



**YAMAHA MBK**

**YN50** <sup>2002</sup>  
5RN-AE1

# **SERVICE MANUAL**

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**YN50**  
**SERVICE MANUAL**  
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## WARNING

This Manual was written by Yamaha Motor España, S.A. principally for the use of Yamaha/MBK agents and qualified mechanics. As it is not possible to give full mechanical instructions in a manual, it is presumed that the persons using the book to carry out the maintenance and repair of Yamaha/MBK motorcycles have a basic knowledge of the concepts and procedures inherent in the technology of motorcycle repair. Without such knowledge any attempt to repair or service this model may cause problems in its use and/or safety.

Yamaha Motor España, S.A., is continually trying to improve all models which it manufactures. Authorised Yamaha/MBK agents will be notified of all significant modifications and changes in the specifications or procedures and these will appear where applicable in future editions of this manual.

## PARTICULARLY IMPORTANT INFORMATION

This material used the following notation.



A danger symbol means ATTENTION, BE CAREFUL, YOUR SAFETY IS IN DANGER!

### WARNING

Non-compliance with a WARNING *may cause the serious injury or death* of the driver, a bystander or the person inspecting of repairing the motorcycle.

### ATTENTION:

ATTENTION indicates the special precautions which should be taken in order to avoid damage to the motorcycle.

### NOTE:

NOTE provides key information to make the procedures easier and clearer.

# HOW TO USE THIS MANUAL

## FORMAT OF THIS MANUAL

This manual is composed of chapters on the main subject categories (See "Illustrated Symbols"). First heading ①: This is a chapter with a symbol at the top right-hand side of each page.

Second heading ②: This title appears at the top of each page to the left of the chapter symbol.

(For the "Inspection and periodic adjustments" chapter the third heading appears)

Third heading ③: This is a final heading.

## MANUAL FORMAT

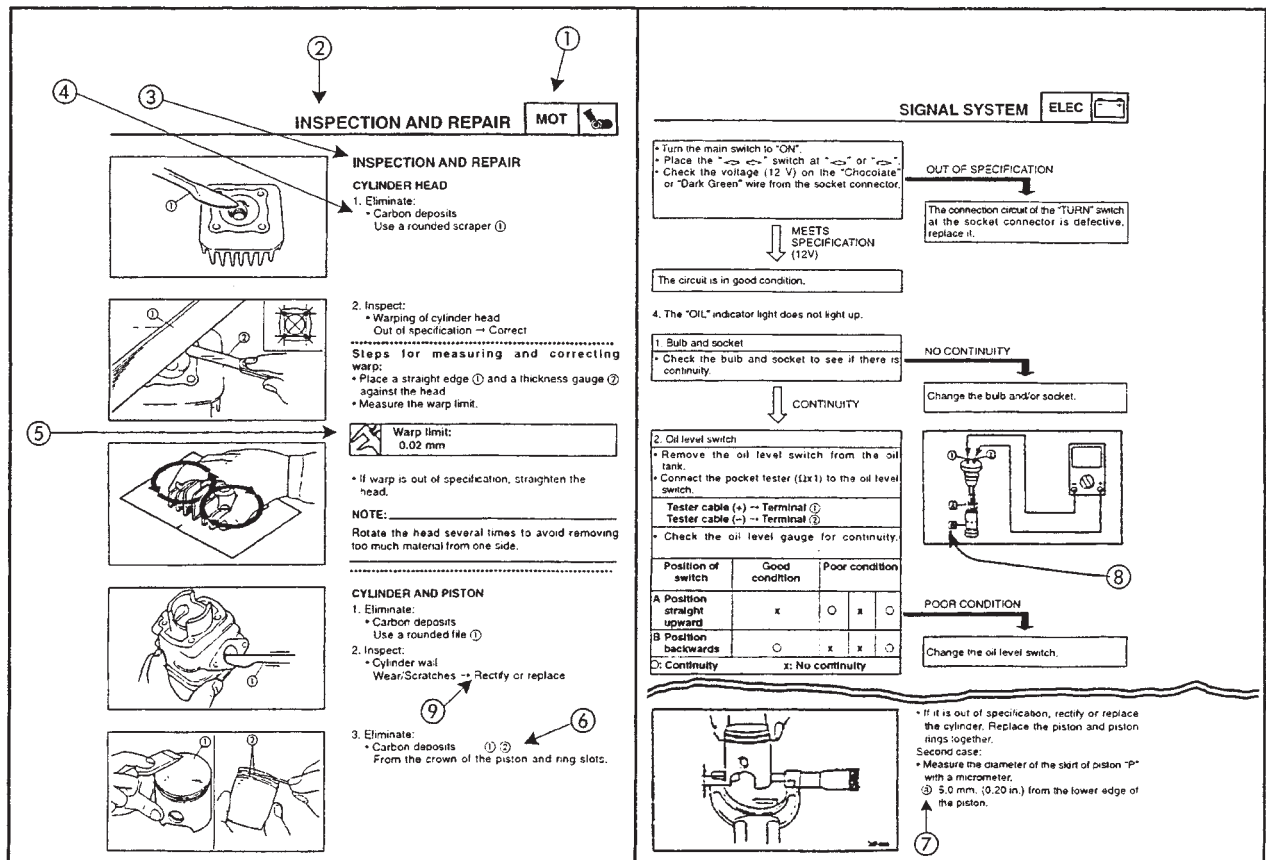
All procedures in this manual are organised sequentially, step by step. The information has been compiled to make reading easy for the mechanic and to provide useful reference material which contains ample explanations of all disassembly, repair, assembly and inspection procedures. A particularly important procedure ④ is placed between a lines of asterisks "\*" with each procedure preceded by "•".

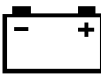
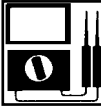
## IMPORTANT CHARACTERISTICS

- Data and special tools are put in a box preceded by a corresponding symbol ⑤.
- A number within a circle ⑥ indicates the number of a part, and an alphabetical letter within a circle indicates data or an alignment mark ⑦, everything else is indicated by a letter within a box ⑧.
- The conditions of defective components will precede an arrow symbol and the course of action to be followed will follow the symbol ⑨.

## DETAILED DIAGRAM

Each chapter provides detailed diagrams before each disassembly section, for the easy identification of disassembly/assembly procedures.



|   |                                                                                     |   |                                                                                     |   |                                                                                     |
|---|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|
| ① | GEN<br>INFO                                                                         |   |    |   |                                                                                     |
| ② | SPEC                                                                                |   |    |   |                                                                                     |
| ③ | INSP/<br>ADJ                                                                        |   |    |   |                                                                                     |
| ④ | ENG                                                                                 |   |    |   |                                                                                     |
| ⑤ | CARB                                                                                |   |    |   |                                                                                     |
| ⑥ | CHAS                                                                                |   |    |   |                                                                                     |
| ⑦ | ELEC                                                                                |   |    |   |                                                                                     |
| ⑧ | TRBL/<br>SHTG                                                                       |   | ?                                                                                   |   |                                                                                     |
| ⑨ |   |   |                                                                                     |   |                                                                                     |
| ⑩ |   |   |                                                                                     |   |                                                                                     |
| ⑪ |  |   |                                                                                     |   |                                                                                     |
| ⑫ |  |   |                                                                                     |   |                                                                                     |
| ⑬ |  |   |                                                                                     |   |                                                                                     |
| ⑭ |  |   |                                                                                     |   |                                                                                     |
| ⑮ |  |   |                                                                                     |   |                                                                                     |
| ⑯ |  | ⑰ |  | ⑱ |  |
| ⑲ |  | ⑳ |  | ㉑ |  |
| ㉒ |  |   |                                                                                     | ㉓ | NEW                                                                                 |

## ILLUSTRATED SYMBOLS

### (See illustration)

Illustrated symbols ① to ⑧ are designed as tabs to be followed with the thumb to indicate the chapter number and the index.

- ① General information
- ② Specifications
- ③ Periodic inspection and adjustment
- ④ General overhaul of the engine
- ⑤ Carburation
- ⑥ Chassis
- ⑦ Electrical system
- ⑧ Troubleshooting

Illustrated symbols ⑨ to ⑮ will be used to identify the specifications which appear in the text.

- ⑨ Refill with fluid
- ⑩ Lubricant
- ⑪ Special tool
- ⑫ Tightening
- ⑬ Wear limit, clearance
- ⑭ Engine speed
- ⑮  $\Omega$  V, A

Illustrated symbols ⑯ to ㉓ of detailed diagrams, indicate the degree of lubricant and the location of the lubrication point.

- ⑯ Apply engine oil
- ⑰ Apply gear oil
- ⑱ Apply molybdenum disulphide oil
- ⑲ Apply grease to wheel bearings
- ㉑ Apply grease with lightweight lithium soap base
- ㉒ Apply molybdenum disulphide grease
- ㉓ Apply bonding agent (LOCTITE®)
- ㉔ Use a new part.

---

# INDEX

## GENERAL INFORMATION



GEN/  
INFO

**1**

## SPECIFICATIONS



SPEC

**2**

## PERIODIC INSPECTION AND ADJUSTMENTS



INSP  
ADJ

**3**

## GENERAL OVERHAUL OF ENGINE



ENG

**4**

## CARBURATION



CARB

**5**

## CHASSIS



CHAS

**6**

## ELECTRICAL SYSTEM



ELEC

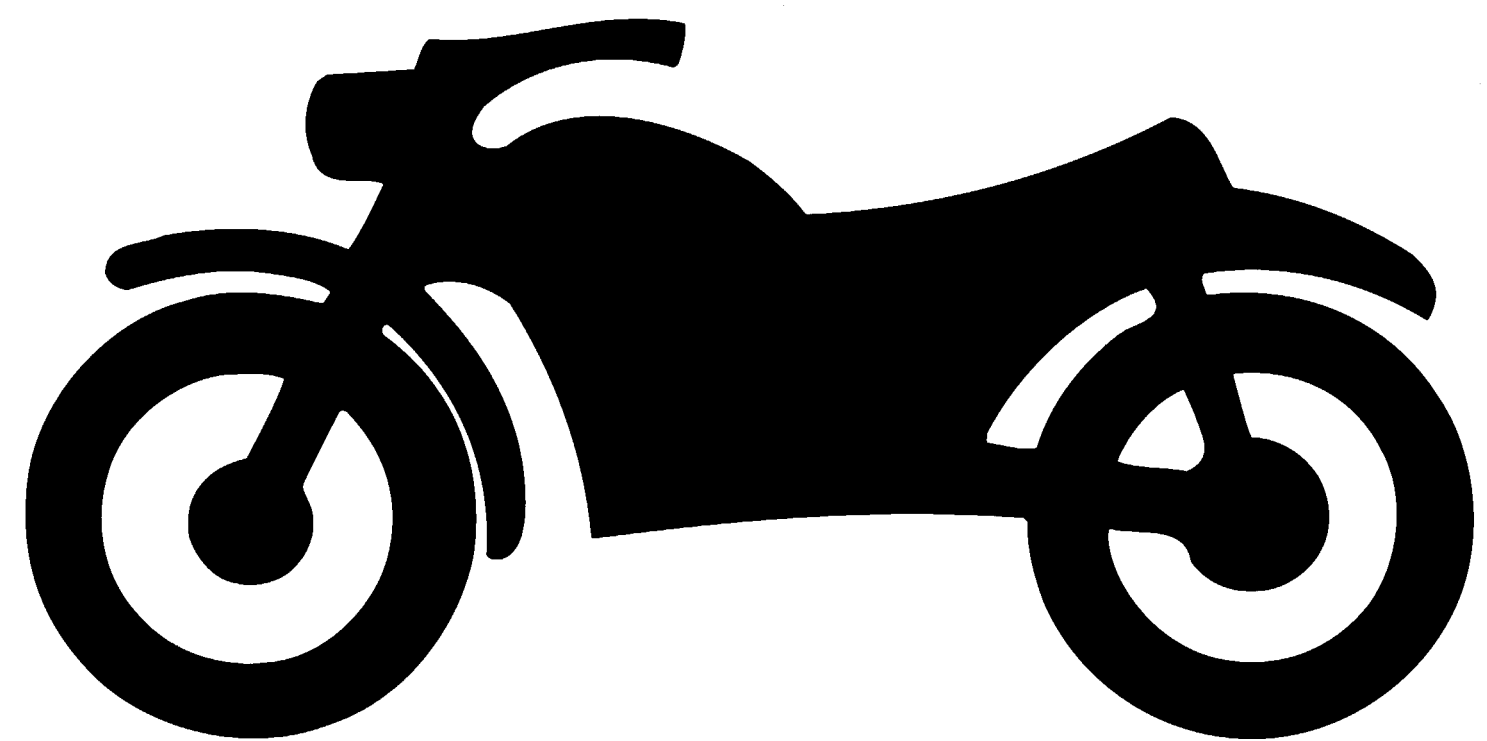
**7**

## TROUBLESHOOTING



TRBL  
SHTG

**8**



**GEN/  
INFO**

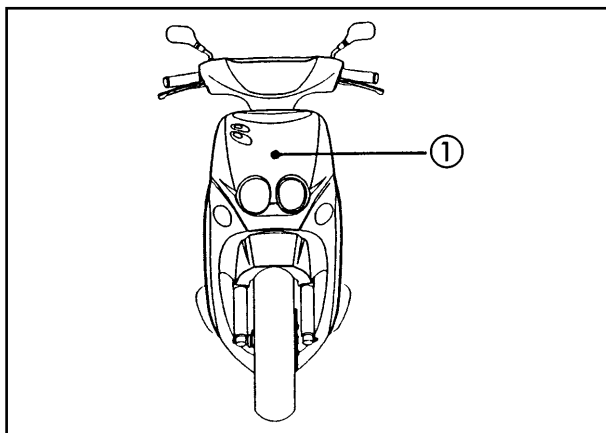
**1**

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## CHAPTER 1

### GENERAL INFORMATION

|                                            |     |
|--------------------------------------------|-----|
| <b>IDENTIFICATION OF THE SCOOTER</b> ..... | 1-1 |
| SERIAL NUMBER OF THE FRAME .....           | 1-1 |
| ENGINE SERIAL NUMBER.....                  | 1-1 |
| <br><b>IMPORTANT INFORMATION</b> .....     | 1-2 |
| CHANGE OF ALL PARTS .....                  | 1-2 |
| OIL SEALS AND O-RINGS .....                | 1-2 |
| SEALING WASHERS/PLATE AND KEYS.....        | 1-2 |
| BEARING AND OIL SEALS .....                | 1-2 |
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| <br><b>SPECIAL TOOLS</b> .....             | 1-3 |
| FOR SERVICING THE ENGINE .....             | 1-3 |
| FOR SERVICING THE CHASSIS .....            | 1-5 |
| FOR ELECTRICAL COMPONENTS .....            | 1-6 |



## GENERAL INFORMATION SCOOTER IDENTIFICATION

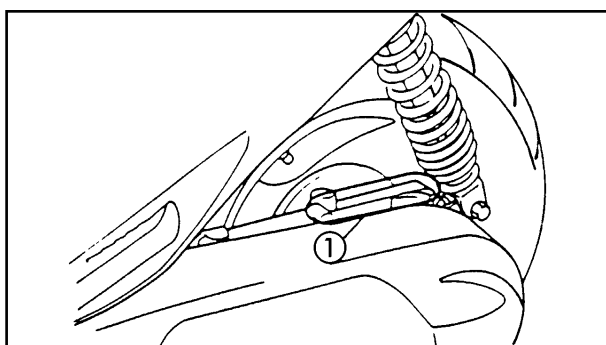
### FRAME SERIAL NUMBER

The serial number of the frame ① is stamped on the steering head pipe.

Frame VTL5AD according standard EU0

Frame VTLSA15 according standard EU1

Frame VTLSA19 according Mofa Version



### ENGINE SERIAL NUMBER

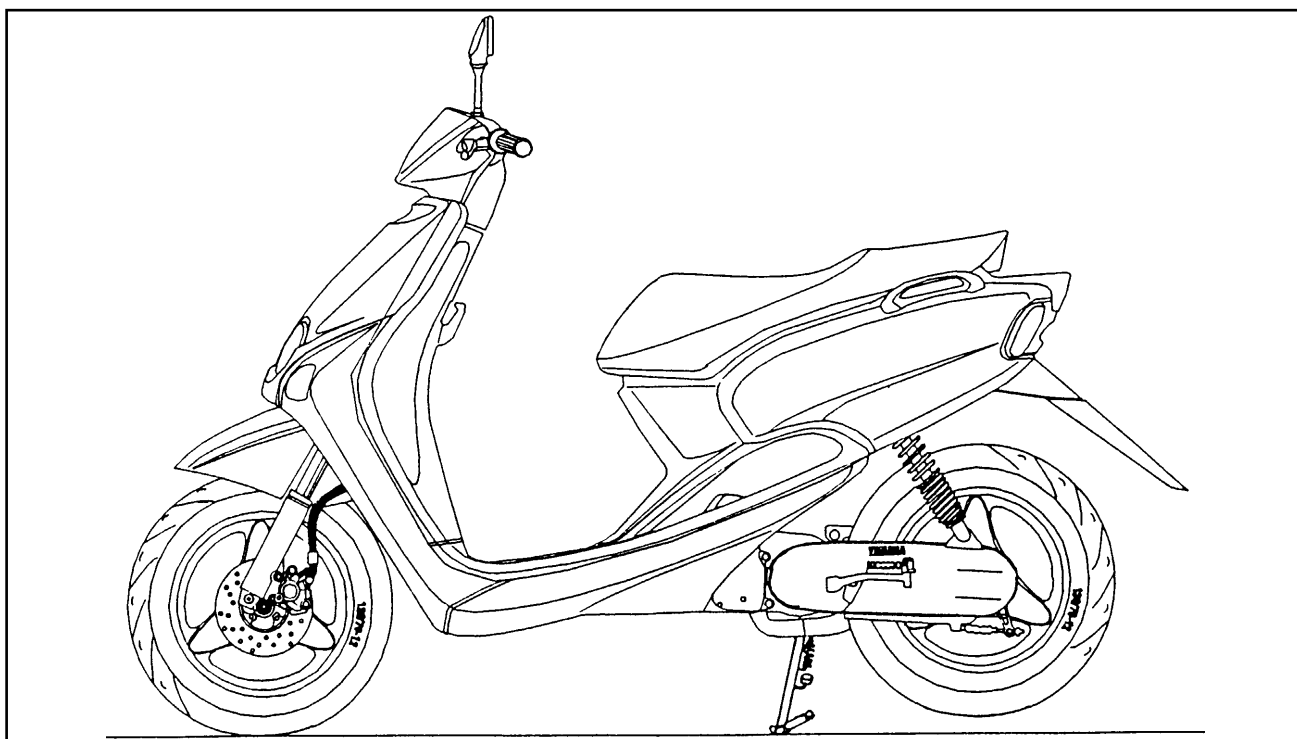
The engine serial number ① is stamped on the upper part of the rear left-hand section of the gear box.

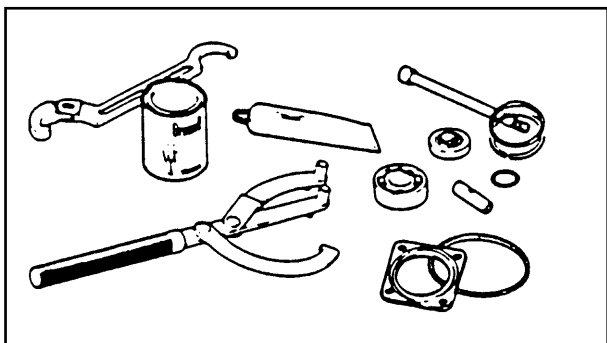
### NOTE:

The first three digits of these numbers identify the model, the remaining digits are the manufacturing number of the unit.

### NOTE:

The designs and specification are subject to change without prior notice.

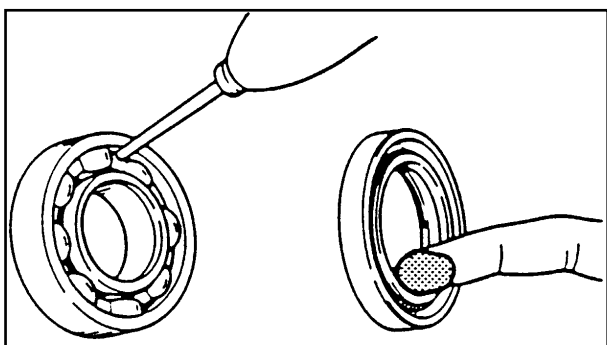




## IMPORTANT INFORMATION

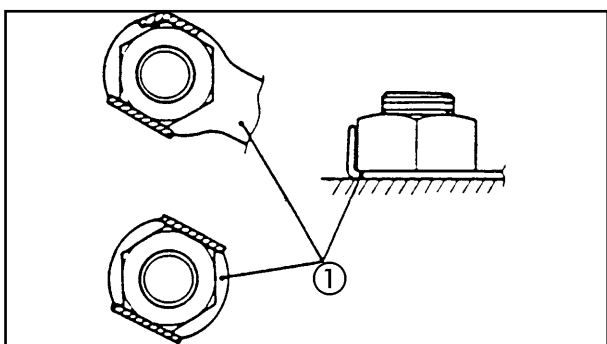
### CHANGE OF ALL PARTS

1. We recommend that original Yamaha parts are used as spare parts. Use the oil and/or grease recommended by Yamaha for assembly and adjustment.



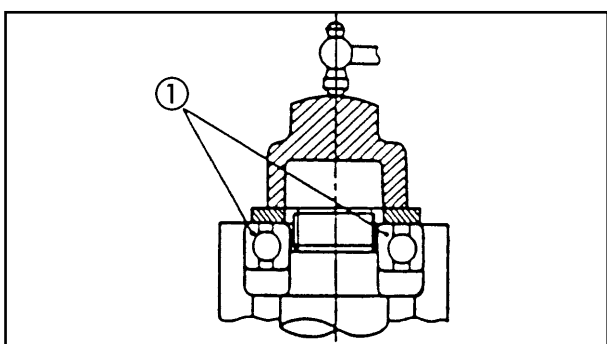
### GASKETS, OIL SEALS AND O-RINGS

1. All gaskets and o-rings should be replaced when the engine is overhauled and repaired. All gasket surfaces, the lips of seals and o-rings should be cleaned.
2. Lubricate with grease all corresponding parts and bearings during assembly. Apply grease on the lips of seals.



### SEALING WASHER/PLATES AND KEYS

1. All washers/plates ① and keys should be replaced when they are removed. The locking tabs should be folded along the flat parts of the bolts or nuts after correctly tightening them.

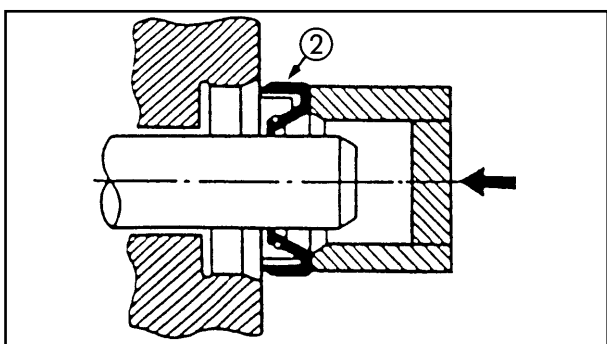


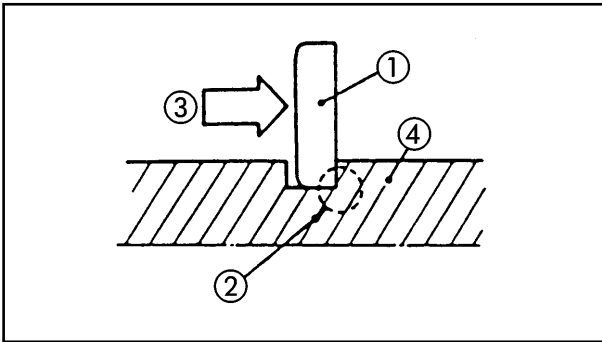
### BEARINGS AND OIL SEALS

1. Install the bearings ① and oil seals ② with their manufacturer's marks or numbers facing outwards (i.e. the printed letters should be on the side exposed to view). When the oil seals are installed, apply a thin layer of light lithium-based grease on the edges of the seal. Put oil on the bearings when they are installed.

### ATTENTION:

**Do not turn the bearings in compressed air to dry them. This will damage the surface of the bearings.**



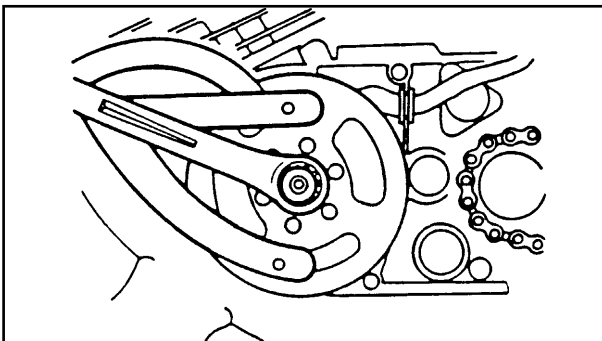


### CIRCLIPS

1. All circlips should be carefully inspected before assembly. Always replace circlips of the piston drum after use. Replace deformed circlips. When installing a circlip ①, ensure that the corner with the sharp edge ② is placed in the opposing direction to the thrust ③ it receives. See sectional view. ④ Axle

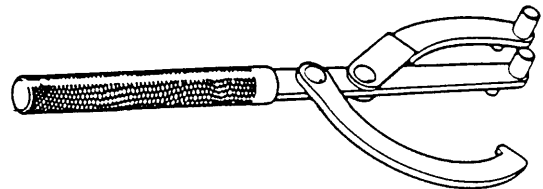
### SPECIAL TOOLS

Appropriate special tools are needed to complete and perfect assembly with accuracy. Using correct tools will help to avoid damage caused by the use of incorrect tools or improvised techniques.

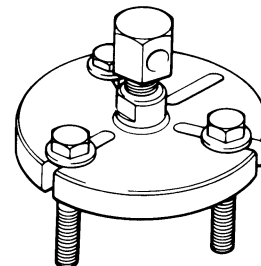


### FOR SERVICING THE ENGINE

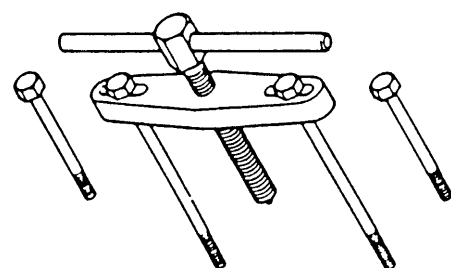
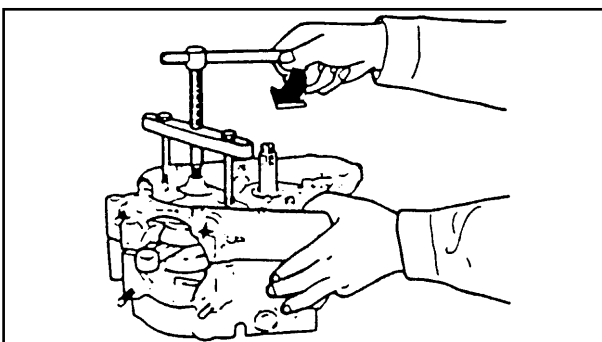
1. Engine wheel holding tool  
(90890-01235)



2. Engine wheel removal tool  
(90890-01362)

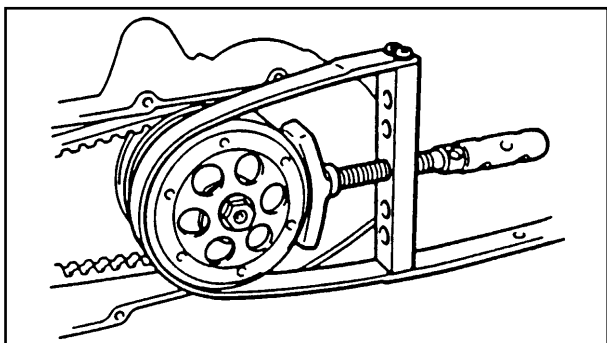


3. Crankcase separation tool  
(90890-01135)

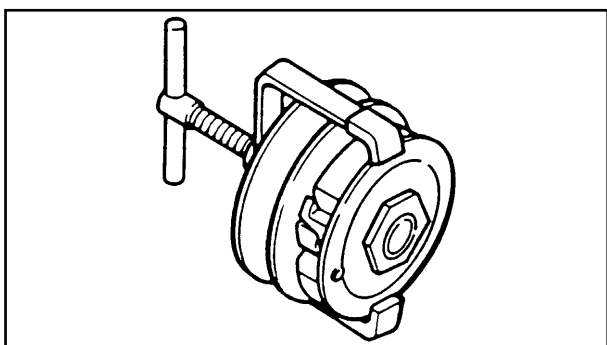
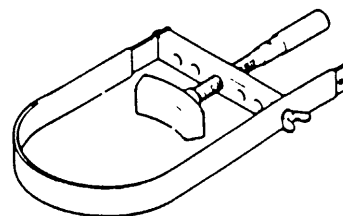


## SPECIAL TOOLS

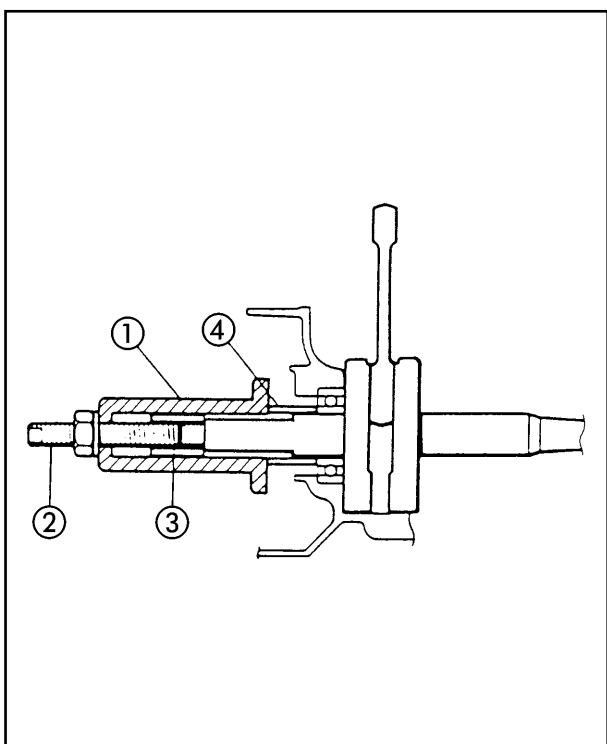
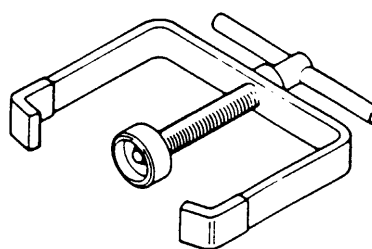
GEN/  
INFO



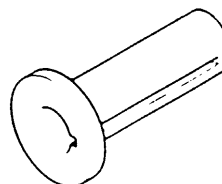
4. Pulley wheel clamp  
(90890-01701)



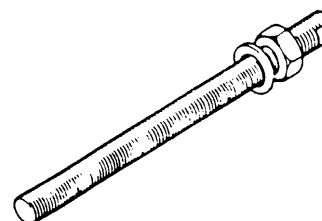
5. Clutch spring compressor  
(90890-01337)



6. Crankshaft installer crucible... ①  
(90890-01274)

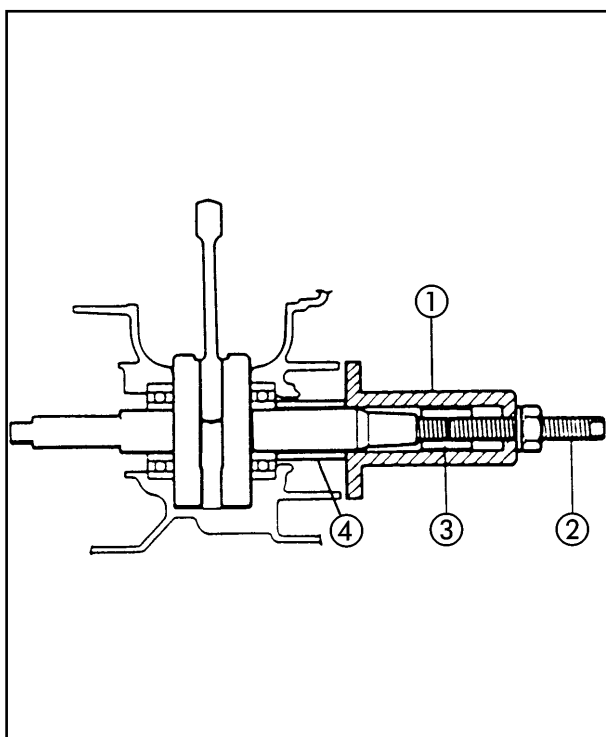


7. Crankshaft installer bolt... ②  
(90890-01275)

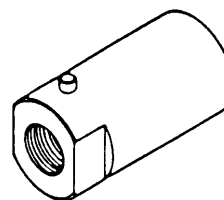


## SPECIAL TOOLS

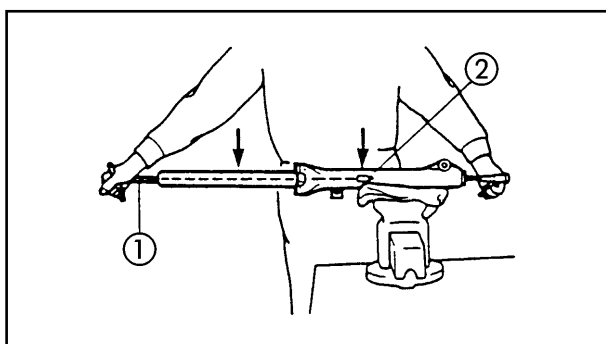
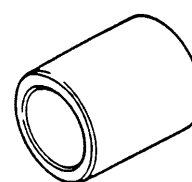
GEN/  
INFO



8. Adaptor (M10)... ③  
(90890-01277)



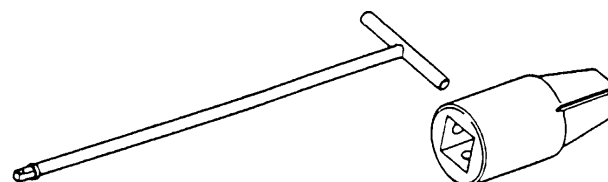
9. Spacer... ④  
(90890-01411)



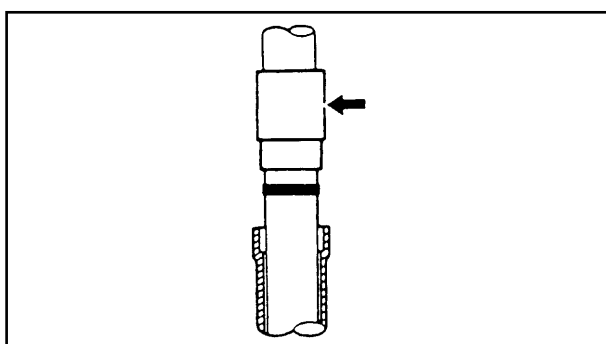
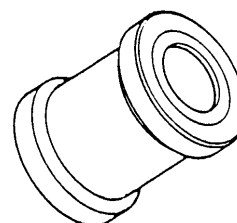
## FOR SERVICING THE CHASSIS

1. T-shaped handle 2... ①  
(90890-01326)

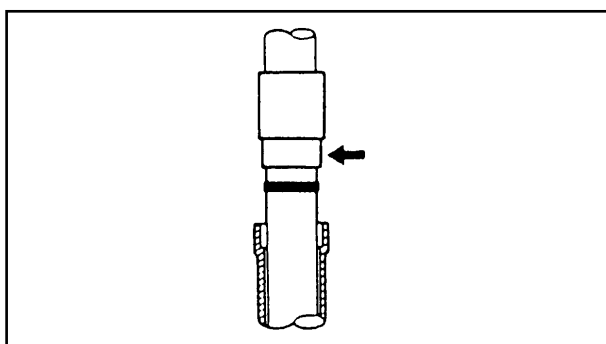
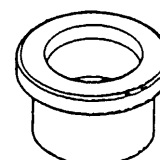
- Shock absorber rod support... ②  
(90890-01294-A)



2. Counterbalance for insertion of fork seals  
(90890-01184)



3. Accessory for insertion of fork seals  
(90890-01186)

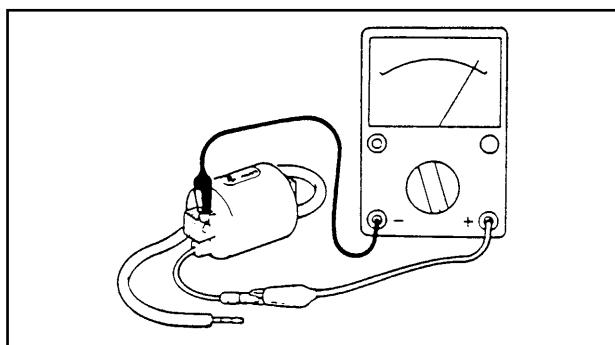
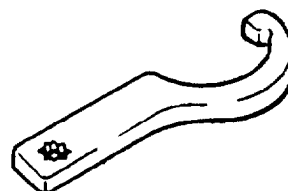


## SPECIAL TOOLS

GEN/  
INFO

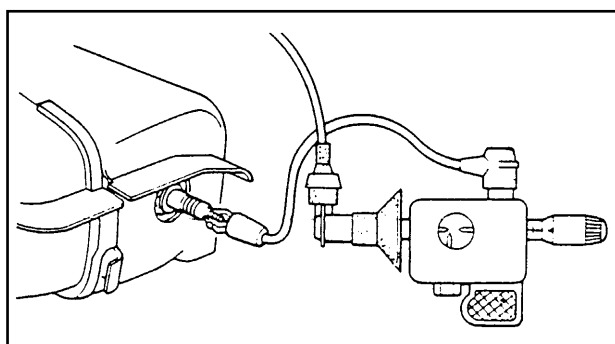
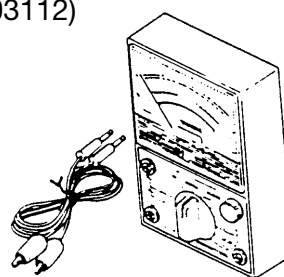


4. Steering nuts wrench  
(90890-01403)

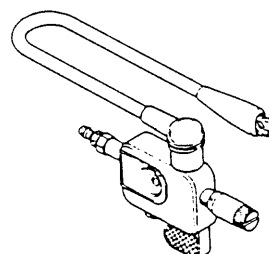


### FOR ELECTRICAL COMPONENTS

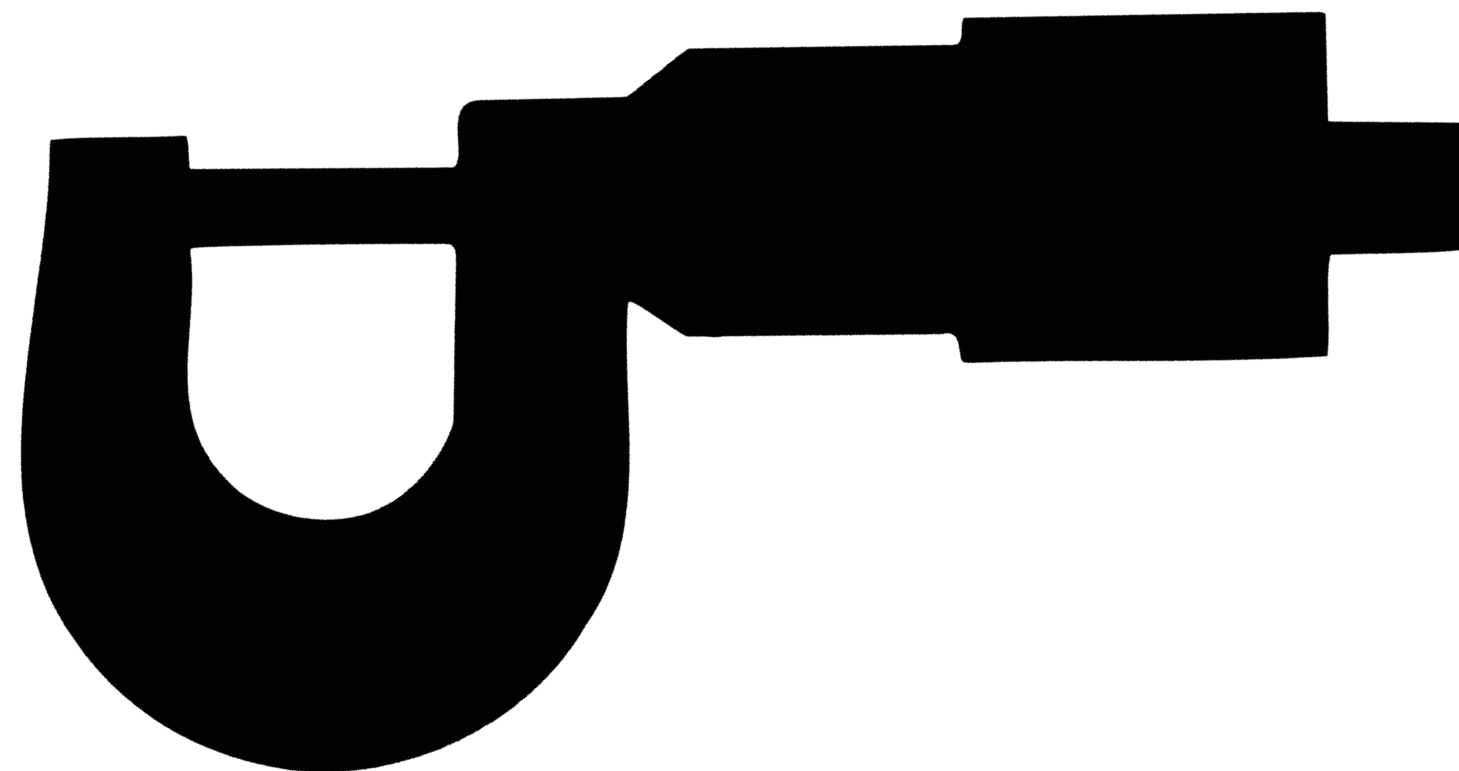
1. Pocket tester  
(90890-03112)



2. Ignition tester  
(90890-06754)







**SPEC**

**2**

CHAPTER 2

SPECIFICATIONS

GENERAL SPECIFICATIONS .....

2-1

MAINTENANCE SPECIFICATIONS .....

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ENGINE .....

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CHASSIS .....

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ELECTRICAL SYSTEM .....

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CABLE ROUTING .....

2-7

# GENERAL SPECIFICATIONS

**SPEC**



| Model                           | YN50R                                    |                    |           |
|---------------------------------|------------------------------------------|--------------------|-----------|
| Engine:                         | Reed valve, petrol, 2-stroke, air-cooled |                    |           |
| Engine type                     | One cylinder inclined to the front       |                    |           |
| Arrangement of cylinders        | 49.2 cc                                  |                    |           |
| Cylinder capacity               | 40.0 x 39.2 mm                           |                    |           |
| Diameter and stroke             | 11.6:1 5AD                               | 10.2:1 SA15        | 11:1 SA19 |
| Compression ratio               | Electrical and pedal kickstart           |                    |           |
| Starter system                  |                                          |                    |           |
| Lubrication system:             | Yamaha autolubrication                   |                    |           |
| Type or grade of oil:           |                                          |                    |           |
| Engine oil                      | 2-stroke air-cooled engine oil           |                    |           |
| Transmission oil                | SE type 10W30 SAE engine oil             |                    |           |
| Oil capacity:                   |                                          |                    |           |
| Oil sump (engine oil)           | 1.2 L                                    |                    |           |
| Transmission oil                |                                          |                    |           |
| Periodic change of oil          | 0.10 L                                   |                    |           |
| Total quantity                  | 0.11 L                                   |                    |           |
| Air filter:                     | Flue type                                |                    |           |
| Fuel:                           |                                          |                    |           |
| Type                            | Unleaded petrol                          |                    |           |
| Fuel tank capacity              | 6.5 L                                    |                    |           |
| Carburettor:                    |                                          |                    |           |
| Type/Manufacturer               | PHVA/DELLORTO/PY12,1/GURTNER             |                    |           |
| Spark plug:                     |                                          |                    |           |
| Type/Manufacturer               | 5AD y SA15                               | SA19               |           |
| Distance between electrodes     | BR8HS/N.G.K.                             | BPR4HS/NGK         |           |
|                                 | 0.6 ~ 0,7 mm                             | 0.6 ~ 0.7 mm       |           |
| Clutch type:                    | Dry, automatic centrifugal               |                    |           |
| Transmission:                   |                                          |                    |           |
| Primary reduction system        | Helicoidal gearing                       |                    |           |
| Primary reduction ratio         | 52/13 (4.00)                             |                    |           |
| Secondary reduction system      | Straight gearing                         |                    |           |
| Secondary reduction ratio       | 42/13(3.230) 5AD-SA15                    | 45/12(33.750) SA19 |           |
| Type of transmission            | Automatic one speed                      |                    |           |
|                                 | (Trapezoidal belt type)                  |                    |           |
| Action                          | Automatic centrifuge type                |                    |           |
| Chassis:                        |                                          |                    |           |
| Frame                           | Steel underside of pipe                  |                    |           |
| Inclination angle of front axle | 26,5°                                    |                    |           |
| Trail                           | 92.5 mm                                  |                    |           |
| Tyres:                          |                                          |                    |           |
| Size (FR)                       | 120/70-12                                |                    |           |
| Size (R)                        | 130/70-12                                |                    |           |
| Tyre pressures (cold):          |                                          |                    |           |
| (Front)                         | 1.75 kg/cm <sup>2</sup>                  |                    |           |
| (Rear)                          | 2.00 kg/cm <sup>2</sup>                  |                    |           |

## GENERAL SPECIFICATIONS

**SPEC**

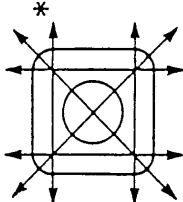
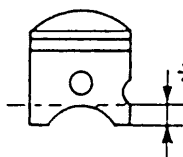
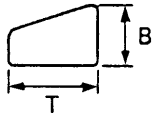
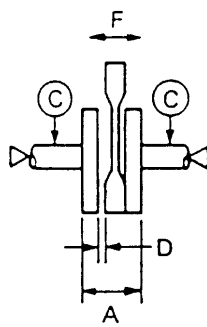


| Model                                                                                                   | YN50R                                                                   |
|---------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Brakes:<br>Front brake type<br>Operation<br>Rear brake type<br>Operation                                | Disc brake<br>Right-hand operation<br>Drum brake<br>Left-hand operation |
| Suspension:<br>Front suspension<br>Rear suspension                                                      | Telescopic fork<br>Balancing unit                                       |
| Shock absorber:<br>Front shock absorber<br>Rear shock absorber                                          | Spring/oil shock absorber<br>Spring/oil shock absorber                  |
| Travel of wheels:<br>Travel of front wheel<br>Travel of rear wheel                                      | 70 mm<br>60 mm                                                          |
| Electrical system:<br>Ignition system<br>Generating system<br>Battery type or model<br>Battery capacity | DC-C.D.I.<br>Magnetic flywheel<br>YB4C-B<br>12V4AH                      |
| Type of headlight:                                                                                      | Bulb type                                                               |
| Bulb voltage/quantity:<br>Headlamp<br>Rear light/brake<br>Indicator<br>Metre light                      | 25W/25Wx2<br>5/21W<br>10Wx4<br>1.2Wx2                                   |
| Warning lights/quantity:<br>Oil<br>Fuel<br>Indicators                                                   | 2Wx1<br>2Wx1<br>2Wx2                                                    |



## MAINTENANCE SPECIFICATIONS

### ENGINE

| Model                                                                                                                                                                                                                                                | YN50R                                                                               |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Cylinder head:<br>Warping limit                                                                                                                                     | 0.02 mm<br>* The lines indicate the measurement                                     |
| Cylinder:<br>Internal diameter<br><Limit><br>Taper limit<br>Eccentricity limit                                                                                                                                                                       | 39.993 ~ 40.012 mm<br><40.1 mm><br>0.05 mm<br>0.01 mm                               |
| Piston:<br>Piston size<br>Measurement point<br>Piston clearance<br>First clearance                                                                                 | 39.952 ~ 39.972 mm<br>5 mm<br>0.034 ~ 0.047 mm<br>40.50 mm                          |
| Piston ring:<br>Cross section<br>B x T<br>Distance between ends<br>(installed)<br><Limit><br>Lateral clearance                                                    | 1.5 x 1.8 mm<br><br>0.15 ~ 0.35 mm<br><0.6 mm><br>0.03 ~ 0.05 mm                    |
| Crank shaft:<br><br>Width of crank shaft "A"<br>Deflection limit "C"<br>Connecting rod big<br>end clearance "D"<br>Free play from small end "F"<br>Free play "E"  | 37.90 ~ 37.95 mm<br>0.03 mm<br><br>0.2 ~ 0.5 mm<br>0.4 ~ 0.8 mm<br>0.004 ~ 0.017 mm |

# MAINTENANCE SPECIFICATIONS

**SPEC**



| Model                                                                                                                                                            | YN50R                                                           |             |                |          |            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|-------------|----------------|----------|------------|
| Automatic centrifugal clutch:<br>Thickness of clutch shoe<br><Limit><br>Free length of clutch shoe<br>spring<br>Clutch revolutions<br>Clutch binding revolutions | 2 mm<br><1 mm><br>29.9 mm<br><br>3.600±250 rpm<br>5.600±400 rpm |             |                |          |            |
| Transmission:<br>Main axle deflection limit<br>Drive axle deflection limit                                                                                       | 0.08 mm<br>0.08 mm                                              |             |                |          |            |
| Choke handle:<br>Type<br>Pedal friction force                                                                                                                    | Ratchet type<br>150 ~ 250 g                                     |             |                |          |            |
| Air filter oil grade (oil filter):                                                                                                                               | Oil for foam air filter<br>2T oil for air-cooled engines        |             |                |          |            |
| Carburettor:                                                                                                                                                     | PHVA/Dellorto/1                                                 |             | YP12/GURTNER/1 |          |            |
| Type/Manufacturer/Quantity                                                                                                                                       |                                                                 |             |                |          |            |
| Main jet (M.J.)                                                                                                                                                  | #78/5AD                                                         | #65//SA15   | #74/5AD        | #62/SA15 | #60/SA19   |
| Retaining position of jet<br>needles (J.N.)                                                                                                                      | A12-3/5                                                         | A20-3/5     | B10A-2/3       | B10A-2/3 | L3035H-1/3 |
| Main air jet (M.A.I.)                                                                                                                                            | ø 1.5                                                           | ø 1.5       | —              | —        | —          |
| Pilot jet (P.J.)                                                                                                                                                 | #36/5AD                                                         | #36/SA15    | #38/5AD        | #38/SA15 | #36/SA19   |
| Pilot air screw (P.A.S.)                                                                                                                                         | 1 1/4 ± 1/4                                                     | 2 1/8 ± 1/8 | 1 1/8          | 1 7/8    | 1 7/8      |
| Valve seat size                                                                                                                                                  | 1.2                                                             |             | 1.4            |          |            |
| engine idling                                                                                                                                                    | 1.800 r.p.m.                                                    |             | 1.800 r.p.m    |          |            |



## CHASSIS

| Model                                                                                                                                                                                             | YN50R                                                                                                           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| Steering system:<br>Steering bearing type                                                                                                                                                         | Ball bearing                                                                                                    |
| Front suspension:<br>Travel of front shock absorber<br>Free length of shock absorber spring<br><Limit><br>Spring/stroke ratio (K <sub>1</sub> )<br>(K <sub>2</sub> )<br>Oil capacity<br>Oil grade | 70 mm<br>226 mm<br>1.12 Kgf/mm<br>1.78 Kgf/mm<br>45 cm <sup>3</sup> ±1<br>10 W shock absorber oil or equivalent |
| Rear suspension:<br>Shock absorber travel<br>Length of spring coupling<br>Spring/stroke ratio (K <sub>1</sub> )<br>(K <sub>2</sub> )                                                              | 60 mm<br>221 mm<br>3.75 Kgf/mm<br>7,10 Kgf/mm                                                                   |
| Wheels:<br>Type of front wheel<br>Type of rear wheel<br>Size/material of front wheel<br>Size/material of rear wheel<br>Rim run-out limit<br>Vertical<br>Lateral                                   | Alloy rim<br>Alloy rim<br>12 x 3.5 aluminium<br>12 x 3.5 aluminium<br>1.0 mm<br>1.0 mm                          |
| Front disc brake<br>Type<br>External diameter and disc thickness<br>Thickness of pads<br><Limit><br>Internal diameter of master cylinder<br>Internal diameter of calliper<br>Brake fluid type     | Single<br>190.0 x 3.5 mm<br>4 mm<br><0.8 mm<br>11 mm<br>30.16 mm<br>DOT 4                                       |
| Drum brake:<br>Type<br>Internal diameter of drum<br><Limit><br>Lining thickness<br><Limit>                                                                                                        | Shoes<br>110 mm<br>110.5 mm<br>4.0 mm<br>2.0 mm                                                                 |
| Brake levers<br>Free play of brake lever (right)/position<br>Free play of brake lever (left)/position                                                                                             | 2 ~ 5 mm /at the end of the lever<br>5 ~ 10 mm /at the end of the lever                                         |



