SERVICE MANUAL

E175C

Crawler Excavator

Part number 47494131A
English
February 2013

Contents

INTRODUCTION

Safety rules

Personal safety

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible death or injury.

Throughout this manual you will find the signal words DANGER, WARNING, and CAUTION followed by special instructions. These precautions are intended for the personal safety of you and those working with you.

Read and understand all the safety messages in this manual before you operate or service the machine.

⚠ DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION, used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

FAILURE TO FOLLOW DANGER, WARNING, AND CAUTION MESSAGES COULD RESULT IN DEATH OR SERIOUS INJURY.

Machine safety

NOTICE: *Notice indicates a situation which, if not avoided, could result in machine or property damage.*

Throughout this manual you will find the signal word Notice followed by special instructions to prevent machine or property damage. The word Notice is used to address practices not related to personal safety.

Information

NOTE: *Note indicates additional information which clarifies steps, procedures, or other information in this manual.*

Throughout this manual you will find the word Note followed by additional information about a step, procedure, or other information in the manual. The word Note is not intended to address personal safety or property damage.

Personal safety

Carefully read this Manual before proceeding with maintenance, repairs, refuelling or other machine operations.

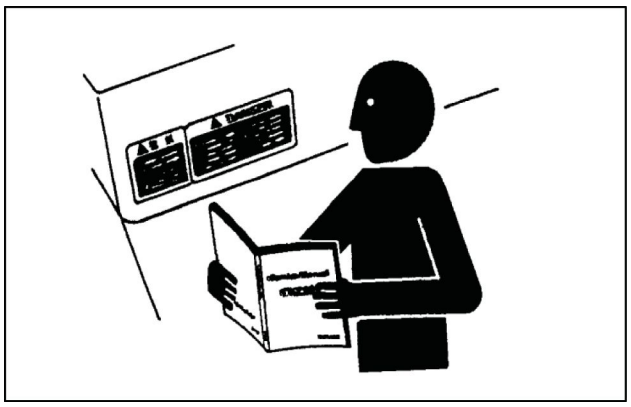
Repairs have to be carried out only by authorized and instructed staff; specific precautions have to be taken when grinding, welding or when using mallets or heavy hammers.

Not authorized persons are not allowed to repair or carry out maintenance on this machine. Do not carry out any work on the equipment without prior authorization.

Ask your employer about the safety instructions in force and safety equipment.

Nobody is allowed to seat on the operator's place during machine maintenance unless he is a qualified operator helping with the maintenance work.

If it is necessary to move the equipment to carry out repairs or maintenance, do not lift or lower the equipment from any other position than the operator's seat.



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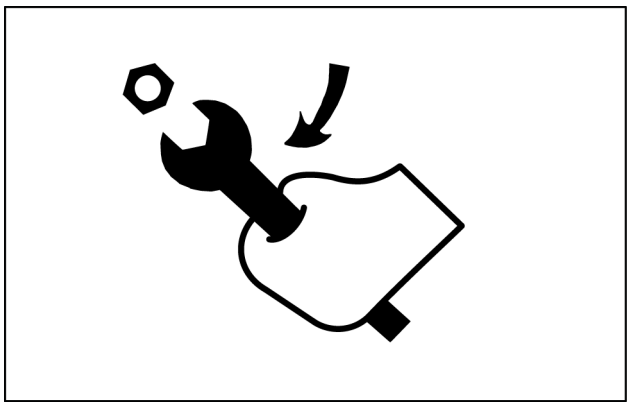
Never carry out any operation on the machine when the engine is running, except when specifically indicated.

Stop the engine and ensure that all pressure is relieved from hydraulic circuits before removing caps, covers, valves, etc.

All repair and maintenance operations should be carried out with the greatest care and attention.

Service stairs and platforms used in a workshop or in the field should be built in compliance with the safety rules in force.



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Any functional disorders, especially those affecting the safety of the machine, should therefore be rectified immediately.

⚠ DANGER

Unexpected movement!
Make sure parking brake is applied. Secure machine with wheel chocks.
Failure to comply will result in death or serious injury.

