



FZS10V FZS10VC

SERVICE MANUAL

TABLE OF CONTENTS

GENERAL INFORMATION	1
SPECIFICATIONS	2
PERIODIC CHECKS AND ADJUSTMENTS	3
CHASSIS	4
ENGINE	5
COOLING SYSTEM	6
FUEL SYSTEM	7
ELECTRICAL SYSTEM	8
TROUBLESHOOTING	9

CHAPTER 1 GENERAL INFORMATION

IDENTIFICATION	1-1
VEHICLE IDENTIFICATION NUMBER.....	1-1
MODEL LABEL.....	1-1
FEATURES	1-2
FI SYSTEM	1-3
INSTRUMENT FUNCTIONS	1-4
IMPORTANT INFORMATION	1-7
PREPARATION FOR REMOVAL AND DISASSEMBLY.....	1-7
REPLACEMENT PARTS	1-7
GASKETS, OIL SEALS AND O-RINGS.....	1-7
LOCK WASHERS/PLATES AND COTTER PINS.....	1-7
BEARINGS AND OIL SEALS	1-8
CIRCLIPS	1-8
CHECKING THE CONNECTIONS	1-9
SPECIAL TOOLS	1-10

CHAPTER 2 SPECIFICATIONS

GENERAL SPECIFICATIONS	2-1
ENGINE SPECIFICATIONS	2-1
CHASSIS SPECIFICATIONS	2-7
ELECTRICAL SPECIFICATIONS	2-9
TIGHTENING TORQUES	2-11
GENERAL TIGHTENING TORQUE SPECIFICATIONS.....	2-11
ENGINE TIGHTENING TORQUES	2-12
CHASSIS TIGHTENING TORQUES	2-16
LUBRICATION POINTS AND LUBRICANT TYPES	2-19
ENGINE	2-19

CHASSIS	2-21
LUBRICATION SYSTEM CHART AND DIAGRAMS	2-23
ENGINE OIL LUBRICATION CHART	2-23
LUBRICATION DIAGRAMS	2-25
COOLING SYSTEM DIAGRAMS	2-35
CABLE ROUTING	2-39

CHAPTER 3 PERIODIC CHECKS AND ADJUSTMENT

PERIODIC MAINTENANCE	3-1
INTRODUCTION	3-1
ENGINE.....	3-4
ADJUSTING THE VALVE CLEARANCE	3-4
SYNCHRONIZING THE THROTTLE BODIES	3-6
ADJUSTING THE ENGINE IDLING SPEED	3-8
ADJUSTING THE THROTTLE CABLE FREE PLAY	3-8
CHECKING THE SPARK PLUGS.....	3-9
MEASURING THE COMPRESSION PRESSURE	3-9
CHECKING THE ENGINE OIL LEVEL.....	3-10
CHANGING THE ENGINE OIL.....	3-11
MEASURING THE ENGINE OIL PRESSURE	3-12
ADJUSTING THE CLUTCH CABLE FREE PLAY	3-13
REPLACING THE AIR FILTER ELEMENT	3-14
CHECKING THE THROTTLE BODY JOINTS	3-15
CHECKING THE FUEL LINE	3-15
CHECKING THE CRANKCASE BREATHER HOSE.....	3-15
CHECKING THE EXHAUST SYSTEM.....	3-16
ADJUSTING THE EXUP CABLES	3-16
CHECKING THE EXUP SERVO MOTOR	3-17
CHECKING THE COOLANT LEVEL	3-17
CHECKING THE COOLING SYSTEM	3-18
CHANGING THE COOLANT	3-18
CHASSIS	3-21
ADJUSTING THE FRONT DISC BRAKE	3-21
ADJUSTING THE REAR DISC BRAKE	3-21
CHECKING THE BRAKE FLUID LEVEL.....	3-22
CHECKING THE FRONT BRAKE PADS.....	3-22
CHECKING THE REAR BRAKE PADS	3-22
CHECKING THE FRONT BRAKE HOSES.....	3-23
CHECKING THE REAR BRAKE HOSE	3-23
ADJUSTING THE REAR BRAKE LIGHT SWITCH	3-23

BLEEDING THE HYDRAULIC BRAKE SYSTEM.....	3-24
ADJUSTING THE SHIFT PEDAL	3-25
ADJUSTING THE DRIVE CHAIN SLACK	3-25
LUBRICATING THE DRIVE CHAIN.....	3-26
CHECKING AND ADJUSTING THE STEERING HEAD	3-26
CHECKING THE FRONT FORK	3-27
ADJUSTING THE FRONT FORK LEGS	3-28
ADJUSTING THE REAR SHOCK ABSORBER ASSEMBLY.....	3-30
CHECKING THE TIRES	3-31
CHECKING THE WHEELS	3-33
CHECKING AND LUBRICATING THE CABLES	3-33
LUBRICATING THE LEVERS.....	3-33
LUBRICATING THE PEDAL	3-33
LUBRICATING THE SIDESTAND.....	3-33
LUBRICATING THE CENTERSTAND	3-33
LUBRICATING THE REAR SUSPENSION	3-33

ELECTRICAL SYSTEM.....	3-34
CHECKING AND CHARGING THE BATTERY.....	3-34
CHECKING THE FUSES.....	3-34
REPLACING THE HEADLIGHT BULBS.....	3-34
ADJUSTING THE HEADLIGHT BEAM	3-34

CHAPTER 4 CHASSIS

GENERAL CHASSIS.....	4-1
REMOVING THE COVER.....	4-5
INSTALLING THE COVER	4-5
FRONT WHEEL.....	4-6
REMOVING THE FRONT WHEEL	4-8
CHECKING THE FRONT WHEEL.....	4-8
ADJUSTING THE FRONT WHEEL STATIC BALANCE	4-9
INSTALLING THE FRONT WHEEL (DISC).....	4-10
REAR WHEEL.....	4-12
REMOVING THE REAR WHEEL (DISC)	4-15
CHECKING THE REAR WHEEL.....	4-15
CHECKING THE REAR WHEEL DRIVE HUB	4-15
CHECKING AND REPLACING THE REAR WHEEL SPROCKET.....	4-16
ADJUSTING THE REAR WHEEL STATIC BALANCE.....	4-16
INSTALLING THE REAR WHEEL (DISC)	4-16
FRONT BRAKE.....	4-18
INTRODUCTION	4-23
CHECKING THE FRONT BRAKE DISCS	4-23
REPLACING THE FRONT BRAKE PADS	4-24

REMOVING THE FRONT BRAKE CALIPERS	4-25
DISASSEMBLING THE FRONT BRAKE CALIPERS	4-25
CHECKING THE FRONT BRAKE CALIPERS	4-26
ASSEMBLING THE FRONT BRAKE CALIPERS	4-26
INSTALLING THE FRONT BRAKE CALIPERS	4-26
REMOVING THE FRONT BRAKE MASTER CYLINDER.....	4-27
CHECKING THE FRONT BRAKE MASTER CYLINDER.....	4-28
ASSEMBLING THE FRONT BRAKE MASTER CYLINDER.....	4-28
INSTALLING THE FRONT BRAKE MASTER CYLINDER	4-28
REAR BRAKE	4-30
INTRODUCTION	4-35
CHECKING THE REAR BRAKE DISC	4-35
REPLACING THE REAR BRAKE PADS	4-35
REMOVING THE REAR BRAKE CALIPER.....	4-36
DISASSEMBLING THE REAR BRAKE CALIPER.....	4-36
CHECKING THE REAR BRAKE CALIPER	4-37
ASSEMBLING THE REAR BRAKE CALIPER.....	4-37
INSTALLING THE REAR BRAKE CALIPER	4-38
REMOVING THE REAR BRAKE MASTER CYLINDER.....	4-39
CHECKING THE REAR BRAKE MASTER CYLINDER	4-39
ASSEMBLING THE REAR BRAKE MASTER CYLINDER.....	4-39
INSTALLING THE REAR BRAKE MASTER CYLINDER.....	4-39
HANDLEBAR.....	4-41
REMOVING THE HANDLEBAR	4-43
CHECKING THE HANDLEBAR.....	4-43
INSTALLING THE HANDLEBAR	4-43
FRONT FORK.....	4-46
REMOVING THE FRONT FORK LEGS	4-48
DISASSEMBLING THE FRONT FORK LEGS	4-48
CHECKING THE FRONT FORK LEGS.....	4-49
ASSEMBLING THE FRONT FORK LEGS	4-50
INSTALLING THE FRONT FORK LEGS	4-54
STEERING HEAD.....	4-55
REMOVING THE LOWER BRACKET	4-57
CHECKING THE STEERING HEAD	4-57
INSTALLING THE STEERING HEAD.....	4-58
REAR SHOCK ABSORBER ASSEMBLY	4-59
HANDLING THE REAR SHOCK ABSORBER	4-61
DISPOSING OF A REAR SHOCK ABSORBER.....	4-61
REMOVING THE REAR SHOCK ABSORBER ASSEMBLY.....	4-61
CHECKING THE REAR SHOCK ABSORBER ASSEMBLY	4-61
CHECKING THE CONNECTING ARM AND RELAY ARM	4-62
INSTALLING THE REAR SHOCK ABSORBER ASSEMBLY	4-62

SWINGARM	4-63
REMOVING THE SWINGARM	4-65
CHECKING THE SWINGARM	4-65
INSTALLING THE SWINGARM	4-66
CHAIN DRIVE	4-67
REMOVING THE DRIVE CHAIN	4-68
CHECKING THE DRIVE CHAIN	4-68
CHECKING THE DRIVE SPROCKET	4-69
CHECKING THE REAR WHEEL SPROCKET	4-69
CHECKING THE REAR WHEEL DRIVE HUB	4-69
INSTALLING THE DRIVE CHAIN	4-69

CHAPTER 5 ENGINE

ENGINE REMOVAL	5-1
INSTALLING THE ENGINE	5-7
CAMSHAFTS	5-9
REMOVING THE CAMSHAFTS	5-11
CHECKING THE CAMSHAFTS	5-12
CHECKING THE TIMING CHAIN AND CAMSHAFT SPROCKET	5-13
CHECKING THE TIMING CHAIN GUIDES	5-13
CHECKING THE TIMING CHAIN TENSIONER	5-13
INSTALLING THE CAMSHAFTS	5-15
CYLINDER HEAD	5-18
REMOVING THE CYLINDER HEAD	5-19
CHECKING THE CYLINDER HEAD	5-19
INSTALLING THE CYLINDER HEAD	5-19
VALVES AND VALVE SPRINGS	5-21
REMOVING THE VALVES	5-23
CHECKING THE VALVES AND VALVE GUIDES	5-24
CHECKING THE VALVE SEATS	5-25
CHECKING THE VALVE SPRINGS	5-27
CHECKING THE VALVE LIFTERS	5-28
INSTALLING THE VALVES	5-28
GENERATOR	5-30
REMOVING THE GENERATOR	5-32
INSTALLING THE GENERATOR	5-32
STARTER CLUTCH	5-34
REMOVING THE STARTER CLUTCH	5-35
CHECKING THE DAMPER	5-35

CHECKING THE STARTER CLUTCH.....	5-35
INSTALLING THE STARTER CLUTCH	5-36
CRANKSHAFT POSITION SENSOR	5-37
REMOVING THE CRANKSHAFT POSITION SENSOR	5-38
INSTALLING THE CRANKSHAFT POSITION SENSOR	5-38
ELECTRIC STARTER	5-39
CHECKING THE STARTER MOTOR	5-41
ASSEMBLING THE STARTER MOTOR.....	5-42
INSTALLING THE STARTER MOTOR.....	5-42
CLUTCH	5-43
REMOVING THE CLUTCH.....	5-47
CHECKING THE FRICTION PLATES	5-48
CHECKING THE CLUTCH PLATES.....	5-48
CHECKING THE CLUTCH SPRINGS.....	5-49
CHECKING THE CLUTCH HOUSING	5-49
CHECKING THE CLUTCH BOSS	5-49
CHECKING THE PRESSURE PLATE.....	5-49
CHECKING THE PULL LEVER SHAFT AND PULL ROD.....	5-49
INSTALLING THE CLUTCH	5-50
SHIFT SHAFT	5-53
REMOVING THE SHIFT SHAFT	5-55
CHECKING THE SHIFT SHAFT	5-55
CHECKING THE STOPPER LEVER.....	5-55
INSTALLING THE SHIFT SHAFT	5-55
OIL PUMP	5-57
REMOVING THE OIL PAN	5-61
CHECKING THE SPROCKET AND CHAIN	5-61
CHECKING THE OIL PUMP	5-61
CHECKING THE RELIEF VALVE	5-62
CHECKING THE OIL DELIVERY PIPES.....	5-62
CHECKING THE OIL STRAINER.....	5-62
CHECKING THE OIL NOZZLES	5-62
ASSEMBLING THE OIL PUMP	5-62
INSTALLING THE OIL/WATER PUMP ASSEMBLY.....	5-63
INSTALLING THE OIL PAN	5-64
CRANKCASE	5-65
DISASSEMBLING THE CRANKCASE.....	5-67
CHECKING THE CRANKCASE	5-67
CHECKING THE BEARING AND OIL SEALS	5-67
ASSEMBLING THE CRANKCASE.....	5-67
CRANKSHAFT	5-69
REMOVING THE CONNECTING RODS AND PISTONS	5-71

REMOVING THE CRANKSHAFT ASSEMBLY	5-71
CHECKING THE CYLINDER AND PISTON.....	5-72
CHECKING THE PISTON RINGS	5-72
CHECKING THE PISTON PINS	5-73
CHECKING THE BIG END BEARINGS	5-74
INSTALLING THE CONNECTING ROD AND PISTON	5-77
CHECKING THE CRANKSHAFT	5-80
CHECKING THE CRANKSHAFT DRIVE SPROCKET.....	5-80
CHECKING THE CRANKSHAFT JOURNAL BEARINGS	5-80
INSTALLING THE CRANKSHAFT	5-82
TRANSMISSION.....	5-84
REMOVING THE TRANSMISSION.....	5-89
CHECKING THE SHIFT FORKS.....	5-89
CHECKING THE SHIFT DRUM ASSEMBLY	5-90
CHECKING THE TRANSMISSION	5-90
INSTALLING THE TRANSMISSION.....	5-91

CHAPTER 6 COOLING SYSTEM

RADIATOR.....	6-1
CHECKING THE RADIATOR.....	6-3
INSTALLING THE RADIATOR	6-3
OIL COOLER.....	6-4
CHECKING THE OIL COOLER.....	6-5
INSTALLING THE OIL COOLER	6-5
THERMOSTAT	6-6
CHECKING THE THERMOSTAT.....	6-8
ASSEMBLING THE THERMOSTAT ASSEMBLY	6-8
INSTALLING THE THERMOSTAT ASSEMBLY	6-8
WATER PUMP	6-10
DISASSEMBLING THE WATER PUMP	6-11
CHECKING THE WATER PUMP	6-11
ASSEMBLING THE WATER PUMP	6-11

