

SERVICE MANUAL

Backhoe Loaders B90B / B90BLR / B100BTC B110B / B110BTC / B115B

Print No. 84581918



TO READER

This manual has been printed for a skilful engineer to supply necessary technical information to carry out service operations on this machine.

Read carefully this manual to collect correct information relevant to repair procedures.

For any question or remark, or in case of any error relevant the contents of this manual, please contact:

CNH ITALIA S.p.A.
Via Plava, 80
10135 TORINO - Italy

REFERENCES

Beyond this Service Manual, also refer to the documents listed below:

- Operator's Manual
 - Service Parts Catalogue
-

SERVICE MANUAL

The Service Manual consists of two volumes:

- B90B - B90BLR - B100BTC - B110B - B110BTC - B115B
Service Manual for "Loader backhoe"
- B90B - B90BLR - B100BTC - B110B - B110BTC - B115B
Service Manual for "Engine"

The Service Manuals for "Loader backhoe" and "Engine" contain the necessary technical information to carry out service and repair on machine and on engine, necessary tools to carry out those operations and information on service standard, on procedures for connection, disconnection, disassembly and assembly of parts.

The Service Manual which covers the loader backhoe models B90B - B90BLR - B100BTC - B110B - B110BTC - B115B consists of the following volumes, which can be identified by their print number as stated below:

VOLUME	MACHINE TYPE	PRINT NUMBER
Service Manual for "Loader backhoe"	B90B - B90BLR - B100BTC - B110B - B110BTC - B115B	84581918
Service Manual - "Engine"	B90B - B90BLR - B100BTC - B110B - B110BTC - B115B	87659057A

PREVENT ACCIDENTS

The majority of accidents and injuries which occur in the workshop, at the worksite or on the road, are caused by the failure of some individual to follow simple and fundamental safety rules or precautions. For this reason most accidents can be prevented by recognizing the real cause and taking the necessary precautions, before the accident occurs.

Regardless of the care used in design and construction of any type of equipment, there may be conditions that cannot be completely safeguarded against, without interfering with reasonable accessibility and efficient operation.

A careful operator and / or technician is the best insurance against accidents.
The careful observance of this single safety rule would be sufficient to prevent serious injuries:

Never attempt to clean, lubricate or adjust a machine while it is in motion.

WARNING

Before carrying out any maintenance operation, adjustment and or repair on machines equipped with attachments, controlled hydraulically or mechanically, make sure that the attachment is lowered and safely set on the ground. If it is necessary to have the equipment partially or fully raised to gain access to certain items, be sure the equipment is suitably supported by means other than the hydraulic lift cylinders, cable and /or mechanical device used for controlling the equipment.

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LOADER BACKHOE MODELS

The complete range of Loader Backhoe models described in this manual are identified below:

	B90B B90BLR	B100BTC	B110B B110BTC	B115B
Powershift	/	/	●	●
Powershuttle	●	●	●	/
Stabilizer sideshift	●	●	●	●
Stabilizer center pivot	/	/	●	●
Cab	●	●	●	●
Rops	●	/	/	/
2WD	●	/	/	/
4WD	●	●	●	●
4WS	/	/	/	●
Pilot control	●	●	●	●
Mechanical control	●	●	●	●
Engine Iveco 72 kW - 97 HP model F4GE9484C*J605 (mechanical)	●	/	/	/
Engine Iveco 72 kW - 97 HP model F4HE0484G*J109 (electronic)	/	●	/	/
Engine 82 kW - 110 HP model F4HE9484C*J107 (electronic)	/	/	●	/
Engine 82 kW - 110 HP (4WS) model F4HE9484C*J108 (electronic)	/	/	/	●
Short backhoe dipper	●	●	/	/
Long backhoe dipper	●	/	●	●

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B90B - B90BLR
B100BTC
B110B - B110BTC
B115B



SECTION 00 - SAFETY RULES

SAFETY INSTRUCTIONS

 **WARNING** 

This warning symbol points out important messages involving your safety.

Carefully read the safety rules contained herein and follow advised precautions to avoid potential hazards and to safeguard your safety and personal integrity.

