

Product: Yamaha GTS1000AE/GTS1000AEC Motorcycle Service Repair Workshop Manual
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YAMAHA

GTS1000AE GTS1000AEC

Service Manual

NEW FEATURES



LIT-11616-09-22

Sample manual. Download All pages at:
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GTS1000AE GTS1000AEC

SERVICE MANUAL

— NEW FEATURES —

LIT-11616-09-22

4HH-28197-21

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NOTICE

This manual was written by the Yamaha Motor Company primarily for use by Yamaha dealers and their qualified mechanics. It is not possible to put an entire mechanic's education into one manual, so it is assumed that persons using this book to perform maintenance and repairs on Yamaha motorcycles have a basic understanding of the mechanical concepts and procedures inherent in motorcycle repair technology. Without such knowledge, attempted repairs or service to this model may render it unfit to use and/or unsafe.

for USA, California

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

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

NOTE:

For USA, California:

This Service Manual contains information regarding periodic maintenance to the emission control system. Please read this material carefully.

PARTICULARLY IMPORTANT INFORMATION

This material is distinguished by the following notation.



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

WARNING

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

CAUTION:

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

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 of each page.
- 2nd title ②: This title appears on the upper of each page on 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.

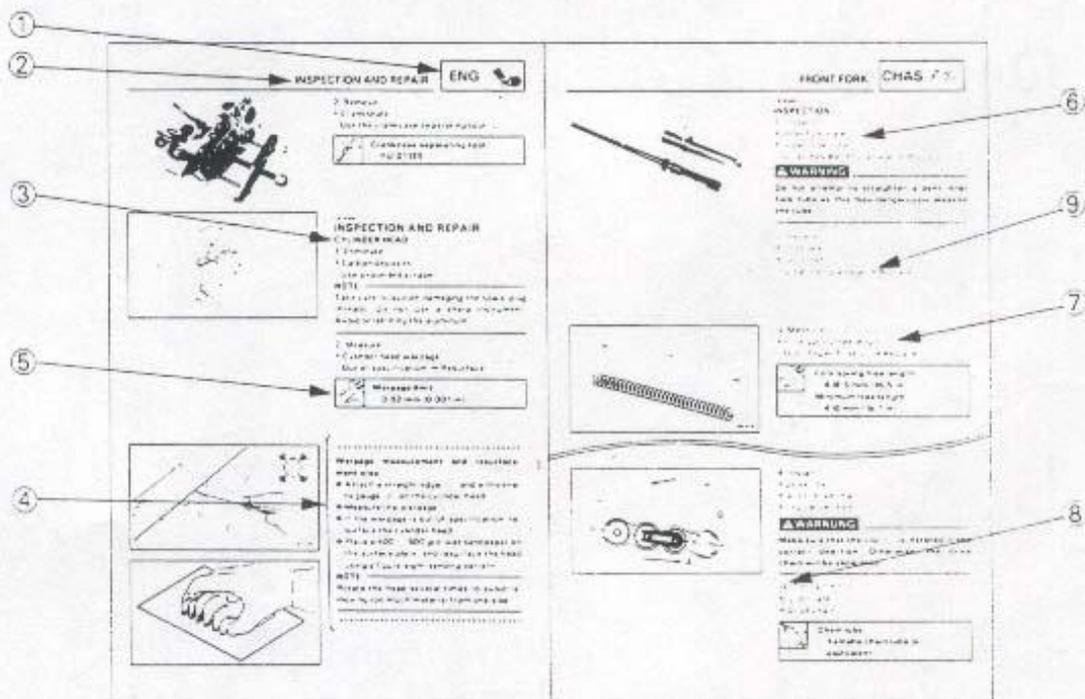
A set of particularly important procedure ④ is placed between a line of asterisks "*" with each procedure preceded by "•".

IMPORTANT FEATURES

- Data and a special tool are framed in a box preceded by a relevant symbol ⑤.
- An encircled numeral ⑥ indicates a part name, and an encircled alphabetical letter data or an alignment mark ⑦, the others being indicated by an alphabetical letter in a box ⑧.
- A condition of a faulty component will precede an arrow symbol and the course of action required the symbol ⑨.

EXPLODED DIAGRAM

Each chapter provides exploded diagrams before each disassembly section for ease in identifying correct disassembly and assembly procedures.



① GEN INFO 	② EFI 
③ ABS 	④ FR SUS 
⑤ 	⑥ 
⑦ 	⑧ 
⑨ 	⑩ 
⑪ 	
⑫ 	⑬ 
⑮ 	⑭ 
⑯ 	⑰ 
⑱ 	⑲ 

ILLUSTRATED SYMBOLS (REFER TO THE ILLUSTRATION)

Illustrated symbols ① to ④ are designed as thumb tabs to indicate the chapter's number and content.

- ① General information
- ② Electronic Fuel Injection (EFI)
- ③ Anti-Lock Brake System (ABS)
- ④ Single-sided swingarm front suspension

Illustrated symbols ⑤ to ⑪ are used to identify the specifications appearing in the text.

- ⑤ Filling fluid
- ⑥ Lubricant
- ⑦ Special tool
- ⑧ Tightening
- ⑨ Wear limit, clearance
- ⑩ Engine speed
- ⑪ Ω, V, A

Illustrated symbols ⑫ to ⑱ in the exploded diagram indicate grade of lubricant and location of lubrication point.

- ⑫ Apply engine oil
- ⑬ Apply gear oil
- ⑭ Apply molybdenum disulfide oil
- ⑮ Apply wheel bearing grease
- ⑯ Apply lightweight lithium-soap base grease
- ⑰ Apply molybdenum disulfide grease
- ⑱ Apply locking agent (LOCTITE*)
- ⑲ Use new one

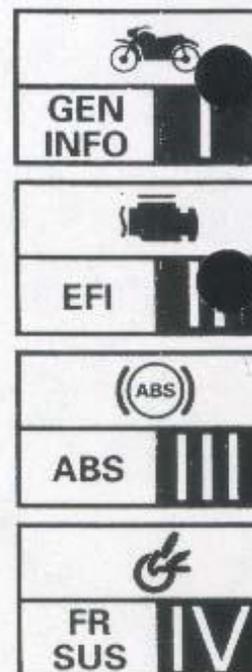
INDEX

GENERAL INFORMATION	
	GEN INFO I
ELECTRONIC FUEL INJECTION (EFI)	
	EFI II
ANTI-LOCK BRAKE SYSTEM (ABS)	
	ABS III
SINGLE-SIDED SWINGARM FRONT SUSPENSION	
	FR SUS IV

CONTENTS

CHAPTER I. GENERAL INFORMATION

MOTORCYCLE IDENTIFICATION	I-1
VEHICLE IDENTIFICATION NUMBER	I-1
ENGINE SERIAL NUMBER	I-1
IMPORTANT INFORMATION	I-2
PREPARATION FOR REMOVAL	I-2
ALL REPLACEMENT PARTS	I-2
GASKETS, OIL SEALS, AND O-RINGS	I-2
LOCK WASHERS/PLATES AND COTTERPINS	I-3
BEARINGS AND OIL SEALS	I-3
CIRCLIPS	I-3
SPECIAL TOOLS	I-4
FOR TUNE UP	I-4
FOR ENGINE SERVICE	I-4
FOR CHASSIS SERVICE	I-4
FOR ELECTRICAL COMPONENTS	I-5
MAINTENANCE SPECIFICATIONS	I-6
ELECTRIC SYSTEM CIRCUIT DIAGRAM	I-7
COUPLER LAYOUT DRAWING	I-9
PERIODIC INSPECTION AND ADJUSTMENT	I-11
COWLING REMOVAL AND INSTALLATION	I-13
FUEL TANK REMOVAL AND INSTALLATION	I-17
INTAKE AIR PRESSURE SYNCHRONIZATION	I-19
CATALYZER CONVERTOR UNIT INSPECTION	I-22
STEERING HEAD INSPECTION	I-24
STEERING TUBE INSPECTION	I-27
FRONT SWINGARM INSPECTION	I-29
FRONT WHEEL ALIGNMENT	I-31



CHAPTER II. ELECTRONIC FUEL INJECTION (EFI)

NAMES OF COMPONENTS AND LAYOUT	II-1
OUTLINE	II-2
TYPES OF FUEL DELIVERY EQUIPMENT	II-3
ENGINE INTEGRATED CONTROL SYSTEM (OUTLINE)	II-4
OPERATION SYSTEM	II-4
ENGINE CONTROL SYSTEM	II-4
INTAKE AIR METERING SYSTEM	II-4
FUEL INJECTION SYSTEM	II-5
FUNCTION OF COMPONENTS	II-6
THE FUEL CONTROL SYSTEM	II-6
CONTROL SYSTEM	II-7
SENSOR SYSTEM	II-11
ACTUATOR SYSTEM	II-14
OTHERS	II-14
ELECTRONIC CONTROL THREE-WAY CATALYTIC CONVERSION SYSTEM	II-16
OUTLINE	II-16
SYSTEM DIAGRAM	II-16
FUNCTION OF COMPONENTS	II-17
CATALYZER	II-17
AIR-FUEL RATIO CORRECTING DEVICE	II-19
FUEL CUT-OFF DEVICE (DURING DECELERATION)	II-20
ENGINE INTEGRATED CONTROL SYSTEM (DETAIL)	II-21
DECIDING THE BASIC INJECTION DURATION	II-21
DETECTION OF INTAKE AIR QUANTITY	II-21
DECIDING THE FINAL INJECTION DURATION	II-22
SELF DIAGNOSIS FUNCTION OF THE ECU	II-26
ECU MODE FUNCTIONS	II-26
EFI WARNING LIGHT DISPLAY AND EFI SYSTEM OPERATING STATUS (DURING USER MODE)	II-27
MOTORCYCLE MAINTENANCE BY USING THE DEALER MODE	II-29
MOTORCYCLE MAINTENANCE BY USING THE DIAGNOSIS MODE AND THE TESTER MODE	II-39
TROUBLESHOOTING	II-49
BASIC PROCEDURES	II-49
DETAILED PROCEDURES	II-51

