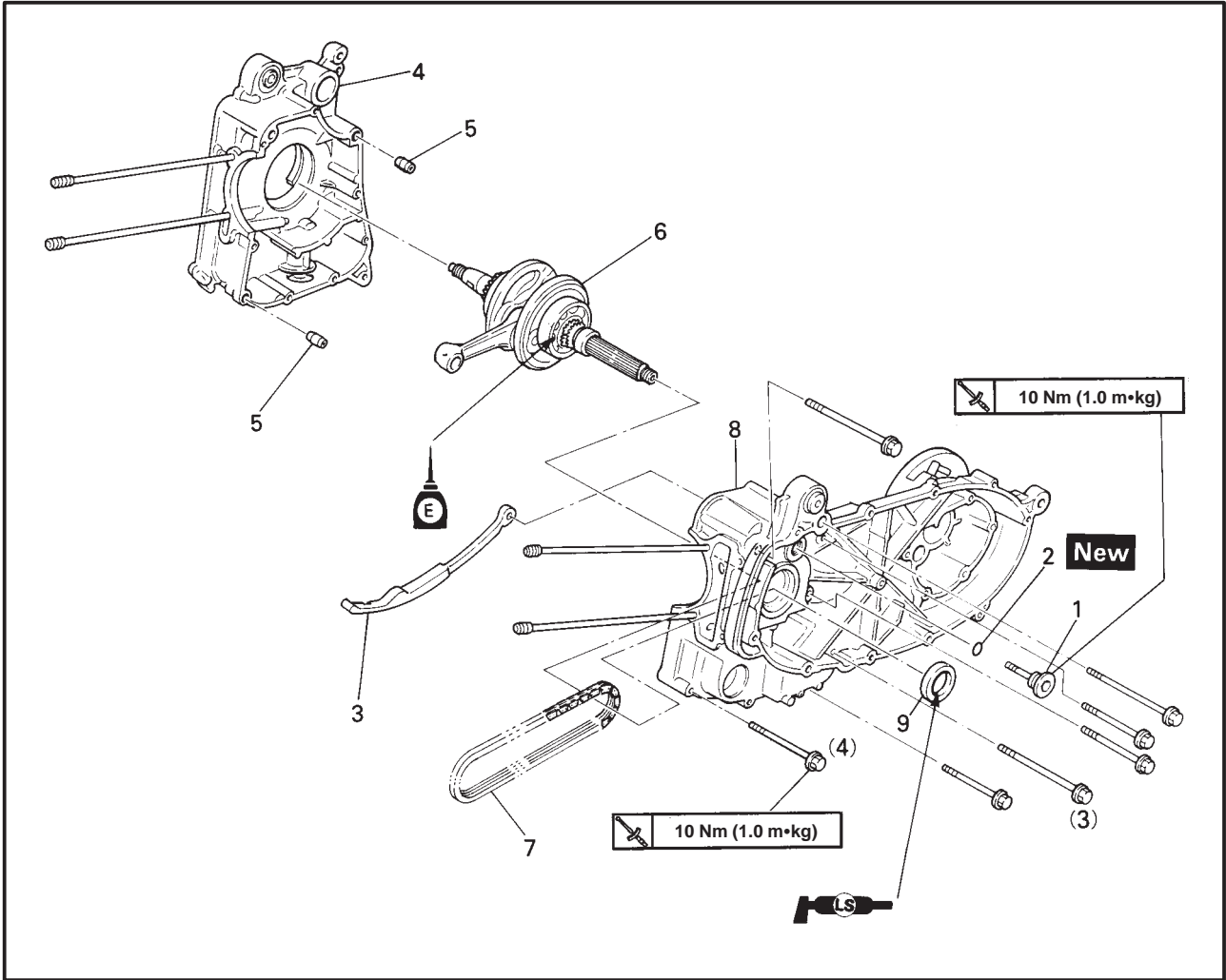


Order	Job name/Part name	Q'ty	Remarks
8	Drive axle	1	Reverse the removal procedure for installation.
9	Main axle	1	
10	Primary driven gear	1	
11	Plain washer	1	

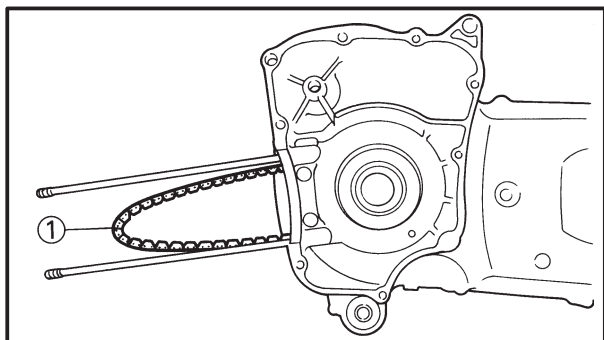
CRANKCASE AND CRANKSHAFT



Order	Job name/Part name	Q'ty	Remarks
	<b>Crankcase and crankshaft removal</b>		Remove the parts in the order.
	Engine removal		Refer to "ENGINE REMOVAL" section.
	Cylinder head		Refer to "CYLINDER HEAD" section.
	Cylinder, piston		Refer to "CYLINDER AND PISTON" section.
	V-belt, clutch, secondary/primary sheave		Refer to "V-BELT, CLUTCH AND SECONDARY/PRIMARY SHEAVE" section.
	A.C. magneto, starter clutch		Refer to "A.C. MAGNETO AND STARTER CLUTCH" section.
	Oil pump		Refer to "OIL PUMP" section.
	Water pump		Refer to "WATER PUMP" section in CHAPTER 5.
	Rear wheel		Refer to "REAR WHEEL AND REAR BRAKE" section in CHAPTER 7.
1	Bolt	1	
2	O-ring	1	



Order	Job name/Part name	Q'ty	Remarks
3	Timing chain guide (intake)	1	Refer to "CRANKSHAFT INSTALLATION" section.
4	Crankcase (right)	1	
5	Dowel pin	2	Refer to "CRANKSHAFT REMOVAL/ INSTALLATION" section.
6	Crankshaft assembly	1	
7	Timing chain	1	
8	Crankcase (left)	1	Reverse the removal procedure for installation.
9	Oil seal	1	



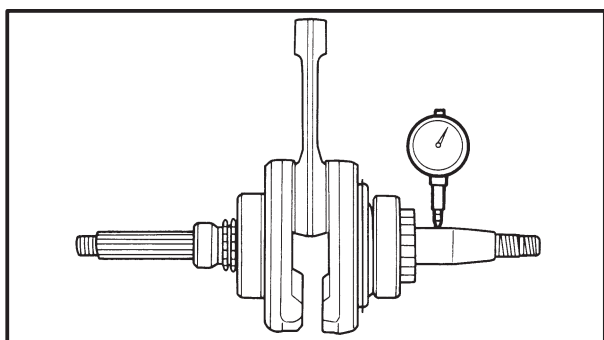
YP\*\*\*\*\*

## CRANKSHAFT REMOVAL

- Remove:
  - Crankshaft assembly
  - Timing chain ①

### NOTE:

- Before removing the crankshaft assembly, remove the timing chain from the crank shaft sprocket.
- If the timing chain hooks to the crankshaft sprocket, the crankshaft cannot be removed.



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## CRANKSHAFT INSPECTION

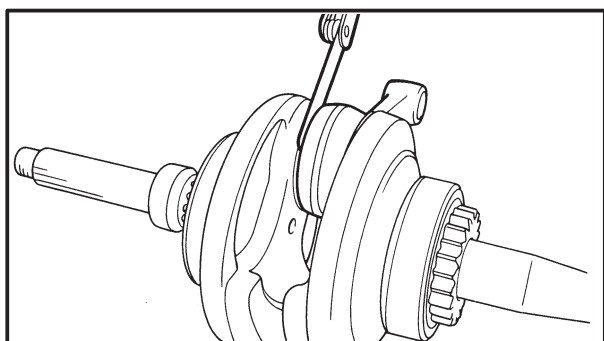
- Measure:
  - Crankshaft runout
  - Out of specification → Replace crankshaft and/or bearing.

### NOTE:

Measure the crankshaft runout with the crankshaft assembly turning slowly.



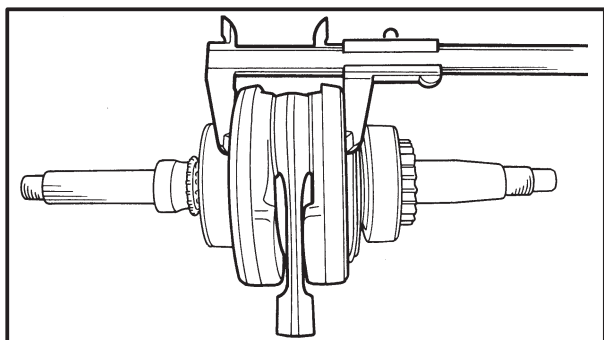
**Runout limit:**  
**0.03 mm**



- Measure:
  - Big end side clearance
  - Out of specification → Replace big end bearing, crank pin and/or connecting rod.



**Big end side clearance:**  
**0.35 × 0.85 mm**

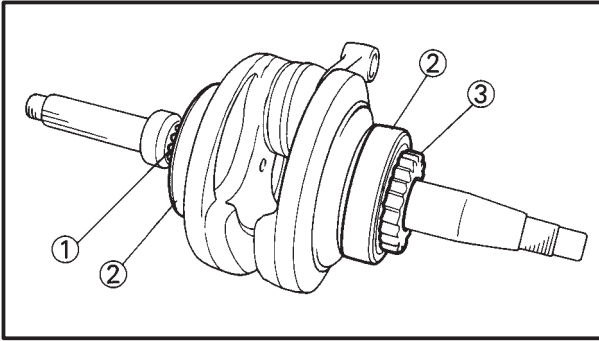


- Measure:
  - Crank width
  - Out of specification → Replace crankshaft.

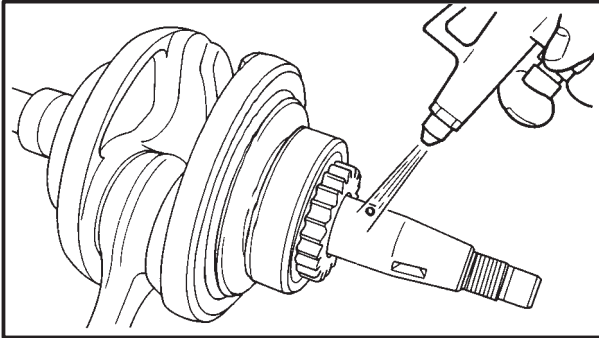


**Crank width:**  
**59.95 × 60.00 mm**





4. Inspect:
- Crankshaft sprocket ①  
Wear/Damage → Replace crankshaft.
  - Bearing ②  
Wear/Crack/Damage → Replace crankshaft.
  - Pump drive gear ③  
Wear/Damage → Replace crankshaft.



5. Inspect:
- Crankshaft journal  
Clogged → Blow out the journal with compressed air.

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## CRANKCASE INSTALLATION

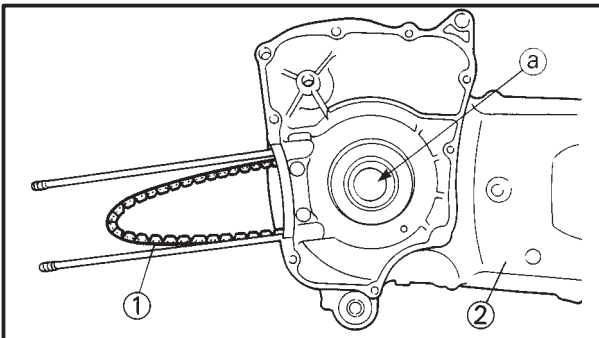
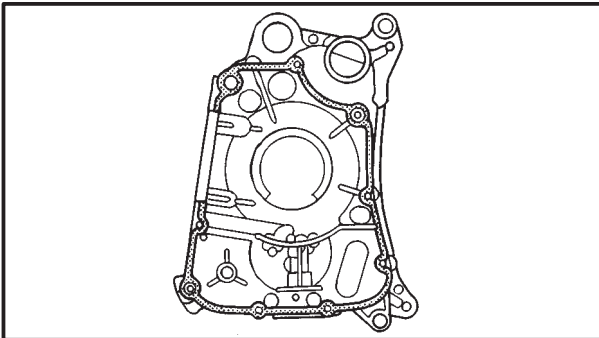
1. Clean all the gasket mating surface and crankcase mating surface thoroughly.
2. Apply:
  - Sealant  
(onto the crankcase mating surfaces)



**Yamaha bond No. 1215**

**NOTE:**

DO NOT ALLOW any sealant to come in contact with the oil gallery.



3. Install:
- Dowel pins
  - Timing chain ①

**NOTE:**

Install the timing chain not to be seen through the the crankshaft hole (a) on the crankcase (left) ②.

ENG



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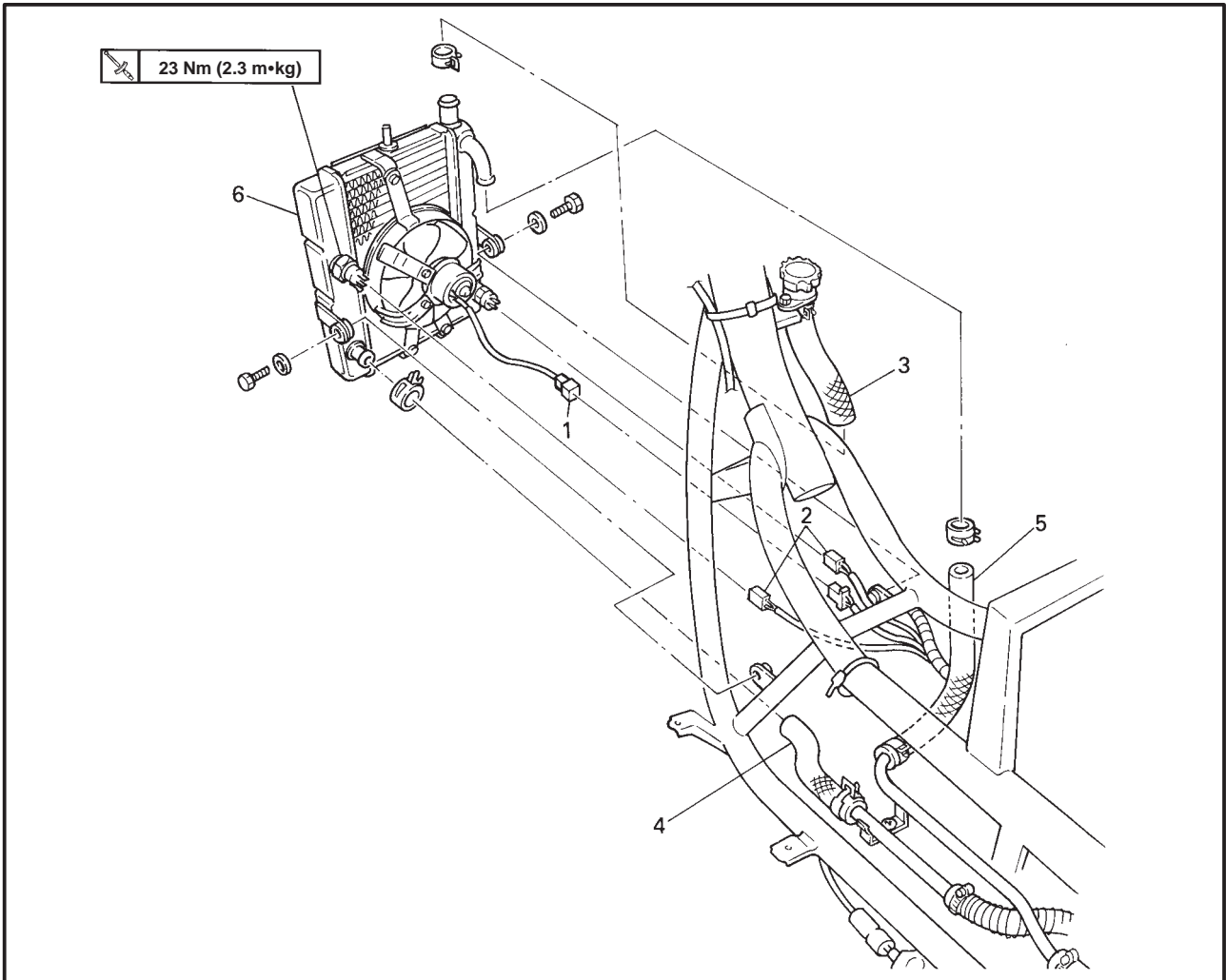
**CHAPTER 5.  
COOLING SYSTEM**

<b>RADIATOR</b> .....	5-1
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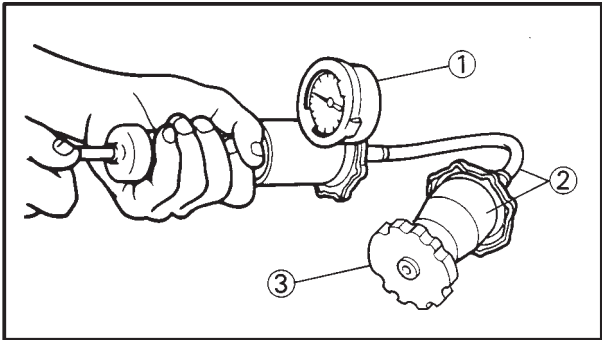
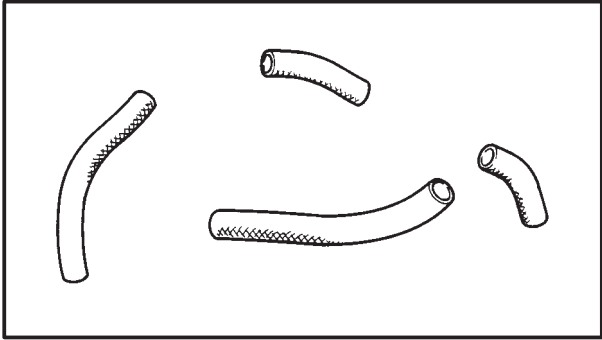
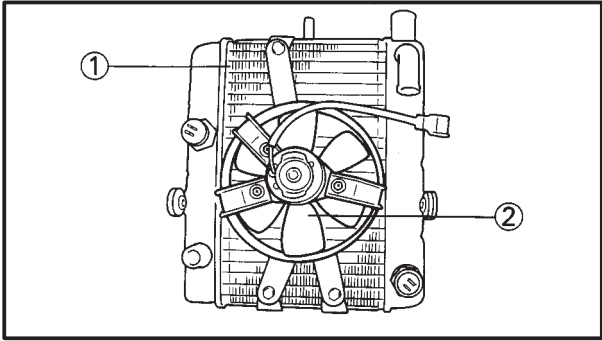
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YP500000

**COOLING SYSTEM  
RADIATOR**



Order	Job name/Part name	Q'ty	Remarks
	<b>Radiator removal</b>		Remove the parts in order.
	Drain the coolant.		Refer to "COOLANT REPLACEMENT" section in CHAPTER 3.
	Fuel tank		Refer to "COVER AND PANEL" section in CHAPTER 3.
	Footrest board, under cover		
	Cowling body, leg shield		
1	Fan motor leads	1	
2	Thermo switch leads	2	
3	Filler hose (radiator)	1	
4	Outlet hose (radiator)	1	
5	Inlet hose (radiator)	1	
6	Radiator	1	Reverse the removal procedure for installation.



YP500030

## INSPECTION

### 1. Inspect:

- Radiator ①  
Obstruction → Blow out with compressed air through the rear of the radiator.  
Flattened fins → Repair or replace.  
If flattened over the 20 % of radiator fin, repair or replace the radiator.

### CAUTION:

Use only specified adhesive to repair the radiator.

### 2. Inspect:

- Radiator hoses
- Radiator pipes  
Cracks/damage → Replace.

### 3. Measure:

- Radiator cap opening pressure
- Radiator cap opens at a pressure below the specified pressure → Replace.



**Radiator cap opening pressure:**

**110 × 140 kPa**

**(1.1 × 1.4 kg/cm<sup>2</sup>, 1.1 × 1.4 bar)**

\*\*\*\*\*

### Measurement steps:

- Attach the radiator cap tester ① and adapter ② to the radiator cap ③.



**Radiator cap tester:**

**90890-01325**

**Adapter:**

**90890-01352**

- Apply the specified pressure for 10 seconds, and make sure there is no pressure drop.

\*\*\*\*\*

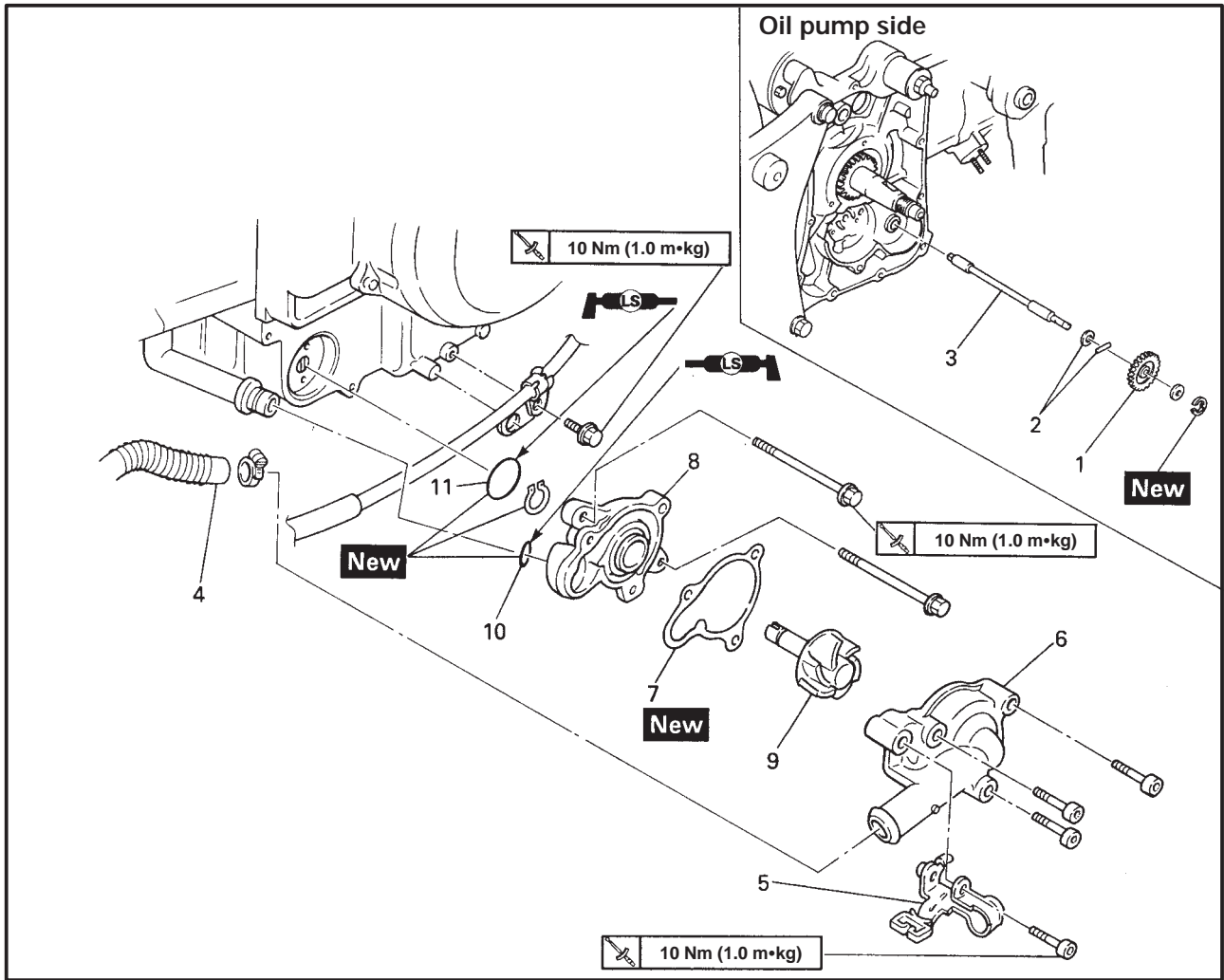
### 4. Inspect:

- Fan motor assembly  
Damage → Replace.  
Malfunction → Check and repair.  
Refer to “COOLING SYSTEM” in CHAPTER 8.

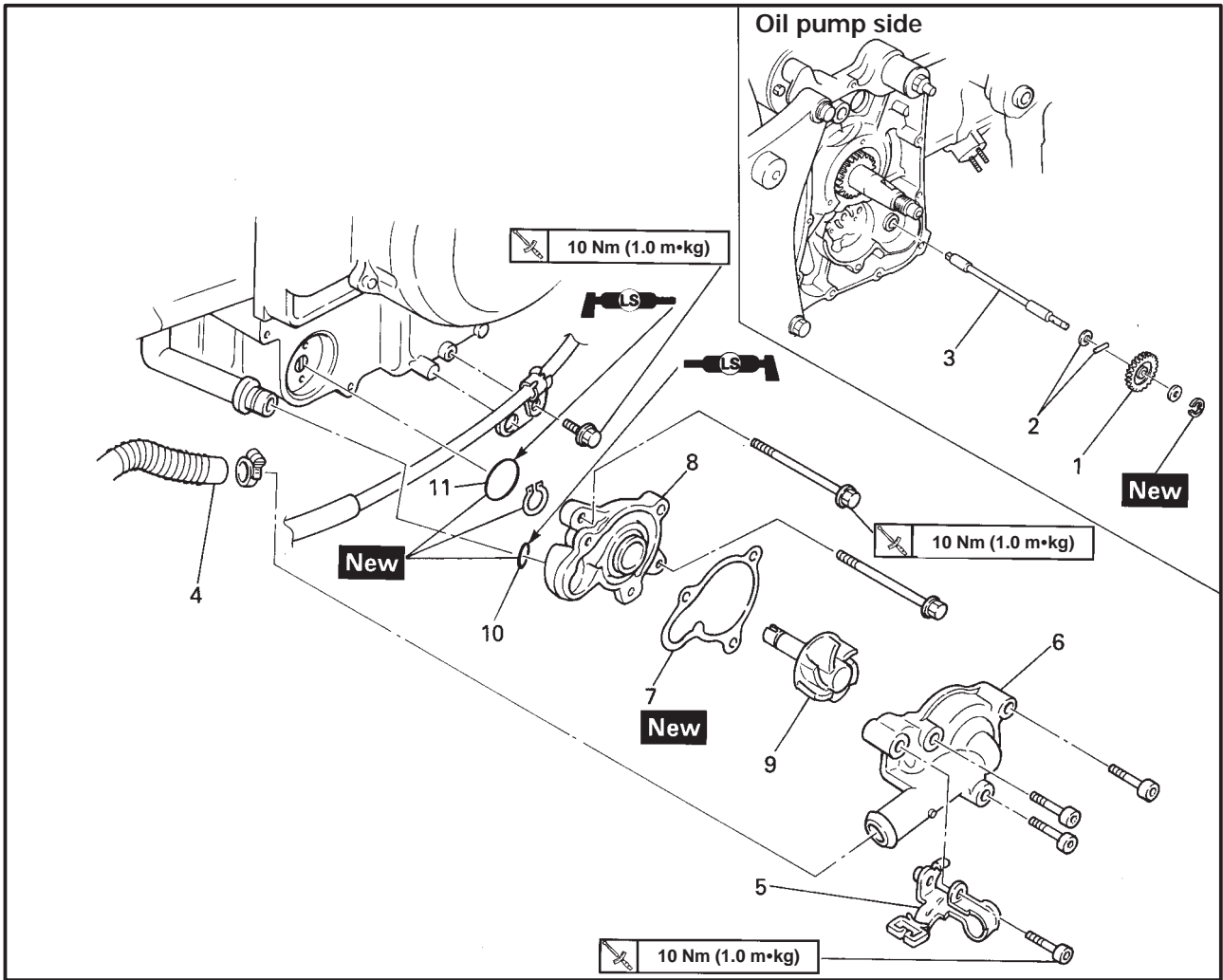
### 5. Inspect:

- Pipes  
Cracks/damage → Replace.

WATER PUMP



Order	Job name/Part name	Q'ty	Remarks
	<b>Water pump removal</b> Drain the coolant.		Remove the parts in order. Refer to "COOLANT REPLACEMENT" section in CHAPTER 3.
	A.C. magneto		Refer to "A.C. MAGNETO AND STARTER CLUTCH" section in CHAPTER 4.
1	Impeller shaft gear	1	
2	Dowel pin/plain washer	1/1	
3	Shaft	1	Refer to "WATER PUMP INSTALLATION" section.
4	Inlet hose (water pump)	1	
5	Holder	1	
6	Housing cover	1	
7	Housing cover gasket	1	
8	Water pump housing	1	



Order	Job name/Part name	Q'ty	Remarks
9	Impeller shaft	1	Refer to "WATER PUMP INSTALLATION" section.
10	O-ring	1	
11	O-ring	1	
			Reverse the removal procedure for installation.

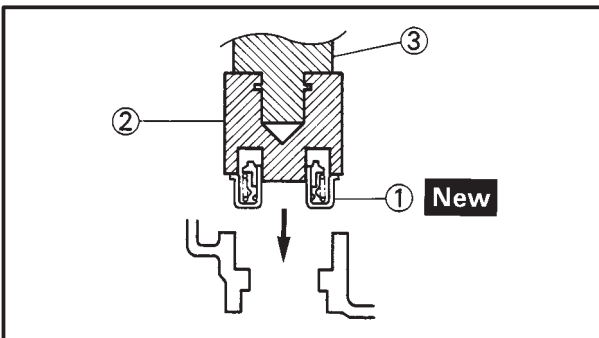
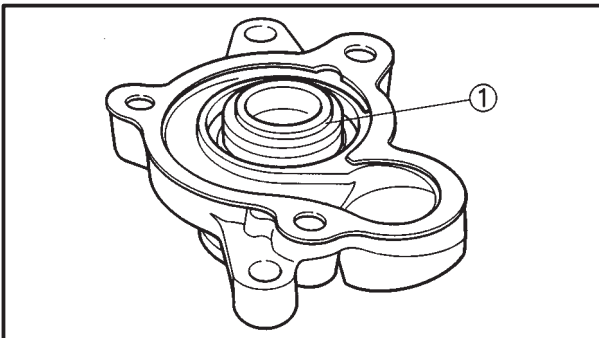
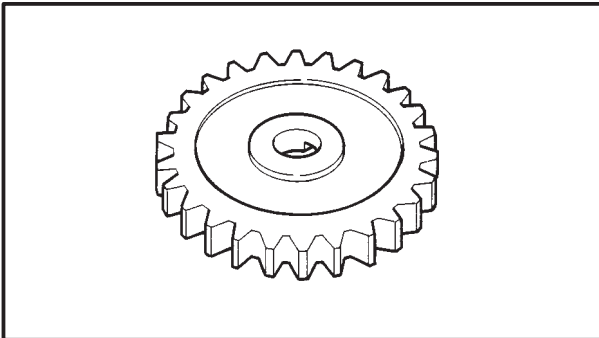
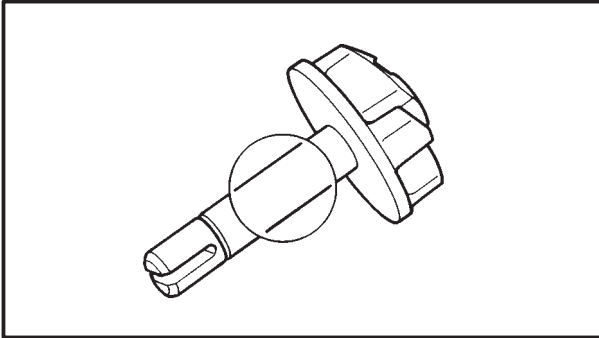




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**NOTE:**

- It is not necessary to disassemble the water pump, unless there is no abnormality such as excessive change in coolant temperature and/or level, discoloration of coolant, or milky transmission oil.
- If necessary, replace water pump as an assembly.



yp\*\*\*\*\*

**INSPECTION**

1. Inspect:

- Impeller shaft
  - Wear/damage → Replace.
  - Fur deposits → Clean.

2. Inspect:

- Impeller shaft gear
  - Wear/damage → Replace.

3. Inspect:

- Mechanical seal ①
  - Damage/worn/wear → Replace.

yp\*\*\*\*\*

**WATER PUMP INSTALLATION**

1. Install:

- Mechanical seal ① **New**

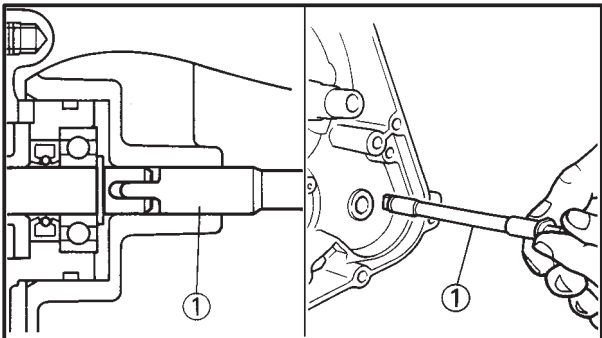
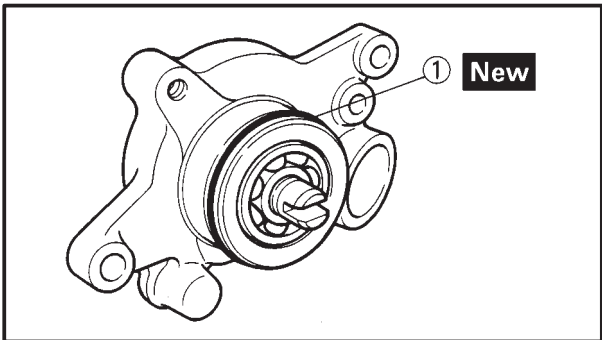
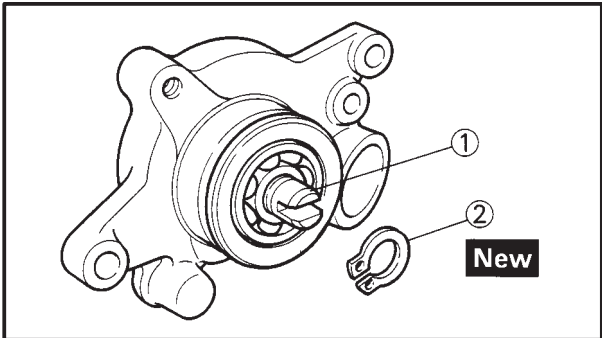
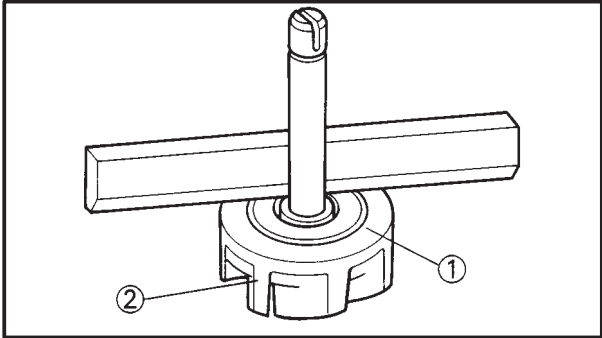
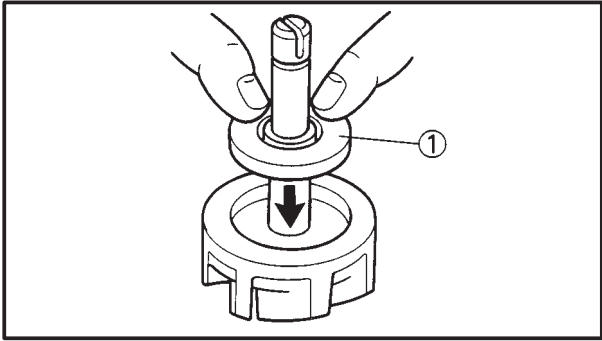
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**Installation steps:**

- Apply the Yamaha bond 1215 to the outside of the mechanical seal.
- Install the mechanical seal by using the mechanical seal installer ② and middle shaft bearing driver ③.

\*\*\*\*\*

	<b>Mechanical seal installer:</b>
	<b>90890-04078</b>
	<b>Middle shaft bearing driver:</b>
	<b>90890-04058</b>



2. Install:

- Mechanical seal ① **New**  
Apply coolant to the outside of the mechanical seal before installing.

**NOTE:** \_\_\_\_\_  
Do not smear any oils grease on to the ring side of the mechanical seal.

3. Inspect:

- Mechanical seal, slip ring side ①  
Inspect the slip ring side of the mechanical seal and the impeller ② for level installation.  
Incorrect level → Reinstall.

4. Install:

- Impeller shaft ①
- Circlip ② **New**

\*\*\*\*\*

**Installation steps:**

- Apply a small amount of grease to the impeller shaft tip.
- Install the impeller shaft while turning it.  
Use care so that the oil seal lip is not damaged or the spring does not slip off its position.

**NOTE:** \_\_\_\_\_  
After installing the impeller shaft, check it for smooth rotation.

\*\*\*\*\*

5. Install:

- O-ring ① **New**

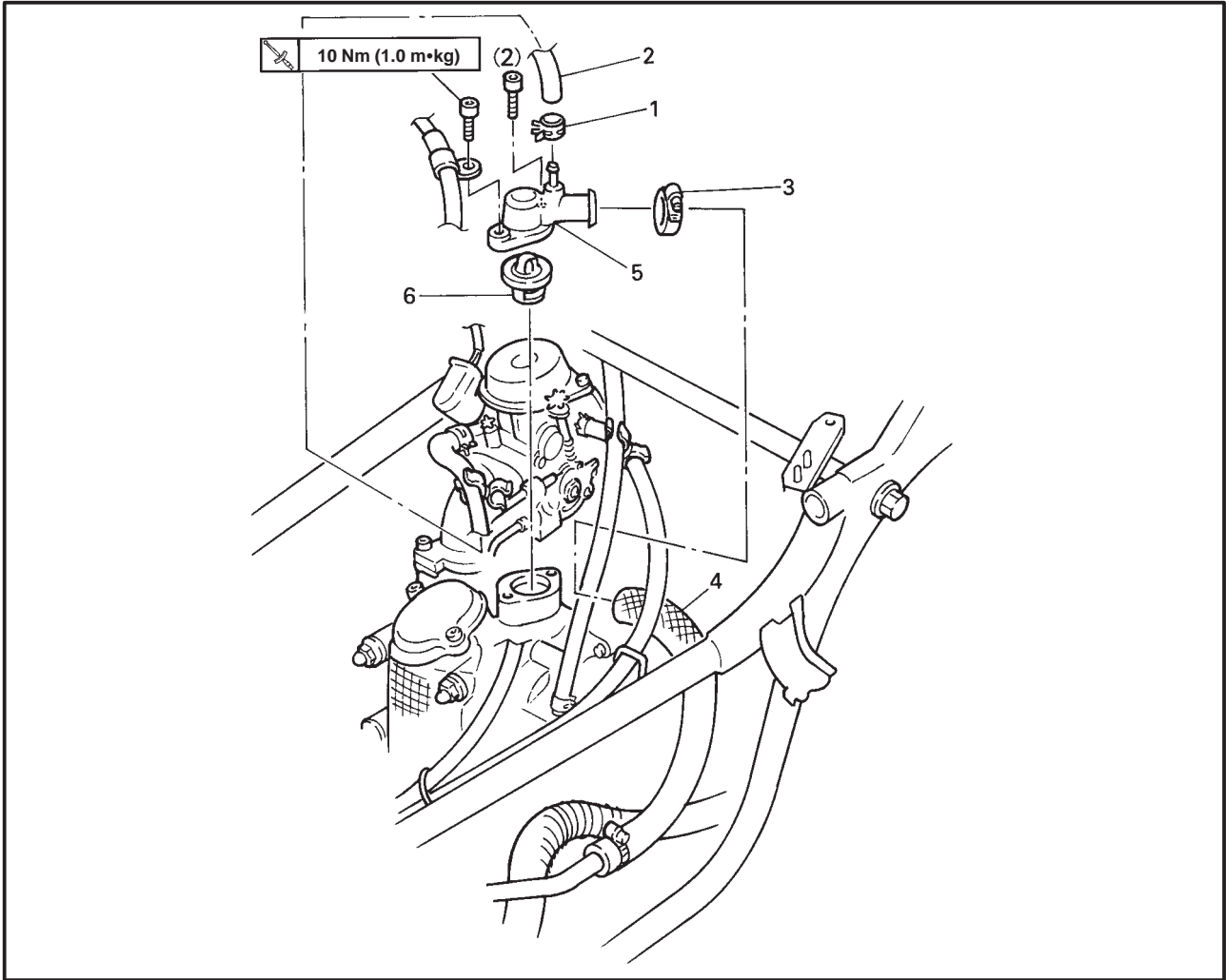
6. Install:

- Water pump housing
- Housing cover  10 Nm (1.0 m•kg)

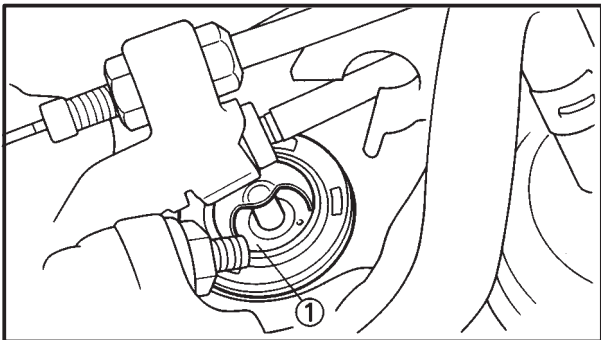
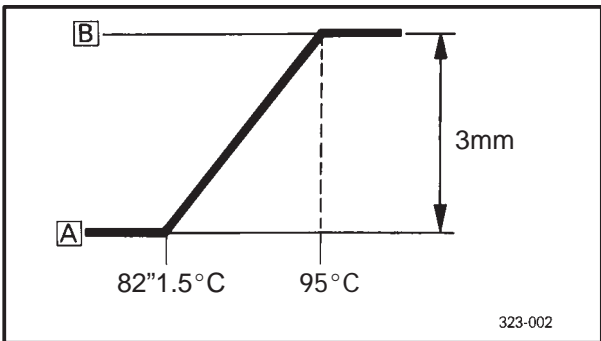
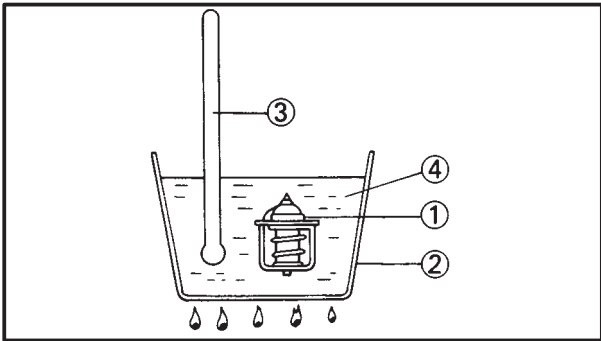
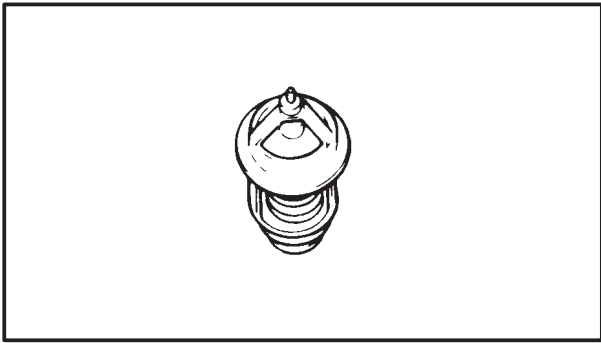
7. Install:

- Shaft ①  
Align the slot on the impeller shaft with the projection on the shaft when installing.