### ELECTRICAL SYSTEM

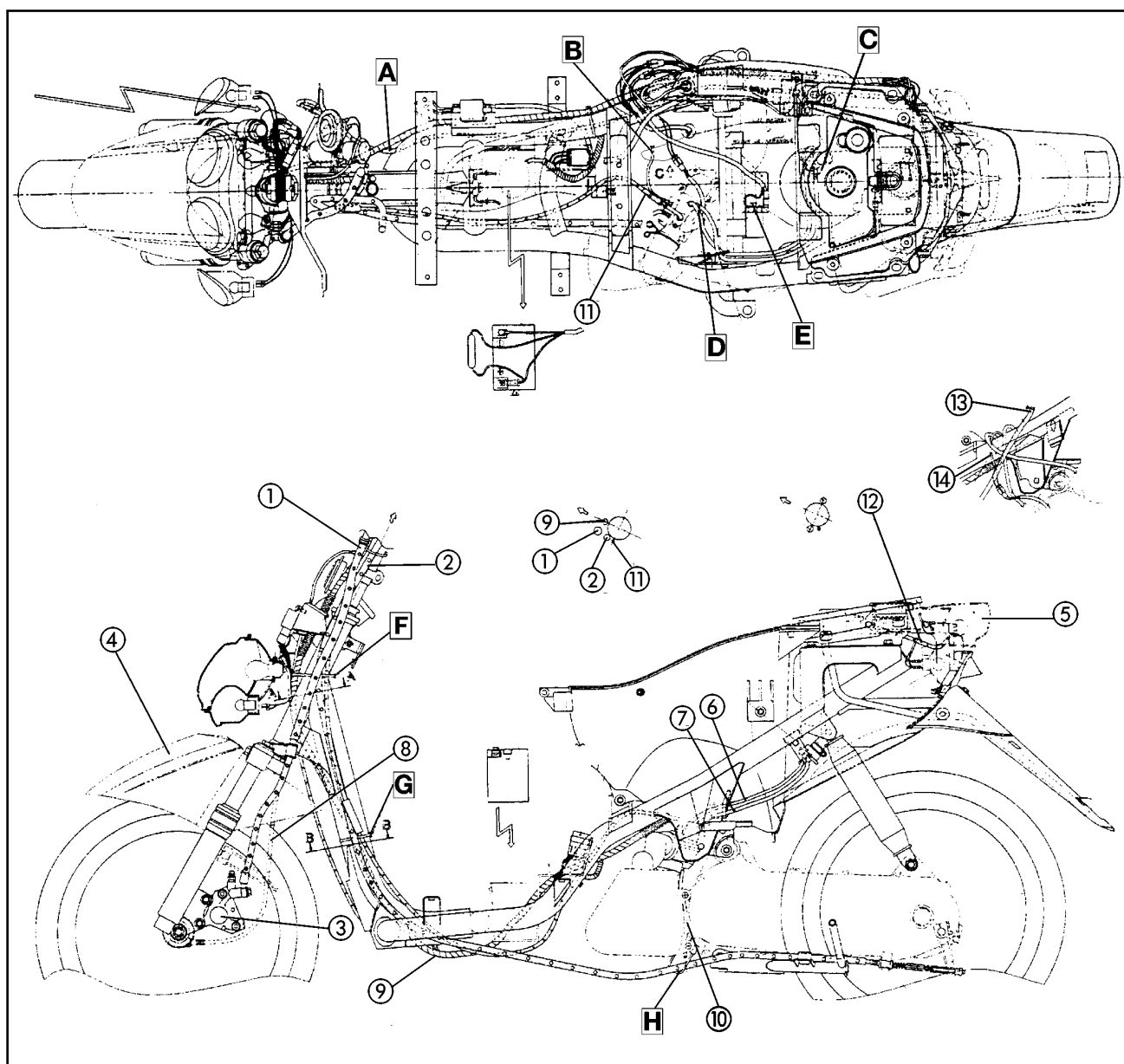
| Model                                                                                               | YN50R                                                                                                                 |
|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Ignition system:<br>Type<br>Ignition distribution (A.P.M.S.)                                        | DC-C.D.I.<br>14*/5.000 r/min                                                                                          |
| C.D.I.:<br>Harnessing coil resistance (colour)                                                      | 400 ~ 600 $\Omega$ a 20 °C (68 °F)<br>(Black/Red-Black)                                                               |
| Ignition coil:<br>Spark plug electrodes gap<br>Primary coil resistance<br>Secondary coil resistance | 6.0 mm<br>0.56 ~ 0.84 $\Omega$ at 20 °C<br>5,68 ~ 8,52 K $\Omega$ at 20 °C                                            |
| Charging system:<br>Charging output<br><br>Charging coil resistance (colour)<br>(Black-White)       | 0.4 A or more/3.000 rpm/min<br>1 A or less/8.000 rpm/min<br>4.8 ~ 7.2 $\Omega$ a 20 °C (68 °F)                        |
| Lighting system:<br>Lighting output<br><br>Lighting coil resistance (colour)                        | 12 V or more/3.000 rpm/min,<br>15 V or less/8.000 rpm/min<br>0.4 ~ 0.6 $\Omega$ a 20 °C (68 °F)<br>(Yellow/Red-Black) |
| Battery:<br>Type:<br>Capacity<br>Specific gravity                                                   | YB4L-B<br>12V4AH<br>1280/20 °C                                                                                        |
| Starter system:<br>Type:                                                                            | Constant mesh type                                                                                                    |
| Starter motor:<br>Output<br>Induction coil resistance<br>Brush length<br><Limit>                    | 0.14 kw<br>0.064 ~ 0.079 $\Omega$ at 20 °C<br>3.9 mm<br><0.9 mm>                                                      |
| Circuit breaker:<br>Type:<br>Amperage/Quantity<br>Principal                                         | Fuse<br><br>7A x 1                                                                                                    |



### CABLE ROUTING

- ① Front brake pipe
- ② Rear brake cable
- ③ Rear brake calliper
- ④ Rear mudguard
- ⑤ Rear warning light
- ⑥ Vacuum tube
- ⑦ Fuel pipe
- ⑧ Speedometer cable
- ⑨ Installation
- ⑩ Breather
- ⑪ Accelerator cable
- ⑫ Seat closing cable
- ⑬ Oil hose
- ⑭ choke wire

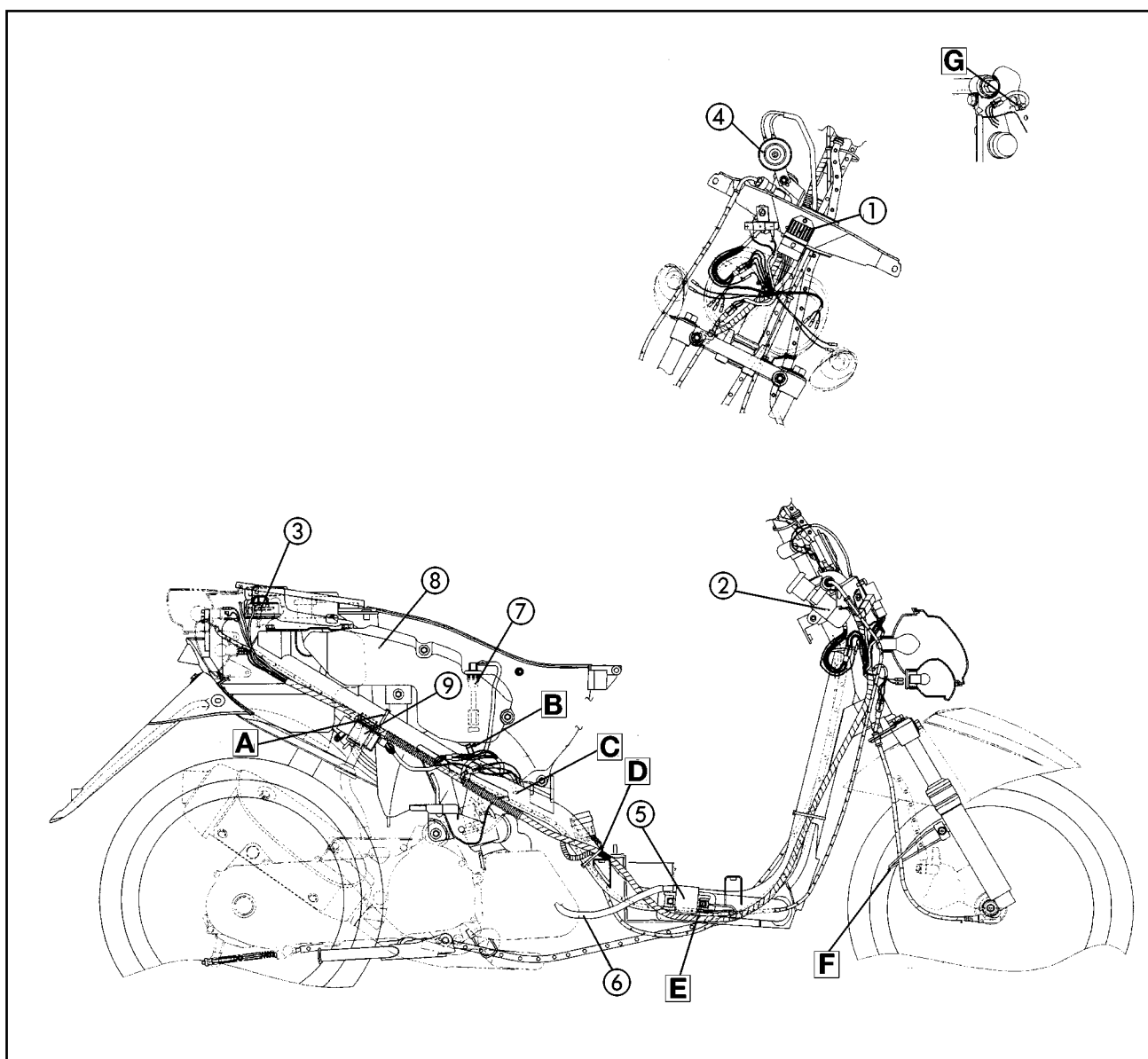
- [A] Insert the seat closing cable through the frame orifice
- [B] Connect the oil tube to the carburettor
- [C] Splice the fuel pipe to the cock
- [D] Splice the fuel pipe to the carburettor
- [E] Press the earth cable and the starter motor together
- [F] Splice all the cables except the brake hose, without tightening
- [G] Splice to the frame wire harness and throttle
- [H] Pass the brake cable through the guide





- ① Rectifier/Regulator
- ② Main switch
- ③ Fuel level measurer
- ④ Horn
- ⑤ Ignition coil
- ⑥ Spark plug cable
- ⑦ Oil level sensor
- ⑧ Oil tank
- ⑨ C.D.I.

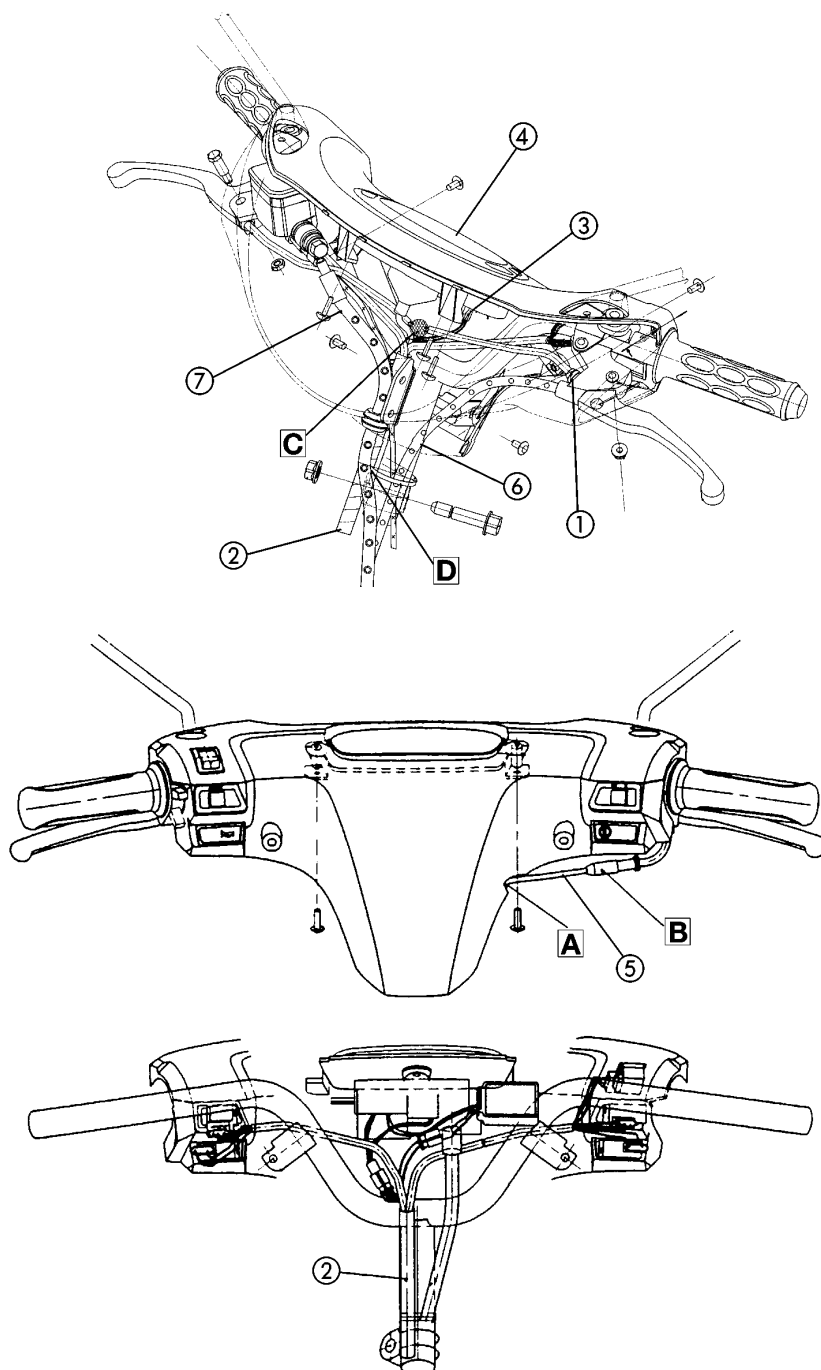
- A Splice the electrical installation to the frame
- B Splice the oil pipe to the tank
- C Connect the oil pipe to the pump
- D Splice the installation to the frame
- E Tighten the earth cable and the ignition coil together
- F Pass the speedometer cable through the guide
- G Fit the grommet in the small hole of the underbracket





- ① Front break switch
- ② Electrical installation
- ③ Intermittent relay
- ④ Speedometer assembly
- ⑤ Accelerator cable
- ⑥ Rear brake cable
- ⑦ Choke cable
- ⑧ Front brake hose

- A** Do not pinch the accelerator cable when assembling the handlebar covers
- B** Accelerator cable tensioner. Cover after adjusting
- C** Connect the brake switch cables in this area
- D** Do not pass the brake pipe through the flange





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**3**

## CHAPTER 3

### PERIODIC INSPECTION AND ADJUSTMENTS

|                                                                |           |
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## PERIOD INSPECTION AND ADJUSTMENTS

### INTRODUCTION

This chapter includes all information necessary to carry out inspections and adjustments recommended. These preventive maintenance procedures, if they are correctly followed, will ensure the most reliable operation of the vehicle and a longer useful life. The need for overhauls and costly repairs will be greatly reduced. This applies both to vehicles which are already in service and to new vehicles which are ready for sale. All service technicians should familiarise themselves with the entire chapter.

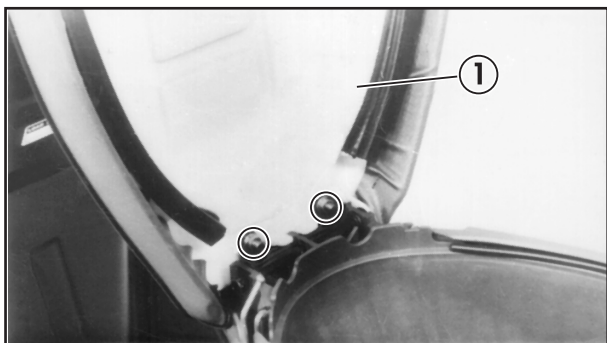
### PERIODIC MAINTENANCE / LUBRICATION INTERVALS

| N. | INTEM | CHECK OR MAINTENANCE JOB                                                                                           | ODOMETER READING<br>( x 1.000 km) |   |                            |    |    | ANNUAL<br>CHECK |
|----|-------|--------------------------------------------------------------------------------------------------------------------|-----------------------------------|---|----------------------------|----|----|-----------------|
|    |       |                                                                                                                    | 1                                 | 6 | 12                         | 18 | 24 |                 |
| 1  | *     | Fuel line                                                                                                          |                                   | ✓ | ✓                          | ✓  | ✓  | ✓               |
| 2  |       | Spark Plug                                                                                                         |                                   | ✓ |                            | ✓  |    |                 |
|    |       | • Check condition.<br>• Clean and regap.<br>• Replace.                                                             |                                   |   | ✓                          |    | ✓  |                 |
| 3  |       | Air filter element                                                                                                 |                                   | ✓ |                            | ✓  |    |                 |
|    |       | • Clean.<br>• Replace.                                                                                             |                                   |   | ✓                          |    | ✓  |                 |
| 4  | *     | Front brake                                                                                                        | ✓                                 | ✓ | ✓                          | ✓  | ✓  | ✓               |
|    |       | • Check operation, fluid level and vehicle for fluid leakage.<br>• Replace brake pads.                             |                                   |   | Whenever worn to the limit |    |    |                 |
| 5  | *     | Rear brake                                                                                                         | ✓                                 | ✓ | ✓                          | ✓  | ✓  | ✓               |
|    |       | • Check operation and adjust brake lever freeplay.<br>• Replace brake shoes.                                       |                                   |   | Whenever worn to the limit |    |    |                 |
| 6  | *     | Brake hose                                                                                                         |                                   | ✓ | ✓                          | ✓  | ✓  | ✓               |
|    |       | • Check for cracks or damage.<br>• Replace. (See NOTE on page 6-5)                                                 |                                   |   | Every 4 years              |    |    |                 |
| 7  | *     | Wheels                                                                                                             |                                   | ✓ | ✓                          | ✓  | ✓  |                 |
| 8  | *     | Tires                                                                                                              |                                   | ✓ | ✓                          | ✓  | ✓  |                 |
|    |       | • Check tread depth and for damage.<br>• Replace if necessary.<br>• Check air pressure.<br>• Correct if necessary. |                                   |   |                            |    |    |                 |
| 9  | *     | Wheel bearings                                                                                                     |                                   | ✓ | ✓                          | ✓  | ✓  |                 |
| 10 | *     | Steering bearings                                                                                                  | ✓                                 | ✓ | ✓                          | ✓  | ✓  |                 |
|    |       | • Check bearing play and steering for roughness.<br>• Lubricate with lithium-soap-based grease.                    |                                   |   | Every 24.000 km            |    |    |                 |
| 11 | *     | Chassis fasteners                                                                                                  |                                   | ✓ | ✓                          | ✓  | ✓  | ✓               |
|    |       | • Make sure that all nuts, bolts and screws are properly tightened.                                                |                                   |   |                            |    |    |                 |
| 12 |       | Centerstand                                                                                                        |                                   | ✓ | ✓                          | ✓  | ✓  | ✓               |
|    |       | • Check operation.<br>• Lubricate.                                                                                 |                                   |   |                            |    |    |                 |
| 13 | *     | Front fork                                                                                                         |                                   | ✓ | ✓                          | ✓  | ✓  |                 |
| 14 | *     | Rear shock absorber assembly                                                                                       |                                   | ✓ | ✓                          | ✓  | ✓  |                 |
| 15 | *     | Carburetor                                                                                                         | ✓                                 | ✓ | ✓                          | ✓  | ✓  | ✓               |
|    |       | • Check starter (choke) operation.<br>• Adjust engine idling speed.                                                |                                   |   |                            |    |    |                 |
| 16 | *     | Autolube pump                                                                                                      | ✓                                 |   | ✓                          |    | ✓  | ✓               |
|    |       | • Check operation.<br>• Bleed if necessary.                                                                        |                                   |   |                            |    |    |                 |
| 17 |       | Final gear oil                                                                                                     | ✓                                 | ✓ |                            | ✓  |    |                 |
|    |       | • Check oil level and vehicle for oil leakage.<br>• Change.                                                        | ✓                                 |   | ✓                          |    | ✓  |                 |
| 18 | *     | V-belt                                                                                                             |                                   |   | ✓                          |    | ✓  |                 |
|    |       | • Replace                                                                                                          |                                   |   |                            |    |    |                 |
| 19 |       | Front and rear brake switches                                                                                      | ✓                                 | ✓ | ✓                          | ✓  | ✓  | ✓               |
| 20 | *     | Moving parts                                                                                                       |                                   | ✓ | ✓                          | ✓  | ✓  | ✓               |
|    |       | • Lubricate.<br>and cables                                                                                         |                                   |   |                            |    |    |                 |
| 21 |       | Lights, signals and switches                                                                                       | ✓                                 | ✓ | ✓                          | ✓  | ✓  | ✓               |
|    |       | • Check operation.<br>• Adjust headlight beam.                                                                     |                                   |   |                            |    |    |                 |

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

#### NOTE:

- The air filter needs more frequent service if you are riding in unusually wet or dusty areas.
- Hydraulic brake service
- Regularly check and, if necessary, correct the brake fluid level.
- Every two years replace the internal components of the brake master cylinder and caliper, and change the brake fluid.
- Replace the brake hoses every four years and if cracked or damaged.



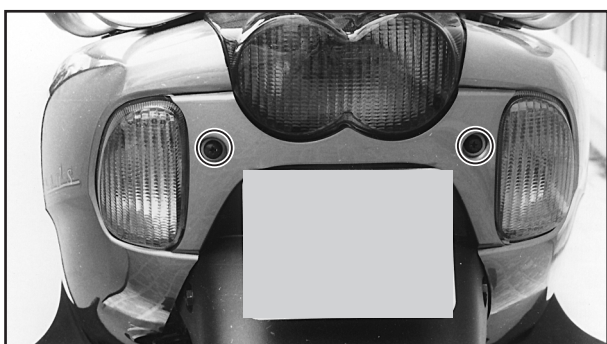
### REAR BODYWORK AND FOOTREST

#### REMOVAL

1. Raise the seat
2. Remove:
  - Seat ①



3. Remove:
  - Battery cover



4. Remove:
  - Rear cover



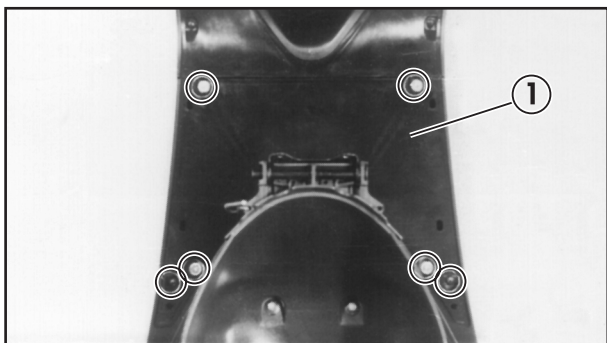
5. Remove:
  - Side covers

#### NOTE:

When the side covers are being removed unhook them from the catches and slide them outwards.

## REAR BODYWORK AND FOOTREST

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6. Remove:
- Footrest ①

### INSTALLATION

When the foot support panel and the rear cover are being installed, reverse the removal process.

Remember the following points.



1. Install:
- Side covers

### NOTE:

- Match up the support and hole and then apply pressure.



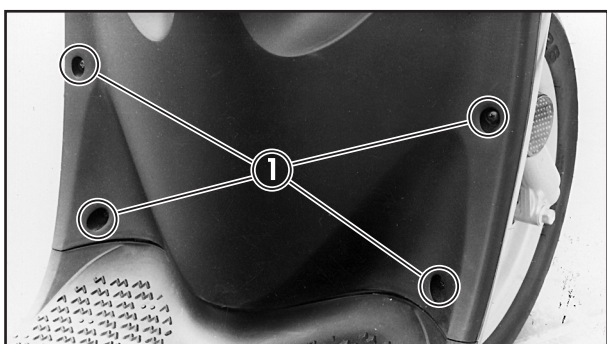
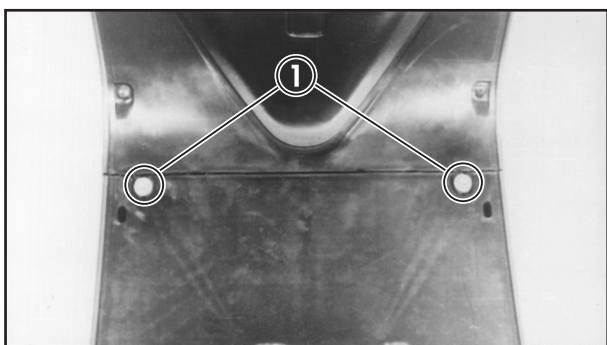
### REAR BODYWORK, MUDGUARDS

#### REMOVAL

1. Remove:
  - Main switch cover.  
Turn the cover to the left and pull upwards.
2. Remove:
  - Upper screws in ignition key panel
  - Rear fairing assembly and headlight

#### NOTE:

Disconnect the headlight cable and indicators.



3. Remove:
  - Front lower fairing screws ①
  - Carrier hook bolt
  - Footrest lower cover screws
4. Remove:
  - Battery cover
  - Battery, fuse and starter relay
  - Bottom footrest cover
  - Footrest
  - Bottom rear fairing

#### NOTE:

Disconnect indicator cables.

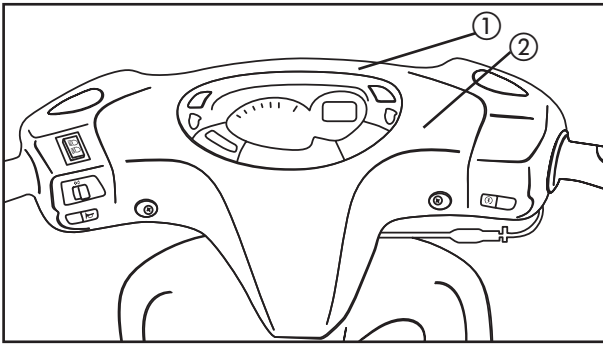
- Mudguards

#### INSTALLATION

Reverse the removal process.

#### NOTE:

After installing all plastic parts, check that all hooks are properly attached.



### HANDLEBAR COVERS

#### REMOVAL

1. Remove:

- Front handlebar cover ①
- Rear handlebar cover ②

#### INSTALLATION

Reverse the removal procedure. Remember the following points.

1. Install:

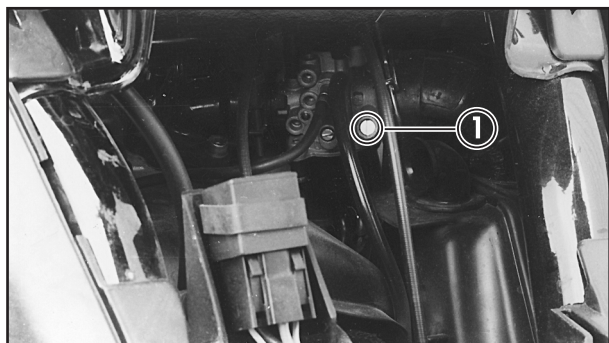
- Front handlebar cover ①
- Rear handlebar cover ②

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

When installing the rear cover, check that the speedometer cables goes through its housing.

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

After installing the handlebar cover, ensure that all the hooks are properly coupled.



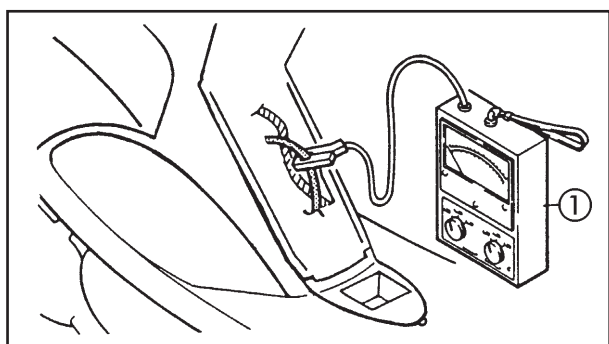
## ENGINE

### ADJUSTMENT OF ENGINE IDLING

1. Tighten:
  - Pilot air screw ①  
Turn the pilot air screw inwards until it seats itself lightly.
2. Loosen:
  - Pilot air screw.  
Unscrew it from its lightly seated position.

#### OUTWARDS TURNS OF THE PILOT AIR SCREW:

| DELLORTO                        |                                 | GURTNER         |                 |                 |
|---------------------------------|---------------------------------|-----------------|-----------------|-----------------|
| EU0                             | EU1                             | EU0             | EU1             | MOFA            |
| $1 \frac{1}{2} \pm \frac{1}{4}$ | $2 \frac{1}{8} \pm \frac{1}{8}$ | $1 \frac{1}{8}$ | $1 \frac{7}{8}$ | $1 \frac{7}{8}$ |



3. Start the engine and let it warm up.

#### ⚠ WARNING

Before starting the engine, ensure that the central safety stand is being used.

4. Join:
  - Inductive tachometer ①  
On the spark plug cable



**Inductive tachometer**  
**90890-03113**

5. Check:
  - Engine idling.  
Outside specified value → Adjust.



**Engine idling**  
**1.800 rpm**

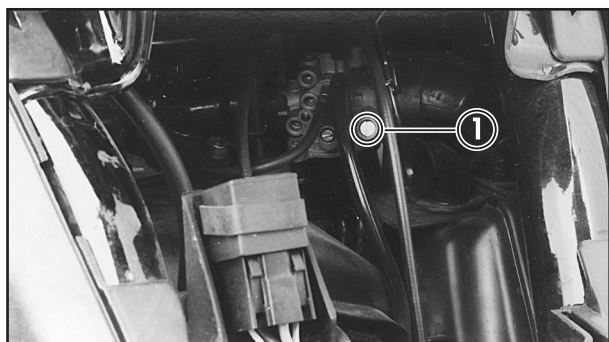
6. Adjust:
  - Engine idling



#### Adjustment steps:

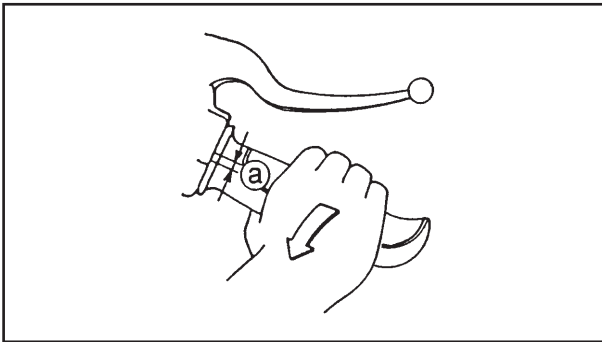
- Turn the accelerator stop screw ① outward or inwards until the specified idling is obtained.

Turn inwards → Increases idling.  
Turn outwards → Decreases idling.



## AJUSTE DEL JUEGO LIBRE DEL CABLE DEL ACELERADOR

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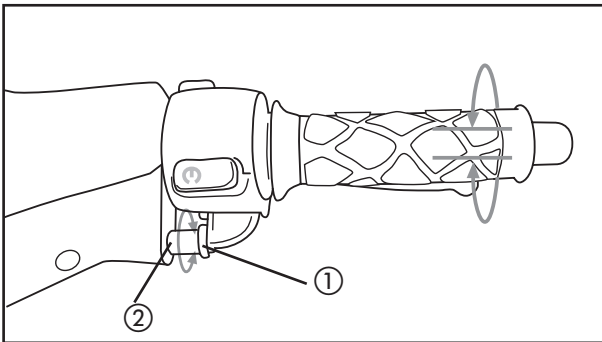
### ADJUSTMENT OF FREE PLAY OF THROTTLE CABLE

#### 1. Check:

- Free play of throttle cable (a)  
Outside specified value → Adjust.



**Free play**  
2 ~ 5 mm



### Steps for adjusting the free play of the throttle cable:

#### NOTE:

Before adjusting the free play of the throttle, engine idling should be adjusted.

#### First step:

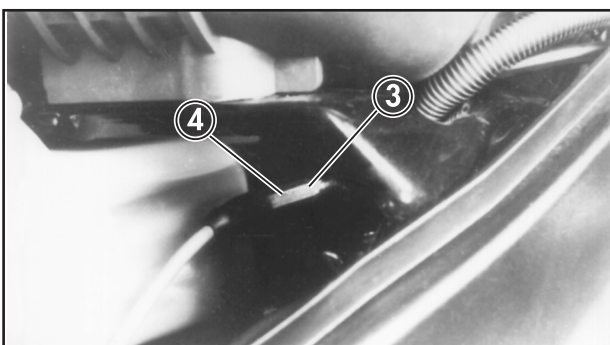
- Loosen the lock nut (1) of the throttle cable.
- Turn the adjuster (2) inwards or outwards until the specified free play is obtained.

**Turn inwards → Free play increases.**  
**Turn outwards → Free play decreases.**

- Tighten the lock nuts.

#### NOTE:

If the free play cannot be adjusted, adjust the cable on the side of the carburettor (second step).



#### Second step:

- Remove the cover.
- Loosen the lock nut (3).
- Turn the adjuster (4) inwards or outwards until the specified free play is obtained.

**Turn inwards → Free play increases.**  
**Turn outwards → Free play decreases.**

- Tighten the lock nut.
- Install the cover.

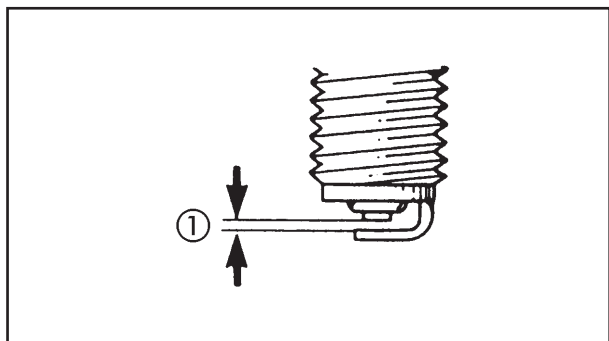


#### WARNING

After adjustment, turn the handlebar to the right and left and check that the idling does not vary.

## SPARK PLUG INSPECTION

**INSP**  
**ADJ**



### SPARK PLUG INSPECTION

1. Inspect:
  - Incorrect type of spark plug → Replace

**Standard spark plug (5AD y SA15)**  
**BR8HS/N.G.K.**  
**for SA19**  
**BRP4HS/N.G.K.**

2. Inspect:
  - Electrode ①  
Worn/Damaged → Replace
  - Insulator ②  
Abnormal colour → Replace  
The normal colour is a light to medium coffee colour.
3. Clean the spark plug with a spark plug cleaner or wire brush.
4. Measure:
  - Distance between electrodes  
Use a thickness gauge.  
Outside the specified value → Correct



**Gap between electrodes**  
**0.6 ~ 0.7 mm**

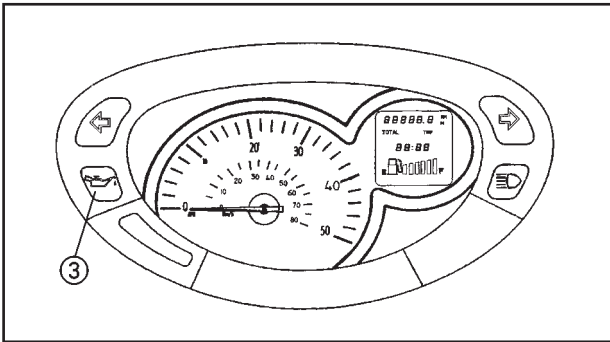
5. Tighten:
  - Spark plug



**Spark plug**  
**2.0 m • kg**

## INSPECTION OF ENGINE OIL LEVEL

**INSP**  
**ADJ**

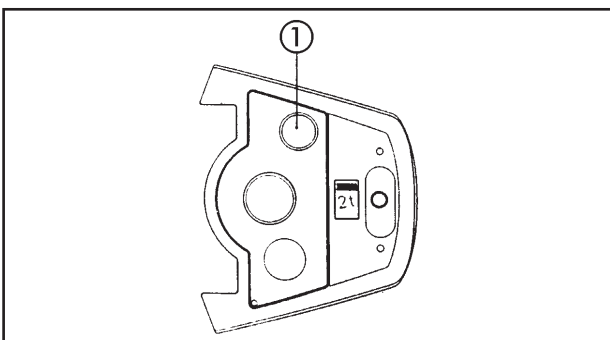
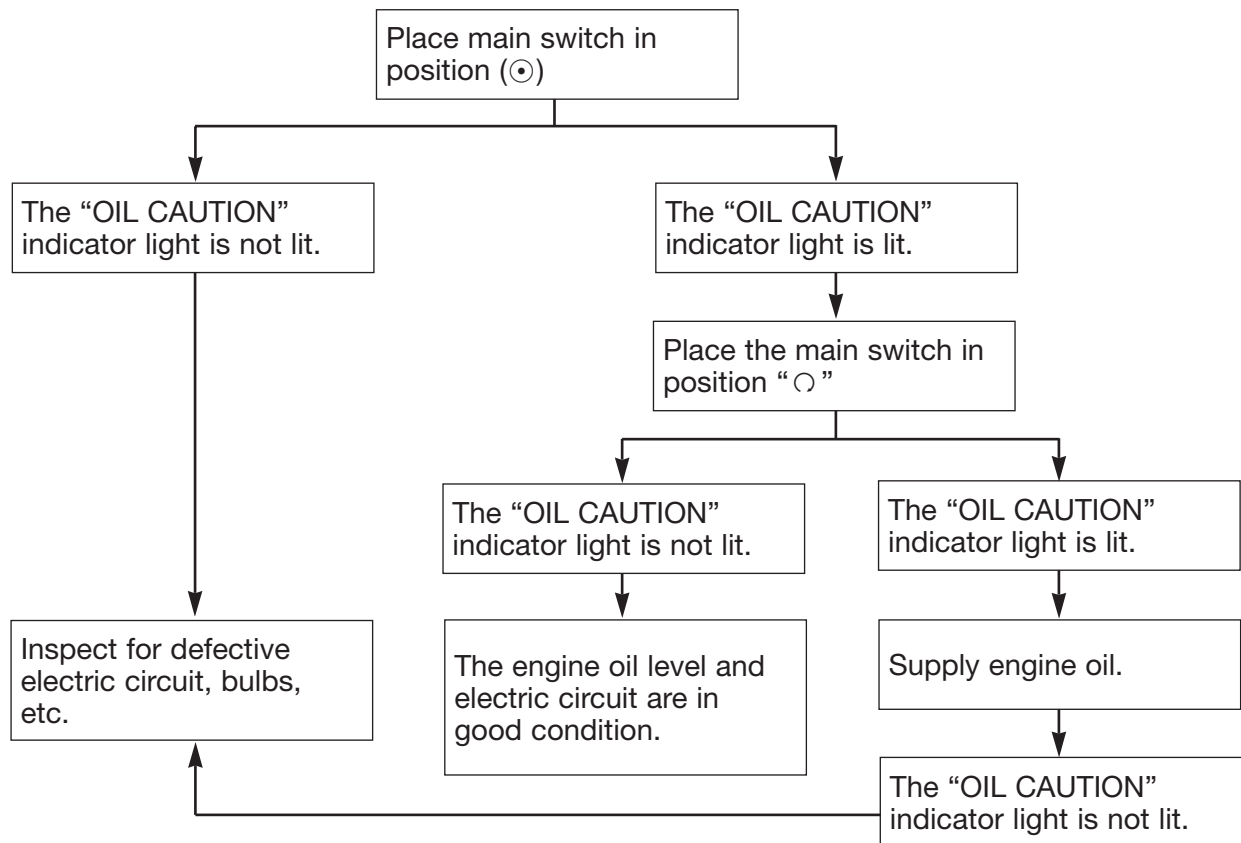


### INSPECTION OF ENGINE OIL LEVEL

1. Inspect:
  - Engine oil level
  - Low oil level → Add sufficient oil.

③ Oil indicator light “OIL CAUTION”

#### Visual inspection steps for engine oil level



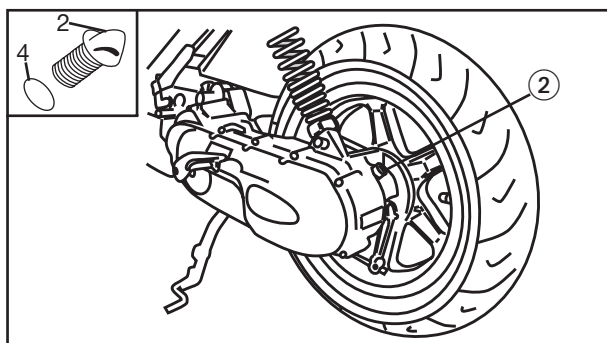
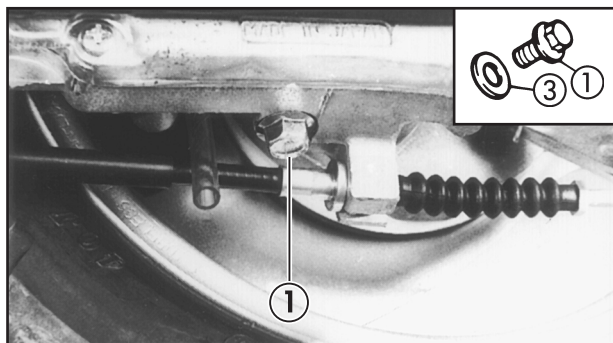
**Recommended oil:**  
**JASO grade FC 2 stroke**  
**engine oil or equivalent**  
**Total:**  
**1.2 L**

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

After filling the oil tank, replace the cap and close the seat.

## CHANGE OF TRANSMISSION OIL / CLEANING AIR FILTER

**INSP**  
**ADJ**



### CHANGE OF TRANSMISSION OIL

1. Remove:
  - Drainage bolt ①
  - Drain the transmission oil.
  - Oil refill cap ②
2. Inspect:
  - Gasket ③ (drainage screw)
  - O-ring ④ (refill cap)
  - Damaged → Change
3. Install:
  - Gasket
  - Drainage screw

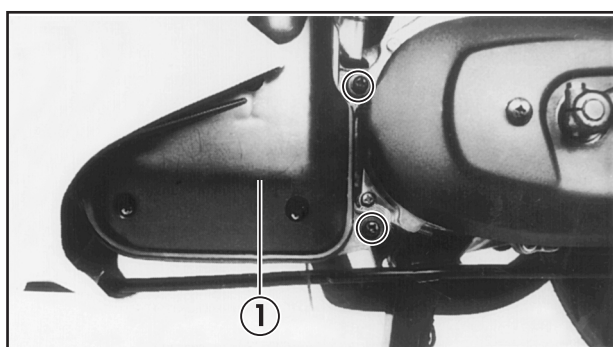


**Drainage screw**  
**18 Nm (1.8 m • kg)**

4. Fill:
  - Transmission Case



**Transmission oil**  
**SE engine oil type SAE 30 or GL**  
**gear oil**  
**Capacity:**  
**0.11 L**



### CLEANING AIR FILTER

Carburettor side

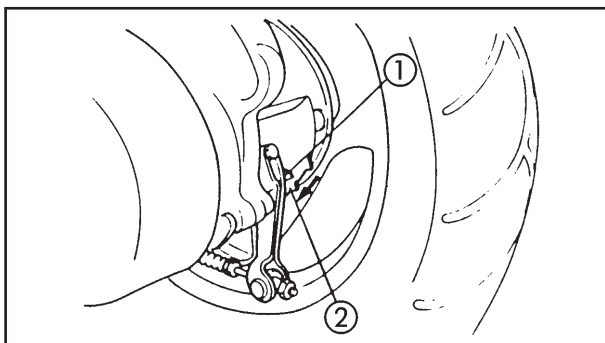
1. Remove:
  - Air filter box assembly ①





## INSPECTION OF BRAKE SHOES / INSPECTION OF BRAKE FLUID LEVEL

INSP  
ADJ



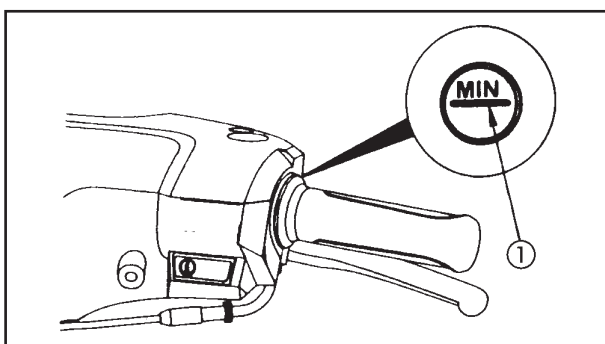
### INSPECTION OF BRAKE SHOES

1. Activate the brake lever
2. Inspect:
  - Wear indicator ①Indicator on wear limit line ② → Change the brake shoes.

### INSPECTION OF BRAKE FLUID LEVEL

#### NOTE:

Place the scooter upright when inspecting the fluid level.



1. Inspect:
  - Fluid level.The fluid level is below the minimum level line → Refill up to correct level.



Recommended fluid:  
DOT 4

#### ATTENTION:

The fluid may corrode painted surfaces or plastic parts. Always clean any spilt fluid immediately.

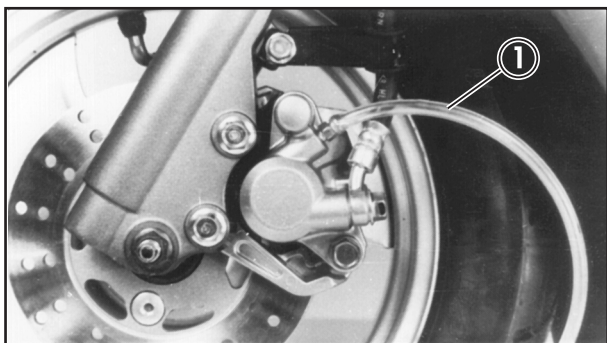


#### WARNING:

- Only use fluid of the designated quality. Otherwise the rubber seals may deteriorate due to leakages and poor performance of the brakes.
- Refill with the same type of fluid. The mixture of fluids may cause a damaging chemical reaction which may cause the poor performance of the brakes.
- Take care not to let water enter the pump while it is being filled. The water will lower the boiling point of the fluid significantly and may cause a steam blockage.

## AIR BLEEDING (HYDRAULIC BRAKE SYSTEM) / STEERING ADJUSTMENT

INSP  
ADJ



### AIR BLEEDING (HYDRAULIC BRAKE SYSTEM)

1. Bleed:
  - Brake fluid

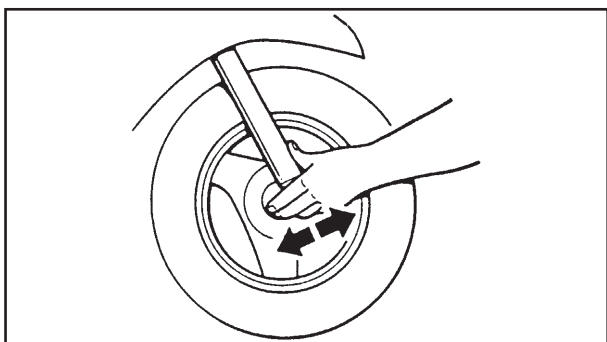


#### Steps for air bleeding:

- a. Add the appropriate amount of brake fluid to the sump.
- b. Install the diaphragm. Take care not to spill fluid or to let the sump overflow.
- c. Connect the clean plastic tube ①.
- d. Place the other end of the tube in a container.
- e. Slowly apply the brake lever several times.
- f. Pull the lever inwards. Keep it in this position.
- g. Loosen the bleed screw and tighten the lever as far as it will go.
- h. Tighten the bleed screw when it has reached its limit, afterwards loosen the lever.
- i. Repeat steps (e) to (h) until the air bubbles in the system have been removed.
- j. Add brake fluid to the correct level.

#### WARNING

**Check the brake operation after bleeding the system.**

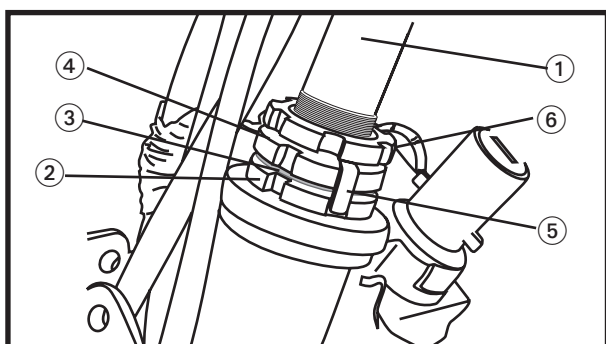


### STEERING ADJUSTMENT

1. Check:
  - Steering assembly bearings Press down the bottom of the fork and carefully move the assembly forwards and backwards.  
Loose → Adjust

## INSPECTION OF TYRES

**INSP**  
**ADJ**



### Steps for tightening the steering nut:

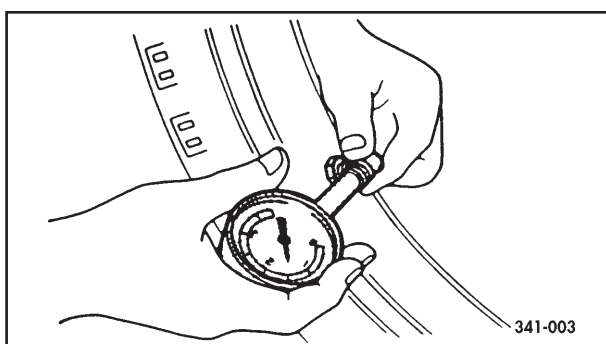
1. Tighten the lower ring nut ② to 3.8 m • kg.
2. Loosen the lower ring nut ② 1/2 of a turn and tighten to 0.65 m • kg.
3. Check the steering for smooth operation.
4. Install rubber washer ③.
5. Install central ring nut ④ and hand tighten until the lower and central ring nuts slots align.
6. Install the lock washer ⑤.
7. Supporting the lower and central ring nuts, install and tighten the upper ring nut to 7.5 m • kg.

## INSPECTION OF TYRES

### ⚠ WARNING

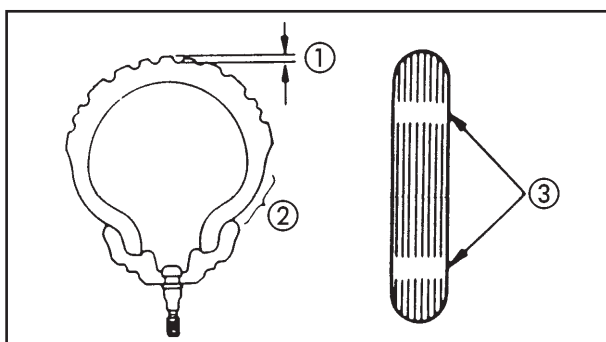
- Do not try to use tubeless tyres in a wheel designed only for inner tube tyres. This may cause damage to the tyre and personal injury due to a puncture.

| Wheel         | Tyre                      |
|---------------|---------------------------|
| Tube type     | Only inner tube type      |
| tubeless type | With or without tube type |



1. Measure:
  - Air pressure
 Outside specified value → Adjust

|                                  |                        |                         |
|----------------------------------|------------------------|-------------------------|
| Basic weight:                    |                        |                         |
| With oil sump and fuel tank full | 87 kg                  |                         |
| Maximum load*                    | 155                    |                         |
| Cold tyre pressure               | front                  | Rear                    |
|                                  | 1.75kg/cm <sup>2</sup> | 2.00 kg/cm <sup>2</sup> |



2. Inspect:
  - Tyre surface
 Worn/Damaged → Change

|  |                                                          |
|--|----------------------------------------------------------|
|  | <b>Minimum depth of thread of tyres</b><br><b>0.8 mm</b> |
|--|----------------------------------------------------------|

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

## WHEEL INSPECTION / INSPECTION OF REAR FORK / REAR SHOCK ABSORBER INSPECTION

**INSP**  
**ADJ**

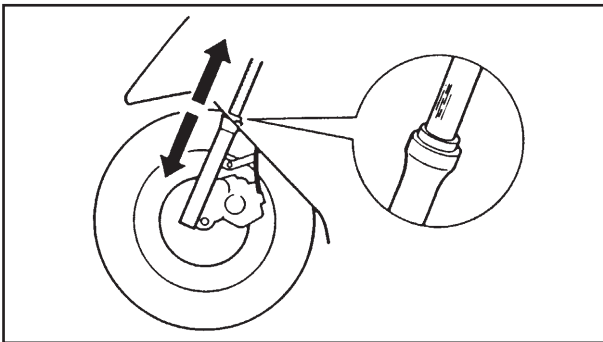


### WHEEL INSPECTION

- Inspect:
  - Wheels damaged/warped → Replace.

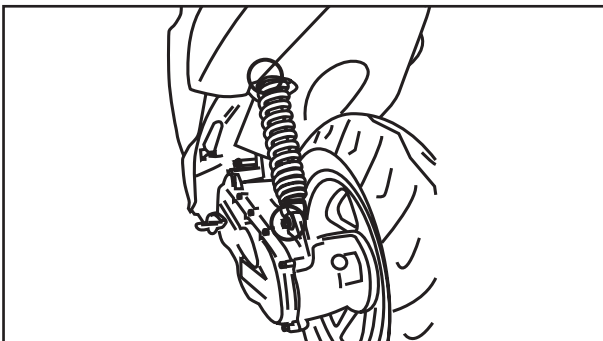
#### **⚠ WARNING:**

Never try to make even the smallest repairs on wheels.



