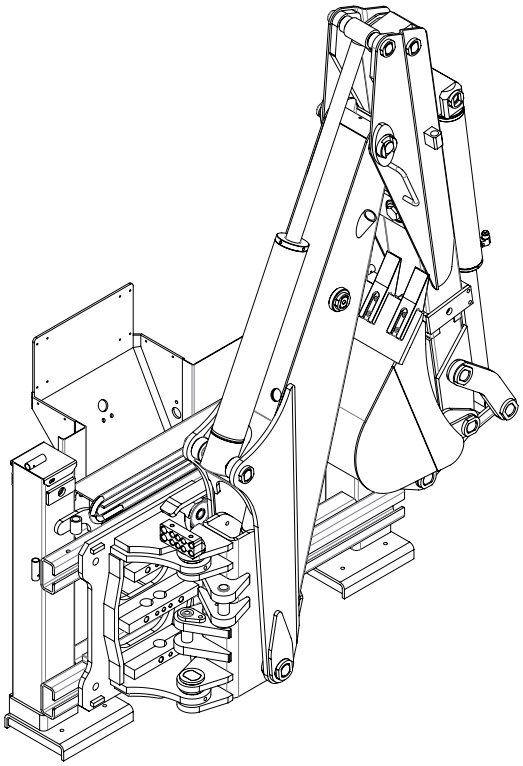
CASE CONSTRUCTION

Operator's Manual

Backhoes



TRANSLATION OF THE ORIGINAL INSTRUCTIONS

CE

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Attention

Before proceeding with any work on the machine read this manual in its entirety and ensure you understand the information contained herein.

Keep the manual in a safe place where it is easily accessible for consultation.

Identification of equipment

In order to allow your retailer to help you as quickly as possible, he will need some data concerning the equipment.
Specify this data in this space.

Name	
Serial number	
Accessories	
Address of retailer	
Address of manufacturer	**U.EMME s.r.l.** Via dell'artigianato 19 - 47015 Modigliana (FC) Tel. +39 0546 941725 - Fax +39 0546 940050 e-mail: info@uemme.com www.uemme.com

"U.Emme S.r.l." (from here on called "Manufacturer") guarantees that every new product is without processing or material defects when it leaves the plant.

The Manufacturer is committed to replace free of charge unusable pieces returned due to certified material and/or processing defects.

This warranty is valid for 12 (twelve) months from the date of delivery to the first User.

To this purpose, the date indicated on the bill of lading concerning delivery to the first User is valid.

In order to take advantage of the warranty, it is essential that:

- The first User sends a "Warranty Certificate" to the Manufacturer within 10 (ten) days from reception of the machine.
  The "Warranty Certificate" must be filled out fully before the User sends it to the Manufacturer.
- The faulty parts must be sent to the Manufacturer's site for the appropriate controls, free of charge and accompanied by the identification date carried on the plate applied to the machine.
- The maintenance schedules and timetables provided by the Manufacturer must be respected.

Expenses for transportation of replaced pieces and on-site inspections by our technicians, useful to ascertain the causes of the defect, will be charged to the user.

The examination of defects and their causes is reserved exclusively to the Manufacturer's personnel or technicians commissioned by the same.

Replaced pieces covered by warranty remain property of the Manufacture.

The warranty does not cover:

- Components not produced directed by the Manufacturer, for which the relevant manufacturer is responsible.
- Faults deriving from standard wear.
- Faults caused by incorrect use.
- Faults due to carelessness, accidents, inexperience and to use which does not comply with the prescriptions and intended use of the machine.
- Damage deriving from machine standstill and lack of profit.
- Damage produced to persons, objects and animals ensuing a fault.

Attention

This is interchangeable equipment compliant with Directive 2006/42/CEE.

Should it be applied on a vehicle suitable for driving on the road, in order to comply with regulations of the highway code, it must be registered on the log book at the charge and burden of the user.

INSTRUCTIONS UPON DELIVERY

When the machine is delivered, Staff of the Sales Organisation must supply the Customer with the first detailed instructions concerning installation, use and maintenance.
These instructions are the ones listed hereafter.

IMPORTANT

During the explanation, the Customer must check the box next to the instruction received.

- ❑ Inform the Customer concerning safety regulations which must be complied with; these regulations are indicated on the stickers applied in the machine and in the Use and Maintenance manual.
- ❑ Warn the Customer that is very important to carefully read and understand the Use and Maintenance manual before installing or operating the machine.
  This manual contains the main instructions regarding installation, use and maintenance of the equipment.
- ❑ Instruct the Customer on how to correctly install and detach the equipment.
- ❑ Inform the operator that is very important to carefully read the Use and Maintenance manual before installing or operating the machine.
- ❑ Explain to the operator how to use the controls of the equipment (if included), pointing out the various safety devices and retainers.
- ❑ Instruct the Customer concerning the correct use of the machine and any accessories applied on it.
- ❑ Point out the chapter of the manual which speaks of lubrication.
  It is very important to explain that regular lubrication ensures the machine with proper functioning and long life.
- ❑ With the manual in hand, instruct the Customer concerning the various maintenance phases, warning him of the risks which could arise during this phase.
- ❑ Explain to the Customer how to secure the equipment for road travel.
  Moreover point out that road travel implicates compliance with regulations in force in each individual country as well as those provided in the manual.
- ❑ Help the Customer to fill out the table on page I of the manual, and the warranty certificate. Once this certificate has been filled out, it must be sent to the Manufacturer.

WARRANTY CERTIFICATE

RETAILER STAMP

. . . . . .
MACHINE MODEL

. . . . . .
FACTORY NUMBER

. . . . . .
DATE OF DELIVERY

. . . . . .
CUSTOMER

. . . . . .
ADDRESS

. . . . . (. . .)
AREA CODE CITY PROV.

SIGNATURE OF CUSTOMER

N.B. For acceptance of warranty standards carried on the back.

(Send to Manufacturer within 10 days of the delivery date)

U.EMME s.r.l.
Via dell'Artigianato, 19
47015 MODIGLIANA (FC) - ITALY
Tel. 0546-941725 • Fax 0546-940050
www.uemme.com

"EC" Declaration of conformity

(Annex II A of Directive 2006/42/EC "machinery directive")

The undersigned Molignoni Mario
Hereby declares that the machinery described below:

Generic denomination:	Backhoes
Function:	Interchangeable equipment
Type/Model:	_____
Serial number:	_____
Manufacturer year:	_____

Complies with the relevant provisions of the "machinery" directive 2006/42/EC and the regulations transposing it into national law.

PERSON AUTHORISED TO COMPILE THE TECHNICAL FILE:
Name: **Matteo Molignoni**
Address: c/o U.EMME s.r.l.
Via dell'Artigianato, 19 - 47015 Modigliana (FC) - Italy.

It is forbidden to set up or install the interchangeable equipment subject of this declaration on supporting machines not complying with laws and/or Directives in force.

Modigliana, lì:

Name of the signatory

Molignoni Mario

U.EMME s.r.l.
Via dell'Artigianato, 19
47015 MODIGLIANA (FC) - ITALIA
Tel. 0546-941725 • Fax 0546-940050
www.uemme.com

Origin certificate
no. _____ / _____

This is to certify that - pursuant to articles 76, 108, 114 of the Italian Legislative Decree 30/014/1992 no. 285 - the equipment specified below has been manufactured at the premises of the

- Company: **U.EMME srl**
- Located in: **Via dell'Artigianato, 19**
  47015 MODIGLIANA (FC) - ITALY

This is to certify the following exchangeable equipment:

Manufacturer and registered office:	**U.EMME srl** **Via dell'Artigianato, 19 - 47015 MODIGLIANA (FC) - ITALY**
Type:	**BACKHOES**
Type/Model:	_____
Frame:	_____

The equipment mentioned above is factory new.

Modigliana, on:

U.EMME srl

Molignoni Mario

VIEWED BY

Branch office of the Transport Department of .....

Officer name and qualification.

Date .....

WARRANTY

A - GENERAL INFORMATION

B - DESCRIPTION

C - SAFETY

D - TECHNICAL SPECIFICATIONS

E - LIFTING AND HANDLING

F - INSTALLATION

G - CONTROLS

H - OPTIONAL

I - TROUBLESHOOTING

L - USE

M - MAINTENANCE

Introduction

The manufacturer declines all liability in relation to anomalies due to wrong settings.

Since our products are in continuous evolution, certain details may not exactly correspond to those completing your equipment model.
In such cases, if you are in doubt with regard to the correct operation, consult an authorised service centre. Never proceed by trial and error.

In order to always offer the best product, report any errors or omissions found in the manuals supplied, especially regarding safety situations, advice for improving the equipment and our customer service and whatever else you wish to communicate to this purpose.

Note

When requesting interventions (even by phone) it is important for the Manufacturer to be able to KNOW THE MODEL AND NAME OF THE EQUIPMENT.

For each service request, it is wise to get this information, before calling.

How to consult the manual

Topics not covered by the manual

This publication DOES NOT address the following subjects:

- Extraordinary maintenance.
  Such operations must be performed by staff authorised by the Manufacturer.

Structure of the publication

The manual is composed of separate sections with an initial table of contents showing the sequence of titles of the sections, the chapters, and the topics addressed, complete with page numbers.

Page numbering is consecutive.

Note

Italian is declared the official language.

Attention

With “equipment” in this publication we mean the backhoe.

The means upon which the equipment is installed is called “operating machine”.

Notes for the user

Unauthorised modifications

It is strictly forbidden for anyone to modify the equipment, in its every part, and for whatever reason without the express written authorisation by the Manufacturer.
No agent or representative of the manufacturer is authorized to give instructions which in any way modify the “Instructions for Use”, the safety prescriptions, the guarantee and/or the method of use of the product.

The manufacturer declines all liability in relation to unauthorised modifications and reserves the right to take any actions it deems necessary to protect its interests.

User or machine operator

The user is directly responsible for personal injury or injury to third parties or property damage resulting from:
- improper use of the equipment and of its every part;
- failure to comply with the safety prescriptions and accident-preventing regulations.

Use of the equipment is reserved exclusively to qualified operators.

A qualified operator is construed as a person who has:
- read the “operating instructions” in their entirety;
- understood the concepts expressed in this publication;
- carrying out what was learned by attending the informative meeting in which the retailer or personnel authorised by the manufacturer explains correct and safe use.
  It is advisable to ensure that more than one operator attends the training course.

Note

This information course is aimed at presenting the information contained in the “Operating instructions” and to immediately clarify any doubts, substantially improving operator training as requested by regulations in force.

After the initial training course other personnel can be trained by qualified operators if the owner considers that the qualified operators in question possess the necessary abilities to pass on the skills they have learned.

Builder

The definition of manufacturer refers to the company

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www.uemme.com

The manufacturer is not responsible of the consequences deriving from an incorrect or improper use of the equipment like, for example:
- methods of use in conflict with the prescribed methods;
- lack of attention in maintenance, in checks during the production process and in checking the efficiency of the tools;
- removal or disabling of active and passive safety devices;
- irresponsible conduct not in compliance with good common practice;
- unauthorised modifications.

Checking the Supplied Product

On receipt of the supplied product check that the delivered material complies with the order and that the “Operating Instructions” are attached.

Upon delivery of the equipment, check that there are no damages or missing parts. If you notice signs of damage or missing parts contact the manufacturer or LOCAL AGENT.

When the product is received, in the presence of inconsistencies, missing material, or clear signs of damage, inform the manufacturer immediately, write your reservations clearly on the delivery note and immediately send a documented report to the shipping agent’s insurance company, complete with photographic evidence of the problem(s).

Symbols used

The following are the symbols used in the manual to recall the reader's attention to the different danger levels when using and servicing the equipment.

Danger

Information or procedure which, if not thoroughly followed, could cause death, serious personal injuries or damage to the equipment. They are often referred to as "residual risks" or, in any event, to danger situations.

Attention

Information or procedure which advises the operator about the best use of the equipment in order to lengthen its life, to avoid damage or loss of programming, to optimise work in compliance with regulations.

