






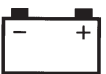




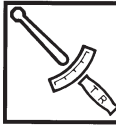














# **FZ6-SS FZ6-SSC**

## **SERVICE MANUAL**

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

## SYMBOLS

The following symbols are not relevant to every vehicle.

Symbols ① to ⑨ indicate the subject of each chapter.

- ① General information
- ② Specifications
- ③ Periodic checks and adjustments
- ④ Chassis
- ⑤ Engine
- ⑥ Cooling system
- ⑦ Fuel injection system
- ⑧ Electrical system
- ⑨ Troubleshooting

Symbols ⑩ to ⑰ indicate the following.

- ⑩ Serviceable with engine mounted
- ⑪ Filling fluid
- ⑫ Lubricant
- ⑬ Special tool
- ⑭ Tightening torque
- ⑮ Wear limit, clearance
- ⑯ Engine speed
- ⑰ Electrical data










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

- ⑱ Engine oil
- ⑲ Gear oil
- ⑳ Molybdenum-disulfide oil
- ㉑ Wheel-bearing grease
- ㉒ Lithium-soap-based grease
- ㉓ Molybdenum-disulfide grease

Symbols ㉔ to ㉕ in the exploded diagrams indicate the following.

- ㉔ Apply locking agent (LOCTITE®)
- ㉕ Replace the part

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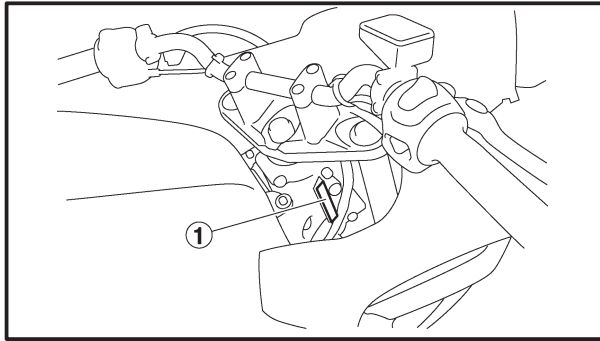
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## CHAPTER 9 TROUBLESHOOTING

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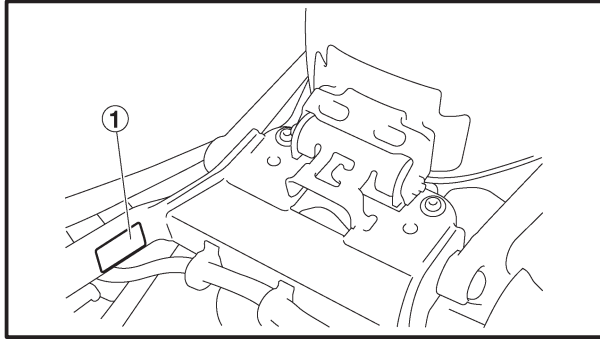
EAS00014

## GENERAL INFORMATION MOTORCYCLE IDENTIFICATION

EAS00017

### VEHICLE IDENTIFICATION NUMBER

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



EAS00018

### MODEL LABEL

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



EAS00896

## FEATURES

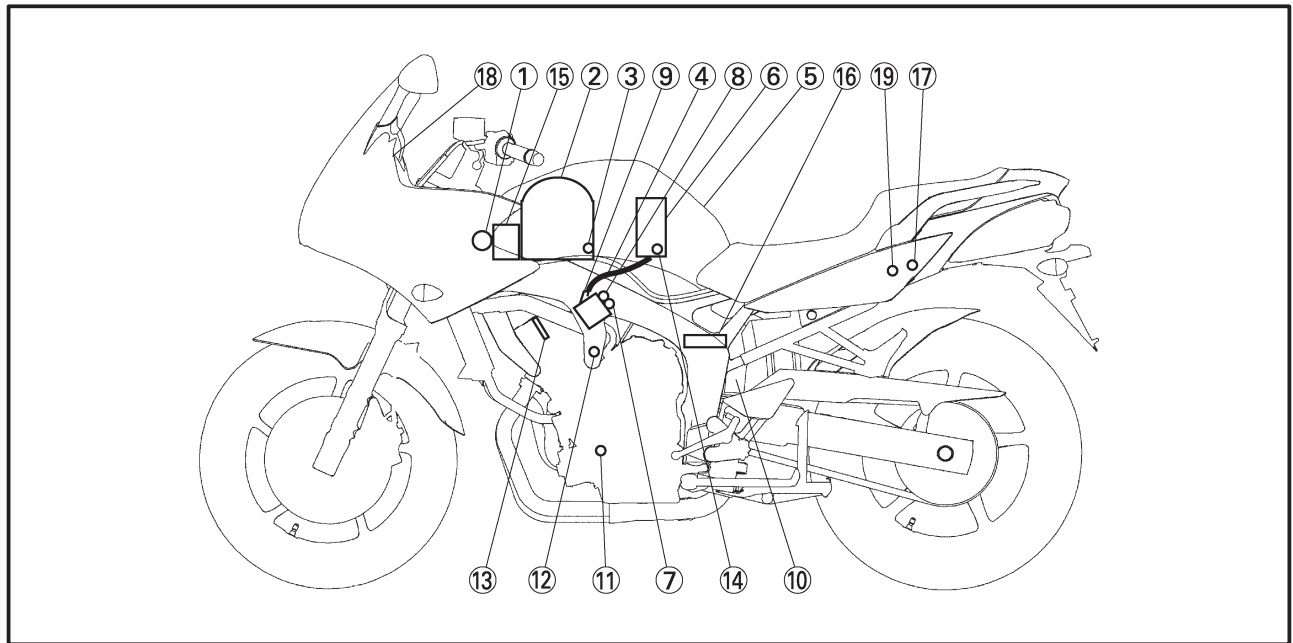
### OUTLINE OF FI SYSTEM

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 and the atmospheric temperature. In the 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 carburetor.

Despite the same volume of intake air, the fuel volume requirement varies by the engine operating conditions, such as acceleration, deceleration, or operating 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 the engine 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 the 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.

The 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.



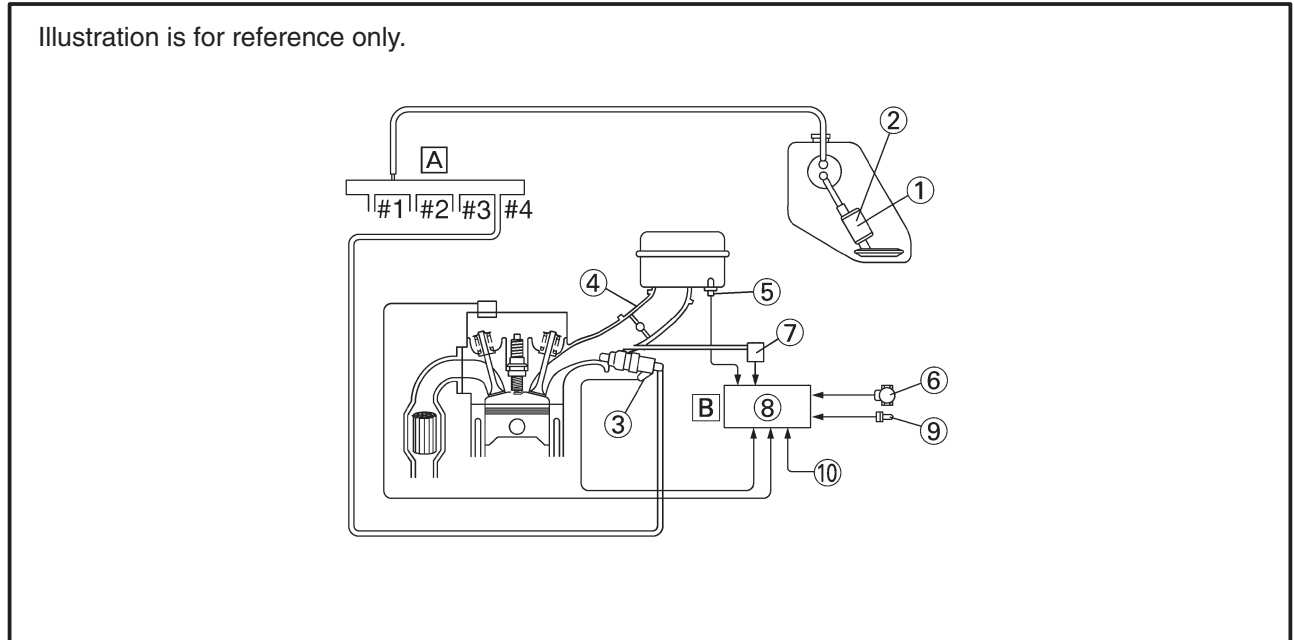
- |                                 |                              |                               |                                |
|---------------------------------|------------------------------|-------------------------------|--------------------------------|
| ① Ignition coil                 | ⑦ Intake air pressure sensor | ⑫ Coolant temperature sensor  | ⑱ Engine trouble warning light |
| ② Air filter case               | ⑧ Throttle position sensor   | ⑬ Spark plug                  | ⑲ Lean angle cut-off switch    |
| ③ Intake air temperature sensor | ⑨ Fuel injector              | ⑭ Pressure regulator          |                                |
| ④ Fuel delivery hose            | ⑩ Catalytic converter        | ⑮ Battery                     |                                |
| ⑤ Fuel tank                     | ⑪ Crankshaft position sensor | ⑯ ECU                         |                                |
| ⑥ Fuel pump                     |                              | ⑰ Fuel injection system relay |                                |

EAS00897

**FI SYSTEM**

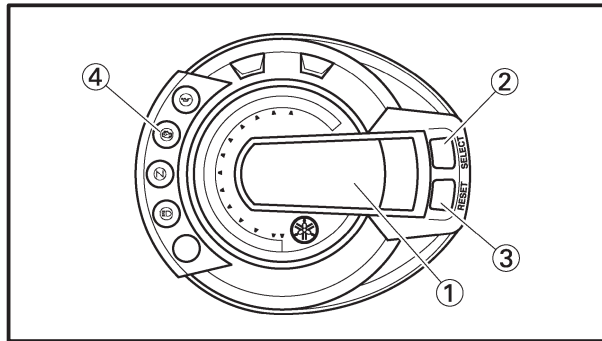
The fuel pump delivers fuel to the injector via the fuel filter. The pressure regulator maintains the fuel pressure that is applied to the injector at only 250 kPa (2.5 kg/cm<sup>2</sup>). Accordingly, when the energizing signal from the ECU energizes the injector, the fuel passage opens, causing the fuel to be injected into the intake manifold only during the time the passage remains open. Therefore, the longer the length of time the injector is energized (injection duration), the greater the volume of fuel that is supplied. Conversely, the shorter the length of time the 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. Signals that are input from the throttle position sensor, crankshaft position sensor, intake air pressure sensor, intake temperature sensor and coolant temperature sensor enable the ECU 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.



- ① Fuel pump
- ② Pressure regulator
- ③ Fuel injector
- ④ Throttle body
- ⑤ Intake air temperature sensor
- ⑥ Throttle position sensor
- ⑦ Intake air pressure sensor
- ⑧ ECU
- ⑨ Coolant temperature sensor
- ⑩ Crankshaft position sensor
- A** Fuel system
- B** Control system





- ① Multi-function display
- ② “SELECT” button
- ③ “RESET” button
- ④ Engine trouble warning light

## INSTRUMENT FUNCTION

### Multi-function display

The multi-function display is equipped with the following:

- a speedometer (which shows the riding speed)
- an odometer (which shows the total distance traveled)
- 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 bottom segment of the fuel meter started flashing)
- a tachometer (which shows the engine speed)
- a fuel meter
- a water temperature
- a clock
- a intake air temperature
- a self-diagnosis device

### NOTE:

- Be sure to turn the key to “ON” before using the “SELECT” and “RESET” buttons.
- For the U.K. only: To switch the speedometer and odometer/tripmeter display between kilometers and miles, press the “SELECT” button for at least two seconds.

### Odometer, tripmeter and tachometer modes

Pushing the “SELECT” button switches the display between the odometer mode “ODO” and the tripmeter modes “TRIP 1” and “TRIP 2” and the tachometer mode “E” in the following order:

ODO → TRIP 1 → TRIP 2 → (TRIP F) → E → ODO

When approximately 3.6 L of fuel remain in the fuel tank, the bottom segment of the fuel meter will start flashing, and the odometer display will automatically change to the fuel reserve tripmeter mode “TRIP F” and start counting the distance traveled from that point. In that case, pushing the “SELECT” button switches the display between the various tripmeter and odometer modes in the following order:

TRIP-F → E → ODO → TRIP 1 → TRIP 2 → TRIP F

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 (3.1 mi).

### Tachometer mode

Displays the digital indication of the engine speed on the odometer section.

Air intake temperature indicator.