### INSPECTION OF REAR FORK

- Inspect:
  - Rear fork
    - Bent/Damaged → Fork bar → Change
    - Oil leaks → Seals → Change
    - Rough operation → Fork assembly → Change



### REAR SHOCK ABSORBER INSPECTION

- Inspect:
  - Rear shock absorber
    - Oil leaks/Damage → Replace
- Check
  - Coupling torque

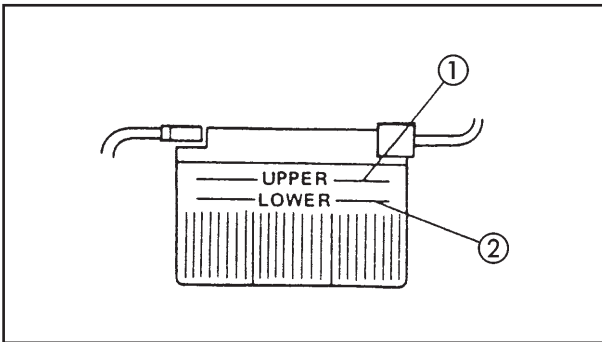
|  |                     |                   |
|--|---------------------|-------------------|
|  | <b>Upper (nut)</b>  | <b>3.2 m • kg</b> |
|  | <b>Lower (bolt)</b> | <b>1.8 m • kg</b> |



### ELECTRICAL SYSTEM

#### BATTERY INSPECTION

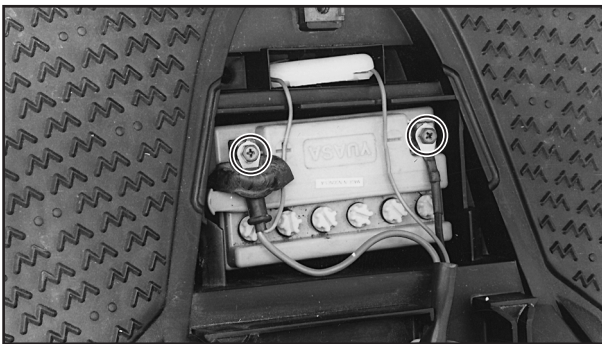
1. Remove:
  - Battery cover  
See "REAR BODYWORK" section



2. Inspect:  
The fluid level between the maximum ① and minimum ② marks.  
Incorrect → Refill

#### ATTENTION:

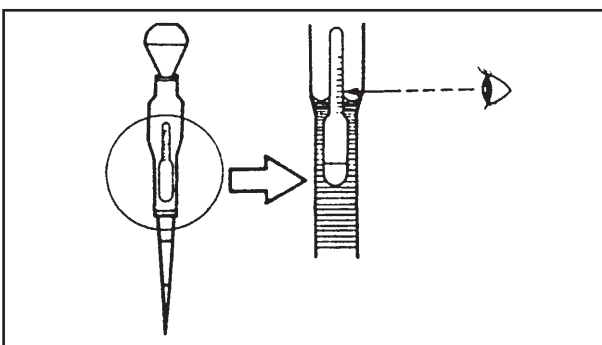
**Add only distilled water; tap water contains minerals which are damaging to the battery.**



3. Inspect:
  - Battery terminals  
Dirty terminals → Clean with a wire brush  
Bad connection → Correct

#### NOTE:

Once the terminals are clean, apply a thin cover of grease.



4. Check:
  - The density of the electrolyte  
Less than 1,280 → Recharge the battery

**Charge current:**  
**0.3 Amps/10 Hrs**

**Electrolyte density:**  
**1,280 at 20 °C (68 °F)**

**Change the battery in the following cases:**

- When the voltage does not reach the specified value and bubbles do not appear, even after several hours of charging.
- When one or more of the trays become sulphated, which can be seen when the plates become white or material accumulates on the bottom.
- When the density readings after slow charging over a prolonged period, indicate that one of the trays is lower than the other.
- When the warping or ondulation of one of the plates or insulators is evident.

**ATTENTION:**

**Always charge new batteries before assembling them, in order to guarantee maximum performance.**

**⚠ WARNING**

The electrolyse in the battery is dangerous; it contains sulphuric acid and is consequently poisonous and very caustic.

**Always follow the following preventive measures:**

- Avoid physical contact with the electrolyte which can cause serious burns or permanent damage to sight.
- Use protective glasses when handling batteries or working near them. Antidote (EXTERNAL):
- SKIN - Wash with water.
- EYES - Wash with water for 15 minutes and consult a doctor immediately.

**Antidote (INTERNAL):**

- Drink large quantities of water or milk, followed by milk of magnesia, beaten egg of vegetable oil.
- See a doctor immediately.

Batteries also generate explosive hydrogen gas, so that the following preventive measures should always be observed:

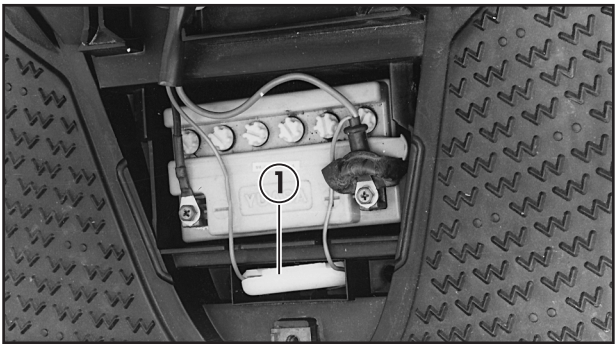
- Charge the batteries in a well ventilated area.
- Maintain the batteries away from fire, sparks or flames (for example, soldering equipment, lit cigarettes, etc.).
- **DO NOT SMOKE** while batteries are being charged or handled.

**MAINTAIN BATTERIES AND THE ELECTROLYSE OUT OF THE REACH OF CHILDREN.**

INSPECTION OF FUSES

1. Remove:
- The battery cover

See the “FRONT BODYWORK” section



2. Inspect:
- Fuse ①

Defective → Replace



Steps to be taken for blown fuses:

- Disconnect the ignition and circuit.
- Install a new fuse of the correct amperage.
- Connect the switches to check the correct operation of the electrical device.
- If the fuse blows immediately after, check the circuit concerned.



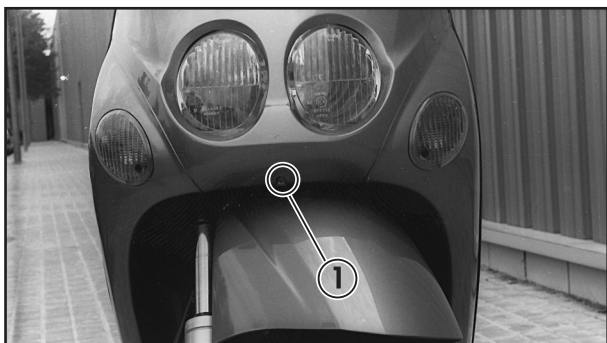
 **WARNING**

Do not use fuses of a higher amperage than that recommended. This can cause extensive damage to the electrical system and fire.

| Description | Amperage | Quantity |
|-------------|----------|----------|
| Principal   | 7A       | 1        |

## ADJUSTMENT OF HEADLAMP BEAM / REPLACEMENT OF HEADLAMP BULB

**INSP**  
**ADJ**



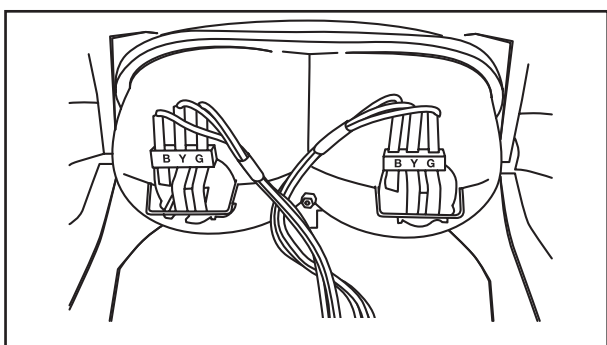
### ADJUSTMENT OF HEADLAMP BEAM

1. Adjust:
  - Headlamp (vertically)

To raise the beam →  
Turn the screw inwards  
To lower the beam →  
Turn the screw outwards

### REPLACEMENT OF HEADLAMP BULB

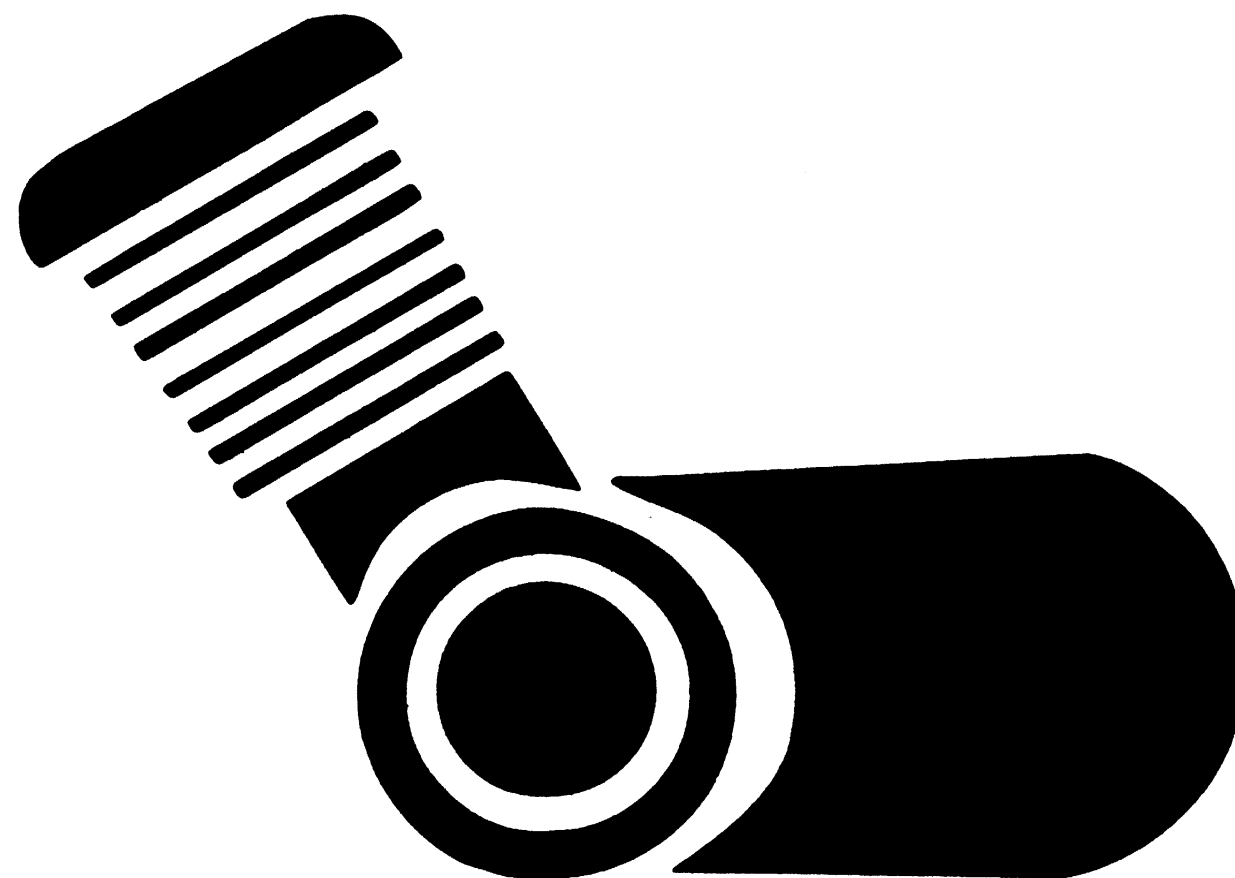
1. Remove:
  - Front fairing
2. Disconnect
  - Headlamp cables



3. Remove:
  - Headlamp bulb cover
  - Headlamp bulb
4. Install:

When the front fairing is installed, reverse the removal process





**ENG**

**4**



## CHAPTER 4

### GENERAL OVERHAUL OF ENGINE

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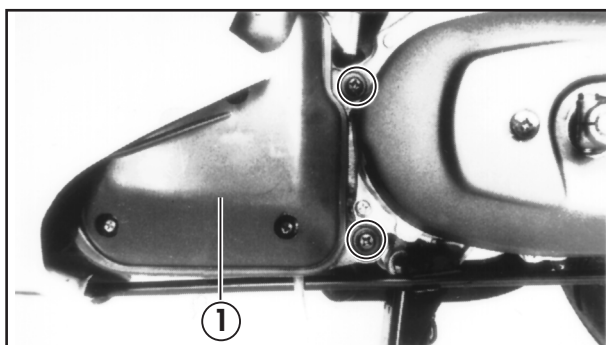


## GENERAL OVERHAUL OF THE ENGINE

### REMOVAL OF ENGINE

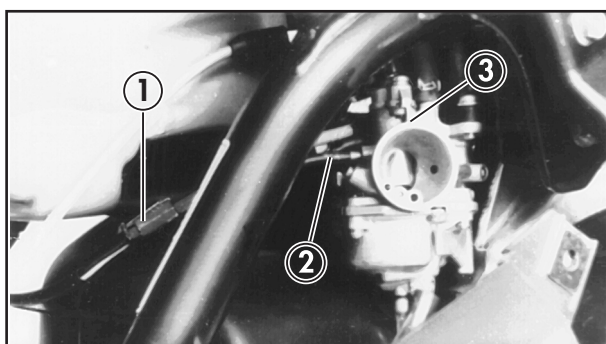
#### REAR BODYWORK AND FOOTREST

1. Remove:
  - Side covers (left and right)
  - Rear cover
  - Footrest panel See section in chapter 3 "REAR BODYWORK AND FOOTREST"

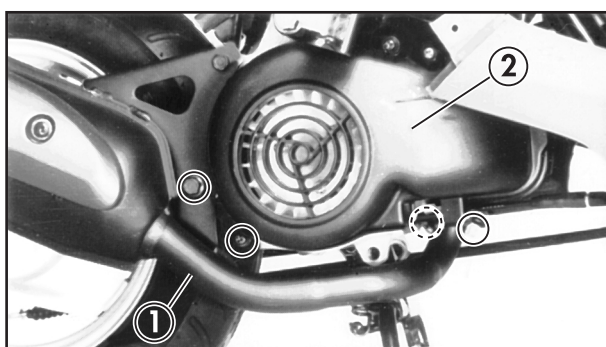


#### CARBURETTOR

1. Remove:
  - Air filter box assembly ①

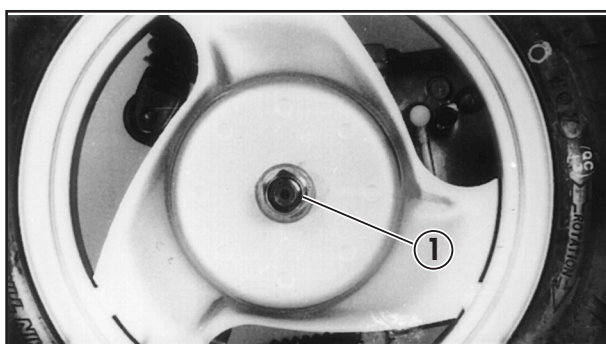


2. Disconnect:
  - Autochoke wire ①
  - Throttle cable
3. Remove:
  - Oil discharge tube ②
  - Fuel supply tube
  - Carburettor ③



#### SILENCER ASSEMBLY

1. Remove:
  - Silencer assembly ①
  - Ventilator cover ②



2. Loosen:
  - Rear axle nut ①

#### NOTE:

When the rear wheel axle nut is loosened, apply the rear brake.



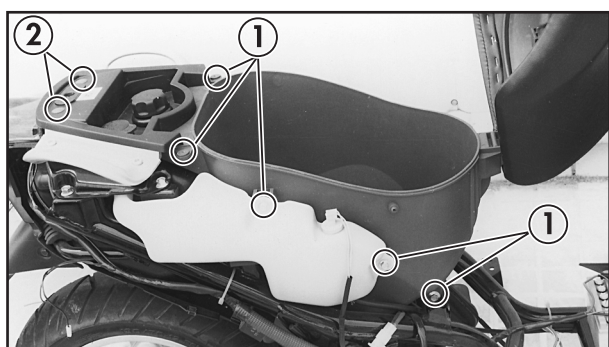
### CABLES AND PIPES

#### 1. Remove:

- Oil pipe ① from side of oil pump.

#### NOTE:

Position oil pipe so that the oil does not spill out.



#### 2. Remove:

- Bolts ① (trunk)
- Overflow bowl rivets

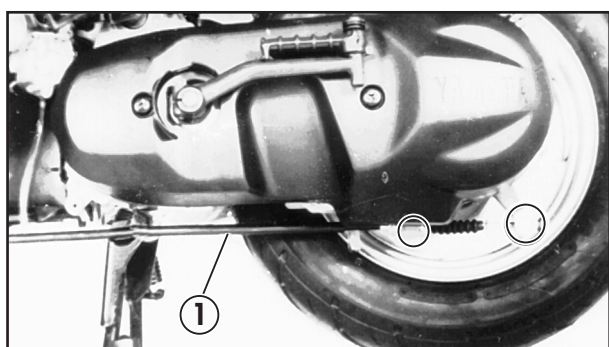
#### NOTE:

To remove the overflow bowl, take off the fuel and oil caps and replace them immediately after removing the bowl.



#### 3. Disconnect:

- Battery cable ①
- Starter motor cable ②
- Magnetic flywheel cable ③
- Spark plug pipe



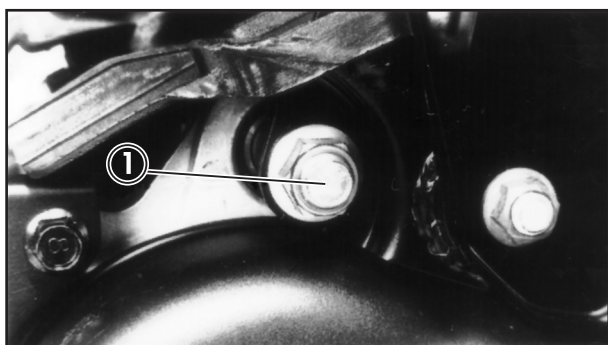
#### 4. Remove:

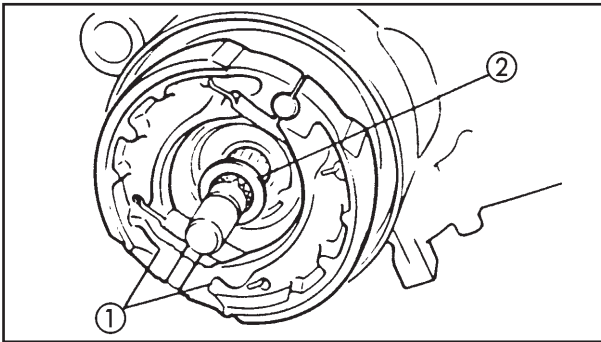
- Rear brake cable ①



### ENGINE REMOVAL

1. Remove:
  - Rear shock absorber screw ① (lower)
2. Remove:
  - Engine assembly screw ①
  - Engine Lift the frame and remove the engine
3. Place the frame on a suitable support

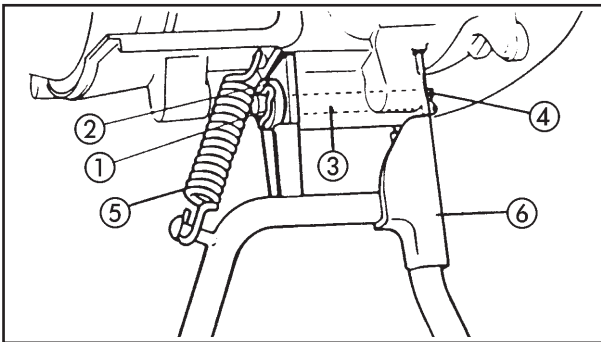




## DISASSEMBLY ENGINE

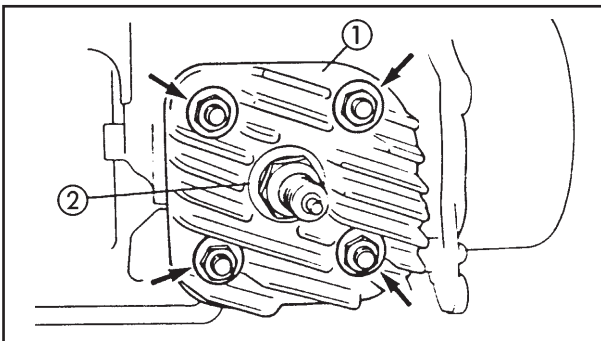
### REAR WHEEL

1. Remove:
  - Rear wheel
  - Brake shoes (1)
  - Flat washer (2)



### CENTRAL STAND

1. Remove:
  - Clip (1)
  - Rubber washer (2)
  - Axle (3)
  - Clasp (4)
  - Spring (5)
  - Central stand (6)

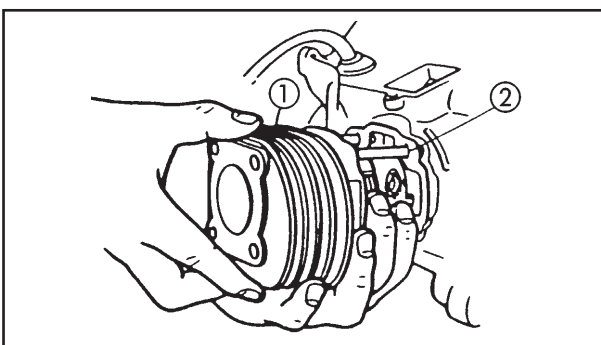


### CYLINDER HEAD AND CYLINDER

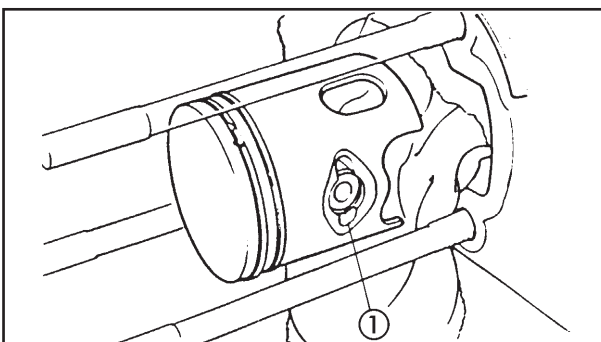
1. Remove:
  - Cover
  - Cylinder head (1)
  - Cylinder head gasket

#### NOTE:

- Before loosening the cylinder head, loosen the spark plug (2).
- The position nuts of the cylinder head should be loosened by 1/2 a turn each time and then removed.



2. Remove:
  - Cylinder (1)
  - Cylinder gasket (2)

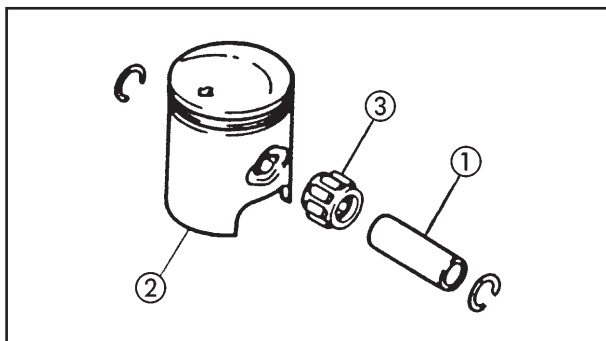


### PISTON PIN AND PISTON

1. Remove:
  - Piston pin clip (1)

#### NOTE:

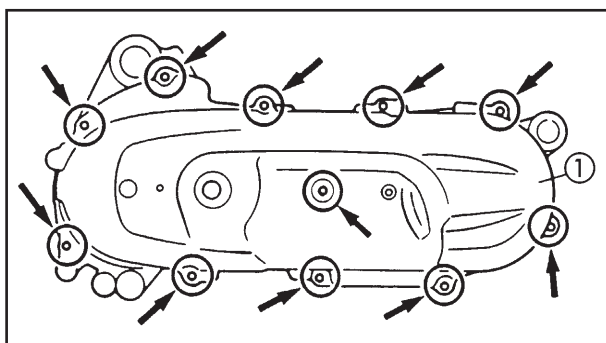
Before removing the piston pin clip, cover the crankcase with a clean cloth so that it does not accidentally fall into the crankcase.



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

## ATTENTION:

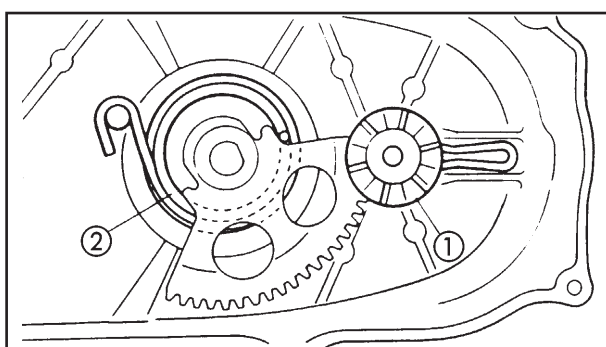
Do not use a hammer to take out the piston pin.



## KICKSTART SYSTEM

1. Remove:
  - Kickstart pedal
  - Crankcase cover ① (left)

2. Remove:
  - Guide(air filter)
  - Air filter

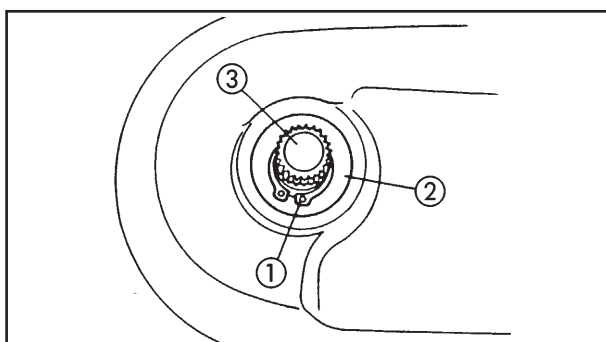


3. Remove:
  - Pedal gear ①

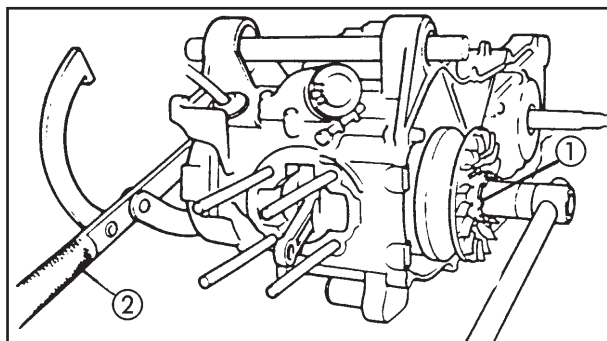
## NOTE:

When the pedal gear removed, move the pedal axle.

4. Unhook:
  - Return spring ②



5. Remove:
  - Circlip ①
  - Flat washer ②
  - Pedal axle ③

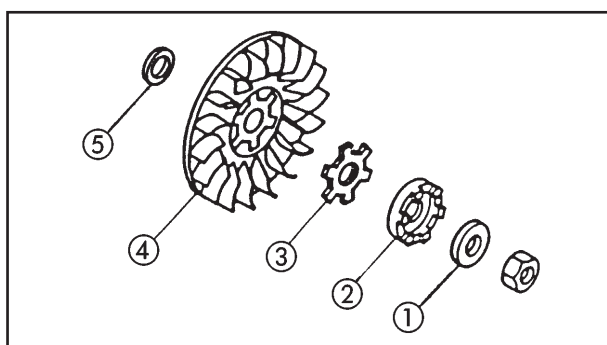


## PRIMARY PULLEY WHEEL

1. Remove:
  - Fan
2. Remove:
  - Nut ① (primary pulley wheel)

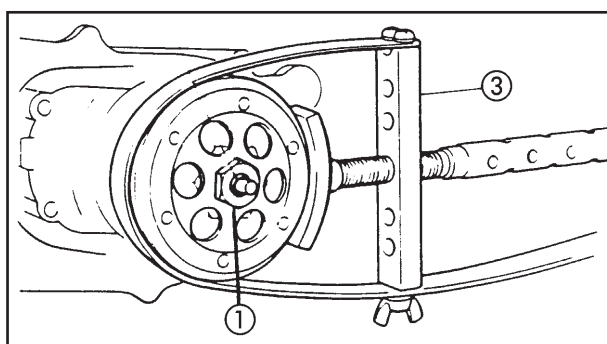
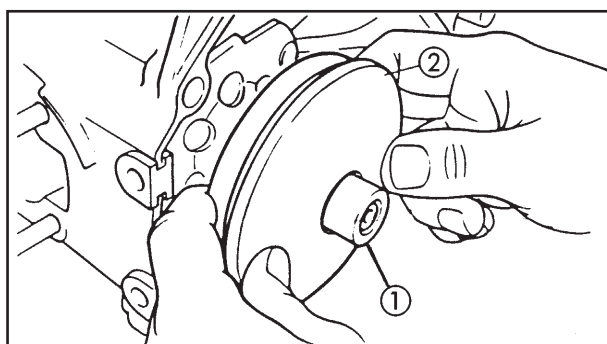
### NOTE:

When the nut is loosened (primary pulley wheel), support the magnetic flywheel using the engine wheel support tool ②



**Engine wheel holding tool:**  
**90890-01235**

3. Remove:
  - Conical spring washer ①
  - One-way clutch ②
  - Washer ③
  - Fixed primary pulley wheel ④
  - Shim ⑤
  - Trapezoidal belt
4. Remove:
  - Hub ①
  - Primary pulley wheel assembly ②



## SECONDARY PULLEY WHEEL

1. Remove:
  - Nut ① (secondary pulley wheel)

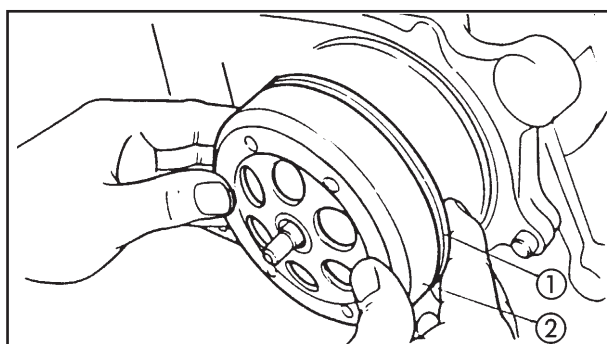
### NOTE:

Support the secondary pulley wheel using the pulley wheel clamp ③.



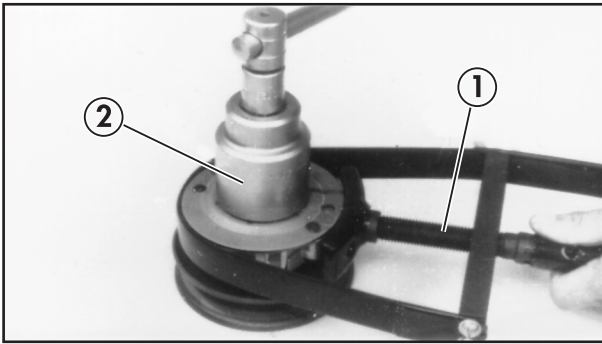
**Pulley wheel clamp:**  
**90890-01701**

2. Remove:
  - Clutch drum ①
  - Secondary pulley wheel assembly ②
  - Crankcase cover gasket
  - Centring devices



## DISASSEMBLY THE ENGINE

ENG



3. Apply:
  - Pulley wheel clamp ①
  - Nut spanner ② (41MM)

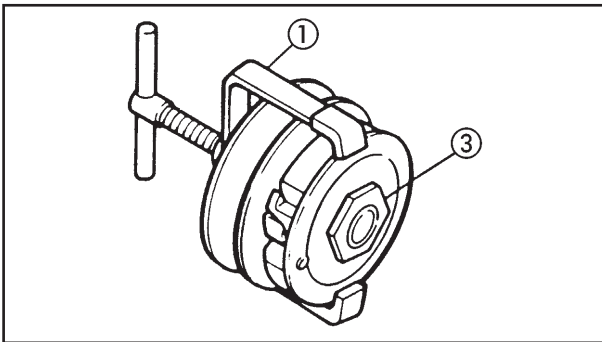


**Pulley wheel clamp:**  
90890-01701

4. Loosen:
  - Clutch positioning nut

### ATTENTION:

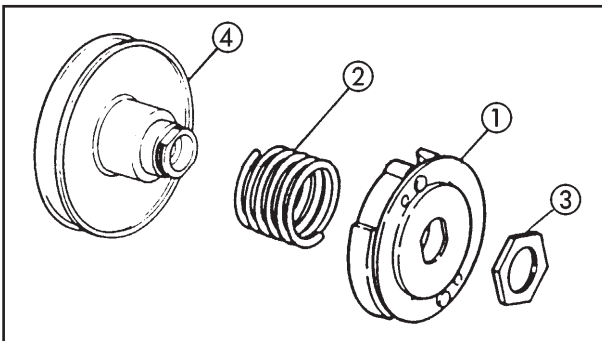
**Do not remove the clutch positioning nut yet.**



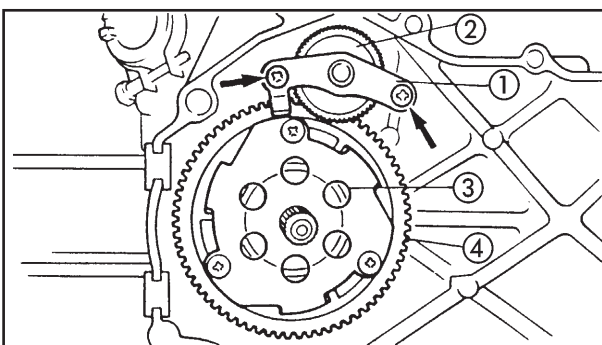
5. Apply:
  - Clutch spring compressor ①



**Clutch spring compressor:**  
90890-01337

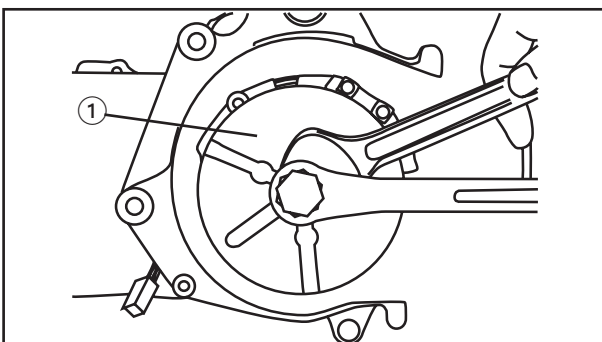


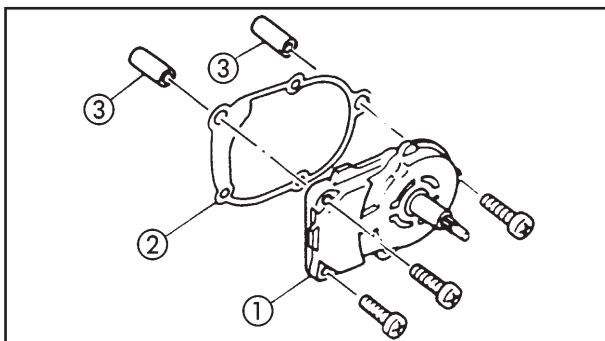
6. Remove:
  - Clutch positioning nut ③
7. Remove:
  - Clutch assembly ①
  - Clutch spring ②
  - Spring seat ④
  - Guide pins
  - Secondary sliding pulley wheel



## STARTER SYSTEM

1. Remove:
  - Plate ① (intermediate gearing)
  - Intermediate gearing ②
  - Starter clutch assembly ③
  - Washer
  - Starter wheel gearing ④
2. Remove:
  - Bushing ①
  - Bearing ②
  - Washer ③
  - Starter motor





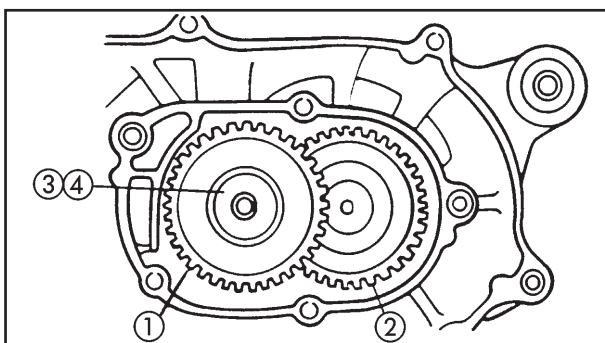
## TRANSMISSION

### 1. Remove:

- Transmission box cover (1)
- Gasket (2)
- Centring devices (3)

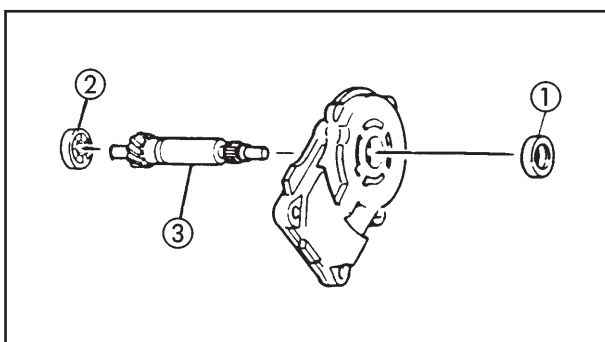
### NOTE:

Before proceeding to disassemble the transmission cap, empty the oil.



### 2. Remove:

- Main axle (1)
- Drive axle (2)
- Flat washer (3)
- Conical spring washer (4)



### 3. Remove:

- Oil seal (1)
- Bearing (2)
- Secondary pulley wheel axle (3)

## MAGNETIC FLYWHEEL

### 1. Remove:

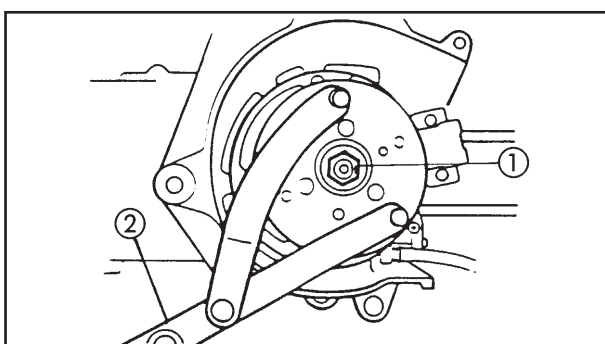
- Nut (1) (rotor)
- Flat washer

### NOTE:

Support the rotor to loosen the nut with the engine flywheel support tool (2).



**Engine flywheel support tool**  
90890-01235

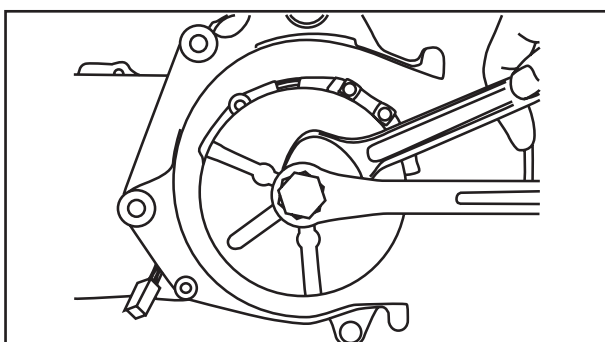


### 2. Remove:

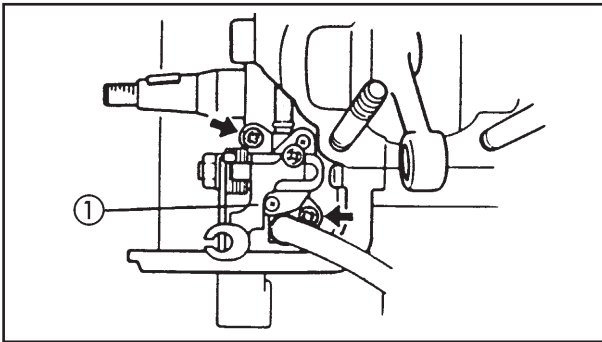
- Rotor (1)
  - Woodruff key
- Use the magnetic flywheel extractor (2)



**Magnetic flywheel extractor**  
90890-01362

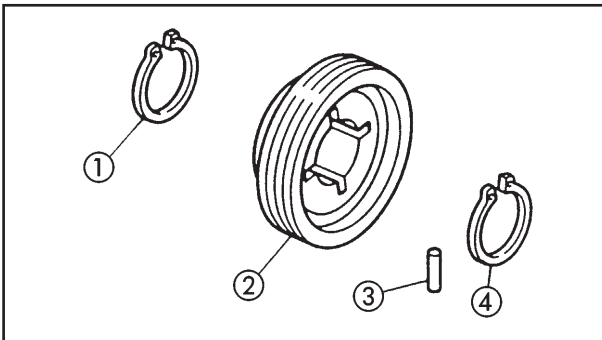


- Stator assembly
- Gasket

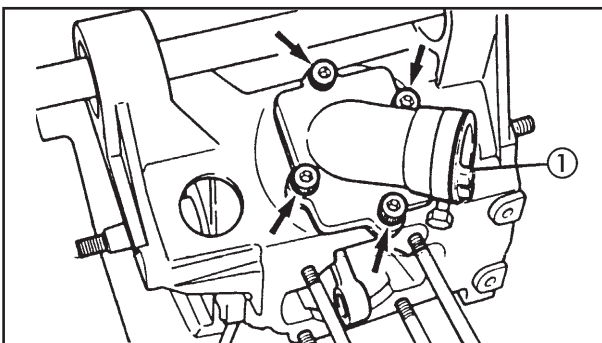


## AUTOLUBRICATION PUMP

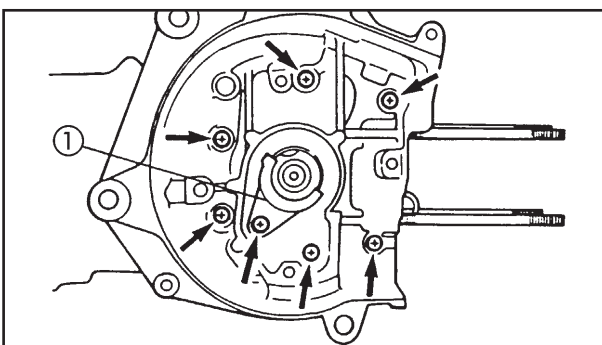
1. Remove:
  - Autolubrication pump ①



2. Remove:
  - Elastic circlip ①
  - Pump drive gearing ②
  - Pin ③
  - Elastic circlip ④



3. Remove:
  - Carburettor gasket ①
  - Reed valve
  - Reed valve gasket



## CRANKCASE AND CRANKSHAFT

1. Remove:
  - Oil seal catch ①
  - Screws (crankcase)

### NOTE:

Loosen each screw 1/4 of a turn and remove them after loosening them.

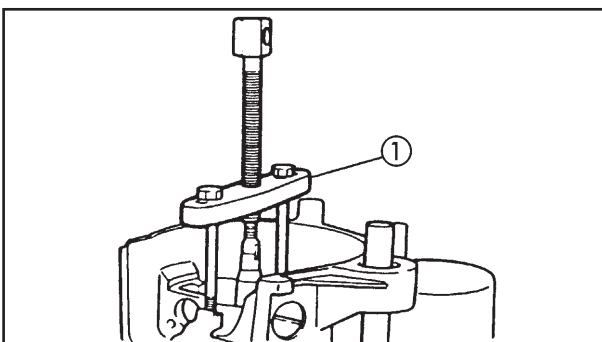
2. Apply:
  - Crankcase separation tool ①



**Crankcase separation tool**  
90890-01135

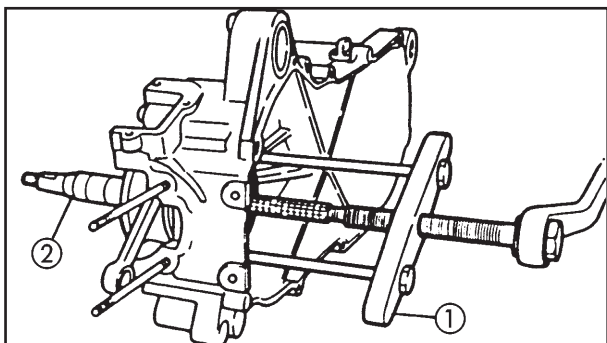
### NOTE:

Fully tighten the positioning nuts of the tool, but ensure that the tool body is parallel with the box. If necessary, slightly loosen one of the screws to level the body of the tool.



## DISASSEMBLY THE ENGINE

ENG

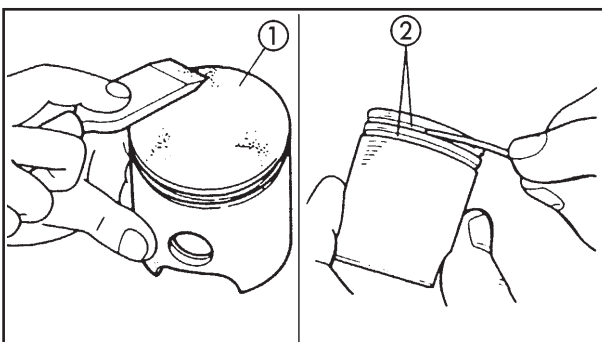
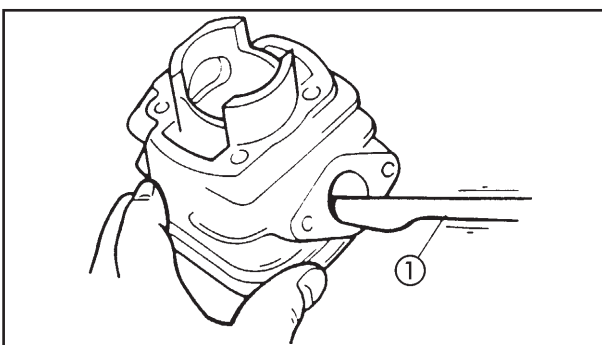
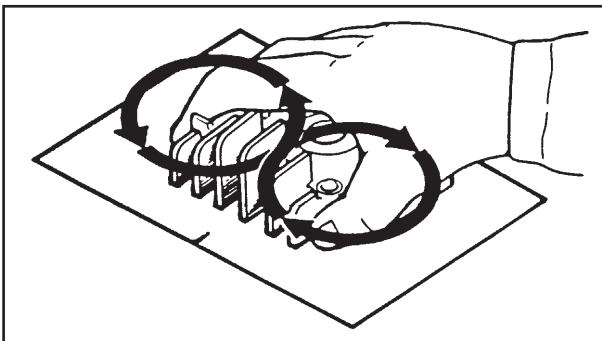
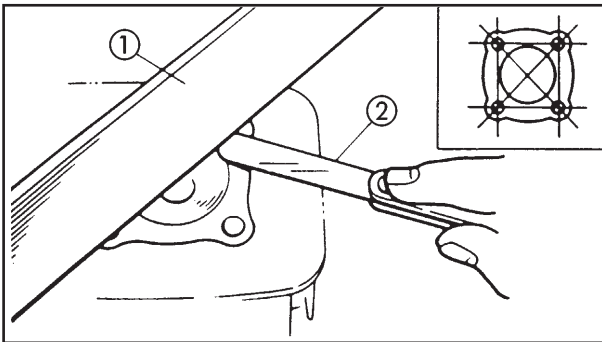
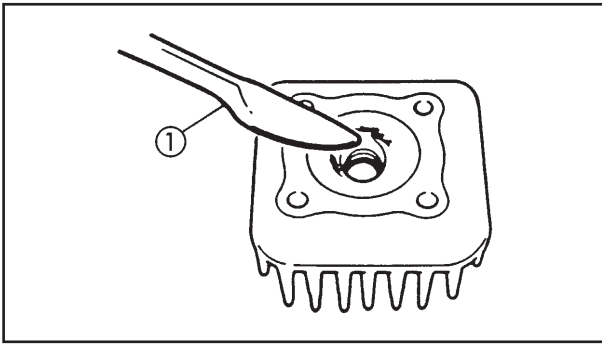


3. Remove:
  - Crankcase (right)  
While pressure is applied, strike alternately on the engine assembly hubs.
4. Apply:
  - Crankcase separation tool ①



**Crankcase separation tool**  
**90890-01135**

5. Remove:
  - Crankshaft ②



## INSPECTION AND REPAIR

### CYLINDER HEAD

#### 1. Eliminate:

- Carbon deposits Use a rounded scraper

①

#### 2. Inspect:

- Cylinder head warping.  
Outside specified value → Rectify



#### Steps for measuring warping and rectification:

- Join a straight edge ① and a thickness calibration ② on the cylinder head
- Measure the limit of the warping



**Warping limit**  
**0.02 mm**

- If the warping is outside the specified value, rectify the cylinder head

#### NOTE:

Turn the cylinder head several times to avoid removing too much material from one side



### CYLINDER AND PISTON

#### 1. Eliminate:

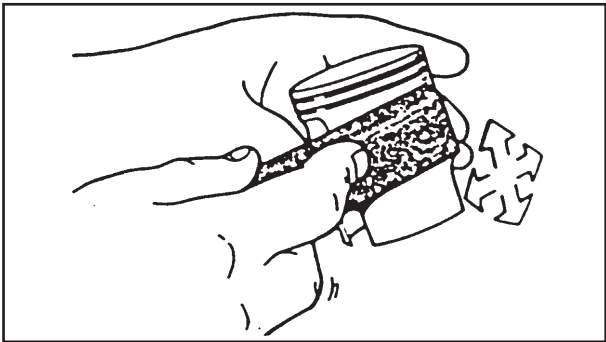
- Carbon deposits Use a rounded file ①

#### 2. Inspect:

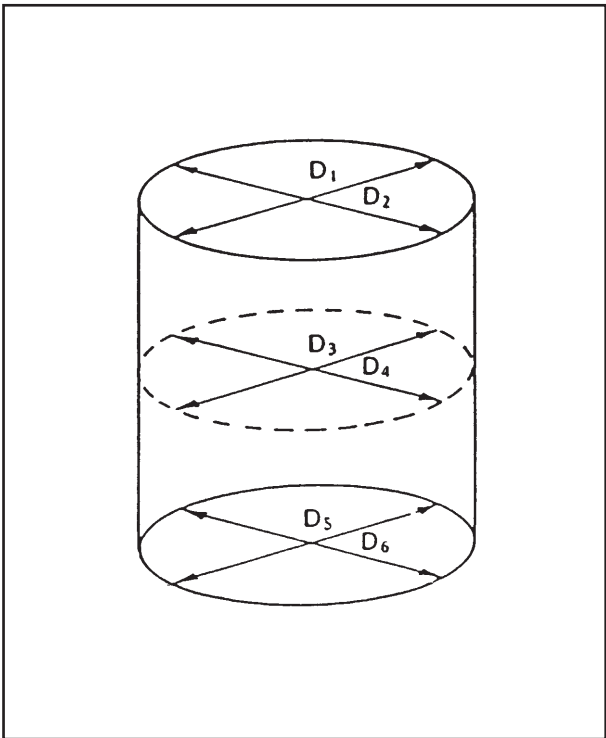
- Cylinder wall Wear/stripping → Rectify or change

#### 3. Eliminate:

- Carbon deposits ① ②  
From the piston crown and ring grooves.



4. Remove:
- Cracking marks and carbon deposits on piston sides.
5. Inspect:
- Piston wall  
Wear/stripping/damage → Change



6. Measure:
- Cylinder piston clearance



**Steps for measuring the clearance of the cylinder piston**

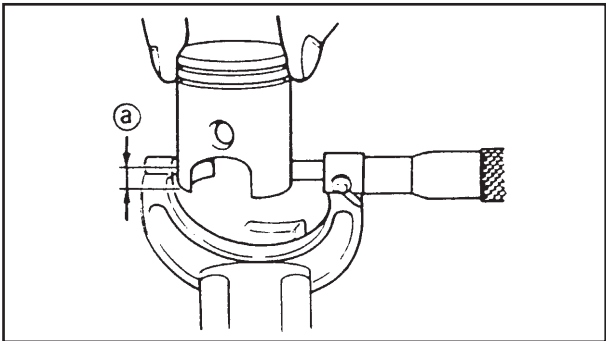
**First step:**

- Measure the lower diameter “C” with a dial gauge.

**NOTE:**

Measure the inner diameter of cylinder “C” in parallel and at right angles to the crankshaft. Then find the mean of the measurements.

|                                          | Standard | Wear limit |
|-----------------------------------------------------------------------------------------------------------------------------|----------|------------|
| Inner diameter of cylinder “C”                                                                                              | 40.0 mm  | 40.10 mm   |
| Taper “T”                                                                                                                   | –        | 0.05 mm    |
| Eccentricity “R”                                                                                                            | –        | 0.01 mm    |
| “C” = Maximum D                                                                                                             |          |            |
| “T” = (Maximum D <sub>1</sub> o D <sub>2</sub> ) - (Maximum D <sub>5</sub> or D <sub>6</sub> )                              |          |            |
| “R” = (Maximum D <sub>1</sub> D <sub>3</sub> o D <sub>5</sub> ) - (Maximum D <sub>2</sub> D <sub>4</sub> o D <sub>6</sub> ) |          |            |

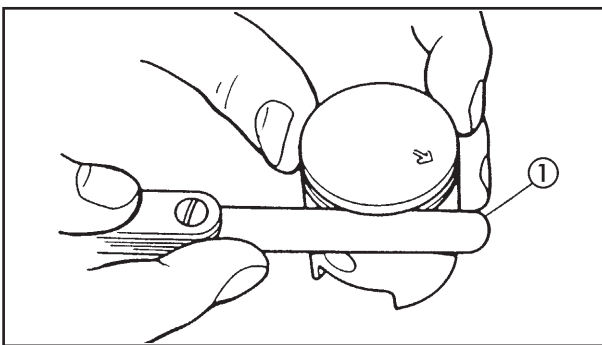


- If this is outside the specified value, rectify or change the cylinder, change the piston and the set of rings.