THERMOSTAT



Order	Job name/Part name	Q'ty	Remarks
	<b>Thermostat removal</b>		Remove the parts in order.
	Drain the coolant		Refer to "COOLANT REPLACEMENT" section in CHAPTER 3.
	Side panel		Refer to "COVER AND PANEL" section in CHAPTER 3.
	Fuel tank		
1	Clip	1	
2	Outlet hose (carburetor)	1	
3	Hose clamp	1	
4	Outlet hose (thermostat)	1	
5	Thermostatic cover	1	Refer to "THERMOSTAT INSTALLATION" section.
6	Thermostatic valve	1	
			Reverse the removal procedure for installation.



EB502010

**INSPECTION**

1. Inspect:
  - Thermostatic valve  
Valve does not open at 80.5 × 83.5°C → Replace.

\*\*\*\*\*

**Inspection steps:**

- Suspend the thermostatic valve in a vessel.
- Place a reliable thermometer in water.
- Observe the thermometer, while continually stirring the water.

\*\*\*\*\*

- ① Thermostatic valve
- ② Vessel
- ③ Thermometer
- ④ Water
- A CLOSE
- B OPEN

**NOTE:**

The thermostatic valve is sealed and its setting requires specialized work. If its accuracy is in doubt, replace it. A faulty unit could cause serious overheating or over-cooling.

2. Inspect:
  - Thermostatic cover  
Cracks/damage → Replace.

YP\*\*\*\*\*

**INSTALLATION**

1. Install:
  - Thermostatic valve ①
  - Thermostatic cover

---

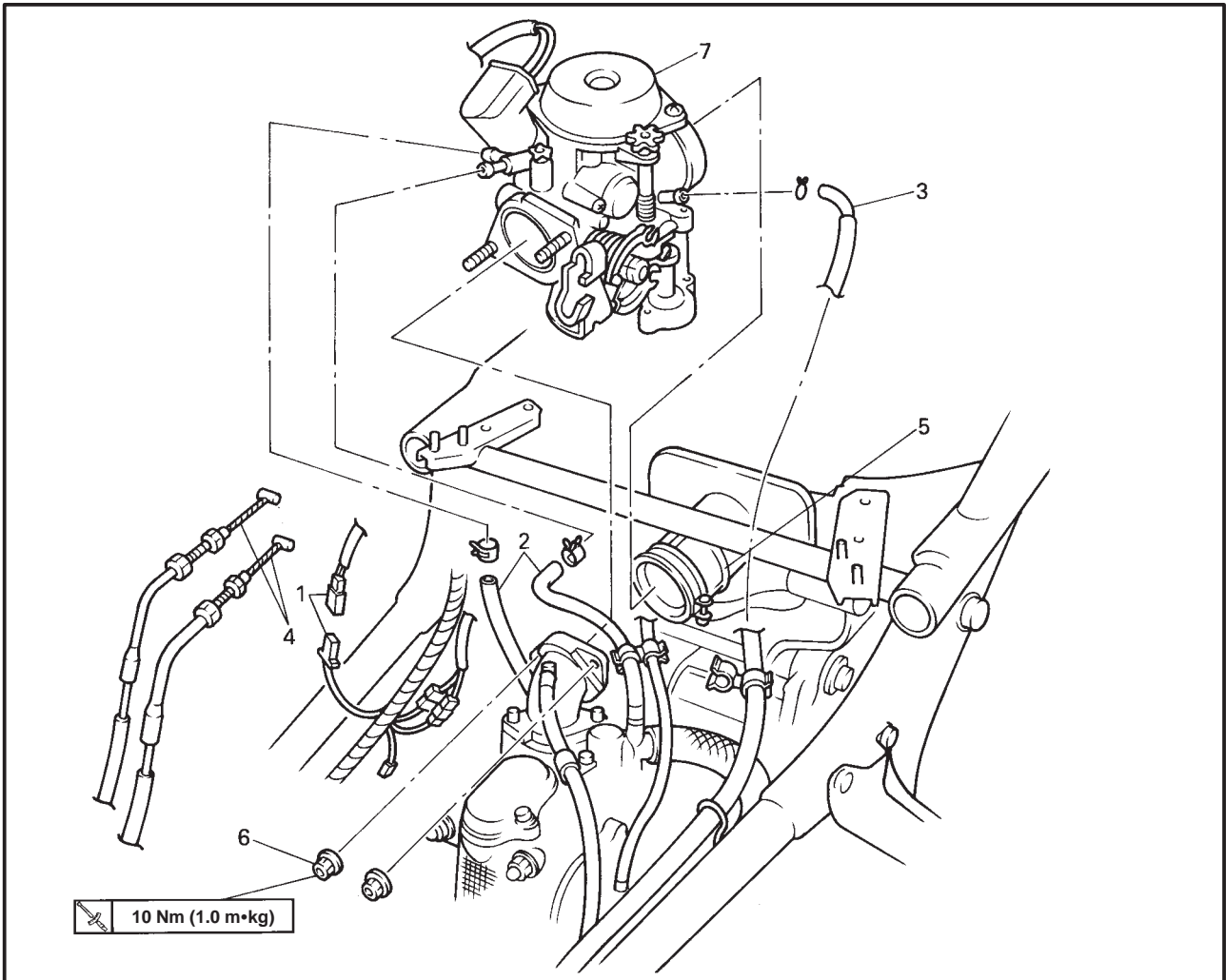
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CARBURETION**

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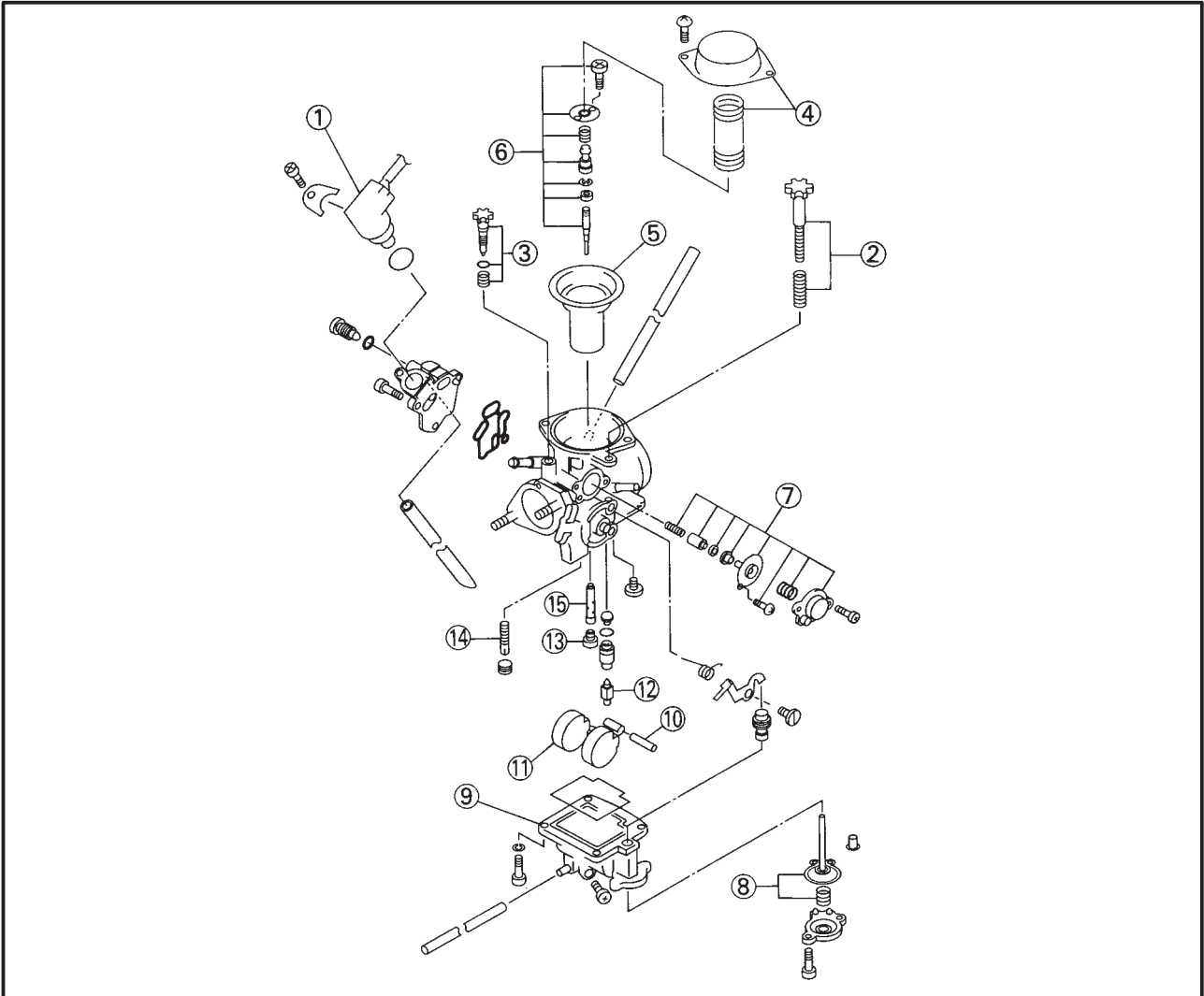
**CARBURETION**  
**CARBURETOR** 



Order	Job name/Part name	Q'ty	Remarks
	<b>Carburetor removal</b>		Remove the parts in order.
	Side panel		Refer to "COVER AND PANEL" section in CHAPTER 3.
	Fuel tank		Refer to "COOLANT REPLACEMENT" section in CHAPTER 3.
	Drain the coolant		
1	Auto choke lead coupler	1	<p><b>CAUTION:</b> _____</p> <p><b>Do not bend the air filter joint clamp when installing the carburetor.</b></p> <p>_____</p> <p>Reverse the removal procedure for installation.</p>
2	Inlet/Outlet hose (carburetor)	1/1	
3	Fuel hose	1	
4	Throttle cable	2	
5	Air filter joint	1	
6	Nut	2	
7	Carburetor ass'y	1	

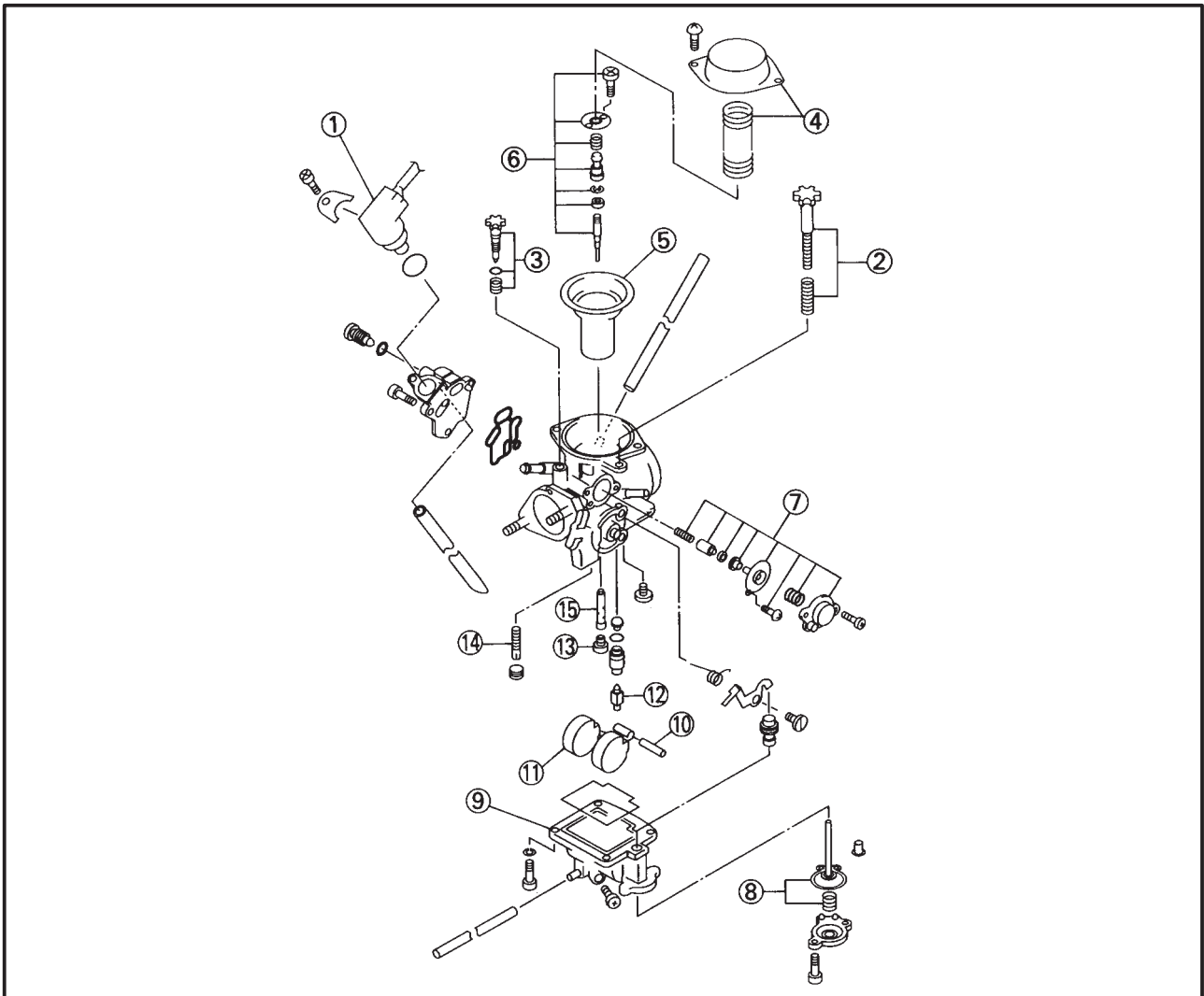


CARBURETOR DISASSEMBLY



Order	Job name/Part name	Q'ty	Remarks
	<b>Carburetor disassembly</b>		Disassemble the parts in order.
①	Auto choke unit	1	
②	Throttle stop screw set	1	
③	Pilot screw set	1	
④	Cover/Diaphragm spring	1/1	
⑤	Piston valve	1	
⑥	Jet needle ass'y	1	
⑦	Coasting enricher	1	
⑧	Accerating pump	1	Refer to "CARBURETOR ASSEMBLY" section.
⑨	Float chamber	1	
⑩	Float pin	1	Refer to "CARBURETOR ASSEMBLY" section.





Order	Job name/Part name	Q'ty	Remarks
⑪	Float	1	Refer to "CARBURETOR ASSEMBLY" section.
⑫	Needle valve	1	
⑬	Main jet	1	
⑭	Pilot jet	1	
⑮	Main nozzle	1	
			Reverse the disassembly procedure for assembly.



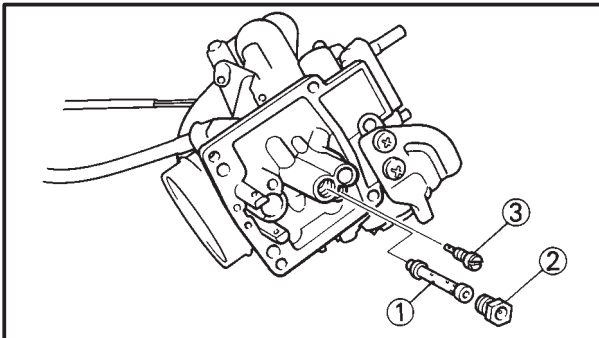
YP600041

**ASSEMBLY**

Reverse the "DISASSEMBLY" procedure.  
Note the following points.

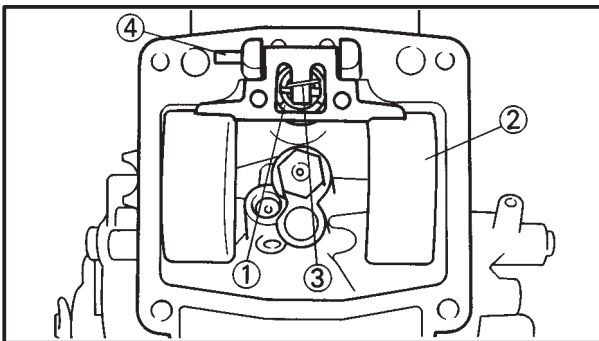
**CAUTION:** \_\_\_\_\_

- Before assembling, wash all parts in clean petroleum based solvent.
- Always use a new gasket.



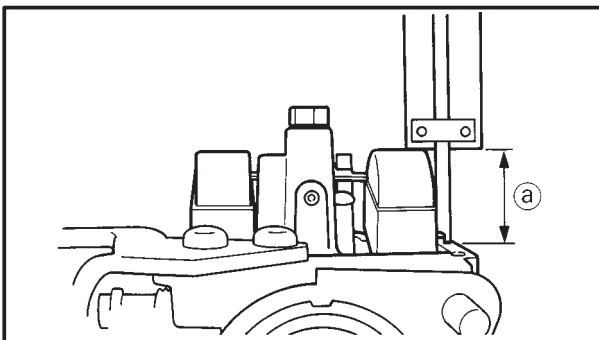
1. Install:

- Main nozzle ①
- Main jet ②
- Pilot jet ③



2. Install:

- Valve seat ①
- Float ②
- Needle valve ③
- Float pin ④



3. Inspect:

- Float height (a)

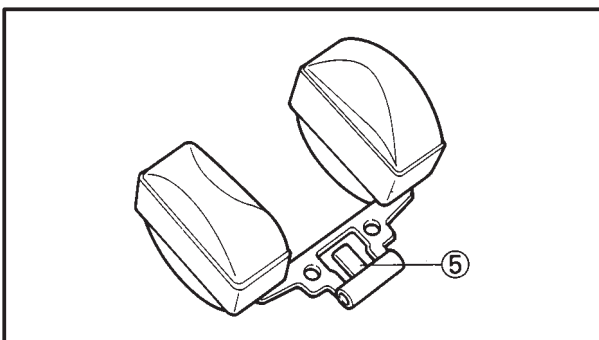
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**Inspection and adjustment steps:**

- Hold the carburetor in an upside down position.
- Measure the distance from the mating surface of the float chamber (gasket removed) to the top of the float.
- If the float height is not within specification, inspect the valve seat and valve needle.
- If either is worn, replace them both.
- If both are fine, adjust the float height by bending the float tang ⑤ on the float.
- Check the float height again.

**NOTE:** \_\_\_\_\_

The float arm should be resting on the valve needle without compressing it.

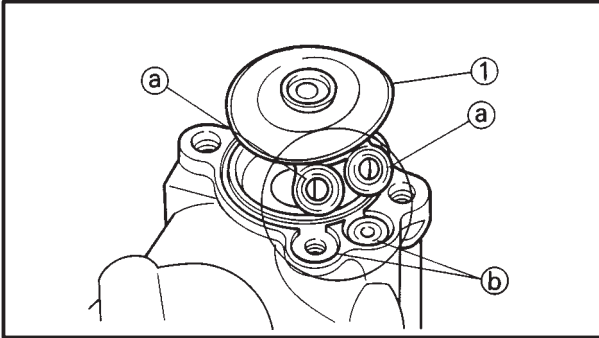




Float height (F.H.):  
27 mm

Out of specification → Replace.

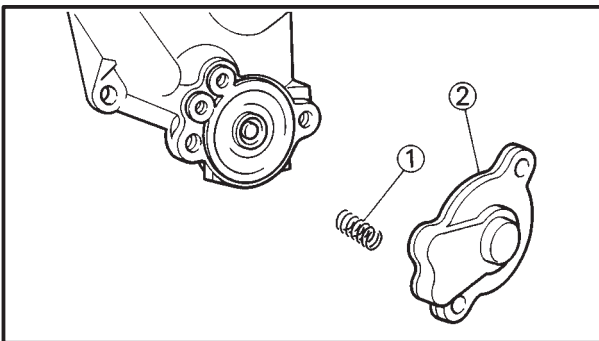
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5. Install:
- Diaphragm ①

**NOTE:**

Align the tab (a) on the diaphragm with the slot (b) on the carburetor body.



6. Install:
- Compression spring ①
  - Cover ②

YP600060

**FUEL LEVEL ADJUSTMENT**

**⚠ WARNING**

Gasoline (fuel) and its vapors are highly flammable and explosive. Keep away from sparks, cigarettes, flames or other sources of ignition.

1. Measure:
- Fuel level (a)
- Out of specification → Adjust.

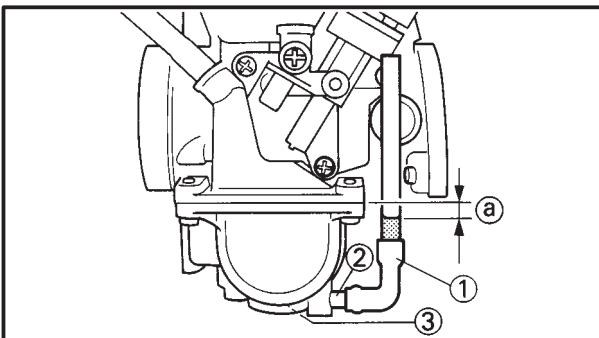


Fuel level:  
5 × 6 mm below the float chamber line

\*\*\*\*\*

**Measurement and adjustment steps:**

- Place the scooter on a level surface.



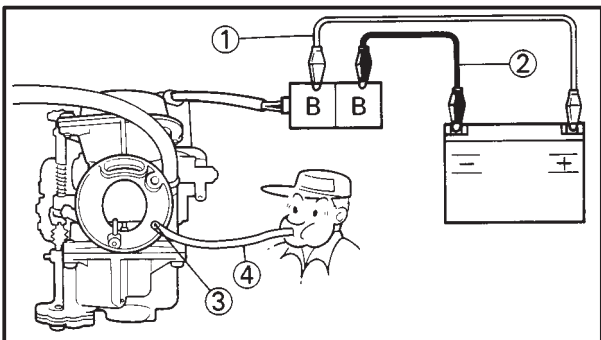
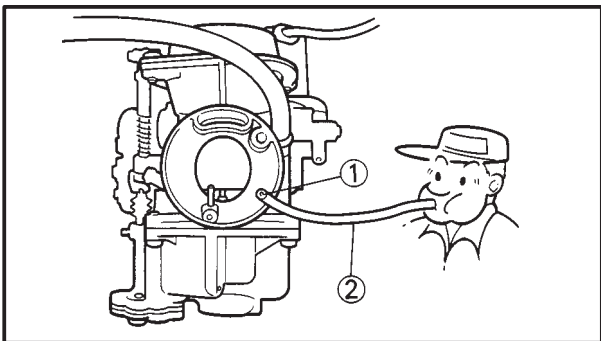
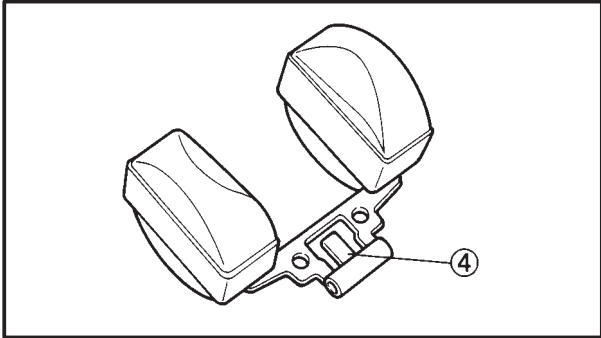


- Put a garage jack under the engine to ensure that the carburetors are positioned vertically.
- Connect the fuel level gauge ① to the drain pipe ②.



**Fuel level gauge:**  
**90890-01312**

- Loosen the drain screw ③.
- Hold the gauge vertically next to the float chamber line.
- Measure the fuel level (a) with the gauge.
- If the fuel level is incorrect, adjust the fuel level.
- Remove the carburetor.
- Inspect the valve seat and needle valve.
- If either is worn, replace them both.
- If both are fine, adjust float level by bending the float tang ④ slightly.
- Install the carburetor.
- Recheck the fuel level.



\*\*\*\*\*

YP\*\*\*\*\*

**AUTO CHOKE INSPECTION**

**(Ambient temperature lower than 45°C)**

1. Remove:
  - Carburetor
2. Inspect:
  - Autochoke unit  
Connect  $\varnothing$  3.3 mm pipe ② to the starter ①, and blow it with the mouth etc.  
Possible → Good condition.  
Impossible → Replace auto choke unit.
3. Inspect:
  - Auto choke unit (with battery)

\*\*\*\*\*

**Inspection and adjustment steps:**

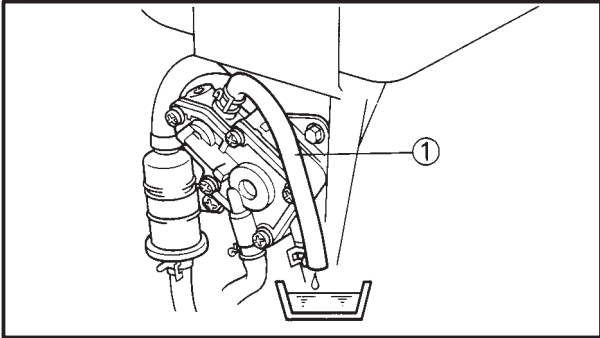
- Connect auto choke unit leads to the 12 V battery for 5 minutes.  
Black terminal → 12 V battery (+) ①  
Black terminal → 12 V battery (-) ②
- Connect  $\varnothing$  3.3 mm pipe ④ to the starter ③, and blow it with the mouth etc.  
Possible → Replace auto choke unit.  
Impossible → Good condition.

\*\*\*\*\*

yp\*\*\*\*\*

**FUEL PUMP INSPECTION**

- 1. Remove:
  - Side panels  
Refer to “COVER AND PANEL” section in CHAPTER 3.



- 2. Inspect:
  - Fuel pump

\*\*\*\*\*

**Inspection steps:**

- Place the receptacle under the fuel pipe end.
- Start engine, and inspect gasoline to flow out from fuel pipe ①.  
Engine is running:  
Gasoline flows out → Good.  
Engine is stopping:  
Gasoline does not flow out → Good.

\*\*\*\*\*

**⚠ WARNING**

- Gasoline (fuel) and its vapors are highly flammable and explosive. Keep away from sparks, cigarettes, flames or other sources of ignition.
- Failure to check for fuel leakage may result in fire or explosion.

- 3. Install:
  - Side panels  
Refer to “COVER AND PANEL” section in CHAPTER 3.



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## CHAPTER 7.

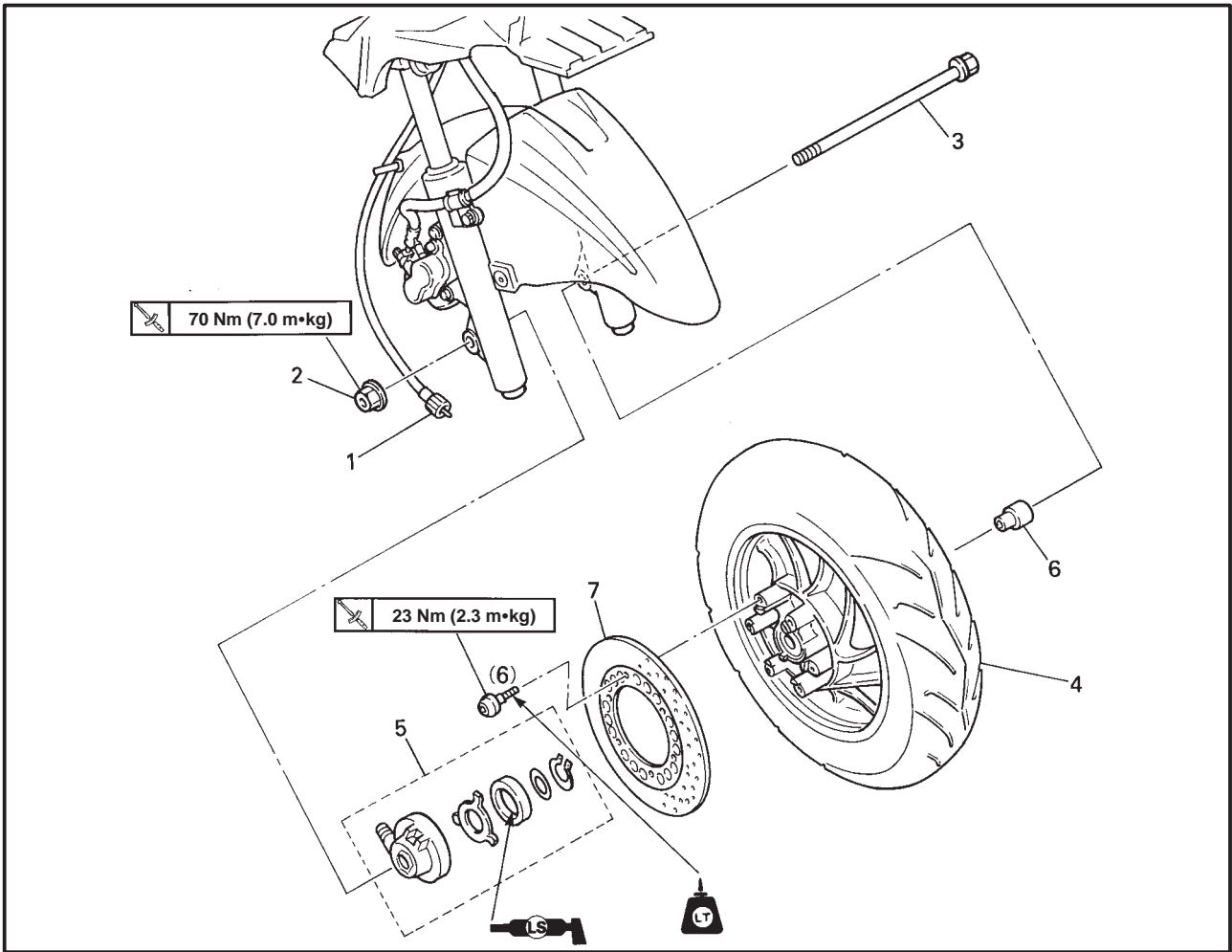
### CHASSIS

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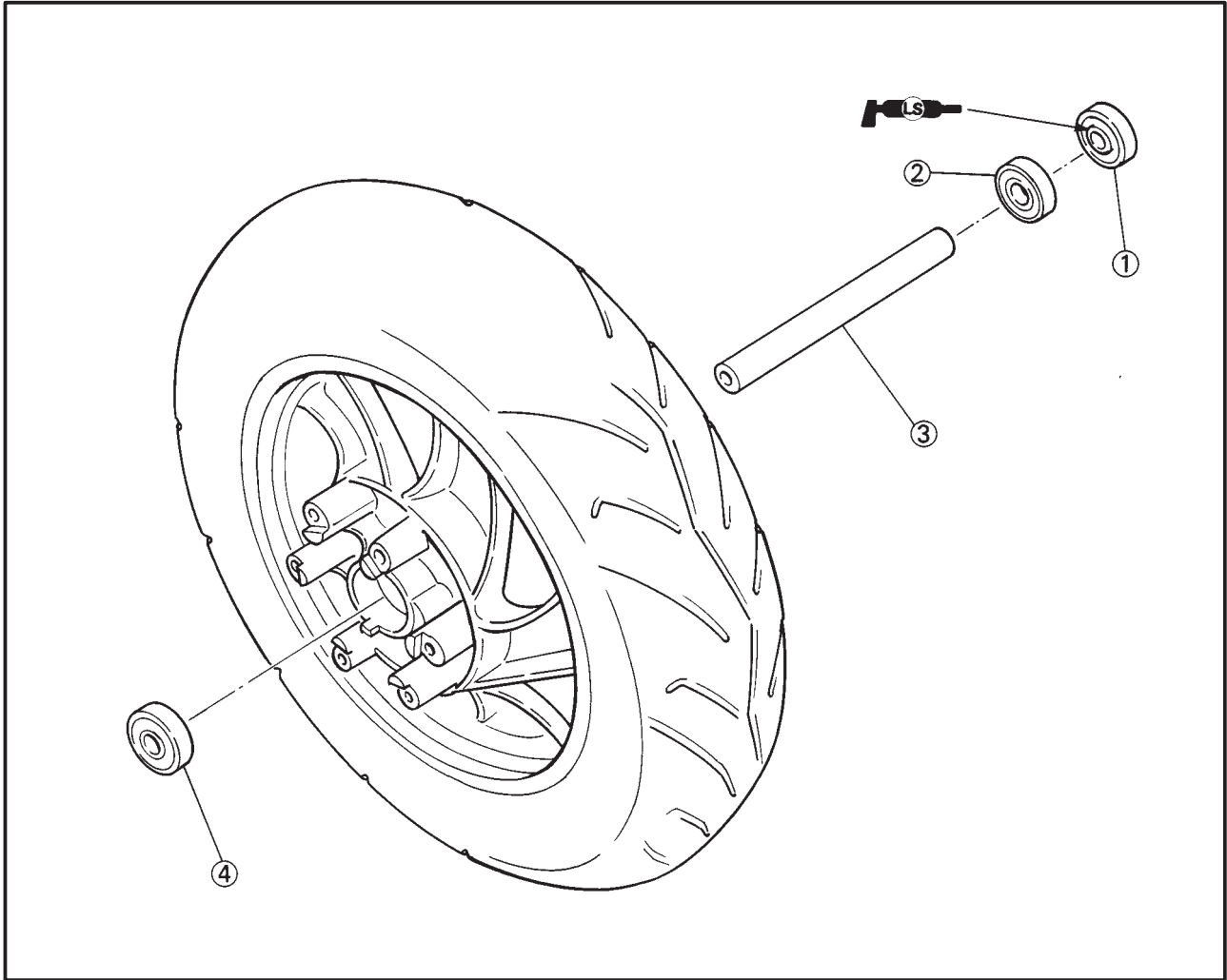


**CHASSIS**  
**FRONT WHEEL AND BRAKE DISC**  
**FRONT WHEEL AND BRAKE DISC**

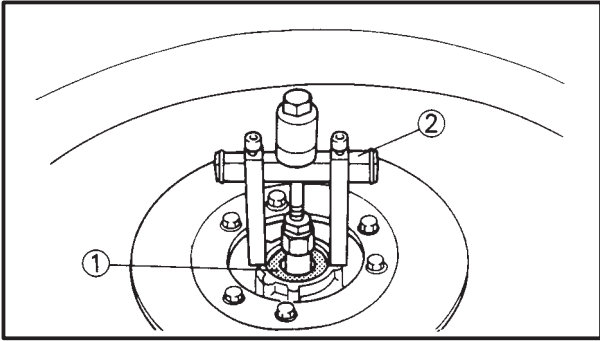


Order	Job name/Part name	Q'ty	Remarks
	<b>Front wheel and brake disc removal</b>		Remove the parts in order. <b>⚠ WARNING</b> _____ <b>Securely support the scooter so there is no danger of it falling over.</b>
1	Speedometer cable	1	Refer to "FRONT WHEEL INSTALLATION" section.
2	Axle nut	1	
3	Wheel axle	1	
4	Front wheel assembly	1	
5	Gear unit assembly	1	
6	Collar	1	
7	Brake disc	1	

FRONT WHEEL DISASSEMBLY



Order	Job name/Part name	Q'ty	Remarks
	<b>Front wheel disassembly</b>		
①	Oil seal	1	Remove the parts in order. Refer to "FRONT WHEEL DISASSEMBLY / ASSEMBLY" section.
②	Bearing	1	
③	Spacer	1	
④	Bearing	1	
			Reverse the removal procedure for installation.



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## FRONT WHEEL DISASSEMBLY

1. Remove:
  - Bearing ①
  - Spacer
 Remove the bearing using a general bearing puller ②.

**CAUTION:** \_\_\_\_\_

Handle the wheel with care not to damage the brake disc. If the brake disc is damaged, replace.

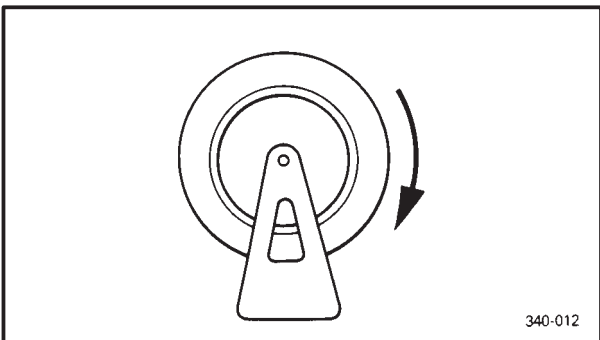
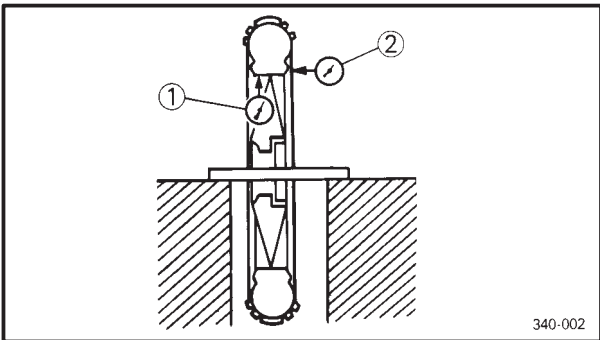
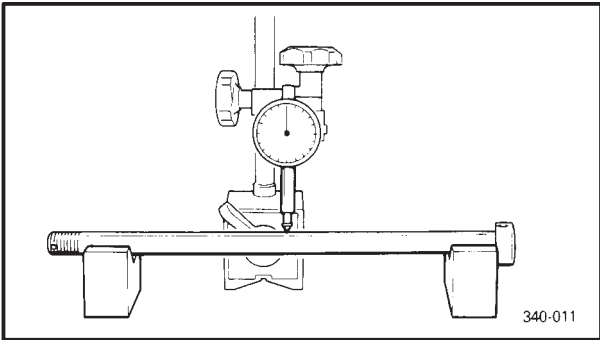
YP700020

## FRONT WHEEL INSPECTION

1. Inspect:
  - Front wheel axle  
(by rolling it on a flat surface)  
Bends → Replace.


**! WARNING** \_\_\_\_\_

Do not attempt to straighten a bent axle.

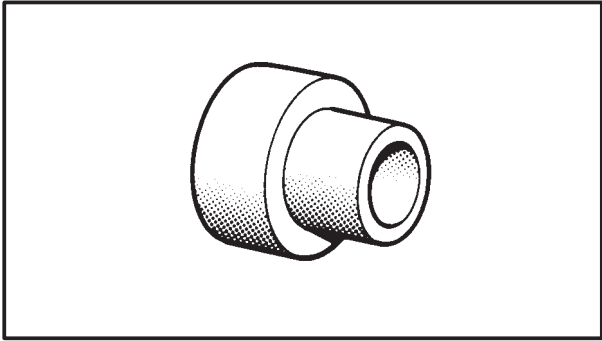


	<b>Wheel axle bending limit:</b> <b>0.25 mm</b>
---	--

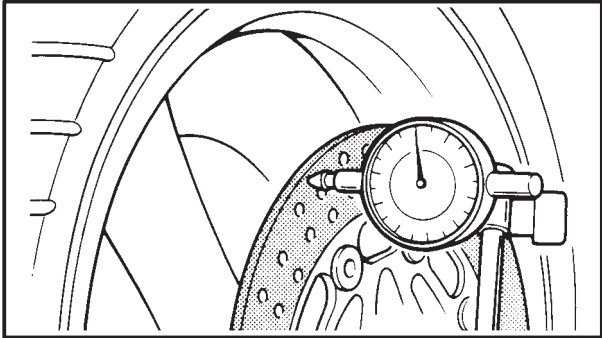
2. Inspect:
  - Front tire  
Wear/damage → Replace:  
Refer to "TIRE INSPECTION" in CHAPTER 3.
  - Front wheel  
Refer to "WHEEL INSPECTION" in CHAPTER 3.
3. Measure:
  - Front wheel runout  
Over the specified limits → Replace.

	<b>Front wheel runout limits:</b> <b>Radial ①: 2.0 mm</b> <b>Lateral ②: 2.0 mm</b>
---	--

4. Inspect:
  - Front wheel bearings  
Bearings allow free play in the wheel hub or the wheel does not turn smoothly → Replace.
  - Oil seals  
Wear/damage → Replace.