SERVICE OF COMPONENTS	II-71
FUEL INJECTOR	II-71
PRESSURE REGULATOR	II-90
THROTTLE SENSOR	II-93
O ₂ SENSOR	II-96

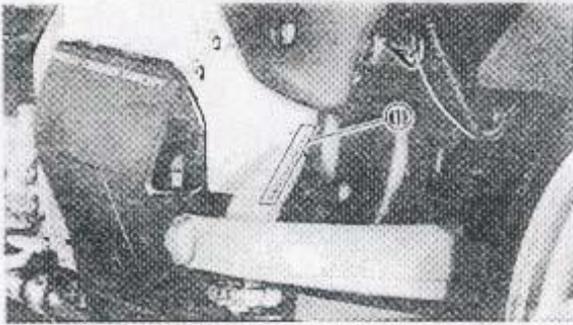
CHAPTER III. ANTI-LOCK BRAKE SYSTEM (ABS)

NAMES OF COMPONENTS AND LAYOUT	III-1
OUTLINE OF ABS	III-2
WHEEL SLIP AND HYDRAULIC PRESSURE CONTROL	III-3
ABS OPERATION AND MOTORCYCLE CONTROL	III-3
FUNCTIONS OF ABS COMPONENTS	III-5
WHEEL SENSOR AND SENSOR ROTOR	III-5
ELECTRONIC CONTROL UNIT (ECU)	III-6
HYDRAULIC UNIT (HU)	III-8
FAIL SAFE RELAY	III-9
OTHER ABS COMPONENTS	III-10
ABS OPERATION AND HYDRAULIC CIRCUIT	III-11
DURING OPERATION OF NORMAL BRAKING SYSTEMS (ABS NOT WORKING)	III-11
DURING EMERGENCY BRAKING (DURING ABS OPERATION)	III-12
SELF DIAGNOSIS FUNCTION OF ECU	III-14
FUNCTIONS OF EACH MODE	III-14
"ABS" WARNING LIGHT INDICATION AND ABS OPERATING STATUS (USER MODE)	III-14
MOTORCYCLE MAINTENANCE BY USING DEALER MODE	III-15
TROUBLESHOOTING	III-22
BASIC PROCEDURES	III-22
DETAILED PROCEDURES	III-24
SERVICE OF COMPONENTS	III-36
[D-1] ECU	III-37
[D-2] FAIL SAFE RELAY	III-38
[D-3] BRAKE LIGHT RELAY	III-42
[D-4] FRONT WHEEL SENSOR AND SENSOR ROTOR	III-44
[D-5] REAR WHEEL SENSOR AND SENSOR ROTOR	III-51
[D-6] HYDRAULIC UNIT (HU)	III-60
[D-7] FINAL INSPECTION BEFORE RE-DELIVERY OF THE SERVICE MOTORCYCLE	III-69



CHAPTER IV.
SINGLE-SIDED SWINGARM FRONT SUSPENSION

NAMES OF PARTS AND LAYOUT	IV-1
FEATURES OF SINGLE-SIDED SWINGARM FRONT SUSPENSION ...	IV-2
FUNCTIONS AND ROLES OF COMPONENTS	IV-3
STEERING TUBE	IV-3
FRONT WHEEL AXLE	IV-3
UPPER ARM	IV-4
JOINT RING	IV-4
KNUCKLE ARM	IV-4
LOWER ARM/SHOCK ABSORBER	IV-4
SERVICE OF COMPONENTS	IV-5
FRONT WHEEL AND WHEEL AXLE	IV-5
STEERING HEAD AND HANDLEBAR	IV-14
STEERING TUBE AND KNUCKLE ARM	IV-23
FRONT SHOCK ABSORBER AND SWINGARM	IV-30



GENERAL INFORMATION

MOTORCYCLE IDENTIFICATION

VEHICLE IDENTIFICATION NUMBER (For E)

The vehicle identification number ① is stamped into the frame.

Starting serial number:

JYA4HHEO * PA000101 (USA)

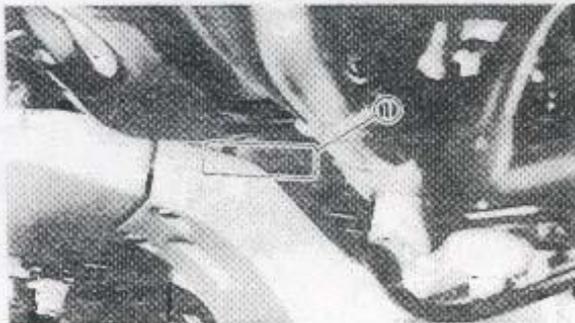
JYA4HHCO * PA001101 (California)

JYA4HHNO * PA002101 (CDN)

JYA4HJTO * PA000101 (AUS, NZ)

NOTE:

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



ENGINE SERIAL NUMBER

The engine serial number ① is stamped into crankcase.

Starting serial number:

4HH-000101 (USA)

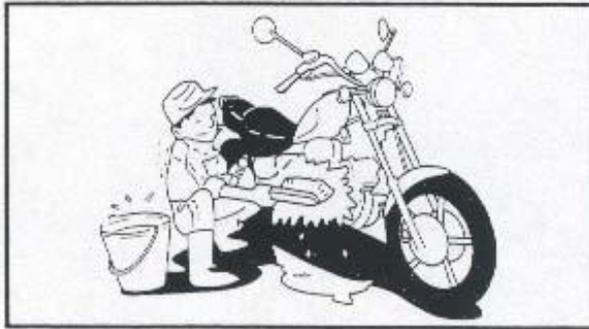
4HH-001101 (California)

4HH-002101 (CDN)

4HJ-000101 (AUS, NZ)

NOTE:

- The first three digits of these numbers are for model identification; the remaining digits are the unit production number.
- Designs and specifications are subject to change without notice.



**IMPORTANT INFORMATION
PREPARATION FOR REMOVAL**

1. Remove all dirt, mud dust, and foreign material before removal and disassembly.



2. Use proper tools and cleaning equipment. Refer to "SPECIAL TOOL".

3. When disassembling the machine keep mated parts together. This includes gears, cylinders, pistons, and other mated parts that have been +mated+ through normal wear. Mated parts must be reused as an assembly or replaced.

4. During the machine disassembly, clean all parts and place them in trays in the order of disassembly. This will speed up assembly time and help assure that all parts are correctly reinstalled.

5. Keep away from fire.



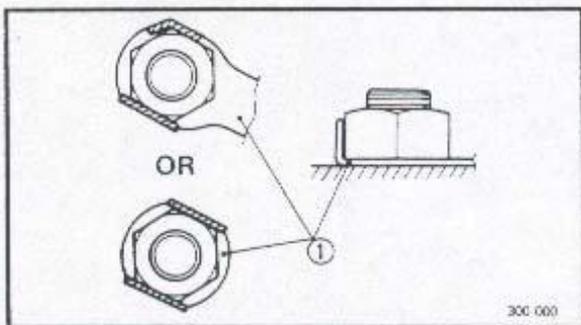
ALL REPLACEMENT PARTS

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

GASKETS, OIL SEALS, AND O-RINGS

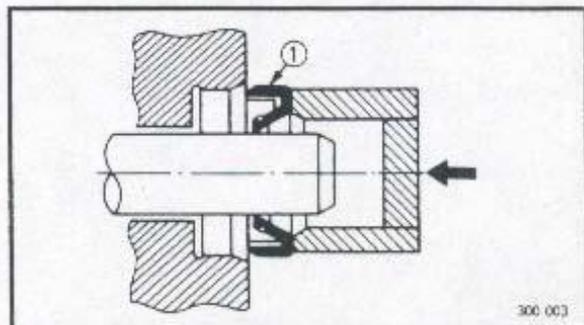
1. All gaskets, seals and O-rings should be replaced when an engine is overhauled. All gaskets surfaces, oil seal lips and O-rings must be cleaned.

2. Properly oil all mating parts and bearing during reassembly. Apply grease to the oil seal lips.



LOCK WASHERS/PLATES AND COTTER PINS

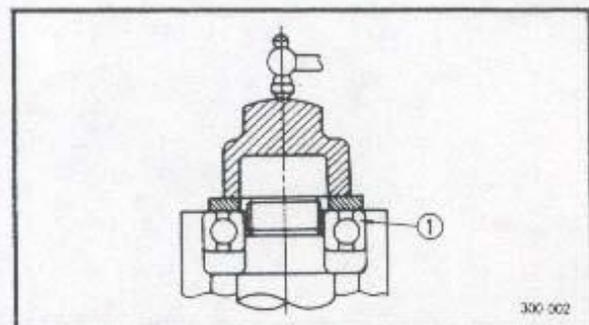
1. All lock washers/plates ① and cotter pins must be replaced when they are removed. Lock tab(s) should be bent along the bolt or nut flat(s) after the bolt or nut has been properly tightened.



BEARINGS AND OIL SEALS

1. Install the bearing(s) and oil seal(s) with their manufacturer's marks or numbers facing outward. (In other words, the stamped letters must be on the side exposed to view.) When installing oil seal(s), apply a light coating of light-weight lithium base grease to the seal lip(s). Oil the bearings liberally when installing.