CHAPTER 7 FUEL SYSTEM

FUEL TANK	7-1
REMOVING THE FUEL TANK.....	7-2
REMOVING THE FUEL PUMP.....	7-2

CHECKING THE FUEL PUMP BODY	7-2
CHECKING THE FUEL PUMP OPERATION	7-2
INSTALLING THE FUEL PUMP	7-2
INSTALLING THE FUEL TANK.....	7-3
THROTTLE BODIES.....	7-4
CHECKING THE INJECTORS	7-8
CHECKING THE THROTTLE BODIES	7-8
CHECKING THE FUEL PRESSURE.....	7-8
ADJUSTING THE THROTTLE POSITION SENSOR	7-8
ADJUSTING THE SUB-THROTTLE POSITION SENSOR	7-9
CHECKING THE SUB-THROTTLE SERVO MOTOR.....	7-10
CHECKING THE THERMO WAX	7-11
ADJUSTING THE THERMO WAX.....	7-11
AIR INDUCTION SYSTEM	7-13
CHECKING THE AIR INDUCTION SYSTEM.....	7-14
INSTALLING THE AIR INDUCTION SYSTEM	7-15

CHAPTER 8 ELECTRICAL SYSTEM

IGNITION SYSTEM.....	8-1
CIRCUIT DIAGRAM.....	8-1
TROUBLESHOOTING.....	8-3
ELECTRIC STARTING SYSTEM.....	8-5
CIRCUIT DIAGRAM.....	8-5
STARTING CIRCUIT CUT-OFF SYSTEM OPERATION.....	8-7
TROUBLESHOOTING.....	8-9
CHARGING SYSTEM.....	8-11
CIRCUIT DIAGRAM.....	8-11
TROUBLESHOOTING.....	8-13
LIGHTING SYSTEM	8-15
CIRCUIT DIAGRAM.....	8-15
TROUBLESHOOTING.....	8-17
SIGNALING SYSTEM.....	8-19
CIRCUIT DIAGRAM.....	8-19
TROUBLESHOOTING.....	8-21
COOLING SYSTEM.....	8-25
CIRCUIT DIAGRAM.....	8-25
TROUBLESHOOTING.....	8-27

FUEL INJECTION SYSTEM	8-29
CIRCUIT DIAGRAM.....	8-29
TROUBLESHOOTING.....	8-31
ECU SELF-DIAGNOSTIC FUNCTION	8-35
SELF-DIAGNOSTIC FUNCTION TABLE.....	8-36
TROUBLESHOOTING METHOD	8-39
DIAGNOSTIC MODE.....	8-40
TROUBLESHOOTING DETAILS	8-48
FUEL PUMP SYSTEM	8-73
CIRCUIT DIAGRAM.....	8-73
TROUBLESHOOTING.....	8-75
ELECTRICAL COMPONENTS	8-77
CHECKING THE SWITCHES.....	8-81
CHECKING THE BULBS AND BULB SOCKETS.....	8-84
CHECKING THE FUSES.....	8-85
CHECKING AND CHARGING THE BATTERY.....	8-85
CHECKING THE RELAYS.....	8-88
CHECKING THE TURN SIGNAL/HAZARD RELAY	8-89
CHECKING THE RELAY UNIT (DIODE)	8-90
CHECKING THE IGNITION COILS.....	8-91
CHECKING THE CRANKSHAFT POSITION SENSOR.....	8-92
CHECKING THE LEAN ANGLE SENSOR.....	8-93
CHECKING THE STARTOR MOTOR OPERATION	8-93
CHECKING THE STATOR COIL.....	8-93
CHECKING THE RECTIFIER/REGULATOR.....	8-94
CHECKING THE HORN	8-94
CHECKING THE FUEL SENDER	8-95
CHECKING THE SPEED SENSOR	8-95
CHECKING THE RADIATOR FAN MOTOR.....	8-96
CHECKING THE COOLANT TEMPERATURE SENSOR	8-96
CHECKING THE THROTTLE POSITION SENSOR	8-97
CHECKING THE SUB-THROTTLE POSITION SENSOR.....	8-97
CHECKING THE AIR INDUCTION SYSTEM SOLENOID	8-98
CHECKING THE ATMOSPHERIC PRESSURE SENSOR.....	8-99
CHECKING THE CYLINDER IDENTIFICATION SENSOR	8-99
CHECKING THE INTAKE AIR PRESSURE SENSOR.....	8-99
CHECKING THE INTAKE AIR TEMPERATURE SENSOR	8-100

CHAPTER 9 TROUBLESHOOTING

TROUBLESHOOTING	9-1
GENERAL INFORMATION	9-1
STARTING FAILURES.....	9-1
INCORRECT ENGINE IDLING SPEED	9-1
POOR MEDIUM-AND-HIGH-SPEED PERFORMANCE	9-2
FAULTY GEAR SHIFTING.....	9-2

SHIFT PEDAL DOES NOT MOVE.....	9-2
JUMPS OUT OF GEAR.....	9-2
FAULTY CLUTCH	9-2
OVERHEATING	9-2
OVERCOOLING	9-3
POOR BRAKING PERFORMANCE	9-3
FAULTY FRONT FORK LEGS	9-3
UNSTABLE HANDLING.....	9-3
FAULTY LIGHTING OR SIGNALING SYSTEM	9-4

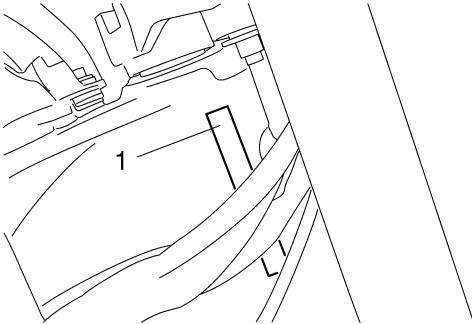
EAS20130

IDENTIFICATION

EAS20140

VEHICLE IDENTIFICATION NUMBER

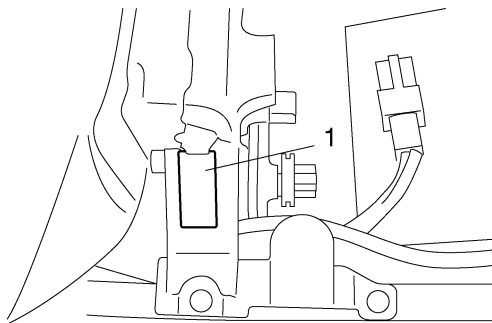
The vehicle identification number "1" is stamped into the right side of the steering head pipe.



EAS20150

MODEL LABEL

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



EAS20170

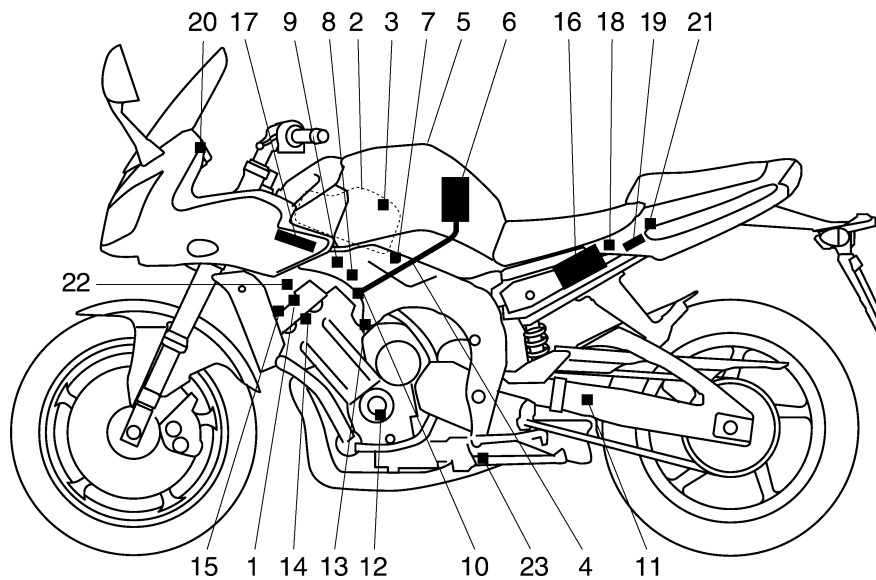
FEATURES

OUTLINE OF THE 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.



- | | |
|----------------------------------|------------------------------------|
| 1. Ignition coil | 14. Spark plug |
| 2. Air filter case | 15. Cylinder identification sensor |
| 3. Intake air temperature sensor | 16. Battery |
| 4. Fuel delivery hose | 17. ECU |
| 5. Fuel tank | 18. Atmospheric pressure sensor |
| 6. Fuel pump | 19. Relay unit (fuel pump relay) |
| 7. Intake air pressure sensor | 20. Engine trouble warning light |
| 8. Throttle position sensor | 21. Lean angle sensor |
| 9. Sub-throttle position sensor | 22. Air cut-off valve |
| 10. Fuel injector | 23. O ₂ sensor |
| 11. Catalytic converter | |
| 12. Crankshaft position sensor | |
| 13. Coolant temperature sensor | |

ET2D1001

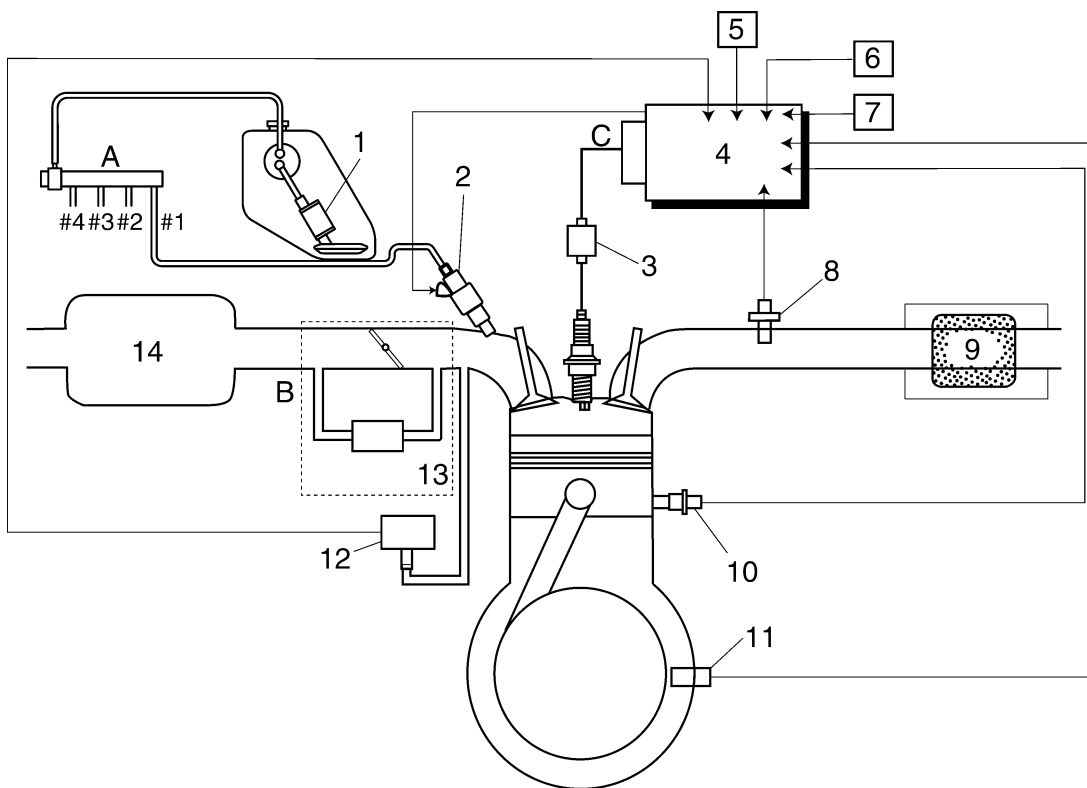
FI SYSTEM

The fuel pump delivers fuel to the fuel injector via the fuel filter. The pressure regulator maintains the fuel pressure that is applied to the fuel injector at only 324 kPa (3.24 kg/cm², 46.1 psi). Accordingly, when the energizing signal from the ECU energizes the fuel injector, the fuel passage opens, causing the fuel to be injected into the intake manifold only during the time the passage remain open.

Therefore, the longer the length of time the fuel injector is energized (injection duration), the greater the volume of fuel that is supplied. Conversely, the shorter the length of time the fuel injector is energized (injection duration), the lesser the volume of fuel that is supplied.

The injection duration and the injection timing are controlled by the ECU. Signals that are input from the throttle position sensor, crankshaft position sensor, intake air pressure sensor, air temperature sensor, coolant temperature sensor, speed sensor and O₂ 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.

Illustration is for reference only.



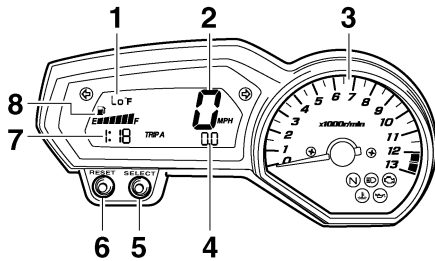
- | | |
|----------------------------------|---------------------|
| 1. Fuel pump | 13. Throttle body |
| 2. Fuel injector | 14. Air filter case |
| 3. Ignition coil | A. Fuel system |
| 4. ECU (engine control unit) | B. Air system |
| 5. Intake air temperature sensor | C. Control system |
| 6. Throttle position sensor | |
| 7. Sub-throttle position sensor | |
| 8. O ₂ sensor | |
| 9. Catalytic converter | |
| 10. Coolant temperature sensor | |
| 11. Crankshaft position sensor | |
| 12. Intake air pressure sensor | |

INSTRUMENT FUNCTIONS

ET2D1002

INSTRUMENT FUNCTIONS

Multi-function meter unit



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

EW2D1005



Be sure to stop the vehicle before making any setting changes to the multi-function meter unit.

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

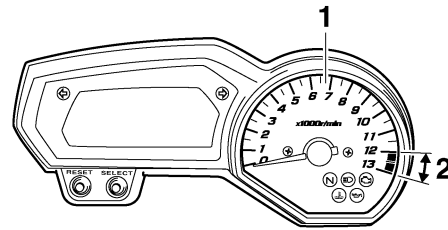
- a speedometer (which shows the riding speed)
- a tachometer (which shows engine speed)
- an odometer (which shows the total distance traveled)
- two tripmeters (which show the distance traveled since they were last set to zero)
- a fuel reserve tripmeter (which shows the distance traveled since the left segment of the fuel meter started flashing)
- a clock
- a fuel meter
- a coolant temperature display
- an air intake temperature display
- a self-diagnosis device
- an LCD and tachometer brightness control mode

NOTE:

- Be sure to turn the key to “ON” before using the “SELECT” and “RESET” buttons.
- To switch the speedometer and odometer/tripmeter displays between kilometers and

miles, press the “SELECT” button for at least one second.

