



**YAMAHA**

**2009**

# **SERVICE MANUAL**

# **FZ6RY(C)**

# ***FZ6R***

Product: 2009 Yamaha FZ6RY(C) Motorcycle Service Repair Workshop Manual  
Full Download: <https://www.arepairmanual.com/downloads/2009-yamaha-fz6ryc-motorcycle-service-repair-workshop-manual/>

Sample of manual. Download All 420 pages at:  
<https://www.arepairmanual.com/downloads/2009-yamaha-fz6ryc-motorcycle-service-repair-workshop-manual/>

EAS20050

**FZ6RY(C)  
SERVICE MANUAL  
©2008 by Yamaha Motor Corporation, U.S.A.  
First edition, December 2008  
All rights reserved.  
Any reproduction or unauthorized use  
without the written permission of  
Yamaha Motor Corporation, U.S.A.  
is expressly prohibited.  
Printed in U.S.A.  
P/N LIT-11616-22-77**

## IMPORTANT

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

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

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

### TIP

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

## IMPORTANT MANUAL INFORMATION

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

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

# HOW TO USE THIS MANUAL

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

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

1  
CLUTCH

**CLUTCH**

Removing the clutch cover

| Order | Job/Parts to remove    | Q'ty | Remarks   |
|-------|------------------------|------|---|
|       | Right front side cover |      | Refer to "GENERAL CHASSIS" on page 4-1.                   |
|       | Engine oil             |      | Drain<br>Refer to "CHANGING THE ENGINE OIL" on page 3-24. |
| 1     | Dipstick               | 1    |   |
| 2     | Holder                 | 1    |   |
| 3     | Clutch cover           | 1    |   |
| 4     | Clutch cover gasket    | 1    |   |
| 5     | Dowel pin              | 2    |   |

For installation, reverse the removal procedure.

5-47

CLUTCH

7. Remove:

- Clutch plate 2 "1"
- Friction plate 3 "2"

8. Remove:

- Spring "1"
- Spring seat plate "2"

9. Remove:

- Collar
- Bearing
- Clutch housing "1"
- Ball
- Push rod 1

**TIP**

- Turn the crankshaft and remove the clutch housing.
- Carefully hung the oil pump drive chain "2" on the main axle to avoid dropping it into the oil pan.
- Be careful not to drop the ball into the oil pan.

**CHECKING THE FRICTION PLATES**  
The following procedure applies to all of the friction plates.

1. Check:

- Friction plate  
Damage/wear → Replace the friction plates as a set.

2. Measure:

- Friction plate thickness  
Out of specification → Replace the friction plates as a set.

**TIP**  
Measure the friction plate at four places.

|   |                               |                               |
|---|-------------------------------|-------------------------------|
| ✂ | Friction plate 1, 2 thickness | 2.92-3.08 mm (0.115-0.121 in) |
|   | Wear limit                    | 2.80 mm (0.1102 in)           |
| ✂ | Friction plate 3 thickness    | 2.94-3.06 mm (0.116-0.120 in) |
|   | Wear limit                    | 2.84 mm (0.1118 in)           |

**CHECKING THE CLUTCH PLATES**  
The following procedure applies to all of the clutch plates.

1. Check:

- Clutch plate  
Damage → Replace the clutch plates as a set.

2. Measure:

- Clutch plate warpage  
(with a surface plate and thickness gauge "1")  
Out of specification → Replace the clutch plates as a set.

|   |               |                     |
|---|---------------|---------------------|
| ✂ | Warpage limit | 0.10 mm (0.0039 in) |
|---|---------------|---------------------|

5-51

## SYMBOLS

The following symbols are used in this manual for easier understanding.

### TIP

The following symbols are not relevant to every vehicle.

| SYMBOL  | DEFINITION                      | SYMBOL  | DEFINITION                       |
|---|---------------------------------|---|----------------------------------|
|    | Serviceable with engine mounted |    | Gear oil                         |
|    | Filling fluid                   |    | Molybdenum disulfide oil         |
|    | Lubricant                       |    | Brake fluid                      |
|    | Special tool                    |    | Wheel bearing grease             |
|   | Tightening torque               |   | Lithium-soap-based grease        |
|  | Wear limit, clearance           |  | Molybdenum disulfide grease      |
|  | Engine speed                    |  | Silicone grease                  |
|  | Electrical data                 |  | Apply locking agent (LOCTITE®).  |
|  | Engine oil                      |  | Replace the part with a new one. |

# TABLE OF CONTENTS

|  |          |
|--|----------|
| <b>GENERAL INFORMATION</b>                 | <b>1</b> |
| <b>SPECIFICATIONS</b>                      | <b>2</b> |
| <b>PERIODIC CHECKS AND<br/>ADJUSTMENTS</b> | <b>3</b> |
| <b>CHASSIS</b>                             | <b>4</b> |
| <b>ENGINE</b>                              | <b>5</b> |
| <b>COOLING SYSTEM</b>                      | <b>6</b> |
| <b>FUEL SYSTEM</b>                         | <b>7</b> |
| <b>ELECTRICAL SYSTEM</b>                   | <b>8</b> |
| <b>TROUBLESHOOTING</b>                     | <b>9</b> |



---

## GENERAL INFORMATION

|   |             |
|---|-------------|
| <b>IDENTIFICATION</b> .....                   | <b>1-1</b>  |
| VEHICLE IDENTIFICATION NUMBER.....            | 1-1         |
| MODEL LABEL .....                             | 1-1         |
| <br>  |             |
| <b>FEATURES</b> .....                         | <b>1-2</b>  |
| OUTLINE OF FI SYSTEM.....                     | 1-2         |
| FI SYSTEM .....                               | 1-3         |
| INSTRUMENT FUNCTIONS.....                     | 1-4         |
| <br>  |             |
| <b>IMPORTANT INFORMATION</b> .....            | <b>1-7</b>  |
| PREPARATION FOR REMOVAL AND DISASSEMBLY ..... | 1-7         |
| REPLACEMENT PARTS .....                       | 1-7         |
| GASKETS, OIL SEALS AND O-RINGS .....          | 1-7         |
| LOCK WASHERS/PLATES AND COTTER PINS.....      | 1-7         |
| BEARINGS AND OIL SEALS.....                   | 1-8         |
| CIRCLIPS.....                                 | 1-8         |
| <br>  |             |
| <b>CHECKING THE CONNECTIONS</b> .....         | <b>1-9</b>  |
| REMOVING THE QUICK FASTENER .....             | 1-10        |
| INSTALLING THE QUICK FASTENER.....            | 1-11        |
| <br>  |             |
| <b>SPECIAL TOOLS</b> .....                    | <b>1-12</b> |

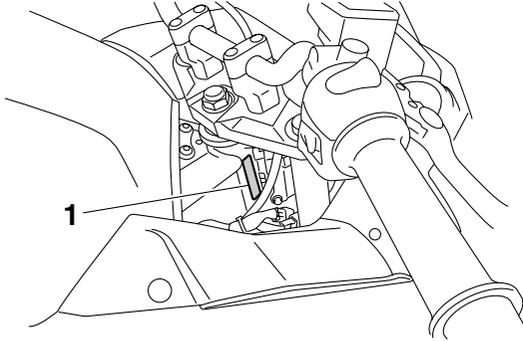
EAS20130

## IDENTIFICATION

EAS20140

### VEHICLE IDENTIFICATION NUMBER

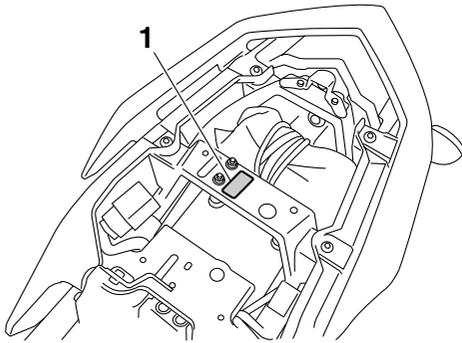
The vehicle identification number "1" is stamped into the right side of the steering head pipe.



