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# YZF-R6

# '99

5EB1-AE1

# SERVICE MANUAL

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**YZF-R6  
SERVICE MANUAL**  
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## NOTICE

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

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

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**NOTE:**

Designs and specifications are subject to change without notice.

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## IMPORTANT MANUAL INFORMATION

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



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

**WARNING**

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

**CAUTION:**

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

**NOTE:**

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

## HOW TO USE THIS MANUAL

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

- ① The manual is divided into chapters. An abbreviation and symbol in the upper right corner of each page indicate the current chapter. Refer to "SYMBOLS".
- ② Each chapter is divided into sections. The current section title is shown at the top of each page, except in Chapter 3 ("PERIODIC CHECKS AND ADJUSTMENTS"), where the sub-section title(-s) appears.
- ③ Sub-section titles appear in smaller print than the section title.
- ④ To help identify parts and clarify procedure steps, there are exploded diagrams at the start of each removal and disassembly section.
- ⑤ Numbers are given in the order of the jobs in the exploded diagram. A circled number indicates a disassembly step.
- ⑥ Symbols indicate parts to be lubricated or replaced. Refer to "SYMBOLS".
- ⑦ A job instruction chart accompanies the exploded diagram, providing the order of jobs, names of parts, notes in jobs, etc.
- ⑧ Jobs requiring more information (such as special tools and technical data) are described sequentially.

**CLUTCH**

**ENG**

**CLUTCH**

**ENG**

**REMOVING THE CLUTCH**

1. Remove:
  - clutch cover (1)

**NOTE:**  
Loosen each bolt 1/4 of a turn at time, in stages and in a crisscross pattern. After all of the bolts are fully loosened, remove them.

2. Straighten the lock washer tab.
3. Loosen:
  - clutch boss nut (1)

**NOTE:**  
While holding the clutch boss (2) with the clutch holding tool (3), loosen the clutch boss nut.

**Clutch holding tool**  
90890-04086

4. Remove:
  - clutch boss nut (1)
  - lock washer (2)
  - clutch boss assembly (3)

**NOTE:**  
There is a built-in damper between the clutch boss and the friction plate. It is not necessary to remove the wire circlip (4) and disassemble the built-in damper unless there is serious clutch chattering.

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

1. Check:
  - Friction plate
  - Damage/wear → Replace the friction plates as a set.
2. Measure:
  - Friction plate thickness
  - Out of specification → Replace the friction plates as a set.

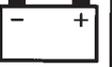
**NOTE:**  
Measure the friction plate at four places.

**Friction plate thickness**  
2.9 – 3.1 mm  
◀Limits: 2.8 mm

Order	Job/Part	Qty	Remarks
<b>Removing the clutch cover</b>			
	Bottom cowling and right side cowling		Remove the parts in the order listed. Refer to "COWLINGS" in chapter 3.
	Engine oil		Drain. Refer to "CHANGING THE ENGINE OIL" in chapter 3.
1	Clutch cable	1	
2	Clutch cover	1	
3	Clutch cover gasket	1	
4	Dowel pin	2	
For installation, reverse the removal procedure.			

4-39

4-43

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

EB004000

## 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 Engine
- ⑤ Cooling system
- ⑥ Carburetor(-s)
- ⑦ Chassis
- 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 base 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

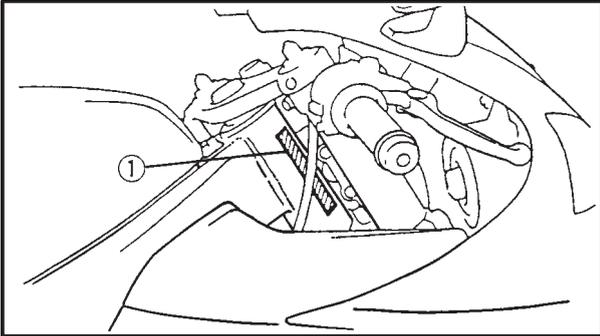
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	<b>CHK ADJ</b> <b>3</b>
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## CHAPTER 1. GENERAL INFORMATION

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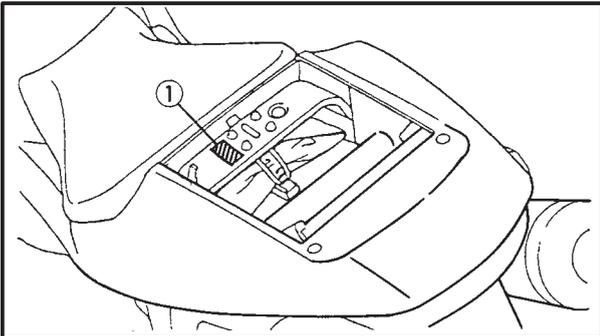
EB100000

## GENERAL INFORMATION MOTORCYCLE IDENTIFICATION

EB100010

### VEHICLE IDENTIFICATION NUMBER

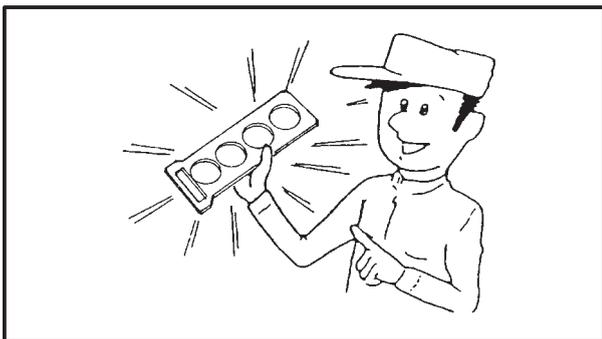
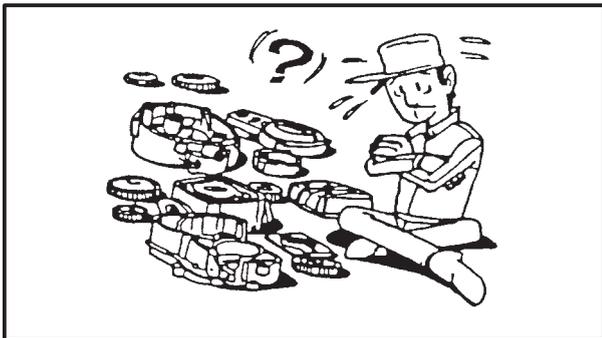
The vehicle identification number ① is stamped into the right side of the steering head pipe.



