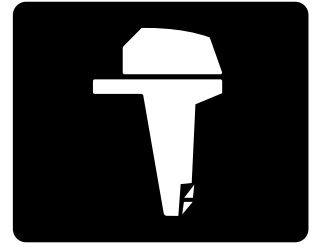




YAMAHA



Z250D
LZ250D

SERVICE MANUAL

290484

60V-28197-3E-11●


NOTICE

This manual has been prepared by Yamaha primarily for use by Yamaha dealers and their trained mechanics when performing maintenance procedures and repairs to Yamaha equipment. It has been written to suit the needs of persons who have a basic understanding of the mechanical and electrical concepts and procedures inherent in the work, for without such knowledge attempted repairs or service to the equipment could render it unsafe or unfit for use.

Because Yamaha has a policy of continuously improving its products, models may differ in detail from the descriptions and illustrations given in this publication. Use only the latest edition of this manual. Authorized Yamaha dealers are notified periodically of modifications and significant changes in specifications and procedures, and these are incorporated in successive editions of this manual.

Important information

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

 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 machine operator, a bystander, or a person inspecting or repairing the outboard motor.

CAUTION:

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

NOTE:

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

CAUTION:










USE UNLEADED STRAIGHT GASOLINE ONLY

- Gasoline containing lead can cause performance loss and engine damage.
- Do not use gasoline mixed with oil during the break-in period or anytime thereafter.

YAMALUBE 2-STROKE OUTBOARD OIL IS RECOMMENDED.

**Z250D, LZ250D
SERVICE MANUAL
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Contents

General information		1
	GEN INFO	
Specifications		2
	SPEC	
Periodic checks and adjustments		3
	CHK ADJ	
Fuel system		4
	FUEL	
Power unit		5
	POWR	
Lower unit		6
	LOWR	
Bracket unit		7
	BRKT	
Electrical systems		8
	ELEC	
Troubleshooting		9
	TRBL SHTG	
Index		



General information

How to use this manual	1-1
Manual format.....	1-1
Symbols.....	1-2
Safety while working	1-3
Fire prevention.....	1-3
Ventilation.....	1-3
Self-protection	1-3
Parts, lubricants, and sealants	1-3
Good working practices	1-4
Disassembly and assembly	1-4
Identification	1-5
Applicable models	1-5
Serial number	1-5
Features and benefits	1-6
Cylinder body and cylinder head	1-6
Pistons and connecting rods	1-7
Fuel injection pumps.....	1-8
Flywheel magnet	1-9
ECM (Electronic Control Module).....	1-10
Injector drivers	1-12
Idle silencer	1-13
Power unit mounting bolts	1-14
Cooling water inlet.....	1-15
Transmission components.....	1-16
Technical tips	1-17
Electronic control system.....	1-17
Partial cylinder operation	1-18
Fail-safe control	1-19
Warning control	1-20
Over-revolution control	1-20
Shift cut control.....	1-20
Propeller selection	1-21
Propeller size.....	1-21
Selection.....	1-21

Predelivery checks	1-22
Checking the fuel system	1-22
Checking the gear oil level	1-22
Checking the engine oil level.....	1-22
Checking the battery.....	1-23
Checking the outboard motor mounting height.....	1-23
Checking the remote control cables	1-23
Checking the steering system	1-24
Checking the gear shift and throttle operation.....	1-24
Checking the power trim and tilt system.....	1-24
Checking the engine start switch and engine shut-off switch	1-24
Checking the cooling water pilot hole	1-25
Test run	1-25
Break-in	1-25
After test run	1-25



How to use this manual

Manual format

The format of this manual has been designed to make service procedures clear and easy to understand. Use the information below as a guide for effective and quality service.

- ① Parts are shown and detailed in an exploded diagram and are listed in the components list.
- ② Tightening torque specifications are provided in the exploded diagrams and after a numbered step with tightening instructions.
- ③ Symbols are used to indicate important aspects of a procedure, such as the grade of lubricant and lubrication point.
- ④ The components list consist of part names and part quantities, as well as bolt and screw dimensions.
- ⑤ Service points regarding removal, checking, and installation are shown in individual illustrations to explain the relevant procedure.

NOTE:

For troubleshooting procedures, see Chapter 9, "Troubleshooting."

LOWR **Lower unit**

③ ②

Lower unit

No.	Part name	Q'ty	Remarks
1	Lower unit	1	
2	Plastic tie	1	Not reusable
3	Hose	1	
4	Check screw	1	
5	Gasket	2	Not reusable
6	Dowel pin	2	
7	Bolt	4	M10 40 mm
8	Drain screw	1	
9	Grommet	1	
10	Bolt	1	M10 45 mm
11	Bolt	1	M8 60 mm
12	Thrust washer	1	
13	Propeller	1	
14	Washer	1	
15	Washer	1	
16	Cotter pin	1	Not reusable
17	Propeller nut	1	
18	Trim tab	1	

6-5
62Y5A11

LOWR **Lower unit**

Lower unit

Removing the drive shaft

- Remove the drive shaft assembly and pinion, and then pull out the forward gear.

Drive shaft holder 4 ①: 90890-06518
Pinion nut holder ②: 90890-06505
Socket adapter 2 ③: 90890-06507

Disassembling the drive shaft

- Install the pinion nut ①, tighten it finger tight, and then remove the drive shaft bearing ② using a press.

CAUTION:

- Do not press the drive shaft threads ③ directly.
- Do not reuse the bearing, always replace it with a new one.

Bearing inner race attachment ③: 90890-06639

Disassembling the forward gear

- Remove the taper roller bearing from the forward gear using a press.

Bearing separator ①: 90890-06534

- Remove the needle bearing from the forward gear.

CAUTION:

Do not reuse the bearing, always replace it with a new one.