In this manual you will find this symbol together with the following keywords:

 **WARNING** 

This symbol warns about the possibility of potential damages to the machine that can involve the operator's safety.

 **WARNING** 

With specific warnings about potential dangers for the operator's or other persons integrity directly or indirectly involved.

The non-compliance with the warnings preceded by the above-mentioned keywords (WARNING and DANGER) can cause serious accidents or even the death of the persons involved.

Moreover, in the present Manual, some instructions are given with text in italics, preceded by the words **NOTE** and **CAUTION**.

NOTA: *it emphasizes and underlines to the operator the correct technique or correct procedure to follow.*

 **WARNING** 

This symbol warns about the possibility of potential damages to the machine that can involve the operator's safety.

FOREWORD

Loader backhoes B90B - B90BLR - B100BTC - B110B - B110BTC - B115B have been designed to perform most earth-moving operations.

If you use this machine for duties involving the use of attachments, accessories, or special tools, consult your Dealer to make sure that the adaptations or modifications carried out are in conformity with the machine's technical specifications and with current regulations on safety.

Any modifications or adaptations which are not approved by the manufacturer may invalidate the machine's original conformity with safety requirements.

The machine must be used according to its intended use, respecting the safety and precautionary rules and strictly following the operating instructions.

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

———— **⚠ DANGER ⚠** ————

A different use of the excavator or of its working equipment:

- for lifting or transporting persons;
- as working platform;
- for lifting loads without the attachment being approved for this purpose;
- for pulling loads;
- is considered unintended use.

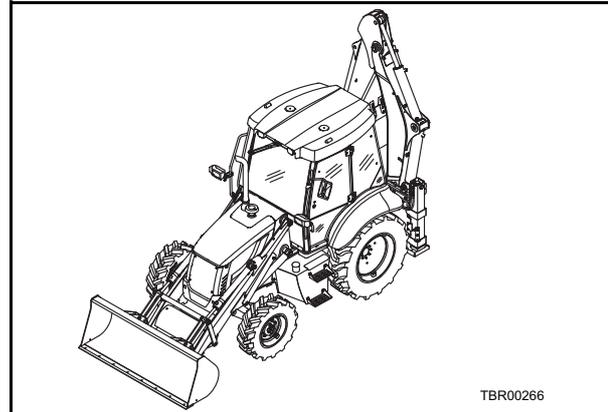
Unintended use may cause injury or life-threatening risks for the operator and for other persons.

The manufacturer/supplier cannot be held responsible for any damage resulting from unintended use. The risk involved in such misuse lies entirely with the user.

———— **⚠ DANGER ⚠** ————

It is absolutely forbidden to tamper with and/or change the setting of any of the hydraulic system valves to avoid damaging machine components, with a consequent risk for personal safety.

The current Operator's Manual is the user's guide for correct run-in, use and maintenance of the machine.



Carefully read this Operator's Manual and store it in the cab for quick location and reference.

Instructions concerning safety, operation and maintenance have been developed to permit safe service and repair of this machine without any risk.

In the event of queries or suggestions relevant to your machine do not hesitate to address to your Dealer.

Dealers have qualified and trained personnel at disposal as well as Original Spares, means and equipment suitable to carry out all necessary maintenance.

Any modifications or adaptations which are not approved by the manufacturer may invalidate the machine's original conformity with safety requirements.

IMPORTANTE: *the engine and fuel system on your machine are designed and built to government emissions standards. Tampering by dealers, customers, operators and users is strictly prohibited by law. Failure to comply with this prohibition could result in government fines, rework charges, invalid warranty, legal action and possible confiscation of the machine until rework to original condition is completed. Engine service and/or repairs must be carried out by a certified technician only.*

NOTA: *each machine is supplied complete with a copy of this Manual. Descriptions and illustrations provided herein are not binding. The Manufacturer, provided that the basic characteristics of machine types described and shown in this Manual remain the same, reserves the right to change components, parts and accessories supplied without any commitment to timely update this publication; and this any time it deems it convenient for improvement purposes or due to commercial or manufacturing requirements. For exact information, please consult your Dealer or contact the Manufacturer's Branch Offices, who remain at your disposal for further help.*

SPARE PARTS

The "non-genuine" spare parts have not been checked and authorized by the Manufacturer.