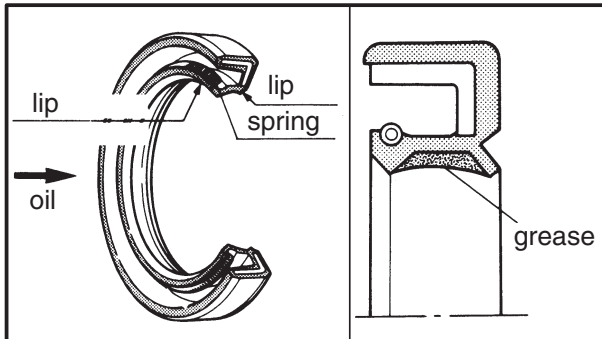
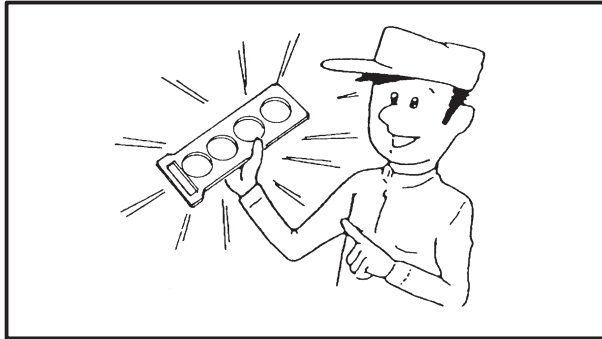
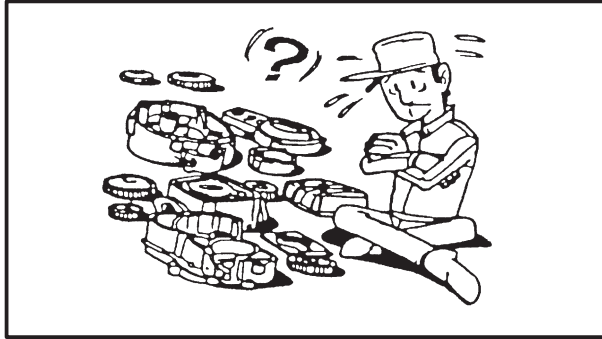
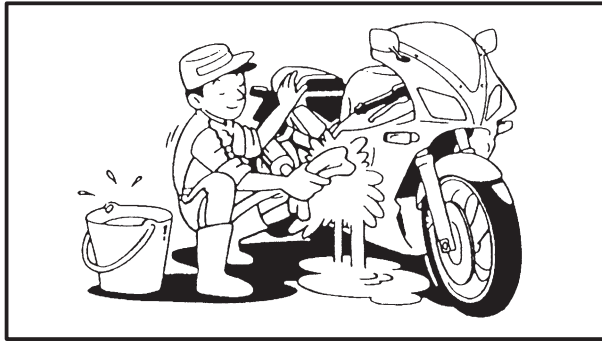
When “ODO” is displayed, pressing the “RESET” for a long time allows the indicator to switch displays between Clock and Air intake temperature. (It activates the clock indication when the main switch is turned OFF.)

In the Co adjustment mode, the indication automatically changes from clock (Air intake temperature) to the engine speed.

**Clock mode**

To set the clock:

1. Push the “SELECT” button and “RESET” button together for at least two seconds.
2. When the hour digits start flashing, push the “RESET” button to set the hours.
3. Push the “SELECT” button, and the minute digits will start flashing.
4. Push the “RESET” button to set the minutes.
5. Push the “SELECT” button and then release it to start the clock.



EAS00020

**IMPORTANT INFORMATION  
PREPARATION FOR REMOVAL AND  
DISASSEMBLY**

1. Before removal and disassembly, eliminate all dirt, mud, dust and foreign material.
2. Use only the proper tools and cleaning equipment.  
Refer to the "SPECIAL TOOLS".
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.

EAS00021

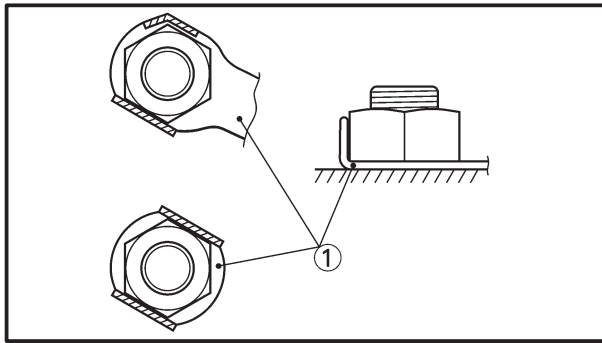
**REPLACEMENT PARTS**

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.

EAS00022

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

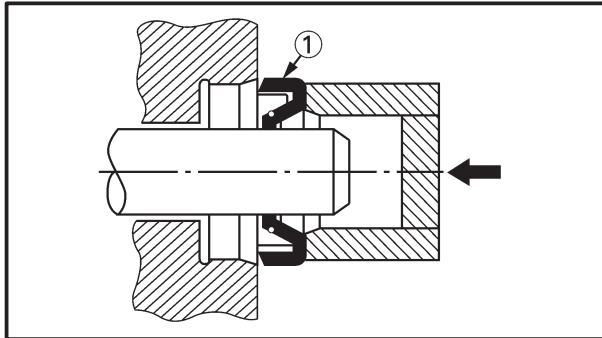
1. When overhauling the engine, replace all gaskets, seals and O-rings. All gasket surfaces, oil seal lips and O-rings must be cleaned.
2. During reassembly, properly oil all mating parts and bearings and lubricate the oil seal lips with grease.



EAS00023

**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.



EAS00024

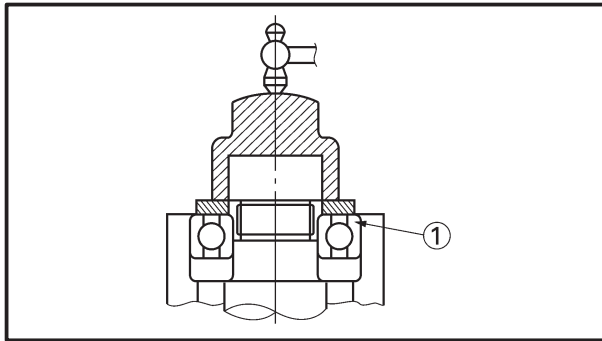
**BEARINGS AND OIL SEALS**

Install bearings and oil seals 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.

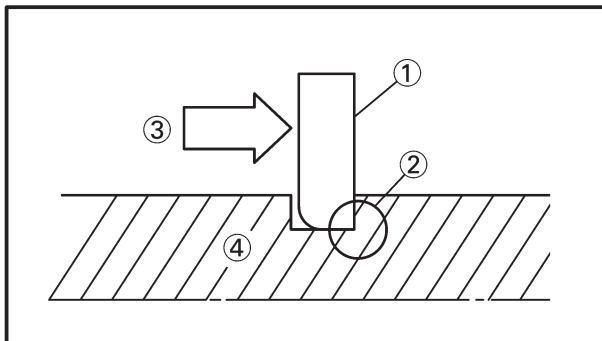
① Oil seal

**CAUTION:**

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



① Bearing



EAS00025

**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.

④ Shaft

EAS00026

## CHECKING THE CONNECTIONS

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.

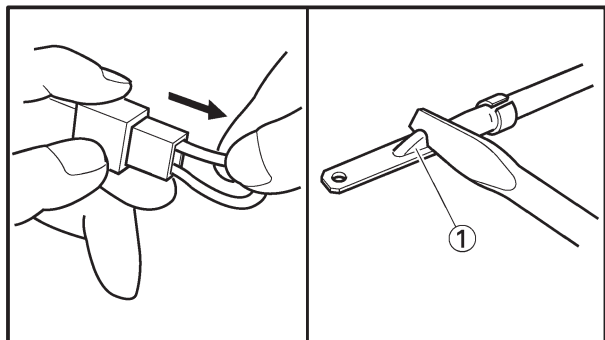
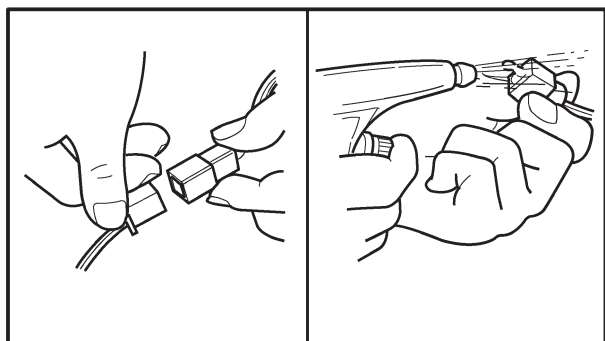
3. Check:

- all connections

Loose connection → Connect properly.

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

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

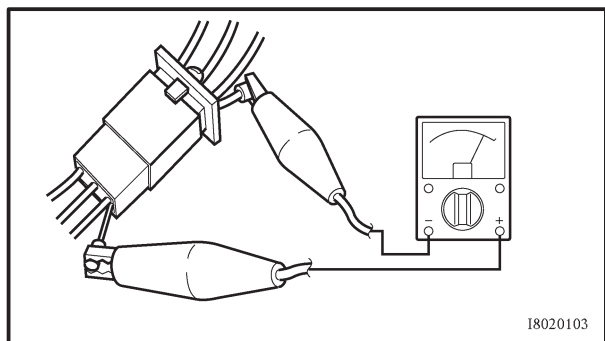


4. Connect:

- lead
- coupler
- connector

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


Make sure all connections are tight.



18020103

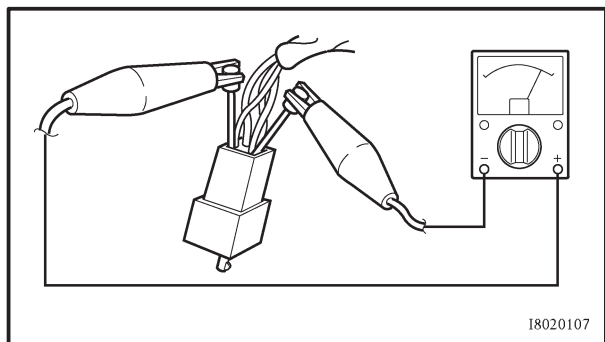
5. Check:

- continuity  
(with the pocket tester)

|   |  |
|---|--|
|  | <b>Pocket tester</b><br>90890-03112, YU-3112 |
|---|--|

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

- 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.



18020107



EAS00027

## SPECIAL TOOLS

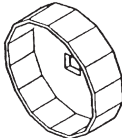
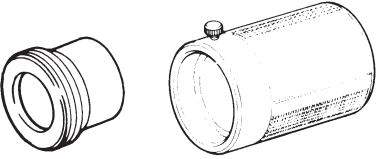
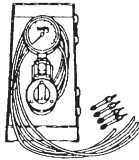
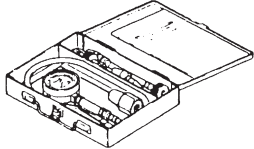
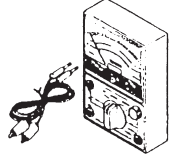
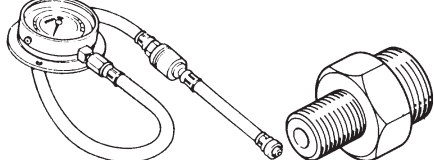
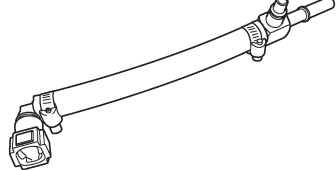
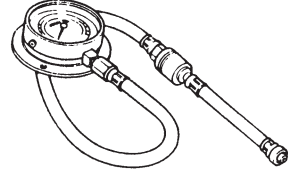
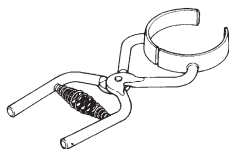
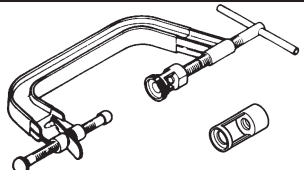
The following special tools are necessary for complete and accurate tune-up and assembly. Use only the appropriate special tools as this will help prevent damage caused by the use of inappropriate tools or improvised techniques. Special tools, part numbers or both may differ depending on the country.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

### NOTE:

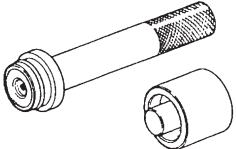
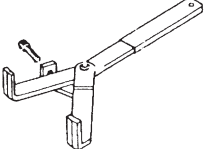

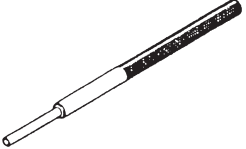
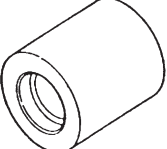
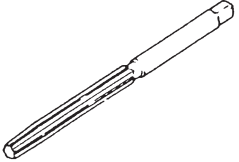
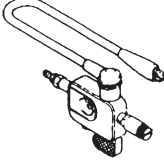

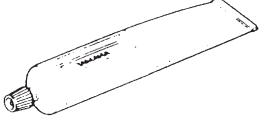
- For U.S.A. and Canada, use part number starting with “YM-”, “YU-”, or “ACC-”.
- For others, use part number starting with “90890-”.