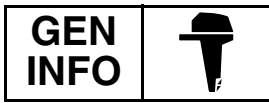
Stopper guide plate ②: 90890-06501
Stopper guide stand ③: 90890-06538
Bearing puller ④: 90890-06535
Bearing puller claw 1 ⑤: 90890-06536

6-19
62Y5A11

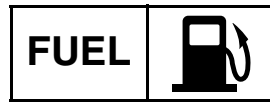
Symbols

The symbols below are designed to indicate the content of a chapter.

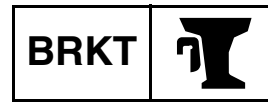
General information



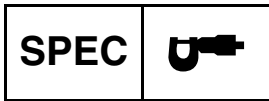
Fuel system



Bracket unit



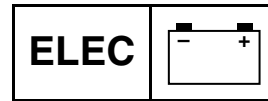
Specifications



Power unit



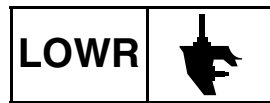
Electrical systems



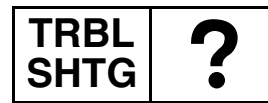
Periodic checks and adjustments



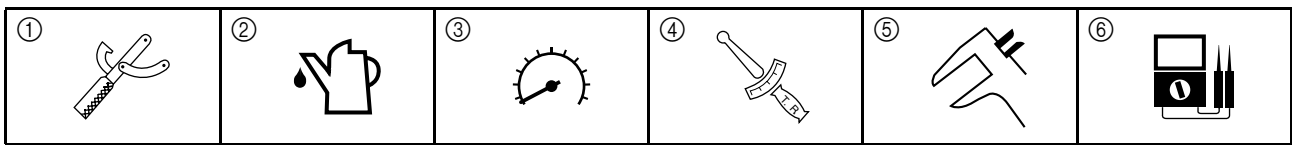
Lower unit



Troubleshooting

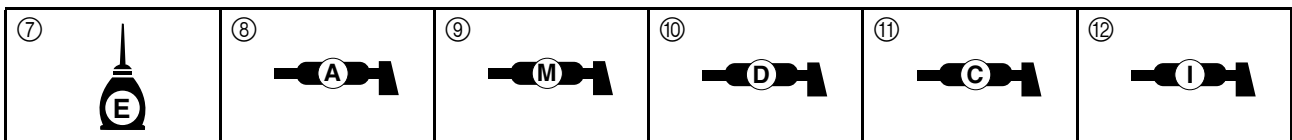


Symbols ① to ⑥ indicate specific data.



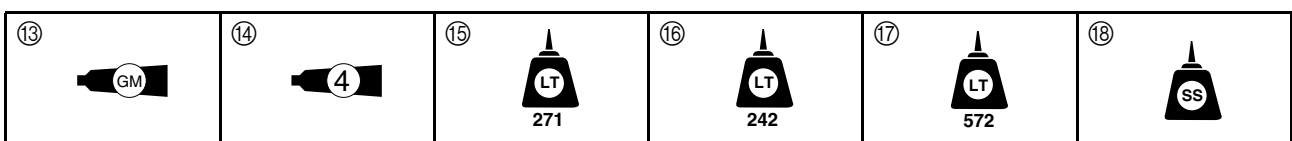
- ① Special tool
- ② Specified oil or fluid
- ③ Specified engine speed
- ④ Specified tightening torque
- ⑤ Specified measurement
- ⑥ Specified electrical value (resistance, voltage, electric current)

Symbols ⑦ to ⑫ in an exploded diagram indicate the grade of lubricant and the lubrication point.



- ⑦ Apply 2-stroke outboard motor oil
- ⑧ Apply water resistant grease (Yamaha grease A)
- ⑨ Apply molybdenum disulfide grease
- ⑩ Apply corrosion resistant grease (Yamaha grease D)
- ⑪ Apply low temperature resistant grease (Yamaha grease C)
- ⑫ Apply injector grease

Symbols ⑬ to ⑱ in an exploded diagram indicate the type of sealant or locking agent and the application point.



- ⑬ Apply Gasket Maker
- ⑭ Apply Yamabond No. 4
- ⑮ Apply LOCTITE 271 (red)
- ⑯ Apply LOCTITE 242 (blue)
- ⑰ Apply LOCTITE 572
- ⑱ Apply silicon sealant

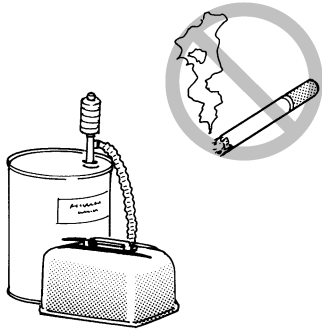


Safety while working

To prevent an accident or injury and to ensure quality service, follow the safety procedures provided below.

Fire prevention

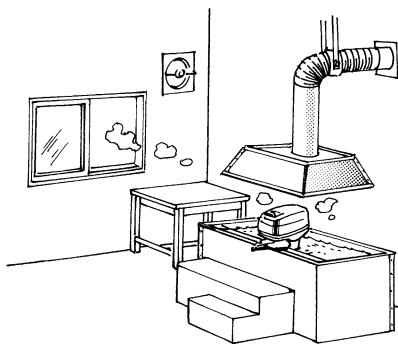
Gasoline is highly flammable. Keep gasoline and all flammable products away from heat, sparks, and open flames.



S69J1010

Ventilation

Gasoline vapor and exhaust gas are heavier than air and extremely poisonous. If inhaled in large quantities they may cause loss of consciousness and death within a short time. When test running an engine indoors (e.g., in a water tank) be sure to do so where adequate ventilation can be maintained.

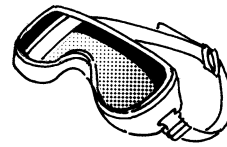


S69J1020

Self-protection

Protect your eyes by wearing safety glasses or safety goggles during all operations involving drilling and grinding, or when using an air compressor.