Note

Ancillary information.

Glossary

Operator

In compliance with the directive 2006/42/EC, the operator is the person or persons in charge of installing, operating, adjusting, servicing, cleaning, repairing and transporting the equipment.

Danger

Situations or actions that could be the source of possible injury to persons or animals or property damage.

Exposed person (In compliance with directive 2006/42/EC)

Anyone who is entirely or partly inside a hazardous zone.

Risk

Combination of the probability and degree of seriousness of possible injury or harm to health in a dangerous situation.

Hazardous zone (In compliance with directive 2006/42/EC)

Any zone inside and/or close to an operating machine in which the presence of a person constitutes a risk for the safety and health of that person.

Routine maintenance

These are the standard control and maintenance operations on the equipment, which do not require special mechanical knowledge to be carried out.

Such operations include: lubrication, greasing, replacing parts subject to regular wear and correction of loosening caused by use, all of which are to be expected.

These operations can be carried out by the operator in charge of the equipment according to the indications provided in this manual.

Extraordinary maintenance

These are the operations caused by unforeseeable breakage or wear, deriving from particular events during use.

Extraordinary maintenance operations must be compulsorily performed by a specialised operator recognised as such by the machine manufacturer.

Protection

Safety measures that consist in the use of specific technical means, called “protections” (guards, safety devices), to protect persons from potential hazards that cannot be reasonably eliminated or sufficiently restricted by means of design strategies.

Safety device

Electrical or mechanical device that prevents accidents and/or damage to property and personal injury; activation of safety devices may be voluntary when performed by an operator or may be caused automatically by the presence of a potential hazard (opening of a protection or access to a certain area).

Operating machine

Means on which the interchangeable equipment is installed.

Equipment/Interchangeable equipment

The subject of this manual (under Directive 2006/42/EC) installed on the machine defines the intended use.

In this manual, equipment means backhoe.

Installer

The person who performs the equipment installation on the machine can be identified in:

- The machine manufacturer
- A workshop
- The equipment manufacturer

Use and maintenance instructions/Use and maintenance manual

Collection of information and instructions necessary to meet the requirements of instructions under Directive 2006/42/EC for the efficient operation and safe conditions of the machine/equipment/ interchangeable equipment.

Description of equipment

Backhoes produced by "**U.EMME s.r.l**" are designed and manufactured in strict compliance with regulations in force at national and European level.

Backhoes are divided into **Farming** and **Industrial** version.

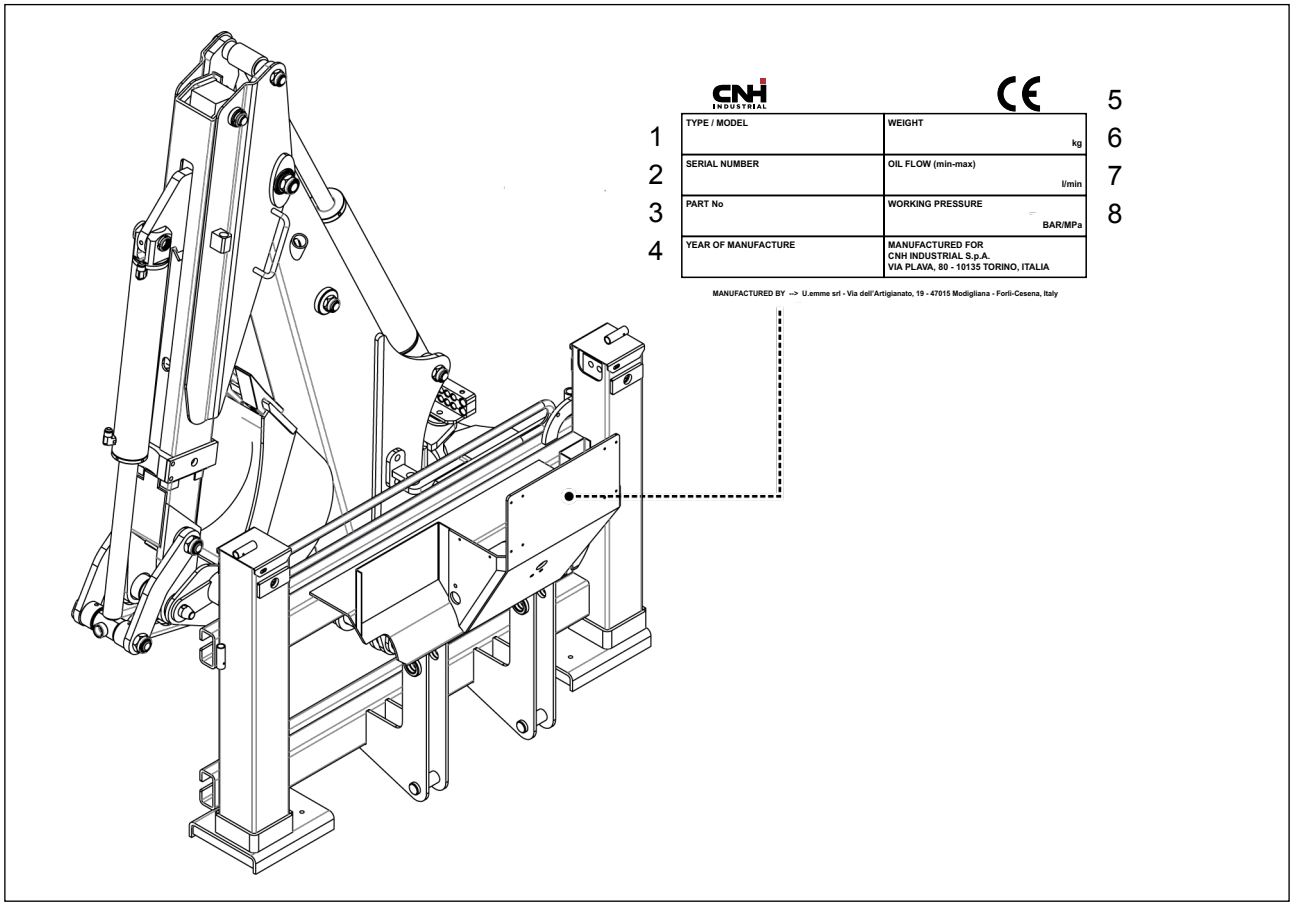
Backhoes of **Farming Series** are usually installed on the three-point hitch of the farm tractors. If the backhoe is continuously used on the same tractor, it is recommended to put it on the rear fixed clamping system provided by the Manufacturer. This series of backhoes is equipped with independent hydraulic system, fitted with hydraulic oil tank, filters and pump-multiplier unit.

Backhoes of **Industrial Series** are usually suitable for the application on front tool holder plate of working machines (Skid Loader, etc.) or on rear fixed clamping system of working machines (Backhoe loaders, etc.). This series of backhoes usually works with the auxiliary hydraulic system of the working machine, to which they are connected through hydraulic hoses equipped with quick coupling.

Some models of both Series may be equipped, on demand, with extractable swinging arm allowing increasing the distance and the digging depth of 500 or 600 mm according to the model.

Identification data plate

Whenever communicating with the manufacturer, always mention the model, general name, serial number and year of manufacture carried on the identification plate.



The identification plate is positioned on the equipment, and carries:

1. Model
2. Serial number
3. Part number
4. Year of manufacture
5. CE mark
6. Weight in Kg
7. Oil flow rate (l/min)
8. Pressure (bar)

Applied signals

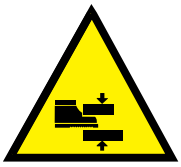
Stickers are applied on the equipment carrying the safety symbols for risk-free operation.

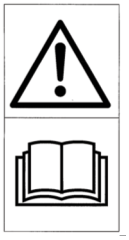
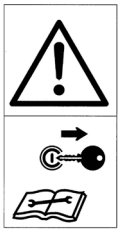
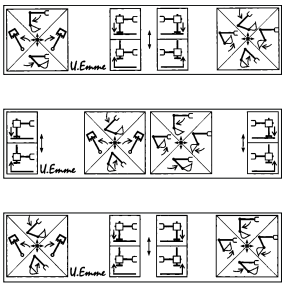
Danger

Comply with the specified indications!

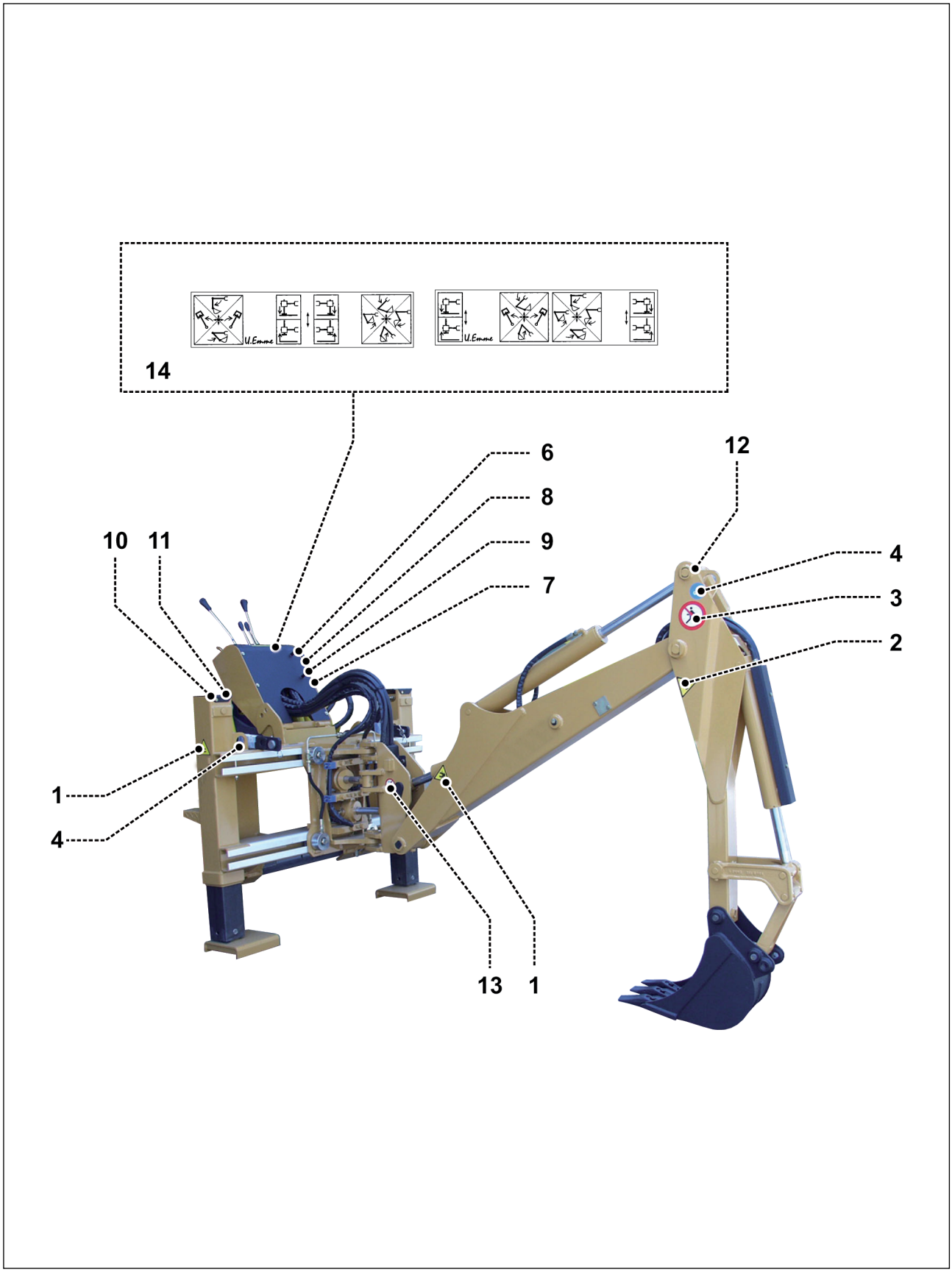
To this purpose it is recommended to:

- **Keep the safety stickers clean and easily readable.**
- **Restore those that are missing and replace those that are deteriorated.**

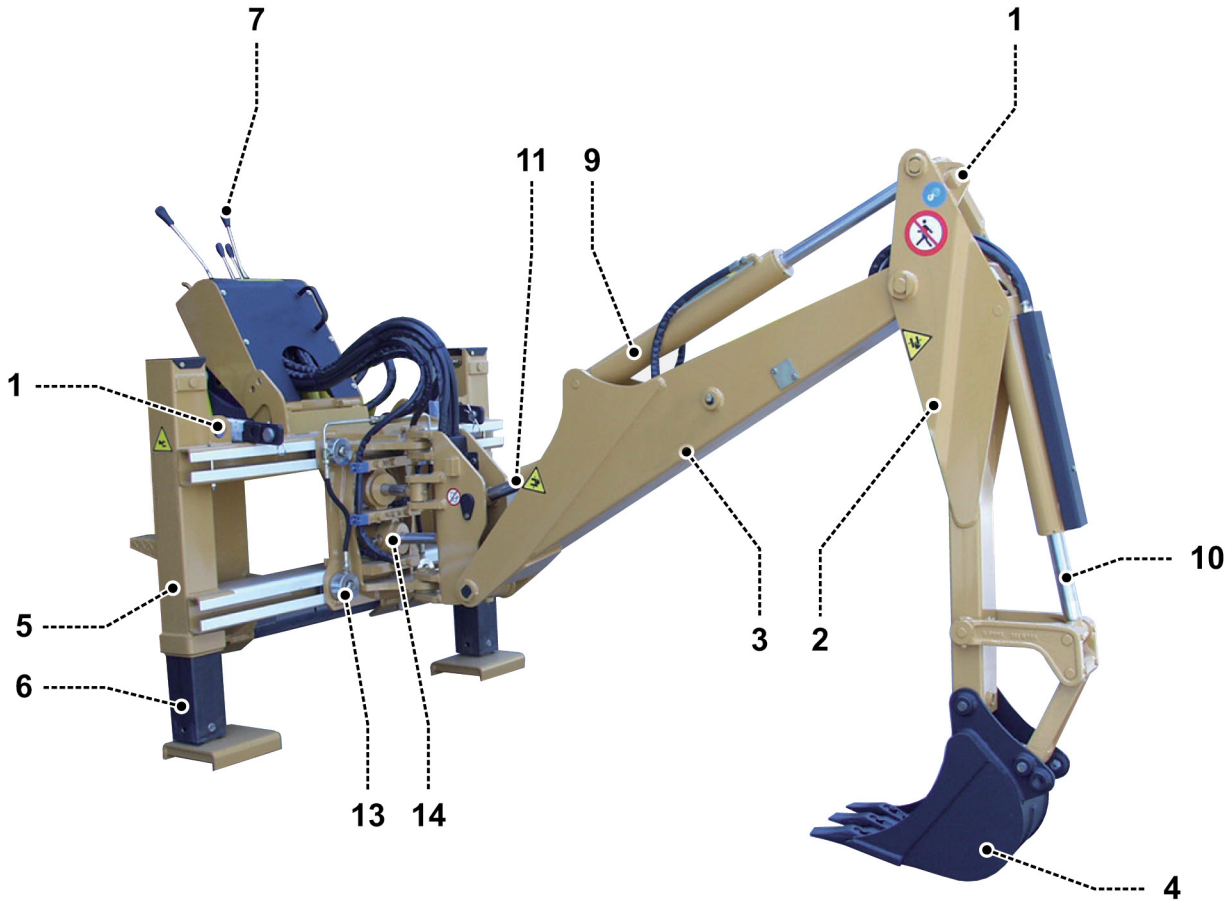
1		**Do approach moving parts** Danger of crushing. Keep your lower limbs away from the danger zone. Wait until all moving parts have come to a complete stop.
2		**Do approach moving parts** Danger of crushing. Keep upper limbs away from the dangerous area. Wait until all moving parts have come to a complete stop.
3		**It is forbidden to stop or pass in the working range of the machine**
4		**Hooking / lifting points** That indicated on the plate is the only point allowed for lifting and handling the equipment with an overhead travelling crane or a crane.
5		**Goggles** Protective goggles use in order to avoid damage caused by material projection.
6		**Helmet** Protective helmet to prevent injuries caused by overhanging loads and knocks against structures.
7		**Safety footwear with reinforced toecap and non-slip sole** Wear accident-prevention footwear to prevent injuries caused by crushing of the feet.
8		**Handbook** Read and keep the instruction manual with care.
9		**Cut-resistant and piercing-resistant gloves** Use of protective gloves to avoid cuts, punctures or pricks during operation.

10		**Read the instructions** Read and keep the instruction manual and the safety indications before commissioning.
11		**Switch the motor off and remove the key** Before performing any maintenance or repair intervention, switch the motor off and remove the key, consult the instruction manual.
12		**Greasing points**
13		**It is forbidden to repair, lubricate, adjust, clean machine moving parts**
14		**Equipment controls function** This pictogram identifies the functions of equipment controls according to the type of distributor installed.

Where to apply the signals



Main components



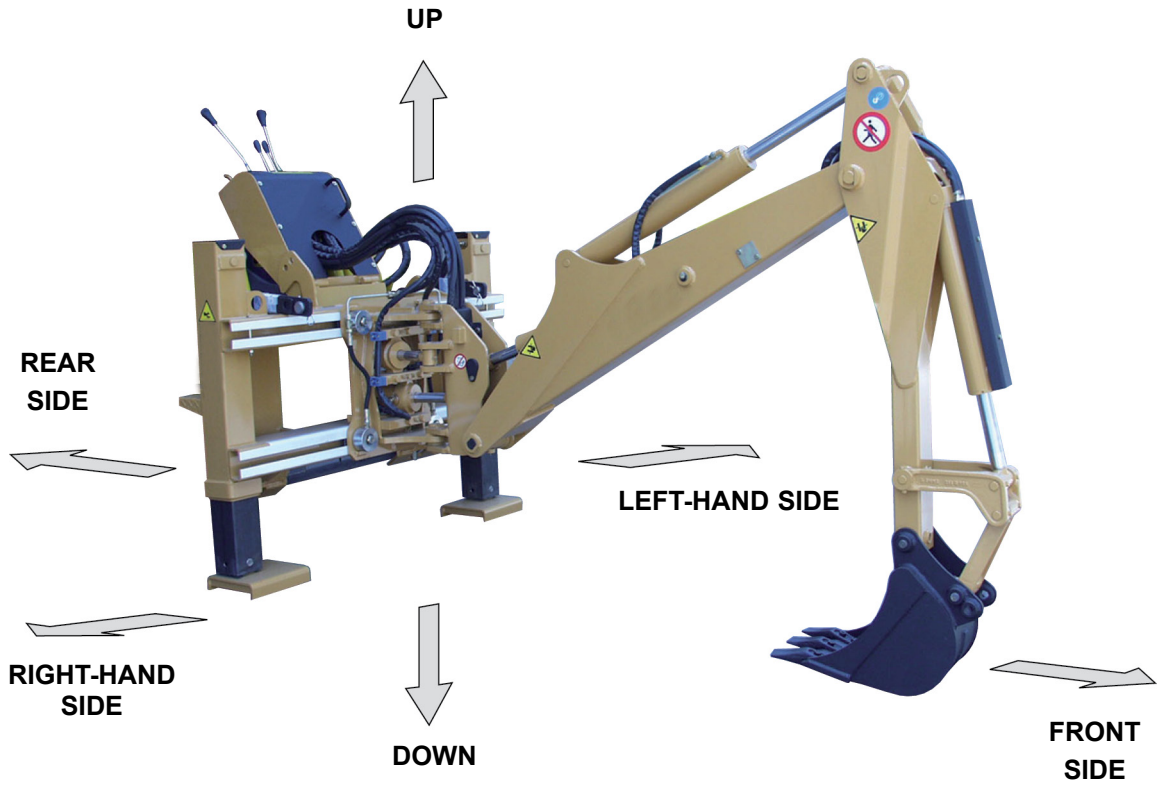
Hydraulic Backhoe “Basic line”

1. Hooking points for lifting
2. Swinging arm
3. Main arm
4. Bucket
5. Frame
6. Stabilizing feet
7. Controls
8. Independent hydraulic system
9. Cylinder for swinging arm moving
10. Cylinder for main arm moving
11. Cylinder for main arm lifting
12. Quick couplings
13. Cylinder for frame translation lock
14. Inclination cylinders

Hydraulic Backhoe additional features in “Deluxe line”

- Auxiliary hydraulic system for hammer
- Hydraulic side shift block on the frame

Positioning



Equipment status

When restarting the machine after any type of stop, make sure no tampering or unauthorised interventions have been carried out (unauthorised release, loosened screws, etc.).

Work standby

By equipment in work standby configuration, we mean those conditions in which the machine is at a standstill for a few hours (e.g.: end of work shift, absence of operator in charge of running and watching over the equipment, lunch break, etc.).

In this case the general conditions must be:

- Equipment resting on the ground in an area suitable for operation and standstill and that guarantees maximum safety, on a level surface and resting firmly on the ground.
- Equipment connected to the operating machine, with the hydraulic system depressurised (discharge pressure).
- Disabled motor.
- The doors, the panels and all tools provided with lock with padlock or with key, blocked and without keys.

  The operator must carry all the keys that activate the operating machine with her/him or store them in a safe place.
- The operator can be temporarily absent from the work area.

Note

If the operator remains in the area, it is not essential to lock doors and panels equipped with locks.

- In the work area there can be other staff, if authorised.
- The work area must be clearly identified.

Prolonged shut-down

When the equipment remains idle for more than 3 days.

In this case the general conditions must be:

- Equipment parked in a suitable place for prolonged standstill (possibly protected) and that guarantees maximum safety, on a flat surface and resting firmly on the ground.
- Equipment resting on the ground on top of wooden supports and NON-yielding ground.
- Equipment disconnected from operating machine.
- The doors, the panels and all tools provided with lock with padlock or with key, blocked and without keys.

  The operator must place all the keys which activate the operating machine in a safe place.
- The operator can stay away from the work area.
- In the work area there can be other staff, if authorised.
- The work area must be clearly identified (if work has not been completed).
- Should it be required by the maintenance schedule, all the necessary maintenance operations must be performed.
- Affix safety signs to the machine.

Attention

Install easily understandable and clearly visible signs to prevent admission by unauthorised personnel and indicate that the machine is out of use.

Temporary stop

By temporary stop configuration, we mean those situations in which the equipment has brief standstills.

In this case the general conditions must be as follows:

- The equipment is connected to the operating machine and to power sources.
- The operating machine is on.
- The operator in charge is in the control station.
- In the work area there can be other staff, if authorised.
- The work area is duly identified.

Working condition

By work configuration, we mean those situations in which the equipment is operative and active.

In this case the general conditions must be as follows:

- The equipment is connected to the operating machine and to power sources.
- The operating machine is on.
- The operator is in the control station.
- There must be no other operators in the work area.
- The work area must be clearly identified.

Characteristics of the work cycle

The equipment allows carrying out digging and material loading operations, as defined in chapter “Intended use”.

Danger

All staff must leave the delimited zone and keep a safe distance.

Distance must be calculated considering the most dangerous situation that can occur during an exceptional event.

Intended use

The equipment must be entrusted only to personnel “qualified” for its use by means of adequate “training and information” (at the customer’s charge) and by carefully reading these “Operating instructions” which must be available for the operator before using the equipment.

The equipment must be used by one operator only.

The equipment is designed and manufactured to be installed on working machines with operational functions and used to carry out digging and material loading operations (earth, stones, inert materials in general) by using a standard digging bucket fitted at the end of the arm.