EB100020

### MODEL CODE

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



EB102000

## IMPORTANT INFORMATION

### PREPARATION FOR REMOVAL AND DIS-ASSEMBLY

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

EB102010

### 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.

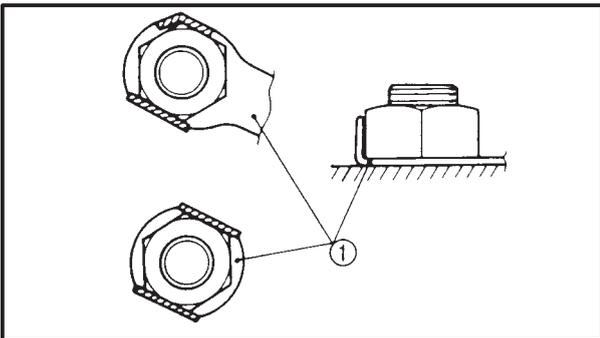
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### GASKETS, OIL SEALS AND O-RINGS

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.

**USING A DYNAMOMETER**

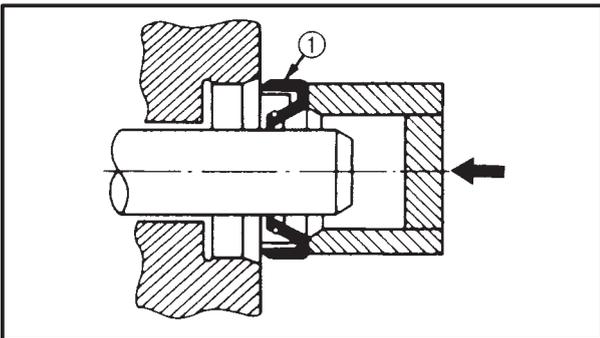
The YZF-R6 has a carbon muffler that may change color when exposed to high temperatures. Therefore, when using a dynamometer always use a fan to cool the muffler.



EB102030

**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 washer tabs and the cotter pin ends along a flat of the bolt or nut.



EB102040

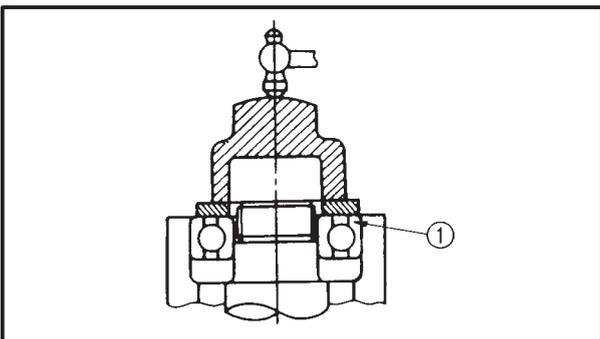
**BEARINGS AND OIL SEALS**

1. 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 base grease. Oil bearings liberally when installing, if appropriate.

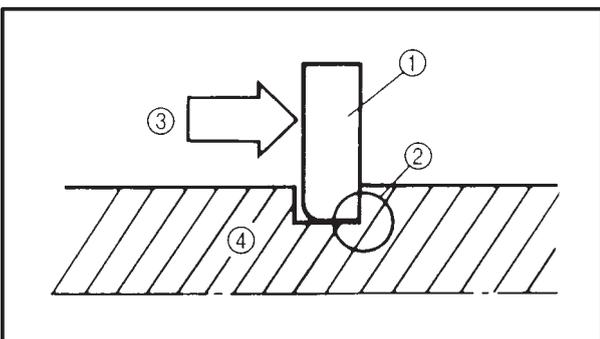
(1) Oil seal

**CAUTION:**

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



(1) Bearing



EB102050

**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 that the sharp-edged corner (2) is positioned opposite the thrust (3) that the circlip receives.

(4) Shaft



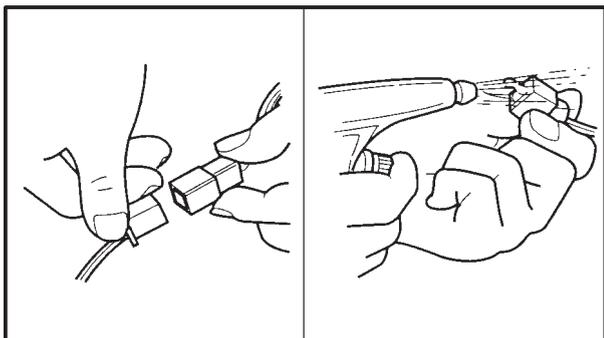
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## CHECKING THE CONNECTIONS

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

1. Disconnect:

- lead
- coupler
- connector

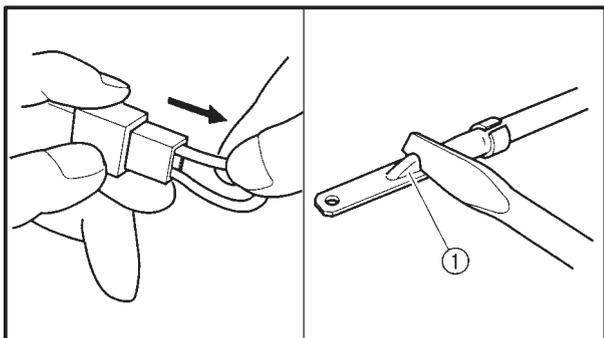


2. Check:

- lead
- coupler
- connector

Moisture → Dry with an air blower.

Rust/stains → Connect and disconnect several times.



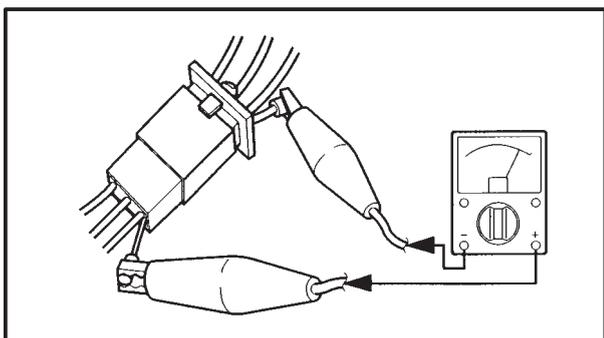
3. Check:

- all connections

Loose connection → Connect properly.

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

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

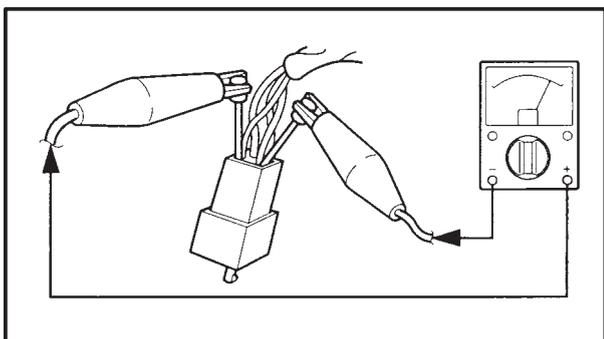


4. Connect:

- lead
- coupler
- connector

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

Make sure that all connections are tight.