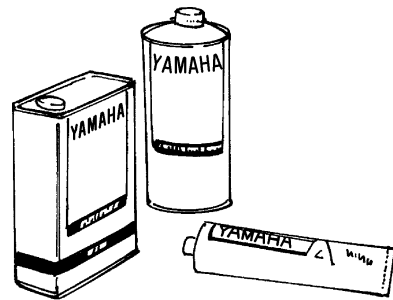
Protect your hands and feet by wearing protective gloves and safety shoes when necessary.



S69J1030

Parts, lubricants, and sealants

Use only genuine Yamaha parts, lubricants, and sealants or those recommended by Yamaha, when servicing or repairing the outboard motor.



S69J1040

Under normal conditions, the lubricants mentioned in this manual should not harm or be hazardous to your skin. However, you should follow these precautions to minimize any risk when working with lubricants.

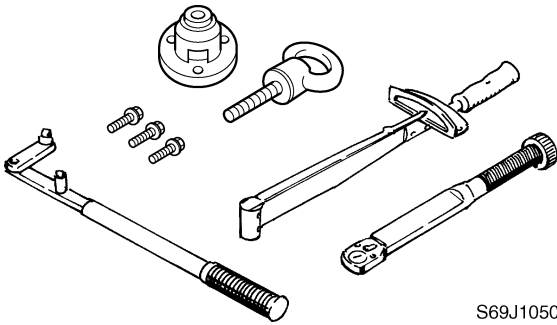
1. Maintain good standards of personal and industrial hygiene.
2. Change and wash clothing as soon as possible if soiled with lubricants.
3. Avoid contact with skin. Do not, for example, place a soiled rag in your pocket.
4. Wash hands and any other part of the body thoroughly with soap and hot water after contact with a lubricant or lubricant soiled clothing has been made.
5. To protect your skin, apply a protective cream to your hands before working on the outboard motor.

6. Keep a supply of clean, lint-free cloths for wiping up spills, etc.

Good working practices

Special service tools

Use the recommended special service tools to protect parts from damage. Use the right tool in the right manner—do not improvise.



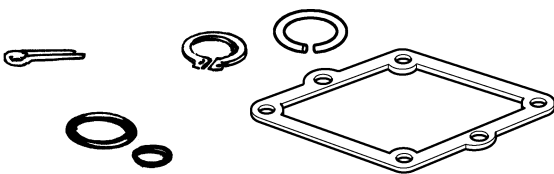
S69J1050

Tightening torques

Follow the tightening torque specifications provided throughout the manual. When tightening nuts, bolts, and screws, tighten the large sizes first, and tighten fasteners starting in the center and moving outward.

Non-reusable parts

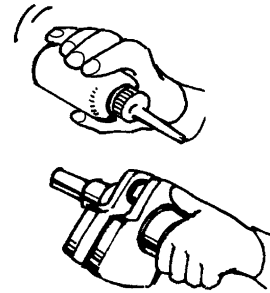
Always use new gaskets, seals, O-rings, cotter pins, circlips, etc., when installing or assembling parts.



S69J1060

Disassembly and assembly

1. Use compressed air to remove dust and dirt during disassembly.
2. Apply engine oil to the contact surfaces of moving parts before assembly.



S69J1070

3. Install bearings with the manufacture identification mark in the direction indicated in the installation procedure. In addition, be sure to lubricate the bearings liberally.
4. Apply a thin coat of water-resistant grease to the lip and periphery of an oil seal before installation.
5. Check that moving parts operate normally after assembly.



Identification

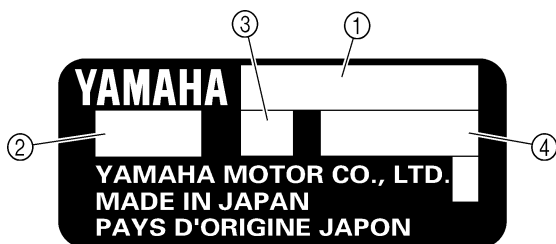
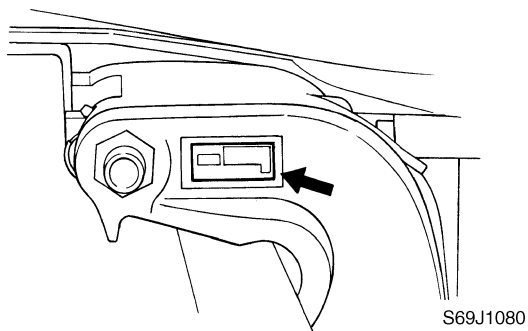
Applicable models

This manual covers the following models.

Applicable models
Z250DETO, LZ250DETO

Serial number

The outboard motor serial number is stamped on a label attached to the port clamp bracket.



- ① Model name
- ② Approved model code
- ③ Transom height
- ④ Serial number

Model name	Approved model code	Starting serial No.
Z250DETO	60V	X: 1000001-
		U: 1000001-
LZ250DETO	60W	X: 1000001-
		U: 1000001-

Features and benefits

Cylinder body and cylinder head

Hemispherical combustion chambers have been incorporated in the cylinder head to realize a high compression ratio of 6.2.

The exhaust ports have been chamfered to reduce loss of the exhaust gases.

Also, an exhaust shell has been adopted to allow exhaust gases flow out smoothly.

The plateau honing process has been used in the cylinder sleeves to reduce friction.