EAS20150

### MODEL LABEL

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



EAS20170

## FEATURES

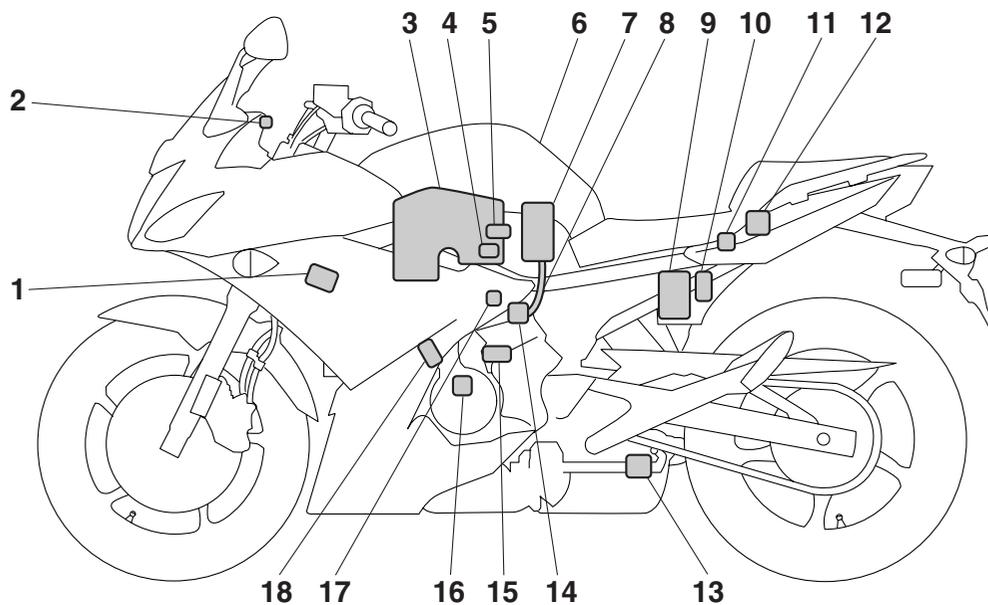
EAS4B51038

### OUTLINE OF FI SYSTEM

The main function of a fuel supply system is to provide fuel to the combustion chamber at the optimum air-fuel ratio in accordance with the engine operating conditions. In a conventional carburetor system, the air-fuel ratio of the mixture that is supplied to the combustion chamber is created by the volume of the intake air and the fuel that is metered by the jet used in the respective chamber. Despite the same volume of intake air, the fuel volume requirement varies with the engine operating conditions, such as acceleration, deceleration, or operation under a heavy load. Carburetors that meter the fuel through the use of jets have been provided with various auxiliary devices, so that an optimum air-fuel ratio can be achieved to accommodate the constant changes in the operating conditions of the engine.

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

Adoption of the FI system has resulted in a highly precise fuel supply, improved engine response, better fuel economy, and reduced exhaust emissions. Furthermore, the air induction system (AI system) has been placed under computer control together with the FI system in order to realize cleaner exhaust gases.



- |                                  |                                |
|----------------------------------|--------------------------------|
| 1. Ignition coil                 | 13. Catalyst                   |
| 2. Engine trouble warning light  | 14. Fuel injector              |
| 3. Air filter case               | 15. Coolant temperature sensor |
| 4. Intake air pressure sensor    | 16. Crankshaft position sensor |
| 5. Intake air temperature sensor | 17. Throttle position sensor   |
| 6. Fuel tank                     | 18. Spark plug                 |
| 7. Fuel pump                     |                                |
| 8. Fuel hose                     |                                |
| 9. Battery                       |                                |
| 10. ECU (engine control unit)    |                                |
| 11. Lean angle sensor            |                                |
| 12. Relay unit                   |                                |