Tachometer



1. Tachometer
2. Tachometer red zone

The electric tachometer allows the rider to monitor the engine speed and keep it within the ideal power range. When the key is turned to “ON”, the tachometer needle will sweep once across the r/min range and then return to zero r/min in order to test the electrical circuit.

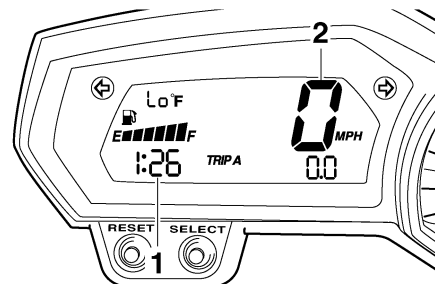
EC2D1007

CAUTION:

Do not operate the engine in the tachometer red zone.

Red zone: 12000 r/min and above

Clock mode



1. Clock
2. Speedometer

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

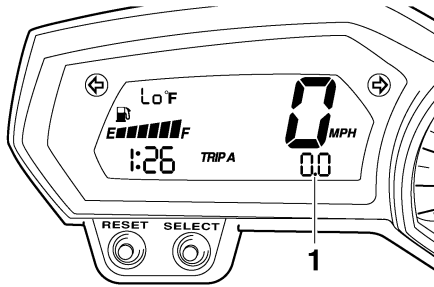
To set the clock

1. Turn the key to “ON”.
2. Push the “SELECT” button and “RESET” button together for at least two seconds.

INSTRUMENT FUNCTIONS

- When the hour digits start flashing, push the “RESET” button to set the hours.
- Push the “SELECT” button, and the minute digits will start flashing.
- Push the “RESET” button to set the minutes.
- Push the “SELECT” button and then release it to start the clock.

Odometer and tripmeter modes



- Odometer/tripmeter/fuel reserve tripmeter

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

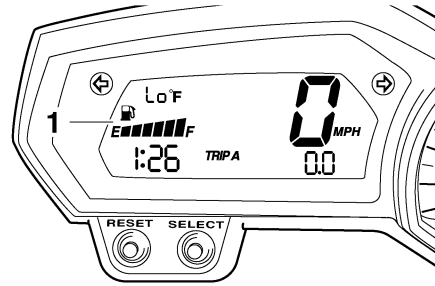
TRIP A → TRIP B → ODO → TRIP A

When the fuel amount in the fuel tank decreases to 3.4 L (0.90 US gal) (0.75 Imp.gal), the left segment of the fuel meter will start flashing, and the odometer display will automatically change to the fuel reserve tripmeter mode “FTRIP” and start counting the distance traveled from that point. In that case, push the “SELECT” button to switch the display between the various tripmeter and odometer modes in the following order:

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

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


Fuel meter



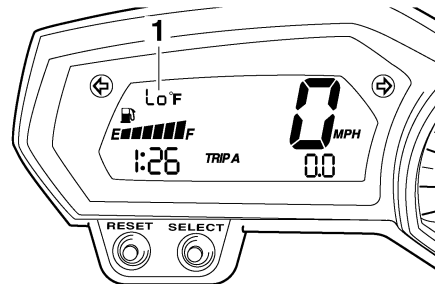
- Fuel meter

The fuel meter indicates the amount of fuel in the fuel tank. The display segments of the fuel meter disappear towards “E” (Empty) as the fuel level decreases. When only one segment is left near “E”, refuel as soon as possible.

NOTE:

This fuel meter is equipped with a self-diagnosis system. If the electrical circuit is defective, the following cycle will be repeated until the malfunction is corrected: “E” (Empty), “F” (Full) and symbol “” will flash eight times, then go off for approximately 3 seconds. If this occurs, have a Yamaha dealer check the electrical circuit.

Coolant temperature mode



- Coolant temperature display

The coolant temperature display indicates the temperature of the coolant. Push the “RESET” button to switch the coolant temperature display to the air intake temperature display.

NOTE:

When the coolant temperature display is selected, “C” is displayed for one second, and then the coolant temperature is displayed.

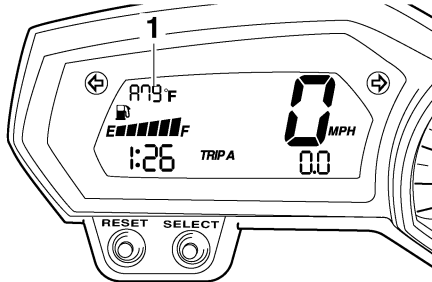
INSTRUMENT FUNCTIONS

EC2D1011

CAUTION:

Do not operate the engine if it is overheated.

Air intake temperature mode



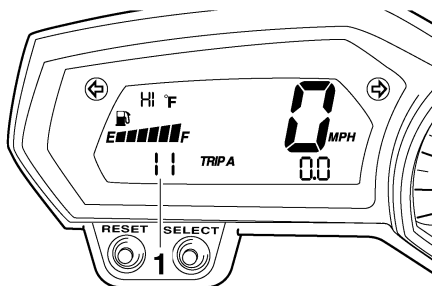
1. Air intake temperature display

The air intake temperature display indicates the temperature of the air drawn into the air filter case. Push the “RESET” button to switch the coolant temperature display to the air intake temperature display.

NOTE:

- Even if the air intake temperature is set to be displayed, the coolant temperature warning light comes on when the engine overheats.
- When the key is turned to “ON”, the coolant temperature is automatically displayed, even if the air intake temperature was displayed prior to turning the key to “OFF”.
- When the air intake temperature display is selected, “A” is displayed for one second, and then the air intake temperature is displayed.

Self-diagnosis device

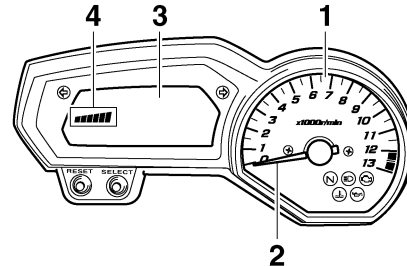


1. Error code display

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

If any of those circuits are defective, the engine trouble warning light will come on, and then the display will indicate a two-digit error code (e.g., 11, 12, 13).

LCD and tachometer brightness control mode



1. Tachometer panel
2. Tachometer needle
3. LCD
4. Brightness level

This function allows you to adjust the brightness of the LCD and the tachometer panel and needle to suit the outside lighting conditions.

To set the brightness

1. Turn the key to “OFF”.
2. Push and hold the “SELECT” button.
3. Turn the key to “ON”, and then release the “SELECT” button after five seconds.
4. Push the “RESET” button to select the desired brightness level.
5. Push the “SELECT” button to confirm the selected brightness level. The display will return to the odometer or tripmeter mode.

EAS20180

IMPORTANT INFORMATION

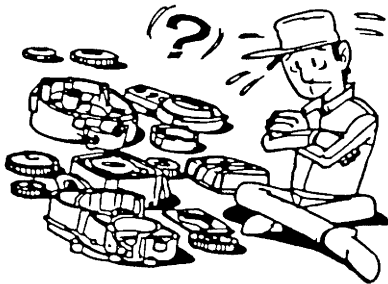
EAS20190

PREPARATION FOR REMOVAL AND DISASSEMBLY

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



2. Use only the proper tools and cleaning equipment. Refer to "SPECIAL TOOLS" on page 1-10.
3. When disassembling, always keep mated parts together. This includes gears, cylinders, pistons and other parts that have been "mated" through normal wear. Mated parts must always be reused or replaced as an assembly.

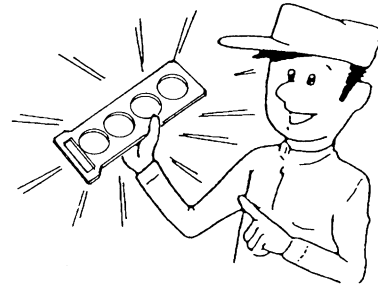


4. During disassembly, clean all of the parts and place them in trays in the order of disassembly. This will speed up assembly and allow for the correct installation of all parts.
5. Keep all parts away from any source of fire.

EAS20200

REPLACEMENT PARTS

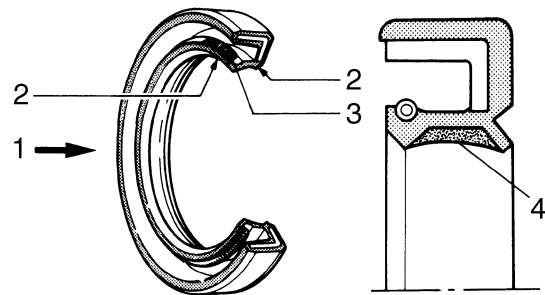
Use only genuine Yamaha parts for all replacements. Use oil and grease recommended by Yamaha for all lubrication jobs. Other brands may be similar in function and appearance, but inferior in quality.



EAS20210

GASKETS, OIL SEALS AND O-RINGS

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

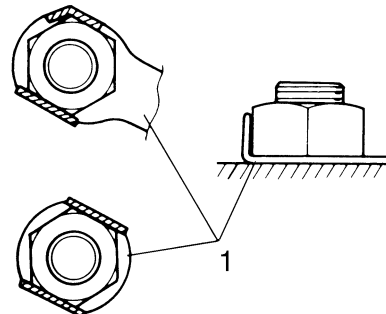


1. Oil
2. Lip
3. Spring
4. Grease

EAS20220

LOCK WASHERS/PLATES AND COTTER PINS

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



EAS20230

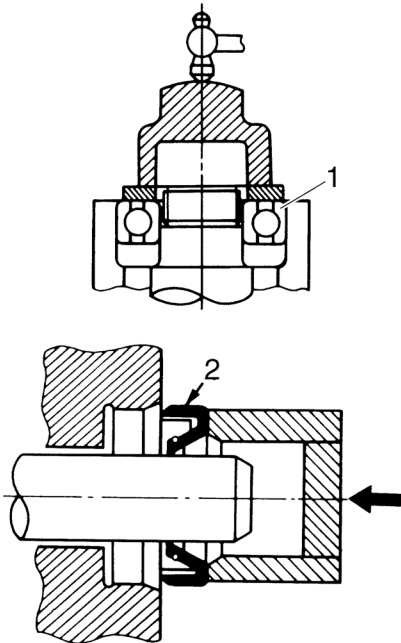
BEARINGS AND OIL SEALS

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

ECA13300

CAUTION:

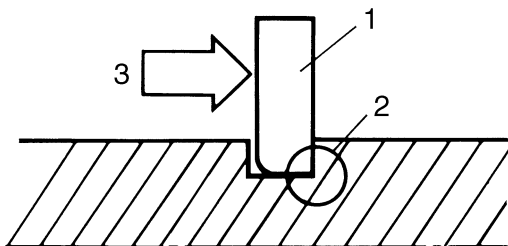
Do not spin the bearing with compressed air because this will damage the bearing surfaces.



EAS20240

CIRCLIPS

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



CHECKING THE CONNECTIONS

EAS20250

CHECKING THE CONNECTIONS

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

1. Disconnect:

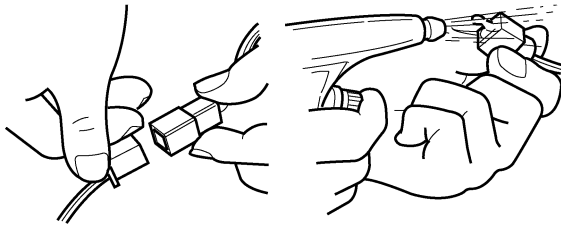
- Lead
- Coupler
- Connector

2. Check:

- Lead
- Coupler
- Connector

Moisture → Dry with an air blower.

Rust/stains → Connect and disconnect several times.

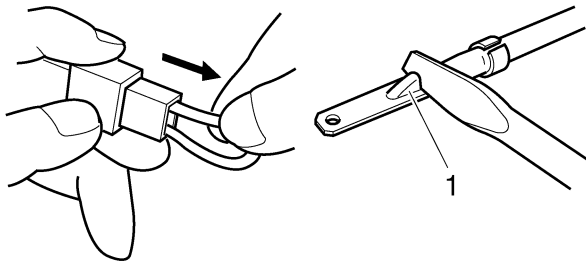


3. Check:

- 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.

5. Check:

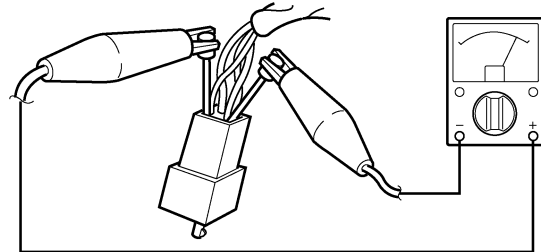
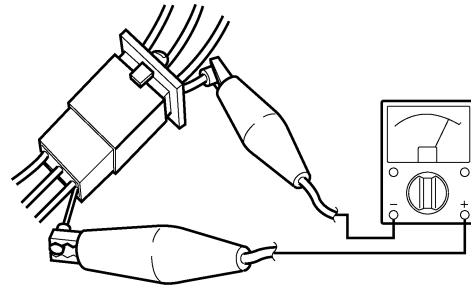
- Continuity
(with the pocket tester)



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

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.



EAS20260

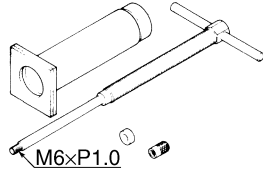
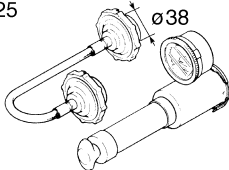
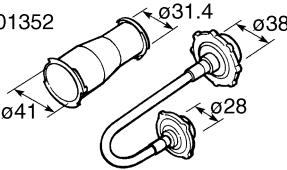
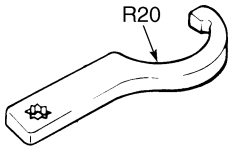
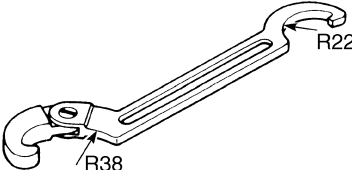
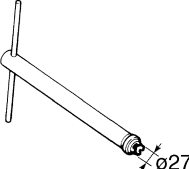
SPECIAL TOOLS

The following special tools are necessary for complete and accurate tune-up and assembly. Use only the appropriate special tools as this will help prevent damage caused by the use of inappropriate tools or improvised techniques. Special tools, part numbers or both may differ depending on the country.

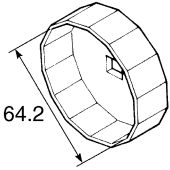
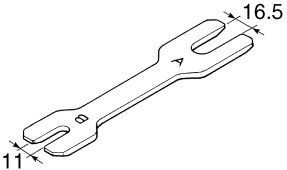
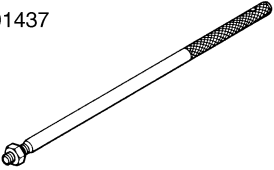
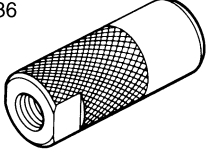
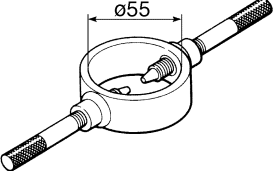
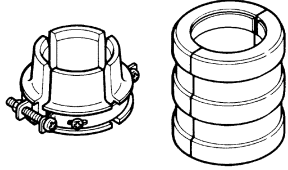
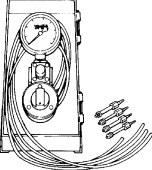
When placing an order, refer to the list provided below to avoid any mistakes.