5. Check:

- continuity  
(with the pocket tester)

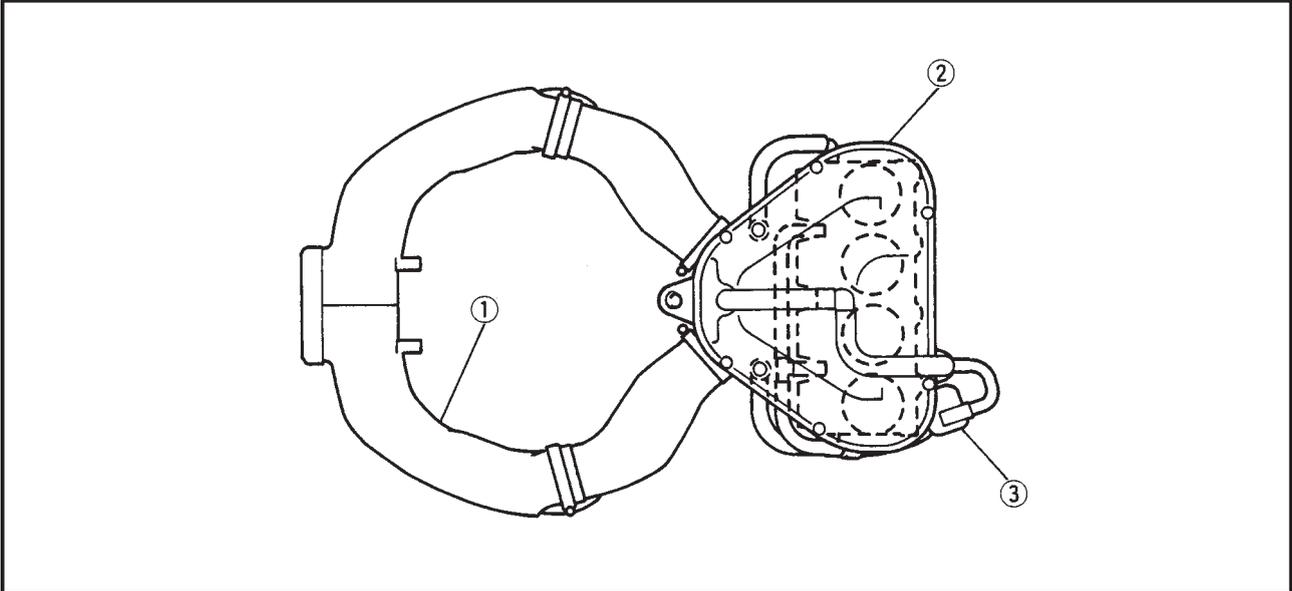
	<b>Pocket tester</b> 90890-03112
--	-------------------------------------

**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.

**FEATURES**  
**AIR INTAKE SYSTEM**

System diagram



This system is designed to improve the power while riding a motorcycle at a high speed by increasing the air intake efficiency by means of pressurizing the air filter case (2) where the air is taken in via the air duct (1) from the air intake port located under the headlight.

The system also delivers air pressure from the air filter case to the carburetor side.

The air pressure is operated to the fuel level in the carburetor to supply the appropriate fuel to increase the power.

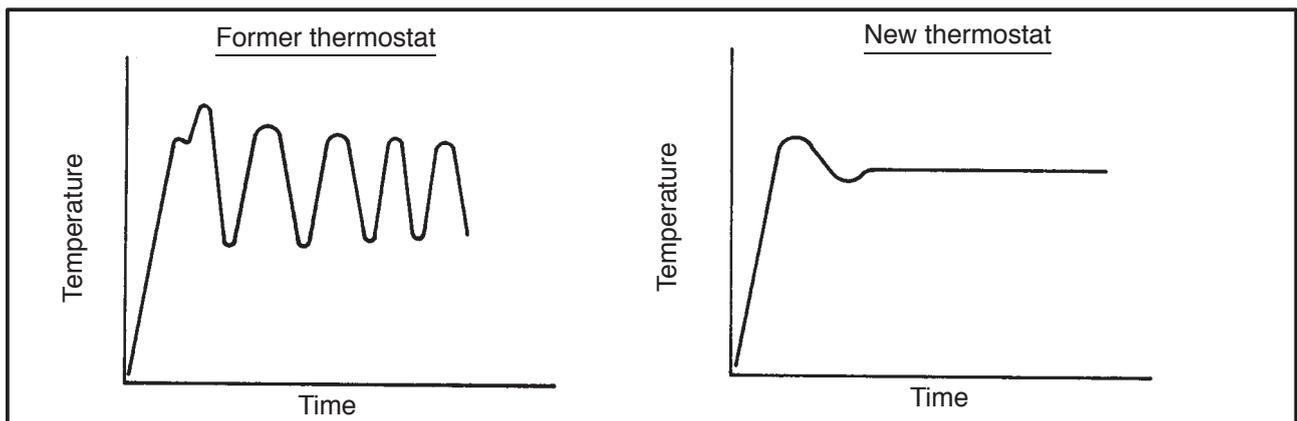
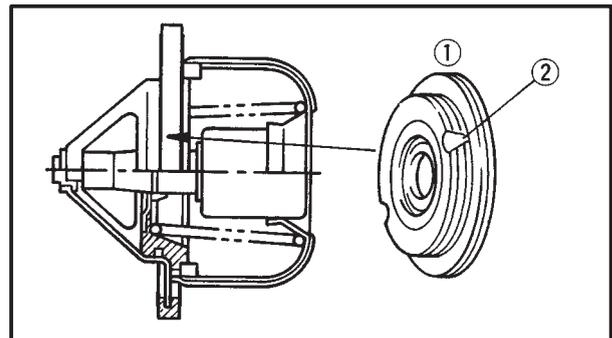
The air chamber (3) is also installed between the air filter case and carburetor for delivery of stabilized air pressure to the carburetor.

**THERMOSTAT**

Coolant flow is controlled by the thermostat of which flow control valve (1) is newly developed for avoiding quick temperature change.