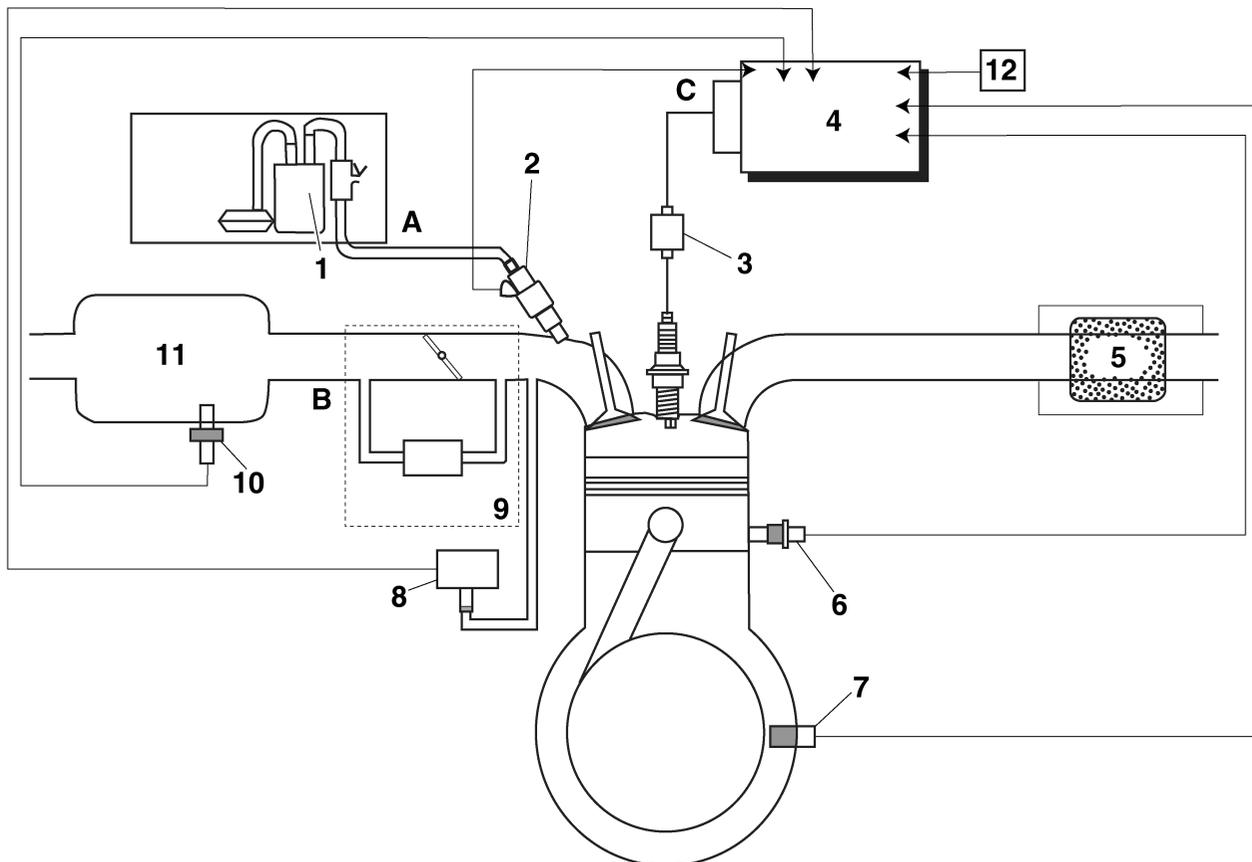
EAS4B51039

## FI SYSTEM

The fuel pump delivers fuel to the fuel injector via the fuel filter. The pressure regulator (in the fuel pump) maintains the fuel pressure that is applied to the fuel injector at 245–255 kPa (2.45–2.55 kgf/cm<sup>2</sup>, 35.5–37.0 psi) higher than the intake manifold pressure. Accordingly, when the energizing signal from the ECU (engine control unit) energizes the fuel injector, the fuel passage opens, causing the fuel to be injected into the intake manifold only during the time the passage remains open. Therefore, the longer the length of time the fuel injector is energized (injection duration), the greater the volume of fuel that is supplied. Conversely, the shorter the length of time the fuel injector is energized (injection duration), the lesser the volume of fuel that is supplied.

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

Illustration is for reference only.



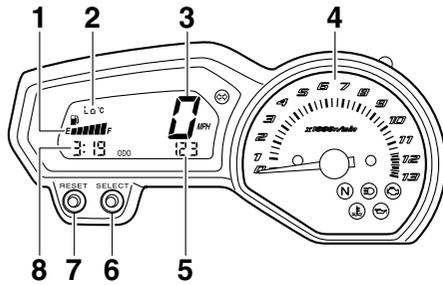
1. Fuel pump
2. Fuel injector
3. Ignition coil
4. ECU (engine control unit)
5. Catalyst
6. Coolant temperature sensor
7. Crankshaft position sensor
8. Intake air pressure sensor
9. Throttle body
10. Intake air temperature sensor

11. Air filter case
12. Throttle position sensor
- A. Fuel system
- B. Air system
- C. Control system

EAS20S1001

## INSTRUMENT FUNCTIONS

### Multi-function meter unit



1. Fuel meter
2. Coolant temperature display
3. Speedometer
4. Tachometer
5. Odometer/tripmeter/fuel reserve tripmeter
6. "SELECT" button
7. "RESET" button
8. Clock

EWA20S1001

### **WARNING**

Be sure to stop the vehicle before making any setting changes to the multi-function meter unit. Changing settings while riding can distract the operator and increase the risk of an accident.

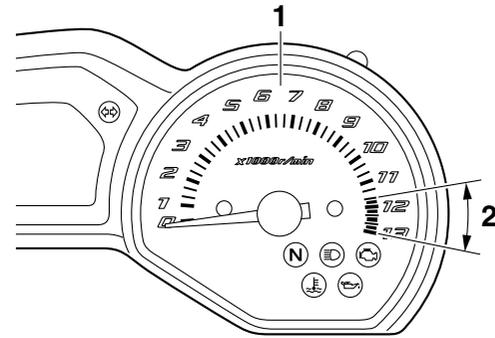
The multi-function meter unit is equipped with the following:

- a speedometer
- a tachometer
- an odometer
- two tripmeters (which show the distance traveled since they were last set to zero)
- a fuel reserve tripmeter (which shows the distance traveled since the left segment of the fuel meter started flashing)
- a clock
- a fuel meter
- a coolant temperature display
- a self-diagnosis device

### TIP

- Be sure to turn the key to "ON" before using the "SELECT" and "RESET" buttons.
- To switch the speedometer and odometer/tripmeter displays between kilometers and miles, press the "SELECT" button for at least one second.

## Tachometer



1. Tachometer
2. Tachometer red zone

The electric tachometer allows the rider to monitor the engine speed and keep it within the ideal power range.

When the key is turned to "ON", the tachometer needle will sweep once across the r/min range and then return to zero r/min in order to test the electrical circuit.

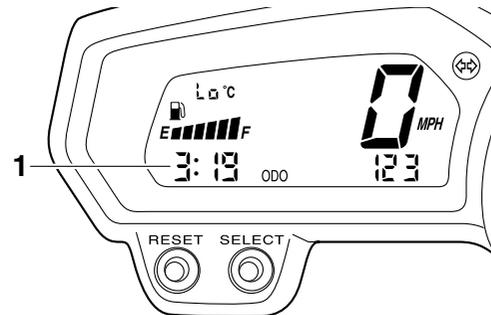
ECA20S1006

### **NOTICE**

Do not operate the engine in the tachometer red zone.

**Red zone: 11666 r/min and above**

## Clock



1. Clock

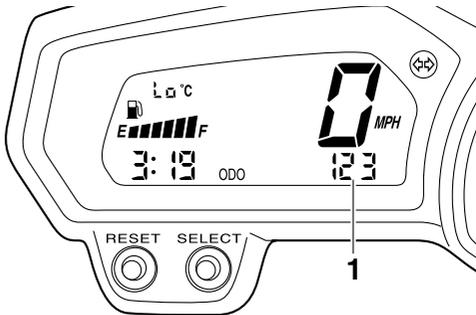
The clock displays when the key is turned to "ON". In addition, the clock can be displayed for 10 seconds by pushing the "SELECT" button when the main switch is in the "OFF" or "LOCK" position.

### To set the clock

1. Turn the key to "ON".
2. Push the "SELECT" button and "RESET" button together for at least two seconds.
3. When the hour digits start flashing, push the "RESET" button to set the hours.

4. Push the “SELECT” button, and the minute digits will start flashing.
5. Push the “RESET” button to set the minutes.
6. Push the “SELECT” button and then release it to start the clock.

## Odometer and tripmeter modes



### 1. Odometer/tripmeter/fuel reserve tripmeter

Push the “SELECT” button to switch the display between the odometer mode “ODO” and the tripmeter modes “TRIP A” and “TRIP B” in the following order:

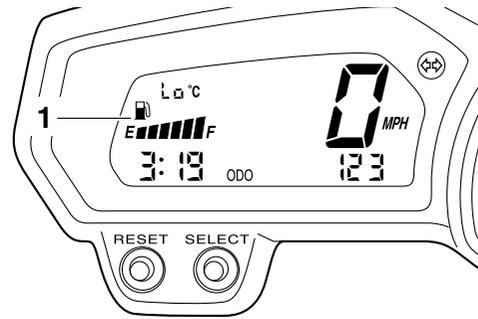
TRIP A → TRIP B → ODO → TRIP A

When the fuel amount in the fuel tank decreases to 3.2 L (0.85 US gal, 0.70 Imp.gal), the left segment of the fuel meter will start flashing, and the odometer display will automatically change to the fuel reserve tripmeter mode “F-TRIP” and start counting the distance traveled from that point. In that case, push the “SELECT” button to switch the display between the various tripmeter and odometer modes in the following order:

F-TRIP → TRIP A → TRIP B → ODO → F-TRIP

To reset a tripmeter, select it by pushing the “SELECT” button, and then push the “RESET” button for at least one second. If you do not reset the fuel reserve tripmeter manually, it will reset itself automatically and the display will return to the prior mode after refueling and traveling 5 km (3 mi).

