

YAMAHA

YP125E

SERVICE MANUAL

NOTICE

This manual was produced by the Yamaha Motor Taiwan Company primarily for use by Yamaha/MBK dealers and their qualified mechanics. It is not possible to include all the knowledge of a mechanic in one manual, so it is assumed that anyone who uses this book to perform maintenance and repairs on Yamaha/MBK scooter has a basic understanding of the mechanical ideas and the procedures of scooter repair. Repairs attempted by anyone without this knowledge are likely to render the scooter unsafe and unfit for use.

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

**TECHNICAL PUBLICATIONS
SERVICE DIVISION
SALES GROUP
YAMAHA MOTOR TAIWAN CO., LTD.**

PARTICULARLY IMPORTANT INFORMATION

This material is distinguished by the following notation.



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

WARNING

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

CAUTION:

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

NOTE:

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

HOW TO USE THIS MANUAL

CONSTRUCTION OF THIS MANUAL

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

- 1st title ①: This is a chapter with its symbol on the upper right corner of each page.
- 2nd title ②: This title appears on the top of each page to the left of the chapter symbol. (For the chapter "Periodic inspection and adjustment" the 3rd title appears.)
- 3rd title ③: This is a final title.

MANUAL FORMAT

All of the procedures in this manual are organized in a sequential, step-by-step format. The information has been compiled to provide the mechanic with an easy to read, handy reference that contains comprehensive explanations of all disassembly, repair, assembly, and inspections.

A set of particularly important procedures ④ is placed between a line of asterisks "*" with each procedure preceded by "●".

IMPORTANT FEATURES

- Data and a special tools are framed and marked with a corresponding symbol ⑤.
- A circled number refers to an illustrated part ⑥.
- A circled lower case letter refers to an illustrated dimension or alignment mark ⑦.
- An upper case letter in a box refers to other illustrated details ⑧.
- An arrow mark after a given defect suggests the recommended course of action ⑨.

EXPLODED DIAGRAMS

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

CYLINDER HEAD, CYLINDER AND PISTON ENG

CYLINDER HEAD, CYLINDER AND PISTON

CYLINDER HEAD, CYLINDER AND PISTON

Order	Job name/Part name	Qty	Remarks
	Cylinder head, Cylinder and piston removal		Remove the parts in the order.
	Engine		Refer to the "ENGINE REMOVAL" section
1	Muffler/Gasket	1/1	
2	Air shroud (cylinder head)	1	
3	Spark plug	1	
4	Cylinder head/Cylinder head gasket	1/1	
5	Cylinder	1	
6	Piston pin clip	2	
7	Piston pin/ Bearing	1/1	
8	Piston	1	
9	Piston ring set	1	
10	Cylinder gasket	1	
			Reverse the removal procedure for installation.

FRONT WHEEL CHAS

3. Inspect:

- Wheel
- Bent/cracks/warpage → Replace.

4. Measure:

- Wheel runout
- Over the specified limit → Replace.

Run runout limit:

Radial ⑦: 2.0 mm

Lateral ⑦: 2.0 mm

5. Inspect:

- Front wheel bearings
- Bearings allow free play in the wheel hub or the wheel turns roughly → Replace.

.....

Front wheel bearings and oil seal replacement steps:

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

NOTE:

To prevent damage place a rag ④ between the screwdriver and the wheel surface.

- Remove the bearing using a general bearing puller ②.
- Install the new bearing by reversing the previous steps.

NOTE:








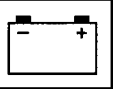


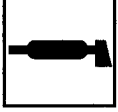



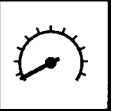
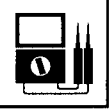







Use a socket ③ that matches the outside diameter of the bearing race.

.....

Do not strike the bearing center race or ball bearings. Contact should be made only with the outer race.

- Install the oil seal (new).

.....

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

ILLUSTRATED SYMBOLS

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

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









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

- ⑩ Can be repaired or maintained with engine mounted.
- ⑪ Filling fluid
- ⑫ Lubricant
- ⑬ Special tool
- ⑭ Tightening
- ⑮ Wear limit, clearance
- ⑯ Engine speed
- ⑰ Ω , V, A

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

- ⑱ Apply engine oil
- ⑲ Apply gear oil
- ⑳ Apply molybdenum disulfide oil
- ㉑ Apply wheel bearing grease
- ㉒ Apply lightweight lithium-soap base grease
- ㉓ Apply molybdenum disulfide grease
- ㉔ Apply locking agent (LOCTITE[®])
- ㉕ Use a new one

INDEX

GENERAL INFORMATION	
	GEN INFO 1
SPECIFICATIONS	
	SPEC 2
PERIODIC INSPECTION AND ADJUSTMENT	
	INSP ADJ 3
ENGINE OVERHAUL	
	ENG 4
COOLING SYSTEM	
	COOL 5
CARBURETION	
	CARB 6
CHASSIS	
	CHAS 7
ELECTRICAL	
	ELEC 8
TROUBLESHOOTING	?
	TRBL SHTG 9

CONTENTS

CHAPTER 1. GENERAL INFORMATION

GENERAL INFORMATION	1-1
SCOOTER IDENTIFICATION	1-1
ENGINE SERIAL NUMBER	1-1
FUNCTION	1-2
OIL CHANGE INDICATOR	1-2
SETTING PROCEDURE	1-2
AUTO-CHOKE SYSTEM	1-3
WATER TEMPERATURE INDICATOR LIGHT TO CHECK THE CIRCUIT	1-4
COOLING LIQUID PATH DIAGRAM	1-5
IMPORTANT INFORMATION	1-6
PREPARATION FOR REMOVAL PROCEDURES	1-6
REPLACEMENT PARTS	1-6
GASKETS, OIL SEALS AND O-RINGS	1-6
LOCK WASHERS/PLATES AND COTTER PINS	1-7
BEARINGS AND OIL SEALS	1-7
CIRCLIPS	1-7
CHECKING OF CONNECTIONS	1-8
HOW TO USE THE CONVERSION TABLE	1-9
CONVERSION TABLE	1-9
SPECIAL TOOLS	1-10

CHAPTER 2. SPECIFICATIONS

SPECIFICATIONS	2-1
GENERAL SPECIFICATIONS	2-1
MAINTENANCE SPECIFICATIONS	2-4
ENGINE	2-4
TIGHTENING TORQUES	2-8
ENGINE	2-8
CHASSIS	2-10
TIGHTENING TORQUES	2-12
CHASSIS	2-12
ELECTRICAL	2-13
GENERAL TORQUE SPECIFICATIONS (Standard Screw)	2-15
LUBRICATION POINT AND GRADE OF LUBRICANT ENGINE	2-16
ENGINE	2-16
CHASSIS	2-17
LUBRICATION DIAGRAM	2-18
LUBRICATION ROUTING	2-18
CABLE ROUTING	2-21

**CHAPTER 3.
PERIODIC INSPECTION AND ADJUSTMENT**

PERIODIC INSPECTION AND ADJUSTMENT	3-1
INTRODUCTION	3-1
PERIODIC MAINTENANCE/LUBRICATION INTERVALS	3-1
MAINTENANCE TABLE OF FLUE GAS CONTROL SYSTEM	3-2
REGULAR MAINTENANCE TABLE OF FLUE GAS CONTROL SYSTEM	3-2
UNSCHEDULED MAINTENANCE TABLE OF FLUE GAS CONTROL SYSTEM	3-2
FUNCTION OF VARIOUS COMPONENTS OF FLUE GAS CONTROL SYSTEM	3-3
COVER AND PANEL	3-4
GRAB BAR, BACKREST, AND SEAT	3-4
TAIL COVER, SIDE COVER, AND FUEL TANK	3-6
FRONT COWLING	3-7
HANDLE COVER, LEGSHIELD, FOOTREST	3-9
ENGINE	3-10
VALVE CLEARANCE ADJUSTMENT	3-10
IDLING SPEED ADJUSTMENT	3-11
THROTTLE CABLE ADJUSTMENT	3-12
SPARK PLUG INSPECTION	3-13
IGNITION TIMING CHECK	3-14
COMPRESSION PRESSURE MEASUREMENT	3-15
ENGINE OIL LEVEL INSPECTION	3-16
ENGINE OIL REPLACEMENT	3-17
ENGINE OIL PRESSURE INSPECTION	3-18
TRANSMISSION OIL REPLACEMENT	3-19
EXHAUST SYSTEM INSPECTION	3-20
AIR FILTER CLEANING AND REPLACEMENT	3-20
V-BELT CASE AIR CLEANER FILTER CLEANING	3-21
COOLANT LEVEL INSPECTION	3-22
COOLANT REPLACEMENT	3-23
COOLING SYSTEM AIR BLEED	3-26
COOLING SYSTEM INSPECTION	3-26
CHASSIS	3-27
BRAKE FLUID LEVEL INSPECTION	3-27
BRAKE PAD INSPECTION	3-28
AIR BLEEDING (HYDRAULIC BRAKE SYSTEM)	3-28
REAR BRAKE ADJUSTMENT	3-29
BRAKE SHOE INSPECTION	3-30
STEERING HEAD INSPECTION	3-30
FRONT FORK INSPECTION	3-32
SWINGARM INSPECTION	3-33
REAR SHOCK ABSORBER INSPECTION	3-33
REAR SHOCK ABSORBER ADJUSTMENT	3-33
TIRE INSPECTION	3-34
WHEEL INSPECTION	3-36
ELECTRICAL	3-37
BATTERY INSPECTION	3-37
FUSE INSPECTION	3-39

HEADLIGHT BEAM ADJUSTMENT	3-40
HEADLIGHT BULB REPLACEMENT	3-40
TAILLIGHT BULB REPLACEMENT	3-42
REAR TURN SINGAL BULB REPLACEMENT	3-42
FRONT TURN SINGAL BULB REPLACEMENT	3-42
FLUE GAS CONTROL SYSTEM	3-43
INSPECT	3-45
EVAPORATED EMISSION CONTROL SYSTEM (EEC SYSTEM)	3-45
FUEL TANK CAP	3-45
ANTI-ROLLING OVER VALVE	3-45
CANISTER	3-45
CRANKCASE LEAKED FLUE GAS FLOW BACK DEVICE (PCV system)	3-47

CHAPTER 4. ENGINE OVERHAUL

ENGINE REMOVAL	4-1
WIRE HARNESS, CABLE, AND PIPE	4-1
ENGINE REMOUNTING	4-3
CYLINDER HEAD	4-4
CYLINDER HEAD	4-4
CYLINDER HEAD REMOVAL	4-6
CYLINDER HEAD INSPECTION	4-6
CYLINDER HEAD INSTALLATION	4-7
CAMSHAFT AND ROCKER ARMS	4-10
CAMSHAFT AND ROCKER ARMS	4-10
ROCKER ARM AND ROCKER ARM SHAFT REMOVAL	4-11
CAMSHAFT INSPECTION	4-11
ROCKER ARMS AND ROCKER ARM SHAFTS INSPECTION	4-12
CAMSHAFT AND ROCKER ARM INSTALLATION	4-12
VALVES AND VALVE SPRINGS	4-14
VALVES AND VALVE SPRINGS REMOVAL	4-15
VALVES AND VALVE SPRINGS INSPECTION	4-15
VALVE SEATS INSPECTION	4-16
VALVES AND VALVE SPRINGS INSTALLATION	4-18
CYLINDER AND PISTON	4-20
PISTON AND PISTON RINGS REMOVAL	4-21
CYLINDER INSPECTION	4-21
PISTON AND PISTON PIN INSPECTION	4-22
PISTON RINGS INSPECTION	4-23
PISTON RINGS, PISTON AND CYLINDER INSTALLATION	4-24
KICK STARTER, V-BELT, CLUTCH AND SECONDARY/PRIMARY SHEAVE	4-26
KICK STARTER, V-BELT AIR FILTER COVER , AND CRANKCASE COVER (LEFT)	4-26
KICK STARTER	4-27
PEDAL ROD INSTALLATION	4-28
V-BELT, CLUTCH AND SECONDARY/PRIMARY SHEAVE	4-29
SECONDARY SHEAVE	4-30

PRIMARY SHEAVE REMOVAL	4-32
SECONDARY SHEAVE AND V-BELT REMOVAL	4-32
SECONDARY SHEAVE DISASSEMBLY	4-33
CLUTCH INSPECTION	4-33
V-BELT INSPECTION	4-34
WEIGHT INSPECTION	4-34
SECONDARY SHEAVE INSPECTION	4-34
PRIMARY SHEAVE ASSEMBLY	4-35
SECONDARY SHEAVE INSTALLATION	4-35
STARTER CLUTCH, STARTER MOTOR	4-38
STARTER DRIVE GEAR INSPECTION	4-39
AC MAGNETO	4-40
AC MAGNETO ROTOR REMOVAL	4-41
AC MAGNETO ROTOR INSTALLATION	4-41
OIL PUMP	4-42
OIL PUMP INSPECTION	4-44
TRANSMISSION	4-45
CRANKCASE AND CRANKSHAFT	4-46
CRANKSHAFT REMOVAL	4-48
CRANKSHAFT INSPECTION	4-48
CRANKCASE INSTALLATION	4-49

CHAPTER 5. COOLING SYSTEM

COOLING SYSTEM	5-1
RADIATOR	5-2
INSPECTION	5-3
WATER PUMP	5-4
INSPECTION	5-5
WATER PUMP INSTALLATION	5-5
THERMOSTAT	5-7
INSPECTION	5-8
INSTALLATION	5-8

CHAPTER 6. CARBURETION

CARBURETION	6-1
CARBURETOR	6-1
CARBURETOR DISASSEMBLY	6-2
ASSEMBLY	6-4
FUEL LEVEL ADJUSTMENT	6-5
AUTO CHOKE INSPECTION	6-6
FUEL PUMP INSPECTION	6-7

**CHAPTER 7.
CHASSIS**

CHASSIS	7-1
FRONT WHEEL AND BRAKE DISC	7-1
FRONT WHEEL DISASSEMBLY	7-2
FRONT WHEEL DISASSEMBLY	7-3
FRONT WHEEL INSPECTION	7-3
BRAKE DISC INSPECTION	7-4
FRONT WHEEL ASSEMBLY	7-4
FRONT WHEEL INSTALLATION	7-5
WHEEL STATIC BALANCE ADJUSTMENT	7-6
REAR SHOCK ABSORBER AND SWING ARM	7-8
REAR WHEEL AND REAR BRAKE	7-9
REAR WHEEL INSPECTION	7-10
REAR BRAKE INSPECTION	7-10
REAR BRAKE INSTALLATION	7-11
FRONT BRAKE	7-12
FRONT BRAKE	7-12
BRAKE PAD	7-12
BRAKE PAD REPLACEMENT	7-13
MASTER CYLINDER	7-14
MASTER CYLINDER DISASSEMBLY	7-15
MASTER CYLINDER INSPECTION	7-16
MASTER CYLINDER ASSEMBLY	7-17
MASTER CYLINDER INSTALLATION	7-17
CALIPER	7-19
CALIPER DISASSEMBLY	7-20
BRAKE CALIPER DISASSEMBLY	7-21
CALIPER INSPECTION	7-21
BRAKE CALIPER ASSEMBLY	7-22
CALIPER INSTALLATION	7-22
FRONT FORK	7-23
FRONT FORK	7-23
FRONT FORK DISASSEMBLY	7-24
FRONT FORK REMOVAL	7-25
FRONT FORK DISASSEMBLY	7-25
FRONT FORK INSPECTION	7-26
FRONT FORK ASSEMBLY	7-26
FRONT FORK INSTALLATION	7-29
HANDLEBAR	7-30
HANDLEBAR REMOVAL	7-32
HANDLEBAR INSPECTION	7-32
HANDLEBAR INSTALLATION	7-32
STEERING	7-34
STEERING	7-34
STEERING REMOVAL	7-36
INSPECTION	7-36
STEERING INSTALLATION	7-37

**CHAPTER 8.
ELECTRICAL**

ELECTRICAL	8-1
ELECTRICAL COMPONENTS	8-1
CIRCUIT DIAGRAM	8-2
CHECKING SWITCHES	8-3
CHECKING STEPS	8-3
SWITCH CONNECTION AS SHOWN IN THIS MANUAL	8-3
SWITCH POSITION AND TERMINAL CONNECTION	8-4
IGNITION SYSTEM	8-5
CIRCUIT DIAGRAM	8-5
TROUBLESHOOTING	8-6
CHARGING SYSTEM	8-10
CIRCUIT DIAGRAM	8-10
TROUBLESHOOTING	8-11
ELECTRIC STARTING SYSTEM	8-14
CIRCUIT DIAGRAM	8-14
TROUBLESHOOTING	8-15
ELECTRICAL STARTING SYSTEM	8-18
STARTER MOTOR	8-18
INSPECTION AND REPAIR	8-20
ASSEMBLY	8-22
LIGHTING SYSTEM	8-23
CIRCUIT DIAGRAM	8-23
TROUBLESHOOTING	8-24
LIGHTING SYSTEM CHECK	8-25
SIGNAL SYSTEM	8-28
CIRCUIT DIAGRAM	8-28
TROUBLESHOOTING	8-29
SIGNAL SYSTEM CHECK	8-30
COOLING SYSTEM	8-36
CIRCUIT DIAGRAM	8-36
TROUBLESHOOTING	8-37
TROUBLESHOOTING	8-40
AUTO CHOKE SYSTEM	8-43
CIRCUIT DIAGRAM	8-43
TROUBLESHOOTING	8-44

**CHAPTER 9.
TROUBLESHOOTING**

TROUBLESHOOTING	9-1
STARTING FAILURE/HARD STARTING	9-1
FUEL SYSTEM	9-1
Fuel pump	9-1
Carburetor	9-1
Auto choke	9-1
Air cleaner	9-1
COMPRESSION SYSTEM	9-1

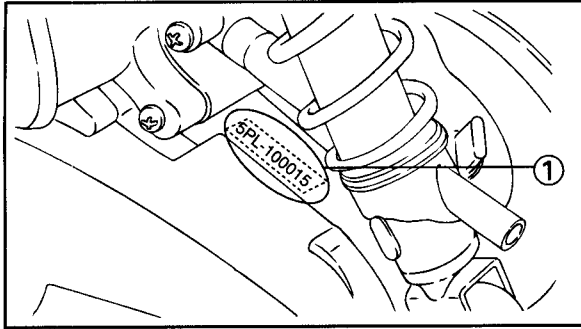
Cylinder and cylinder head	9-1
Piston and piston ring	9-1
Valve system	9-1
IGNITION SYSTEM	9-2
Battery	9-2
Fuse	9-2
Spark Plug	9-2
Ignition coil	9-2
Ignition system	9-2
Switch	9-2
Wiring	9-2
POOR IDLE SPEED PERFORMANCE	9-2
POOR IDLE SPEED PERFORMANCE	9-2
Carburetor.....	9-2
Auto choke	9-2
Air cleaner.....	9-2
Ignition system	9-2
Valve system	9-2
POOR MEDIUM AND HIGH SPEED PERFORMANCE	9-3
POOR MEDIUM AND HIGH SPEED PERFORMANCE	9-3
POOR MEDIUM AND HIGH SPEED PERFORMANCE	9-3
Carburetor.....	9-3
Air cleaner.....	9-3
POOR SPEED PERFORMANCE	9-3
POOR SPEED PERFORMANCE	9-3
Ignition system	9-3
Fuel system	9-3
Compression system	9-3
Clutch	9-3
Engine oil	9-3
Brakes	9-3
FAULTY CLUTCH	9-4
WHEN ENGINE IS RUN, SCOOTER DOES NOT RUN	9-4
V belt	9-4
Cam, slider	9-4
Compression spring.....	9-4
Gears	9-4
CLUTCH SLIPPING	9-4
Clutch weight spring	9-4
Clutch shoe	9-4
Primary sliding sheave	9-4
POOR STARTING PERFORMANCE	9-4
V-belt	9-4
Primary sliding sheave	9-4
Compression spring.....	9-4
Secondary sliding sheave	9-4
Clutch shoe	9-4
POOR SPEED PERFORMANCE	9-4

V belt	9-4
Roller weight	9-4
Primary/secondary sheave	9-4
OVER HEATING OR OVER-COOLING	9-5
OVER HEATING	9-5
Ignition system	9-5
Fuel system	9-5
Compression system	9-5
Engine oil	9-5
Brakes	9-5
Cooling system	9-5
OVER-COOLING	9-5
Cooling system	9-5
FAULTY BRAKE	9-6
POOR BRAKING EFFECT	9-6
Front brake	9-6
Rear brake	9-6
FRONT FORK MALFUNCTION	9-6
OIL LEAKAGE	9-6
MALFUNCTION	9-6
INSTABLE HANDLING	9-7
INSTABLE HANDLING	9-7
Handlebars	9-7
Steering	9-7
Front forks	9-7
Wheels	9-7
Frame	9-7
Rear arm	9-7
Rear shock absorber	9-7
Cowling	9-7
STARTER MOTOR DOES NOT OPERATE	9-7
STARTER MOTOR DOES NOT OPERATE	9-7
Battery	9-7
Fuse	9-7
Switch	9-7
Wireharness	9-7
Starter motor	9-7
Engine	9-7
FAULTY SIGNAL AND LIGHTING SYSTEM	9-8
HEADLIGHT DARK	9-8
BULB BURNT OUT	9-8
FLASHER DOES NOT BLINK	9-8
FLASHER KEEPS ON	9-8
FLASHER BLINKS SLOWER	9-8
FLASHER BLINKS QUICKER	9-8
HORN DOES NOT SOUND	9-8

GENERAL INFORMATION
SCOOTER IDENTIFICATION

ENGINE SERIAL NUMBER

The engine serial number ① is stamped into the crankcase.



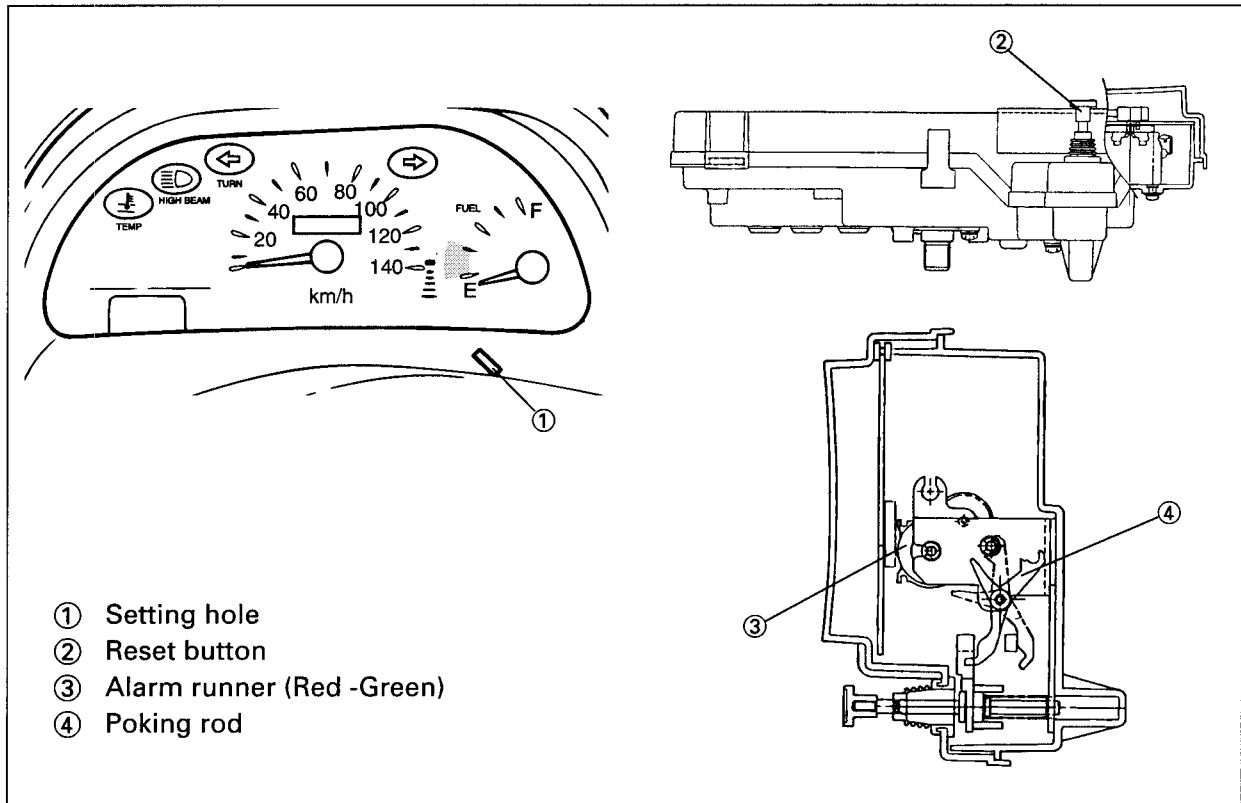
Start stamping the engine serial number.
YP125E 5PL-000101

1



FEATURES

OIL CHANGE INDICATOR



- ① Setting hole
- ② Reset button
- ③ Alarm runner (Red -Green)
- ④ Poking rod

• FUNCTION

In order to improve the suitability of the scooter, change the engine oil once the oil change indicator on the meter panel turned from "green" to "red" (been travelling for approximately 1000km) to keep the scooter as good as new.

• SETTING PROCEDURE

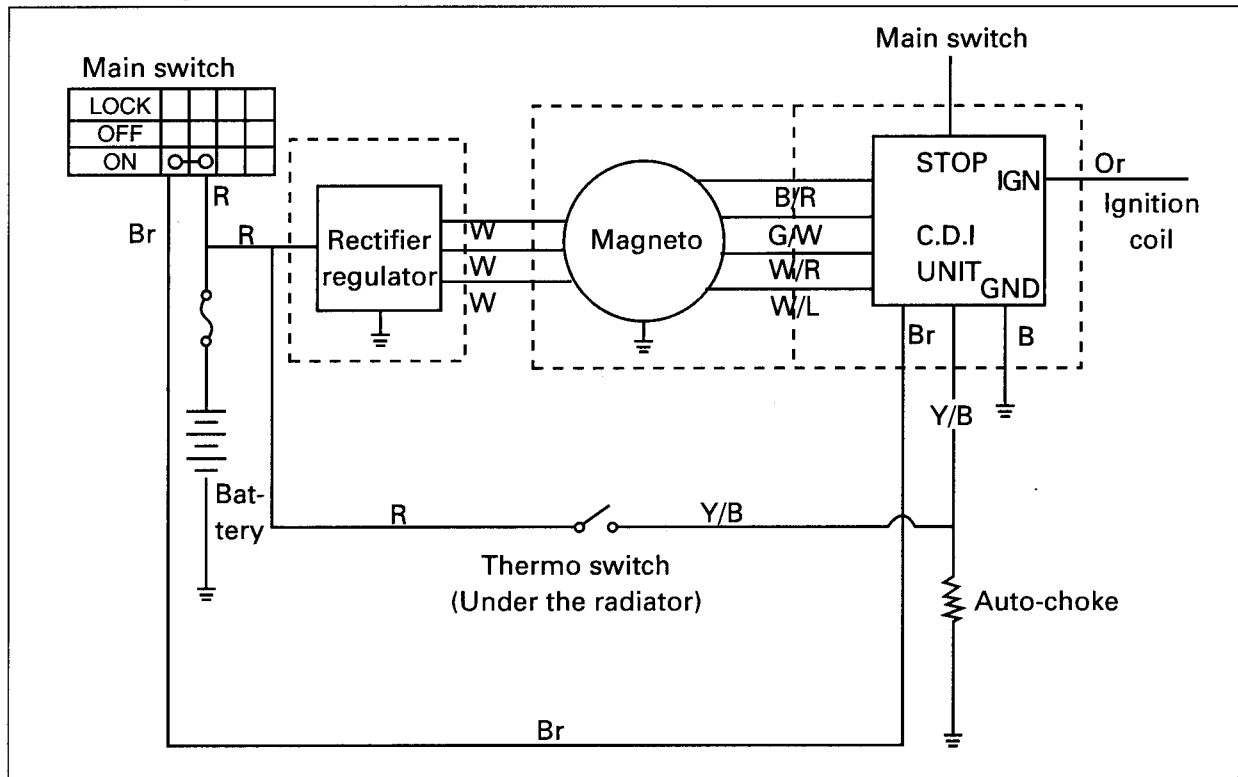
When the scooter has just come out of the factory, oil change indicator is set at "green" position. Reset under the following conditions:

- 1) Initial maintenance of new scooter at worn-in period (approximately 500km) (at "green" position).
- 2) Changing the oil before travel distance reached 1000km (at "green" position).
- 3) Changing the oil regularly at every travel distance of approximately 1000km (at "red" position).

When the three conditions mentioned above occurred, insert the key in the "setting hole" after changing the oil and hold down so that the oil change indicator will change from "red" to "green" position to revert to zero count.

AUTO-CHOKE SYSTEM

- Circuit diagram



- Function

The control circuit of auto-choke is controlled by the C.D.I. unit and thermo switch. It provides proper percentage of gas mixture to the scooter during cold start and warm restart.

- Auto-choke Action

Condition 1

	Engine Condition	C.D.I. Unit	Auto-choke
Main Switch 'ON'	Running	Conducting (Note 1)	Activates
	Off	Circuit break	Not activates

Condition 2

	65°C	Thermo Switch	Auto-choke
Cooling Water Temperature	Above	ON	Activates
	Below	OFF	Not activates

Or auto-choke acting condition (Note 2)

Note 1: Whether the engine's revolution is able to reach 100rpm or not depends whether C.D.I. is conducting or not.

Above 100rpm → conducting, below 100rpm → circuit break

Note 2: • As long as the auto-choke conforms to one of the above mentioned conditions, then it will start activating.

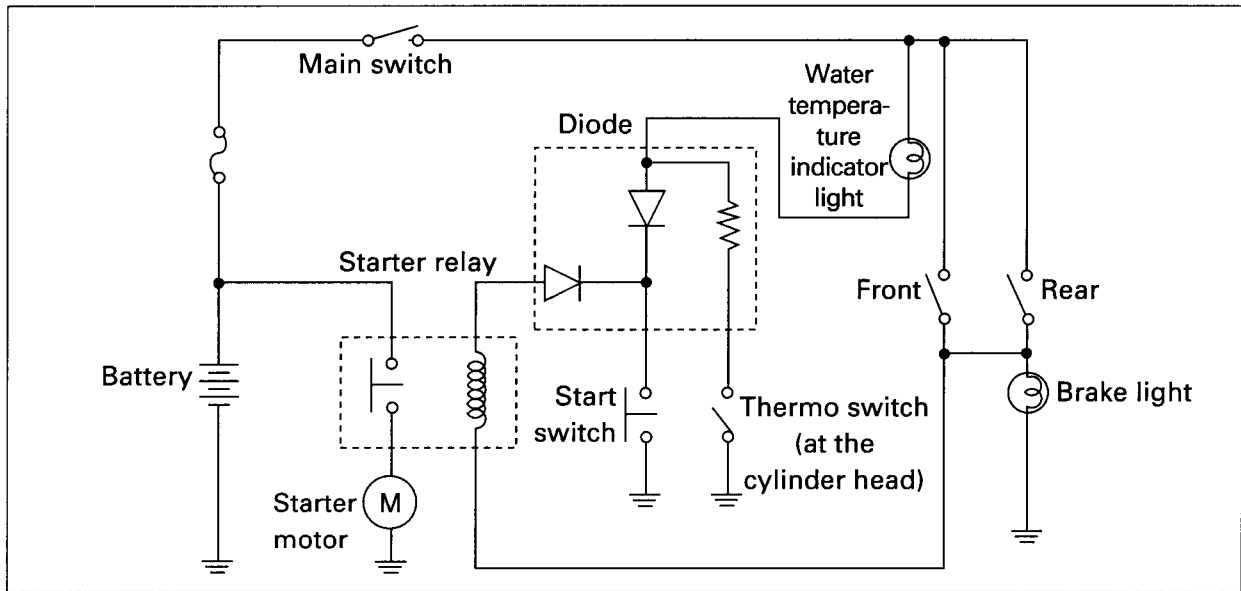
- When the temperature of paraffin inside the auto-choke is :

Above 45°C → oil way of auto-choke will close.

Below 45°C → oil way of auto-choke will open.

WATER TEMPERATURE INDICATOR LIGHT TO CHECK THE CIRCUIT

- Circuit diagram



- Function
The function of water temperature indicator is for the rider to check the circuit before riding, to make sure that the water temperature indicator is normal and to warn the rider whether the temperature already exceeded the regulated temperature or not. (Indicator will light up when water temperature reaches 120°C.)
- Inspection Method

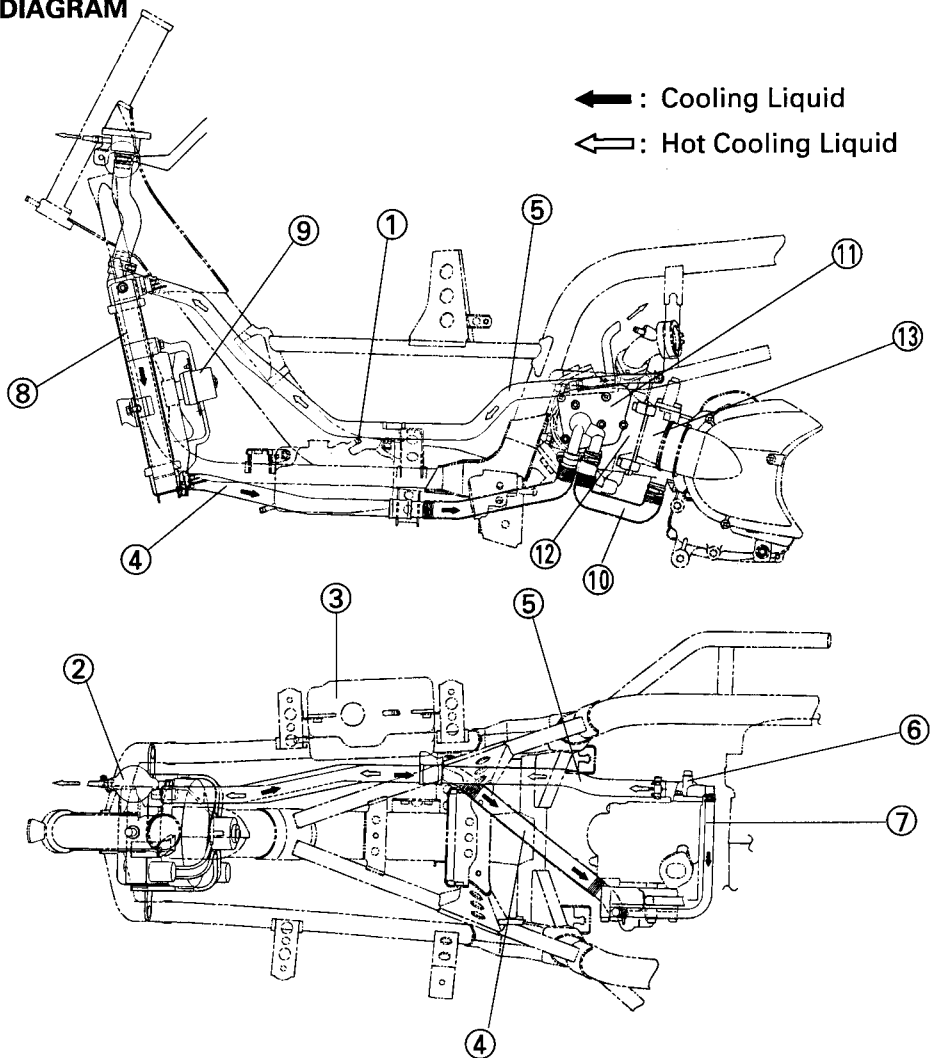
Main switch	Start Switch	Brake Light Switch	Indicator Light	Result
ON	Press down	Not conducting	On	Normal
ON	Press down	Conducting	On	Normal
ON	Release	Not conducting	Off	Normal

CAUTION:

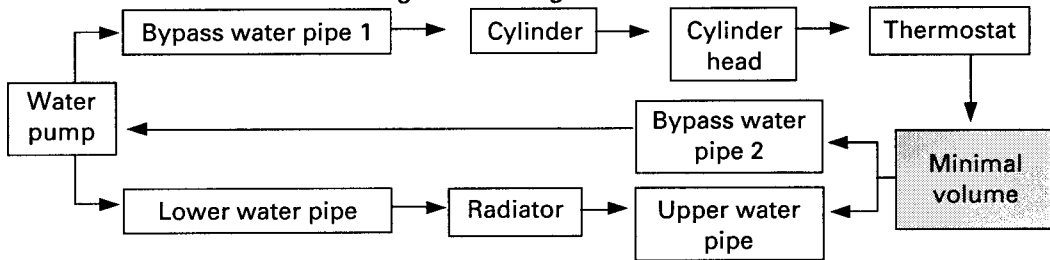
- Any condition occurred other than the above mentioned means the system has fault and this fault should be eliminated before riding the scooter.
- If the main witch is ON but did not press the start switch, water temperature indicator's light will light up. It is possible that the temperature of cooling water has already reached 120°C (thermo switch is conducting).

COOLING LIQUID PATH DIAGRAM

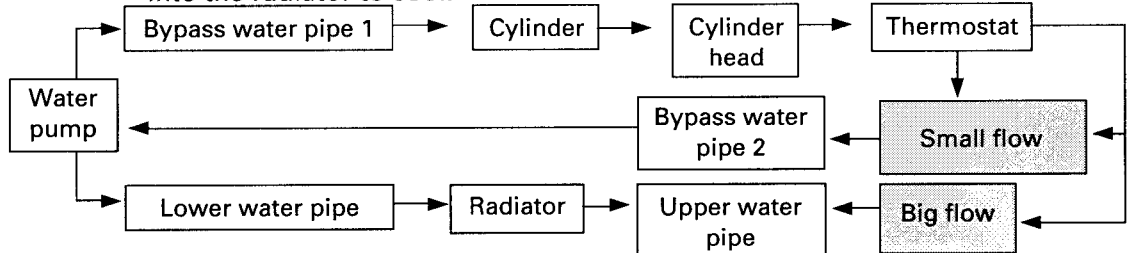
- ① Overflow pipe
- ② Radiator cover
- ③ Reservoir tank
- ④ Lower water pipe
- ⑤ Upper water pipe
- ⑥ Thermostat
- ⑦ Bypass water pipe 2
- ⑧ Radiator
- ⑨ Cooling fan
- ⑩ Bypass water pipe 1
- ⑪ Water pump
- ⑫ Cylinder head
- ⑬ Cylinder

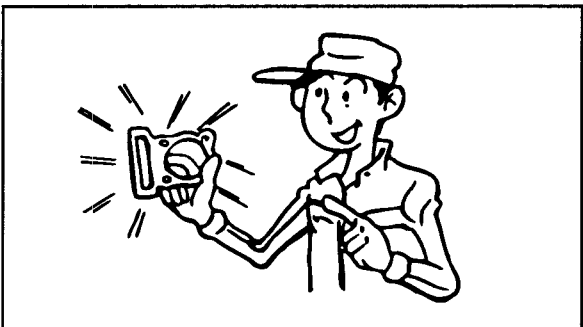
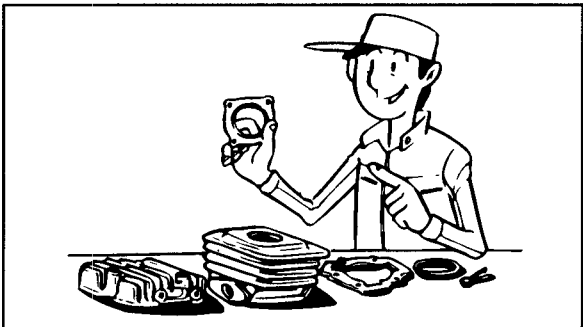
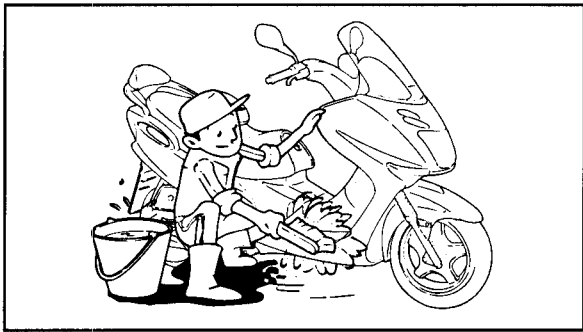


Small Circulation: The economizer is closed if the temperature of cooling water has not reached $82 \pm 1.5^\circ\text{C}$, forcing the cooling liquid to proceed small circulation in order to shorten the warming time of engine.