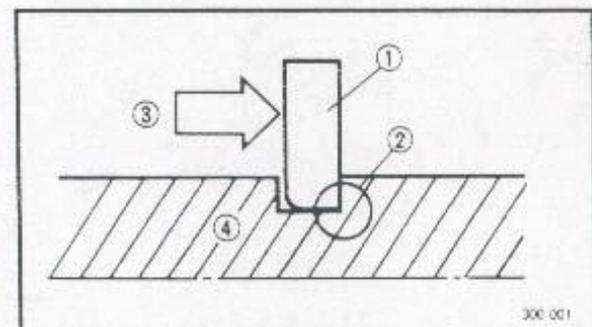
① Oil seal



CAUTION:

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

① Bearing



CIRCLIPS

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

④ Shaft



SPECIAL TOOLS

The proper special tools are necessary for complete and accurate tune-up and assembly. Using the correct special tool will help prevent damage caused by the use of improper tools or improvised techniques.

The shape and part number used for the special tool differ by country, so two types are provided.

Refer to the list provided to avoid errors when placing an order.

PN. YM- [] [] [] [] [] [] , YU- [] [] [] [] [] []
 YS- [] [] [] [] [] [] , YK- [] [] [] [] [] []
 ACC- [] [] [] [] [] []

For
US, CDN

P/N. 90890- [] [] [] [] [] []

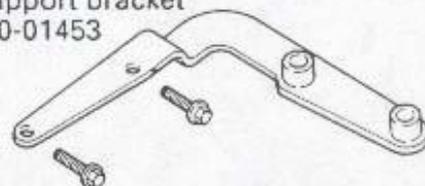
Except for
US, CDN

FOR TUNE UP

FOR ENGINE SERVICE

1

Caliper support bracket
P/N. 90890-01453



This tool is used for front brake system air bleeding.

1

Adapter
P/N. 90890-03151



This adapter is to be used for measure the fuel pressure.

2

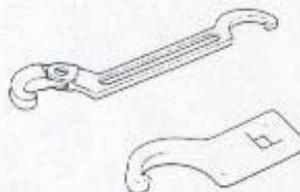
Pressure gauge
P/N. 90890-03153



This measuring equipments to measure the fuel pressure.

1

Ring nut wrench
P/N. YU-01268
90890-01268
P/N. YU-33975
90890-01403

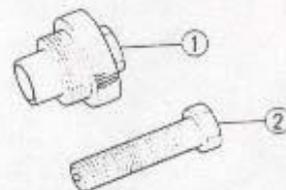


This tool is used to loosen and tighten the steering ring nut

FOR CHASSIS SERVICE

2-A

Bearing puller kit
P/N. 90890-04127
Bearing puller - ①
Bolt - ②

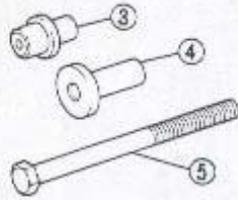


This bearing puller kit is to remove and install the front wheel bearing.



2-B

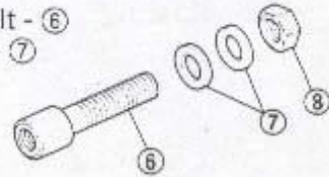
- Spacer - ③
- Bearing spacer - ④
- Puller bolt - ⑤



This bearing puller kit is to remove and install the front wheel bearing.

2-C

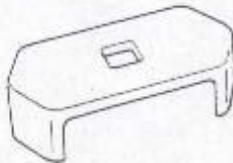
- Connecting bolt - ⑥
- Plane washer - ⑦
- Nut - ⑧



This bearing puller kit is to remove and install the front wheel bearing.

3

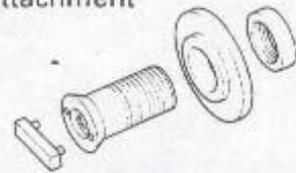
- Cap wrench
- P/N. 90890-01451



This tool is to remove and install the hub cap nut.

4

- Wheel balancer attachment
- P/N. 90890-01452



This attachment is to be used to fix the front wheel to the wheel balance.

**FOR ELECTRICAL
COMPONENTS**

1

- Test coupler adapter
- P/N. YM-3149
- 90890-03149



This instrument is necessary for self diagnosis of the EFI and ABS system.



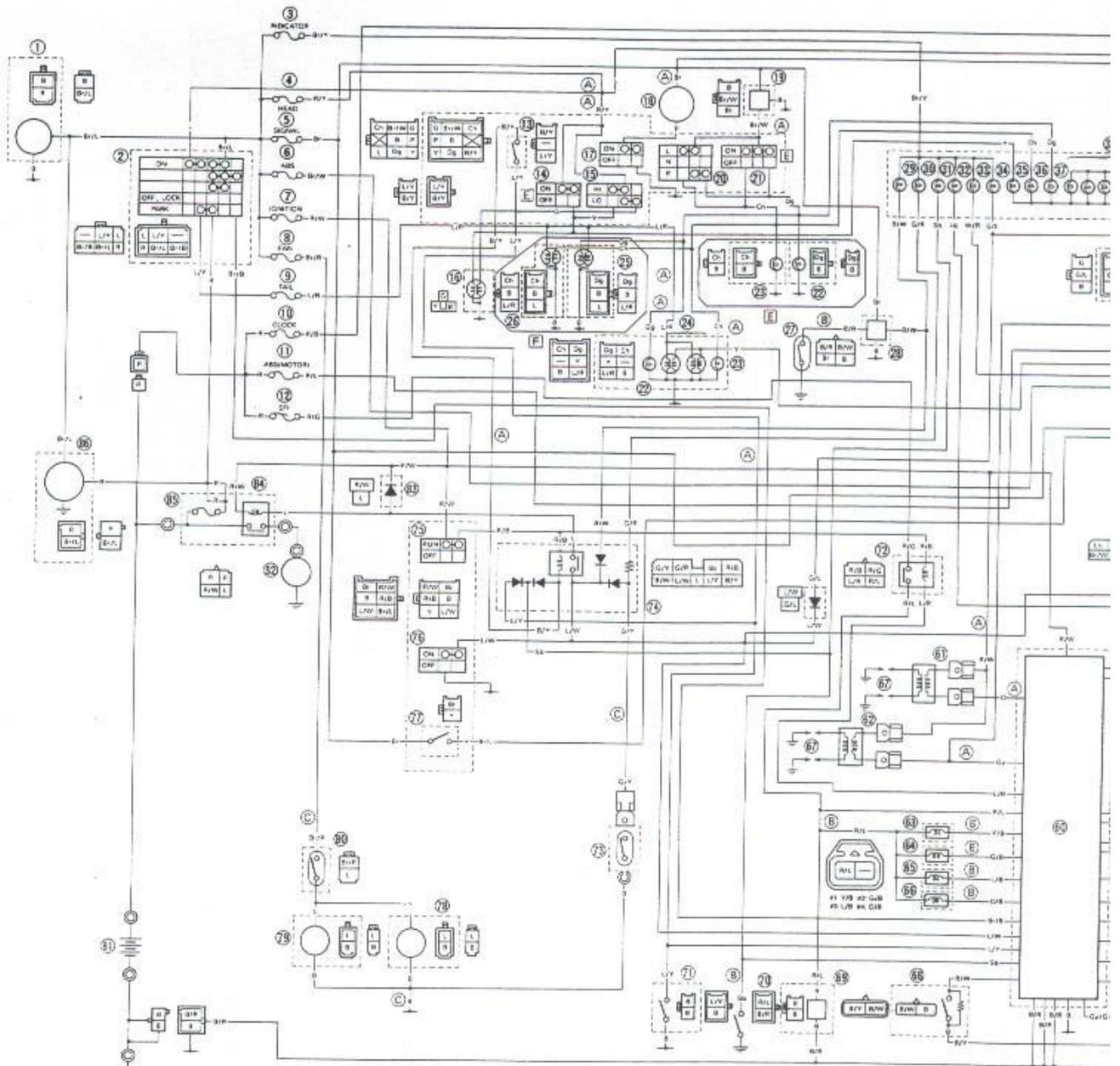
MAINTENANCE SPECIFICATIONS

Model	GTS1000AE/GTS1000AEC
Fuel pump: Model/manufacture Resistance	196100-2220/NIPPONDENSO 2 ~ 4 Ω at 20°C (68°F)
Pressure regulator: Model/manufacture Control pressure	195300-2380/NIPPONDENSO 255 kPa (2.55 kg/cm ² , 36.3 psi)
Throttle sensor: Model/manufacture Resistance	198500-3070/NIPPONDENSO
Full open	2.62 ~ 3.94 Ω at 20°C (68°F)
Full close	0.39 ~ 0.59 Ω at 20°C (68°F)
Front wheel sensor: Model/manufacture Resistance	OELAAB/SUMITOMO 1.19 ~ 2.21 kΩ at 20°C (68°F)
Rear wheel sensor (GTS1000A): Model/manufacture Resistance	OELAAJ/SUMITOMO 1.19 ~ 2.21 kΩ at 20°C (68°F)
Injector: Model/manufacture Resistance	195500-2680/NIPPONDENSO 11 ~ 17 Ω at 20°C (68°F)
Camshaft sensor: Model/manufacture Resistance	PU200-11F/HITACHI 120 ~ 180 Ω at 20°C (68°F)
Crankshaft sensor: Model/manufacture Resistance	PU200-11F/HITACHI 120 ~ 180 Ω at 20°C (68°F)
Water temperature sensor: Model/manufacture Resistance	179700-0110/NIPPONDENSO 1.96 ~ 2.94 kΩ at 20°C (68°F)
Intake temperature sensor: Model/manufacture Resistance	179700-0110/NIPPONDENSO 1.96 ~ 2.94kΩ at 20°C (68°F)
Intake pressure sensor: Model/manufacture Output voltage	079800-2880/NIPPONDENSO 3.8 V at 760 mmHg