## Fuel meter



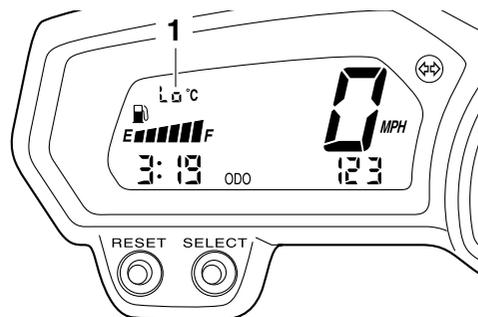
### 1. Fuel meter

The fuel meter indicates the amount of fuel in the fuel tank. The display segments of the fuel meter disappear towards “E” (Empty) as the fuel level decreases. When the last segment on the left starts flashing, refuel as soon as possible.

#### TIP

This fuel meter is equipped with a self-diagnosis system. If a problem is detected in the electrical circuit, the following cycle is repeated until the malfunction is corrected: fuel level segments and symbol “” flash eight times, then go off for approximately 3 seconds. If this occurs, check the electrical circuit. Refer to “SIGNALING SYSTEM” on page 8-19.

## Coolant temperature mode



### 1. Coolant temperature display

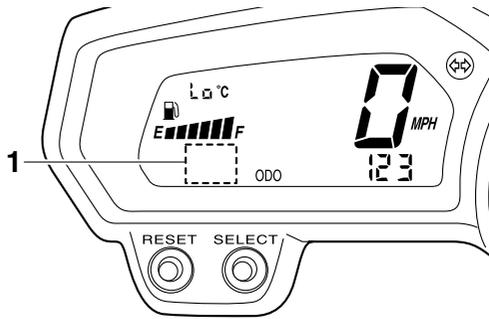
The coolant temperature display indicates the temperature of the coolant.

ECA20S1007

#### NOTICE

**Do not continue to operate the engine if it is overheating.**

## Self-diagnosis device



### 1. Error code display

This model is equipped with a self-diagnosis device for various electrical circuits.

If a problem is detected in any of those circuits, the engine trouble warning light will come on and the display will indicate an error code.

If the display indicates any error codes, note the code number, and then check the vehicle.

ECA20S1008

#### **NOTICE**

**If the display indicates an error code, the vehicle should be checked as soon as possible in order to avoid engine damage.**

EAS20180

## IMPORTANT INFORMATION

EAS20190

### PREPARATION FOR REMOVAL AND DISASSEMBLY

1. Before removal and disassembly, remove all dirt, mud, dust and foreign material.



2. Use only the proper tools and cleaning equipment. Refer to "SPECIAL TOOLS" on page 1-12.
3. When disassembling, always keep mated parts together. This includes gears, cylinders, pistons and other parts that have been "mated" through normal wear. Mated parts must always be reused or replaced as an assembly.

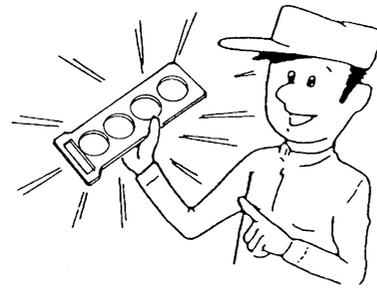


4. During disassembly, clean all of the parts and place them in trays in the order of disassembly. This will speed up assembly and allow for the correct installation of all parts.
5. Keep all parts away from any source of fire.

EAS20200

### REPLACEMENT PARTS

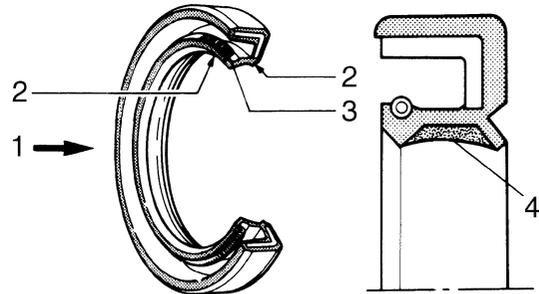
Use only genuine Yamaha parts for all replacements. Use oil and grease recommended by Yamaha for all lubrication jobs. Other brands may be similar in function and appearance, but inferior in quality.



EAS20210

### GASKETS, OIL SEALS AND O-RINGS

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

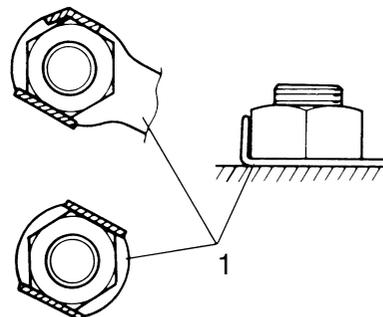


1. Oil
2. Lip
3. Spring
4. Grease

EAS20220

### LOCK WASHERS/PLATES AND COTTER PINS

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



EAS20230

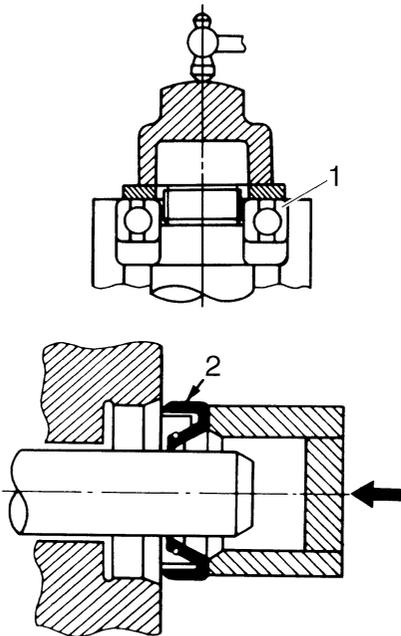
## BEARINGS AND OIL SEALS

Install bearings "1" and oil seals "2" so that the manufacturer's marks or numbers are visible. When installing oil seals, lubricate the oil seal lips with a light coat of lithium-soap-based grease. Oil bearings liberally when installing, if appropriate.

ECA13300

### NOTICE

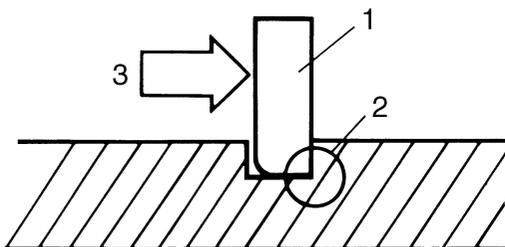
**Do not spin the bearing with compressed air because this will damage the bearing surfaces.**



EAS20240

## CIRCLIPS

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



# CHECKING THE CONNECTIONS

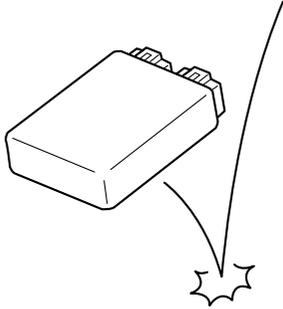
EAS20250

## CHECKING THE CONNECTIONS

ECA20S1001

### NOTICE

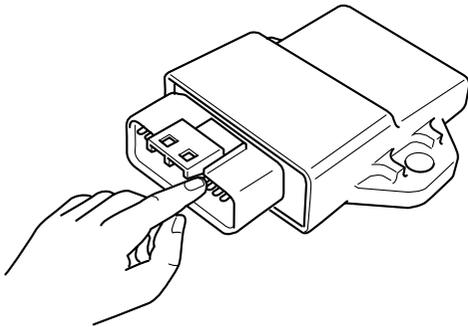
Electronic parts are very sensitive. Handle with care and do not give impact.