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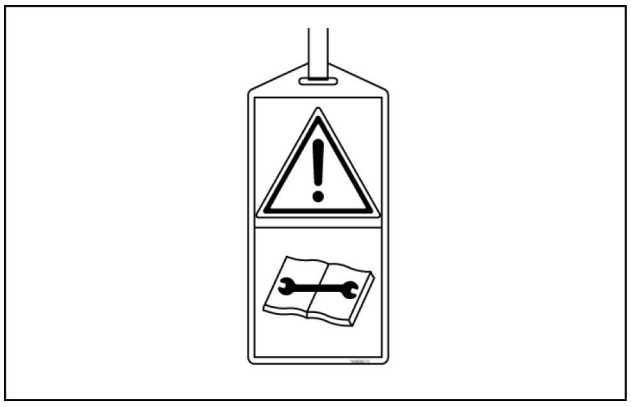
Before performing any work on the machine, attach a maintenance in progress tag. This tag can be applied on the left-hand control lever, safety lever or cab door.



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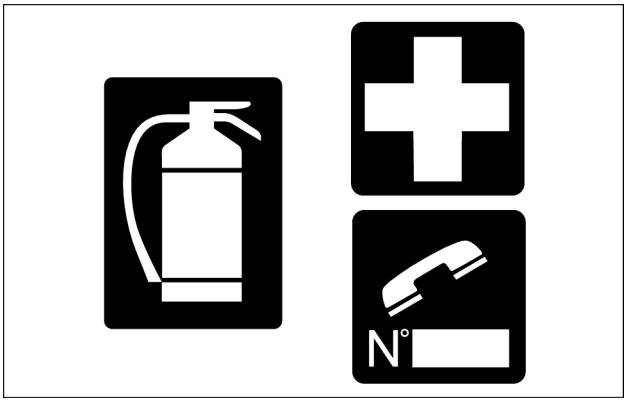
Emergency

Be prepared for emergencies. Always keep at disposal on the machine a first aid kit and a fire extinguisher. Make sure that the fire extinguisher is serviced in accordance with the manufacturer's instructions.



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Equipment

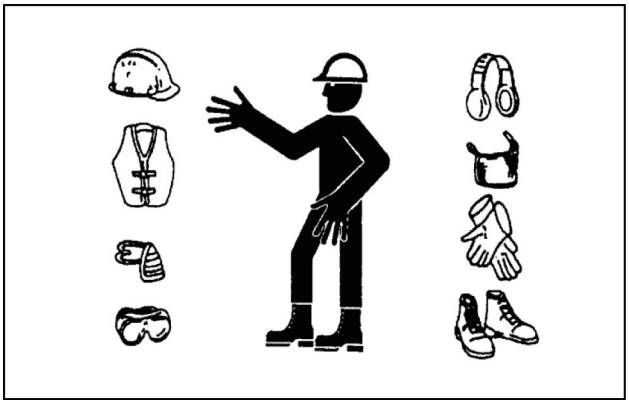
Wear close fitting clothing and safety equipment appropriate for the job:

- Safety helmet
- Safety shoes
- Heavy gloves
- Reflective clothing
- Wet weather clothing

If environment condition require it following personal safety equipment should be at hand:

- Respirators (or dust proof masks)
- Ear plugs or acoustic ears protections
- Goggles with lateral shield or masks for eyes protection

Do not wear rings, wristwatches, jewels, unbuttoned or flapping clothing such as ties, torn clothes, scarves, open jackets or shirts with open zips which could get caught into moving parts.



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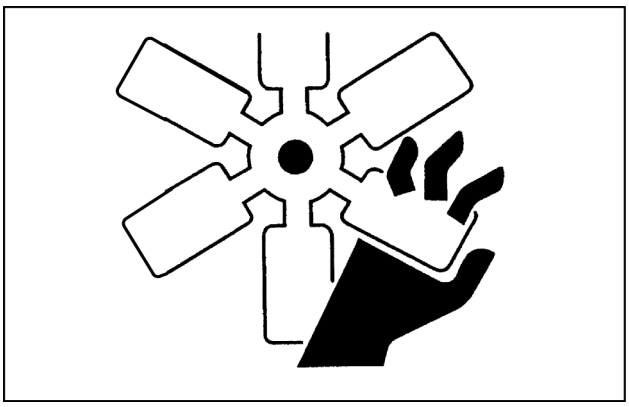
Engine - Radiator

Never leave the engine run in closed spaces without ventilation and not able to evacuate toxic exhaust gases. Keep the exhaust manifold and tube free from combustion materials.

Do not refuel with the engine running, especially if hot, as this increases fire hazard in case of fuel spillage.

Never attempt to check or adjust the belts when the engine is running.

Never lubricate the machine with the engine running.



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Pay attention to rotary pieces and do not allow to anyone to approach to avoid becoming entangled.