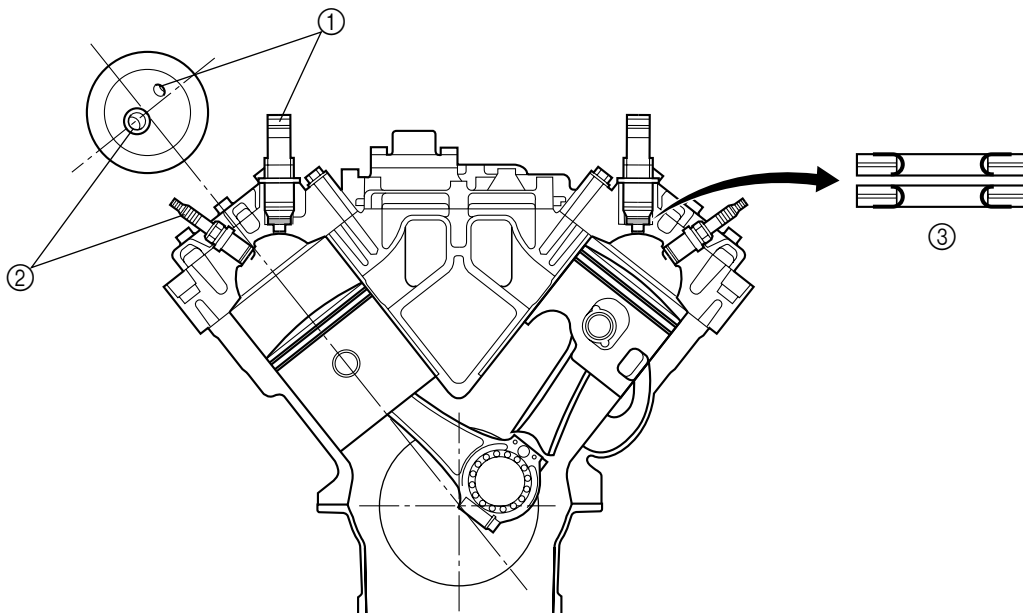
The spark plugs have been offset from the center of the cylinder head to keep the fuel injectors away from high temperatures.

The fuel injectors are located on the exhaust side of the combustion chambers. Fuel is injected toward the tumble due to scavenging to obtain the optimum air-fuel mixture.

Special twin corrugated washers have been adopted in the injectors to prevent fuel in an injector from carbonizing due to exhaust heat.

NOTE:

Install the washers so that the shorter metal guard ends contact each other.



- ① Injector
- ② Spark plug
- ③ Corrugated washers

S60V1130

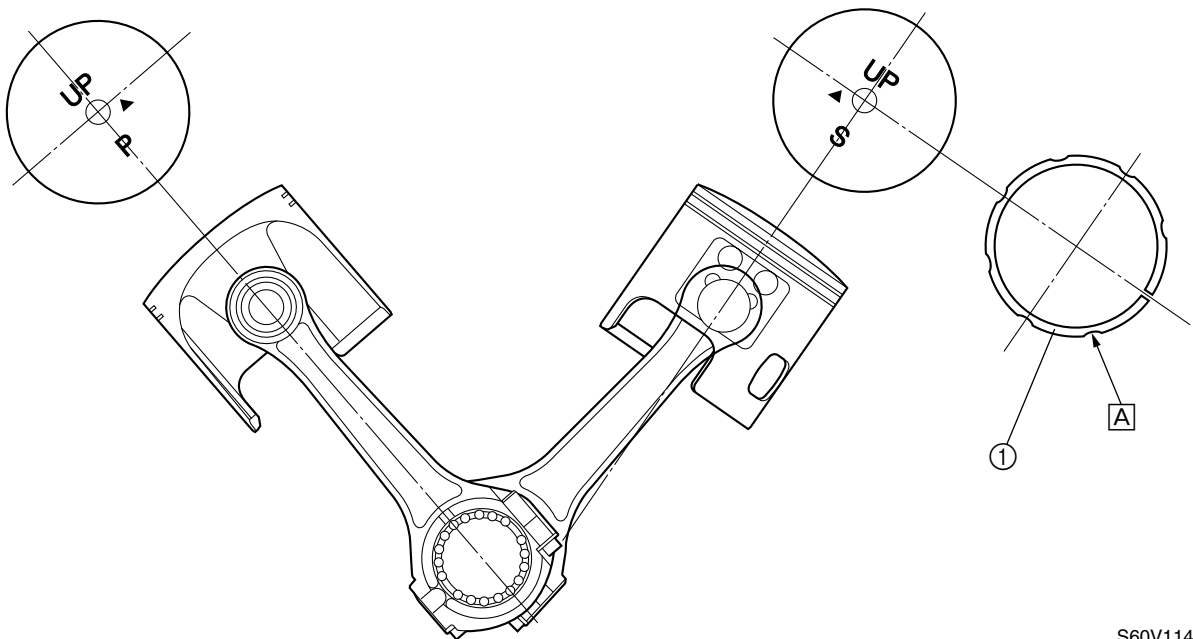




Pistons and connecting rods

The pistons and connecting rods have been processed as follows to increase durability.

- Heat resisting, lightweight aluminum forged pistons have been adopted.
- Highly carbonized connecting rods have been adopted.
- The piston rings have been processed with a hard chrome plating that has a thickness of 50 microns.
- The big end bearings have been processed with 18 rollers, 2 rollers more than those of the VX250 (250C), and with oil grooves around the outer race of the bearings.
- The small ends of the connecting rods have been processed with a special heat treatment.
- Oil grooves have been processed around the outer peripheries of the 2nd piston rings.