NOTE:

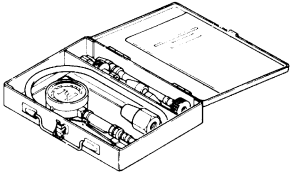
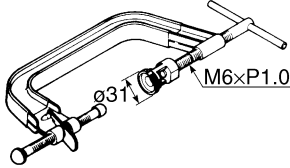
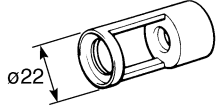
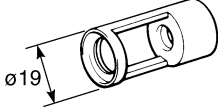
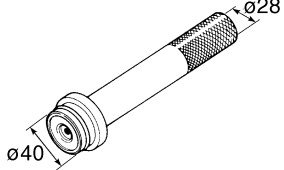
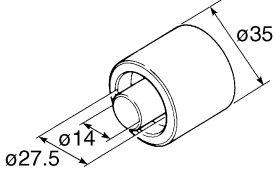
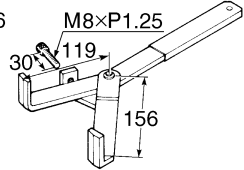
- For U.S.A. and Canada, use part number starting with “YM-”, “YU-”, or “ACC-”.
- For others, use part number starting with “90890-”.

Tool name/Tool No.	Illustration	Reference pages
Piston pin puller set 90890-01304 Piston pin puller YU-01304	90890-01304 	5-71
Radiator cap tester 90890-01325 Radiator pressure tester YU-24460-01	90890-01325 	6-3
Radiator cap tester adapter 90890-01352 Radiator pressure tester adapter YU-33984	90890-01352 	6-3
Steering nut wrench 90890-01403 Spanner wrench YU-33975		3-26, 4-57
Ring nut wrench 90890-01268 Spanner wrench YU-01268		4-57
Damper rod holder 90890-01423 Damping rod holder YM-01423		4-49, 4-50

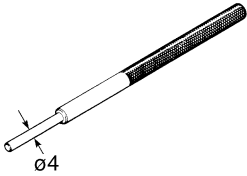
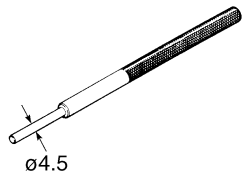
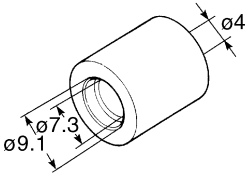
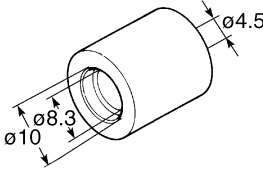
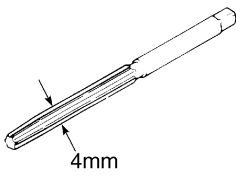
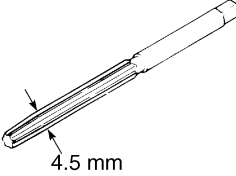
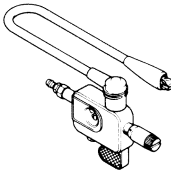
SPECIAL TOOLS

Tool name/Tool No.	Illustration	Reference pages
Oil filter wrench 90890-01426 YU-38411		3-11
Rod holder 90890-01434 Damper rod holder double ended YM-01434		4-48, 4-53
Rod puller 90890-01437 Universal damping rod bleeding tool set YM-A8703	90890-01437 	4-52
Rod puller attachment (M10) 90890-01436 Universal damping rod bleeding tool set YM-A8703	90890-01436 	4-52
Fork spring compressor 90890-01441 YM-01441		4-48, 4-53
Fork seal driver 90890-01442 Adjust table fork seal driver (36-46 mm) YM-01442		4-51
Vacuum gauge 90890-03094 Carburetor synchronizer YU-44456	90890-03094 	3-7

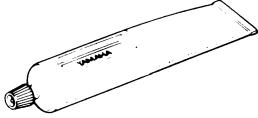
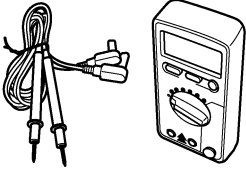
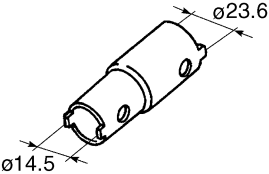

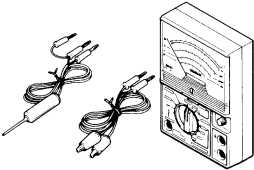
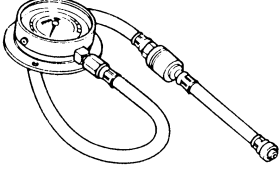
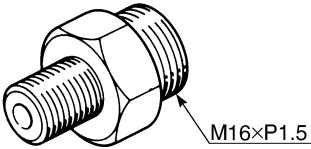
SPECIAL TOOLS

Tool name/Tool No.	Illustration	Reference pages
Compression gauge 90890-03081 Engine compression tester YU-33223		3-10
Valve spring compressor 90890-04019 YM-04019		5-23, 5-29
Valve spring compressor attachment 90890-04108 Valve spring compressor adapter (22 mm) YM-04108		5-23, 5-29
Valve spring compressor attachment 90890-04114 Valve spring compressor adapter YM-04114	90890-04114 	5-23, 5-29
Middle driven shaft bearing driver 90890-04058 Bearing driver (40 mm) YM-04058		6-12
Mechanical seal installer 90890-04078 Water pump seal installer YM-33221-A		6-12
Universal clutch holder 90890-04086 YM-91042	90890-04086 	5-47

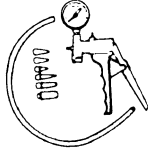
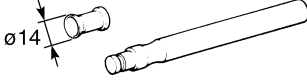
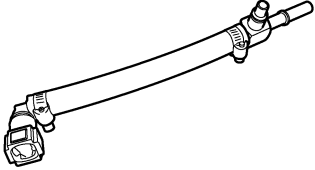
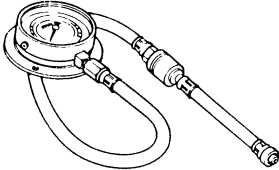
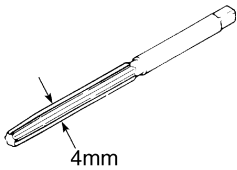
SPECIAL TOOLS

Tool name/Tool No.	Illustration	Reference pages
Valve guide remover (E) 90890-04111 Valve guide remover (4.0 mm) YM-04111		5-25
Valve guide remover (E.5) 90890-04116 Valve guide remover (4.5 mm) YM-04116		5-25
Valve guide installer (E) 90890-04112 Valve guide installer (4.0 mm) YM-04112		5-25
Valve guide installer (E.5) 90890-04117 Valve guide installer (4.5 mm) YM-04117		5-25
Valve guide reamer (E) 90890-04113 Valve guide reamer (4.0 mm) YM-04113		5-25
Valve guide reamer (E.5) 90890-04118 Valve guide reamer (4.5 mm) YM-04118		5-25
Ignition checker 90890-06754 Opama pet-4000 spark checker YU-34487		8-92

SPECIAL TOOLS

Tool name/Tool No.	Illustration	Reference pages
Yamaha bond No.1215 (Three Bond No.1215®) 90890-85505		2-19, 5-67, 6-12
Digital circuit tester 90890-03174 Model 88 Multimeter with tachometer YU-A1927		7-9, 7-10
Pivot shaft wrench 90890-01471 Frame spanner socket YM-01471		5-7
Pivot shaft wrench adapter 90890-01476		5-7
Pocket tester 90890-03112 Analog pocket tester YU-03112-C		1-9, 5-41, 8-83, 8-84, 8-85, 8-88, 8-89, 8-90, 8-91, 8-92, 8-93, 8-94, 8-95, 8-96, 8-97, 8-98, 8-99, 8-100
Oil pressure gauge 90890-03153 Pressure gauge YU-03153		3-13, 7-8
Oil pressure gauge adapter 90890-03139		3-13

SPECIAL TOOLS

Tool name/Tool No.	Illustration	Reference pages
Vacuum/pressure pump gauge set 90890-06756		7-8
Valve lapper 90890-04101 Valve lapping tool YM-A8998		3-5
Fuel pressure adapter 90890-03176 YM-03176		7-8
Pressure gauge 90890-03153 YU-03153		3-13, 7-8
Camshaft wrench 90890-04143 YM-04143		5-11, 5-16

GENERAL SPECIFICATIONS

EAS20280

GENERAL SPECIFICATIONS

Model

Model	3C34 (U.S.A.) 3C35 (California)
-------	------------------------------------

Dimensions

Overall length	2140 mm (84.3 in)
Overall width	770 mm (30.3 in)
Overall height	1205 mm (47.4 in)
Seat height	815 mm (32.1 in)
Wheelbase	1460 mm (57.5 in)
Ground clearance	135 mm (5.31 in)
Minimum turning radius	3000 mm (118.1 in)

Weight

With oil and fuel	220.0 kg (485 lb) (U.S.A.) 221.0 kg (487 lb) (California)
Maximum load	190 kg (419 lb) (U.S.A.) 189.0 kg (417 lb) (California)

EAS20290

ENGINE SPECIFICATIONS

Engine

Engine type	Liquid cooled 4-stroke, DOHC
Displacement	998.0 cm ³ (60.90 cu.in)
Cylinder arrangement	Forward-inclined parallel 4-cylinder
Bore × stroke	77.0 × 53.6 mm (3.03 × 2.11 in)
Compression ratio	11.50 : 1
Standard compression pressure (at sea level)	1480 kPa/350 r/min (210.5 psi/350 r/min) (14.8 kgf/cm ² /350 r/min)
Starting system	Electric starter

Fuel

Recommended fuel	Unleaded gasoline only
Fuel tank capacity	18.0 L (4.76 US gal) (3.96 Imp.gal)
Fuel reserve amount	3.4 L (0.90 US gal) (0.75 Imp.gal)

Engine oil

Lubrication system	Wet sump
Type	YAMALUBE 4 , SAE10W30 or SAE20W40
Recommended engine oil grade	API service SE, SF, SG type or higher
Engine oil quantity	
Total amount	3.80 L (4.02 US qt) (3.34 Imp.qt)
Without oil filter cartridge replacement	2.90 L (3.07 US qt) (2.55 Imp.qt)
With oil filter cartridge replacement	3.10 L (3.28 US qt) (2.73 Imp.qt)

Oil filter

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

Oil pump

Oil pump type	Trochoid
Inner-rotor-to-outer-rotor-tip clearance	0.010–0.100 mm (0.0004–0.0039 in)
Limit	0.18 mm (0.0071 in)
Outer-rotor-to-oil-pump-housing clearance	0.090–0.150 mm (0.0035–0.0059 in)
Limit	0.22 mm (0.0087 in)
Oil-pump-housing-to-inner-and-outer-rotor clearance	0.06–0.13 mm (0.0024–0.0051 in)

ENGINE SPECIFICATIONS

Limit	0.20 mm (0.0079 in)
Bypass valve opening pressure	80.0–120.0 kPa (11.6–17.4 psi) (0.80–1.20 kgf/cm ²)
Relief valve operating pressure	600.0–680.0 kPa (87.0–98.6 psi) (6.00–6.80 kgf/cm ²)

Cooling system

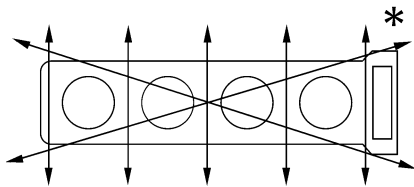
Radiator capacity (including all routes)	2.25 L (2.38 US qt) (1.98 Imp.qt)
Coolant reservoir capacity (up to the maximum level mark)	0.25 L (0.26 US qt) (0.22 Imp.qt)
Radiator cap opening pressure	93.3–122.7 kPa (13.5–17.8 psi) (0.93–1.23 kgf/cm ²)
Radiator core	
Width	222.6 mm (8.76 in)
Height	360.0 mm (14.17 in)
Depth	22.0 mm (0.87 in)
Water pump	
Water pump type	Single suction centrifugal pump
Reduction ratio	65/43 × 25/32 (1.181)
Max impeller shaft tilt limit	0.15 mm (0.0059 in)

Spark plug (s)

Manufacturer/model	NGK/CR9EK
Spark plug gap	0.6–0.7 mm (0.024–0.028 in)

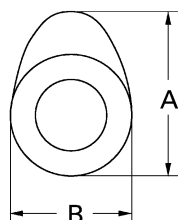
Cylinder head

Volume	12.20–13.00 cm ³ (0.74–0.79 cu.in)
Warpage limit*	0.10 mm (0.0039 in)



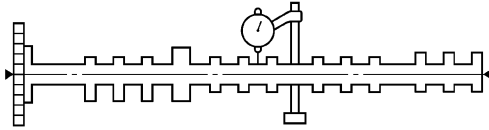
Camshaft

Drive system	Chain drive (right)
Camshaft cap inside diameter	22.500–22.521 mm (0.8858–0.8867 in)
Camshaft journal diameter	22.459–22.472 mm (0.8842–0.8847 in)
Camshaft-journal-to-camshaft-cap clearance	0.028–0.062 mm (0.0011–0.0024 in)
Camshaft lobe dimensions	
Intake A	32.500–32.600 mm (1.2795–1.2835 in)
Limit	32.400 mm (1.2756 in)
Intake B	24.950–25.050 mm (0.9823–0.9862 in)
Limit	24.850 mm (0.9783 in)
Exhaust A	30.699–30.799 mm (1.2086–1.2126 in)
Limit	30.599 mm (1.2047 in)
Exhaust B	22.950–23.050 mm (0.9035–0.9075 in)
Limit	22.850 mm (0.8996 in)



Camshaft runout limit	0.030 mm (0.0012 in)
-----------------------	----------------------

ENGINE SPECIFICATIONS

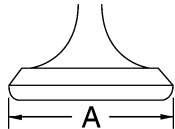


Timing chain

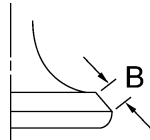
Model/number of links	RH2020/122
Tensioning system	Automatic

Valve, valve seat, valve guide

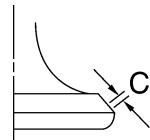
Valve clearance (cold)	
Intake	0.11–0.20 mm (0.0043–0.0079 in)
Exhaust	0.21–0.25 mm (0.0083–0.0098 in)
Valve dimensions	
Valve head diameter A (intake)	23.40–23.60 mm (0.9213–0.9291 in)
Valve head diameter A (exhaust)	24.90–25.10 mm (0.9803–0.9882 in)



