

DATE OF ISSUE	OBSERVATION						
30 / 04 / 2010 10 / 04 / 2014	<p data-bbox="456 387 576 416">- 1st ISSUE</p> <p data-bbox="456 450 807 479">- Correction of Repair Manual</p> <table data-bbox="523 483 1281 577"><tr><td data-bbox="523 483 995 512">Model Name and Engine Serial Number</td><td data-bbox="1182 483 1281 512">G-1, G-2</td></tr><tr><td data-bbox="523 517 807 546">Battery Specific Gravity</td><td data-bbox="1155 517 1281 546">G-23, S-33</td></tr><tr><td data-bbox="523 551 671 580">Fuel System</td><td data-bbox="1118 551 1281 580">M-11 to M-16</td></tr></table>	Model Name and Engine Serial Number	G-1, G-2	Battery Specific Gravity	G-23, S-33	Fuel System	M-11 to M-16
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THE TEXTS AND PICTURES IN THIS DOCUMENT CANNOT BE REPRODUCED EITHER TOTALLY OR PARTLY.

TO THE READER

This Workshop Manual has been prepared to provide servicing personnel with information on the mechanism, service and maintenance of 07-E3B series. It is divided into three parts, "General", "Mechanism" and "Servicing".

■ General

Information on the engine identification, the general precautions, maintenance check list, check and maintenance and special tools are described.

■ Mechanism

Information on the construction and function are included. This part should be understood before proceeding with troubleshooting, disassembling and servicing.

Refer to Diesel Engine Mechanism Workshop Manual (Code No. 9Y021-01877) for the one which has not been described to this workshop manual.

■ Servicing

Information on the troubleshooting, servicing specification lists, tightening torque, checking and adjusting, disassembling and assembling, and servicing which cover procedures, precautions, factory specifications and allowable limits.

All information illustrations and specifications contained in this manual are based on the latest product information available at the time of publication.

The right is reserved to make changes in all information at any time without notice.

Due to covering many models of this manual, information or picture being used, have not been specified as one model.

November 2007

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SAFETY FIRST

This symbol, the industry's "Safety Alert Symbol", is used throughout this manual and on labels on the machine itself to warn of the possibility of personal injury. Read these instructions carefully.

It is essential that you read the instructions and safety regulations before you attempt to repair or use this unit.



DANGER

: Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



WARNING

: Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION

: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.



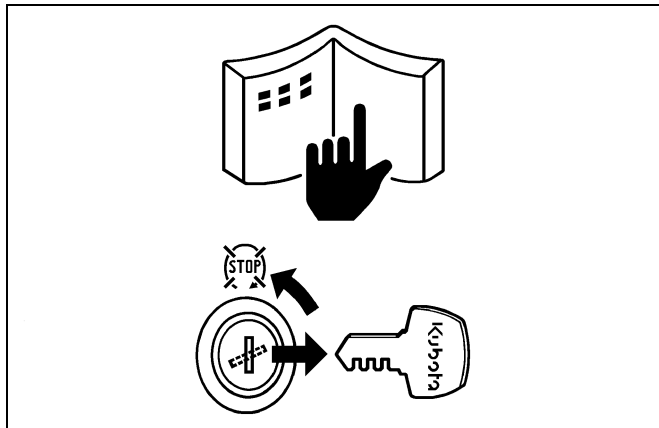
IMPORTANT

: Indicates that equipment or property damage could result if instructions are not followed.



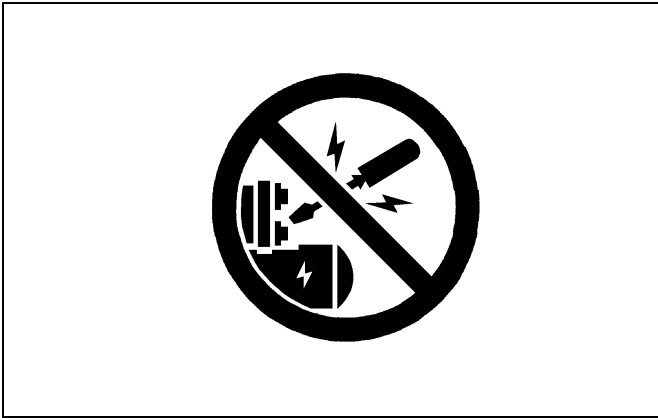
NOTE

: Gives helpful information.