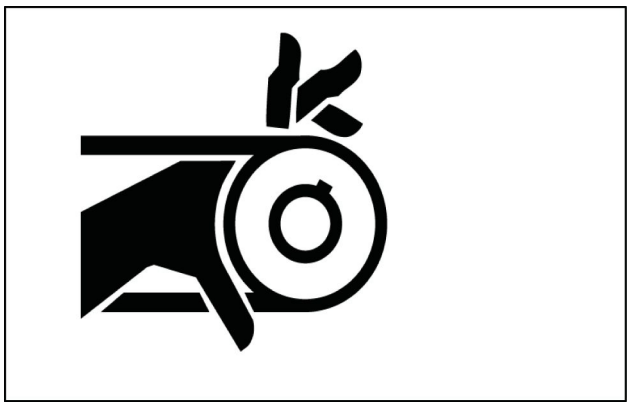
If hands, clothes or tools get caught in the fan blades or in the transmission belt, this can cause amputations, violent tears and generate condition of serious danger; for this reason avoid touching or to come close to all rotary or moving parts.

A violent jet of the coolant from the radiator can cause damages and scalds.

If you are to check the coolant level, you have to shut-off the engine previously and to let cool down the radiator and its pipes. Slowly unscrew the cap to release the inside pressure.

If necessary, remove the cap with hot engine, wear safety clothes and equipment, then loosen the cap slowly to relieve the pressure gradually.

When checking the fuel, oil and coolant levels, use exclusively explosion proof classified lamps. If this kind of lamps are not used fires or explosions may occur.



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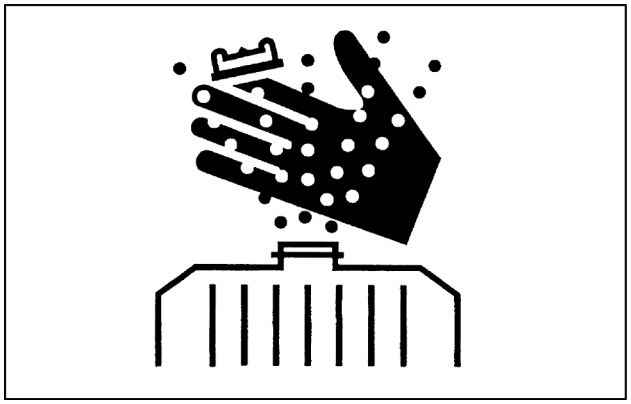

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Hydraulic systems

Splashes of fluids under pressure can penetrate the skin causing serious injuries.

Avoid this hazard by relieving pressure before disconnecting hydraulic or other lines.

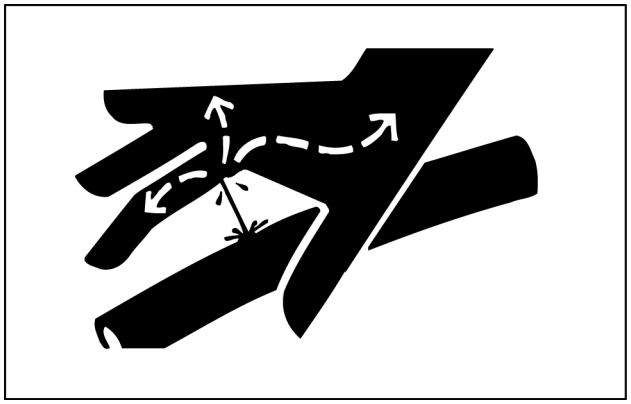
Relieve the residual pressure by moving the hydraulic control levers several times.

Tighten all connections before applying pressure.

To protect the eyes wear a facial shield or safety goggles.

Protect your hands and body from possible splashes of fluids under pressure.

Swallowing hydraulic oil is a severe health hazard.



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When hydraulic oil has been swallowed, avoid vomiting, but consult a doctor or go to a hospital.

If an accident occurs, see a doctor familiar with this type of injury immediately.

Any fluid penetrating the skin must be removed within few hours to avoid serious infections.

Flammable splashes may originate because of the heat near pipes with fluids under pressure, with the result of serious scalds for the persons hit. Do not weld or use torches near pipes containing fluids or other flammable materials.

Pipes under pressure can accidentally be pierced when the heat expands beyond the area immediately heated.

Arrange for fire resistant temporary shields to protect hoses or other components during welding.