5. Inspect:
  - Collar
    - Grooved wear → Replace the collar and the oil seal as a set.



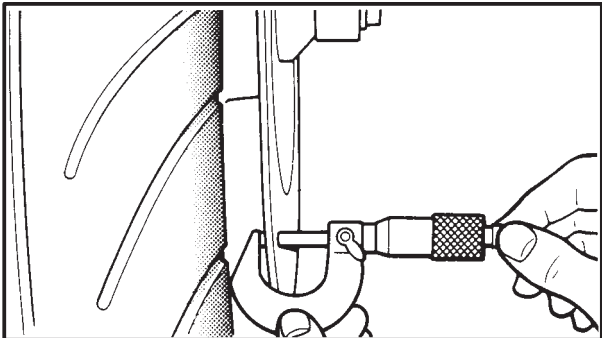
YP\*\*\*\*\*

### BRAKE DISC INSPECTION


1. Measure:
  - Brake disc deflection

	<b>Maximum deflection:</b> <b>0.15 mm</b>
---	--

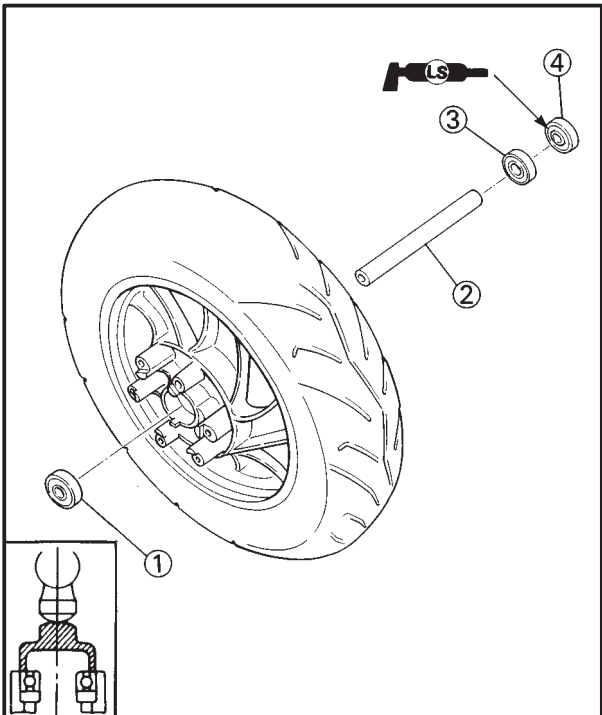
Out of specification → Replace.



2. Measure:
  - Brake disc thickness

	<b>Brake disc thickness:</b> <b>4.0 mm</b>
	<b>Minimum thickness:</b> <b>3.5 mm</b>

Out of specification → Replace.



YP\*\*\*\*\*

### FRONT WHEEL ASSEMBLY

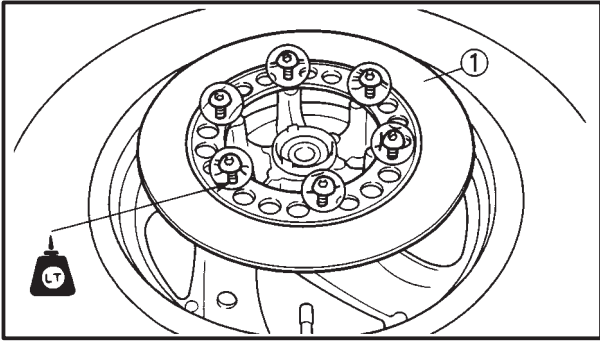
1. Install:
  - Bearing ①
  - Spacer ②
  - Bearing ③
  - Oil seal ④

**NOTE:** \_\_\_\_\_

- Apply the lithium soap base grease on the bearing and oil seal lip when installing.
- Use a socket that matches the outside diameter of the race of the bearing.
- Always use a new oil seal.
- Install the oil seal with its manufacturer's marks or numbers facing outward.

**CAUTION:** \_\_\_\_\_

**Do not strike the inner race of balls of the bearing. Contact should be made only with the outer race.**



2. Install:

- Brake disc ①  23 Nm (2.3 m•kg)

**NOTE:** \_\_\_\_\_

Tighten the bolts (brake disc) in stage using a crisscross pattern.

---

EB700030

## FRONT WHEEL INSTALLATION

Reverse the "REMOVAL" procedure.

Note the following points.

1. Lubricate:

- Front wheel axle
- Bearings
- Oil seal (lips)
- Drive/driven gear (speedometer)

	<b>Recommended lubricant:</b> Lithium soap base grease
---	---

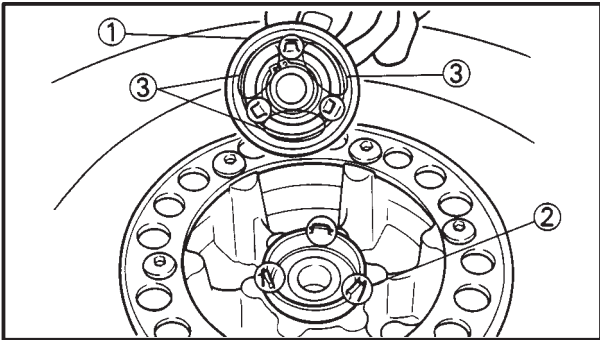
2. Install:

- Speedometer gear unit ①

**NOTE:** \_\_\_\_\_

Make sure that the wheel hub and the speedometer gear unit are installed with the three projections ② meshed into the three slots ③.

---



3. Install:

- Front wheel

**NOTE:** \_\_\_\_\_

Make sure that the slot in the speedometer gear unit fits over the stopper on the front fork outer tube.

---

4. Tighten:

- Front wheel axle
- Axle nut (front wheel axle) ①

**CAUTION:** \_\_\_\_\_

Before tightening the axle nut, stroke the front fork several times to check for proper fork operation.

---

**⚠ WARNING** \_\_\_\_\_

Make sure that the brake hose is routed properly.

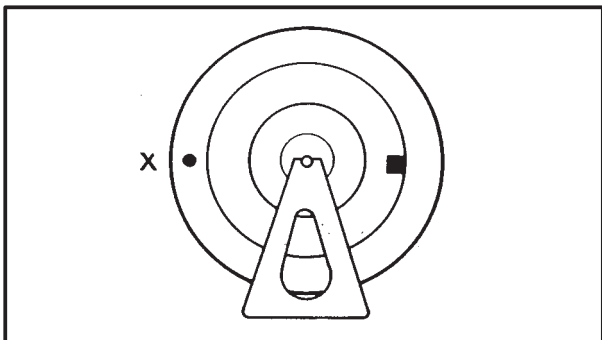
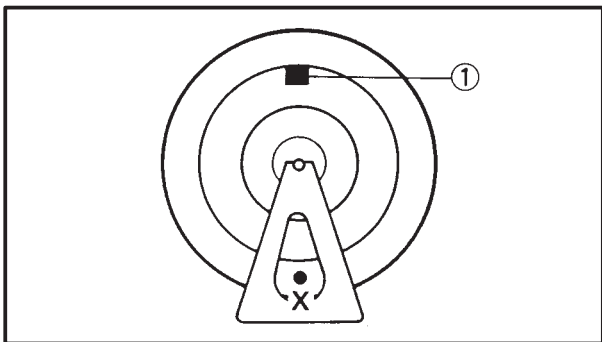
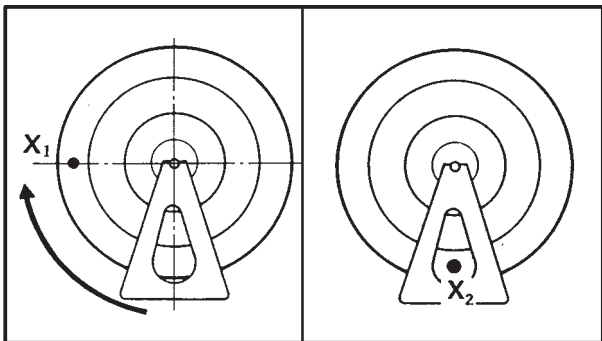
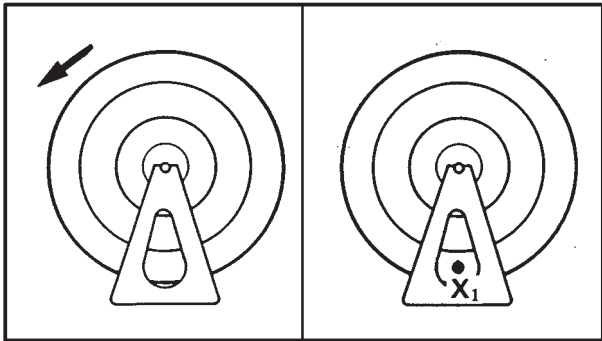
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YP700040

**WHEEL STATIC BALANCE ADJUSTMENT**

**NOTE:** \_\_\_\_\_

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



1. Remove:
  - Balancing weight
2. Set:
  - Wheel  
(on a suitable stand)
3. Find:
  - Heavy spot

\*\*\*\*\*

**Procedure:**

- a. Spin the wheel and wait for it to rest.
- b. Put an "X<sub>1</sub>" mark on the wheel's bottom spot.
- c. Turn the wheel so that the "X<sub>1</sub>" mark is 90° up.
- d. Release the wheel and wait for it to rest. Put an "X<sub>2</sub>" mark on the wheel's bottom spot.
- e. Repeat the above b., c., and d. several times until all marks come to the same spot.
- f. This spot is the wheel's heavy spot "X".

\*\*\*\*\*

4. Adjust:
  - Wheel static balance

\*\*\*\*\*

**Adjusting steps:**

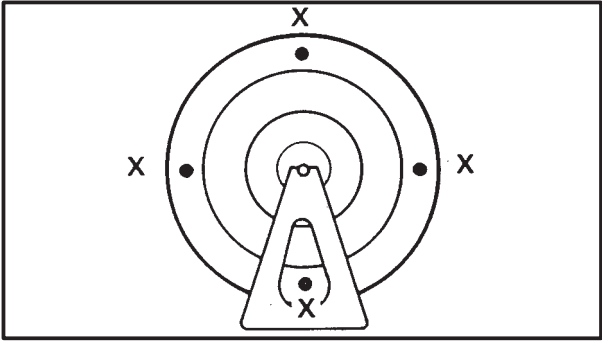
- Install a balancing weight ① on the rim exactly opposite to the heavy spot "X".

**NOTE:** \_\_\_\_\_

Start with the smallest weight.

- Turn the wheel so that the heavy spot is 90° up.
- Check that the heavy spot is at rest there. If not, try another weight until the wheel is balanced.

\*\*\*\*\*



5. Check:
- Wheel static balance

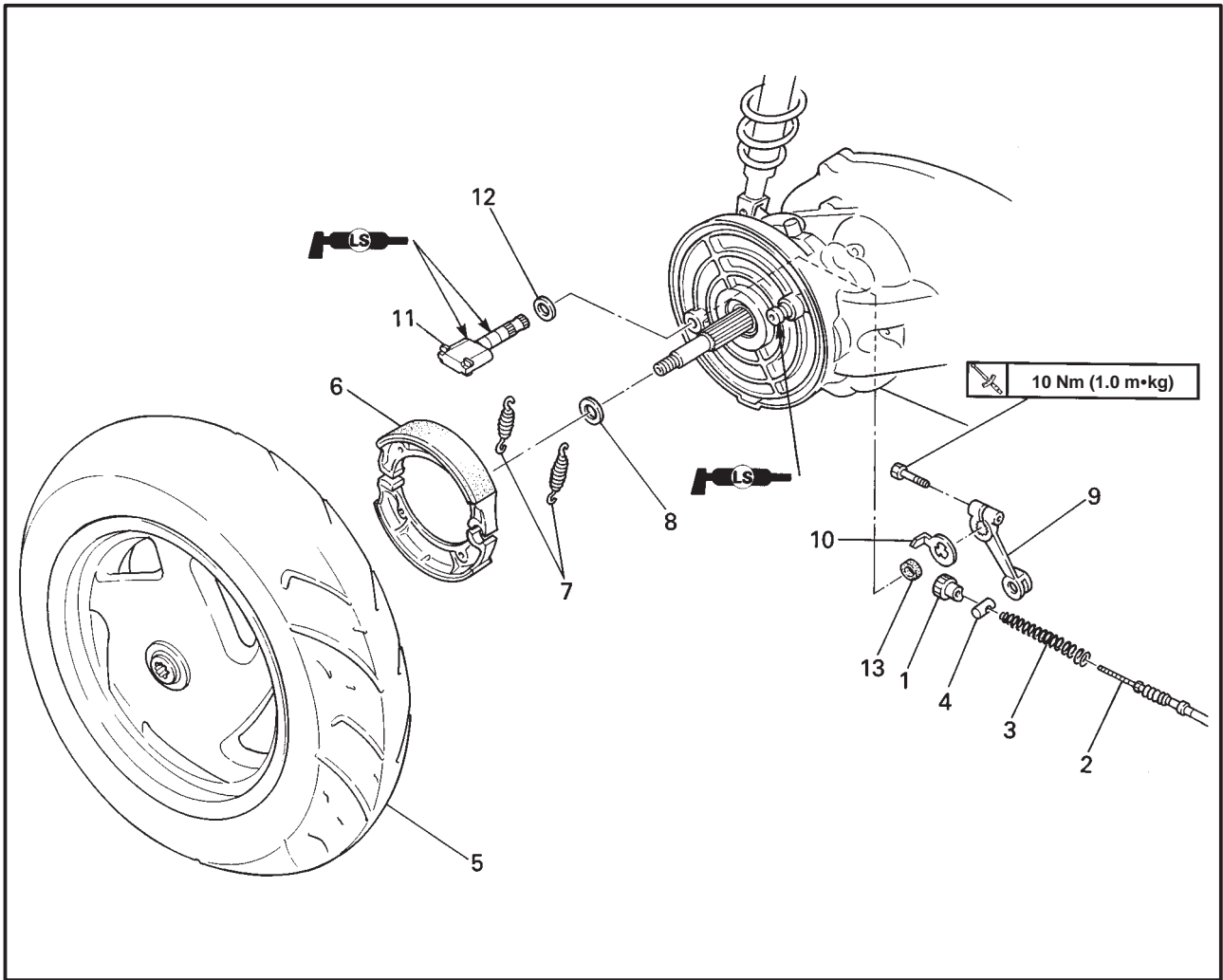
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**Checking steps:**

- Turn the wheel so that it comes to each point as shown.
- Check that the wheel is at rest at each point. If not, readjust the front wheel static balance.

\*\*\*\*\*

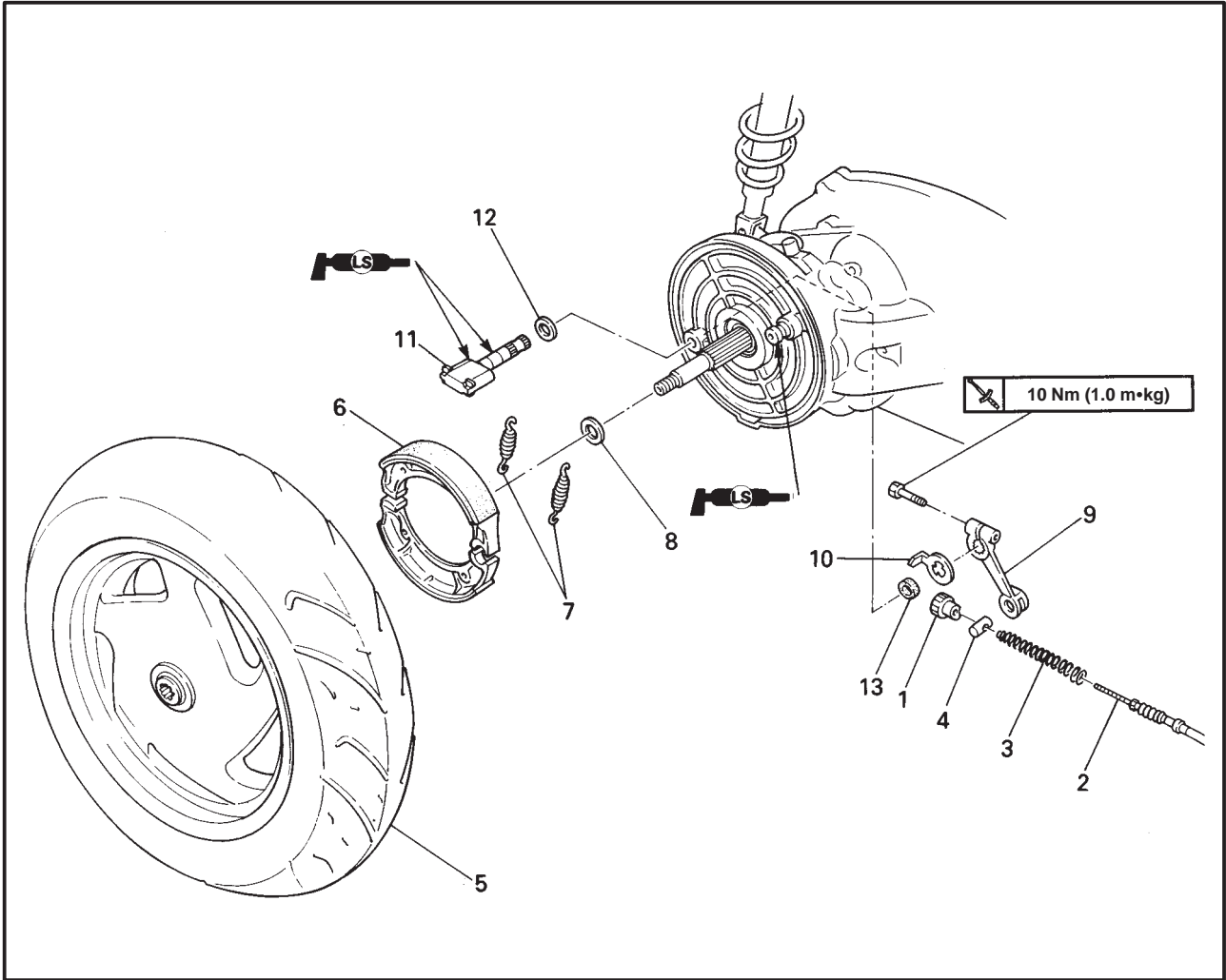
REAR WHEEL AND REAR BRAKE



Order	Job name/Part name	Q'ty	Remarks
	<b>Rear wheel and rear brake removal</b>		Remove the part in order. Refer to "REAR SHOCK ABSORBER AND SWINGARM" section.  Refer to "REAR BRAKE INSTALLATION" section.
	Swingarm		
1	Adjuster	1	
2	Brake cable	1	
3	Compression spring	1	
4	Pin	1	
5	Rear wheel assembly	1	
6	Brake lining	2	
7	Tension spring	2	
8	Plate washer	1	
9	Camshaft lever	1	
10	Indicator plate	1	
11	Camshaft	1	



# REAR WHEEL AND REAR BRAKE



Order	Job name/Part name	Q'ty	Remarks
12	Camshaft shim	1	Reverse the removal procedure for installation.
13	Camshaft seal	1	

EB701020

## REAR WHEEL INSPECTION

1. Inspect:
  - Rear wheel axle
  - Rear wheel
  - Rear wheel bearings
  - Oil seals
 Refer to "FRONT WHEEL".
2. Measure:
  - Rear wheel runout
 Refer to "FRONT WHEEL".

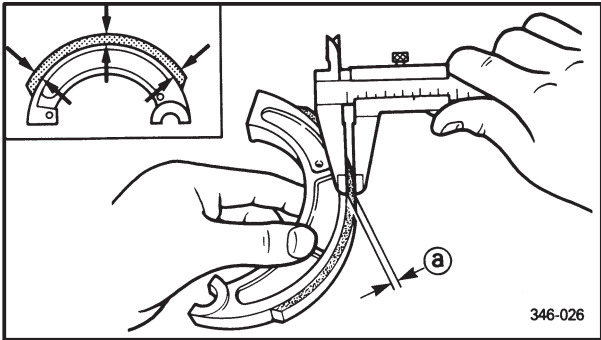
EB701021

## REAR BRAKE INSPECTION


1. Inspect:
  - Brake lining surface
 Glazed areas → Polish.  
 Use coarse sand paper.

**NOTE:** \_\_\_\_\_

After polishing, wipe the polished particles with a cloth.



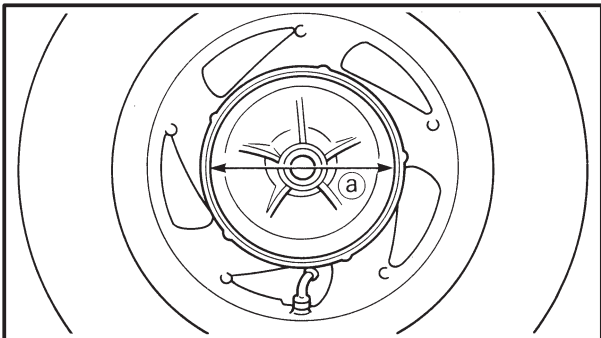
2. Measure:
  - Brake lining thickness

	<b>Brake lining thickness (a):</b> <b>Standard:</b> 4 mm <b>Limit:</b> 2 mm
---	---


Out of specification → Replace.  
 Measuring points

**NOTE:** \_\_\_\_\_

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



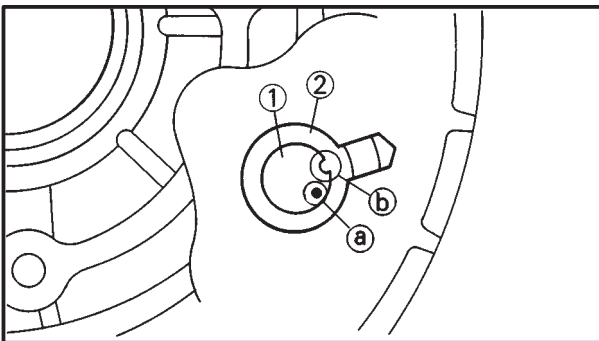
3. Measure:
  - Brake drum inside diameter (a)
 Out of specification → Replace the wheel.

	<b>Brake drum inside diameter:</b> <b>Standard:</b> 160 mm <b>Limit:</b> 161 mm
---	---

4. Inspect:
  - Brake drum inner surface
  - Oil/scratches → Repair.
  - Oil
    - Use a rag soaked in lacquer thinner or solvent.
  - Scratches
    - Use an emery cloth (lightly and evenly polishing)
5. Inspect:
  - Camshaft face.
    - Wear → Replace.

**⚠ WARNING**

**When inspecting the brake lining, do not spill oil or grease on the brake lining.**



yp\*\*\*\*\*

### REAR BRAKE INSTALLATION

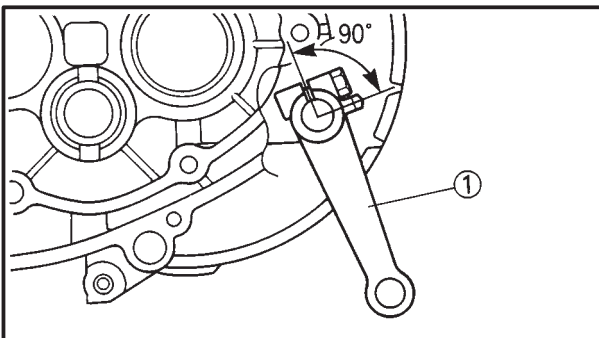
1. Install:
  - Camshaft ①
  - Indicator plate ②

\*\*\*\*\*

**Installation steps:**

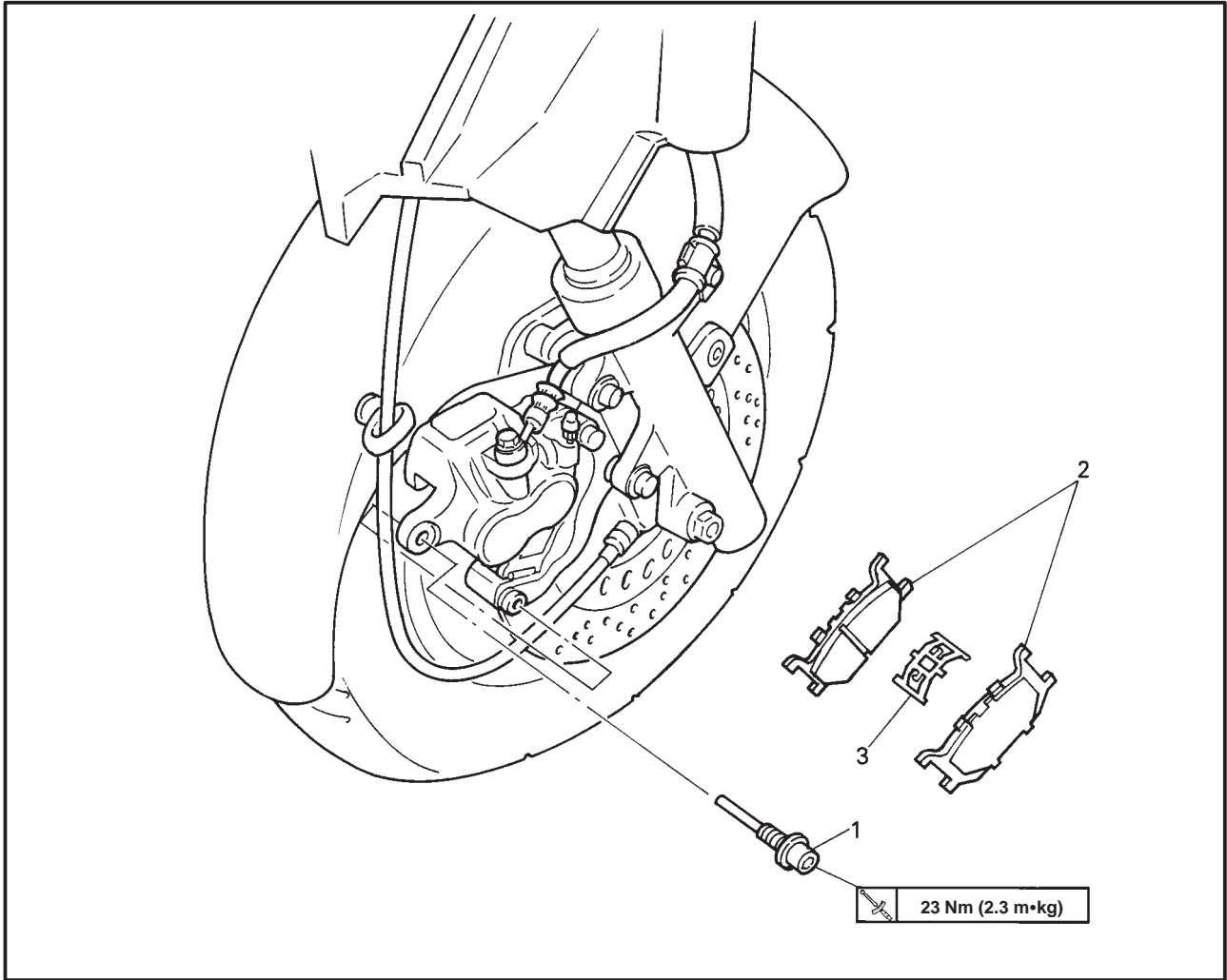
- Set the camshaft with its punched mark **a** facing the direction as shown.
- Align the projection **b** on the indicator plate with the camshaft notch and install.
- Check the proper position of the brake shoe.

\*\*\*\*\*

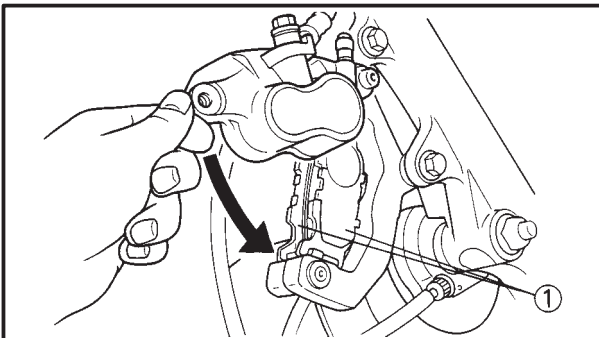
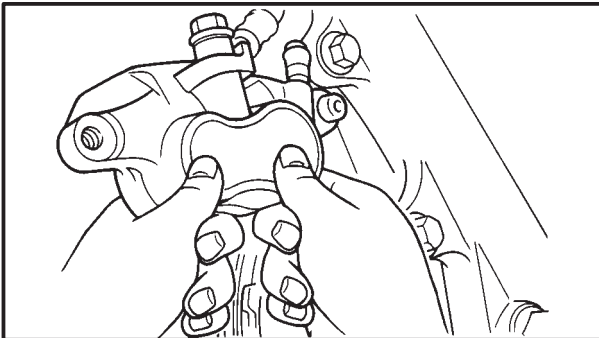
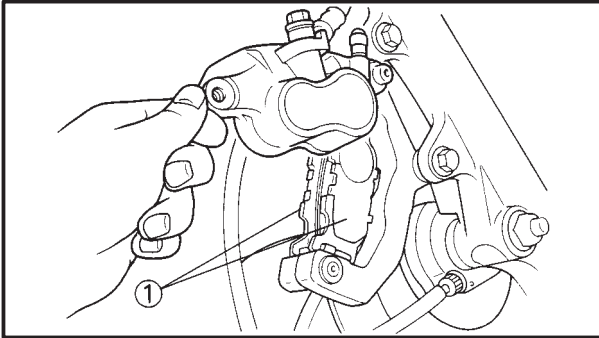
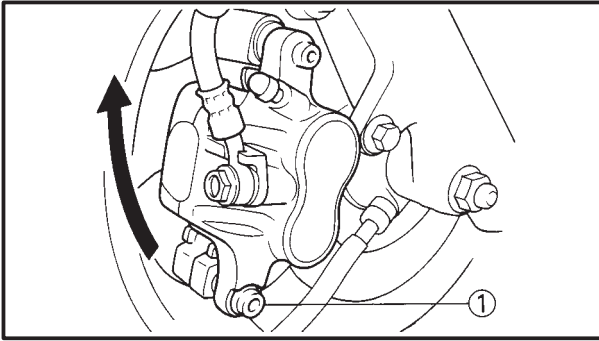


2. Install:
  - Camshaft lever ①
    - Install the camshaft lever with its slit and the indicator plate at right angle as shown.

**FRONT BRAKE**  
**BRAKE PAD**



Order	Job name/Part name	Q'ty	Remarks
	<b>Brake pad removal</b>		Remove the parts in order.
1	Caliper support bolt	1	Refer to "BRAKE PAD REPLACEMENT" section.
2	Brake pad	2	
3	Pad support	1	
			Reverse the removal procedure for installation.



YP702010

**BRAKE PAD REPLACEMENT****NOTE:**

It is not necessary to disassemble the brake caliper and brake hose to replace the brake pads.

## 1. Remove:

- Bolt (caliper support bolt) ①

Move the direction brake caliper to the arrow mark.

## 2. Remove:

- Brake pads

**NOTE:**

- Install new brake pad springs when the brake pads have to be replaced.
- Replace the brake pads as a set if either is found to be worn to the wear limit.

## 3. Push the caliper piston into the brake caliper by finger.

**CAUTION:**

When pushing the caliper piston into the brake caliper, brake fluid level in reservoir tank is increasing higher.

## 4. Install:

- Brake pad ①

Install the brake pad, and move the brake caliper to the allow mark direction.

## 5. Install:

- Bolt (caliper support bolt)

23 Nm (2.3 m•kg)

## 6. Inspect:

- Brake fluid level

Refer to "BRAKE FLUID LEVEL INSPECTION" section in CHAPTER 3.

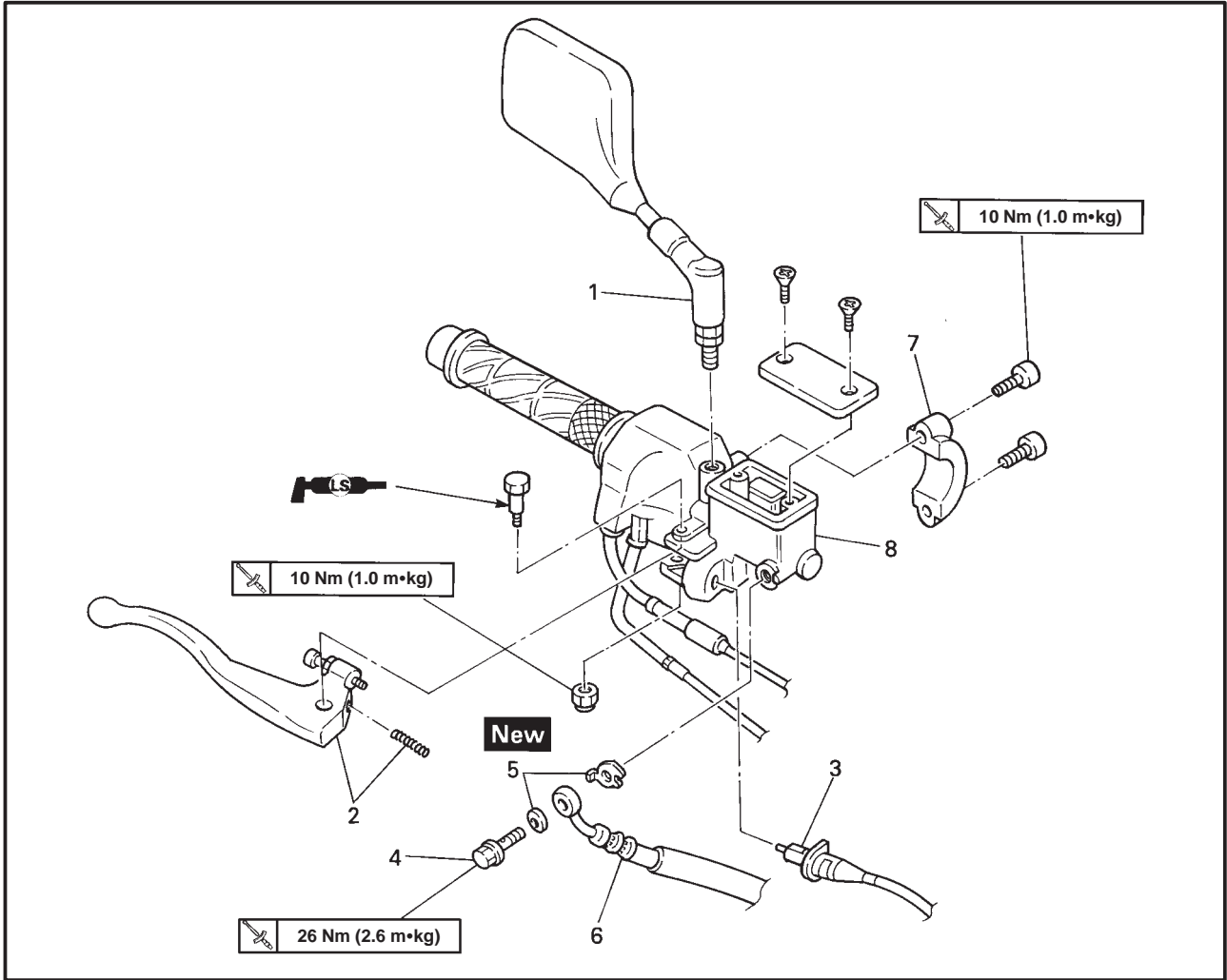
## 7. Check:

- Brake lever operation

Soft spongy feeling → Bleed the brake system.

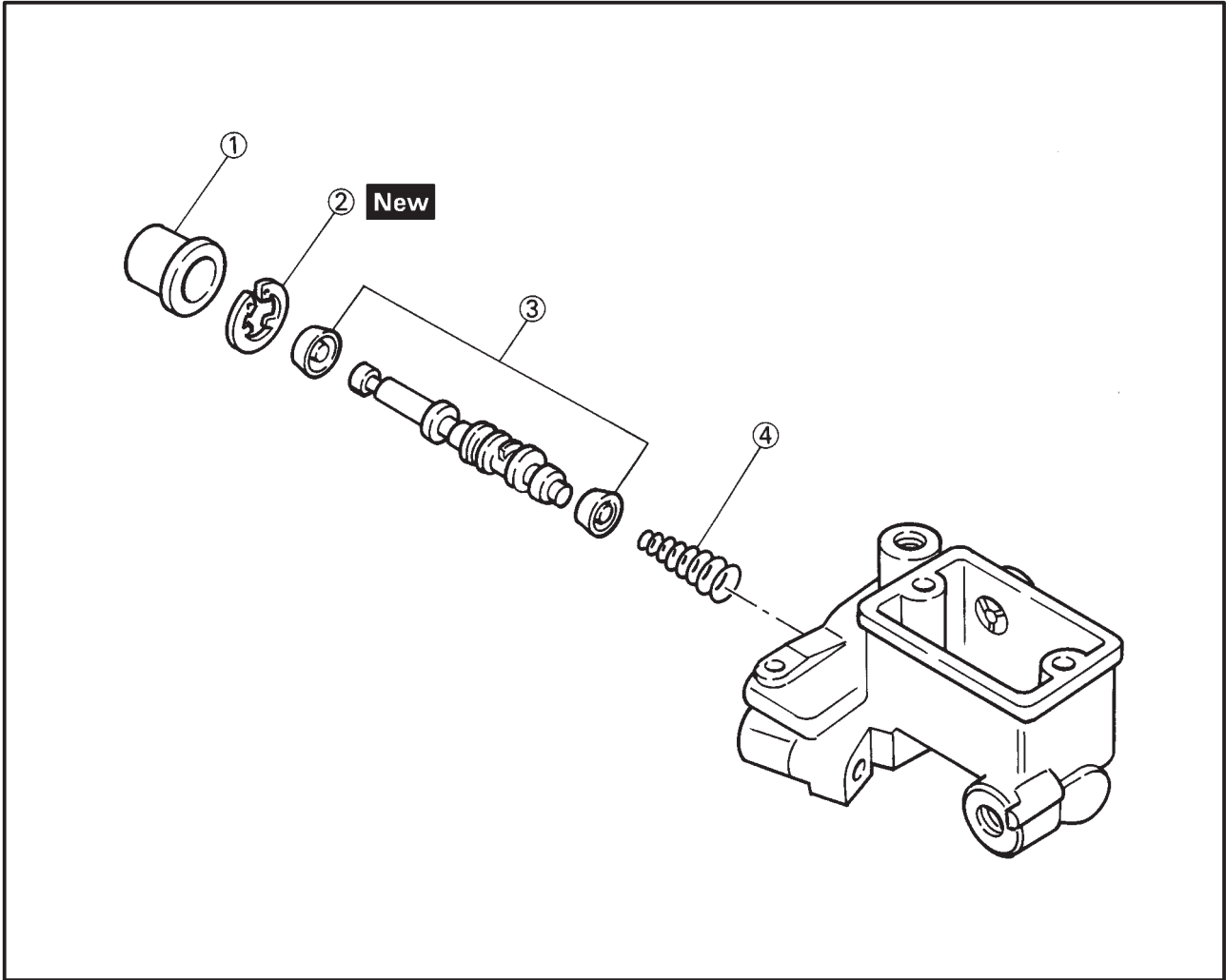
Refer to "AIR BLEEDING (HYDRAULIC BRAKE SYSTEM)" in CHAPTER 3.

MASTER CYLINDER

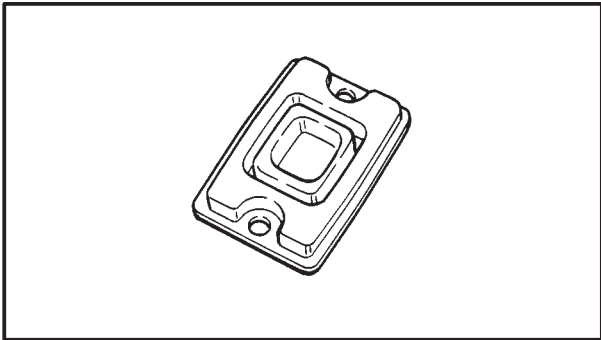
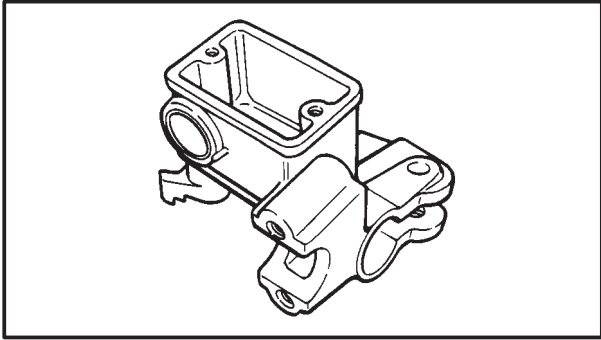
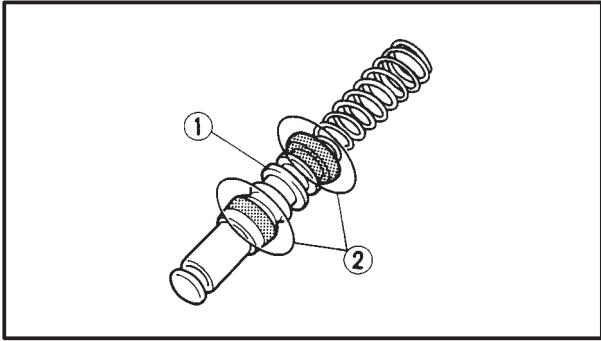


Order	Job name/Part name	Q'ty	Remarks
	<b>Master cylinder removal</b>		
	Drain the brake fluid		Remove the parts in order. Refer to "BRAKE FLUID REPLACEMENT" section in CHAPTER 3.
1	Rear view mirror (right)	1	Refer to "MASTER CYLINDER INSTALLATION" section.  Reverse the removal procedure for installation.
2	Brake lever/compression spring	1/1	
3	Brake switch	1	
4	Union bolt	1	
5	Plain washer	2	
6	Brake hose	1	
7	Master cylinder bracket	1	
8	Master cylinder	1	

MASTER CYLINDER DISASSEMBLY



Order	Job name/Part name	Q'ty	Remarks
	<b>Master cylinder disassembly</b>		Remove the parts in order.
①	Master cylinder boot	1	Refer to "MASTER CYLINDER ASSEMBLY" section.
②	Circlip	1	
③	Master cylinder assembly	1	
④	Spring	1	
			Reverse the disassembly procedure for assembly.