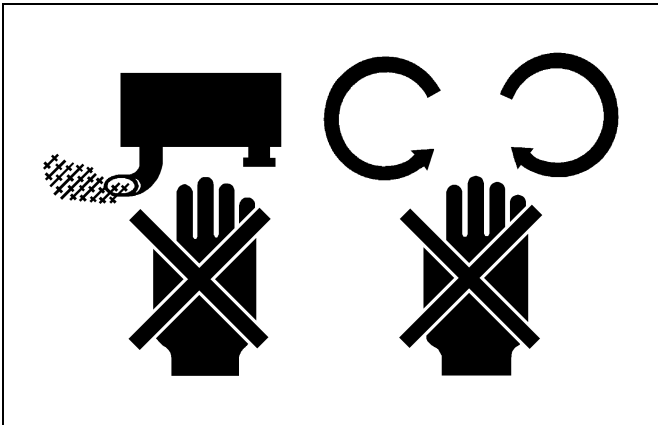
BEFORE SERVICING AND REPAIRING

- Read all instructions and safety instructions in this manual and on your engine safety decals.
- Clean the work area and engine.
- Park the machine on a firm and level ground.
- Allow the engine to cool before proceeding.
- Stop the engine, and remove the key.
- Disconnect the battery negative cable.
- Hang a "**DO NOT OPERATE**" tag in operator station.



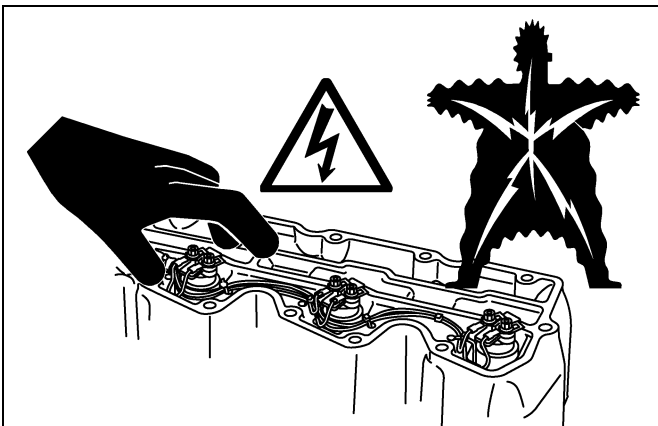
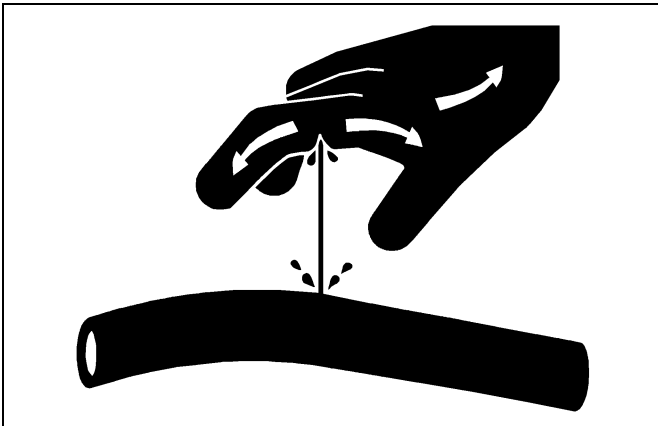
SAFETY STARTING

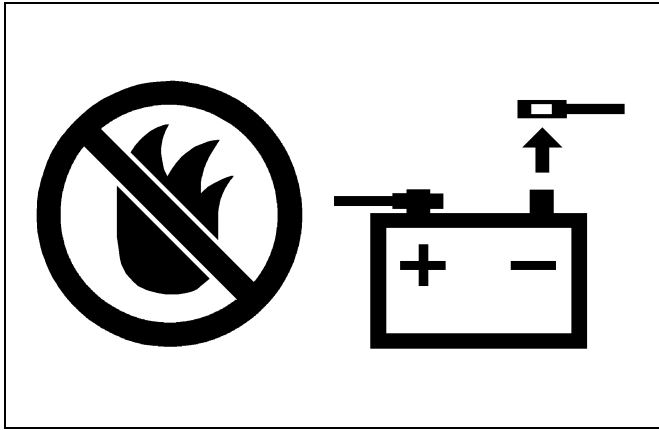
- Do not start the engine by shorting across starter terminals or bypassing the safety start switch.
- Unauthorized modifications to the engine may impair the function and / or safety and affect engine life.