The **Farming Series** backhoes are designed, manufactured and prepared to be applied on the three-point hitch or on fixed clamping system (exclusively provided by the Manufacturer), on the rear part of farm tractors. This type of backhoe is usually prepared with independent hydraulic circuit, fitted with pump-multiplier unit to work with **power take-off at 540 rpm** of the tractor. As an alternative it is possible to prepare **Farming Series** backhoes with hydraulic system suitable to work with the tractor one. Each backhoe model must be installed only on tractors, trolleys or loaders with characteristics suitable to those provided by the Manufacturer.

Backhoes of **Industrial Series** are designed, manufactured and prepared for the application on front tool holder plate of working machines (Skid Loader, etc.) or on rear fixed clamping system of working machines (Backhoe loaders, industrial tractors, etc.). This series of machines is prepared with the auxiliary hydraulic system suitable to work with the auxiliary system of the working machine, to which they are connected through hydraulic hoses equipped with quick coupling. Each backhoe model must be installed only on working machines with characteristics suitable to use defined by the Manufacturer.

Operation with original bucket, demolition hammer and drill is intended, having characteristics indicated by the Manufacturer. The use with accessories different from those indicated must be authorised in writing by the Manufacturer.

Danger

The machine on which the equipment is installed must mandatorily be equipped with protection roll bars or cab in accordance with regulations in force and provided with ROPS or FOPS approval.

The operating limits of the equipment are subject to the technical data of the various versions (see section “Technical specifications”).

Before commissioning, the installer must perform the technical checks in compliance with the regulations in force.

In particular, the following checks will have to be carried out:

- Visibility
- Controls

Improper use

The equipment must NOT be used with terminal tools different from the expected ones; use other than the intended one could cause damage to the equipment and be a danger for the operators.

It is prohibited to use the equipment outside the limits of use defined in the technical specifications of the different versions (see section “Technical specifications”).

Attention

Use of the equipment under heavy duty conditions (example: bad environmental conditions etc.) entails more frequent checks and/or maintenance operations.

It is forbidden to use the equipment for uses other than that described in chapter “Intended use” and not in compliance with the indications given under section “Safety”.

Conformity of the product

Community Directives

2006/42/EC

Norm of the European Parliament and of the Council regarding the approaching of the laws of the Member-States about machines.

Forbidden behaviours

It is forbidden to use the equipment for transporting or moving persons.

It is forbidden to attempt to lift up, pull or push loads fixed to the ground.

It is prohibited to stop in the work area of the equipment.

It is forbidden to go on working when even a minor structural sagging is detected.

Intervention is forbidden (adjustments, dismantling, etc.) when the equipment is in motion.

It is forbidden to approach the equipment wearing unsuitable clothing (e.g. ties, wide, unbuttoned and/or loose clothing, etc.): wear only work wear.

It is prohibited to use the equipment or not to carry out maintenance interventions without wearing the suitable Personal Protective Equipment.

It is prohibited to use the equipment in conditions which are not expressly included in its intended use.

It is forbidden to use the equipment with terminal tools not expressly indicated.

It is forbidden to use the equipment on machines with unsuitable power and weight.

It is forbidden to use the equipment if stabilisers are not properly placed on the ground.

It is forbidden to use the equipment over the limits of usage specified in this manual.

It is forbidden to carry out operations on the machine involving the modification of components or parameters that affect the work cycle.

It is forbidden to change the calibration of valves on control distributor.

It is forbidden to use the equipment out of the allowed range of temperature: from -20 °C to +40 °C.

It is forbidden to use the equipment with non-original spare parts or components without the authorisation of the Manufacturer.

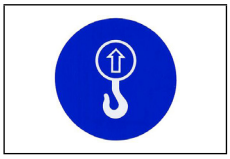
It is forbidden to carry out any modification or structural intervention without the authorisation of the Manufacturer.

It is forbidden to tamper with any seal of the machine components.

It is forbidden to connect the equipment to the auxiliary system of the working machine with maximum capacity and/or pressure higher than those indicated by the Manufacturer.

It is forbidden to use the equipment controls from a position different from the one set for the operator on the working machine, or without wearing proper personal protective equipment (helmet, gloves, goggles, safety belts, etc.).

It is prohibited to use equipment lifting points other than those marked.



Environment

It is prohibited to use the equipment in areas with risk of fire.

It is prohibited to use the equipment in explosive and corrosive environments.

It is prohibited to use the equipment in closed environments not provided with a suitable air exchange system.

It is prohibited to operate the equipment at a distance from aerial and underground electrical lines less than the minimum distance allowed the regulations in force in the country of installation.

It is prohibited to operate with poor lighting.

Residual risks and dangers

Below is a list of the risks and dangers that the design and manufacturer cannot prevent.

During the use

- Danger of crushing and impacts during equipment hooking operation.
- Danger of entrapment and dragging caused by the use of unsuitable clothes.
- Risk of collision with equipment, fixed infrastructures, mobile objects and elements in the work area, if the necessary operating areas are considered and in case handling is careless, approximated and not carried out with attention.
- Risk of collision with resulting crushing dangers for people and/or workers present in the work area.
- Risk for personal safety when two operators must be present in the work area and the operator using the equipment begins to move it before the collaborator has moved away, or moved his limbs away, from the danger zone.
- Risk for personal safety when assembling/disassembling parts, accessories or components and the workers are without the necessary personal protections (safety-helmet, gloves, shoes, etc…).
- Risk of harm to the personnel in the area when shifting with the bucket provided with teeth, but without the necessary protection.
- Risk of collision with fixed and moving infrastructures along the way (e.g. parked or moving cars, doors, gates, etc.), if the equipment is not positioned properly on the ground after use.
- Risk of crash with fixed and mobile structure along the way, if you do not insert the safety locks in all the mobile parts accessories and devices that need to be locked.
- Risk of equipment instability in case of ground not solid enough to support pressure caused by stabilisers.

During maintenance

Risk of damage to the equipment with consequent danger, if:

- parts or elements of the equipment are replaced with non-original spare parts;
- operations or interventions NOT authorised by the Manufacturer are carried out;
- interventions by shops non-authorised by the manufacturer are carried out.

General risks for the operators and exposed people

If people do NOT stay and/or transit at a safety distance, they can incur:

- Danger of amputating
- Danger of running down
- Danger of crushing
- Danger of impact with consequent falling down

Operating instructions

Placing and working

Attention

Correct and safe use requires operator to check the equipment and the proper fastening of the mechanical retainers before beginning operation.

In case of anomalies contact the authorised Service.

Danger

If the equipment is applied to a farm tractor, ensure to lock the control lever of the hydraulic lifter.

Danger

Equipment must be exclusively handled by lifting, using a crane with suitable load capacity, law-compliant lifting accessories in good working order, to be connected to the points provided. Only qualified and trained personnel can be used for lifting operations.

Danger

If too many and too large objects are found along the way, the equipment could be damaged and they could be a source of danger for objects, persons and animals along the work path and not at the due distance.

Keep objects, persons and animals at a safety distance (10 m).

Support plates transmit pressure forces to stabilisers on the ground. When the pressure of the surface of support plates exceeds the pressure allowed on the ground, the support surface must be increased by placing suitable plates or a base of stable material (hardwood planks, etc.). Plates or planks must be positioned so that plates of stabilisers rest in the middle of the support surface. The needed support surface must be calculated according to the reaction of stabilisers and the capacity of the ground.

The reaction of stabilisers changes according to the machine on which the backhoe is installed. If you do not have more exact evidence, consider a reaction equal to the weight of the tractor, plus the weight of the backhoe.

Danger

It is strictly forbidden to work with the backhoe without using stabilisers.

Moving, travelling and parking

Always position the equipment in the middle of the operating machine upon which it is mounted in order not to jeopardise safety during movements or travel.

Attention

Block all the pins with the specific cotter pins before driving or moving the equipment.

If necessary, restore the efficiency of the pins, shear pins and blocks, calling directly the closer Authorised Service Shop.

Equipment and accessories can remain anchored while moving or driving as long as parameters of law relative to maximum allowed clearance dimensions are complied with. Make sure they are blocked/fastened.

However respect the prevailing standards.

Positioning/parking the equipment must not represent a hinder, if there are no prior indications and authorisations, to:

- safety doors, pedestrian crossing and transit ways;
- exits ways in case of danger, doors and private entrances, driveways;
- the visibility of signals (road-signs, warning signs, signal lights etc…).

Visibility and Lighting

Before proceeding with works, check if the minimal standards of visibility have been respected, avoiding overcast and not well-lit environments (fog, smokes etc).

Do not proceed to any operation if reasonable safety and visibility levels are not ensured.

Electric discharges

An electric discharge endangers the life of all exposed personnel; it is therefore recommended to keep the equipment and the load at the distance indicated in the following table.

Un (kV)	D (m)
≤ 1	3
1 < Un ≤ 30	3.5
30 < Un ≤ 132	5
> 132	7

where:

Un = Nominal voltage

D = Distance

Should there be contact between the equipment and electrical lines or should the distance between them be reduced (due to wind, swaying, etc.) causing dangerous discharges, you must:

- keep personnel and animals present in the area at a distance of at least 10 m from the equipment, from the operating machine or from the load;
- all personnel within a 10 m range must quit the area hopping with their feet together;
- avoid contact with the equipment and operating machine;
- warn personnel in the surrounding area of the looming danger, forbidding them to approach or to touch the equipment and operating machine;
- if your position is free from dangers, do not try to go away, but keep staying in your position waiting for specialised aid, do not touch any object or metallic part different from those you are already in touch with;
- the operators who are in the vehicle cab must remain still in that position, waiting for skilled assistance.

Safety distance from channels

Work with the backhoe at a safety distance from scarps and channels. Safety distance depends on the type of channel or scarp (propped up or not), and it mainly changes according to the type of ground. A rule of thumb to calculate the minimum safety distance is:

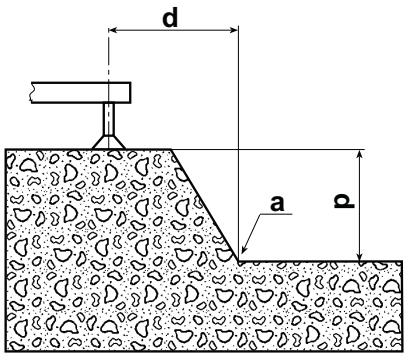
- In case of compact ground, the minimum safety distance "**d**" corresponds to the channel depth "**p**"

d = p

- In case of friable or unstable ground, the minimum safety distance corresponds to twice the channel depth

d = 2 x p

Safety distance is measured from the foot of the channel "**a**".



The operators

Every operator has some jobs to do and he must respect them.

The operating figures involved in the use of the equipment can be summarised as follows:

Operator of the equipment and driver of the operating machine

- before using the equipment in work sites or industrial areas, asks the area safety manager detailed information on any dangers present in the area where the operating machine is going to be operated and on dangers that might be created by using the equipment.
- Chooses a suitable place where to operate and park the operating machine with the equipment.
- Delimits the work area to avoid the access of non-authorised people.
- Assesses path to be run with the load and its dangers considering any obstacles on the way.
- Places the equipment in the rest position to transport under maximum safety.
- Makes a visual inspection of the equipment to search for possible faults.
- Makes sure the plates applied on the equipment are in good conditions and well readable.
- Makes sure the equipment is in the correct rest position.
- Drives the vehicle set up with the equipment from one workplace to another under full safety conditions.

Routine maintenance operator

- Checks equipment general conditions, wear of sliding parts, flexible hoses and looks for any leaks.
- Carries out the routine maintenance operations as envisaged and at the intervals specified in this manual.
- Reports unexpected situations to authorised workshops and to the owner of the equipment (such as wear, failure, breakage, etc.).
- Fills out the servicing checks.

Depending on the maintenance operations to be performed, the person assigned to routine maintenance must use the following PPE:

CLOTHES Use of suitable protective clothing to prevent from being entangled in mechanical parts of the equipment or of the operating machine.

GLOVES Use of protective gloves to avoid cuts, perforations or picks caused by mechanical parts non-correctly trimmed.

SHOES Use of safety shoes to avoid risks caused by the falling down of materials or devices used during routine maintenance operations.