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**MASTER CYLINDER INSPECTION**

1. Inspect:
  - Master cylinder ①  
Wear/scratches → Replace the master cylinder assembly.
  - Master cylinder cup ②
  - Cracks/damage → Replace.
  
2. Inspect:
  - Master cylinder
  - Scratches/wear/damage → Replace the master cylinder assembly.
  
3. Inspect:
  - Diaphragm  
Wear/damage → Replace.

YP\*\*\*\*\*

**MASTER CYLINDER ASSEMBLY**

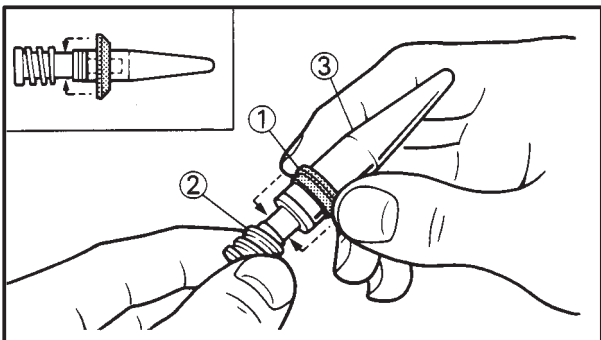
**⚠ WARNING**

- All internal brake components should be cleaned and lubricated with new brake fluid only before installation.



**Recommended brake fluid:  
DOT #4**

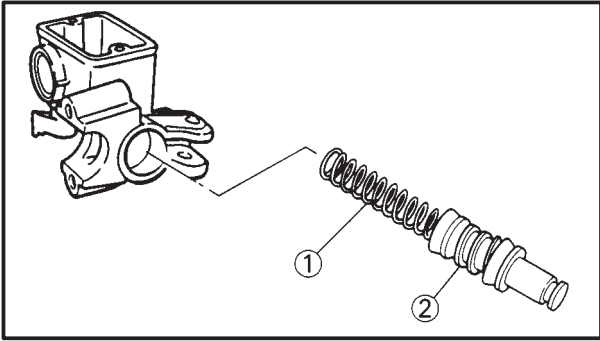
- Replace the piston seals and dust seals whenever a master cylinder is disassembled.



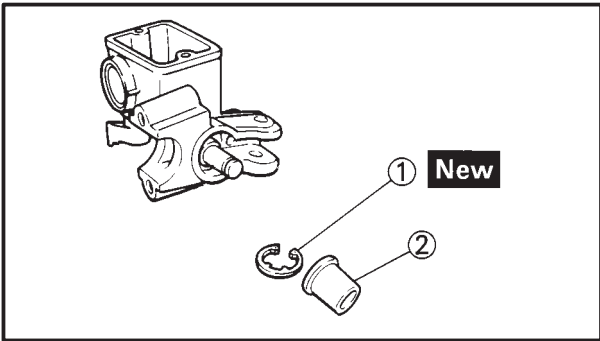
**Cylinder cup installer set:  
90890-01996**

1. Install:
  - Cylinder cup ①
  - Master cylinder piston ②  
Install cylinder cup ① by using cylinder cup installer ③.

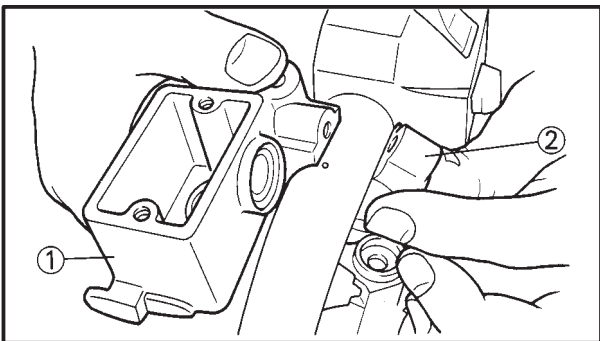




2. Install:
- Spring ①  
Install the spring with its smaller diameter to the master cylinder piston.
  - Master cylinder kit ②




3. Install:
- Circlip ① **New**  
Install the circlip securely into the master cylinder groove.
  - Master cylinder boot ②



yp\*\*\*\*\*

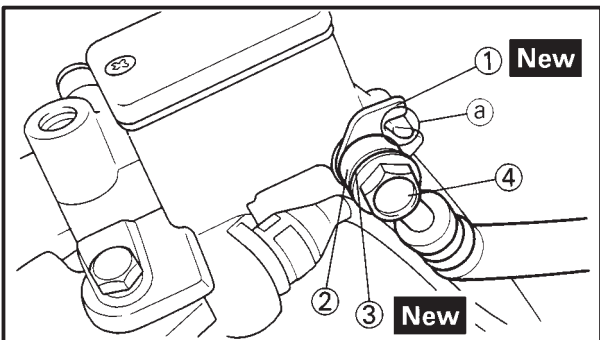
**MASTER CYLINDER INSTALLATION**

1. Install:
- Master cylinder ①
  - Master cylinder bracket ②


 10 Nm (1.0 m•kg)

**CAUTION:** \_\_\_\_\_

Align the end of the master cylinder with the punch mark on the handlebar, then install the master cylinder bracket ② with the “UP” mark facing upward.



2. Install:
- Plain washer ① **New**
  - Brake hose ②
  - Plain washer ③ **New**
  - Union bolt ④

 26 Nm (2.6 m•kg)

**CAUTION:** \_\_\_\_\_

Align the plain washer notch and master cylinder edge ① for assembly.



### 3. Air bleed:

- Brake system

Refer to “AIR BLEEDING” section in CHAPTER 3.

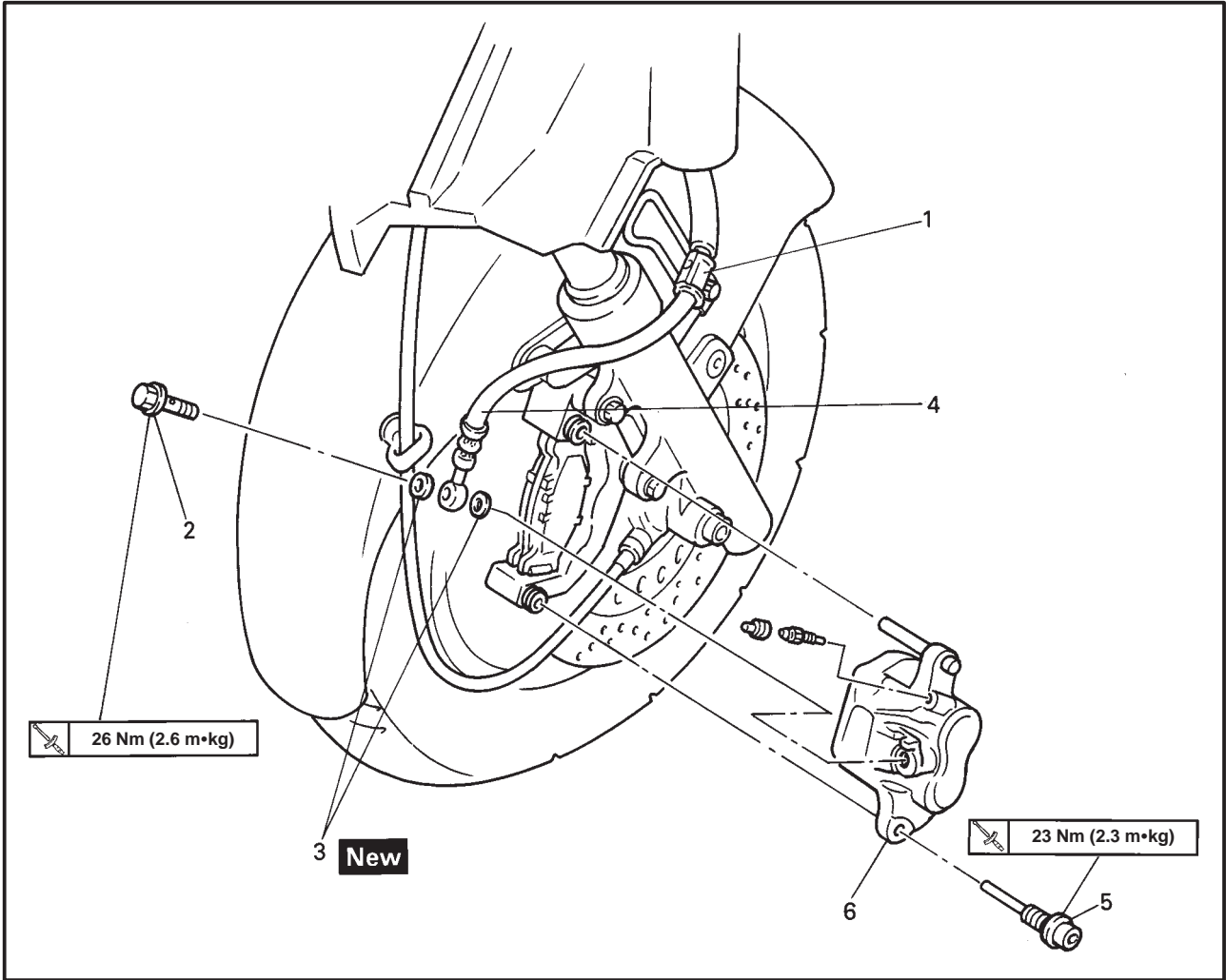
### **⚠ WARNING**

- **Use only designated quality brake fluid: Otherwise, the rubber seals may deteriorate, causing leakage and poor brake performance.**
  - **Refill with the same type of brake fluid: mixing fluids may result in a harmful chemical reaction and lead to poor performance.**
  - **Be careful that water does not enter the significantly lower the boiling point of the fluid may result in vapor lock.**
- 

### 4. Inspect:

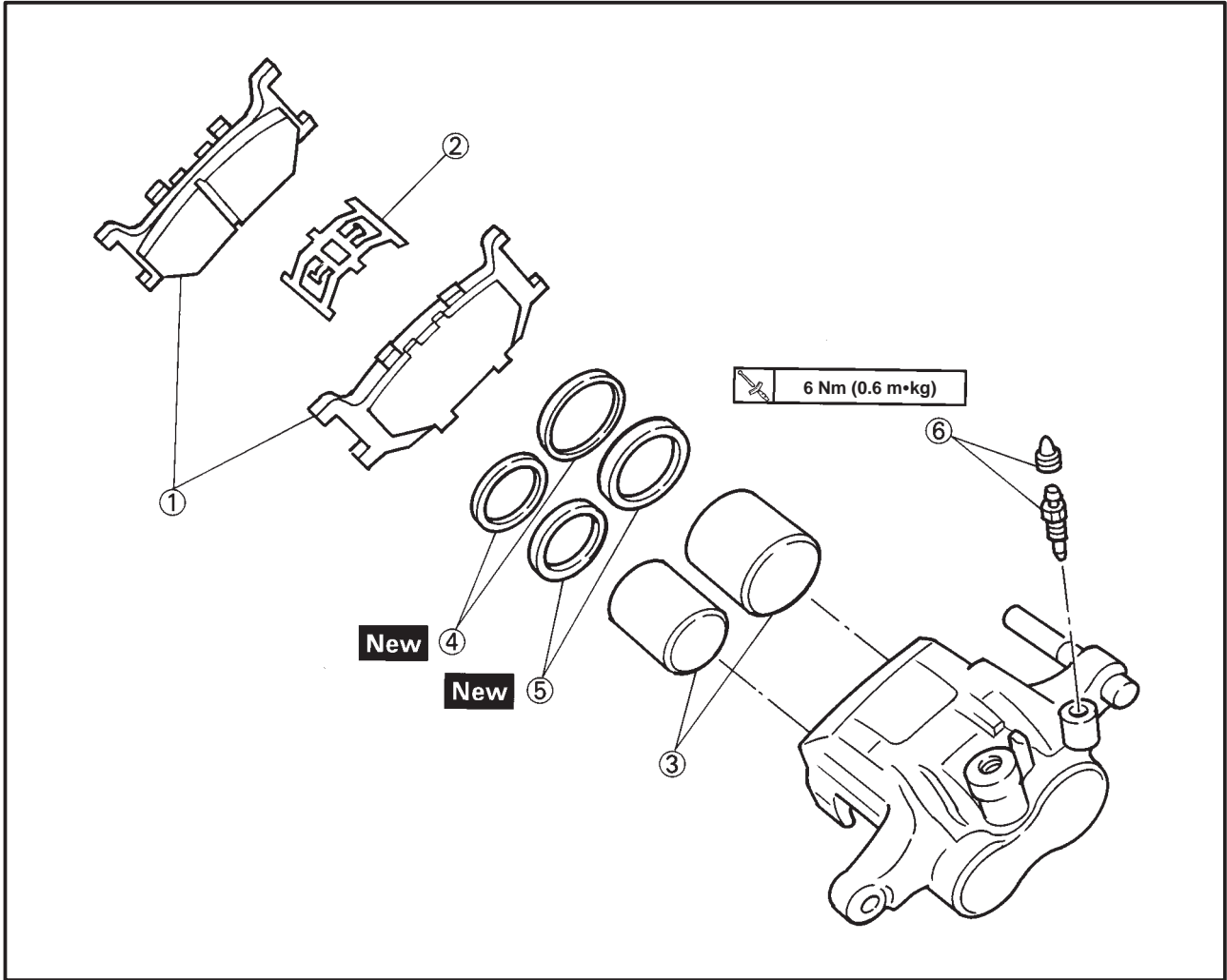
- Brake operation

CALIPER

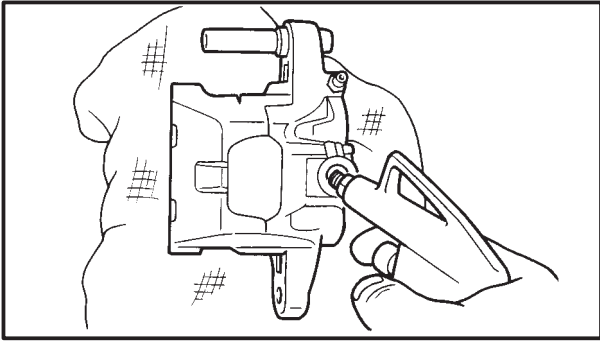


Order	Job name/Part name	Q'ty	Remarks
	<b>Caliper removal</b>		Remove the parts in order. Refer to "BRAKE FLUID REPLACEMENT" section in CHAPTER 3.
1	Drain the brake fluid	1	Refer to "CALIPER INSTALLATION" section.
2	Brake hose holder	1	
3	Union bolt	1	
4	Plain washer	2	
5	Brake hose	1	
6	Caliper support bolt	1	
	Caliper assembly	1	Reverse the removal procedure for installation.

**CALIPER DISASSEMBLY**



Order	Job name/Part name	Q'ty	Remarks
	<b>Caliper disassembly</b>		Remove the parts in order.
①	Brake pad	2	Refer to "BRAKE CALIPER DIS-ASSEMBLY/ASSEMBLY" section.
②	Pad support	1	
③	Caliper piston	2	
④	Dust seal	2	
⑤	Piston seal	2	
⑥	Bleed screw/Cap	1/1	
			Reverse the disassembly procedure for assembly.



YP702020

**BRAKE CALIPER DISASSEMBLY**

**NOTE:**

Before disassembling either brake caliper, drain the brake fluid from the brake hose, master cylinder, brake caliper and reservoir tank.

1. Remove:
  - Brake caliper piston

\*\*\*\*\*

**Removal steps:**

- Blow compressed air into the hose joint opening to force out the caliper piston from the brake caliper body.

**! WARNING**

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

**CAUTION:**

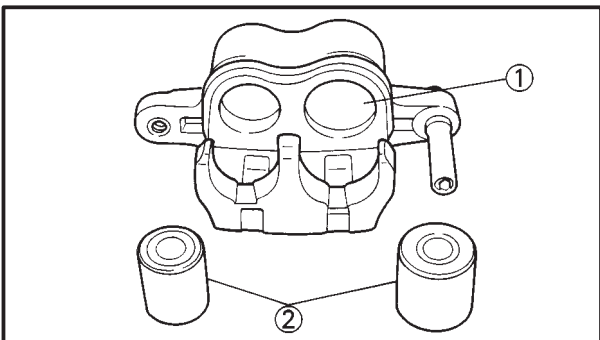
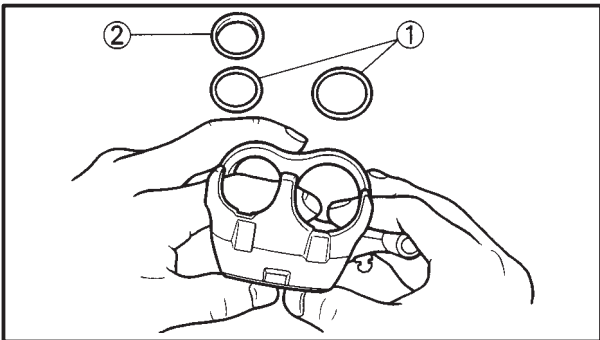
Carefully remove the caliper piston to prevent damage.

\*\*\*\*\*

2. Remove:
  - Dust seal ①
  - Piston seal ②
 When removing, push the seals by your finger.

**CAUTION:**

- Do not use a sharp instrument. Remove seals by your finger.
- Do not re-use removed parts.



YP\*\*\*\*\*

**CALIPER INSPECTION**

1. Inspect:
  - Caliper cylinder ①
  - Caliper piston ②
 Scratches, wear → Replace caliper assembly.

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**BRAKE CALIPER ASSEMBLY**

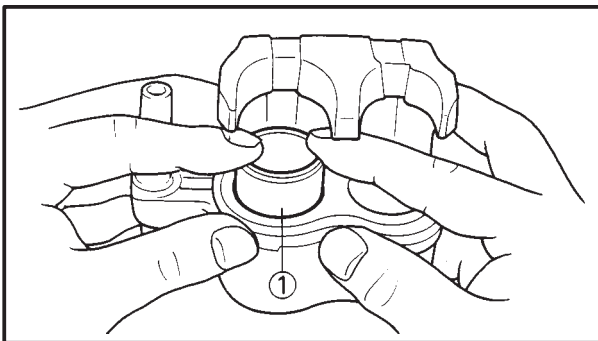
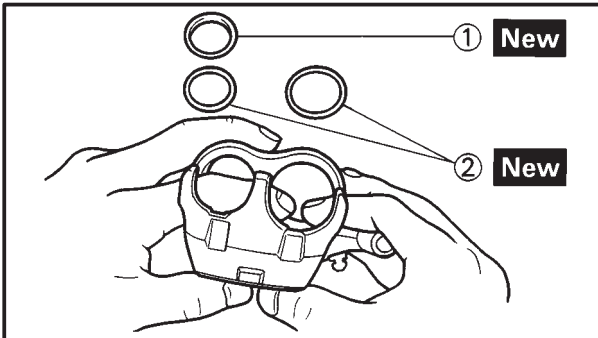
**⚠ WARNING**

- All internal brake components should be cleaned and lubricated with new brake fluid only before installation.



**Recommended brake fluid:  
DOT #4**

- Replace the caliper piston seals whenever a brake caliper is disassembled.



1. Install:

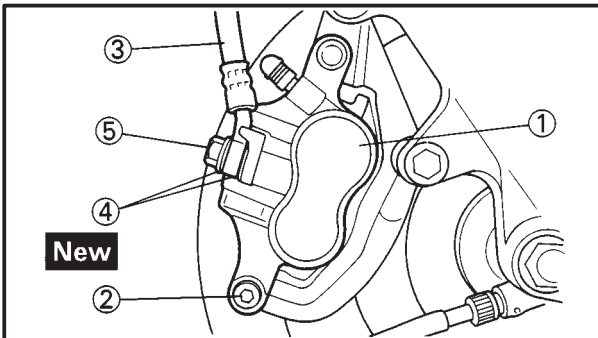
- Piston seals ① **New**
- Dust seal ② **New**

2. Install:

- Caliper piston ①  
Apply brake fluid to the outer surface and install.

**CAUTION:**



- Do not force.
- Use care to prevent damage on caliper piston.



YP\*\*\*\*\*

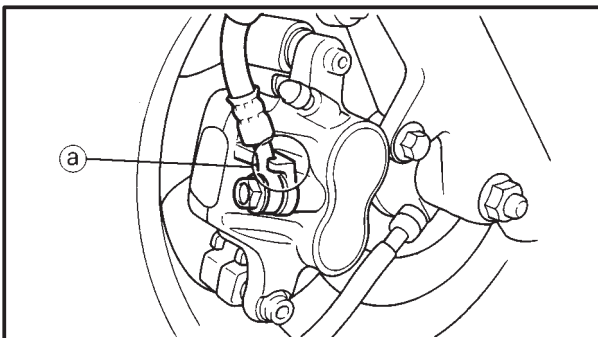
**CALIPER INSTALLATION**

1. Install:

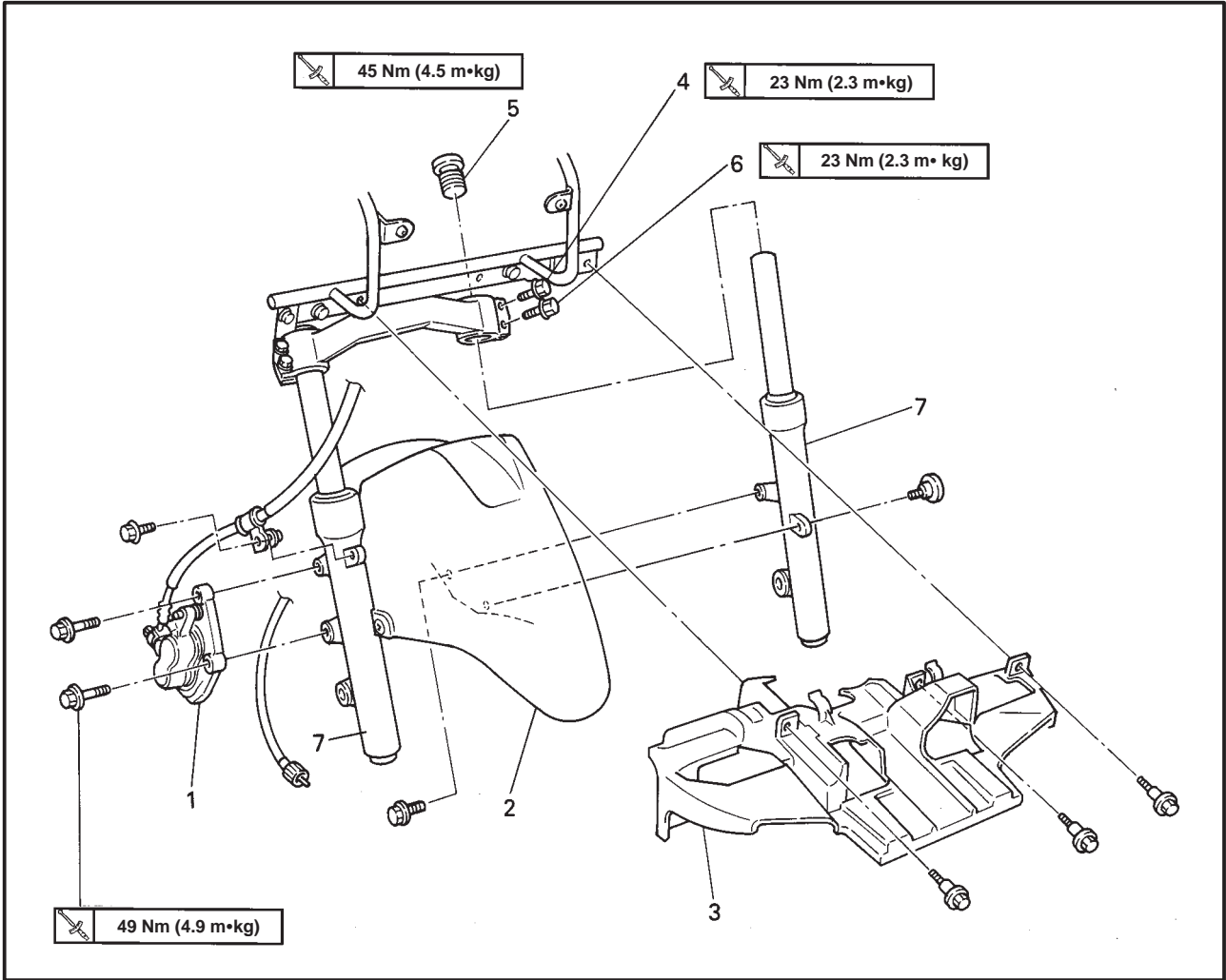
- Caliper ①
- Caliper support bolt ②  23 Nm (2.3 m•kg)
- Brake hose ③
- Plain washer ④ **New**
- Union bolt ⑤  26 Nm (2.6 m•kg)

**CAUTION:**

When installing the brake hose to the caliper, lightly touch the brake hose with the stopper **a** on the caliper.

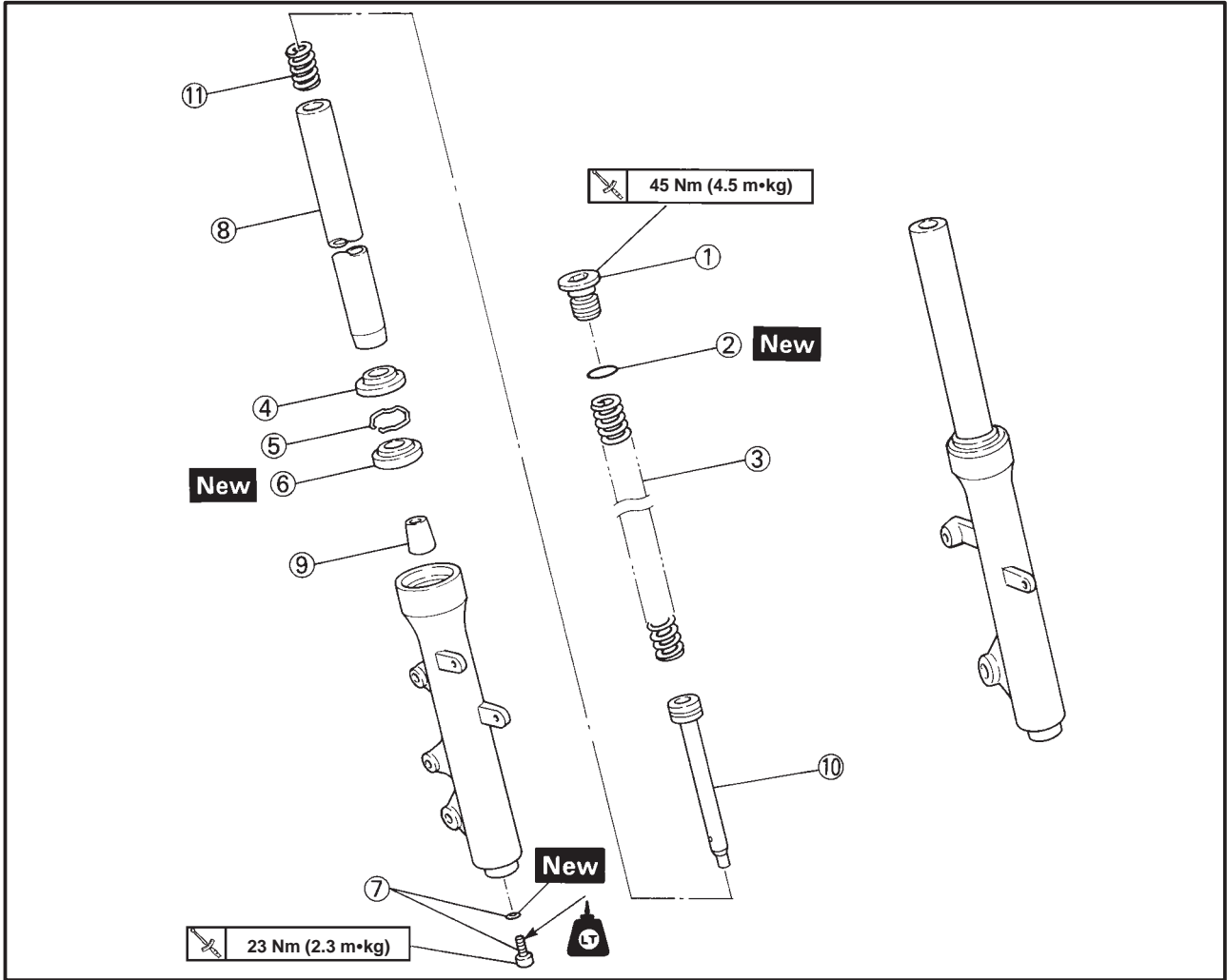


**FRONT FORK**  
FRONT FORK



Order	Job name/Part name	Q'ty	Remarks
	<b>Front fork removal</b>		
	Front wheel		Remove the parts in order. Refer to "FRONT WHEEL" section.
1	Caliper assembly	1	
2	Front fender	1	
3	Inner fender	1	
4	Bolt (under bracket upper)	2	
5	Cap bolt/O-ring	2/2	Refer to "FRONT FORK REMOVAL/ INSTALLATION" section.
6	Bolt (under bracket lower)	2	
7	Front fork (left/right)	1/1	
			Reverse the removal procedure for installation.

FRONT FORK DISASSEMBLY



Order	Job name/Part name	Q'ty	Remarks
	<b>Front fork disassembly</b>		Remove the parts in order.
①	Cap bolt	1	Refer to "FRONT FORK REMOVAL/INSTALLATION" section.
②	O-ring	1	Refer to "FRONT FORK ASSEMBLY" section.
③	Fork spring	1	
④	Dust seal	1	
⑤	Retaining clip	1	
⑥	Oil seal	1	Refer to "FRONT FORK DISASSEMBLY/ASSEMBLY" section.
⑦	Bolt (Damper rod)/Gasket	1/1	
⑧	Inner tube	1	Refer to "FRONT FORK ASSEMBLY" section.
⑨	Oil lock piece	1	
⑩	Damper rod	1	
⑪	Rebound spring	1	Reverse the disassembly procedure for assembly.

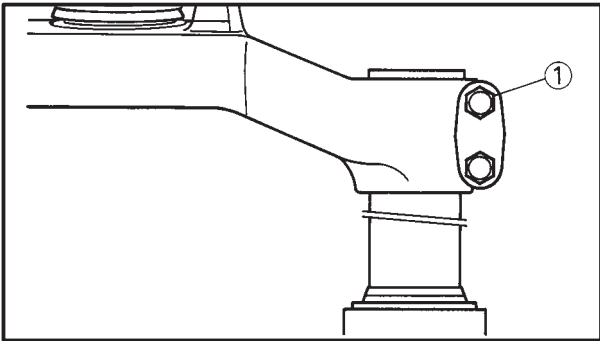


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**FRONT FORK REMOVAL**

**⚠ WARNING**

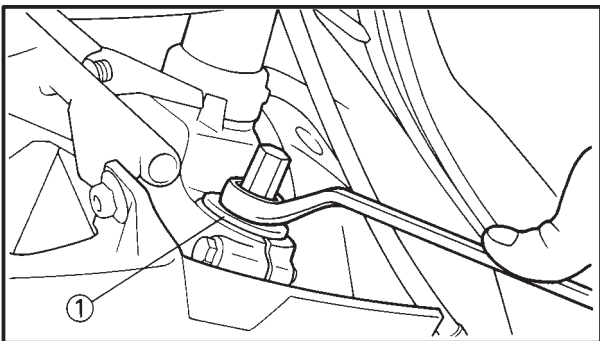
- Securely support the scooter so there is no danger of it falling over.
- Stand the scooter on a level surface.
- Stand the scooter on its centerstand.



1. Loosen:
  - Bolt (lower bracket upper) ①

**NOTE:**

Loosen only the upper bolt.



2. Remove:
  - Cap bolt ①

**NOTE:**

Use 17 mm width hexagonal wrench for removing.

3. Loosen the bolt (under bracket lower) to remove the front forks.

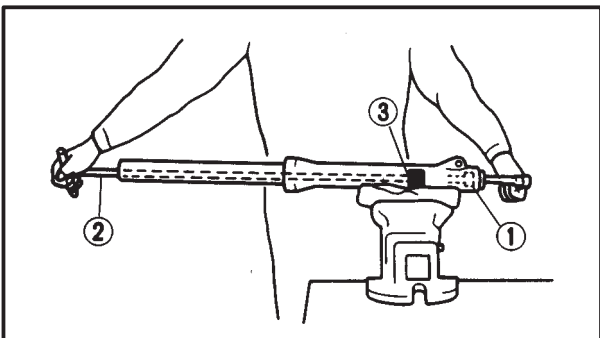
**⚠ WARNING**

**Support the front fork before loosening the pinch bolts.**

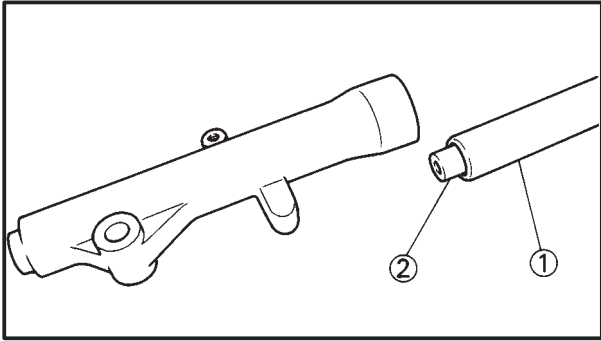
YP703020

**FRONT FORK DISASSEMBLY**

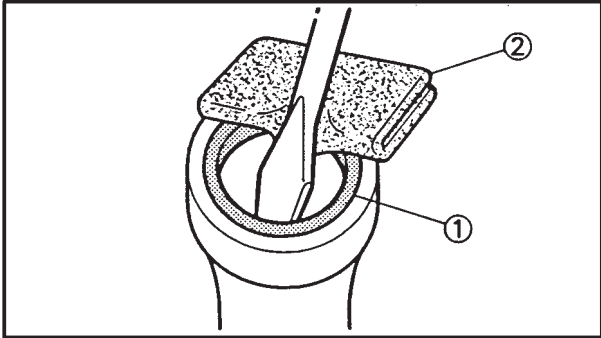
1. Remove:
  - Bolt (damper rod) ①
 Loosen the bolt (damper rod) ① while holding the damper rod with T-handle ② and holder ③.



	<b>Damper rod holder:</b>
	90890-04084
	<b>T-handle</b>
	90890-01326



2. Remove:
- Inner tube
  - Oil lock piece

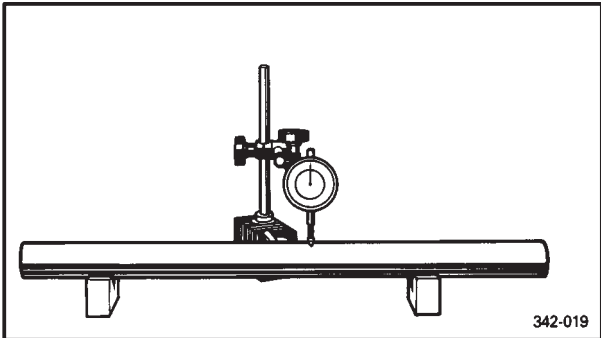


3. Remove:
- Oil seal ①

**CAUTION:** \_\_\_\_\_

Never reuse the oil seal.

② Rag



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**FRONT FORK INSPECTION**

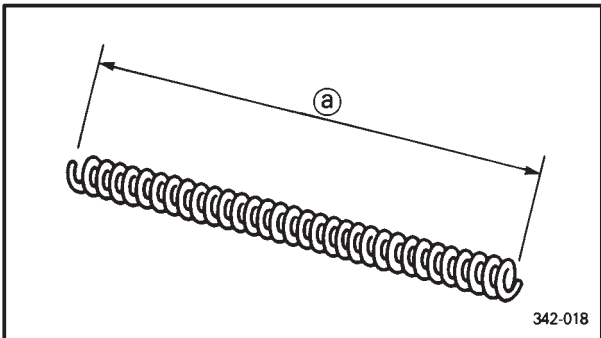
1. Inspect:
- Inner tube bending

	<b>Inner tube bending limit:</b> 0.2 mm
---	--


Scratches/bends/damage → Replace.

**⚠ WARNING** \_\_\_\_\_

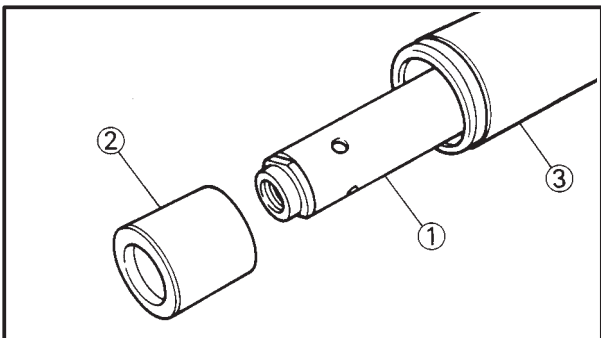
Do not attempt to straighten a bent inner tube as this may dangerously weaken the tube.



2. Measure:
- Fork spring ①

	<b>Front fork spring free length:</b> 268.5 mm <Wear limit> 263.5 mm
---	---

Over the specified limit → Replace.

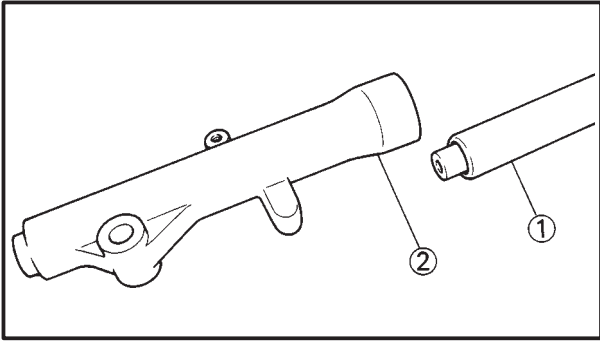


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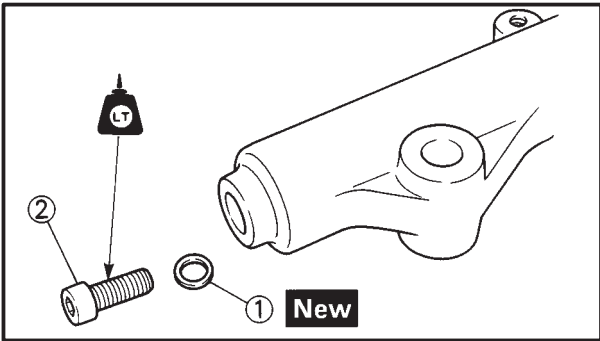
**FRONT FORK ASSEMBLY**

Reverse the “DISASSEMBLY” procedure.  
Note the following points.

1. Install:
- Damper rod ①
  - Rebound spring
  - Oil lock piece ②
  - Inner tube ③

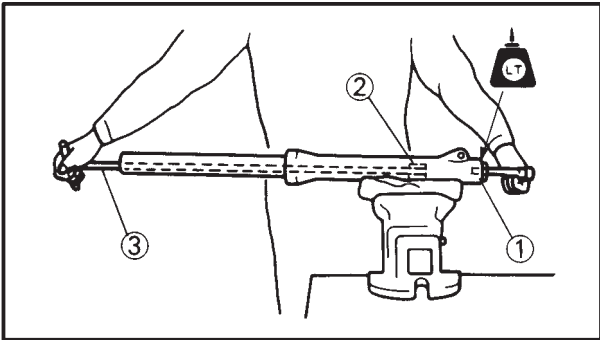


2. Install:
- Inner tube ①
  - Into outer tube ②.



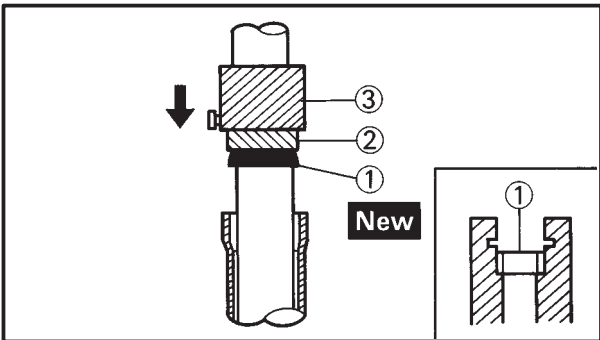
3. Install:
- Plain washer ① **New**
  - Bolt (damper rod) ②

4. Tighten:
- Bolt (damper rod) ①  23 Nm (2.3 m•kg)



**NOTE:** \_\_\_\_\_  
Tighten damper rod bolt ① while holding the damper rod with a T-handle ② and a damper rod holder ③.