ELECTRIC SYSTEM CIRCUIT DIAGRAM



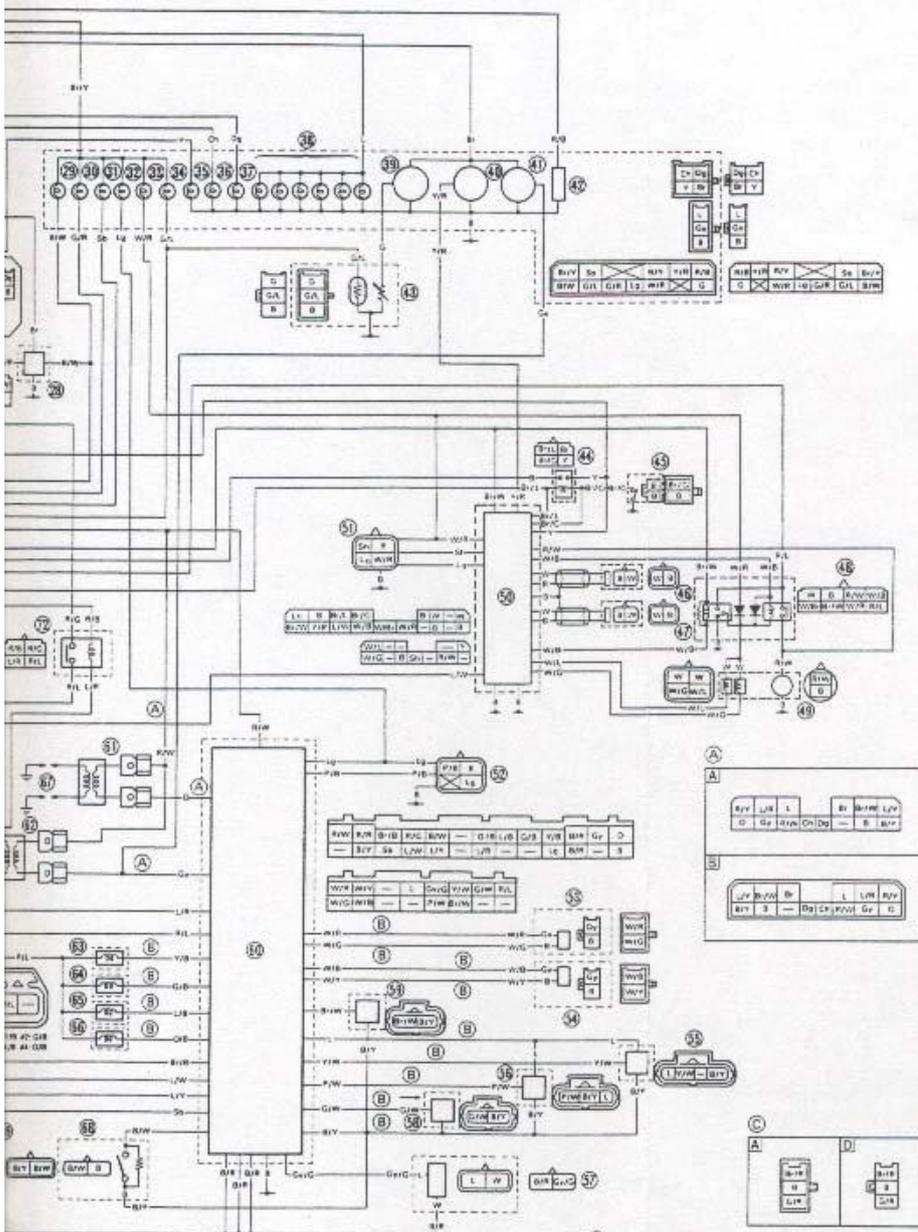
ELECTRIC SYSTEM CIRCUIT DIAGRAM



COLOR CODE

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

ELECTRIC SYSTEM CIRCUIT DIAGRAM



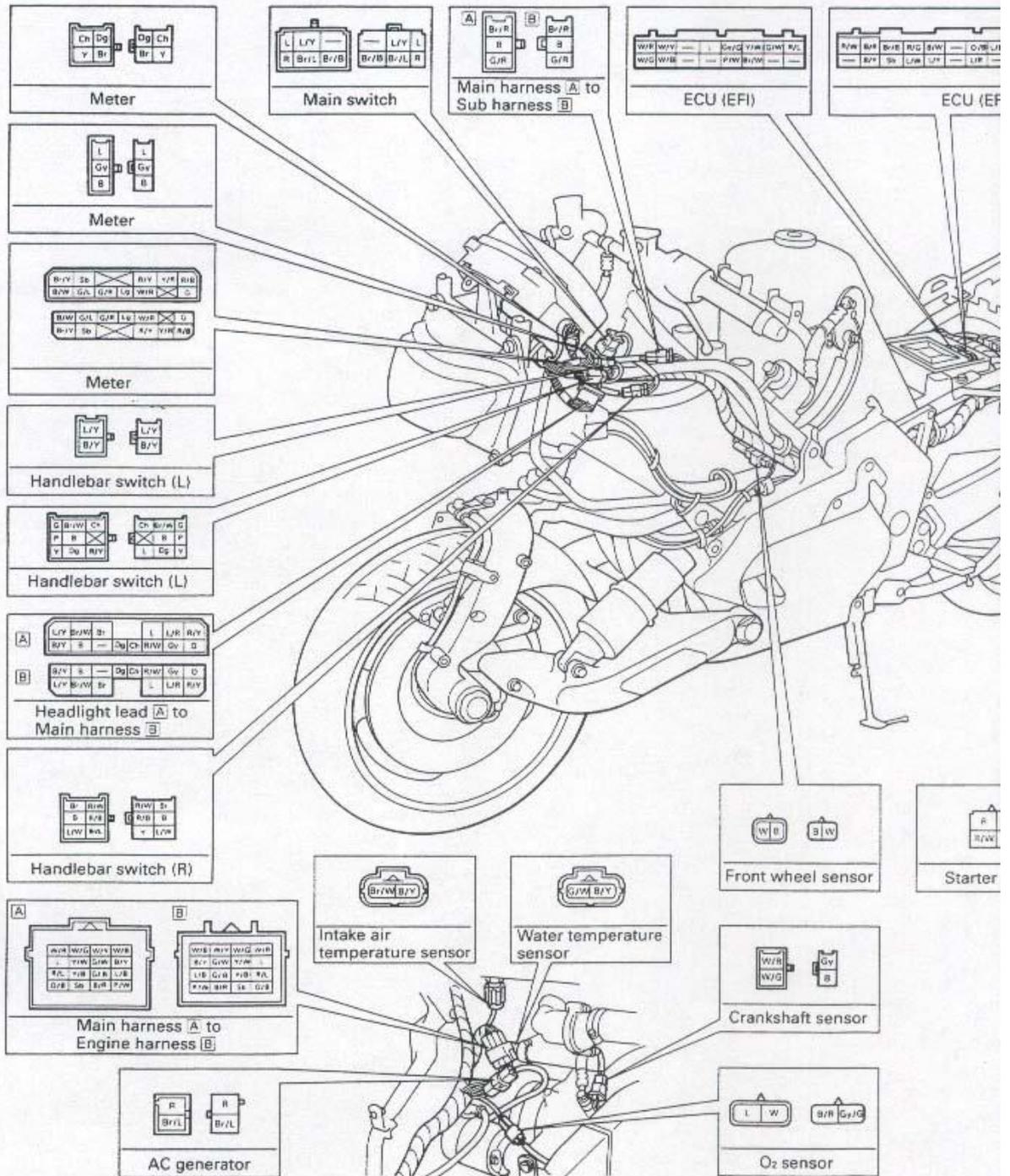
- ① Condensor
 - ② Main switch
 - ③ Fuse (INDICATOR)
 - ④ Fuse (HEAD)
 - ⑤ Fuse (SIGNAL)
 - ⑥ Fuse (ABS)
 - ⑦ Fuse (IGNITION)
 - ⑧ Fuse (FAN)
 - ⑨ Fuse (TAIL)
 - ⑩ Fuse (CLOCK)
 - ⑪ Fuse (ABS PUMP)
 - ⑫ Fuse (EFI)
 - ⑬ Clutch switch
 - ⑭ "PASS" switch
 - ⑮ "LIGHTS" (dimmer) switch
 - ⑯ Headlight
 - ⑰ "HORN" switch
 - ⑱ Horn
 - ⑲ Flasher relay
 - ⑳ "TURN" switch
 - ㉑ "Emergency" switch
 - ㉒ Flasher light (right)
 - ㉓ Flasher light (left)
 - ㉔ Tail/brake light
 - ㉕ Front position light (right)
 - ㉖ Front position light (left)
 - ㉗ Oil level switch
 - ㉘ Oil light relay
 - ㉙ "OIL" level indicator light
 - ㉚ Water temperature indicator light
 - ㉛ "NEUTRAL" indicator light
 - ㉜ "EFI" indicator light
 - ㉝ "ABS" indicator light
 - ㉞ "FUEL" level indicator light
 - ㉟ "HIGH BEAM" indicator light
 - ㊱ "TURN" indicator light (left)
 - ㊲ "TURN" indicator light (right)
 - ㊳ Meter light
 - ㊴ Fuel gauge
 - ㊵ Speedometer
 - ㊶ Tachometer
 - ㊷ Clock
 - ㊸ Fuel sender
 - ㊹ Brake light relay
 - ㊺ Rear brake switch
 - ㊻ Front wheel sensor
 - ㊼ Rear wheel sensor
 - ㊽ Fall safe relay
 - ㊾ Hydraulic unit
 - ㊿ ECU (for ABS)
 - 1 ABS test coupler
 - 2 EFI test coupler
 - 3 Crankshaft sensor
 - 4 Camshaft sensor
 - 5 Throttle sensor
 - 6 Pressure sensor
 - 7 O₂ sensor
 - 8 Water temperature sensor
 - 9 Intake air temperature sensor
 - 10 ECU (for EFI)
 - 11 Ignition coil #1
 - 12 Ignition coil #2
 - 13 Injector #1
 - 14 Injector #2
 - 15 Injector #3
 - 16 Injector #4
 - 17 Spark plug
 - 18 Fall detection switch
 - 19 Fuel pump
 - 20 Neutral switch
 - 21 Sidestand switch
 - 22 EFI main relay
 - 23 Thermo unit
 - 24 Starting circuit cut-off relay
 - 25 "ENGINE STOP" switch
 - 26 "START" switch
 - 27 Font brake switch
 - 28 Fan motor #2
 - 29 Fan motor #1
 - 30 Thermo switch
 - 31 Battery
 - 32 Starter motor
 - 33 Diode
 - 34 Starter relay
 - 35 Fuse (MAIN)
 - 36 AC genelator
- A** Main harness
B Head light lead
C Engine harness
D Sub lead
E For AUS and NZ
F For US and CDN