S60V1140

① 2nd piston ring

Ⓐ Oil groove

Fuel injection pumps

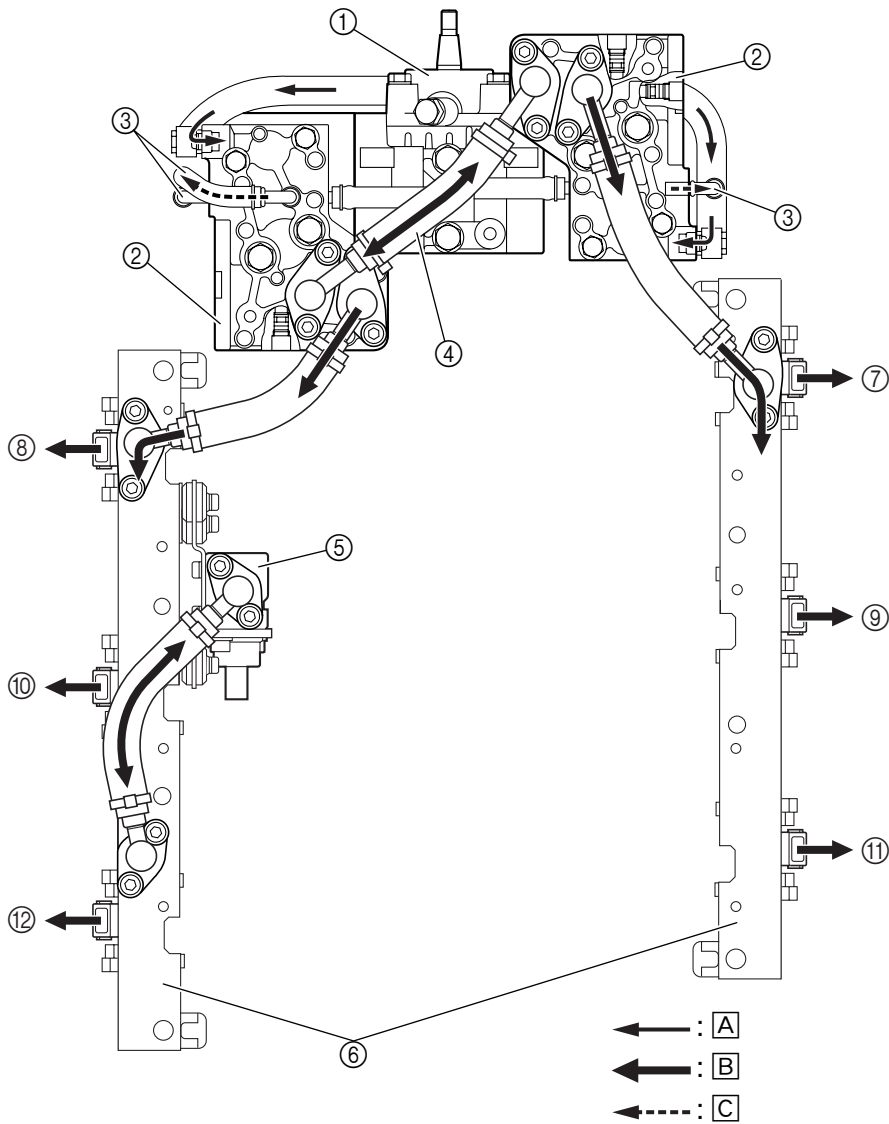
Twin fuel injection pumps with pressure regulators have been adopted to obtain a high fuel pressure of 7 MPa (71 kg/cm², 1,015 psi).

The fuel injection pressure is detected by the fuel pressure sensor installed on the fuel rail. Protectors have been incorporated on the fuel pressure sensor to reduce vibrations conducting to the sensor.

High-pressure fuel injection obtains a better air-fuel mixture due to finer atomization.

CAUTION:

Do not disassemble the fuel injection pumps. The proper facilities and special service tools are required to reassemble them.



S60V1150

- | | | |
|---|---------------|----------------------------------|
| ① Fuel pump drive unit | ⑦ Injector #1 | ⓐ Medium-pressure fuel (suction) |
| ② High-pressure fuel pump with pressure regulator | ⑧ Injector #2 | ⓑ High-pressure fuel |
| ③ Fuel return hose | ⑨ Injector #3 | ⓒ Fuel return |
| ④ Pressure equalizing pipe | ⑩ Injector #4 | |
| ⑤ Fuel pressure sensor | ⑪ Injector #5 | |
| ⑥ Fuel rail | ⑫ Injector #6 | |



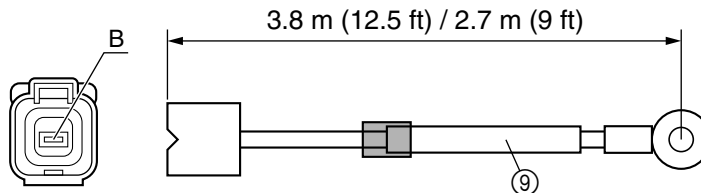
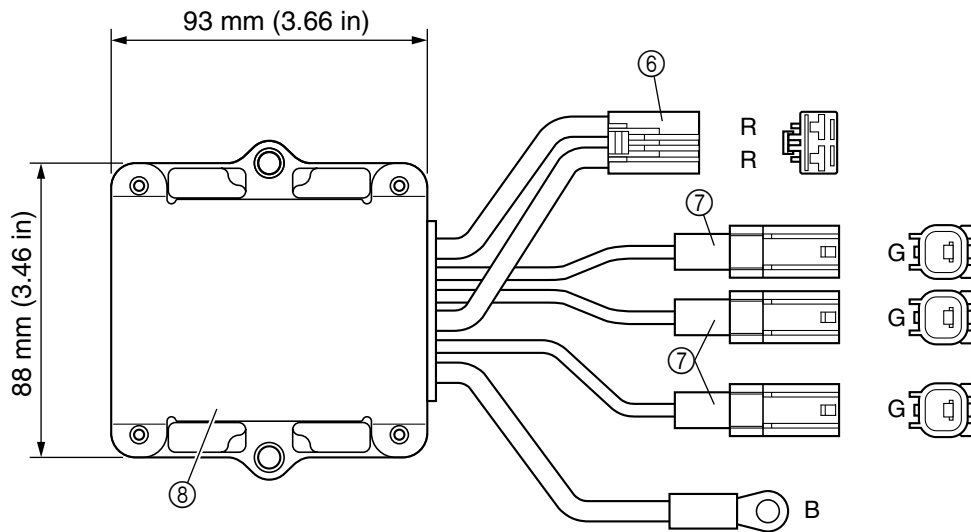
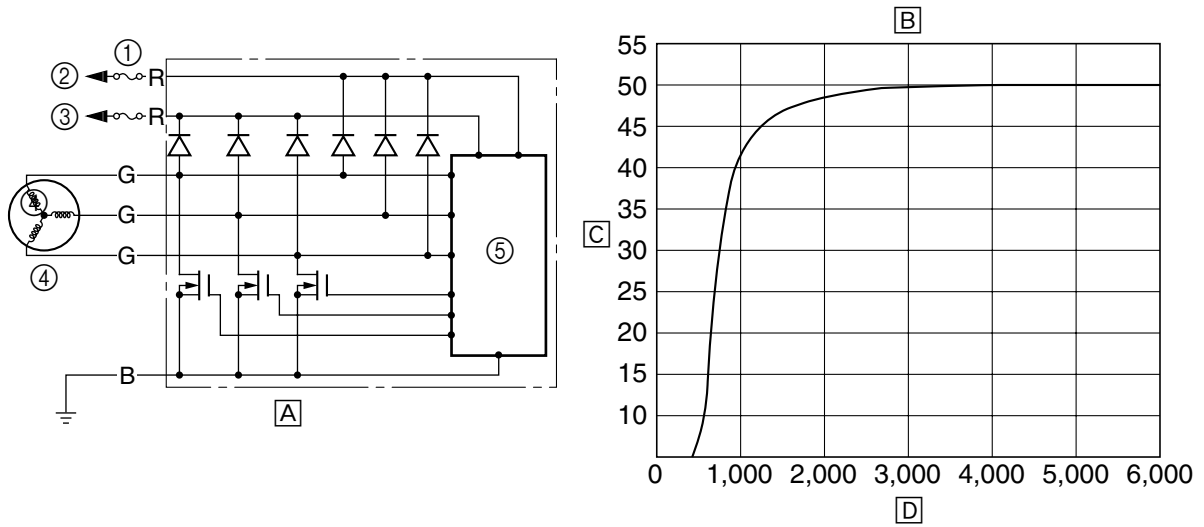
Flywheel magnet