**Second step:**

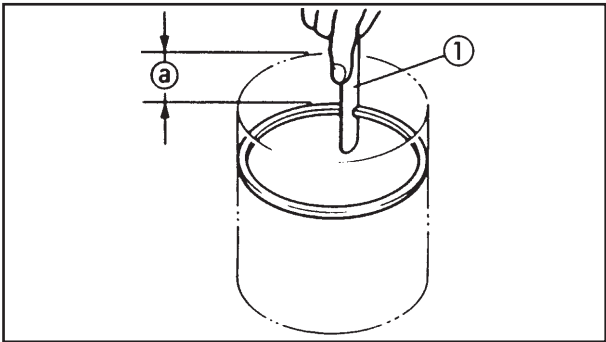
- Measure the diameter of the piston skirt “P” with a micrometer.  
Ⓐ 5.0 mm (0.20 in) from the inner edge of the piston

- 

[illegible]

**Top**

- 4-13**



3. Measure:
- Gap between ends  
Outside specified value → Change set of rings.  
Use a thickness gauge ①.

|  | Standard     | Limit   |
|-----------------------------------------------------------------------------------|--------------|---------|
| Top ring                                                                          | 0.15~0.35 mm | 0.60 mm |
| Second ring                                                                       | 0.15~0.35 mm | 0.60 mm |

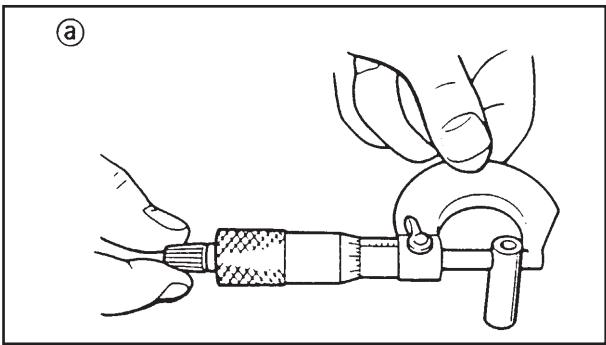
① Measurement point 20 mm (0.8 in)

4. Clearance of piston rings:  
The size of the rings is not stamped on its upper part.

| Piston ring clearance |          |
|-----------------------|----------|
| 1st Clearance         | 40.25 mm |
| 2st Clearance         | 40.50 mm |

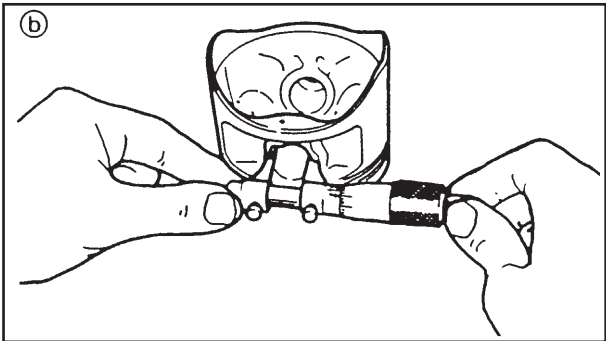
**PISTON PIN AND PISTON PIN BEARING**

1. Inspect:  
Piston pin  
Blue discolouring/Groove → Change, then inspect the lubrication system.



2. Measure:
- External diameter ① (Piston pin clip)  
Outside specified value → Change

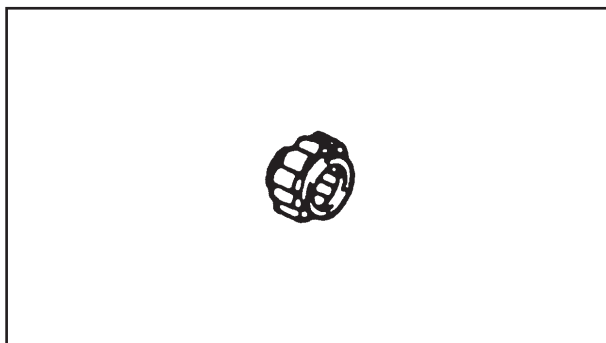
|  | External diameter (piston pin clip)<br>9.996 ~ 10.00 mm |
|-------------------------------------------------------------------------------------|---------------------------------------------------------|
|-------------------------------------------------------------------------------------|---------------------------------------------------------|



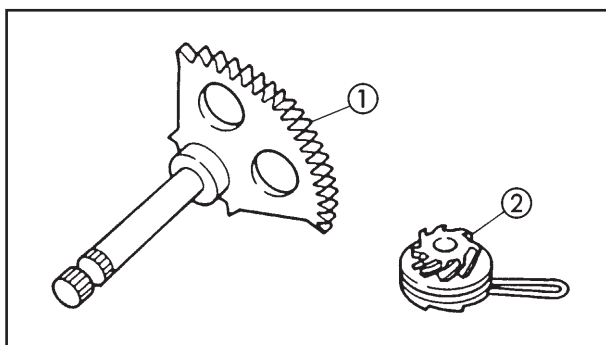
3. Measure:
- Clearance of piston pin to piston:  
Outside specified value → Change the piston

|                                                                                                                           |
|---------------------------------------------------------------------------------------------------------------------------|
| Clearance of piston pin to piston=<br>Size of inner diameter (Piston pin) ② -<br>External diameter (piston pin housing) ① |
|---------------------------------------------------------------------------------------------------------------------------|

|  | Clearance of piston pin to piston<br>0.004 ~ 0.016 mm<br>Limit<br>0.07 mm |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------|

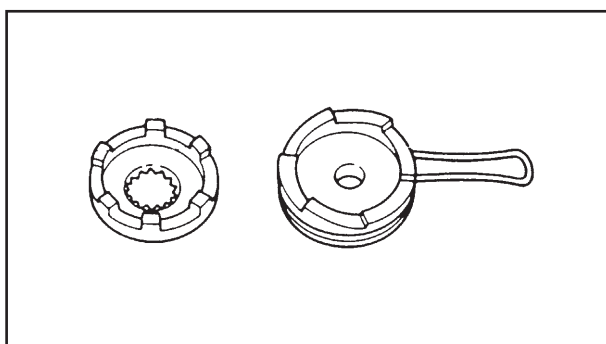


4. Inspect:  
Bearing (piston pin)  
Pitting/Damage → Change

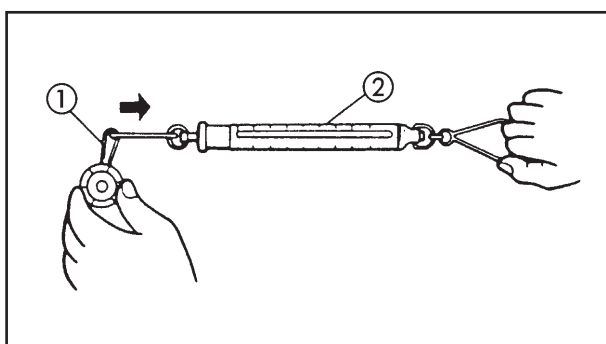


## KICKSTART

1. Inspect:
  - Pedal gear teeth ①
  - Pedal pinion gear teeth ②
 Burrs/Spalling/Non-uniformity/Wear → Change



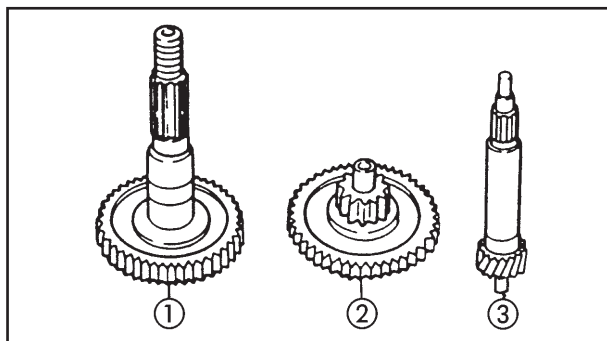
2. Inspect:
  - Locking bolt(pedal pinion gear and one way clutch)
 Rounded edges/Wear → Change



3. Measure:
  - Spring tension (pedal pinion gear)
 Outside specified value → Change  
Use a dynamometer



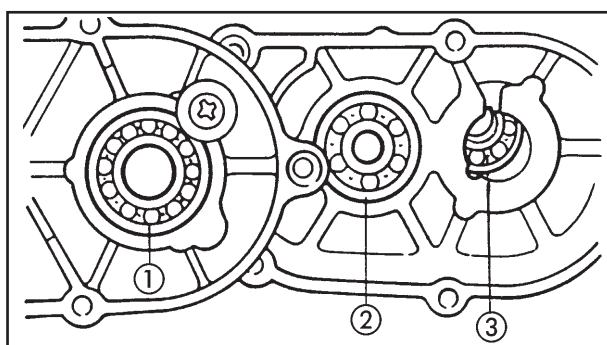
**Standard tension**  
150 ~ 250 gr



### TRANSMISSION

#### 1. Inspect:

- Drive axle ①
  - Main axle ②
  - Secondary pulley wheel axle ③
- Burrs/Spalling/Non-uniformity/Wear → Change



#### 2. Inspect:

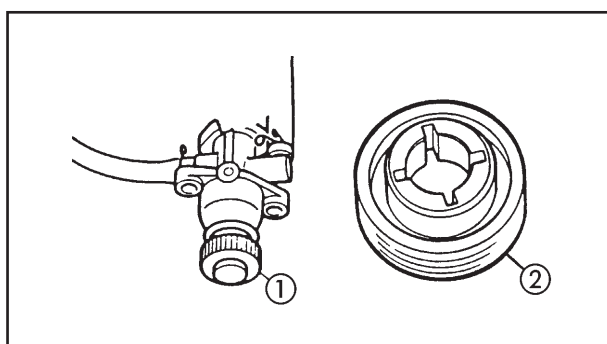
- Secondary pulley wheel axle bearing ①
  - Main axle bearing ②
  - Drive axle bearing ③
- Pivot the inner guide of the bearing.  
Excessive play/Non-uniformity → Change  
Pitting/Damage → Change

### AUTOLUBRICATION PUMP

Internal wear or poor operation may cause the pump to deviate from its factory adjustment. However, this is very uncommon. If incorrect operation is suspected, inspect the following:

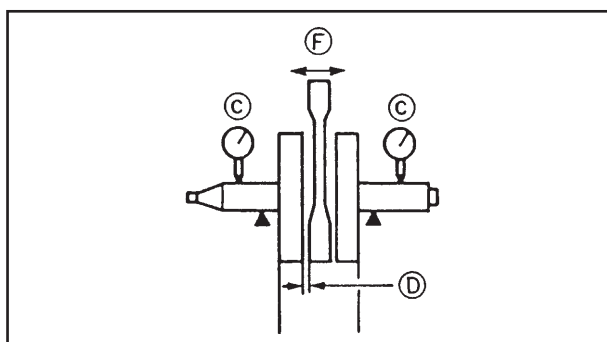
#### 1. Inspect:

- Supply line Obstruction → Apply air under pressure
- O-ring Wear/Damage → Change



#### 2. Inspect:

- Drive gear teeth of the autolubrication pump ①
  - Gear teeth driven by autolubrication pump ②
- Pitting/Wear/Damage → Change



### CRANKSHAFT

#### 1. Measurement:

- Deflection limit "C"
  - Clearance on big end side "D"
  - Limit of free play at small end of connecting rod "F"
- Outside specified value → Change.  
Use V blocks, dial gauges and thickness gauge.



**Deflection limit "C":**

**0.03 mm**

**Clearance on big end side "D":**

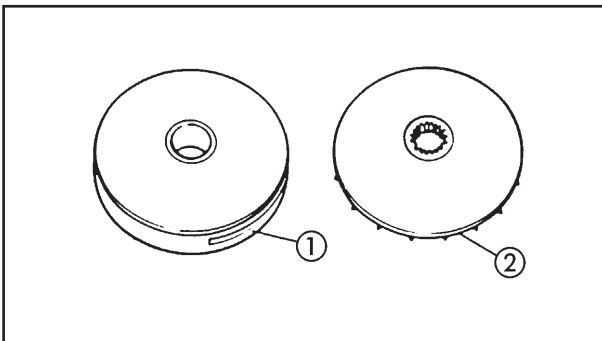
**0.2 ~ 0.5 mm**

**Free play at small end "F":**

**0.4 ~ 0.8 mm**

2. Inspect:

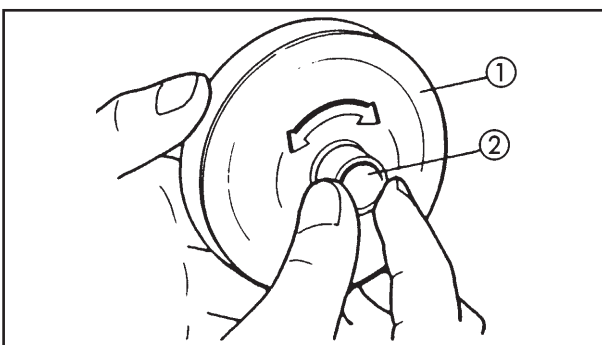
- Bearings (crankshaft) Pivot the inner bearing guide.  
Excessive play/Non-uniformity → Change  
Pitting/Damage → Change



**PRIMARY PULLEY WHEEL**

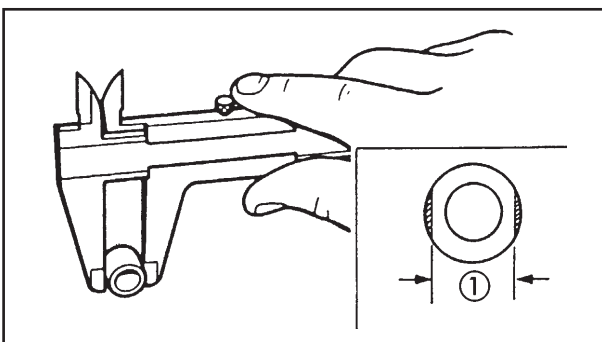
1. Inspect:

- Primary sliding pulley wheel ①
- Primary fixed pulley wheel ②  
Wear/Cracks/Striping/Damage → Change



2. Check:

- Free movement Insert the bushing in the primary sliding pulley wheel and check if there is free movement.  
If it catches or there is excessive play → Change the pulley wheel or the bushing.



3. Measure:

- External diameter ① (roller)  
Outside specified value → Change.

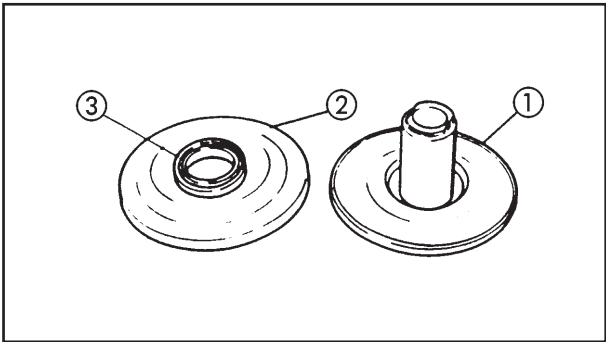


**External diameter (roller)**

**15.0 mm**

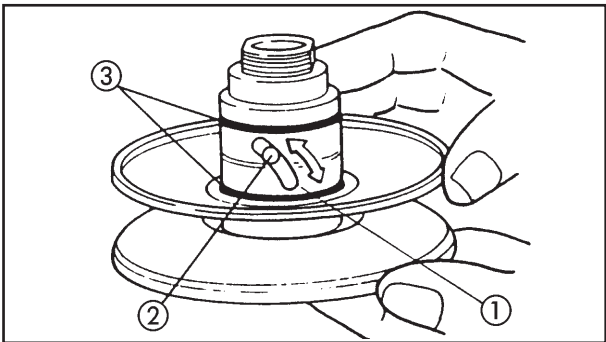
**Limit:**

**14,5 mm**

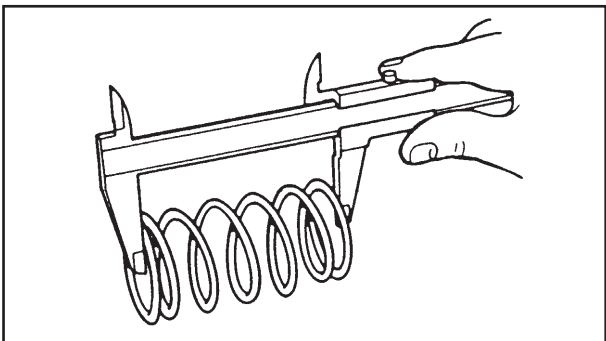


**SECONDARY PULLEY WHEEL**

1. Inspect:
- Secondary fixed pulley wheel ①
  - Secondary sliding pulley wheel ②  
Striping/Cracks/Damage → Change set.
  - Oil seal ③  
Damage → Change.



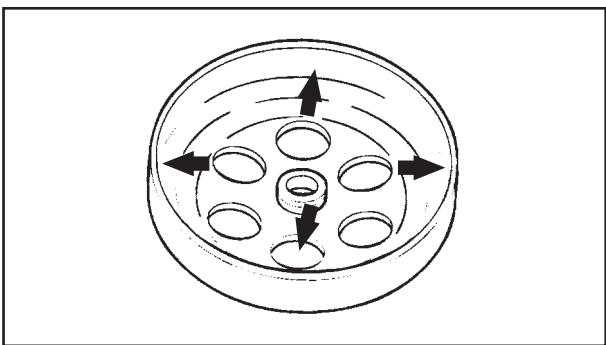
2. Inspect:
- Turning cam groove ①
  - Guide pin ②  
Wear/Damage → Change set.
  - O-ring ③  
Damaged → Change.



3. Measure:
- Free length of variator spring.  
Outside specified value → Change

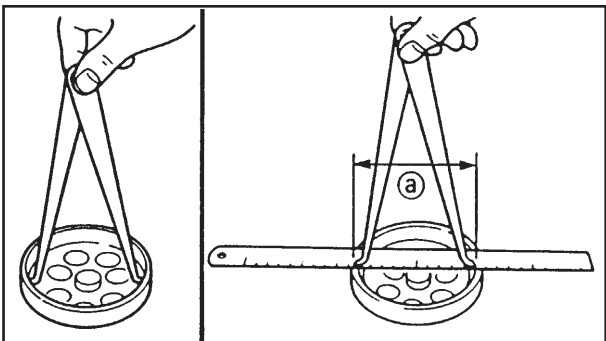


**Free length of secondary pulley wheel**  
109.6 mm  
<Limit>  
90.4 mm



4. Inspect:
- Inner surface of the clutch hub  
Oil/Striping → Clean

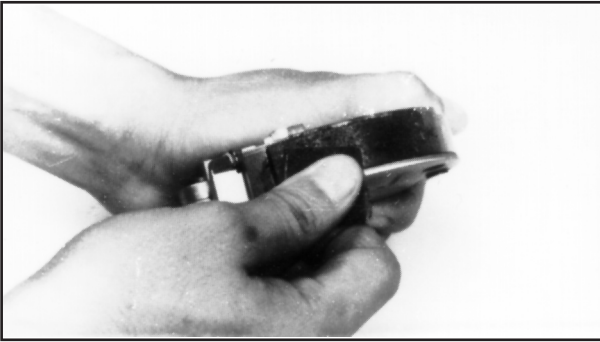
|          |                                               |
|----------|-----------------------------------------------|
| Oil      | Use a cloth dampened with dissolvent          |
| Striping | Use sand paper (polish lightly and uniformly) |



5. Measure:
- Internal diameter of the clutch hub ①  
Outside specified value → Change



**Internal diameter of clutch hub**  
105.0 mm  
<Wear limit>  
105.4 mm

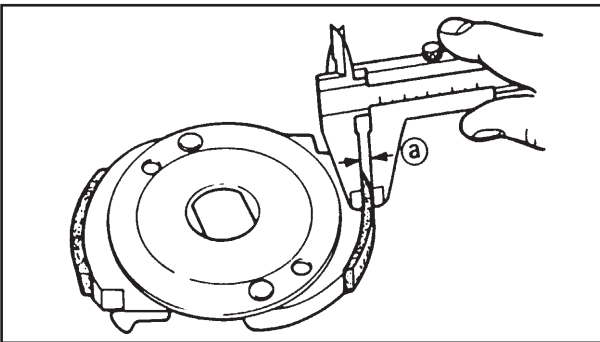


6. Inspect:

- Clutch shoes shiny parts → Polish with sand paper.

**NOTE:**

After using sand paper, clean the polished particles with a cloth.



7. Measure:

- Thickness of clutch shoe (a)  
Outside specified value → Change



**Thickness of clutch shoe**

2.0 mm

<Wear limit>

1.0 mm

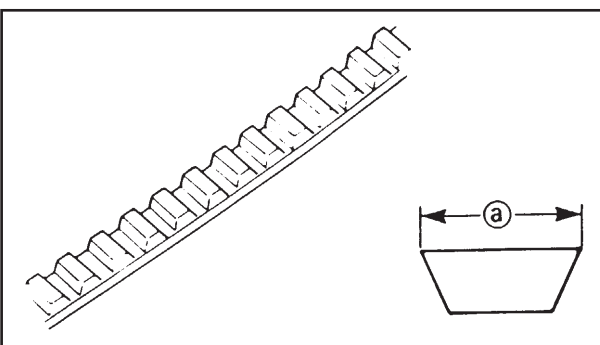
## TRAPEZOIDAL BELT

1. Inspect:

- Trapezoidal belt  
Cracks/Wear → Change

**NOTE:**

Replace the trapezoidal belt if it is dirty with oil or grease.



2. Measure:

- Width of trapezoidal belt (a)  
Outside specified value → Change

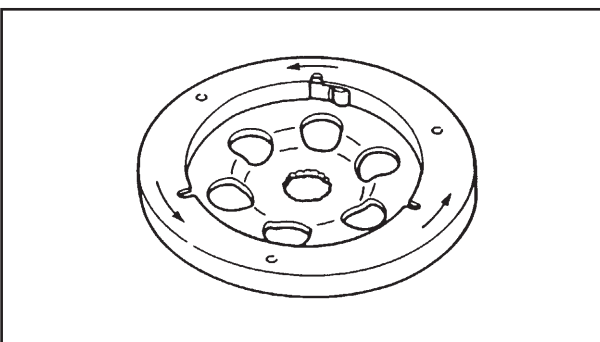


**Width of trapezoidal belt**

16.5 mm

<Wear limit>

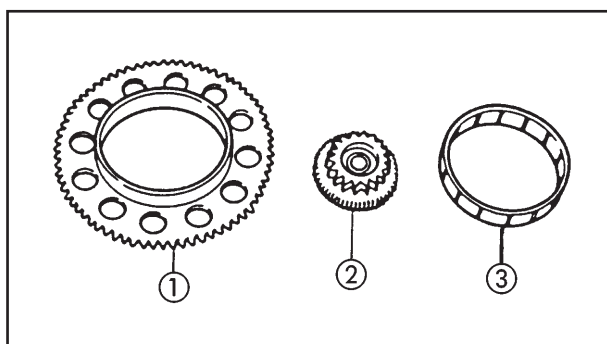
15.7 mm



## STARTER CLUTCH AND GEARS

1. Inspect:

- Starter clutch Press the conical pin in the direction of the arrow.  
Rough operation → Change the starter clutch assembly



## 2. Inspect:

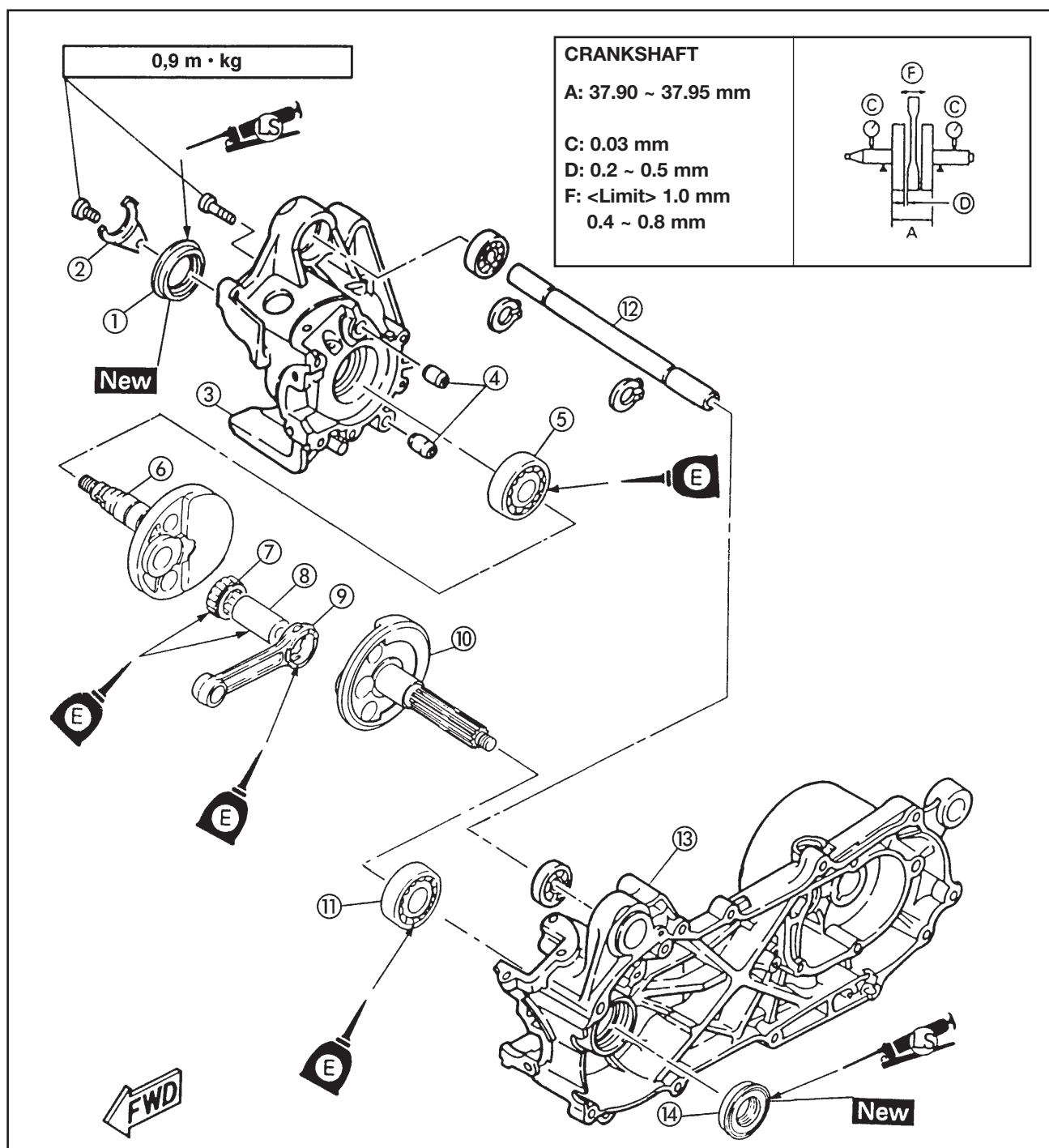
- Starter wheel gear teeth ①
- Intermediate gear teeth ②  
Burr/Spalling/Non-uniformity/Wear → Change
- Bearing ③ (starter wheel gear)  
Pitting/Damage → Change

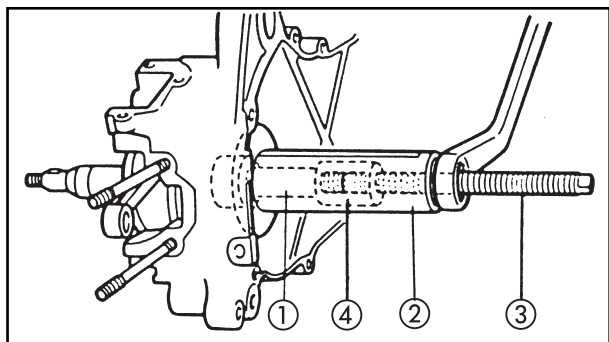


## ASSEMBLY AND ADJUSTMENT OF ENGINE

### CRANKSHAFT AND CRAKCASE

- |                     |                          |
|---------------------|--------------------------|
| ① Oil seal          | ⑧ Crankshaft pin         |
| ② Oil seal catch    | ⑨ Connecting rod         |
| ③ Crankcase (right) | ⑩ Crankcase (left)       |
| ④ Centring device   | ⑪ Bearing                |
| ⑤ Bearing           | ⑫ Engine mounting spacer |
| ⑥ Crankcase (right) | ⑬ Crankcase (left)       |
| ⑦ Bearing           | ⑭ Oil seal               |





## CRANKSHAFT AND CRANKCASE

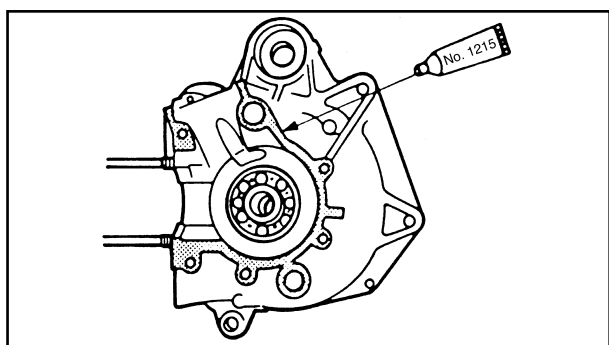
1. Place:

- Crankshaft installation tool



**Crankshaft installation tool:**

- ①: 90890-01411
- ②: 90890-01274
- ③: 90890-01275
- ④: 90890-01277



2. Install:

- Crankshaft  
(in left crankcase)

3. Install:

- Centring device
- Engine mounting spacer

4. Apply:

- Yamaha N.° 1215 adhesive on the corresponding surfaces of both halves of the crankcase



**Yamaha N. 1215 adhesive:**  
90890-85505

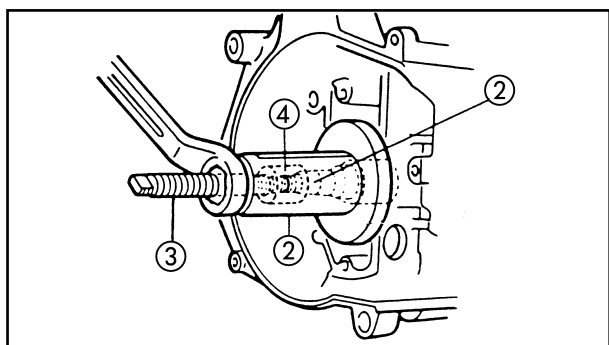
5. Place:

- Crankshaft installation tool



**Crankshaft installation tool:**

- ①: 90890-01411
- ②: 90890-01274
- ③: 90890-01275
- ④: 90890-01277



6. Install:

- Right crankcase

7. Tighten:

- Crankcase positioning screws

**NOTE:**

Tighten the crankcase positioning screws in stages, using a crossed method for tightening.



**Crankcase screws**  
0.9 m • kg

8. Check:

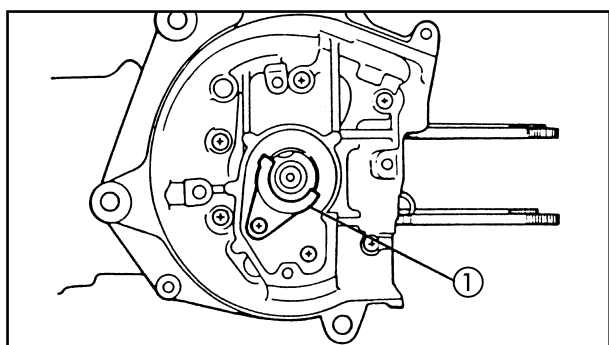
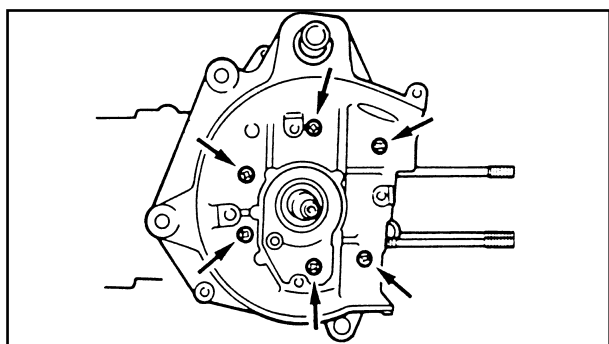
- Rotation of crankshaft  
Rough turning → Repair

9. Install:

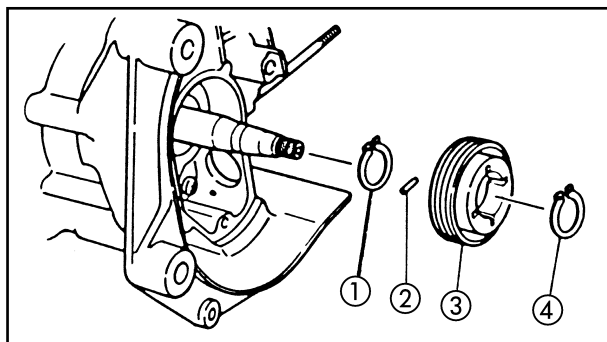
- Oil seal catch plate ①



**Screw (oil seal catch plate)**  
0.9 m • kg

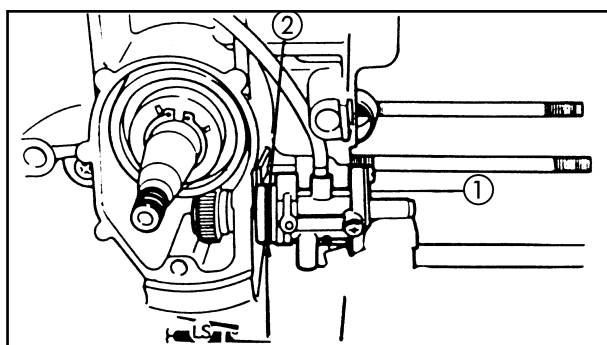


- ① Fan
- ② Flat washer
- ③ Rotor assembly
- ④ Charge coil
- ⑤ Lighting coil
- ⑥ Harnessing coil
- ⑦ Stator plate
- ⑧ Oil seal
- ⑨ Gasket
- ⑩ Oil outlet pipe
- ⑪ Oil pipe
- ⑫ Bushing
- ⑬ Autolubrication pump
- ⑭ O-ring
- ⑮ Elastic circlip
- ⑯ Oil pump drive gear
- ⑰ Pin



## AUTOLUBRICATION PUMP

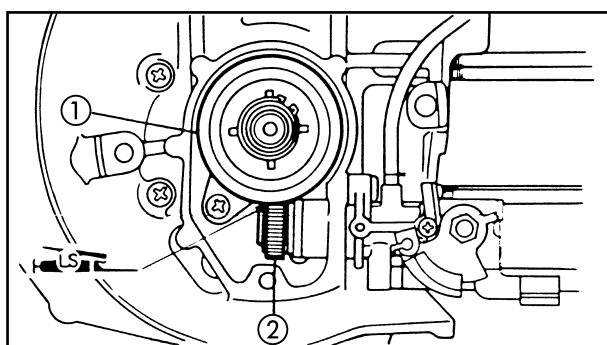
1. Install:
  - Elastic circlip ①
  - Pin ②
  - Pump drive gear ③
  - Elastic circlip ④



2. Apply:
  - Grease with lithium soap base (on the o-ring ②)
3. Install:
  - Autolubrication pump ①



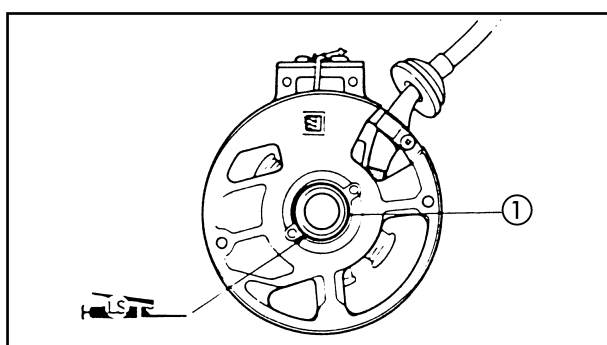
**Screw (autolubrication pump)**  
0.4 m • kg



4. Apply:
  - Grease with lithium soap base (on the autolubrication pump gear ①, ②)



15 cc



## FLYWHEEL MAGNETO

1. Install:
  - Seal
2. Apply:
  - Grease with lithium soap base (on the oil reten ①)
3. Pass the wheel cable through the crankcase orifice.

4. Install:
  - Stator assembly



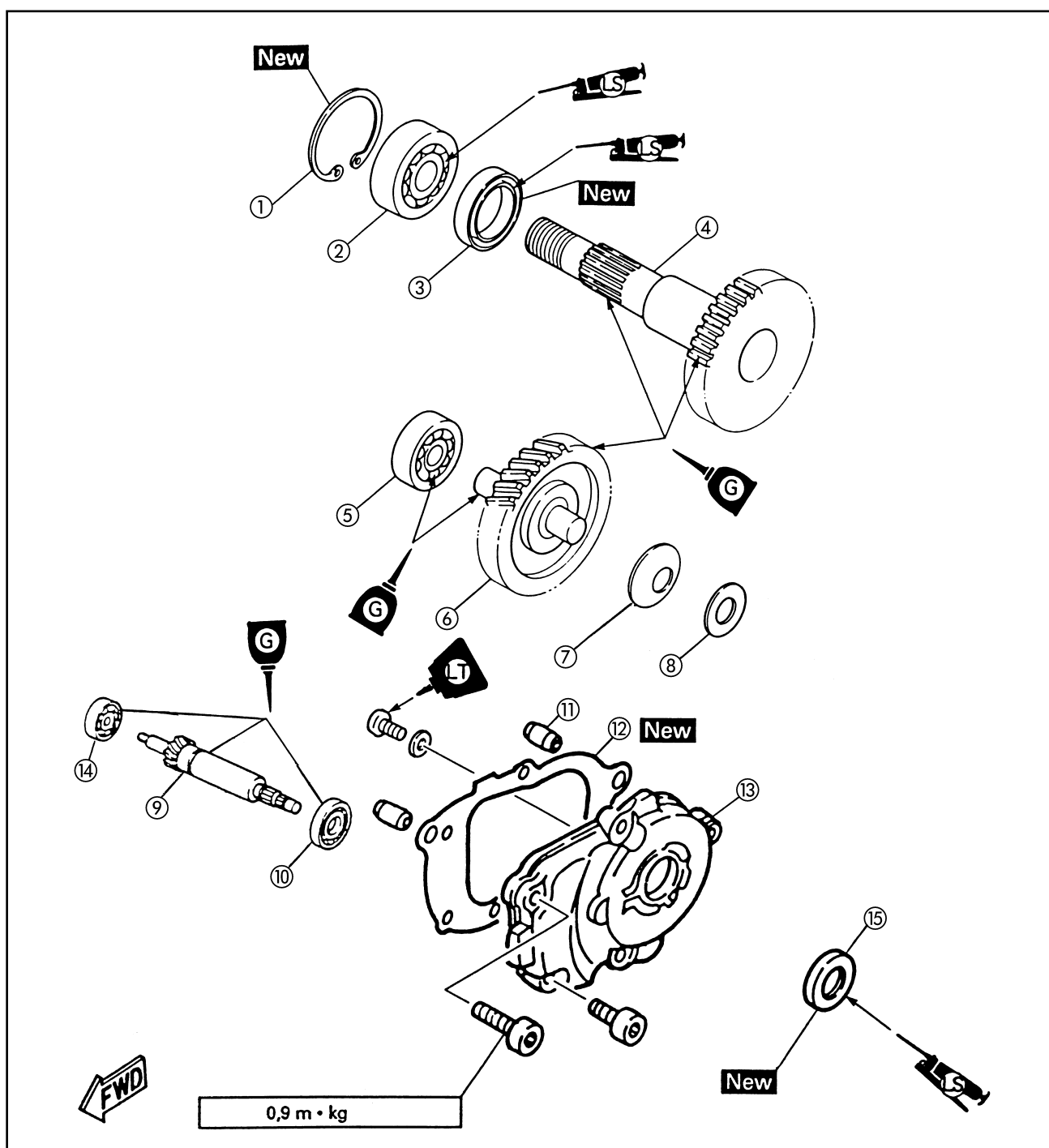
**Screw (stator assembly)**  
0.8 m • kg

5. Install:
  - Key
  - Magnetic wheel
  - Flat washer
  - Nut



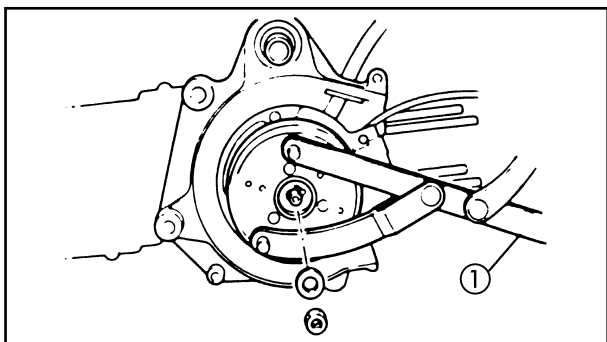
## TRANSMISSION

- |                         |                               |
|-------------------------|-------------------------------|
| ① Circlip               | ⑨ Secondary pulley wheel axle |
| ② Bearing               | ⑩ Bearing                     |
| ③ Oil seal              | ⑪ Centring device             |
| ④ Drive axle            | ⑫ Seal                        |
| ⑤ Bearing               | ⑬ Transmission box cover      |
| ⑥ Main axle             | ⑭ Bearing                     |
| ⑦ Conical spring washer | ⑮ Oil seal                    |
| ⑧ Flat washer           |                               |



## ASSEMBLY AND ADJUSTMENT OF ENGINE

**MOT**



6. Tighten:
  - Nut (flywheel magneto)
 Use the engine wheel support tool ①.

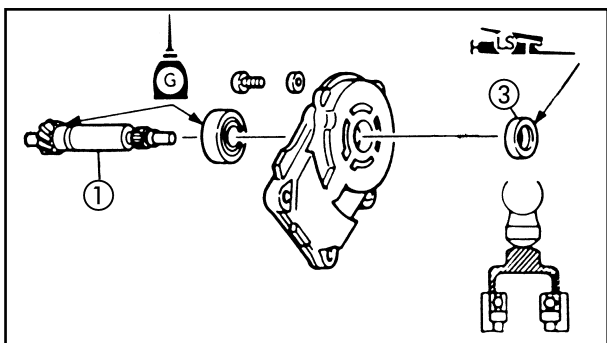


**Engine wheel support tool**  
90890-01235



**Flywheel nut**  
4.3 m • kg

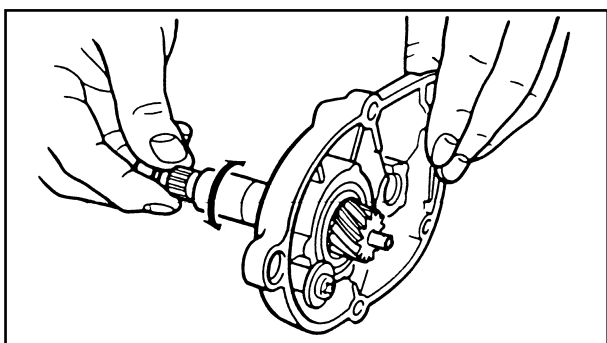
### TRANSMISSION



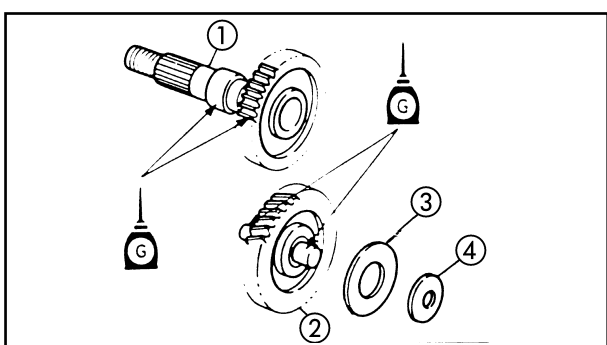
1. Apply:
  - SE engine oil type 10W30  
(on the transmission box cover bearing)
2. Install:
  - Secondary pulley wheel axle ①  
(on transmission box cover)
3. Install:
  - Circlip ②
  - Oil seal ③

### NOTE:

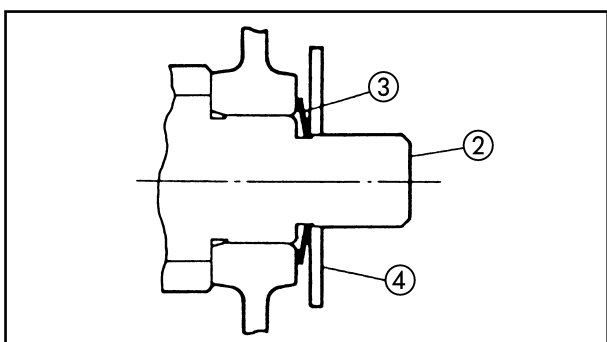
Apply grease with lithium soap based on the oil seal lips.



4. Check:
  - Rotation of secondary pulley wheel axle.  
Rough rotation → Repair.



5. Apply:
  - SE type 10W30 engine oil  
(on bearing of main axle and drive axle bearing)
6. Install:
  - Drive axle ①
  - Main axle ②
  - Conical spring washer ③
  - Flat washer ④



7. Install:
  - Gasket
  - Conical pins
  - Transmission box cover

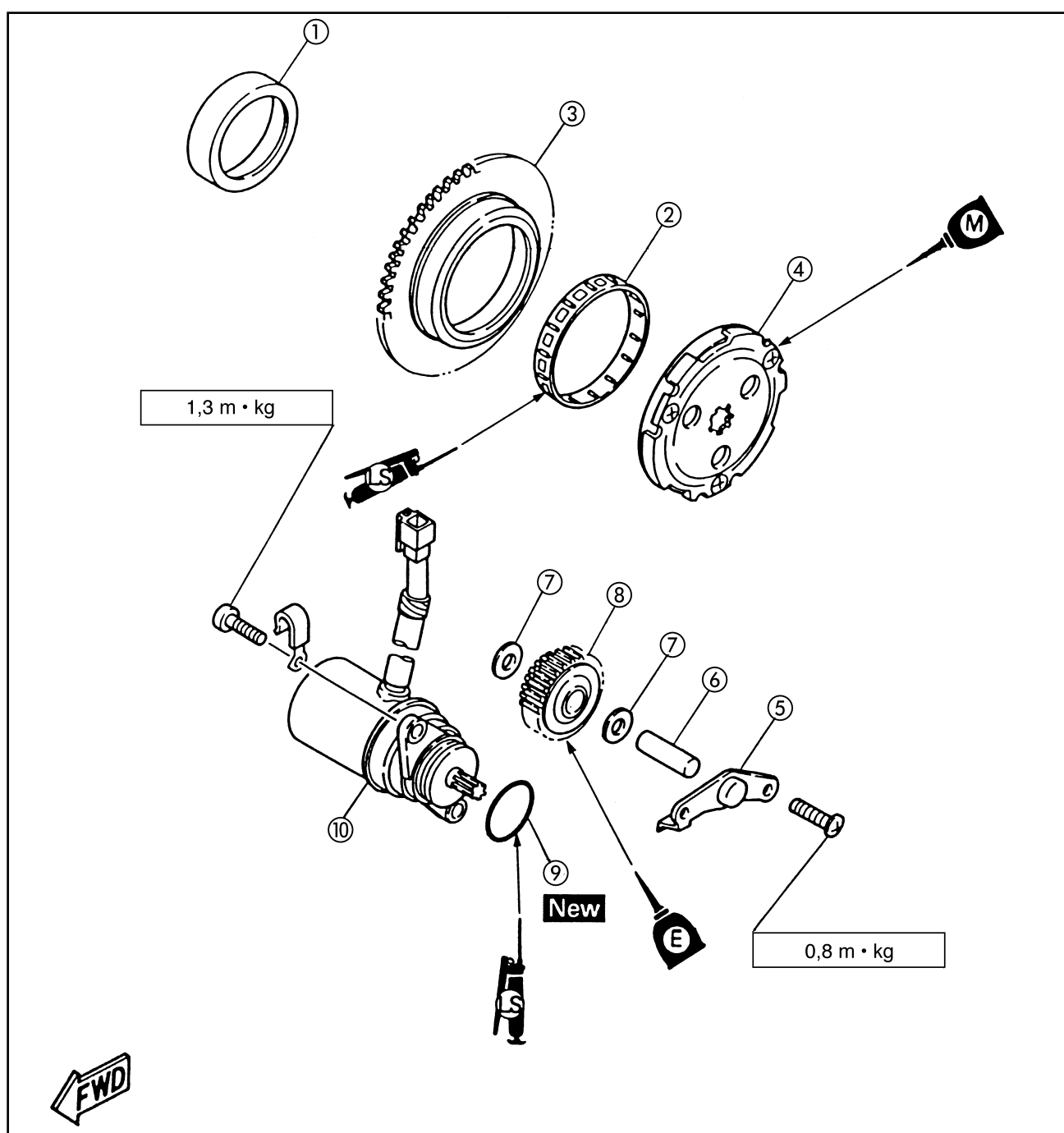


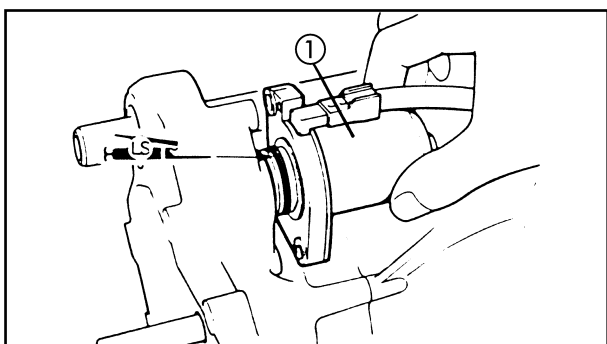
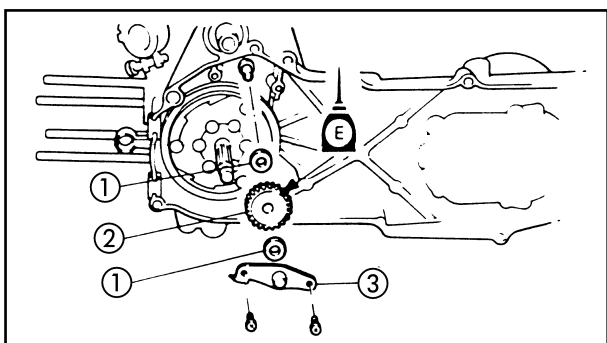
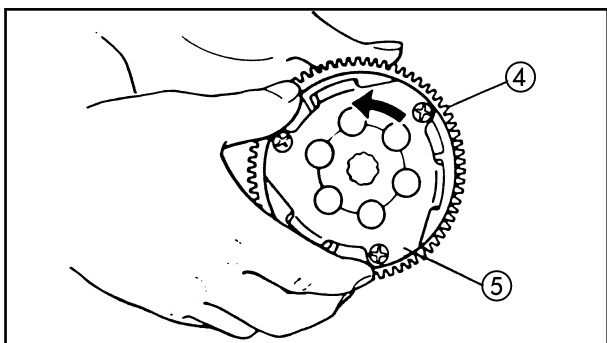
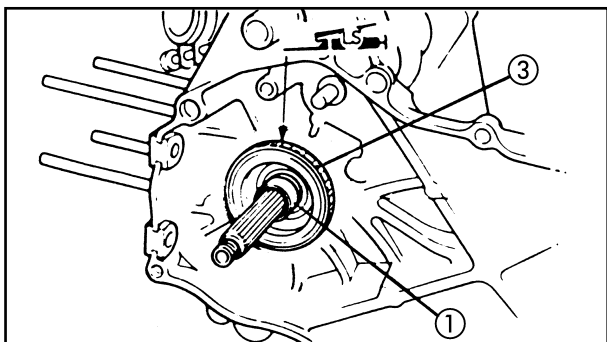
**Screw (box cover)**  
0.9 m • kg



## STARTER SYSTEM

- |                      |                     |
|----------------------|---------------------|
| ① Bushing            | ⑥ Axle              |
| ② Bearing            | ⑦ Flat washer       |
| ③ Starter wheel gear | ⑧ Intermediate gear |
| ④ Starter clutch     | ⑨ O-ring            |
| ⑤ Plate              | ⑩ Starter engine    |





## STARTER SYSTEM

### 1. Install:

- Bushing (1)
- Bearing (3)
- Starter wheel gear (4)
- Starter clutch (5)

### NOTE:

- Apply grease with a lithium soap base on the bearing (3).
- Apply molybdenum disulphide oil on the pin (starter clutch) (5).

### 2. Install:

- Flat washer (1)
- Intermediate gear (2)
- Flat washer (1)
- Plate (3) (intermediate gear)



**Screw (intermediate gear plate)**  
0,8 m • kg

### NOTE:

Apply engine oil on the intermediate gear (2).

### 3. Install:

- Starter motor (1)



**Starter motor bolts**  
1,3 m • kg

### NOTE:

Apply grease with a lithium soap base on the o-ring of the starter motor.