-Green/Yellow Br/L..... Brown/Blue
-Green/Red Br/R..... Brown/Red
-Blue/Yellow R/Y..... Red/Yellow
-Blue/Red R/L..... Red/Blue
-Blue/Black Y/B..... Yellow/Black
-Blue/White
-Red/White
- W.....Brown/White

COUPLER LAYOUT DRAWING



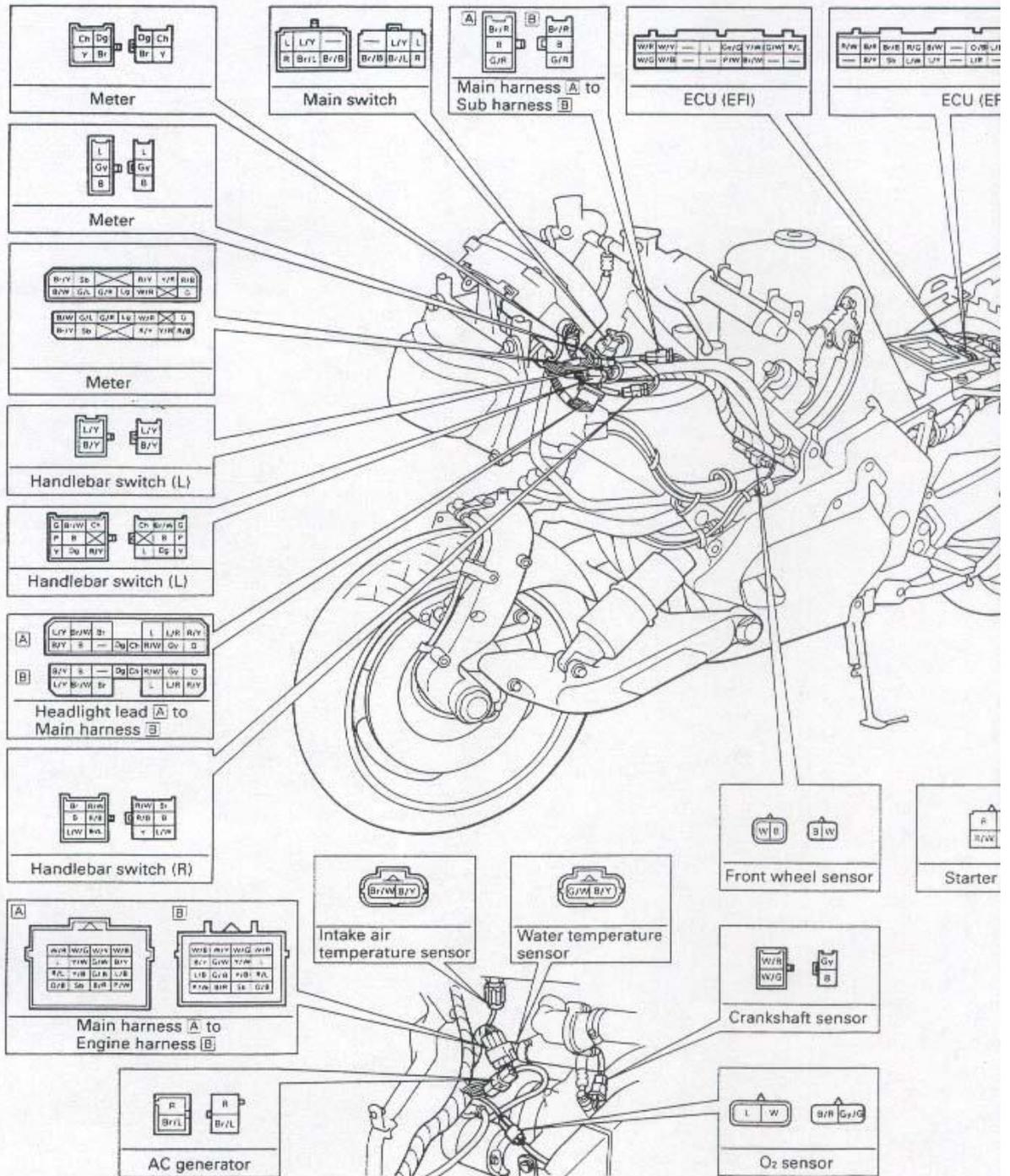
COUPLER LAYOUT DRAWING



COUPLER LAYOUT DRAWING



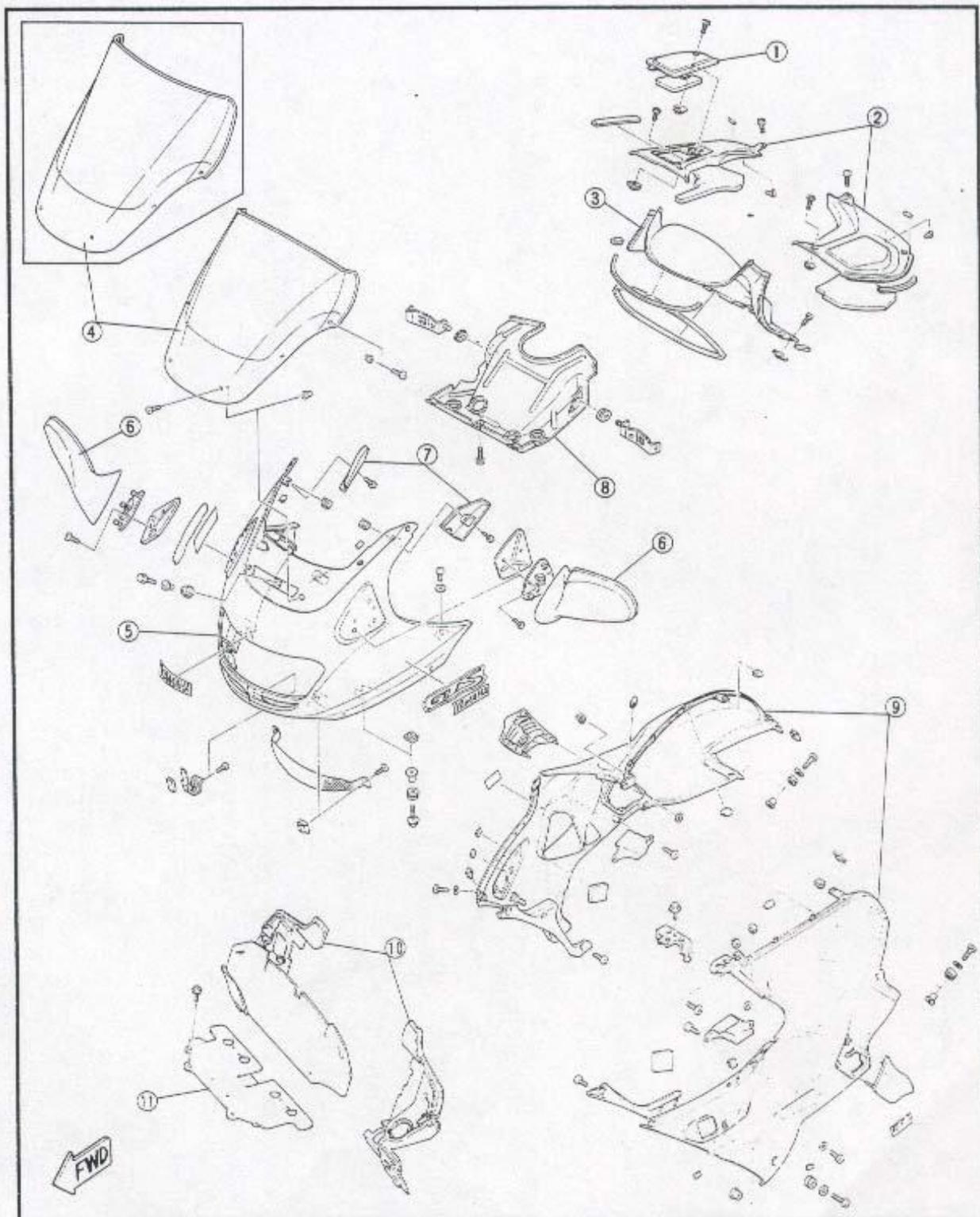
COUPLER LAYOUT DRAWING



PERIODIC INSPECTION AND ADJUSTMENT

COWLING

- | | | |
|----------------------|-------------------------|--------------------------|
| ① Reservoir tank lid | ⑤ Front cowling | ⑨ Side cowling |
| ② Inner panel | ⑥ Rear view mirror | ⑩ Rubber baffles (side) |
| ③ Meter cover | ⑦ Meter cover extension | ⑪ Rubber baffles (lower) |
| ④ Windshield | ⑧ Bottom cover | |