(Refer to the graphs)

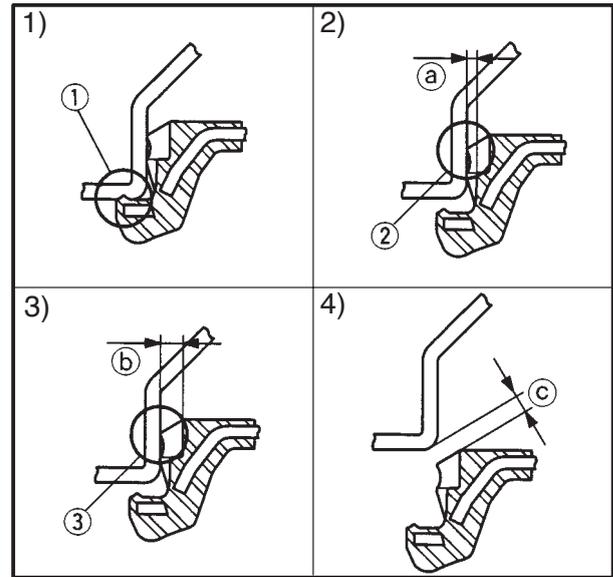
(2) Notch groove





**Flow control operation**

- 1) When valve is closed  
The lip ① seals the coolant.
- 2) When valve is set as low-lift  
The 2nd lip ② seals the coolant.  
To reduce the water temperature change, the coolant starts flowing through the notch depending on its area at (a) section.
- 3) When the valve is set as middle-lift  
The 3rd lip ③ seals the coolant.  
The coolant flows through the notch depending on its area at (b) section.  
This flow rate is larger than the case of 2).
- 4) When the valve is set as high-lift  
In the same way as the regular thermostat control, the coolant flows through clearance (c) between the valve and flange.



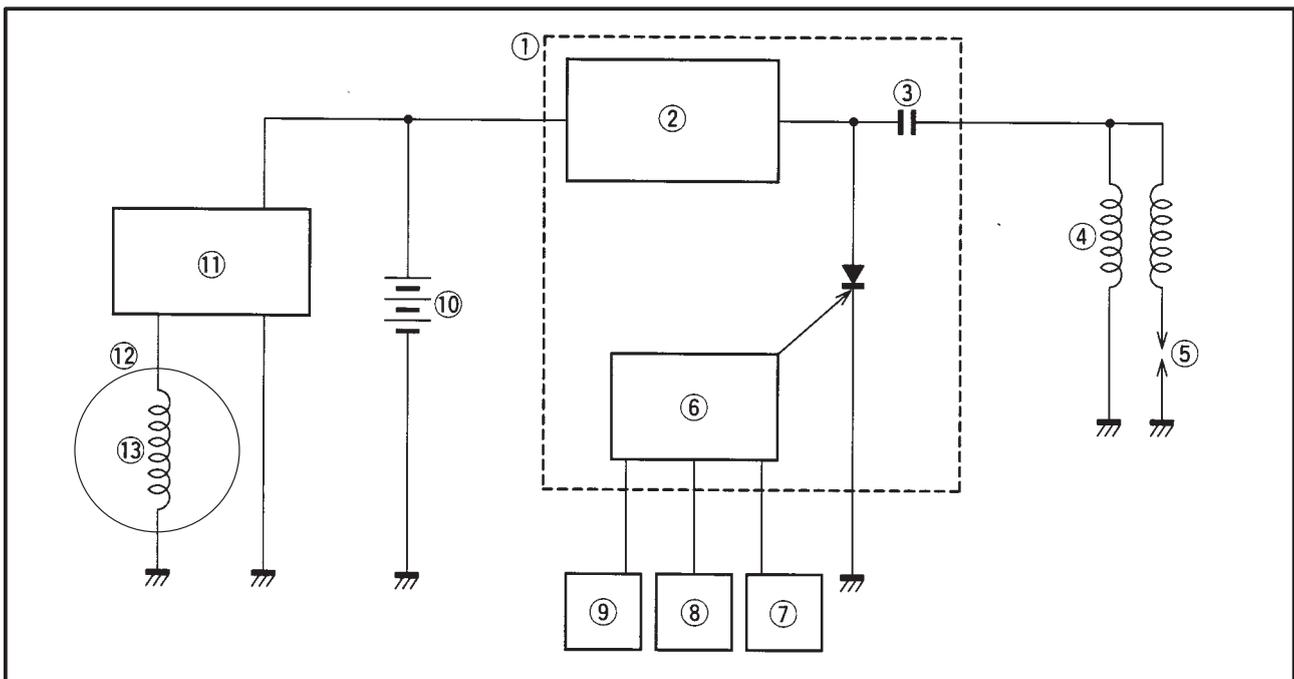
**IGNITION SYSTEM**

1. DC CDI

1) Features

- \* Battery is used as the power source.
- \* Stabilized spark performance is provided in the range from a low speed to high speed since the battery is used as the power source.
- \* Compact AC magneto design is possible since the source coil is unnecessary.
- \* Compact ignition coil design is possible since the condenser stores electricity.
- Plug top ignition coil is equipped in which the plug cap and ignition coil are integrated.
- \* Stator coil can supply power even if the battery is running out.

2) Circuit diagram

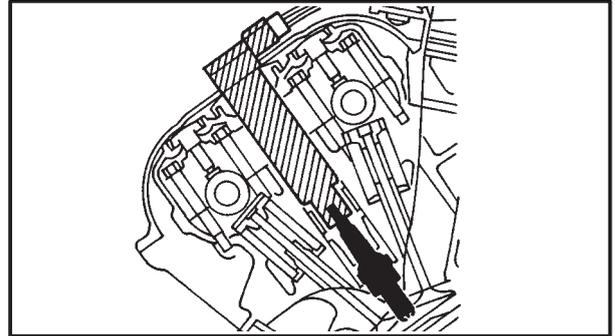


- |                     |                              |                       |               |
|---------------------|------------------------------|-----------------------|---------------|
| ① CDI unit          | ⑤ Spark plug                 | ⑨ Speed sensor        | ⑬ Stator coil |
| ② Voltage converter | ⑥ Ignition timing controller | ⑩ Battery             |               |
| ③ Condenser         | ⑦ Pickup coil                | ⑪ Rectifier/regulator |               |
| ④ Ignition coil     | ⑧ T. P. S.                   | ⑫ AC magneto          |               |

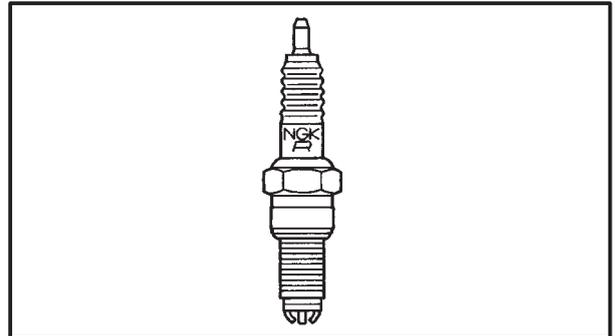
**2. Ignition coil**

Compact and right weight design is provided since the plug top ignition coil is equipped in which the plug cap ignition coil are integrated.

