

**SERVICE
MANUAL**

**EI50BSR
Blade Runner**

Print No. 87493625A



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E150BSR Blade Runner

**SERVICE MANUAL
ENGLISH**

Print No. 87493625A

Issued 09/2008
English - Printed in Italy

Printed by Studio ti - 35008

SAFETY INSTRUCTIONS

GENERAL SAFETY INFORMATION

WARNING

Do not perform any maintenance operation on this machine until you have carefully read and understood all instructions contained in this manual.

An improper operation or maintenance of this machine may lead to accidents or serious injury, even death.

If parts are missing or damaged, contact your Dealer to have them replaced.

If you have any questions, please consult your Dealer.

Most accidents occurring during operation are due to negligence of precautionary measures and safety instructions. Sufficient care should be taken to prevent these accidents. Incorrect operation, lubrication or maintenance are very dangerous and may cause injury or death of the personnel. Therefore all precautionary measures, NOTES, DANGERS, WARNINGS and CAUTIONS contained in this manual and on the machine should be read and understood by all personnel before starting any work with or on the machine.

Operation, inspection and maintenance should be carefully carried out, and safety must be given the first priority. Safety messages are indicated with marks. The safety information contained in this manual is intended only as an integration of safety codes, insurance requirements, local laws, rules and regulations.

Safety messages appear in this manual and on the machine. All safety messages are identified by the words "DANGER", "WARNING" and "CAUTION".

DANGER

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

WARNING

Indicates a potentially hazardous situation which, if not prevented, will result in death or serious injury.

CAUTION

Indicates a potentially hazardous situation that, if not prevented, will result in minor or moderate injury. It may also be used to alert against possible damage to the machine and its components.

It is very difficult to forecast every danger that may occur during operation. However, safety can be guaranteed by fully understanding the operating procedures for this machine according to the methods recommended by the Manufacturer.

While operating the machine, be sure to perform work with great care, so as not to damage the machine, or allow accidents to occur.

Continue studying this manual until all safety, operating and maintenance procedures are completely understood by all persons working with the machine.

SAFETY INSTRUCTIONS

⚠ WARNING

Lubrication and maintenance appropriate for this machine, recommended by the Manufacturer, are indicated in this Service Manual.

An improper performance of lubrication or maintenance procedures is dangerous and could result in injury or death. Read and understand this manual before carrying out any lubrication or maintenance operation.

The operator or serviceman may be unfamiliar with many of the systems in this machine. This makes a careful use of the systems very important when performing maintenance operations. Getting familiar with the system or its components is very important before removing or disassembling any of them.

Because of the size of some of the machine's components, the operator or serviceman should check the weights noted in this manual. Use proper lifting procedures when removing any components.

The following is a list of basic precautions that must always be observed.

Read and understand all warning labels and safety decals before operating, servicing or repairing this machine.

Always wear protective glasses and protective shoes when working around machines.

In particular, wear safety goggles when using hammers, punches or drifts on any part or attachment of the machine. Use gloves, safety goggles, aprons and protective clothing appropriate for welding jobs. Do not wear loose accessories or torn clothes. Remove all rings from fingers, loose jewellery, confine long hair and loose clothing before working on this machine.

Disconnect the battery and hang a "Maintenance in progress" tag in the operator's compartment. Remove the starter switch key.

If possible, make all repairs with the machine parked on a level and firm surface. Block the machine so it does not roll while working on or under the machine. Hang a "Maintenance in progress" tag in the operator's compartment.

Do not work on any machine that is supported only by lift, jacks or a hoist. Always use blocks or stops for the jack before carrying out any disassembly operation.

⚠ WARNING

Do not operate this machine until you have read and understood the instructions contained in this manual. Improper machine operation is dangerous and could result in injury or death.

Relieve all pressure in air, oil or fuel systems before any lines, fittings or related devices are disconnected or removed. Always make sure that all raised components are blocked correctly and pay attention to possible pressures when disconnecting any device from a system under pressure.

Lower the bucket, dozer or other attachments to the ground before performing any operation on the machine. If this cannot be done, make sure the bucket, dozer or other attachment is blocked correctly to prevent it from dropping unexpectedly.

Use the steps and the grab handles when mounting or dismounting the machine. Remove any debris or mud from steps, walkways or work platforms before using them.

Always face the machine when using steps, ladders and walkways. When it is not possible to use the designed access system, provide ladders, scaffolds, or work, platforms to perform safe repair operations.