## SECONDARY AND PRIMARY PULLEY WHEEL

- |                 |                                  |                                |
|-----------------|----------------------------------|--------------------------------|
| ① Nut           | ⑨ Secondary sliding pulley wheel | ⑰ Shim                         |
| ② Clutch drum   | ⑩ Trapezoidal belt               | ⑱ Hub                          |
| ③ Clutch plate  | ⑪ Guide pin                      | ⑲ Sliding primary pulley wheel |
| ④ Shoe spring   | ⑫ Secondary fixed pulley wheel   | ⑳ Rollers                      |
| ⑤ Clutch spring | ⑬ Conical washer                 | ㉑ Runner                       |
| ⑥ Spring seat   | ⑭ One-way clutch                 | ㉒ Cam                          |
| ⑦ Oil seal      | ⑮ Washer                         | ㉓ Washer                       |
| ⑧ O-ring        | ⑯ Fixed primary pulley wheel     |                                |
- \*: Apply assembly lube

\*: Apply assembly lube

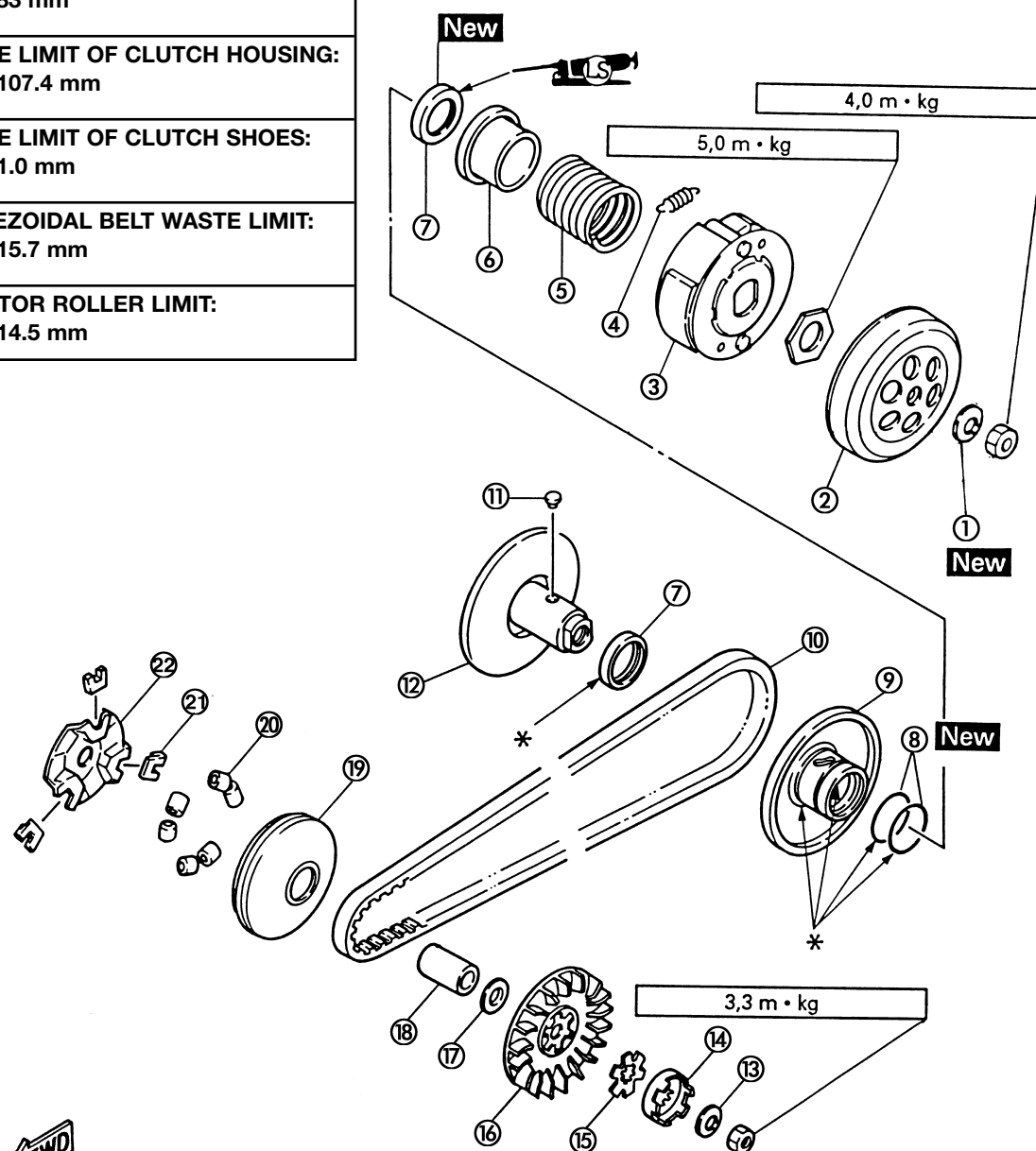
**FREE LENGTH LIMIT OF VARIATOR:**  
83 mm

**WASTE LIMIT OF CLUTCH HOUSING:**  
107.4 mm

**WASTE LIMIT OF CLUTCH SHOES:**  
1.0 mm

**TRAPEZOIDAL BELT WASTE LIMIT:**  
15.7 mm

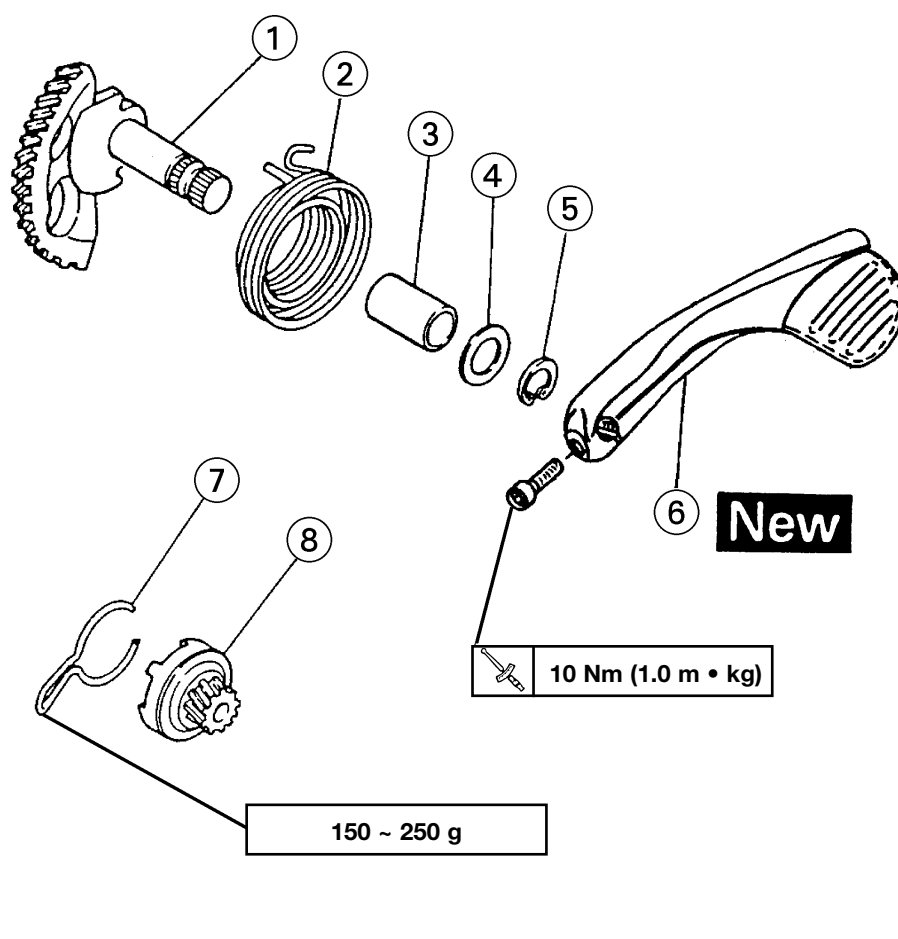
**VARIATOR ROLLER LIMIT:**  
**14.5 mm**

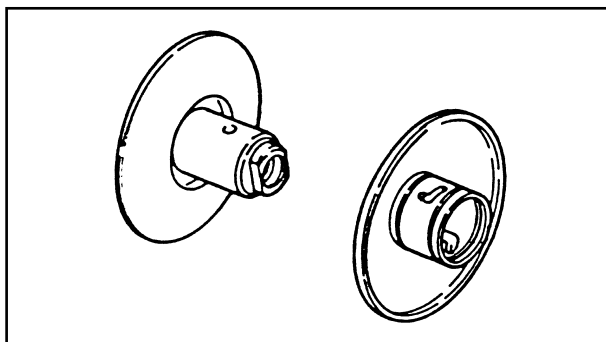




## KICKSTART PEDAL

- ① Pedal axle
- ② Return spring
- ③ Bushing
- ④ Flat washer
- ⑤ Elastic retainer
- ⑥ Starter pedal
- ⑦ Spring
- ⑧ Pedal pinion gear

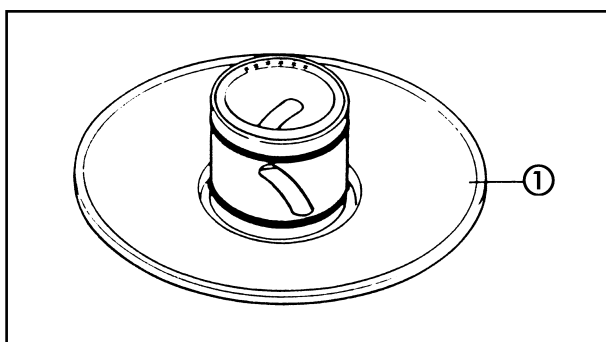




## SECONDARY PULLEY WHEEL

When assembling the secondary pulley wheel, reverse the disassembly procedure. Remember the following points:

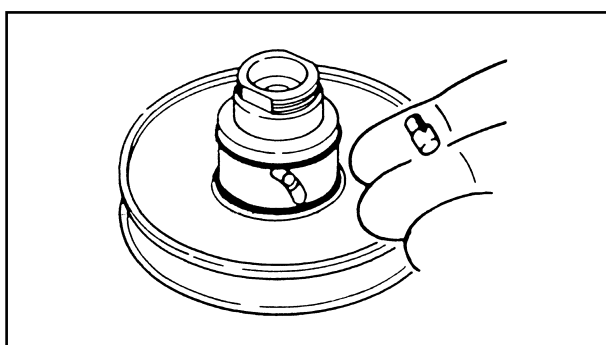
1. Apply:
  - Assembly grease  
(in the sliding/fixed pulley wheel)



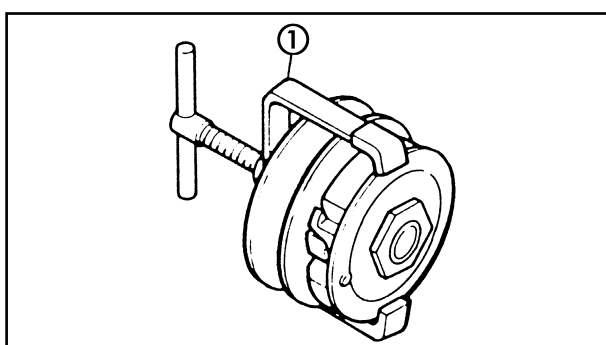
2. Install:
  - Sliding pulley wheel ①

### NOTE:

Take care that the lips of the oil seals do not turn when the pulley wheel is installed.



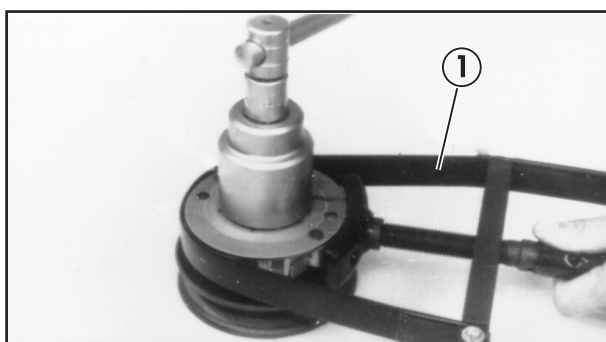
3. Apply:
  - Assembly grease  
(on the torsion cam grooves and o-rings)
4. Check:
  - Sliding pulley wheel.  
Faulty operation → Repair.



5. Install:
  - Clutch positioning bolt  
Use the clutch spring compressor ①



**Clutch spring compressor**  
90890-01337



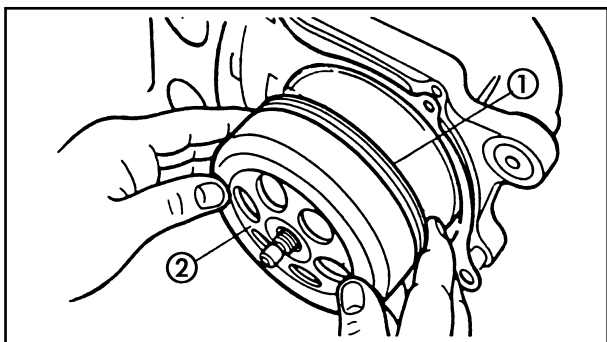
6. Tighten:
  - Clutch positioning nut  
Use the pulley wheel clamp ①  
Spanner (41 MM).



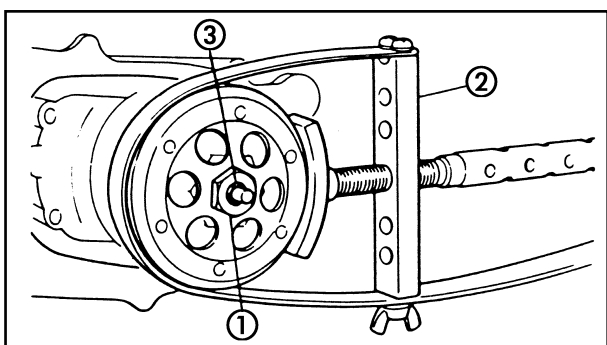
**Pulley wheel clamp**  
90890-01701



5.0 m • kg



7. Install:
  - Conical pin
  - Crankcase cover seal
  - Secondary pulley wheel assembly ①
  - Clutch drum ②



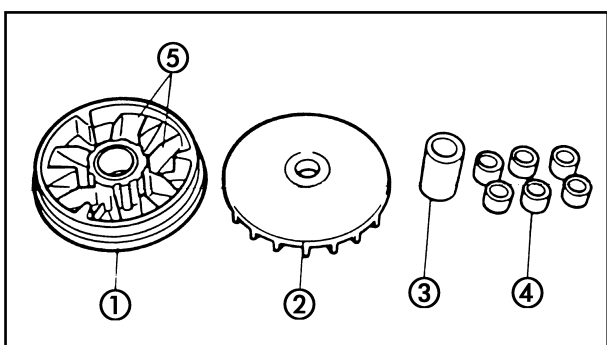
8. Tighten:
  - Nut ① (secondary pulley wheel)
  - Use the pulley wheel support ②



**Pulley wheel clamp**  
90890-01701



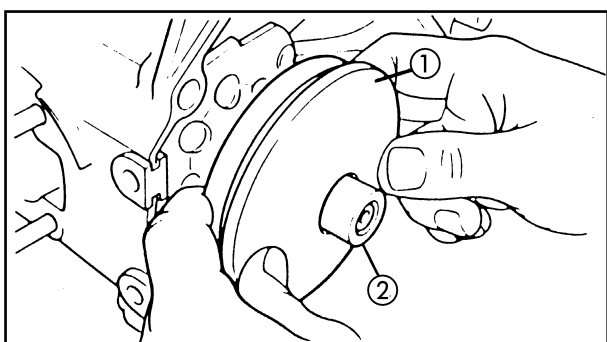
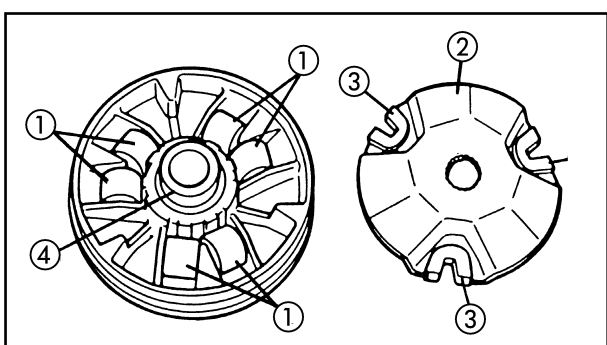
**Clutch drum nut**  
4.0 m • kg



9. Install
  - O-ring ③

## PRIMARY PULLEY WHEEL

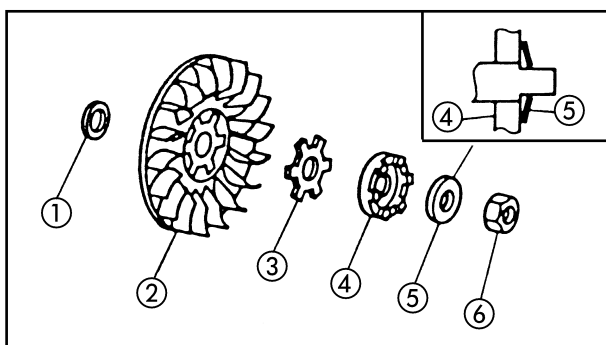
1. Clean:
  - Surface of primary sliding pulley wheel ①
  - Surface of primary fixed pulley wheel ②
  - Hubs ③
  - Rollers ④
  - Roller races ⑤
2. Install:
  - Counterbalance ①
  - Race ②
  - Runner ③
  - Hub ④
3. Check:
  - Operation of race Rough operation → Repair.



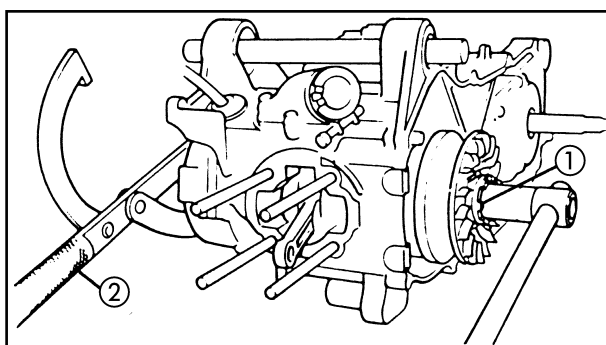
4. Install:
  - Primary pulley wheel assembly ①
  - Hub ②
5. Install:
  - Trapezoidal belt

## NOTE:

The trapezoidal belt should be installed with the arrow facing towards the front.



6. Install:
- Shim ①
  - Primary fixed pulley wheel ②
  - Washer ③
  - One-way clutch ④
  - Conical spring washer ⑤
  - Nut ⑥



7. Tighten:
- Nut ① (primary pulley wheel)



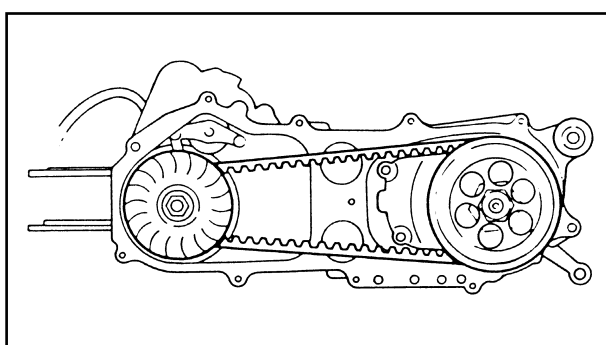
**Primary pulley wheel nut**  
3,3 m • kg

**NOTE:**

When the nut is tightened (primary pulley wheel), support the magnetic flywheel using the engine wheel support tool ②



**Engine wheel support tool**  
90890-01235

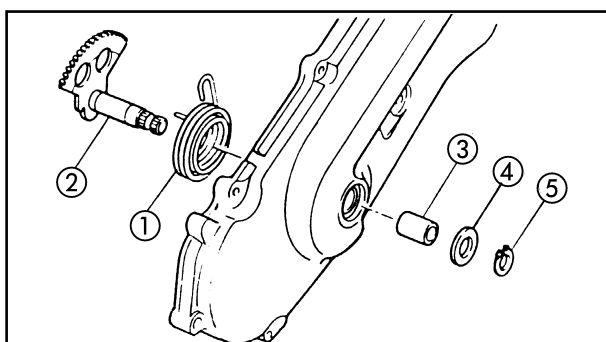


8. Adjust:
- Trapezoidal belt  
Tense the trapezoidal belt by turning the primary pulley wheel several times

9. Install:
- Fan



**Screw (fan)**  
0.7 m • kg

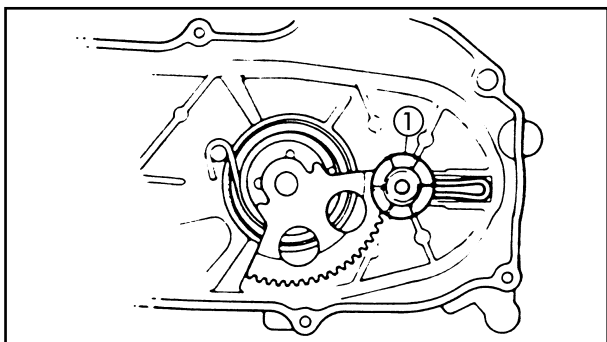


**KICKSTART PEDAL**

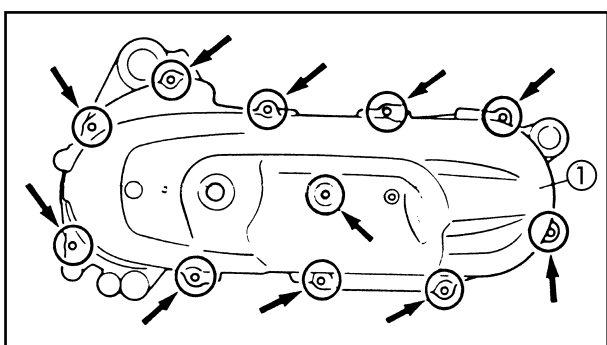
1. Install:
- Return spring ①
  - Pedal axle ②
  - Bushing ③
  - Flat washer ④
  - Elastic circlip ⑤

## ASSEMBLY AND ADJUSTMENT OF ENGINE

**MOT**



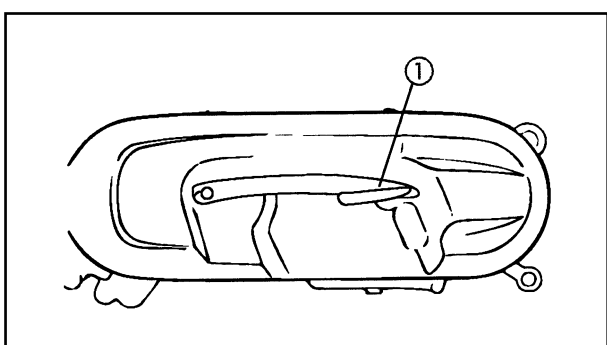
2. Hook on:
  - Return spring (on pedal gear and hub)
3. Install:
  - Pedal pinion gear ①



4. Install:
  - Crankcase cover ①



**Screw (crankcase cover)**  
7 Nm (0.7 m • kg)



5. Install:
  - Kickstart pedal ①



**Kickstart pedal**  
0.9 m • kg



## PISTON, CYLINDER AND CYLINDER HEAD

- |                        |                 |
|------------------------|-----------------|
| ① Carburettor gasket   | ⑦ Cylinder seal |
| ② Reed valve           | ⑧ Piston rings  |
| ③ Gasket               | ⑨ Piston        |
| ④ Cylinder head        | ⑩ Piston pin    |
| ⑤ Cylinder head gasket | ⑪ Circlips      |
| ⑥ Cylinder             | ⑫ Bearing       |

### CLEARANCE FROM PISTON TO CYLINDER:

0.034 ~ 0.047 mm  
Limit: 0.1 mm

### BETWEEN ENDS (INSTALLED):

Top ring  
0.15 ~ 0.35 mm  
Limit:  
0.60 mm  
Second ring  
0.15 ~ 0.35 mm  
Limit:  
0.60 mm

### LATERAL CLEARANCE:

Top ring  
0.03 ~ 0.05 mm  
Limit  
0.10 mm  
Second ring  
0.03 ~ 0.05 mm  
Limit  
0.10 mm

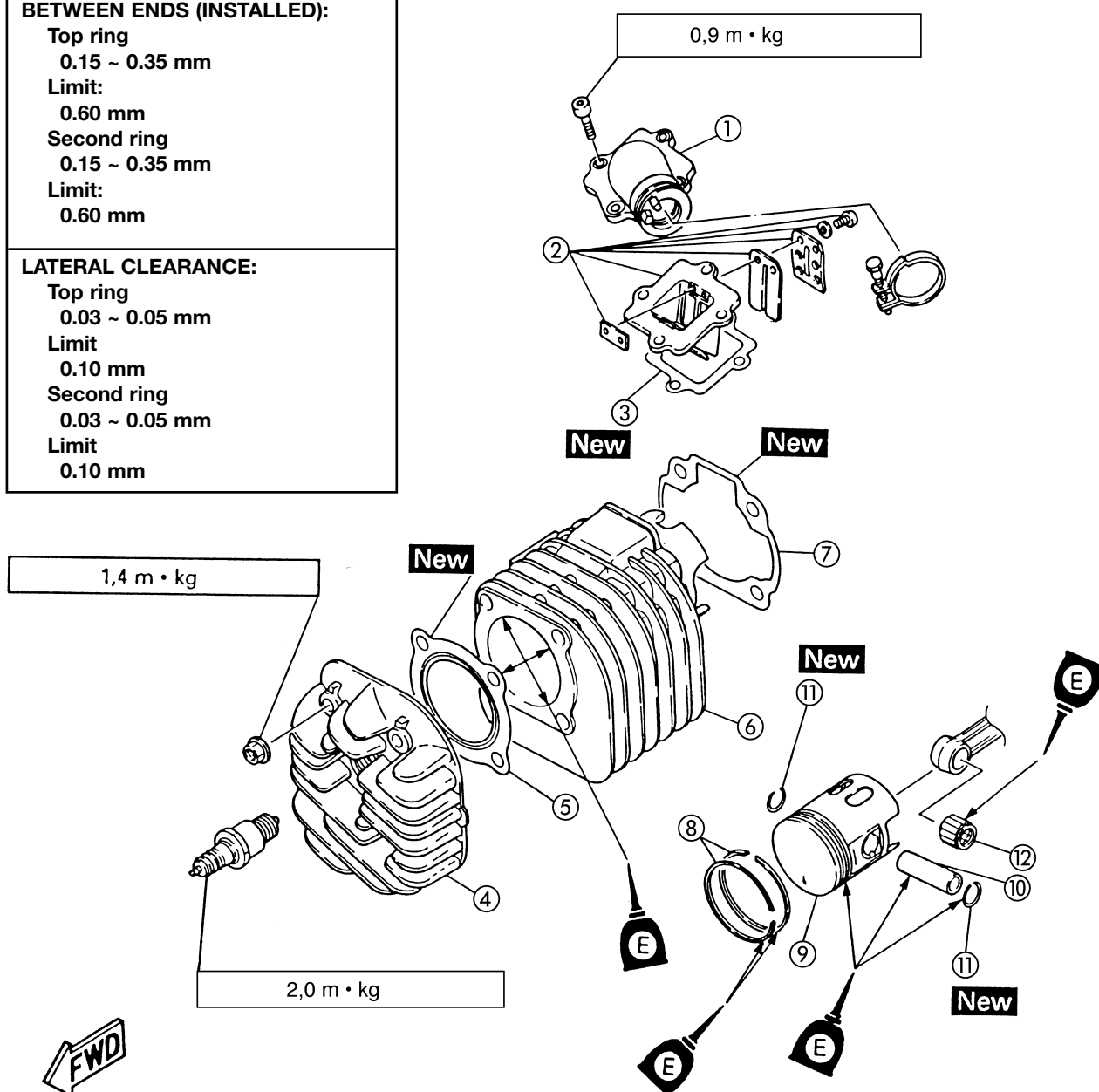
### SPARK PLUG

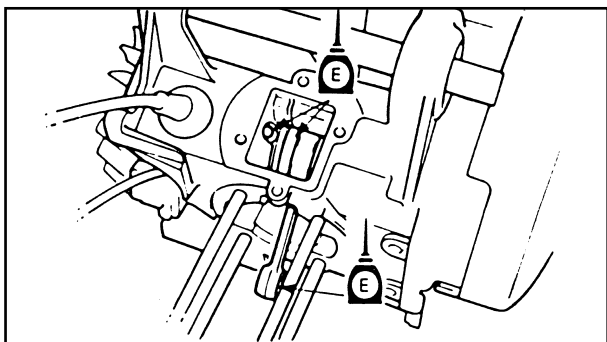
MANUFACTURER/TYPE:

NKG/BR7HS

GAP BETWEEN ELECTRODES

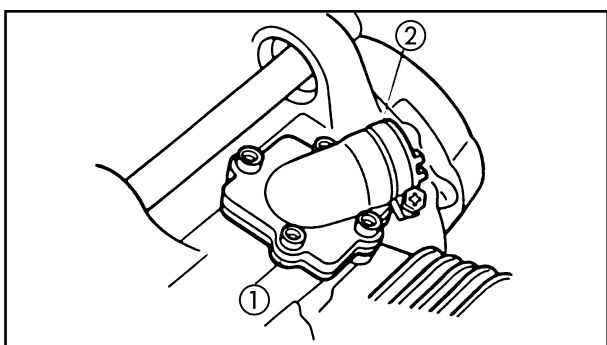
0.06 ~ 0.7 mm





## PISTON AND PISTON PIN

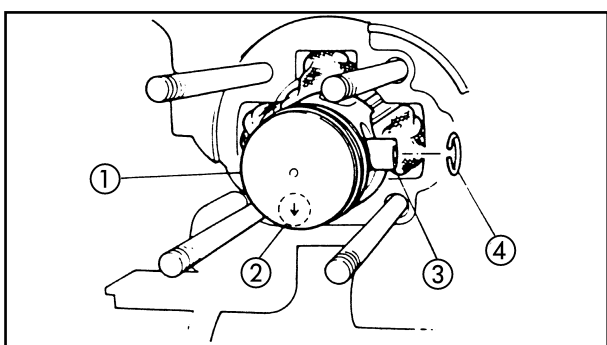
1. Apply:
  - Engine oil  
(in the crankshaft bearing, big end bearing, small end bearing, piston pin, piston ring grooves and piston skirt areas.)



2. Install:
  - Reed valve gasket
  - Reed valve ①
  - Carburettor gasket ②



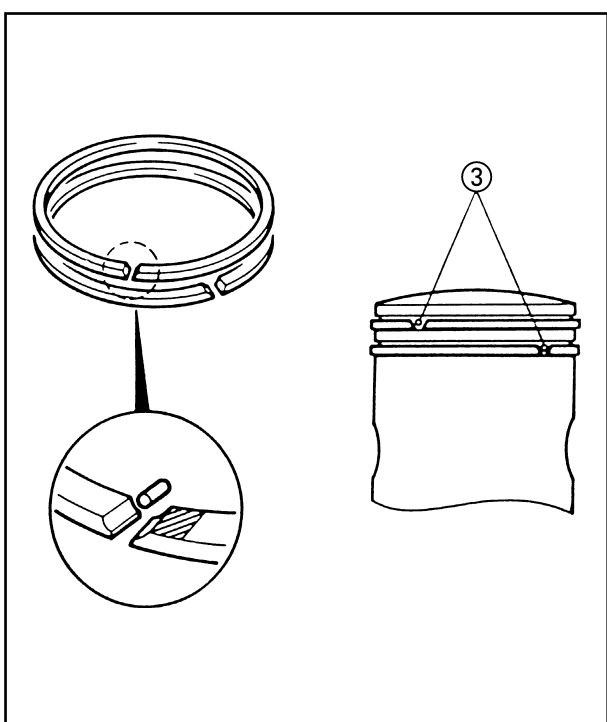
**Carburettor gasket**  
0.9 m • kg



3. Install:
  - Small end bearing
  - Piston ①
  - Piston pin ③
  - Piston circlips ④

## NOTE:

- The arrow ② of the piston should point to the exhaust side.
- Before installing the piston circlip, cover the crankcase with a towel or clean cloth so that the circlip and other materials do not accidentally fall into the crankcase.
- Always use new piston circlips.

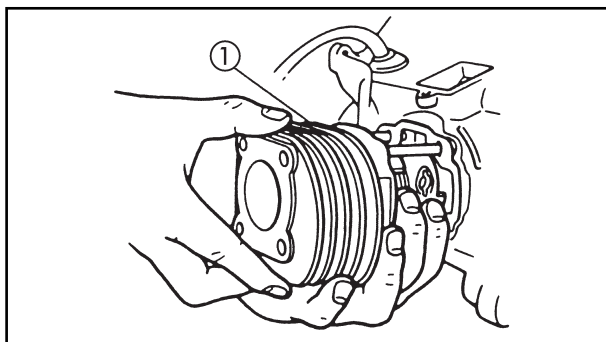


## CYLINDER AND CYLINDER HEAD

1. Install:
  - Cylinder gasket (Use a new gasket)
2. Check:
  - Piston rings

## NOTE:

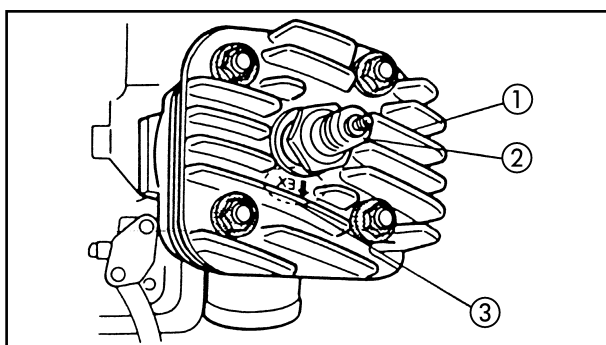
- Ensure that the ends of the rings are correctly coupled around the centring devices ③ on the piston grooves.
- Check that the manufacturers symbols or numbers printed on the rings are on the upper side of same.



3. Install:
- Cylinder ①

**NOTE:**

Install the cylinder with one hand while compressing the piston rings with the other.



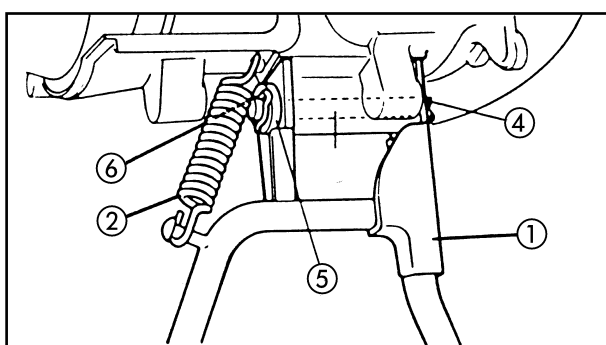
4. Install:
- Cylinder head gasket (new gasket)
5. Install:
- Cylinder head ①
  - Spark plug ②
  - Air protector

**NOTE:**

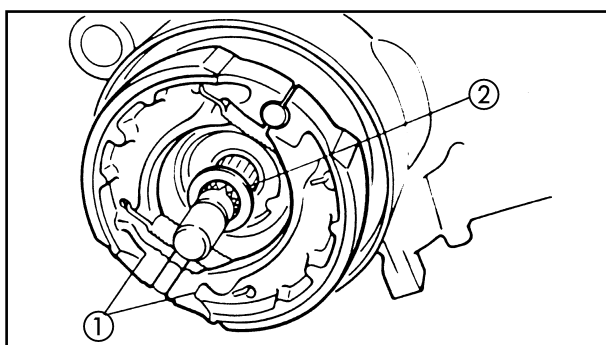
- The arrow ③ “EX” from the cylinder head should point to the exhaust side.
- Tighten the cylinder head positioning nuts in several steps, using a *cris-cross pattern*



**Cylinder head positioning screws**  
 1.4 m • kg  
 spark plug  
 2.0 m • kg



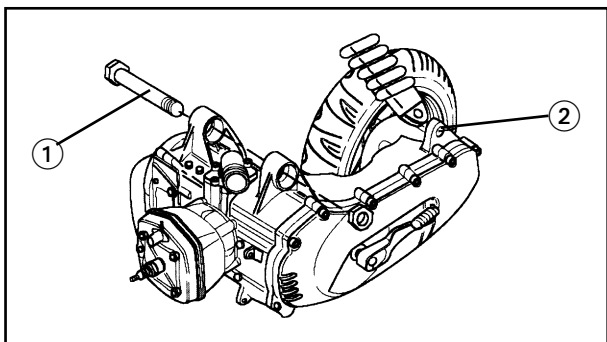
6. Install:
- Central stand ①
  - Spring ②
  - Axle ③
  - Clasp ④
  - Rubber washer ⑤
  - Strap loop ⑥



7. Install:
- Brake shoes ①
  - Flat washer ②
  - Rear wheel

## ASSEMBLY AND ADJUSTMENT OF ENGINE

MOT



### ASSEMBLY OF ENGINE

When the engine is being assembled, reverse the removal procedure

1. Install:

- Engine assembly bolt ①
- Rear shock absorber bolt ② (lower)



**Engine assembly bolt**

**8.4 m • kg**

**Rear shock absorber bolt (lower)**

**1.8 m • kg**

2. Install:

- Carburettor
- Oil supply pipe
- Fuel pipes
- Air filter box assembly

**NOTE:**

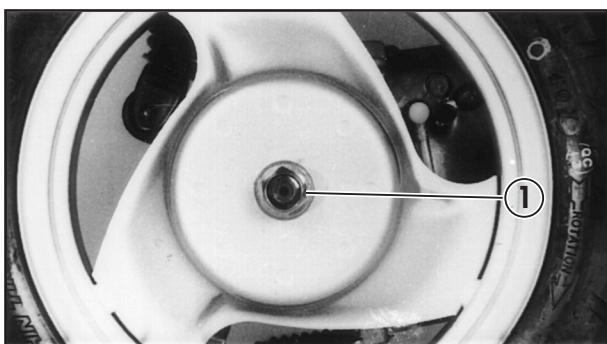
- Align the projection of the carburettor with the projections of the head
- Before installing the oil supply pipe, fill it with oil.

3. Install:

- Oil pipe
- Oil supply pipe

**NOTE:**

Pass the oil supply pipe and the oil pipe through as shown.



4. Bleed the air:

- Autolubrication pump  
Consult chapter 3, section – “BLEEDING OF AIR FROM THE AUTOLUBRICATION PUMP”.

5. Tighten:

- Rear wheel axle nut ①

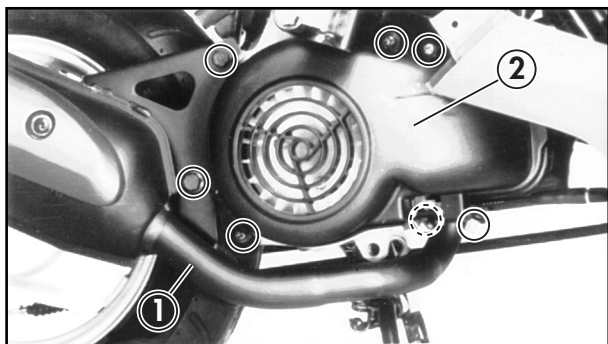
**NOTE:**

When the rear wheel axle nut is tightened, apply the rear brake.



**rear wheel axle bolt**

**12.5 m • kg**



6. Install:
- Silencer ①
  - Fan cover ②



**Bolt (silencer)**  
2.6 m • kg  
**Bolt (exhaust pipe)**  
0.9 m • kg

7. Apply:
- Transmission oil.  
See chapter 3 section - "CHANGING TRANSMISSION OIL".
8. Adjust:
- Free play of brake levers.  
See chapter 3, section - "ADJUSTMENT OF FREE PLAY OF FRONT/REAR BRAKE LEVER".
  - Free play of accelerator cable See section "ADJUSTMENT OF FREE PLAY OF ACCELERATOR CABLE".

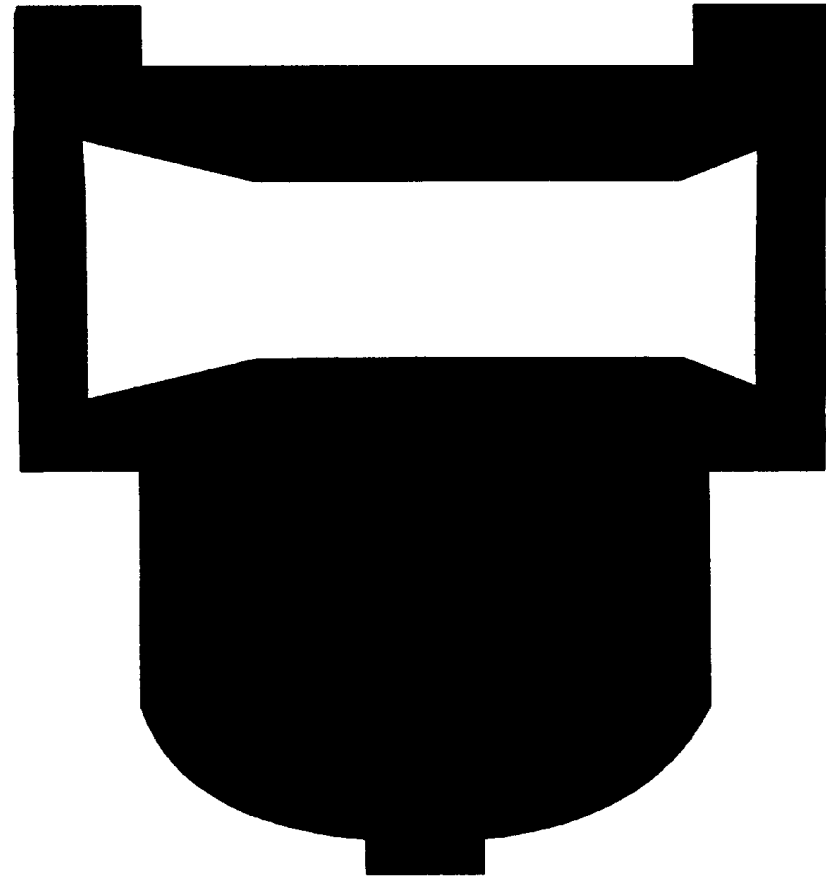
9. Install:
- Helmet carrier
  - Overflow bowl
  - Footrest
  - Rear bodywork
  - Rear cover
- Follow the reverse process to the removal procedure.

10. Install:
- Battery in its footrest housing

11. Connect:
- Battery cables

**Positive cable + to positive terminal + of battery**  
**Negative cable - to negative terminal - of battery**

12. Place:
- Front cover



**CARB**

**5**



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## CHAPTER 5 CARBURETOR

|                                    |     |
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| REMOVING THE CARBURETOR .....      | 5-2 |
| DISASSEMBLING THE CARBURETOR ..... | 5-2 |
| CHECKING THE CARBURETOR .....      | 5-3 |
| ASSEMBLING THE CARBURETOR .....    | 5-5 |
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| REMOVING THE REED VALVE .....      | 5-8 |
| CHECKING THE REED VALVE .....      | 5-8 |
| INSTALLING THE REED VALVE.....     | 5-9 |



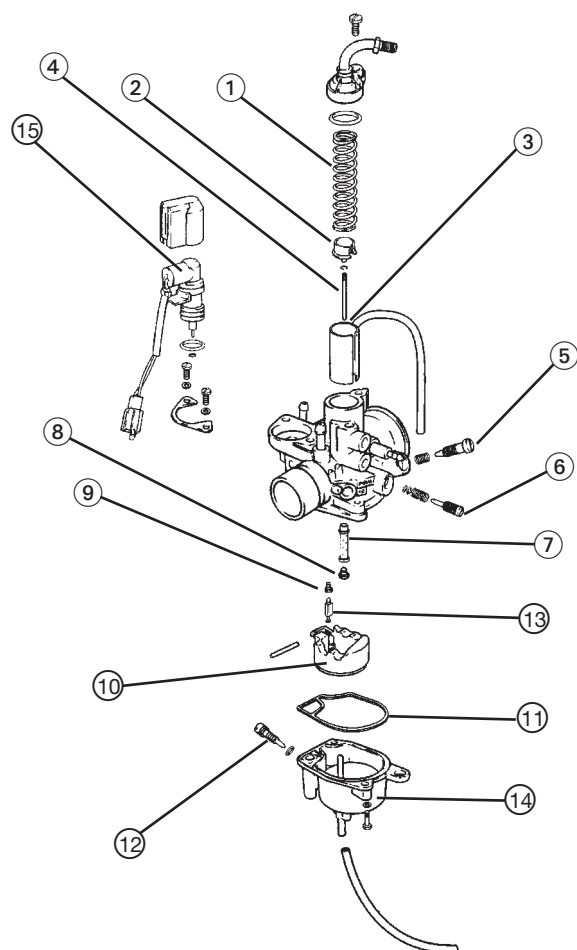
EAS00480

# CARBURETOR

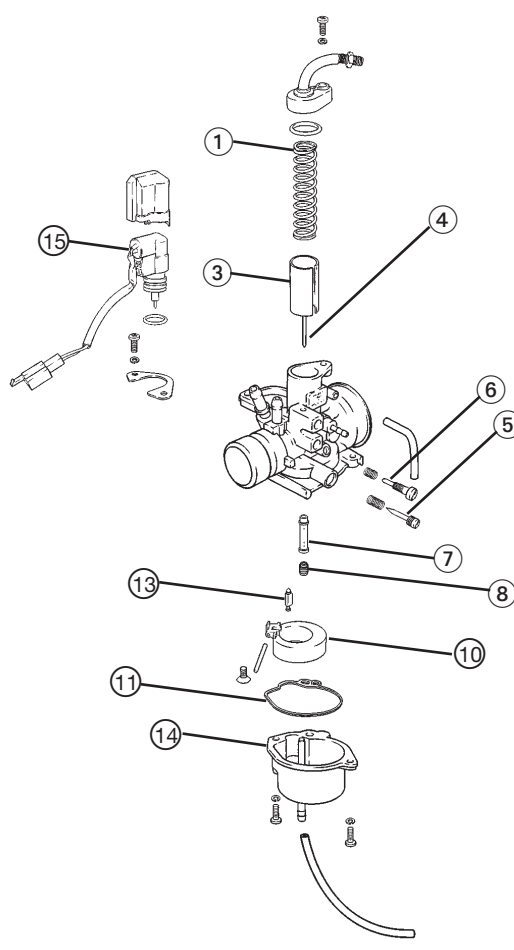
## CARBURETOR

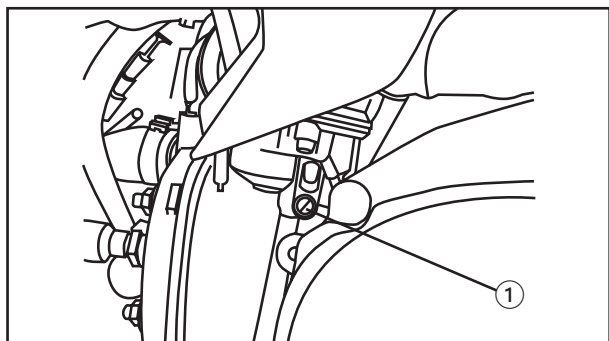
- |                         |                  |
|-------------------------|------------------|
| ① Throttle valve spring | ⑨ Pilot jet      |
| ② Spring catch          | ⑩ Float          |
| ③ Throttle valve        | ⑪ Float gasket   |
| ④ Jet needle            | ⑫ Drain screw    |
| ⑤ Pilot air screw       | ⑬ Needle valve   |
| ⑥ Throttle stop screw   | ⑭ Float chamber  |
| ⑦ Needle jet            | ⑮ Autochoke unit |
| ⑧ Main jet              |                  |

carburetor dell'orto



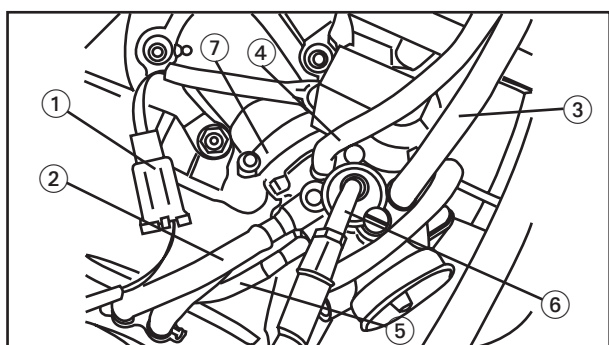
carburetor gurtner





### REMOVING THE CARBURETOR

1. Remove:
  - air filter box
  - helmet box
 Refer to "REAR BODYWORK, MUD-GUARD" in chapter 3
2. Drain:
  - fuel (from drain screw ①)

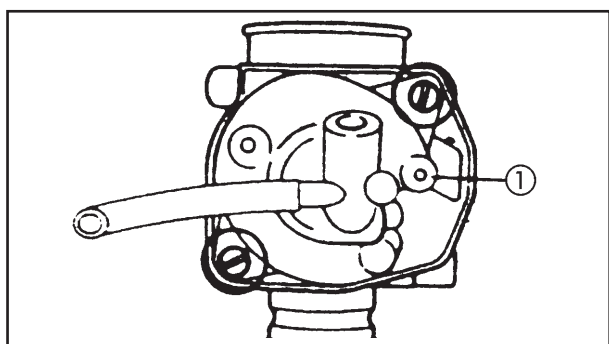


3. Disconnect:
  - autochoke lead coupler ①
  - fuel hose ②
  - vacuum hose ③
  - oil delivery hose ④
  - throttle cable (with throttle valve) ⑤
  - clamp (fixing clip) ⑥

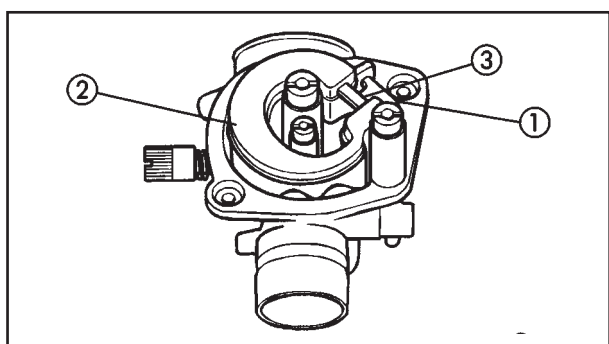
4. Remove:
  - carburetor

### DISASSEMBLING THE CARBURETOR

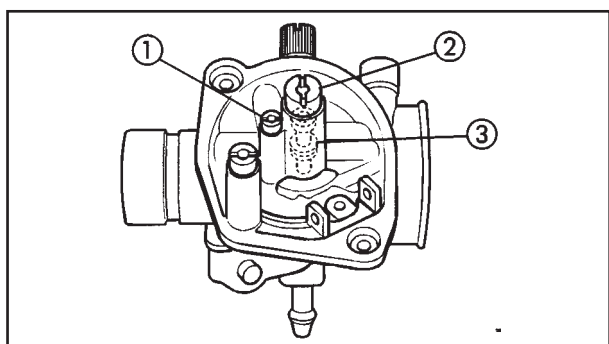
1. Remove:
  - float chamber ①



2. Remove:
  - float pin ①
  - float ②
  - needle valve ③

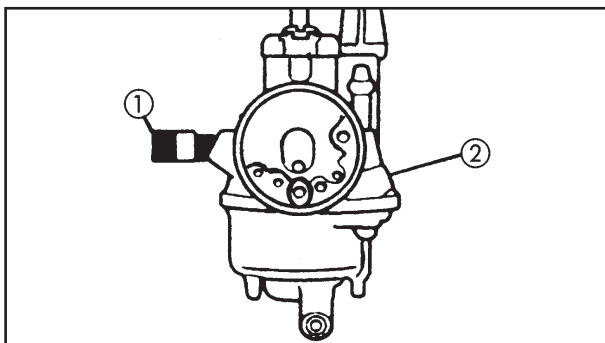


3. Remove:
  - pilot jet ①
  - main jet ②
  - needle jet ③

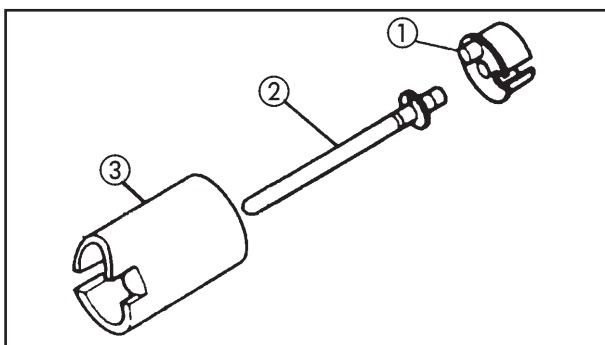


## CARBURETOR

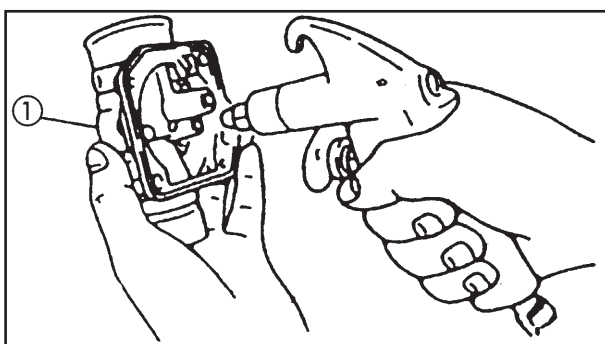
CARB



4. Remove:
- throttle stop screw ① (with spring, washer and o-ring)
  - pilot air screw ② (with spring)



5. Remove:
- spring seat ①
  - jet needle ②
  - throttle valve ③
  - throttle valve spring



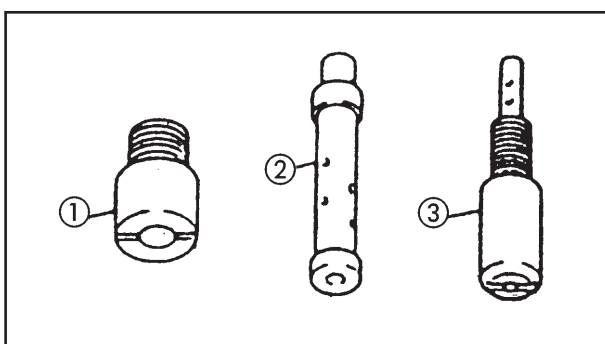
EAS00485

### CHECKING THE CARBURETOR

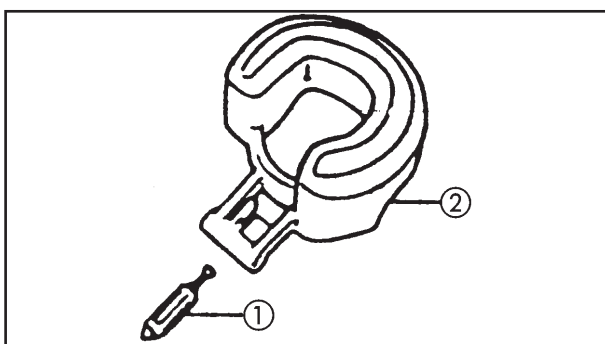
1. Check:
- carburetor body ①  
Dirty → Clean

#### NOTE:

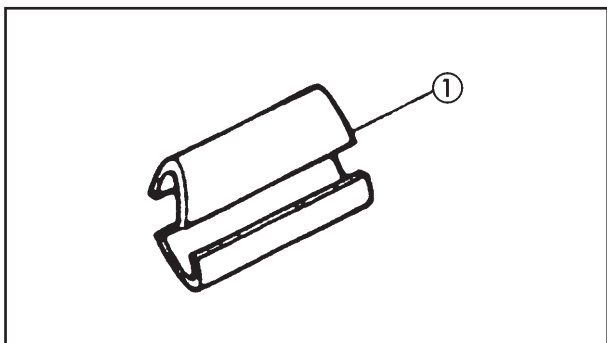
For cleaning, use a petrol based solvent. Clean the pipes and jets with compressed air



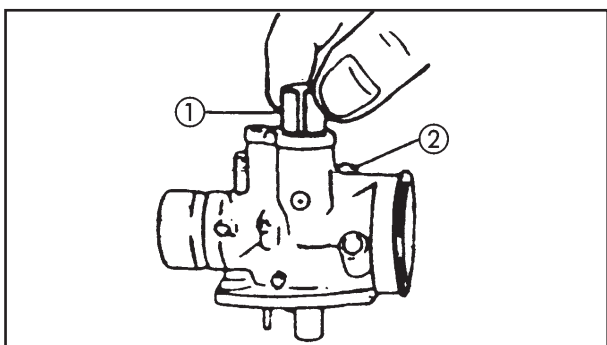
2. Check:
- main jet ①
  - needle jet ②
  - pilot jet ③  
Dirty → Clean



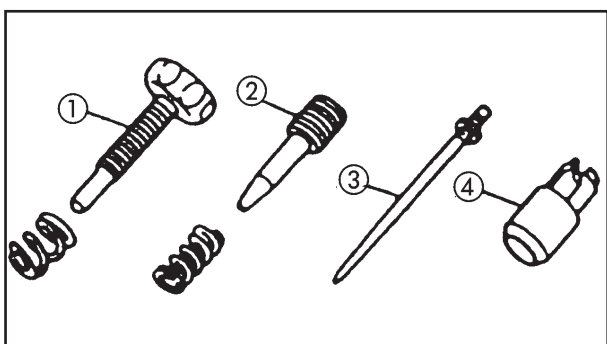
3. Check:
- needle valve ①  
Wear/Dirty → Clean
  - float ②  
Damage → Change
  - gasket Damage → Change



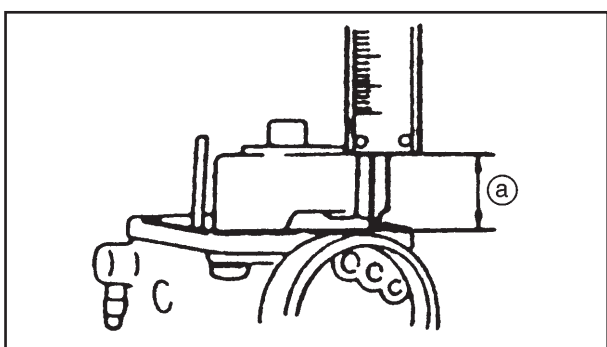
4. Check:
- throttle valve (1)  
Wear/Damage → Change



5. Check:
- throttle valve displacement  
Irregular movement/Catches → Change  
Insert the throttle valve (1) in the body (2) and check its displacement.