High tension cord was cut an end to use and ignition energy loss has become lower.

**3. Spark plug**

The 2-pole spark plug is applied to improve the ignition quality and combustion efficiency.



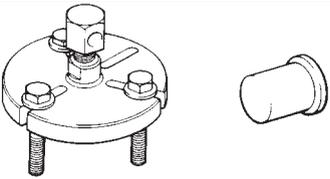
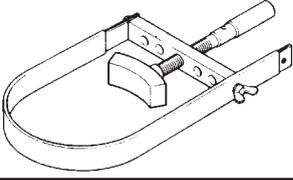
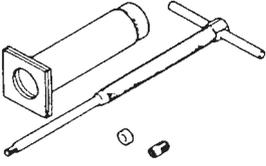
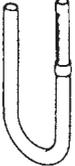
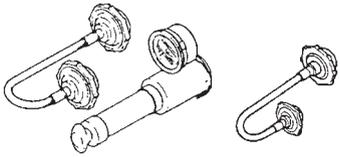
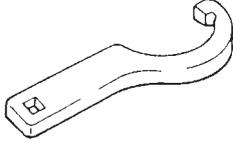
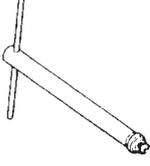
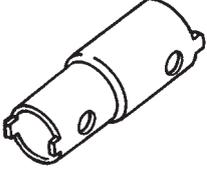


EB104000

## 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.

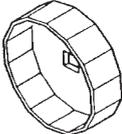
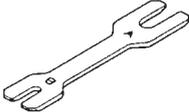
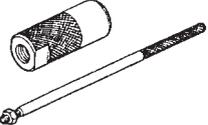
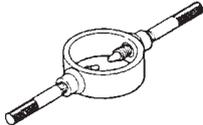
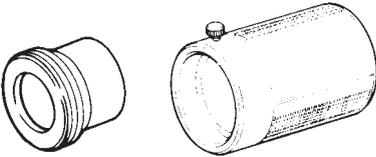
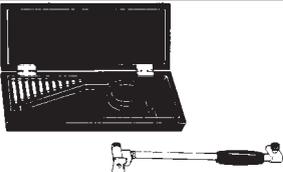
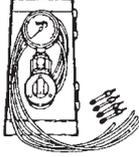
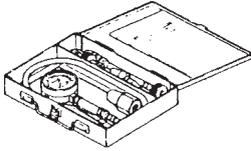
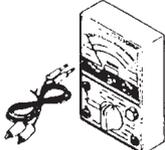
When placing an order, refer to the list provided below to avoid any mistakes.

Tool No.	Tool name/Function	Illustration
Flywheel puller 90890-01362 Adapter 90890-04089	Flywheel puller Adapter  This tool is used to remove the generator rotor.	
90890-01701	Sheave holder  This tool is used to hold the generator rotor when removing or installing the generator rotor bolt or pickup coil rotor bolt.	
90890-01304	Piston pin puller  This tool is used to remove the piston pins.	
90890-01312	Fuel level gauge  This tool is used to measure the fuel level in the float chamber.	
Radiator cap tester 90890-01325 Adapter 90890-01352	Radiator cap tester Adapter  These tools are used to check the cooling system.	
90890-01403	Steering nut wrench  This tool is used to loosen or tighten the steering stem ring nuts.	
90890-01425	Damper rod holder  This tool is used to hold the damper rod assembly when loosening or tightening the damper rod assembly bolt.	
90890-01471	Pivot shaft wrench  This tool is used to loosen or tighten the pivot adjust bolt and engine mount adjust bolt.	

## SPECIAL TOOLS

**GEN  
INFO**

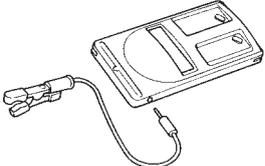
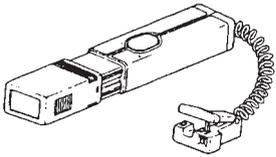
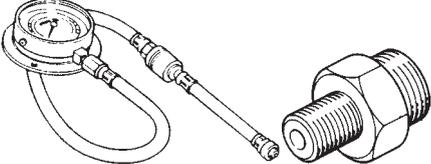
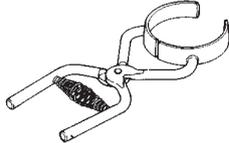
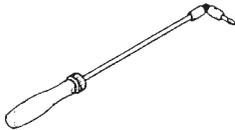
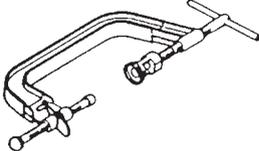
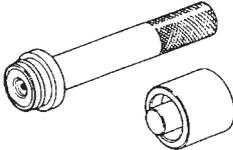
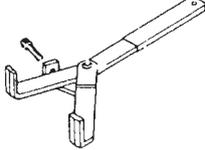
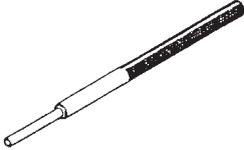


Tool No.	Tool name/Function	Illustration
90890-01426	Oil filter wrench  This tool is needed to loosen or tighten the oil filter cartridge.	
90890-01434	Rod holder  This tool is used to support the damper adjusting rod.	
Rod puller 90890-01437 Rod puller attachment 90890-01436	Rod puller Rod puller attachment  These tools are used to pull up the front fork damper rod.	
90890-01441	Fork spring compressor  This tool is used to disassemble or assemble the front fork legs.	
Fork seal driver 90890-01376 Fork seal driver attachment 90890-01374	Fork seal driver weight Fork seal driver attachment  This tool is used to install the front fork's oil seal and dust seal.	
90890-03008	Micrometer  This tool is used to measure the piston skirt diameter.	
90890-03017	Cylinder bore gauge (50~100mm)  This gauge is used to measure cylinder bore.	
Vacuum gauge 90890-03094 Valve gauge attachment 90890-03060	Vacuum gauge Vacuum gauge attachment  This gauge is used to synchronize the carburetors.	
Compression gauge 90890-03081 Adapter 90890-04136	Compression gauge Adapter  These tools are used to measure engine compression.	
90890-03112	Pocket tester  This tool is used to check the electrical system.	