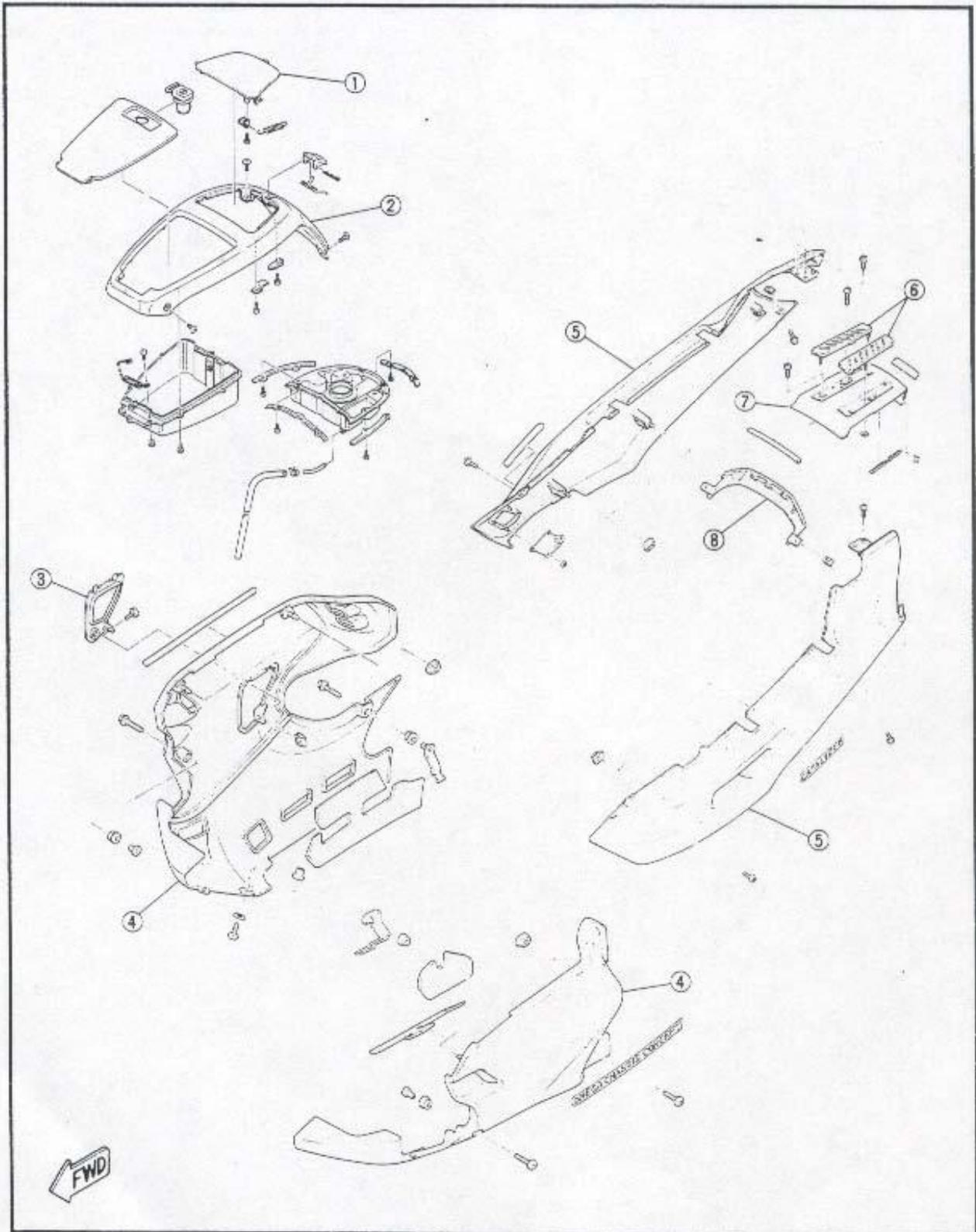


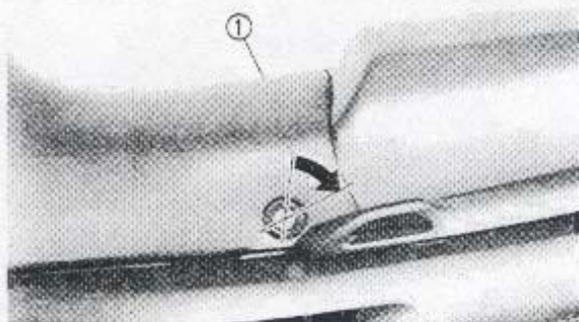
PERIODIC INSPECTION AND ADJUSTMENT

GEN
INFO



- ① Fuel filler lid
- ② Top cover
- ③ Filler cap cover
- ④ Lower cowling
- ⑤ Side cover
- ⑥ Tail cover protector
- ⑦ Tail cover
- ⑧ Side cover bridge





COWLING REMOVAL AND INSTALLATION

Removal

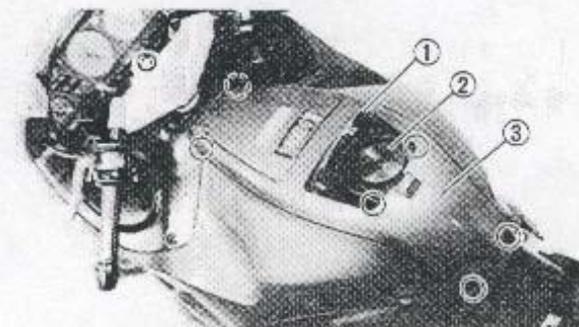
Top cover and cowling

1. Remove:

- Seat ①

NOTE:

Insert the key into the seat lock and turn it clockwise to release the seat lock.

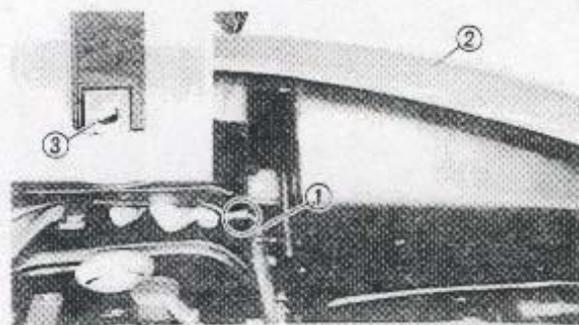


2. Open:

- Fuel filler lid ①

3. Remove:

- Fuel tank cap ②
- Screws (top cover) ③



4. Disconnect:

- Drain hose ① (over flow plate)

NOTE:

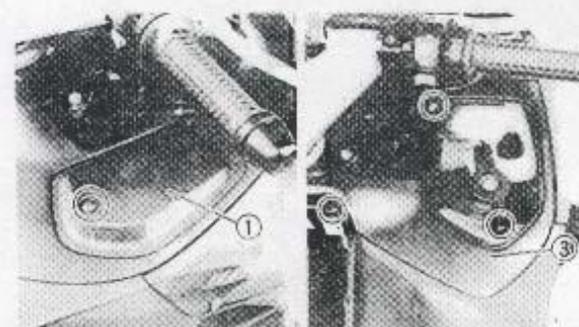
Pull up the top cover ② and disconnect the drain hose.

5. Remove:

- Top cover ②

NOTE:

Be careful not to loose the spring nuts ③.

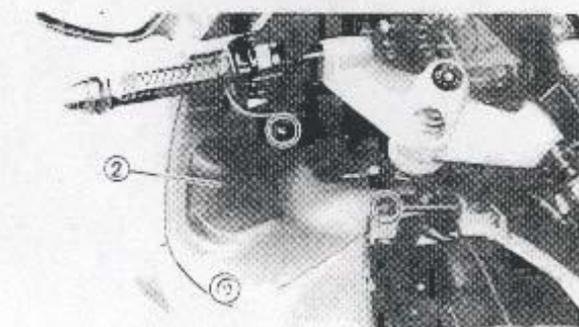


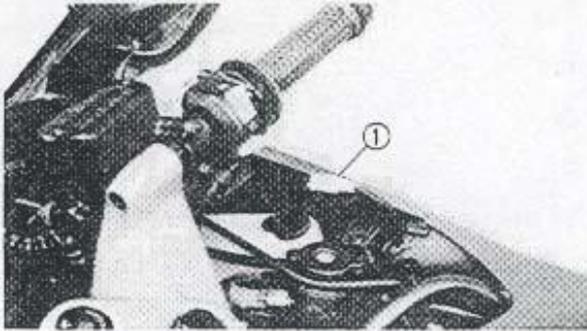
6. Install:

- Fuel tank cap

7. Remove:

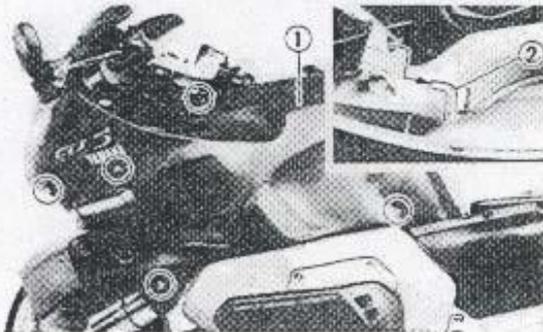
- Reservoir tank lid ①
- Inner panel (left ② and right ③)