6. Check:
- throttle stop screw (1)
  - pilot air screw (2)
  - jet needle (3)
  - starter plunger (4)  
Wear/Damage → Change



7. Measure:
- Float height (a)  
Outside specifications → Check valve, float and valve seat



**Float height (a)**  
15.0 mm ~ 17.0 mm

### Steps for measuring the height of the float:

- Assemble the valve, float and axle on the carburetor body
- Turn the carburetor upside down
- Using a vernier caliper, measure the distance between the plane of the bowl gasket (without the gasket) and the upper part of the float.



### NOTE:

The arm of the float should be supported on the valve without compressing it.

- If the height of the float is not within the specified limits, inspect the valve and its seat.
- Substitute both parts if any part of them is worn.
- If both are in good condition, replace the float.
- Check the height of the float again.

### NOTE:

The height of the float is adjusted in the factory. Do not try to modify it under any circumstances.

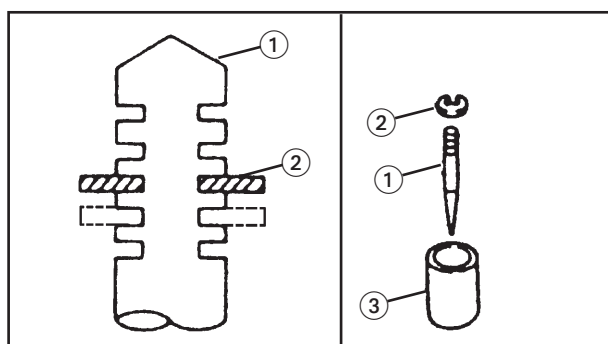
EAS00487

## ASSEMBLING THE CARBURETOR

The assembly of the carburetor is carried out following the reverse procedure to "DISASSEMBLY". Bear in mind the following points:

### CAUTION:

- Before assembling the carburetor, wash all of the parts in a petroleum-based solvent.
- Always use new gaskets.



### 1. Install:

- jet needle ①
- clip ②
- throttle valve ③
- spring seat
- spring



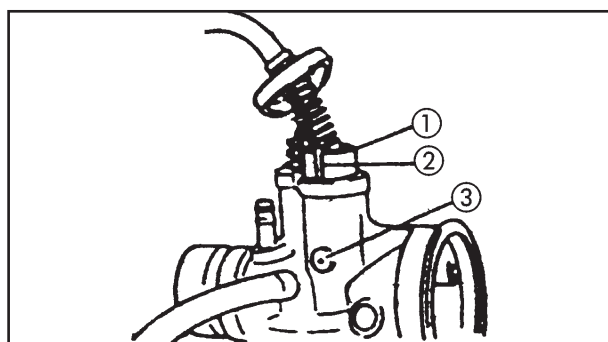
**Jet needle clip position:**  
 3/5 (Dell'orto)  
 2/3 (Gurtner)  
 1/3 (Mofa Version)

### 2. Install:

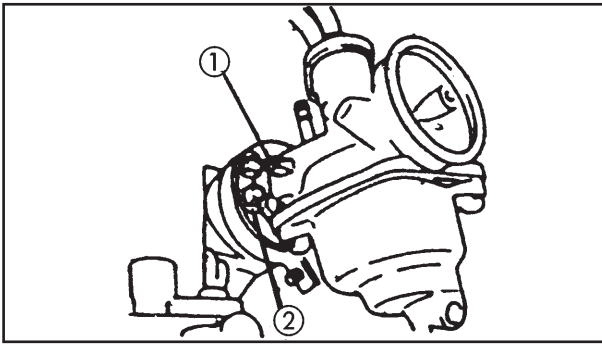
- throttle valve ①

### NOTE:

Align the groove ② with the carburetor projection ③.







EAS00492

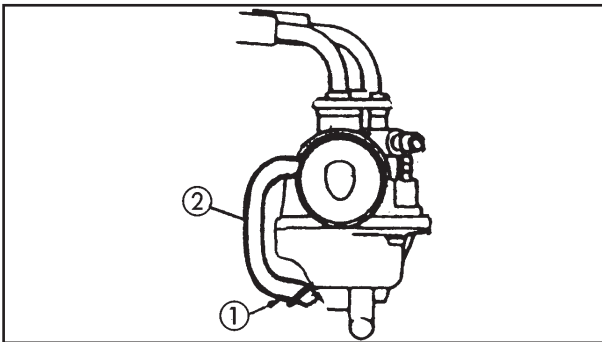
### INSTALLING THE CARBURETOR

1. Adjust:
  - engine idling speed



**Engine idling speed**  
**1.800 rpm**

Refer to “ADJUSTING HE ENGINE IDLING SPEED” in chapter 3.

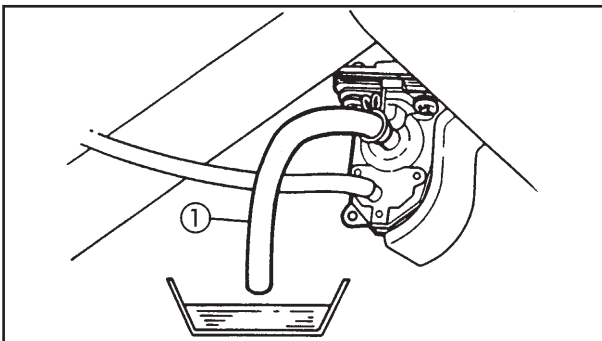


2. Adjust:
  - throttle cable free play



**Throttle cable free play (at the flange of the throttle grip)**  
**2 ~ 5 mm**

Refer to “ADJUSTING HE ENGINE IDLING SPEED” in chapter 3.



EAS00505

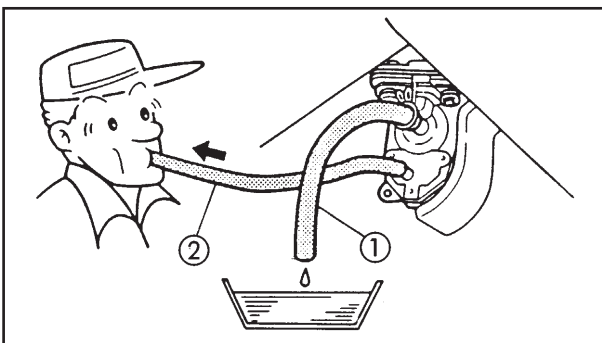
### FUEL COCK

#### CHECKING THE FUEL COCK

1. Stop the engine.
2. Remove:
  - helmet box
 Refer to chapter 3, “REAR BODYWORK, MUDGUARD” section.
3. Inspect:
  - fuel cock

#### Steps for inspecting fuel cock:

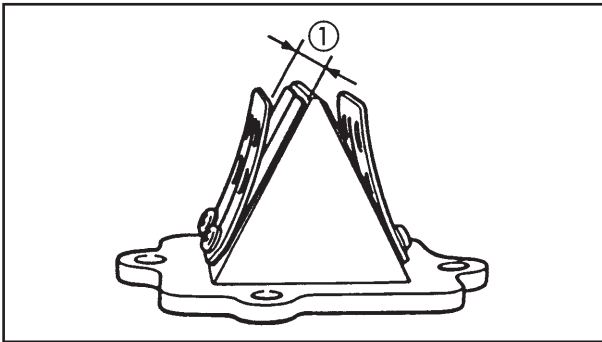
- Disconnect the fuel hose ①
- Place a receptacle under the end of the fuel hose.
- Disconnect the vacuum hose ② and suction to create a vacuum
- If the fuel comes out of the fuel hose as a result of applying a vacuum and stops when the vacuum is stopped, the cock is in good condition. If not, clean or replace the vacuum hose, the fuel hose and cock.





## REED VALVE

CARB

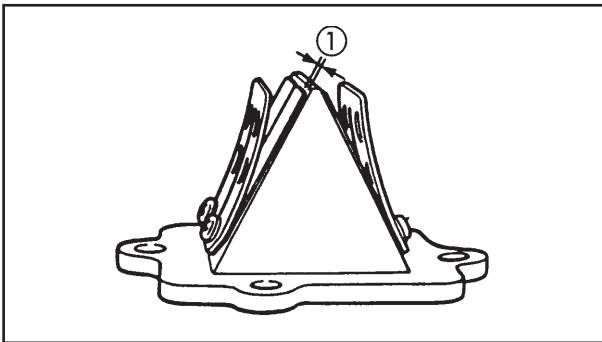


2. Measure:

- valve stopper height ①  
Out of specification → Adjust the stopper/Replace the valve stopper.



**Height of valve stopper ①**  
6.0 ~ 6.4 mm



3. Measure:

- clearance of reed valve ①  
Out of specification → Replace the reed valve.



**Clearance of reed valve ①**  
Less than 0.2 mm

### INSTALLING THE REED VALVE

When the reed valve assembly is installed, reverse the removal procedure. Bear in mind the following points.

1. Install:

- gasket **New**

2. Tighten:

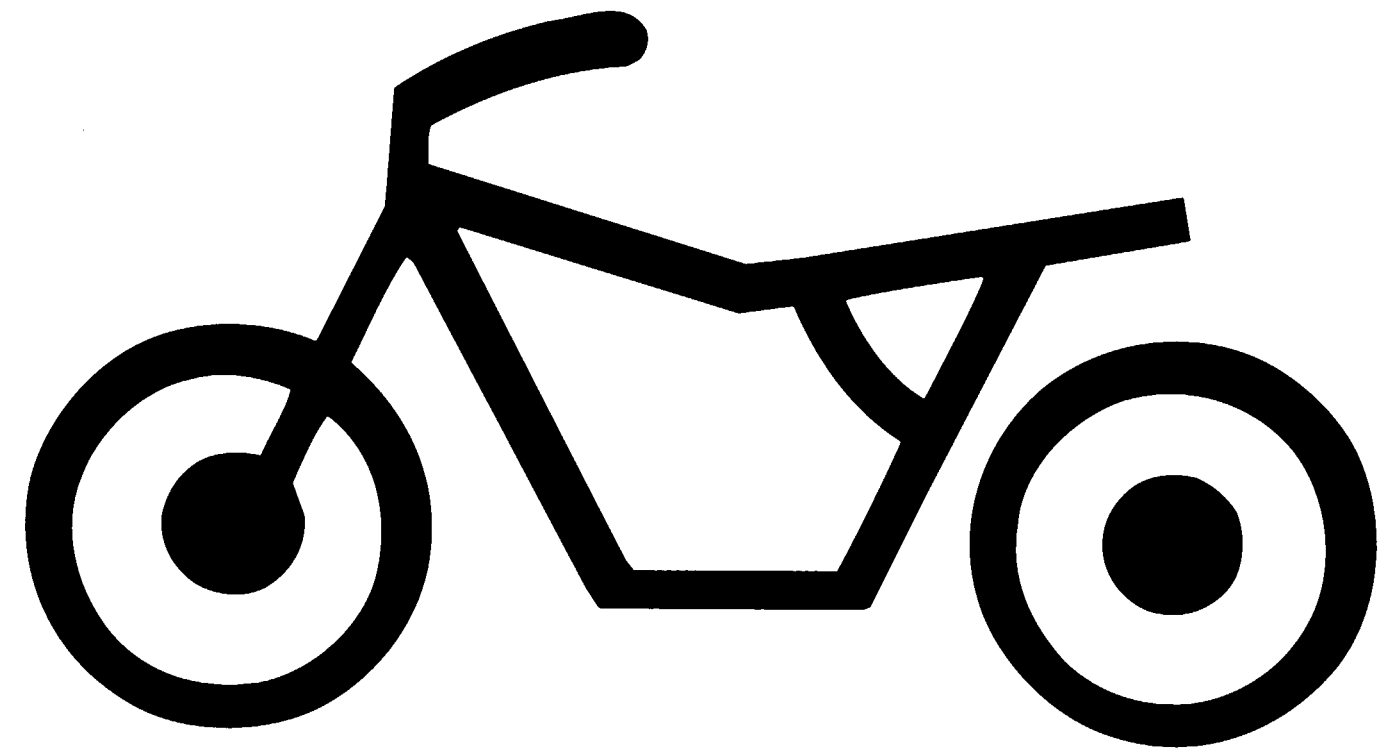
- tighten the bolts for reed valve



**Reed valve**  
11 Nm (1.1 m • kg)

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

Tighten each bolt gradually to avoid it being deformed.



**CHAS**

**6**



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## CHAPTER 6

### CHASSIS

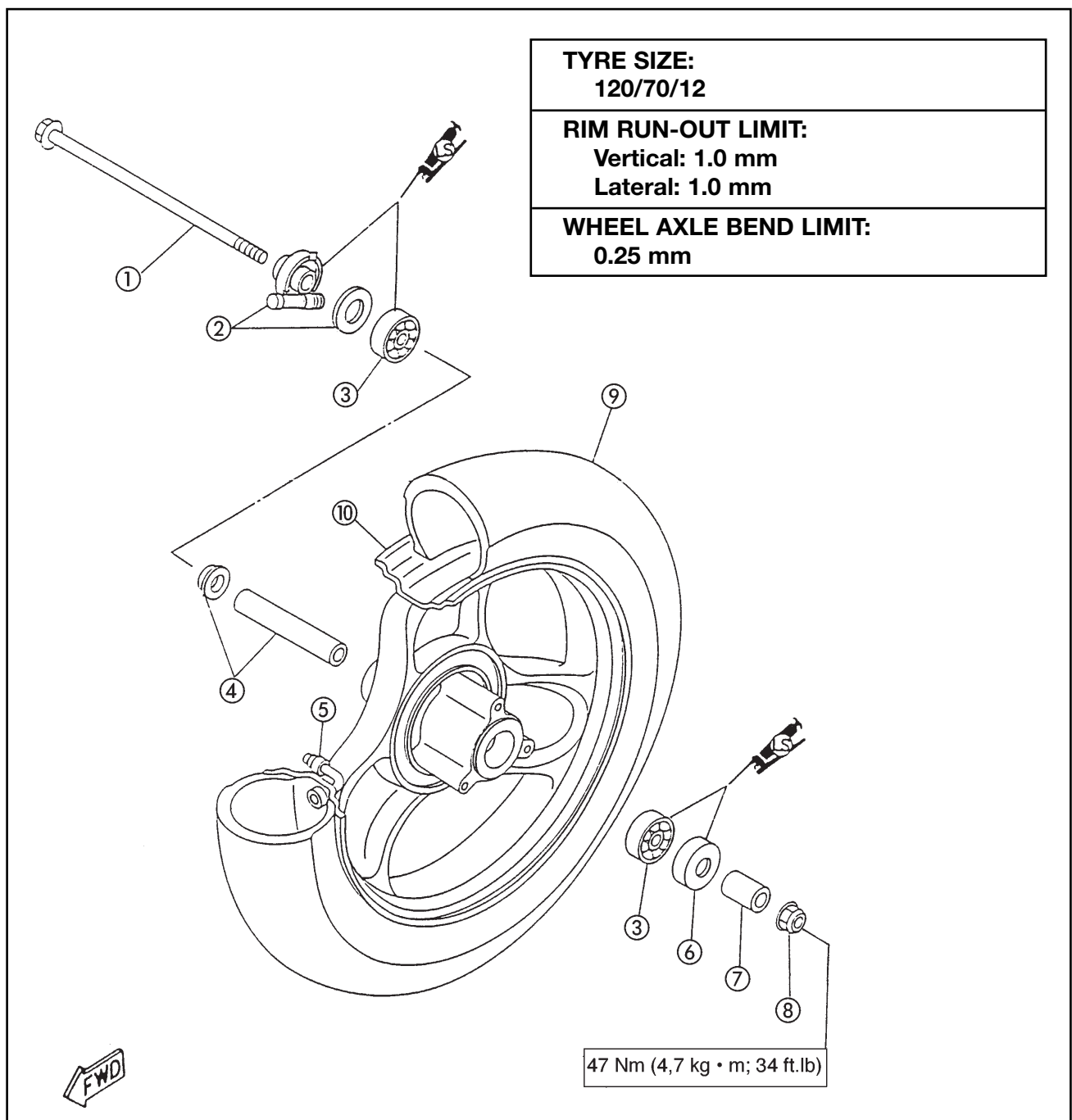
|                                     |      |
|-------------------------------------|------|
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| INSTALLATION .....                  | 6-3  |
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| ASSEMBLY OF PUMP .....              | 6-8  |
| <br>                                |      |
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| <br>                                |      |
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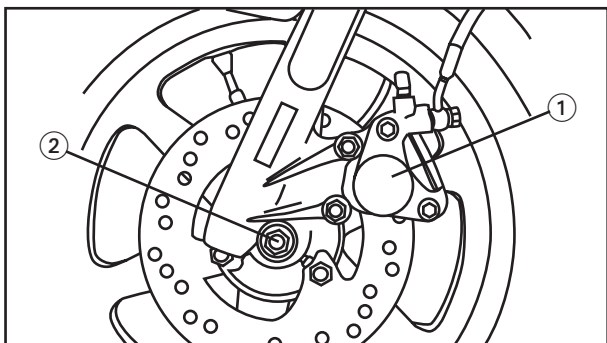


## CHASSIS

### FRONT WHEEL

- |                         |            |
|-------------------------|------------|
| ① Wheel axle            | ⑦ Tyre     |
| ② Speedometer gear unit | ⑧ Oil seal |
| ③ Bearing               | ⑨ Spacer   |
| ④ Spacer                | ⑩ Nut      |
| ⑤ Hub                   | ⑪ Washer   |
| ⑥ Rim assembly          |            |



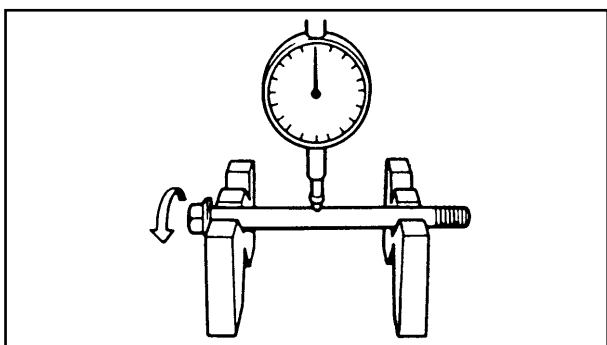


### REMOVAL

1. Remove:
  - brake caliper ①
  - Axle ②
  - Wheel

### NOTE:

Do not press the brake lever when the wheel is removed from the scooter, otherwise the brake blocks will be closed under force.



### INSPECTION

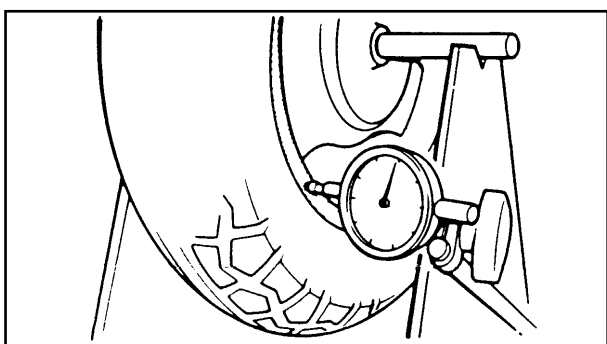
1. Measure:
  - Bend of wheel axle
 Outside specified value → Change



**Bend limit of wheel axle**  
0.25 mm

### ⚠ WARNING

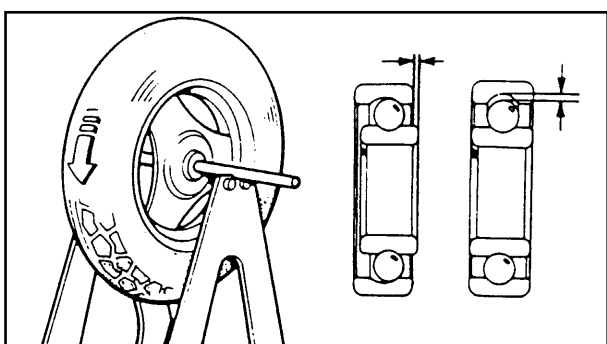
**Do not try to straighten a bent axle**



2. Measure:
  - Run out of wheel
 Outside specified value → Change



**Run-out limit:**  
**Vertical: 1.0 mm**  
**Lateral: 1.0 mm**



3. Inspect:
  - Wheel Cracks/Marked/Deformed → Change
4. Inspect:
  - Wheel bearings
 Bearings allow play on the wheel hub or the wheel turns abruptly → Change
5. Inspect:
  - Speedometer gear unit ①
 Wear/Damage → Change



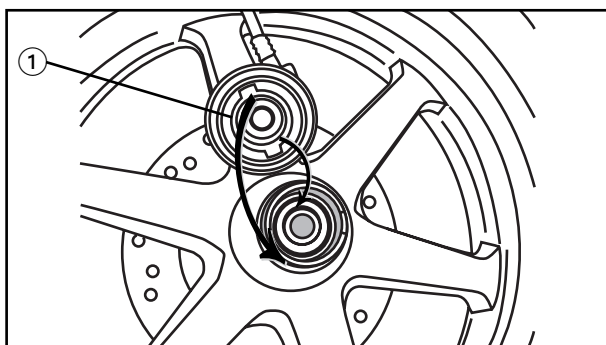
### INSTALLATION

Reverse the removal process. Bear in mind the following points.

1. Lubricate:
  - Front wheel axle
  - Bearings
  - Oil seal (edges)
  - Drive gear (speedometer)



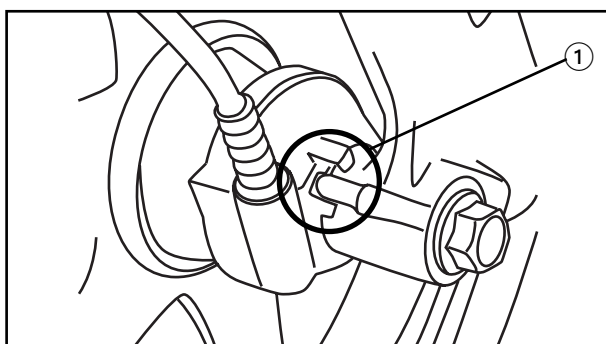
**Recommended lubricant:**  
Grease with lithium soap base



2. Install:
  - Speedometer gear unit ①

### NOTE:

Ensure that the two projections in the gear unit are engaging with the flat surface of the gear unit.



3. Install:
  - Front wheel

### NOTE:

Ensure that the projection (torsion stopper) ① of the casing of the gear unit is correctly positioned.

4. Tighten:
  - Front wheel axle:



**Front wheel axle:**  
4.8 m • kg



### WARNING:

Ensure that the brake pipe is correctly positioned.



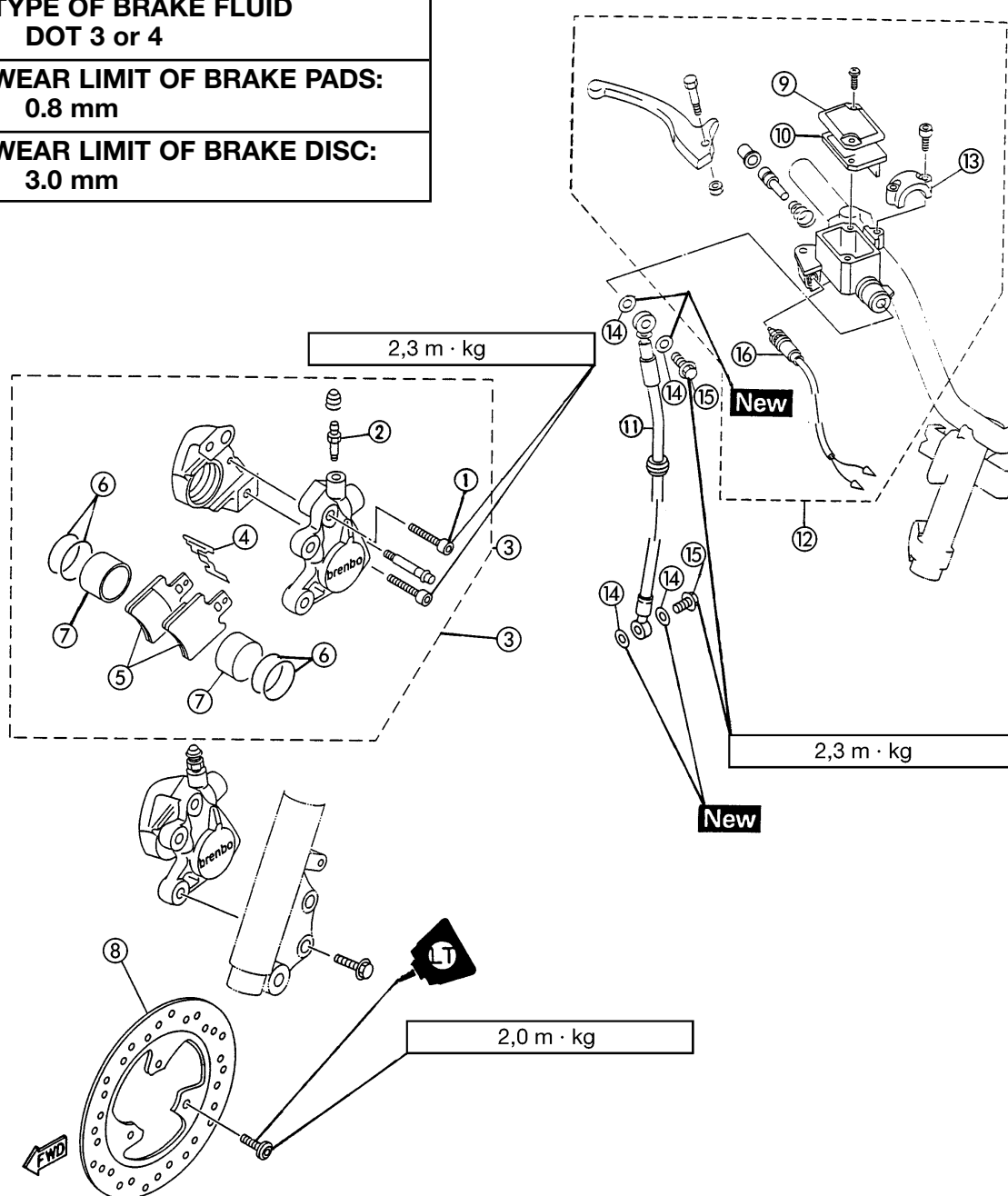
## FRONT BRAKE

- |                     |                            |
|---------------------|----------------------------|
| ① Retaining bolt    | ⑨ Master cylinder cap      |
| ② Bleed screw       | ⑩ Diaphragm                |
| ③ Calliper assembly | ⑪ Hose                     |
| ④ Block spring      | ⑫ Brake pump assembly      |
| ⑤ Pad set           | ⑬ Assembly plate           |
| ⑥ Piston seal       | ⑭ Copper washer            |
| ⑦ Piston            | ⑮ Assembly bolt            |
| ⑧ Brake disc        | ⑯ Brake light switch cable |

**TYPE OF BRAKE FLUID**  
DOT 3 or 4

**WEAR LIMIT OF BRAKE PADS:**  
0.8 mm

**WEAR LIMIT OF BRAKE DISC:**  
3.0 mm



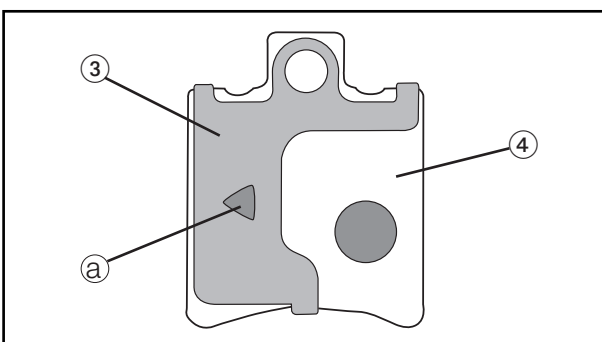
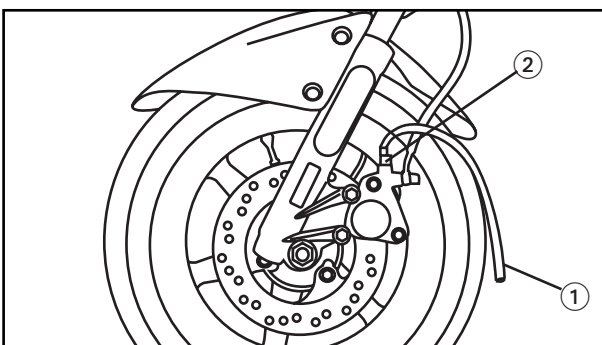
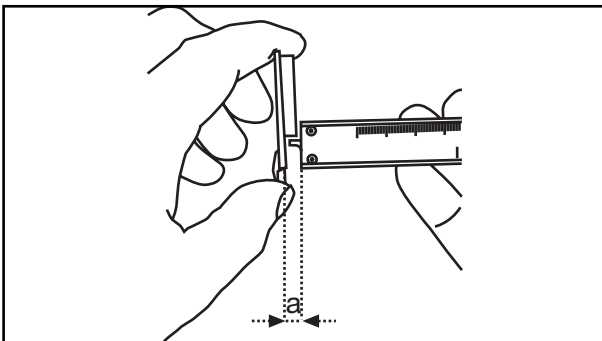
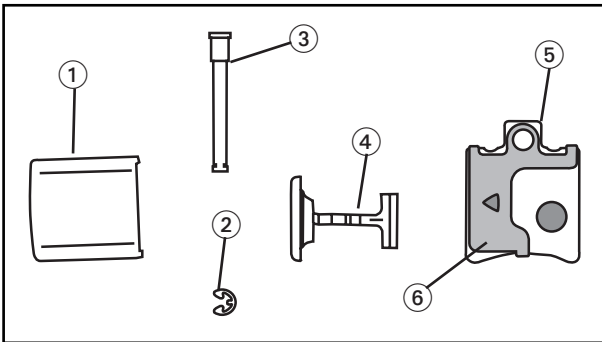
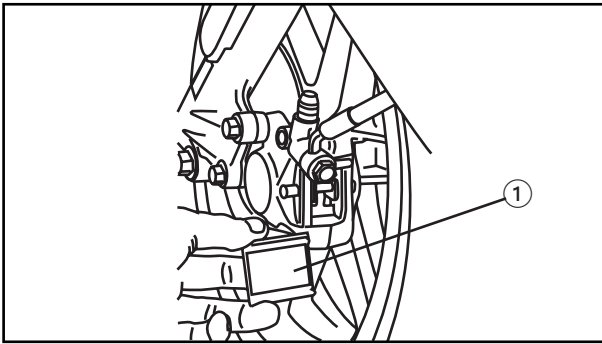


EAS00583

### REPLACING THE FRONT BRAKE PADS

#### NOTE:

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



#### 1. Remove:

- brake pad cover (1)
- brake pad clip (2)
- brake pad pin (3)
- brake pad spring (4)

#### 2. Remove:

- brake pads (5)
- (along with the brake pad shims (6))

#### 3. Measure:

- brake pad wear limit (a)
- Out of specification → Replace the brake pads as a set.



**Brake pad wear limit**  
**0.5 mm**

#### 4. Install:

- brake pad shims (onto the brake pads)
- brake pads
- brake pad spring

#### NOTE:

Always install new brake pads, brake pad shims, and a brake pad spring as a set.

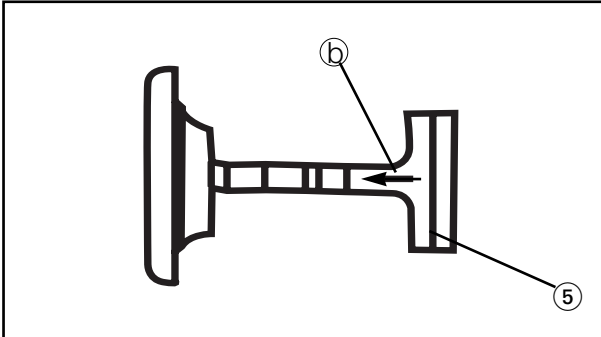


- Connect a clear plastic hose (1) tightly to the bleed screw (2). Put the other end of the hose into an open container.
- Loosen the bleed screw and push the brake caliper pistons into the brake caliper with your finger.
- Tighten the bleed screw.



**Bleed screw**  
**6 Nm (0.6 m• kg)**

- Install a new brake pad shim (3) onto each new brake pad (4).



**NOTE:**

The triangle mark (▲) on the brake pad shim must point in the direction of disc rotation.

- e. Install new brake pads and a new brake pad spring ⑤.

**NOTE:**

The arrow mark (b) of the brake pad spring must point in the direction of disc rotation.



5. Install:
  - brake pad pins
  - brake pad clips
  - brake pad cover
6. Check:
  - brake fluid level

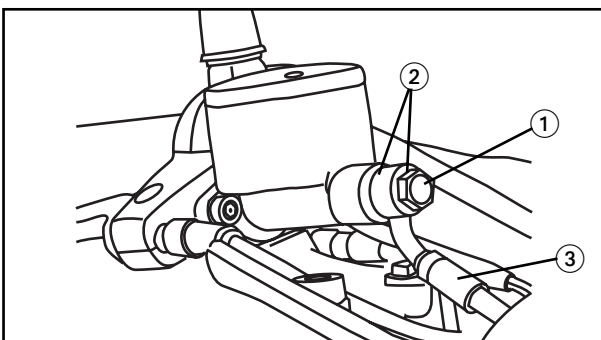
Below the minimum level mark → Add the recommended brake fluid to the proper level.  
Refer to “CHECKING THE BRAKE FLUID LEVEL” in chapter 3.
7. Check:
  - brake lever operation

Soft or spongy feeling → Bleed the brake system.  
Refer to “BLEEDING THE HYDRAULIC BRAKE SYSTEM” in chapter 3.

## REMOVING THE BRAKE HOSE

**NOTE:**

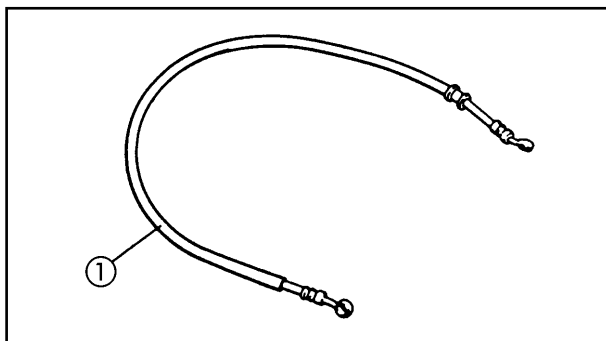
Before replacing the brake hose, drain the brake fluid from the entire brake system.



1. Remove:
  - union bolt ①
  - copper washers ②
  - brake hose ③

**NOTE:**

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



## CHECKING THE BRAKE HOSE

1. Check:
  - brake hoses ①  
cracks/damage/wear → Replace.

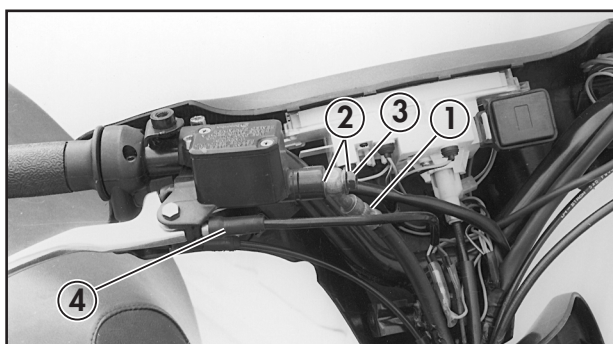
## BRAKE HOSE ASSEMBLY

### ⚠ WARNING

- All internal parts should be cleaned only in new brake fluid.
- Internal parts should be lubricated with brake fluid when installed.



Recommended brake fluid  
DOT 4



1. Install:
  - Brake hose ①
  - Copper washers ②
  - Assembly bolts ③
  - Brake switch ④

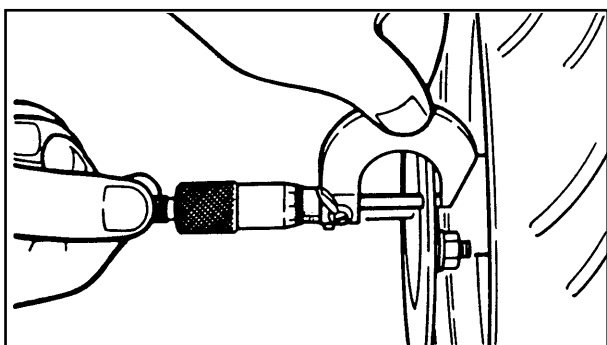
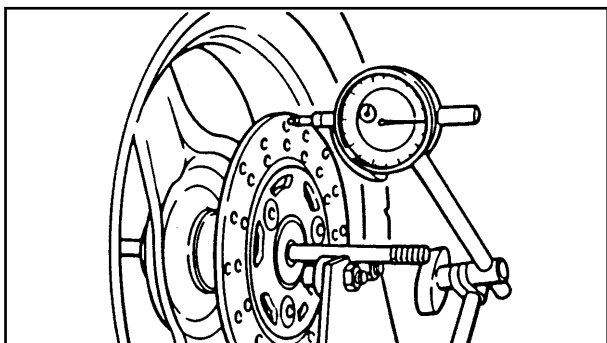


Assembly bolt:  
2.3 m • kg

### ⚠ WARNING

- The correct positioning of the hose is essential to ensure the safe operation of the scooter. See “CABLE ROUTING”.
- Always use new copper washers.

2. Ensure that the brake hose does not touch other parts (accelerator cable, installation, cables, etc.) by turning the handlebar to the left and right. If it does touch, correct this.



## CHECKING THE BRAKE DISC

### 1. Measure:

- Deflection of brake disc  
Outside specified value → Inspect run-out of wheel.  
If the wheel is in good condition, change the brake disc



**Maximum deflection**  
**0.5 mm**

- Brake disc thickness  
Outside specified value → Change



**Minimum thickness**  
**3.0 mm**



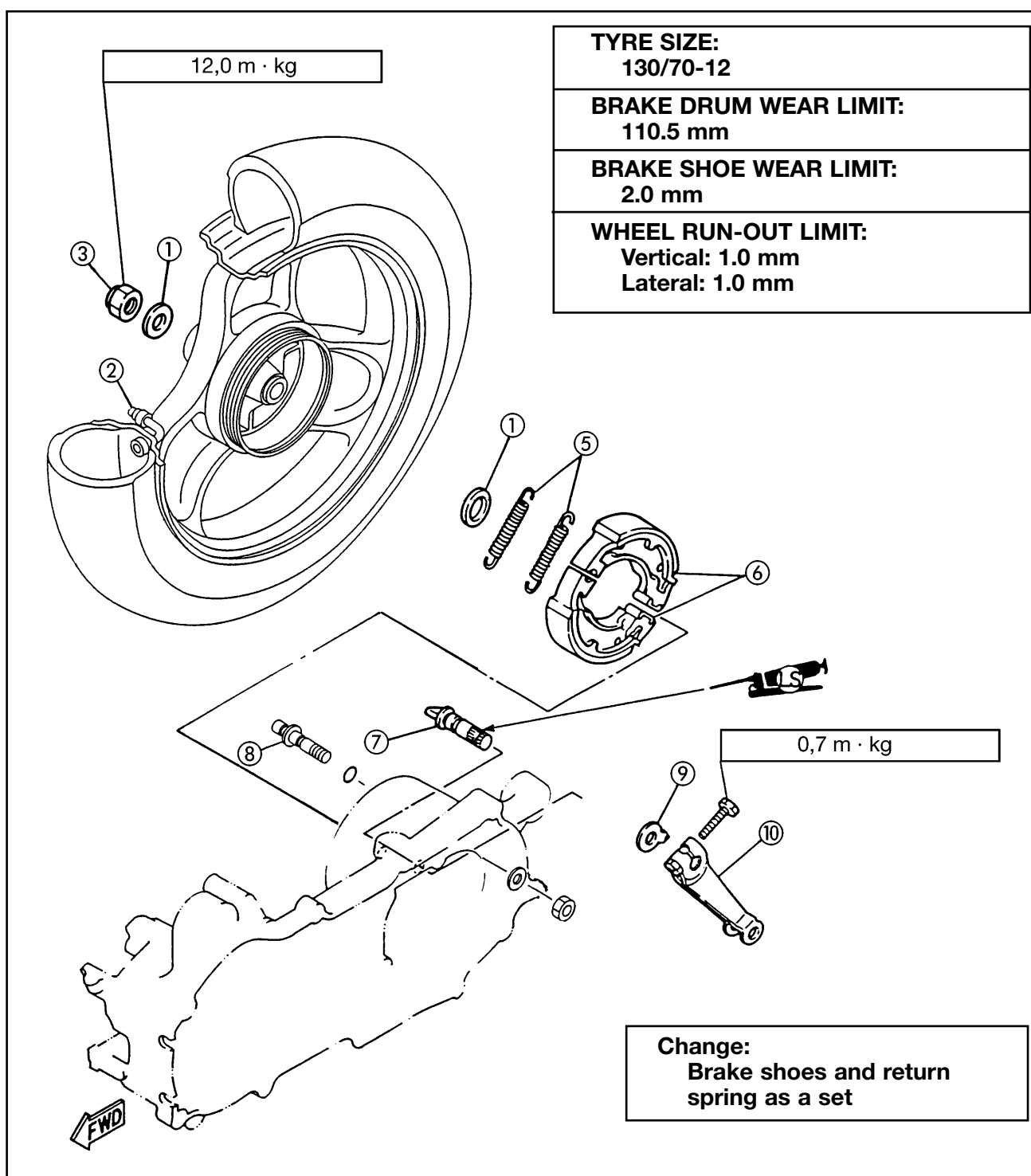
**Bolt (brake disc)**  
**2.0 m • kg**  
**LOCTITE®**

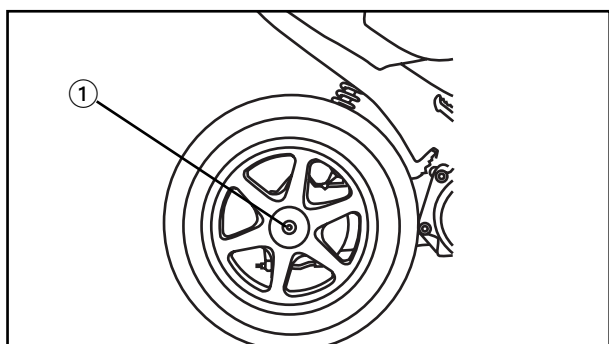


### REAR WHEEL

- ① Flat washer
- ② Valve
- ③ Nut
- ④ Flat washer
- ⑤ Return spring

- ⑥ Brake shoe
- ⑦ Brake cam
- ⑧ Shoe axle
- ⑨ Wear indicator
- ⑩ Brake lever



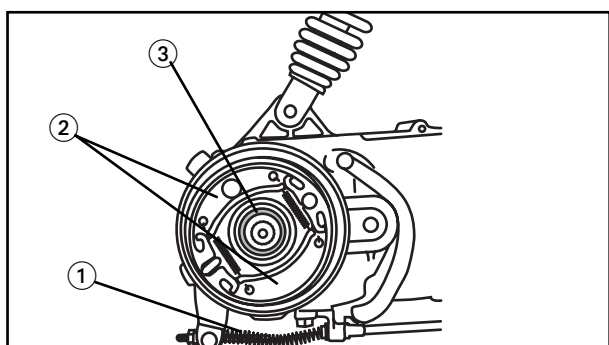


### REMOVAL

1. Remove:
  - Exhaust pipe assembly
2. Loosen:
  - Rear axle nut ①

### NOTE:

When the axle nut is loosened, apply rear brake.



3. Remove:
  - Rear wheel
4. Remove:
  - Rear brake cable ①
  - Brake shoes ②
  - Flat washer ③

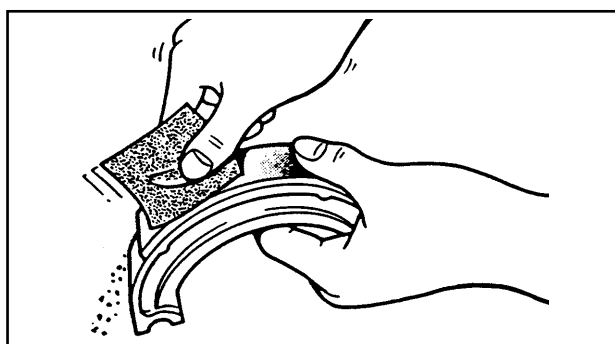
### INSPECTION

1. Inspect:
  - Wheel  
See "INSPECTION OF REAR WHEEL" section
2. Measure:
  - Wheel run-out  
See "INSPECTION OF REAR WHEEL" section



**Rim run-out limits:**  
**Vertical: 1.0 mm**  
**Lateral: 1.0 mm**

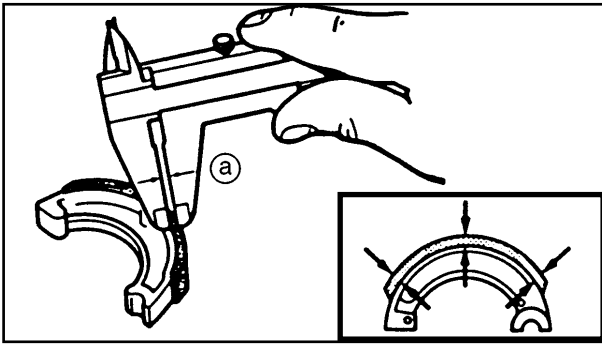
3. Check:
  - Wheel bearings Consult the "INSPECTION OF REAR WHEEL" section



4. Inspect:
  - Brake shoes Crystallisation → Polish with sand paper.

### NOTE:

After using sand paper, clean the polished particles with a cloth.



### 5. Measure:

- Thickness of brake shoes (a)
- Outside specified value → Change



### Brake shoes thickness

4.0 mm

Limit: 2.0 mm

### 6. Inspect:

- Drum brake inner surface
- Oil/Scratches → Change

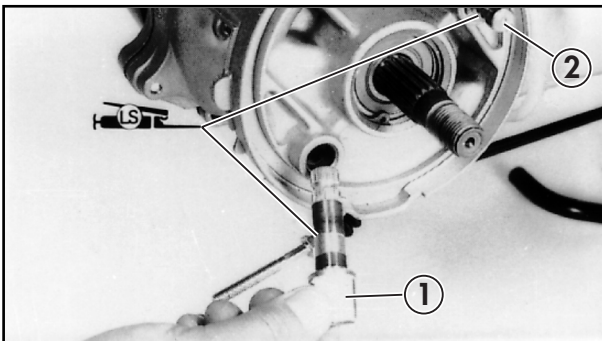
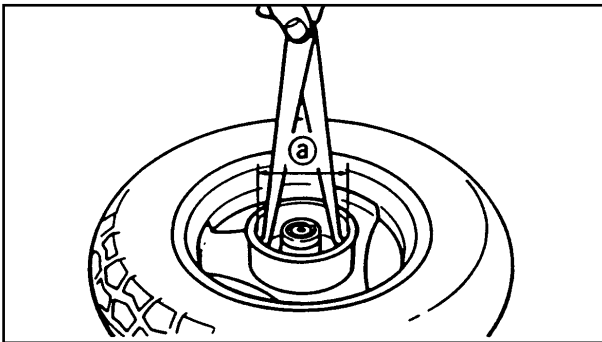
### 7. Measure

- Drum brake inner diameter (a)
- Out of specification → Change



### Wear limit of brake drum

110.5 mm



## ASSEMBLY

When the brake shoe carrier plate is assembled, reverse the removal procedure. Bear in mind the following points.

### 1. Install:

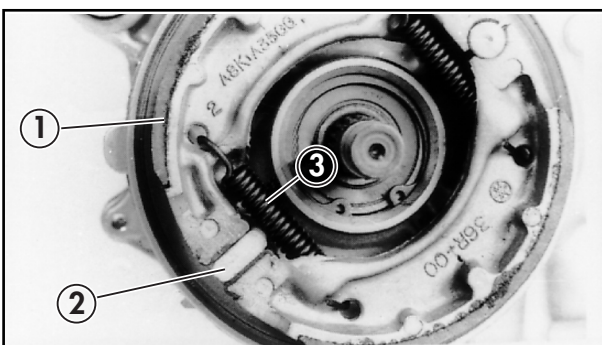
- Brake cam (1)

### NOTE:

Apply Grease with a lithium soap base on the brake cam (1) and pin (2).

### ATTENTION:

After installing the brake cam, remove excess grease.

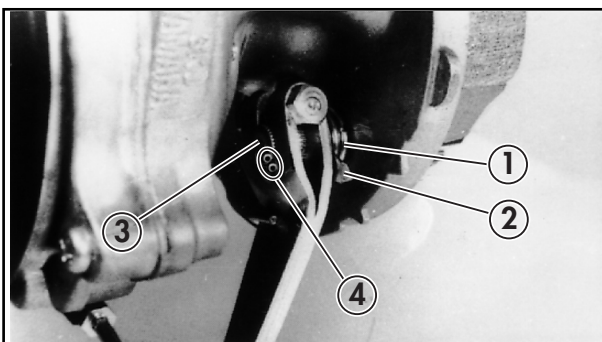


### 2. Install:

- Brake shoes (1)
- Return spring (2)

### NOTE:

Install with the mark (3) outwards.



### 3. Install:

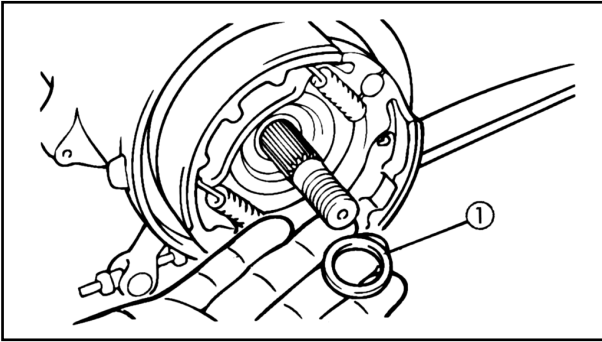
- Torsion spring (1)
- Wear indicator (2)
- Cam lever (3)

### NOTE:

- Align the projection of the wear indicator (2) with the line as shown.
- Align the punch marks (4).