The assembly and/or use of such products may have negative effects on the machine design features and could impair its operation safety.

The Manufacturer is not liable for any damage caused by "non-genuine" spare parts or accessories.

WARRANTY

This machine is under warranty according to the regulations in force in Your Country and in compliance with the sales agreement drawn up with the Dealer.

The warranty, however, expires if the operation and maintenance instruction for this machine and contained in this manual, have not been followed.

SAFETY INSTRUCTIONS

Carefully read the safety rules contained herein and follow advised precautions to avoid potential hazards and to safeguard your safety and personal integrity.

Your safety and that of the people around you depends on you.

It is essential that you understand this manual for a correct inspection, lubrication and repair of this machine.

Read this manual carefully and check that:

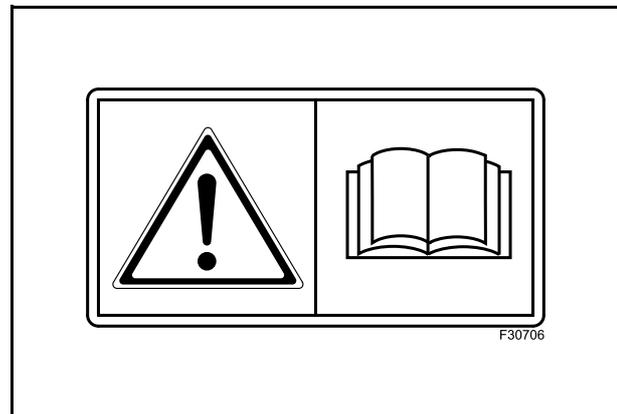
- you understand fully the symbols on the controls and the safety signs used in this manual and on the machine;
- you understand fully the speed, stability, braking and steering characteristics of the machine. If you are in any doubt, consult your Dealer.

The safety messages in this section concern situations which may arise during normal machine operation, servicing and repair. These safety messages also indicate the different ways of coping with these situations. Other safety messages are used throughout the manual to indicate specific dangers.

The information given in this chapter is a summary of the basic rules to respect at all times and does not exempt you from observing traffic regulations or the requirements of insurance companies.

The presence of grease, oil, mud or (in winter) ice on the steps and access handles can cause accidents. Make sure they are always clean.

When mounting or dismounting from the machine always face the machine and use the steps and access handles on the left-hand side of the machine.



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

- safety helmet;
- safety shoes;
- heavy gloves;
- reflective clothing;
- wet weather clothing.

If the environment conditions make it necessary, the following personal safety equipment should be at hand:

- respirators (or dustproof 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.

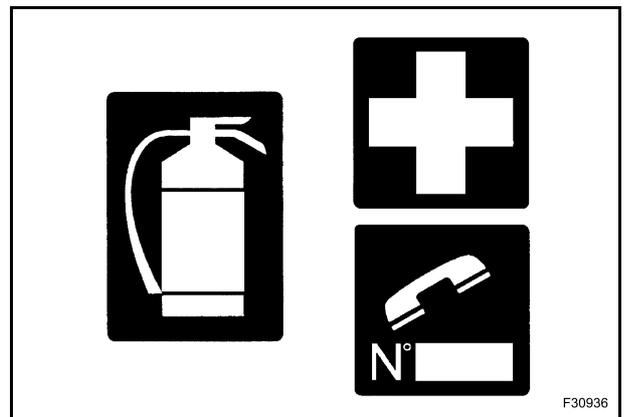
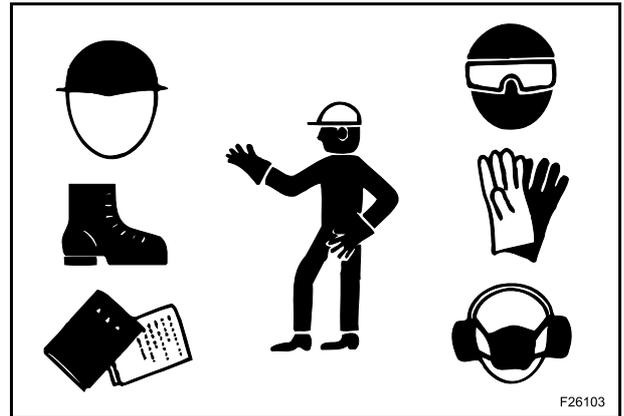
Any functional disorders, especially those affecting the safety of the machine, should therefore be rectified immediately.