8. Disconnect:

- Flasher couplers ① (left and right)

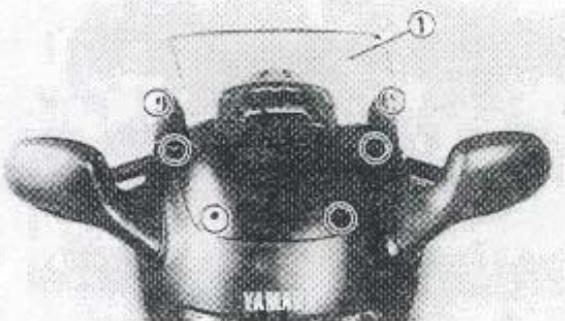


9. Remove:

- Side cowlings ① (left and right)

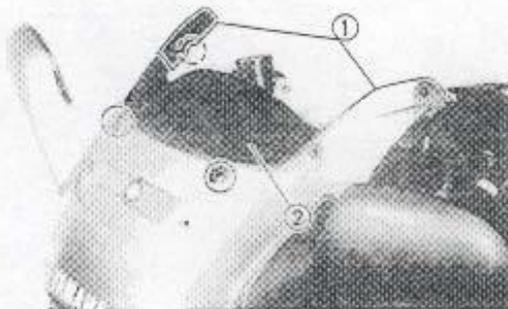
NOTE:

When removing the side cowlings, be careful not to break off the mounting hook ②.



10. Remove:

- Windshield ①

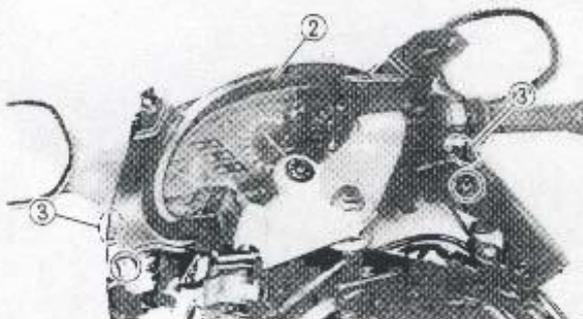


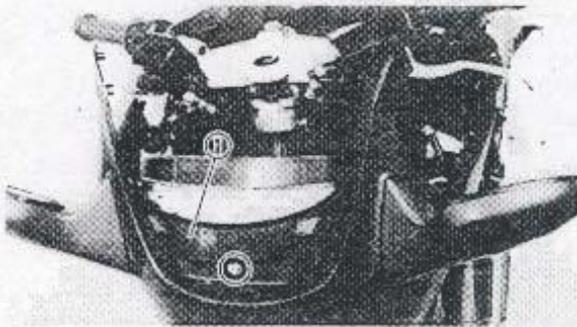
11. Remove:

- Meter cover extensions ①
- Meter cover ②

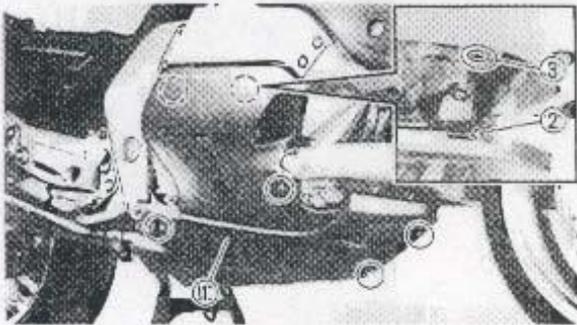
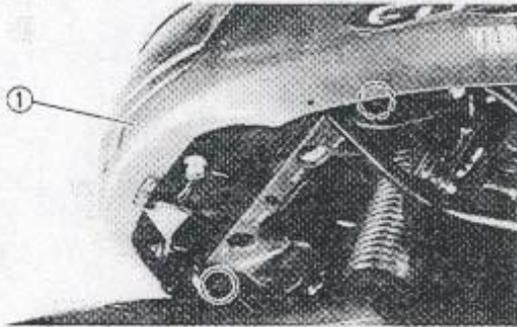
NOTE:

Be careful not to loose the two rubber dampers ③ on the meter cover.





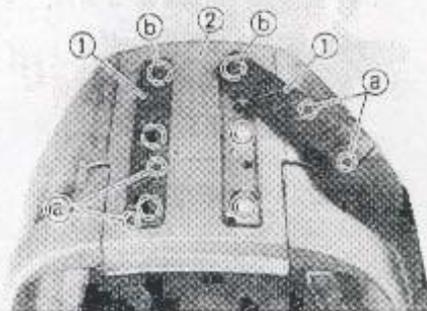
12. Remove:
- Front cowling ①



Side cover and lower cowling

1. Remove:
- Lower cowlings ① (left and right)

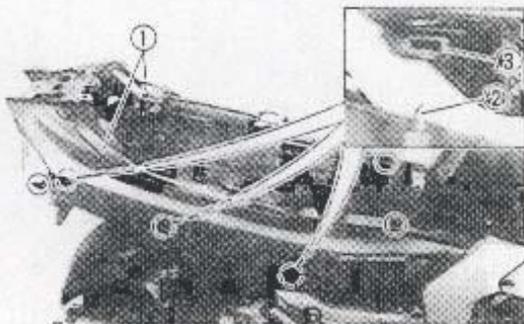
NOTE: _____
 Unhook the projections ② on the inside of the lower cowling from the grommets ③ on the frame.



2. Remove:
- Tail cover protectors ①
 - Tail cover ②

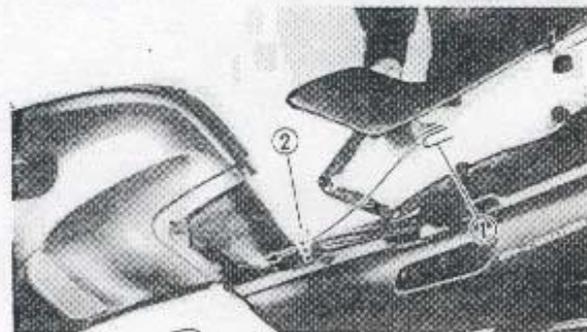
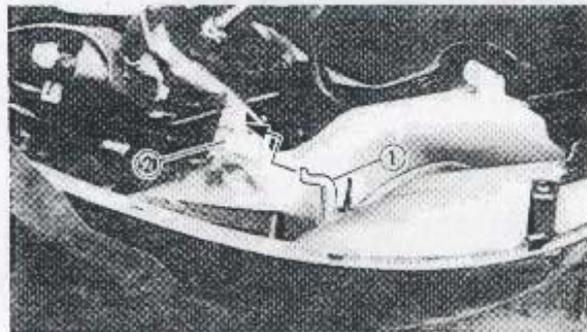
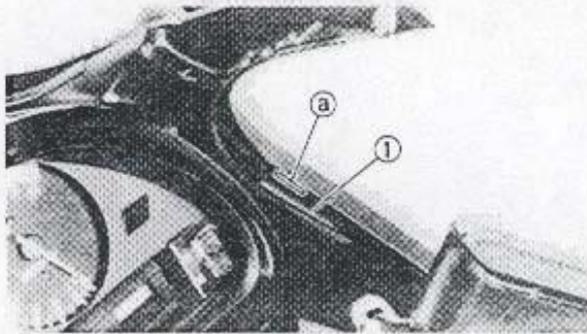
NOTE: _____
 Disconnect knobs ③ and turn the tail cover protectors ①.

CAUTION: _____
 This knob (rear end) ③ can not disconnect.



3. Remove:
- Side cover ① (left and right)

NOTE: _____
 Unhook the projections ② on the inside of the side cover from the grommets ③ on the frame.



Installation

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

Top cover and cowling

1. Install:

- Meter cover

NOTE:

When installing the meter cover, fit the rubber dampers ① into the channels ② on the inside of the front cowling.

2. Install:

- Side cowlings (left and right)

NOTE:

Make sure the hook ① on the inside of the side cover sits correctly behind the frame bracket ②.

3. Install:

- Seat

NOTE:

Insert the lobe ① on the front of the seat into the bracket ② on the frame, then push down the seat end.



FUEL TANK REMOVAL AND INSTALLATION
Removal

1. Place the motorcycle on the centerstand.

2. Remove:

- Seat
- Top cover
- Inner panels
- Side cowlings

Refer to "COWLING REMOVAL AND INSTALLATION".