Big circulation: The economizer is open if the temperature of cooling water reaches $82 \pm 1.5^\circ\text{C}$, enabling high temperature cooling liquid in the cylinder/cylinder head to flow into the radiator to cool.





**IMPORTANT INFORMATION
PREPARATION FOR REMOVAL PROCEDURES**

1. Remove all dirt, mud, dust and foreign material before removal and disassembly.
2. Use proper tools and cleaning equipment.

3. Refer to the "SPECIAL TOOLS" section.
4. When disassembling the machine, always keep mated parts together. This includes gears, cylinders, pistons and other parts that have been "mated" through normal wear. Mated parts must always be reused or replaced as an assembly.

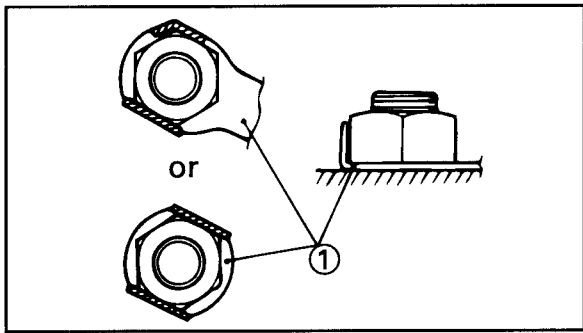
5. During machine disassembly, clean all parts and place them in trays in the order of disassembly. This will speed up assembly and allow for the correct installation of all parts.
6. Keep all parts away from any source of fire.

REPLACEMENT PARTS

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

GASKETS, OIL SEALS AND O-RINGS

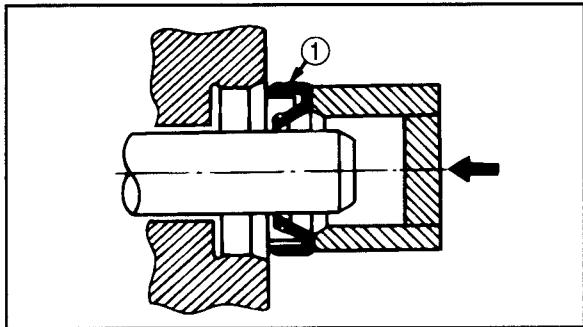
1. Replace all gaskets, seals and O-rings when overhauling the engine. All gasket surfaces, oil seal lips and O-rings must be cleaned.
2. Properly oil all mating parts and bearings during reassembly. Apply grease to the oil seal lips.



LOCK WASHERS/PLATES AND COTTER PINS

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

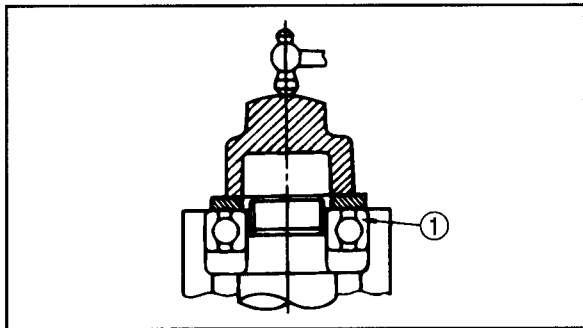
① Lock washer



BEARINGS AND OIL SEALS

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

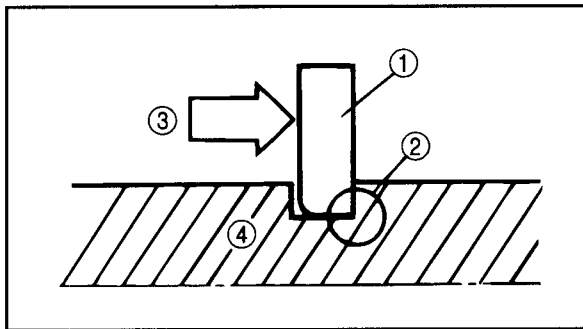
① Oil seal



CAUTION: _____

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

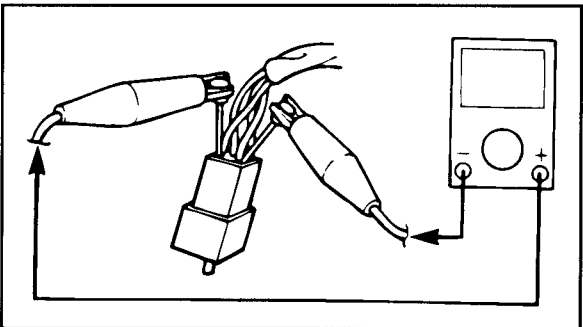
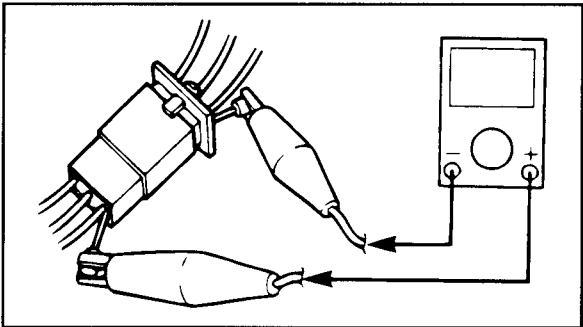
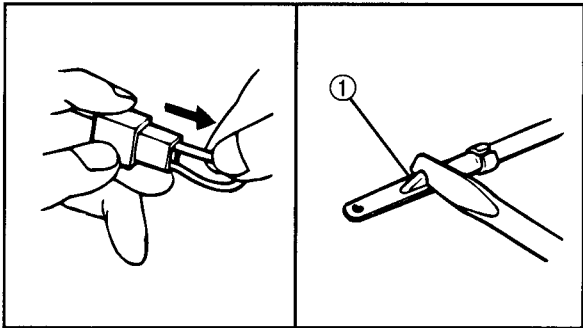
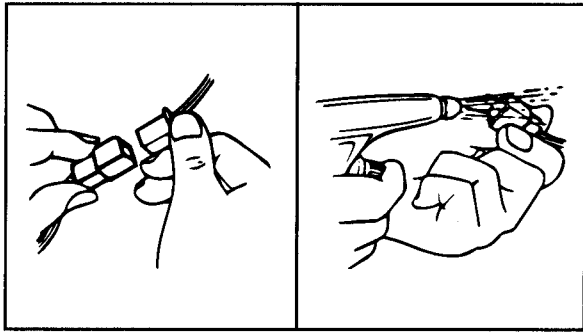
① Bearing



CIRCLIPS

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

④ Shaft



CHECKING OF CONNECTIONS

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

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

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

6. Connect:
 - Connector

CAUTION: _____

The two connectors "click" together.

7. Check for continuity with a tester.

CAUTION: _____

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

HOW TO USE THE CONVERSION TABLE

All specification data in this manual are listed in SI and METRIC UNITS. Use this table to convert METRIC unit data to IMPERIAL unit data.

Ex.

METRIC		MULTIPLIER	=	IMP
** mm	×	0.03937	=	** in
2 mm	×	0.03937	=	0.083 in

CONVERSION TABLE

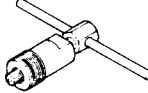
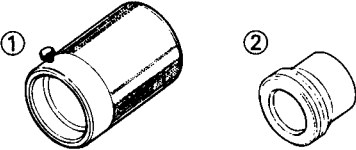
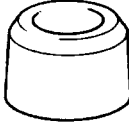
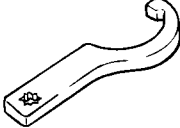
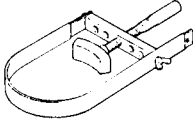
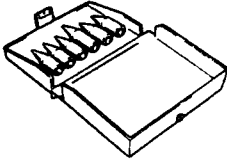
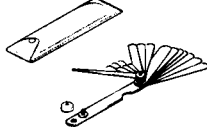
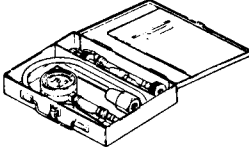
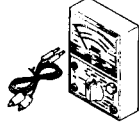
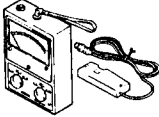
METRIC TO IMP			
	Known	Multiplier	Result
Torque	m.kg	7.233	ft.lb
	m.kg	86.794	in.lb
	cm.kg	0.0723	ft.lb
	cm.kg	0.8679	in.lb
Weight	kg	2.205	lb
	g	0.03527	oz
Distance	km/h	0.6214	mph
	km	0.6214	mi
	m	3.281	ft
	m	1.094	yd
	cm	0.3937	in
	mm	0.03937	in
Volume/ Capacity	cc(cm ³)	0.03527	oz (IMP liq.)
	cc(cm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



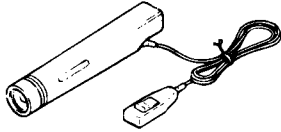
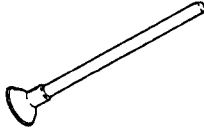
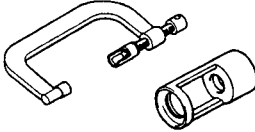
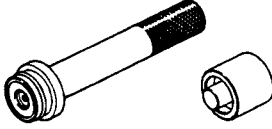
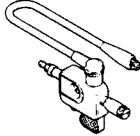
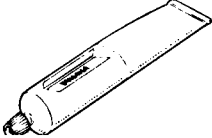
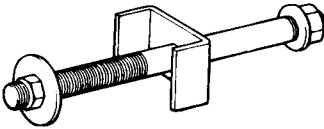
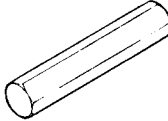
SPECIAL TOOLS

The following special tools are necessary for complete and accurate tune-up and assembly. Use only the appropriate special tools; this will help prevent damage caused by the use of inappropriate tools or improvised techniques. When placing an order, refer to the list provided below to avoid any mistakes.

Tool No.	Tool name/Usage	Illustration
90890-01084 -01085	Weight Rocker arm shaft puller bolt These tools are used when removing or installing the rocker arm shafts.	
90890-01235	Rotor holding tool This tool is used to remove the flywheel magneto.	
90890-01268	Ringnut wrench This tool is used to loosen and tighten the exhaust and steering ringnut.	
90890-01311	Valve adjusting tool This tool is necessary for adjusting valve clearance.	
90890-01312	Fuel level gauge This gauge is used to measure the fuel level in the float chamber.	
90890-01325 -01352	Radiator cap tester Adaptor These tools are used for checking the cooling system.	
90890-01326 -04084	T-handle Damper rod holder These tools are used for holding the damper rod holder when removing or installing the damper rod holder.	
90890-01337	Clutch spring compressor This tools are used for removing the nut with holding the compression spring.	
90890-01384	Locknut wrench This tool is used when removing or installing the secondary sheave nut.	

Tool No.	Tool name / Usage	Illustration
90890-01189	<p>Flywheel puller</p> <p>This tool is used for removing the rotor.</p>	
90890-01367 -01368	<p>Fork seal driver weight ① Fork seal driver attachment ②</p> <p>This tool is used when installing the fork seal.</p>	
90890-01384	<p>Oil seal guide</p> <p>This tool is used for protecting the oil seal lip when installing the secondary sliding sheave.</p>	
90890-01403	<p>Ring nut wrench</p> <p>This tool is used to loosen or tighten the steering ring nut.</p>	
90890-01701	<p>Sheave holder</p> <p>This tool is used for holding the secondary sheave.</p>	
90890-01996	<p>Cylinder cup installer set</p> <p>This tool is used for installing the cylinder cup to the master cylinder piston.</p>	
90890-03079	<p>Thickness gauge</p> <p>This tool is used to measure the valve clearance.</p>	
90890-03081	<p>Compression gauge</p> <p>These tools are used to measure the engine compression.</p>	
90890-03112	<p>Pocket tester</p> <p>These instruments are invaluable for checking the electrical system.</p>	
90890-03113	<p>Engine tachometer</p> <p>This tool is needed for detecting engine rpm.</p>	



Tool No.	Tool name / Usage	Illustration
90890-03141	<p>Timing light</p> <p>This tool is needed for detecting ignition timing.</p>	
90890-04101	<p>Valve lapper</p> <p>This tool is used for removing and installing the lifter and for lapping the valve.</p>	
90890-04019 -04108	<p>Valve spring compressor Attachment</p> <p>These tools are used when removing or installing the valve and the valve spring.</p>	
90890-04058 -04078	<p>Middle shaft bearing driver Mechanical seal installer</p> <p>These tools are used for installing mechanical seal.</p>	
90890-06754	<p>Ignition checker</p> <p>This instrument is necessary for checking the ignition system components.</p>	
90890-85505	<p>Yamaha bond No. 1215</p> <p>This sealant (bond) is used for crankcase mating surface, etc.</p>	
90890-01387	<p>Spring compression tool</p> <p>This tool is used to disassemble or assemble the sub groove wheel.</p>	
90890-01104	<p>Front fork disassembler</p> <p>This tool is used to disassemble the hexagonal screws on top of the front fork.</p>	



SPECIFICATIONS

GENERAL SPECIFICATIONS

Model	YP125E
Model code:	5PL1
Dimensions:	
Overall length	2,065 mm
Overall width	740 mm
Overall height	1,240 mm
Seat height	710 mm
Wheelbase	1,500 mm
Minimum ground clearance	110 mm
Minimum turning radius	2,600 mm
Basic weight:	
With oil and full fuel tank	144 kg
Engine:	
Engine type	Water-cooled 4-stroke SOHC 2 steam valve
Cylinder arrangement	Forward-inclined single cylinder
Total emission	125c.c.
Bore × stroke	53.7 × 54.8 mm
Compression ratio	11:1
Compression pressure (STD)	11 kg/cm ² (300rpm)
Starting system	Electric start/Kick starter
Lubrication system:	Forced pressure feed foam combined with wet sump case
Oil type or grade:	
Engine oil API Standard	SE or higher grade
SAE number count	20W-40
Periodic oil change	1.2 L
Total oil capacity (when disassembling the engine)	1.4 L
Transmission oil	SAE 85W-140
Total amount	130 c.c.
Radiator capacity	
Total amount (including all routes)	1.085 L(including reservoir tank)
Air filter:	
Carburetor side	Wet type element
Crankcase side	Dry type element
Fuel:	
Type	Regular unleaded gasoline only
Fuel tank capacity	8L

GENERAL SPECIFICATIONS

SPEC



Model	YP125E
Carburetor: Type/quantity Manufacturer	BS26-164 MIKUNI
Spark plug: Type Manufacturer Spark plug gap	C7E NGK 0.7~0.8 mm
Clutch type:	Dry, centrifugal automatic
Transmission: Primary reduction system Primary reduction ratio Secondary reduction system Secondary reduction ratio Transmission type Operation Single speed automatic	Helical gear 40/15 (2.666) Sper gear 44/12 (3.666) V-belt Automatic 2.541 ~ 0.792 : 1
Chassis: Frame type Caster angle Trail	Steel tube underbone 27° ± 0.5° 160 mm
Tire: Type Size Manufacturer Type	Tubeless 120/70-12 51J 130/70-12 59L CHENG SHIN CHENG SHIN C-922S-2 C-6007-2
Tire pressure (cold tire): Maximum load-except motorcycle Single rider With passenger	front rear front rear 1.50 kg/cm ² 2.00 kg/cm ² 1.50 kg/cm ² 2.25 kg/cm ²

GENERAL SPECIFICATIONS

SPEC



Model	YP125E
Brake: Front brake type operation Rear brake type operation	Single disc brake Right hand operation Drum brake Left hand operation
Suspension: Front suspension Rear suspension	Telescopic fork Unit swing
Shock absorber: Front shock absorber Rear shock absorber	Coil spring/Oil damper Coil spring/Oil damper
Wheel travel: Front wheel travel Rear wheel travel	90 mm 85 mm
Electrical: Ignition system Generator system Battery type Battery capacity	C.D.I. 3-phase AC magneto YT × 7A-BS 12H 6AH (10hr)
Headlight type:	Quartz bulb (Halogen)
Bulb wattage × quantity: Headlight Tail/brake light Flasher light Meter light High beam indication light Water temperature indicator light Turn indicator light	12V 60W/55W × 1 12V 5W/18W × 1 12V 10W × 4 12V 1.7W × 2 12V 1.7W × 1 12V 1.7W × 1 12V 1.7W × 2



MAINTENANCE SPECIFICATIONS

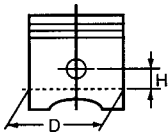
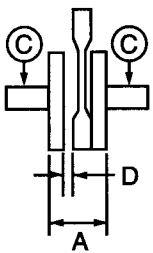
ENGINE

Item	Standard	Limit	
Cylinder head: Warp limit	...	0.05 mm	
Cylinder: Bore size Out of round limit	53.700~53.710 ...	52.10 mm 0.05 mm	
Camshaft: Cam dimensions			
Intake "A" "B" "C"		30.388~30.488 mm 25.136~25.236 mm 5.438 mm ...	
Exhaust "A" "B" "C"		30.386~30.486 mm 25.143~25.243 mm 5.436 mm ...	
Camshaft runout limit		...	0.03 mm
Cam chain: Cam chain type/No. of links		82RH2005/94M	...
Rocker arm/rocker armshaft: Rocker arm inside diameter Rocker shaft outside diameter Rocker arm-to-rocker armshaft clearance	12.000~12.017 mm 11.981~11.991 mm 0.009~0.037 mm	12.030 mm 11.950 mm ...	
Valve, valve seat, valve guide: Valve clearance (cold) Valve dimensions	IN EX	0.08~0.12 mm 0.18~0.22 mm ...	
	<p>Face Width</p> <p>Seat Width</p> <p>Margin Thickness</p>	<p>"A" head diameter</p> <p>"B" face width</p> <p>"C" seat width</p> <p>"D" margin thickness</p>	
"A" head diameter	IN EX	26.9~27.1 mm 22.9~23.1 mm ...	
"B" face width	IN EX	2.69~3.25 mm 2.69~3.25 mm ...	
"C" seat width	IN EX	0.9~1.1 mm 0.9~1.1 mm ...	
"D" margin thickness	IN EX	0.5~0.9 mm 0.5~0.9 mm ...	
Stem outside diameter	IN EX	4.475~4.490 mm 4.460~4.475 mm	4.445 mm 4.430 mm
Guide inside diameter	IN EX	4.505~4.515 mm(For repair only) 4.505~4.515 mm(For repair only)	4.553 mm 4.553 mm

MAINTENANCE SPECIFICATIONS

SPEC



Item	Standard	Limit
Stem-to-guide clearance	IN EX	0.025~0.030 mm 0.040~0.045 mm
Stem runout limit		...
Valve seat width	IN EX	0.9~1.1 mm 0.9~1.1 mm
Valve spring:		
Free length	IN/EX	41.94 mm
Set length (valve closed)	IN/EX	37.5 mm
Compressed force (installed) IN/EX		14.2~16.4 kg
Tilt limit (Inner)	IN EX	......
		2.5°/1.6 mm 2.5°/1.6 mm
Piston:		
 Piston to cylinder clearance Piston size "D" Measuring point "H"	0.03 mm 53.670~53.680 mm 12 mm	0.15 mm ... (Measuring point is determined at 12mm down of pin hole center)
Piston pin bore inside diameter		15.002~15.013 mm
Piston pin outside diameter		14.990~14.995 mm
Piston rings:		
Top ring:		
Type	Barrel	...
End gap (installed)	0.15~0.25 mm	0.5 mm
Side clearance (installed)	0.03~0.04 mm	0.12 mm
2nd ring:		
Type	Taper	...
End gap (installed)	0.15~0.30 mm	0.65 mm
Side clearance (installed)	0.02~0.06 mm	0.12 mm
Oil ring:		
End gap (installed)	0.02~0.07 mm	...
Crankshaft:		
 Crank width "A" Runout limit "C" Big end side clearance "D"	47.95~48.00 mm 0.03 mm 0.15~0.45 mm	.........
Automatic centrifugal clutch:		
Clutch shoe thickness	3.5 mm	2.0 mm
Clutch housing inside diameter	120 mm	120.3 mm
Clutch shoe spring free length	28 mm	...
Weight outside diameter	20 mm	19.5 mm
Clutch-in revolution	3,000~3,600 r/min	...
Clutch-stall revolution	5,200~6,200 r/min	...
V-belt:		
V-belt width	22 mm	19.8 mm

MAINTENANCE SPECIFICATIONS

SPEC



Item	Standard	Limit
Carburetor:		
Type	BS26-164	...
I.D. mark	5PL00	...
Ventury outside diameter	∅ 26	...
Main jet (M.J)	# 115	...
Main air jet (M.A.J)	∅ 0.8	...
Jet needle (J.N)	4D x10-2	...
Throttle valve size (Th.V)	115	...
Pilot air jet 1 (P.A.J.1)	∅ 160	...
Needle jet (N.J)	0-4M (902)	...
Pilot outlet (P.O)	∅ 0.81	...
Pilot jet (P.J)	# 22.5	...
Bypass 1 (B.P.1)	∅ 0.8	...
Bypass 2 (B.P.2)	∅ 1.0	...
Bypass 3 (B.P.3)	∅ 1.1	...
Pilot screw (P.S)	2 1/4 ± 1/2	...
Valve seat size (V.S)	2.0	...
Starter jet (G.S)	∅ 40	...
Float height (F.H)	6.5~7.5 mm	...
Engine idle speed	1,550~1,650 r/min	...
Fuel pump:		
Type	Vaccum type	...
Model/manufacture	5CA1/MIKUNI	...
Oil pump:		
Type	Trochoid type	
Tip clearance	0.15 mm	0.23 mm
Side clearance	0.07 mm	0.14 mm
Radiator:		
Type/manufacture	5CA1/Yoyon	...
Width/height/thickness	148 × 302 × 75 mm	...
Radiator cap opening pressure	0.95~1.25 kg/cm ²	...
Radiator capacity	0.8L	...
Reservoir tank capacity	0.285L	...
Thermostatic valve:		
Type/manufacture	4HC/NIHON THERMOSTAT	...
Valve opening temperature	80.5~83.5°C	...
Valve full open temperature	95°C	...
Valve full open lift	3 mm	...

MAINTENANCE SPECIFICATIONS

SPEC



Item	Size
Bearings and oil seals:	
Big end bearing	29 × 37 × 16
Crankshaft bearing (left)	6305 62 × 25 × 17
Crankshaft bearing (right)	6305 62 × 25 × 17
Crankshaft oil seal (left)	HTC 22 × 32 × 7L
Crankshaft oil seal (right)	SD7 19 × 30 × 8 VS
	S7 19 × 30 × 6-1 HS
Main axle bearing (left)	15 × 25 × 12
Main axle bearing (right)	6301 12 × 37 × 12
Drive axle bearing (left)	6303 17 × 47 × 14
Drive axle bearing (right)	62/22 22 × 50 × 14
Drive axle oil seal	31 × 52 × 7
Camshaft bearing (left)	6004 20 × 42 × 12
Camshaft bearing (right)	6002Z 15 × 32 × 9
Primary drive gear bearing (left)	62/22 SH2 22 × 50 × 14
Primary drive gear bearing (right)	6203 17 × 40 × 12
Primary drive gear oil seal	SD 22 × 39 × 6



TIGHTENING TORQUES

ENGINE

Part to be tightened	Part name	Thread size	Q'ty	Tightening torque	Remarks
				kgf·cm	
Cylinder head × cylinder	Nut	M8	4	220	Bolt and nuts should be greased.
Spark plug	-	M10	1	125	
Cylinder head × cylinder(cam drain side)	Hexagonal taft bolt	M6	2	120	
Cylinder × crank case	Hexagonal taft bolt	M6	1	120	
Exhaust pipe stud bolt	Bolt	M6	2	70	
Cylinder's oil drain plug	Flange bolt	M6	1	80	
Inspection bolt of engine oil pressure	Bolt	M6	1	65	
Cam shaft bearing stopper	Hexagonal taft bolt	M6	1	120	
Guide bolt of chain tensioner	Bolt	M6	1	65	
Cam chain	Flange bolt	M8	1	300	
Chain tensioner × cylinder	Hexagonal taft bolt	M6	2	100	
End cover of chain tensioner	Bolt	M8	1	125	
Stop plate of rocker arm shaft	Flange bolt	M6	1	98	
Water pump housing	Hexagonal taft bolt	M6	4	100	
Plate × water pump	Screw	M6	1	70	
Water pump × cylinder head	Screw	M6	2	70	
Water pump × cylinder head	Pan head screw	M6	1	70	
Conduction flow pipe × chassis frame	Hexagonal bolt	M6	1	40	
Thermostatic cover × cylinder head	Flange bolt	M6	2	98	
Air release bolt of cooling liquid	Hexagonal taft bolt	M6	1	100	
Pipe 6	Screw	M6	2	65	
Oil pump × crank case	Flat head screw	M6	2	65	
Drain plug (engine oil)	Oil drain plug	M35	1	320	
Carburetor joint × cylinder head	Flange bolt	M6	2	98	
Air filter case	Screw	M6	2	65	
Fuel cock × fuel tank	Flange bolt	M6	2	98	

MAINTENANCE SPECIFICATIONS

SPEC



Part to be tightened	Part name	Thread size	Q'ty	Tightening torque	Remark
				kgf.cm	
Exhaust pipe lock nut	Nut	M6	2	100	
Muffler lock bolt	Flange nut	M8	1	310	
Muffler lock bolt	Flange bolt	M8	1	310	
Protector(Muffler) 1	Screw	M6	2	65	
Protector(Muffler) 2	Screw	M6	3	65	
Supporting frame × back rocker arm	Flange bolt	M6	2	65	
Crankcase 1 × crankcase 2	Flange bolt	M6	8	100	
Crankcase cover 1 × crankcase 1	Flange bolt	M6	11	100	
Crankcase cover 2 × crankcase 1	Flange bolt	M6	6	100	
Generator's coil mount × crankcase 2	Flange bolt	M6	3	100	
Belt compartment's air filter cover × crankcase cover 1	Pan head screw	M6	3	65	
Vent tube	Screw	M6	3	65	
Stud × crankcase 1	Bolt	M8	2	125	
Stud × crankcase 2	Bolt	M8	2	125	
Crankcase cover 3 × crankcase cover 1	Bolt 1	M6	2	65	
Belt compartment's air guide board × crankcase cover 1	Screw	M6	3	85	
Idle gear plate	Pan head screw	M6	2	65	
Kick crank	Bolt	M8	1	225	
Secondary groove wheel nuts	Nut	M14	1	600	
Clutch carrier nuts	Nut	M36	1	900	
Main fixed groove wheel	Nut	M12	1	550	
Thermo switch	–	PT 1/8	1	75	
Starter motor	Bolt	M6	2	65	
Magneto rotor	Nut	M12	1	700	
Thermo switch (electric fan motor)	–	M16	1	225	Upper part of radiator
Thermo switch (carburetor rich oil system)	–	M16	1	225	Lower part of radiator
Magneto coil × seat	Pan head screw	M6	3	65	



CHASSIS

Item	Standard	Limit
Steering system: Steering bearing type	Ball bearing	...
Front suspension: Front fork travel	90 mm	...
Fork spring free length	376.4 mm	368.9 mm
Spring rate (K1)	9.4 N/mm (0.94 kgf/mm)	...
(K2)	13.2 N/mm (1.33 kgf/mm)	...
Stroke (K1)	0~60 mm	...
(K2)	60~90 mm	...
Oil capacity	108cc	...
Oil grade	Fork oil 10W	...
Inner tube vend limit	...	0.2 mm
Rear suspension: Shock absorber stroke	85 mm	...
Spring free length	327 mm	325 mm
Fitting length (First one)	224 mm	...
Spring rate (K1)	8.0 N/mm (0.8 kgf/mm)	...
(K2)	10.8 N/mm (1.08 kgf/mm)	...
(K3)	21.0 N/mm (2.1 kgf/mm)	...
Stroke (K1)	0~25 mm	...
(K2)	25~55 mm	...
(K3)	55~85 mm	...
Front wheel: Type	Cast wheel	...
Rim size	MT2.75 x 12	...
Rim material	Aluminum	...
Rim runout limit Radial	...	1.0 mm
Lateral	...	0.5 mm
Rear wheel: Type	Cast wheel	...
Rim size	MT3.50 x 12	...
Rim material	Aluminum	...
Rim runout limit Radial	...	1.0 mm
Lateral	...	0.5 mm
Front disc brake: Type	Single	...
Disc outside diameter x thickness	245 x 4 mm	3.5 mm
Pad thickness	6.5 mm	0.8 mm
Master cylinder inside diameter	12.7 mm	...
Caliper cylinder outside diameter	27 mm x 2	...
Brake fluid type	DOT #3 or DOT #4	...
Rear drum brake: Type	Leading, trailing	...
Drum inside diameter	130 mm	131 mm
Shoe thickness	4 mm	1 mm
Brake lever: Brake lever free play (front at lever side)	2~5 mm	...
Brake lever free play (rear)	10~20 mm	...
Throttle cable free play	3~5 mm	...

MAINTENANCE SPECIFICATIONS**SPEC**

Item	Size	
Bearings and oil seals:		
Front wheel bearing (left)	6201 ZC3/3E	12 × 32 × 10
Front wheel bearing (right)	6301Z	12 × 37 × 12
Front wheel oil seal (left)	TC	17 × 32 × 6
Meter gear oil seal (right)	TC	44 × 52 × 6
Swing arm bearing	6300ZZ	15 × 43 × 13
Swing arm oil-seal (left)		28 × 35 × 4
Swing arm oil-seal (right)		26 × 42 × 8



TIGHTENING TORQUES

CHASSIS

Part to be tightened	Thread size	Q'ty	Tightening torque	Remark
			kgf.cm	
Engine bracket × Chassis frame	M10	2	420	See"NOTE"
Engine bracket 2 × Engine bracket 3	M10	1	550	
Engine bracket × Centerstand	M10	2	315	
Swing arm assembly	M8	2	280	
Rear shock absorber and frame	M10	2	315	
Rear shock absorber and engine	M8	2	175	
Steering ring nut	M25	–	–	
Handle bar × Steering shaft	M10	1	600	
Oil level sensor × Fuel tank	M5	4	30	
Plastic parts & Cover	about	–	15	
	M5			
Front wheel axle	M12	1	700	
Rear wheel axle	M14	1	1050	
Rear brake cam lever	M6	1	98	
Rear brake locking-prong flange nuts	M10	1	315	
Brake calipers × Shock absorber	M10	2	400	
Brake disk × Wheel rim	M8	5	230	
Brake oil tube adapter × Calipers	M10	1	300	
Calipers air bleed screw	M7	1	59	

NOTE:

1. First, tighten the ring nut (lower) approximately 38 Nm (380kgf•cm) by using the torque wrench ,then loosen the ring nut 1/4 turn.
2. Second, tighten the ring nut (lower) approximately 22 Nm (220kgf•cm) by using the torque wrench,then finger tighten the ring nut (center). Align the slots both ring nut and install the lock washer.
3. Final, hold the ring nuts (lower and center) and tighten the ring nut (upper) 75 Nm (750kgf•cm) by using the torque wrench.



ELECTRICAL

Item	Standard	limit
Ignition timing: Ignition timing (B.T.D.C.) Advanced timing (B.T.D.C.) Advanced type	5° at 1,500 r/min 27.5° at 5,500 r/min Electrical type	.........
Ignition coil: Model/manufacture Minimum spark gap Primary winding resistance Secondary winding resistance	5CA/TIIC 6 mm 0.56~0.84k Ω at 20°C 5.7~8.5k Ω at 20°C	............
Spark plug cap: Type Resistance	Resin type 10k Ω	......
Charging system: Type Model/manufacture Normal output Stator coil resistance/color	3-phase AC magneto 5PL1/TIIC 14V 10.5A at 5,000 rpm 0.6~0.9 Ω at 20°C/W-W	............
Rectifier/regulator: Model/manufacture No load regulated voltage Capacity Withstand voltage	5AG/Taichuan 14.5 ± 0.4V at 5,000rpm (Full charged battery) 25A 200V	............
Battery: Specific gravity	1.320	...
Electric starter system: Type Starter motor: Model/manufacture/ID number Operation voltage Output Armature coil resistance Brush overall length Brush quantity Spring force Commutator diameter Mica undercut (depth)	Constant-mesh 5CA1/TIIC 12V 0.3 kw 0.0306~0.0374 Ω at 20°C 10 mm 2 pcs. 552~828 gf 22 mm 1.5 mm	... ... ... ... ... 3.5 mm ... 552 gf 21 mm ...
Starter relay: Model/manufacture Amperage rating Coil winding resistance	3KW/Shilin 100 A 3.9~4.7 Ω	.........
Horn: Model/manufacture Maximum amperage	4CW/Ginshen 1.5 A	......
Flasher relay: Type Model/manufacture Flasher frequency	Capacitor 5CP/Dayang 85 cycle/min	.........
Fuel gage: Model/manufacture Sender unit resistance - full - empty	5CA/SHANCHU 4~10 Ω 90~100 Ω	.........

MAINTENANCE SPECIFICATIONS

SPEC



Item	Standard	Limit
Circuit brake: Method	Fuse	...
Electric fan motor: Model/manufacturer	5CA/Shilin	...
Thermo switch (electric fan): Model/manufacturer	4UH/NIHON THERMOSTAT	...
Switch ON	98 ± 3°C	...
Switch OFF	91°C and above	...
Thermo switch (auto-choke): Model/manufacturer	5CA/NIHON THERMOSTAT	...
Switch ON	65 ± 2°C	...
Switch OFF	56°C and above	...
Thermo switch (water temperature indicator light): Model/manufacturer	4BA/NIPPON DENSO	...
Switch ON	120 ± 3°C	...
Switch OFF	113°C and above	...
Circuit breaker: Type	Fuse	...
MAIN	20A × 1 pc.	...
FAN	3A × 1pc.	...
Reserve	20A × 1pc.	...
C.D.I.: Model/manufacturer	5PL1/TIIC	...
Pulse coil resistor	248~372 Ω (W/R-W/L)	...
Head coil resistor	720~1080 Ω (B/R-G/W)	...

GENERAL TORQUE SPECIFICATIONS

SPEC

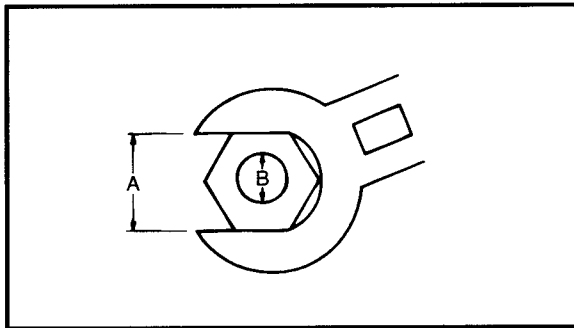


GENERAL TORQUE SPECIFICATIONS (Standard Screw)

This Chart was based on the I. S. O. screw tightening specifications. To avoid twisting or unbalance, tighten the screws in a criss-cross fashion or according to the specified procedure.

* It is imperative to use standard torsion testing wrench in testing the torsion.

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



- A: Distance across flats
- B: Outside thread diameter



LUBRICATION POINT AND GRADE OF LUBRICANT ENGINE

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

LUBRICATION POINT AND GRADE OF LUBRICANT

SPEC

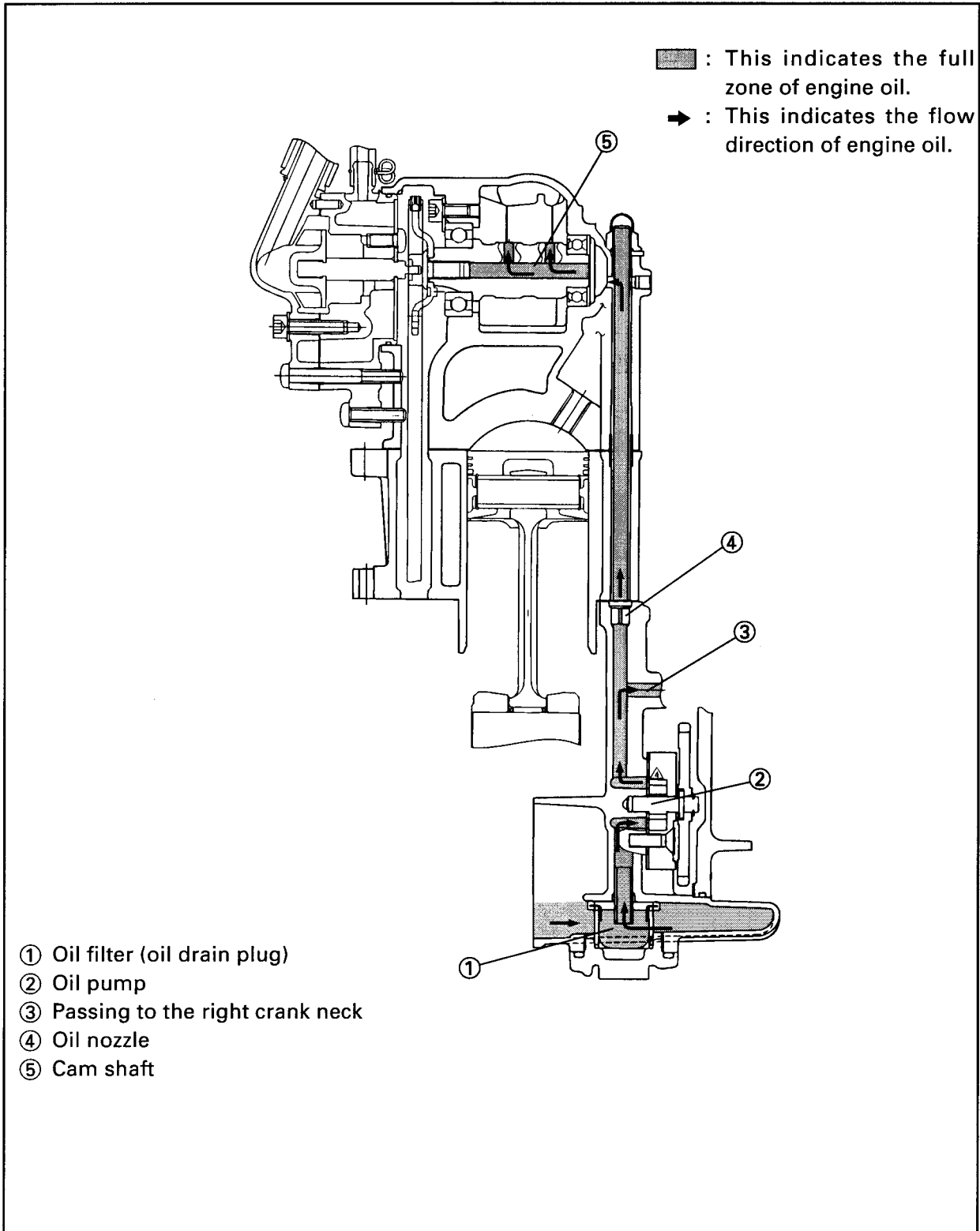


CHASSIS



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

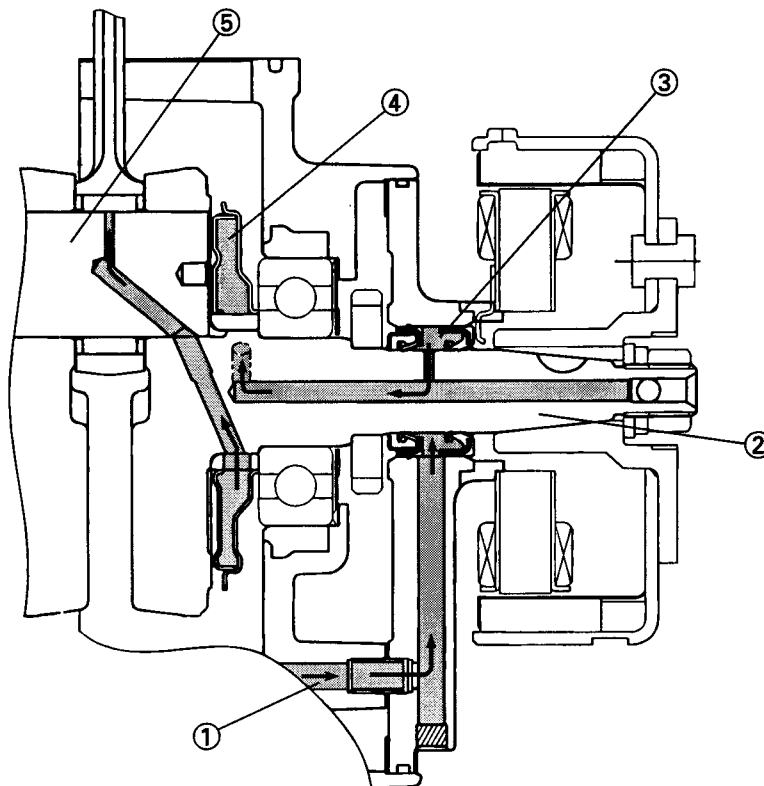


LUBRICATION ROUTING





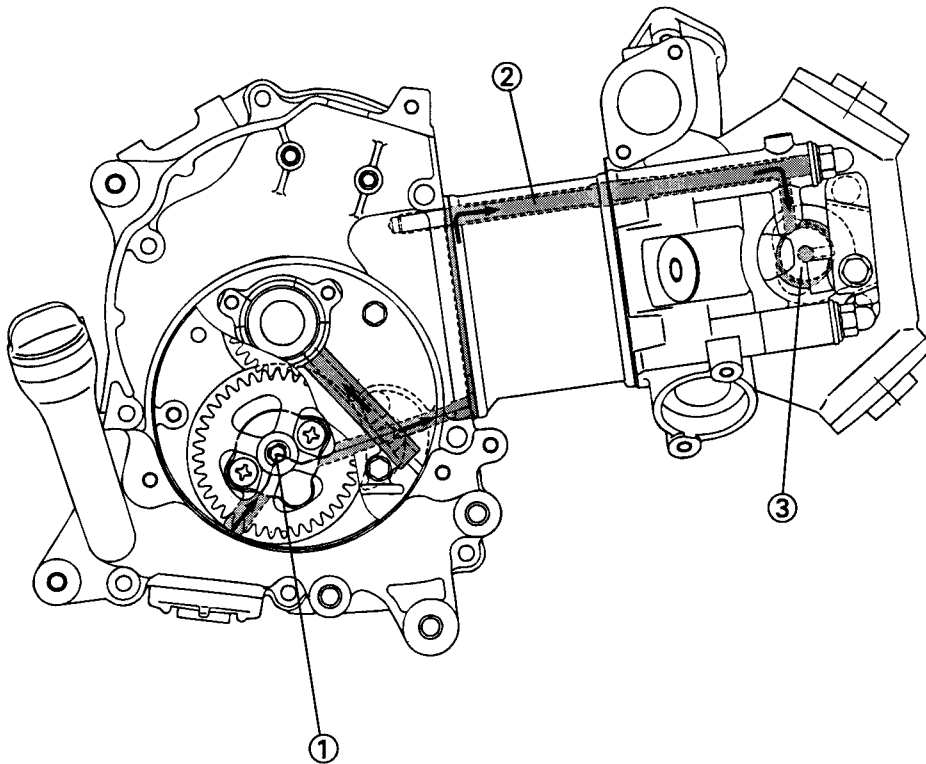
 : This indicates the full zone of engine oil.
 : This indicates the flow direction of engine oil.