Make sure that you fully understand the symbols of the safety decals applied on the machine. Make sure that they are always clean and perfectly legible.

Be prepared for emergencies.

Always keep a first aid kit and a fire extinguisher close at hand on the machine.

Make sure that the fire extinguisher is serviced in accordance with the manufacturer's instructions.



PREVENTION OF FIRE OR EXPLOSIONS

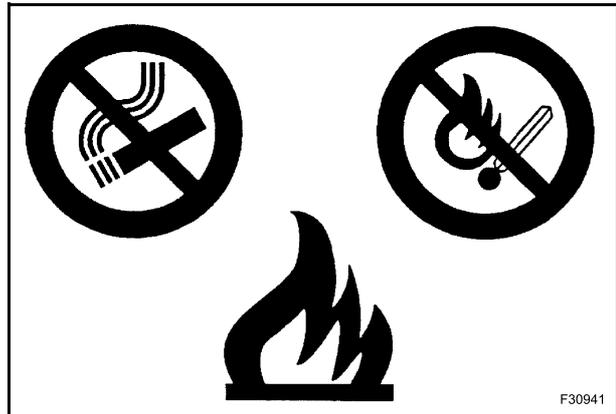
The engine fuel can originate an explosion or a fire.

Never refuel when the engine is running.

Do not smoke during refuelling.

Take all the necessary safety measures when welding, grinding or when working near a naked flame.

Use a non-inflammable product for cleaning parts.



A spark or a flame can cause the electrolyte of the battery to explode.

To prevent any risk of explosion, observe the following instructions:

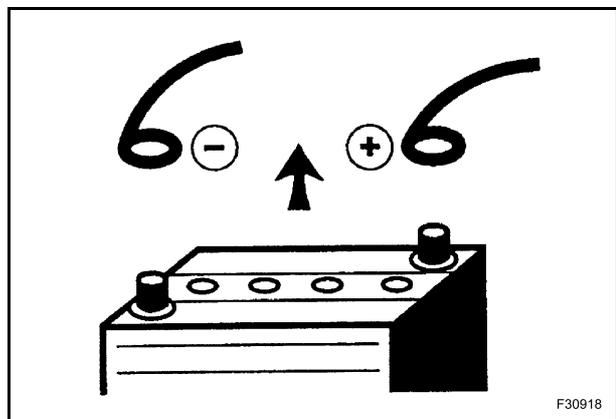
- when disconnecting the battery cables, always disconnect the negative (-) cable first;
- to reconnect the battery cables, always connect the negative (-) cable last;
- never short-circuit the battery clamps with metal objects;
- do not weld, grind or smoke near a battery.

The engine exhaust may produce sparks.

Before using the machine in an area which may contain inflammable vapours, ensure that there is good ventilation.

Always keep a fire extinguisher available on the machine.

Make sure that it is properly maintained in conformity with the manufacturer's instructions.



PREVENTION OF BURNS

The battery electrolyte generates severe burns.

The battery contains sulphuric acid.

Avoid any contact with the skin, eyes or clothing.

Antidote:

- EXTERNAL: rinse well with water, removing any soiled clothing.
- INTERNAL: avoid vomiting. Drink water to rinse your mouth. Consult a doctor.
- EYES: rinse thoroughly with water for 15 minutes and get prompt medical attention.

When the electrolyte of a battery is frozen, it can explode if you attempt to charge the battery or if you try to start the engine using a booster battery.

Always keep the battery charged to prevent the electrolyte freezing.

Batteries generate explosive gases.

Keep all flames, sparks and cigarettes away.

Provide good ventilation when changing a battery or using a battery in an enclosed space.