	<b>Damper rod holder:</b> 90890-04084
	<b>T-handle</b> 90890-01326

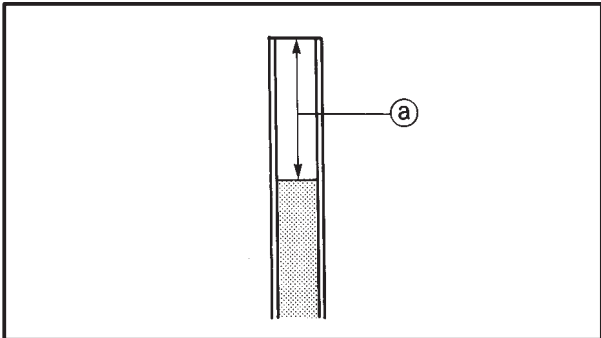
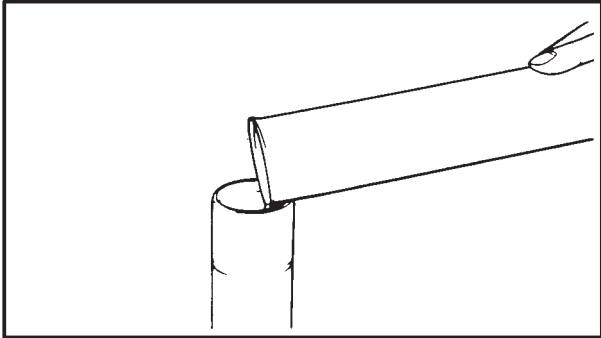
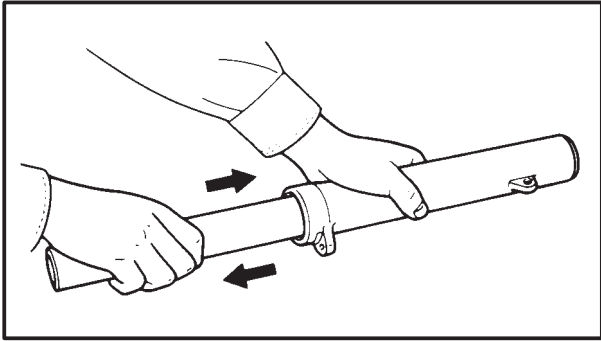


6. Install:
- Oil seal ① **New**
  - Retaining clip
  - Dust seal
- Use the fork seal driver weight ③ and the attachment ②.

**NOTE:** \_\_\_\_\_  
• Before installing the oil seal ①, apply lithium soap base grease onto the oil seal lips.  
• Adjust the retaining clip so that it fits into the outer tube groove.


**CAUTION:** \_\_\_\_\_  
**Make sure that the oil seal numbered side faces upward.**

	<b>Fork seal driver weight:</b> 90890-01367
	<b>Attachment:</b> 90890-01374




7. Inspect:
- Inner tube operation  
Unsmooth operation → Disassembly and recheck.

8. Fill:
- Fork oil

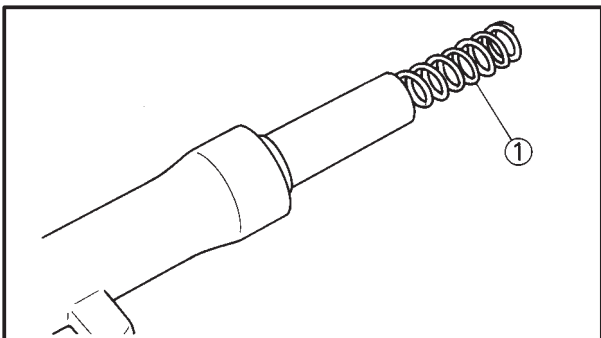
	<b>Oil quantity:</b>
	<b>0.142 L</b>
	<b>Recommended oil:</b> <b>Fork oil 15 WT or equivalent</b>

9. After filling up, slowly pump the fork up and down to distribute the fork oil.

10. Measure:
- Oil level ①  
Out of specification → Adjust.

	<b>Oil level:</b>
	<b>80 mm</b>
	<b>(from the top of the inner tube fully compressed and without the fork spring)</b>

**NOTE:** \_\_\_\_\_  
Hold the fork in an upright position.  
\_\_\_\_\_

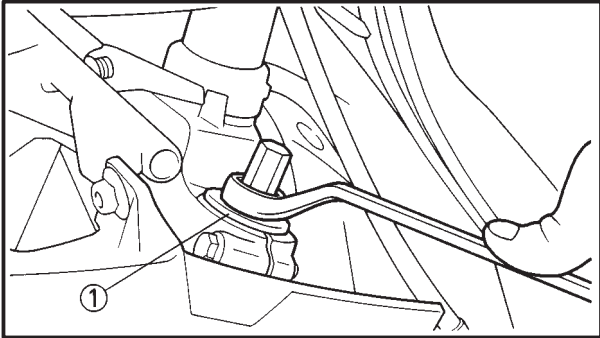
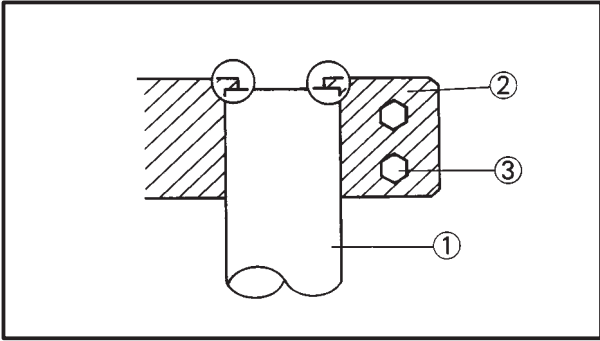


11. Install:
- Front fork spring ①

**NOTE:** \_\_\_\_\_

- Install the fork spring with its smaller pitch upward.
- Before installing the cap bolt, apply grease to the O-ring.
- Temporarily tighten the cap bolt.

\_\_\_\_\_



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## FRONT FORK INSTALLATION

Reverse the "REMOVAL" procedure.  
Note the following points.

1. Install:


- Front fork ①


Temporary tighten the pinch bolts.

**NOTE:**

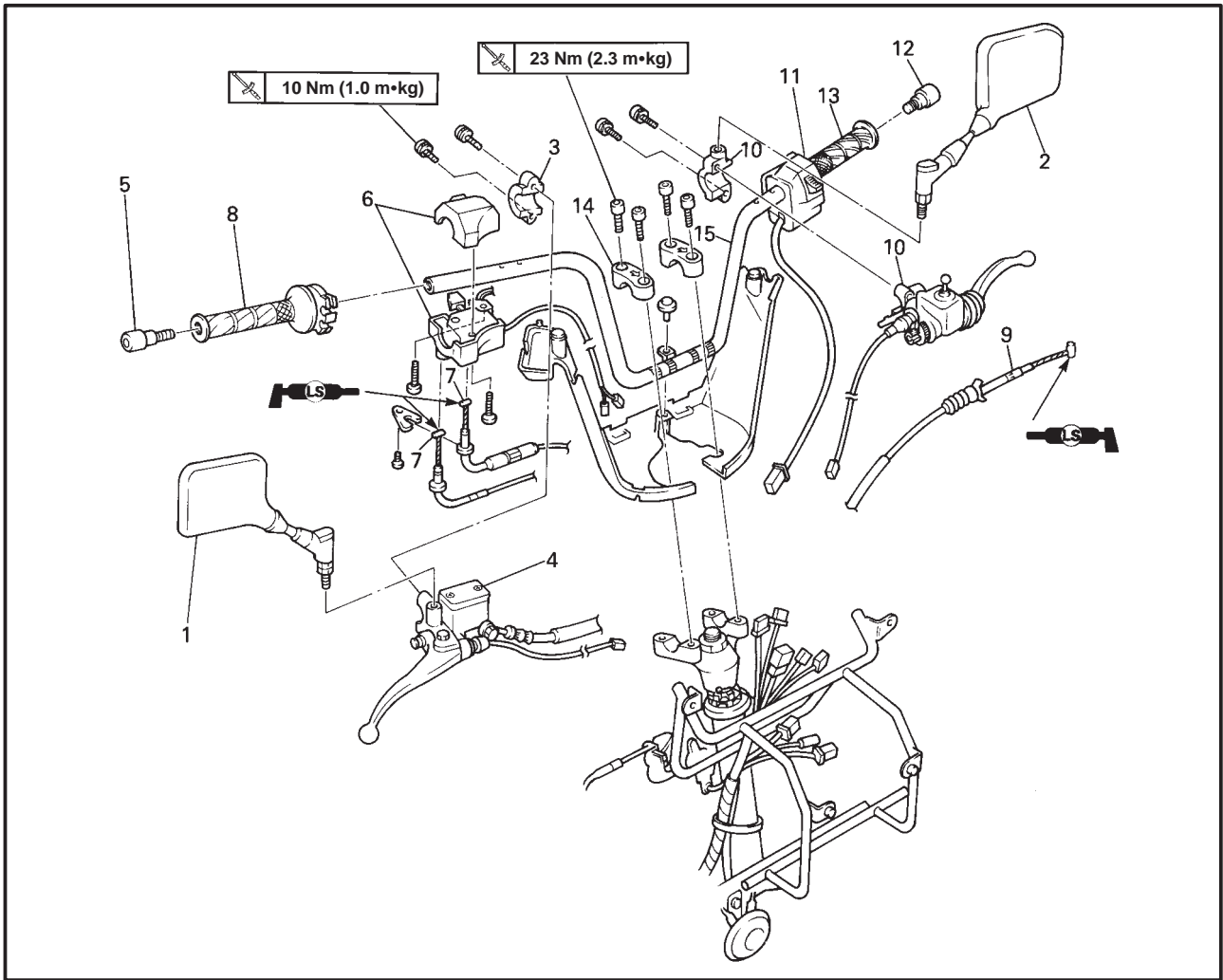
Pull up the inner tube until its end flushes the top of the under bracket ②, then temporarily tighten the bolt (under bracket lower) ③.

2. Tighten:

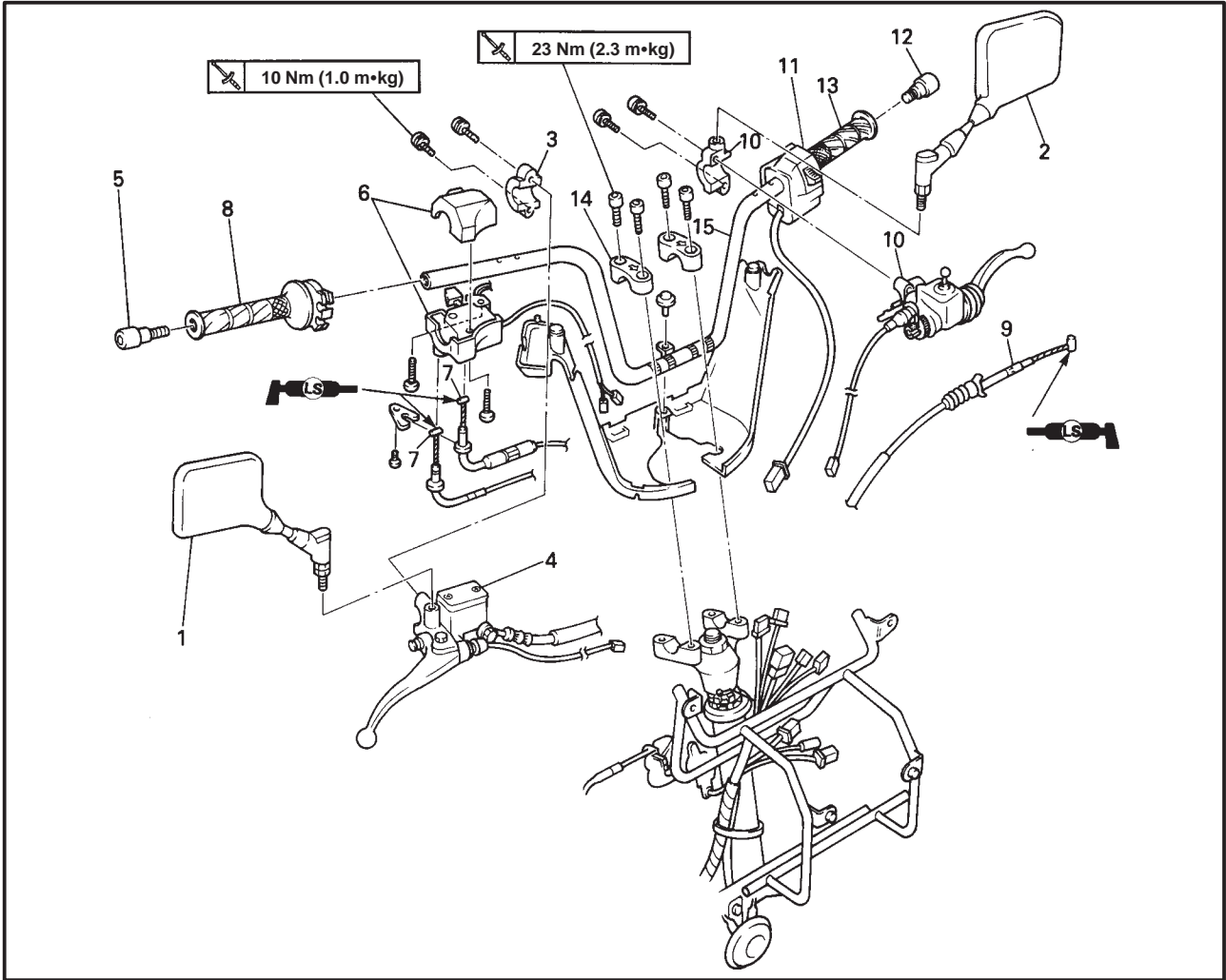
- Cap bolts ①  45 Nm (4.5 m•kg)
- Pinch bolts (under bracket upper/lower)

 23 Nm (2.3 m•kg)

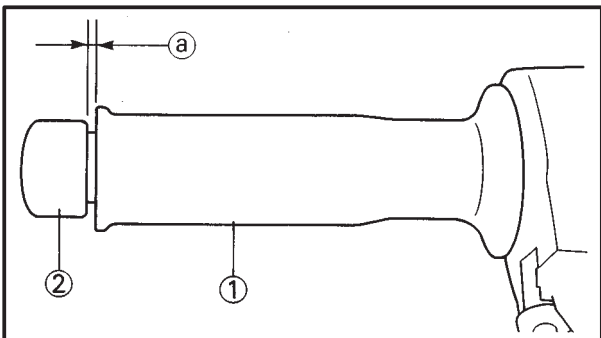
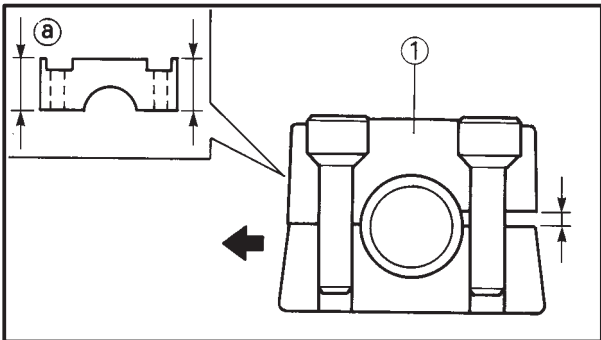
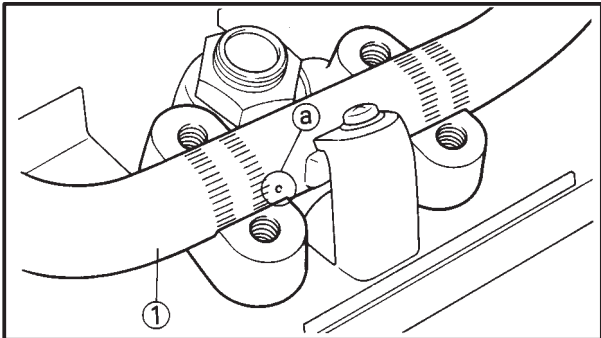
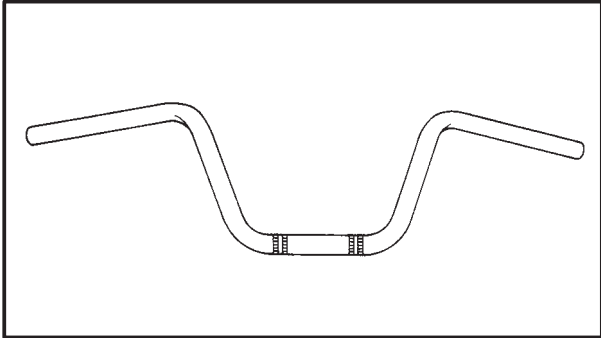
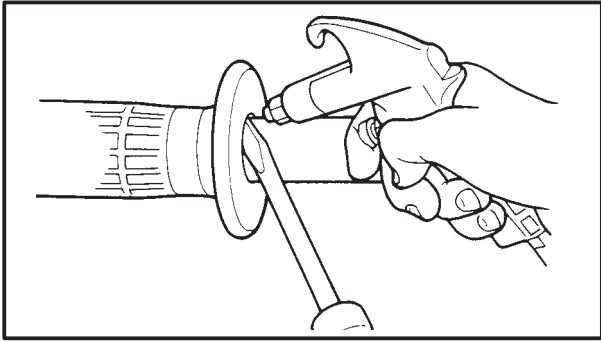
HANDLEBAR



Order	Job name/Part name	Q'ty	Remarks
	<b>Handlebar removal</b>		Remove the parts in order.
	Handlebar upper cover		Refer to "COVER AND PANEL" section in CHAPTER 3.
1	Rear view mirror (right)	1	Left-thread screw.  Refer to "HANDLEBAR INSTALLATION" section.
2	Rear view mirror (left)	1	
3	Master cylinder bracket	1	
4	Master cylinder	1	
5	Grip end (right)	1	
6	Handlebar switch (right)	1	
7	Throttle cable	2	
8	Grip assembly	1	
9	Brake cable	1	
10	Lever holder (left)	1	
			Refer to "HANDLEBAR INSTALLATION" section.



Order	Job name/Part name	Q'ty	Remarks
11	Handlebar switch (left)	1	Refer to "HANDLEBAR INSTALLATION" section.
12	Grip end (left)	1	
13	Grip	1	
14	Upper handlebar holder	2	Refer to "HANDLEBAR INSTALLATION" section.
15	Handlebar	1	
			Reverse the removal procedure for installation.



YP\*\*\*\*\*

**HANDLEBAR REMOVAL**

1. Remove:
  - Grip (Left)

\*\*\*\*\*

**Removal steps:**

- Remove the grip end (left).
- Blow with compressed air between the handlebar and adhesive side of the grip to remove.

\*\*\*\*\*

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**HANDLEBAR INSPECTION**

1. Inspect:
  - Handlebar
  - Bends/Cracks/Damage → Replace.

**⚠ WARNING**

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

YP\*\*\*\*\*

**HANDLEBAR INSTALLATION**

1. Install:
  - Handlebar ①

**NOTE:**

- Apply a light coat of lithium soap base grease onto the handlebar right end.
- Align the match marks (a) on the handlebar with the lower handlebar holder upper surface.

2. Install:

- Upper handlebar holder ①

 23 Nm (2.3 m•kg)

**NOTE:**

The upper handlebar holders should be installed with the arrow marks a facing forward (a).

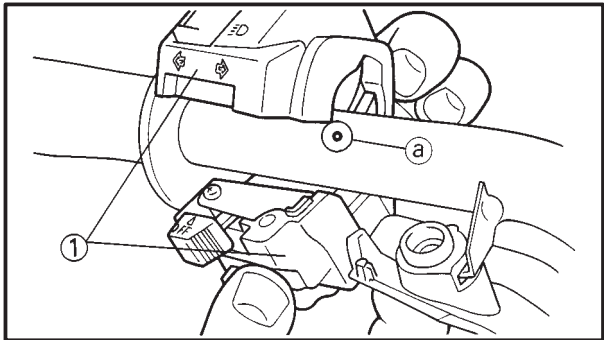
3. Install:

- Grip ①
- Grip end (Left) ②

**NOTE:**

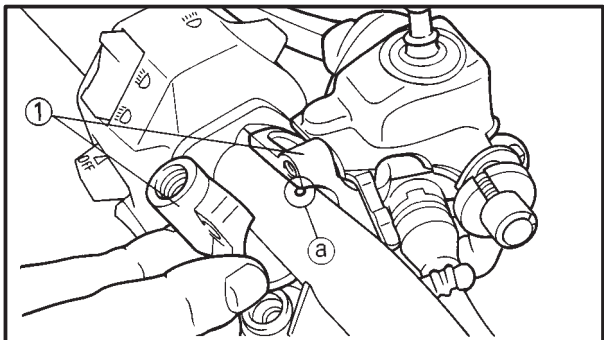
Provide a clearance (a) of 2.5 mm between the handlebar grip and handlebar grip end.





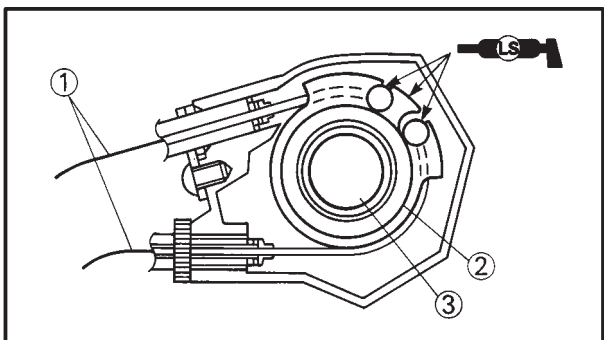
4. Install:  
 • Handlebar switch (left) ①

**NOTE:** \_\_\_\_\_  
 Align the handlebar switch mating surface with the punched mark (a) on the handlebar.  
 \_\_\_\_\_



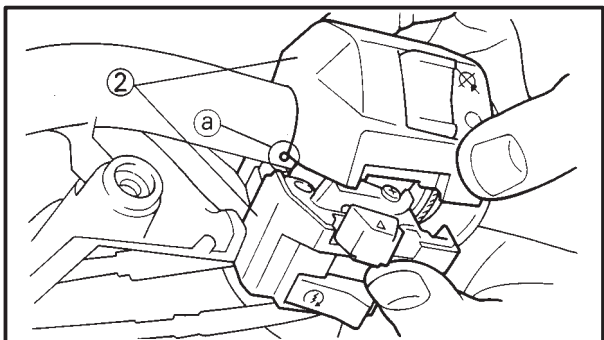
5. Install:  
 • Lever holder (left) ①

**NOTE:** \_\_\_\_\_  
 Align the lever holder mating surface with the punched mark (a) on the handlebar.  
 \_\_\_\_\_



6. Install:  
 • Throttle cable ①  
 • Grip assembly ②

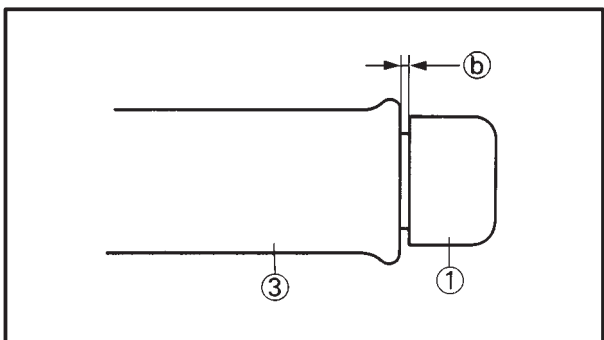
**NOTE:** \_\_\_\_\_  
 Apply a light coat of lithium soap base grease onto the inside of the grip assembly and install it to the handlebar.  
 \_\_\_\_\_



7. Install:  
 • Grip end (right) ①  
 • Handlebar switch (right) ②

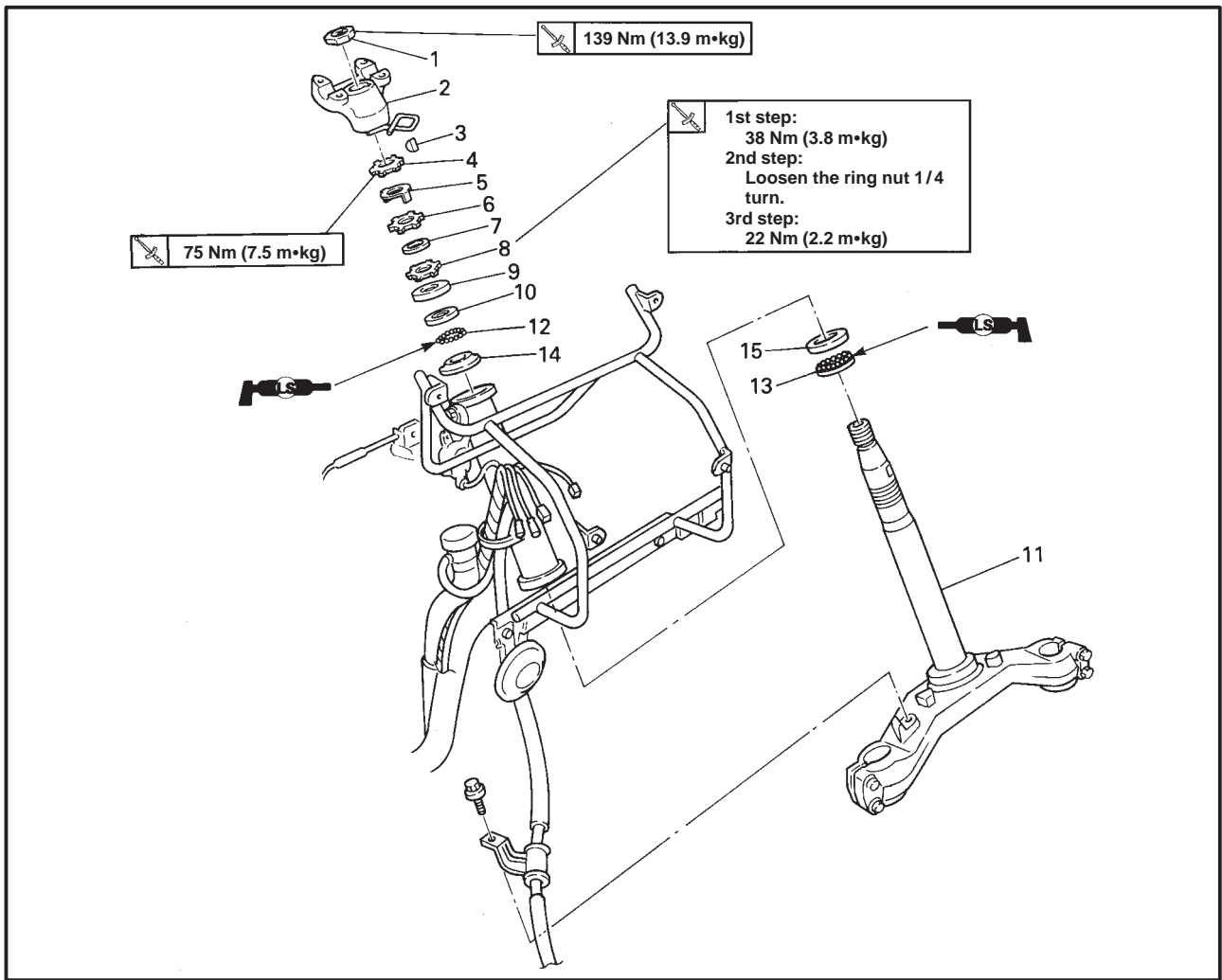
\*\*\*\*\*  
**Installation steps:**  
 • Align the handlebar switch (right) mating surface and punched mark (a) on the handlebar.  
 • Provide a clearance (b) of 2.5 mm between the grip assembly ③ and handlebar grip. Otherwise, the grip may not move.

**⚠ WARNING** \_\_\_\_\_  
**Check the throttle grip for smooth operation.**  
 \_\_\_\_\_

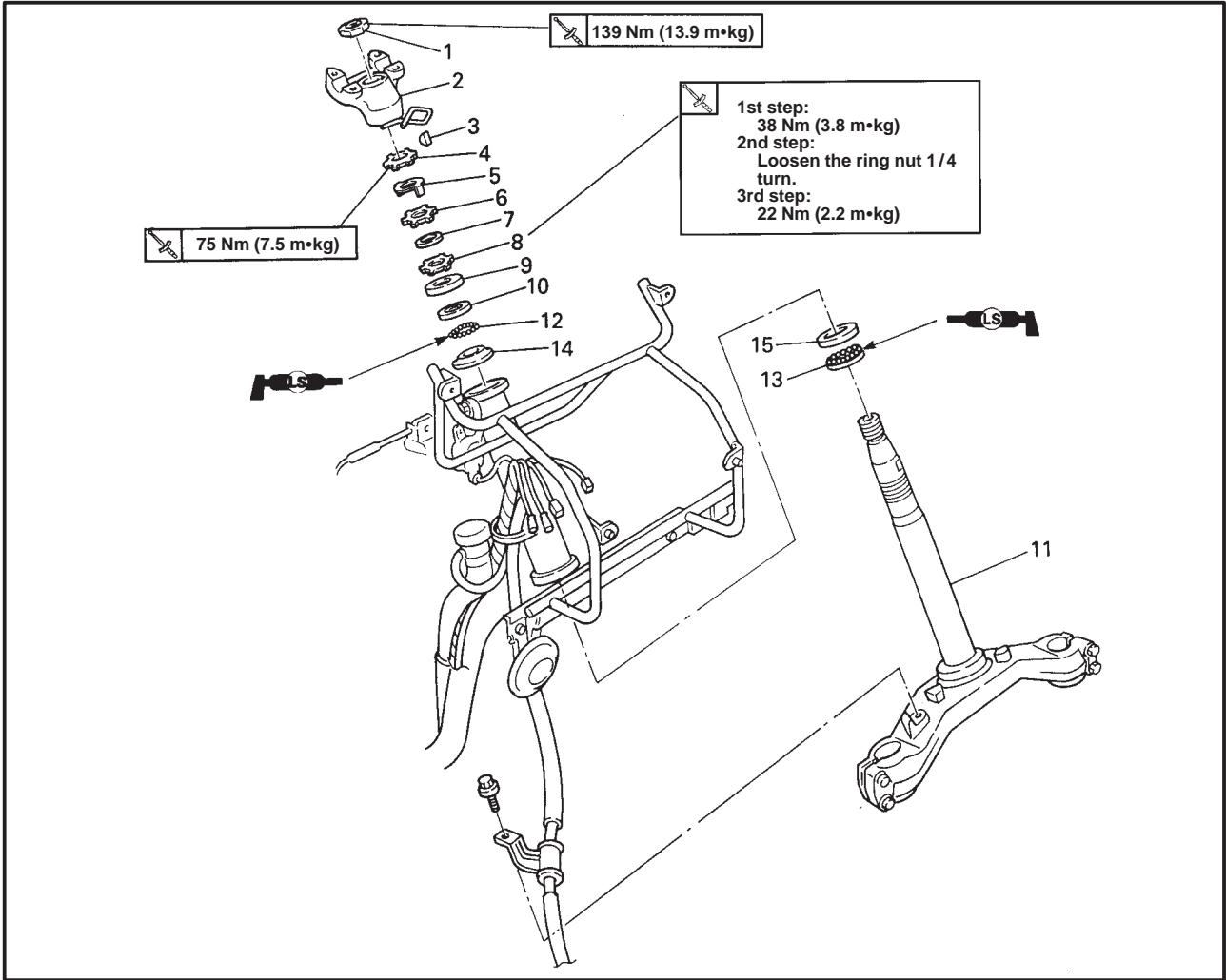


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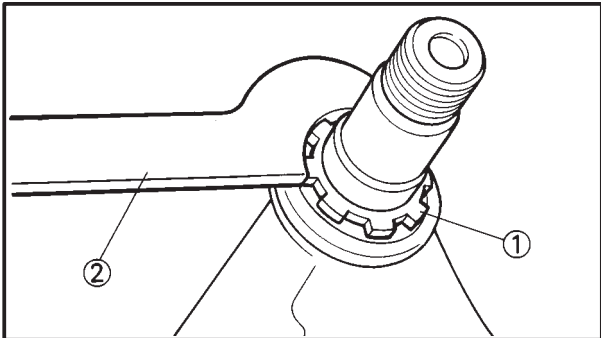
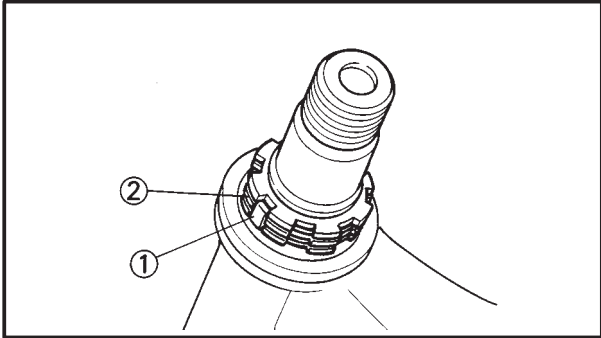
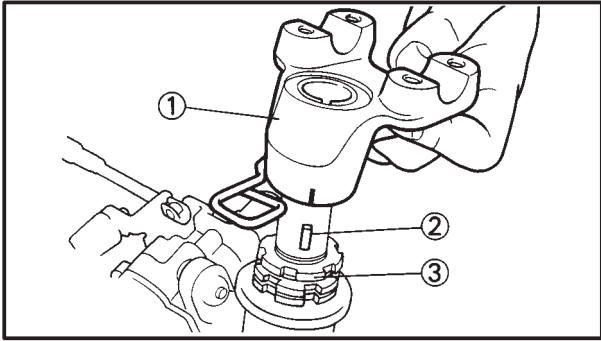
STEERING



Order	Job name/Part name	Q'ty	Remarks
	<b>Steering removal</b>		Remove the parts in order.
	Handlebar upper cover		Refer to "FRONT WHEEL, BRAKE DISC" section.
	Front fork		Refer to "FRONT FORK" section.
	Handlebar		Refer to "HANDLEBAR" section.
1	Nut	1	Refer to "STEERING REMOVAL/INSTALLATION" section.
2	Handlebar lower holder	1	
3	Woodruff key	1	
4	Ring nut (upper)	1	
5	Lock washer	1	
6	Ring nut (center)	1	
7	Rubber washer	1	
8	Ring nut (lower)	1	
9	Ball race cover	1	
10	Ball race 1	1	
11	Lower bracket	1	



Order	Job name/Part name	Q'ty	Remarks
12	Ball bearing	22	Refer to "STEERING INSTALLATION" section. Reverse the removal procedure for installation.
13	Ball bearing	19	
14	Ball race 1	1	
15	Ball race 2	1	



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**STEERING REMOVAL**

**⚠ WARNING**

- Securely support the scooter so that there is no danger of it falling over.
- Stand the scooter on a level surface.

1. Remove:
- Handlebar lower holder ①
  - Woodruff key ②

**NOTE:**

Remove the handlebar lower holder by loosening the ring nut (upper) ③ gradually.

2. Remove:
- Ring nut (upper)
  - Lock washer ①
  - Ring nut (center) ②
  - Rubber washer

3. Remove:
- Ring nut (lower) ①

**NOTE:**

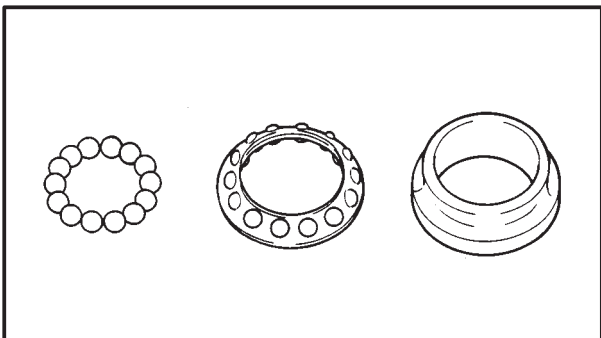
Hold the lower bracket by hand, then remove by using the exhaust ring and steering nut wrench ②.



**Exhaust and steering nut wrench:  
90890-01268**

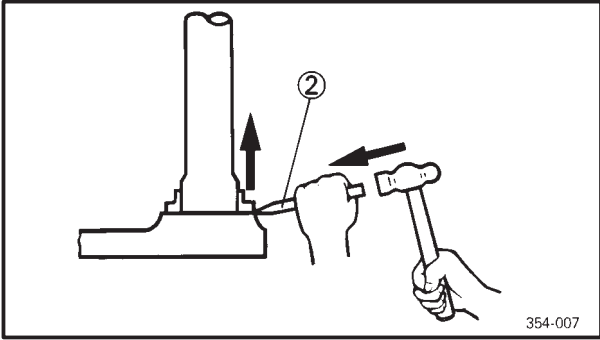
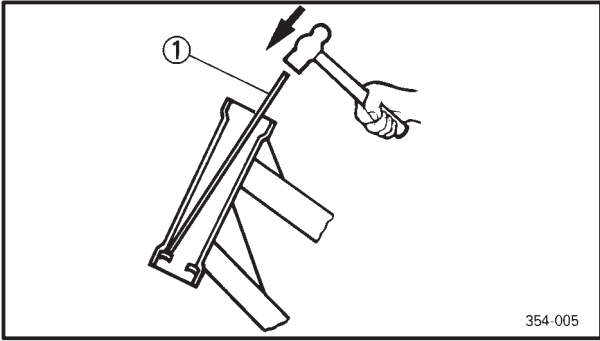
**⚠ WARNING**

Securely support the steering shaft so that there is no danger of it falling down.



**INSPECTION**

1. Wash the bearing and bearing races with a solvent.
2. Inspect:
  - Bearings
  - Bearing races
  - Pitting/Damage → Replace.



\*\*\*\*\*

**Bearing race replacement steps:**

- Remove the bearing races on the head pipe using long rod ① and the hammer as shown.
- Remove the bearing race on the under bracket using the floor chisel ② and the hammer as shown.
- Install the new dust seal and races.

\*\*\*\*\*

**NOTE:** \_\_\_\_\_

- Always replace bearings and races as a set.
- Replace the dust seal whenever a steering head disassembled.

\_\_\_\_\_

**CAUTION:** \_\_\_\_\_

**If the bearing race is fitted not squarely, the head pipe could be damaged.**

\_\_\_\_\_

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**STEERING INSTALLATION**

Reverse the “REMOVAL” procedure.

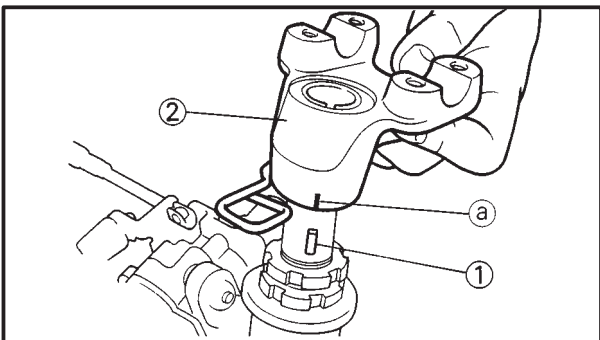
Note the following points.

1. Lubricate:
  - Bearings (upper and lower)
  - Bearing races


	<p><b>Recommended lubricant:</b> <b>Lithium-soap base grease</b></p>
---	--

2. Install:
  - Ring nut (lower)
  - Rubber washer
  - Ring nut (center)
  - Lock washer
  - Ring nut (upper)

Refer to “STEERING HEAD INSPECTION” section in CHAPTER 3.



3. Install:
  - Woodruff key ①
  - Handlebar lower bracket ②

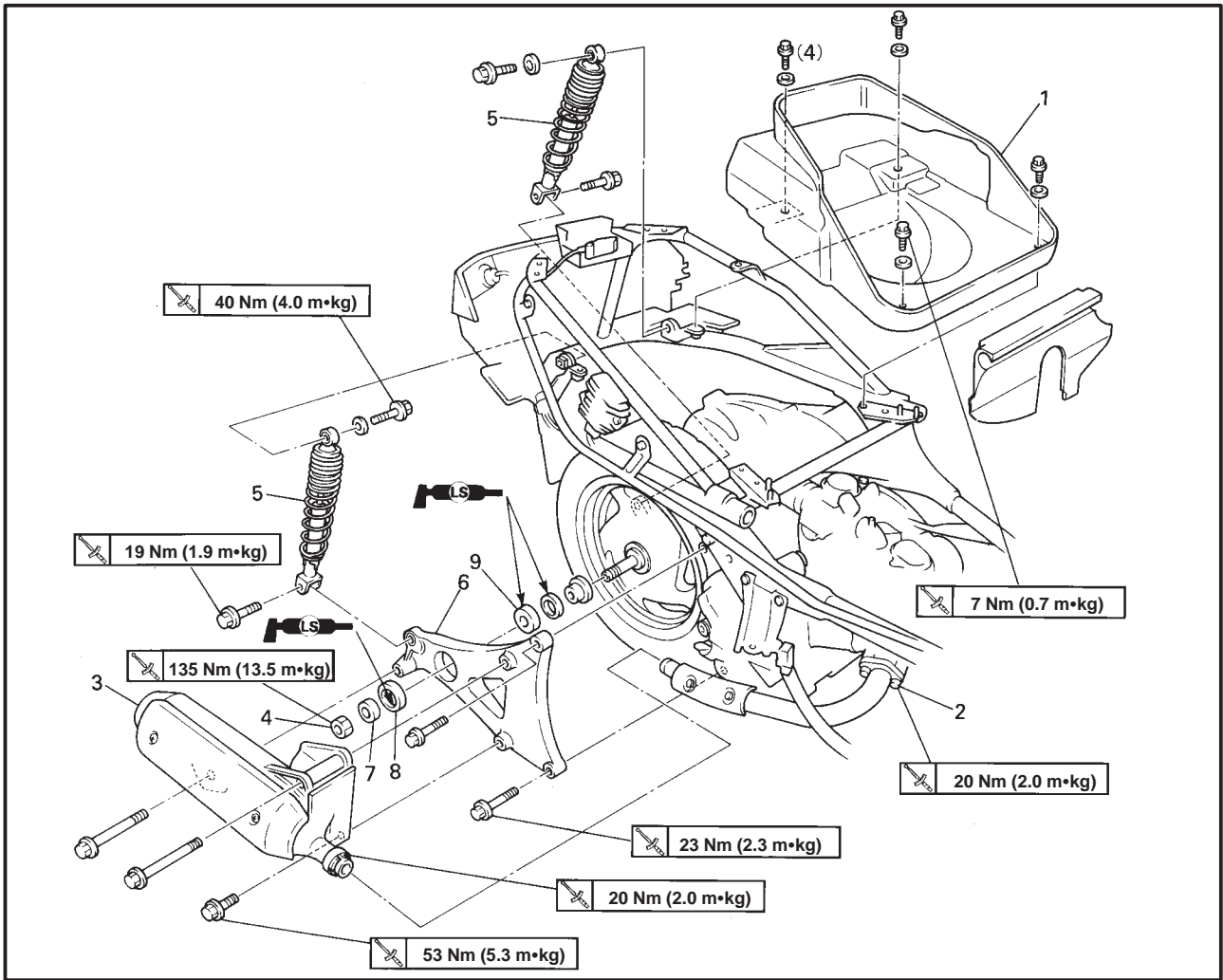
 **139 Nm (13.9 m•kg)**

**NOTE:** \_\_\_\_\_

Align the woodruff key to key groove mark (a) on the handlebar lower holder.