| Tool No.   | Tool name/Function   | Illustration |
|--|--|--------------|
| Flywheel puller<br>90890-01362<br>YU-33270-B<br>Adapter<br>90890-04089<br>YM-33282         | Flywheel puller<br>Adapter<br><br>This tool is used to remove the generator rotor.   |              |
| 90890-01701<br>YS-01880-A  | Sheave holder<br><br>This tool is used to hold the generator rotor when removing or installing the generator rotor bolt or pickup coil rotor bolt. |              |
| 90890-01304<br>YU-01304  | Piston pin puller<br><br>This tool is used to remove the piston pins.  |              |
| Radiator cap tester<br>90890-01325<br>YU-24460-01<br>Adapter<br>90890-01352<br>YU-33984    | Radiator cap tester<br>Adapter<br><br>These tools are used to check the cooling system.  |              |
| 90890-01403<br>YU-33975  | Steering nut wrench<br><br>This tool is used to loosen or tighten the steering stem ring nuts.   |              |
| 90890-01460<br>-01326  | Damper rod holder ①<br>T-handle ②<br>These tool are used for holding the damper rod when removing or installing the damper rod.                    |              |
| Pivot shaft wrench<br>90890-01471<br>YM-01471<br>Pivot shaft wrench adapter<br>90890-01476 | Pivot shaft wrench<br>Pivot shaft wrench adapter<br><br>This tool is used to loosen or tighten the pivot adjust bolt and engine mount adjust bolt. |              |



| Tool No.   | Tool name/Function  | Illustration  |
|--|---|---|
| 90890-01426<br>YU-38411  | Oil filter wrench<br><br>This tool is needed to loosen or tighten the oil filter cartridge.   |    |
| Fork seal driver<br>90890-01367<br>YM-33963<br>Fork seal driver attachment<br>90890-01374<br>YM-8020-A | Fork seal driver weight<br>Fork seal driver attachment<br><br>This tool is used to install the front fork's oil seal and dust seal. |    |
| Vacuum gauge<br>90890-03094<br>YU-08030  | Vacuum gauge<br><br>This gauge is used to synchronize the carburetors.  |    |
| Compression gauge<br>90890-03081<br>YU-33223<br>Adapter<br>90890-04136                                 | Compression gauge<br>Adapter<br><br>These tools are used to measure engine compression.   |    |
| 90890-03112<br>YU-3112   | Pocket tester<br><br>This tool is used to check the electrical system.  |   |
| Oil pressure gauge<br>90890-03153<br>YU-03153<br>Adapter<br>90890-03139                                | Oil pressure gauge<br>Adapter<br><br>These tools are used to measure engine oil pressure.   |  |
| 90890-03176<br>YM-03176  | Fuel pressure adapter<br><br>This tool is needed to measure fuel pressure.  |  |
| 90890-03153<br>YU-03153  | Pressure gauge<br><br>This tool used is to measure fuel pressure.   |  |
| 90890-04044<br>YM-04044  | Piston ring compressor<br><br>This tool is used to compress piston rings when installing the cylinder.                              |  |
| Valve spring compressor<br>90890-04019<br>YM-04019<br>Attachment<br>90890-04108<br>YM-01253            | Valve spring compressor<br>Attachment<br><br>These tools are used to remove or install the valve assemblies.                        |  |



| Tool No.   | Tool name/Function  | Illustration  |
|--|---|---|
| Middle driven shaft bearing driver<br>90890-04058<br>YM-4058<br>Mechanical seal installer<br>90890-04078<br>YM-33221 | Middle driven shaft bearing driver<br>Mechanical seal installer<br><br>These tools are used to install the water pump seal. |    |
| 90890-04086<br>YM-91042  | Clutch holding tool<br><br>This tool is used to hold the clutch boss when removing or installing the clutch boss nut.       |    |
| 90890-04101  | Valve lifter<br><br>This tool is needed to remove and install the valve lifter.   |    |
| 90890-04111  | Valve guide remover ( $\phi 4$ )<br><br>This tool is used to remove or install the valve guides.                            |    |
| 90890-04112  | Valve guide installer ( $\phi 4$ )<br><br>This tool is used to install the valve guides.                                    |   |
| 90890-04113<br>YM-04113  | Valve guide reamer ( $\phi 4$ )<br><br>This tool is used to rebores the new valve guides.                                   |  |
| 90890-06754<br>YM-34487  | Ignition checker<br><br>This tool is used to check the ignition system components.  |  |
| 90890-06756<br>YB-35956  | Vacuum/pressure pump gauge set<br><br>This tool used to measure the vacuum pressure.  |  |
| 90890-85505<br>ACC-11001-05-01   | Yamaha bond No. 1215<br><br>This bond is used to seal two mating surfaces (e.g., crankcase mating surfaces).                |  |





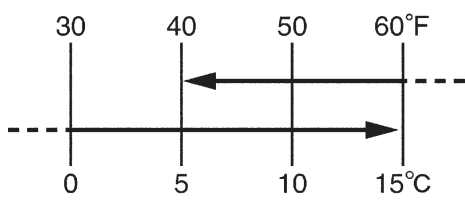
## SPECIFICATIONS

### GENERAL SPECIFICATIONS

| Item                                | Standard  | Limit |
|-------------------------------------|---|-------|
| <b>Model code</b>                   | 5VX3 (USA except for CAL)<br>5VX4 (CAL)                       | ...   |
| <b>Dimensions</b>                   |   |       |
| Overall length                      | 2,095 mm (82.5 in)  | ...   |
| Overall width                       | 750 mm (29.5 in)  | ...   |
| Overall height                      | 1,215 mm (47.8 in)  | ...   |
| Seat height                         | 795 mm (31.3 in)  | ...   |
| Wheelbase                           | 1,440 mm (56.7 in)  | ...   |
| Minimum ground clearance            | 145 mm (5.71 in)  | ...   |
| Minimum turning radius              | 2,800 mm (110.2 in)   | ...   |
| <b>Weight</b>                       |   |       |
| Wet (with oil and a full fuel tank) | 207 kg (456 lb) (USA except for CAL)<br>208 kg (459 lb) (CAL) | ...   |
| Maximum load (except motorcycle)    | 190 kg (419 lb) (USA except for CAL)<br>189 kg (417 lb) (CAL) | ...   |



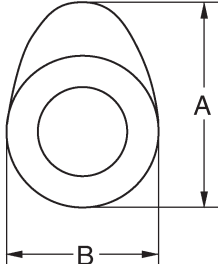
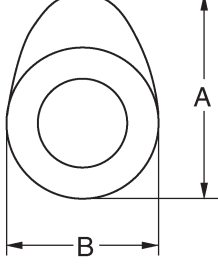
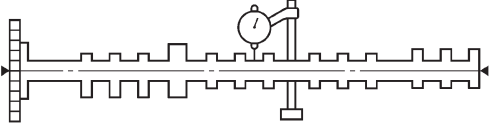
ENGINE SPECIFICATIONS

| Item  | Standard   | Limit   |
|---|--|---|
| <b>Engine</b><br>Engine type<br>Displacement<br>Cylinder arrangement<br>Bore × stroke<br>Compression ratio<br>Engine idling speed<br>Vacuum pressure at engine idling speed<br>Standard compression pressure (at sea level)   | Liquid-cooled, 4-stroke, DOHC<br>600 cm <sup>3</sup> (36.61 cu.in)<br>Forward-inclined parallel 4-cylinder<br>65.5 × 44.5 mm (2.58 × 1.75 in)<br>12.2 : 1<br>1,250 ~ 1,350 r/min<br>29 kPa (218 mmHg, 8.6 inHg)<br>1,550 kPa (15.50 kg/cm <sup>2</sup> , 15.50 bar, 220.46 psi) at 400 r/min   | ...<br>...<br>...<br>...<br>...<br>...<br>...               |
| <b>Fuel</b><br>Recommended fuel<br>Fuel tank capacity<br>Total (including reserve)<br>Reserve only  | Unleaded gasoline only<br>19.4 L (4.25 Imp gal, 5.1 US gal)<br>3.6 L (0.79 Imp gal, 0.9 US gal)  | ...<br>...<br>...   |
| <b>Engine oil</b><br>Lubrication system<br>Recommended oil<br><br>Quantity<br>Total amount<br>Without oil filter cartridge replacement<br>With oil filter cartridge replacement<br>Oil pressure<br><br>Engine oil temperature<br>Relief valve opening pressure | Wet sump<br><br>At 5°C (40°F) or higher<br>Yamalube 4 (20W40) or SAE 20W40 type SE motor oil<br>At 15°C (60°F) or lower<br>Yamalube 4 (10W30) or SAE 10W30 type SE motor oil<br><br>3.4 L (2.99 Imp qt, 3.59 US qt)<br>2.5 L (2.20 Imp qt, 2.64 US qt)<br>2.8 L (2.47 Imp qt, 2.96 US qt)<br>240 kPa at 6,600 r/min<br>(2.4 kg/cm <sup>2</sup> at 6,600 r/min)<br>(2.4 bar at 6,600 r/min)<br>(34.1 psi at 6,600 r/min)<br>96°C (205°F)<br>450 ~ 550 kPa (4.5 ~ 5.5 kg/cm <sup>2</sup> , 4.5 ~ 5.5 bar, 65.3 ~ 79.8 psi) | ...<br>...<br>...<br>...<br>...<br>...<br>...<br>...<br>... |

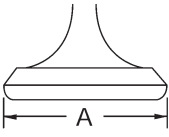
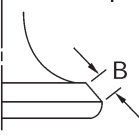
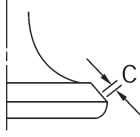


| Item  | Standard   | Limit  |
|---|--|--|
| <b>Oil filter</b><br>Oil filter type<br>Bypass valve opening pressure   | Formed<br>80 ~ 120 kPa (0.8 ~ 1.2 kg/cm <sup>2</sup> ,<br>0.8 ~ 1.2 bar, 11.6 ~ 17.4 psi)  | ...<br>...   |
| <b>Oil pump</b><br>Oil pump type<br>Inner-rotor-to-outer-rotor-tip<br>clearance<br>Outer-rotor-to-oil-pump-housing<br>clearance   | Trochoid<br>0.03 ~ 0.09 mm<br>(0.0012 ~ 0.0035 in)<br>0.03 ~ 0.08 mm<br>(0.0012 ~ 0.0032 in)   | ...<br>0.15 mm<br>(0.0059 in)<br>0.15 mm<br>(0.0059 in)                                |
| <b>Cooling system</b><br>Radiator capacity<br>Radiator cap opening pressure<br><br>Radiator core<br>Width<br>Height<br>Depth<br>Coolant reservoir<br>Capacity<br>Water pump<br>Water pump type<br>Reduction ratio<br>Max. impeller shaft tilt | 2.0 L (1.76 Imp pt, 2.11 US qt)<br>93.3 ~ 122.7 kPa (0.93 ~ 1.23 kg/cm <sup>2</sup> ,<br>0.93 ~ 1.23 bar, 13.5 ~ 17.8 psi)<br><br>300 mm (11.81 in)<br>188 mm (7.4 in)<br>24 mm (0.94 in)<br><br>0.27 L (0.24 Imp qt, 0.29 US qt)<br><br>Single suction centrifugal pump<br>86/44 × 31/31 (1.955)<br>... | ...<br><br><br>...<br>...<br>...<br><br>...<br><br>...<br>...<br>0.15 mm<br>(0.006 in) |
| <b>Starting system type</b>   | Electric starter   |  |
| <b>Spark plugs</b><br>Model (manufacturer) × quantity<br>Spark plug gap   | CR9EK (NGK) × 4<br>0.6 ~ 0.7 mm (0.0236 ~ 0.0276 in)   | ...<br>...   |
| <b>Cylinder head</b><br>Volume<br>Max. warpage<br><br>  | 10.3 ~ 10.9 cm <sup>3</sup> (0.63 ~ 0.67 cu.in)<br>...   | ...<br>0.05 mm<br>(0.002 in)   |

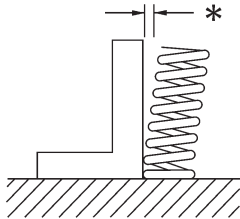



| Item  | Standard  | Limit  |
|---|---|--|
| <p><b>Camshafts</b><br/>                     Drive system<br/>                     Camshaft cap inside diameter<br/>                     Camshaft journal diameter<br/>                     Camshaft-journal-to-camshaft-cap clearance<br/>                     Intake camshaft lobe dimensions</p> | <p>Chain drive (right)<br/>                     23.008 ~ 23.029 mm (0.9058 ~ 0.9067 in)<br/>                     22.967 ~ 22.980 mm (0.9042 ~ 0.9047 in)<br/>                     0.028 ~ 0.062 mm (0.0011 ~ 0.0024 in)</p> | <p>•••<br/>                     •••<br/>                     •••<br/>                     0.08 mm<br/>                     (0.0032 in)</p> |
|    |   |  |
| <p>Measurement A</p>  | <p>32.45 ~ 32.55 mm (1.278 ~ 1.282 in)</p>  | <p>32.40 mm<br/>                     (1.276 in)</p>  |
| <p>Measurement B</p>  | <p>24.95 ~ 25.05 mm (0.982 ~ 0.986 in)</p>  | <p>24.90 mm<br/>                     (0.980 in)</p>  |
| <p>Exhaust camshaft lobe dimensions</p>   |   |  |
|    |   |  |
| <p>Measurement A</p>  | <p>32.45 ~ 32.55 mm (1.278 ~ 1.282 in)</p>  | <p>32.40 mm<br/>                     (1.276 in)</p>  |
| <p>Measurement B</p>  | <p>24.95 ~ 25.05 mm (0.982 ~ 0.986 in)</p>  | <p>24.90 mm<br/>                     (0.980 in)</p>  |
| <p>Max. camshaft runout</p>   | <p>•••</p>  | <p>0.06 mm<br/>                     (0.0024 in)</p>  |
|    |   |  |