A large capacity Rectifier Regulator has been adopted to obtain a charging current of 50 amperes for battery charging capabilities.

An isolator has been incorporated into the Rectifier Regulator unit.

NOTE:

An optional battery charging cable has been made available for use with an accessory battery.



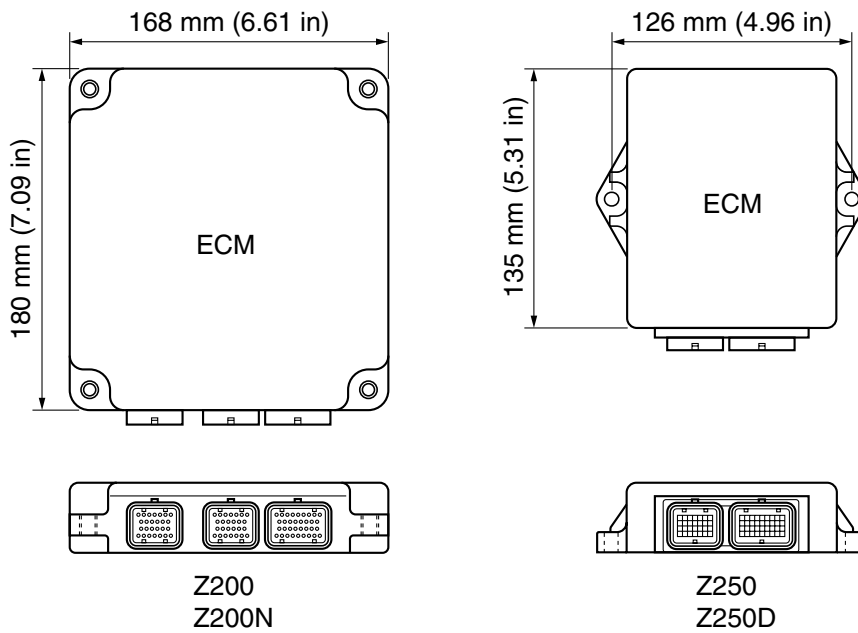
P/No. 69J-81949-00 (3.8 m [12.5 ft])
68F-81949-00 (2.7 m [9 ft])

S60V1160

- ① Fuse
- ② Battery 1
- ③ Battery 2
- ④ Lighting coil
- ⑤ Control circuit
- ⑥ Blue
- ⑦ Black
- ⑧ Rectifier Regulator unit
- ⑨ Isolator cable (optional)
- Ⓐ Charging circuit
- Ⓑ Charging output
- Ⓒ Charging current (A)
- Ⓓ Engine speed (r/min)

ECM (Electronic Control Module)

A small and lightweight ECM has been adopted to make the surrounding components compact.

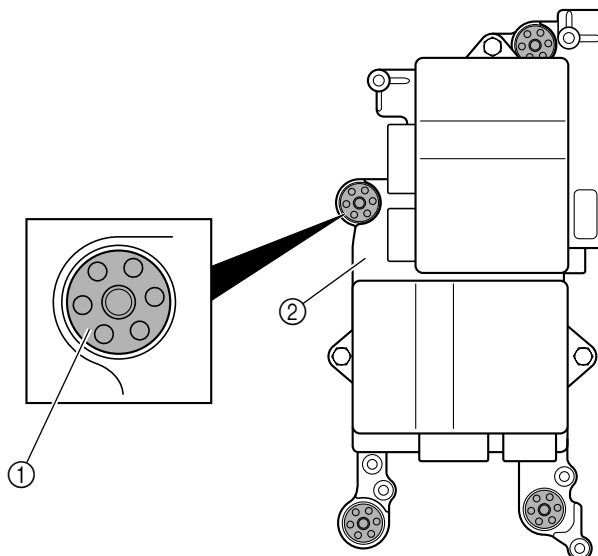


S60V1170

Silicon grommets (navy blue) have been adopted for installing the ECM and injector driver brackets, and to reduce vibration conducting from the engine.

CAUTION:

Do not apply fuel or oil to the grommets, otherwise they can be damaged.