\_\_\_\_\_

REAR SHOCK ABSORBER AND SWINGARM



Order	Job name/Part name	Q'ty	Remarks
	<b>Rear shock absorber and swingarm removal</b>		Remove the parts in order.
	Side panels		Refer to "COVER AND PANEL" section in CHAPTER 3.
1	Box	1	<b>NOTE:</b> _____
2	Nut	2	Loosen.
3	Muffer assembly	1	<b>NOTE:</b> _____
4	Axle nut	1	Remove with the rear brake applied.
5	Rear shock absorber	1	_____
6	Swingarm	1	
7	Collar	1	
8	Oil seal	1	
9	Bearing	1	
			Reverse the removal procedure for installation.

---

## CHAPTER 8. ELECTRICAL

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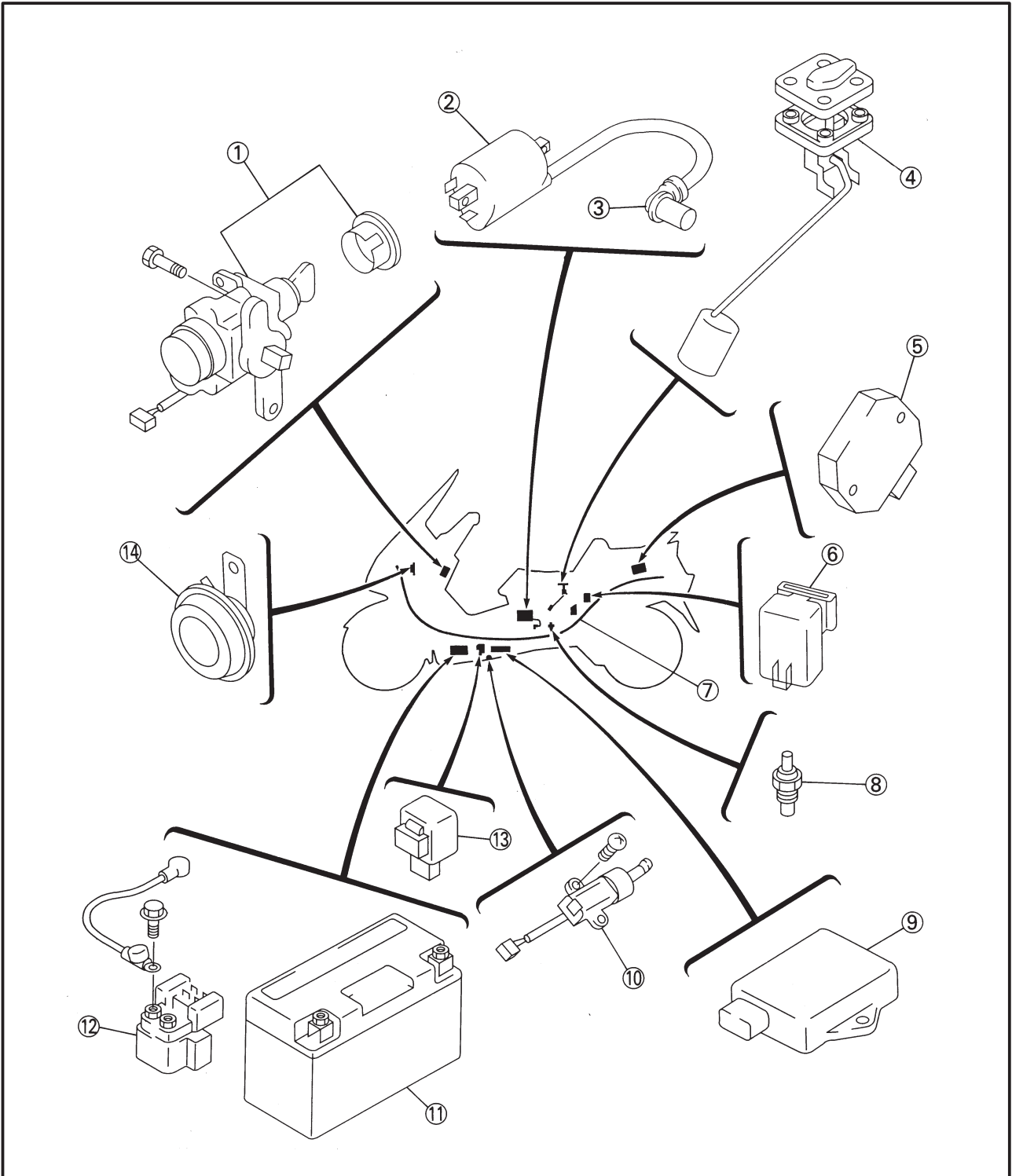
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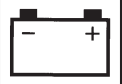
EB800000

**ELECTRICAL  
ELECTRICAL COMPONENTS**

- ① Main switch
- ② Ignition coil
- ③ Spark plug cap
- ④ Fuel sender
- ⑤ Rectifier/Regulator
- ⑥ Starting circuit cut-off relay
- ⑦ Wireharness
- ⑧ Thermo unit
- ⑨ Ignitor unit
- ⑩ Sidestand switch
- ⑪ Battery
- ⑫ Starter relay
- ⑬ Flasher relay
- ⑭ Horn







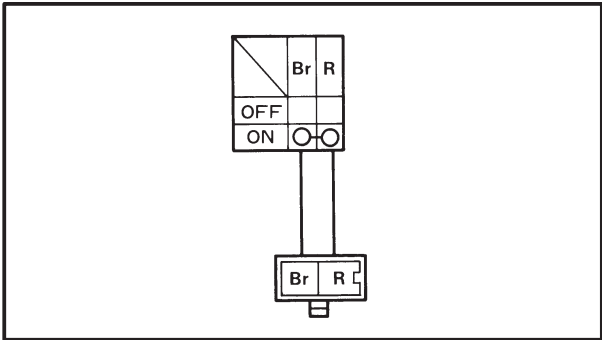
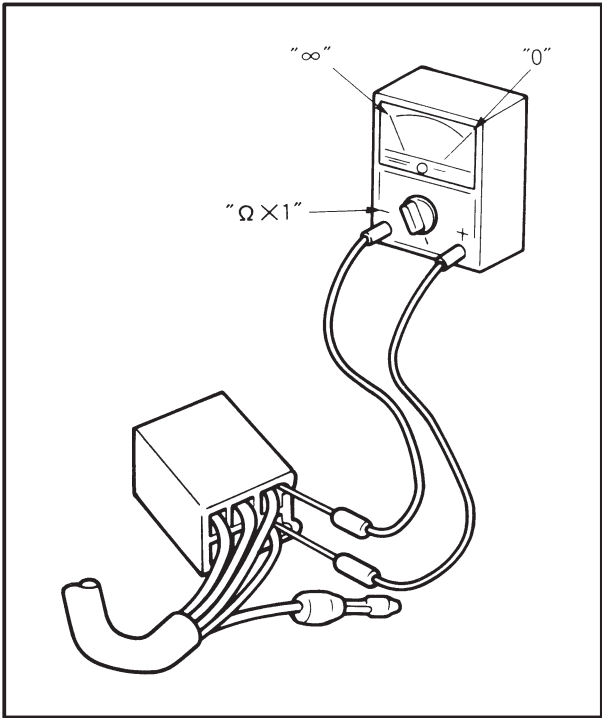
- |                                  |                              |
|----------------------------------|------------------------------|
| ① A.C. magneto                   | ②⑦ Turn switch               |
| ② Rectifier regulator            | ②⑧ Horn switch               |
| ③ Main switch                    | ②⑨ Dimmer switch             |
| ④ Battery                        | ③⑩ Pass switch               |
| ⑤ Main fuse                      | ③⑪ Handlebar switches (left) |
| ⑥ Starter relay                  | ③⑫ Tail/Brake light          |
| ⑦ Starter motor                  | ③⑬ Licence light             |
| ⑧ Thermo switch (auto choke)     | ③⑭ Rear flasher lights       |
| ⑨ Auto choke                     | ③⑮ Front flasher lights      |
| ⑩ Ignitor unit                   | ③⑯ Head light                |
| ⑪ Ignition coil                  | ③⑰ Auxiliary light           |
| ⑫ Spark plug                     | ③⑱ Turn indicator lights     |
| ⑬ Pickup coil                    | ③⑲ High beam indicator light |
| ⑭ Sidestand switch               | ④⑰ Meter lights              |
| ⑮ Starting circuit cut-off relay | ④⑱ Oil indicator light       |
| ⑯ Lights switch                  | ④⑲ Reset switch              |
| ⑰ Starter switch                 | ④⑳ Fuel gauge                |
| ⑱ Engine stop switch             | ④㉑ Read switch               |
| ⑲ Handlebar switches (right)     | ④㉒ Clock                     |
| ⑳ Fuse (fan)                     | ④㉓ Thermometer               |
| ㉑ Thermo switch                  | ④㉔ Speedometer               |
| ㉒ Fan motor                      | ④㉕ Meter assembly            |
| ㉓ Rear brake switch              | ④㉖ Fuel sender               |
| ㉔ Front brake switch             | ④㉗ Thermo unit               |
| ㉕ Flasher relay                  |                              |
| ㉖ Horn                           |                              |

**NOTE:**

- Starter switch is closed while the button (switch) is pushed.
- Sidestand switch is closed while the side stand is upped.
- Brake switch is closed while the brake is applied.

**COLOR CODE**

B	Black	Y	Yellow	R/B	Red/Black
Br	Brown	W	White	R/Y	Red/Yellow
Ch	Chocolate	B/R	Black/Red	R/W	Red/White
Dg	Dark green	Br/W	Brown/White	Y/R	Yellow/White
G	Green	G/R	Green/Red	W/G	White/Green
L	Blue	G/Y	Green/Yellow		
O	Orange	L/B	Blue/Black		
Sb	Sky blue	L/Y	Blue/Yellow		
P	Pink	L/W	Blue/White		
R	Red	L/R	Blue/Red		



YP-N

**CHECKING SWITCHES**  
**CHECKING STEPS**

Using pocket tester, check switches for continuity between their terminals to determine whether they are correctly connected.

Replace the switch component if any of the combinations does not produce the correct reading.

	<b>Pocket tester:</b> <b>90890-03112</b>
---	---

**NOTE:** \_\_\_\_\_

- Turn the switch to the “ON”, “OFF” positions several times.
- Adjust the pocket tester to correct “0” position before checking switches.
- Set the pocket tester selector to “× 1” Ω.

**SWITCH CONNECTION AS SHOWN IN THIS MANUAL**

This manual contains connection charts, like the one shown on the left, showing the terminal connections of switches (e.g. the main switch, handlebar switch, brake switch, lighting switch etc.)

The column on the extreme left indicates the different switch positions, the top line indicates the colors of the leads connected to the terminals on the switch.

“○—○” indicates terminals between which there is continuity, i.e. a closed circuit, in the given switch position.

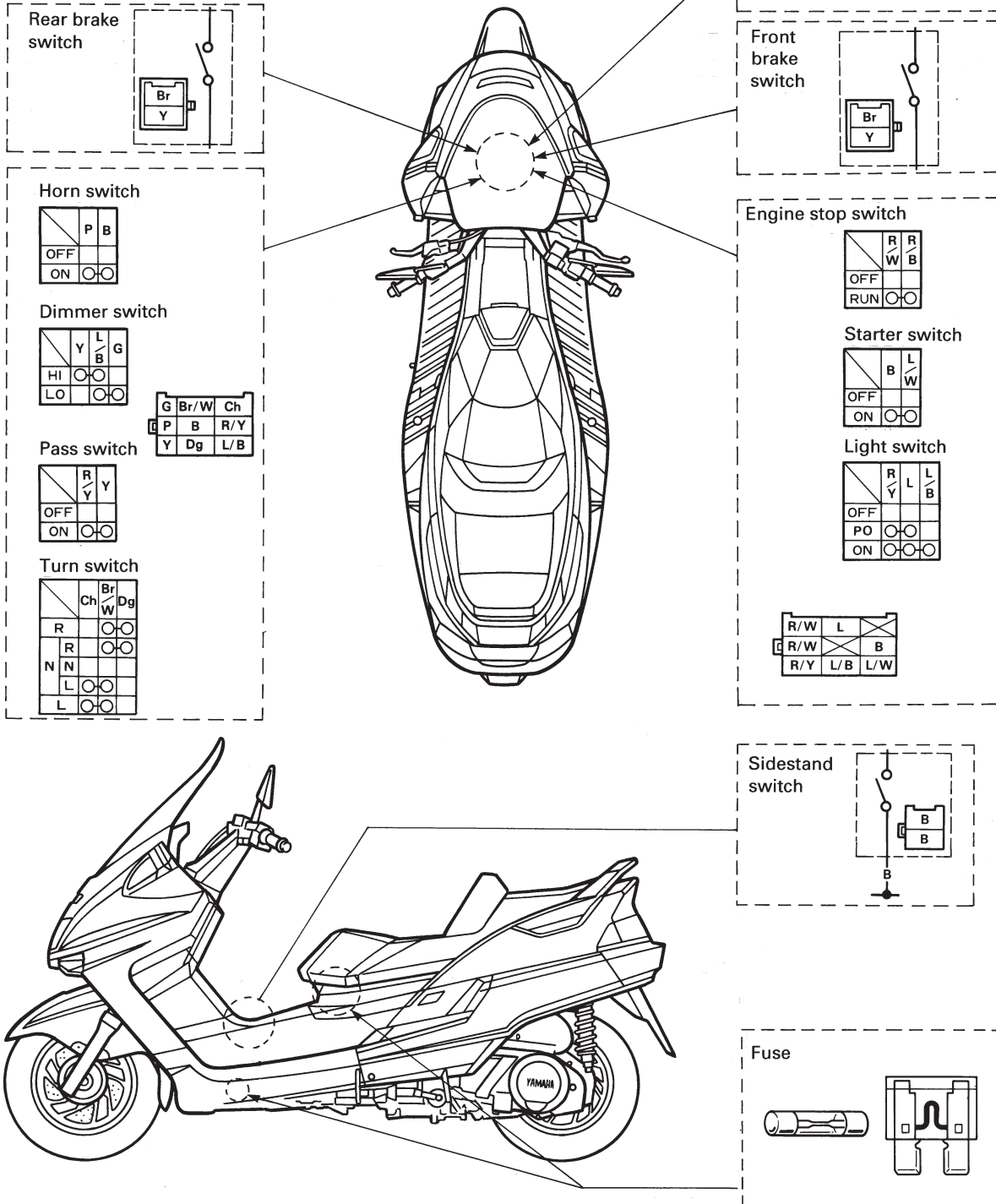
In this chart:  
“Br and R” have continuity with the switch in the “ON” position.

yp\*\*\*\*\*

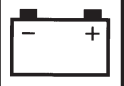
## SWITCH POSITION AND TERMINAL CONNECTION

Before checking a switch refer to the checking switches as shown in the left page and check for the correct terminal connections (closed circuit) according to the color combinations shown in the chart.

Poor connection, fault → Repair or replace.

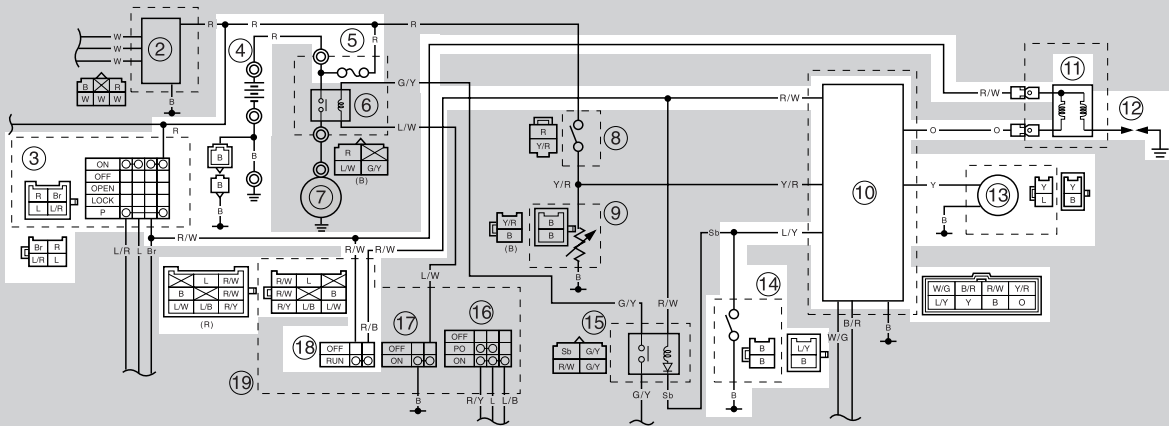


\* Indicates coupler positions.



EB802000

**IGNITION SYSTEM  
CIRCUIT DIAGRAM**



- ③ Main switch
- ④ Battery
- ⑤ Main fuse
- ⑩ Ignitor unit
- ⑪ Ignition coil
- ⑫ Spark plug
- ⑬ Pickup coil
- ⑭ Sidestand switch
- ⑱ Engine stop switch

YP802010

**TROUBLESHOOTING**

**IF THE IGNITION SYSTEM FAILS TO OPERATE.  
(NO SPARK OR INTERMITTENT SPARK)**


**Procedure**

Check:

1. Fuse (Main)
2. Battery
3. Spark plug
4. Ignition spark gap
5. Spark plug cap resistance
6. Ignition coil
7. Pickup coil resistance
8. Main switch
9. Engine stop switch
10. Sidestand switch
11. Wiring connection (entire ignition system)

**NOTE:**

- Remove the following parts before troubleshooting.
  - 1) Footrest board
  - 2) Cowling body
- Use the special tools specified in the trouble shooting section.



**Ignition checker**  
90890-06754

**Pocket tester:**  
90890-03112

YP\*\*\*\*\*

1. Fuse

---

Refer to "CHECKING SWITCHES" section in CHAPTER 8.

CONTINUITY

YP\*\*\*\*\*

2. Battery

---

- Check the battery condition.

Refer to "BATTERY INSPECTION" section in CHAPTER 3.

CORRECT

YP\*\*\*\*\*


3. Spark plug

---

- Check the spark plug condition.
- Check the spark plug type.
- Check the spark plug gap.

Refer to "SPARK PLUG INSPECTION" section in CHAPTER 3.

OUT OF SPECIFICATION



**Spark plug gap:**  
0.6 ~ 0.7 mm

↓

NO CONTINUITY

Replace the fuse.

INCORRECT

- Clean battery terminals.
- Recharge or replace the battery.

**Standard spark plug:**  
DR8EA/NGK

Repair or replace the spark plug

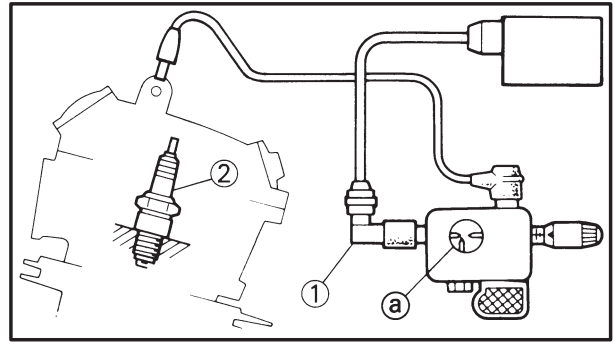
# IGNITION SYSTEM



yp\*\*\*\*\*

- ### 4. Ignition spark gap
- Disconnect the spark plug cap from the spark plug.
  - Connect the ignition checker ① as shown.
  - ② Spark plug
  - Turn the main switch to "ON".
  - Check the ignition spark gap ①
  - Check the spark by pushing the starter switch, and increase the spark gap until a misfire occurs.

**Minimum spark gap:**  
**6 mm (0.24 in)**



MEETS SPECIFICATION

The ignition system is not faulty.

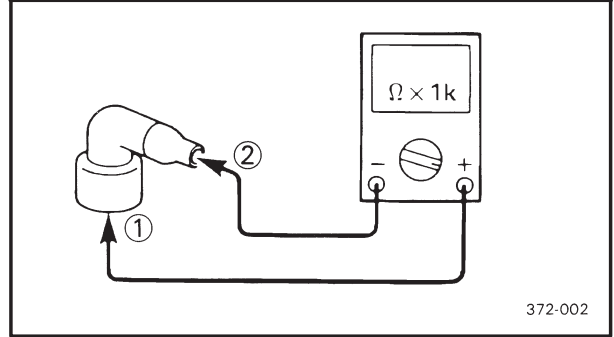
**OUT OF SPECIFICATION OR NO SPARK**

yp\*\*\*\*\*

- ### 5. Spark plug cap resistance
- Remove the spark plug cap.
  - Connect the pocket tester ( $\Omega \times 1k$ ) to the spark plug cap.
- NOTE:** \_\_\_\_\_
- When removing the spark plug cap, do not pull the spark plug cap from high tension cord.
  - Remove → Turning counterclockwise.
  - Connect → Turning clockwise.
  - Check the high tension cord when connecting the spark plug cap.
  - When connecting the spark plug cap, cut the high tension cord about 5 mm.

**Spark plug cap resistance:**  
**5 k $\Omega$  (20°C)**

**Tester (+) lead → Spark plug side ①**  
**Tester (-) lead → High tension cord side ②**



372-002

OUT OF SPECIFICATION

Replace the spark plug cap.

**CORRECT**






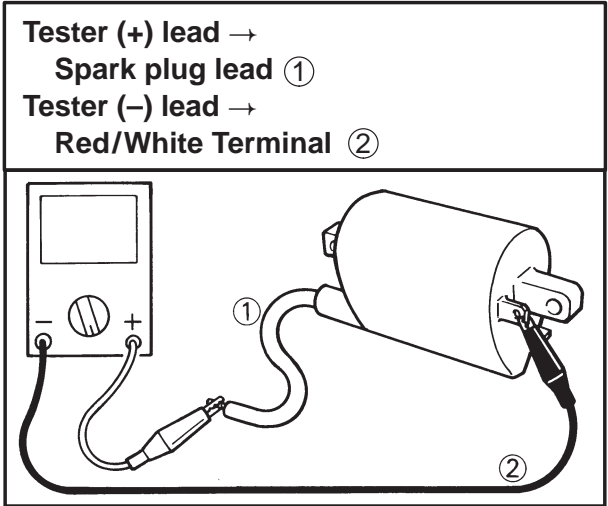
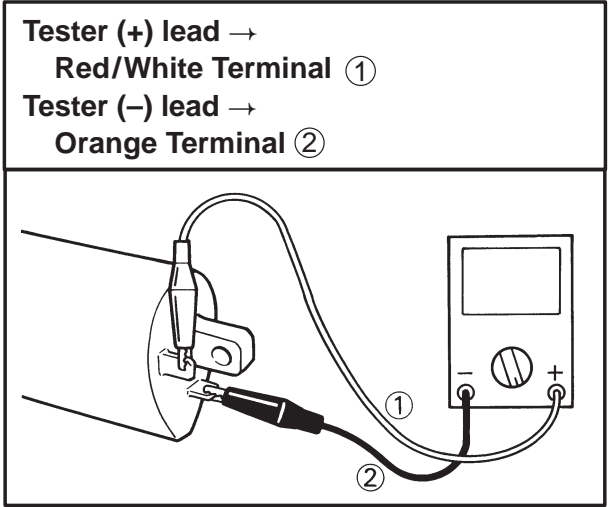
yp\*\*\*\*\*

**6. Ignition coil resistance**


- Disconnect the ignition coil connector from the wireharness.
- Connect the pocket tester ( $\Omega \times 1$ ) to the ignition coil.
- Check if the primary coil has the specified resistance.



**Primary coil resistance:**  
**3.6 ~ 4.8  $\Omega$  (20°C)**



- Connect the pocket tester ( $\Omega \times 1 \text{ k}$ ) to the ignition coil.
- Check the secondary has the specified resistance.




**Secondary coil resistance:**  
**10.7 ~ 14.5 k $\Omega$  (20°C)**

OUT OF SPECIFICATION

Replace the ignition coil.

BOTH MEET  
SPECIFICATION



\*




YP\*\*\*\*\*

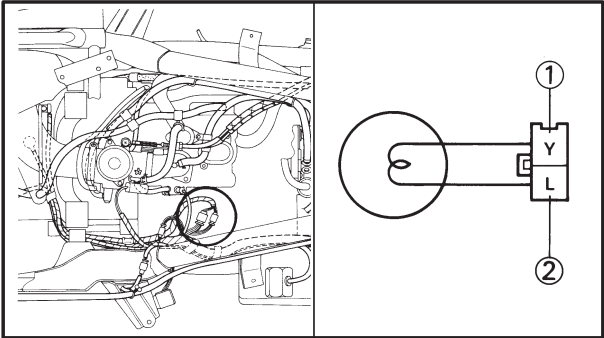
**7. Pickup coil resistance**

- Disconnect the pickup coil coupler from the wireharness.
- Connect the pocket tester ( $\Omega \times 100$ ) to the pickup coil coupler.

**Tester (+) lead → Yellow Terminal ①**  
**Tester (-) lead → Blue Terminal ②**

- Check the pickup coil has the specified resistance.

 **Pickup coil resistance:**  
**168 ~ 252  $\Omega$  (20°C)**



OUT OF SPECIFICATION

Replace the pickup coil.

MEETS SPECIFICATION

YP\*\*\*\*\*

**8. Main switch**

Refer to "CHECKING SWITCHES" section in the CHAPTER 8.

NO CONTINUITY

Replace the main switch.

CONTINUITY

YP\*\*\*\*\*

**9. Engine stop switch**

Refer to "CHECKING SWITCHES" section.

NO CONTINUITY

Replace the right handlebar switch.

CONTINUITY

YP\*\*\*\*\*

**10. Sidestand switch**

Refer to "CHECKING SWITCHES" section.

NO CONTINUITY

Replace the sidestand switch.

CORRECT

YP\*\*\*\*\*

**11. Wiring connection**

- Check the connection of the entire ignition system.
- Refer to "CIRCUIT DIAGRAM".

POOR CONNECTIONS

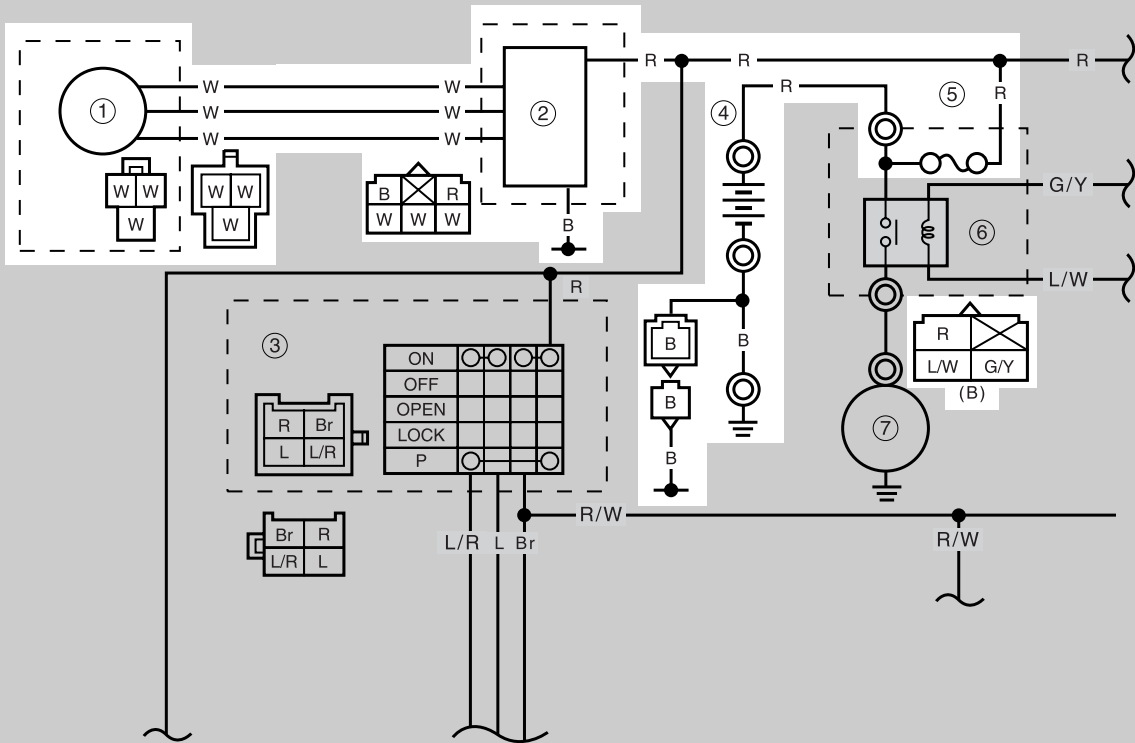
Correct.

CORRECT

Replace the ignitor unit.

YP804000

**CHARGING SYSTEM  
CIRCUIT DIAGRAM**



- ① A.C. magneto
- ② Rectifier regulator
- ④ Battery
- ⑤ Main fuse

YP804010

**TROUBLESHOOTING**

**IF THE BATTERY IS NOT CHARGED**

**Procedure**

Check:

1. Fuse (Main)
2. Battery
3. Charging voltage
4. Stator coil resistance
5. Wiring system (entire charging system)

**NOTE:**

- Remove the following parts before troubleshooting.
  - 1) Side panels
  - 2) Tail cover
- Use the special tools specified in the troubleshooting section.

	<b>Engine tachometer</b> <b>90890-03113</b> <b>Pocket tester:</b> <b>90890-03112</b>
---	---

yp\*\*\*\*\*

1. Fuse
Refer to "CHECKING SWITCHES" section.

CONTINUITY

yp\*\*\*\*\*

2. Battery
<ul style="list-style-type: none"> <li>• Check the battery condition.</li> </ul> Refer to "BATTERY INSPECTION" section in CHAPTER 3.

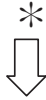
CORRECT  
\*

NO CONTINUITY


Replace the fuse.
-------------------

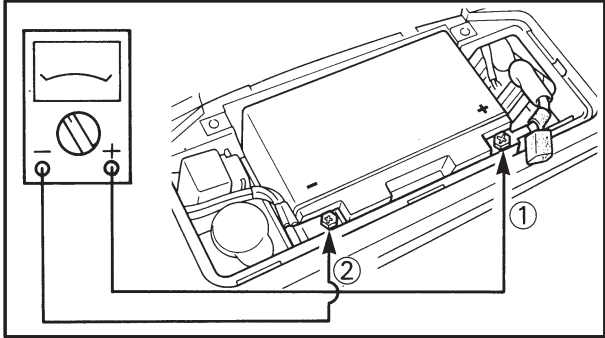
INCORRECT

<ul style="list-style-type: none"> <li>• Clean battery terminals.</li> <li>• Recharge or replace the battery.</li> </ul>
--




yp\*\*\*\*\*

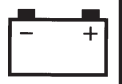
<b>3. Charging voltage</b>	
<ul style="list-style-type: none"> <li>• Connect the engine tachometer to the spark plug lead ①.</li> <li>• Connect the pocket tester (DC20 V) to the battery.</li> </ul>	
<b>Tester (+) lead →</b>	<b>Battery (+) terminal ①</b>
<b>Tester (-) lead →</b>	<b>Battery (-) terminal ②</b>
<ul style="list-style-type: none"> <li>• Measure the battery terminal voltage.</li> <li>• Start the engine and accelerate to about 5,000 r/min.</li> <li>• Check the terminal voltage.</li> </ul>	
	<b>Charging voltage = measured voltage – terminal voltage:</b> <b>0.2 ~ 2.5 V up</b>
<b>NOTE:</b> _____ Use a fully charged battery. _____	



MEETS SPECIFICATION

The charging circuit is not faulty.  
Replace the battery.


**OUT OF SPECIFICATION**  
 \*



γP\*\*\*\*\*

**4. Starter coil resistance**

- Remove the A.C. magneto coupler from wireharness.
- Connect the pocket tester ( $\Omega \times 1$ ) to the stator coil.

**Tester (+) lead → white terminal**  
**Tester (-) lead → White terminal**

- Measure the stator coil resistance.

**Stator coil resistance:**  
**0.8 ~ 1.0  $\Omega$  (20° C)**

OUT OF SPECIFICATION

Replace the stator coil.

MEETS SPECIFICATION

γP\*\*\*\*\*

**5. Wiring connection**

Check the entire charging system for connections.  
 Refer to "CIRCUIT DIAGRAM" section.

POOR CONNECTION

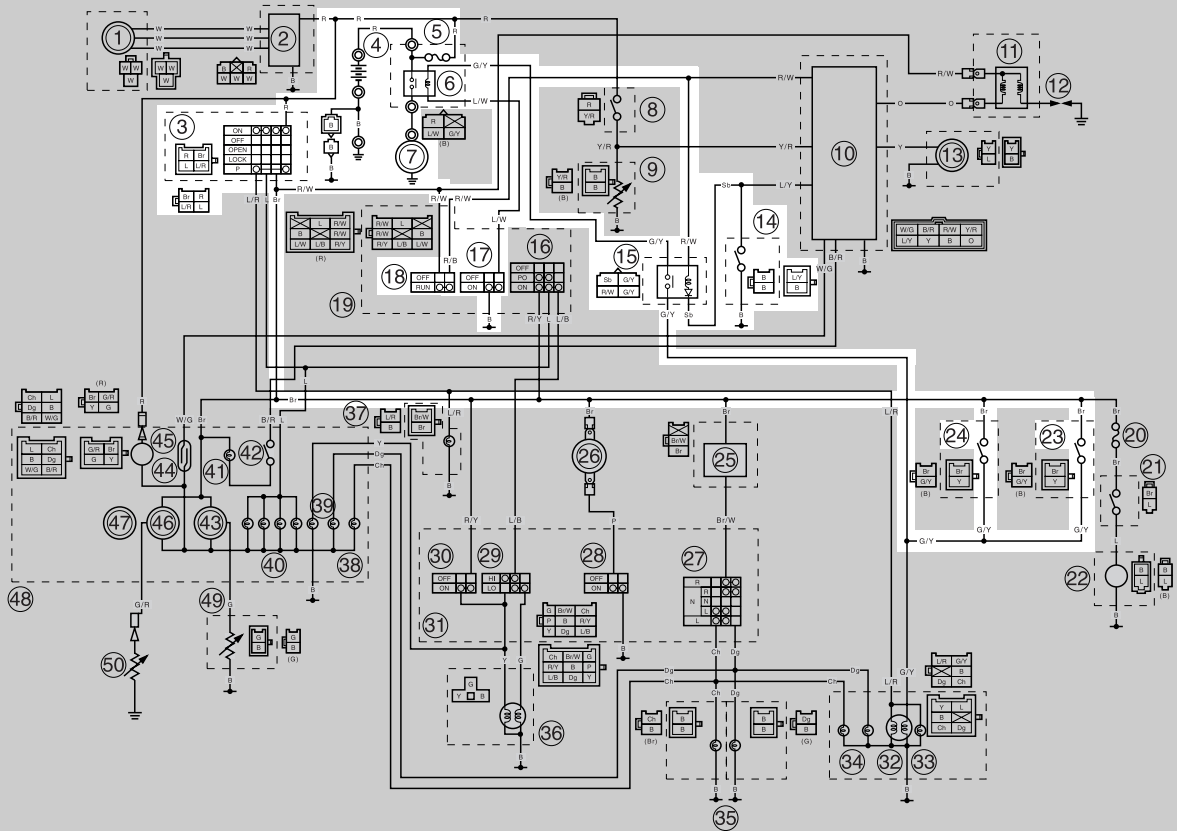
Correct.

CORRECT

Replace the rectifier/regulator.

EB80300

**ELECTRIC STARTING SYSTEM  
CIRCUIT DIAGRAM**



- ③ Main switch
- ④ Battery
- ⑤ Main fuse
- ⑥ Starter relay
- ⑦ Starter motor
- ⑭ Sidestand switch
- ⑮ Starting circuit cut-off relay
- ⑰ Starter switch
- ⑱ Engine stop switch
- ⑲ Rear brake switch
- ⑳ Front brake switch



YP803020

## TROUBLESHOOTING

**IF THE STARTER MOTOR FAILS TO OPERATE.**

### Procedure

Check:

- |   |  |
|---|--|
| <ol style="list-style-type: none"> <li>1. Fuse (Main)</li> <li>2. Battery</li> <li>3. Starter motor</li> <li>4. Starter relay</li> <li>5. Starting circuit cut-off relay</li> <li>6. Main switch</li> </ol> | <ol style="list-style-type: none"> <li>7. Engine stop switch</li> <li>8. Sidestand switch</li> <li>9. Front/Rear brake switch</li> <li>10. Starter switch</li> <li>11. Wiring connection (entire starting system)</li> </ol> |
|---|--|

### NOTE:

- Remove the following parts before troubleshooting.
  - 1) Side panels
  - 2) Tail cover
  - 3) Box
- Use the special tools specified in the troubleshooting section.

**Pocket tester:**  
**90890-03112**

yp\*\*\*\*\*

1. Fuse

---

Refer to "CHECKING SWITCHES" section in CHAPTER 8.

NO CONTINUITY

Replace the fuse.

↓ CONTINUITY

yp\*\*\*\*\*

2. Battery

---

- Check the battery condition.  
Refer to "BATTERY INSPECTION" section in CHAPTER 3.

INCORRECT

- Clean the battery terminals.
- Recharge or replace battery.

↓ CORRECT

\*





yp\*\*\*\*\*

**3. Starter motor**

- Connect the battery positive terminal and starter motor cable using a jumper lead.
- Check the starter motor operation.

DOES NOT MOVE

Repair or replace the starter motor.

**⚠ WARNING**

A wire used as a jumper lead must have the equivalent capacity as that of the battery lead or more, otherwise it may burn. This check is likely to produce sparks, so be sure that no flammable gas or fluid is in the vicinity.



MOVES

yp\*\*\*\*\*

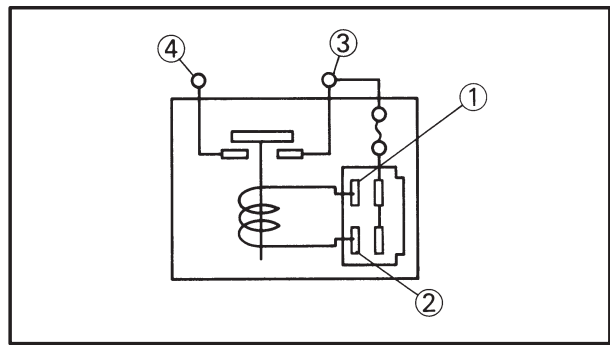
**4. Starter relay**

- Disconnect the relay unit coupler from the wireharness.
- Connect the pocket tester ( $\Omega \times 1$ ) and battery (12 V) to the relay unit coupler terminals.

**Battery (+) lead** → **Green/Yellow terminal ①**  
**Battery (-) lead** → **Blue/White terminal ②**

• Check the starter relay for continuity.

**Tester (+) lead** → **③ terminal**  
**Tester (-) lead** → **④ terminal**



NO CONTINUITY

Replace the starter relay.



CONTINUITY

yp\*\*\*\*\*

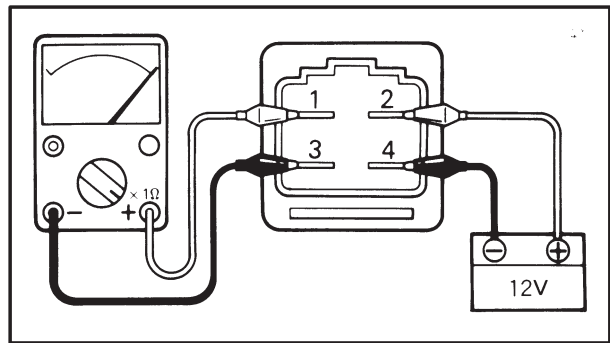
**5. Starting circuit cut-off relay**

- Disconnect the starting circuit cut-off relay coupler from the wireharness.
- Connect the the pocket tester ( $\Omega \times 1$ ) and battery (12 V) to the starting circuit cut-off relay coupler terminals.

**Battery (+) lead** → **② terminal**  
**Battery (-) lead** → **④ terminal**

• Check the starting circuit cut-off relay for continuity.