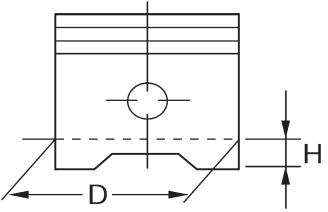
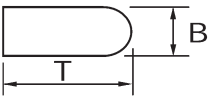
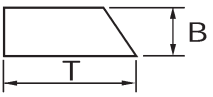
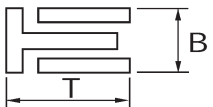


| Item  | Standard  | Limit  |
|---|---|--|
| <b>Timing chain</b>   |   |  |
| Model/number of links   | 92RH2015/120  | •••  |
| Tensioning system   | Automatic   | •••  |
| <b>Valves, valve seats, valve guides</b>  |   |  |
| Valve clearance (cold)  |   |  |
| Intake  | 0.13 ~ 0.20 mm (0.0051 ~ 0.0079 in)   | •••  |
| Exhaust   | 0.23 ~ 0.30 mm (0.0091 ~ 0.0118 in)   | •••  |
| Valve dimensions  |   |  |
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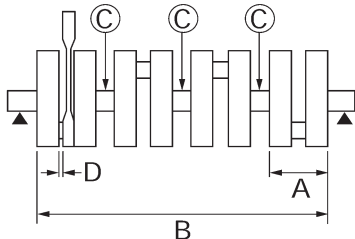


| Item  | Standard  | Limit                    |
|---|---|--------------------------|
| <b>Valve springs</b>  |   |                          |
| Free length   |   |                          |
| Intake (inner)  | 37.0 mm (1.46 in)                                       | 35.2 mm (1.39 in)        |
| (outer)   | 38.4 mm (1.51 in)                                       | 36.5 mm (1.44 in)        |
| Exhaust   | 41.8 mm (1.65 in)                                       | 39.7 mm (1.56 in)        |
| Installed length (valve closed)   |   |                          |
| Intake (inner)  | 30 mm (1.18 in)   | •••                      |
| (outer)   | 32.5 mm (1.28 in)                                       | •••                      |
| Exhaust   | 36.1 mm (1.42 in)                                       | •••                      |
| Compressed spring force (installed)   |   |                          |
| Intake (inner)  | 69.0 ~ 79.0 N (7.03 ~ 8.05 kg,<br>15.50 ~ 17.75 lb)     | •••                      |
| (outer)   | 114.0 ~ 132.0 N (11.62 ~ 13.46 kg,<br>25.63 ~ 29.67 lb) | •••                      |
| Exhaust   | 160 ~ 184 N (16.32 ~ 18.76 kg,<br>35.97 ~ 41.36 lb)     | •••                      |
| Spring tilt   |   |                          |
|   |   |                          |
| Intake (inner)  | •••   | 2.5°/1.6 mm<br>(0.06 in) |
| (outer)   | •••   | 2.5°/1.7 mm<br>(0.07 in) |
| Exhaust   | •••   | 2.5°/1.8 mm<br>(0.07 in) |
| Winding direction (top view)  |   |                          |
| Intake (inner)  | Counter clockwise                                       | •••                      |
| (outer)   | Clockwise   | •••                      |
| Exhaust   | Clockwise   | •••                      |
|  |   |                          |
| <b>Cylinders</b>  |   |                          |
| Cylinder arrangement  | Forward-inclined, parallel 4-cylinder                   | •••                      |
| Bore × stroke   | 65.5 mm × 44.5 mm (2.58 × 1.75 in)                      | •••                      |
| Compression ratio   | 12.2 : 1  | •••                      |
| Bore  | 65.50 ~ 65.51 mm (2.5787 ~ 2.5791 in)                   | •••                      |
| Max. out-of-round   | •••   | 0.05 mm<br>(0.002 in)    |



| Item  | Standard                                | Limit            |
|---|---|------------------|
| <b>Piston</b>   |   |                  |
| Piston-to-cylinder clearance  | 0.010 ~ 0.035 mm (0.0004 ~ 0.0014 in)   | 0.055 mm         |
| Diameter D  | 65.475 ~ 65.490 mm (2.5778 ~ 2.5783 in) | 0.0022 in<br>••• |
|    |   |                  |
| Height H  | 4 mm (0.16 in)                          | •••              |
| Piston pin bore (in the piston)   |   |                  |
| Diameter  | 16.002 ~ 16.013 mm                      | 16.043 mm        |
| Offset  | (0.6300 ~ 0.6304 in)                    | (0.6316 in)      |
| Offset direction  | 0.5 mm (0.0197 in)                      | •••              |
| Piston pins   | Intake side                             | •••              |
| Outside diameter  | 15.991 ~ 16.000 mm                      | 15.971 mm        |
| Piston-pin-to-piston-pin-bore clearance   | (0.6296 ~ 0.6299 in)                    | (0.6288 in)      |
| Piston rings  | 0.002 ~ 0.022 mm (0.0001 ~ 0.0009 in)   | 0.072 mm         |
| Top ring  | 0.0028 in                               | (0.0028 in)      |
|   |   |                  |
| Ring type   | Barrel                                  | •••              |
| Dimensions (B × T)  | 0.90 × 2.45 mm (0.04 × 0.10 in)         | •••              |
| End gap (installed)   | 0.25 ~ 0.35 mm (0.0098 ~ 0.0138 in)     | 0.60 mm          |
| Ring side clearance   | 0.030 ~ 0.065 mm (0.0012 ~ 0.0026 in)   | 0.115 mm         |
|   |   | (0.0045 in)      |
| 2nd ring  |   |                  |
|  |   |                  |
| Ring type   | Taper                                   | •••              |
| Dimensions (B × T)  | 0.8 × 2.5 mm (0.03 × 0.10 in)           | •••              |
| End gap (installed)   | 0.7 ~ 0.8 mm (0.0276 ~ 0.0315 in)       | 1.15 mm          |
| Ring side clearance   | 0.030 ~ 0.065 mm (0.0012 ~ 0.0026 in)   | 0.125 mm         |
|   |   | (0.0453 in)      |
| Oil ring  |   |                  |
|  |   |                  |
| Dimensions (B × T)  | 1.5 × 2.0 mm (0.06 × 0.08 in)           | •••              |
| End gap (installed)   | 0.10 ~ 0.35 mm (0.0039 ~ 0.0138 in)     | •••              |



| Item  | Standard  | Limit  |
|---|---|--|
| <p><b>Connecting rods</b><br/>Crankshaft-pin-to-big-end-bearing clearance<br/>Bearing color code</p>  | <p>0.028 ~ 0.052 mm (0.0011 ~ 0.0020 in)<br/>1 = Blue 2 = Black 3 = Brown 4 = Green</p>   | <p>0.08 mm (0.0032 in)<br/>•••</p>   |
| <p><b>Crankshaft</b></p>  <p>Width A<br/>Width B<br/>Max. runout C<br/>Big end side clearance D<br/>Big end radial clearance<br/>Small end free play<br/>Crankshaft-journal-to-crankshaft-journal-bearing clearance<br/>Bearing color code</p>   | <p>51.85 ~ 52.55 mm (2.04 ~ 2.06 in)<br/>268.8 ~ 270.0 mm (10.58 ~ 10.63 in)<br/>•••<br/>0.160 ~ 0.262 mm (0.0063 ~ 0.0103 in)<br/>0.028 ~ 0.052 mm (0.0011 ~ 0.0020 in)<br/>0.32 ~ 0.50 mm (0.01 ~ 0.02 in)<br/>0.034 ~ 0.058 mm (0.0013 ~ 0.0023 in)<br/>0 = White 1 = Black 2 = Brown<br/>3 = Green 4 = Yellow</p>   | <p>•••<br/>•••<br/>0.03 mm (0.0012 in)<br/>•••<br/>•••<br/>•••<br/>0.10 mm (0.0039 in)<br/>•••</p>   |
| <p><b>Clutch</b><br/>Clutch type<br/>Clutch release method<br/>Clutch release method operation<br/>Operation<br/>Clutch cable free play (at the end of the clutch lever)<br/>Friction plates<br/>Color code<br/>Thickness<br/>Plate quantity<br/>Color code<br/>Thickness<br/>Plate quantity<br/>Clutch plates<br/>Thickness<br/>Plate quantity<br/>Max. warpage<br/>Thickness<br/>Plate quantity<br/>Max. warpage<br/>Clutch springs<br/>Free length<br/>Spring quantity</p> | <p>Wet, multiple disc<br/>Outer pull, rack and pinion pull<br/>Cable operation<br/>Left-hand operation<br/>10 ~ 15 mm (0.39 ~ 0.59 in)<br/>Brown<br/>2.9 ~ 3.1 mm (0.114 ~ 0.122 in)<br/>6<br/>Purple<br/>2.9 ~ 3.1 mm (0.114 ~ 0.112 in)<br/>2<br/>1.9 ~ 2.1 mm (0.07 ~ 0.08 in)<br/>7<br/>•••<br/>2.2 ~ 2.4 mm (0.086 ~ 0.095 in)<br/>1<br/>•••<br/>55 mm (2.17 in)<br/>6</p> | <p>•••<br/>•••<br/>•••<br/>•••<br/>•••<br/>•••<br/>2.8 mm (0.110 in)<br/>•••<br/>2.8 mm (0.110 in)<br/>•••<br/>•••<br/>•••<br/>0.1 mm (0.0039 in)<br/>•••<br/>•••<br/>0.1 mm (0.0039 in)<br/>52.3 mm (2.06 in)<br/>•••</p> |





| Item  | Standard   | Limit                  |
|---|--|------------------------|
| <b>Transmission</b>   |  |                        |
| Transmission type   | Constant mesh, 6-speed                               | ...                    |
| Primary reduction system                                      | Spur gear  | ...                    |
| Primary reduction ratio                                       | 86/44 (1.955)  | ...                    |
| Secondary reduction system                                    | Chain drive  | ...                    |
| Secondary reduction ratio                                     | 46/16 (2.875)  | ...                    |
| Operation   | Left-foot operation                                  | ...                    |
| <b>Gear ratios</b>  |  |                        |
| 1st gear  | 37/13 (2.846)  | ...                    |
| 2nd gear  | 37/19 (1.947)  | ...                    |
| 3rd gear  | 28/18 (1.556)  | ...                    |
| 4th gear  | 32/24 (1.333)  | ...                    |
| 5th gear  | 25/21 (1.190)  | ...                    |
| 6th gear  | 26/24 (1.083)  | ...                    |
| Max. main axle runout   | ...  | 0.02 mm<br>(0.0008 in) |
| Max. drive axle runout  | ...  | 0.02 mm<br>(0.0008 in) |
| <b>Shifting mechanism</b>                                     |  |                        |
| Shift mechanism type  | Shift drum/Guide bar                                 | ...                    |
| Max. shift fork guide bar bending                             | ...  | 0.05 mm<br>(0.002 in)  |
| <b>Air filter type</b>  |  |                        |
|   | Oil-coated paper element                             | ...                    |
| <b>Fuel pump</b>  |  |                        |
| Pump type   | Electrical   | ...                    |
| Model (manufacturer)  | 5VX (DENSO)  | ...                    |
| Output pressure   | 250 kPa (2.5 kg/cm <sup>2</sup> , 2.5 bar, 36.3 psi) | ...                    |
| <b>Throttle position sensor</b>                               |  |                        |
| Resistance  | 4.0 ~ 6.0 kΩ at 20°C (68°F)                          | ...                    |
| Output voltage (at idle)                                      | 0.63 ~ 0.73 V (Adjusted by tachometer)               | ...                    |
| <b>Throttle bodies</b>  |  |                        |
| Model (manufacturer) × quantity                               | 36EIDW (MIKUNI) × 2                                  | ...                    |
| Intake vacuum pressure  | 29 kPa (218 mmHg, 8.5038 inHg)                       | ...                    |
| Throttle cable free play (at the flange of the throttle grip) | 3 ~ 5 mm (0.12 ~ 0.20 in)                            | ...                    |
| ID mark   | 5VX1 00 (5VX3)<br>5VX4 10 (5VX4)                     | ...                    |
| Throttle valve size   | #50  | ...                    |