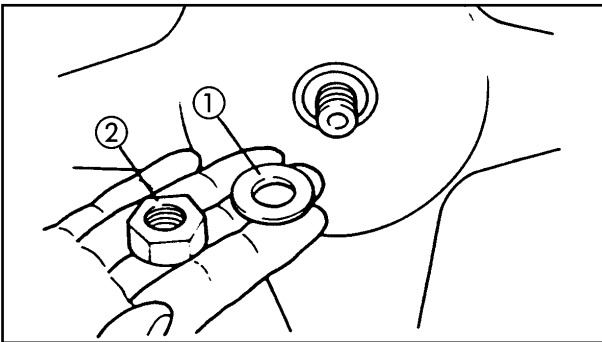
## REAR WHEEL

CHAS



**Bolt (cam lever):**  
0.7 m • kg

4. Install:
- Flat washer ①
  - Brake cable



**Nut (Rear wheel axle):**  
12.5 m • kg

2. Install:
- Silencer



**Bolt (exhaust pipe side):**  
0.9 m • kg  
**Bolt (silencer side):**  
2.6 m • kg

3. Adjust:
- Free play of rear brake lever  
See section in chapter 3 "CHECKING  
FREE PLAY OF REAR BRAKE LEVER".



### FRONT FORK

- |                              |                               |
|------------------------------|-------------------------------|
| ① Front fork assembly (left) | ⑨ Oil seal                    |
| ② Rubber cap                 | ⑩ Fork spring                 |
| ③ Restraining ring           | ⑪ Sliding metal               |
| ④ Restraining ring           | ⑫ Shock absorber rod          |
| ⑤ Cap                        | ⑬ Return spring               |
| ⑥ O-ring                     | ⑭ Bar                         |
| ⑦ Dust guard                 | ⑮ Oil lock piece              |
| ⑧ Retainer                   | ⑯ Outer tube                  |
|                              | ⑰ Front fork assembly (right) |

#### FREE LENGTH OF FORK SPRING:

##### LIMIT:

LEFT 226 mm

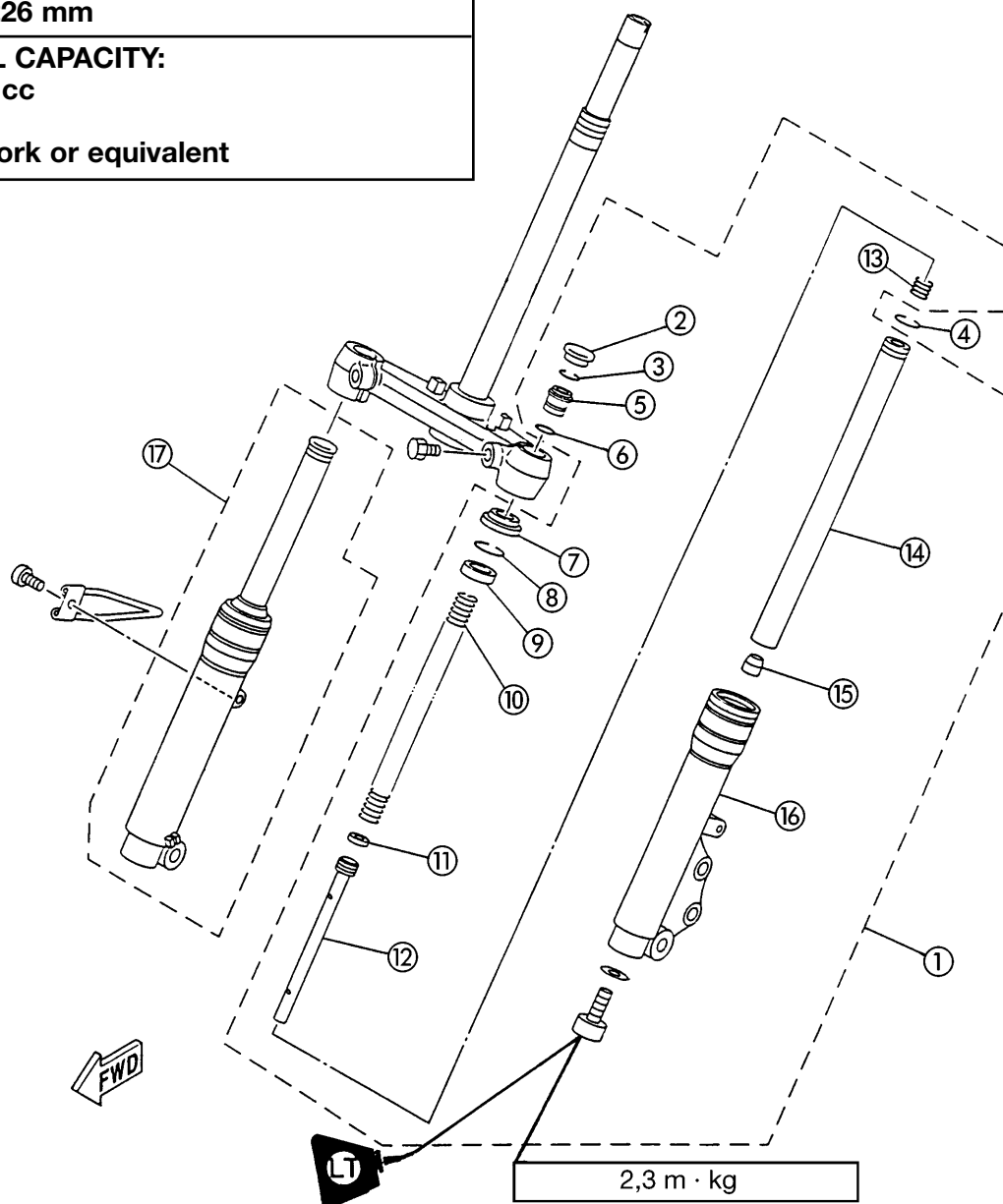
RIGHT 226 mm

#### FORK OIL CAPACITY:

50 cc ± 1 cc

##### GRADE:

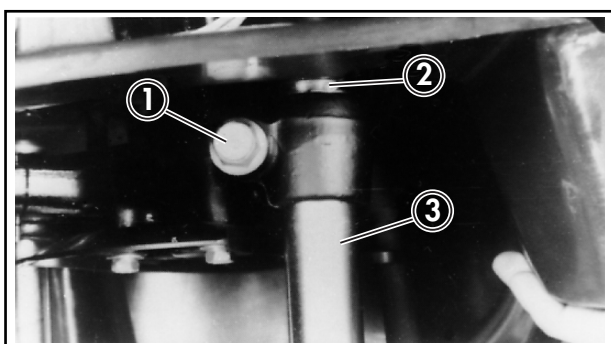
10 W oil fork or equivalent



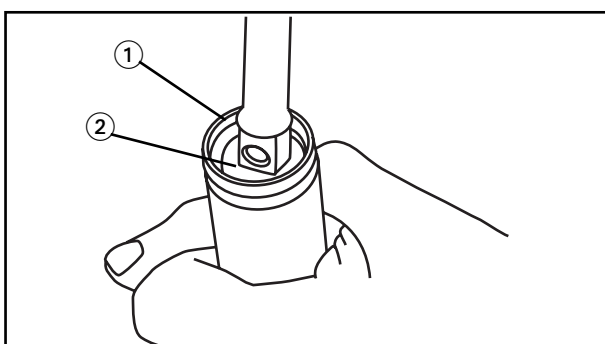


### REMOVAL

1. Place the scooter on its central stand and place an adequate support under the engine
2. Remove:
  - Brake callipers
 Consult "FRONT BRAKE REMOVAL" section
3. Remove:
  - Front wheel
 See "FRONT WHEEL REMOVAL SECTION"
4. Remove:
  - Mudguard, front fairing
 See chapter 3 "FRONT BODYWORK, MUDGUARD"

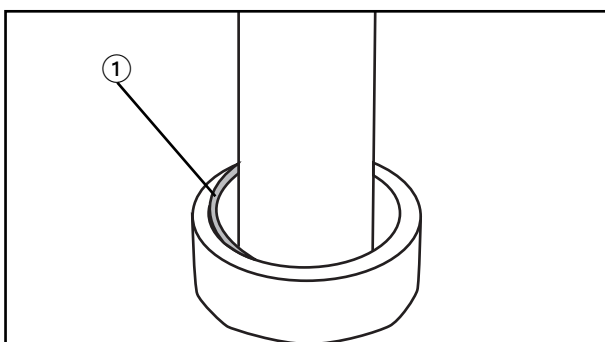


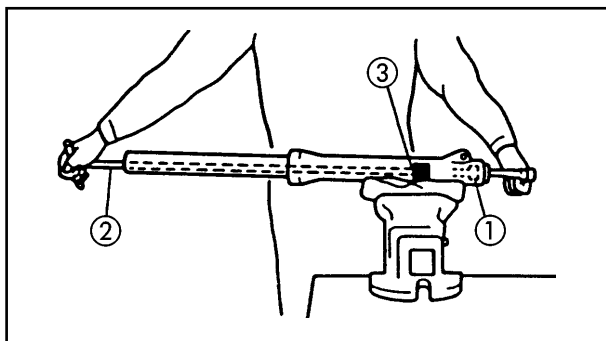
5. Loosen:
  - Positioning bolt ① (fork)
6. Remove:
  - Restraining ring ②
  - FRONT FORK ③



### DISASSEMBLY

1. Remove:
  - Rubber cap
  - Restraining ring ①
  - Cap ②
  - Fork spring
2. Drain:
  - Fork oil
3. Remove:
  - Mudguard
  - Retainer ①





4. Remove:
  - Bolt (shock absorber rod) ①
  - Copper washer

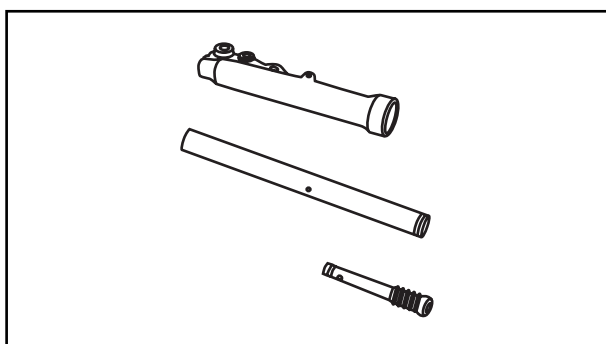
### NOTE:

Remove the bolt (shock absorber rod) while the shock absorber rod is held with the T-handle ② and a support ③



**T-handle:**  
90890-01326  
**Support:**  
90890-01294-A

5. Remove:
  - Inner pipe
  - Shock absorber rod
  - Oil lock piece (left side)
  - Oil seal



### INSPECTION

1. Inspect:
  - Fork bar
  - Outer tube
  - Shock absorber rod
  - Striping/Warping/Wear/Damage → Change

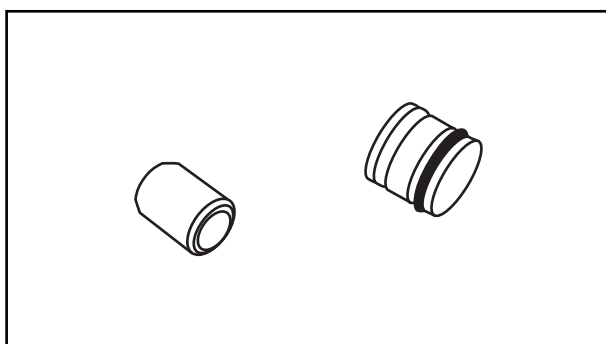
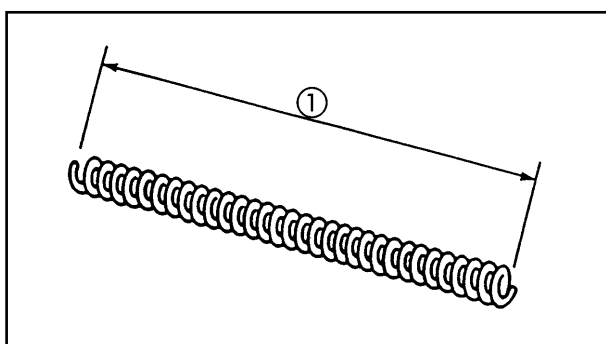
### ⚠ WARNING

**Do not try to straighten a fork bar or an outer tube as this may dangerously weaken the tube.**

2. Measure:
  - Fork spring
  - Above specified limit → Change



**Free length of fork spring (limit) ①:**  
Left 226 mm  
Right 226 mm



3. Inspect:
  - Oil lock piece
  - O-ring (cover)
  - Wear/Damage → Change

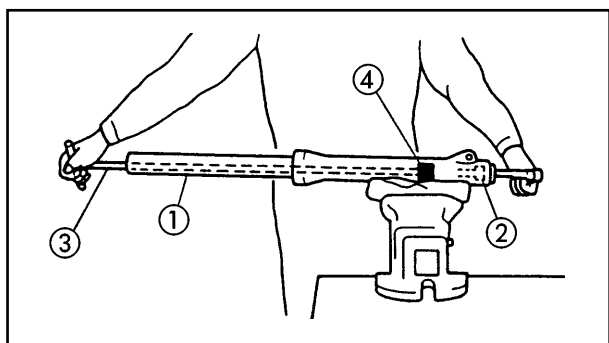


### ASSEMBLY

Reverse the disassembly procedure. Bear in mind the following points.

#### NOTE:

- When assembling the fork, ensure that the following new parts are used.
- Oil seal
- Mudguard
- Sliding metal
- Ensure that all components are clean before assembly.



#### 1. Install:

- Shock absorber rod
- Oil lock piece (left side)
- Bar ①
- Copper washer (new)
- Bolt (shock absorber rod) ②



**Bolt (hydraulic rod):**  
23 Nm (2.3 m • kg, 17 • lb)  
**LOCTITE®**

#### NOTE:

Tighten the bolt (hydraulic rod) while supporting the bar with the T-handle ③ and the support ④.



**T-handle:**  
90890-01326  
**Support:**  
90890-01294-A

#### 2. Install:

- Oil seal ①
- Use a counterbalance for installing fork seals ③ and an adaptor ②.



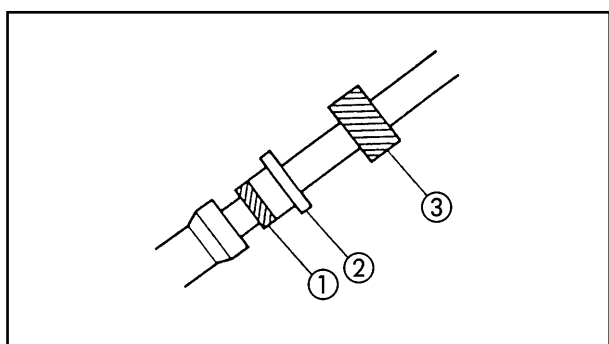
**Counterbalance for installing oil seals:**  
90890-01184  
**Adaptor:**  
90890-01186

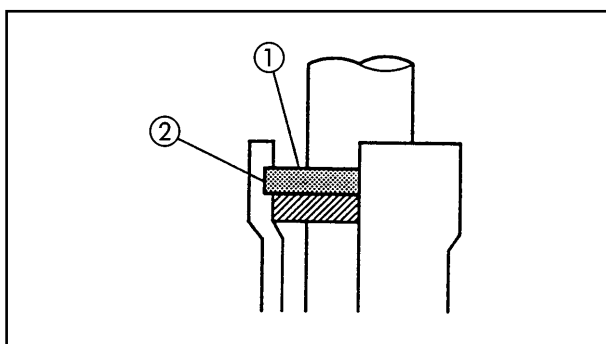
#### NOTE:

Before installing the oil seal, apply grease with a lithium soap base on the edges of same.

#### ATTENTION:

Ensure that the numbered side of the seal is facing upwards.

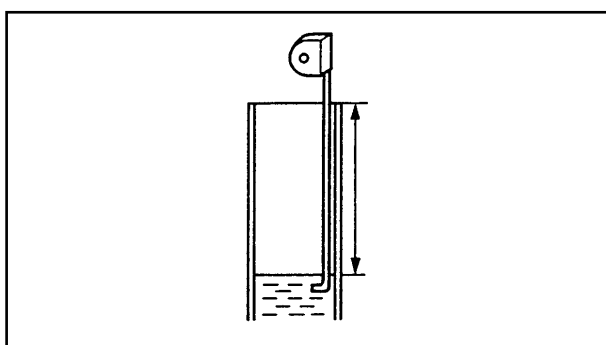




3. Install:
- Retainer ①
  - Dust guard

**NOTE:**

Couple the retainer correctly on the groove of the outer tube ②.



4. Fill :
- Fork oil



**Each fork:**  
**50 cm<sup>3</sup>**  
**10 W fork oil or equivalent after filling, slowly pump the fork to distribute the oil.**



**Oil level:**  
**95 mm**  
**From the upper part of the inner fork tube totally compressed without the spring.**

**NOTE:**

Place the fork in a vertical position.

5. Install:
- Fork spring
  - Cover
  - Restraining ring
  - Rubber cap

**NOTE:**

- Before installing the cover, apply grease to the o-ring.
- Couple the restraining ring correctly on the inner tube groove.



## INSTALLATION

Reverse the removal procedure.

The following points should be remembered

1. Install:
  - Front fork:
  - Stopper ring

## NOTE:

Attach the stopper ring correctly on the inner tube groove.



2. Tighten:
  - Positioning bolt (lower bracket)



**Positioning bolt (inner lever arm)**  
**30 Nm (3.0 m • kg, 22 ft • lb)**

3. Install:
  - Front wheel
  - Brake calliper
  - Clasp (brake hose)
  - Speedometer cable  
See "FRONT WHEEL" section
  - Front mudguard  
See chapter 3, section "FRONT BODY-WORK MUDGUARD"

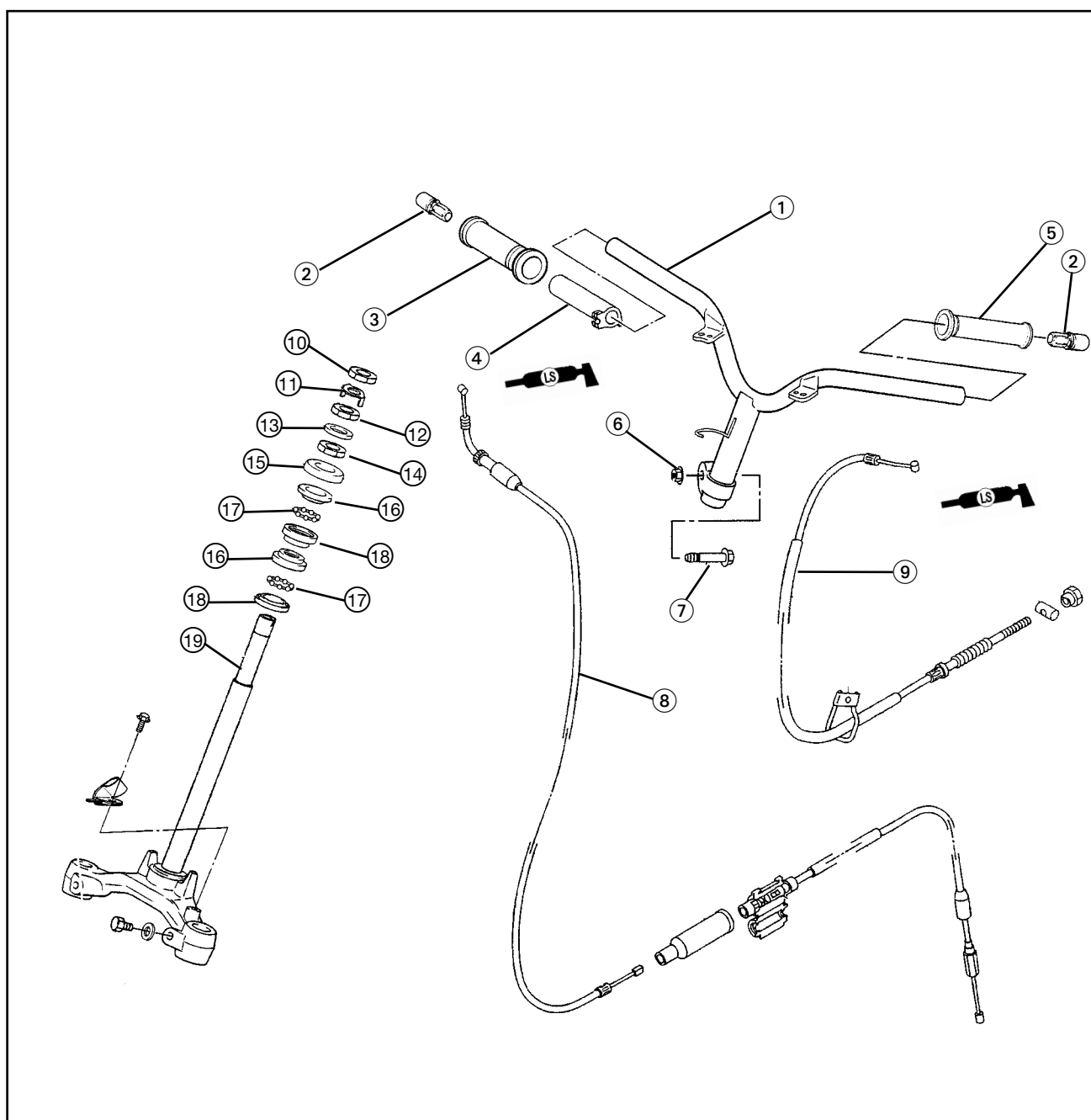


**Wheel axle**  
**48 Nm (4.8 m • kg, 35 ft • lb)**



## HANDLEBAR AND STEERING

- |                       |                      |
|-----------------------|----------------------|
| ① Handlebar           | ⑪ Lock washer        |
| ② Grip cap            | ⑫ Center ring nut    |
| ③ Throttle grip       | ⑬ Rubber washer      |
| ④ Throttle grip guide | ⑭ Lower ring nut     |
| ⑤ Grip                | ⑮ Bearing cover      |
| ⑥ Nut                 | ⑯ Upper bearing race |
| ⑦ Bolt                | ⑰ Bearing cage       |
| ⑧ Throttle cable      | ⑱ Bearing race       |
| ⑨ Brake cable         | ⑲ Lower bracket      |
| ⑩ Upper ring nut      |                      |





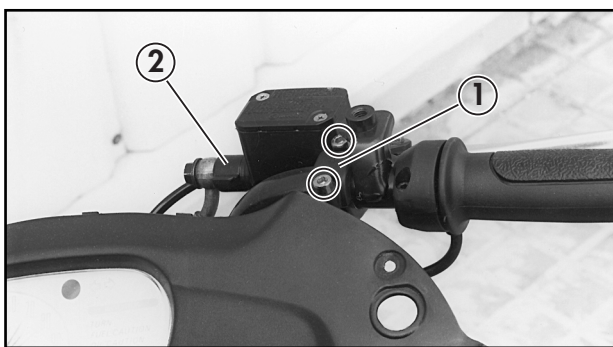
### REMOVAL

1. Place the scooter on its central stand and place a suitable support under the engine.
2. Remove:
  - Front wheel  
See section "REMOVAL OF FRONT WHEEL"
3. Remove:
  - Mudguard
  - Front fairing  
See chapter 3, "FRONT BODYWORK, MUDGUARDS" section.
4. Remove:
  - Handlebar covers See chapter 3 "HANDLEBAR COVER" section

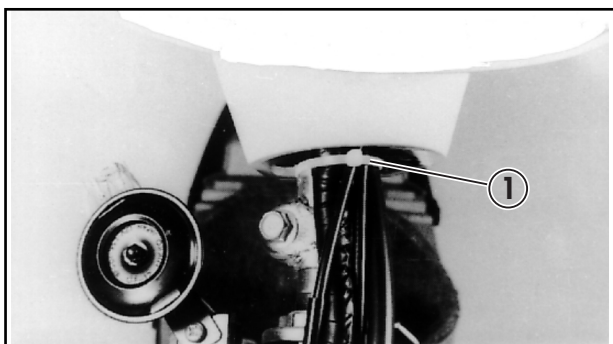
### NOTE:

Before completely removing the rear cover with the speedometer, disconnect the speedometer cable and the signalling and lighting system cables.

5. Remove:
  - Front fork  
See "REMOVAL OF FRONT FORK" section



6. Remove:
  - Brake pump support
  - Brake pump.
  - Throttle grip



7. Remove:
  - Flange ① (electrical installation)



8. Remove:
- Upper ring nut

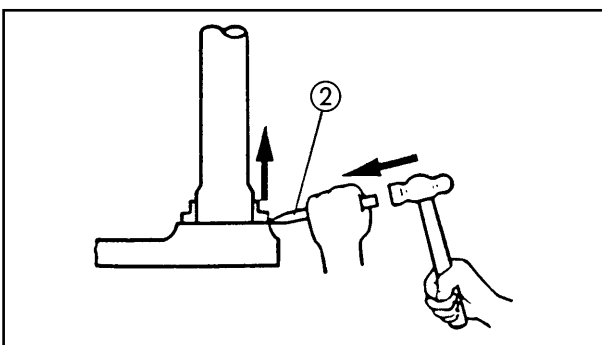
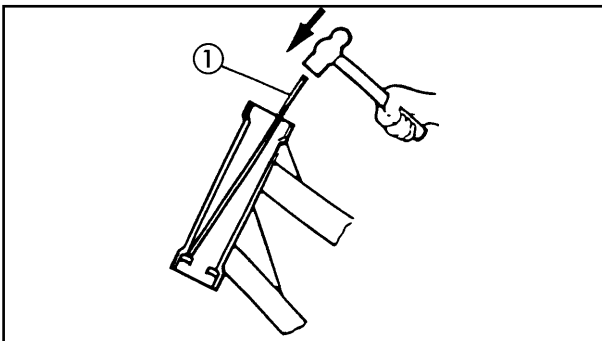


**Ring nut wrench for steering**  
90890-01403

## ⚠ WARNING

**Support the steering axle so that it does not fall.**

9. Remove:
- Lock washer
  - Central ring nut
  - Rubber washer
  - Lower ring nut
  - Bearing cover
  - Lower bracket



## INSPECTION

1. Wash the bearing and race with solvent.
2. Inspect:
  - Bearings
  - Bearing race
  - Pitted/Damage → Change



## Steps for replacing the bearing race:

- Remove steering bearing races using a long rod ① and the hammer as shown.
- Remove the bearing race from the shaft using a chisel ② and the hammer as shown.
- Install the new mudguard and the guides.



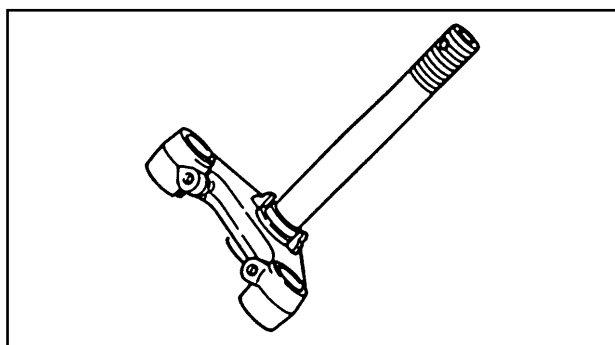


## NOTE:

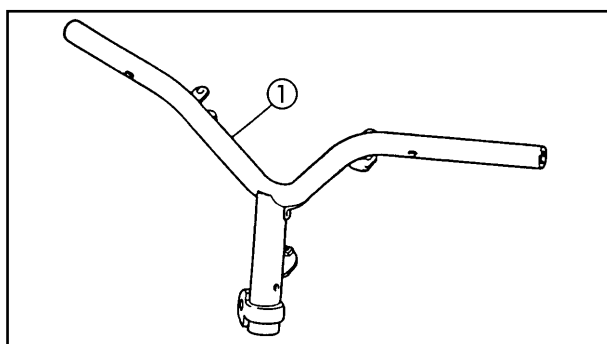
- Always change the bearing and the races together.
- Change the mudguard whenever the steering head is disassembled.

## ATTENTION:

**If the bearing race is not coupled correctly, the steering tube may be damaged.**



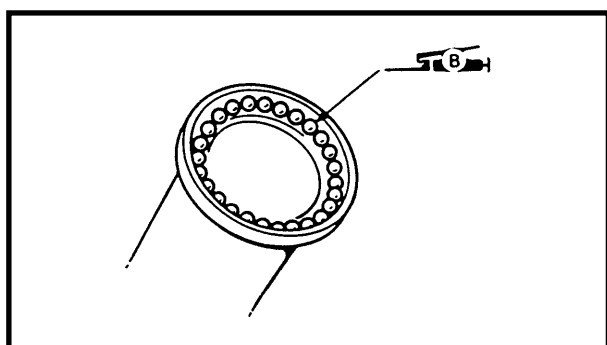
- Inspect:
  - Lower lever arm (with steering rod)  
Cracks/Damage → Change



- Inspect:
  - Handlebar ①  
Cracks/Damage → Change

## ⚠ WARNING

**Do not try to straighten a bent handlebar since this can weaken it dangerously.**



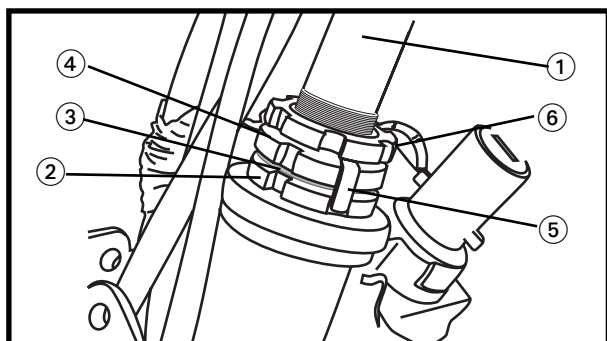
## INSTALLATION

Reverse the steps for disassembly and removal. The following points should be remembered

- Apply:
  - Wheel bearing grease  
(on upper bearings and lower bearings.)
- Install:
  - Lower bracket ①
  - Lower ring nut ②
  - Rubber washer ③
  - Central ring nut ④
  - Lock washer ⑤
  - Upper ring nut ⑥

## ATTENTION:

**Support the steering column until it is in position.**



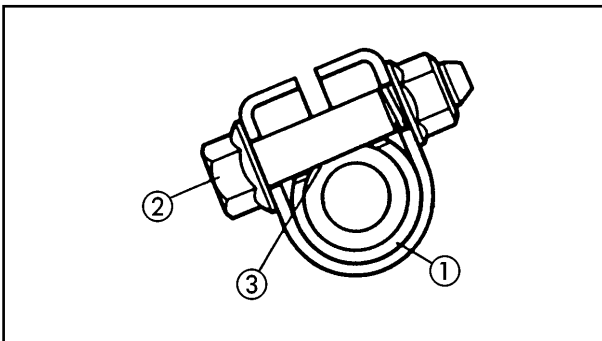


3. Tighten:
  - Steering nut



## Steps for tightening the steering nut:

1. Tighten the lower ring nut ② to 3.8 m•kg.
2. Loosen the lower ring nut ② 1/2 of a turn and tighten to 0.65 m•kg.
3. Check the steering for smooth operation.
4. Install rubber washer ③.
5. Install central ring nut ④ and hand tighten until the lower and central ring nuts slots align.
6. Install the lock washer ⑤.
7. Supporting the lower and central ring nuts, install and tighten the upper ring nut to 7.5 m•kg.



4. Install:
  - Handlebar ①
  - Bolt ②
  - Nut

## NOTE:

Match up the bolt ② on the tooth of the steering column ③.



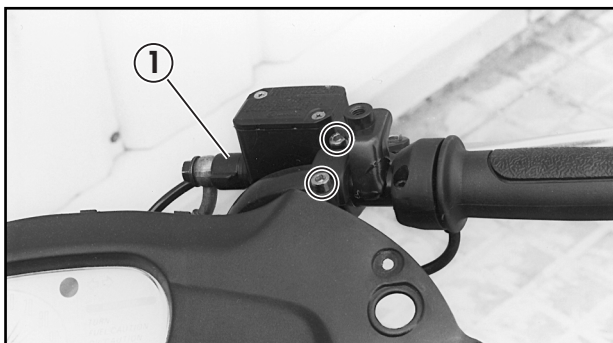
**Bolt (handlebar)**  
4.3 m • kg

5. Install:
  - Flange

## NOTE:

Support electrical installation

6. Apply:
  - Grease with lithium soap base (on the end of the accelerator cable and right end of the handlebar.)



7. Install:
- Brake pump ①

**NOTE:**

First tighten the upper bolt, then the lower bolt.



**Bolt (brake pump)**  
0.9 m • kg

8. Install:
- Rear handlebar cover with speedometer
  - Front handlebar cover

**NOTE:**

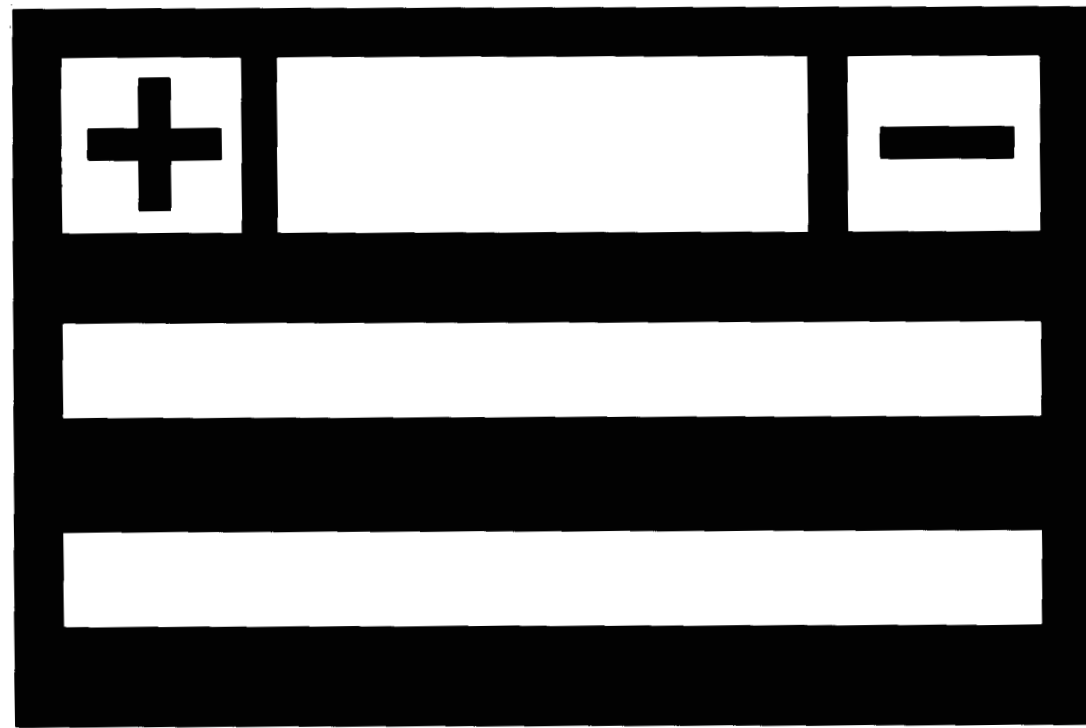
Connect the speedometer cables, signalling and lighting systems.

**ATTENTION:**

**Situate the speedometer cable through its housing in the rear cover.**

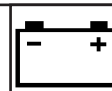
9. Install:
- Front fork  
See "INSTALLATION OF FRONT FORK SECTION".
10. Install:
- Front wheel  
See section "INSTALLATION OF FRONT WHEEL"





**ELEC**

**7**

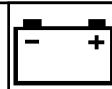


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## CHAPTER 7

### ELECTRICAL SYSTEM

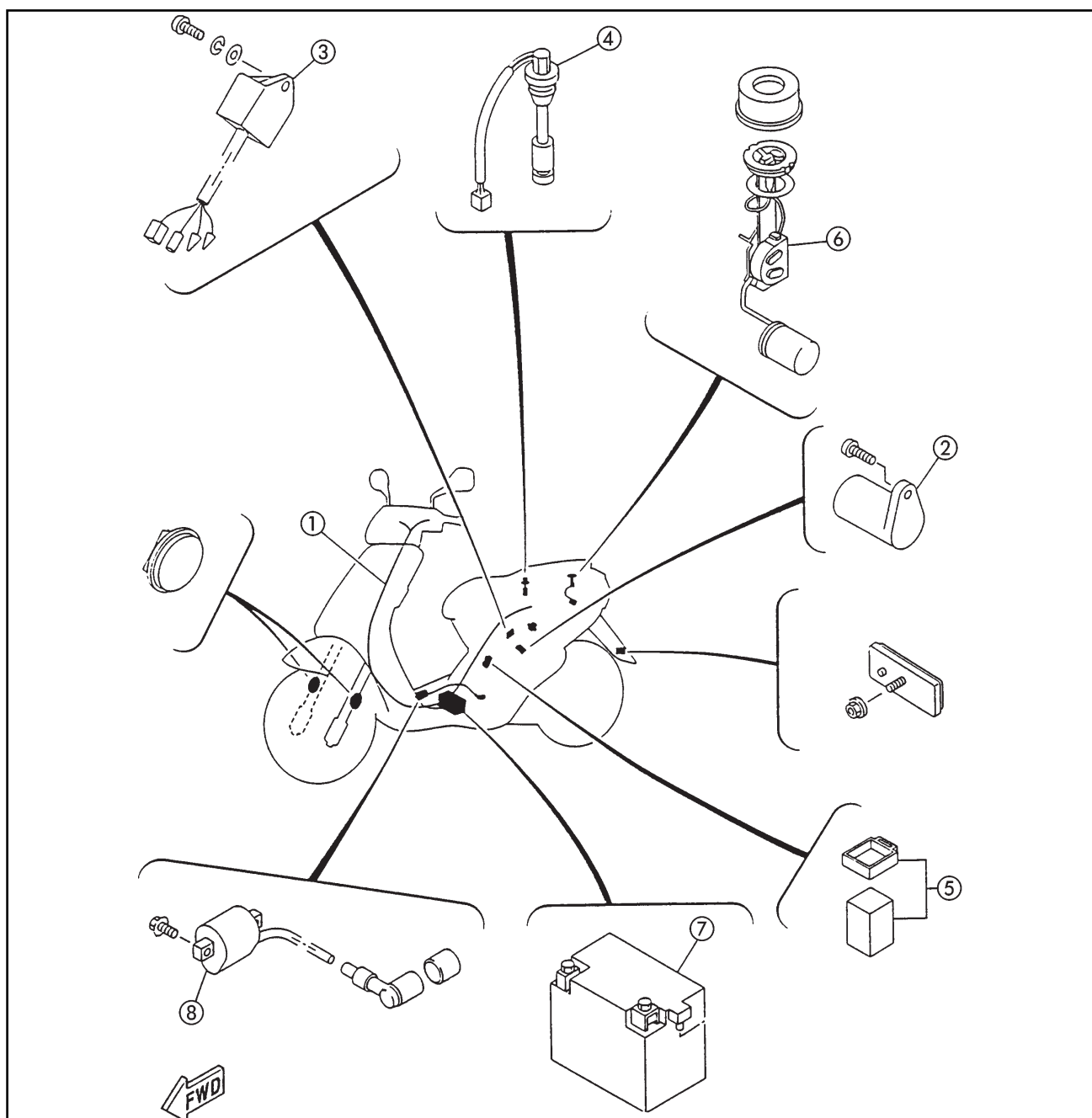
|                                           |                 |
|-------------------------------------------|-----------------|
| <b>ELECTRICAL COMPONENTS .....</b>        | <b>7-1</b>      |
| <b>IGNITION AND STARTER SYSTEM.....</b>   | <b>7-3</b>      |
| CIRCUIT DIAGRAM .....                     | 7-3             |
| IGNITION AND STARTER CIRCUIT SYSTEM ..... | 7-4             |
| TROUBLESHOOTING .....                     | 7-5             |
| <br><b>CHARGING SYSTEM .....</b>          | <br><b>7-10</b> |
| CIRCUIT DIAGRAM .....                     | 7-10            |
| LOCATION AND REPAIR OF FAULTS .....       | 7-11            |
| <br><b>LIGHTING SYSTEM .....</b>          | <br><b>7-13</b> |
| CIRCUIT DIAGRAM .....                     | 7-13            |
| LOCATION AND REPAIR OF FAULTS .....       | 7-14            |
| CHECKING OF LIGHTING SYSTEM .....         | 7-15            |
| <br><b>SIGNALLING SYSTEM .....</b>        | <br><b>7-17</b> |
| CIRCUIT DIAGRAM .....                     | 7-17            |
| LOCATION AND REPAIR OF BREAKDOWNS .....   | 7-18            |
| CHECKING OF SIGNALLING SYSTEM.....        | 7-19            |

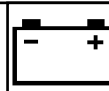


## ELECTRICAL SYSTEM

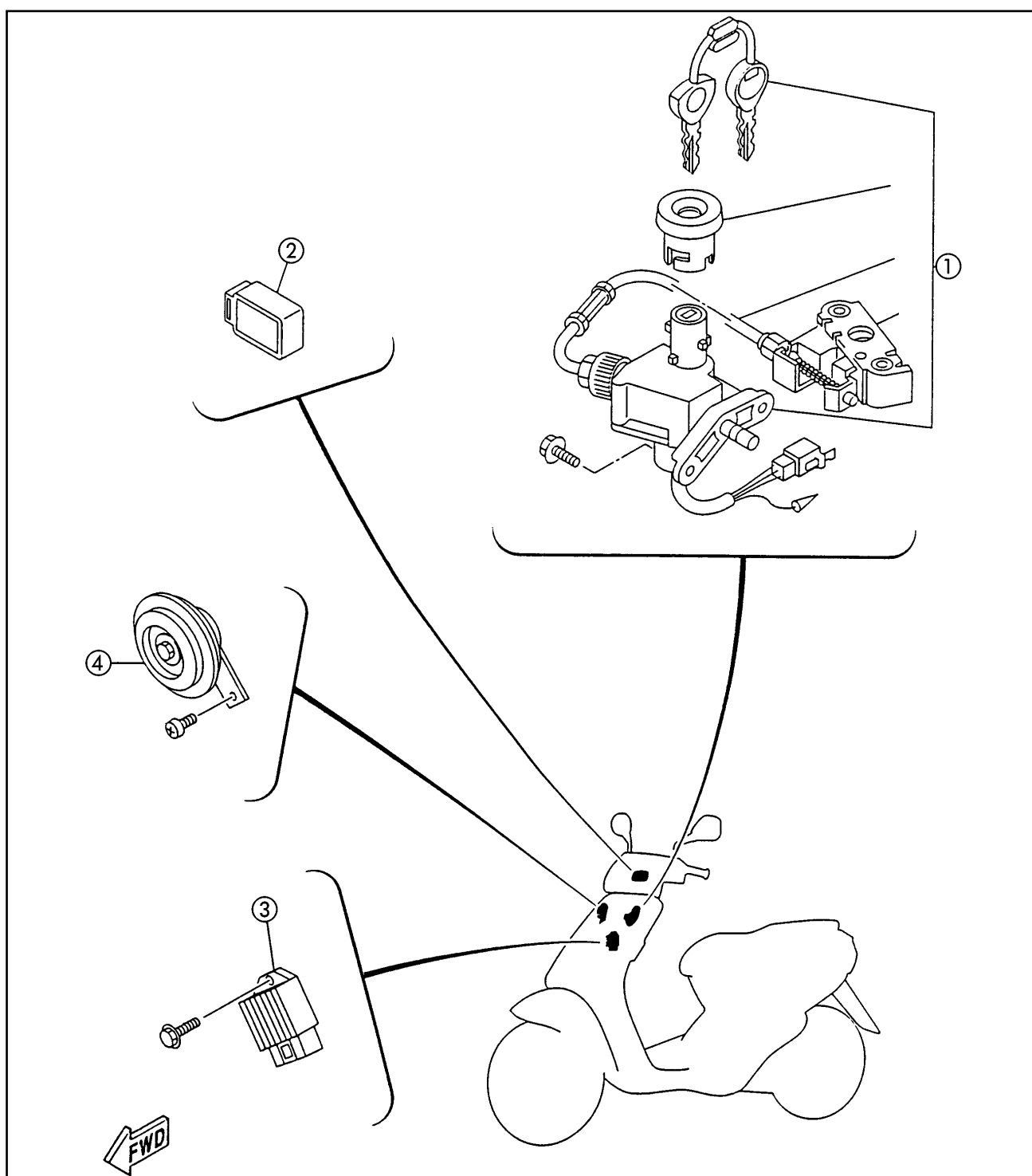
## ELECTRICAL COMPONENTS

- ① Wire harness
- ② Starter motor
- ③ CDI unit
- ④ Engine oil level gauge
- ⑤ Starter relay
- ⑥ Fuel level gauge
- ⑦ Battery
- ⑧ Ignition coil

**BATTERY****SPECIFIC GRAVITY: 1,280****IGNITION COIL:****PRIMARY COIL RESISTANCE:****0.56 ~ 0.84  $\Omega$  at 20 °C (68 °F)****SECONDARY COIL RESISTANCE:****5.7 ~ 8.5  $\Omega$  at 20 °C (68 °F)**

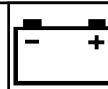


- ① Main switch/seat lock
- ② Turn signal relay
- ③ Rectifier/regulator
- ④ Horn



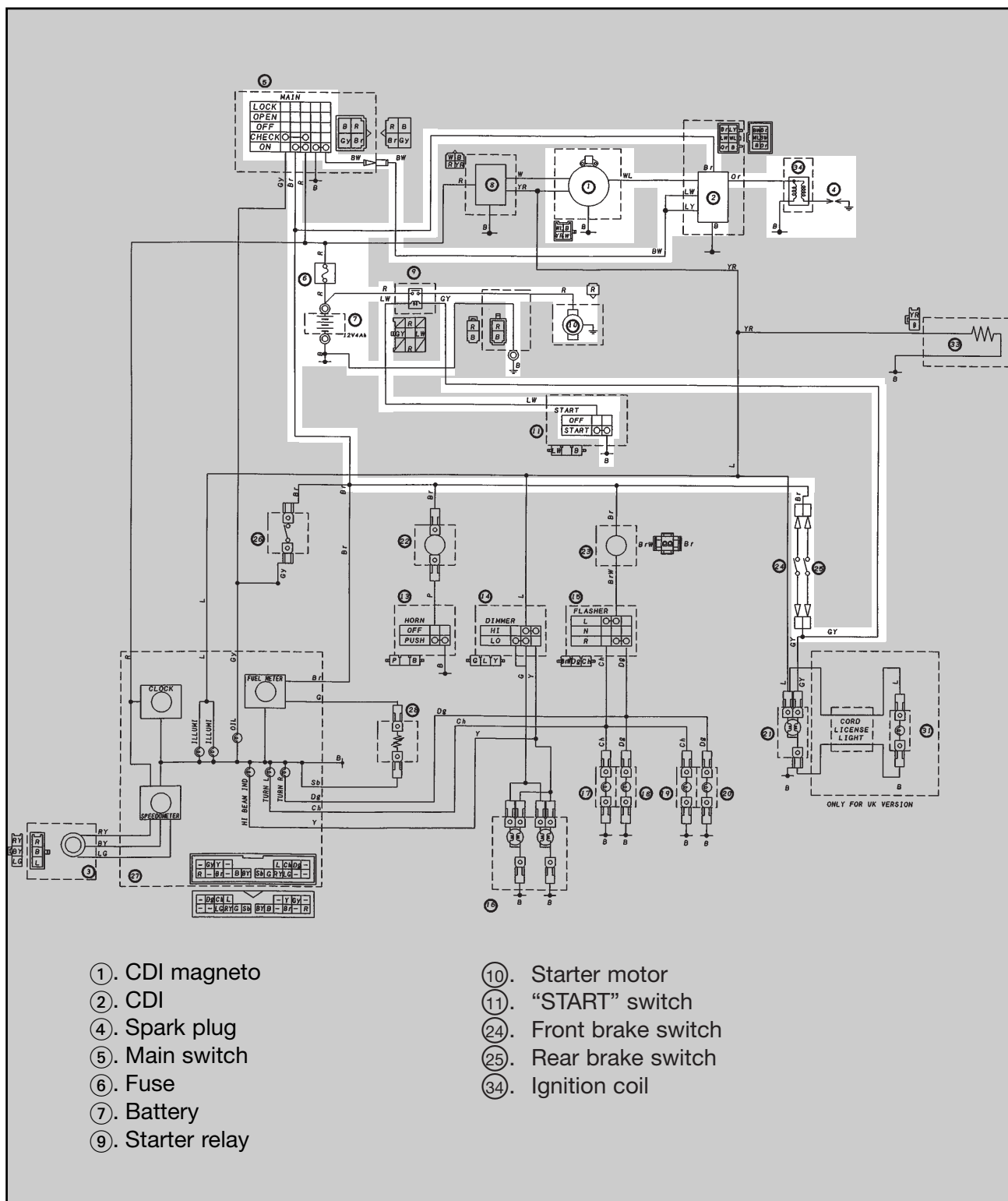
# IGNITION AND STARTER SYSTEM

ELEC



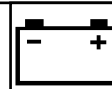
## IGNITION AND STARTER SYSTEM

### CIRCUIT DIAGRAM



# IGNITION AND STARTER SYSTEM

ELEC



## SISTEMA DE ENCENDIDO Y ARRANQUE

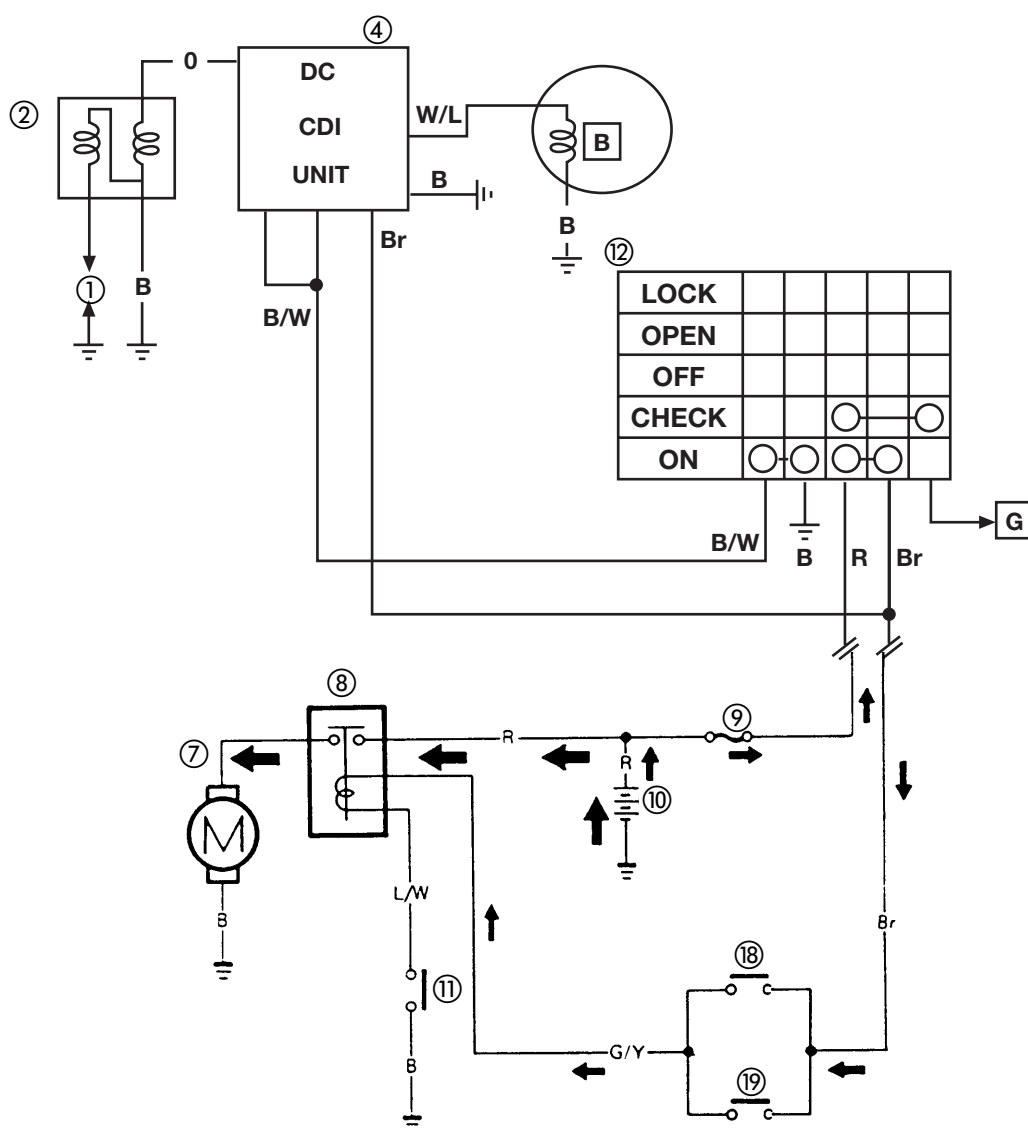
- ① Spark plug
- ② Ignition coil
- ④ CDI unit
- ⑦ Starter motor
- ⑧ Starter relay
- ⑨ Fuse
- ⑩ Battery
- ⑪ Starter switch
- ⑫ Main switch
- ⑬ Front brake switch
- ⑭ Rear brake switch
- ⑮ Pick-up coil
- ⑯ To oil level switch

**INDUCED COIL RESISTANCE:**  
0.05 ~ 0.06  $\Omega$  at 20 °C (68 °F)

**BRUSH WEAR LIMIT:**  
0.9 mm

**COMMUTATOR WEAR LIMIT:**  
16.6 mm

**MICA LOWER CUT-OFF:**  
1.35 mm



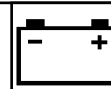
Current which flows in the ignition control circuit



Current which flows in the starter motor control circuit

# IGNITION AND STARTER SYSTEM

ELEC



## TROUBLESHOOTING

### IF THE IGNITION SYSTEM IS NOT OPERATING (NO SPARK OR INTERMITTENT SPARK)

#### NOTE:

- Remove the following parts before carrying out the repair of fault .
  - 1) Side covers (right and left)
  - 2) Rear cover
  - 3) Footrest panel
- Use the following special tools to repair faults.



**Ignition tester:**  
**90890-06754**



**Pocket tester:**  
**90890-03112**

#### 1. Spark plug

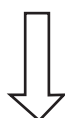
- Check spark plug conditions.
- Check type of spark plug.
- Check distance between electrodes .  
Consult chapter 3 "INSPECTION OF SPARK PLUG"

**Standard spark plug**  
**BR7HS (NGK)**



**Distance between electrodes**  
**0.6 ~ 0.7 mm**

INCORRECT



CORRECT

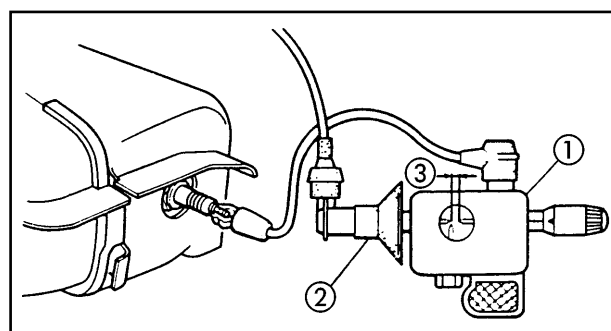
Defective spark plug, change or adjust the distance between the electrodes

#### 2. Gap of the ignition spark plug

- Disconnect the spark plug pipe from the spark plug.
- Connect the ignition tester ① as shown.
- ② Spark plug pipe
- ③ Spark gap
- Check spark gap
- Start the engine and increase the spark jump until ignition fails.



**Minimum spark gap:**  
**6.0 mm**



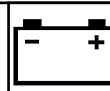
SATISFIES THE SPECIFIED VALUE



\*

OUTSIDE  
SPECIFIED  
VALUE OR  
NO SPARK

The ignition system is in good condition.



\*



## 3. Spark plug cap resistance

- Remove spark plug cap
- Connect the pocket tester ( $\Omega \times 1k$ ) on the spark plug cap.
- Check if the spark plug pipe has the specified resistance



**Resistance of spark plug:**  
5 k $\Omega$  at 20 °C (68 °F)



SATISFIES  
THE  
SPECIFIED  
VALUE

## 4. Resistance of ignition coil

- Disconnect the ignition coil cables.
- Connect the pocket tester ( $\Omega \times 1$ ) on the ignition coil .

### Ignition coil:

**Cable (+) of tester → Terminal + (orange)**

**Cable (-) of tester → Terminal - (ground)**

- Check if the primary coil has the specified resistance.



**Primary coil resistance:**  
0.56 ~ 0.84  $\Omega$  at 20 °C (68 °F)

- Connect the pocket tester ( $\Omega \times 1k$ ) on the ignition bobbin.