**Tester (+) lead** → **① terminal**  
**Tester (-) lead** → **③ terminal**



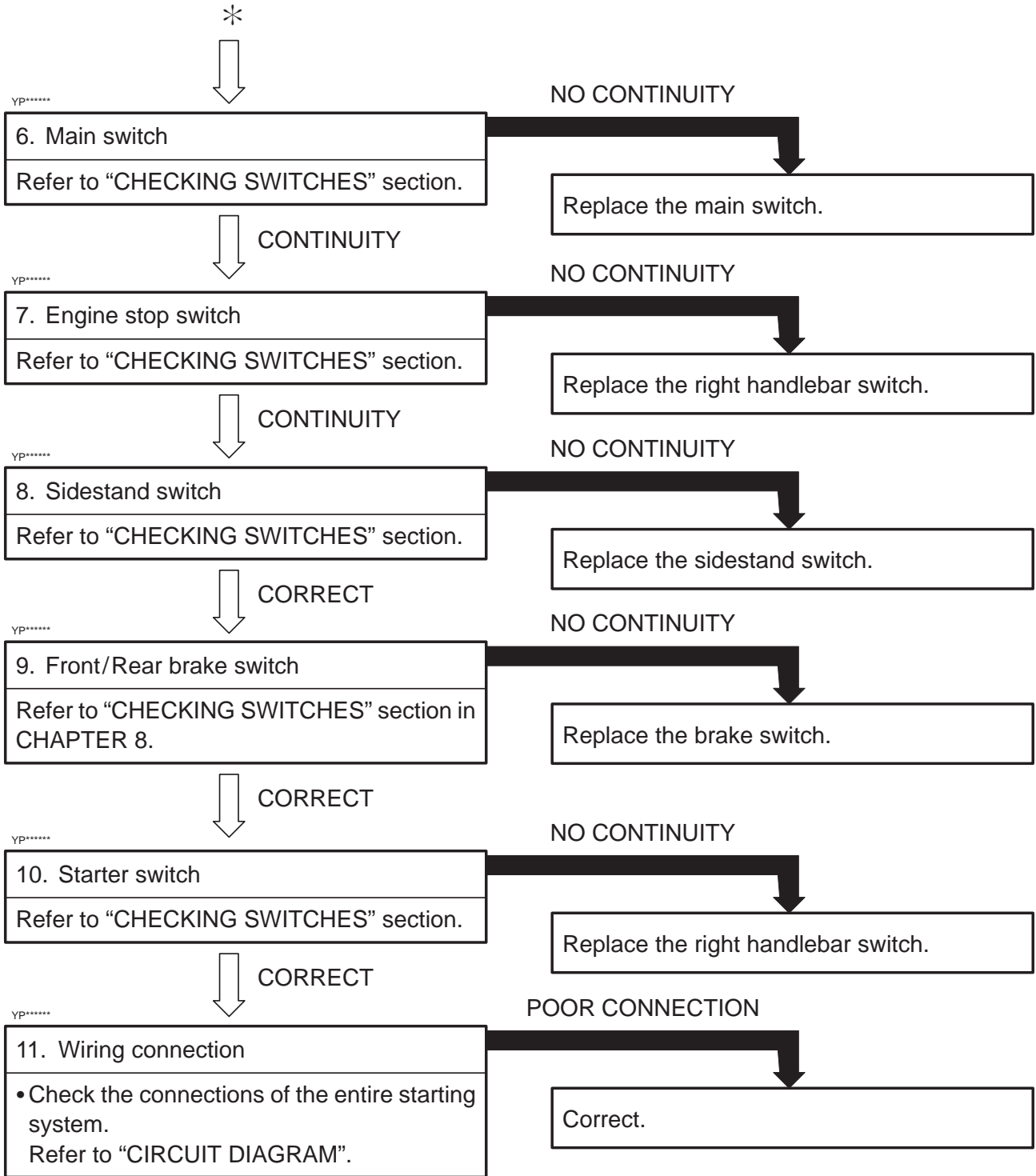
NO CONTINUITY

Replace the starting circuit cut-off relay.

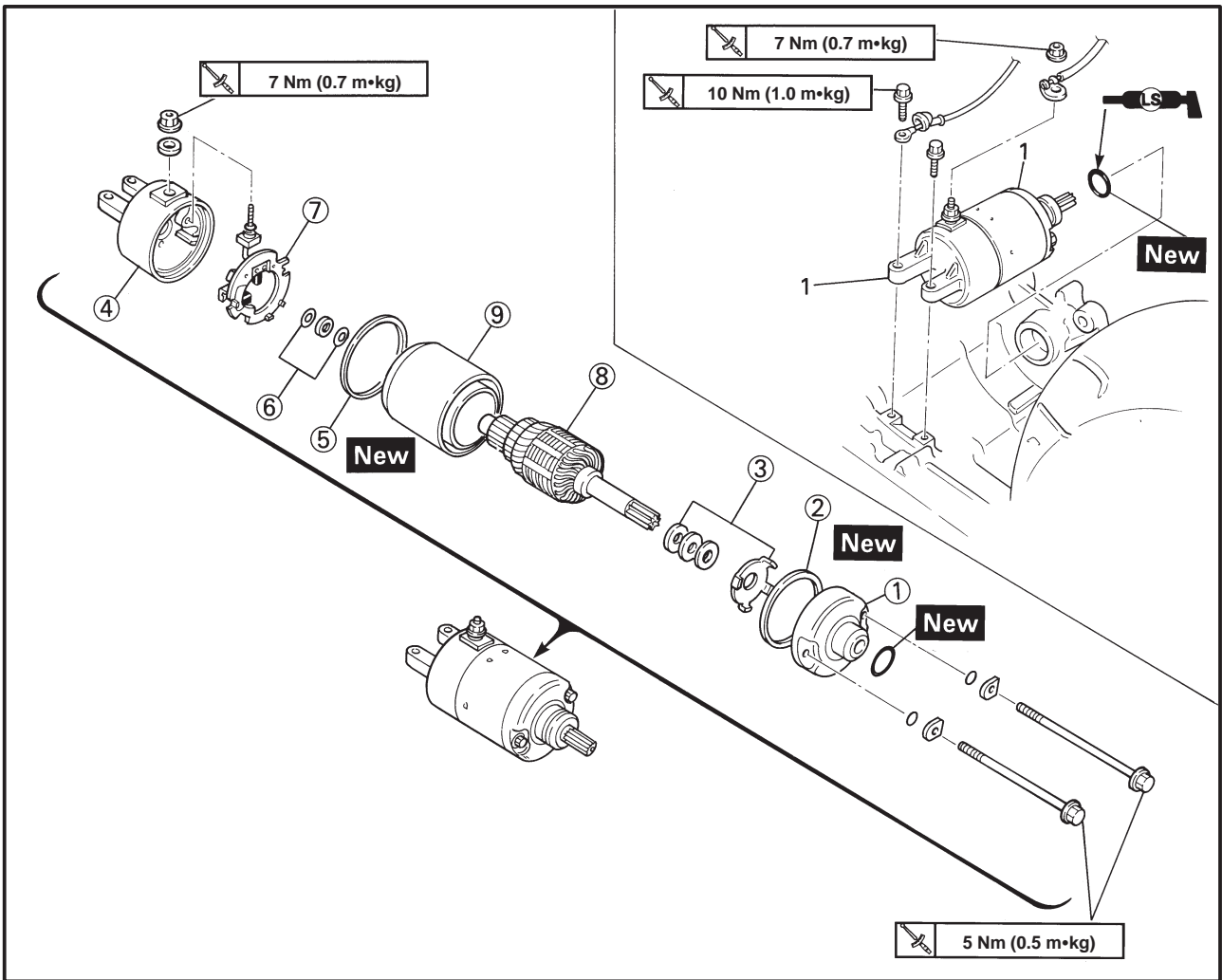


CONTINUITY

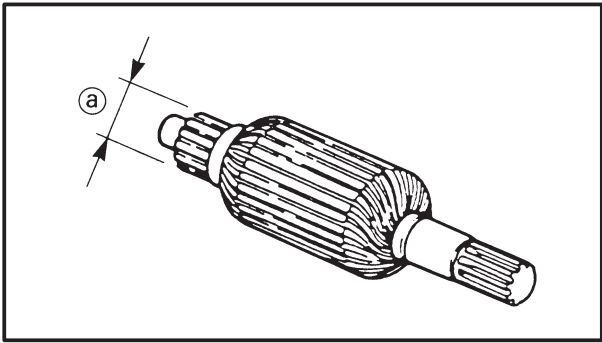




STARTER MOTOR



Order	Job name/Part name	Q'ty	Remarks
	<b>Starter motor removal</b>		Remove the parts in order.
	Air cleaner case		Refer to "ENGINE REMOVAL AND INSTALLATION" section in CHAPTER 4.
1	Starter motor	1	Reverse the removal procedure for installation.
	<b>Starter motor disassembly</b>		Disassembly the parts in order.
①	Front bracket	1	Refer to "Starter motor assembly"
②	Ring	1	
③	Shims	1	
④	Rear bracket	1	
⑤	Ring	1	
⑥	Shims	1	
⑦	Brush holder set	1	
⑧	Armature ass'y	1	
⑨	Stator ass'y	1	
			Reverse the disassembly procedure for assembly.



YP803034

**Inspection and repair**

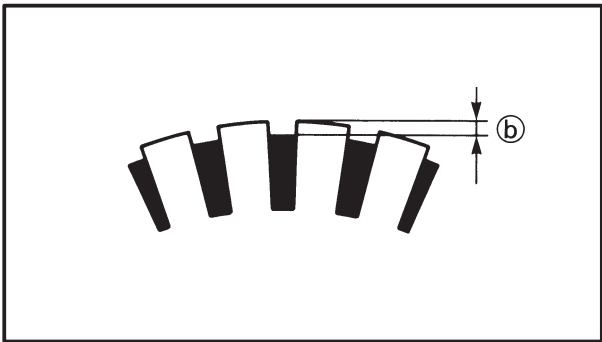
1. Inspect:
  - Commutator
    - Dirt → Clean it with #600 grit sandpaper.
2. Measure:
  - Commutator diameter (a)



**Commutator wear limit:**  
**27 mm**

Out of specification → Replace the starter motor

3. Measure:
  - Mica undercut (a)



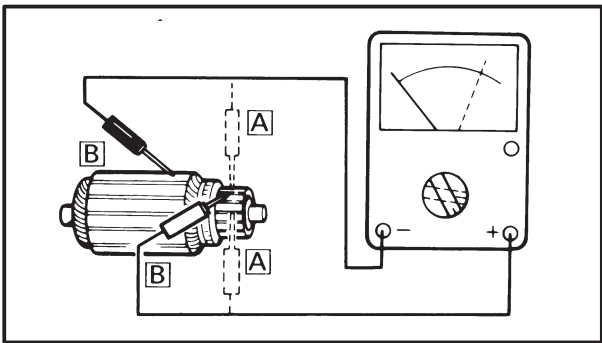


**Mica undercut:**  
**0.7 mm**

Out of specification → Scrape the mica to the proper value (a hacksaw blade can be ground to fit).

**NOTE:** \_\_\_\_\_

The mica insulation of the commutator must be undercut to ensure proper operation of commutator.



4. Inspect:
  - Armature coil resistances (installation/continuity)

Defects → Replace the starter motor.  
If commutator is dirty, clean it with sandpaper.

	Good condition	Bad condition		
A	○	○	×	×
B	×	○	×	○

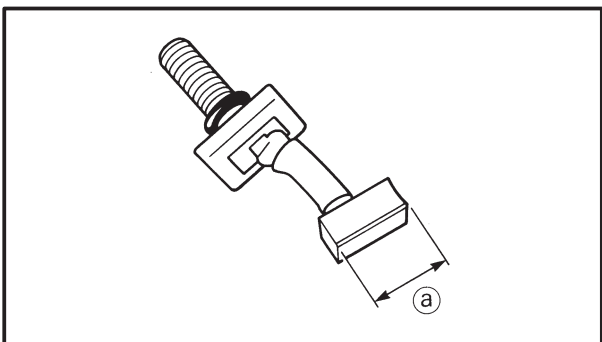
○: Continuity  
×: No continuity  
Bad condition → Replace.

5. Measure:
  - Brush length (a)

Out of specification → Replace.

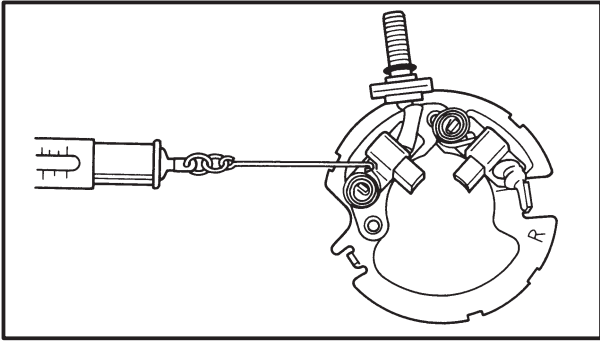


**Brush length wear limit:**  
**4.0 mm**



6. Measure:
  - Brush spring force

Fatigue/out of specification → Replace as a set.



**Brush spring force:**  
570 ~ 920 g

7. Inspect:
- Bearing
  - Oil seal
- Wear/damage → Replace.

yp\*\*\*\*\*

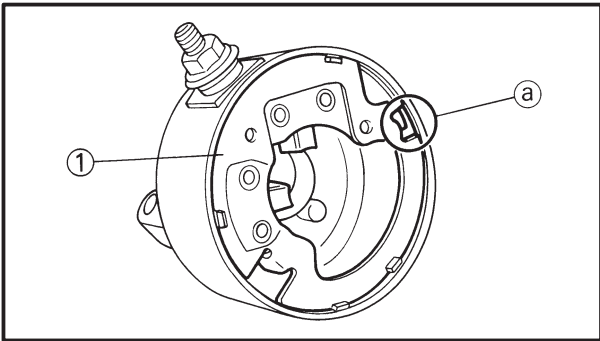
### Assembly

Reverse the "Removal" procedure.  
Note the following points.

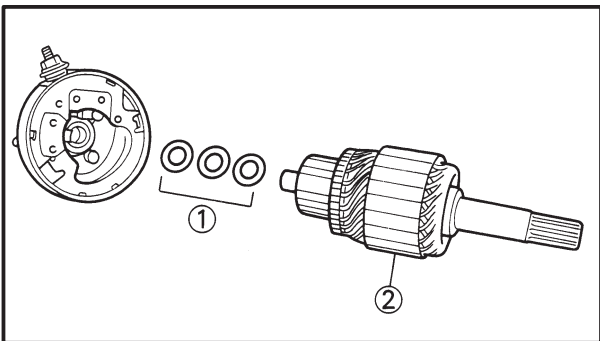
1. Install:
- Brush holder ①

**NOTE:** \_\_\_\_\_

Align the projection (a) on the brush seat with the slot (b) on the housing.

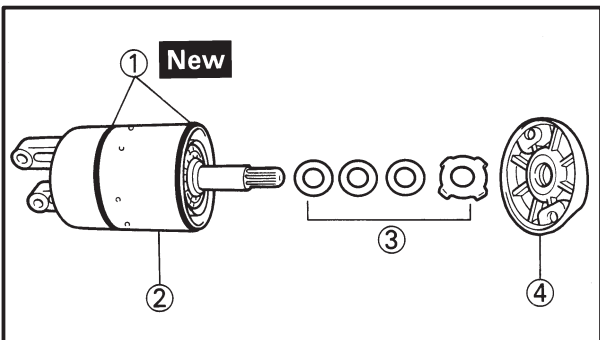


2. Install:
- Shims ①
  - Armature coil ②



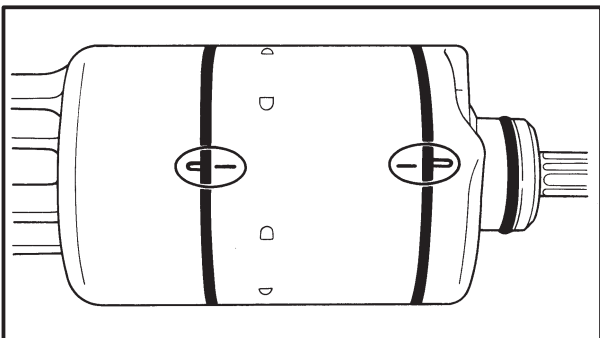
3. Install:
- Ring ① **New**
  - Stator ass'y ②
  - Shims ③
  - Front bracket ④

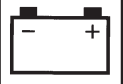
**5 Nm (0.5 m•kg)**



**NOTE:** \_\_\_\_\_

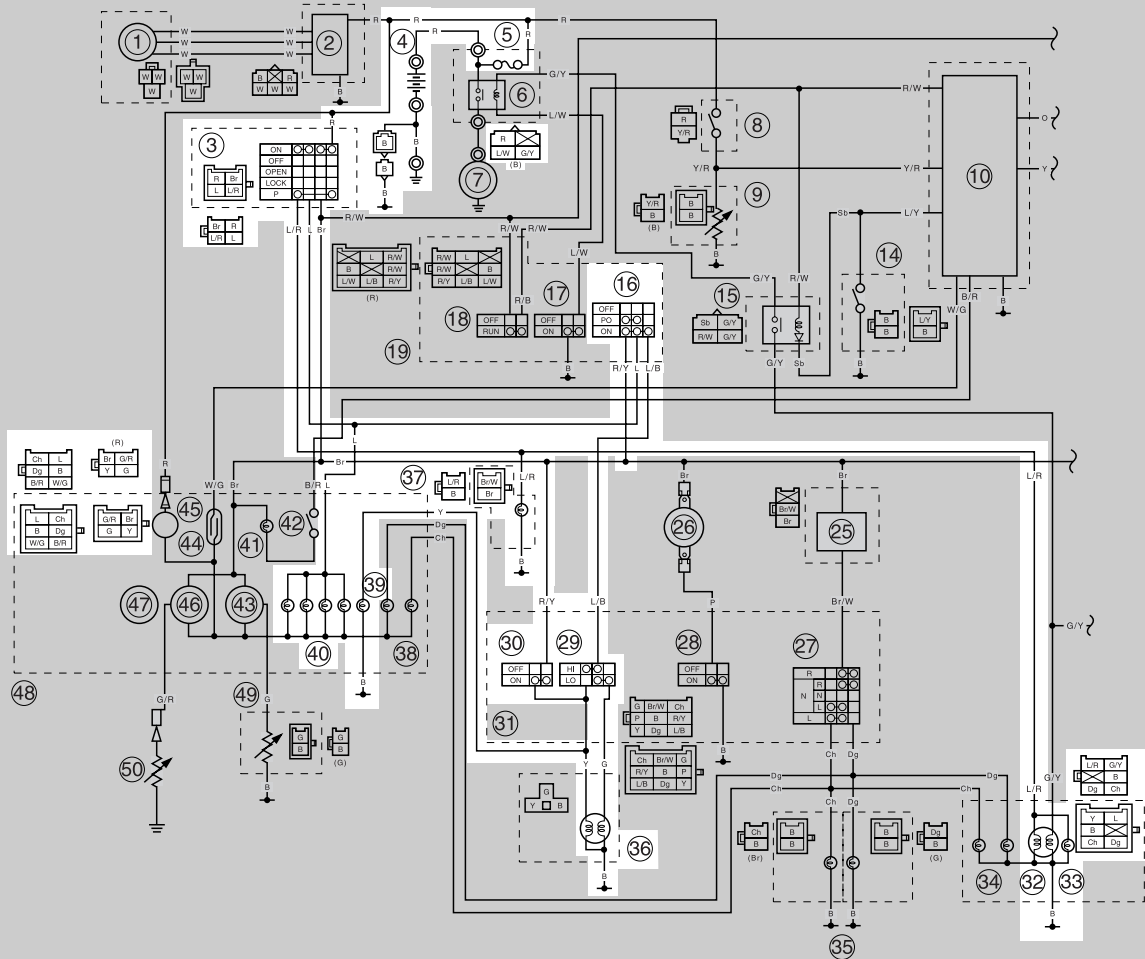
- Apply molybdenum grease lightly on to the bearings of the starter motor.
- Align the match marks on the yoke with the match marks on the brackets.





EB804000

**LIGHTING SYSTEM  
CIRCUIT DIAGRAM**



- ③ Main switch
- ④ Battery
- ⑤ Main fuse
- ⑬ Lights switch
- ⑲ Dimmer switch
- ⑳ Pass switch
- ㉓ Tail/Brake light
- ㉔ Licence light
- ㉖ Head light
- ㉘ Auxiliary light
- ㉙ Meter lights

YP805010

**TROUBLESHOOTING**

**IF THE HEADLIGHT, HIGH BEAM INDICATOR LIGHT, TAILLIGHT, MARKER LIGHT AND/OR METER LIGHT FAIL TO COME ON.**

**Procedure**

Check:

1. Fuse (Main)
2. Battery
3. Main switch
4. Lights switch
5. Dimmer switch and pass switch
6. Wiring connection (entire lighting system)

**NOTE:**

- Remove the following parts before troubleshooting.
  - 1) Tail cover
  - 2) Cowling body
- Use the special tools specified in the troubleshooting section.

 **Pocket tester:**  
**90890-03112**

YP\*\*\*\*\*

1. Fuse  
Refer to "CHECKING SWITCHES" section.

↓ CONTINUITY

YP\*\*\*\*\*

2. Battery  
• Check the battery condition.  
Refer to "BATTERY INSPECTION" section in CHAPTER 3.

↓ CORRECT

YP\*\*\*\*\*

3. Main switch  
Refer to "CHECKING SWITCHES" section.

↓ CONTINUITY

YP\*\*\*\*\*

4. Lights switch  
Refer to "CHECKING SWITCHES" section.

↓ CONTINUITY

\*

NO CONTINUITY

Replace the fuse.

INCORRECT

- Clean battery terminals.
- Recharge or replace battery.

NO CONTINUITY

Replace the main switch.

NO CONTINUITY

Replace the right handlebar switch.



YP\*\*\*\*\*

5. Dimmer switch/Pass switch  
Refer to "CHECKING SWITCHES" section.

NO CONTINUITY

Replace the left handlebar switch.



YP\*\*\*\*\*

6. Wiring connection  
• Check the connections of the entire lighting system.  
Refer to "WIRING DIAGRAM".

POOR CONNECTIONS

Correct.



Check the condition of each of the lighting system's circuits.  
Refer to "LIGHTING SYSTEM CHECK"

YP805020

**LIGHTING SYSTEM CHECK**

1. If the headlight and the high beam indicator light fail to come on.

1. Bulb and bulb socket  
Refer to "CHECKING SWITCHES" section.

NO CONTINUITY

Replace the bulb and/or bulb socket.



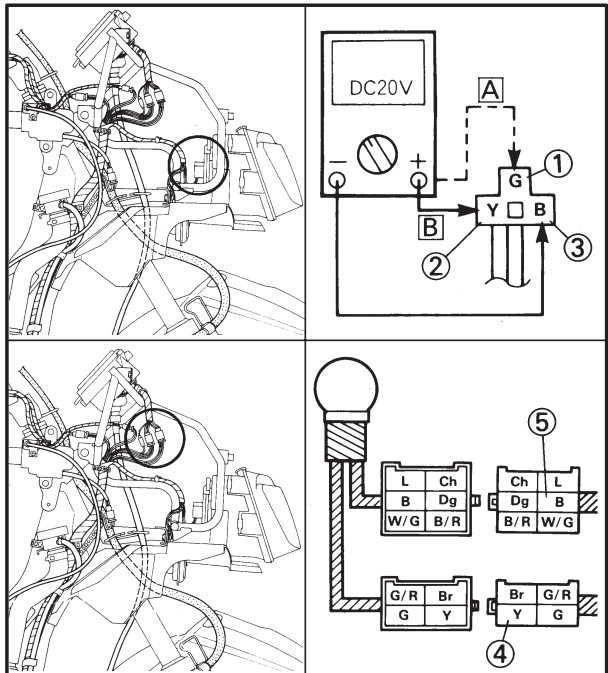
2. Voltage  
• Connect the pocket tester (DC20 V) to the headlight and high beam indicator light couplers.

**A** When the dimmer switch is on low beam.  
When dimmer switch is on high beam or  
**B** the Pass switch is pushed.

**Headlight:**  
Tester (+) lead → Green ① or Yellow ② lead  
Tester negative (-) lead → Black ③ lead

**High beam indicator light:**  
Tester (+) lead → Yellow ④ lead  
Tester (-) lead → Black ⑤ lead

\*





\*

- Turn the main switch to on.
- Turn the light switch to on position.
- Turn the dimmer switch to low beam or high beam.
- Pass switch to push in.
- Check for voltage (12 V) on the lead at bulb socket connectors.

OUT OF SPECIFICATION

The wiring circuit from the main switch to bulb socket connector is faulty. Repair.

MEETS SPECIFICATION

This circuit is not faulty.

YP805021

2. If the meter light fails to come on.

1. Bulb and bulb socket  
Refer to "CHECKING SWITCHES" section.

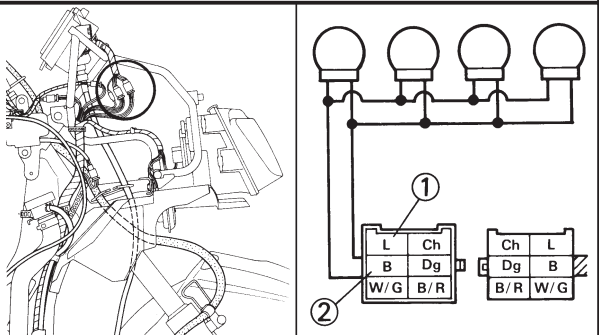
NO CONTINUITY

Replace the bulb and/or bulb socket.

CONTINUITY

2. Voltage  
• Connect the pocket tester (DC20 V) to the bulb socket coupler.

Tester (+) lead →  
**Blue terminal ①**  
Tester (-) lead →  
**Black terminal ②**



- Turn the main switch to on.
- Turn the lights switch to on or pilot position.
- Check the voltage (12 V) of the leads on the bulb socket connector.

OUT OF SPECIFICATION

The wiring circuit from main switch to bulb socket is faulty. Repair.

MEETS SPECIFICATION

This circuit is not faulty.

YP805022

3. The taillight fails to come on.

1. Bulb and bulb socket  
 Refer to "CHECKING SWITCHES" section.

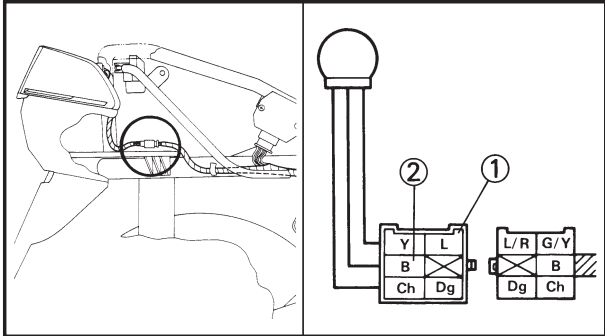
CONTINUITY

NO CONTINUITY

Replace the bulb and/or bulb socket.

2. Voltage  
 • Connect the pocket tester (DC20 V) to the bulb socket connector.

Tester (+) lead →  
**Blue terminal ①**  
 Tester (-) lead →  
**Black terminal ②**



OUT OF SPECIFICATION

The wiring circuit from main switch to bulb connector is faulty. Repair.

• Turn the main switch to on.  
 • Turn the lights switch to on or pilot position.  
 • Check the voltage (12 V) on the bulb socket connector.

MEETS SPECIFICATION

This circuit is not faulty.

YP805023

4. If the auxiliary light fails to come on.

1. Bulb and bulb socket

Refer to "CHECKING SWITCHES" section.

NO CONTINUITY

Replace the bulb and/or bulb socket.

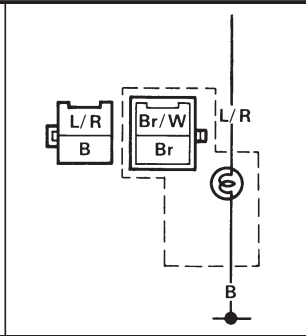
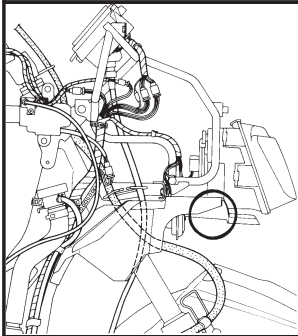
↓ CONTINUITY

2. Voltage

- Connect the pocket tester (DC20 V) to the bulb socket connector.

**Tester (+) lead → Blue terminal ①**

**Tester (-) lead → Black terminal ②**



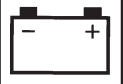
OUT OF SPECIFICATION

The wiring circuit from main switch to bulb connector is faulty. Repair.

- Turn the main switch to on.
- Turn the lights switch to on or pilot position.
- Check the voltage (12 V) on the bulb socket connector.

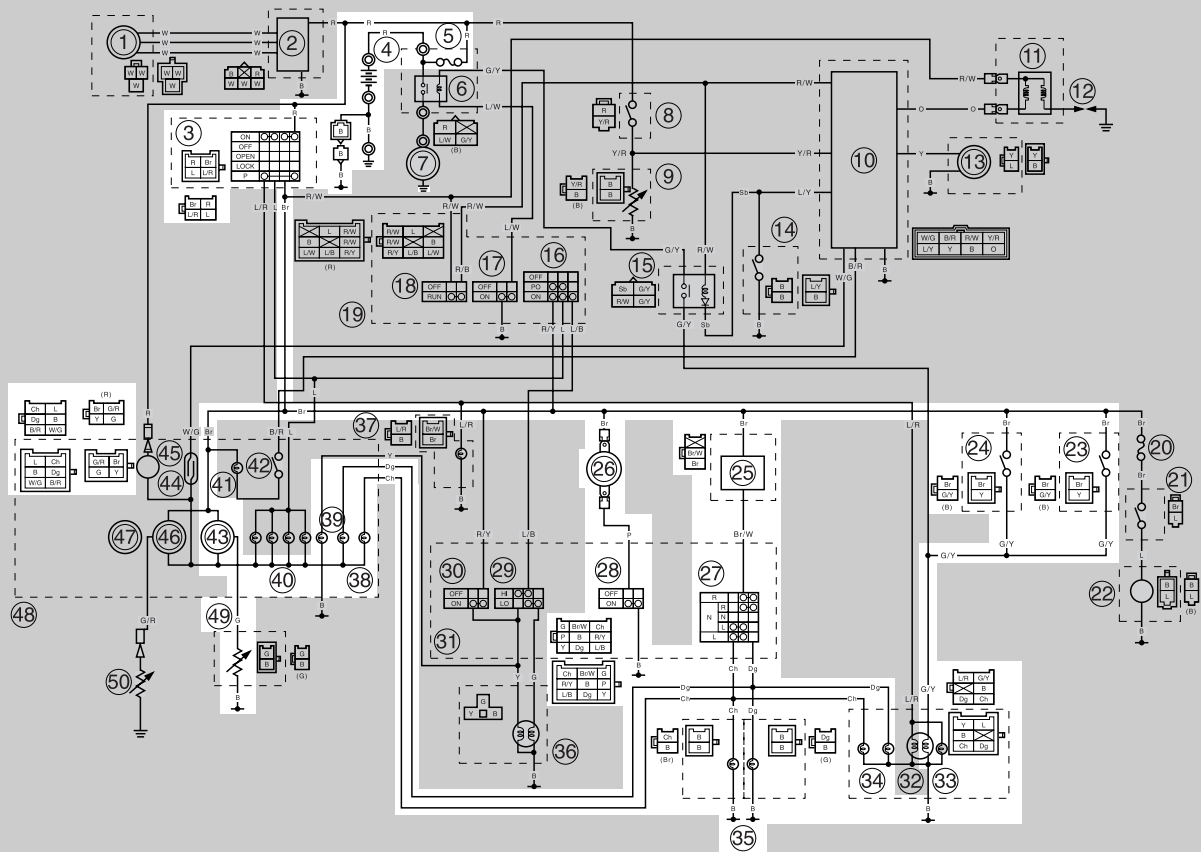
↓ MEETS SPECIFICATION

This circuit is not faulty.



EB806000

**SIGNAL SYSTEM  
CIRCUIT DIAGRAM**



- |                         |                          |
|-------------------------|--------------------------|
| ③ Main switch           | ③⑧ Turn indicator lights |
| ④ Battery               | ④③ Fuel gauge            |
| ⑤ Main fuse             | ④⑨ Fuel sender           |
| ②③ Rear brake switch    |                          |
| ②④ Front brake switch   |                          |
| ②⑤ Flasher relay        |                          |
| ②⑥ Horn                 |                          |
| ②⑦ Turn switch          |                          |
| ②⑧ Horn switch          |                          |
| ③③ Tail/Brake light     |                          |
| ③④ Rear flasher lights  |                          |
| ③⑤ Front flasher lights |                          |

YP806010

**TROUBLESHOOTING**

**IF THE FLASHER LIGHT, BRAKE LIGHT AND/OR INDICATOR LIGHT FAIL TO COME ON.  
IF THE HORN FAILS TO SOUND.**


**Procedure**

Check:

1. Fuse (Main)
2. Battery
3. Main switch
4. Wiring connection (entire signal system)

**NOTE:**

- Remove the following parts before troubleshooting.
  - 1) Cowling body
  - 2) Side panels
- Use the special tools in the troubleshooting section.



**Pocket tester:  
90890-03112**

YP\*\*\*\*\*

1. Fuse  
Refer to "CHECKING SWITCHES" section.

↓ CONTINUITY

YP\*\*\*\*\*

2. Battery

- Check the battery condition.  
Refer to "BATTERY INSPECTION" section in CHAPTER 3.

↓ CORRECT

YP\*\*\*\*\*

3. Main switch  
Refer to "CHECKING SWITCHES" section.

↓ CONTINUITY  
\*

NO CONTINUITY

Replace the fuse.

INCORRECT

- Clean battery terminals.
- Recharge or replace battery.

NO CONTINUITY

Replace the main switch.



YP\*\*\*\*\*

4. Wireharness

- Check the connections of the entire signal system. Refer to "CIRCUIT SYSTEM WIRING DIAGRAM" section.

POOR CONNECTION



Correct.

CONTINUITY

Check condition of each of the signal system's circuits. Refer to "SIGNAL SYSTEM CHECK" section.

YP806020

**SIGNAL SYSTEM CHECK**

1. If the horn fails to sound.

1. HORN switch  
Refer to "CHECKING SWITCHES" section.

CONTINUITY

2. Voltage

- Connect the pocket tester (DC20 V) to the horn lead.

**Tester (+) lead → Brown terminal ①.**  
**Tester (-) lead → Frame ground**

- Turn the main switch to on.
- Check for voltage (12 V) on the "Brown" lead at the horn terminal.

MEETS SPECIFICATION

3. Horn

- Connect the pocket tester (DC20 V) to the horn at the "Pink" terminal.

**Tester (+) lead → Pink ① terminal.**  
**Tester (-) lead → Frame ground**

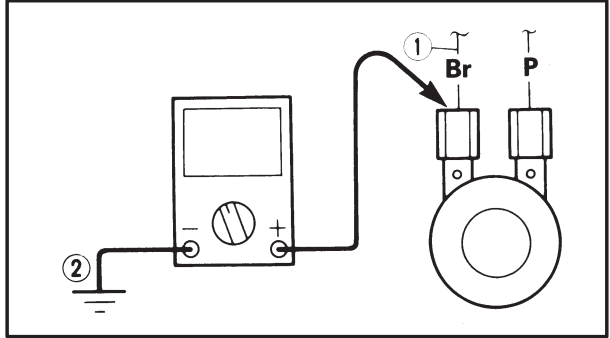
- Turn the main switch to on.
- Check for voltage on the "Pink" lead to frame ground.

CONTINUITY

Adjust or replace horn.

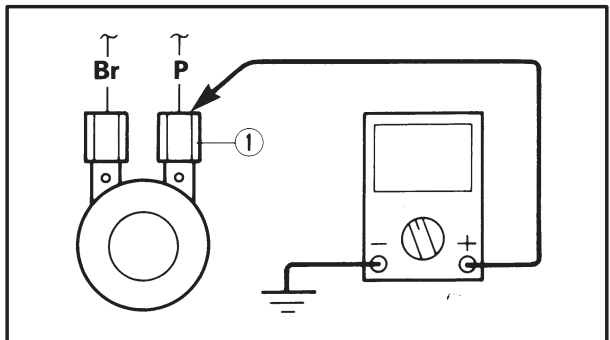
NO CONTINUITY

Replace the left handlebar switch.



OUT OF SPECIFICATION

The wiring circuit from the main switch to the horn is faulty. Repair.



NO CONTINUITY

Replace the horn.

YP806022

2. If the brake light fails to come on:

1. Bulb and bulb socket  
Refer to "CHECKING SWITCHES" section.

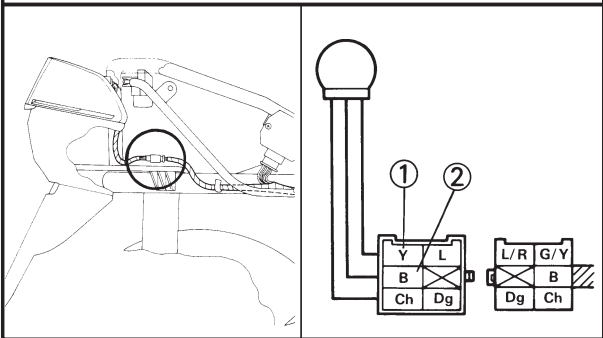
CONTINUITY

2. Brake switch (Front/Rear)  
Refer to "CHECKING SWITCHES" section.

CONTINUITY

3. Voltage  
• Connect the pocket tester (DC20 V) to the bulb socket connector.

Tester (+) lead → Blue terminal ①  
Tester (-) lead → Black terminal ②



• Turn the main switch to on.  
• The brake lever is pulled in.  
• Check for voltage (12 V) of the "Yellow" lead on the bulb socket connector.

MEETS SPECIFICATION

This circuit is not faulty.

NO CONTINUITY

Replace the bulb and/or bulb socket.

NO CONTINUITY

Replace brake switch.

OUT OF SPECIFICATION

4. Wiring connection  
• Wiring circuit from the main switch to the bulb socket connector is faulty. Repair. Refer to "SIGNAL SYSTEM WIRING DIAGRAM".



YP806023

3. If the flasher light and/or turn indicator light fails to blink.

1. Bulb and bulb socket  
Refer to "CHECKING SWITCHES" section.

NO CONTINUITY

Replace the bulb and/or bulb socket.

CONTINUITY

2. Turn switch  
Refer to "CHECKING SWITCHES" section.

NO CONTINUITY

Replace the left handlebar switch.

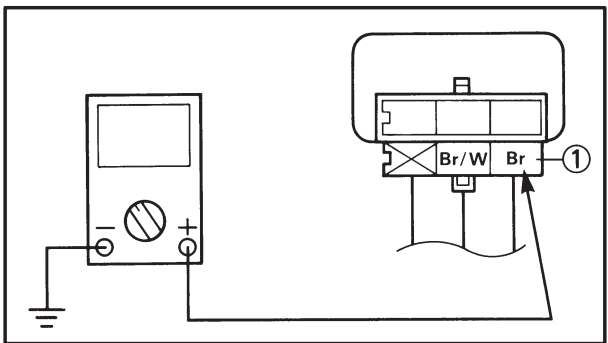
CONTINUITY

3. Voltage

- Connect the pocket tester (DC20 V) to the flasher relay coupler.

**Tester (+) lead → Brown terminal ①.**  
**Tester (-) lead → Frame ground**

- Turn the main switch to on.
- Check for voltage (12 V) of the "Brown" ① lead at the flasher relay terminal.



OUT OF SPECIFICATION

The wiring circuit from main switch to flasher relay connector is faulty. Repair.

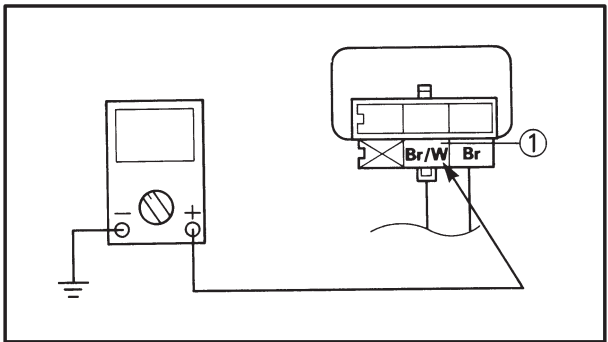
MEETS SPECIFICATION

4. Voltage

- Connect the pocket tester (DC20 V) to the flasher relay coupler.

**Tester (+) lead → Brown/White terminal ①.**  
**Tester (-) lead → Frame ground**

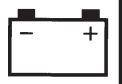
- Turn the main switch to on.
- Check for voltage (12 V) on the "Brown/White" lead at the flasher relay terminal.



OUT OF SPECIFICATION

The flasher relay is faulty. Replace.

MEETS SPECIFICATION  
\*



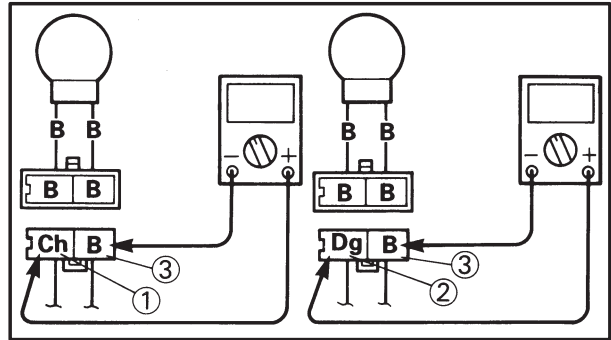
5. Voltage

- Connect the pocket tester (DC20 V) to the bulb socket connector.

**At flasher light (left)**  
 Tester (+) lead → Chocolate lead ①  
 Tester (-) lead → Black terminal ③

**At flasher light (right)**  
 Tester (+) lead → Dark green lead ②  
 Tester (-) lead → Black terminal ③

- Turn the main switch to on.
- Turn the turn switch to left or right.
- Check for voltage (12 V) on the “Chocolate” lead and “Dark green” at the flasher light terminal.



OUT OF SPECIFICATION



MEETS SPECIFICATION

This circuit is not faulty.

6. Wiring connection

- Wiring circuit from the turn switch to bulb socket connector is fault. Repair. Refer to “CIRCUIT DIAGRAM”.

YP806027


4. If the fuel gauge fails to operate.

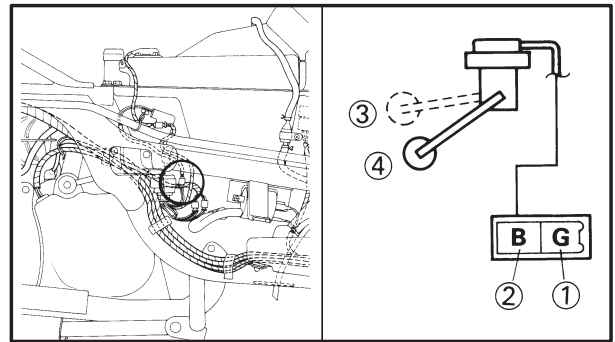
1. Fuel sender

- Remove the fuel sender from the fuel tank.
- Disconnect the fuel sender coupler from the wireharness.  
Connect the pocket tester ( $\Omega \times 10$ ) to the fuel sender coupler lead.