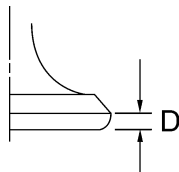
Valve face width B (intake)	1.760–2.900 mm (0.0693–0.1142 in)
Valve face width B (exhaust)	1.760–2.900 mm (0.0693–0.1142 in)



Valve seat width C (intake)	0.90–1.10 mm (0.0354–0.0433 in)
Valve seat width C (exhaust)	0.90–1.10 mm (0.0354–0.0433 in)

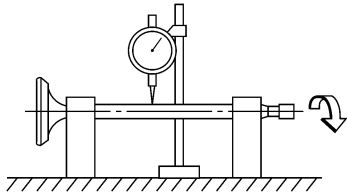


Valve margin thickness D (intake)	0.50–0.90 mm (0.0197–0.0354 in)
Valve margin thickness D (exhaust)	0.50–0.90 mm (0.0197–0.0354 in)



Valve stem diameter (intake)	3.975–3.990 mm (0.1565–0.1571 in)
Limit	3.945 mm (0.1553 in)
Valve stem diameter (exhaust)	4.460–4.475 mm (0.1756–0.1762 in)
Limit	4.425 mm (0.1742 in)
Valve guide inside diameter (intake)	4.000–4.012 mm (0.1575–0.1580 in)
Limit	4.050 mm (0.1594 in)
Valve guide inside diameter (exhaust)	4.500–4.512 mm (0.1772–0.1776 in)
Limit	4.550 mm (0.1791 in)
Valve-stem-to-valve-guide clearance (intake)	0.010–0.037 mm (0.0004–0.0015 in)
Limit	0.080 mm (0.0032 in)
Valve-stem-to-valve-guide clearance (exhaust)	0.025–0.052 mm (0.0010–0.0020 in)
Limit	0.100 mm (0.0039 in)
Valve stem runout	0.010 mm (0.0004 in)

ENGINE SPECIFICATIONS

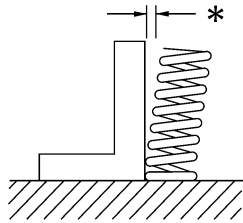


Cylinder head valve seat width (intake)	0.90–1.10 mm (0.0354–0.0433 in)
Cylinder head valve seat width (exhaust)	0.90–1.10 mm (0.0354–0.0433 in)

Valve spring

Inner spring

Free length (intake)	40.47 mm (1.59 in)
Free length (exhaust)	40.53 mm (1.60 in)
Installed length (intake)	32.66 mm (1.29 in)
Installed length (exhaust)	33.88 mm (1.33 in)
Spring rate K1 (intake)	17.53 N/mm (100.10 lb/in) (1.79 kgf/mm)
Spring rate K2 (intake)	22.86 N/mm (130.53 lb/in) (2.33 kgf/mm)
Spring rate K1 (exhaust)	21.52 N/mm (122.88 lb/in) (2.19 kgf/mm)
Spring rate K2 (exhaust)	27.99 N/mm (159.82 lb/in) (2.85 kgf/mm)
Installed compression spring force (intake)	127.40–144.60 N (28.64–32.51 lb) (12.99–14.74 kgf)
Installed compression spring force (exhaust)	133.00–153.00 N (29.90–34.39 lb) (13.56–15.60 kgf)
Spring tilt (intake)*	2.5 °/1.8 mm
Spring tilt (exhaust)*	2.5 °/1.8 mm



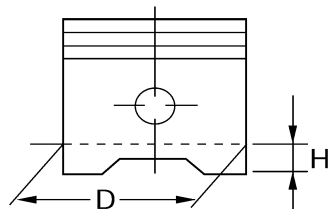
Winding direction (intake)	Clockwise
Winding direction (exhaust)	Clockwise

Cylinder

Bore	77.000–77.010 mm (3.0315–3.0319 in)
Taper limit	0.050 mm (0.0020 in)
Out of round limit	0.050 mm (0.0020 in)

Piston

Piston-to-cylinder clearance	0.010–0.035 mm (0.0004–0.0014 in)
Limit	0.12 mm (0.0047 in)
Diameter D	76.975–76.990 mm (3.0305–3.0311 in)
Height H	5.0 mm (0.20 in)



Offset	0.50 mm (0.0197 in)
Offset direction	Intake side

ENGINE SPECIFICATIONS

Piston pin bore inside diameter	17.002–17.013 mm (0.6694–0.6698 in)
Piston pin outside diameter	16.991–17.000 mm (0.6689–0.6693 in)

Piston ring

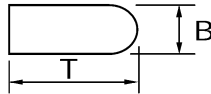
Top ring

Ring type

Barrel

Dimensions (B × T)

0.90 × 2.75 mm (0.04 × 0.11 in)



End gap (installed)

0.15–0.25 mm (0.0059–0.0098 in)

Ring side clearance

0.030–0.065 mm (0.0012–0.0026 in)

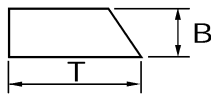
2nd ring

Ring type

Taper

Dimensions (B × T)

0.80 × 2.75 mm (0.03 × 0.11 in)



End gap (installed)

0.30–0.45 mm (0.0118–0.0177 in)

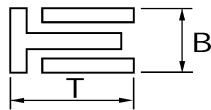
Ring side clearance

0.020–0.055 mm (0.0008–0.0022 in)

Oil ring

Dimensions (B × T)

1.50 × 2.25 mm (0.06 × 0.09 in)



End gap (installed)

0.10–0.40 mm (0.0039–0.0157 in)

Connecting rod

Oil clearance (using plastigauge®)

0.034–0.058 mm (0.0013–0.0023 in)

Bearing color code

1.Blue 2.Black 3.Brown 4.Green

Crankshaft

Width A

55.20–56.60 mm (2.173–2.228 in)

Width B

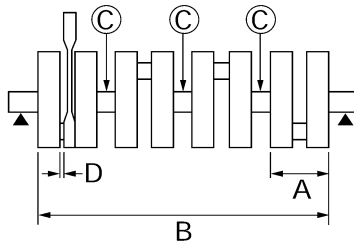
298.75–300.65 mm (11.76–11.84 in)

Runout limit C

0.030 mm (0.0012 in)

Big end side clearance D

0.160–0.262 mm (0.0063–0.0103 in)



Journal oil clearance (using plastigauge®)

0.014–0.037 mm (0.0006–0.0015 in)

Bearing color code

0.White 1.Blue 2.Black 3.Brown 4.Green

Clutch

Clutch type

Wet, multiple-disc

Clutch release method

Outer pull, rack and pinion pull

Clutch lever free play

10.0–15.0 mm (0.39–0.59 in)

Friction plate thickness

2.90–3.10 mm (0.114–0.122 in)

Wear limit

2.80 mm (0.1102 in)

Plate quantity

9 pcs

ENGINE SPECIFICATIONS

Clutch plate thickness	1.90–2.10 mm (0.075–0.083 in)
Plate quantity	8 pcs
Warpage limit	0.10 mm (0.0039 in)
Clutch spring free length	52.50 mm (2.07 in)
Spring quantity	6 pcs

Transmission	
Transmission type	Constant mesh 6-speed
Primary reduction system	Spur gear
Primary reduction ratio	65/43 (1.512)
Secondary reduction system	Chain drive
Secondary reduction ratio	45/17 (2.647)
Operation	Left foot operation
Gear ratio	
1st	38/15 (2.533)
2nd	33/16 (2.063)
3rd	37/21 (1.762)
4th	35/23 (1.522)
5th	27/20 (1.350)
6th	29/24 (1.208)
Main axle runout limit	0.08 mm (0.0032 in)
Drive axle runout limit	0.08 mm (0.0032 in)

Shifting mechanism	
Shift mechanism type	Guide bar
Shift fork guide bar bending limit	0.100 mm (0.0039 in)
Shift fork thickness	5.80–5.88 mm (0.2283–0.2315 in)

Air filter	
Air filter element	Oil-coated paper element

Fuel pump	
Pump type	Electrical
Model/manufacturer	2D1/DENSO
Maximum consumption amperage	4.3 A
Output pressure	324.0 kPa (47.0 psi) (3.24 kgf/cm ²)

Fuel injection	
Model/quantity	297500-0300/4
Manufacturer	DENSO

Throttle body	
Type/quantity	SE 45EIDW-B10/1 (U.S.A.) SE 45EIDW-B13/1 (California)
Manufacturer	MIKUNI
ID mark	2D11 00 (U.S.A.) 3C35 00 (California)
Throttle valve size	#100

Throttle position sensor	
Resistance	4.9–5.1 k Ω
Output voltage (at idle)	0.63–0.73 V

Idling condition	
Engine idling speed	1100–1300 r/min
Intake vacuum	30.0 kPa (8.9 inHg) (225 mmHg)
Water temperature	95.0–105.0 °C (203.00–221.00 °F)
Oil temperature	80.0–90.0 °C (176.00–194.00 °F)
Throttle cable free play	3.0–5.0 mm (0.12–0.20 in)

CHASSIS SPECIFICATIONS

EAS20300

CHASSIS SPECIFICATIONS

Chassis

Frame type	Diamond
Caster angle	25.00 °
Trail	109.0 mm (4.29 in)

Front wheel

Wheel type	Cast wheel
Rim size	17M/C x MT3.50
Rim material	Aluminum
Wheel travel	130.0 mm (5.12 in)
Radial wheel runout limit	1.0 mm (0.04 in)
Lateral wheel runout limit	0.5 mm (0.02 in)

Rear wheel

Wheel type	Cast wheel
Rim size	17M/C x MT6.00
Rim material	Aluminum
Wheel travel	130.0 mm (5.12 in)
Radial wheel runout limit	1.0 mm (0.04 in)
Lateral wheel runout limit	0.5 mm (0.02 in)

Front tire

Size	120/70 ZR17M/C (58W)
Manufacturer/model	MICHELIN/Pilot Road S
Manufacturer/model	DUNLOP/D221FA
Wear limit (front)	0.8 mm (0.03 in)

Rear tire

Size	190/50 ZR17M/C (73W)
Manufacturer/model	MICHELIN/Pilot Road D
Manufacturer/model	DUNLOP/D221G
Wear limit (rear)	0.8 mm (0.03 in)

Tire air pressure (measured on cold tires)

Loading condition	0–90 kg (0–198 lb)
Front	250 kPa (36 psi) (2.50 kgf/cm ²) (2.50 bar)
Rear	290 kPa (42 psi) (2.90 kgf/cm ²) (2.90 bar)
Loading condition	90–190 kg (198–419 lb) (U.S.A.)
	90-189 kg (198-417 lb) (California)
Front	250 kPa (36 psi) (2.50 kgf/cm ²) (2.50 bar)
Rear	290 kPa (42 psi) (2.90 kgf/cm ²) (2.90 bar)
High-speed riding	
Front	250 kPa (36 psi) (2.50 kgf/cm ²) (2.50 bar)
Rear	290 kPa (42 psi) (2.90 kgf/cm ²) (2.90 bar)

Front brake

Type	Dual disc brake
Operation	Right hand operation
Front brake lever free play	2.3–11.5 mm (0.09–0.45 in)
Front disc brake	
Disc outside diameter × thickness	320.0 × 4.5 mm (12.60 × 0.18 in)
Brake disc thickness limit	4.0 mm (0.16 in)
Brake disc deflection limit	0.10 mm (0.0039 in)
Brake pad lining thickness (inner)	4.5 mm (0.18 in)
Limit	0.5 mm (0.02 in)
Brake pad lining thickness (outer)	4.5 mm (0.18 in)
Limit	0.5 mm (0.02 in)

CHASSIS SPECIFICATIONS

Master cylinder inside diameter	16.00 mm (0.63 in)
Caliper cylinder inside diameter	30.20 mm (1.19 in)
Caliper cylinder inside diameter	27.00 mm (1.06 in)
Recommended fluid	DOT 4

Rear brake

Type	Single disc brake
Operation	Right foot operation
Brake pedal free play	4.3–9.3 mm (0.17–0.37 in)
Rear disc brake	
Disc outside diameter × thickness	245.0 × 5.0 mm (9.65 × 0.20 in)
Brake disc thickness limit	4.5 mm (0.18 in)
Brake disc deflection limit	0.15 mm (0.0059 in)
Brake pad lining thickness (inner)	6.0 mm (0.24 in)
Limit	1.0 mm (0.04 in)
Brake pad lining thickness (outer)	6.0 mm (0.24 in)
Limit	1.0 mm (0.04 in)
Master cylinder inside diameter	12.7 mm (0.50 in)
Caliper cylinder inside diameter	38.20 mm (1.50 in)
Recommended fluid	DOT 4

Steering

Steering bearing type	Angular bearing
Lock to lock angle (left)	33.0 °
Lock to lock angle (right)	33.0 °

Front suspension

Type	Telescopic fork
Spring/shock absorber type	Coil spring/oil damper
Front fork travel	130.0 mm (5.12 in)
Fork spring free length	243.5 mm (9.59 in)
Collar length	100.0 mm (3.94 in)
Installed length	239.0 mm (9.41 in)
Spring rate K1	9.32 N/mm (53.22 lb/in) (0.95 kgf/mm)
Spring stroke K1	0.0–130.0 mm (0.00–5.12 in)
Inner tube outer diameter	43.0 mm (1.69 in)
Inner tube bending limit	0.2 mm (0.01 in)
Optional spring available	No
Recommended oil	Suspension oil 01
Quantity	545.0 cm ³ (18.43 US oz) (19.22 Imp.oz)
Level	91.0 mm (3.58 in)

Rear suspension

Type	Swingarm (link suspension)
Spring/shock absorber type	Coil spring/gas-oil damper
Rear shock absorber assembly travel	60.0 mm (2.36 in)
Spring free length	191.3 mm (7.53 in)
Installed length	181.8 mm (7.16 in)
Spring rate K1	120.00 N/mm (685.20 lb/in) (12.24 kgf/mm)
Spring stroke K1	0.0–60.0 mm (0.00–2.36 in)
Optional spring available	No
Enclosed gas/air pressure (STD)	1000 kPa (142.2 psi) (10.0 kgf/cm ²)

Drive chain

Type/manufacturer	50VA8/DAIDO
Link quantity	122
Drive chain slack	25.0–35.0 mm (0.98–1.38 in)
15-link length limit	239.3 mm (9.42 in)

ELECTRICAL SPECIFICATIONS

EAS20310

ELECTRICAL SPECIFICATIONS

Voltage

System voltage 12 V

Ignition system

Ignition system Transistorized coil ignition (digital)
Ignition timing (B.T.D.C.) 5.0 °/1200 r/min

Engine control unit

Model/manufacturer TBDF29/DENSO

Transistorized coil ignition

Crankshaft position sensor resistance 336–504 Ω at 20°C (68°F)

Ignition coil

Model/manufacturer F6T558/MITSUBISHI
Minimum ignition spark gap 6.0 mm (0.24 in)
Primary coil resistance 1.19–1.61 Ω at 20°C (68°F)
Secondary coil resistance 8.5–11.5 kΩ at 20°C (68°F)