SAFETY WORKING

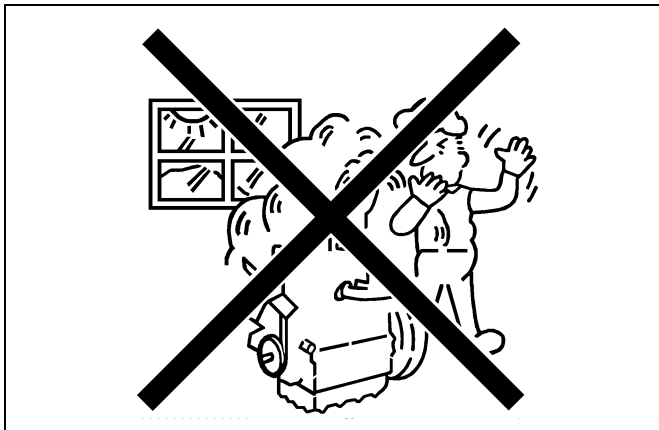
- Do not work on the machine while under the influence of alcohol, medication, or other substances or while fatigued.
- Wear close fitting clothing and safety equipment appropriate to the job.
- Use tools appropriate to the work. Makeshift tools, parts, and procedures are not recommended.
- When servicing is performed together by two or more persons, take care to perform all work safely.
- Do not touch the rotating or hot parts while the engine is operating.
- Never remove the radiator cap while the engine is operating, or immediately after stopping. Otherwise, hot water will spout out from radiator. Only remove radiator cap when cool enough to touch with bare hands. Slowly loosen the cap to first stop to relieve pressure before removing completely.
- Escaping fluid (fuel or hydraulic oil) under pressure can penetrate the skin causing serious injury. Relieve pressure before disconnecting hydraulic or fuel lines. Tighten all connections before applying pressure.
- Wear a suitable hearing protective device such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.
- Do not open high-pressure fuel system. High-pressure fluid remaining in fuel lines can cause serious injury. Do not disconnect or attempt to repair fuel lines, sensors, or any other components between the high-pressure fuel pump and injectors on engines with high pressure common rail fuel system.
- High voltage exceeding 100 V is generated in the ECU, and is applied to the injector. Pay sufficient caution to electric shock when performing work activities.





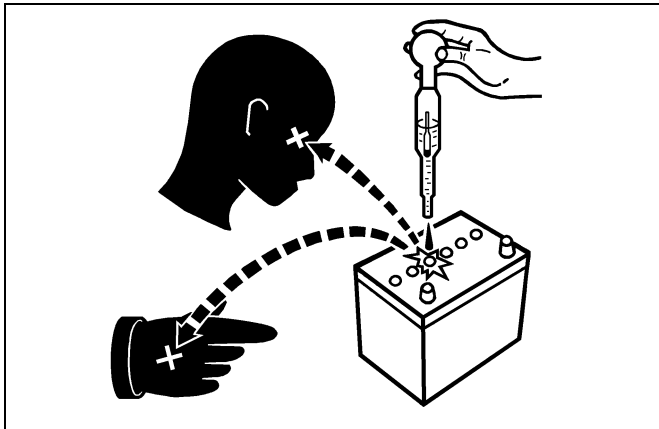
AVOID FIRES

- Fuel is extremely flammable and explosive under certain conditions. Do not smoke or allow flames or sparks in your working area.
- To avoid sparks from an accidental short circuit, always disconnect the battery negative cable first and connect it last.
- Battery gas can explode. Keep sparks and open flame away from the top of battery, especially when charging the battery.
- Make sure that no fuel has been spilled on the engine.



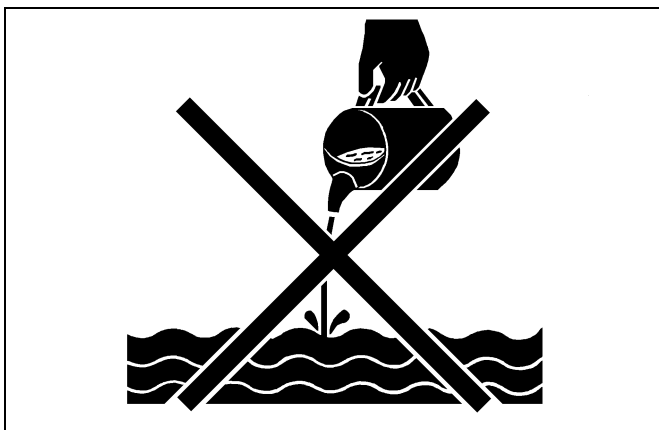
VENTILATE WORK AREA

- If the engine must be operating to do some work, make sure the area is well ventilated. Never operate the engine in a closed area. The exhaust gas contains poisonous carbon monoxide.