Always protect your eyes when working near a battery.

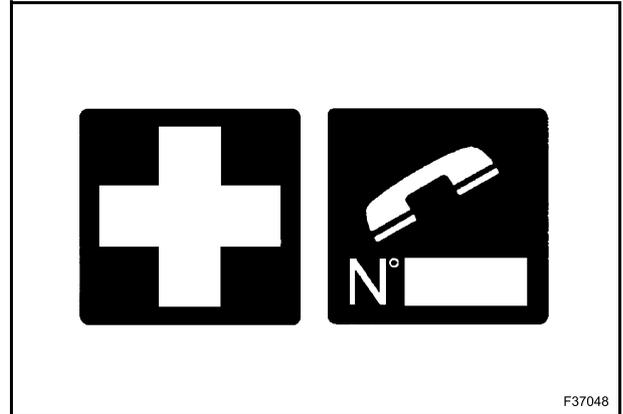
Never touch the battery terminals with your hands.

This can induce a state of electrolysis and impair the main organs of the body.

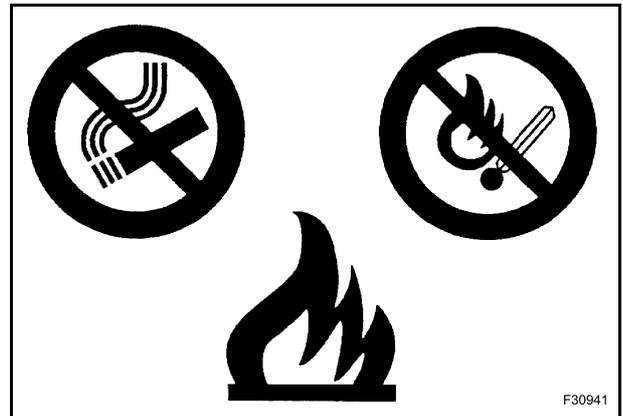
Hot coolant could spray out if the radiator cap is removed while the system is still hot.

To remove the cap: allow the system to cool down, turn the cap to the first notch and wait until there is no more pressure.

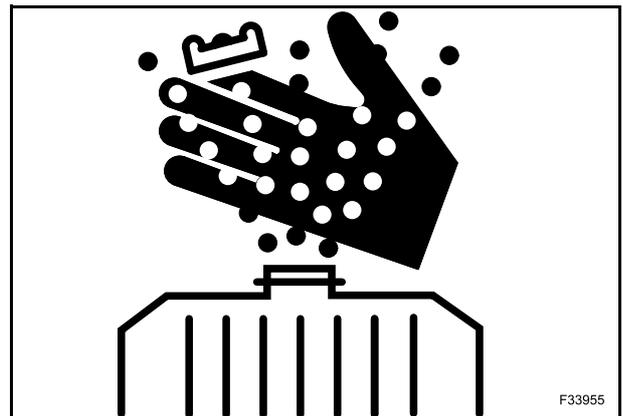
Then remove the cap.



F37048



F30941



F33955

PRECAUTIONS FOR WASTE DISPOSAL

Improperly disposing of waste can threaten the environment.

Each country has its own Regulations on this subject. It is therefore advisable to prepare suitable containers to collect and store momentarily all solid and fluid materials that must not be scattered in the environment to avoid pollution.

At preset intervals these products will be delivered to disposal stations legally recognized and present in this Country.

Here below is a list of the products in the machine which require disposal:

- hydraulic oil;
- brake system oil;
- coolant mixture, condensation residue and pure anti-freeze;
- diesel oil;
- oil and diesel oil filter elements;
- engine and air conditioning air filter elements;
- battery.

Also polluting rags, paper, sawdust and gloves must be disposed in compliance with the same procedures.