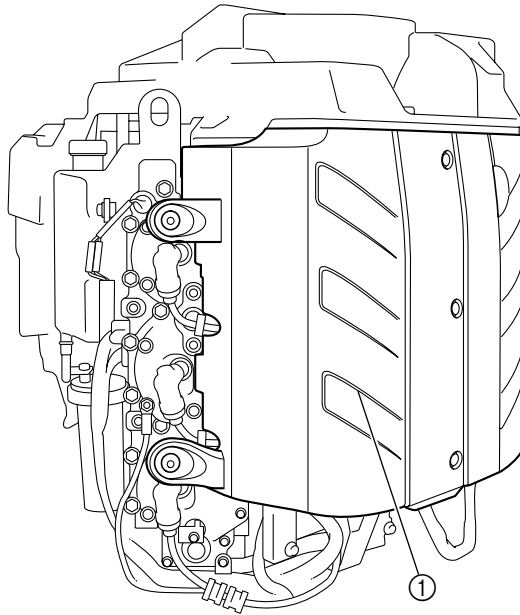


S60V1180

- ① Silicon grommet (navy blue)
- ② ECM and injector drivers mounting bracket



A large cover has been adopted to protect the electrical components from water.

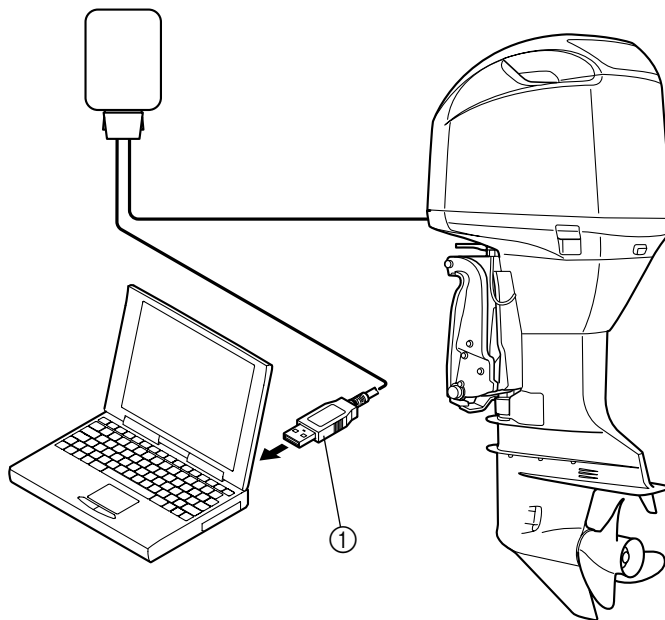


S60V1190

① Large electrical component cover

The memory in the ECM has been increased from 128 bytes to 256 bytes to expand the functions of the YDIS.

A communication cable with a USB connector has been made available.



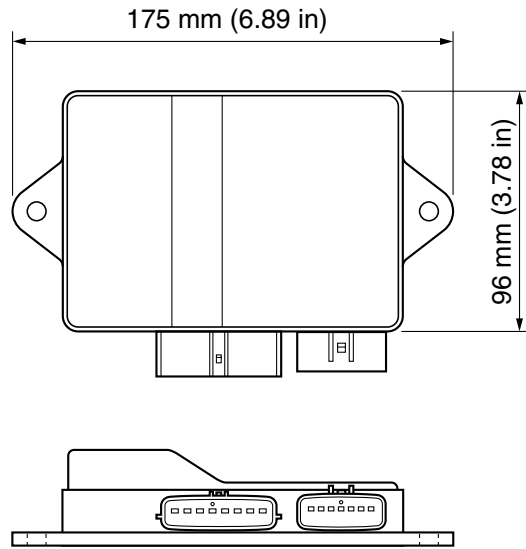
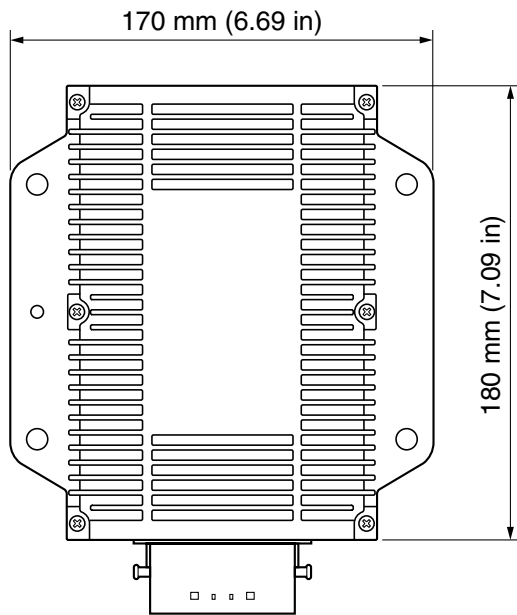
S60V1200

① USB connector

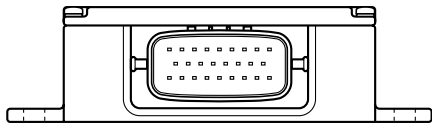
Injector drivers

Twin small and lightweight injector drivers have been adopted to make the surrounding components compact.

Maintenance has been made easy and low cost for replacing the driver has been obtained.



Z250
Z250D



Z200
Z200N

S60V1210

**Thank you very much
for your reading.**

**Please click here and go
back to the website.**

**Then, you can
download the complete
manual instantly.**

No waiting.