CHASSIS SPECIFICATIONS

| Item                       | Standard  | Limit            |
|----------------------------|---|------------------|
| <b>Frame</b>               |   |                  |
| Frame type                 | Diamond   | •••              |
| Caster angle               | 25°   | •••              |
| Trail                      | 97.5 mm (3.84 in)   | •••              |
| <b>Front wheel</b>         |   |                  |
| Wheel type                 | Cast wheel  | •••              |
| Rim                        |   |                  |
| Size                       | 17 M/C × MT3.50   | •••              |
| Material                   | Aluminum  | •••              |
| Wheel travel               | 130 mm (5.12 in)  | •••              |
| Wheel runout               |   |                  |
| Max. radial wheel runout   | •••   | 1 mm (0.04 in)   |
| Max. lateral wheel runout  | •••   | 0.5 mm (0.02 in) |
| <b>Rear wheel</b>          |   |                  |
| Wheel type                 | Cast wheel  | •••              |
| Rim                        |   |                  |
| Size                       | 17 M/C × MT5.50   | •••              |
| Material                   | Aluminum  | •••              |
| Wheel travel               | 130 mm (5.12 in)  | •••              |
| Wheel runout               |   |                  |
| Max. radial wheel runout   | •••   | 1 mm (0.04 in)   |
| Max. lateral wheel runout  | •••   | 0.5 mm (0.02 in) |
| <b>Front tire</b>          |   |                  |
| Tire type                  | Tubeless  | •••              |
| Size                       | 120/70 ZR17 M/C (58W)   | •••              |
| Model (manufacturer)       | BT020F GG (BRIDGESTONE)<br>D252F (DUNLOP)                                 | •••              |
| Tire pressure (cold)       |   |                  |
| 0 ~ 90 kg (0 ~ 198 lb)     | 225 kPa (2.25 kgf/cm <sup>2</sup> , 2.25 bar, 33 psi)                     | •••              |
| 90 ~ 190 kg (198 ~ 419 lb) | 250 kPa (2.5 kgf/cm <sup>2</sup> , 2.5 bar, 35.6 psi)<br>(except for CAL) | •••              |
| 90 ~ 189 kg (198 ~ 417 lb) | 250 kPa (2.5 kgf/cm <sup>2</sup> , 2.5 bar, 35.6 psi)<br>(CAL)            | •••              |
| High-speed riding          | 225 kPa (2.25 kgf/cm <sup>2</sup> , 2.25 bar, 33 psi)                     | •••              |
| Min. tire tread depth      | •••   | 1.6 mm (0.06 in) |



| Item  | Standard  | Limit                 |
|---|---|-----------------------|
| <b>Rear tire</b>  |   |                       |
| Tire type   | Tubeless  | •••                   |
| Size  | 180/55 ZR17 M/C (73W)   | •••                   |
| Model (manufacturer)  | BT020R GG (BRIDGESTONE)<br>D252 (DUNLOP)                                  | •••                   |
| Tire pressure (cold)  |   |                       |
| 0 ~ 90 kg (0 ~ 198 lb)  | 250 kPa (2.5 kgf/cm <sup>2</sup> , 2.5 bar, 35.6 psi)                     | •••                   |
| 90 ~ 190 kg (198 ~ 419 lb)                                      | 290 kPa (2.9 kgf/cm <sup>2</sup> , 2.9 bar, 41.3 psi)<br>(except for CAL) | •••                   |
| 90 ~ 189 kg (198 ~ 417 lb)                                      | 290 kPa (2.9 kgf/cm <sup>2</sup> , 2.9 bar, 41.3 psi)<br>(CAL)            | •••                   |
| High-speed riding   | 250 kPa (2.5 kgf/cm <sup>2</sup> , 2.5 bar, 35.6 psi)                     | •••                   |
| Min. tire tread depth   | •••   | 1.6 mm<br>(0.06 in)   |
| <b>Front brakes</b>   |   |                       |
| Brake type  | Dual disc brake   | •••                   |
| Operation   | Right hand operation  | •••                   |
| Recommended fluid   | DOT 4   | •••                   |
| Brake discs   |   |                       |
| Diameter × thickness  | 298 × 5 mm (11.73 × 0.20 in)  | •••                   |
| Min. thickness  | •••   | 4.5 mm<br>(0.18 in)   |
| Max. deflection   | •••   | 0.1 mm<br>(0.004 in)  |
| Brake pad lining thickness                                      | 6.0 mm (0.24 in)  | 0.8 mm<br>(0.03 in)   |
|   |   |                       |
| Master cylinder inside diameter                                 | 16 mm (0.63 in)   | •••                   |
| Caliper cylinder inside diameter                                | 30.2 mm and 25.4 mm (1.19 in and 1.00 in)                                 | •••                   |
| <b>Rear brake</b>   |   |                       |
| Brake type  | Single disc brake   | •••                   |
| Operation   | Right foot operation  | •••                   |
| Brake pedal position (below the bottom of the footrest bracket) | 25.8 mm (1.02 in)   | •••                   |
| Recommended fluid   | DOT 4   | •••                   |
| Brake discs   |   |                       |
| Diameter × thickness  | 245 × 5 mm (9.65 × 0.20 in)   | •••                   |
| Min. thickness  | •••   | 4.5 mm<br>(0.18 in)   |
| Max. deflection   | •••   | 0.15 mm<br>(0.006 in) |
| Brake pad lining thickness                                      | 6.0 mm (0.24 in)  | 1.0 mm<br>(0.04 in)   |
|   |   |                       |
| Master cylinder inside diameter                                 | 12.7 mm (0.5 in)  | •••                   |
| Caliper cylinder inside diameter                                | 38.1 mm (1.5 in)  | •••                   |

# CHASSIS SPECIFICATIONS

**SPEC**



| Item  | Standard                            | Limit                |
|---|-------------------------------------|----------------------|
| <b>Front suspension</b>   |                                     |                      |
| Suspension type   | Telescopic fork                     | •••                  |
| Front fork type   | Coil spring/oil damper              | •••                  |
| Front fork travel   | 130 mm (5.12 in)                    | •••                  |
| <b>Spring</b>   |                                     |                      |
| Free length   | 354.0 mm (13.94 in)                 | 347 mm<br>(13.66 in) |
| Spacer length   | 131.5 mm (5.18 in)                  | •••                  |
| Installed length  | 347.0 mm (13.66 in)                 | •••                  |
| Spring rate (K1)  | 7.4 N/mm (0.75 kg/mm, 42.25 lb/in)  | •••                  |
| Spring rate (K2)  | 11.8 N/mm (1,20 kg/mm, 67.38 lb/in) | •••                  |
| Spring stroke (K1)  | 0 ~ 70 mm (0 ~ 2.76 in)             | •••                  |
| Spring stroke (K2)  | 70 ~ 130 mm (2.76 ~ 5.12 in)        | •••                  |
| Inner tube outer diameter   | 43 mm (1.69 in)                     | •••                  |
| Inner tube bending limit  | •••                                 | 0.2 mm<br>(0.01 in)  |
| Optional spring available   | No                                  | •••                  |
| <b>Fork oil</b>   |                                     |                      |
| Recommended oil   | Suspension oil "01" or equivalent   | •••                  |
| Quantity (each front fork leg)  | 0.467 L (0.41 Imp qt, 0.49 US qt)   | •••                  |
| Level (from the top of the inner tube, with the inner tube fully compressed, and without the fork spring) | 134 mm (5.28 in)                    | •••                  |

# CHASSIS SPECIFICATIONS

**SPEC**



| Item                                     | Standard  | Limit                 |
|--|---|-----------------------|
| <b>Steering</b>                          |   |                       |
| Steering bearing type                    | Angular bearing                                       | •••                   |
| <b>Rear suspension</b>                   |   |                       |
| Suspension type                          | Swingarm (monocross)                                  | •••                   |
| Rear shock absorber assembly type        | Coil spring/gas-oil damper                            | •••                   |
| Rear shock absorber assembly travel      | 50 mm (1.97 in)                                       | •••                   |
| Spring                                   |   |                       |
| Free length                              | 185.0 mm (7.28 in)                                    | •••                   |
| Installed length                         | 172.0 mm (6.77 in)                                    | •••                   |
| Spring rate (K1)                         | 127.4 N/mm (12.99 kg/mm, 727.45 lb/in)                | •••                   |
| Spring stroke (K1)                       | 0 ~ 50 mm (0.00 ~ 1.97 in)                            | •••                   |
| Optional spring available                | No  | •••                   |
| Standard spring preload gas/air pressure | 1,200 kPa (12 kg/cm <sup>2</sup> , 12 bar, 170.7 psi) | •••                   |
| Spring preload adjusting positions       |   |                       |
| Minimum                                  | 1   | •••                   |
| Standard                                 | 3   | •••                   |
| Maximum                                  | 7   | •••                   |
| <b>Swingarm</b>                          |   |                       |
| Free play (at the end of the swingarm)   |   |                       |
| Radial                                   | •••   | 1.0 mm<br>(0.04 in)   |
| Axial                                    | •••   | 1.0 mm<br>(0.04 in)   |
| <b>Drive chain</b>                       |   |                       |
| Model (manufacturer)                     | 50V4 (DAIDO)  | •••                   |
| Link quantity                            | 118   | •••                   |
| Drive chain slack                        | 45 ~ 55 mm (1.77 ~ 2.17 in)                           | •••                   |
| Maximum ten-link section                 | •••   | 150.1 mm<br>(5.91 in) |



## ELECTRICAL SPECIFICATIONS

| Item  | Standard                         | Limit |
|---|----------------------------------|-------|
| <b>System voltage</b>                       | 12 V                             | ...   |
| <b>Ignition system</b>                      |                                  |       |
| Ignition system type                        | DC. T.C.I.                       | ...   |
| Ignition timing                             | 5° BTDC at 1,300 r/min           | ...   |
| Advancer type                               | Digital                          | ...   |
| Crankshaft position sensor resistance/color | 248 ~ 372 Ω at 20°C (68°F)/Gy-B  | ...   |
| T.C.I. unit model (manufacturer)            | F8T811 (MITSUBISHI)              | ...   |
| <b>Ignition coils</b>                       |                                  |       |
| Model (manufacturer)                        | JO383 (DENSO)                    | ...   |
| Minimum ignition spark gap                  | 6 mm (0.24 in)                   | ...   |
| Primary coil resistance                     | 1.53 ~ 2.07 Ω at 20°C (68°F)     | ...   |
| Secondary coil resistance                   | 12.0 ~ 18.0 kΩ at 20°C (68°F)    | ...   |
| <b>Spark plug cap</b>                       |                                  |       |
| Material                                    | Resin                            | ...   |
| Resistance                                  | 10.0 kΩ at 20°C (68°F)           | ...   |
| <b>Charging system</b>                      |                                  |       |
| System type                                 | A.C. magneto                     | ...   |
| Model (manufacturer)                        | F5VX (MORIC)                     | ...   |
| Normal output                               | 14 V/310 W at 5,000 r/min        | ...   |
| Stator coil resistance/color                | 0.22 ~ 0.34 Ω at 20°C (68°F)/W-W | ...   |
| <b>Rectifier/regulator</b>                  |                                  |       |
| Regulator type                              | Semi conductor short circuit     | ...   |
| Model (manufacture)                         | SH719AA (SHINDENGEN)             | ...   |
| No-load regulated voltage                   | 14.1 ~ 14.9 V                    | ...   |
| Rectifier capacity                          | 18 A                             | ...   |
| Withstand voltage                           | 240 V                            | ...   |
| <b>Battery</b>                              |                                  |       |
| Battery type                                | GT12B-4                          | ...   |
| Battery voltage/capacity                    | 12 V/10 Ah                       | ...   |
| Specific gravity                            | 1.320                            | ...   |
| Manufacturer                                | GS                               | ...   |
| Ten hour rate amperage                      | 1.0 A                            | ...   |
| <b>Headlight type</b>                       | Halogen bulb                     |       |
| <b>Bulbs (voltage/wattage × quantity)</b>   |                                  |       |
| Headlight                                   | 12V 60 W/55 W × 1                | ...   |
|   | 12 V 55 W × 1                    | ...   |
| Tail/brake light                            | 12 V 5 W/21 W × 1                | ...   |
| Front turn signal/position light            | 12 V 21 W/5 W × 2                | ...   |
| Rear turn signal light                      | 12 V 21 W × 2                    | ...   |
| Licence light                               | 12 V 5 W × 1                     | ...   |
| Meter light                                 | EL                               | ...   |

# ELECTRICAL SPECIFICATIONS

**SPEC**



| Item   | Standard  | Limit   |
|--|---|---|
| <b>Indicator light<br/>(voltage/wattage × quantity)</b><br>Neutral indicator light<br>High beam indicator light<br>Oil level warning light<br>Turn signal indicator light<br>Engine trouble warning light                | LED × 1<br>LED × 1<br>LED × 1<br>LED × 2<br>LED × 1   | ...<br>...<br>...<br>...<br>...   |
| <b>Electric starting system</b><br>System type<br>Starter motor<br>Model (manufacturer)<br>Power output<br>Brushes<br>Overall length<br>Spring force<br>Armature coil resistance<br>Commutator diameter<br>Mica undercut | Constant mesh<br>SM-14 (MITSUBA)<br>0.6 kW<br>10 mm (0.39 in)<br>7.16 ~ 9.52 N (730 ~ 971 g,<br>25.77 ~ 34.27 oz)<br>0.0012 ~ 0.0022 Ω at 20°C (68°F)<br>28 mm (1.1 in)<br>0.7 mm (0.03 in) | ...<br>...<br>...<br>3.5 mm<br>(0.14 in)<br>...<br>...<br>27 mm<br>(1.06 in)<br>... |
| <b>Starter relay</b><br>Model (manufacturer)<br>Amperage<br>Coil resistance  | MS5F-441 (JIDECO)<br>180 A<br>4.18 ~ 4.62 Ω at 20°C (68°F)  | ...<br>...<br>...   |
| <b>Horn</b><br>Horn type<br>Model (manufacturer) × quantity<br>Max. amperage<br>Performance<br>Coil resistance   | Plain<br>HF-12 (NIKKO) × 1<br>3 A<br>105 ~ 118 db/2 m<br>1.01 ~ 1.11 Ω at 20°C (68°F)   | ...<br>...<br>...<br>...<br>...   |
| <b>Turn signal relay</b><br>Relay type<br>Model (manufacturer)<br>Self-cancelling device built-in<br>Turn signal blinking frequency<br>Wattage   | Full transistor<br>FE246BH (DENSO)<br>No<br>75 ~ 95 cycles/min.<br>21 W × 2 + 3.4 W   | ...<br>...<br>...<br>...<br>...   |
| <b>Oil level switch</b><br>Model (manufacturer)  | 5VX (SOMIC ISHIKAWA)  | ...   |