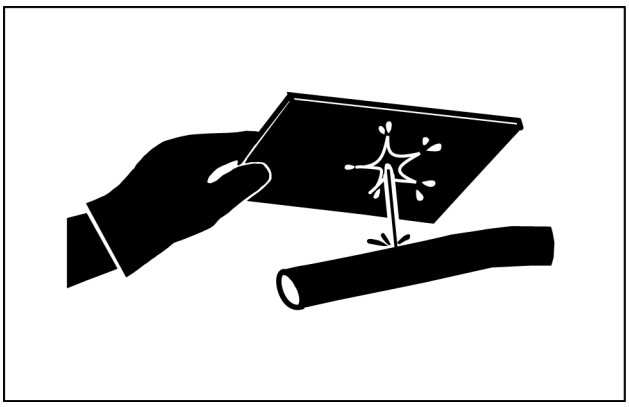
Have any visible leakage repaired immediately.

Escaping oil pollutes the environment. Soak up any oil that has escaped with a proper binding agent. Sweep up binding agent and dispose of it separately from other waste.

Never search for leakages with the fingers, but use a piece of cardboard and always wear goggles.

Never repair damaged piping; always replace it. Replace hydraulic hoses immediately on detecting any damage or moist areas.

Always store hydraulic oil in the original containers.



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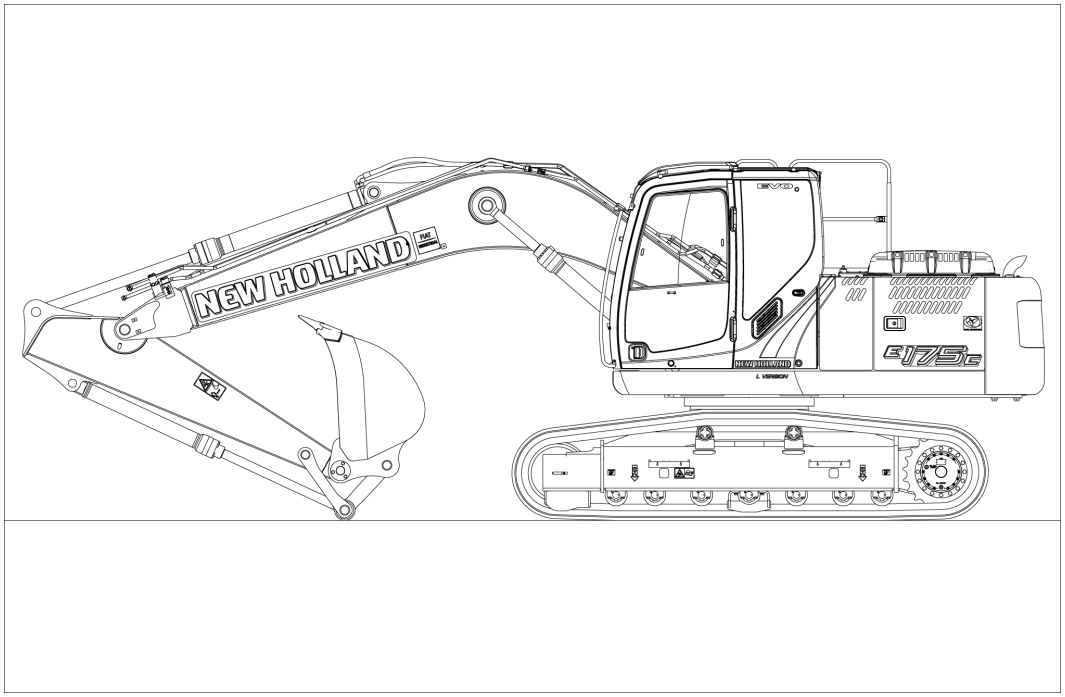
Engine



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Engine - General specification

Performance

Maximum climbable gradient : 70%
Swing speed : **11.5 RPM**

Travel speed

Slow	**2.9 km/h** (**1.80 mph**)
Fast	**4.9 km/h** (**3.04 mph**)

Engine specifications

Main specifications

Maker	**FPT**
Model	**F4GE9484D*JG**
Type	Water-cooled, 4 cycle direct injection type, diesel engine with intercooler turbo-charger
Number of cylinders	4 in-line
Bore	**104 mm** (**4.09 in**)
Stroke	**132 mm** (**5.20 in**)
Total displacement	**4.5 l** (**275 in³**)
Compression ratio	17.5:1
Rated output power (at **2200 RPM**) (**ISO 14396**: without fan)	**93 kW** (**131 Hp**)
Maximum torque (at **1250 RPM**) (**ISO 14396**)	**525 N·m** (**387.2 lb ft**)
High idling	**2380 RPM** - **2480 RPM**
Low idling	**750 RPM** - **850 RPM**
Fuel consumption rate	**231 g/kWh**
Engine oil quantity	**12 l** (**3.2 US gal**)
Weight	**392 kg** (**864 lb**)