To prevent back injury, use a hoist when lifting components which weigh 20 kg (45 lbs) or more. Make sure all chains, hooks, slings, etc., are in good condition and have the correct capacity. Be sure hooks are positioned correctly. Lifting eyes are not to be side loaded during a lifting operation.

In order to prevent burns, be careful not to touch hot machine parts and hot liquids in systems.

Be careful when removing cover plates. Gradually back off the last two screws or nuts located at opposite ends of the cover or device and carefully pry the cover loose to relieve any spring or other pressure before removing the last two screws or nuts completely.

Be careful when removing filler caps, breathers and plugs on the machine. Hold a rag over the cap or plug to prevent being sprayed or splashed by liquids under pressure. Danger is even greater if the machine has just been stopped, as liquids might be boiling hot.

Always use proper tools that are in good condition and that are suited for the job at hand. Be sure you understand how to use them before performing any service work.

Replace all clamps with original spare parts. Do not use clamps of a lesser quality.

Repairs which require welding should be performed only with the benefit of the appropriate reference information and by personnel adequately trained and skilled in welding procedures. Determine the type of metal being welded and select the correct welding procedure and electrodes, rods or wires to provide a metal weld strength at least equivalent to that of the parent metal. Make sure to disconnect the battery before any welding operation is performed.

Do not damage the cables during removal operations. Reinstall the cables so that they are not damaged during machine operation, by contacting the machine's sharp corners or by rubbing against objects or hot surfaces. Do not connect the cables to a system containing liquids.

Make sure all protective devices including the operator's protective devices are properly installed and functioning correctly before starting a repair operation. If a guard or shield must be removed to perform the repair work, use extra caution and replace the guard or shield after repair is complete.

Performing maintenance and repair operations while the bucket is lifted is dangerous, because there is the possibility of a device falling. Do not fail to lower such device and place the bucket to the ground before starting the operation.

Loose or dirty fuel, lubrication and hydraulic systems, pipes and hoses may cause fires. Do not bend or strike high-pressure lines, nor install bent or damaged lines. Inspect lines, tubes and hoses carefully. Do not check for leaks with your hands. Very small leaks from holes can result in a high-velocity oil jets that will be invisible close to the hose. This oil can penetrate the skin and cause personal injury. Use cardboard or paper to locate hole leaks.

Tighten the connections to the prescribed torques. Make sure that all protections against burns, the clamps and the operator's protective devices are correctly installed in order to prevent excessive heat, vibrations or rubbing against other parts during operation. The protections against oil leaks from hot hoses or damaged seals must be correctly installed.

Do not operate a machine if any rotating part is damaged or contacts any other part during operation. Any high speed rotating component that has been damaged or altered should be checked for balance before reusing.

Be careful when servicing or separating the crawlers. Chips can fly when removing or installing a crawler pin. Wear safety glasses and long sleeve protective clothing. Crawlers can unroll very quickly when separated. Keep away from front and rear of machine. The machine can move unexpectedly when both crawlers are disengaged from the sprockets. Block the machine to prevent it from moving.

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NOTE:

This Manual is prepared as a technical material in which the information necessary for the maintenance and repairing services of our hydraulic excavators are collected, and is categorized into 7 Chapters, Specification, Maintenance, System, Disassembly, Troubleshooting, Engine, and Installation Procedures for Optional Attachment.

- The Chapter "Specification" describes the specifications for entire machine and material, which are instructive for replacement and repairing of attachments.
- The Chapter "Maintenance" describes the material, which is helpful for maintenance service and adjustments for entire machine.
- The Chapter "System" describes the operating system like hydraulic system, electric system, components, and so on.
- The Chapter "Disassembly" describes the removal and installing of assembly mounted on the upper structure and undercarriage, and the assembling and disassembling of the associated hydraulic equipment.
- The Chapter "Troubleshooting" describes how to find the fault equipment.
- The Chapter "Engine" describes the engines making use of the "Maintenance Manual" provided by the suppliers.
- The Chapter "Installation Procedures for Optional Attachment" describes the supplements added on request as required.

This Manual may be properly revised due to the improvement of products, modification of specifications, etc. And there are cases where the system on actual machine and a part of the contents of this manual may differ due to the variations of specification by countries. For the section in which the description is hardly understood, contact our distributor.

All parts mentioned in this Manual can be supplied as spare parts, refer to spare part catalogue. Therefore, the order must be placed with respective formal number with due confirmation on the Parts Manual for applicable machine.

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