AC magneto

Model/manufacturer STATOR:F074T85073/MITSUBISHI
Standard output 14.0 V/40.0 A/6500 r/min
Stator coil resistance 0.14–0.18 Ω at 20°C (68°F)

Voltage regulator

Rectifier/regulator
Regulator type Semi conductor-short circuit
Model/manufacturer FH012AA/SHINDENGEN
Regulated voltage (DC) 14.2–14.8 V
Rectifier capacity 50.0 A
Withstand voltage 40.0 V

Battery

Model YTZ14S
Voltage, capacity 12 V, 11.2 Ah
Specific gravity 1.310
Manufacturer GYM
Ten hour rate amperage 1.12 A

Headlight

Bulb type Halogen bulb

Bulb voltage, wattage × quantity

Headlight 12 V, 60 W/55.0 W × 2
Tail/brake light 12 V, 5.0 W/21.0 W × 1
Front turn signal/position light 12 V, 21 W/5.0 W × 2
Rear turn signal light 12 V, 21 W × 2
License plate light 12 V, 5.0 W × 1
Meter lighting LED

Indicator light

Neutral indicator light LED
Turn signal indicator light LED
Oil level warning light LED
High beam indicator light LED
Coolant temperature warning light LED
Engine trouble warning light LED

ELECTRICAL SPECIFICATIONS

Electric starting system

System type Constant mesh

Starter motor

Model/manufacture SM13/MITSUBA
Power output 0.80 kW
Armature coil resistance 0.0250–0.0350 Ω
Brush overall length 12.5 mm (0.49 in)
Limit 5.00 mm (0.20 in)
Brush spring force 7.65–10.01 N (27.54–36.03 oz) (780–1021 gf)
Commutator diameter 28.0 mm (1.10 in)
Limit 27.0 mm (1.06 in)
Mica undercut (depth) 0.70 mm (0.03 in)

Starter relay

Model/manufacture 2768109-A/JIDECO
Amperage 180.0 A
Coil resistance 4.18–4.62 Ω at 20°C (68°F)

Horn

Horn type Plane
Quantity 1 pcs
Model/manufacture YF-12/NIKKO
Maximum amperage 3.0 A
Coil resistance 1.15–1.25 Ω at 20°C (68°F)
Performance 105–113 dB/2m

Turn signal/hazard relay

Relay type Full transistor
Model/manufacture FE246BH/DENSO
Built-in, self-canceling device No
Turn signal blinking frequency 75.0–95.0 cycles/min
Wattage 21 W \times 2.0 +3.4 W

Oil level gauge

Model/manufacture 5VY/SOMIC ISHIKAWA

Servo motor

Model/manufacture 2D1/YAMAHA

Fuses

Main fuse 50.0 A
Headlight fuse 20.0 A
Signaling system fuse 10.0 A
Ignition fuse 15.0 A
Radiator fan fuse 10.0 A \times 2
Fuel injection system fuse 15.0 A
Backup fuse 10.0 A
Reserve fuse 20.0 A
Reserve fuse 15.0 A
Reserve fuse 10.0 A

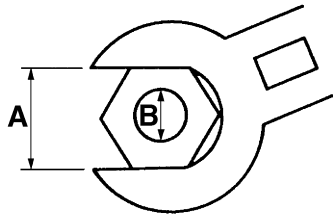
EAS20320

TIGHTENING TORQUES

EAS20330

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 (nut)	B (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

EAS20340






ENGINE TIGHTENING TORQUES

Item	Thread size	Q'ty	Tightening torque	Remarks
Spark plug	M10	4	13 Nm (1.3 m·kg, 9.4 ft·lb)	
Cylinder head nut	M10	10	See NOTE	
Cylinder head bolt	M6	2	12 Nm (1.2 m·kg, 8.7 ft·lb)	
Camshaft caps bolt	M6	28	10 Nm (1.0 m·kg, 7.2 ft·lb)	
Cylinder head cover bolt	M6	6	12 Nm (1.2 m·kg, 8.7 ft·lb)	
Cylinder head stud bolt (exhaust pipe)	M8	8	15 Nm (1.5 m·kg, 11 ft·lb)	
Air indication system cap bolt	M6	4	10 Nm (1.0 m·kg, 7.2 ft·lb)	
Camshaft sprocket bolt	M7	4	24 Nm (2.4 m·kg, 17 ft·lb)	
Cylinder head and throttle body clamp	M5	4	3 Nm (0.3 m·kg, 2.2 ft·lb)	
Connecting rod cap bolt (1st)	M8	8	20 Nm (2.0 m·kg, 14 ft·lb)	
Connecting rod cap bolt (final)	M8	8	Specified angle 150°	
Generator rotor bolt	M10	1	60 Nm (6.0 m·kg, 43 ft·lb)	
Timing chain tensioner bolt	M6	2	10 Nm (1.0 m·kg, 7.2 ft·lb)	
Water pump outlet pipe bolt	M6	1	10 Nm (1.0 m·kg, 7.2 ft·lb)	
Water pump inlet pipe bolt (water pump side)	M6	1	10 Nm (1.0 m·kg, 7.2 ft·lb)	
Water pump inlet pipe bolt (front side)	M6	1	10 Nm (1.0 m·kg, 7.2 ft·lb)	
Oil/water pump drive sprocket bolt	M6	1	15 Nm (1.5 m·kg, 11 ft·lb)	
Water pump bolt	M6	5	12 Nm (1.2 m·kg, 8.7 ft·lb)	
Thermostat cover nut	M6	2	10 Nm (1.0 m·kg, 7.2 ft·lb)	
Thermostat inlet pipe bolt	M6	1	10 Nm (1.0 m·kg, 7.2 ft·lb)	
Oil cooler bolt	M20	1	63 Nm (6.3 m·kg, 46 ft·lb)	
Engine oil drain bolt	M14	1	43 Nm (4.3 m·kg, 31 ft·lb)	
Oil pipe bolt	M6	2	10 Nm (1.0 m·kg, 7.2 ft·lb)	
Oil strainer bolt	M6	3	10 Nm (1.0 m·kg, 7.2 ft·lb)	
Oil delivery pipe bolt	M6	3	10 Nm (1.0 m·kg, 7.2 ft·lb)	
Oil filter union bolt	M20	1	70 Nm (7.0 m·kg, 51 ft·lb)	
Oil filter	M20	1	17 Nm (1.7 m·kg, 12 ft·lb)	
Oil pan bolt	M6	14	12 Nm (1.2 m·kg, 8.7 ft·lb)	
Oil pan bolt	M6	1	12 Nm (1.2 m·kg, 8.7 ft·lb)	
Air filter case cover screw	M5	11	1.2 Nm (0.12 m·kg, 0.9 ft·lb)	
Throttle body and throttle body joint clamp	M5	4	3 Nm (0.3 m·kg, 2.2 ft·lb)	
Throttle body and funnel bolt	M5	6	4.2 Nm (0.42 m·kg, 3.0 ft·lb)	
Throttle cable adjusting bolt	M6	1	4.5 Nm (0.45 m·kg, 3.3 ft·lb)	

TIGHTENING TORQUES

Item	Thread size	Q'ty	Tightening torque	Remarks
Cylinder head and exhaust pipe nut	M8	8	20 Nm (2.0 m·kg, 14 ft·lb)	
Exhaust pipe and muffler bolt	M8	1	20 Nm (2.0 m·kg, 14 ft·lb)	
EXUP pulley and shaft arm nut	M6	1	7 Nm (0.7 m·kg, 5.1 ft·lb)	
EXUP valve pulley cover bolt	M6	2	14 Nm (1.4 m·kg, 10 ft·lb)	
EXUP cable nut	M6	2	7 Nm (0.7 m·kg, 5.1 ft·lb)	
Exhaust pipe and exhaust pipe bracket bolt	M8	2	20 Nm (2.0 m·kg, 14 ft·lb)	
EXUP servo motor cover bolt	M5	2	2 Nm (0.2 m·kg, 1.4 ft·lb)	
EXUP servo motor nut	M6	1	7 Nm (0.7 m·kg, 5.1 ft·lb)	
Crankcase stud bolt	M10	10	8 Nm (0.8 m·kg, 5.8 ft·lb)	
Crankcase bolt (main journal)	M9	10	See NOTE	
Crankcase bolt	M6	2	10 Nm (1.0 m·kg, 7.2 ft·lb)	
Crankcase bolt	M6	8	10 Nm (1.0 m·kg, 7.2 ft·lb)	
Crankcase bolt	M8	1	24 Nm (2.4 m·kg, 17 ft·lb)	
Crankcase bolt	M8	5	24 Nm (2.4 m·kg, 17 ft·lb)	
Generator rotor cover bolt	M6	4	12 Nm (1.2 m·kg, 8.7 ft·lb)	
Generator rotor cover bolt	M8	3	22 Nm (2.2 m·kg, 16 ft·lb)	
Drive sprocket cover bolt	M6	3	12 Nm (1.2 m·kg, 8.7 ft·lb)	
Crankcase cover screw	M6	3	10 Nm (1.0 m·kg, 7.2 ft·lb)	
Clutch cover bolt	M6	7	12 Nm (1.2 m·kg, 8.7 ft·lb)	
Clutch cover bolt	M6	1	12 Nm (1.2 m·kg, 8.7 ft·lb)	
Pickup rotor cover bolt	M6	6	12 Nm (1.2 m·kg, 8.7 ft·lb)	
Breather cover bolt	M6	4	12 Nm (1.2 m·kg, 8.7 ft·lb)	
Breather plate bolt	M6	3	10 Nm (1.0 m·kg, 7.2 ft·lb)	
Plate bolt	M6	2	12 Nm (1.2 m·kg, 8.7 ft·lb)	
Pickup rotor cover blind bolt	M8	1	15 Nm (1.5 m·kg, 11 ft·lb)	
Generator rotor cover plug	M20	1	8 Nm (0.8 m·kg, 5.8 ft·lb)	
Main gallery plug (oil return)	M16	3	8 Nm (0.8 m·kg, 5.8 ft·lb)	
Main gallery plug	M20	1	8 Nm (0.8 m·kg, 5.8 ft·lb)	
Oil return pipe bolt	M6	2	10 Nm (1.0 m·kg, 7.2 ft·lb)	
Oil return plug	M12	2	24 Nm (2.4 m·kg, 17 ft·lb)	
AC magneto lead bolt	M6	1	10 Nm (1.0 m·kg, 7.2 ft·lb)	
Startor coil screw	M6	3	14 Nm (1.4 m·kg, 10 ft·lb)	
Generator rotor cover screw	M6	3	10 Nm (1.0 m·kg, 7.2 ft·lb)	
Thermostat assembly stay bolt	M6	2	10 Nm (1.0 m·kg, 7.2 ft·lb)	
Starter clutch idler gear bolt	M6	1	10 Nm (1.0 m·kg, 7.2 ft·lb)	
Clutch boss nut	M20	1	95 Nm (9.5 m·kg, 69 ft·lb)	Stake

TIGHTENING TORQUES

Item	Thread size	Q'ty	Tightening torque	Remarks
Clutch spring bolt	M6	6	10 Nm (1.0 m·kg, 7.2 ft·lb)	Use a lock washer
Drive sprocket nut	M22	1	85 Nm (8.5 m·kg, 61 ft·lb)	
Bearing plate bolt	M6	3	12 Nm (1.2 m·kg, 8.7 ft·lb)	
Shift fork stopper plate bolt	M6	2	10 Nm (1.0 m·kg, 7.2 ft·lb)	
Stopper screw	M8	1	22 Nm (2.2 m·kg, 16 ft·lb)	
Shift rod locknut (front)	M6	1	7 Nm (0.7 m·kg, 5.1 ft·lb)	
Shift rod locknut (rear)	M6	1	7 Nm (0.7 m·kg, 5.1 ft·lb)	Left thread
Shift rod joint bolt	M6	1	10 Nm (1.0 m·kg, 7.2 ft·lb)	
Shift arm bolt	M6	1	10 Nm (1.0 m·kg, 7.2 ft·lb)	
Neutral switch	M10	1	20 Nm (2.0 m·kg, 14 ft·lb)	
Sub-throttle servo motor cover bolt	M4	3	2 Nm (0.2 m·kg, 1.4 ft·lb)	
Coolant temperature sensor	M12	1	18 Nm (1.8 m·kg, 13 ft·lb)	
Cylinder identification sensor bolt	M6	1	8 Nm (0.8 m·kg, 5.8 ft·lb)	
Atmospheric pressure sensor bolt	M5	2	7 Nm (0.7 m·kg, 5.1 ft·lb)	
Crankshaft position sensor bolt	M6	1	10 Nm (1.0 m·kg, 7.2 ft·lb)	
Oil level switch bolt	M6	2	10 Nm (1.0 m·kg, 7.2 ft·lb)	
Starter motor bolt	M6	2	10 Nm (1.0 m·kg, 7.2 ft·lb)	

NOTE:

• Cylinder head nut

1 First, tighten the bolts to approximately 19 Nm (1.9 m·kg, 14 ft·lb) with a torque wrench following the tightening order.

2 Retighten the bolts 67 Nm (6.7 m·kg, 48 ft·lb) with a torque wrench.

• Connecting rod cap bolt

1 Tighten the connecting rod bolts to 20 Nm (2.0 m·kg, 14 ft·lb) and then tighten them further to reach the specified angle 150°.

• Crankcase bolt (main journal)

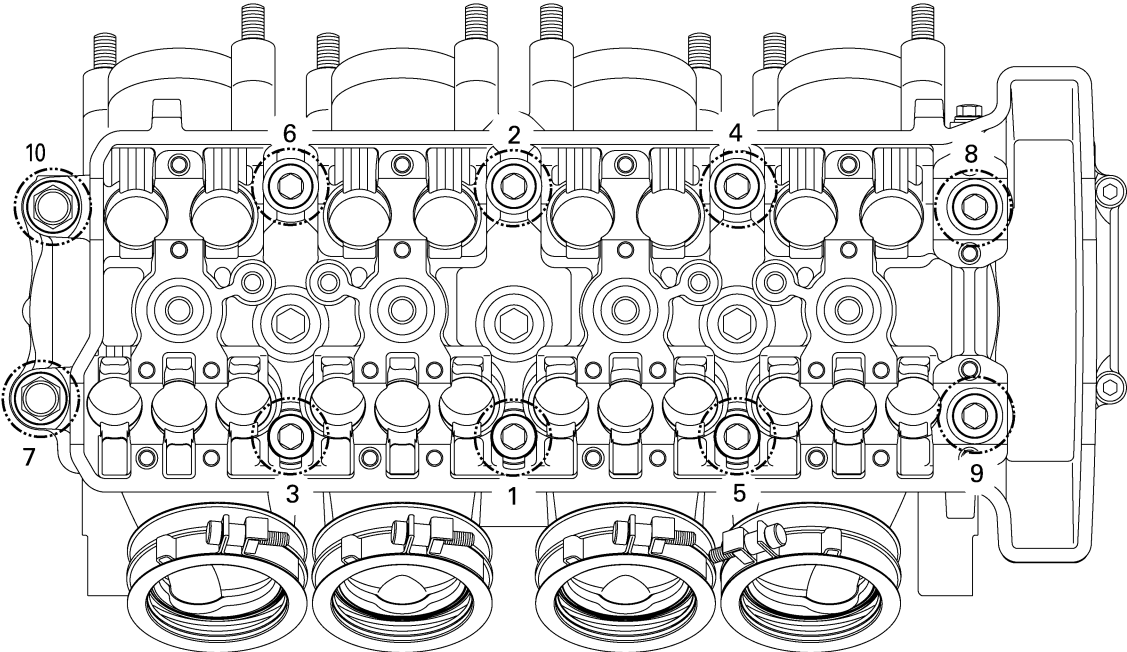
1 First, tighten the bolts to approximately 20 Nm (2.0 m·kg, 14 ft·lb) with a torque wrench following the tightening order.