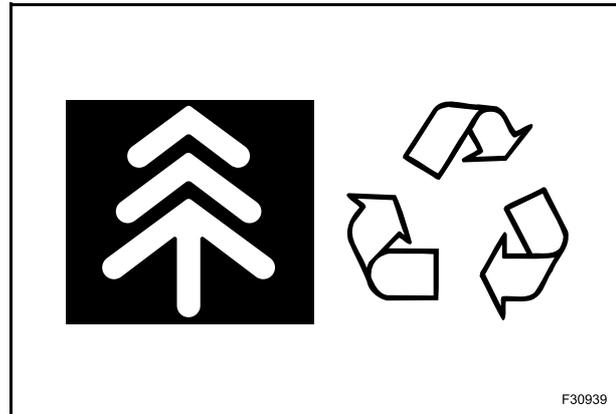
Do not use food or beverage containers that may mislead someone into drinking from them.

Do not pour waste onto the ground, down a drain, or into any water source.

Air conditioning coolant escaping into the air can damage the Earth's atmosphere.

Government regulations may require a certified air conditioning service centre to recover and recycle used air conditioning coolant.

Obtain information on the proper way to recycle or dispose of waste from your local environmental or recycling centre, or from your Dealer.



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SECTION 01 - MAINTENANCE

Do not carry out any service operation until you have read and understood the instructions and warnings given in this manual.

Observe the adjusting, maintenance and inspection activities and intervals set out in the operating instructions, including information on the replacement of parts and equipment as this service concerns exclusively the qualified personnel.

Wear safety equipment and suitable clothing to perform maintenance operations on the machine.

During maintenance operations, apply a warning plate.

Always wear eye protection when using a tool which might project metal particles. Use a hammer with a soft face, such as copper, for pin assembly.

Incorrectly performed maintenance or adjustments can cause serious injury. If you do not understand a maintenance or adjustment procedure, consult your Dealer.

Before performing any maintenance operation on this machine, make sure it is in a safety condition.

Move the machine to a level and firm ground, away from any soft ground, excavations and poorly shored cavity.

Rest the loader attachment on the ground if no maintenance operation is to be performed on it. Otherwise, raise the attachment and block the support strut.

Place the backhoe attachment in road travel position if no maintenance operation is to be performed on it. Otherwise, rest it on the ground.

Place the direction-of-travel lever and gearshift lever in neutral position.

Immobilize the machine by means of the parking brake.

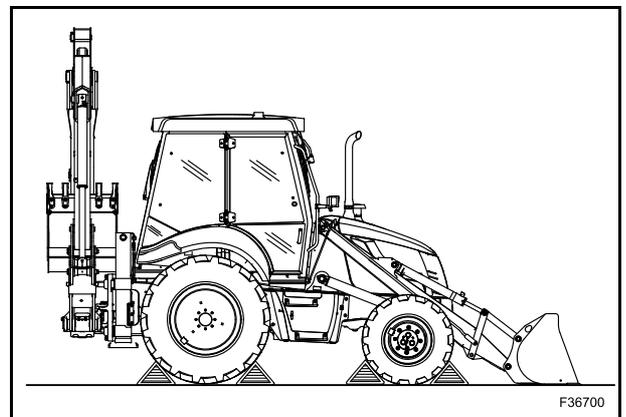
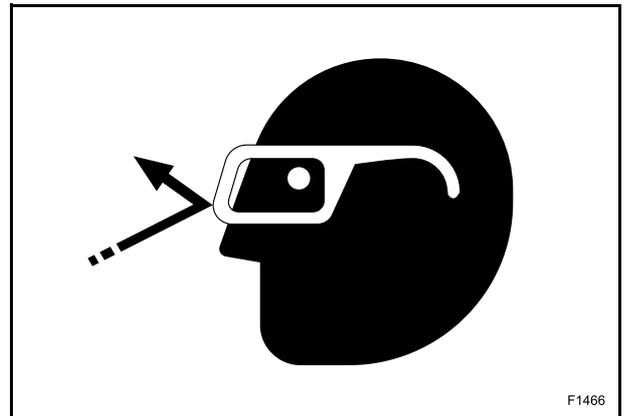
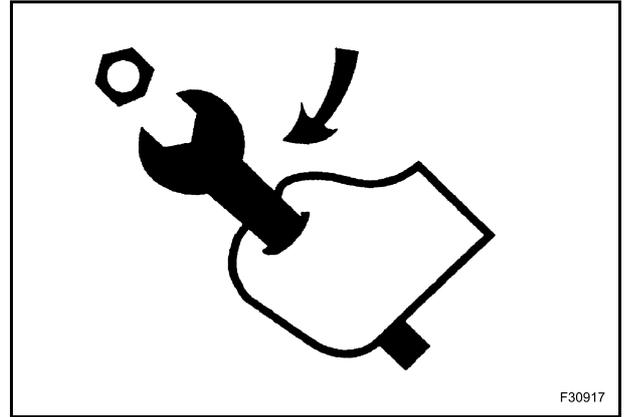
Completely raise the stabilizers and lock them mechanically.