GOGGLES Obligation to protect eyes with goggles or protective screens when operating close to parts of the pressurised hydraulic circuit and/or during machine cleaning operations.

Site or work area safety manager

- Inform the operator in charge of using the equipment about:
  - dangers present in the work area and those that might arise by using the operating machine;
  - possible presence of workers in the danger area (manoeuvre area of operating machine) who, due to particular tasks, cannot leave the work place;
  - possible release of hazardous substances into the air or the ground which could jeopardise the safe execution of work;
  - safety devices compulsory in the working area.

Equipment safety manager

- Informs the equipment operator about dangers which may arise by using it.

Danger

The equipment safety manager must monitor that the equipment is not used improperly; namely that it cannot endanger the health of the operator, of exposed persons, of animals and materials present in the work area.

Safety devices

Danger

It is forbidden to tamper with the safety devices; before using the equipment, make sure that all devices are installed and properly in place and/or working.

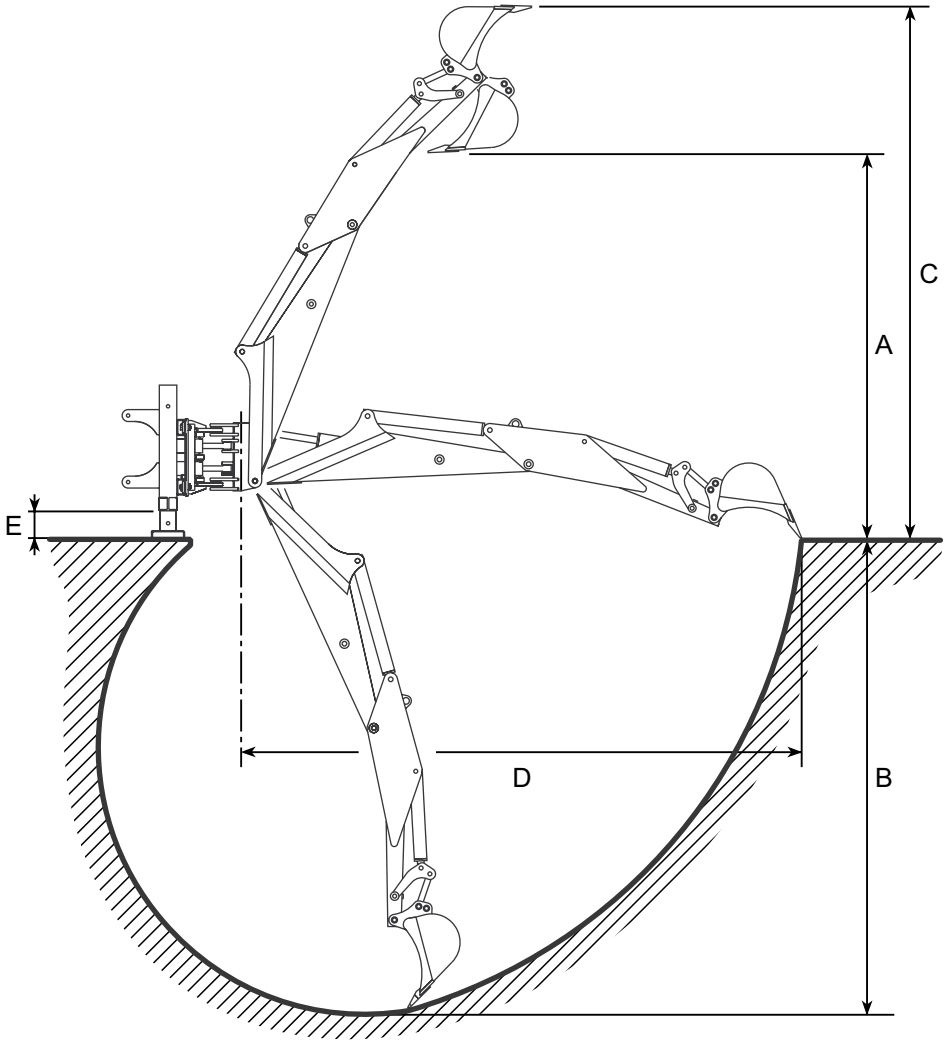
The equipment features the following safety devices:

- Fixed protection guards (casing and/or grates). The machine danger areas are equipped with fixed protection guards. These guards are fixed (for example through screws, nuts, welding) and can only be opened or removed using special tools. This way the access to machine dangerous areas can occur only intentionally, for example in order to carry out maintenance or repair operations. Such operations are allowed only with the equipment at standstill and with working machine engine off.
- Safety plates and marking. To know the position and meaning of safety plates and markings on the machine, consult the relevant chapter in section B - DESCRIPTION.
- Hydraulically piloted shut-off valves which, placed on hydraulic stabilizer cylinders, lock the cylinder movement in case of lack of pressure.
- Pressure relief valve placed on the hydraulic distributor that limits the maximum working pressure. This valve is sealed with red paint during workshop testing. Calibration pressure of the maximum pressure valve varies according to the model of backhoe.
- Pin and connecting rod to be installed when the equipment must be transported. The pin allows stopping the descent and of the rotation of the main arm, while the connecting rod locks the swinging arm.

Attention

Some safety devices are sealed (in some cases with red paint) by the Manufacturer during equipment testing. These seals can be removed by the Manufacturer of the Authorised Workshop only. After repair, they shall seal again the device according to the indications of the Manufacturer.

Technical specifications



Hydraulic backhoe “basic” and “deluxe” line

	E24	E28	E32
A (mm)	1975	2317	2588
Digging depth B (mm)	2477	2753	3257
C (mm)	3012	3358	3700
D (mm)	3195	3500	3975
E (mm)	150	150	150
Tooth breaking strength (kg)	1570	2300	2280
Weight without hydraulic system (kg)	520	750	1020
Operating pressure (bar)	160	170	170
Maximum pump flow rate (l/min)	20	30	55
Standard movable frame width (mm)	1400	1600	1600
Standard digging bucket (mm)	300	300	300
Rotation with superimposed cylinders (°)	180	180	180
Reaction of stabilisers	(*)	(*)	(*)

(*) Variable according to the machine on which the backhoe is installed. This data must be provided by the installer. Unless you have more precise measures, we suggest considering a reaction equal to the total weight of the machine plus the weight of the backhoe.

Features of working machine

	E24	E28	E32
Total mass daN (kg)	1500÷2300	2500÷3000	3000÷5500
Power kW	29÷44	37÷59	51÷66
Power HP	40÷60	50÷80	70÷90
Maximum pump flow rate (l/min)	60	80	80
Maximum pressure (bar)	160	170	170

Optional accessories

	E24	E28	E32
Digging bucket (mm)	250÷600	250÷600	300÷700
Trapezoidal bucket (°/mm)	45°/200	45°/200	45°/250
Ditch cleaning bucket (mm)	800÷1000	800÷1000	800÷1000
Demolition hammer daN (kg)	ARIETE 90	ARIETE 90	ARIETE 150
U.Emme auger (mod. - Drill Ø)	TR 10 - 150÷500		TR 20 - 200÷600

Acoustical noise

The backhoe is an interchangeable piece of equipment, i.e. cannot operate if not coupled to a thrust vehicle, the noise generated does not consequently exceed the one generated by the working machine.

The user must therefore make sure that the acoustical noise of the vehicle used (farm tractor, operating machine) is within the maximum limit of 80 dB(A).

This measurement must be carried out from the driver's seat of the vehicle.

Should the limit of 80 dB(A) be exceeded, appropriate personal protective equipment must be used (earmuffs, earplugs, etc).

Compatibility chart

SSL CTL		Duty	Length (mm)	Height (mm)	Width (mm)	Capacity (m^3)		PN	Flow Type	SR 130	SR 150 SR 160	SR 175 SV 185	SR 200 SR 210	SR 220 SR 240	SV 250 SV 280	SR 250 SR 270	SV 300 SV 340	TR 270	TR 310	TR 320 TR 340	TV 370 TV 380
BACKHOE (STD w mec side shift blocage; DELUXE w hyd side shift blocage, hammer line)																					
	E24 - STD						520	47748627	STD	x	x										
	E24 - DELUXE						520	47748631	STD	x	x										
	E28 - STD						750	47748629	STD			x	x	x							
	E28 - DELUXE						750	47748632	STD			x	x	x							
	E32 - STD						1020	47748630							x	x	x	x	x	x	x
	E32 - DELUXE						1020	47748639							x	x	x	x	x	x	x
CHOOSE BUCKET	OPT - E24 - Buckets	STD			250		80	47751823		x	x										
		STD			300		90	47751828		x	x										
		STD			400		100	47751830		x	x										
		STD			500		120	47751832		x	x										
		STD			600		130	47751834		x	x										
	OPT - E28 - Buckets	STD			250		80	47751847				x	x	x							
		STD			300		90	47751848				x	x	x							
		STD			400		100	47751849				x	x	x							
		STD			500		120	47751850				x	x	x							
		STD			600		130	47751851				x	x	x							
	OPT - E32 - Buckets	STD			300		80	47751858							x	x	x	x	x	x	x
		STD			400		90	47751860							x	x	x	x	x	x	x
		STD			500		100	47751861							x	x	x	x	x	x	x
		STD			600		120	47751862							x	x	x	x	x	x	x
		STD			700		130	47751863							x	x	x	x	x	x	x
		STD			800		140	47751864							x	x	x	x	x	x	x

Foreword

The following section carries information regarding handling and moving the equipment.

Comply with all general and specific regulations regarding lifting means and handling and transportation operations, even if not specified in this document.

Before starting working with the machine, it is necessary to have read and learnt the sections of this manual, in particular section C - “Safety”.

You must also comply with the specific safety prescriptions in this section to safeguard the operator and the equipment.

Safety requirements

Lifting and handling operations must be carried out with means suitable for the weight to be lifted and handled.

Attention

Operating lifting and handling means must be entrusted to authorised personnel, qualified for their use.

It is the owner’s task to find staff qualified for machine lifting and transport, as well as suitable lifting means.

The manufacturer declines all liability related to the use of unsuitable lifting means.

Always use lifting accessories in perfect conditions and suitable for the weight of the equipment or parts to be lifted.

When moving and lifting the equipment, keep the manoeuvre area free from material, objects and persons.

During lifting and handling operations, adopt the necessary precautions in order to prevent the part being handled from falling and/or the means overturning.

Attention

Move the equipment very slowly.

Do not cause blows or jerks and lift the equipment to the minimum indispensable height from the ground.

Attention

For handling and positioning, use lifting means suitable to the weight to be handled (see section “Technical specifications”).

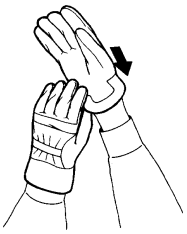
All staff, included the operator, will have to keep at a safe distance.

The distance must take into account the hazardous situation which can occur during an unexpected event such as the breakage of a chain or eye-bolt and the consequent overturning of the load.

Attention

Do not climb onto the equipment for any reason whatsoever.

Before starting lifting operations ensure you are wearing the following personal protective equipment (PPE):

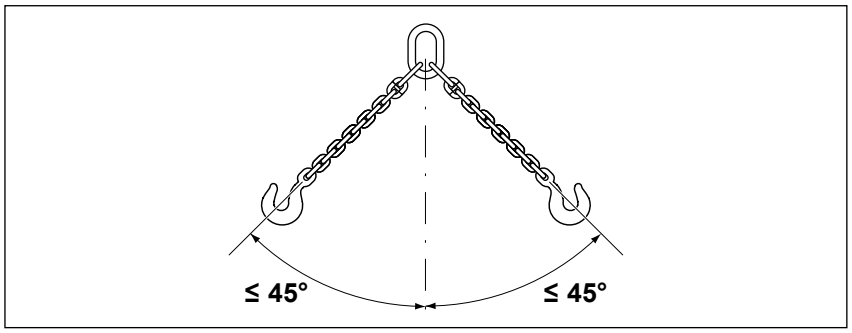
	Helmet
	Cut-resistant gloves
	Safety footwear with reinforced toecap and non-slip sole

Lifting

Lifting accessories and harnessing accessories must always be in excellent condition, suitable in relation to the weights to be lifted, in compliance with statutory regulations in force in the country of use, and used in compliance with the manufacturer's instructions and/or the relevant technical standards.