2 Loosen all the bolts one by one following the tightening order and then tighten them to 20 Nm (2.7 m·kg, 14 ft·lb) again.

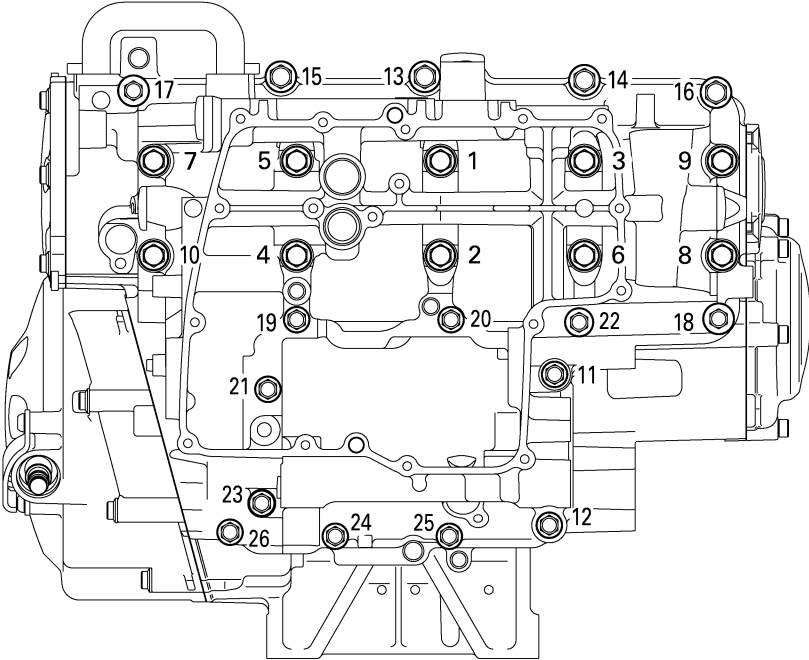
3 Retighten the bolts further to reach the specified angle (60°)

TIGHTENING TORQUES

Cylinder head tightening sequence:









Crankcase tightening sequence:







TIGHTENING TORQUES

EAS20350

CHASSIS TIGHTENING TORQUES

Item	Thread size	Q'ty	Tightening torque	Remarks
Upper bracket pinch bolt	M8	2	26 Nm (2.6 m·kg, 19 ft·lb)	
Steering stem nut	M28	1	113 Nm (11.3 m·kg, 82 ft·lb)	
Upper handlebar holder bolt	M8	4	24 Nm (2.4 m·kg, 17 ft·lb)	
Lower handlebar holder nut	M10	2	32 Nm (3.2 m·kg, 23 ft·lb)	
Lower bracket pinch bolt	M8	4	23 Nm (2.3 m·kg, 17 ft·lb)	
Lower ring nut	M30	1	SEE NOTE	
Cap bolt	M46	2	23 Nm (2.3 m·kg, 17 ft·lb)	
Damper rod assembly bolt	M10	1	23 Nm (2.3 m·kg, 17 ft·lb)	
Brake master cylinder bracket bolt	M6	2	10 Nm (1.0 m·kg, 7.2 ft·lb)	
Brake master cylinder reservoir cap screw	M4	2	2 Nm (0.2 m·kg, 1.4 ft·lb)	
Front brake hose union bolt	M10	3	30 Nm (3.0 m·kg, 22 ft·lb)	
Front brake hose holder bolt	M6	2	7 Nm (0.7 m·kg, 5.1 ft·lb)	
Cowling stay bolt	M8	2	33 Nm (3.3 m·kg, 24 ft·lb)	
Cowling bracket bolt	M6	2	7 Nm (0.7 m·kg, 5.1 ft·lb)	
Front fender bolt	M6	4	6 Nm (0.6 m·kg, 4.3 ft·lb)	
Clutch lever holder pinch bolt	M6	1	11 Nm (1.1 m·kg, 8.0 ft·lb)	
Right front engine mounting bolt 1	M10	1	45 Nm (4.5 m·kg, 33 ft·lb)	
Right front engine mounting bolt 2	M10	1	50 Nm (5.0 m·kg, 36 ft·lb)	
Left front engine mounting bolt	M10	1	45 Nm (4.5 m·kg, 33 ft·lb)	
Upper self-locking nut	M10	1	51 Nm (5.1 m·kg, 37 ft·lb)	
Lower self-locking nut	M10	1	51 Nm (5.1 m·kg, 37 ft·lb)	
Engine mounting adjust bolt (upper)	M11	1	7 Nm (0.7 m·kg, 5.1 ft·lb)	
Engine mounting adjust bolt (lower)	M11	1	7 Nm (0.7 m·kg, 5.1 ft·lb)	
Pivot shaft nut	M18	1	105 Nm (11 m·kg, 76 ft·lb)	
Connecting arm nut (connecting arm and frame)	M10	1	44 Nm (4.4 m·kg, 32 ft·lb)	
Relay arm nut (relay arm and swingarm)	M10	1	44 Nm (4.4 m·kg, 32 ft·lb)	
Relay arm nut (relay arm and connecting arm)	M10	1	44 Nm (4.4 m·kg, 32 ft·lb)	
Main frame and rear frame nut	M10	4	41 Nm (4.1 m·kg, 30 ft·lb)	
Clutch cable locknut	M8	1	7 Nm (0.7 m·kg, 5.1 ft·lb)	
Throttle cable locknut	M6	2	5 Nm (0.5 m·kg, 3.6 ft·lb)	
Rear shock absorber assembly upper nut	M10	1	44 Nm (4.4 m·kg, 32 ft·lb)	
Rear shock absorber assembly lower nut	M10	1	44 Nm (4.4 m·kg, 32 ft·lb)	
Drive chain guard bolt	M6	3	7 Nm (0.7 m·kg, 5.1 ft·lb)	
Drive chain guide bolt	M6	2	7 Nm (0.7 m·kg, 5.1 ft·lb)	
Rear fender screw	M6	3	7 Nm (0.7 m·kg, 5.1 ft·lb)	

TIGHTENING TORQUES

Item	Thread size	Q'ty	Tightening torque	Remarks
Rear brake hose holder screw	M6	2	7 Nm (0.7 m·kg, 5.1 ft·lb)	
Fuel tank bolt (front)	M6	3	7 Nm (0.7 m·kg, 5.1 ft·lb)	
Fuel tank bolt (rear)	M6	1	7 Nm (0.7 m·kg, 5.1 ft·lb)	
Fuel tank bracket screw	M6	4	7 Nm (0.7 m·kg, 5.1 ft·lb)	
Fuel tank cap bolt	M5	5	6 Nm (0.6 m·kg, 4.3 ft·lb)	
Fuel pump bolt	M5	6	4 Nm (0.4 m·kg, 2.9 ft·lb)	
Seat lock assembly nut	M6	2	7 Nm (0.7 m·kg, 5.1 ft·lb)	
Mud guard assembly bolt	M8	4	16 Nm (1.6 m·kg, 12 ft·lb)	
License plate light screw	M5	2	4 Nm (0.4 m·kg, 2.9 ft·lb)	
Rear reflector nut	M5	2	4 Nm (0.4 m·kg, 2.9 ft·lb)	
Mud guard assembly bracket screw	M5	6	2 Nm (0.2 m·kg, 1.4 ft·lb)	
Tail/brake light bracket bolt	M8	3	16 Nm (1.6 m·kg, 12 ft·lb)	
Rear fender bracket bolt	M6	2	7 Nm (0.7 m·kg, 5.1 ft·lb)	
Seat bracket bolt	M6	4	7 Nm (0.7 m·kg, 5.1 ft·lb)	
Exhaust pipe assembly bracket bolt	M8	2	20 Nm (2.0 m·kg, 14 ft·lb)	
Side cover screw	M6	2	4 Nm (0.4 m·kg, 2.9 ft·lb)	
Lean angle sensor bolt	M4	2	2 Nm (0.2 m·kg, 1.4 ft·lb)	
Coolant reserver tank bolt	M6	1	5 Nm (0.5 m·kg, 3.6 ft·lb)	
Front wheel axle shaft	M18	1	72 Nm (7.2 m·kg, 52 ft·lb)	
Front wheel axle pinch bolt	M8	1	23 Nm (2.3 m·kg, 17 ft·lb)	
Front brake caliper bolt	M10	4	40 Nm (4.0 m·kg, 29 ft·lb)	
Front brake disc screw	M6	10	18 Nm (1.8 m·kg, 13 ft·lb)	
Brake caliper bleed screw	M8	3	5 Nm (0.5 m·kg, 3.6 ft·lb)	
Rear wheel axle nut	M24	1	150 Nm (15.0 m·kg, 108 ft·lb)	
Rear brake disc screw	M8	5	30 Nm (3.0 m·kg, 22 ft·lb)	
Rear brake caliper bolt (front)	M12	1	27 Nm (2.7 m·kg, 20 ft·lb)	
Rear brake caliper bolt (rear)	M8	1	22 Nm (2.2 m·kg, 16 ft·lb)	
Rear wheel sprocket nut	M10	6	100 Nm (10.0 m·kg, 72 ft·lb)	
Drive chain adjusting locknut	M8	2	16 Nm (1.6 m·kg, 12 ft·lb)	
Rear brake hose union bolt	M10	2	30 Nm (3.0 m·kg, 22 ft·lb)	
Sidestand nut	M10	1	48 Nm (4.8 m·kg, 35 ft·lb)	
Sidestand bracket bolt	M10	2	63 Nm (6.3 m·kg, 46 ft·lb)	
Sidestand switch bolt	M5	2	4 Nm (0.4 m·kg, 2.9 ft·lb)	
Footrest bracket bolt	M8	4	30 Nm (3.0 m·kg, 22 ft·lb)	
Rear brake fluid reserver tank bolt	M5	1	4 Nm (0.4 m·kg, 2.9 ft·lb)	
Rear brake master cylinder bolt	M8	2	23 Nm (2.3 m·kg, 17 ft·lb)	
Centerstand nut	M10	2	56 Nm (5.6 m·kg, 41 ft·lb)	
Centerstand bracket nut	M10	4	55 Nm (5.5 m·kg, 40 ft·lb)	
Centerstand bracket adapter bolt	M10	2	73 Nm (7.3 m·kg, 53 ft·lb)	
Footrest bolt	M10	4	55 Nm (5.5 m·kg, 40 ft·lb)	
Throttle cable adjust nut	M6	2	4 Nm (0.4 m·kg, 2.9 ft·lb)	
Clutch cable adjust nut	M8	1	7 Nm (0.7 m·kg, 5.1 ft·lb)	

TIGHTENING TORQUES

NOTE:

- 1 First, tighten the ring nut to approximately 52 Nm (5.2 m•kg, 38 ft•lb) with a torque wrench, then loosen the lower ring nut completely.
 - 2 Retighten the lower ring nut 18 Nm (1.8 m•kg, 13 ft•lb).
-




























LUBRICATION POINTS AND LUBRICANT TYPES

EAS20360

LUBRICATION POINTS AND LUBRICANT TYPES

EAS20370

ENGINE

Lubrication point	Lubricant
Oil seal lips	
O-rings	
Bearings	
Crankshaft pins	
Piston surfaces	
Piston pins	
Crankshaft journals	
Camshaft lobes	
Camshaft journals	
Valve stems (intake and exhaust)	
Valve stem ends (intake and exhaust)	
Water pump impeller shaft	
Oil pump rotors (inner and outer)	
Oil pump housing	
Oil strainer	
Clutch (pull rod)	
Oil/water pump drive sprocket and washer	
Clutch (thrust plate)	
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
Crankcase mating surface	Yamaha bond No. 1215
Clutch cover (crankcase mating surface)	Yamaha bond No. 1215
Generator rotor cover (crankcase mating surface)	Yamaha bond No. 1215
























LUBRICATION POINTS AND LUBRICANT TYPES

Lubrication point	Lubricant
Pickup rotor cover	Yamaha bond No. 1215

LUBRICATION POINTS AND LUBRICANT TYPES

EAS20380

CHASSIS

Lubrication point	Lubricant
Steering bearings and bearing races (upper and lower)	
Throttle grip inner surface	
Brake lever pivoting point and metal-to-metal moving parts	
Clutch lever pivoting point and metal-to-metal moving parts	
Engine mount bolts (rear upper and lower)	
Engine mount bolts (front left and right)	
Relay arm, connecting rod and rear shock absorber collar	
Pivot shaft	
Swingarm pivot bearing	
Swingarm head pipe end, oil seal and bush	
Oil seal (relay arm, connecting arm and rear shock absorber)	
Seat lock assembly moving parts	
Sidestand pivoting point and metal-to-metal moving parts	
Sidestand switch contact point	
Sidestand hook and spring contact point	
Shift shaft joint rod moving parts	
Shift pedal pivoting parts	
Rear footrest ball and metal-to-metal moving parts	
Centerstand metal-to-metal moving parts	
Front wheel oil seal (left and right)	
Rear wheel oil seal	
Rear wheel drive hub oil seal	
Rear wheel drive hub mating surface	