3. Disconnect:

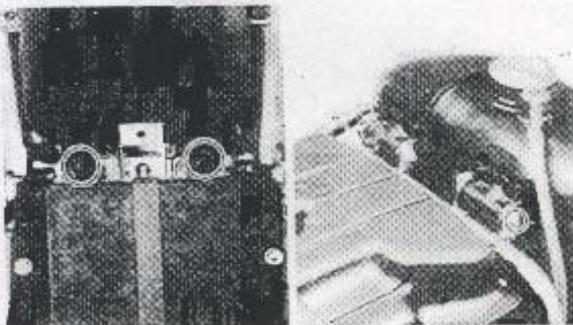
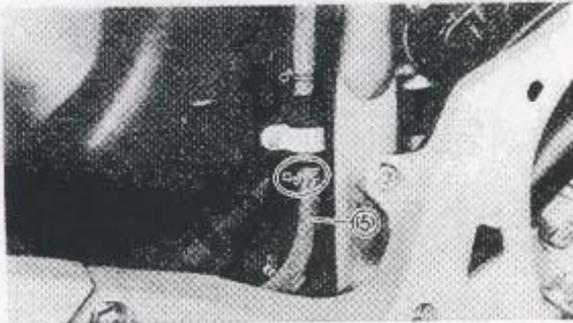
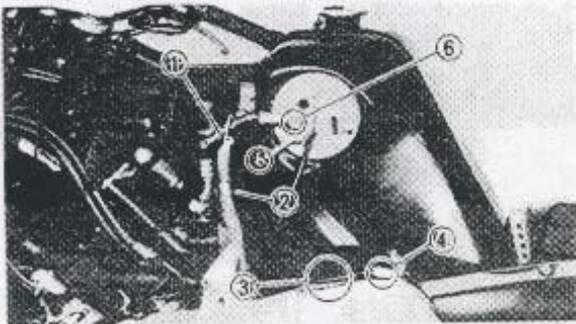
- Fuel delivery hose ①
- Fuel return hose ②
- Fuel sender coupler ③
- Fuel pump coupler ④
- Fuel breather hose ⑤

⚠ WARNING

Gasoline is highly flammable.
Avoid spilling fuel on the hot engine.

NOTE:

Place a rag under the return hose ② and the union bolt ⑥ of the fuel delivery hose to avoid spilling fuel.



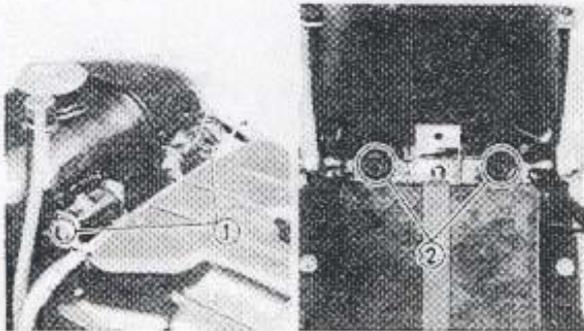
4. Remove:

- Fuel tank



Installation

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

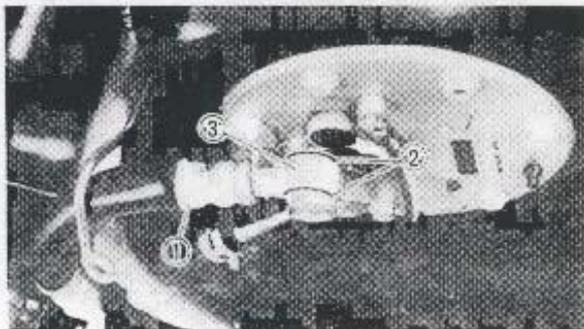


1. Install:
- Fuel tank

	Bolt ① (front): 23 Nm (2.3 m · kg, 17 ft · lb)
	Bolt ② (rear): 16 Nm (1.6 m · kg, 11 ft · lb)

CAUTION:

Be sure the fuel tank breather hose and the tank cap compartment drain hose are correctly routed. Refer to "CABLE ROUTING" in CHAPTER 2.



2. Connect:
- Fuel delivery hose ①

NOTE:

Be sure to place one copper washer ② on each side of the hose fitting ③.

	Union bolt: 30 Nm (3.0 m · kg, 2.2 ft · lb)
--	--

⚠ WARNING

Always use new copper washers.

3. Check:

- Fuel leakage
Leak → Repair.

NOTE:

Turn the main switch "ON" to operate the fuel pump and check for fuel leakage.



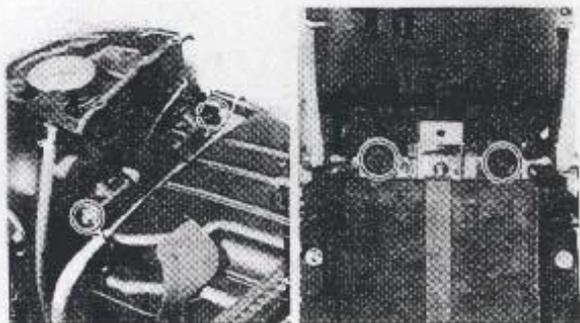
INTAKE AIR PRESSURE SYNCHRONIZATION

The air screws must be adjusted to provide uniform air pressure in all air intake ducts.

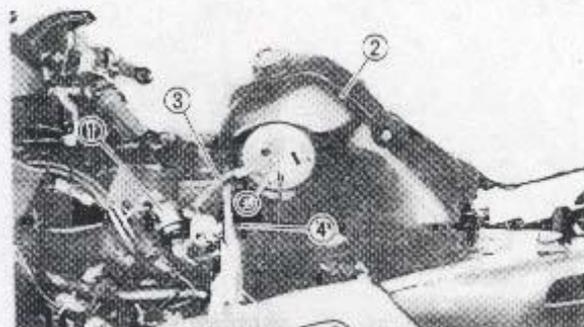
NOTE:

Valve clearance should be adjusted properly before synchronizing the intake air pressure.

1. Place the motorcycle on its centerstand.
2. Remove:
 - Seat
 - Top cover
 - Side cowlings (left and right)
 Refer to "COWLING REMOVAL AND INSTALLATION".



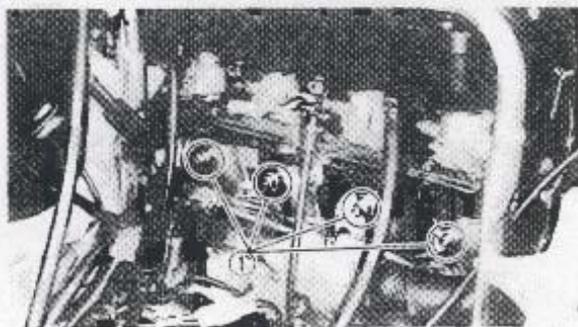
3. Remove:
 - Fuel tank mounting bolts



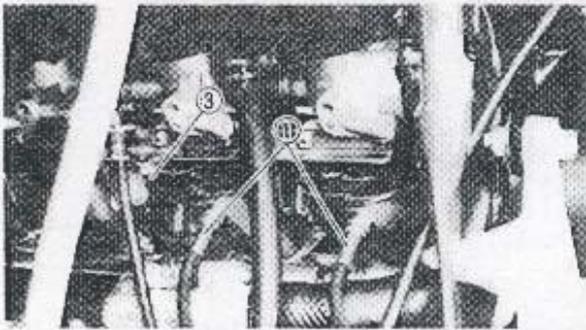
4. Detach the fuel filter ① from the frame, then lift the fuel tank ② up and place it on the left side of the frame without disconnecting the delivery ③ and fuel return hose ④.

CAUTION:

Be careful not to push down the fuel tank while connecting the vacuum gauge.



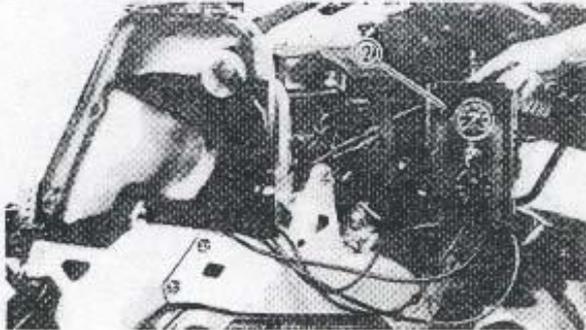
5. Remove:
 - Vacuum check bolts ① (with gasket)



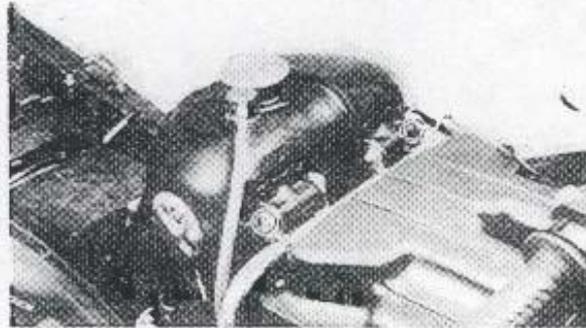
6. Attach:
- Inductive tachometer (to #1 spark plug lead)
 - Adapters ①
 - Vacuum gauge ②



Inductive tachometer:
YU-08036-A/90890-03113
Adapter:
YM-03060/90890-03060
Vacuum gauge:
YU-08030-A/90890-03094



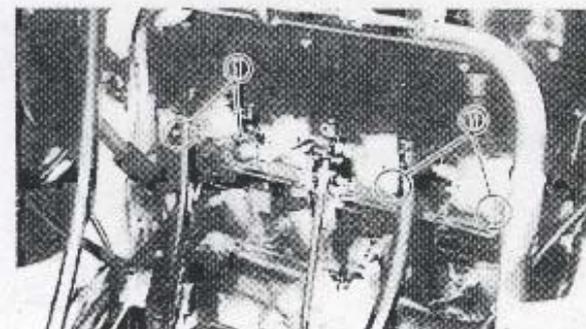
7. Reinstall the fuel tank and secure it provisionally with one of the fuel tank stay bolts. Refer to "FUEL TANK REMOVAL AND INSTALLATION" section.



8. Start the engine and let it warm up for several minutes until the fast idling system ③ cuts out.
9. Check:
- Engine idling speed
Out of specification → Adjust.
Refer to "IDLING SPEED ADJUSTMENT" — CHAPTER 3. in Main Service Manual.



Engine idle speed:
950 ~ 1,050 r/min



10. Adjust:
- Intake air pressure synchronization

- Adjustment steps:**
- Turn the air screws ① in or out until the gauge shows the specified vacuum reading for all four intake ducts.