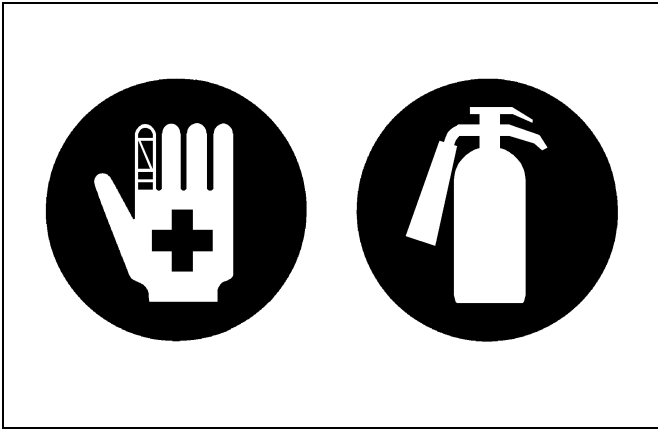
PREVENT ACID BURNS

- Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, clothing and cause blindness if splashed into eyes. Keep electrolyte away from eyes, hands and clothing. If you spill electrolyte on yourself, flush with water, and get medical attention immediately.



DISPOSE OF FLUIDS PROPERLY

- Do not pour fluids into the ground, down a drain, or into a stream, pond, or lake. Observe relevant environmental protection regulations when disposing of oil, fuel, coolant, electrolyte and other harmful waste.

**PREPARE FOR EMERGENCIES**

- Keep a first aid kit and fire extinguisher handy at all times.
- Keep emergency numbers for doctors, ambulance service, hospital and fire department near your telephone.

SPECIFICATIONS

Model	V2607-DI-E3B	V2607-DI-T-E3B
Number of Cylinder	4	
Type	Vertical, water-cooled, 4-cycle DI diesel engine	
Bore × Stroke	87.0 × 110 mm (3.43 × 4.33 in.)	
Total Displacement	2615 cm ³ (159.6 cu.in.)	
ISO Net Continuous	30.4 kW / 2700 min ⁻¹ (rpm) (40.8 HP / 2700 min ⁻¹ (rpm))	41.3 kW / 2700 min ⁻¹ (rpm) (55.4 HP / 2700 min ⁻¹ (rpm))
ISO / SAE Net Intermittent	35.0 kW / 2700 min ⁻¹ (rpm) (46.9 HP / 2700 min ⁻¹ (rpm))	47.5 kW / 2700 min ⁻¹ (rpm) (63.7 HP / 2700 min ⁻¹ (rpm))
SAE Gross Intermittent	36.5 kW / 2700 min ⁻¹ (rpm) (48.9 HP / 2700 min ⁻¹ (rpm))	49.2 kW / 2700 min ⁻¹ (rpm) (66.0 HP / 2700 min ⁻¹ (rpm))
Maximum Bare Speed	2920 min ⁻¹ (rpm)	
Minimum Bare Idling Speed	825 to 875 min ⁻¹ (rpm)	
Combustion Chamber	Reentrant Type, Center Direct Injection Type (E-CDIS)	
Fuel Injection Pump	Bosch PFR4KZ Type Mini Pump	
Governor	All speed mechanical governor	
Direction of Rotation	Counter-clockwise (Viewed from flywheel side)	
Injection Nozzle	Bosch P Type	
Injection Timing	0.0393 rad (2.25 °) before T.D.C.	[Serial No. : 8G0001 to 8V9999] 0.0044 rad (0.25 °) after T.D.C. [Serial No. : 8W0001 and above] 0.0044 rad (0.25 °) before T.D.C.
Firing Order	1-3-4-2	
Injection Pressure	1st stage 18.63 MPa (190.0 kgf/cm ² , 2702 psi), 2nd stage 21.57 MPa (220.0 kgf/cm ² , 3129 psi),	
Compression Ratio	20.0	19.0
Lubricating System	Forced lubrication by trochoid pump	
Oil Pressure Indicating	Electrical Type Switch	
Lubricating Filter	Full Flow Paper Filter (Cartridge Type)	
Cooling System	Pressurized radiator, forced circulation with water pump	
Starting System	Electric Starting with Starter	
Starting Motor	12 V, 2.5 kW	
Starting Support Device	By Glow Plug in Combustion Chamber	
EGR	None	External EGR (EGR Cooler + Mechanical water-cooled EGR Valve + Reed Valve)
Battery	12 V, 92 AH equivalent	
Charging Alternator	12 V, 540 W	
Fuel	Recommended fuels vary depending on the contents of the emission control regulations, the ambient temperature, and the fuel specifications. Therefore, please refer to the detailed description on page G-6.	
Lubricating Oil	Class CF lubricating oil as per API classification is recommended. For details on recommended lubricating oils, see page G-6 and page G-9.	
Lubricating Oil Capacity	10.2 L (2.69 U.S.gals)	
Weight (Dry)	225 kg (496 lbs)	235 kg (518 lbs)