- ① Engine oil delivered from the engine oil pump
- ② Right crank neck
- ③ O-ring safety valve
- ④ Centrifugal filter
- ⑤ Crank pin



- : This indicates the full zone of engine oil.
- ➔ : This indicates the flow direction of engine oil.



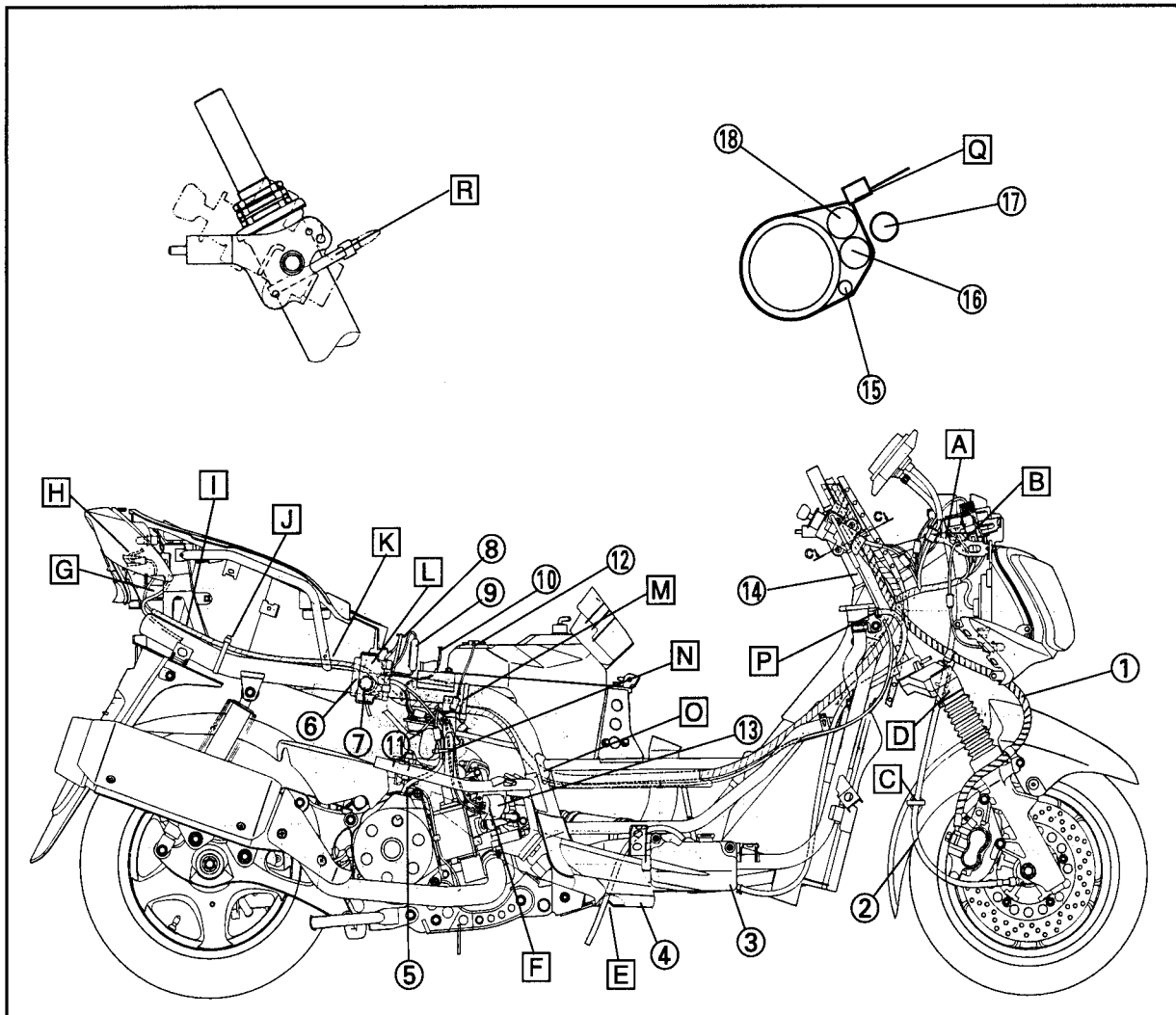
- ① Oil pump
- ② Oil passage (cylinder, inside of cylinder head)
- ③ Camshaft



CABLE ROUTING

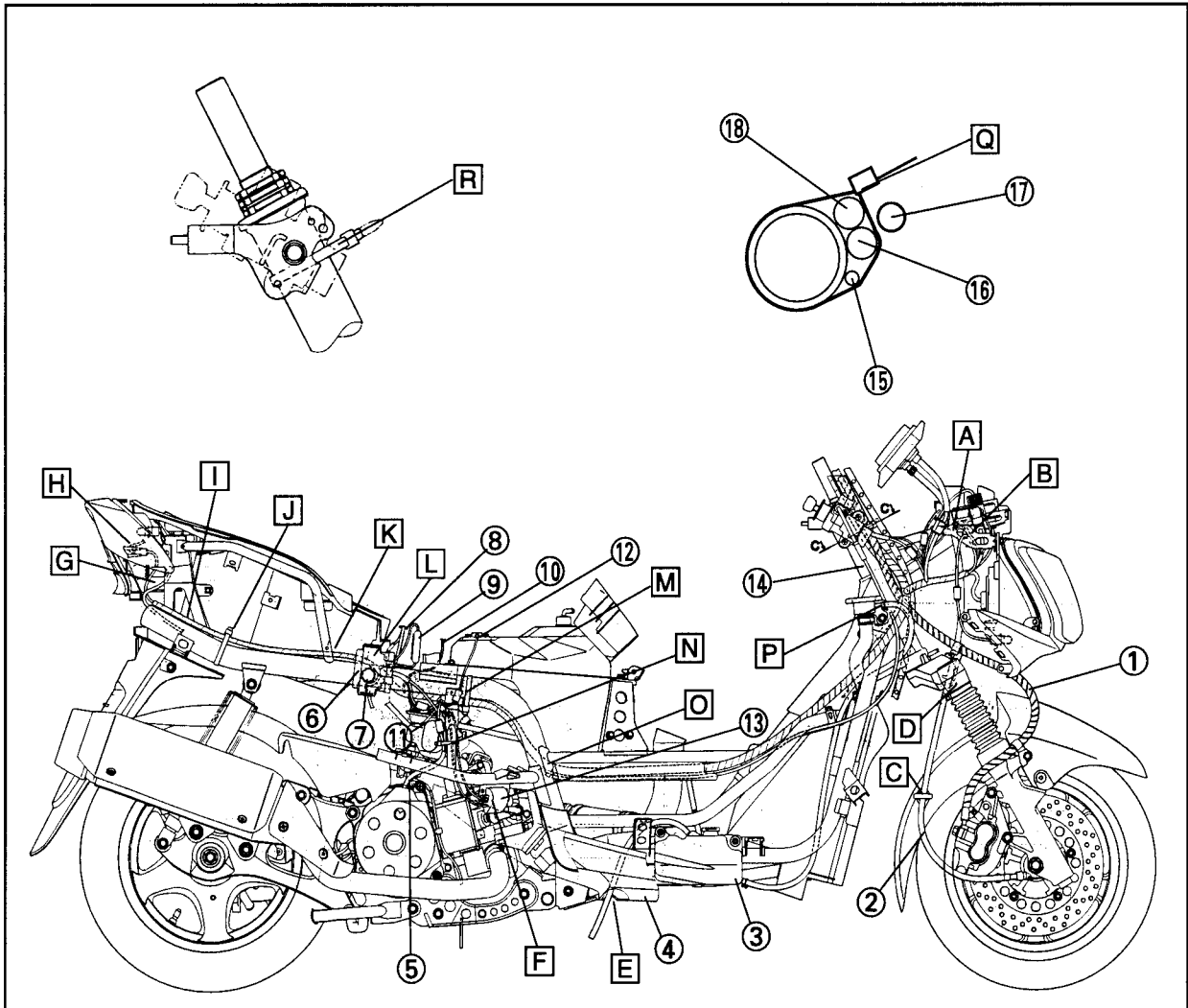
- ① Brake hose
- ② Speedometer cable
- ③ Reservoir tank
- ④ Lower cap
- ⑤ C.D.I. magneto lead
- ⑥ C.D.I. component
- ⑦ Starter relay lead
- ⑧ Cathode lead
(battery→starter motor assembly)
- ⑨ Radiator fan fuse
- ⑩ Main fuse lead
- ⑪ Auto-choke lead
- ⑫ Fuel level sensor
- ⑬ Ignition coil
- ⑭ Seat lock cable
- ⑮ Throttle valve cable
- ⑯ Front brake hose
- ⑰ Rear brake cable (not clamped)

- ⑱ Cable assembly
- A Pass the speedometer cable through the lead hole of supporting frame 1.
- B Pass the lead of front right indicator light through the rear side hole (L/R) of supporting frame 1.
- C Pass speedometer cable through the lead hook.
- D Pass speedometer cable through the lead hook.
- E Pass the overflow pipe of cooling water through ear left hole of lower cap at the bottom.
- F Attach cathode lead and ignition coil.
- G Pass seat lock cable through the inner side of chassis frame.
- H After the connecting, fix the plug in the adapter fixing set of taillight.



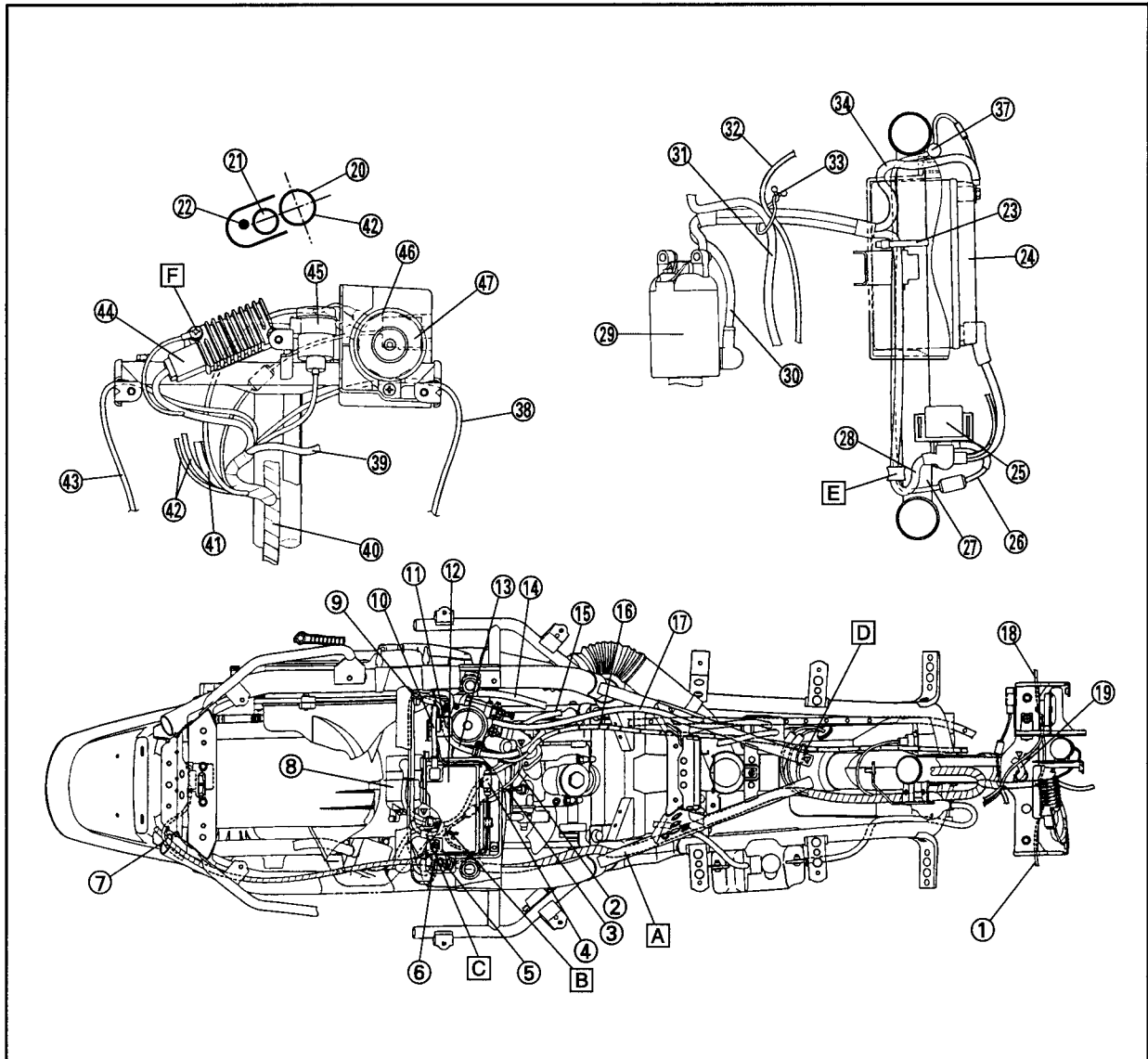


- I Pass cable assembly through the outer side of chassis frame.
- J Cut the excess harness after clamping the main harness.
- K Pass cable assembly through the inner side of chassis frame.
- L Pass cable assembly through the upper side of the cross bar of chassis frame.
- M Cut the excess harness after clamping.
- N Cut the excess harness after clamping.
- O Use the white tape seen on the upper coil of cable assembly for positioning.
- P The grip of clip ring should face downward.
- Q Use the harness to clamp 18, 19, 21, and 22, and maintain 1 finger extra harness.
- R Cut the excess harness after clamping.





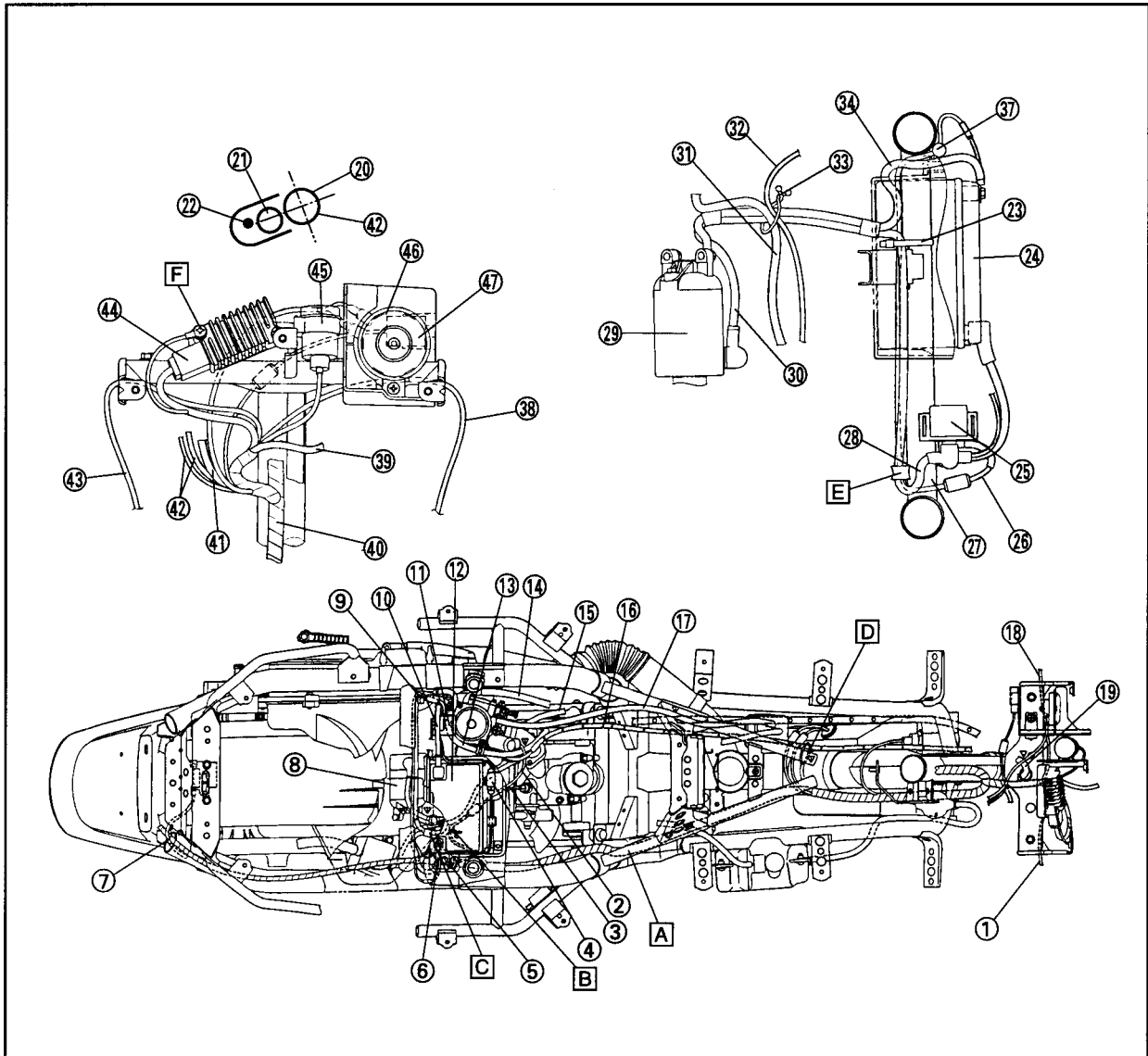
- | | | |
|---|----------------------------------|--|
| ① Front right turn lead | ⑫ Battery | ⑳ Positive pole lead |
| ② Auto-choke lead | ⑬ P.C.V. tube | ㉑ Starter relay assembly |
| ③ Thermo switch lead | ⑭ Fuel tube | ㉒ Positive pole lead |
| ④ Main fuse | ⑮ Negative pressure tube | ㉓ Vacuum tube |
| ⑤ Radiator fan fuse | ⑯ Throttle valve cable | ㉔ Auto-choke lead and thermo switch lead |
| ⑥ Cathode lead
(Battery → Starter motor assembly) | ⑰ Clearing hose | ㉕ Band |
| ⑦ Seat lock cable | ⑱ Front left turn indicator lead | ㉖ Cathode lead |
| ⑧ Starter motor assembly | ⑲ Speedometer cable | |
| ⑨ Positive pole lead
(Starter relay assembly → Starter motor assembly) | ⑳ Chassis frame | |
| ⑩ Positive pole lead
(Battery → Starter relay assembly) | ㉑ Cable assembly | |
| ⑪ Starter relay assembly | ㉒ Seat lock cable | |
| | ㉓ Band | |
| | ㉔ Battery | |
| | ㉕ Starter relay assembly | |
| | ㉖ Starter relay lead | |
| | ㉗ Chassis frame cross bar | |





- ③⑤ Cable assembly
- ③⑥ Front left turn indicator lead
- ③⑦ Headlight lead
- ③⑧ Cable assembly
- ③⑨ Speedometer lead
- ④⑩ Main switch lead
- ④① Front right turn indicator lead
- ④② Rectifier/regulator
- ④③ Indicator relay and pilot operated alarm
- ④④ Horn
- ④⑤ Diode assembly

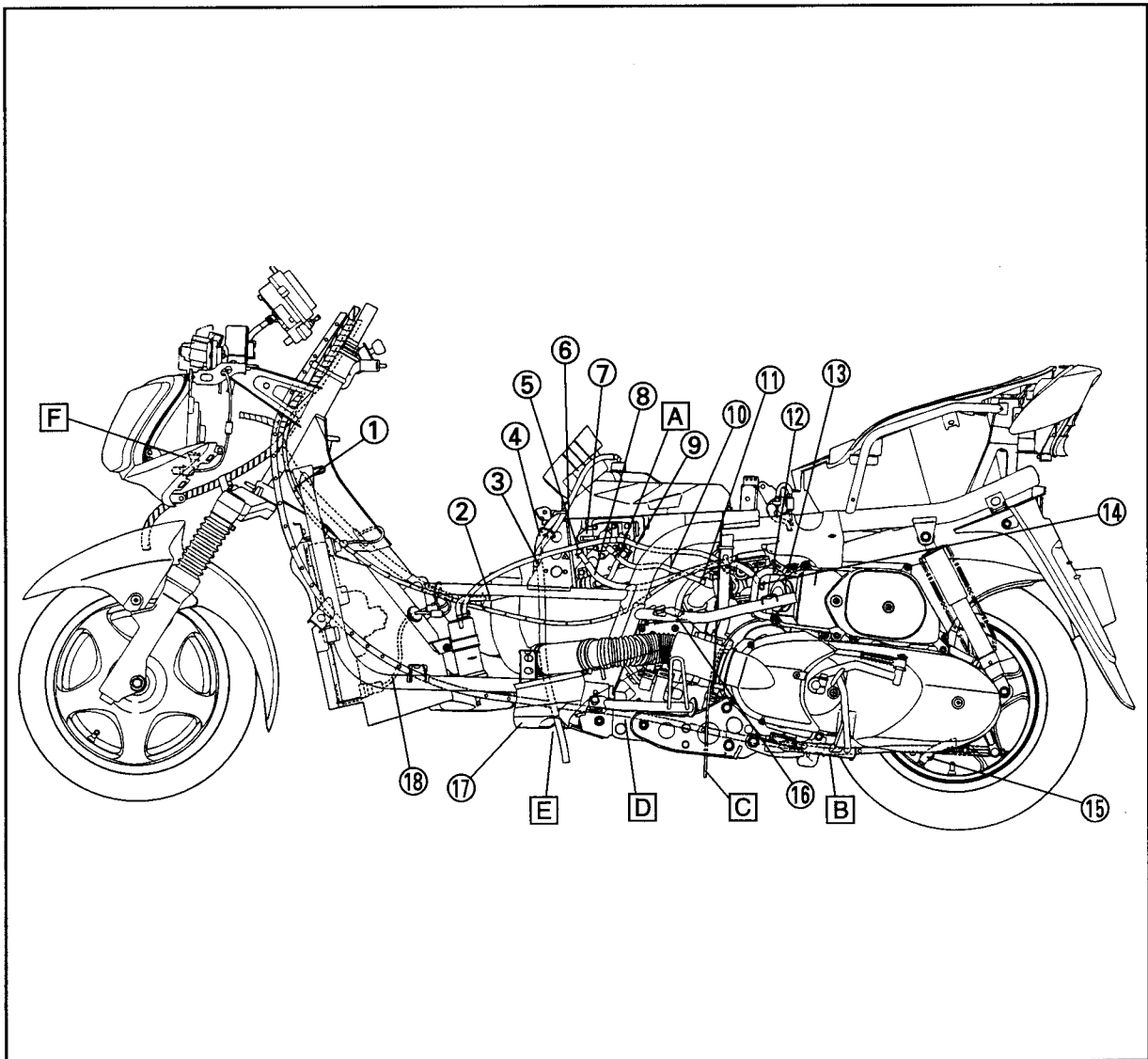
- A Pass cable assembly through the notch of protection frame 2.
- B Clamp the vacuum tube, positive pole outgoing wire, cathode lead, and thermo switch lead together.
- C Starting from the left of the chassis, pass the vacuum, cathode lead, and positive pole lead according to their order through the notch of mudguard.
- D The grip of harness should face downward.
- E After passing through 2 lead hold the harness down until it touches the cross bar of chassis frame.
- F Lock along with ground connection.





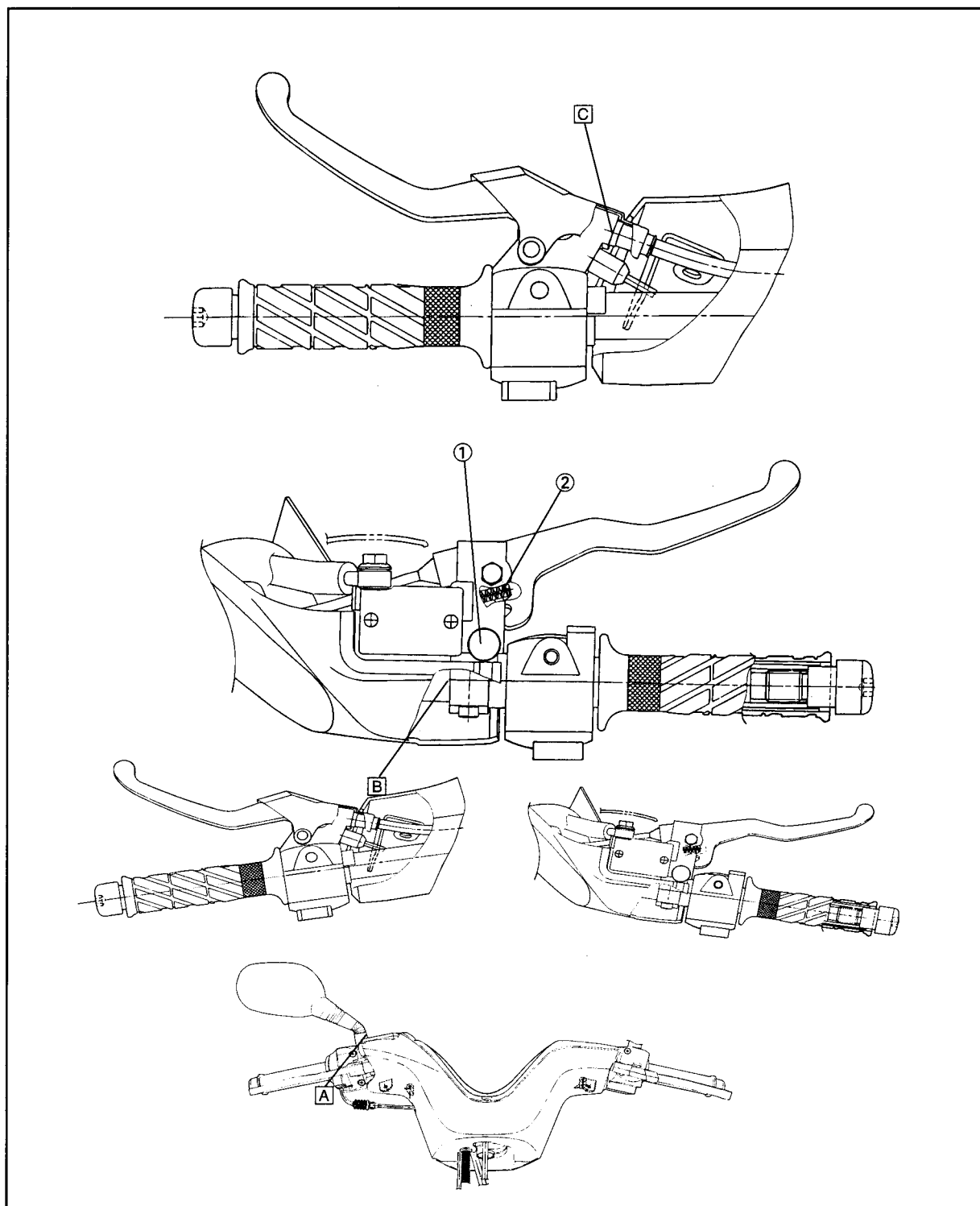
- ① Throttle valve cable
- ② Pipe (lower)
- ③ Pipe
- ④ Overflow pipe
- ⑤ Circlip
- ⑥ Pipe (upper)
- ⑦ Fuel pump
- ⑧ Fuel tube
- ⑨ Clearing tube
- ⑩ Vacuum tube
- ⑪ Circlip
- ⑫ Vent tube
- ⑬ Circlip
- ⑭ Circlip
- ⑮ Vent tube
- ⑯ Circlip
- ⑰ Lower mudguard
- ⑱ Thermo switch lead

- A The grip of circlip should face downward.
- B Pass the rear brake cable through the cable lead.
- C Pass the floating release tube of carburetor through the hole of engine bracket.
- D Pass the rear brake cable through the upper part of the cross bar of engine bracket assembly.
- E Pass the overflow tube of oil feeding hole through the hole at the rear left end of lower mudguard.
- F Do not fix the front indicator's adapter on the adapter fixing mount (left/right).





- ① Cap
- ② Compression spring
- A After passing the compression spring through the notch of handlebar cover 1, assemble handlebar cover 1 and 2 but should not clamp in.
- B Align the master cylinder of brake with the locating mark of the whole handlebar.
- C The joint of brake cable should be inserted directly into the scooter until it touches the projected portion of the handlebar fixer of brake.



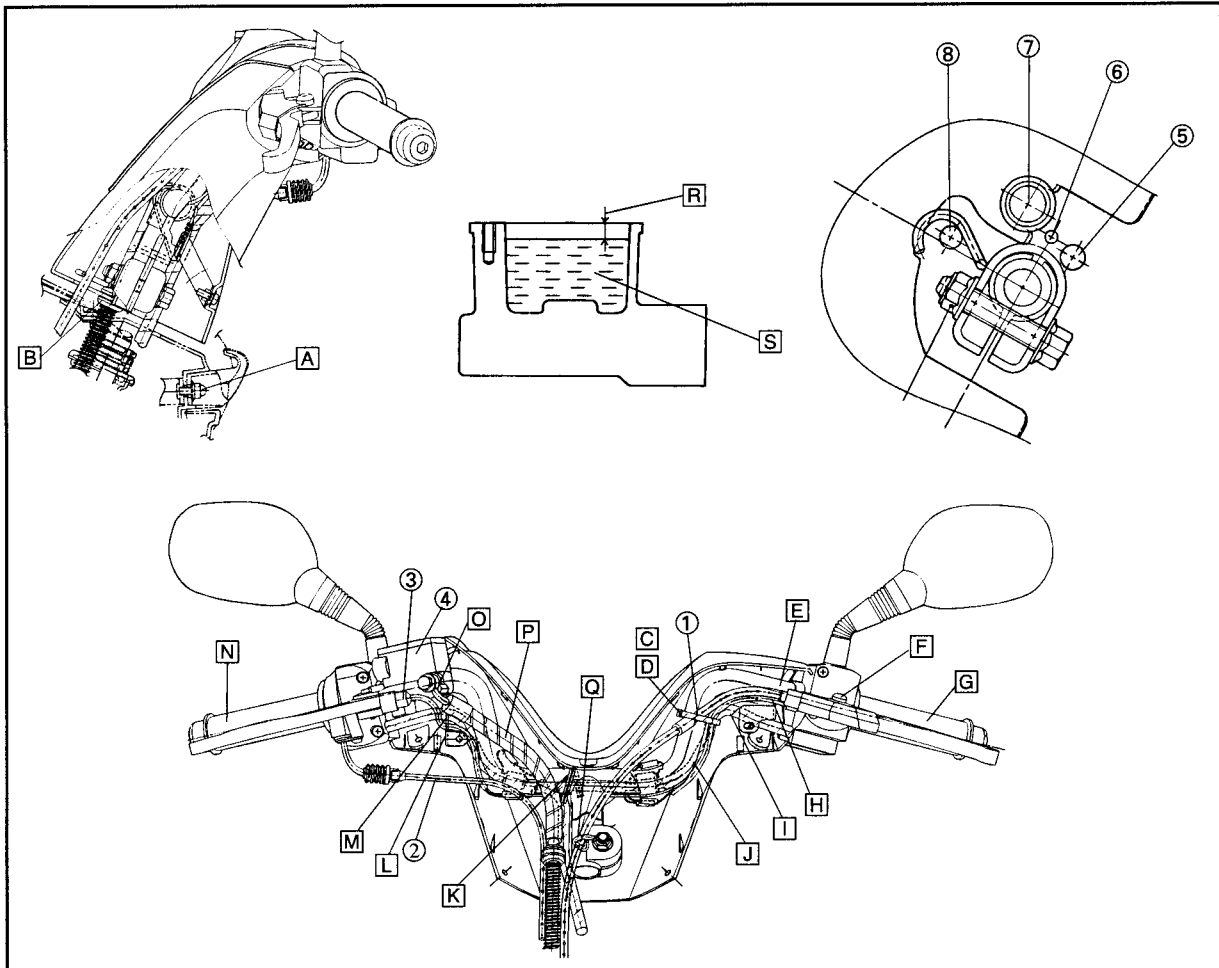


- ① Brake cable 2
- ② Throttle valve cable 1
- ③ Front brake switch (right)
- ④ Master cylinder
- ⑤ Cable assembly
- ⑥ Throttle valve cable 1
- ⑦ Brake hose
- ⑧ Brake cable 2

- A Pass cable assembly through the lower side of the handlebar, pull out from the front, then pass through the upper side of the supporting frame and handlebar 1, and hang on the wheel.
- B Insert the fixing ring of brake hose into the insert section of handlebar 2.
- C Tie with the harness and cut the excess harness at the rear side (reserve 5mm).
- D Pass the lead cable of brake cable through the front side of the handlebar and fix with a harness. Use the same harness to fix the

lead of handlebar switch and lead of brake indicator witch on the lower side of the handlebar.

- E Do the initial assembly of brake cable 2 and handlebar switch and then assemble them on the handlebar.
- F After assembling the small cover of brake handlebar cover with brake cable 2, fix the screw head of handlebar switch.
- G Pour bonding agent on a cloth and then inset into the handlebar switch 1 until it touches the end.
- H Pass the lead (left side) of brake indicator switch through the upper side of handlebar supporting frame.
- I Pass the lead (right side) of handlebar switch through the upper side of handlebar supporting frame.
- J Pass cable assembly through the rear side of handlebar.

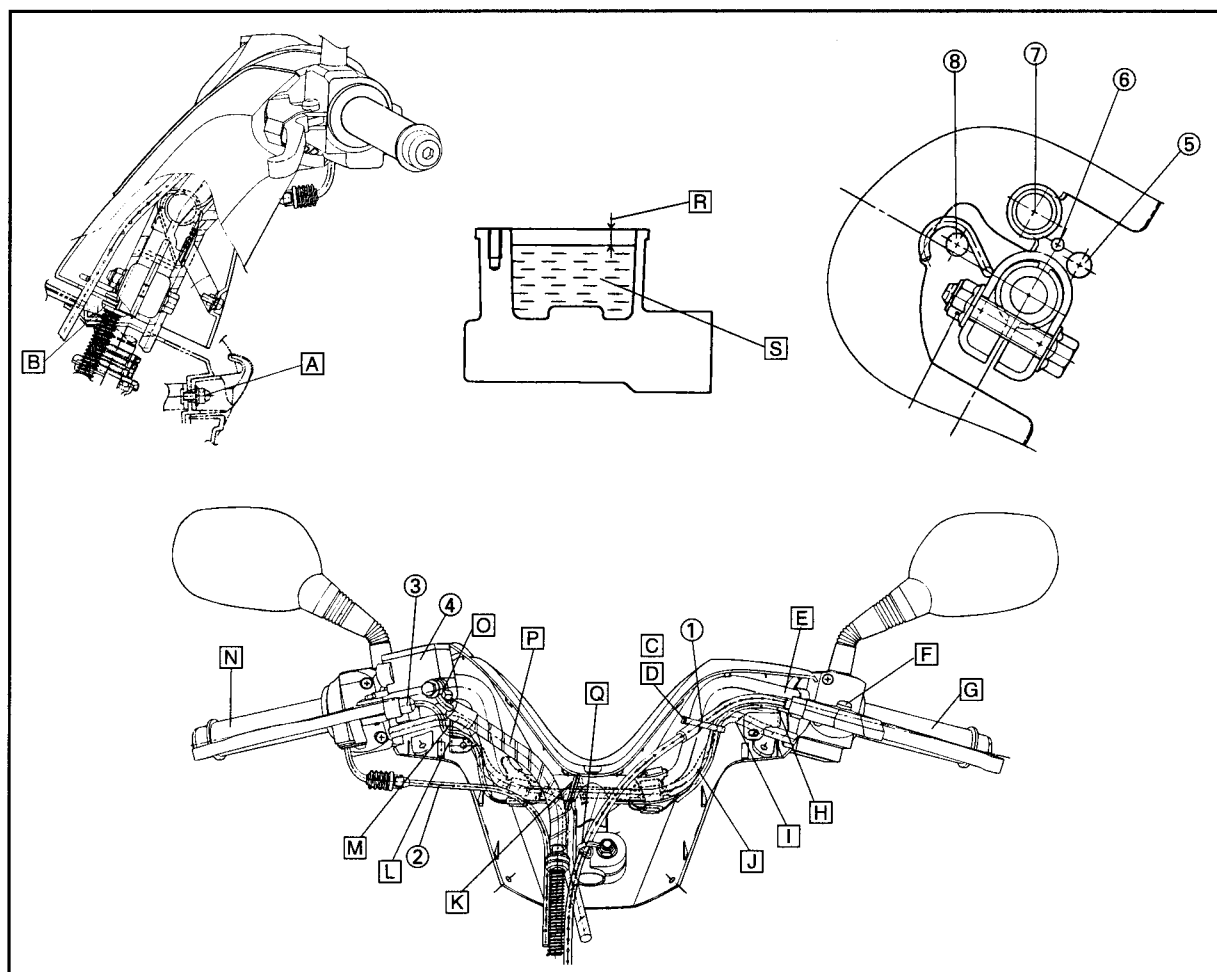




- K** Pass cable assembly through the lower side of the handlebar, pull out from the front, then pass through the upper side of handlebar 1, and hang on the wheel.
- L** Pass the lead (right side) of brake indicator switch through the upper side of handlebar supporting frame.
- M** Pass the lead (right side) of handlebar switch through the dented part of handlebar supporting frame.
- N** After assembling the oil feeding handle, check the relevant parts of the handle. Once you left your hand the handle should be able to revert to its position immediately.
- O** Assemble the brake hose until it touches the stopper of master cylinder.
- P** Pass brake hose through the front side of handlebar.
- Q** Pass brake cable 2 through the cable fixer.
- R** Fluid count should be 5mm and below starting from the brake master cylinder to

the fluid level, but brake fluid should not overflow once the cap is on. Wipe away any overflowed brake fluid.