**Tester (+) lead** → **Green terminal** ①  
**Tester (-) lead** → **Black terminal** ②

- Check the fuel sender for specified resistance.

	Float position	Specified resistance
	UP ③	4 ~ 10 $\Omega$
	DOWN ④	90 ~ 100 $\Omega$



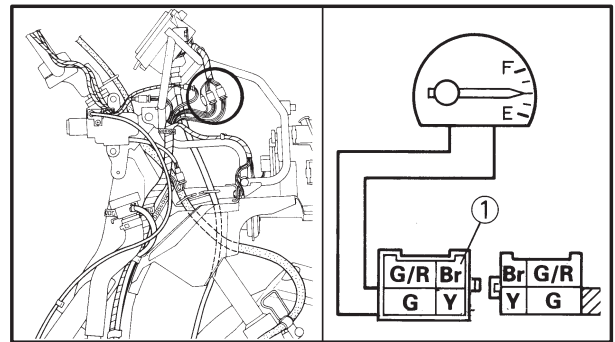
OUT OF SPECIFICATION

Replace the fuel sender.

2. Voltage

- Connect the pocket tester (DC20 V) to the fuel gauge coupler.

**Tester (+) lead** → **Brown terminal** ①  
**Tester (-) lead** → **Frame ground**

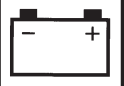


OUT OF SPECIFICATION

- Turn the main switch to "ON".
- Check for voltage (12 V) of the "Brown" lead on the fuel sender lead.

Check the connection of the entire signal system.  
Refer to "CHECKING OF CONNECTIONS".  
Refer to "CIRCUIT DIAGRAM".

MEETS SPECIFICATION  
 \*



**3. Fuel gauge**

- Connect the fuel sender to wireharness.
- Move the float to "UP" ① or "DOWN" ②

- Turn the main switch to "ON".
- Check the fuel gauge needle moves "F" or "E".

Float position	Needle moves
Float "UP" ①	"F"
Float "DOWN" ②	"E"

**NOTE:** \_\_\_\_\_

Before reading the meter, stay put the float for more than three minutes respectively at "UP" or "DOWN".

\_\_\_\_\_

DOES NOT MOVE

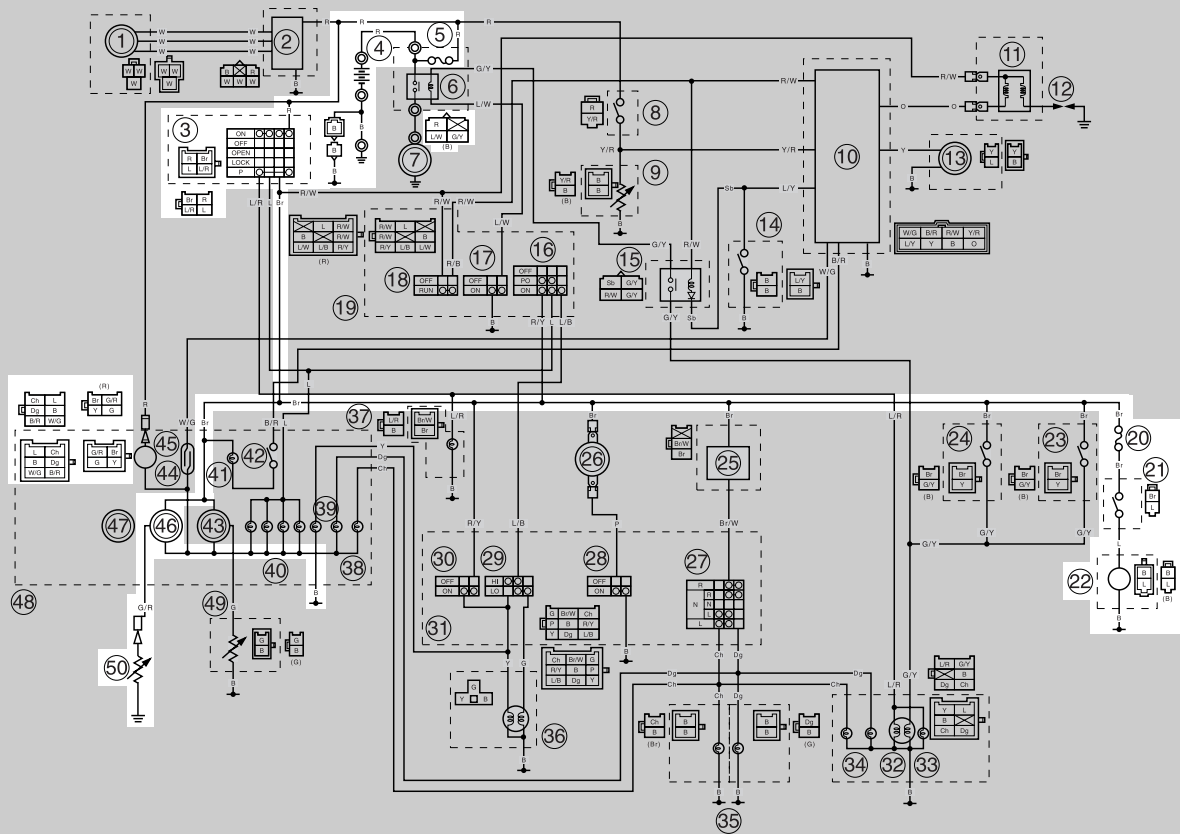
Replace the fuel gauge.

MOVES

This circuit is not faulty.

YP80700

**COOLING SYSTEM  
CIRCUIT DIAGRAM**



- ③ Main switch
- ④ Battery
- ⑤ Main fuse
- ⑳ Fuse (fan)
- ㉑ Thermo switch
- ㉒ Fan motor
- ④⑥ Thermo meter
- ⑤① Thermo unit

YP\*\*\*\*\*

**TROUBLESHOOTING**

**IF THE FAN MOTOR FAILS TO TURN.**


**Procedure**

Check:

1. Fuse (Main, Fan)
2. Battery
3. Fan motor (inspection 1)
4. Fan motor (inspection 2)
5. Thermo switch
6. Wiring connection (entire cooling system)

**NOTE:**

- Remove the following parts before troubleshooting.
  - 1) Side panels
  - 2) Footrest board
  - 3) Under cover
  - 4) Drain the cooling water
- Use the special tools specified in the troubleshooting section.

 **Pocket tester:**  
**90890-03112**

YP\*\*\*\*\*

1. Fuse  
Refer to "CHECKING SWITCHES" section.

↓ CONTINUITY

NO CONTINUITY

Replace the fuse.

YP\*\*\*\*\*

2. Battery  
• Check the battery condition.  
Refer to "BATTERY INSPECTION" section in CHAPTER 3.

↓ CORRECT

INCORRET

• Clean battery terminals.  
• Recharge or replace battery.

YP\*\*\*\*\*

3. Main switch  
Refer to "CHECKING SWITCHES" section.

↓ CONTINUITY  
\*

NO CONTINUITY

Replace the main switch.



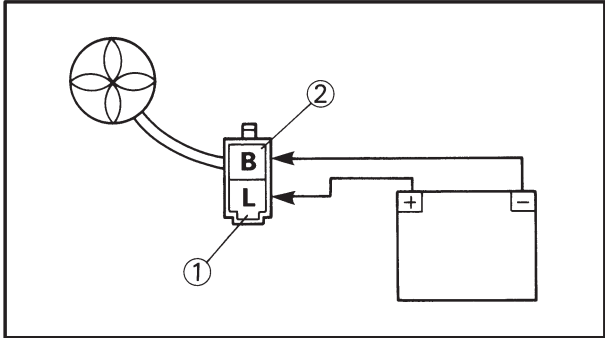
YP\*\*\*\*\*

**4. Fan motor (inspection 1)**

- Disconnect the fan motor couplers.
- Connect the battery as shown.

**Battery (+) lead → Blue terminal ①**  
**Battery (-) lead → Black terminal ②**

- Check the fan motor operation.



DOES NOT MOVE

Replace fan motor.

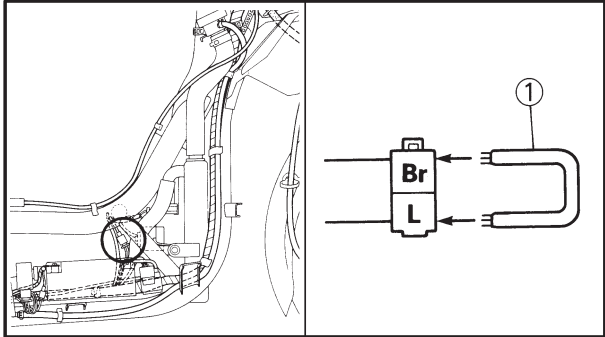


MOVES

YP\*\*\*\*\*

**5. Fan motor (inspection 2)**

- Turn the main switch to on.
- Remove the thermo switch lead from thermo switch.
- Connect jumper lead ① to thermo switch leads.
- Turn the main switch to on.



DOES NOT MOVE

The wiring circuit from battery to fan motor is faulty. Repair.



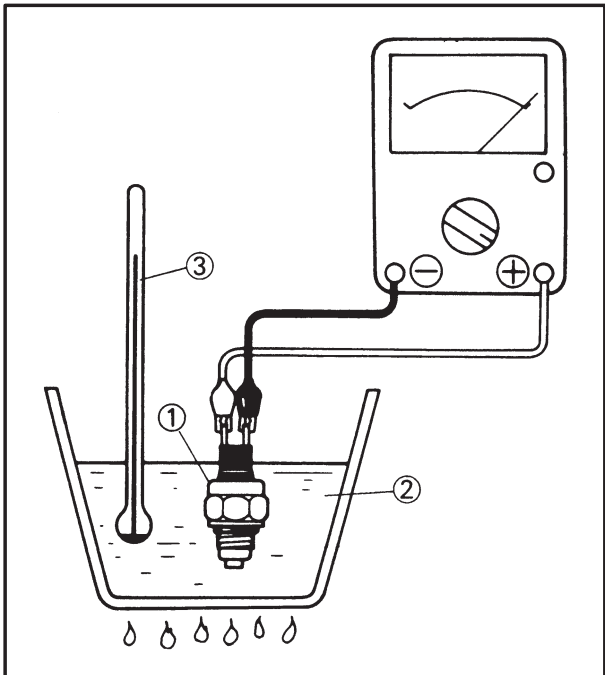
MOVES

YP807012

**6. Thermo switch**

- Remove the thermo switch from the radiator.
- Connect the pocket tester ( $\Omega \times 1$ ) to the thermo switch ①.
- Immerse the thermo switch in the water ②.
- Check the thermo switch for continuity.

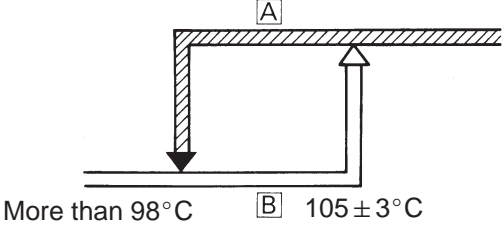
**NOTE:** \_\_\_\_\_  
 Measure temperatures while heating the coolant with the temperature gauge ③.  
 \_\_\_\_\_



**⚠ WARNING**

- Handle the thermo switch with special care. Never subject it to strong shocks or allow it to be dropped. Should it be dropped, it must be replaced.
- Do not touch the thermo switch to the bottom of the heated vessel.

---



**A** Thermo switch "ON".  
**B** Thermo switch "OFF".

OUT OF SPECIFICATION

Replace the thermo switch.

CORRECT

7. Wiring connection

- Check the connection of the entire cooling system. Refer to "CIRCUIT DIAGRAM" section.

POOR CONNECTION

Correct.



YP807010

**TROUBLESHOOTING**

**IF THE WATER TEMPERATURE METER FAILS TO MOVE, WHEN ENGINE IS WARM**

**Procedure**

Check:

1. Fuse (Main, Fan)
2. Battery
3. Main switch
4. Thermo unit
5. Voltage
6. Wiring connection (entire cooling system)

**NOTE:**

- Remove the following parts before troubleshooting.
  - 1) Fuel tank
  - 2) Cowling body
- Use the special tools specified in the troubleshooting section.

 **Pocket tester:**  
**90890-03112**

YP\*\*\*\*\*

1. Fuse  
Refer to "CHECKING SWITCHES" section.

↓ CONTINUITY

YP\*\*\*\*\*

2. Battery  
• Check the battery condition.  
Refer to "BATTERY INSPECTION" section in CHAPTER 3.

↓ CORRECT

YP\*\*\*\*\*

3. Main switch  
Refer to "CHECKING SWITCHES" section.

↓ CONTINUITY  
\*

NO CONTINUITY

Replace the fuse.

INCORRET

• Clean battery terminals.  
• Recharge or replace battery.

NO CONTINUITY

Replace the main switch.

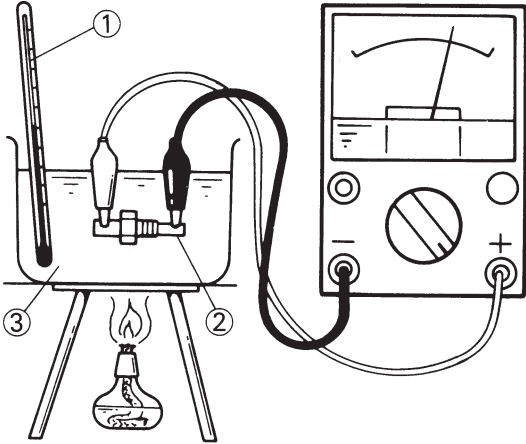


yp\*\*\*\*\*

**4. Thermo unit**

- Drain the coolant, and remove the thermo unit from the radiator.
- Immerse the thermo unit ② in the coolant ③.

① Thermometer



Coolant temperature	Resistance
80 °C	47.5 ~ 56.8 Ω
100 °C	26.2 ~ 29.3 Ω

**⚠ WARNING**

- Handle the thermo unit with special care. Never subject it to strong shocks or allow it to be dropped. Should it be dropped, it must be replaced.
- Do not touch the thermo unit to the bottom of the heated vessel.

OUT OF SPECIFICATION

Replace the thermo unit.



MEETS SPECIFICATION

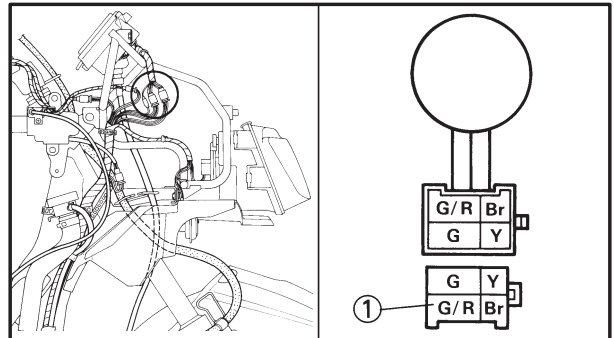
yp\*\*\*\*\*

**5. Voltage**

- Connect the pocket tester (DC20 V) to the temperature gauge coupler.

**Tester (+) lead → Green/Red terminal ①**  
**Tester (-) lead → Frame ground**

- Turn the main switch to on.
- Check for voltage (12 V) on the temperature gauge lead.



OUT OF SPECIFICATION

The wiring circuit from main switch to temperature gauge is faulty. Repair.



CORRECT



yp\*\*\*\*\*

6. Wiring connection

- Check the connections of the entire cooling system. Refer to "CIRCUIT DIAGRAM" section.



CORRECT

Replace the temperature gauge.

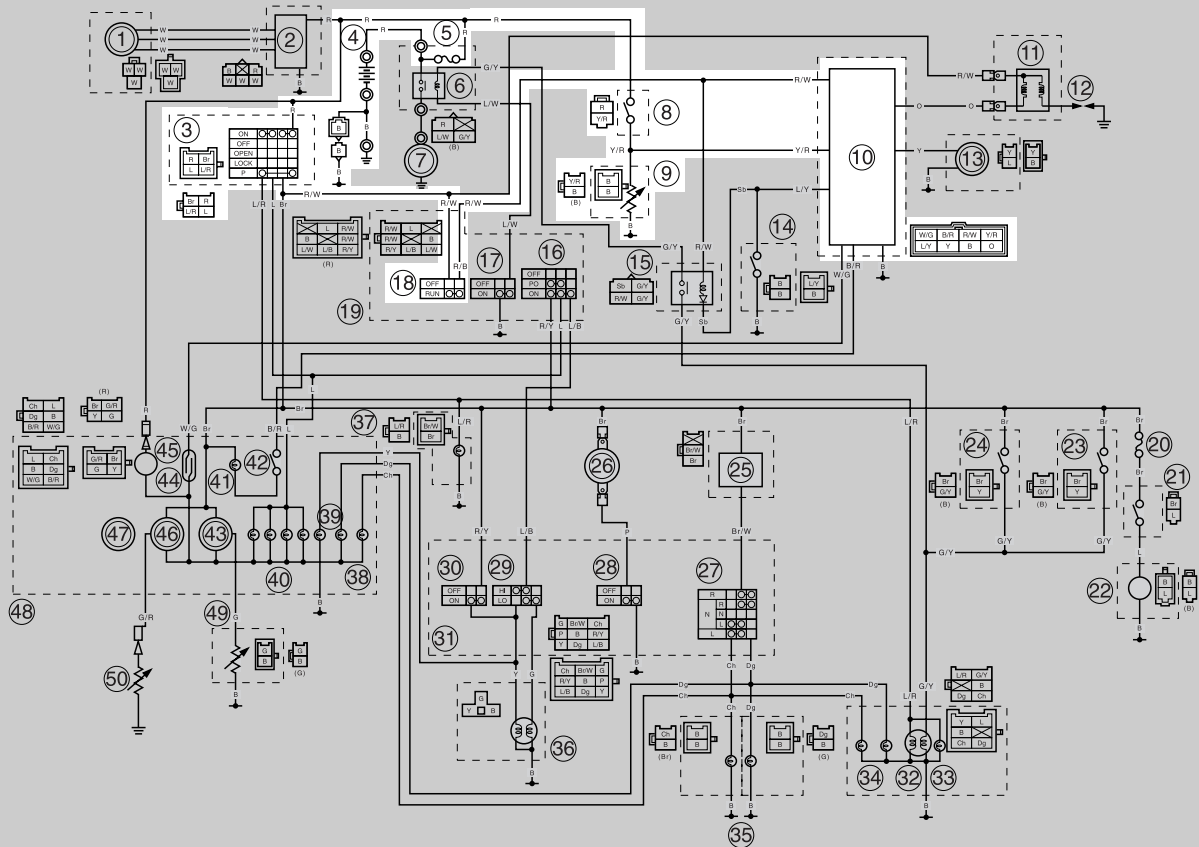
POOR CONNECTION



Correct.

YP\*\*\*\*\*

**AUTO CHOKE SYSTEM  
CIRCUIT DIAGRAM**



- ③ Main switch
- ④ Battery
- ⑤ Main fuse
- ⑧ Thermo switch (auto choke)
- ⑨ Auto choke
- ⑩ Ignitor unit
- ⑱ Engine stop switch



yp\*\*\*\*\*

**TROUBLESHOOTING**

**IF THE AUTO CHOKE FAILS TO OPERATE.**

**Procedure**

Check:

1. Fuse (Main)
2. Battery
3. Main switch
4. Engine stop switch
5. Thermo switch
6. Auto choke unit resistance
7. Voltage
8. Wiring connection (entire auto choke system)

**NOTE:**

- Remove the following parts before troubleshooting.
  - 1) Fuel tank
  - 2) Footrest board
  - 3) Cowling body
- Use the special tools specified in the troubleshooting section.

 **Pocket tester:**  
**90890-03112**

yp\*\*\*\*\*

1. Fuse  
Refer to "CHECKING SWITCHES" section.

CONTINUITY

NO CONTINUITY

Repalce the fuse.

yp\*\*\*\*\*

2. Battery  
• Check the battery condition.  
Refer to "BATTERY INSPECTION" section in CHAPTER 3.

CORRECT

INCORRECT

• Clean battery terminals.  
• Recharge or replace battery.

yp\*\*\*\*\*

3. Main switch  
Refer to "CHECKING SWITCHES" section.

CONTINUITY

NO CONTINUITY

Replace the main switch.

yp\*\*\*\*\*

4. Engine stop switch  
Refer to "CHECKING SWITCHES" section.

CONTINUITY

NO CONTINUITY

Replace the right handlebar switch.

\*



YP\*\*\*\*\*

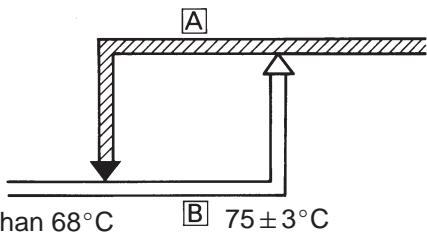
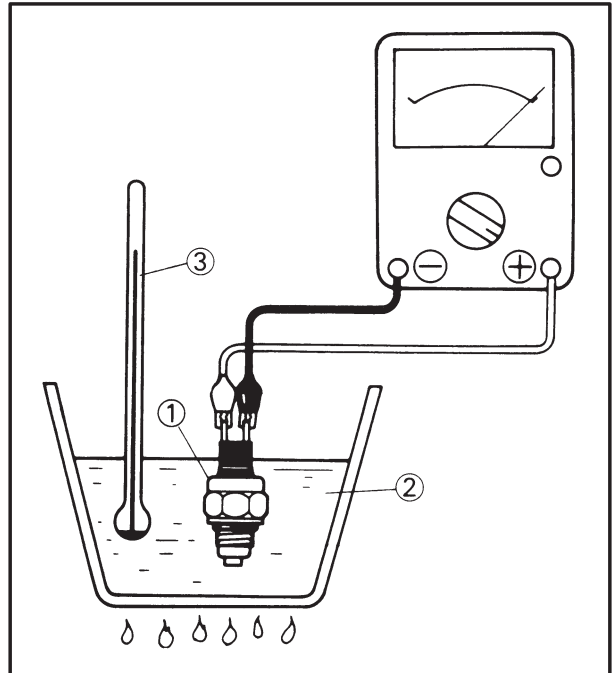
5. Thermo switch

- Disconnect the thermo switch from the radiator.
- Connect the pocket tester ( $\Omega \times 1$ ) to the thermo switch ①.
- Immerse the thermo switch in the coolant ②.
- Check the thermo switch for continuity.

**NOTE:** \_\_\_\_\_  
 Note temperatures while heating the water with the temperature gauge ③.

**⚠ WARNING** \_\_\_\_\_

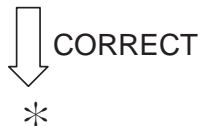
- Handle the thermo switch with special care. Never subject it to strong shocks or allow it to be dropped. Should it be dropped, it must be replaced.
- Do not touch the thermo switch to bottom of the heated vessel.



- A** Thermo switch on.
- B** Thermo switch off.

OUT OF SPECIFICATION

Replace the thermo switch.






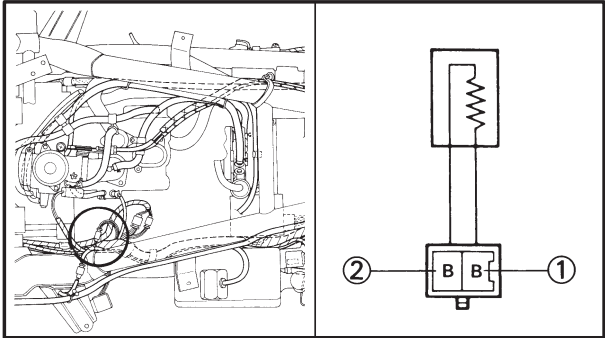
YP\*\*\*\*\*

**6. Auto choke unit resistance**

- Disconnect the auto choke unit coupler from the wireharness.
- Connect the pocket tester ( $\Omega \times 1$ ) to the auto choke unit coupler lead.

**Tester (+) lead → Black terminal ①**  
**Tester (-) lead → Black terminal ②**

 **Auto choke unit resistance:**  
**16 ~ 24  $\Omega$  (20°C)**



OUT OF SPECIFICATION

Replace the auto choke unit.

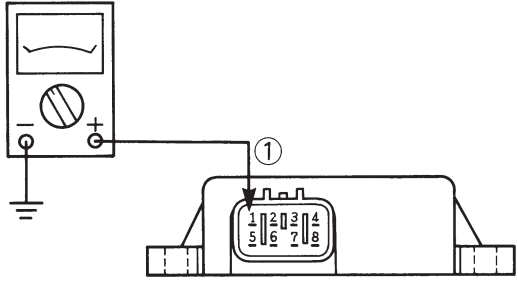


YP\*\*\*\*\*

**7. Voltage (temperature under 68°C)**

- Connect the pocket tesor (DC20 V) to the ignitor unit.

**Tester (+) lead → Yellow/Red terminal ①(1 terminal)**  
**Tester (-) lead → Frame ground**



- Turn the main switch to on, and start the engine.
- Check for voltage (12 V) on “Yellow/Red” terminal at the ignitor unit.

OUT OF SPECIFICATION

Replace the ignitor unit.



YP\*\*\*\*\*

**8. Wiring connection**

- Check the connection of the entire auto choke system. Refer to “CIRCUIT DIAGRAM” section.

POOR CONNECTION

Correct.





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**CHAPTER 9.**  
**TROUBLESHOOTING**

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## TROUBLESHOOTING

### NOTE:

The following troubleshooting does not cover all the possible causes of trouble. It should be helpful, however, as a guide to troubleshooting. Refer to the relative procedure in this manual for inspection, adjustment and replacement of parts.

YP90000

## STARTING FAILURE/HARD STARTING

### FUEL SYSTEM

#### Fuel tank

- Empty
- Clogged fuel tank cap breather hole
- Deteriorated fuel or fuel containing water or foreign material

#### Fuel pump

- Clogged fuel hose
- Clogged fuel pump
- Broken vacuum hose or improperly hose setting

#### Carburetor

- Deteriorated fuel or fuel containing water or foreign material
- Clogged pilot jet
- Clogged air passage
- Improperly set pilot air screw
- Clogged pilot air passage
- Improperly sealed valve seat
- Improperly adjusted fuel level
- Clogged starter jet
- Clogged emulsion (heated water) tube
- Sucked-in air

### COMPRESSION SYSTEM

#### Cylinder and cylinder head

- Loose spark plug
- Loose cylinder head
- Broken cylinder head gasket
- Broken cylinder gasket
- Worn, damaged or seized cylinder

#### Piston and piston ring

- Worn piston
- Worn, fatigued or broken piston ring
- Seized piston ring
- Seized or damaged piston

#### Auto choke

- Starter plunger malfunction
- Wax malfunction
- P.T.C. thermister malfunction
- Ignitor unit malfunction
- Thermo switch malfunction

#### Air cleaner

- Clogged air cleaner element
- Improper air cleaner setting

#### Valve system

- Improperly adjusted valve clearance
- Improperly sealed valve
- Improperly contacted valve and valve seat
- Improper valve timing
- Broken valve spring
- Seized valve

**IGNITION SYSTEM**

**Battery**

- Improperly charged battery
- Faulty battery

**Fuse**

- Burnt out, improper connection

**Spark plug**

- Improper plug gap
- Worn electrodes
- Wire between terminals broken
- Improper heat range
- Worn electrodes
- Faulty spark plug cap

**Ignition coil**

- Broken or shorted primary/secondary coil
- Faulty high tension cord
- Broken ignitin coil body

**Ignition system**

- Faulty ignitor unit
- Faulty pick up coil
- Broken magneto woodruff key

**Switch**

- Faulty main switch
- Faulty "ENGINE STOP" switch
- Faulty front and/or rear brake switch
- Faulty sidestand switch

**Wiring**

- Loose battery terminal
- Loose coupler connection
- Improperly grounded
- Broken wireharness

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**POOR IDLE SPEED PERFORMANCE**

**POOR IDLE SPEED PERFORMANCE**

**Carburetor**

- Loose or clogged pilot jet
- Damaged carburetor joint
- Improperly tightened carburetor joint clamp hose
- Improperly adjusted idle speed (Pilot screw), (Throttle stop screw), (CO test)
- Improperly adjusted throttle cable
- Flooded carburetor

**Auto choke**

- Faulty starter plunger
- Improper wax operation
- Faulty ignitor unit
- Faulty P.T.C. thermister

**Air cleaner**

- Clogged air cleaner element

**Ignition system**

- Faulty spark plug
- Faulty high tension cord
- Faulty ignitor unit
- Faulty pick up coil
- Faulty ignition coil

**Valve system**

- Improperly adjusted valve clearance



EB902000

### POOR MEDIUM AND HIGH SPEED PERFORMANCE

#### POOR MEDIUM AND HIGH SPEED PERFORMANCE

Refer to "STARTING FAILURE/HARD STARTING" section. (Fuel system, electrical system, compression system and valve train)

##### Carburetor

- Improperly adjusted fuel level
- Clogged main nozzle
- Clogged or loose pilot jet

##### Air cleaner

- Clogged air cleaner element

yp\*\*\*\*\*

### POOR SPEED PERFORMANCE

#### POOR SPEED PERFORMANCE

##### Ignition system

- Dirty spark plug
- Improper heat range
- Faulty ignitor unit
- Faulty pick up coil

##### Fuel system

- Clogged fuel tank cap breather hole
- Clogged air cleaner element
- Clogged jet
- Improperly adjusted fuel level
- Improper carburetor air vent hose setting

##### Compression system

- Worn cylinder
- Worn or seized piston ring
- Cylinder head gasket broken
- Cylinder gasket broken
- Carbon deposit build-up
- Improperly adjusted valve clearance
- Improperly contacted valve and valve seat
- Faulty valve timing

##### Clutch

- Refer to "CLUTCH SLIPPING/DRAGGING" section

##### Engine oil

- Improper oil level (low or over oil level)
- Improper quality (Low oil viscosity)
- Deterioration
- Clogged oil passage

##### Brakes

- Dragging brake



YP\*\*\*\*\*

**FAULTY CLUTCH**

**WHEN ENGINE IS RUN, SCOOTER DOES NOT RUN**

**V belt**

- Worn/bent/slipping

**Cam, slider**

- Worn/damaged

**Compression spring**

- Damage

**Gears**

- Damage

YP904000

**CLUTCH SLIPPING**

**Clutch weight spring**

- Worn/loose

**Clutch shoe**

- Worn/damaged

**Primary sliding sheave**

- Seized

YP\*\*\*\*\*

**POOR STARTING PERFORMANCE**

**V belt**

- Slipping/oily V belt

**Primary sliding sheave**

- Improper operation
- Damage

**Compression spring**

- Worn/loose

**Secondary sliding sheave**

- Improper operation
- Worn guide pin groove
- Worn guide pin

**Clutch shoe**

- Worn/bent

**POOR SPEED PERFORMANCE**

**V belt**

- Worn
- Oily V belt

**Roller weight**

- Worn/improper operation

**Primary/secondary sheave**

- Worn

YP905000

## OVERHEATING OR OVER COOLING

### OVERHEATING

#### Ignition system

- Improper spark plug gap
- Improper spark plug heat range
- Faulty ignitor unit

#### Fuel system

- Improper carburetor setting
- Improper fuel level adjustment
- Clogged air cleaner element

#### Compression system

- Heavy carbon deposit build-up
- Improperly adjusted valve timing
- Improperly adjusted valve clearance

#### Engine oil

- Incorrect engine oil level
- Improper engine oil quality (High viscosity)
- Low engine oil quality

#### Brakes

- Dragging brake

#### Cooling system

- Inoperative fan motor
- Faulty thermostat
- Faulty thermo switch
- Incorrect coolant level (low coolant level)
- Faulty radiator (Clogged, damage)
- Faulty radiator cap
- Impeller shaft gear malfunction (bent dowel pin, gear)
- Damaged impeller shaft
- Disconnected fan motor connector

### OVER COOLING

#### Cooling system

- Faulty cooling fan
- Faulty thermostat
- Faulty thermo switch



YP906000

### **FAULTY BRAKE POOR BRAKING EFFECT**

#### **Front brake**

- Worn brake pad
- Worn brake disc
- Air in brake fluid
- Leaking brake fluid
- Faulty master cylinder kit
- Faulty caliper seal kit
- Loose union bolt
- Broken brake hose
- Oily or greasy brake pad
- Oily or greasy brake disc

#### **Rear brake**

- Improper brake lever adjustment
- Worn brake shoe
- Improper brake shoe contact
- Worn camshaft
- Worn brake drum
- Mud or water into brake drum inside
- Oily or greasy brake lining
- Faulty brake cable
- Broken or fatigued tension spring
- Faulty camshaft, cam lever

YP907000

### **FRONT FORK MALFUNCTION OIL LEAKAGE**

- Bent, damaged or rusty inner tube
- Damaged or cracked outer tube
- Damaged oil seal lip
- Loose hexagon bolt
- Damage cap bolt O-ring

#### **MALFUNCTION**

- Bent inner tube
- Deformed outer tube
- Damaged fork spring
- Bent cylinder complete
- Improper oil viscosity (High viscosity)
- Improper oil level



YP908000

**INSTABLE HANDLING**

**INSTABLE HANDLING**

**Handlebars**

- Loose handlebar tightening bolt

**Steering**

- Loose or overtightening steering nut
- Bent under bracket
- Damaged bearing or ball race

**Front forks**

- Uneven oil levels on both sides
- Broken front fork spring
- Twisted front forks

**Wheels**

- Incorrect wheel balance
- Deformed wheel rim
- Unevenly worn tires
- Incorrect tire pressure
- Loose bearing
- Bent or loose wheel axle

**Frame**

- Twisted
- Damaged head pipe bearings

**Rear arm**

- Faulty bearings
- Bent rear arm

**Rear shock absorber**

- Fatigued spring
- Improperly adjusted spring preload
- Oil leakage

**Cowling**

- Damage
- Improper mounting

YP\*\*\*\*\*

**STARTER MOTOR DOES NOT  
OPERATE**

**STARTER MOTOR DOES NOT OPERATE**

**Battery**

- Insufficient battery capacity
- Faulty battery

**Fuse**

- Burnt out, improper connection

**Switch**

- Faulty main switch
- Faulty sidestand switch
- Faulty front and/or rear brake switch
- Faulty starting circuit cut-off relay
- Faulty starter relay

**Wireharness**

- Loose battery terminal
- Loosely connected coupler
- Improperly grounded
- Broken wireharness

**Starter motor**

- Worn brush
- Faulty commutator
- Broken armature coil

**Engine**

- Seized engine



YP909000

## FAULTY SIGNAL AND LIGHTING SYSTEM

### HEADLIGHT DARK

- Improper bulb
- Too many electric accessories
- Hard charging
- Faulty rectifier/regulator
- Faulty battery
- Improperly connected coupler, connector, wireharness
- Improperly grounded
- Faulty main switch or Lights (dimmer) switch
- Bulb life expired

### BULB BURNT OUT

- Improper bulb
- Faulty battery
- Faulty rectifier/regulator
- Improperly grounded
- Faulty main switch
- Bulb life expired

### FLASHER DOES NOT BLINK

- Improperly grounded
- Insufficient battery capacity
- Faulty fuse
- Faulty turn switch
- Faulty flasher relay
- Broken wireharness, incorrect coupler connection
- Bulb burnt out

### FLASHER KEEPS ON

- Faulty flasher relay
- Insufficient battery capacity (nearly discharged)
- Bulb burnt out (front or rear)

### FLASHER BLINKS SLOWER

- Faulty flasher relay
- Insufficient battery capacity (nearly discharged)
- Improper bulb
- Faulty main and/or turn switch

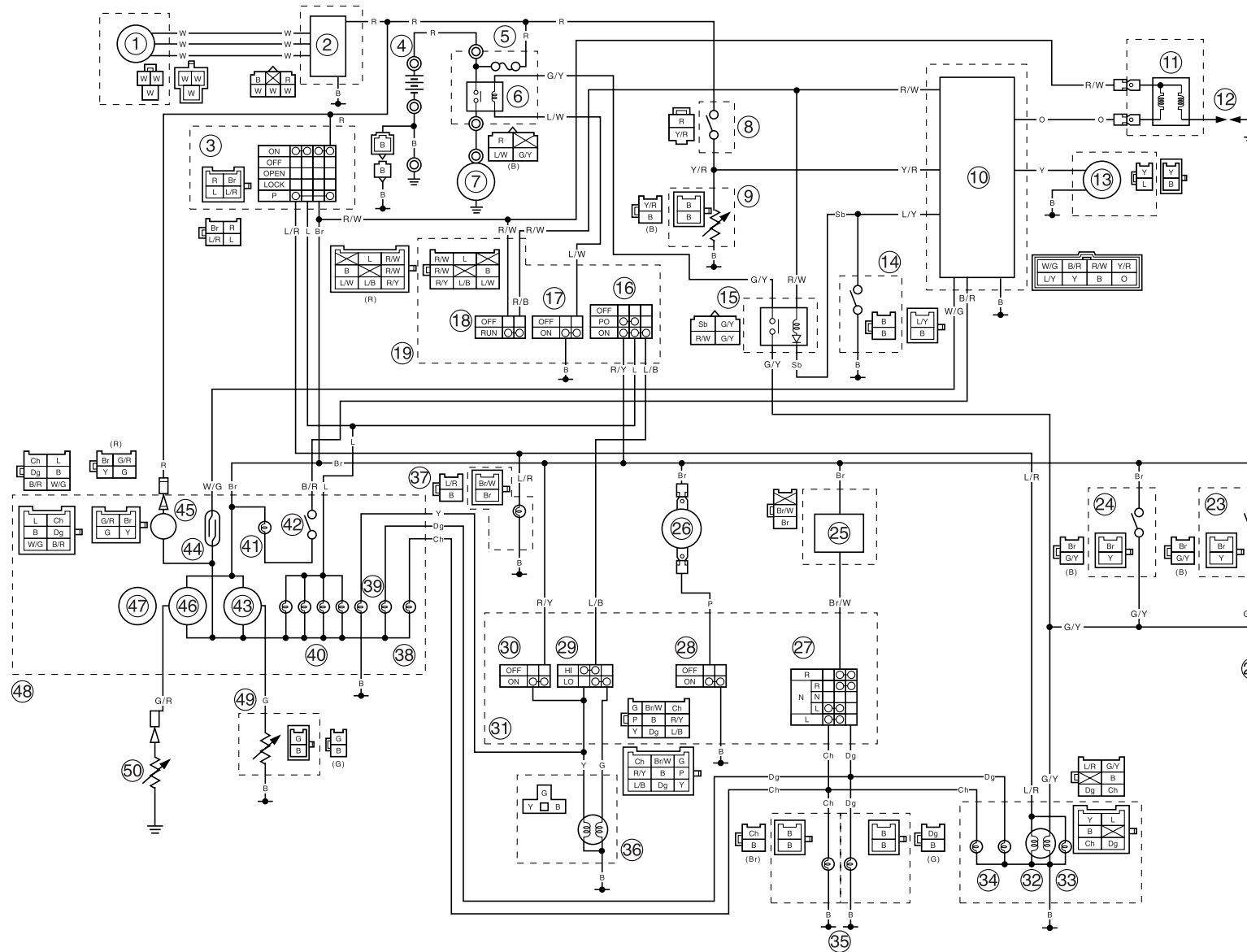
### FLASHER BLINKS QUICKER

- Improper bulb
- Faulty flasher relay

### HORN DOES NOT SOUND

- Faulty battery
- Faulty fuse
- Faulty main and/or horn switch
- Improper horn adjustment
- Faulty horn (burnt coil, connector)
- Broken wireharness

# YP250 WIRING DIAGRAM



1. A.C. magneto
2. Rectifier/regulator
3. Main switch
4. Main fuse
5. Battery
6. Starter relay
7. Starter motor
8. Thermo switch (auto choke)
9. Auto choke
10. Ignitor unit
11. Ignition coil
12. Spark plug
13. Pickup coil
14. Sidestand switch
15. Starting circuit cut-off relay
16. Lights switch
17. Starter switch
18. Engine stop switch
19. Handlebar switches (right)
20. Fuse (fan)
21. Thermo switch
22. Fan motor
23. Rear brake switch
24. Front brake switch
25. Flasher relay
26. Horn
27. Turn switch
28. Horn switch
29. Dimmer switch
30. Pass switch
31. Handlebar switches (left)
32. Tail/Brake light
33. Licence light
34. Rear flasher lights
35. Front flasher lights
36. Head light
37. Auxiliary light
38. Turn indicator lights
39. High beam indicator light
40. Meter lights
41. Cil indicator light
42. Reset switch
43. Fuel gauge
44. Read switch
45. Clock
46. Thermometer
47. Speedometer
48. Meter assembly
49. Fuel sender
50. Thermo unit

## COLOR CODE

B . . . . .	Black	Br/W . . . .	Brown/White
Br . . . . .	Brown	G/R . . . . .	Green/Red
Ch . . . . .	Chocolate	G/Y . . . . .	Green/Yellow
Dg . . . . .	Dark green	L/B . . . . .	Blue/Black
G . . . . .	Green	L/Y . . . . .	Blue/Yellow
L . . . . .	Blue	L/W . . . . .	Blue/White
O . . . . .	Orange	L/R . . . . .	Blue/Red
Sb . . . . .	Sky blue	R/B . . . . .	Red/Black
P . . . . .	Pink	R/Y . . . . .	Red/ Yellow
R . . . . .	Red	R/W . . . . .	Red/White
Y . . . . .	Yellow	Y/W . . . . .	Yellow/White
W . . . . .	White	W/G . . . . .	White/Green
B/R . . . . .	Black/Red		