For lifting it is necessary to use chains that allow the machines to be connected to the indicated points (see paragraph "Intended hooking points").

It is crucial that the angle between the chains and the vertical line **does NOT exceed the angle of 45°**.



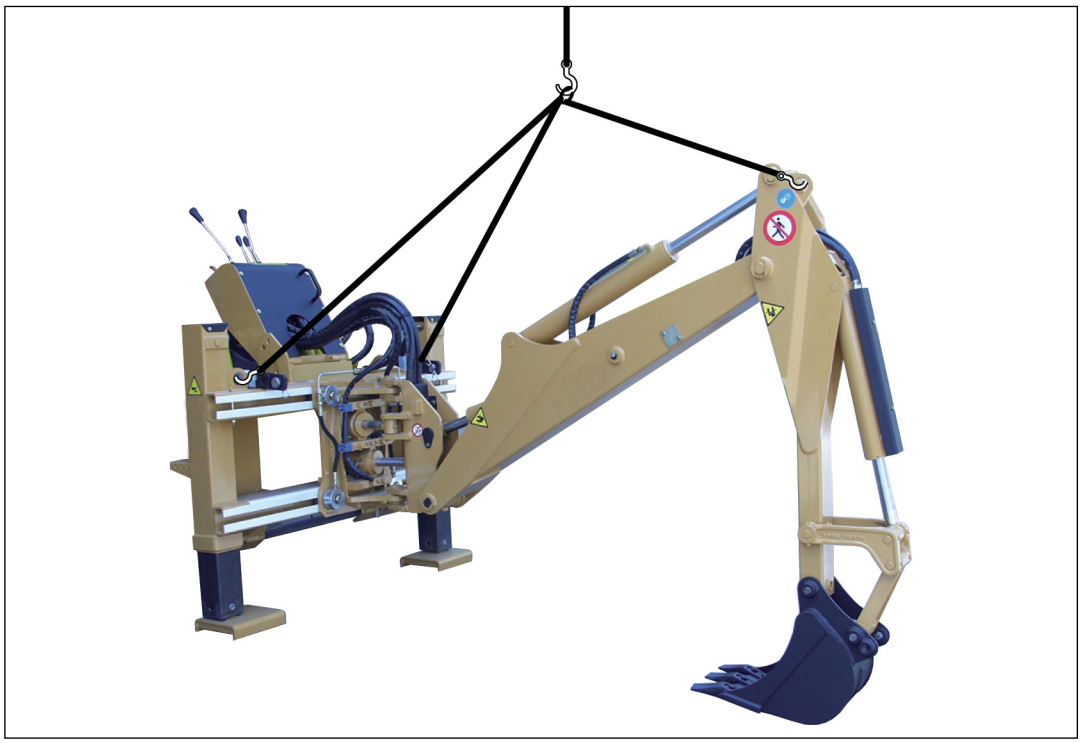
Attention

An angle wider than 45° determines a high stress both on the sling parts and on hooking points, with a high risk of damage and breakage.

Intended hooking points

For lifting and handling of parts, use the lifting points arranged by the Manufacturer.

The lifting points are easily recognisable because highlighted by a pictogram.



It is prohibited to hook the equipment in points other than those envisioned or indicated.

Attention

Damaged pins of the lifting points, hooks or chains are very dangerous because they can break suddenly without prior warning.

Should they be damaged (twisted, loose, corroded etc.) have them scrapped immediately so that other operators, unaware of the danger, use them.

Never utilize used accessories if you are not sure they are intact.

Handling and/or storage

Handling and lifting operations must be carried out by specialised companies operating in the machinery transportation sector; these operations can only be carried out in safe conditions with adequate skill and using proper means.

During lifting procedures:

- use the utmost caution;
- keep all persons clear of the area of operations;
- do not allow persons to walk or stand under or in the vicinity of suspended loads;
- lift loads to the indispensable minimum height;
- move the load slowly, without causing blows or jerks,
- keep the manoeuvre area free of materials and clutter;
- use rods long enough for leading the load.

All staff, included the operator, will have to keep at a safe distance.
The distance will have to consider the situation of danger that could arise during an exceptional event, like the break of a chain, a hook and the resulting overturning of the load.

Packing

Removing the packing (if present)

The packing conditions are strictly related to the method of transport and the dimensions of the parts.

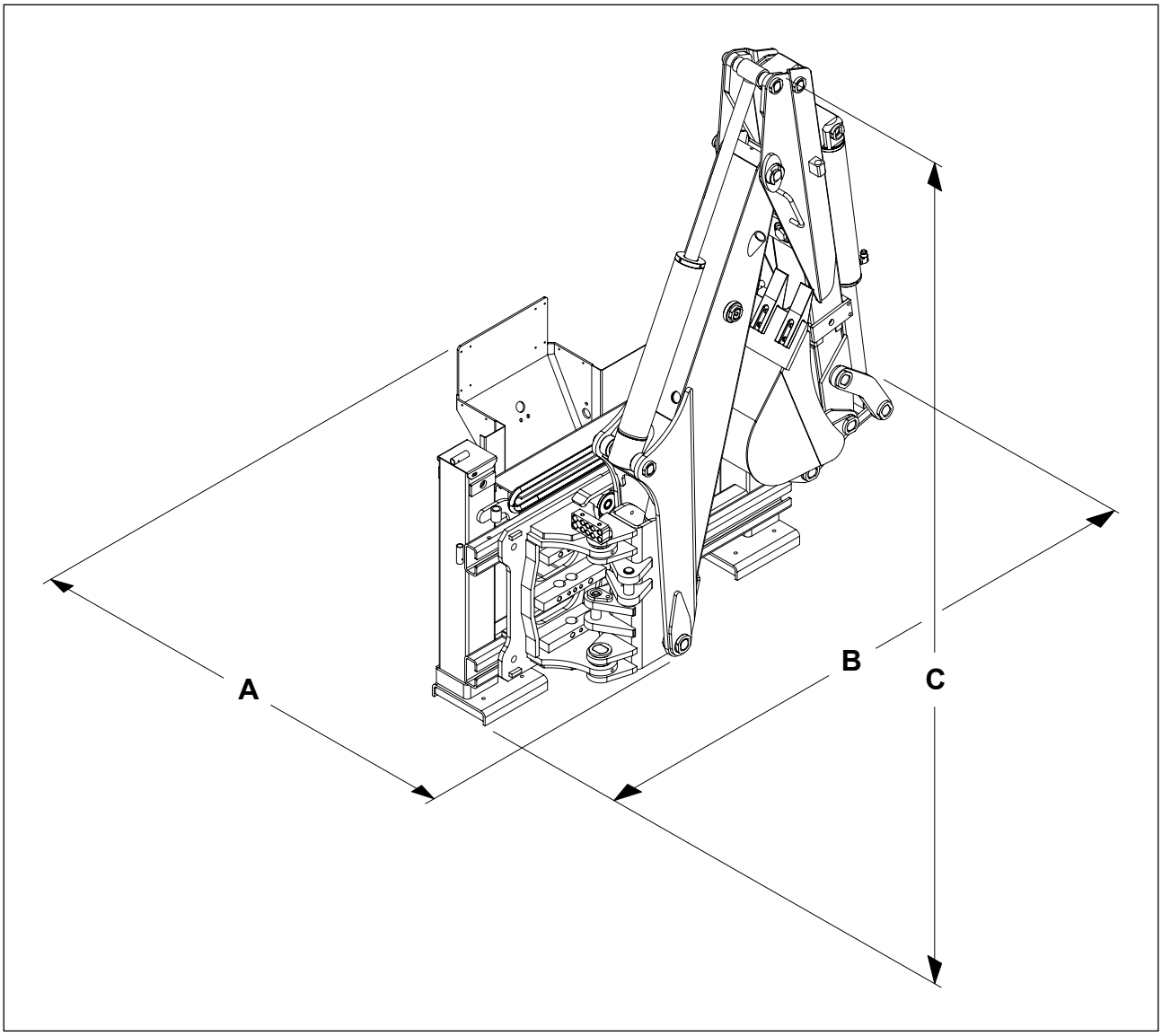
While removing packing material protect hands, feet, head, etc. by means of personal protective equipment (PPE) in compliance with standards and in good condition.

Attention

Remove the packing components making sure to separate the materials used to protect the equipment.

Do not pollute the environment with packing, dust, scraps or chemical products. Dispose of them correctly as dictated by local laws.

Dimensions, weights and lifting diagrams



Note

Dimensions and weight of the equipment vary according to the version required and the type of package. To know dimensions and weight of your equipment, please check indications in the relevant delivery note.

Checking the equipment

Upon delivery, make sure all the parts are included and have not been damaged during transportation; immediately report any defects to your retailer, to the carrier or to the manufacturer.

Pre-delivery checks

The equipment leaves the manufacturing company with all its parts in perfect working order.

In any event, the Retailer, upon delivery to the User, must check the following:

- the hitch for connection to the operating machine,
- all safety stickers indicated in this booklet must be present and legible,
- screws and bolts must be tightened all the way,
- the overall aspect of the equipment must not show imperfections.

Danger

The Dealer must deliver and have the user examine and thoroughly read this manual, which must be kept by the user for the entire life of the equipment.

Foreword

Danger

Thoroughly comply with the safety indications stated on the previous pages.

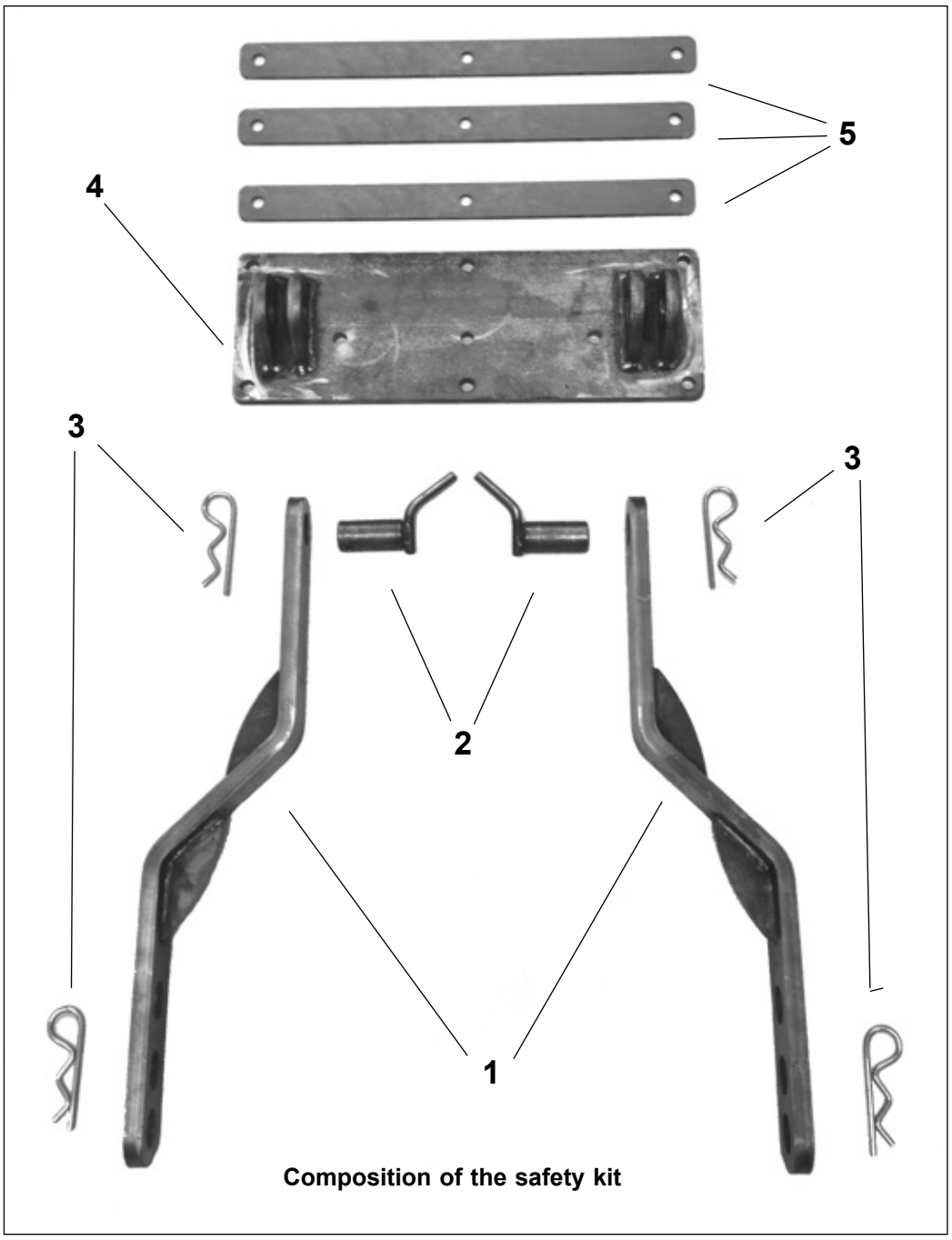
As every operating machine has a tool-holder frame that is different from that present on another one (even if conceptually they can be similar) the information supplied is only general on this type of installation.