## SPECIAL TOOLS

**GEN  
INFO**

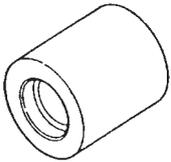
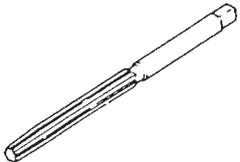
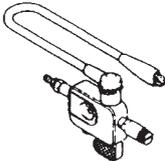
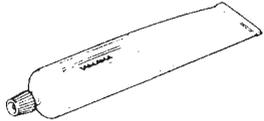


Tool No.	Tool name/Function	Illustration
90793-80009	<p>Engine tachometer</p> <p>This tool is used to check engine speed.</p>	
90890-03141	<p>Timing light</p> <p>This tool is used to check the ignition timing.</p>	
<p>Oil pressure gauge 90890-03153 Adapter 90890-03139</p>	<p>Oil pressure gauge Adapter</p> <p>These tools are used to measure engine oil pressure.</p>	
90890-04044	<p>Piston ring compressor</p> <p>This tool is used to compress piston rings when installing the cylinder.</p>	
90890-03158	<p>Carburetor angle driver</p> <p>This tool is used to turn the pilot screw when adjusting the engine idling speed.</p>	
<p>Valve spring compressor 90890-04019 Attachment 90890-04108</p>	<p>Valve spring compressor Attachment</p> <p>These tools are used to remove or install the valve assemblies.</p>	
<p>Middle driven shaft bearing driver 90890-04058 Mechanical seal installer 90890-04078</p>	<p>Middle driven shaft bearing driver Mechanical seal installer</p> <p>These tools are used to install the water pump seal.</p>	
90890-04086	<p>Clutch holding tool</p> <p>This tool is used to hold the clutch boss when removing or installing the clutch boss nut.</p>	
90890-04111	<p>Valve guide remover</p> <p>This tool is used to remove or install the valve guides.</p>	

## SPECIAL TOOLS

**GEN  
INFO**



Tool No.	Tool name/Function	Illustration
90890-04112	<p>Valve guide installer</p> <p>This tool is used to install the valve guides.</p>	
90890-04113	<p>Valve guide reamer</p> <p>This tool is used to rebores the new valve guides.</p>	
90890-06754	<p>Ignition checker</p> <p>This tool is used to check the ignition system components.</p>	
90890-85505	<p>Yamaha bond No. 1215</p> <p>This bond is used to seal two mating surfaces (e.g., crankcase mating surfaces).</p>	



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## CHAPTER 2. SPECIFICATIONS

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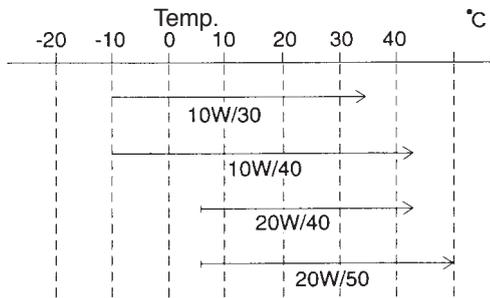
**SPECIFICATIONS**

**GENERAL SPECIFICATIONS**

Item	Standard	Limit
<b>Dimensions</b>		
Overall length	2025 mm (except for NOR, SWE, FIN, AUS NZL)	...
	2075 mm (for NOR, SWE, FIN, AUS, NZL)	...
Overall width	690 mm	...
Overall height	1105 mm	...
Seat height	820 mm	...
Wheelbase	1380 mm	...
Minimum ground clearance	135 mm	...
Minimum turning radius	3400 mm	...
<b>Weight</b>		
Wet (with oil and a full fuel tank)	188 kg	...
Dry (without oil and fuel)	169 kg	...
Maximum load (total of cargo, rider, passenger, and accessories)	375 kg	...



ENGINE SPECIFICATIONS

Item	Standard	Limit
<b>Engine</b> Engine type Displacement Cylinder arrangement Bore × stroke Compression ratio Engine idling speed Vacuum pressure at engine idling speed Standard compression pressure (at sea level)	Liquid-cooled, 4-stroke, DOHC 600 cm <sup>3</sup> Forward-inclined parallel 4-cylinder 65.5 × 44.5 mm 12.4 : 1 1,250 ~ 1,350 r/min 24.0 kPa (0.24 kg/cm <sup>2</sup> ) 1550 kPa (15.5 kgf/cm <sup>2</sup> ) at 400 r/min	... ... ... ... ... ... ...
<b>Fuel</b> Recommended fuel Fuel tank capacity Total (including reserve) Reserve only	Regular gasoline 17 L 3.5 L	... ... ...
<b>Engine oil</b> Lubrication system Recommended oil  Quantity Total amount Without oil filter cartridge replacement With oil filter cartridge replacement Oil pressure (hot) Relief valve opening pressure	Wet sump SAE20W40SE or SAE10W30SE 3.5 L 2.5 L 2.7 L 80 kPa at 1300 r/min (0.80 kgf/cm <sup>2</sup> at 1300 r/min) 450 ~ 550 kPa (4.5 ~ 5.5 kgf/cm <sup>2</sup> )	... ... ... ... ... ...

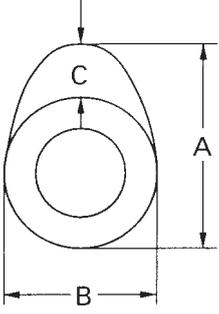
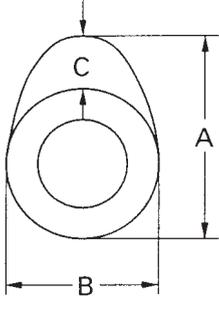
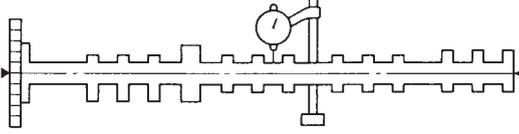
# ENGINE SPECIFICATIONS