# ELECTRICAL SPECIFICATIONS

**SPEC**



| Item   | Standard                        | Limit |
|--|---------------------------------|-------|
| <b>Fuses (amperage × quantity)</b>               |                                 |       |
| Main fuse  | 30 A × 1                        | ...   |
| Fuel injection system fuse                       | 10 A × 1                        | ...   |
| Headlight fuse                                   | 20 A × 1                        | ...   |
| Signaling system fuse                            | 10 A × 1                        | ...   |
| Ignition fuse                                    | 10 A × 1                        | ...   |
| Radiator fan motor fuse                          | 20 A × 1                        | ...   |
| Backup fuse (odometer and clock)                 | 10 A × 1                        | ...   |
| Taillight fuse                                   | 10 A × 1                        | ...   |
| Reserve fuse                                     | 30 A, 20 A, 10 A                | ...   |
| <b>Fuel level sender</b>                         |                                 |       |
| Model (manufacture)                              | 5VX (DENSO)                     | ...   |
| Sender unit resistance-full                      | 20 ~ 26 Ω                       | ...   |
| Sender unit resistance-empty                     | 134 ~ 140 Ω                     | ...   |
| <b>Starting circuit cut-off relay</b>            |                                 |       |
| Model (manufacture)                              | G8R-30Y-S (OMRON)               | ...   |
| Coil resistance                                  | 162 ~ 198 Ω                     | ...   |
| <b>Headlight relay, Radiator fan motor relay</b> |                                 |       |
| Model (manufacture)                              | ACM33211M05 (MATSUSHITA)        | ...   |
| Coil resistance                                  | 86.4 ~ 105.6 Ω                  | ...   |
| <b>Fuel injection system relay</b>               |                                 |       |
| Model (manufacture)                              | G8R-30Y-R (OMRON)               | ...   |
| Coil resistance                                  | 162 ~ 198 Ω                     | ...   |
| <b>Water temperature sensor</b>                  |                                 |       |
| Model (manufacture)                              | K003T20191 (MITSUBISHI)         | ...   |
| Resistance                                       | 0.290 ~ 0.354 Ω at 80°C (176°F) | ...   |



# CONVERSION TABLE/ GENERAL TIGHTENING TORQUE SPECIFICATIONS

**SPEC**



EAS00028

EAS00030

## 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.

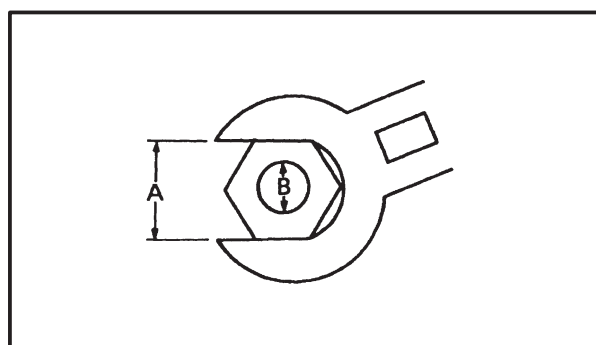
|        |   |            |   |          |
|--------|---|------------|---|----------|
| METRIC |   | MULTIPLIER | = | IMPERIAL |
| ** mm  | × | 0.03937    | = | ** in    |
| 2 mm   | × | 0.03937    | = | 0.08 in  |

## CONVERSION TABLE

| METRIC TO IMPERIAL  |                       |            |                           |
|---------------------|-----------------------|------------|---------------------------|
|                     | Metric unit           | Multiplier | Imperial unit             |
| Tightening 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                        |
| Speed               | km/hr                 | 0.6214     | mph                       |
| Distance            | km                    | 0.6214     | mi                        |
|                     | m                     | 3.281      | ft                        |
|                     | m                     | 1.094      | yd                        |
|                     | cm                    | 0.3937     | in                        |
|                     | mm                    | 0.03937    | in                        |
| Volume/<br>Capacity | cc (cm <sup>3</sup> ) | 0.03527    | oz (IMP liq.)             |
|                     | cc (cm <sup>3</sup> ) | 0.06102    | cu•in                     |
|                     | lt (liter)            | 0.8799     | qt (IMP liq.)             |
|                     | lt (liter)            | 0.2199     | gal (IMP liq.)            |
| Misc.               | kg/mm                 | 55.997     | lb/in                     |
|                     | kg/cm <sup>2</sup>    | 14.2234    | psi (lb/in <sup>2</sup> ) |
|                     | Centigrade (°C)       | 9/5+32     | Fahrenheit (°F)           |

## GENERAL TIGHTENING TORQUE SPECIFICATIONS

This chart specifies tightening torques for standard fasteners with a standard ISO thread pitch. Tightening torque specifications for special components or assemblies are provided for each chapter of this manual. To avoid warpage, tighten multi-fastener assemblies in a crisscross pattern and progressive stages until the specified tightening torque is reached. Unless otherwise specified, tightening torque specifications require clean, dry threads. Components should be at room temperature.



A: Distance between flats  
B: Outside thread diameter

| A<br>(nut) | B<br>(bolt) | General tightening torques |      |       |
|------------|-------------|----------------------------|------|-------|
|            |             | Nm                         | m•kg | ft•lb |
| 10 mm      | 6 mm        | 6                          | 0.6  | 4.3   |
| 12 mm      | 8 mm        | 15                         | 1.5  | 11    |
| 14 mm      | 10 mm       | 30                         | 3.0  | 22    |
| 17 mm      | 12 mm       | 55                         | 5.5  | 40    |
| 19 mm      | 14 mm       | 85                         | 8.5  | 61    |
| 22 mm      | 16 mm       | 130                        | 13.0 | 94    |



**TIGHTENING TORQUES**  
**ENGINE TIGHTENING TORQUES**

| Item                                   | Fastener | Thread size | Q'ty | Tightening torque |            |           | Remarks             |
|--|----------|-------------|------|-------------------|------------|-----------|---------------------|
|  |          |             |      | Nm                | m•kg       | ft•lb     |                     |
| Spark plugs                            | –        | M10         | 4    | 18                | 1.8        | 13        |                     |
| Cylinder head                          | Bolt     | M10         | 10   | 1st 19            | 1.9        | 14        |                     |
|  |          |             |      | 2nd 50            | 5.0        | 36        |                     |
|  | Bolt     | M6          | 2    | 12                | 1.2        | 8.7       |                     |
| Camshaft caps                          | Bolt     | M6          | 20   | 10                | 1.0        | 7.2       |                     |
| Cylinder head cover                    | Bolt     | M6          | 6    | 12                | 1.2        | 8.7       |                     |
| Camshaft cap oil check bolt            | Bolt     | M8          | 1    | 20                | 2.0        | 15        |                     |
| Air indication system reed valve cover | Bolt     | M6          | 4    | 10                | 1.0        | 7.2       | Yamaha bond No.1215 |
| Air-cut valve stay                     | Bolt     | M6          | 1    | 10                | 1.0        | 7.2       |                     |
| Camshaft sprockets                     | Bolt     | M7          | 4    | 20                | 2.0        | 15        |                     |
| Connecting rod caps (except for CAL)   | Nut      | M7          | 8    | 15 + 150°         | 1.5 + 150° | 11 + 150° |                     |
| Connecting rod caps (for CAL)          | Bolt     | M7          | 8    | 15 + 120°         | 1.5 + 120° | 11 + 120° |                     |
| Generator rotor                        | Bolt     | M12         | 1    | 75                | 7.5        | 54        |                     |
| Timing chain tensioner                 | Bolt     | M6          | 2    | 12                | 1.2        | 8.7       |                     |
| Timing chain tensioner cap bolt        | Bolt     | M6          | 1    | 7.0               | 0.7        | 5.1       |                     |
| Thermostat cover                       | Bolt     | M6          | 2    | 12                | 1.2        | 8.7       |                     |
| Coolant hose joint                     | Bolt     | M6          | 2    | 10                | 1.0        | 7.2       |                     |
| Water pump cover                       | Bolt     | M6          | 2    | 10                | 1.0        | 7.2       |                     |
| Water pump                             | Bolt     | M6          | 2    | 12                | 1.2        | 8.7       |                     |
| Thermo sensor                          | Bolt     | M12         | 1    | 18                | 1.8        | 13        |                     |
| Coolant hose drain bolt (water pump)   | Bolt     | M6          | 1    | 10                | 1.0        | 7.2       |                     |
| Radiator and frame                     | Bolt     | M6          | 2    | 7.0               | 0.7        | 5.1       |                     |
| Radiator stay and crankcase            | Bolt     | M6          | 1    | 10                | 1.0        | 7.2       |                     |
| Oil pump cover                         | Bolt     | M6          | 3    | 12                | 1.2        | 8.7       |                     |
| Oil pump                               | Bolt     | M6          | 3    | 12                | 1.2        | 8.7       |                     |
| Oil pan                                | Bolt     | M6          | 12   | 12                | 1.2        | 8.7       |                     |
| Oil pan (center)                       | Bolt     | M6          | 1    | 12                | 1.2        | 8.7       |                     |
| Oil cooler                             | Bolt     | M20         | 1    | 63                | 6.3        | 46        |                     |
| Engine oil drain bolt                  | Bolt     | M14         | 1    | 43                | 4.3        | 31        |                     |
| Oil filter union bolt                  | Bolt     | M20         | 1    | 70                | 7.0        | 51        |                     |
| Oil filter                             | –        | M20         | 1    | 17                | 1.7        | 12        |                     |
| Oil pump chain guide                   | Bolt     | M6          | 2    | 12                | 1.2        | 8.7       |                     |
| Oil pipe                               | Bolt     | M6          | 2    | 12                | 1.2        | 8.7       |                     |
| Throttle body joint                    | Bolt     | M6          | 8    | 10                | 1.0        | 7.2       |                     |
| Air filter case cover                  | Screw    | M5          | 6    | 1.2               | 0.12       | 0.9       |                     |
| Throttle body and throttle body joint  | Clamp    | M4          | 4    | 3.0               | 0.3        | 2.2       |                     |
| Throttle body and air filter case      | Clamp    | M5          | 4    | 3.0               | 0.3        | 2.2       |                     |
| Exhaust pipe and cylinder head         | Nut      | M8          | 8    | 20                | 2.0        | 15        |                     |
| Exhaust pipe and exhaust pipe stay     | Bolt     | M8          | 1    | 20                | 2.0        | 15        |                     |
| Catalyst pipe and catalyst pipe stay   | Bolt     | M8          | 1    | 20                | 2.0        | 15        |                     |
| Muffler joint                          | Bolt     | M8          | 1    | 20                | 2.0        | 15        | See NOTE 1          |
| Catalyst joint                         | Bolt     | M8          | 1    | 20                | 2.0        | 15        | See NOTE 1          |
| Exhaust stay and frame                 | Bolt     | M8          | 1    | 34                | 3.4        | 25        |                     |
| Catalyst pipe stay and frame           | Bolt     | M8          | 1    | 20                | 2.0        | 15        |                     |
| Muffler stay and frame                 | Bolt     | M8          | 2    | 20                | 2.0        | 15        |                     |