More detailed information can be requested to the operating machine Manufacturer.

Installation of upper hooks

Installation of hooking supports on bolted plate (safety kit)

The backhoe is an equipment that creates very hard stress on the working machine. For this reason, in addition to the hooks equipped with quick coupling device placed on the tool carrier plate, named “safety kit”. This kit is composed by two supports (**1**) with three different positions on the side that will be fastened on the backhoe frame, while on the opposite side the two supports will be hooked through two pins (**2**) ensured with safety cotters (**3**) on suitable coupling flanges applied to the frontal plate bolted on the machine frame (**4**). The kit is completed by three plates (**5**) to apply in the rear part of the machine frame, bolted at the same highness of the frontal plate (**4**).



Composition of the safety kit

The safety kit is supplied by the Manufacturer together with the backhoe and must be installed on the operating machine as follows:

Attention

Assembly and adjustment of the upper hooking supports of the backhoe must be carried out by skilled and qualified personnel. We advice to commission the first installation to a workshop authorised to operate on the working machine.

ATTENTION. Never align holes using your fingers; use a suitable centring device.

Assembly of the frontal and rear plates to the operating machine frame

- Apply the bolted plate (**4**) at the holes available on the frontal machine frame by inserting the proper bolts provided with the supports.
- Place the three plates in the rear part of the machine frame, bolted at the same highness of the frontal plate (**5**).

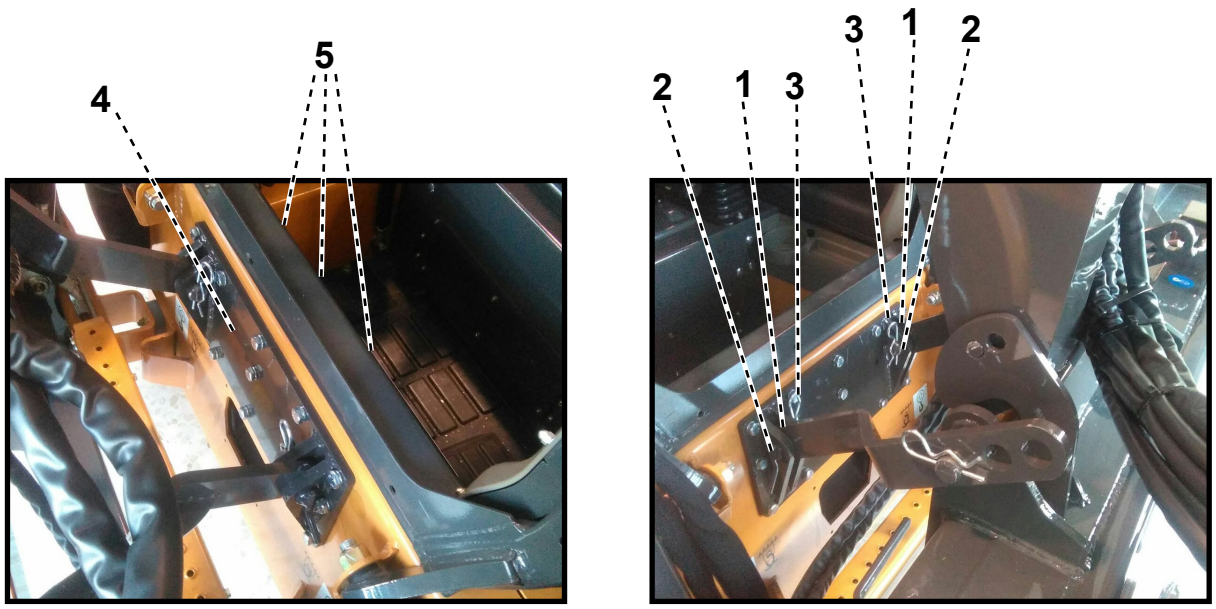
Attention

If plate fixing holes are not available in machine frame refer to a workshop authorised by the Manufacturer of the working machine.

Assembly of upper auxiliary supports

These supports or brackets are designed to compensate the stress produced by the backhoe and to be assembled and disassembled in an easy and quick way:

- Insert the pin of the auxiliary supports (**1**) in the hole available on the coupler flanges of the bolted plate on operating machine frame.
- hook through the pins (**2**) the auxiliary supports to the coupler flanges and ensure them with two safety cotters (**3**).



Installation of backhoe on tool holder frame

Attention

Our backhoes, in their package and transport configuration, have stabilizer feet partially out and arms folded up and locked by proper safety stops and connecting rods, in order to ensure a safe stability in vertical position.

To properly install the backhoe on the working machine, proceed as follows:

- Place the backhoe on a flat surface, large enough to be able to carry out all the approaching operations in complete safety.

Danger

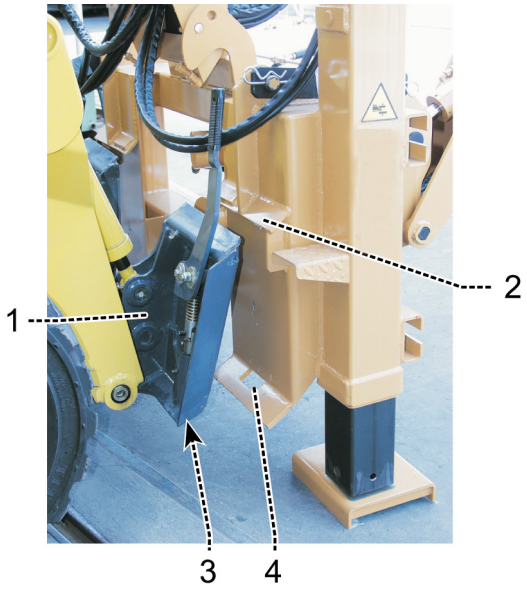
If the backhoe must be lifted or moved, refer to section E - Lifting and Handling.

- Put the front part of the machine aligned to the middle of backhoe frame, stopping at about 50 cm from it.
- Unhook quick coupling devices placed on the tool holder plate of the working machine by moving the proper lever(s).
- Turn levers (**5**) in order to release the quick coupling device of upper hooking arms of the backhoe.
- Lower and tilt the operating machine tool support plate (**1**) forward.
- Approach with the machine and insert the tool holder plate under the relevant seat (**2**) on the backhoe frame, paying great attention to perfectly match the coupling seats.

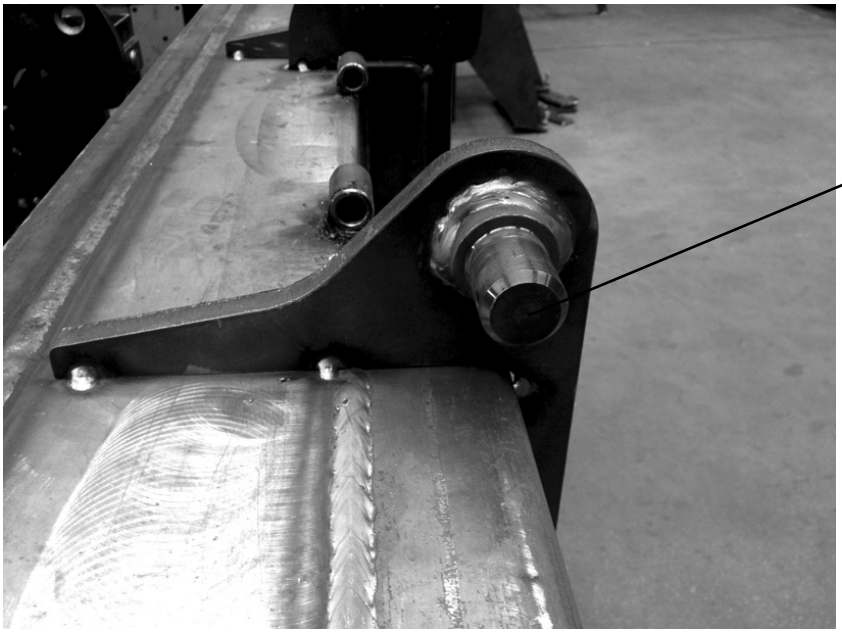
Danger

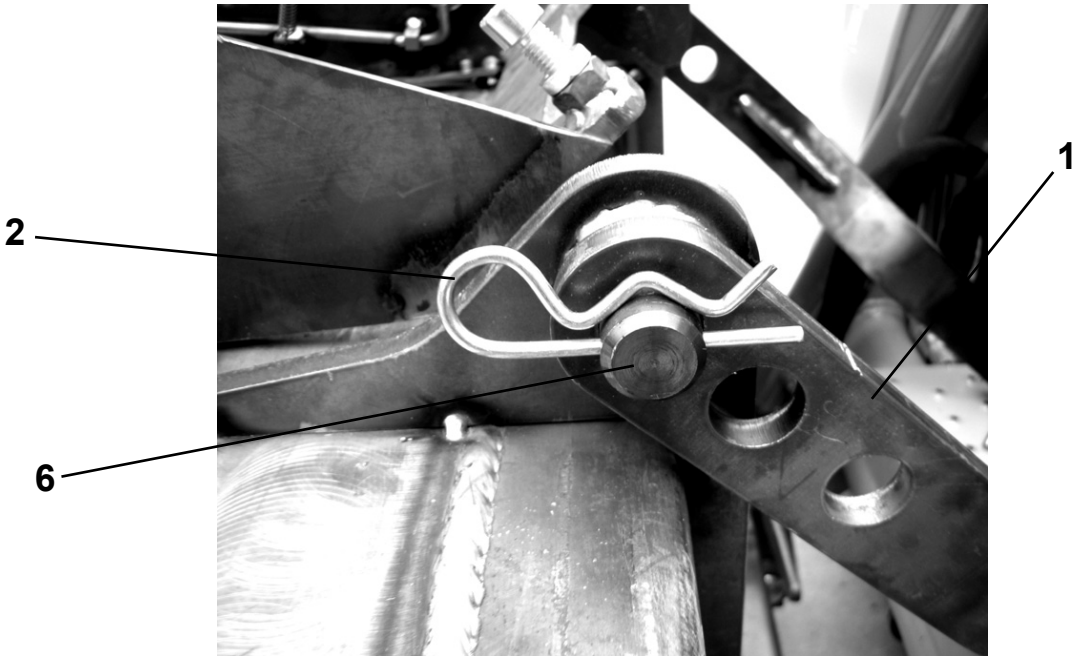
Perform all connection operations using the working machine at a very low speed, activating the controls with extreme caution and attention, to prevent the backhoe from overturning.