- S** Use brake fluid DOT 3 or DOT4.



PERIODIC INSPECTION AND ADJUSTMENT

INTRODUCTION

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

PERIODIC MAINTENANCE/LUBRICATION INTERVALS

NO.	ITEM	ROUTINE	TYPE	BREAK-IN	EVERY	
				First 500 km or 1 month	2,500 km or 3 month	5,000 km or 5 month
1 *	Engine oil	• Replace.	Refer to ENGINE OIL INSPECTION	Replace every 1,000 km		
2	Oil strainer	• Clean with solvent.	—	√	Replace every 3,000 km	
3	Final gear oil	• Replace.	Yamaha gear oil	√	√	
4	Cooling system	• Check hose for cracks or damage. Replace if necessary.	—		√	√
		• Replace coolant.	Ethylene glycol antifreeze	Replace every 12 months / 10,000 km		
5 *	Front brake system	• Adjust free play. • Check and replace if necessary. • Replace brake fluid every 24,000km or 24 months.	Brake fluid: DOT 4	√	√	√
6 *	Rear brake system	• Adjust lever free play. • Check and replace shoes if necessary.	—	√	√	√
7 *	Control cables	• Apply oil lightly.	Same as engine oil	√	√	√
8	Brake lever pivot	• Apply oil lightly.	Same as engine oil		√	√
9	Centerstand and sidestand pivot	• Check operation and lubricate.	Same as engine oil		√	√
10 *	Front fork	• Check operation and for oil leakage.	—		√	√
11 *	Steering bearings	• Check bearing assembly for looseness.	—		√	√
12 *	Wheel bearings	• Check bearing for smooth rotation.	—		√	√

3

NO. Items marked with an asterisk "*" require special tools, data and technical skills for servicing. Take the scooter to a Yamaha dealer.

NOTE:

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

MAINTENANCE TABLE OF FLUE GAS CONTROL SYSTEM
REGULAR MAINTENANCE TABLE OF FLUE GAS CONTROL SYSTEM

NO.	ITEM	CHECKS AND MAINTENANCE JOBS	Type	BREAK-IN	EVERY	
				First 500km or 1 month	2,500 km or 3 month	5,000 km or 5 month
1	* Valve clearance	• Check and adjust valve clearance when engine is cooled.	—	√		√
2	* Spark	• Check condition. • Adjust gap and clean.	Refer to SPARK PLUG INSPECTION	√	√	√
3	* Crank case leak flue gas recovery device	• Check whether the vent tube has crack or damaged.	—			√
4	* Fuel line	• Check fuel hose and vacuum pipe for cracks or damage.	—			√
5	* Idle speed	• Check and adjust engine idle speed. • Adjust throttle cable free play.	—	√	√	√
6	* Emission system	• Check if there is any leak. • Adjust the free gap of throttle valve cable.	—			√
7	* Carburetor idle speed idle combustion ratio	• Check and adjust (CO measurement).	—	√	√	√
8	* Air filter	• Clean with solvent and dampen with oil.	—		√	√
9	* Crankcase filter	• Clean with compressed air.	—		√	√
10	* Evaporated gas control system	• Check whether the system is broken or not, change it if necessary.	—			√
11	* V-belt	• Check whether it is damage or worn. If it is to be oiled, clean it first, and change it if necessary	—			√

NO. Items marked with an asterisk "*" require special tools, data and technical skills for servicing. Take the scooter to a Yamaha dealer.

UNSCHEDULED MAINTENANCE TABLE OF FLUE GAS CONTROL SYSTEM

Item	Routine
Ignition system	If there is any abnormal continuous ignition, engine stall, overheating, etc., it is necessary to do the maintenance or inspection.
Carbon removal	If the engine horsepower fluctuated at big scale between the travel distance of 5,000 ~ 10,000km, remove the cumulated carbon from the cylinder head, piston head, and emission system.
Piston	If it was over used before travel distance reaches 500km, piston, piston ring, and cylinder body will be worn or jam the cylinder. Clean or bore the cylinder or replace a new one.



FUNCTION OF VARIOUS COMPONENTS OF FLUE GAS CONTROL SYSTEM

System	Initial	Purpose	Function
Evaporated Gas System	EEC	To minimize the HC inside the fuel tank from evaporating into the atmosphere.	Store the gas in the fuel tank through the activated carbon can, and then lead into the cylinder to burn in order to minimize generation of HC.
Crank Case Leaked Flue Gas Back Flow	PCV	To totally recover the HC of leaked flue gas in the crankcase to burn again.	Use the positive pressure generated by the up and down motion of piston to lead the leaked flue gas from the crankcase into the cylinder through the air filter to burn again, in order to restrain the leaked flue gas from the crankcase to generate HC.
Catalytic Converter		To minimize the HC in the emitted flue gas to generate CO.	Use the heavy metal in the catalytic converter to oxidize the HC and CO in the emitted flue gas into non-hazardous matters like CO ₂ (carbon dioxide) and H ₂ O (water), and then emit into the atmosphere.

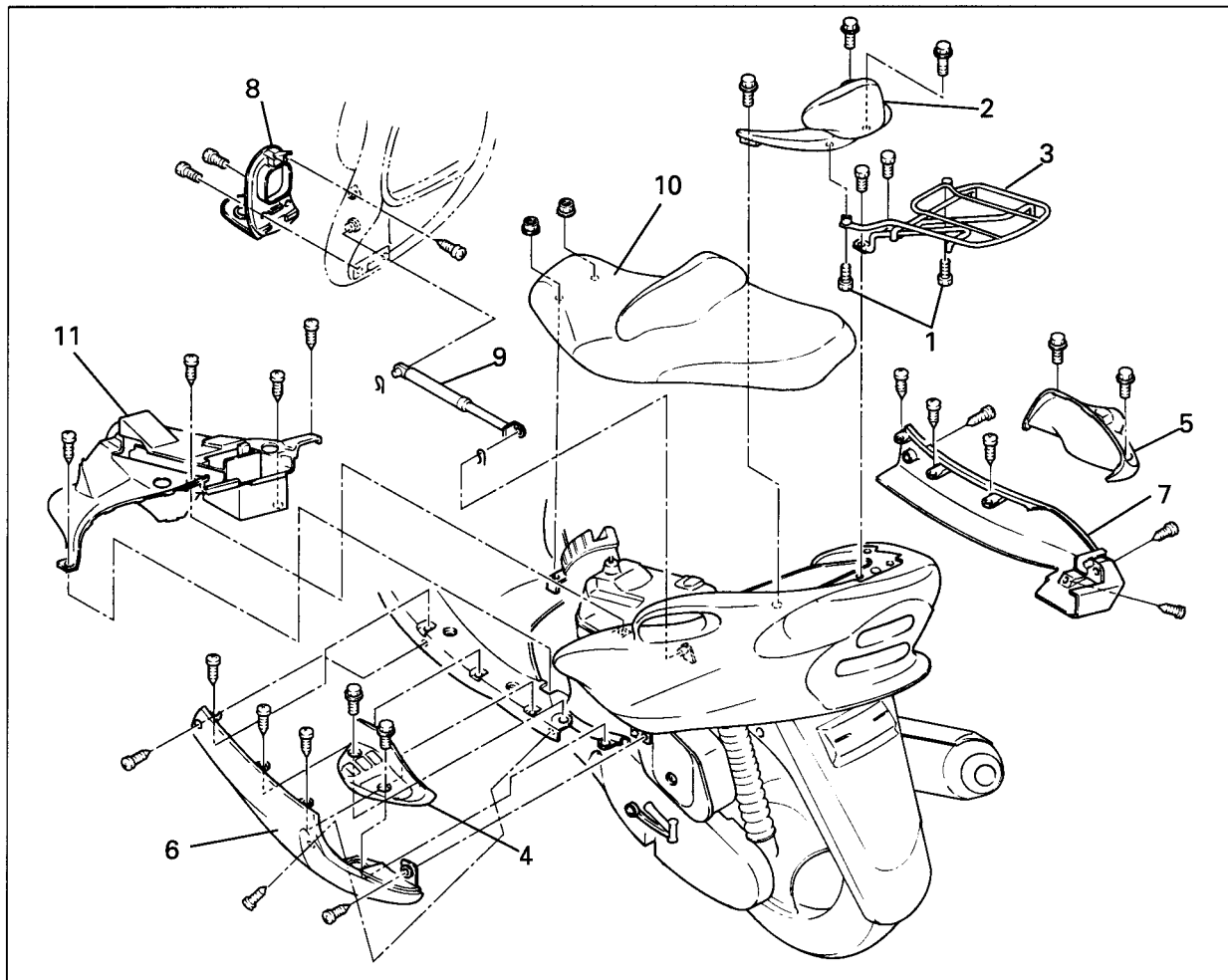
CAUTION:

Use 92 or 95 unleaded gasoline for this scooter. If you carelessly used supreme gasoline, the catalytic converter will fail and increase the emission density of flue gas.

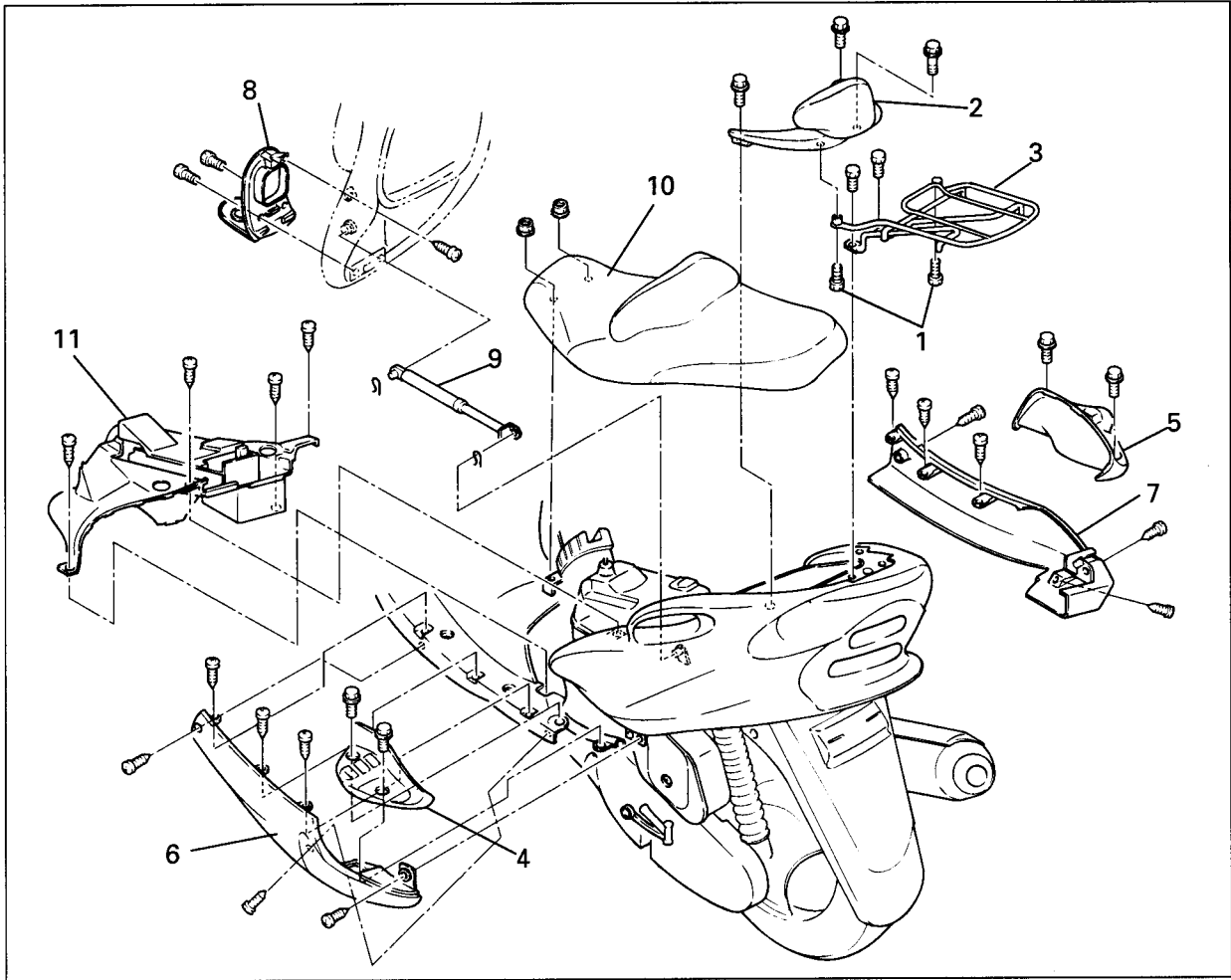
NOTE:

Use 92 or 95 unleaded gasoline for this scooter. If you carelessly used supreme gasoline, the catalytic converter will fail and increase the emission density of flue gas.

COVER AND PANEL
GRAB BAR, BACKREST, AND SEAT

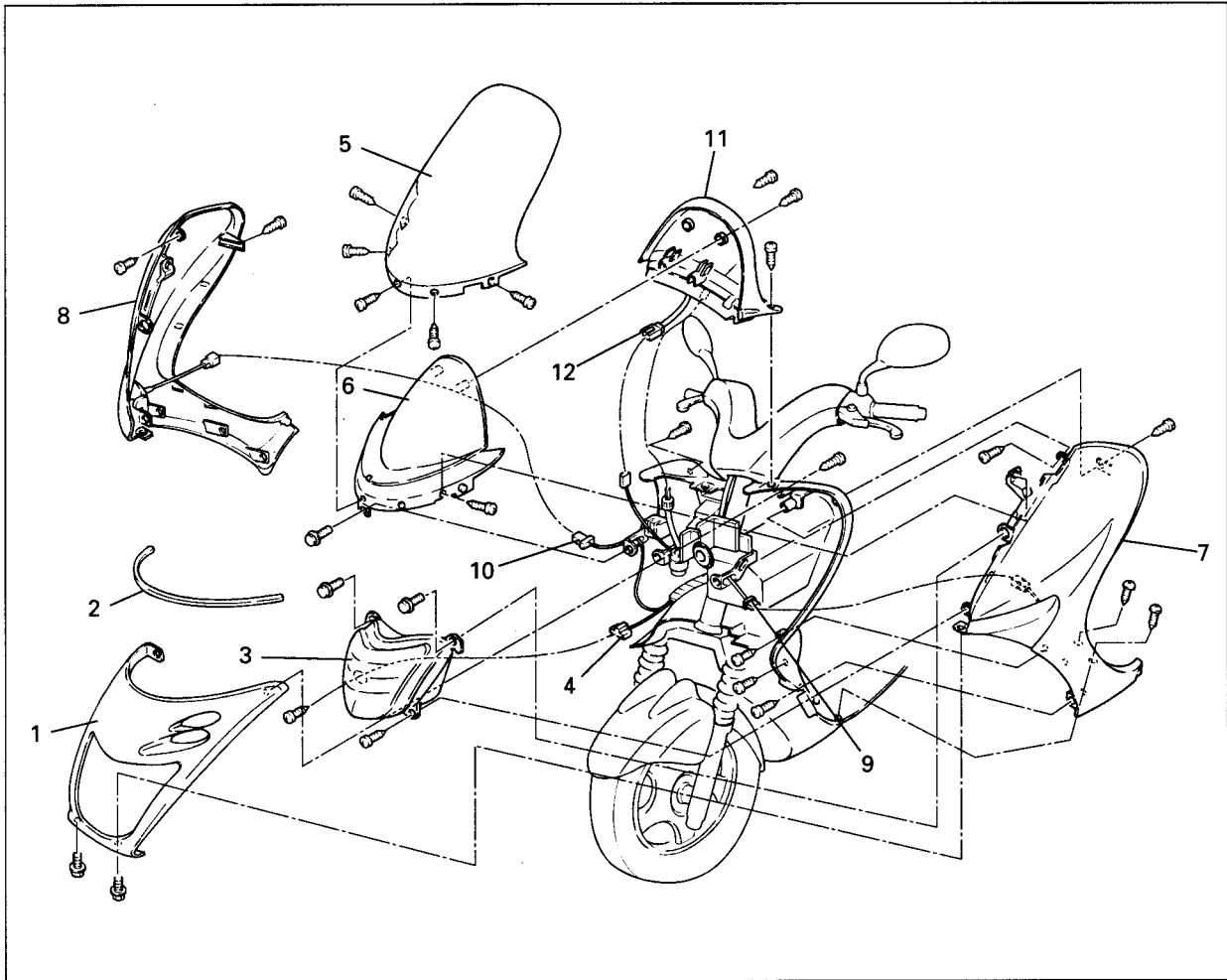


Order	Job name / Part name	Q'ty	Remarks
	Grab bar, backrest, and seat removal		Remove the parts in order.
1	Rear frame bolt (optional accessory)	4	
2	Grab bar/backrest	1	
3	Rear frame (optional accessory)	1	
4	Passenger foot rest (left)	1	
5	Passenger foot rest (right)	1	
6	Lower left side cover	1	
7	Lower right side cover	1	
8	Fuel tank cap protection cover	1	
9	Damper assembly	1	NOTE: _____
10	Seat	1	Install the pneumatic lifting rod according to the indicated direction.
11	Fuel tank cover	1	_____

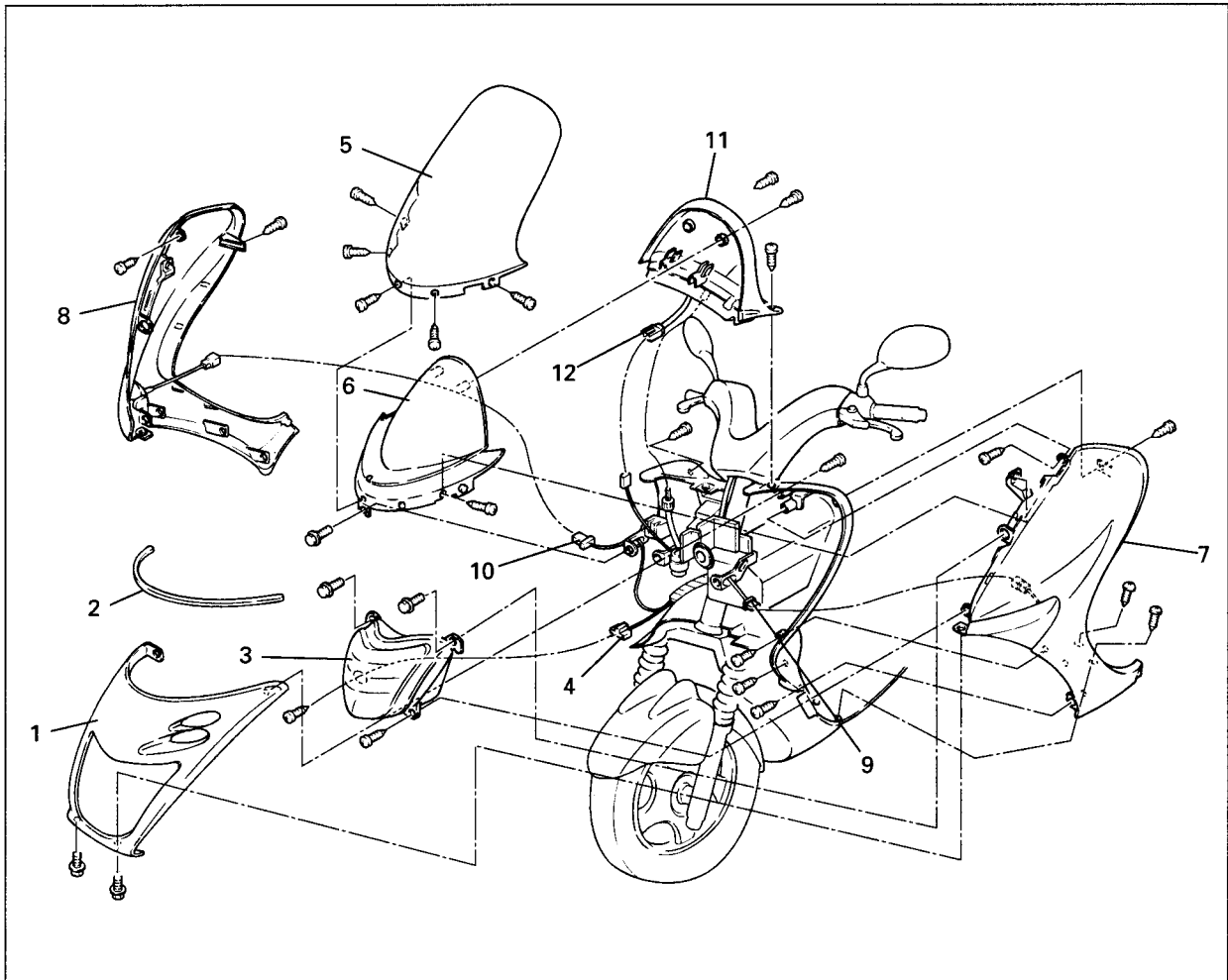


Order	Job name / Part name	Q'ty	Remarks
			Reverse the removal procedure for installation.

FRONT COWLING

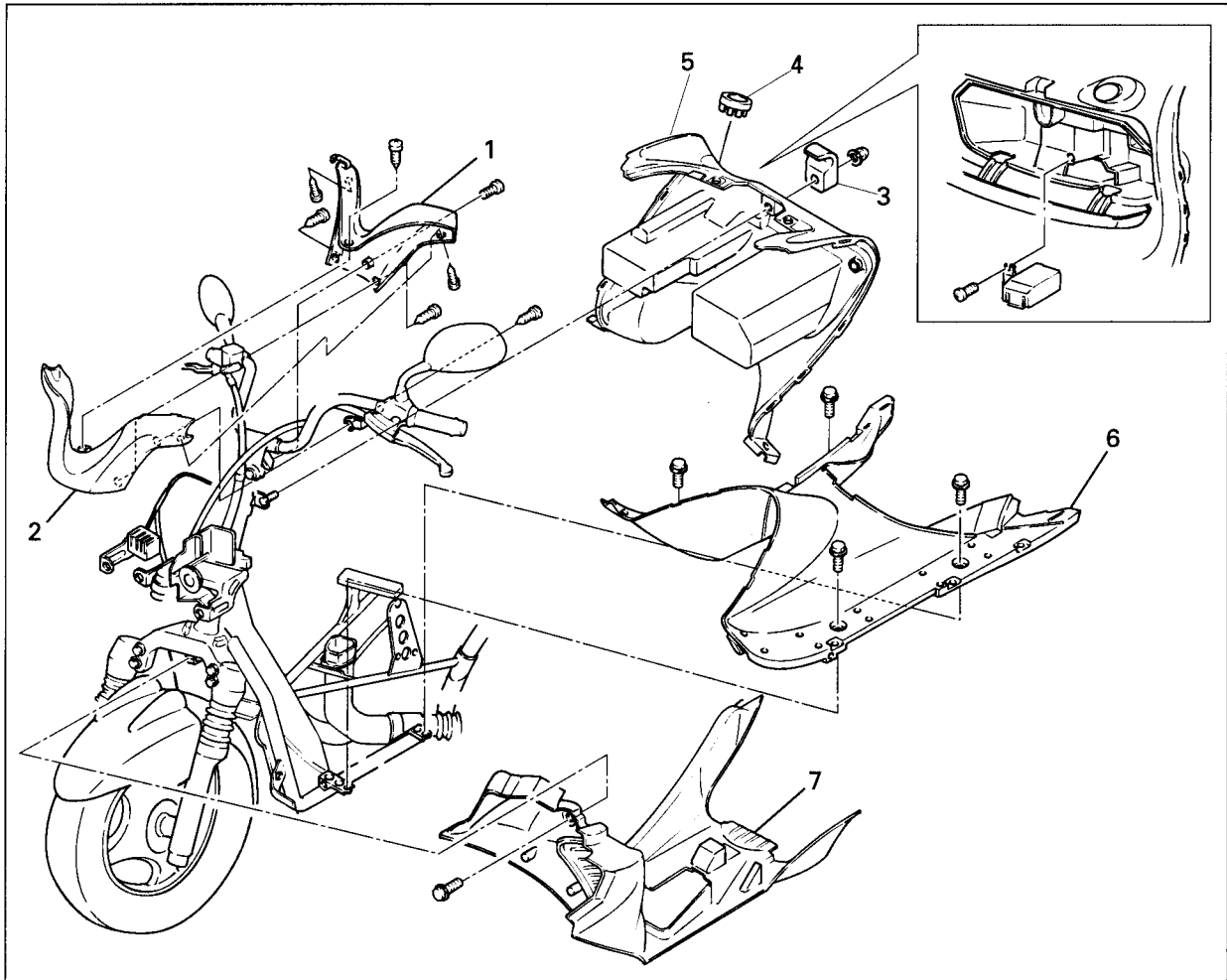


Order	Job name / Part name	Q'ty	Remarks
	Headlight cowling and front cowling removal		Remove the parts according to its order.
1	Headlight cowling	1	
2	Waterproof sash	1	
3	Headlight	1	NOTE: _____
4	Headlight lead coupler joint	1	Disconnect the couplers.
5	Wind screen	1	
6	Meter panel cowling	1	
7	Front left cowling	1	
8	Front right cowling	1	NOTE: _____
9	Front left turn signal indicator lead coupler	1	Disconnect the couplers.
10	Front right turn signal indicator lead coupler	1	
11	Meter panel	1	
12	Meter panel outgoing wire joint	1	



Order	Job name / Part name	Q'ty	Remarks
			Reverse the removal procedure for installation.

HANDLE COVER, LEGSHIELD, FOOTREST



Order	Job name / Part name	Q'ty	Remarks
	Handle cover, legshield, and footrest board removal		Remove the parts in order.
1	Handle protection cover (rear)	1	
2	Handle protection cover (front)	1	
3	Hook	1	
4	Main switch cover	1	
5	Legshield	1	
6	Footrest board	1	
7	Under cowling	1	
			Reverse the removal procedure for installation.

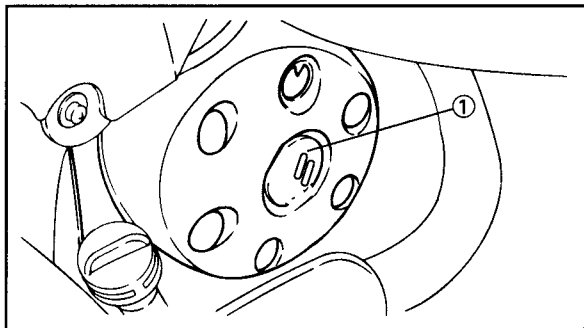
ENGINE

VALVE CLEARANCE ADJUSTMENT

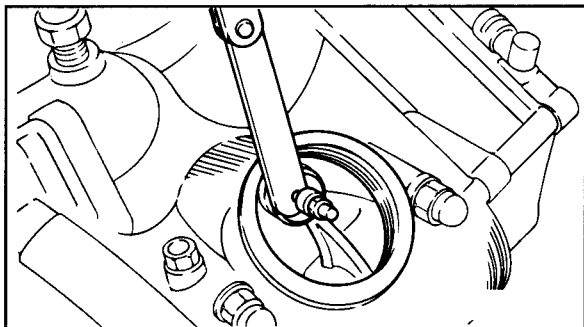
NOTE: _____

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

1. Remove
 - Grab bar/backrest
 - Lift lever
 - Seat
 - Footrest 1, 2
 - Side cover protection 1, 2
 - Side cover 1
 Refer to "COVER AND PANEL" section .




2. Remove:
 - Tail cover
 - Side cover 3
 - Fuel tank
 Refer to "COVER AND PANEL" section .



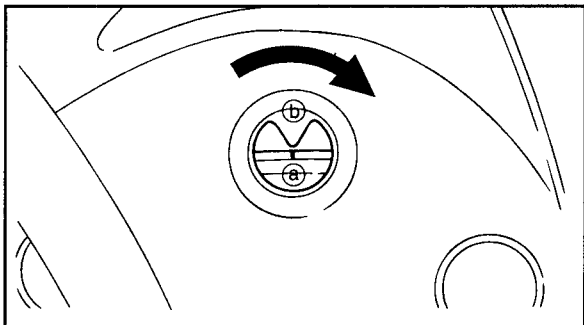
3. Remove:
 - Spark plug
 - Cylinder head cover (intake/exhaust side)
 - Cover ①

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

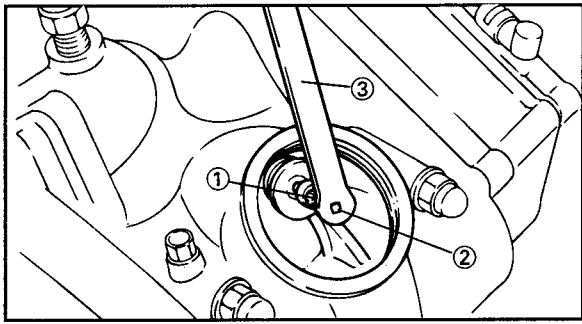
	Valve clearance (cold): Intake valve 0.08 - 0.12 mm Exhaust valve 0.18 ~ 0.22 mm
---	--

Measurement steps:

- Use the right wrench to turn the crankshaft clockwise. When the "I" mark ① on the magneto's rotor is aligned to the "▼" indication ② on the magneto's cap and there is an obvious valve clearance on the emission arm, this means the piston is at the compression dead center.
- Measure the valve clearance by using a feeler gauge.
Out of specification → Adjust.



VALVE CLEARANCE ADJUSTMENT /IDLING SPEED ADJUSTMENT



5. Adjust:
- Valve clearance

Adjustment steps:

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

Turning in → Valve clearance is decreased.

Turning out → Valve clearance is increased.



Valve adjusting tool:
90890-01311

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

70 kg•cm

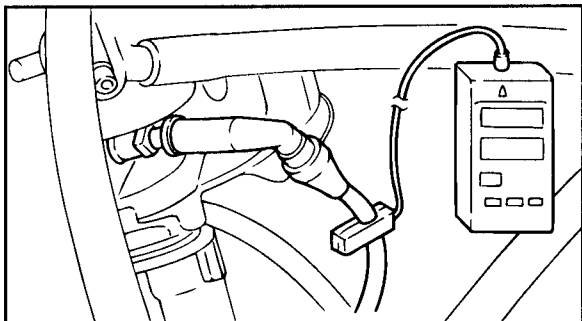
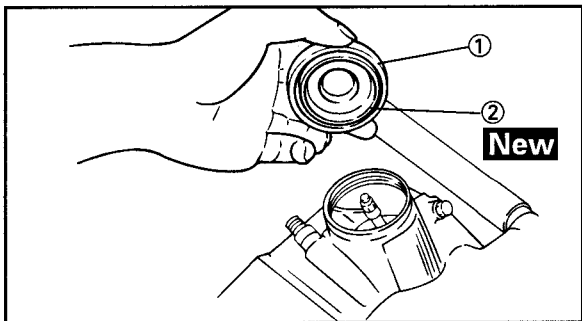
- Measure the valve clearance.
- If the clearance is incorrect, repeat above steps until specified clearance is obtained.

6. Install:

- Cylinder head cover (intake side) ①
- O-ring ②
Damage → Replace

7. Install:

- Cylinder head cover (exhaust side)
- O-ring
Damage → Replace
- Spark plug 130 kg•cm
- Cover



IDLING SPEED ADJUSTMENT

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



Inductive tachometer:
90890-03113

IDLING SPEED ADJUSTMENT /THROTTLE CABLE ADJUSTMENT

**INSP
ADJ**



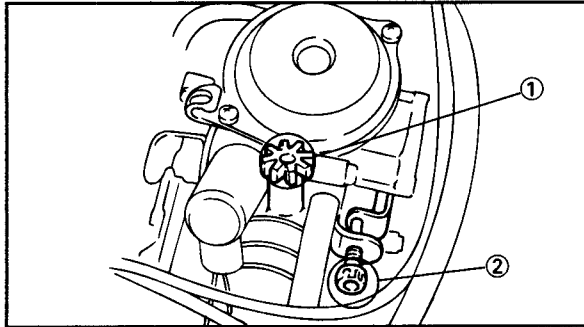
3. Check:
- Engine idling speed
Out of specification → Adjust.

	Engine idling speed: 1,550~1,650 r/min
--	---

4. Adjust:
- Engine idle speed

Adjustment steps:

- Turn the pilot screw ① (p/s screw) until it is lightly seated.
- Turn the pilot screw out by the specified number of turns.

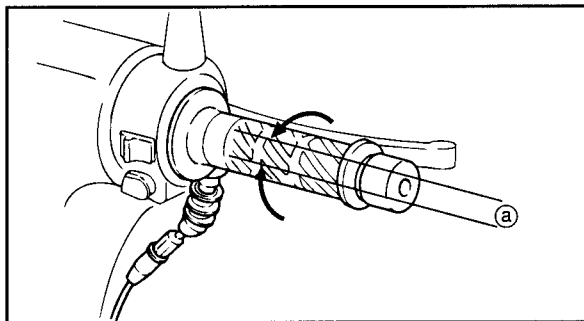


	Pilot screw: 2-1/4±1/2 turns out
--	-------------------------------------

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

Turning in → Idling speed is increased.	
Turning out → Idling speed is decreased.	

5. Adjust:
- Throttle cable free gap
Refer to "THROTTLE CABLE FREE GAP ADJUSTMENT" section.



THROTTLE CABLE ADJUSTMENT

NOTE: _____

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

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

	Free play (throttle cable): 3 - 5 mm at throttle grip flange
--	---

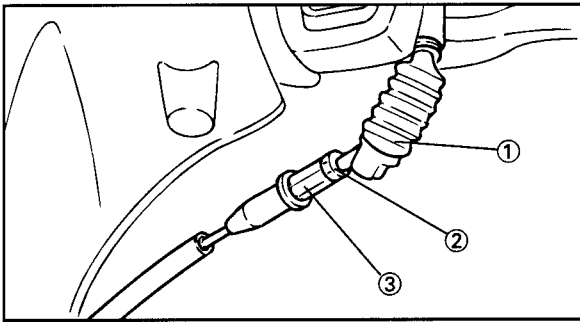
2. Adjust:
- Throttle cable free play

Adjustment steps:

NOTE: _____

Never accelerate the throttle when stopping the engine.

THROTTLE CABLE ADJUSTMENT /SPARK PLUG INSPECTION



- Pull out the adjuster cover ① backward.
- Loosen the locknut ② on the throttle cable.
- Turn the adjuster ③ in or out until specified free play is obtained.

Turning in → Free play is increased.

Turning out → Free play is decreased.

- Tighten the locknut.
- Re-install the adjuster cover.

⚠ WARNING

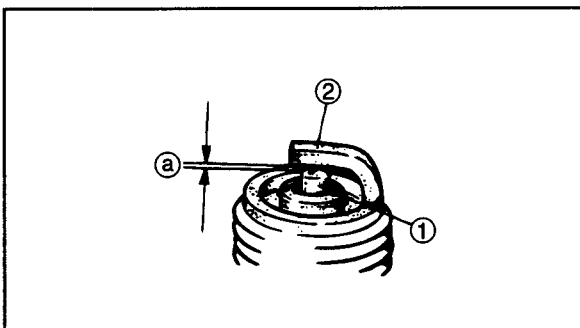
After adjusting, turn the handlebar to the right and to the left to ensure that this does not cause the engine idling speed to change.

SPARK PLUG INSPECTION

1. Remove:
 - Spark plug cap
 - Spark plug

CAUTION:

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



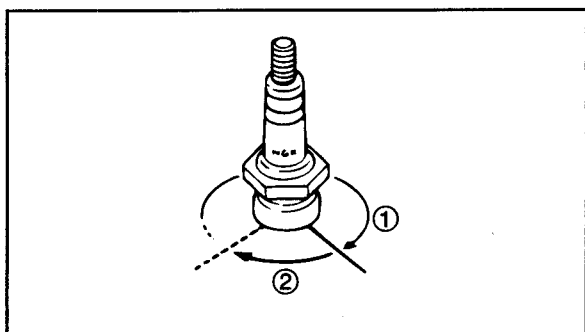
2. Check:
 - Spark plug type
 - Incorrect → Replace.





Standard spark plug:
C7E (NGK) or
U22ES (NIPPON DENSO)

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

SPARK PLUG INSPECTION/ IGNITION TIMING CHECK



 Spark plug gap:
0.7 ~ 0.8 mm

6. Install:
- Spark plug  130 kg•cm

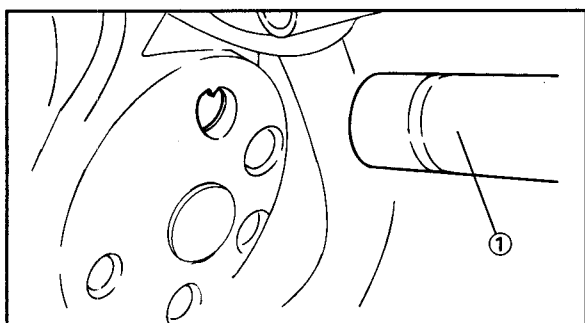
NOTE: _____

- Before installing a spark plug, clean the gas-gasket surface and plug surface.
- Lock securely ① with the hand, then use a wrench to lock it to the specified torsion ②.


IGNITION TIMING CHECK

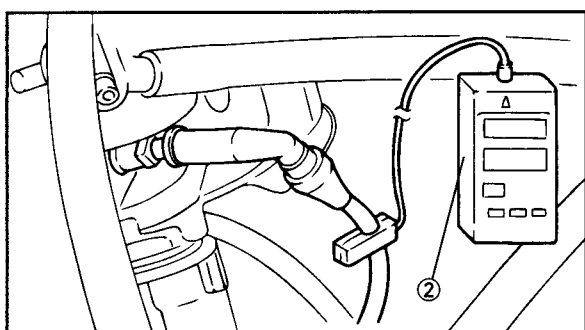
NOTE: _____

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



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


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

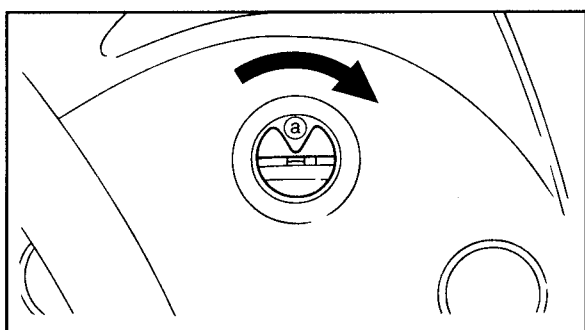


2. Check:
- Ignition timing

Checking steps:

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

 Engine idling speed:
1,550 ~ 1,650 r/min



- Check the stationary pointer "▼" ① on the magneto cover to verify it is within the required range indicated "H" on the magneto rotor.
- Incorrect firing range → Check the ignition system.

IGNITION TIMING CHECK/ COMPRESSION PRESSURE MEASUREMENT



NOTE: _____

Ignition timing is not adjustable.