* The specification described above is of the standard engine of each model.

* Conversion Formula : HP = 0.746 kW, PS = 0.7355 kW

W1028103

Model	V3007-DI-T-E3B	V3307-DI-T-E3B
Number of Cylinder	4	
Type	Vertical, water-cooled, 4-cycle DI diesel engine	
Bore × Stroke	94.0 × 110 mm (3.70 × 4.33 in.)	94.0 × 120 mm (3.70 × 4.72 in.)
Total Displacement	3053 cm ³ (186.3 cu.in.)	3331 cm ³ (203.3 cu.in.)
ISO Net Continuous	39.8 kW / 2600 min ⁻¹ (rpm) (53.4 HP / 2600 min ⁻¹ (rpm))	45.6 kW / 2600 min ⁻¹ (rpm) (61.2 HP / 2600 min ⁻¹ (rpm))
ISO / SAE Net Intermittent	46.9 kW / 2600 min ⁻¹ (rpm) (62.9 HP / 2600 min ⁻¹ (rpm))	53.7 kW / 2600 min ⁻¹ (rpm) (72.0 HP / 2600 min ⁻¹ (rpm))
SAE Gross Intermittent	48.5 kW / 2600 min ⁻¹ (rpm) (65.0 HP / 2600 min ⁻¹ (rpm))	55.4 kW / 2600 min ⁻¹ (rpm) (74.3 HP / 2600 min ⁻¹ (rpm))
Maximum Bare Speed	2820 min ⁻¹ (rpm)	
Minimum Bare Idling Speed	775 to 825 min ⁻¹ (rpm)	
Combustion Chamber	Reentrant Type, Center Direct Injection Type (E-CDIS)	
Fuel Injection Pump	Bosch PFR4KZ Type Mini Pump	
Governor	All speed mechanical governor	
Direction of Rotation	Counter-clockwise (Viewed from flywheel side)	
Injection Nozzle	Bosch P Type	
Injection Timing	0.010 rad (0.60 °) after T.D.C.	0.023 rad (1.3 °) after T.D.C.
Firing Order	1-3-4-2	
Injection Pressure	1st stage 18.63 MPa (190.0 kgf/cm ² , 2702 psi), 2nd stage 22.56 MPa (230.0 kgf/cm ² , 3271 psi),	
Compression Ratio	20.0	
Lubricating System	Forced lubrication by trochoid pump	
Oil Pressure Indicating	Electrical Type Switch	
Lubricating Filter	Full Flow Paper Filter (Cartridge Type)	
Cooling System	Pressurized radiator, forced circulation with water pump	
Starting System	Electric Starting with Starter	
Starting Motor	12 V, 3.0 kW	
Starting Support Device	By Glow Plug in Combustion Chamber	
EGR	External EGR (EGR Cooler + Mechanical water-cooled EGR Valve + Reed Valve)	
Battery	12 V, 120 AH equivalent	
Charging Alternator	12 V, 540 W	
Fuel	Recommended fuels vary depending on the contents of the emission control regulations, the ambient temperature, and the fuel specifications. Therefore, please refer to the detailed description on page G-6.	
Lubricating Oil	Class CF lubricating oil as per API classification is recommended. For details on recommended lubricating oils, see page G-6 and page G-9.	
Lubricating Oil Capacity	11.2 L (2.96 U.S.gals)	
Weight (Dry)	263 kg (580 lbs)	275 kg (606 lbs)

* The specification described above is of the standard engine of each model.

* Conversion Formula : HP = 0.746 kW, PS = 0.7355 kW

W1028103