Feeding

Type	Direct injection from rotary pump
Injection sequence	1-3-4-2

Battery

Voltage	2 x **12 V**
Capacity	2 x **100 A·h**

Starter motor

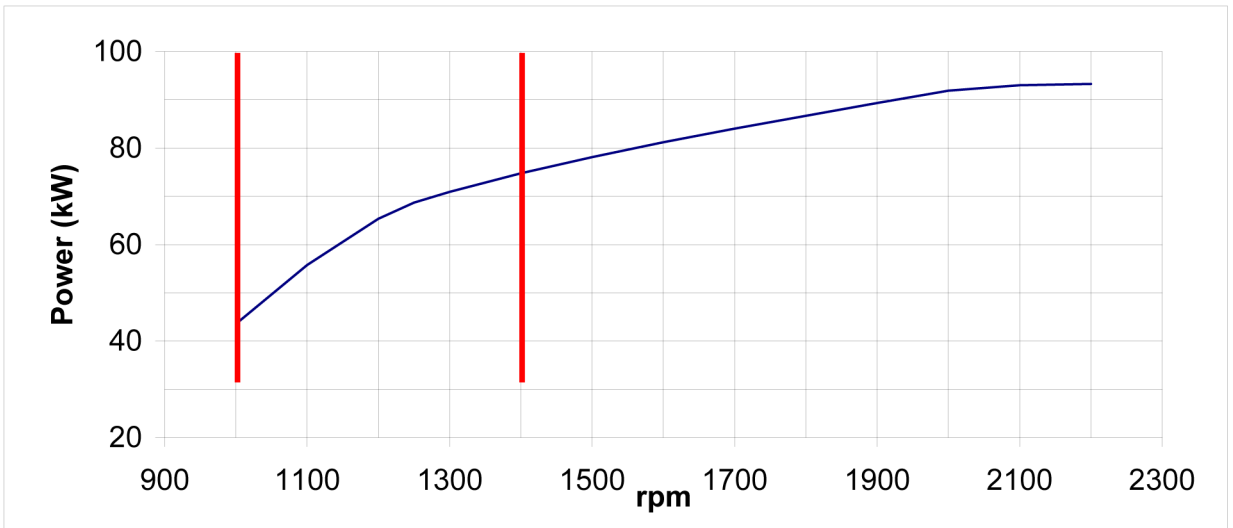
Maker	BOSCH
Voltage	**24 V**
Output	**4 kW** (**5.4 Hp**)