**SPEC**

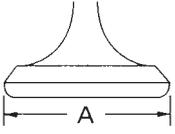
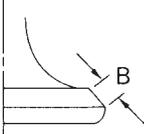
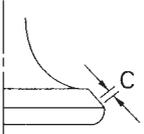
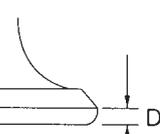
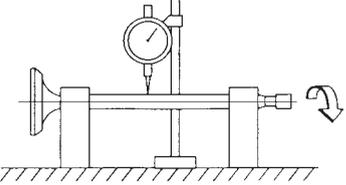


Item	Standard	Limit
<b>Oil filter</b> Oil filter type Bypass valve opening pressure	Cartridge (paper) 80 ~ 120 kPa (0.8 ~ 1.2 kgf/cm <sup>2</sup> )	... ...
<b>Oil pump</b> Oil pump type Inner-rotor-to-outer-rotor-tip clearance Outer-rotor-to-oil-pump-housing clearance	Trochoidal 0.03 ~ 0.09 mm 0.03 ~ 0.08 mm	... 0.15 mm 0.15 mm
<b>Cooling system</b> Radiator capacity Radiator cap opening pressure Radiator core Width Height Depth Coolant reservoir Capacity Water pump Water pump type Reduction ratio	2.15 L 110 ~ 140 kPa (1.10 ~ 1.40 kgf/cm <sup>2</sup> ) 320 mm 258 mm 24 mm 0.44 L Single-suction centrifugal pump 86/44 × 31/31 (1.955)	... ... ... ... ... ... ...
<b>Starting system type</b>	Electric starter	
<b>Spark plugs</b> Model (manufacturer) × quantity Spark plug gap	CR10EK/NGK × 4 0.6 ~ 0.7 mm	... ...
<b>Cylinder head</b> Max. warpage 	...	0.05 mm

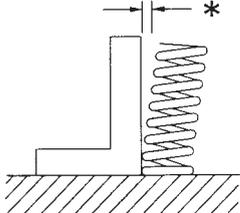


Item	Standard	Limit
<p><b>Camshafts</b>                      Drive system                      Camshaft cap inside diameter                      Camshaft journal diameter                      Camshaft-journal-to-camshaftcap clearance                      Intake camshaft lobe dimensions</p>	<p>Chain drive (right)                      23.000 ~ 23.021 mm                      22.967 ~ 22.980 mm                      0.020 ~ 0.054 mm</p>	<p>•••                      •••                      •••                      0.08 mm</p>
		
<p>Measurement A                      Measurement B                      Measurement C</p>	<p>33.05 ~ 33.15 mm                      25.14 ~ 25.24 mm                      7.81 ~ 8.01 mm</p>	<p>33.0 mm                      25.09 mm                      •••</p>
<p>Exhaust camshaft lobe dimensions</p>		
		
<p>Measurement A                      Measurement B                      Measurement C</p>	<p>32.55 ~ 32.65 mm                      25.07 ~ 25.17 mm                      7.38 ~ 7.58 mm</p>	<p>32.50 mm                      25.02 mm                      •••</p>
<p>Max. camshaft runout</p>	<p>•••</p>	<p>0.06 mm</p>
		

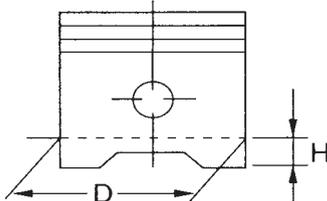
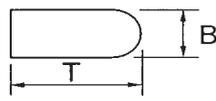
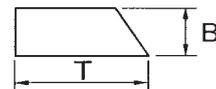
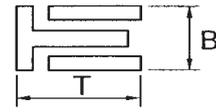


Item	Standard	Limit	
<b>Timing chain</b>			
Model/number of links	RH2015/120	•••	
Tensioning system	Automatic	•••	
<b>Valves, valve seats, valve guides</b>			
Valve clearance (cold)			
Intake	0.11 ~ 0.20 mm	•••	
Exhaust	0.21 ~ 0.30 mm	•••	
Valve dimensions			
			
Head Diameter	Face Width	Seat Width	Margin Thickness
Valve head diameter A			
Intake	24.9 ~ 25.1 mm		•••
Exhaust	21.9 ~ 22.1 mm		•••
Valve face width B			
Intake	1.14 ~ 1.98 mm		•••
Exhaust	1.14 ~ 1.98 mm		•••
Valve seat width C			
Intake	0.9 ~ 1.1 mm		1.6 mm
Exhaust	0.9 ~ 1.1 mm		1.6 mm
Valve margin thickness D			
Intake	0.6 ~ 0.8 mm		0.5 mm
Exhaust	0.6 ~ 0.8 mm		0.5 mm
Valve stem diameter			
Intake	3.975 ~ 3.990 mm		3.950 mm
Exhaust	3.960 ~ 3.975 mm		3.935 mm
Valve guide inside diameter			
Intake	4.000 ~ 4.012 mm		4.042 mm
Exhaust	4.000 ~ 4.012 mm		4.042 mm
Valve-stem-to-valve-guide clearance			
Intake	0.010 ~ 0.037 mm		0.08 mm
Exhaust	0.025 ~ 0.052 mm		0.1 mm
Valve stem runout	•••		0.04 mm
			
Valve seat width			
Intake	0.9 ~ 1.1 mm		1.6 mm
Exhaust	0.9 ~ 1.1 mm		1.6 mm

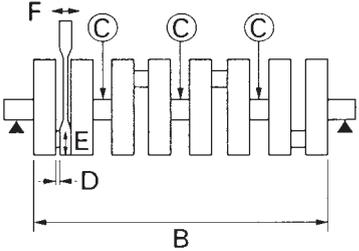


Item	Standard	Limit
Valve springs Free length Intake (inner) (outer) Exhaust Installed length (valve closed) Intake (inner) (outer) Exhaust Compressed spring force (installed) Intake (inner) (outer) Exhaust Spring tilt  Intake (inner) (outer) Exhaust Winding direction (top view) Intake Exhaust 	37.0 mm 38.4 mm 41.7 mm  30.0 mm 32.5 mm 36.1 mm  69 ~ 79 N (7.0 ~ 8.0 kgf) 114 ~ 132 N (11.6 ~ 13.4 kgf) 160 ~ 184 N (16.3 ~ 18.7 kgf)  ... ... ...  Clockwise Clockwise  	35 mm 36.5 mm 39.5 mm  ... ... ...  2.5°/1.6 mm 2.5°/1.7 mm 2.5°/1.8 mm  ... ... ...
<b>Cylinders</b> Cylinder arrangement Bore × stroke Compression ratio Bore Max. taper Max. out-of-round	Forward-inclined, parallel 4-cylinder 65.5 × 45.5 mm 12.4 : 1 65.50 ~ 65.51 mm ... ...	... ... ... ... 0.05 mm 0.05 mm