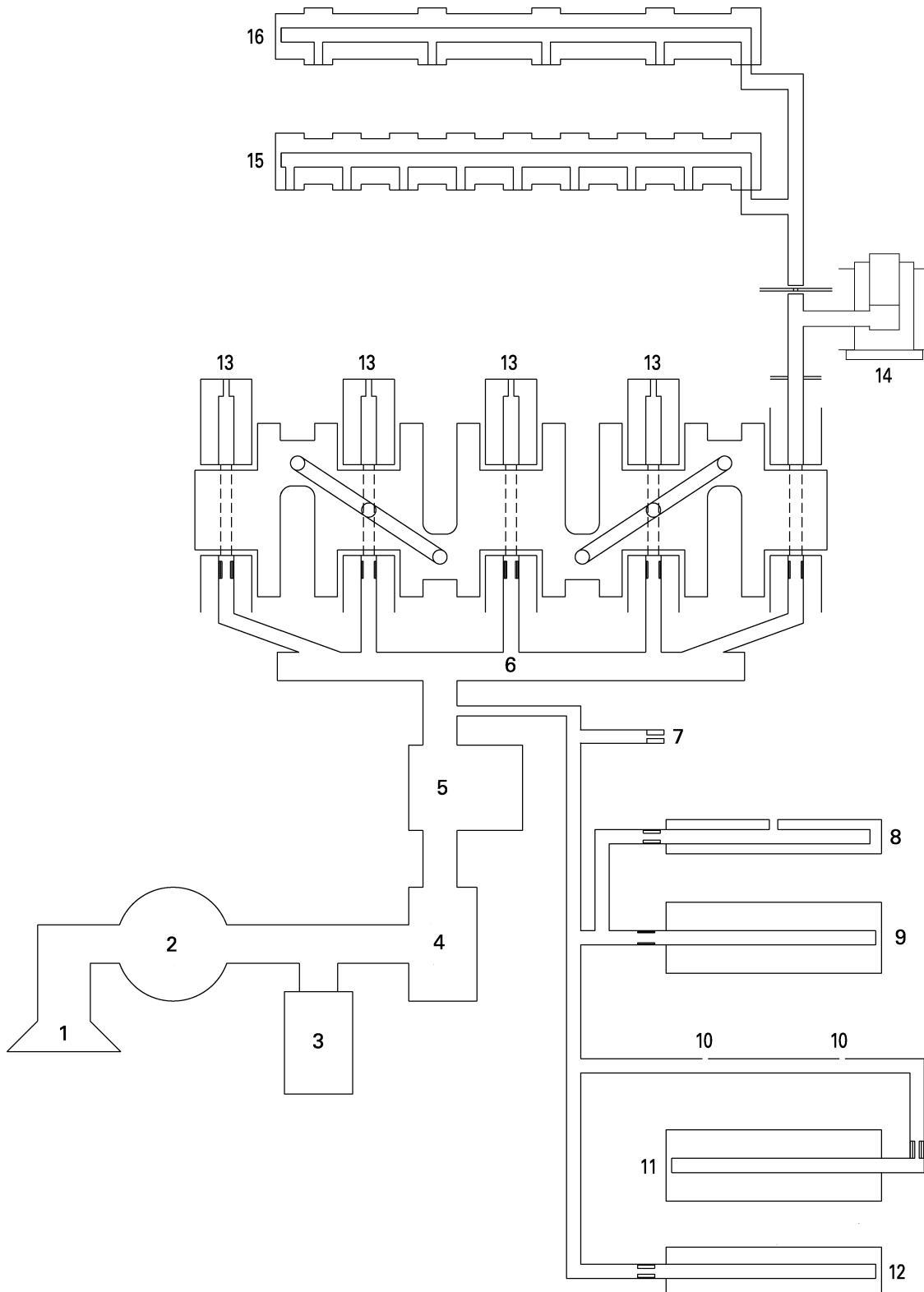
LUBRICATION SYSTEM CHART AND DIAGRAMS

EAS20390

LUBRICATION SYSTEM CHART AND DIAGRAMS

EAS20400

ENGINE OIL LUBRICATION CHART



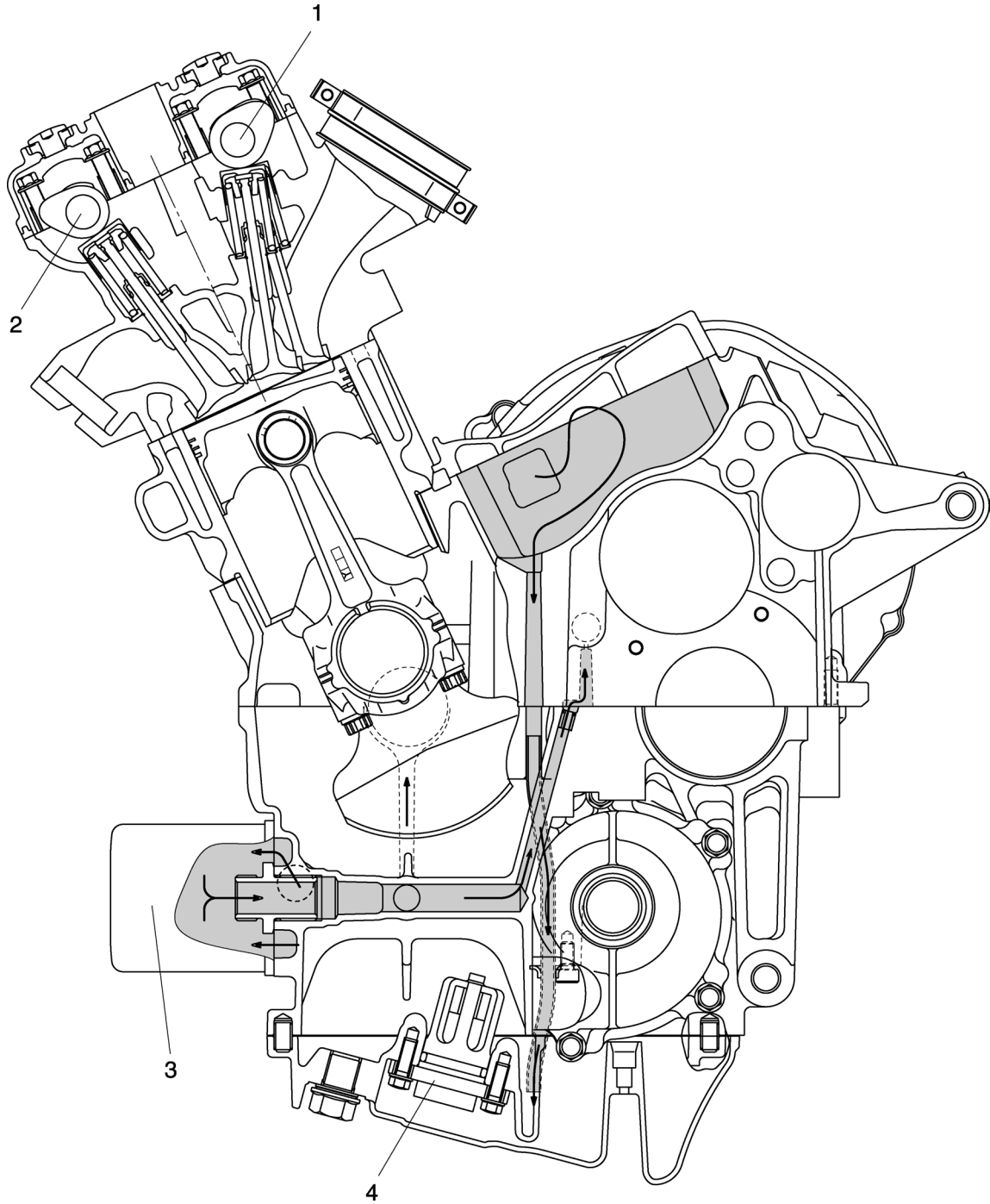
LUBRICATION SYSTEM CHART AND DIAGRAMS

1. Oil strainer
2. Oil pump
3. Relief valve
4. Oil cooler
5. Oil filter
6. Main gallery
7. AC magneto drive gear shower
8. Shift fork (upper)
9. Main axle
10. Mission shower
11. Drive axle
12. AC magneto axle
13. Piston cooler
14. Chain tensioner
15. Intake camshaft
16. Exhaust camshaft

LUBRICATION SYSTEM CHART AND DIAGRAMS

EAS20410

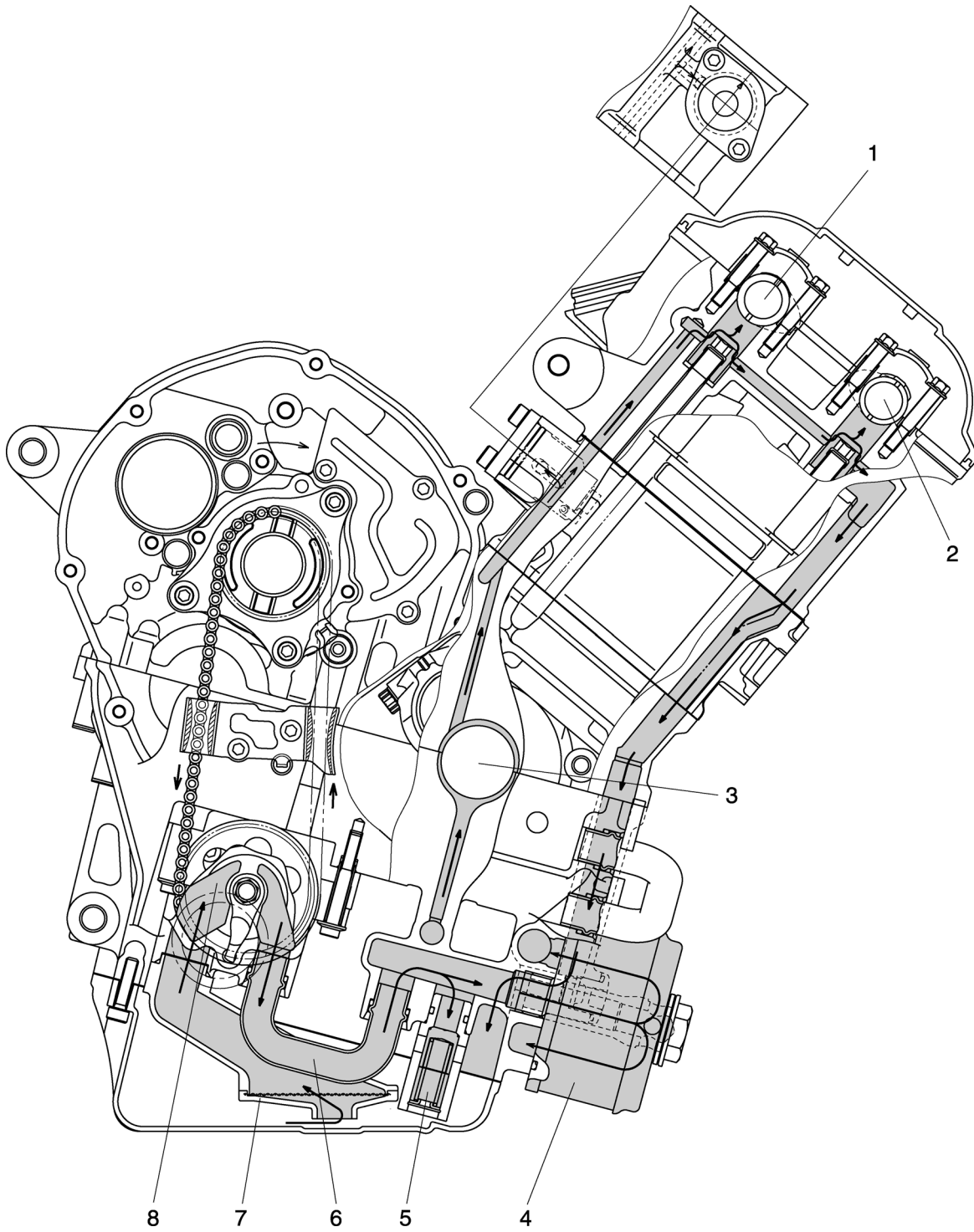
LUBRICATION DIAGRAMS



LUBRICATION SYSTEM CHART AND DIAGRAMS

1. Intake camshaft
2. Exhaust camshaft
3. Oil filter cartridge
4. Oil level switch

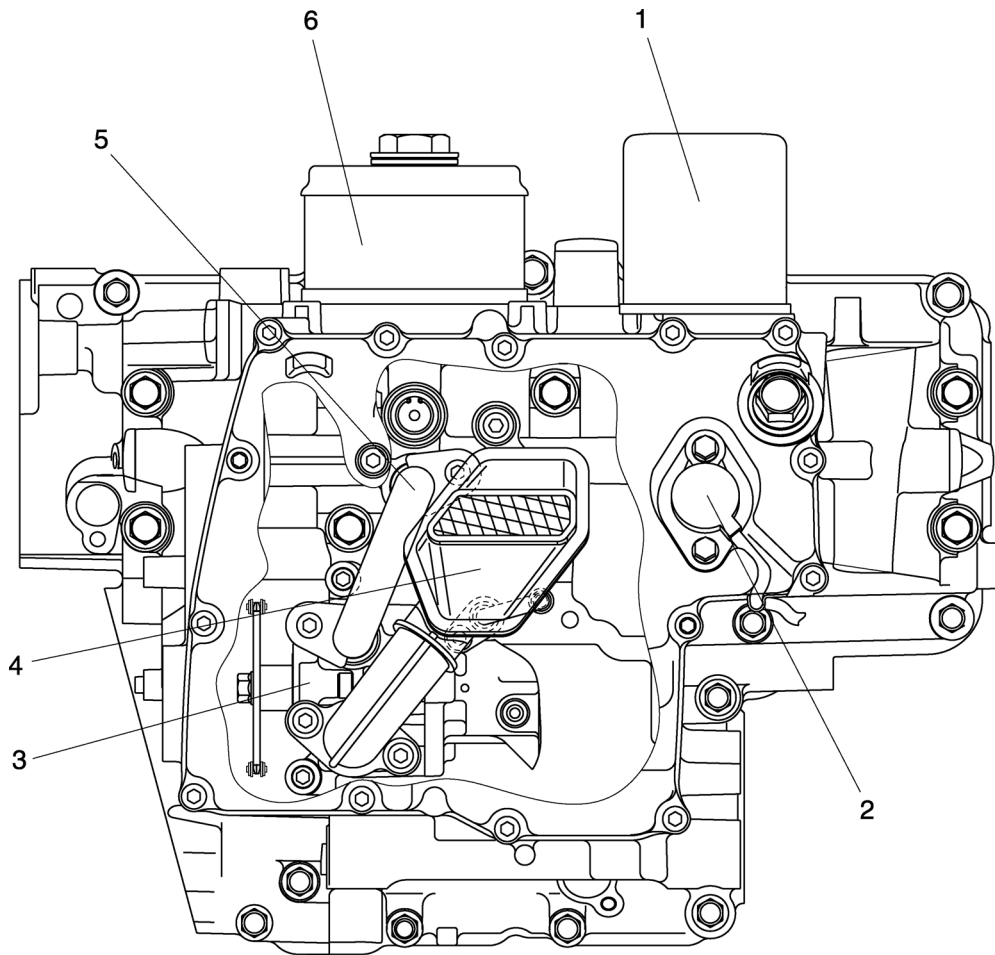
LUBRICATION SYSTEM CHART AND DIAGRAMS



LUBRICATION SYSTEM CHART AND DIAGRAMS

1. Intake camshaft
2. Exhaust camshaft
3. Crankshaft
4. Oil cooler
5. Relief valve
6. Oil pipe
7. Oil strainer
8. Oil pump

LUBRICATION SYSTEM CHART AND DIAGRAMS





Download the full PDF manual instantly.

Our customer service e-mail:

aservicemanualpdf@yahoo.com