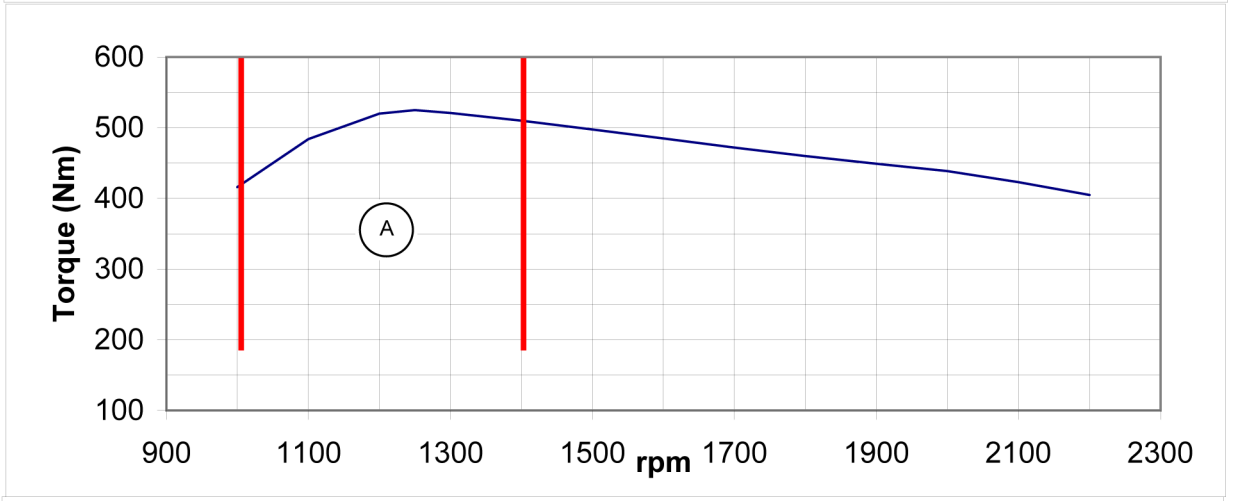
Alternator

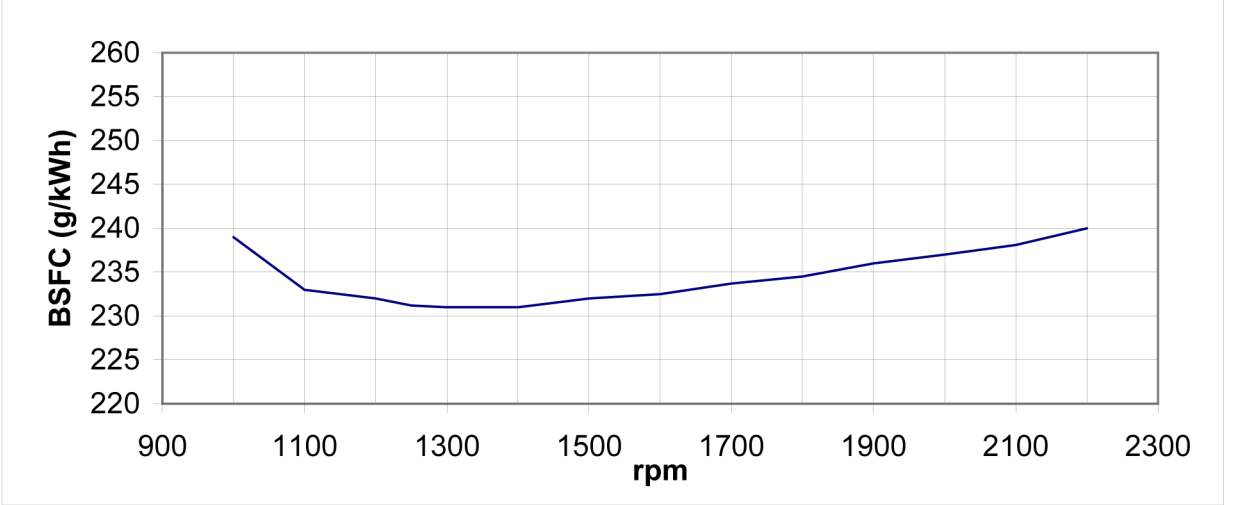
Maker	BOSCH
Voltage	**24 V**
Output	**70 A**

Engine characteristic curve

Condition to be measured: The net value is indicated, measuring without cooling fan.







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Performance between nominal maximum torque and maximum power is taken as nominal. **LDA** intervention is shown at the lowest possible engine speed.

A: LDA intervention area

Fuel consumption volume

= (Fuel consumption rate / 0.835 x 1000) x kW x Load factor (α)

= (**231 g/kWh** / 0.835 x 1000) x **93 kW** (**126.4 Hp**) x α

= 27.66 α L/h

α: standard load factor (0.70 - 0.80)

Fuel consumption in regular operation (load factor 0.70 - 0.80) **19.3 - 22.1 l/hour** (**5.1 - 5.8 US gal/hour**)

NOTE: *Fuel consumption curve is derived from engine prototype values.*

Suggest:

If the above button click is invalid.

Please download this document

first, and then click the above link

to download the complete manual.

Thank you so much for reading

Engine - Prepare

1. Remove battery ground.
2. Remove bonnet and guard. Remove under cover.
3. Remove air cleaner hose.
4. Remove counterweight.
5. Remove radiator hose and intercooler hose.
6. Remove fuel hose and heater hose, and if necessary disconnect air-con hose.
7. If necessary, remove pump, muffler and radiator.
8. Remove harness connector.
    1. Remove E/G ground cable.
    2. Starter cable-starter B terminal.
    3. Remove the connector that connects the upper harness with the engine and ECU harness.
    4. Upper harness
       P1 Alternator **B** terminal
       CN-160 E/G speed sensor
       CN-141, **CN142 P1**, **P2** Pump proportional valve
       CN-139, **CN-140 P1**, **P2** pump pressure sensor
       M-1 Starter motor **C** terminal

NOTE: *Prepare a stand, which withstands the weight of the engine assy and can place the removed engine firmly.*