COMPRESSION PRESSURE MEASUREMENT

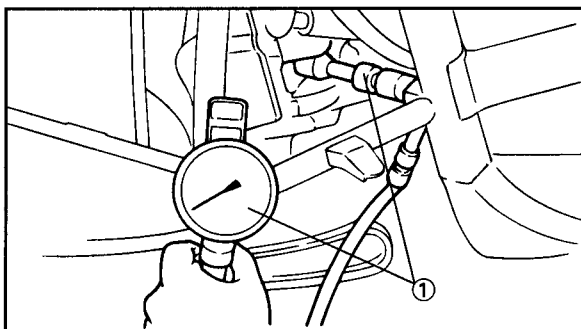
NOTE: _____

Insufficient compression pressure will result in performance loss.

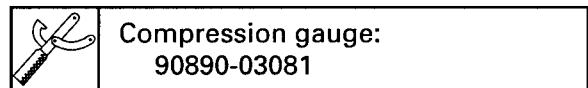
1. Remove:
 - Footrest board 2
 - Side panels 2
Refer to "COVER AND PANEL" section.
2. Check:
 - Valve clearance
Out of specification → Adjust.
Refer to "VALVE CLEARANCE ADJUSTMENT" section.
3. Start the engine and let it warm up for several minutes.
4. Turn off the engine.
5. Remove:
 - Spark plug

CAUTION: _____

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



6. Attach:
 - Compression gauge ①



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

COMPRESSION PRESSURE MEASUREMENT /ENGINE OIL LEVEL INSPECTION

**INSP
ADJ**



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

	Compression pressure (at sea level):
	Standard: 11 kg/cm ²
	Minimum: 10 kg/cm ²
	Maximum: 12 kg/cm ²

Measurement steps:

- Turn the throttle grip full and use a starter motor (use a fully charged battery) or kick crank to start the engine until the reading on the compression gauge stabilizes.

⚠ WARNING

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

8. Install:

- Spark plug 130kg•cm

9. Install:

- Side panel 2
- Footrest board 2

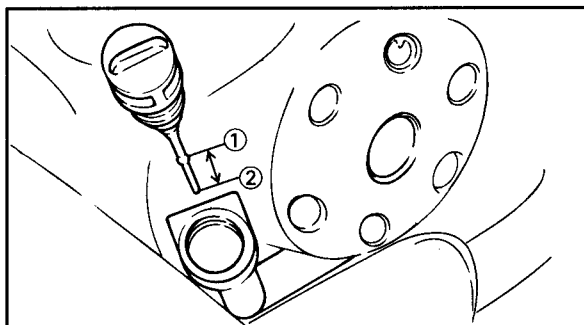
Refer to "COVER AND PANEL" section.

ENGINE OIL LEVEL INSPECTION

1. Stand the scooter on a level surface.

NOTE:

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



2. Start the engine and let it warm up for a few minutes.

3. Turn off the engine.

4. Inspect:

• Method

Turn out the stick gage, wipe cleanly and turn it into the bottom, then take it out and read the oil level.

• Engine oil level

Oil level should be between maximum ① and minimum ② marks.

Oil level is below the minimum mark → Add oil up to the proper level.

ENGINE OIL LEVEL INSPECTION/ ENGINE OIL REPLACEMENT

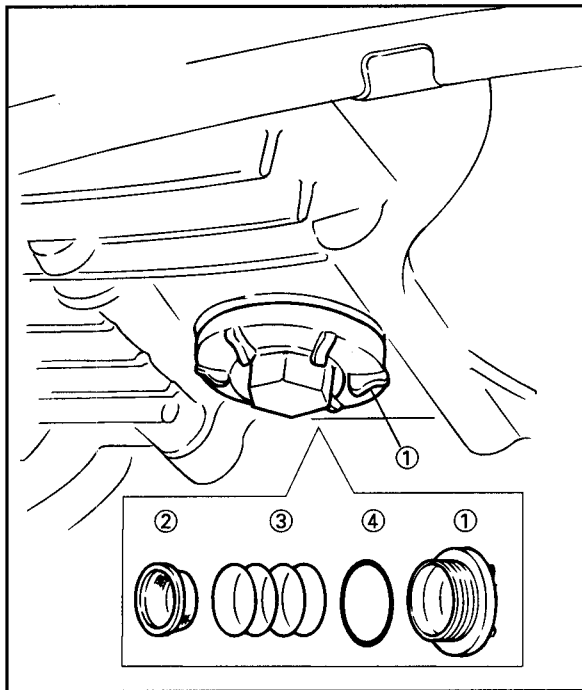


Oil quantity:
1.2 L

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

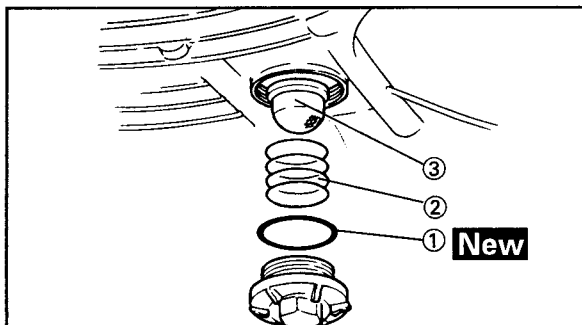
NOTE: _____


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



ENGINE OIL REPLACEMENT

1. Start the engine and let it warm up for several minutes.
2. Turn off the engine and place an oil pan under the engine.
3. Remove:
 - Stick gage
 - Drain plug ①
 - Oil strainer ②
 - Compression spring ③
 - O-ring ④Drain the crankcase of its oil.



4. Install:
 - O-ring ① **New**
 - Compression spring ②
 - Oil strainer ③
 - Dirty or Damaged → Clean or Replace
 - Drain plug  320kg·cm

NOTE: _____

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

ENGINE OIL REPLACEMENT/ ENGINE OIL PRESSURE INSPECTION



5. Fill:
 - Crankcase(Stick gage hole)

	Oil quantity: 1.2 L
---	------------------------

6. Check:
 - Engine oil level
Refer to "ENGINE OIL LEVEL INSPECTION" section.

7. Reset:
 - Engine oil warning circuit ①

Resetting steps:

- Reset after changing the engine oil during periodic maintenance.
- Use an I-driver and insert it into the setting hole ② at the lower right of the meter panel and then hold it down.
- Wait until the indicator turns from red to green, then setting is done.

NOTE: _____

If you change the engine oil before the oil change indicator turns red (for example: changing engine oil before it reaches the 1000km mileage), remember to reset the engine oil change indicator after changing the oil, in order to ensure that the oil change indicator is accurate and send out a regular oil changing indication to the driver.

Indicator display → approximately every 1000km/turning from green to red

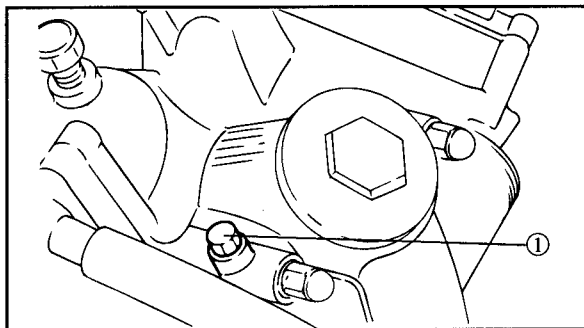
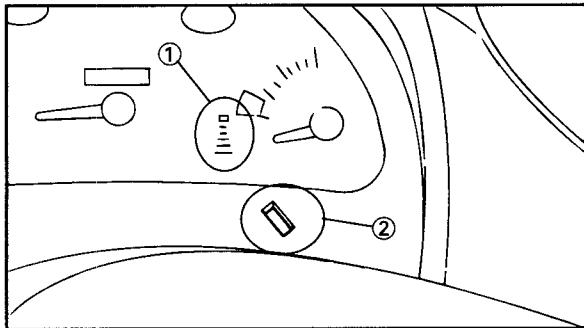
ENGINE OIL PRESSURE INSPECTION

1. Remove:
 - Footrest board 2
 - Side panels 2
Refer to the "COVER AND PANEL" section.

2. Inspect:
 - Oil pressure

Inspection steps:

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



ENGINE OIL PRESSURE INSPECTION /TRANSMISSION OIL REPLACEMENT



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

65 kg•cm

CAUTION: _____

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

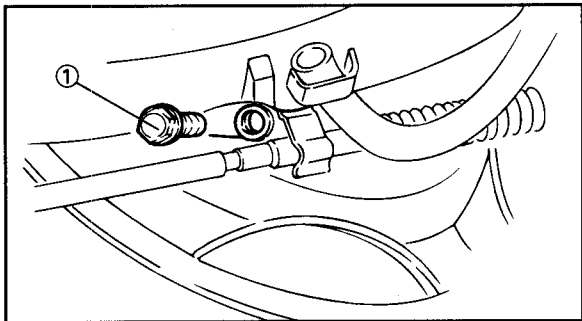
NOTE: _____

Wipe any spilled oil off the engine.

TRANSMISSION OIL REPLACEMENT

NOTE: _____

Make sure the scooter is upright when replacing the oil.

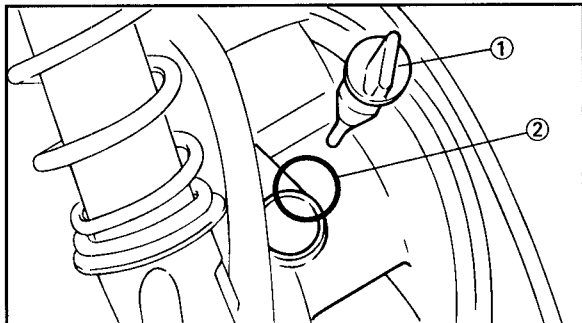


1. Stand the scooter on a level surface.
2. Start the engine for several minutes to warm it up and then stop.
3. Place an oil pan under the crankcase.
4. Remove:
 - Oil filler cap
 - Drain bolt ①
 - Washer
 Drain the oil.
5. Tighten:
 - Washer **New**
 - Drain bolt 230 kg•cm
6. Fill:
 - Crankcase

	Recommended oil:
	Yamaha gear oil
	Oil quantity:
	130 c.c.

CAUTION: _____

Wipe any spilled oil off the tire or the wheel.



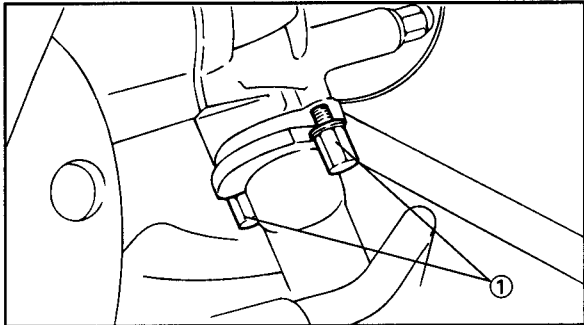
7. Install:
 - Oil filler cap ①
 - O-ring ②
8. Start the engine for several minutes to warm it up and check for the oil leakage.


EXHAUST SYSTEM INSPECTION/ AIR FILTER CLEANING AND REPLACEMENT

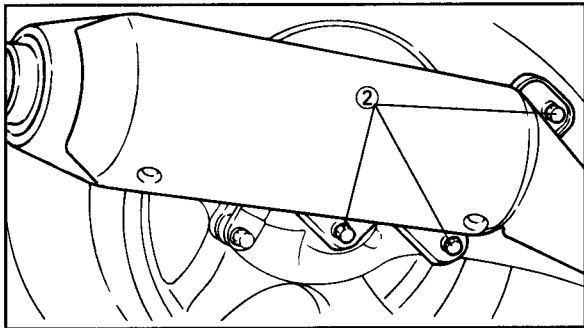



EXHAUST SYSTEM INSPECTION

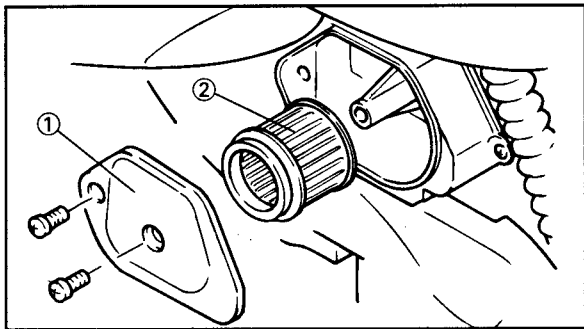
1. Remove:
 - Footrest board 2
 - Side panels 2Refer to "COVER AND PANEL" section.



2. Inspect:
 - Nut ① (exhaust pipe)
 100 kg·cm
Loose/ Damage → Tighten/ Replace.
 - Gasket (exhaust pipe)
Exhaust gas leaks → Tighten/ Replace.



3. Inspect:
 - Bolt ② (muffler)  310 kg·cm
Loose/ Damage → Tighten/ Replace.



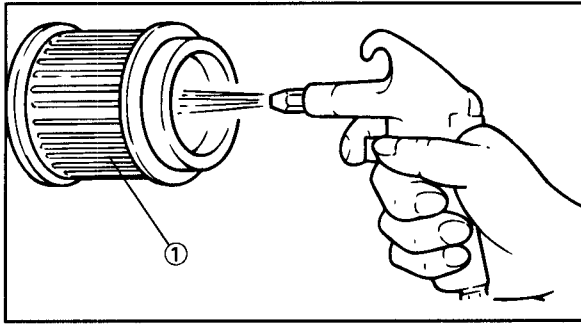
AIR FILTER CLEANING AND REPLACEMENT

1. Remove:
 - Air filter case cover ①
 - Air filter element ②

CAUTION:

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

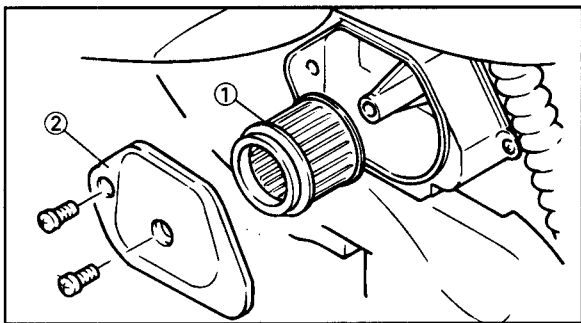
AIR FILTER CLEANING AND REPLACEMENT /V-BELT CASE AIR CLEANER AIR FILTER CLEANING



2. Inspect:
 - Filter element ①
Damage → Replace
3. Clean:
 - Filter element is dirty
Blow out the dust in the element from the outer surface using compressed air.
4. Replace:
 - Filter element
Replacement cycle → Replace a new one every 2500km.

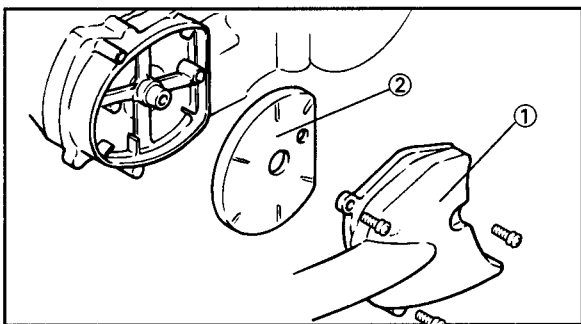
NOTE:

If the scooter is ridden in a dusty and dirty surrounding, clean the filter element more often or shorten the replacement cycle (less than 2500km), in order to maintain its performance as good as new.



5. Install:
 - Air filter element ①
 - Air filter case cover ②

65kg•cm



V-BELT CASE AIR CLEANER FILTER CLEANING

1. Remove:
 - V-belt case air cleaner filter cover ①
 - V-belt case air cleaner filter element ②

NOTE:

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

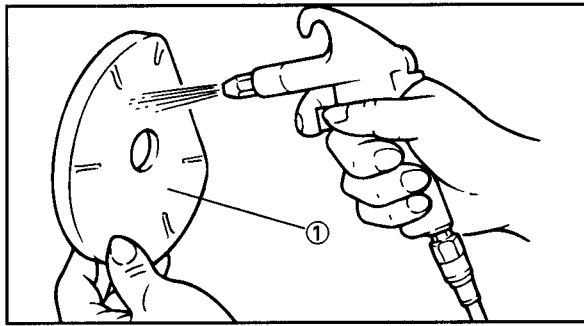
2. Inspect:
 - Filter element
Damaged → Replace.

CAUTION:

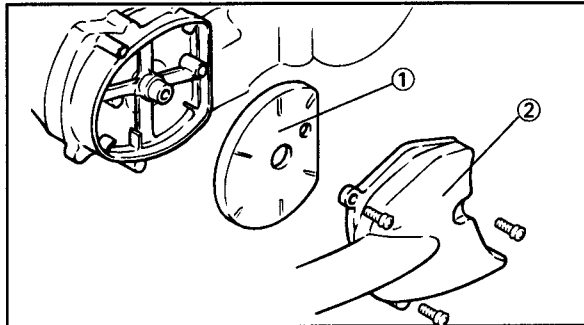
This element is a dry type. Be careful not to stain with grease or water.

V-BELT CASE AIR CLEANER AIR FILTER CLEANING /COOLANT LEVEL INSPECTION

INSP
ADJ

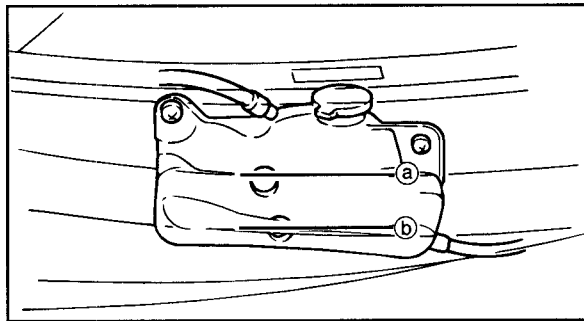


3. Clean:
 - V-belt case air cleaner filter element
Blow out the dust in the element from the outer surface using compressed air.



4. Install:
 - V-belt case air cleaner filter element ①
 - V-belt case air cleaner filter cover ②

65 kg·cm



COOLANT LEVEL INSPECTION

NOTE:

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

1. Stand the scooter on a level surface.
2. Stand the scooter on its centerstand.
3. Inspect:
 - Coolant level
Coolant level should be between the maximum (a) and minimum (b) marks.
Coolant level is below the "Lower" level line → Add soft water (Yamaha coolant) up to the proper level.

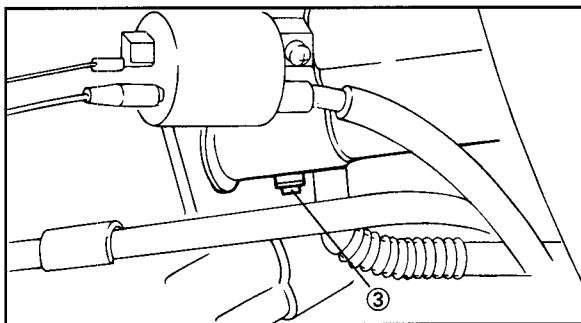
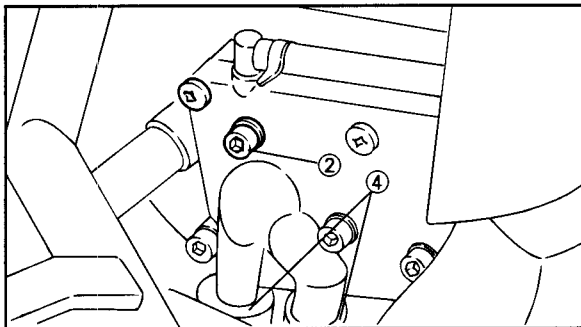
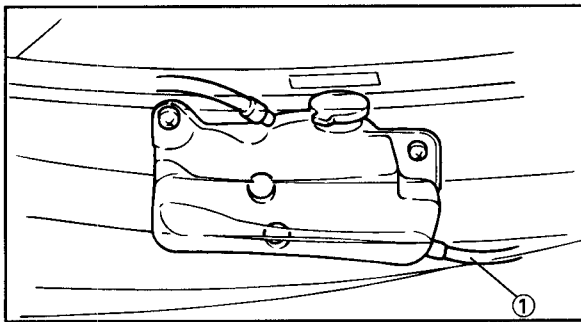
CAUTION:

Hard water or salt water is harmful to engine parts. Use only distilled water if soft water is not available.

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

NOTE:

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



COOLANT REPLACEMENT

1. Remove:
 - Footrest board 1, 2
 - Side panels 1,2
 Refer to the "COVERS AND PANEL" section.
2. Remove:
 - Hose ① (reservoir tank)
 Drain the reservoir tank of its coolant.
3. Remove:
 - Drain bolt ②
 - Cylinder drain bolt ③
 - Water pump outlet and inlet hose ④
 - Radiator cap
 Open the front trunk, remove the cover, slowly loosen to remove the radiator cap and drain the coolant.

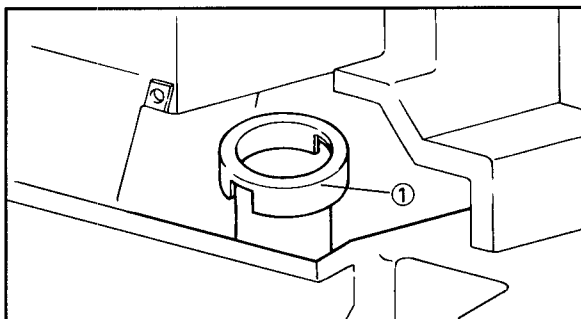
⚠ WARNING

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

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

NOTE:

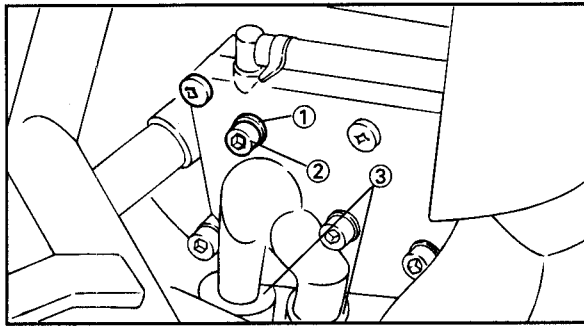
- Remove the radiator cap after removing the drain bolt.
- Place the scooter upright on a level surface when draining the coolant completely.




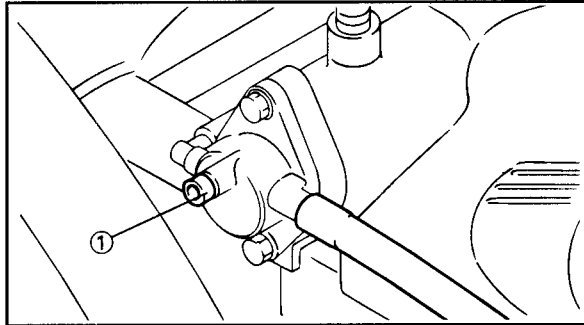
4. Clean:
 - Radiator
 Fill soft water into the filler neck support ① (reservoir tank).

COOLANT REPLACEMENT

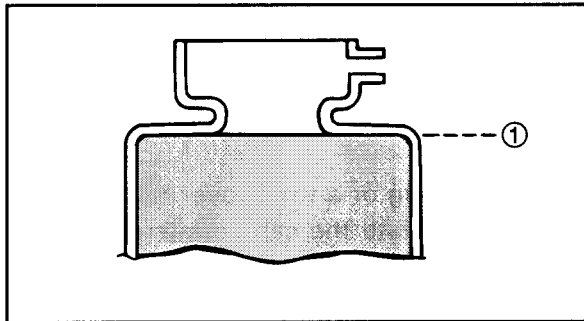
INSP
ADJ



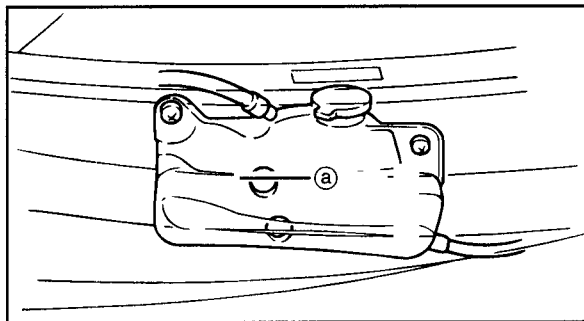
5. Install
 - Gasket ① **New**
 - Drain bolt ②  100kg•cm
 - Cylinder drain bolt
 - Water pump outlet and inlet hose ③



6. Loosen:
 - Check bolt ① (thermostat cap)
7. Connect:
 - Hose (reservoir tank)



8. Fill:
 - Radiator (to specified level ①)
Fill the coolant slowly, until the coolant comes out from the carburetor drain pipe.



- Reservoir tank (to maximum level (a))



Recommended coolant:
Yamaha coolant
Total capacity: (including pipeline)
0.8L
Reservoir tank capacity:
0.285L



Handling notes for coolant:

Coolant is potentially harmful and should be handled with special care.

⚠ WARNING

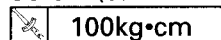
- If coolant splashes in your eyes:
thoroughly wash your eyes with water and consult a doctor.
- If coolant splashes on your clothes:
quickly wash it away with water and then with soap and water.
- If coolant is swallowed:
quickly make the person who has swallowed it vomit and then take him to a doctor.

CAUTION:

- Hard water or salt water is harmful to engine parts. Use only distilled water if soft water is not available.
- Do not use water containing impurities or oil.
- Take care that no coolant splashes onto painted surfaces. If it does, wash them straightaway with water.

9. Tighten

- Screw (carburetor bleed)



Fill the coolant slowly to the specified level.

10. Install:

- Radiator cap

11. Start the engine and let it warm up for several minutes.

12. Stop the engine and inspect the level. Refer to "COOLANT LEVEL INSPECTION" section.

NOTE:

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

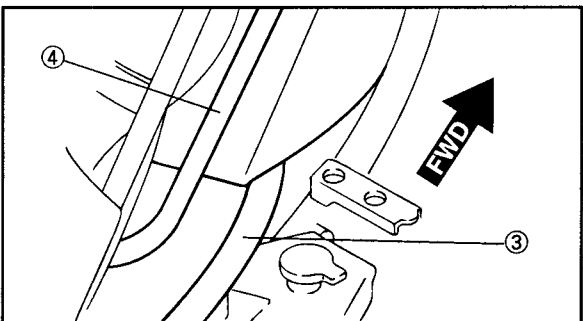
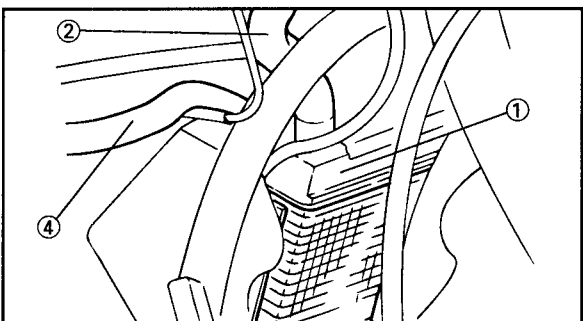
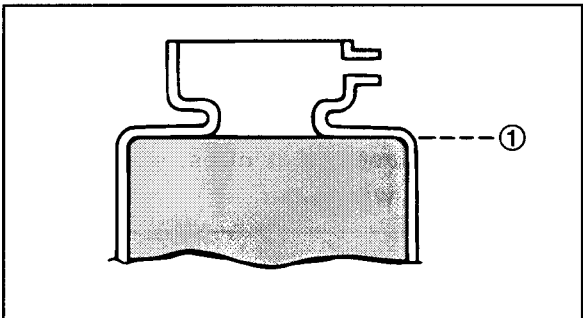
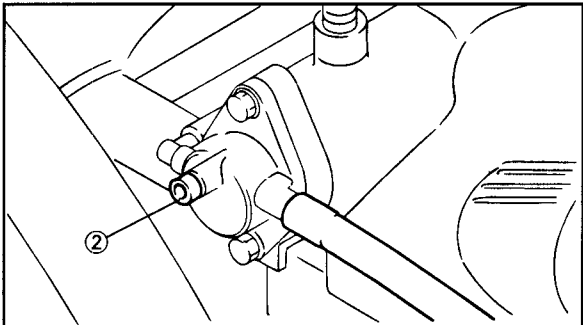
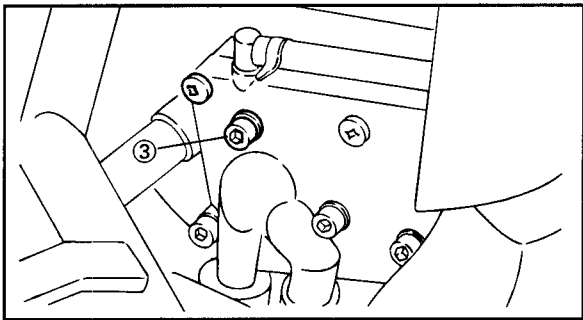
13. Install:

- Side panels 1, 2
- Footrest board 1, 2

Refer to "COVER AND PANEL" section.

COOLING SYSTEM AIR BLEED /COOLING SYSTEM INSPECTION

INSP
ADJ



COOLING SYSTEM AIR BLEED

1. Start the engine and maintain running at idle speed.
2. Loosen the drain bolt ③ until there is no air in the coolant, and then tighten the drain bolt.
3. Loosen the drain bolt ② of thermostat cap until there is no air in the coolant, and then tighten the drain bolt.
4. Turn off the engine. Wait until the engine is cool before adding coolant until it reached the specified level ①.
5. Lock radiator cap back.

COOLING SYSTEM INSPECTION

1. Inspect:
 - Radiator ①
 - Filler hose (radiator) ②
 - Lower outlet hose (radiator) ③
 - Pipe
 - Upper outlet hose (radiator) ④Cracks/Damage → Replace.
Refer to "COOLING SYSTEM" section in chapter 5.

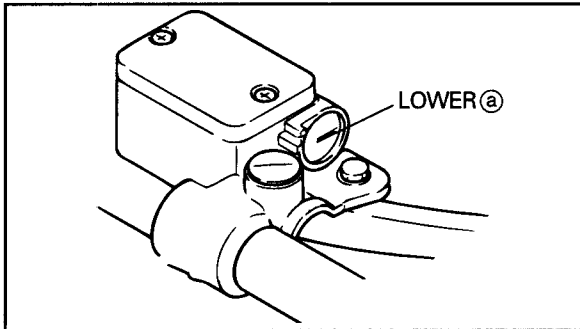
CHASSIS

BRAKE FLUID LEVEL INSPECTION

1. Stand the scooter on a level surface.

NOTE: _____

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



2. Stand the scooter on its centerstand.

3. Inspect:

- Brake fluid level

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



Recommended brake fluid:
DOT #4 or DOT #3

NOTE: _____

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

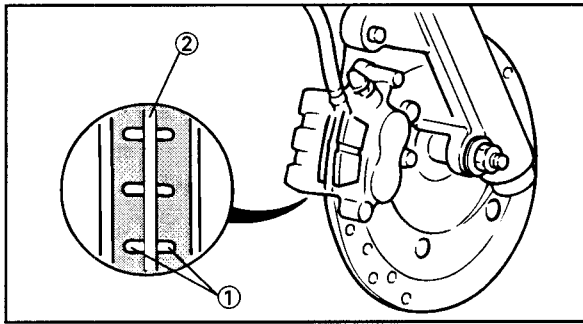
CAUTION: _____

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

WARNING _____

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

BRAKE PAD INSPECTION/ AIR BLEEDING (HYDRAULIC BRAKE SYSTEM)



BRAKE PAD INSPECTION

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

AIR BLEEDING (HYDRAULIC BRAKE SYSTEM)

⚠ WARNING

Bleed the brake system whenever:

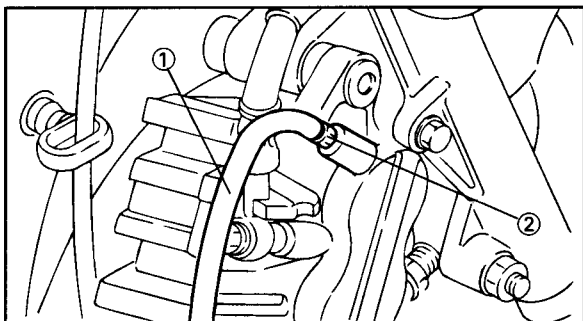
- The system is disassembled
- A brake hose is loosened or removed
- The brake fluid level is very low
- Brake operation is faulty

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

1. Bleed:
 - Brake system

Air bleeding steps:

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



AIR BLEEDING (HYDRAULIC BRAKE SYSTEM)/ REAR BRAKE ADJUSTMENT



NOTE: _____

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

j. Tighten the bleed screw.

- Bleed screw  59 kg•cm

NOTE: _____

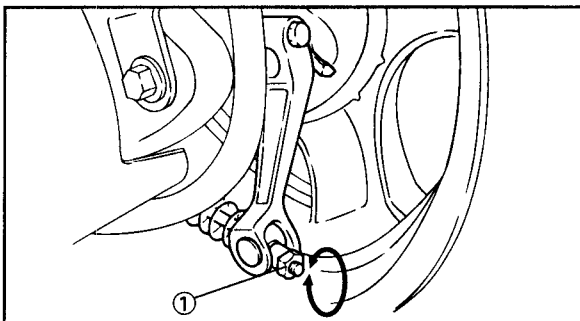
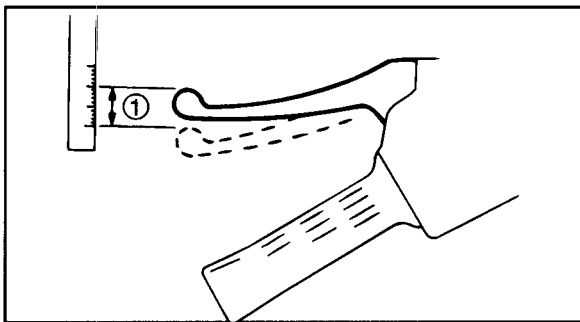
If bleeding is difficult, it may be necessary to let the brake fluid settle for a few hours. Repeat the bleeding procedure when the tiny bubbles in the brake system have disappeared.

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

Refer to "BRAKE FLUID LEVEL INSPECTION" section.

⚠ WARNING _____


Check brake operation after bleeding the brake system.



REAR BRAKE ADJUSTMENT

1. Inspect:

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

	Free play: 10 ~ 20 mm
---	--------------------------

2. Adjust:

- Brake lever free play (rear)

Adjustment steps:

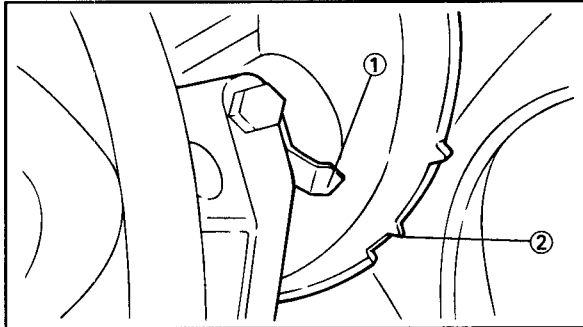
Rear wheel side:

- Turn the adjuster ① clockwise or counterclockwise until the specified free play is obtained.

Clockwise → Free play is decreased.
Counterclockwise → Free play is increased.

CAUTION: _____

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



BRAKE SHOE INSPECTION

1. Operate the brake lever.
2. Inspect:
 - Brake shoesWear indicator ① reaches the wear limit line ② → Replace the brake shoes as a set.
Refer to "REAR WHEEL" section in CHAPTER 6.

STEERING HEAD INSPECTION

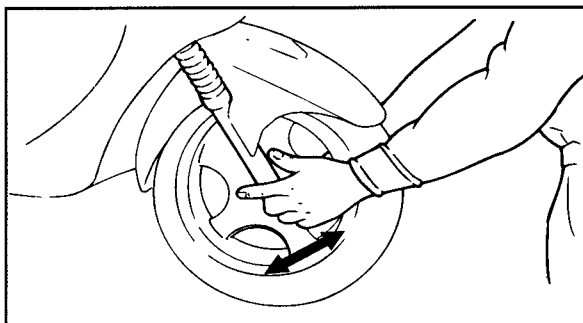
⚠ WARNING _____

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

1. Stand the scooter on a level surface.

NOTE: _____

Stand the scooter on its centerstand.



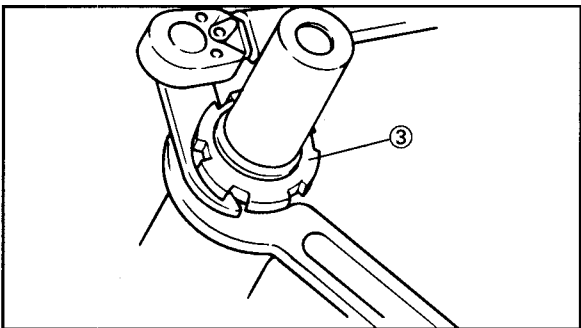
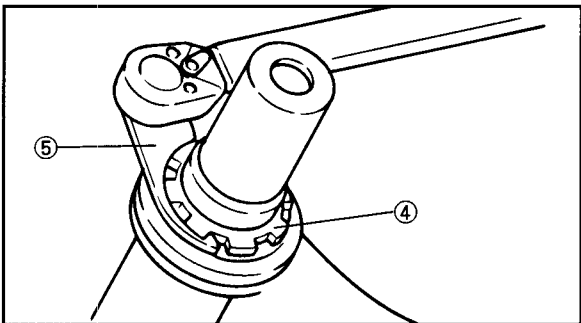
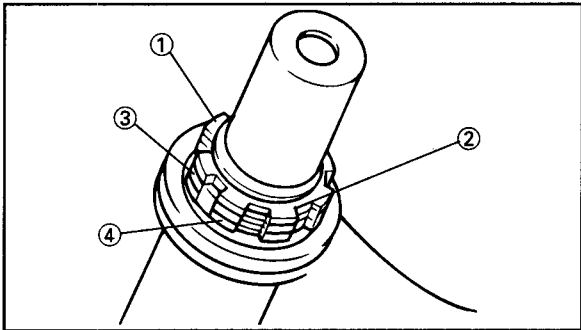
2. Elevate the front wheel by placing a suitable stand under the chassis.
3. Inspect:
 - Steering assembly bearingsGrasp the bottom of the lower front fork tubes and gently rock the fork assembly back and forth.
Looseness → Adjust the steering head.
4. Remove:
 - Headlight cowling
 - Waterproof sash
 - Meter panel cover
 - Meter panelRefer to "COVERS AND PANEL" section.

5. Adjust:
- Steering head

Adjustment steps:

- Remove the ring nut (upper) ①, lock washer ②, the ring nut (center) ③ and the rubber washer.
- Loosen the ring nut (lower) ④.
- Tighten the ring nut (lower) using the ring nut wrench ⑤.

	380 kg•cm
--	-----------



NOTE: _____

Set the torque wrench at right angles to the ring nut wrench.

	Ring nut wrench: 90890-01403
--	---------------------------------

- Loosen the ring nut (lower) ④ completely, then tighten it to specification.

	220 kg•cm
--	-----------

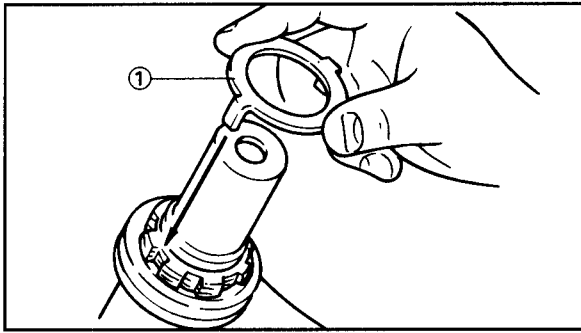
⚠ WARNING _____

Do not overtighten.

- Check the steering head for looseness or binding by turning it all the way in both directions. If it binds, remove the steering stem assembly and inspect the steering bearings. Refer to "STEERING HEAD" in CHAPTER 7.
- Install the rubber washer.
- Install the ring nut (center) ③.
- Finger tighten the ring nut (center), then align the slots of both ring nuts. If necessary, hold the ring nut (lower) and tighten the ring nut (center) until their slots are aligned.

STEERING HEAD INSPECTION /FRONT FORK INSPECTION

INSP
ADJ



- Install the lock washer ①

NOTE:

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

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



750 kg•cm



Exhaust and ring nut wrench:
90890-01268

6. Install:

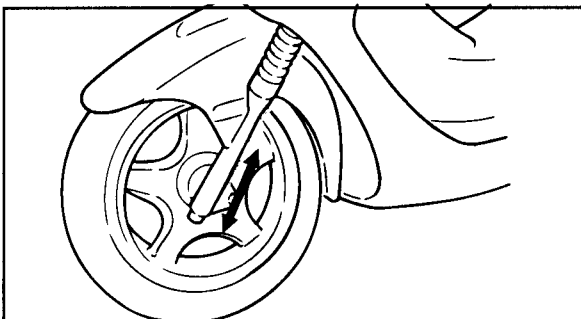
- Meter panel
- Meter panel cover
- Waterproof sash
- Headlight cowling

Refer to "COVER AND PANEL" section.