ECA20S1002

### NOTICE

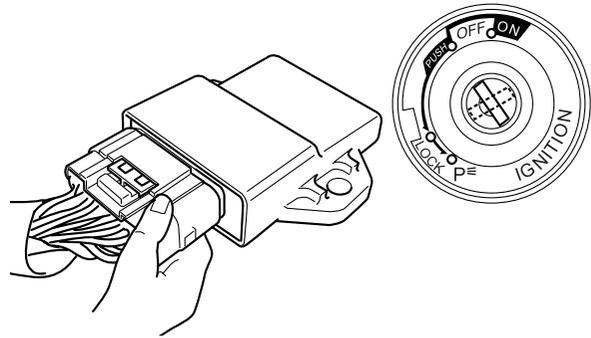
- Mankind has static electricity. It's voltage is very high and electronic parts are very sensitive.
- It is possible that inner small components of electronic parts are destroyed by static electricity.
- Do not touch and do not make them dirty.



ECA20S1003

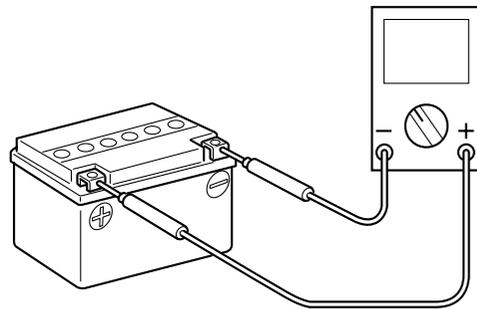
### NOTICE

- When you disconnect electronic parts from the wire harness, always turn off the main switch.
- If you disconnect above condition, it may damage the electronic parts.



### TIP

When you check the electric system of a motorcycle, check the battery voltage before. Minimum 11V is requested to check each component function.



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

#### 1. Disconnect:

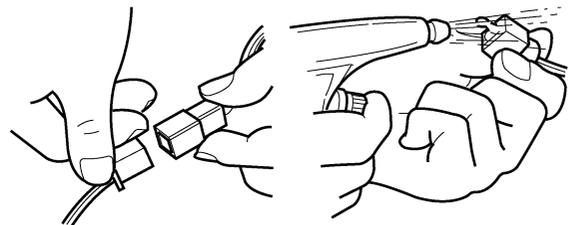
- Lead
- Coupler
- Connector

#### 2. Check:

- Lead
- Coupler
- Connector

Moisture → Dry with an air blower.

Rust/stains → Connect and disconnect several times.



#### 3. Check:

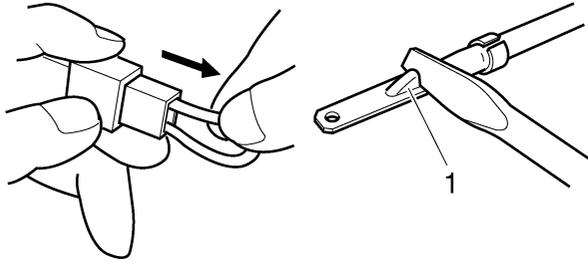
- All connections

Loose connection → Connect properly.

# CHECKING THE CONNECTIONS

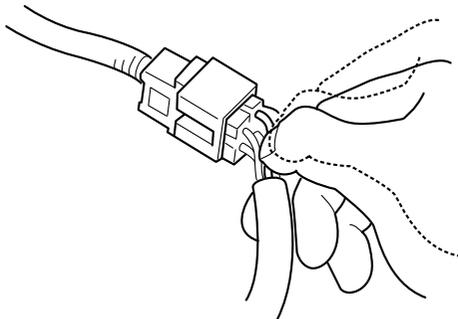
**TIP**

If the pin "1" on the terminal is flattened, bend it up.



**TIP**

If the contact seems not good, pull the terminal by hand and check its condition.



4. Connect:

- Lead
- Coupler
- Connector

**TIP**

Make sure all connections are tight.

5. Check:

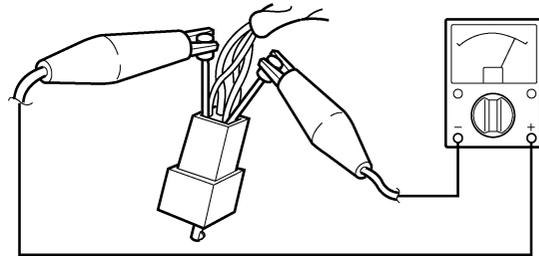
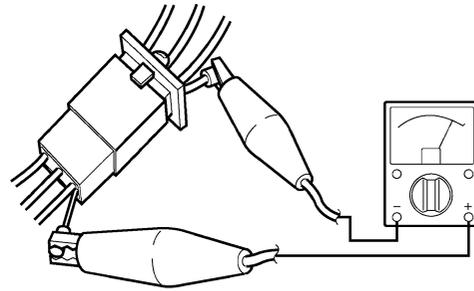
- Continuity  
(with the pocket tester)



**Pocket tester**  
90890-03112  
**Analog pocket tester**  
YU-03112-C

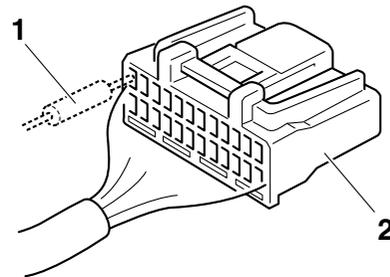
**TIP**

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



**TIP**

When you check the voltage or electrical continuity, insert the measuring probe from back side as you can insert from back side.



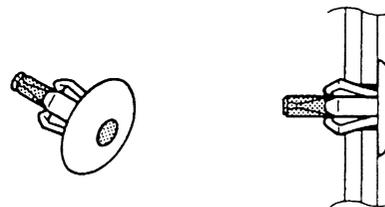
1. Probe
2. Coupler

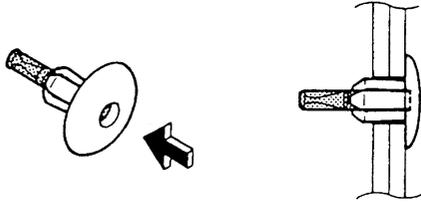
EAS21840

## REMOVING THE QUICK FASTENER

**TIP**

To remove the quick fastener, push its center with a screwdriver, then pull the fastener out.