# TIGHTENING TORQUES

**SPEC**



| Item   | Fastener | Thread size | Q'ty | Tightening torque |      |       | Remarks             |
|--|----------|-------------|------|-------------------|------|-------|---------------------|
|  |          |             |      | Nm                | m•kg | ft•lb |                     |
| Crankcase (main journal)                         | Bolt     | M8          | 10   | See NOTE 2        |      |       |                     |
| Crankcase  | Bolt     | M6          | 2    | 14                | 1.4  | 1.0   |                     |
| Crankcase  | Bolt     | M6          | 13   | 12                | 1.2  | 8.7   |                     |
| Crankcase  | Bolt     | M8          | 2    | 24                | 2.4  | 17    |                     |
| Generator rotor cover                            | Bolt     | M6          | 9    | 12                | 1.2  | 8.7   |                     |
| Clutch cover                                     | Bolt     | M6          | 7    | 12                | 1.2  | 8.7   |                     |
| Clutch cover                                     | Bolt     | M6          | 1    | 12                | 1.2  | 8.7   | Yamaha bond No.1215 |
| Pickup coil rotor cover                          | Bolt     | M6          | 7    | 12                | 1.2  | 8.7   |                     |
| Clutch cable holder                              | Bolt     | M6          | 2    | 12                | 1.2  | 8.7   |                     |
| Pickup coil rotor cover                          | Bolt     | M8          | 1    | 15                | 1.5  | 11    |                     |
| Shift shaft cover                                | Bolt     | M6          | 6    | 12                | 1.2  | 8.7   |                     |
| Breather plate                                   | Screw    | M6          | 3    | 12                | 1.2  | 8.7   |                     |
| Stator coil                                      | Screw    | M6          | 3    | 10                | 1.0  | 7.2   |                     |
| Pickup rotor cover and clamp                     | Screw    | M6          | 1    | 7.0               | 0.7  | 5.1   |                     |
| Drive sprocket cover                             | Bolt     | M6          | 3    | 10                | 1.0  | 7.2   |                     |
| Oil gallery bolt                                 | –        | M16         | 2    | 8                 | 0.8  | 5.8   |                     |
| Generator rotor cover and stator coil lead clamp | Screw    | M6          | 1    | 10                | 1.0  | 7.2   |                     |
| Breather hose cover                              | Bolt     | M6          | 4    | 12                | 1.2  | 8.7   |                     |
| Oil pipe   | Bolt     | M6          | 2    | 12                | 1.2  | 8.7   |                     |
| Crankshaft position sensor                       | Bolt     | M6          | 2    | 10                | 1.0  | 7.2   |                     |
| Starter clutch                                   | Screw    | M8          | 3    | 32                | 3.2  | 23    |                     |
| Starter motor cover bolt                         | Bolt     | M6          | 2    | 3.4               | 0.34 | 2.5   |                     |
| Clutch pressure plate                            | Screw    | M6          | 6    | 8.0               | 0.8  | 5.8   |                     |
| Clutch boss                                      | Nut      | M20         | 1    | 90                | 9.0  | 65    | Use a lock washer   |
| Drive sprocket                                   | Nut      | M18         | 1    | 90                | 9.0  | 65    | Use a lock washer   |
| Transmission bearing housing                     | Screw    | M6          | 3    | 12                | 1.2  | 8.7   |                     |
| Shift drum retainer                              | Bolt     | M6          | 2    | 10                | 1.0  | 7.2   |                     |
| Shift shaft spring stopper                       | Screw    | M8          | 1    | 22                | 2.2  | 16    |                     |
| Shift rod  | Nut      | M6          | 1    | 7                 | 0.7  | 5.1   | Left thread         |
| Shift rod  | Nut      | M6          | 1    | 7                 | 0.7  | 5.1   |                     |
| Shift rod joint                                  | Bolt     | M6          | 1    | 10                | 1.0  | 7.2   |                     |
| Shift arm  | Bolt     | M6          | 1    | 10                | 1.0  | 7.2   |                     |
| Pickup coil rotor                                | Bolt     | M8          | 1    | 35                | 3.5  | 25    |                     |
| Starter motor                                    | Bolt     | M6          | 2    | 10                | 1.0  | 7.2   |                     |
| Neutral switch                                   | –        | M10         | 1    | 20                | 2.0  | 14    |                     |
| Oil level switch                                 | Bolt     | M6          | 2    | 10                | 1.0  | 7.2   |                     |
| Speed sensor                                     | Bolt     | M6          | 1    | 10                | 1.0  | 7.2   |                     |

**NOTE 1:**

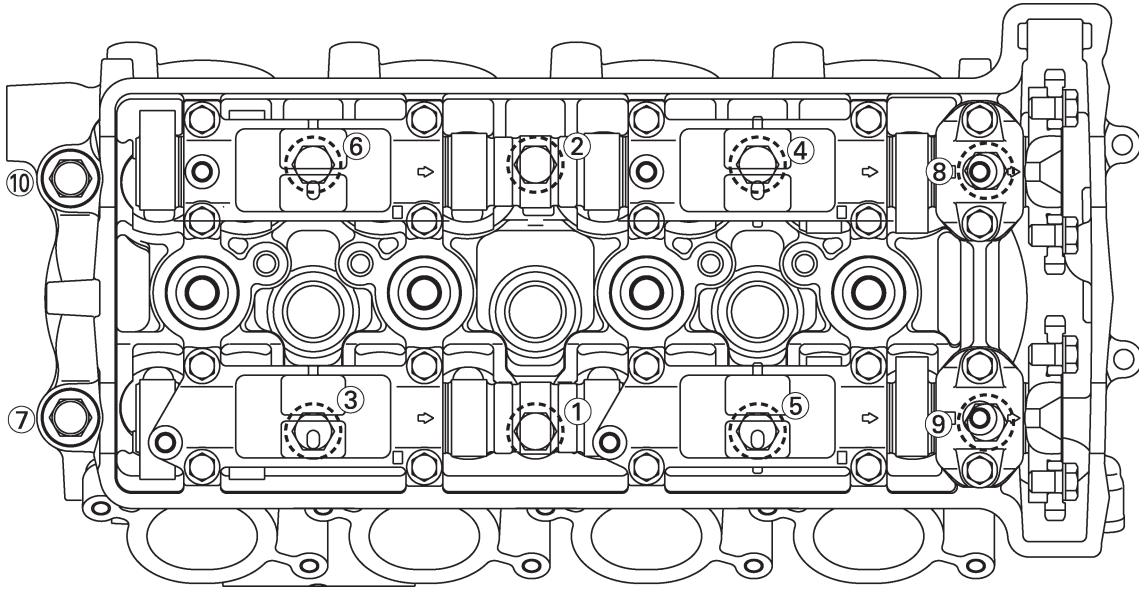
Retighten the bolt at 1000 km (600 ml).

**NOTE 2:**

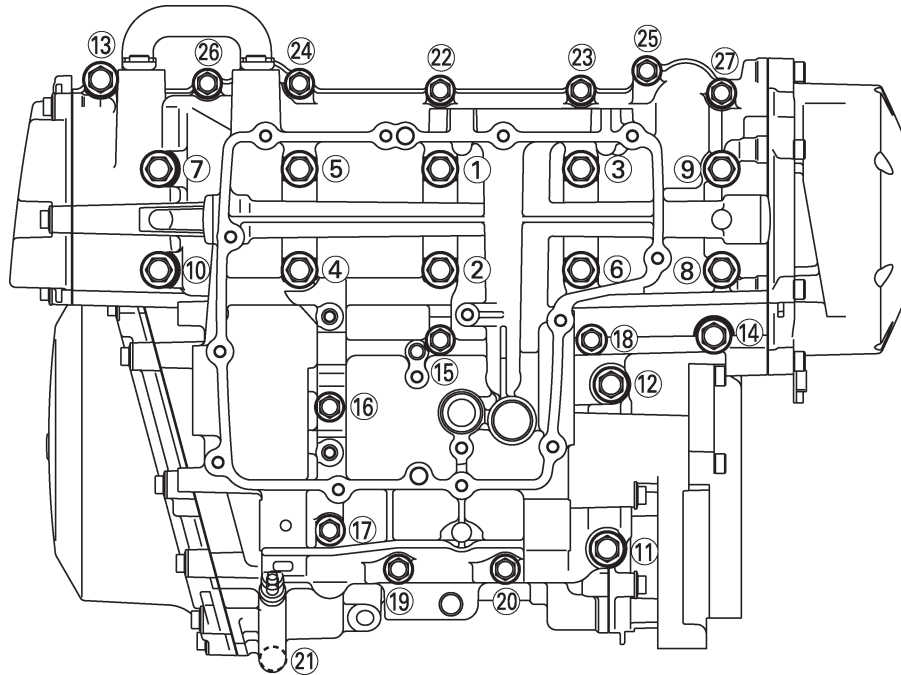
1. First, tighten the bolts to approximately 12 Nm (1.2 m•kg, 8.7 ft•lb) with a torque wrench. (Following the tightening order)
2. Retighten the bolts 25 Nm (2.5 m•kg, 18 ft•lb) with a torque wrench.
3. Loosen the all bolts one by one following the tightening order and then tighten them to 27 Nm (2.7 m•kg, 20 ft•lb) again.




Cylinder head tightening sequence:



Crankcase tightening sequence.





CHASSIS TIGHTENING TORQUES

| Item  | Thread size | Tightening |      |       | Remarks  |
|---|-------------|------------|------|-------|--|
|   |             | Nm         | m•kg | ft•lb |  |
| Upper bracket pinch bolt                                | M8          | 30         | 3.0  | 22    | See NOTE 1   |
| Steering stem nut                                       | M22         | 110        | 11   | 80    |  |
| Upper bracket and upper handlebar holder                | M8          | 23         | 2.3  | 17    |  |
| Under bracket pinch bolt                                | –           | 30         | 3.0  | 22    |  |
| Lower ring nut  | M25         | 18         | 1.8  | 13    |  |
| Front fork cap bolt                                     | M35         | 24         | 2.4  | 17    |  |
| Damper rod assembly bolt                                | M10         | 23         | 2.3  | 17    |  |
| Pinch bolt (front wheel axle)                           | M8          | 23         | 2.3  | 17    |  |
| Front brake master cylinder and master cylinder bracket | M6          | 10         | 1.0  | 7.2   |  |
| Front brake master cylinder cap screw                   | M4          | 2          | 0.2  | 1.4   |  |
| Front brake hose union bolt                             | M10         | 30         | 3.0  | 22    | See NOTE 2   |
| Front brake hose holder and front fork                  | M6          | 10         | 1.0  | 7.2   |  |
| Front cowling stay and frame                            | M8          | 33         | 3.3  | 24    |  |
| Front cowling bracket and frame                         | M6          | 7          | 0.7  | 5.1   |  |
| Front fender and front fork                             | M6          | 6          | 0.6  | 4.3   |  |
| Clutch lever holder pinch bolt                          | M6          | 11         | 1.1  | 8.0   |  |
| Engine mount bolts (left of front side)                 | M10         | 55         | 5.5  | 40    |  |
| Engine mount bolts (left of rear side)                  | M10         | 55         | 5.5  | 40    |  |
| Engine mount bolts (right of front side)                | M10         | 55         | 5.5  | 40    |  |
| Engine mount self locking nut (upper)                   | M10         | 55         | 5.5  | 40    |  |
| Engine mount self locking nut (lower)                   | M10         | 55         | 5.5  | 40    |  |
| Front frame and rear frame (upper)                      | M10         | 41         | 4.1  | 30    | See NOTE 3  |
| Front frame and rear frame (lower)                      | M10         | 41         | 4.1  | 30    |  |
| Pivot shaft and frame                                   | M18         | 120        | 12   | 87    |  |
| Rear shock absorber and frame                           | M10         | 40         | 4.0  | 29    |  |
| Rear shock absorber and rear arm                        | M10         | 40         | 4.0  | 29    |  |
| Seal guard and rear arm                                 | M6          | 7          | 0.7  | 5.1   |  |
| Rear fender and rear arm                                | M6          | 7          | 0.7  | 5.1   |  |
| Rear brake hose holder and rear arm                     | M6          | 7          | 0.7  | 5.1   |  |
| Fuel tank bracket and frame                             | M6          | 7          | 0.7  | 5.1   |  |
| Fuel tank bracket and fuel tank                         | M6          | 7          | 0.7  | 5.1   |  |
| Fuel tank and rear frame                                | M6          | 7          | 0.7  | 5.1   |  |
| Fuel tank and fuel tank cap                             | M5          | 6          | 0.6  | 4.3   |  |
| Fuel pump and fuel tank                                 | M5          | 4          | 0.4  | 2.9   |  |
| Ignition coil and battery box                           | M6          | 7          | 0.7  | 5.1   |  |
| Seat lock and frame                                     | M6          | 7          | 0.7  | 5.1   |  |
| Rotor and mud guard                                     | M6          | 3          | 0.3  | 2.2   |  |
| Licence plate light and flap                            | M5          | 4          | 0.4  | 2.9   |  |
| Front side reflector and front brake hose holder        | M5          | 4          | 0.4  | 2.9   |  |
| Rear side reflector and stay                            | M5          | 3          | 0.3  | 2.2   |  |
| Rear reflector and flap                                 | M5          | 4          | 0.4  | 2.9   |  |
| Flap and bracket 6                                      | M6          | 7          | 0.7  | 5.1   |  |
| Bracket 6 and rear frame                                | M6          | 19         | 1.9  | 14    |  |
| Seat handle and tail/brake right unit                   | M6          | 3          | 0.3  | 2.2   |  |
| Rear fender cover and seat handle                       | M5          | 4          | 0.4  | 2.9   |  |
| Seat handle bolt  | M8          | 23         | 2.3  | 17    |  |
| Muffler and rear fender                                 | M6          | 7          | 0.7  | 5.1   |  |