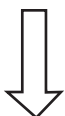
**Cable (+) of tester → Cable of spark plug**

**Cable (-) of tester → Ground**

- Check if the secondary coil has the specified resistance.

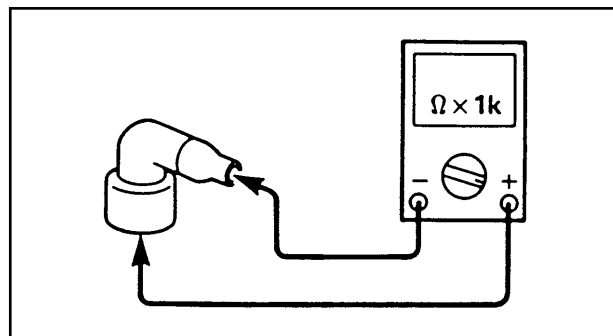


**Secondary coil resistance:**  
5.7 ~ 8.5 k $\Omega$  at 20 °C (68 °F)  
(Spark plug cable - Coil cable)



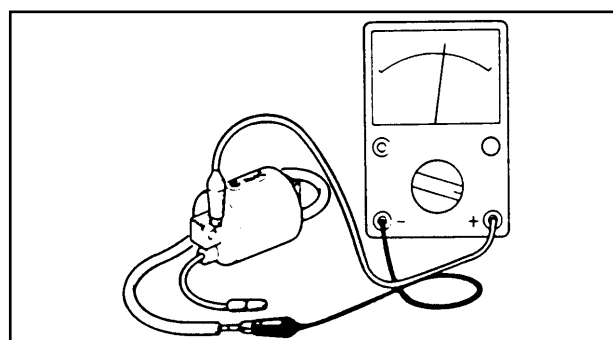
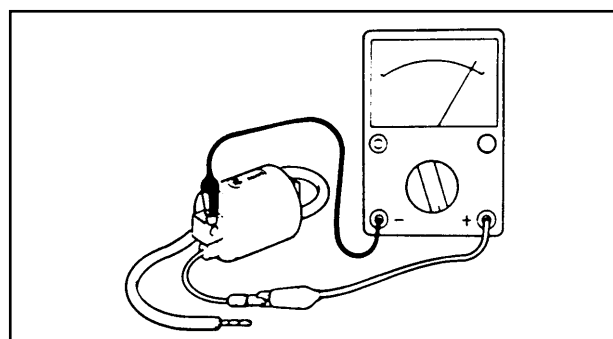
BOTH SATISFY  
THE SPECIFIED  
VALUE

\*



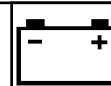
OUTSIDE SPECIFIED VALUE

Replace the spark plug cap



OUTSIDE SPECIFIED VALUE

The ignition coil is defective, replace it



\*



## 5. Pick up coil resistance

- Disconnect the Pick up coil coupler of the installation
- Connect the pocket tester ( $\Omega \times 100$ ) on the pick up coil terminal.

**Cable (+) of tester → White blue**

**Cable (-) of tester → Black**

- Check if the pick up coil has the specified resistance.



**Resistance of harnessing coil**  
**250 ~ 370  $\Omega$  at 20 °C (68 °F)**

OUTSIDE SPECIFIED VALUE



The pick up coil is defective, replace it



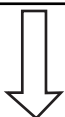
SATISFIES  
THE SPECIFIED VALUE

## 6. Connections

Check the connections throughout the ignition system for connections.  
Consult the "ELECTRICAL DIAGRAM" section

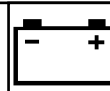


Correct



CORRECT

Replace the CDI unit.



## THE STARTER MOTOR DOES NOT FUNCTION

### NOTE:

- Remove the following parts before repairing the faults.
  - Side covers (right and left)
  - Rear cover
  - Front mudguard
  - Handlebar cover (upper)
- Use the following special tool for these repairs.



**Pocket tester:**  
**90890-03112**

### 1. Fuse

- Remove the fuse.
- Connect the pocket tester ( $\Omega \times 1$ ) on the fuse.
- Check the fuse to see if there is continuity.

NO CONTINUITY

The fuse is defective

CONTINUITY

### 2. Battery

- Check the conditions of the battery. Consult the "INSPECTION OF THE BATTERY" section in chapter 3.

**Open circuit voltage:**  
**12.8 V or more at 20 °C (68 °F)**

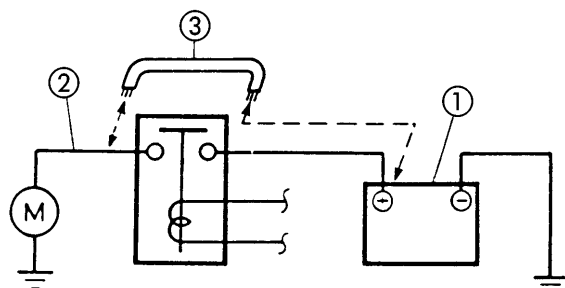
INCORRECT

- Clean the battery terminals
- Recharge or change battery.

CORRECT

### 3. Starter motor

- Connect the positive terminal of the battery (1) and the starter motor cable (2) using a bridge cable (3)\*



- Check the operation of the starter motor.

STARTER MOTOR DOESN'T TURN

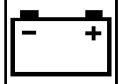
The starter motor is defective, repair or change.

STARTER MOTOR  
TURNS

\*

## IGNITION AND STARTER SYSTEM

ELEC



\*



### 4. Starter relay

- Disconnect the starter relay cable from the installation.
- Connect the battery to the starter relay cables as shown using the bridge cables ①.
- Check the operation of the starter motor.

INCORRECT



The main switch is defective, change.



DOES MOVE

### 5. Main switch

- Disconnect the coupler of the main switch from the installation.
- Check the switch component to see if there is continuity between “Red ① and Brown ②”.

DOESN'T MOVE



The starter relay is defective, change



CORRECT

### 6. Starter switch

- Disconnect the coupler of the handlebar switch (right) from the installation.
- Check the starter switch component to see if there is continuity between “Blue/White ① and Black ②”

INCORRECT



The starter switch is defective, change the handlebar switch (right).



CORRECT

\*

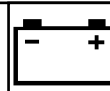
### 7. Connections

- Check the connections throughout the ignition system.  
See the “ELECTRICAL DIAGRAM”

BAD CONNECTION

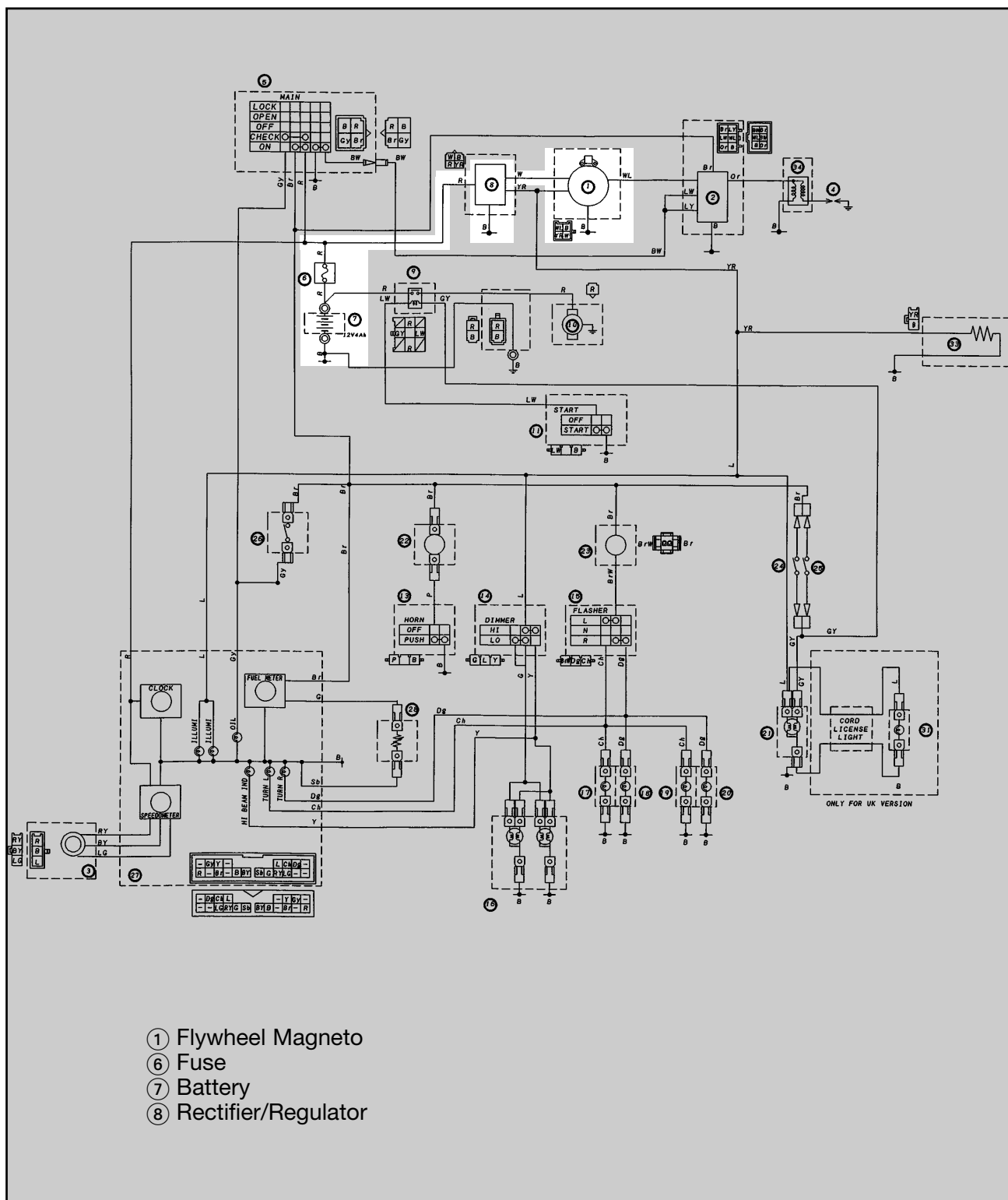


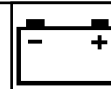
Correct



# CHARGING SYSTEM

## CIRCUIT DIAGRAM





## TROUBLESHOOTING

## THE BATTERY IS NOT CHARGED

## NOTE:

- Remove the following parts before carrying out the repair of the fault.
  - Side covers (right and left)
  - Rear cover
- Use the following special tool for this repair.



**Inductive tachometer:**  
**90890-03113**



**Pocket tester:**  
**90890-03112**

## 1. Fuse (main)

- Remove the fuse.
- Connect the pocket tester ( $\Omega \times 1$ ) to the fuse.
- Check the fuse to see if there is continuity

NO CONTINUITY

The fuse is defective, change.



CONTINUITY

## 2. Battery

- Check the condition of the battery.  
See chapter 3, section "INSPECTION OF THE BATTERY".

**Open circuit voltage:**  
**12.8 V or more at 20 °C (68 °F)**

INCORRECT

- Clean the battery terminals
- Recharge or change the battery.



CORRECT

## 3. Charging voltage

- Connect the inductive tachometer on the spark plug cable
- Connect the pocket tester (20 V CC) on the battery.

Cable (+) of the tester → Terminal (+)  
Cable (–) of the tester → Terminal (–)

- Start the engine and accelerate to 5,000 rpm/min.
- Check charging voltage.



**Charging voltage:**  
**14 ~ 15 V at 5,000 rpm/min.**

SATISFIES THE SPECIFIED VALUE

The charging circuit is in good condition.

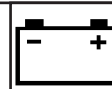
## NOTE:

Use a fully charged battery.



OUTSIDE SPECIFIED VALUE

\*



\*

**4. Charge coil resistance**

- Disconnect the charge coil coupler from the installation.
- Connect the pocket tester( $\Omega \times 1$ ) on the charge coils.
- Measure the resistances of the charge coil.

**Cable (+) of the tester → White cable ①**  
**Cable (-) of tester → Yellow/Red Cable ②**



**Charge coil resistance:**  
**0,288 ~ 0.432  $\Omega$  at 20 °C (68 °F)**

OUTSIDE SPECIFIED VALUE

SATISFIES THE  
SPECIFIED VALUE

The charge coil is defective, change

**5. Connections**

Check the connections throughout the ignition system.  
Consult the “ELECTRICAL DIAGRAM” section.

BAD CONNECTION



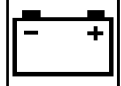
GOOD

Correct.

Change the rectifier/regulator

### CIRCUIT DIAGRAM





### TROUBLESHOOTING

#### HEADLAMP, "HIGH BEAM" LIGHT INDICATOR, REAR LIGHT AND/OR METER LIGHT DO NOT LIGHT UP

#### NOTE:

- Remove the following parts before repairing the faults.
  - 1) Side covers (right and left)
  - 2) Rear cover
  - 3) Handlebar cover (upper)
- Use the following special tool for these repairs.



**Pocket tester:**  
**90890-03112**

#### 1. Light switch "D D"

- Disconnect the coupler of the main switch (left) from the installation.
- Place the switch "D D" in position "D".
- Check the switch component to see if there is continuity between "Blue/Yellow" and "Blue/Green ③".



correct

INCORRECT



The "LIGHTS" switch (intensity control) is defective, Change the handlebar switch (left).

#### 2. Resistance of the lighting coil

- Disconnect the lighting coil coupler from the installation
- Connect the pocket tester ( $\Omega \times 1$ ) on the lighting coils.
- Measure the resistances of the lighting coil.

**Cable (+) of tester → Yellow/Red ①**  
**Cable (-) of tester → Ground ②**



**Lighting coil resistance:**  
**0,176 ~ 0,264  $\Omega$  at 20 °C (68 °F)**

OUTSIDE SPECIFIED VALUE

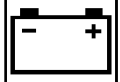


The lighting coil is defective, change.



SATISFIES THE  
SPECIFIED VALUE

\*



\*



## 3. Connections

Check the connections throughout the lighting system.  
See "ELECTRICAL DIAGRAM" section



CORRECT

The circuit is in good condition

BAD CONNECTION



Correct

## CHECKING LIGHTING SYSTEM

### 1. The headlight does not light

#### 1. Bulb and bulb holder

- Check the bulb and bulb holder to see if there is continuity.



CONTINUITY

NO CONTINUITY



Replace the bulb and/or bulb holder.

#### 2. Voltage

- Connect the pocket tester (20 V AC) on the headlight.

#### Headlamp light:

**Cable (+) of → Yellow or Green**

**Cable (-) of tester → Black**

**A** When the switch "☞ ☜" (intensity control) is in position "☞".

**B** When the switch "☞ ☜" (intensity control) is in position "☜".

- Place the main switch on "O".
- Start the engine.
- Place the switch "☞ ☜" (dimmer switch) in position "☞" or "☜".
- Check if there is a voltage (12 V) in the "Green" and "Yellow" cable in the connectors of the bulb holder.



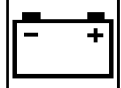
SATISFIES  
THE SPECIFIED  
VALUE (12 V)

The circuit is in good condition.

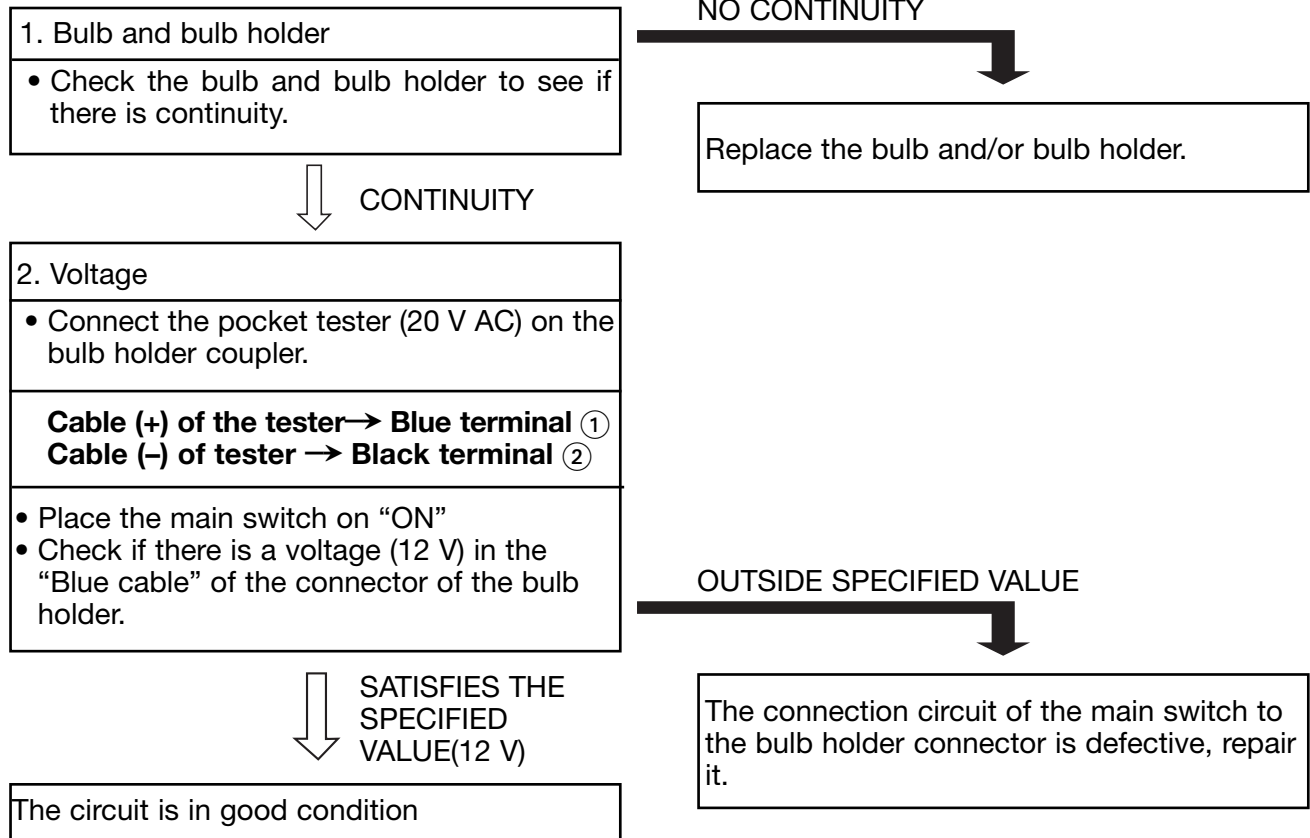
OUTSIDE SPECIFIED VALUE



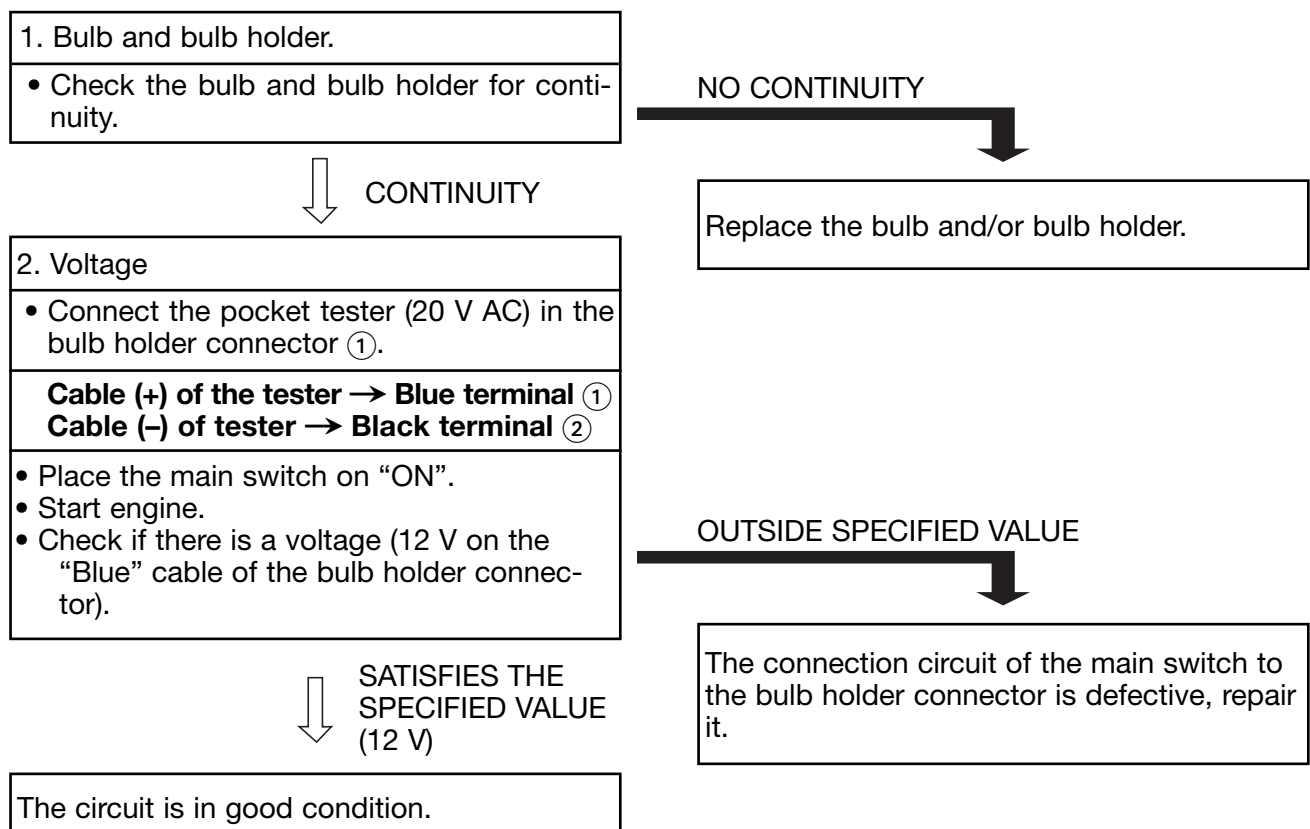
The connection circuit of the main switch to the bulb holder connector is defective, repair it.

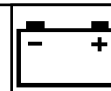


## 2. The panel light does not light.



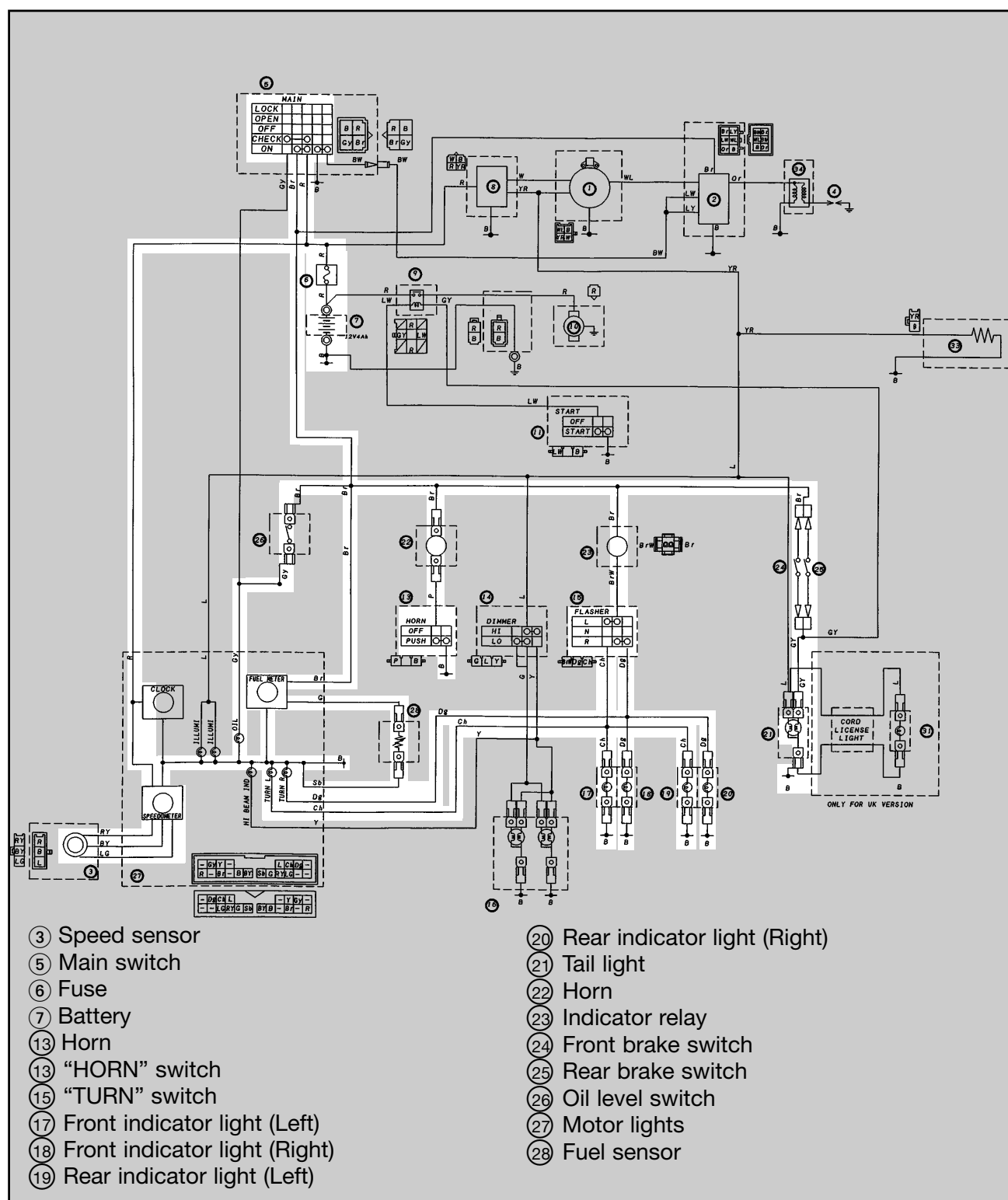
## 3. The rear light does not light.

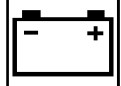




## SIGNALLING SYSTEM

### CIRCUIT DIAGRAM





### TROUBLESHOOTING

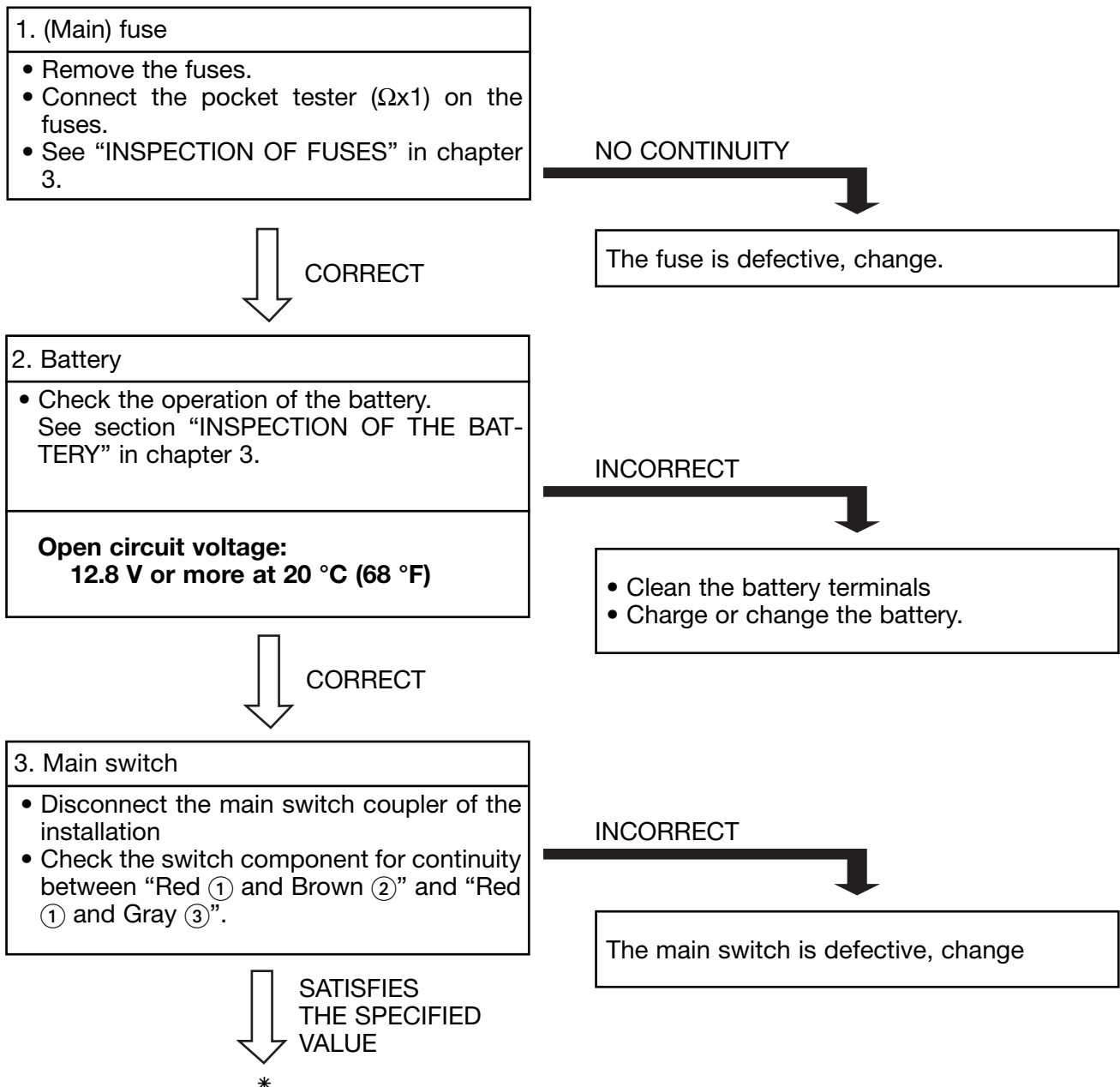
- INDICATOR LIGHT, BRAKE LIGHT, AND/OR INDICATING LIGHTS DO NOT LIGHT.
- THE HORN DOES NOT SOUND

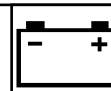
#### NOTE:

- Remove the following parts before repairing the faults .
  - 1) Front cover .
  - 2) Inner cover
  - 3) Rear panel (battery box)
  - 4) Front lower fender
- Use the following special tool for the repairs.



**Pocket tester:**  
**90890-03112**





\*



## 4. Connections

- Check the connections throughout the signalling system.
- See the “ELECTRICAL DIAGRAM” section

BAD CONNECTION

Repair

CORRECT



Check the conditions for each signalling system circuit.  
Consult the “CHECKING SIGNALLING SYSTEM” section.

## CHECKING SIGNALLING SYSTEM

### 1. Horn does not operate

#### 1. “HORN” switch.

- Disconnect the coupler of the handlebar switch (left) from the installation and horn cable.
- Check the switch component for continuity between “Black ① and Red ②”.

INCORRECT

The “HORN” switch is defective, change the handlebar switch (left).

CORRECT



#### 2. Voltage

- Connect the pocket tester (20 V DC) on the horn cable.

**Cable (+) of the tester → Brown ①**  
**Cable (–) of tester → Frame earth**

- Place the main switch on “ON”
- Check if there is a voltage (12 V) in the brown cable of the horn terminal.

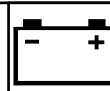
OUTSIDE SPECIFIED VALUE

The connection circuit from the main switch to the horn terminal is defective, repair.

SATISFIES  
THE SPECIFIED  
VALUE (12 V)



\*



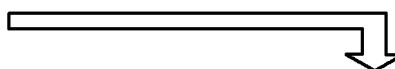
\*



## 3. Horn

- Disconnect the “Pink” cable from the horn terminal.
- Connect a bridge cable ① on the horn terminal and earth the bridge cable.
- Place the main switch on “ON”.

THE HORN SOUNDS



The horn is in good condition.



THE HORN DOES NOT SOUND.

## 4. Voltage

- Connect the pocket tester (20 V DC) on the horn, on the “Pink” terminal.

**Cable (+) of tester → Pink ①**  
**Cable (-) of tester → Earth of frame**

- Place main switch on “ON”.
- Check if there is a voltage (12 V) in the “Pink” cable on the horn terminal.

OUTSIDE SPECIFIED VALUE



The horn is defective.



SATISFIES THE SPECIFIED VALUE

Adjust the horn.

## 2.The brake lights do not light.

### 1.Bulb and bulb holder.

- Check the bulb and bulb holder for continuity

NO CONTINUITY



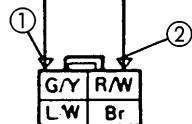
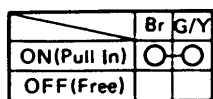
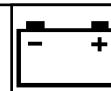
Change the bulb and/or bulb holder.



CONTINUITY

### 2.Brake switch

- Disconnect the brake switch cables from the installation.
- Check the switch component for continuity between “Brown ① and Green/Yellow ②”.



INCORRECT

The brake switch is defective, change.

CORRECTO

### 3.Voltage

- Connect the pocket tester (20 V DC) on the bulb holder connector.

Cable (+) of tester → Green/Yellow ①  
Cable (-) of tester → Black ②

- Place the main switch on “ON”.
- Activate the brake lever.
- Check if there is a voltage (12 V) on the “Green/Yellow” cable of the bulb holder connector.

OUTSIDE SPECIFIED VALUE

The connection circuit from the main switch to the connector of the bulb holder is defective, change.

SATISFIES THE SPECIFIED VALUE (12 V)

The circuit is in good condition.

### 3. The Master lights do not flash.

#### 1. Bulb and bulb holder.

- Check the bulb and bulb holder for continuity.

NO CONTINUITY

Change the bulb and/or bulb holder.

CONTINUITY

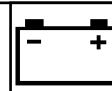
#### 2.Turning signal switch “↔”

- Disconnect the handlebar switch coupler (left) from the installation.
- Check the switch component for continuity between “Brown/white” ① and “Chocolate ②” and “Brown/White” ① and “Dark green” ③

CORRECT

## SIGNALLING SYSTEM

ELEC



\*



INCORRECT



The "TURN" is defective, change the hand-lebar switch (left).

### 3. Voltage

- Connect the pocket tester (20 V DC) on the flasher relay .

**Cable (+) of tester → Brown**  
**Cable (-) of tester → Fame ground**

- Place the main switch on "ON".
- Check if there is a voltage (12 V) on the "Brown" cable and "Frame ground" of the flasher relay terminal.



SATISFIES THE  
SPECIFIED VALUE  
(12 V)

OUTSIDE SPECIFIED VALUE



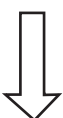
The indicator relay is defective, change

### 4. Voltage

- Connect the pocket tester (20VDC) on the flaster relay.

**Cable (+) of tester → White/Brown**  
**Cable (-) of tester → Frame ground**

- Place the main switch on "ON"
- Chek it there is a vollàge (12V) on the "Brown / White" cable and "Frame ground" of the flasher relay terminal.



SATISFIES THE  
SPECIFIED VALUE  
(12V)

OUTSIDE SPECIFIED VALUE



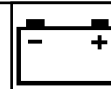
The flasher relay is faulty, change

### 5. Voltage

- Connect the pocket tester (20 V DC) on the bulb holder receptacle.

**On the indicator light (left):**  
**Cable (+) of the tester → Chocolate ①**  
**Cable (-) of tester → Frame ground**

**On the indicator light (right):**  
**Cable (+) of tester → Dark Green ②**  
**Cable (-) of tester → Frame ground**



- Place the main switch on “○”.
- Place the switch “↔” on position “↔” or “⊕”.
- Check if there is a voltage (12 V) on the “Chocolate” or “Dark Green” cable of the bulb holder connector.



SATISFIES THE  
SPECIFIED VALUE  
(12 V)

The circuit is in good condition.

OUTSIDE SPECIFIED VALUE



The connection circuit from the “TURN” switch to the bulb holder connector is defective, review.

## 4. The oil indicator light “OIL” does not light.

### 1. Bulb and bulb holder

- Check the bulb and bulb holder for continuity.



CONTINUITY

NO CONTINUITY



Change the bulb and/or bulb receptacle.

### 2. Oil level switch

- Remove the oil sump oil level switch.
- Connect the pocket tester ( $\Omega \times 1$ ) on the oil level switch.

**Cable (+) of tester → Terminal ①**  
**Cable (-) of tester → Terminal ②**

- Check the oil level measurer for continuity.

| Switch position                                     | Good condition | Bad condition |   |   |
|-----------------------------------------------------|----------------|---------------|---|---|
| <b>A Vertical position upwards</b>                  | x              | ○             | x | ○ |
| <b>B Reverse position</b>                           | ○              | x             | x | ○ |
| ○: Continuity                      x: No continuity |                |               |   |   |



GOOD CONDITION

POOR CONDITION



Change the oil level switch.

### 3. Voltage

- Connect the pocket tester (20 V DC) on the bulb holder connector .

**Cable (+) of tester → Gray ①**  
**Cable (-) of tester → Frame ground**

- Place main switch on “\*”
- Check if there is a voltage (12 V) on the “Gray” cable of the bulb holder connector

SATISFIES THE SPECIFIED VALUE (12 V)

The circuit is in good condition.

OUTSIDE SPECIFIED VALUE

4. Connections
- Check the connections throughout the signalling system. See the “ELECTRICAL DIAGRAM” section.

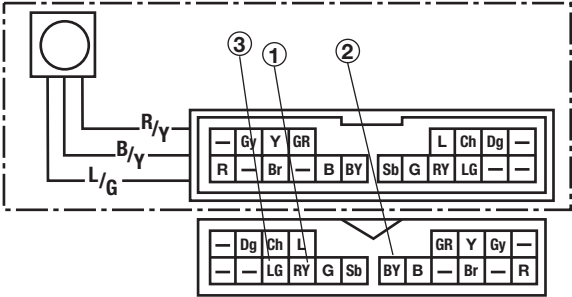
5. The speedometer fails to come on.

1. Voltage

- Connect the pocket tester (DC 20 V) to the multi-function meter socket coupler (wire harness side) as shown.

Positive tester probe → red/yellow ①

Negative tester probe → black/yellow ②



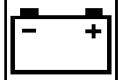
- Set the main switch to “ON”.
- Measure the voltage (DC 12 V) of red/yellow ① on the multi-function meter coupler (wire harness side).
- Is the voltage within specification?

YES

This circuit is OK.

NO

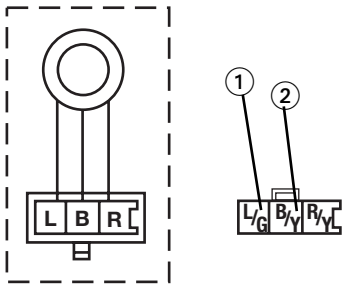
Replace the speed sensor.



## 2. Speed sensor

- Connect the pocket tester (DC 20 V) to the speed sensor coupler (wire harness side) as shown.

**Positive tester probe → blue/green ①**  
**Negative tester probe → black/yellow ②**



- Set the main switch to “ON”.
- Elevate the front wheel and slowly rotate it.
- Measure the voltage (DC 12 V) of red/yellow and black/yellow. With each full rotation of the front wheel, the voltage reading should cycle from 0 V to 5 ~ 11V to 0 V to 5 ~ 11V, etc.
- Does the voltage reading cycle correctly?

↓ YES

The circuit is OK.

↓ NO

Replace the speed sensor.

?

**LOC  
AVER**

**8**

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CHAPTER 8

LOCATION AND REPAIR OF BREAKDOWNS

LOCATION AND REPAIR OF ENGINE BREAKDOWNS .....

8-1

ELECTRICAL SYSTEM .....

8-1

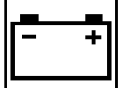
COMPRESSION SYSTEM .....

8-2

INLET AND EXHAUST SYSTEM .....

8-3

ELECTRICAL DIAGRAM YN50



## ELECTRICAL SYSTEM

### \* CHECK ALL CABLE CONNECTIONS

#### MAIN SWITCH

- The main switch is short circuited.

#### SPARK PLUG

- Excessive carbon deposits.
- Damp electrodes.
- Incorrect gap.
- Broken.

#### IGNITION COIL

- The primary and secondary coils are broken or defective.
- The high voltage cable is defective.
- The spark plug cap is defective.

#### SOURCE COIL

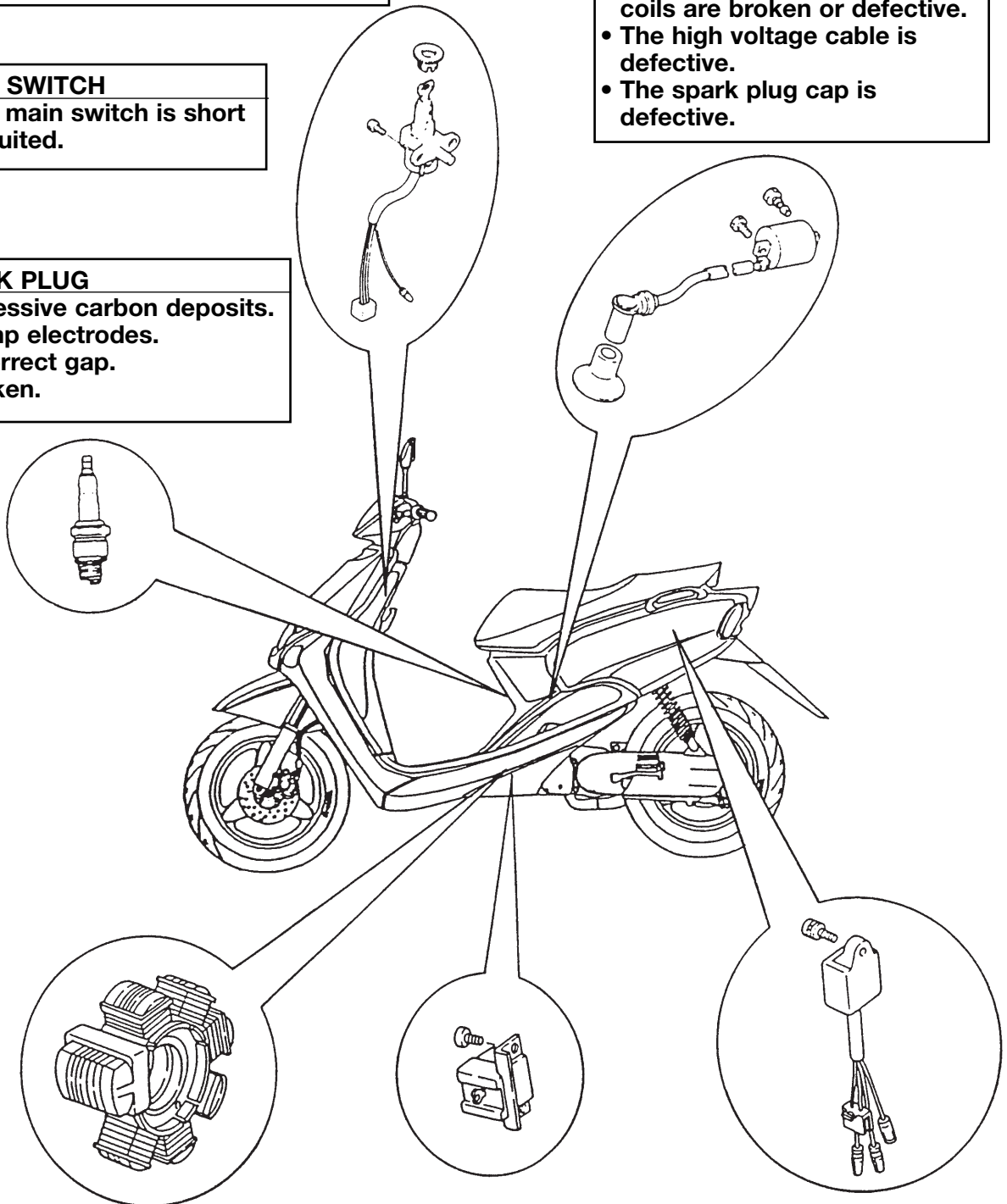
- The coils are broken.

#### PICK-UP COIL

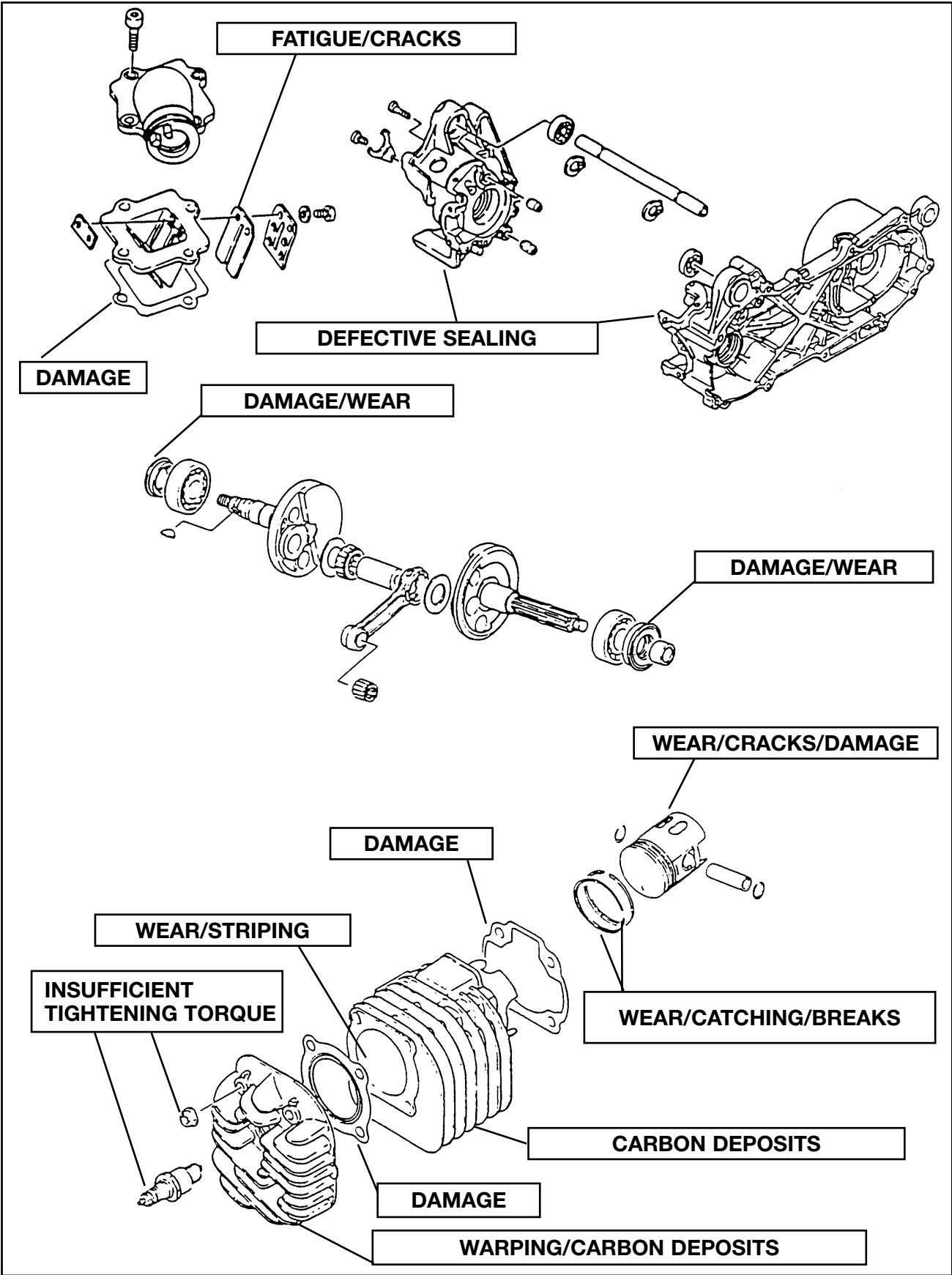
- The coils are broken.
- Incorrect ignition distribution.

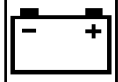
#### CDI UNIT

- CDI unit defective

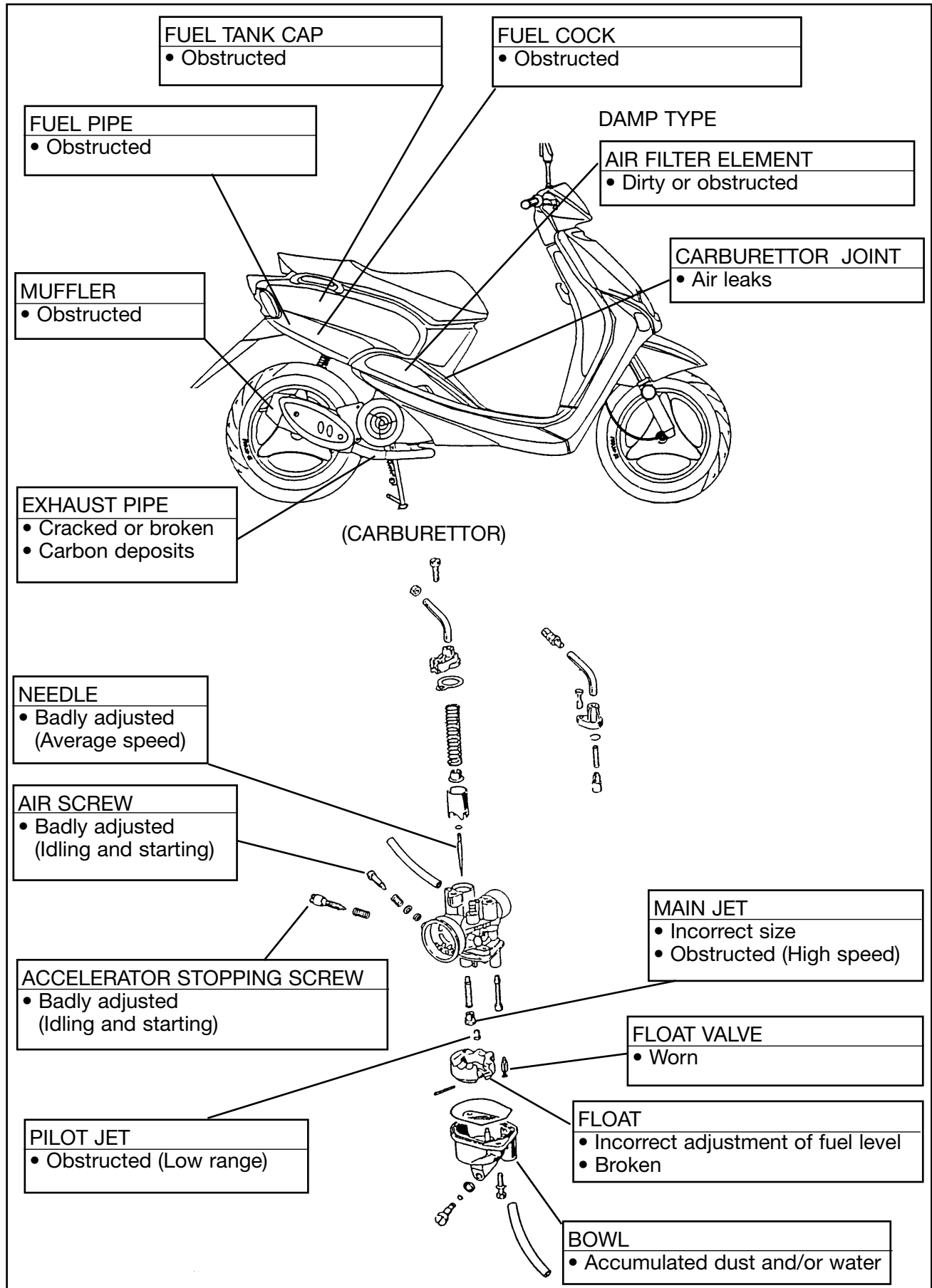


COMPRESSION SYSTEM





## INLET AND EXHAUST SYSTEM



ELECTRICAL DIAGRAM YN50

COLOUR CODE

|      |       |              |
|------|-------|--------------|
| B    | ..... | BLACK        |
| R    | ..... | RED          |
| L    | ..... | BLUE         |
| G    | ..... | GREEN        |
| O    | ..... | ORANGE       |
| Y    | ..... | YELLOW       |
| P    | ..... | PINK         |
| BR   | ..... | BROWN        |
| CH   | ..... | CHOCOLATE    |
| SB   | ..... | SKY BLUE     |
| DG   | ..... | DARK GREEN   |
| W    | ..... | WHITE        |
| B/BR | ..... | BLACK/BROWN. |
| B/Y  | ..... | BLACK/YELLOW |
| B/R  | ..... | BLACK/RED    |
| B/W  | ..... | BLACK/WHITE  |
| G/R  | ..... | GREEN/RED    |
| G/Y  | ..... | GREEN/YELLOW |
| BR/W | ..... | BROWN/WHITE  |
| W/R  | ..... | WHITE/RED    |
| W/B  | ..... | WHITE/BLACK  |
| W/G  | ..... | WHITE/GREEN  |
| Y/L  | ..... | YELLOW/BLUE  |
| Y/R  | ..... | YELLOW/RED   |
| L/B  | ..... | BLUE/BLACK   |
| L/W  | ..... | BLUE/WHITE   |
| L/Y  | ..... | BLUE/YELLOW  |
| R/Y  | ..... | RED/YELLOW   |
| L/G  | ..... | BLEU/GREEN   |

|     |                         |
|-----|-------------------------|
| 1.  | Flywheel magneto        |
| 2.  | CDI UNIT                |
| 3.  | SPEED SENSOR            |
| 4.  | Spark plug              |
| 5.  | Main switch             |
| 6.  | Fuse                    |
| 7.  | Battery                 |
| 8.  | Rectifier/regulator     |
| 9.  | Starter relay           |
| 10. | Starter motor           |
| 11. | Starter switch          |
| 13. | Horn switch             |
| 14. | Dimmer switch           |
| 15. | Turn lights switch      |
| 16. | Headlight               |
| 17. | Front left turn light   |
| 18. | Front right turn light  |
| 19. | Rear left turn light    |
| 20. | Rear right turn light   |
| 21. | Tail light              |
| 22. | Horn                    |
| 23. | Turn lights relay       |
| 24. | Front stop switch       |
| 25. | Rear stop switch        |
| 26. | Oil level switch        |
| 27. | Instrument panel        |
| 28. | Fuel sender             |
| 31. | License light (UK only) |
| 33. | Auto choke              |
| 34. | Ignition coil           |