Item	Standard	Limit
<b>Pistons</b>		
Piston-to-cylinder clearance Diameter D	0.025 ~ 0.050 mm 65.460 ~ 65.475 mm	0.07 mm •••
		
Height H	4 mm	•••
Piston pin bore (in the piston)		
Diameter	16.002 ~ 16.013 mm	•••
Offset	0.35 ~ 0.65 mm	•••
Offset direction	Intake side	•••
Piston pins	0.5 mm	•••
Outside diameter	15.991 ~ 16.000 mm	•••
Piston-pin-to-piston-pin-bore clearance	0.002 ~ 0.022 mm	0.072 mm
Piston rings		
Top ring		
		
Ring type	Barrel	•••
Dimensions (B × T)	0.80 × 2.45 mm	•••
End gap (installed)	0.15 ~ 0.25 mm	0.50 mm
Ring side clearance	0.030 ~ 0.065 mm	0.115 mm
2nd ring		
		
Ring type	Taper	•••
Dimensions (B × T)	0.8 × 2.5 mm	•••
End gap (installed)	0.40 ~ 0.50 mm	0.85 mm
Ring side clearance	0.020 ~ 0.055 mm	0.115 mm
Oil ring		
		
Dimensions (B × T)	1.5 × 2.3 mm	•••
End gap (installed)	0.10 ~ 0.35 mm	•••



Item	Standard	Limit
<b>Connecting rods</b> Crankshaft-pin-to-big-end-bearing clearance Bearing color code	0.028 ~ 0.052 mm 1 = Blue 2 = Black 3 = Brown 4 = Green	... ...
<b>Crankshaft</b>  Width B Max. runout C Big end side clearance D Crankshaft-journal-to-crankshaft-journal-bearing clearance Bearing color code	268.8 ~ 270.0 mm 0.160 ~ 0.262 mm 0.034 ~ 0.058 mm 0 = White 1 = Blue 2 = Black 3 = Brown 4 = Green	... ... 0.03 mm ... ... ...
<b>Clutch</b> Clutch type Clutch release method Clutch release method operation Operation Clutch cable free play (at the end of the clutch lever) Friction plates Thickness Plate quantity Clutch plates Thickness Plate quantity Max. warpage Clutch plate Thickness Plate quantity Max. warpage Clutch springs Free length Spring quantity	Wet, multiple disc Rack and pinion (pull rod type) Cable operation Left hand operation 10 ~ 15 mm 2.9 ~ 3.1 mm 8 1.9 ~ 2.1 mm 7 ... 2.2 ~ 2.4 mm 1 ... 55 mm 6	... ... ... ... ... 2.8 mm ... ... 0.1 mm ... 0.1 mm 54 mm ...

## ENGINE SPECIFICATIONS

**SPEC**


Item	Standard	Limit
<b>Transmission</b>		
Transmission type	Constant mesh, 6-speed	•••
Primary reduction system	Spur gear	•••
Primary reduction ratio	86/44 (1.9545)	•••
Secondary reduction system	Chain drive	•••
Secondary reduction ratio	48/16 (3.000)	•••
Operation	Left-foot operation	•••
Gear ratios		
1st gear	37/13 (2.846)	•••
2nd gear	37/19 (1.947)	•••
3rd gear	28/18 (1.555)	•••
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
Max. drive axle runout	•••	0.02 mm
<b>Shifting mechanism</b>		
Shift mechanism type	Cam drum	•••
Max. shift fork guide bar bending	•••	0.05 mm
installed shift rod length	242 mm	•••
<b>Air filter type</b>		
	Dry element	•••
<b>Fuel pump</b>		
Pump type	Electrical	•••
Model (manufacturer)	5EB (MITSUBISHI)	•••
Output pressure	15 ~ 20 kPa (0.15 ~ 0.2 kgf/cm <sup>2</sup> )	•••
<b>Carburetors</b>		
Model (manufacturer) × quantity	CVRD37 (MIKUNI) × 4	•••
Throttle cable free play (at the flange of the throttle grip)	6 ~ 8 mm	•••
ID mark	5EB00, 5EB200 (G), 5EB300 (F)	•••
Main jet	Carburetors 1 and 4: #152 Carburetors 2 and 3: #148	•••
Main air jet	#110	•••
Jet needle	N7RA	•••
Needle jet	2.6	•••
Pilot air jet	#110	•••
Pilot outlet	0.9	•••
Pilot jet	#38	•••
Bypass 1	0.8	•••
Bypass 2	0.8	•••
Bypass 3	0.8	•••
Pilot screw turns out	2	•••
Valve seat size	1.2	•••

## ENGINE SPECIFICATIONS

**SPEC**



Item	Standard	Limit
Starter jet 1	#50	•••
Starter jet 2	0.6	•••
Butterfly valve size	#110	•••
Fuel level (below the line on the float chamber)	17.5 ~ 18.5 mm	•••

## CHASSIS SPECIFICATIONS



### CHASSIS SPECIFICATIONS

Item	Standard	Limit
<b>Frame</b>		
Frame type	Diamond	•••
Caster angle	24°	•••
Trail	81 mm	•••
<b>Front wheel</b>		
Wheel type	Cast wheel	•••
Rim		
Size	17 × MT3.50	•••
Material	Aluminum	•••
Wheel travel	130 mm	•••
Wheel runout		
Max. radial wheel runout	•••	1 mm
Max. lateral wheel runout	•••	0.5 mm
<b>Rear wheel</b>		
Wheel type	Cast wheel	•••
Rim		
Size	17 × MT5.50	•••
Material	Aluminum	•••
Wheel travel	120 mm	•••
Wheel runout		
Max. radial wheel runout	•••	1 mm
Max. lateral wheel runout	•••	0.5 mm
<b>Front tire</b>		
Tire type	Tubeless	•••
Size	120/60ZR17 (55W)	•••
Model (manufacturer)	BRIDGESTON BT56F-E DUNLOP D207F-J	•••
Tire pressure (cold)		
0 ~ 90 kg	250 kPa (2.5 kg/cm <sup>2</sup> , 2.5 bar)	•••
90 ~ 197 kg	250 kPa (2.5 kg/cm <sup>2</sup> , 2.5 bar)	•••
High-speed riding	250 kPa (2.5 kg/cm <sup>2</sup> , 2.5 bar)	•••
Min. tire tread depth	•••	1.6 mm