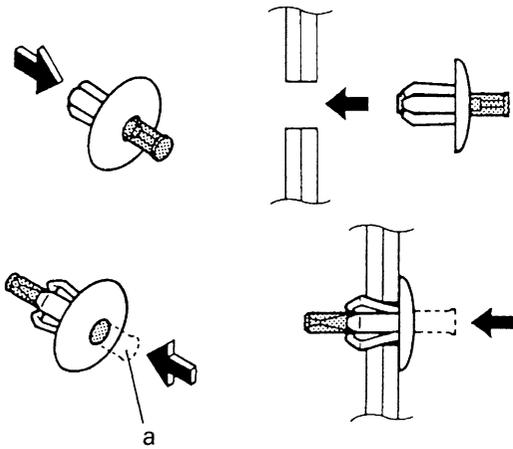
EAS21850

## INSTALLING THE QUICK FASTENER

### TIP

To install the quick fastener, push its pin so that it protrudes from the fastener head, then insert the fastener into the cover and push the pin "a" in with screwdriver. Make sure that the pin is flush with the fastener's head.

---



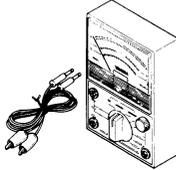
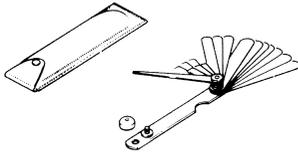
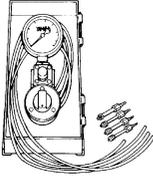
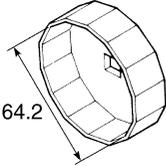
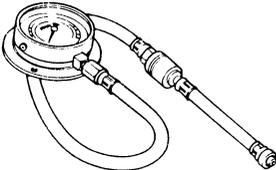
EAS20260

## SPECIAL TOOLS

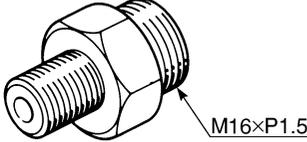
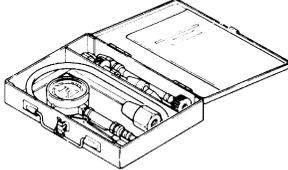
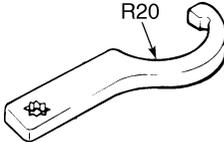
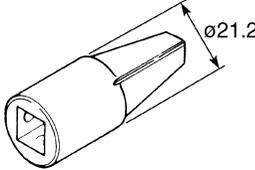
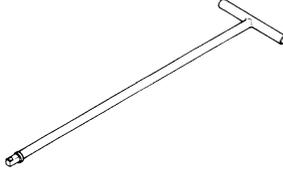
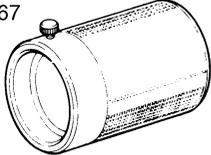
The following special tools are necessary for complete and accurate tune-up and assembly. Use only the appropriate special tools as this will help prevent damage caused by the use of inappropriate tools or improvised techniques. Special tools, part numbers or both may differ depending on the country.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

### TIP

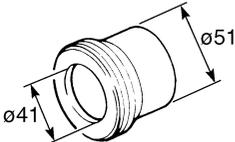
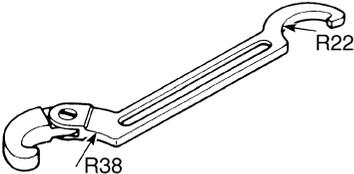
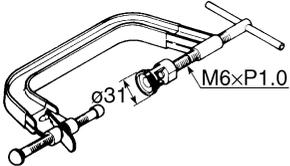
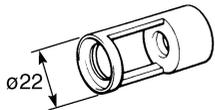
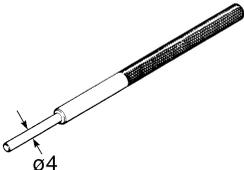
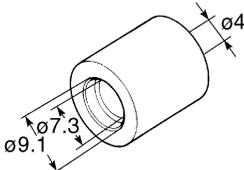
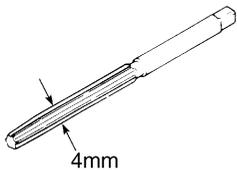
- For U.S.A. and Canada, use part number starting with “YM-”, “YU-”, or “ACC-”.
- For others, use part number starting with “90890-”.

| Tool name/Tool No.   | Illustration  | Reference pages           |
|--|---|---------------------------|
| Pocket tester<br>90890-03112<br>Analog pocket tester<br>YU-03112-C |                   | 1-10, 8-77,<br>8-85, 8-91 |
| Thickness gauge<br>90890-03079<br>Narrow gauge set<br>YM-34483     |                  | 3-6                       |
| Valve lapper<br>90890-04101<br>Valve lapping tool<br>YM-A8998      |                 | 3-6, 5-24                 |
| Vacuum gauge<br>90890-03094<br>Carburetor synchronizer<br>YU-44456 | 90890-03094<br> | 3-9                       |
| Oil filter wrench<br>90890-01426<br>YU-38411                       |                 | 3-23                      |
| Pressure gauge<br>90890-03153<br>YU-03153                          |                 | 3-24, 7-7, 7-9            |

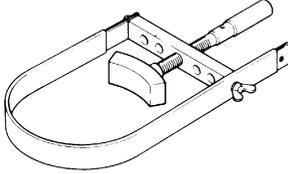
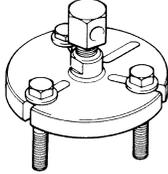
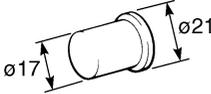
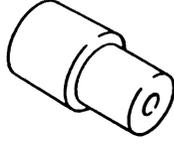
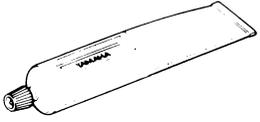
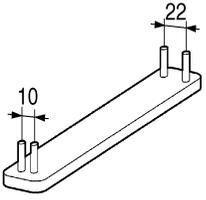
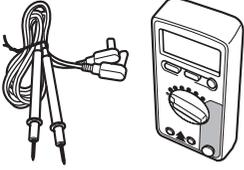
# SPECIAL TOOLS

| Tool name/Tool No.   | Illustration   | Reference pages |
|--|--|-----------------|
| Oil pressure adapter H<br>90890-03139                                      |    | 3-24            |
| Compression gauge<br>90890-03081<br>Engine compression tester<br>YU-33223  |    | 5-18            |
| Steering nut wrench<br>90890-01403<br>Spanner wrench<br>YU-33975           |    | 3-18, 4-53      |
| Damper rod holder<br>90890-01460   |   | 4-46, 4-48      |
| T-handle<br>90890-01326<br>YM-01326  |    | 4-46, 4-48      |
| Fork seal driver weight<br>90890-01367<br>Replacement hammer<br>YM-A9409-7 | <p data-bbox="764 1464 894 1491">90890-01367</p>  <p data-bbox="764 1693 1013 1721">YM-A9409-7/YM-A5142-4</p>  | 4-48, 4-49      |