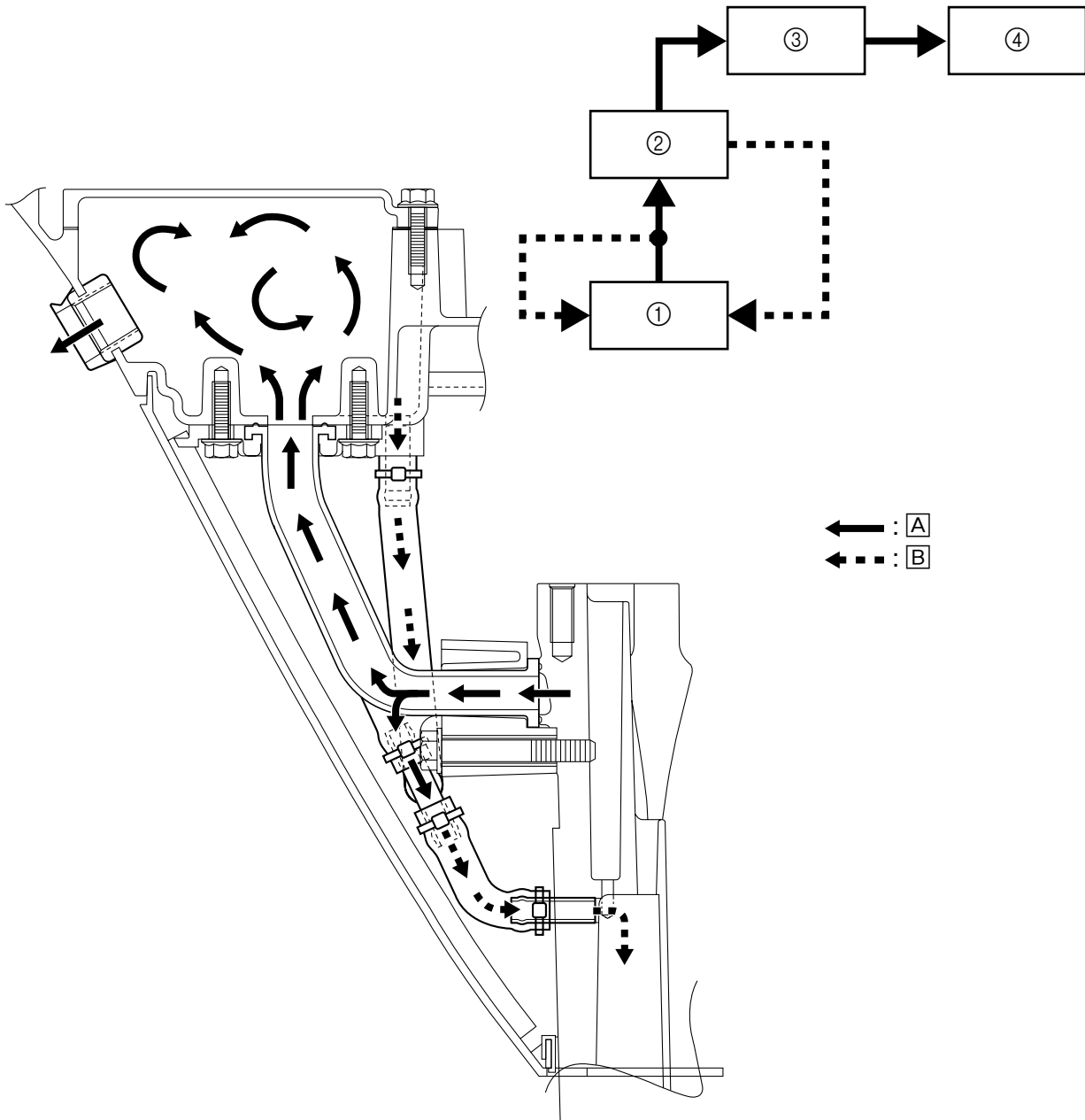


Idle silencer

An idle silencer has been incorporated in the bottom cowling.

Exhaust gases are led into the idle silencer from the upper case and expanded, and then discharged into the atmosphere.

The idle hole has been positioned higher at the rear of the bottom cowling to decrease the resistance of the exhaust back pressure.



- ① Upper case
- ② Silencer
- ③ Idle hole
- ④ Atmosphere

- Ⓐ Exhaust gas/water
- Ⓑ Water

S60V1220

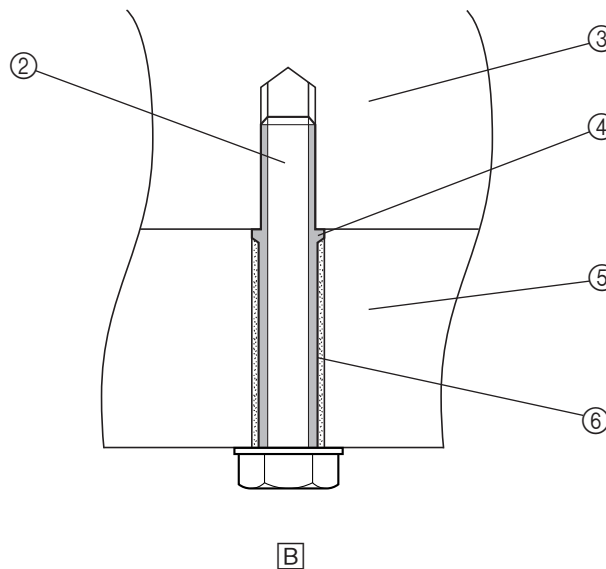
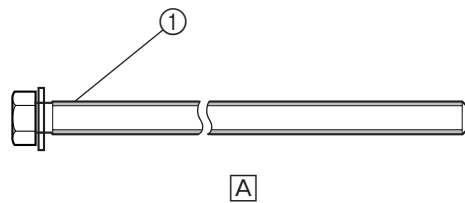
Power unit mounting bolts

Bolts coated with a sealing agent have been adopted to provide a sealing function to the bolts. The sealing agent secures the axial force of the bolts after they are tightened to the specified torque, thus preventing the bolts from coming loose. The sealing agent also helps prevent the bolts from sticking if salt water enters into the thread holes and crystallizes.

Also, the bolts can be removed even if corroded particles have collected in and choked the bolt holes because the sealing agent also acts as an insulator. As a result, servicing such as removing the power unit has been made easy.

NOTE:

Clean the bolt surface, and then apply LOCTITE 572 to the bolt to act as a sealing agent when reusing the power unit mounting bolts.



S60V1230

- ① Sealing agent coating
- ② Bolt
- ③ Cylinder block
- ④ Sealing agent
- ⑤ Upper case
- ⑥ Corroded particles

- Ⓐ Power unit mounting bolt
- Ⓑ Bolt hole description