FRONT FORK INSPECTION

⚠ WARNING

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



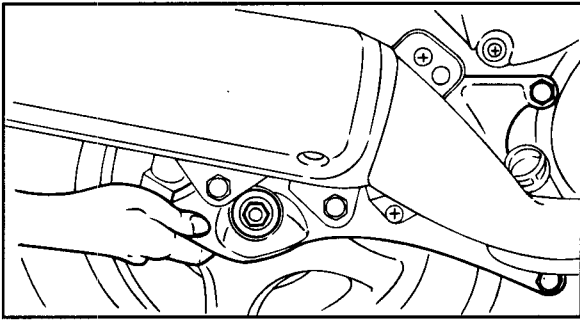
1. Stand the scooter on a level surface.
2. Loosen the screw of front fork cover.
3. Check:

- Inner tube
Scratches/Damage → Replace.
- Oil seal
Excessive oil leakage → Replace.
Hold the scooter upright and apply the front brake.

4. Inspect:

- Operation
Push down hard on the handlebars several times.
Unsmooth operation → Repair.
Refer to "FRONT FORK" section in CHAPTER 7.

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



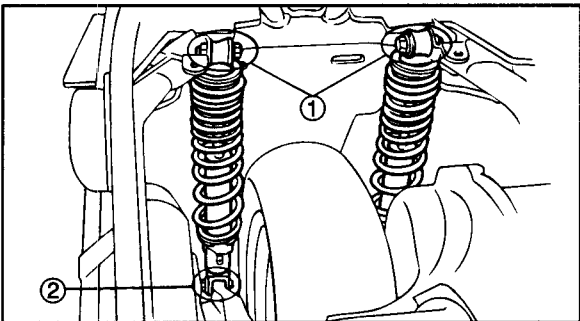
SWINGARM INSPECTION

⚠ WARNING

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

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

REAR SHOCK ABSORBER INSPECTION



1. Remove:
 - Grab bar/backrest
 - Rear cover
 - Side cover 1, 2
 - Box
Refer to "COVER AND PANEL" section.
2. Inspect:
 - Rear shock absorber mount
Loosen → Tighten.
 - Bolt (upper) ①

	315kg•cm
--	----------
 - Bolt (lower) ②

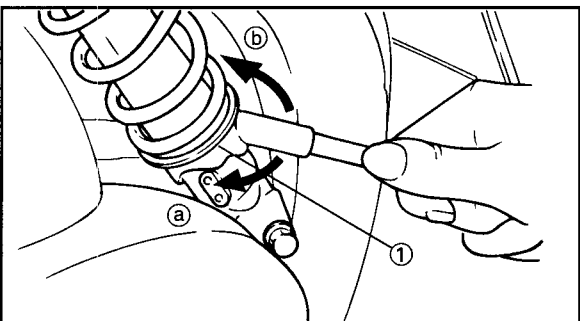
	175kg•cm
--	----------

Refer to "REAR SHOCK ABSORBER AND SWINGARM" section in CHAPTER 7.

REAR SHOCK ABSORBER ADJUSTMENT

⚠ WARNING

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



1. Adjust:
 - Spring preload
Turn the adjuster ring ① to direction ① or ②.

NOTE:

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

REAR SHOCK ABSORBER ADJUSTMENT / TIRE INSPECTION



Adjustment steps:

- Turn the adjuster ring clockwise or counter-clockwise.

Clockwise (a) → Spring preload is increased. Counterclockwise (b) → Spring preload is decreased.

	Hard	Standard	Soft
Adjusting position:	3	2	1

CAUTION:

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

TIRE INSPECTION

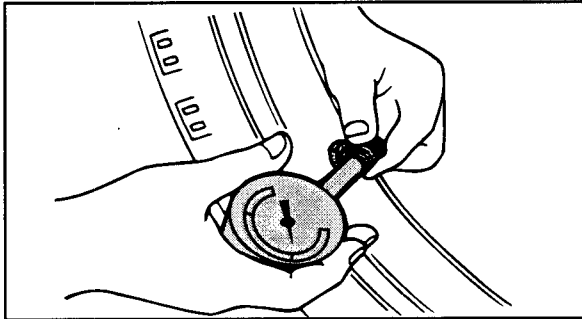
1. Measure:
 - Tire inflation pressure
 Out of specification → Adjust.

WARNING

- Tire inflation pressure should only be checked and adjusted when the tire temperature equals the ambient air temperature. Tire inflation pressure and suspension must be adjusted according to the total weight of the cargo, rider, passenger and accessories (fairing, saddlebags, etc. if approved for this model), and according to whether the scooter will be operated at high speed or not.

NEVER OVERLOAD THE SCOOTER.

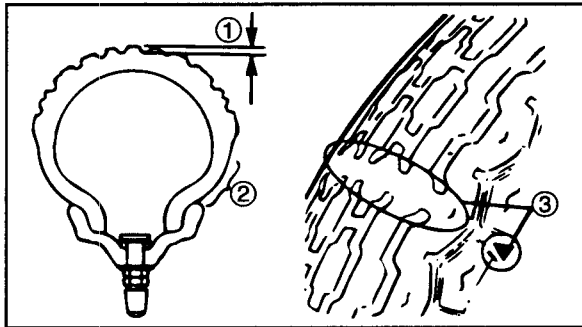
- Operation of an overloaded scooter could cause tire damage, accident or injury.



TIRE INSPECTION



Basic weight: (with oil and full fuel tank)	144 kg	
Cold tire pressure	Front	Rear
Cold tire pressure (1 rider)	1.5 kg/cm ² 21.31 b/in ²	2.0 kg/cm ² 28.41 b/in ²
Cold tire pressure (with passenger)	1.5 kg/cm ² 21.31 b/in ²	2.25 kg/cm ² 32.01 b/in ²



2. Inspect:

- Tire surfaces

Wear/Damage → Replace.

	Minimum tire tread depth (front and rear): 0.8 mm
--	---

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

⚠ WARNING

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

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

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

FRONT:

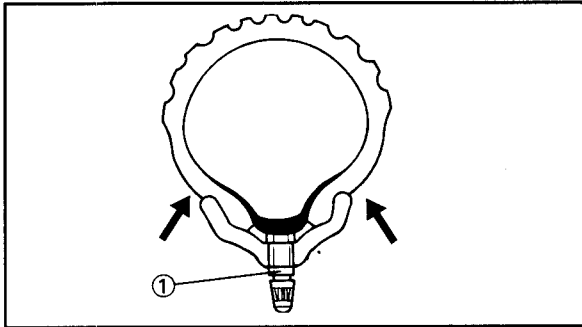
Manufacture	Size	Type
CHING SHIN	120/70-12 51J	C-922S-2

REAR:

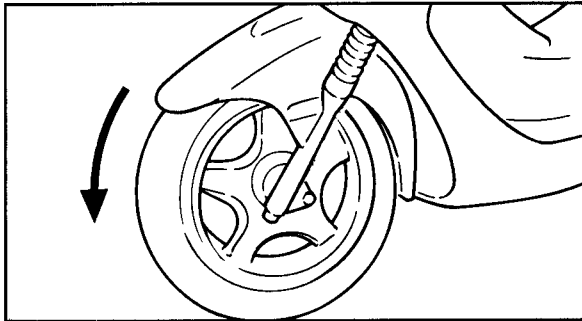
Manufacture	Size	Type
CHING SHIN	130/70-12 59J	C-6007-2

⚠ WARNING

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



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

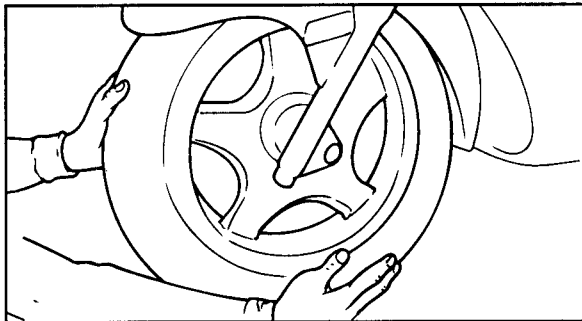


WHEEL INSPECTION

1. Inspect:
 - Wheels
Damage/Bends → Replace.

NOTE:

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



⚠ WARNING

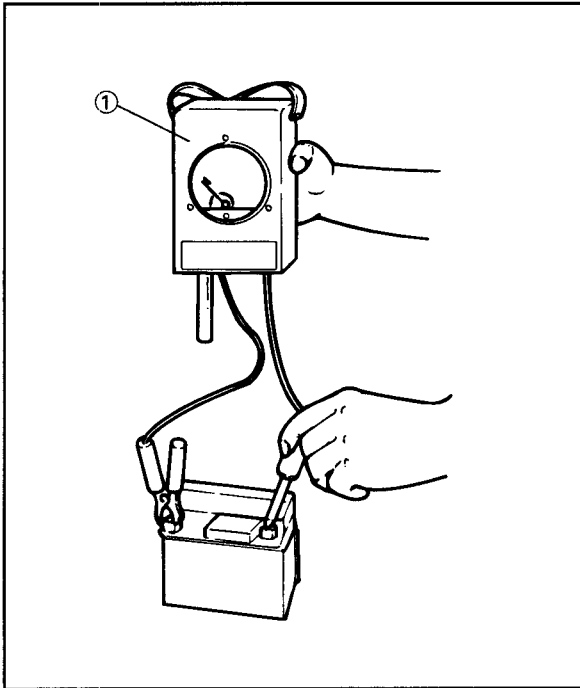
Never attempt to make any repairs to the wheel.

ELECTRICAL BATTERY INSPECTION

1. Remove:
 - Cover (battery case)
Refer to "COVER AND PANEL" section.
2. Check:
 - Battery leads
Butt is dirty → Clean with a steel brush
Poor wiring → Rectify.
3. Remove:
 - Battery

NOTE: _____

Disconnect the negative lead (-) first.

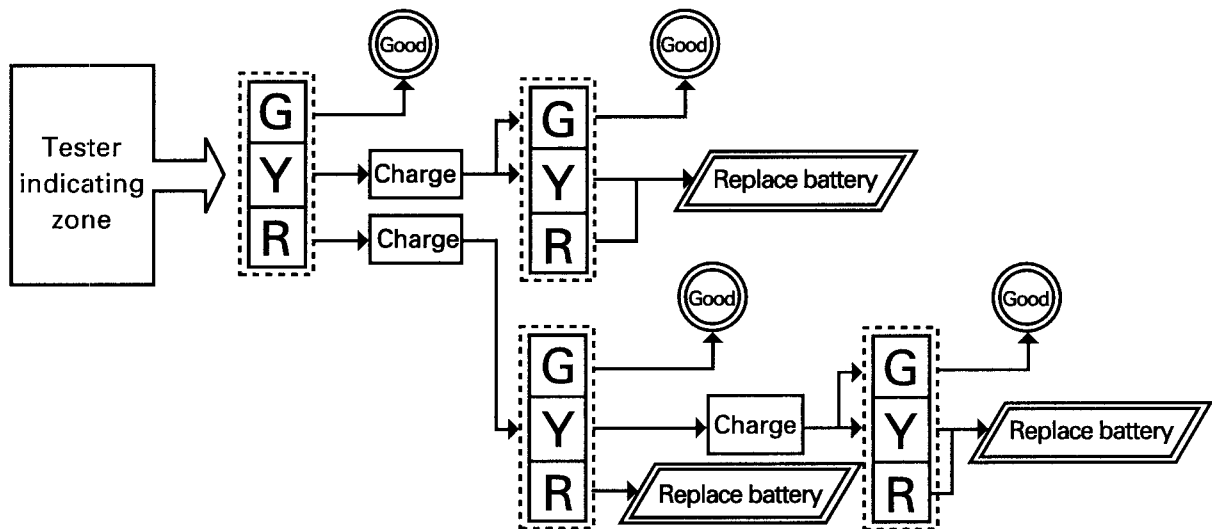


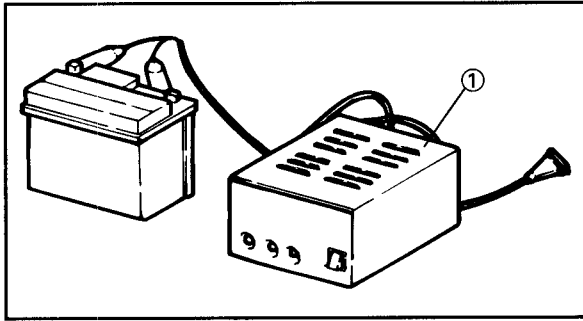
4. Inspect:
 - Battery condition
Use a battery tester ① to check and test the condition.

NOTE: _____

- Read the instruction carefully before using the tester.
- Refer to Procedure 5 when charging the battery.

Test determination of tester:





5. Charging:

- Battery

Use MF battery charger ① to charge the battery.



Charging current

0.7A charge for 5~10 hours
(standard current)

Battery voltage should be above
12.8V after charging.

NOTE: _____

Read the instruction carefully before using the charger.

CAUTION: _____

- Keep away from fire.
- Do not remove the sealing cap of battery. If the sealing cap is removed, the battery will not be able to maintain its balance and battery performance will deteriorate.
- Charging time, charging current, and charging voltage are different from the general type of batteries.
- Battery electrolyte level will drop while charging. Therefore, be very careful when charging the battery.

6. Install:

- Battery

NOTE: _____

Connect the positive lead first and then connect the negative lead.

7. Install:

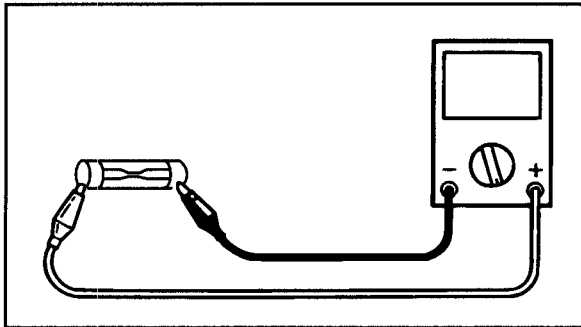
- Cover (battery case)

Refer to "COVER AND PANEL" section.

FUSE INSPECTION

CAUTION:

Always turn off the main switch when checking or replacing the fuse. Otherwise, a short circuit may occur.




1. Remove:
 - Cover (battery case)
Refer to "COVER AND PANEL" section.
2. Inspect:
 - Fuse

Inspection steps:

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

NOTE:

Set the tester selector to "Ωx1" position.

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

- If the tester is indicated at "∞", replace the fuse.

3. Replace:
 - Blown fuse

Replacement steps:

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

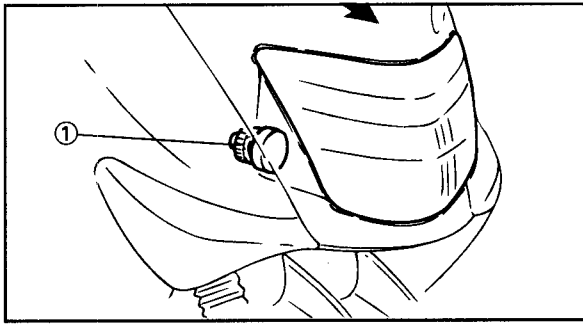
WARNING

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

4. Install:
 - Cover (battery case)
Refer to "COVER AND PANEL" section.

HEADLIGHT BEAM ADJUSTMENT /HEADLIGHT BULB REPLACEMENT

INSP
ADJ



HEADLIGHT BEAM ADJUSTMENT

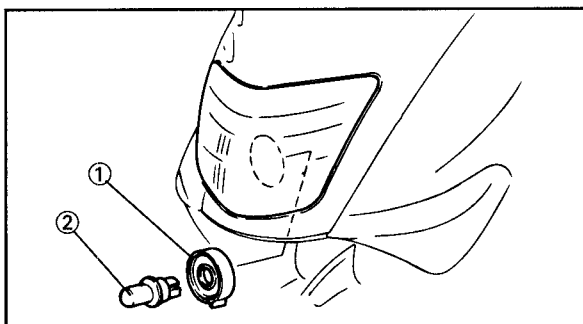
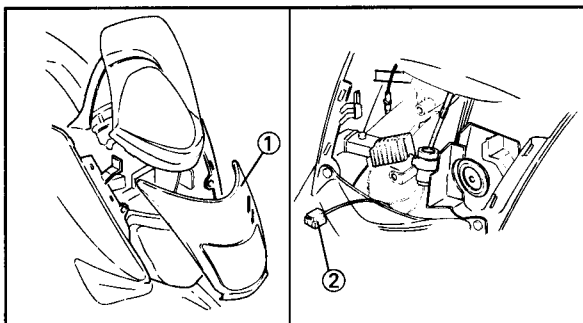
1. Adjust:
 - Headlight beam (vertical)
Face at the scooter front and turn and adjust the screw ① clockwise or counterclockwise.

Clockwise → Headlight beam moves lower.

Turning out → Headlight beam moves higher.

NOTE:

Adjust the beam of this front indicator vertically only. Do not adjust it horizontally.



HEADLIGHT BULB REPLACEMENT

1. Remove:
 - Headlight cover ①
Refer to "COVER AND PANEL" section.
2. Remove:
 - Headlight lead coupler ②
3. Remove:
 - Dust mask ①
 - Bulb fixer
Hold the bulb fixer down and pull upward.
4. Remove:
 - Bulb ② (burned)

⚠ WARNING

If the bulb is volatile, do not use inflammables or your hand to take off the bulb. Wait until the bulb is cool before taking it off.

5. Installation:
 - Bulb (new)

NOTE:

Make sure the three-legged flange of the bulb and three-legged groove of headlight fixing mount are tabling.



CAUTION: _____

Beware not to touch the bulb glass when changing the bulb. If the bulb is stained with oil, use a clean cloth to wipe off with alcohol so as not to affect the life of the bulb and its illumination

6. Installation:

- Bulb fixer
- Dust mask

NOTE: _____

Make sure the bulb fixer is tabled and positioned in the groove.

7. Connection:

- Headlight lead coupler

8. Installation:

- Headlight cover

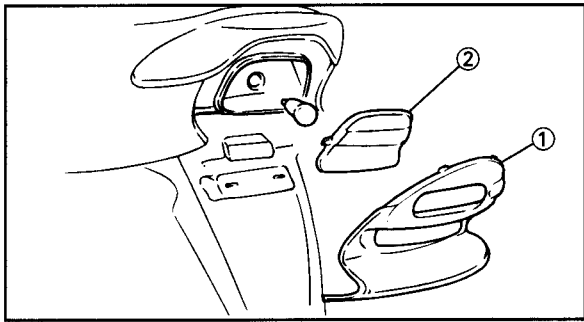
9. Adjustment:

- Headlight beam

Refer to "HEADLIGHT BEAM ADJUSTMENT" section.

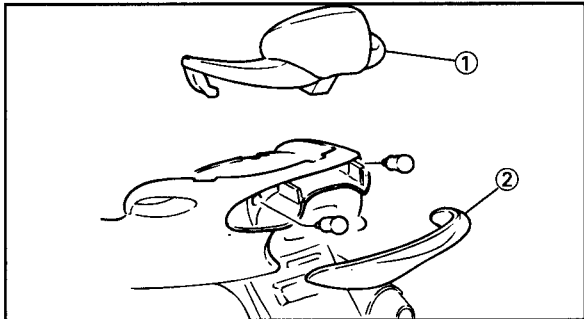
**TAILLIGHT BULB REPLACEMENT
/REAR TURN SIGNAL BULB REPLACEMENT
/FRONT TURN SIGNAL BULB REPLACEMENT**

**INSP
ADJ**



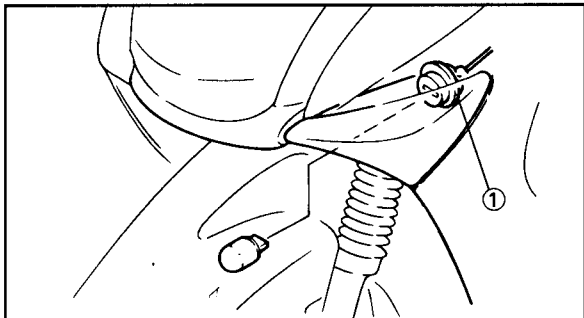
TAILLIGHT BULB REPLACEMENT

1. Remove:
 - Taillight cover ①
 - Taillight lens ②
2. Replace:
 - Bulb (defective)
3. Install:
 - Taillight lens
 - Taillight cover



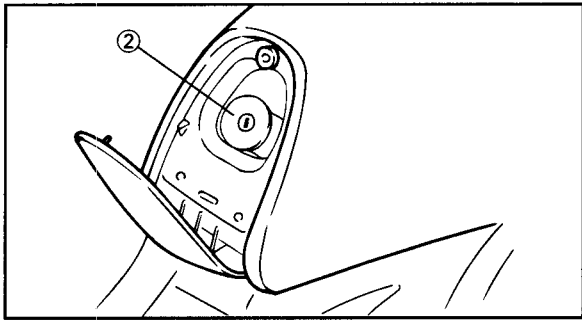
REAR TURN SIGNAL BULB REPLACEMENT

1. Remove:
 - Taillight cover
 - Grab bar/backrest ①
 - Rear turn signal indicator lens ②
2. Replace:
 - Bulb (defective)
3. Install:
 - Rear turn signal indicator lens
 - Taillight cover



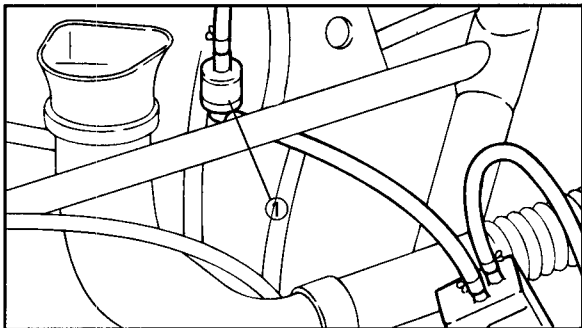
FRONT TURN SIGNAL BULB REPLACEMENT

1. Remove:
 - Front turn signal indicator fixing seat ①
2. Replace:
 - Bulb (defective)
3. Install:
 - Front turn signal indicator fixing seat



**INSPECT
EVAPORATED EMISSION CONTROL SYSTEM
(EEC SYSTEM)
FUEL TANK CAP**

1. Remove:
 - Fuel tank cap ①
2. Check:
 - Fuel tank cap
Damaged or Deformed → Replace
3. Install:
 - Fuel tank cap

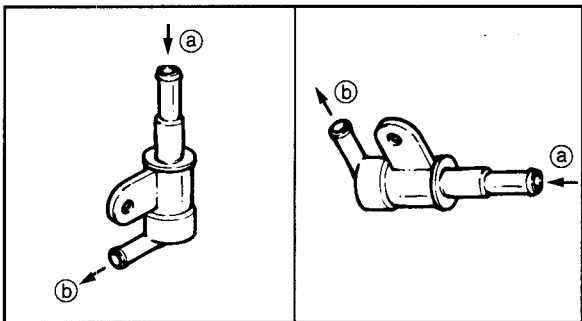


ANTI-ROLLING OVER VALVE

1. Remove:
 - Anti-rolling over valve ①
2. Inspect:
 - Anti-rolling over valve
Damaged or Malfunctioning → Replace

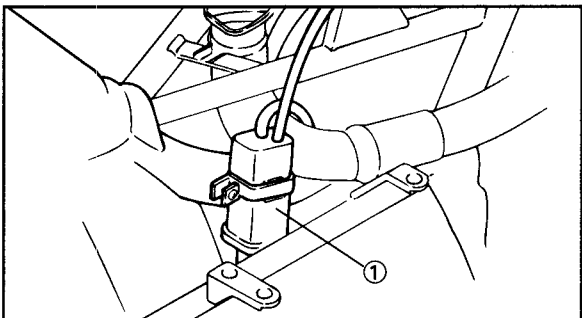
Inspection Procedure:

1. Place the anti-rolling over valve slanting or horizontally and blow from (a) end:
 - There should be no gas flowing from (b) end. If there is gas flowing, then it is malfunctioning.
2. Place the anti-rolling over valve vertically and blow from (a) end:
 - There should be gas flowing from (b) end. If there is no gas flowing, then it is malfunctioning.
3. Install:
 - Anti-rolling over valve



NOTE: _____

Anti-rolling over valve should be installed vertically on the scooter frame. If it was placed slanting or horizontally (approximately 45 degrees and above), the scooter will not start.

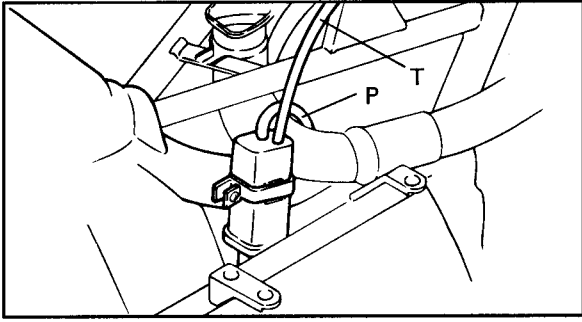


CANISTER

1. Remove:
 - Canister ①
2. Check:
 - Canister
Damaged or Cracked → Replace
Clogged → Blow with compressed air

FUNCTION OF FLUE GAS CONTROL SYSTEM AND INSPECTION

INSP
ADJ



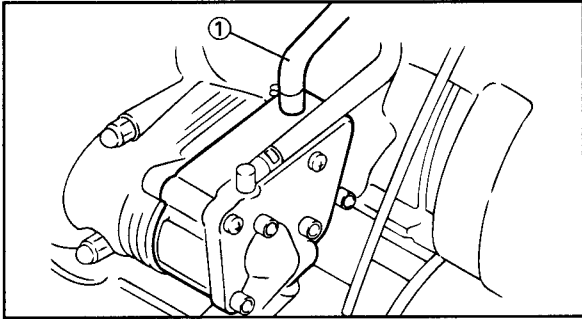
3. Install
 - Canister

NOTE: _____

When installing the canister, make sure that each pipeline on the canister is at its correct position:

P: Connect to carburetor.

T: Connect to anti-rolling over valve.

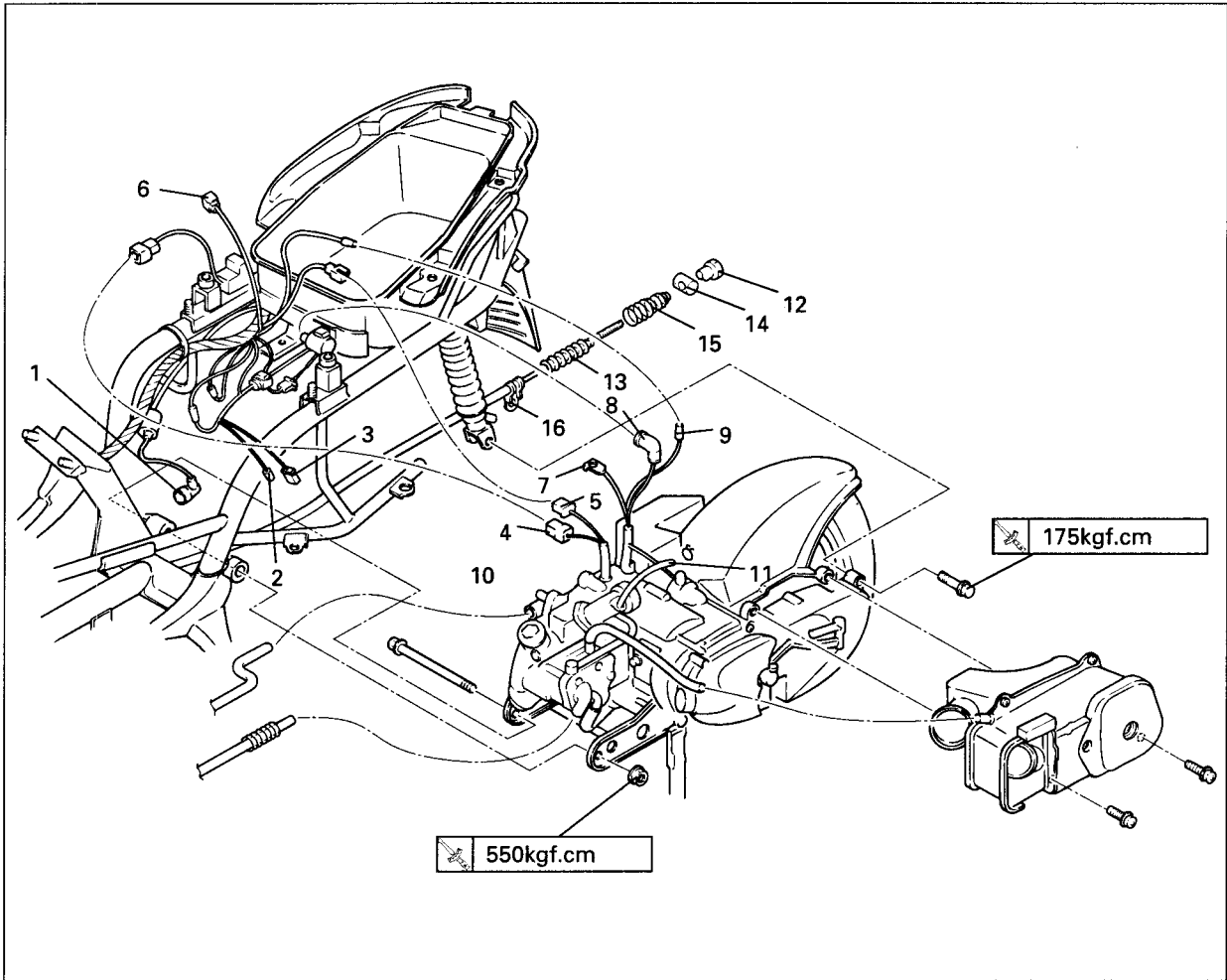


CRANKCASE LEAKED FLUE GAS FLOW BACK DEVICE (PCV system)

Leaked flue gas flow back pipe

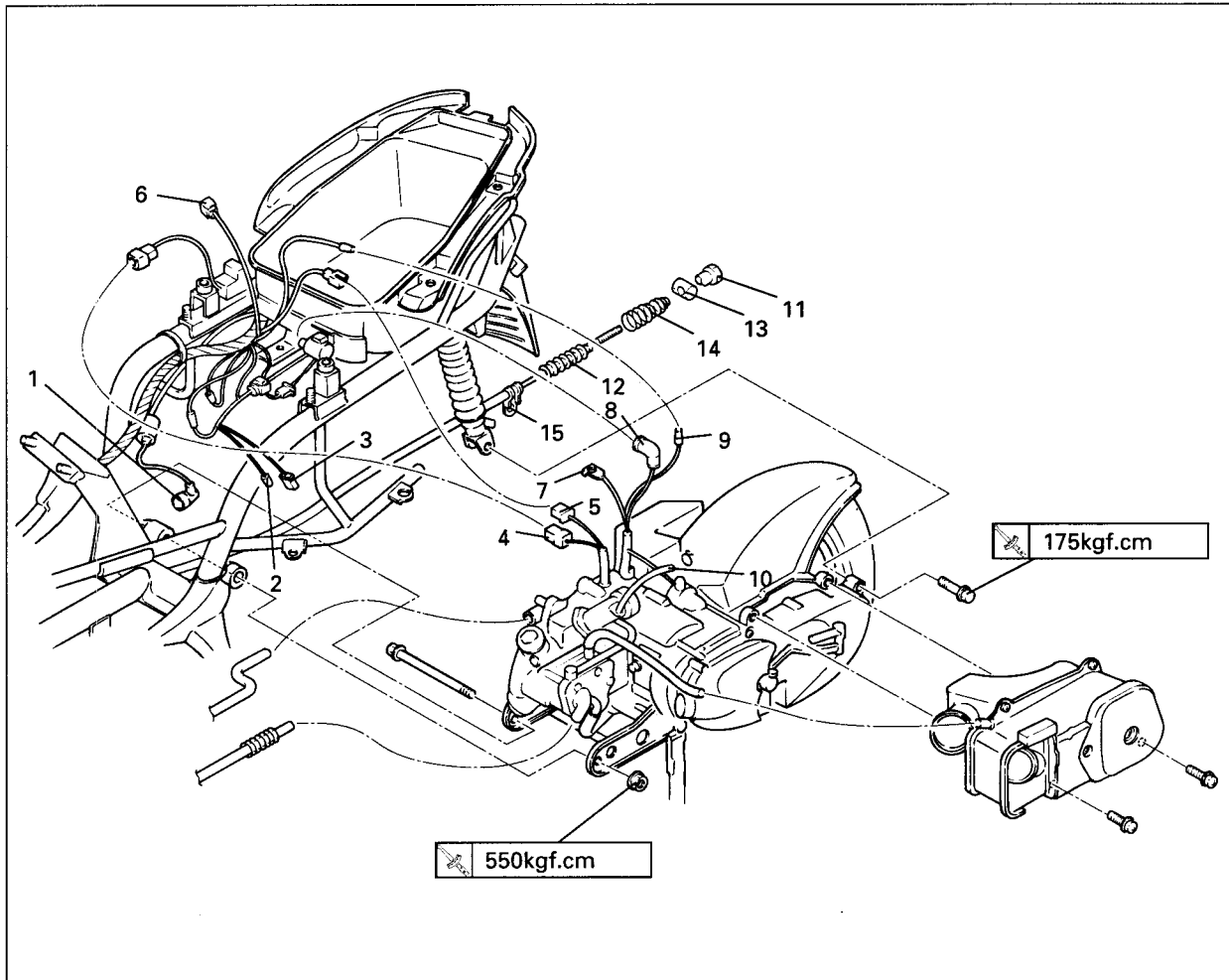
1. Check:
 - Flow back pipe and coupler ①
 - Damaged or Cracked → Replace
 - Bent or Loose → Correct

ENGINE REMOVAL
WIRE HARNESS, CABLE, AND PIPE

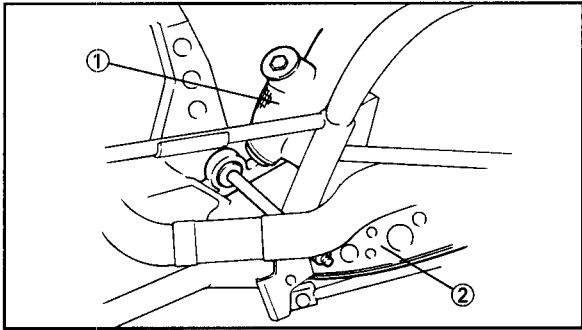


4

Order	Job name / Part name	Q'ty	Remarks
	Wire harness and Cables removal		Remove the parts in order. Refer to "COVER AND PANEL" section in CHAPTER 3. Refer to "COOLANT REPLACEMENT" section in CHAPTER 3. Refer to "CARBURETOR" section in CHAPTER 6.
	Footrests board (L/R)		
	Side cover protective plates (L/R)		
	Side covers (L/R)		
	Fuel tank, seat, fuel tank cover		
	Air inlet pipe of belt compartment		
	Drain the coolant		
	Carburetor		
1	Spark plug cap	1	
2	Thermo switch lead wire	1	
3	Auto choke lead wire	1	
4	C. D. I. lead	1	
5	Rectifier/regulator lead	1	
6	Oil level sensor's lead	1	



Order	Job name / Part name	Q'ty	Remarks
7	Battery (-) lead	1	Reverse the removal procedure for installation.
8	Starting relay lead	1	
9	Main wiring (-) lead	1	
10	Fuel system pump(vacuum tube)	1	
11	Flange nut	1	
12	Brake cable 2	1	
13	Pin	1	
14	Compression spring	1	
15	Cable holder	1	

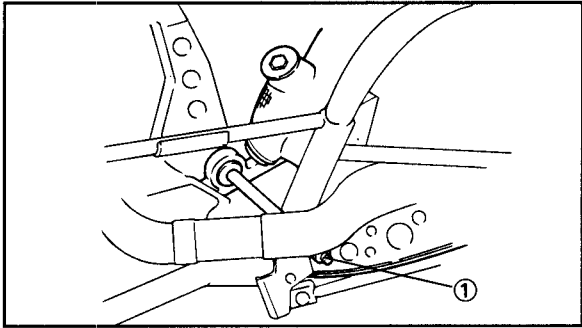


ENGINE REMOUNTING

When remounting the engine, reverse the removal procedure in job instruction chart. Note the following points:


1. Install:

- Engine ①
- Rod ②



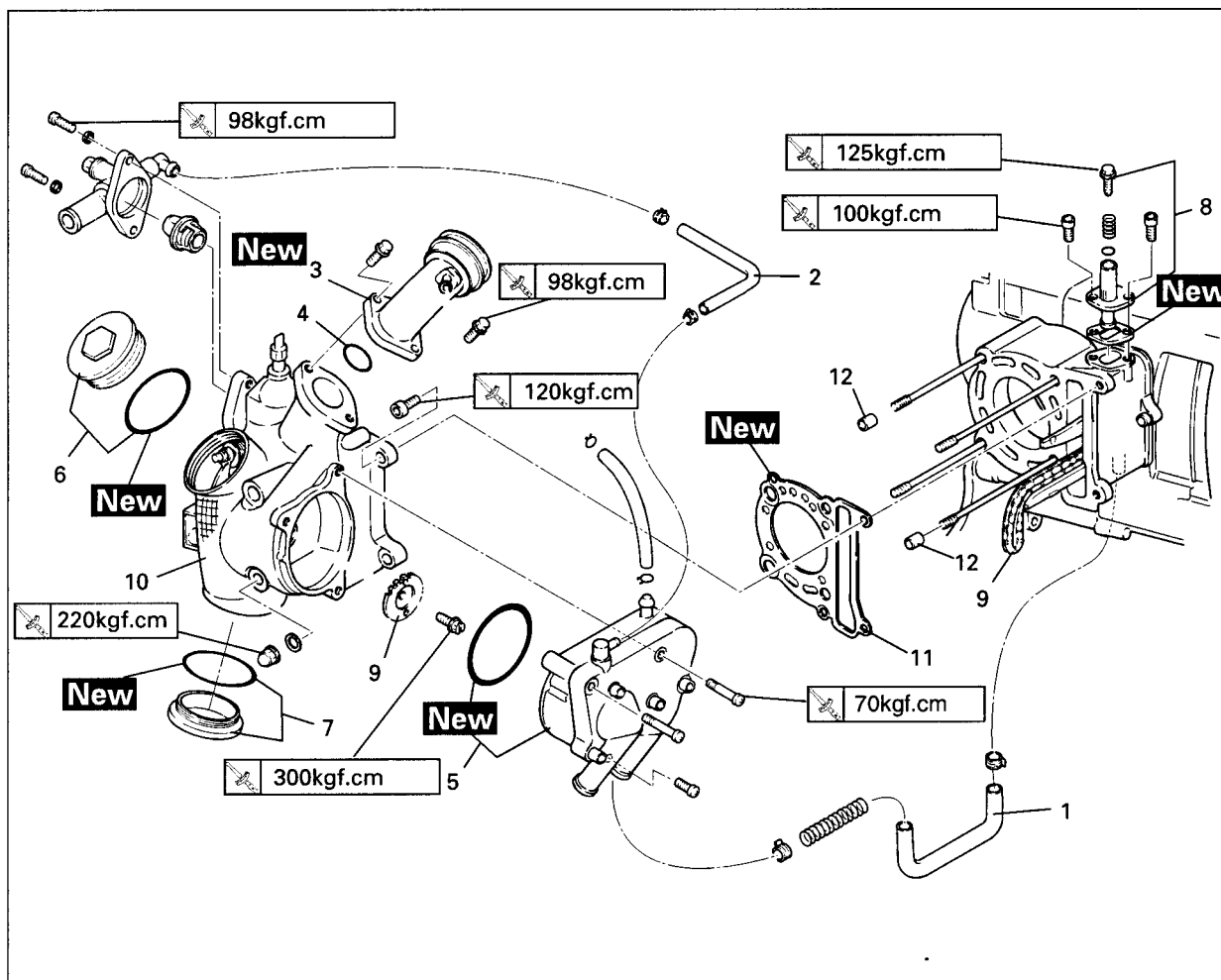
2. Tighten:

- Bolt ①

 550kgf·cm



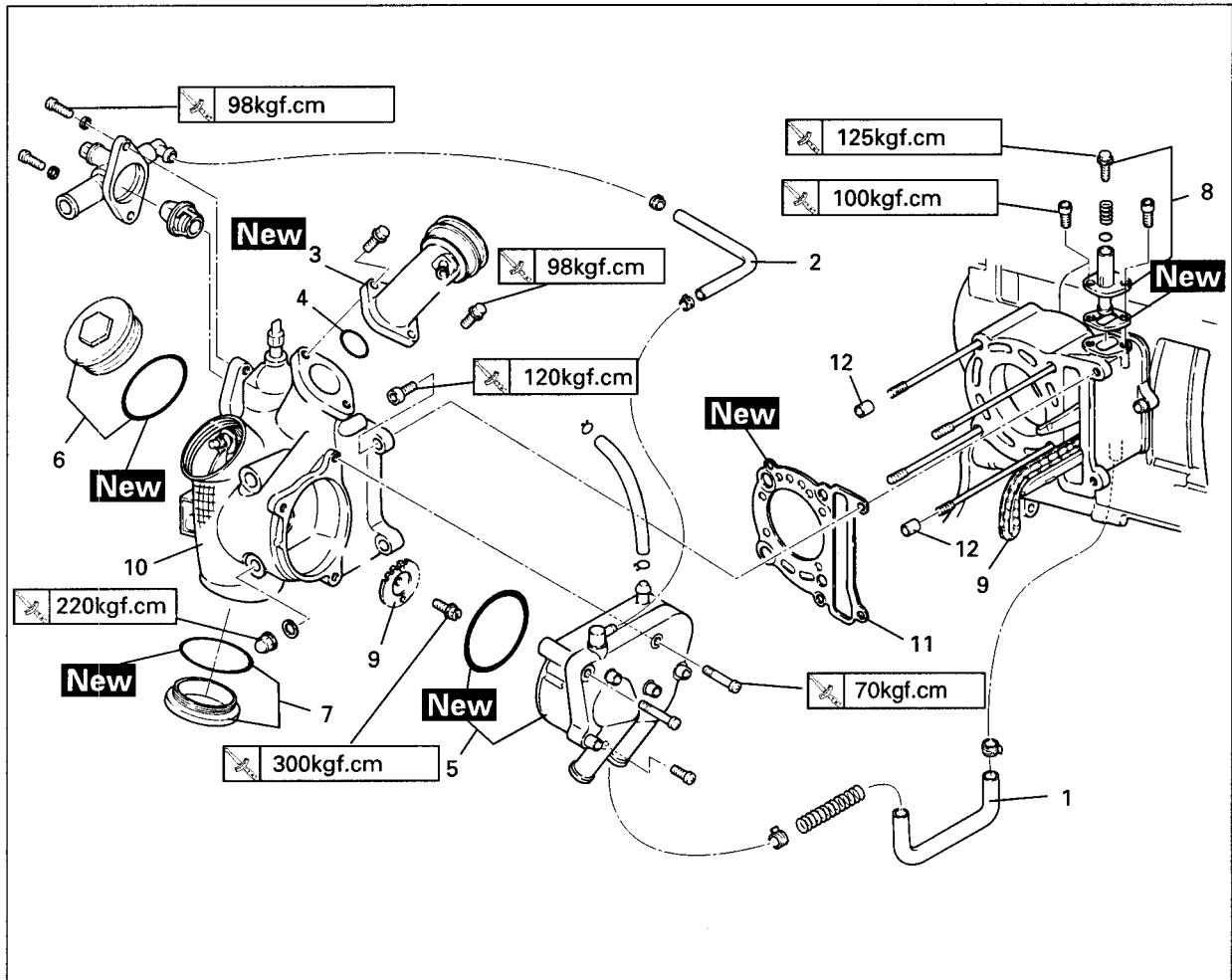
CYLINDER HEAD



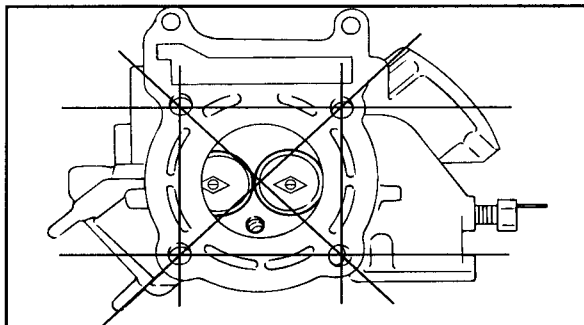
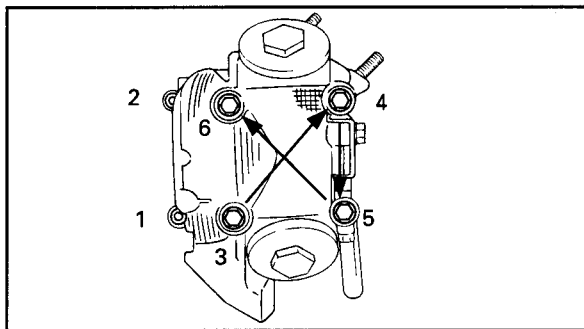
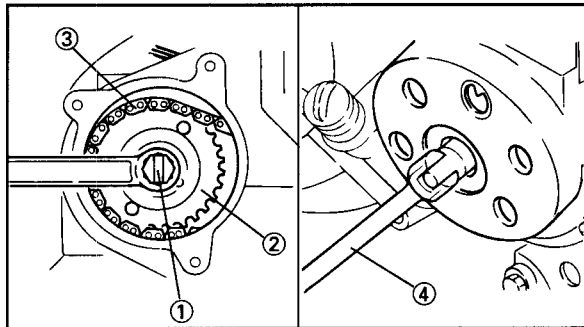
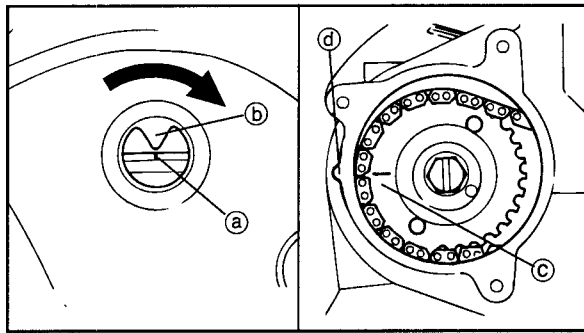
Order	Job name / Part name	Q'ty	Remarks
	Cylinder Head removal		Remove the parts in the order.
	Footrests (L/R)		
	Side cover protective plates (L/R)		
	Side covers (L/R)		
	Fuel tank, seat, fuel tank cover		
	Air inlet pipe of belt compartment		
	Drain the coolant.		
	Carburetor		Refer to "COVER AND PANELS" section in CHAPTER 3.
			Refer to "COOLANT REPLACEMENT" section in CHAPTER 3.
			Refer to "CARBURETOR" section in CHAPTER 6.
1	Water discharge pipe	1	
2	Return pipe	1	
3	Manifold pipe	1	
4	O-ring	1	
5	Water pump / O-ring	1/1	



CYLINDER HEAD



Order	Job name / Part name	Q'ty	Remarks
6	Cylinder head cover (intake side)/O-ring	1/1	Refer to "CYLINDER HEAD REMOVAL AND INSTALLATION" section.
7	Cylinder head cover (exhaust side)/O-ring	1/1	
8	Timing chain tensioner assembly	1	
9	Timing chain/cam sprocket	1/1	
10	Cylinder head	1	
11	Cylinder head gasket	1	
12	Dowel pin	1	Reverse the removal procedure for installation.



CYLINDER HEAD REMOVAL

1. Align:
 - "I" mark (a) on the rotor
(with stationary pointer on the crank case cover)

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

2. Loosen:
 - Bolt (1)
3. Remove:
 - Timing chain tensioner assembly
 - Timing chain tensioner gasket
4. Remove:
 - Bolt (1)
 - Cam sprocket (2)
 - Timing chain (3)

NOTE: _____
 • Fasten a safety wire to the timing chain to prevent it from falling into the crankcase.
 • Remove the bolt (1) while holding the rotor mounting bolt with a wrench (4).

5. Remove:
 - Cylinder head

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

CYLINDER HEAD INSPECTION

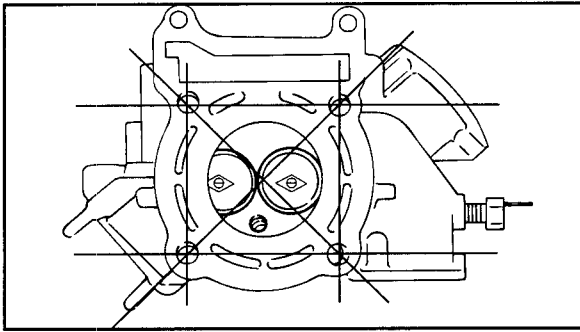
1. Eliminate:
 - Carbon deposits
(from combustion chambers)
Use a rounded scraper.

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

- Spark plug threads
- Valve seats

CYLINDER HEAD

ENG



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



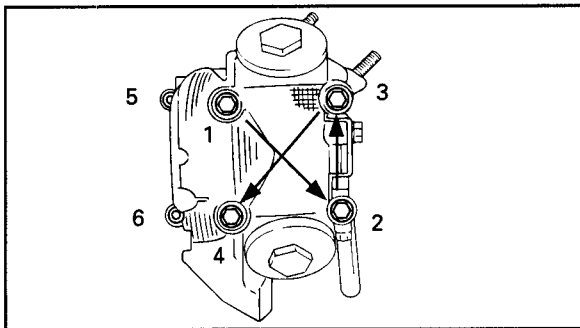
Cylinder head warpage:
Less than 0.05 mm

Warpage measurement and resurfacement steps:

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

NOTE: _____

Rotate the cylinder head several times for an even resurfacement.





CYLINDER HEAD INSTALLATION

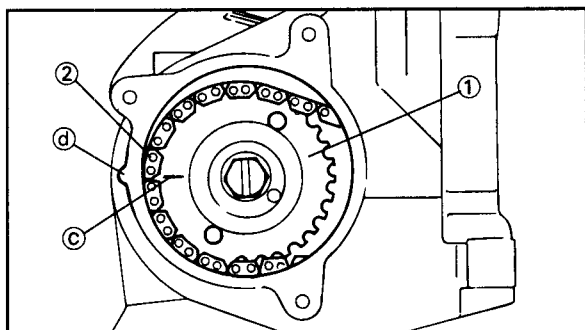
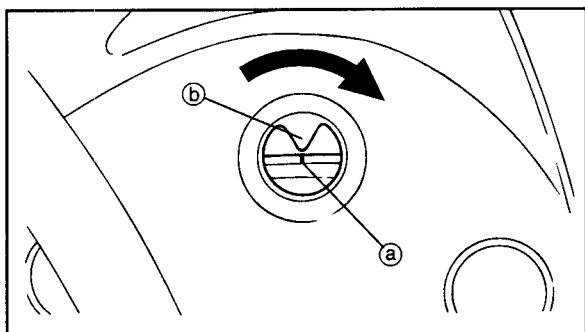
1. Install:
 - Gasket (cylinder head) **New**
 - Dowel pins
 - Cylinder head

NOTE _____

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

2. Tighten:

- Nuts (cylinder head)  220kg•cm
- Bolts (cylinder)  120kg•cm



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

Installing steps:

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

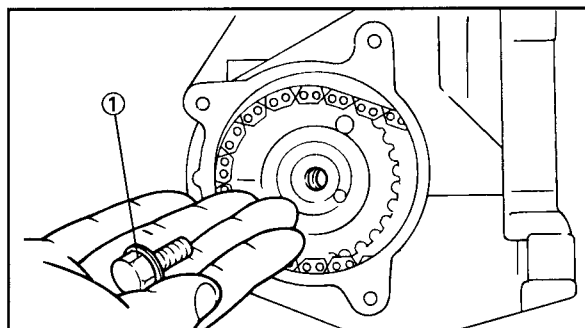
NOTE:

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

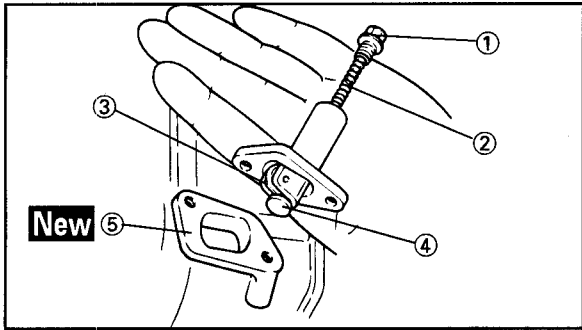
CAUTION:

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

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



4. Install:
- Bolt ①



5. Install:

- Timing chain tensioner

Installation steps:

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

Bolt (chain tensioner)

100kg•cm

Cap bolt (timing chain tensioner)

125kg•cm

6. Tighten:

- Bolt (cam sprocket) 300kg•cm

7. Check:

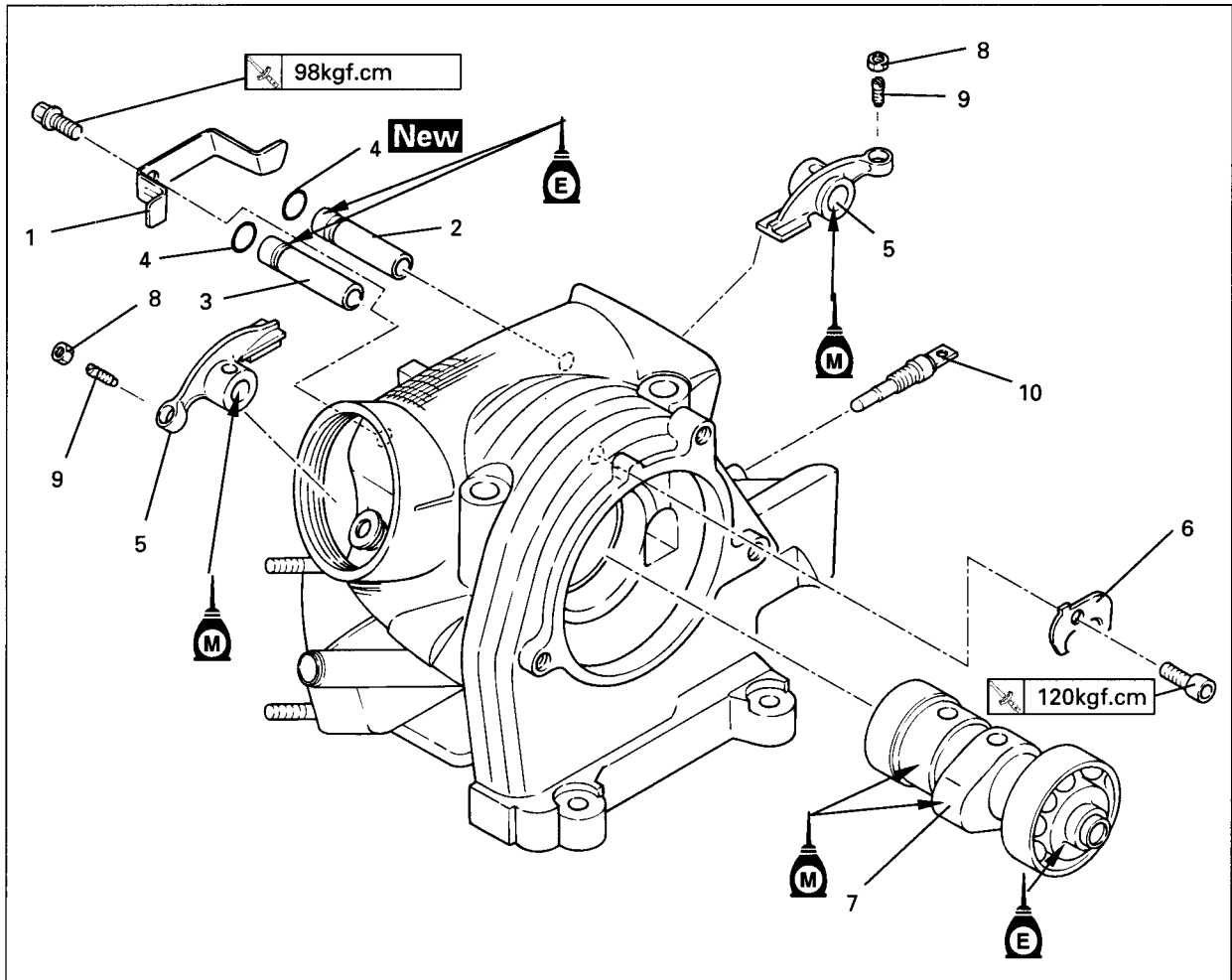
- Valve timing
Out of alignment → Adjust.
Refer to the above steps 3~5.

8. Check:

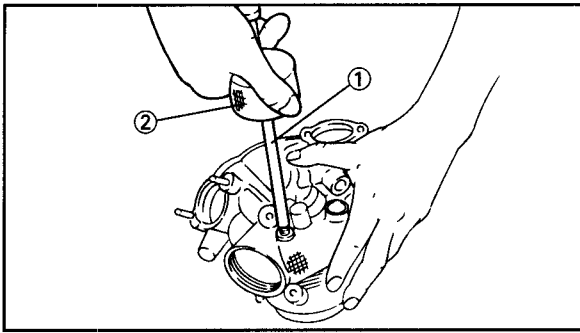
- Valve clearance
Out of specification → Adjust.
Refer to the "VALVE CLEARANCE ADJUSTMENT" section in CHAPTER 3.



CAMSHAFT AND ROCKER ARMS



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



ROCKER ARM AND ROCKER ARM SHAFT REMOVAL

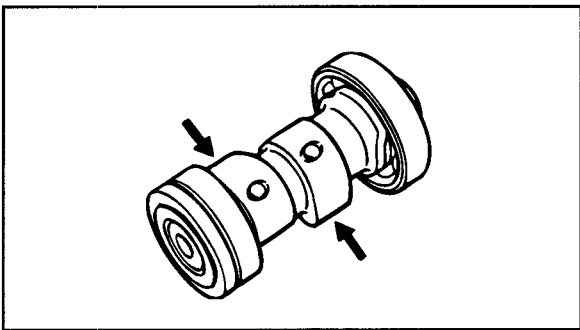
1. Remove:
 - Rocker arm shaft (intake)
 - Rocker arm shaft (exhaust)

NOTE:

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

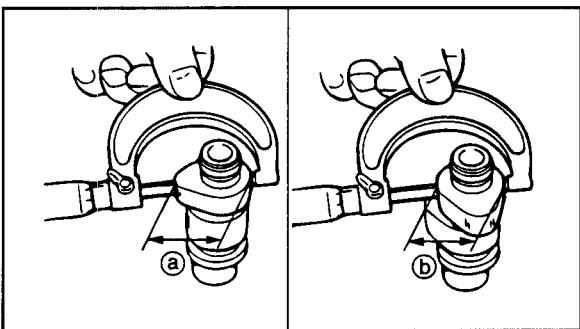


Rocker arm shaft puller bolt:
90890-01085
Weight:
90890-01084



CAMSHAFT INSPECTION

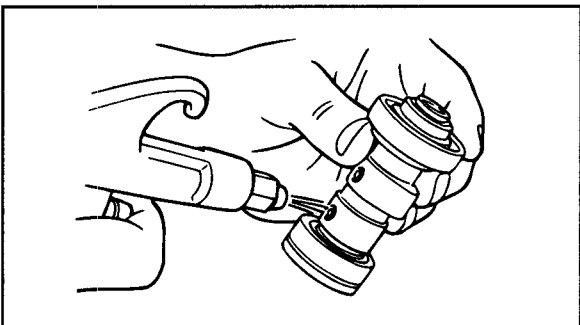
1. Inspect:
 - Cam lobes
Pitting/Scratches/Blue discoloration → Replace.



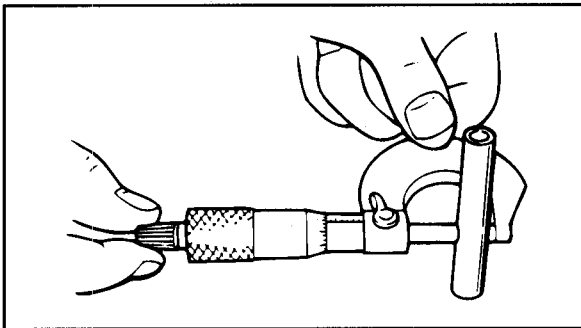
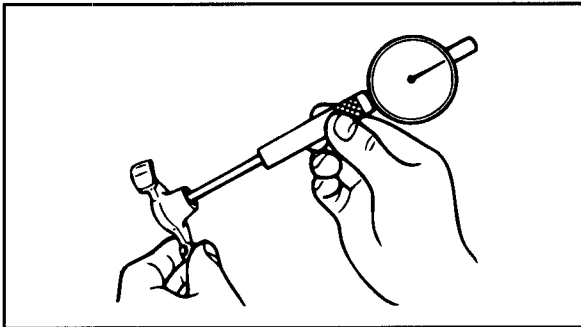
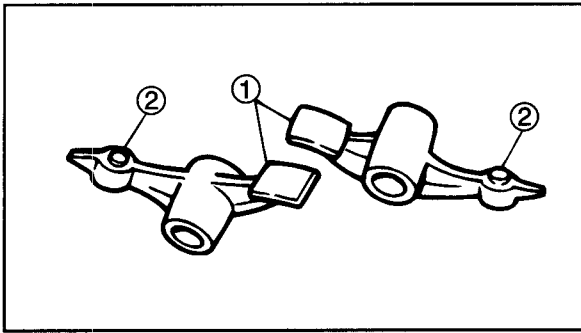
2. Measure:
 - Cam lobes length a and b.
Out of specification → Replace.



Cam lobes length:
Intake:
 (a) 30.388~30.488 mm
 < Limit: 30.288 mm >
 (b) 25.136~25.236 mm
 < Limit: 25.036 mm >
 Exhaust:
 (a) 30.386~30.486 mm
 < Limit: 30.286 mm >
 (b) 25.143~25.243 mm
 < Limit: 25.043 mm >



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



ROCKER ARMS AND ROCKER ARM SHAFTS INSPECTION

1. Inspect:

- Cam lobe contact surface ①
- Adjuster surface ②

Wear/Pitting/Scratches/Blue discoloration → Replace.

Inspection steps:

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

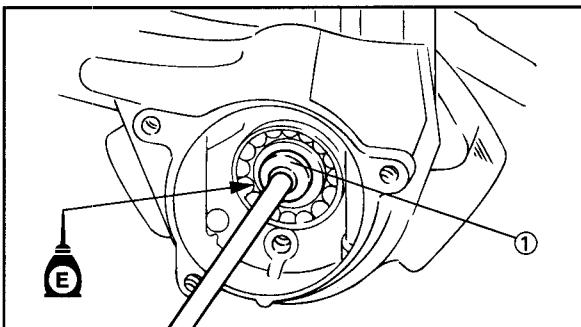


Inside diameter (rocker arm):
12.000~12.017 mm
<Limit: 12.030 mm>

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



Outside diameter (rocker arm shaft):
11.981 ~11.991 mm
<Limit: 11.950 mm>



CAMSHAFT AND ROCKER ARM INSTALLATION

1. Lubricate:

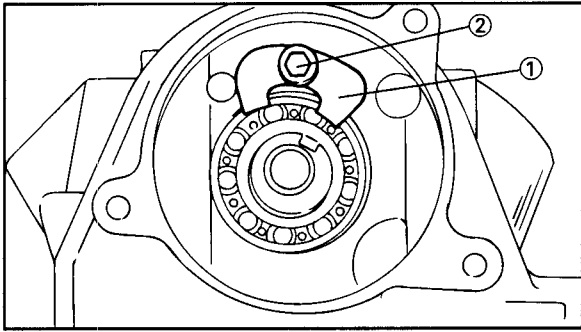
- Camshaft ①




Camshaft:
Molybdenum disulfide oil
Camshaft bearing:
Engine oil

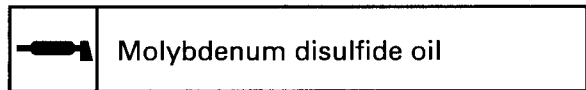
CAMSHAFT AND ROCKER ARMS

ENG



2. Install:
 - Lock washer ①
 - Bolt ②  120kg·cm

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



4. Install:
 - Rocker arm
 - Rocker arm shaft (intake)

NOTE: _____

Intake:

Install the rocker arm shaft (intake) completely pushed in.

5. Install:
 - Rocker arm ①
 - Rocker arm shaft (exhaust)

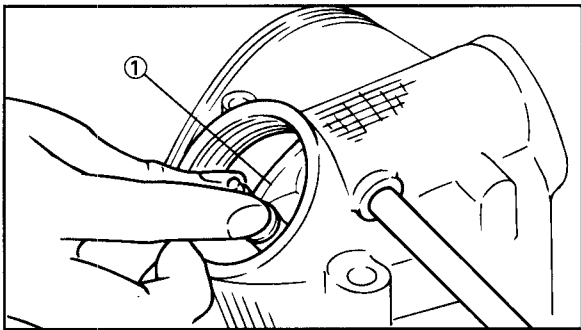
NOTE: _____

Exhaust:

Install the rocker arm shaft (exhaust) completely pushed in.

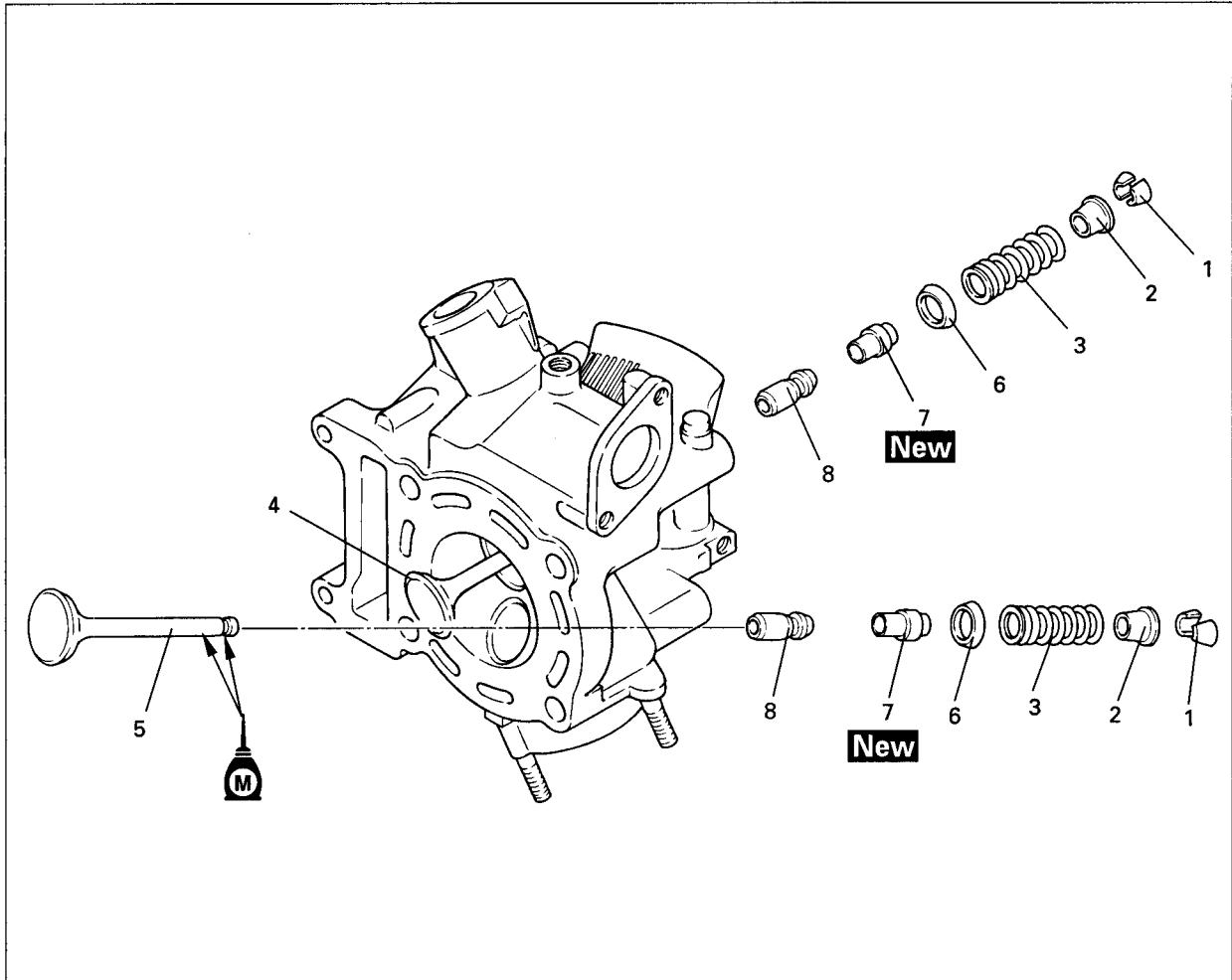
CAUTION: _____

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

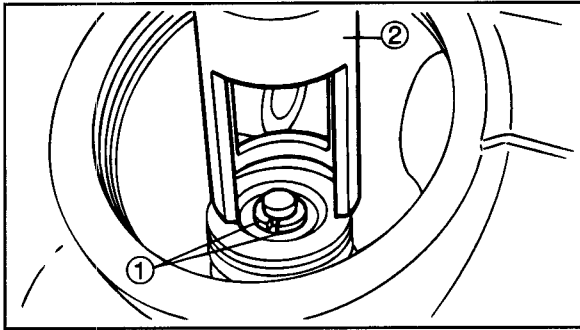




VALVES AND VALVE SPRING



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



VALVES AND VALVE SPRINGS REMOVAL

1. Remove:
 - Valve cotters ①

NOTE: _____

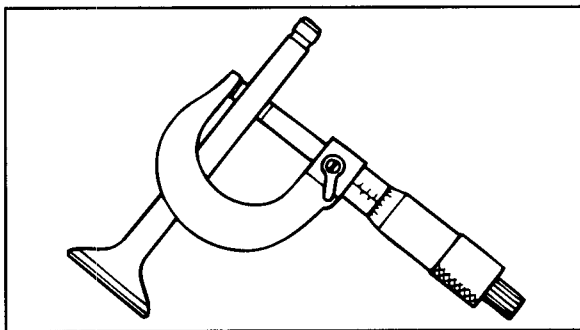
Attach a valve spring compressor and attachment ② between the valve spring retainer and cylinder head to remove the valve cotters.

CAUTION: _____

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



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



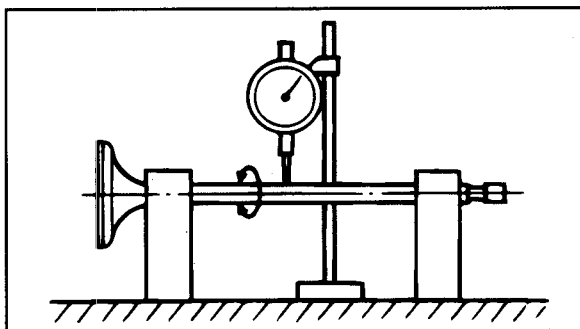
VALVES AND VALVE SPRINGS INSPECTION

1. Measure:
 - Valve stem diameter

Out of specification → Replace.



Valve stem diameter:
Intake: 4.475~4.490 mm
<Limit: 4.445 mm>
Exhaust: 4.460~4.475 mm
<Limit: 4.430 mm>

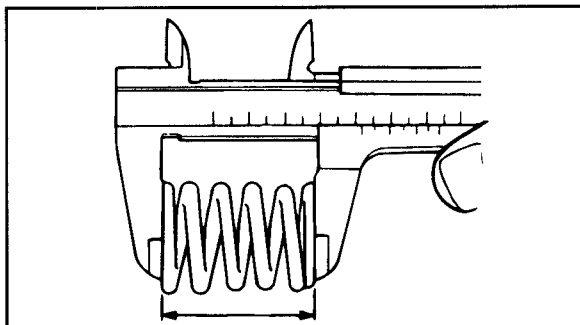


2. Measure:
 - Runout (valve stem)

Out of specification → Replace.



Runout limit:
0.01 mm

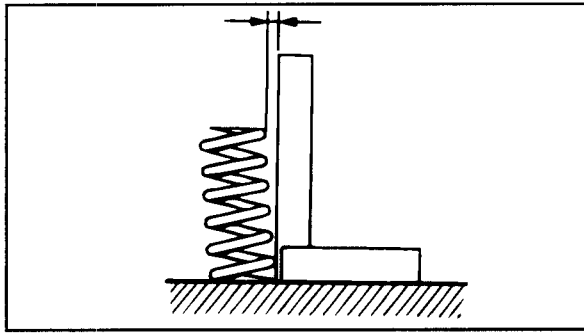


3. Measure:
 - Free length (valve spring)

Out of specification → Replace.



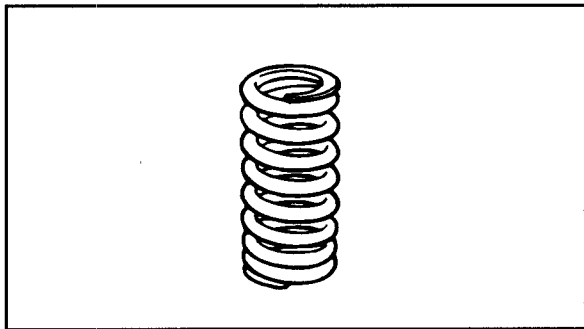
Valve spring free length:
41.94 mm
<Limit: 39.843 mm>



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



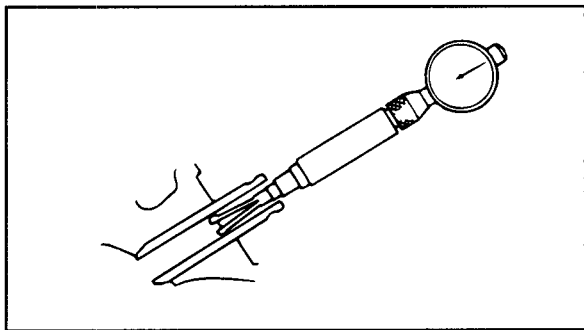
Spring tilt limit:
1.6 mm (2.5°)



5. Inspect:
- Spring contact face
Wear/Pitting/Scratches → Replace.
6. Measure:
- Valve guide inside diameter
Out of specification → Replace.



Valve guide inside diameter:
Intake: 4.505~4.515 mm
<Limit: 4.553 mm>
Exhaust: 4.505~4.515 mm
<Limit: 4.553 mm>



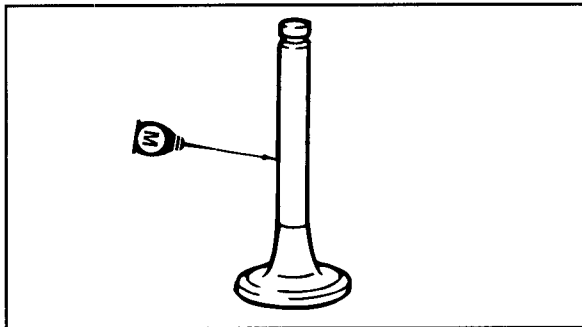
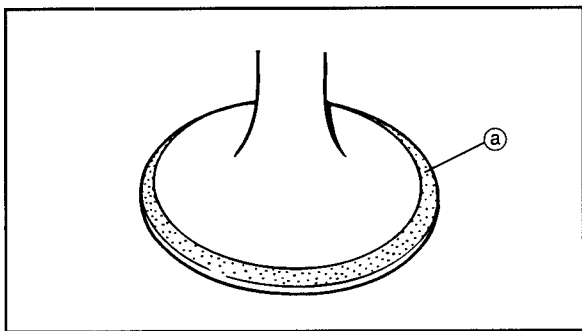
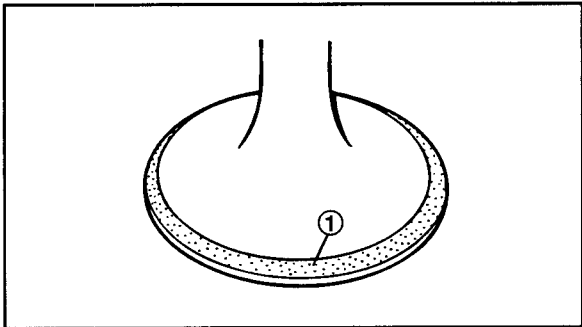
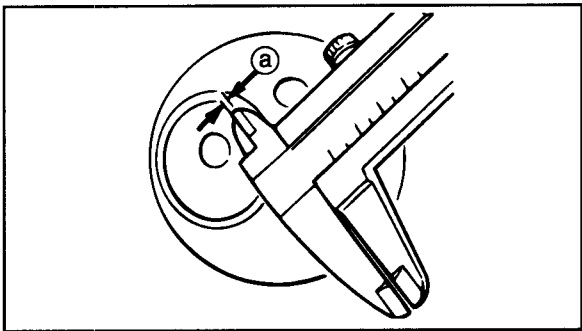
7. Measure:
- Stem-to-guide clearance
(Valve guide inside diameter – Valve stem diameter)
Out of specification → Replace the valve guide.



Stem-to-guide clearance limit
Intake : 0.08 mm
Exhaust : 0.10 mm

VALVE SEATS INSPECTION


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



3. Measure:

- Valve seat width (a)

Out of specification → Replace the valve seat.

	Valve seat width:
	Intake: 0.9~1.1 mm
	<Limit: 1.6 mm>
	Exhaust: 0.9~1.1 mm
	<Limit: 1.6 mm>

Measurement steps:

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

4. Lap:

- Valve face
- Valve seat

NOTE: _____

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

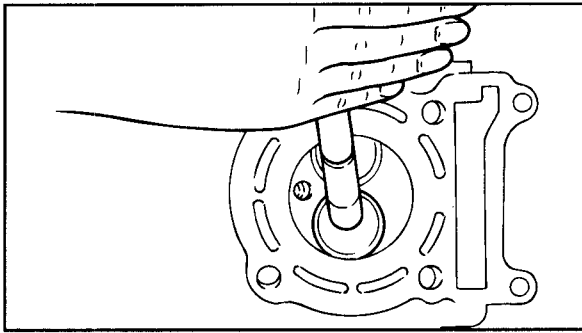
Lapping steps:

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

CAUTION: _____

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

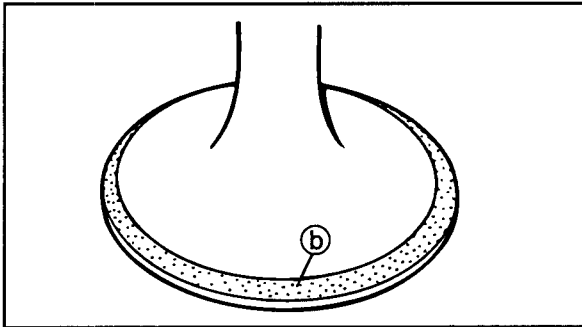
- Apply molybdenum disulfide oil to the valve stem.
- Install the valve into the cylinder head.



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

NOTE: _____

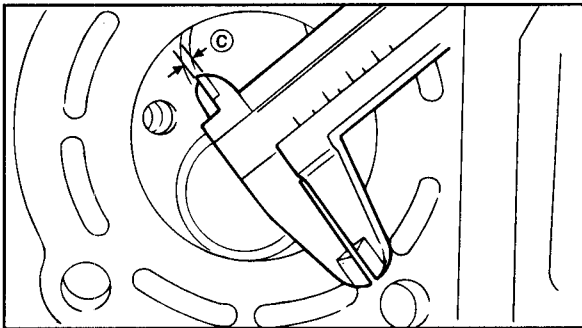
For best lapping results, lightly tap the valve seat while rotating the valve back and forth between your hand.



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

NOTE: _____

Make sure to clean off all compound from the valve face and valve seat after every lapping operation.