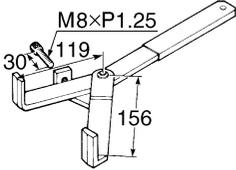
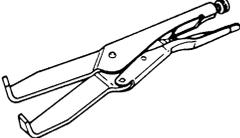
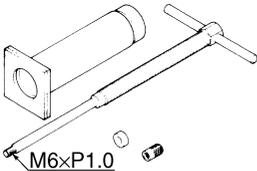
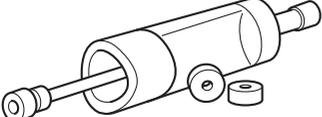
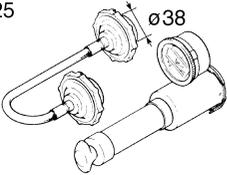
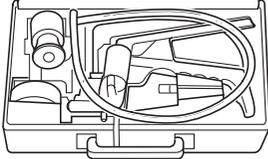
# SPECIAL TOOLS

| Tool name/Tool No.   | Illustration   | Reference pages |
|--|--|-----------------|
| Fork seal driver attachment ( $\phi 41$ )<br>90890-01381<br>Replacement 41 mm<br>YM-A5142-2            |    | 4-48            |
| Ring nut wrench<br>90890-01268<br>Spanner wrench<br>YU-1268  |    | 4-53            |
| Valve spring compressor<br>90890-04019<br>YM-04019   |    | 5-21, 5-26      |
| Valve spring compressor attachment<br>90890-04108<br>Valve spring compressor adapter 22 mm<br>YM-04108 |  | 5-21, 5-26      |
| Valve guide remover ( $\phi 4$ )<br>90890-04111<br>Valve guide remover (4.0 mm)<br>YM-04111            |  | 5-22            |
| Valve guide installer ( $\phi 4$ )<br>90890-04112<br>Valve guide installer (4.0 mm)<br>YM-04112        |  | 5-22            |
| Valve guide reamer ( $\phi 4$ )<br>90890-04113<br>Valve guide reamer (4.0 mm)<br>YM-04113              |  | 5-22            |

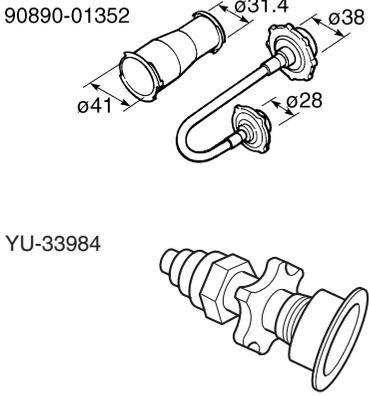
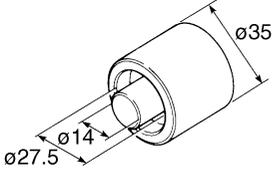
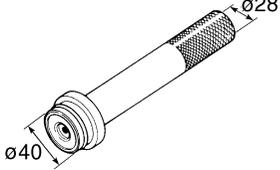
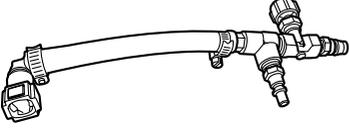
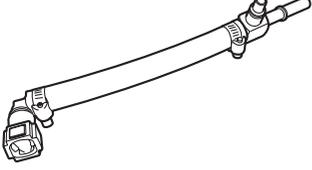
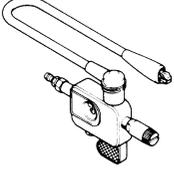
# SPECIAL TOOLS

| Tool name/Tool No.   | Illustration  | Reference pages  |
|--|---|--|
| Sheave holder<br>90890-01701<br>Primary clutch holder<br>YS-01880-A                      |   | 5-30, 5-31,<br>5-32  |
| Flywheel puller<br>90890-01362<br>Heavy duty puller<br>YU-33270-B                        |   | 5-30   |
| Flywheel puller attachment<br>90890-04089<br>Crankshaft protector<br>YM-33282            | <p data-bbox="764 761 894 789">90890-04089</p>  <p data-bbox="764 995 873 1023">YM-33282</p>  | 5-30   |
| Yamaha bond No. 1215<br>(Three bond No.1215®)<br>90890-85505                             |   | 5-32, 5-34,<br>5-61, 6-12  |
| Camshaft wrench<br>90890-04143<br>YM-04143   |   | 5-34   |
| Digital circuit tester<br>90890-03174<br>Model 88 Multimeter with tachometer<br>YU-A1927 |   | 5-38, 7-10,<br>8-78, 8-79,<br>8-83, 8-84,<br>8-86, 8-87,<br>8-88, 8-89,<br>8-90, 8-91,<br>8-93 |

# SPECIAL TOOLS

| Tool name/Tool No.  | Illustration  | Reference pages |
|---|---|-----------------|
| Universal clutch holder<br>90890-04086<br>YM-91042                            | <p data-bbox="764 300 894 321">90890-04086</p>  <p data-bbox="764 527 870 549">YM-91042</p>             | 5-50, 5-54      |
| Piston pin puller set<br>90890-01304<br>Piston pin puller<br>YU-01304         | <p data-bbox="756 746 878 768">90890-01304</p>  <p data-bbox="764 985 862 1006">YU-01304</p>          | 5-66            |
| Radiator cap tester<br>90890-01325<br>Radiator pressure tester<br>YU-24460-01 | <p data-bbox="756 1210 878 1232">90890-01325</p>  <p data-bbox="764 1453 894 1474">YU-24460-01</p>  | 6-3             |

# SPECIAL TOOLS

| Tool name/Tool No.   | Illustration   | Reference pages |
|--|--|-----------------|
| Radiator cap tester adapter<br>90890-01352<br>Radiator pressure tester adapter<br>YU-33984 |    | 6-3             |
| Mechanical seal installer<br>90890-04078<br>Water pump seal installer<br>YM-33221-A        |    | 6-12            |
| Middle driven shaft bearing driver<br>90890-04058<br>Bearing driver 40 mm<br>YM-04058      |   | 6-12            |
| Fuel injector pressure adapter<br>90890-03210<br>YU-03210                                  |  | 7-7             |
| Fuel pressure adapter<br>90890-03176<br>YM-03176   |  | 7-9             |
| Ignition checker<br>90890-06754<br>Opama pet-4000 spark checker<br>YM-34487                |  | 8-85            |

---

## SPECIFICATIONS

|   |      |
|---|------|
| GENERAL SPECIFICATIONS .....                  | 2-1  |
| ENGINE SPECIFICATIONS .....                   | 2-2  |
| CHASSIS SPECIFICATIONS.....                   | 2-9  |
| ELECTRICAL SPECIFICATIONS.....                | 2-12 |
| TIGHTENING TORQUES.....                       | 2-14 |
| GENERAL TIGHTENING TORQUE SPECIFICATIONS..... | 2-14 |
| ENGINE TIGHTENING TORQUES.....                | 2-14 |
| CHASSIS TIGHTENING TORQUES.....               | 2-18 |
| LUBRICATION POINTS AND LUBRICANT TYPES .....  | 2-22 |
| ENGINE.....                                   | 2-22 |
| CHASSIS.....                                  | 2-23 |
| LUBRICATION SYSTEM CHART AND DIAGRAMS .....   | 2-25 |
| ENGINE OIL LUBRICATION CHART .....            | 2-25 |
| LUBRICATION DIAGRAMS .....                    | 2-27 |
| COOLING SYSTEM DIAGRAMS.....                  | 2-39 |
| CABLE ROUTING.....                            | 2-41 |

# GENERAL SPECIFICATIONS

---

EAS20280

## GENERAL SPECIFICATIONS

|       |  |
|-------|--|
| Model | FZ6RY 36P1 (U49)<br>FZ6RY 36P4 (U49)<br>FZ6RYC 36P2 (CAL)<br>FZ6RYC 36P5 (CAL) |
|-------|--|