Stop the engine and remove the starter key.

Open the oil tank plug.

Release the hydraulic pressure by operating the control levers in all directions. On hydraulically controlled machines, turn the key to ON and release the pressure by moving the hydraulic control levers in all directions.

Disconnect the electric system by disconnecting the battery master switch.



Place some wedges under the wheels so as to prevent the machine from moving.

Unauthorized modifications of the machine can cause serious injuries.

Do not carry out any modification on this machine without obtaining prior authorization from your Dealer.

Any modification carried out must be in conformity with the machine's technical specifications and must conform to current safety regulations.

Do not carry out any welding operation on the machine without prior authorization from your Dealer.

Some of the machine's components are subject to type approvals. It is mandatory when replacing those components to ensure that they are in conformity with regulations.

Hydraulic fluid or grease under pressure which penetrates the skin can cause serious injury.

Take the necessary safety precautions (protective clothing and face and hand protection) to prevent all such risks.

In addition, before handling these products, read the manufacturer's specific instructions for their use.

If hydraulic fluid penetrates the skin a doctor must be called immediately.

When carrying out a welding operation on the machine, as authorized by the manufacturer and in accordance with his specifications, disconnect the electric system by means of the battery master switch, connect the welding set earth lead to the component on which the welding is to be carried out (never connect the ground lead to a hydraulic system component) and disconnect the electric cables of the motor control unit (in case of electronic motors).

A burst tyre can cause serious injury.

Regularly check the condition of tyres and always observe the inflation pressures defined in accordance with the type of tyre and ground conditions.



When checking the tyre pressure or during an inflation operation, never stay in front of the tyre but always keep to the tread side.

Always use an inflation cage when the wheel is removed from the machine.

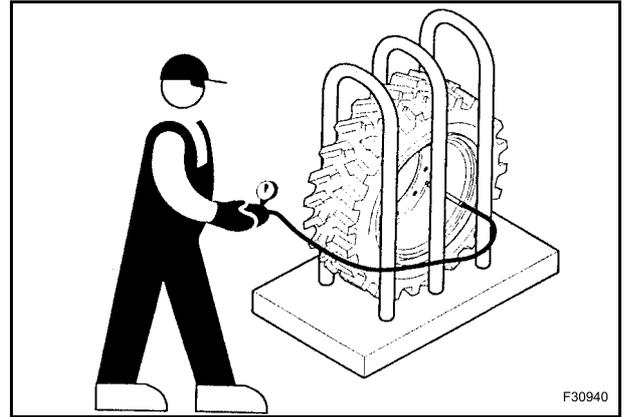
Keep all other persons away from the area.

Never weld near a tyre. It is essential to remove the tyre before any welding operation.

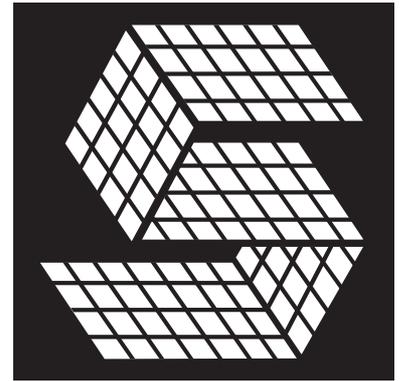
Take the necessary safety measures to protect your face when using compressed air.

The machine's structure is in conformity with the FOPS and ROPS protection standards.

Any modification (drilling, welding, etc.) may cause that conformity to be invalidated.



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