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

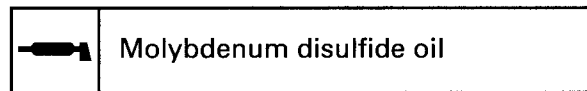
VALVES AND VALVE SPRINGS INSTALLATION

1. Deburr:

- Valve stem end
Use an oil stone to smooth the stem end.

2. Apply:

- Molybdenum disulfide oil
(onto the valve stem (3) and oil seal (2).)

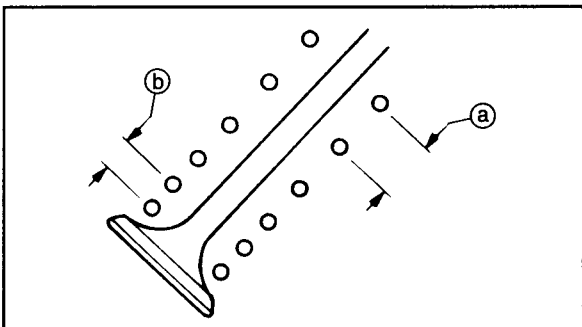
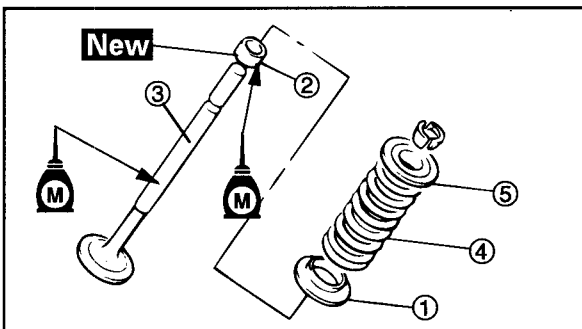


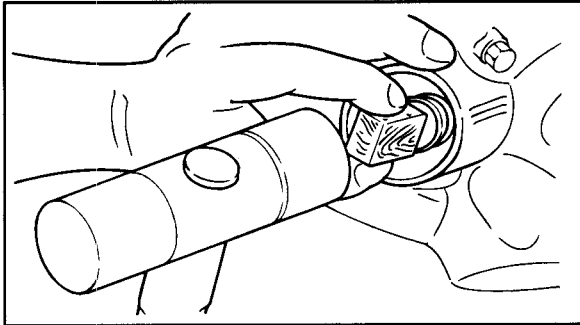
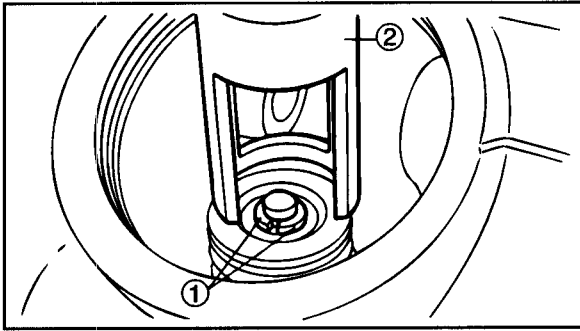
3. Install:

- Valve spring seat (1)
- Valve stem seal (2) **New**
- Valve (3)
(into the cylinder head)
- Valve spring (4)
- Valve spring seat (5)

NOTE: _____

During the installation of valve spring, the sparser end (a) of spring should face upward and the denser end (b) should face the cylinder head.





4. Install:
- Valve cotters ①

NOTE: _____

Install the valve cotters while compressing the valve spring with a valve spring compressor and attachment ②.



Valve spring compressor:

90890-04019

Attachment:

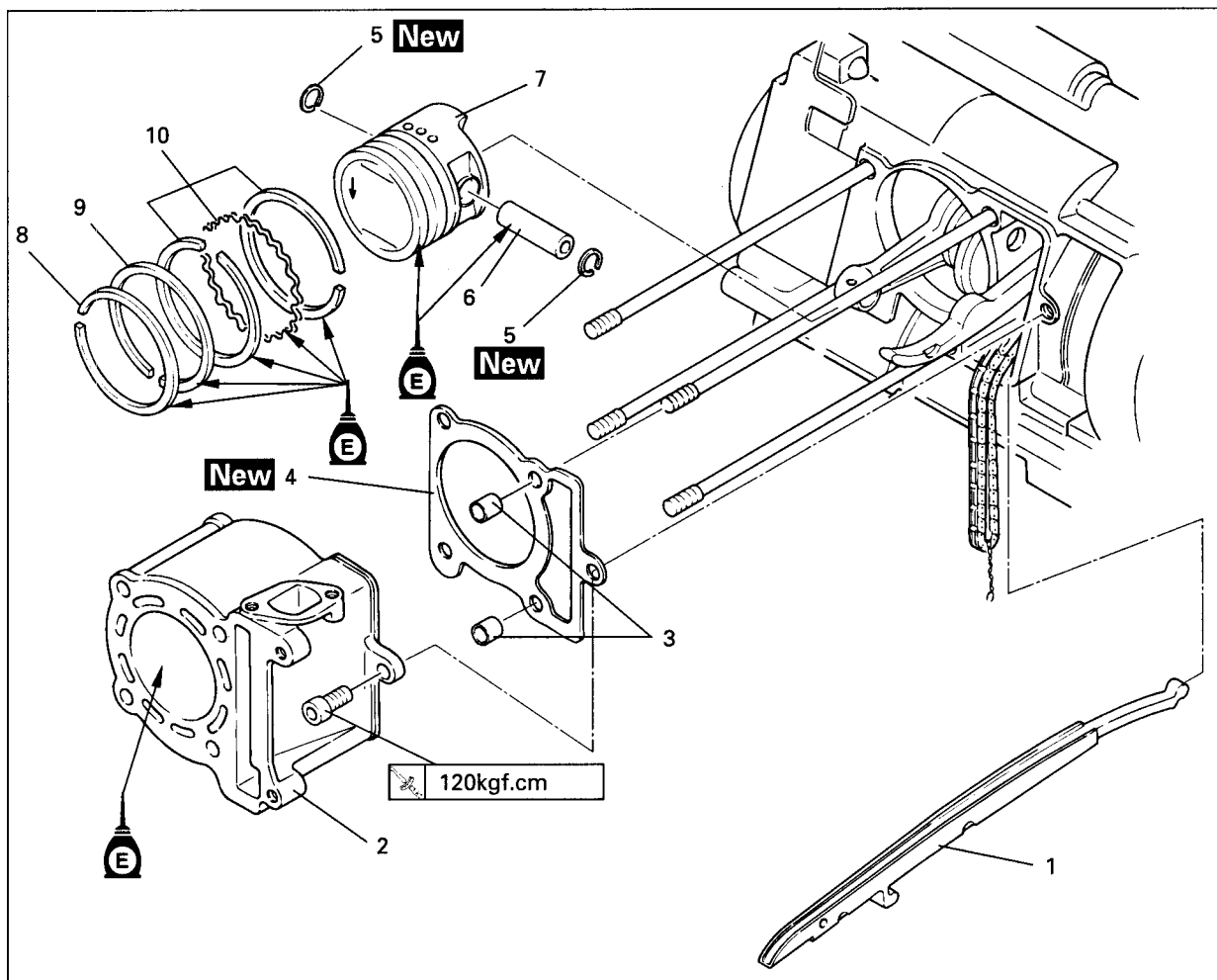
90890-04108

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

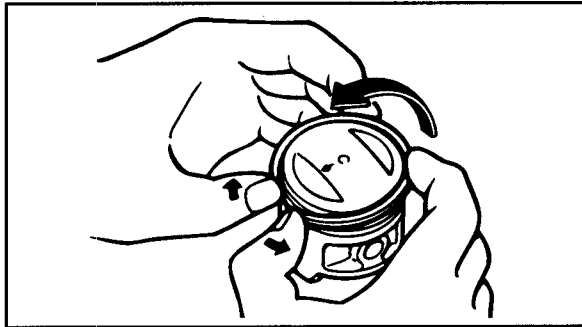
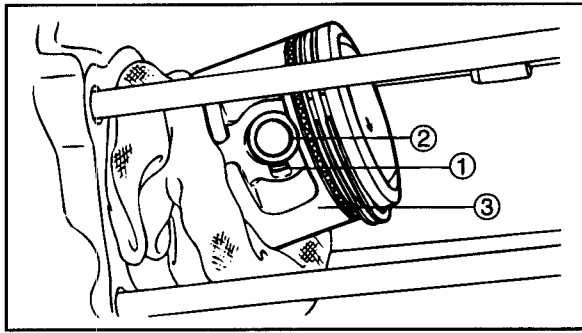
CAUTION: _____

Do not hit so much as to damage the valve.

CYLINDER AND PISTON



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



PISTON AND PISTON RINGS REMOVAL

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

NOTE: _____

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

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

NOTE: _____

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

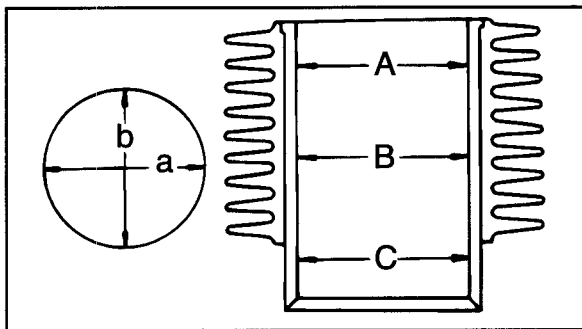
CYLINDER INSPECTION

1. Measure:
 - Cylinder bore

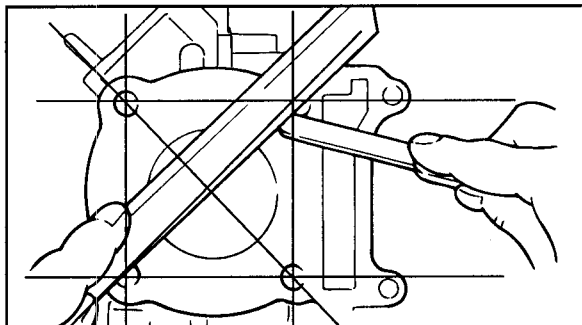
Out of specification → Rebore or replace

NOTE: _____

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



Cylinder bore:
53.700~53.710 mm
<Defferance limit between A, B and C: 0.03 mm>

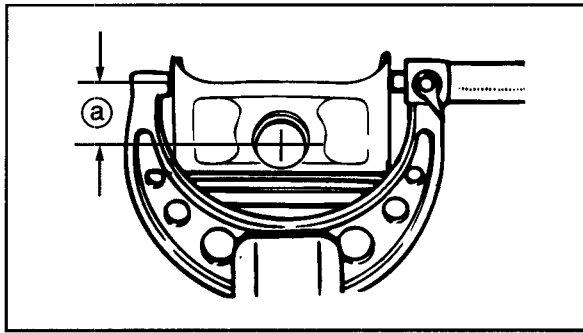


2. Measure:
 - Warpage

Out of specification → Replace.



Cylinder warpage limit:
0.05 mm



PISTON AND PISTON PIN INSPECTION

1. Measure:

- Piston skirt diameter
Out of specification → Replace.
- ① 12 mm from the piston bottom edge



Piston skirt diameter:
53.670~53.680 mm

2. Calculate:

- Piston-to-cylinder clearance

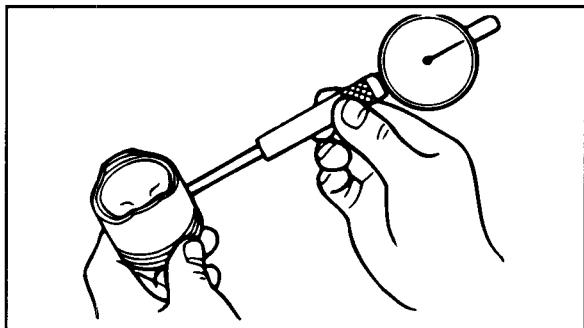
Piston-to-cylinder clearance =
Cylinder bore - Piston skirt diameter

Refer to "CYLINDER" section for cylinder bore measurement.

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



Piston-to-cylinder clearance:
0.03 mm



3. Measure:

- Piston pin bore diameter
Out of specification → Replace.



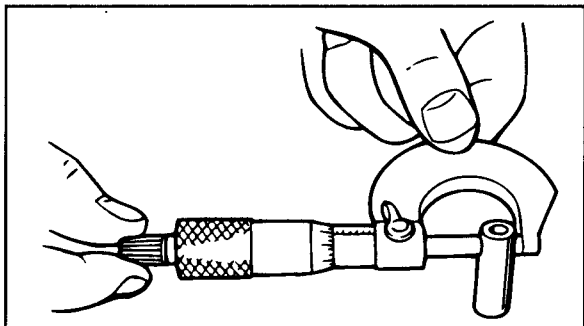
Piston pin bore diameter:
15.002~15.013 mm
<Limit: 15.043 mm>

4. Measure:

- Piston pin outside diameter
Out of specification → Replace.

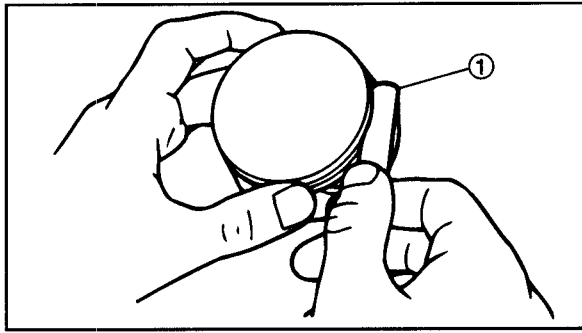


Piston pin outside diameter:
14.990~14.995 mm
<Limit: 14.970 mm>



5. Inspect:

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



PISTON RINGS INSPECTION

1. Measure:

- Side clearance ①

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

NOTE: _____

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



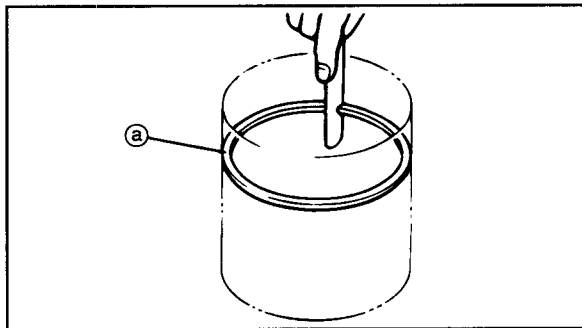
Side clearance (Piston ring):

Top ring:

0.03~0.07 mm
<Limit: 0.12 mm>

2nd ring:

0.02~0.06 mm
<Limit: 0.12 mm>



2. Position:

- Piston ring
(into the cylinder)

NOTE: _____

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

① 20mm

3. Measure:

- End gap

Out of specification → Replace.

NOTE: _____

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



End gap:

Top ring:

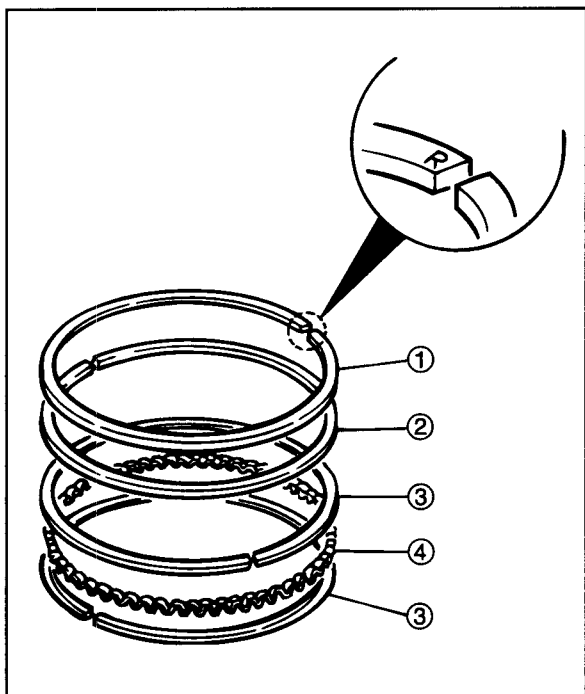
0.15~0.25 mm
<Limit: 0.5 mm>

2nd ring:

0.15~0.30 mm
<Limit: 0.65 mm>

Oil ring:

0.2~0.7 mm



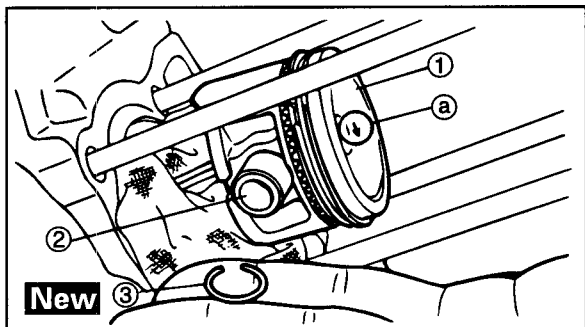
PISTON RINGS, PISTON AND CYLINDER INSTALLATION

1. Install:

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

NOTE:

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



2. Install:

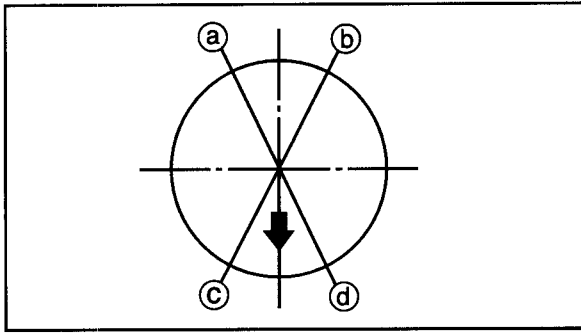
- Piston ①
- Piston pin ②
- Piston pin clip ③ **New**

NOTE:

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

3. Install:

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



4. Position:

- Piston rings

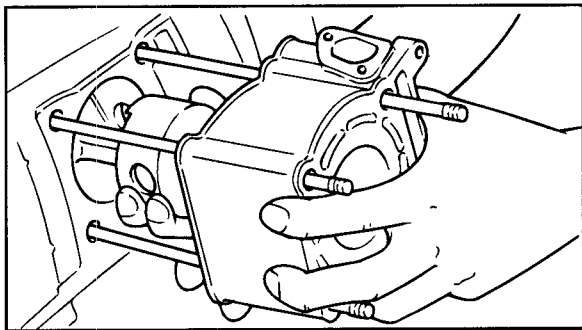
NOTE:

Offset the piston ring end gaps as shown.

- ① Top ring end
- ② Oil ring end (lower)
- ③ Oil ring end (upper)
- ④ 2nd ring end

5. Lubricate:

- Piston outer surface
- Piston ring
- Cylinder inner surface



6. Install:

- Cylinder

NOTE:

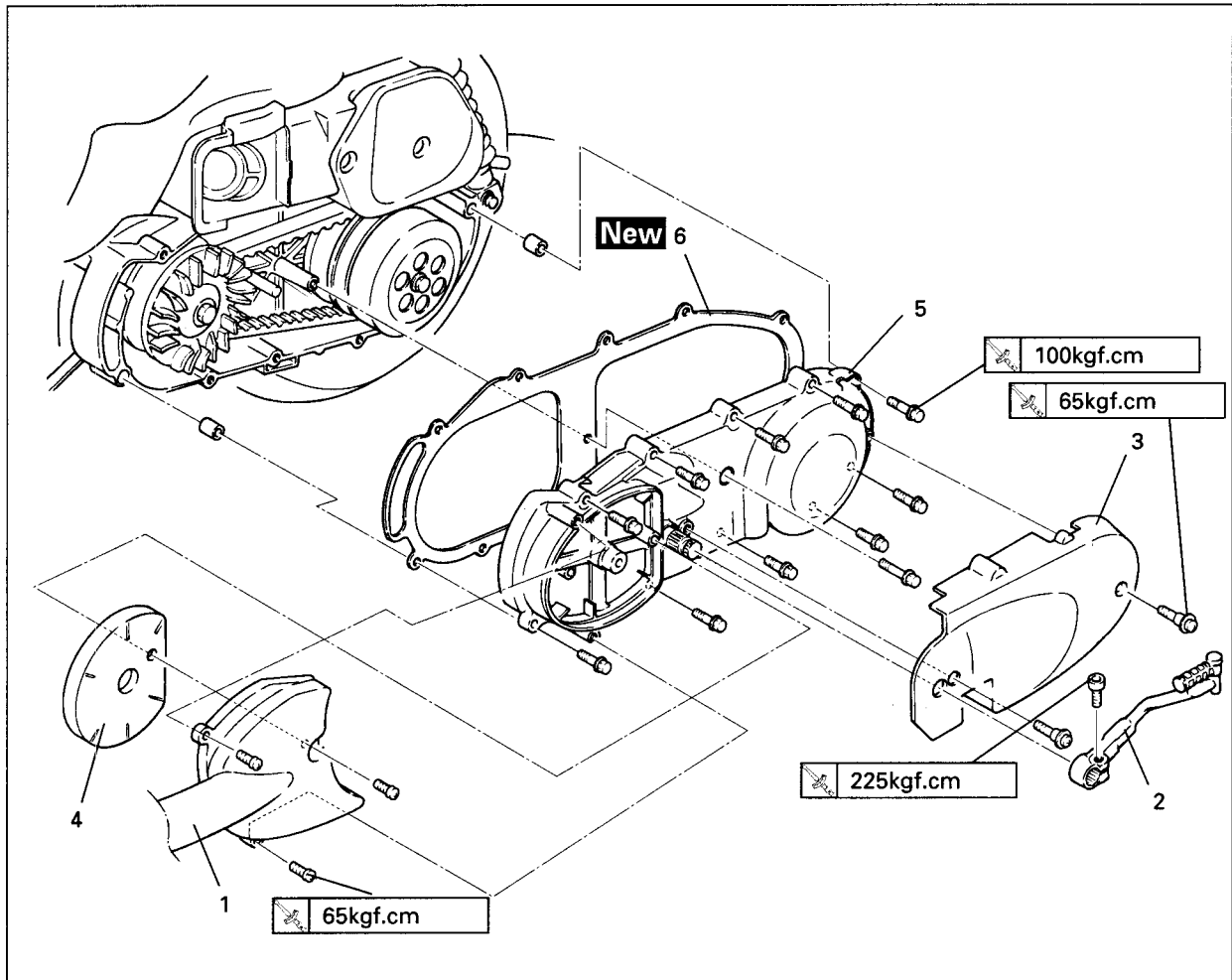
- Install the cylinder with one hand while compressing the piston rings with the other hand.
- Pass the timing chain and timing chain guide (exhaust side) through the timing chain cavity.

KICK STARTER, V-BELT, CLUTCH AND SECONDARY/PRIMARY SHEAVE

ENG



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



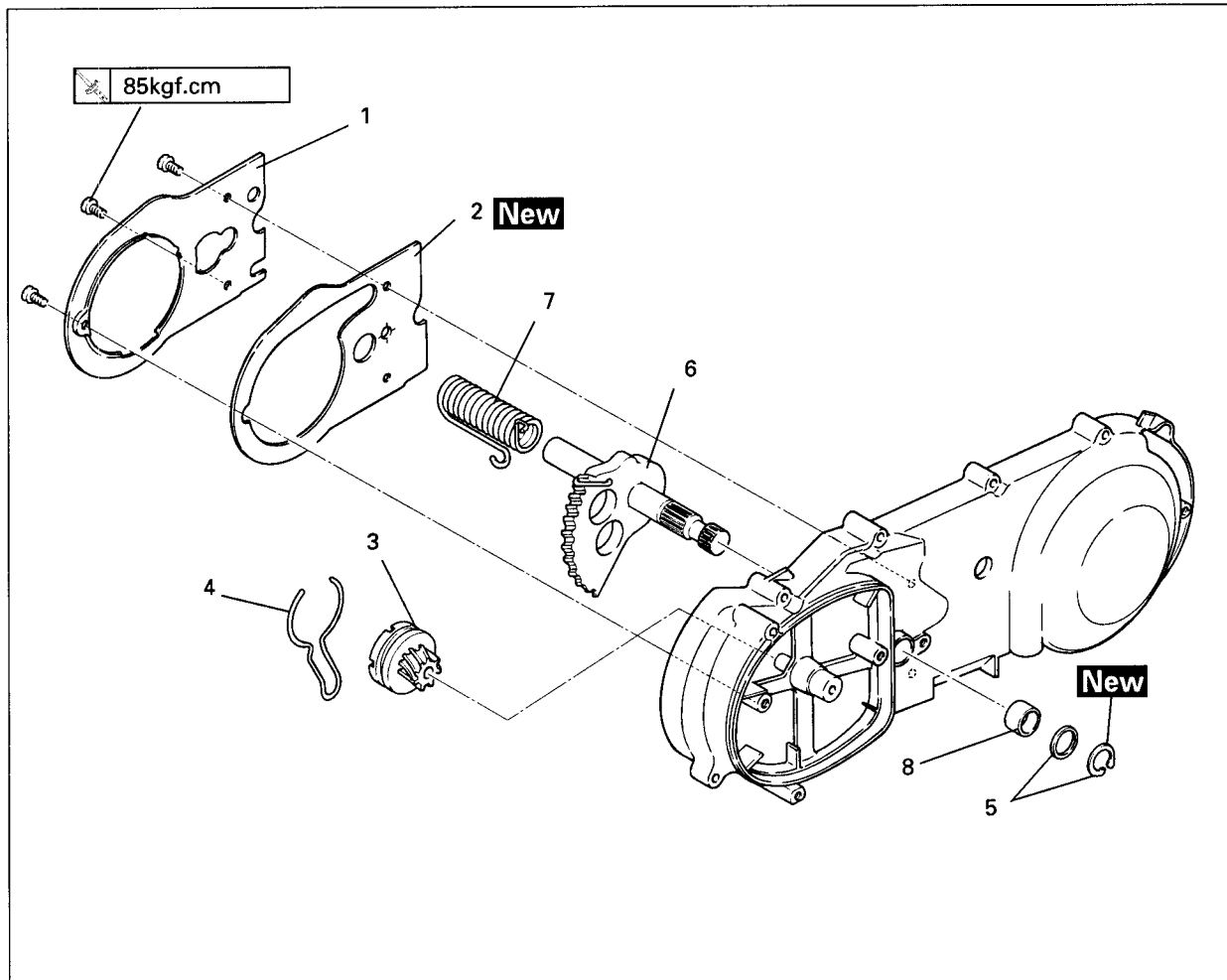
Order	Job name / Part name	Q'ty	Remarks
	V-belt air filter cover, and crankcase cover (left) removal		Remove the parts in order.
1	Crankcase filter cover	1	
2	Kick starter	1	
3	Crankcase cover protector	1	
4	Crankcase filter element	1	
5	Crankcase cover (left)	1	
6	Crankcase cover gasket	1	
			Reverse the removal procedure for installation.

KICK STARTER, V-BELT, CLUTCH AND SECONDARY/PRIMARY SHEAVE

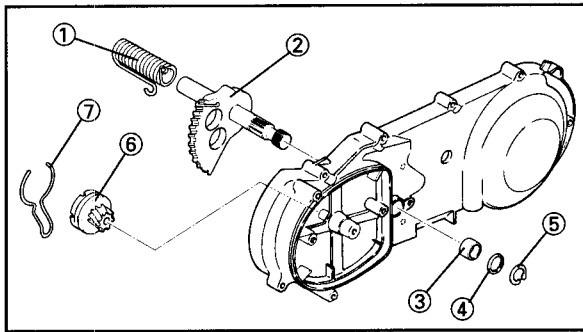
ENG



KICK STARTER



Order	Job name / Part name	Q'ty	Remarks	
	Foot starter removal Crankcase cover		Remove the parts in order. Refer to "CRANKCASE COVER RE- MOVAL"	
1	Board	1	section.	
2	Gasket	1		
3	Pinion gear	1	Refer to "PINION GEAR INSTALLATION"	
4	Pinion gear clip	1		section.
5	Circlip/Plain washer	1/1	Refer to "KICK STARTER INSTALLATION"	
6	Kick starter segment gear Assy	1		section.
7	Torsion spring	1		
8	Solid bush	1		
			Reverse the removal procedure for instal- lation.	



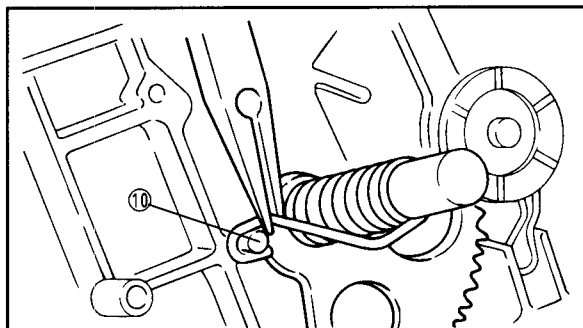
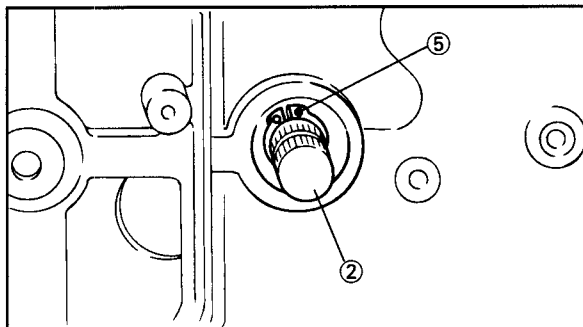
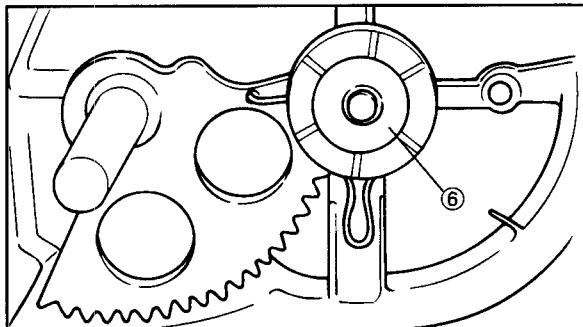
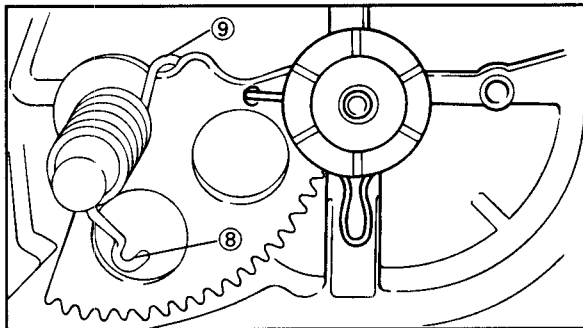
PEDAL ROD INSTALLATION

1. Install:

- Return spring ①
- Kick starter segment gear Assy ②
- Collar ③
- Plate washer ④
- Circlip ⑤
- Pinion gear ⑥
- Pinion gear clip ⑦

Installing steps:

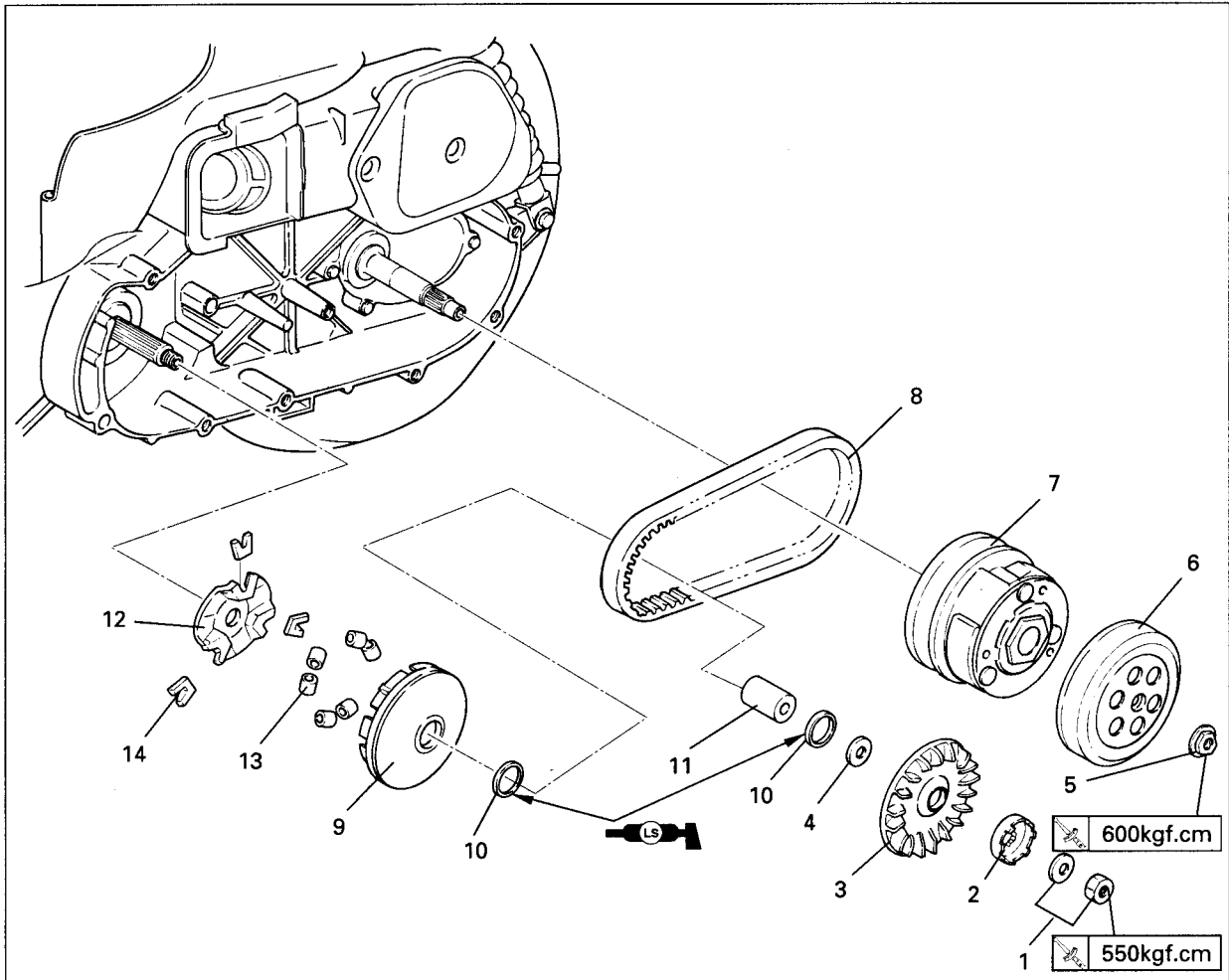
- a. Put the hook ⑧ of return spring at the front of the rib flange of crankcase, and then jam the other end ⑨ to the plane of fan gear. Turn the fan gear to the position as shown in the drawing at the left.
- b. Use a circlip ⑤ to hold and fix the kick starter segment gear assy ②.
- c. Use appropriate pliers to hook the spring hook on to the crankcase projection ⑩.
- d. Install kick starter and pinion gear ⑥.



KICK STARTER, V-BELT, CLUTCH AND SECONDARY/PRIMARY SHEAVE



V-BELT, CLUTCH AND SECONDARY/PRIMARY SHEAVE



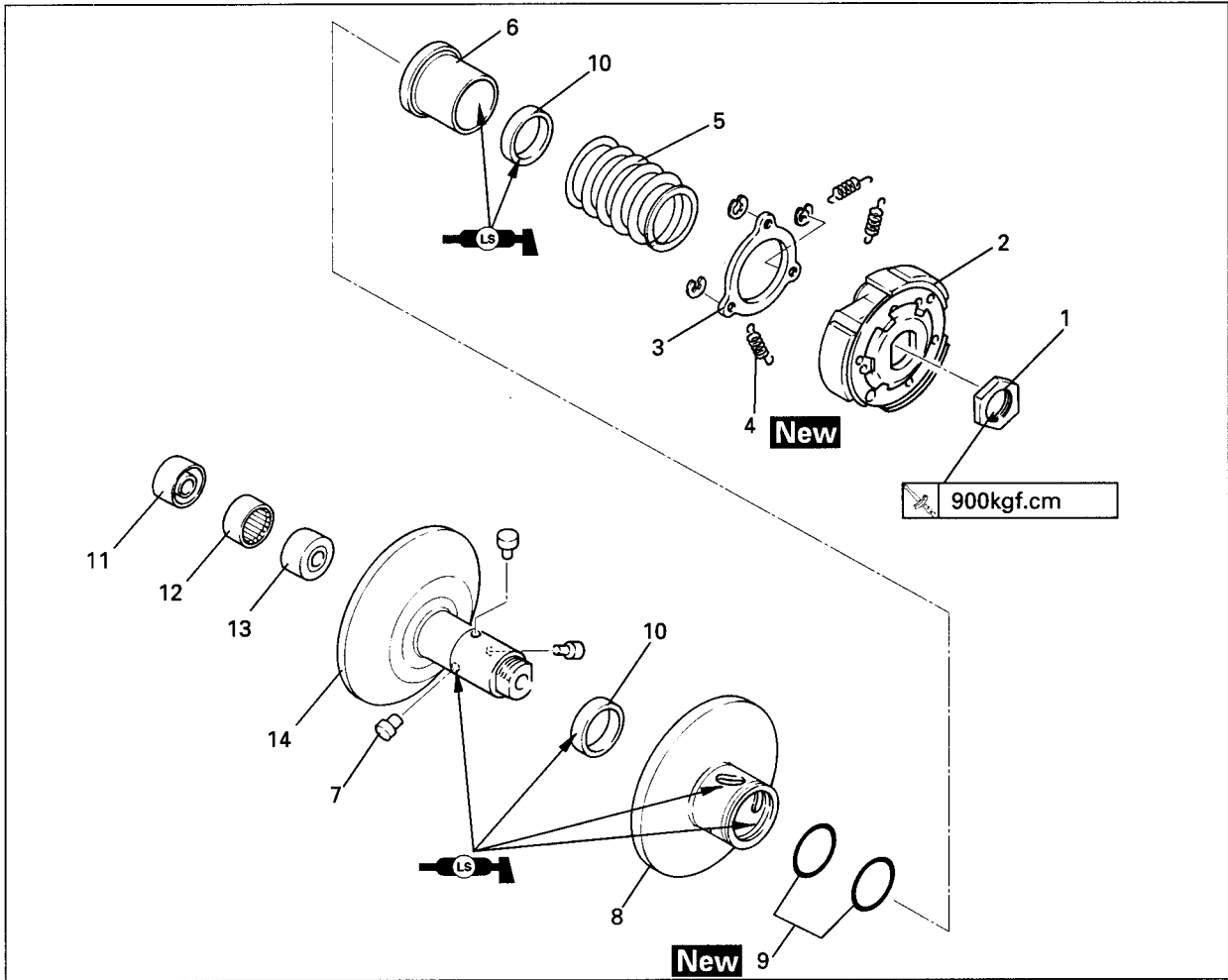
Order	Job name / Part name	Q'ty	Remarks
	V-belt, Clutch and Secondary/Primary sheave removal		Remove the parts in order.
1	Nut/plain washer	1/1	Refer to "PRIMARY SHEAVE REMOVAL" section.
2	One-way clutch	1	
3	Primary fixed sheave	1	
4	Washer	1	Refer to "SECONDARY SHEAVE AND V-BELT REMOVAL" section.
5	Nut	1	
6	Clutch housing	1	
7	Clutch assembly	1	
8	V-belt	1	Refer to "SECONDARY SHEAVE INSTALLATION" section.
9	Primary sliding sheave	1	Refer to "PRIMARY SHEAVE ASSEMBLY" section.
10	Oil seal	2	
11	Collar	1	
12	Cam	1	
13	Rolling ball	6	
14	Slider	3	

KICK STARTER, V-BELT, CLUTCH AND SECONDARY/PRIMARY SHEAVE

ENG



SECONDARY SHEAVE



Order	Job name / Part name	Q'ty	Remarks
	Secondary sheave disassembly		Disassemble the parts in order.
1	Nut	1	Refer to "SECONDARY SHEAVE DISASSEMBLY" section.
2	Clutch carrier	1	
3	Clutch block holder	1	
4	Clutch shoe spring	3	
5	Compression spring	1	
6	Spring seat	1	
7	Guide pin	3	
8	Secondary sliding sheave	1	
9	O-ring	2	
10	Oil seal	2	
11	Oil seal	1	
12	Rolling pin bearing	1	
13	Bearing	1	
14	Secondary sheave	1	