## TIGHTENING TORQUES

**SPEC**



| Item   | Thread size | Tightening |      |       | Remarks   |
|--|-------------|------------|------|-------|---|
|  |             | Nm         | m•kg | ft•lb |   |
| Side cover and rear frame                                    | M6          | 10         | 1.0  | 7.2   |   |
| Rear mud guard and rear frame                                | M6          | 7          | 0.7  | 5.1   |   |
| Engine stop switch and frame                                 | M4          | 2          | 0.2  | 1.4   |   |
| Coolant reserver tank bracket and stay 1, 2                  | M6          | 10         | 1.0  | 7.2   |   |
| Stay 1, 2 and frame  | M6          | 10         | 1.0  | 7.2   |   |
| Coolant reserver tank bracket and coolant reserver tank      | M6          | 4          | 0.4  | 2.9   |   |
| Canister and canister bracket (for CAL)                      | M6          | 7          | 0.7  | 5.1   |   |
| Canister bracket and coolant reserver tank bracket (forCAL)  | M6          | 7          | 0.7  | 5.1   |   |
| Front wheel axle shaft and bolt                              | M18         | 72         | 7.2  | 52    |   |
| Front wheel axle pinch bolt                                  | M8          | 23         | 2.3  | 17    |   |
| Front brake caliper and front fork                           | M10         | 40         | 4.0  | 29    |   |
| Front brake disc and front wheel                             | M6          | 18         | 1.8  | 13    |  |
| Brake caliper bleed screw                                    | M7          | 6          | 0.6  | 4.3   |   |
| Rear wheel axle nut  | M24         | 120        | 12   | 87    |   |
| Rear brake disc and rear wheel                               | M8          | 30         | 3.0  | 22    |  |
| Rear brake caliper bolt front and rear brake caliper bracket | M8          | 27         | 2.7  | 20    |   |
| Rear brake caliper bolt rear and rear brake caliper bracket  | M8          | 22         | 2.2  | 16    |   |
| Rear wheel sprocket and rear wheel drive hub                 | M10         | 100        | 10   | 72    |   |
| Chain adjusting bolt lock nut                                | M8          | 16         | 1.6  | 12    |   |
| Rear brake hose union bolt                                   | M10         | 30         | 3.0  | 22    |   |
| Sidestand bolt lock nut                                      | M10         | 46         | 4.6  | 33    |   |
| Sidestand bracket and frame                                  | M10         | 63         | 6.3  | 46    |   |
| Sidestand switch screw                                       | M5          | 4          | 0.4  | 2.9   |   |
| Footrest bracket and frame                                   | M8          | 30         | 3.0  | 22    |   |
| Rear brake reserver tank and coolant reserver tank bracket   | M6          | 3          | 0.3  | 2.2   |   |
| Rear master cylinder and footrest bracket                    | M8          | 23         | 2.3  | 17    |   |
| Mainstand and nut  | M10         | 73         | 7.3  | 53    |   |
| Footrest and footrest bolt                                   | M8          | 10         | 1.0  | 7.2   |   |
| Brake pedal and brake shaft                                  | M6          | 8          | 0.8  | 5.8   |   |

**NOTE 1:**

1. First, tighten the ring nut to approximately 52 Nm (5.2 m•kg, 38 ft•lb) with a torque wrench, then loosen the ring nut completely.
2. Retighten the lower ring nut to specification.

**NOTE 2:**

Refer to “INSTALLING THE ENGINE” in chapter 5.

**NOTE 3:**

To repair, make sure to apply the liquid fixing agent to the bolt without fixing agent (90149 – 10001) and use it.



EAS00031

**LUBRICATION POINTS AND LUBRICANT TYPES  
ENGINE**

| Lubrication point  | Lubricant           |
|--|---------------------|
| Oil seal lips  |                     |
| O-rings  |                     |
| Bearings and bushes  |                     |
| Crankshaft pins  |                     |
| Piston surfaces  |                     |
| Piston pins  |                     |
| Connecting rod bolts   |                     |
| Crankshaft journals  |                     |
| Camshaft lobes   |                     |
| Camshaft journals  |                     |
| Valve stems (intake and exhaust)                             |                     |
| Valve stem ends (intake and exhaust)                         |                     |
| Valve lifter surface   |                     |
| Piston cooler (O-ring)                                       |                     |
| Oil pump rotors (inner and outer)                            |                     |
| Oil pump housing   |                     |
| Oil strainer   |                     |
| Clutch (pull rod)  |                     |
| Starter clutch idle gear inner surface                       |                     |
| Starter clutch assembly                                      |                     |
| Primary driven gear  |                     |
| Transmission gears (wheel and pinion)                        |                     |
| Main axle and drive axle                                     |                     |
| Shift drum   |                     |
| Shift forks and shift fork guide bars                        |                     |
| Shift shaft  |                     |
| Shift shaft boss   |                     |
| Cylinder head cover mating surface                           | Yamaha bond No.1215 |
| Cylinder head cover semicircular                             | Yamaha bond No.1215 |
| Crankcase mating surface                                     | Yamaha bond No.1215 |
| Generator rotor cover (stator coil assembly lead grommet)    | Yamaha bond No.1215 |
| Pickup rotor cover (crankshaft position sensor lead grommet) | Yamaha bond No.1215 |



EAS00032

## CHASSIS

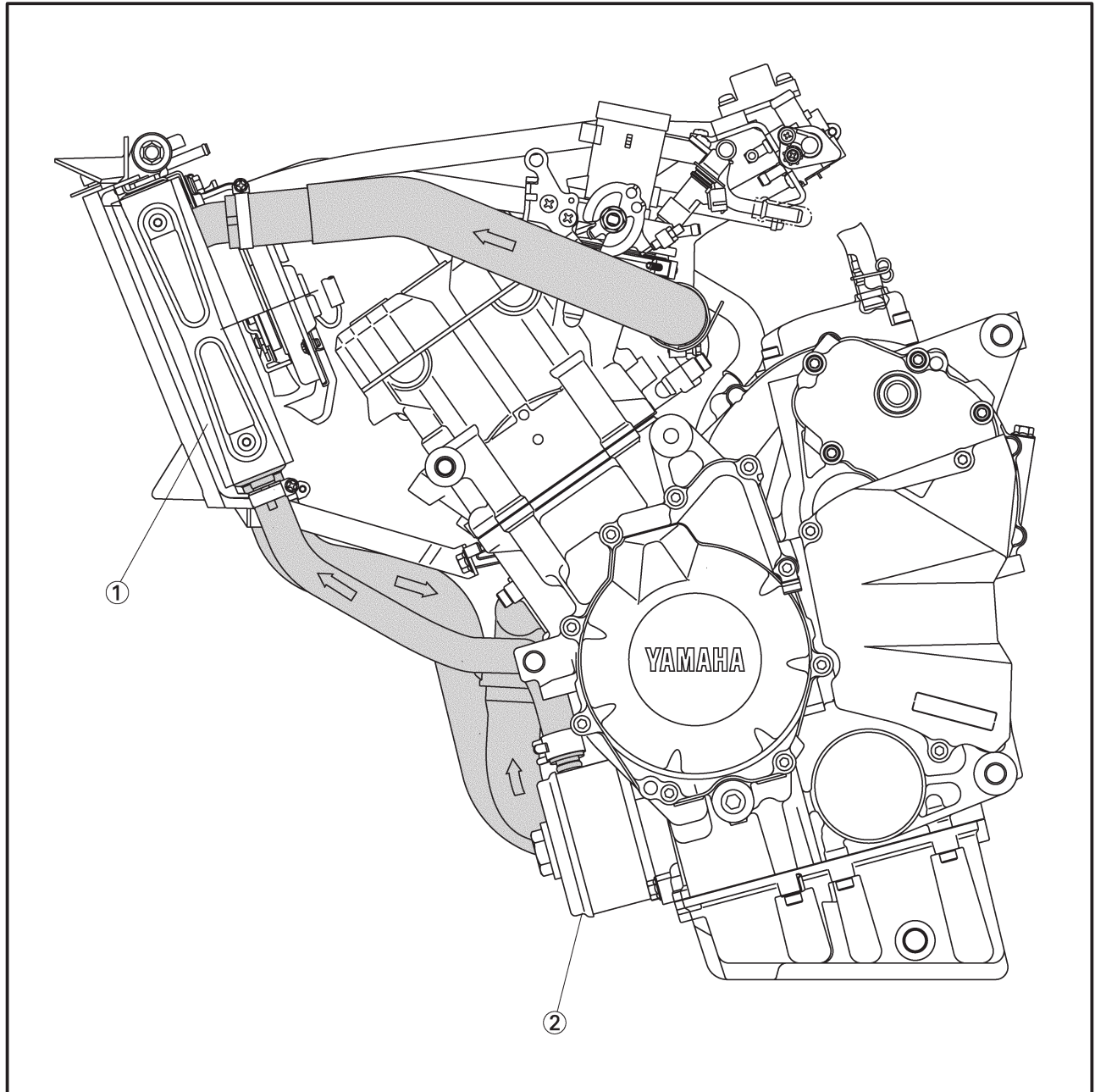
| Lubrication point   | Lubricant |
|---|-----------|
| Steering bearings and bearing races (upper and lower)       |           |
| Front wheel oil seal (right and left)                       |           |
| Rear wheel oil seal   |           |
| Rear wheel drive hub oil seal                               |           |
| Rear wheel drive hub mating surface                         |           |
| Rear brake pedal shaft                                      |           |
| Sidestand pivoting point and metal-to-metal moving parts    |           |
| Link and sidestand switch contact point                     |           |
| Throttle grip inner surface                                 |           |
| Brake lever pivoting point and metal-to-metal moving parts  |           |
| Clutch lever pivoting point and metal-to-metal moving parts |           |
| Rear shock absorber collar                                  |           |
| Pivot shaft   |           |
| Swingarm pivot bearing                                      |           |
| Swingarm head pipe end, oil seal and bush                   |           |
| Engine mount bolts (rear upper and lower)                   |           |
| Shift pedal shaft   |           |
| Shift shaft joint   |           |
| Rear footrest ball and metal-to-metal moving parts          |           |
| Main stand metal-to-metal moving parts                      |           |





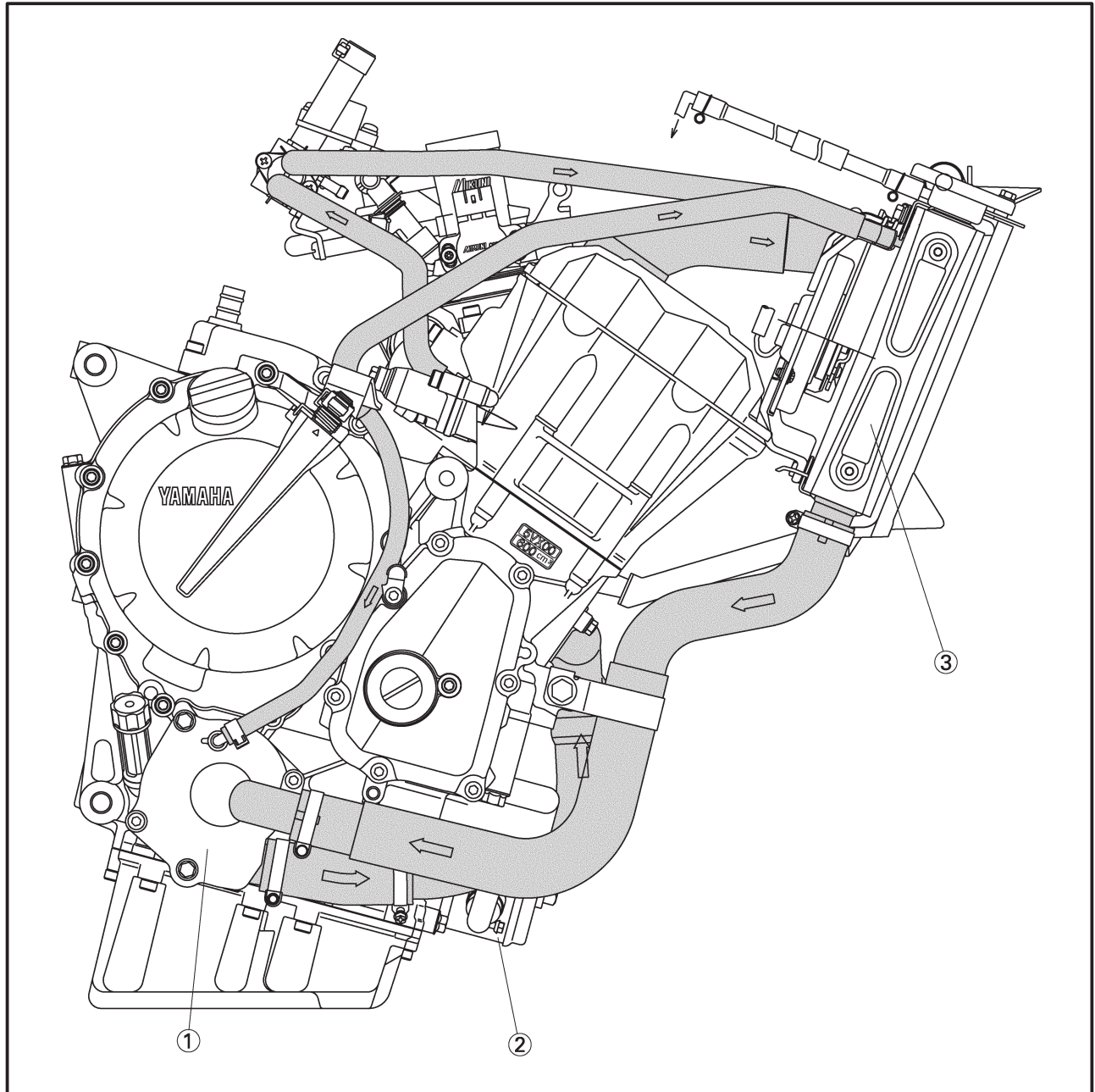
**COOLING SYSTEM DIAGRAMS**

- ① Radiator
- ② Oil cooler





- ① Water pump
- ② Oil cooler
- ③ Radiator





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