---

### Dimensions

|                        |                    |
|------------------------|--------------------|
| Overall length         | 2120 mm (83.5 in)  |
| Overall width          | 770 mm (30.3 in)   |
| Overall height         | 1185 mm (46.7 in)  |
| Seat height            | 785 mm (30.9 in)   |
| Wheelbase              | 1440 mm (56.7 in)  |
| Ground clearance       | 140 mm (5.51 in)   |
| Minimum turning radius | 2800 mm (110.2 in) |

---

### Weight

|                   |   |
|-------------------|---|
| With oil and fuel | FZ6RY 212.0 kg (467 lb)<br>FZ6RYC 213.0 kg (470 lb) |
| Maximum load      | FZ6RY 188 kg (414 lb)<br>FZ6RYC 187 kg (412 lb)     |

# ENGINE SPECIFICATIONS

EAS20290

## ENGINE SPECIFICATIONS

### Engine

|  |  |
|--|--|
| Engine type                                  | Liquid cooled 4-stroke, DOHC   |
| Displacement                                 | 599.8 cm <sup>3</sup>  |
| Cylinder arrangement                         | Forward-inclined parallel 4-cylinder   |
| Bore × stroke                                | 65.5 × 44.5 mm (2.58 × 1.75 in)  |
| Compression ratio                            | 12.20 :1   |
| Standard compression pressure (at sea level) | 1550 kPa/400 r/min (15.5 kgf/cm <sup>2</sup> /400 r/min,<br>220.5 psi/400 r/min) |
| Minimum–maximum                              | 1300–1650 kPa (13.0–16.5 kgf/cm <sup>2</sup> ,<br>184.9–234.7 psi)               |
| Starting system                              | Electric starter   |

### Fuel

|                     |                                    |
|---------------------|------------------------------------|
| Recommended fuel    | Unleaded gasoline only             |
| Fuel tank capacity  | 17.3 L (4.57 US gal, 3.81 Imp.gal) |
| Fuel reserve amount | 3.2 L (0.85 US gal, 0.70 Imp.gal)  |

### Engine oil

|  |  |
|--|--|
| Lubrication system                       | Wet sump   |
| Type                                     | YAMALUBE 4 10W-40 or 20W-50, SAE<br>10W-40 or SAE 20W-50 |
| Recommended engine oil grade             | API service SG type or higher, JASO standard<br>MA       |
| Engine oil quantity                      |  |
| Total amount                             | 3.40 L (3.59 US qt, 2.99 Imp.qt)                         |
| Without oil filter cartridge replacement | 2.50 L (2.64 US qt, 2.20 Imp.qt)                         |
| With oil filter cartridge replacement    | 2.80 L (2.96 US qt, 2.46 Imp.qt)                         |

### Oil filter

|                 |       |
|-----------------|-------|
| Oil filter type | Paper |
|-----------------|-------|

### Oil pump

|   |  |
|---|--|
| Oil pump type                                       | Trochoid   |
| Inner-rotor-to-outer-rotor-tip clearance            | Less than 0.12 mm (0.0047 in)  |
| Limit   | 0.20 mm (0.0079 in)  |
| Outer-rotor-to-oil-pump-housing clearance           | 0.090–0.150 mm (0.0035–0.0059 in)                                    |
| Limit   | 0.220 mm (0.0087 in)   |
| Oil-pump-housing-to-inner-and-outer-rotor clearance | 0.050–0.110 mm (0.0020–0.0043 in)                                    |
| Limit   | 0.180 mm (0.0071 in)   |
| Bypass valve opening pressure                       | 80.0–120.0 kPa (0.80–1.20 kgf/cm <sup>2</sup> , 11.6–17.4<br>psi)    |
| Relief valve operating pressure                     | 490.0–570.0 kPa (4.90–5.70 kgf/cm <sup>2</sup> ,<br>71.05–82.65 psi) |
| Pressure check location                             | Main gallery   |

### Cooling system

|   |   |
|---|---|
| Radiator capacity (including all routes)                  | 2.00 L (2.11 US qt, 1.76 Imp.qt)                                  |
| Radiator capacity   | 0.56 L (0.59 US qt, 0.49 Imp.qt)                                  |
| Coolant reservoir capacity (up to the maximum level mark) | 0.25 L (0.26 US qt, 0.22 Imp.qt)                                  |
| Radiator cap opening pressure                             | 93.3–122.7 kPa (0.93–1.23 kgf/cm <sup>2</sup> , 13.5–17.8<br>psi) |

**Radiator core**

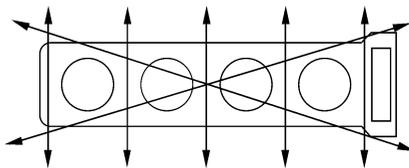
|                   |                                 |
|-------------------|---------------------------------|
| Width             | 300.0 mm (11.81 in)             |
| Height            | 197.0 mm (7.76 in)              |
| Depth             | 22.0 mm (0.87 in)               |
| <b>Water pump</b> |                                 |
| Water pump type   | Single suction centrifugal pump |
| Reduction ratio   | 86/44 × 31/31 (1.955)           |

**Spark plug (s)**

|                    |                             |
|--------------------|-----------------------------|
| Manufacturer/model | NGK/CR9E                    |
| Spark plug gap     | 0.7–0.8 mm (0.028–0.031 in) |

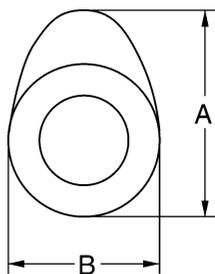
**Cylinder head**

|               |   |
|---------------|---|
| Volume        | 10.33–10.93 cm <sup>3</sup> (0.63–0.67 cu.in) |
| Warpage limit | 0.05 mm (0.0020 in)                           |



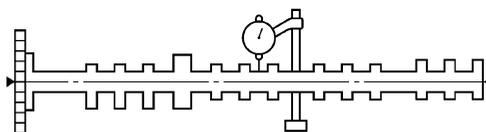
**Camshaft**

|  |                                     |
|--|-------------------------------------|
| Drive system                               | Chain drive (right)                 |
| Camshaft cap inside diameter               | 23.008–23.029 mm (0.9058–0.9067 in) |
| Camshaft journal diameter                  | 22.967–22.980 mm (0.9042–0.9047 in) |
| Camshaft-journal-to-camshaft-cap clearance | 0.028–0.062 mm (0.0011–0.0024 in)   |
| Limit                                      | 0.080 mm (0.0032 in)                |
| <b>Camshaft lobe dimensions</b>            |                                     |
| Intake A                                   | 31.850–31.950 mm (1.2539–1.2579 in) |
| Limit                                      | 31.800 mm (1.2520 in)               |
| Intake B                                   | 24.950–25.050 mm (0.9823–0.9862 in) |
| Limit                                      | 24.900 mm (0.9803 in)               |
| Exhaust A                                  | 31.850–31.950 mm (1.2539–1.2579 in) |
| Limit                                      | 31.800 mm (1.2520 in)               |
| Exhaust B                                  | 24.950–25.050 mm (0.9823–0.9862 in) |
| Limit                                      | 24.900 mm (0.9803 in)               |



Camshaft runout limit

0.060 mm (0.0024 in)



**Timing chain**

Tensioning system: Automatic