- Slowly lift and tilt the upper part of the working machine connection plate slightly backwards, so as to make the lower quick coupling devices (**3**) match the respective holes (**4**) on the backhoe frame.
- Move the tool holder plate quick coupling device levers to the lock position to fix the backhoe on the working machine.



- Make the auxiliary supports free ends match the relevant seats (**1**) on the backhoe frame and insert pins (**6**) fastening them with safety cotters (**2**).
- Check that the wedges or pins of the quick-coupling devices are inserted perfectly inside their seats.





Hydraulic connection

Backhoes of the industrial series are equipped with “Send” and “Return” rubber pipes provided with quick couplings, suitable to be connected to the respective joints of the machine auxiliary hydraulic system.

- Define which joint of the machine is the “Send”, since the “Send” pipe of the backhoe circuit must be connected to that joint. It is important to know that the delivery pipe of the backhoe is always the one connected on the side of the maximum pressure valve (**1**) of the distributor. This pipe must be connected to the delivery pipe of the machine circuit (see relevant Use Manual).

Attention

The first time you connect the backhoe to the machine, check that the send pipe of the backhoe corresponds to the one of the working machine.

Danger

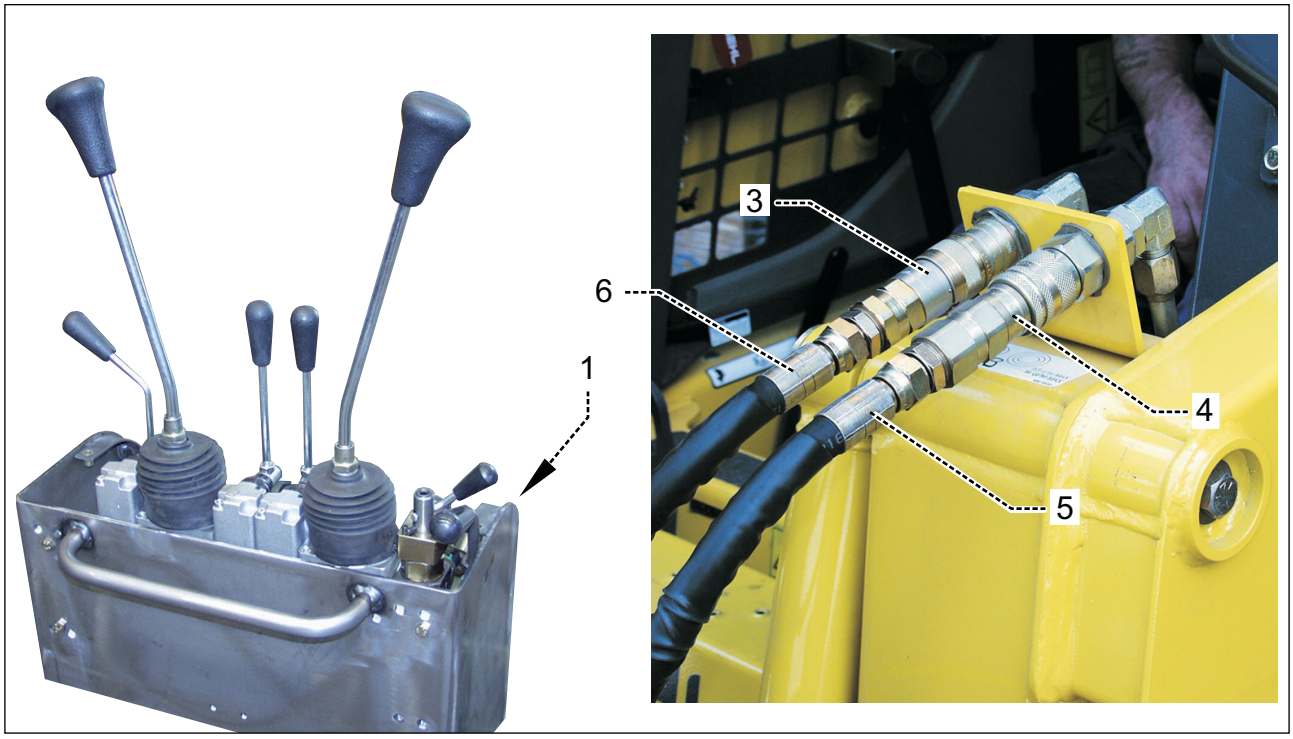
Before connecting quick couplings, make sure that machine engine is at a standstill and the hydraulic system is not under pressure.

- Remove protection plugs from quick couplings.

Note

Perfectly clean the backhoe and machine quick couplings before connecting them.

- Connect quick couplings of pipes (**5-6**) of the backhoe hydraulic system to the respective joints (**3-4**) of the machine auxiliary system. These pipes are equipped with different quick couplings (male and female) to avoid a wrong connection. If pipes are inverted, it is absolutely necessary to remove quick couplings of backhoe pipes and invert them.



Attention

If the auxiliary system of the machine is controlled by a double-acting distributor (or three-way diverter), check how the control lever (or push button) shall be activated, to have oil under pressure (Delivery) on the quick coupling corresponding to “Delivery” of the distributor placed on the backhoe. Signal and lock the position of the lever on the machine to avoid to accidentally invert the oil flow direction. Invert “Delivery” with “Return” may compromise the backhoe operation and damage the hydraulic system.

At the end of backhoe installation operations, activate the auxiliary hydraulic circuit of the machine and carefully check the operation of controls, one at a time. Check that there are no leaks or oil leakage.

Attention

Make the machine operate empty for some minutes using all cylinders to bleed the hydraulic system from remaining air. This operation must be carried out every time that the backhoe is installed on the machine, or every time you notice a jerky movement of cylinders.

Bucket adjustment

Connection of connecting rod on hole (**1**) or hole (**2**) influences the backhoe performance both in breakout force and in the closing or opening angle of the bucket as follows:

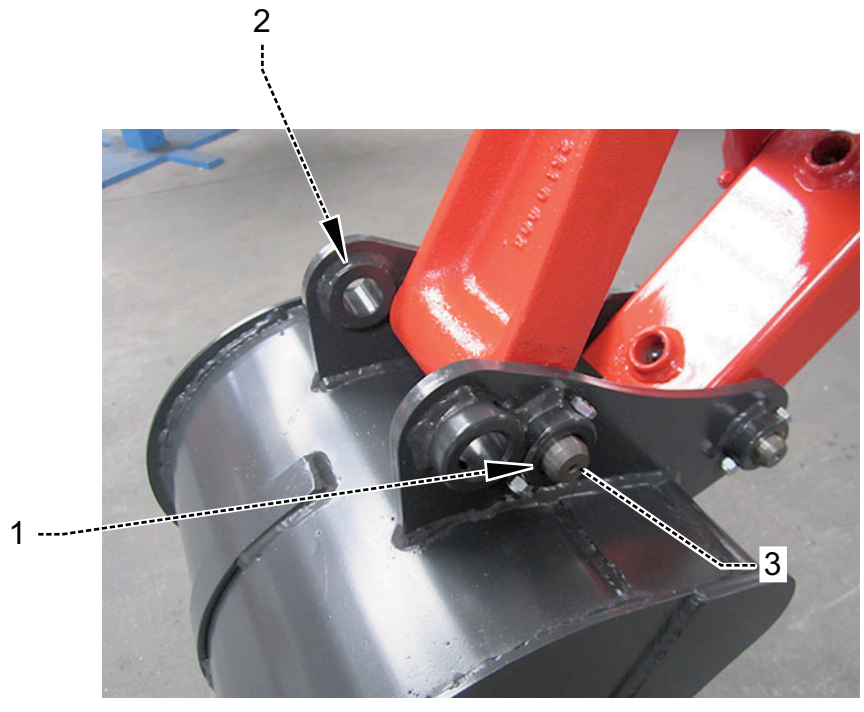
- With connecting rod in position (**1**) there is a greater digging force and a smaller rotation angle of the bucket, so this position is particularly suitable to work very solid grounds.
- With connecting rod in position (**2**) there is a lower digging force and a wider rotation angle of the bucket, so this position is suitable for soft grounds or .melted material.

To change the connection point of the connecting rod, lean slightly the bucket on the ground on a flat surface so that it does not overturn after having extracted the pin that fixes the connecting rod and operate as follows:

- Engage the parking brake and stop the machine, or stay at the control position with the parking brake engaged and seek the assistance of another expert equipped with safety clothes (gloves, safety footwear, etc.).
- Unscrew and remove screws that lock the pin (**3**).
- Extract the pin (**3**) that fixes the bucket with the connecting rod. If the pin resists, use a plastic hammer and a punch obtained from a brass or aluminium bar to avoid the deformation of the pin and the accidental ejection of splinters.
- Warn the person who removed the pin to keep a safety distance, then activate with great care the distributor lever that controls the bucket motion cylinder, until the hole on the connecting rod end matches the suitable holes on the bucket.
- Insert the pin (**3**) using a plastic hammer and lock it with its screws.

Danger

Never align holes using your fingers: use a suitable centring device.



Equipment removal

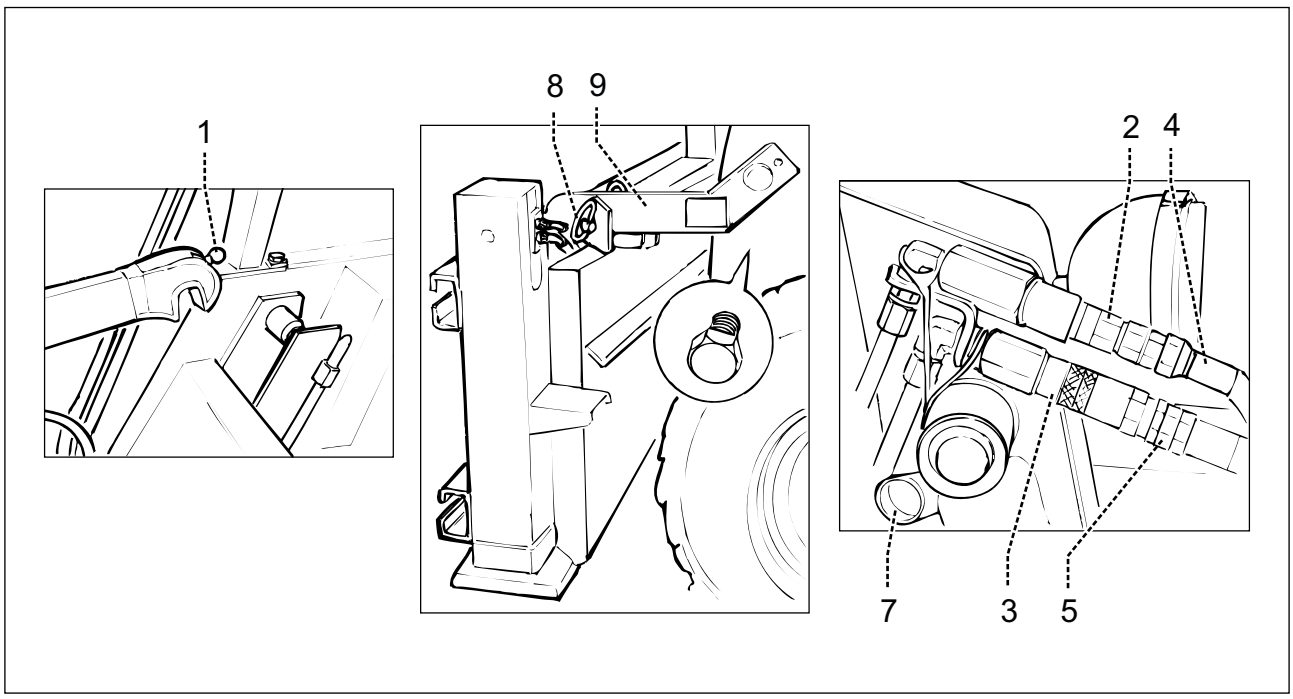
Disassembly procedure

- Select a flat surface on which to place the backhoe, making sure it is protected as much as possible from atmospheric agents and from access of unauthorised persons, and proceed as follows:
- Lay stabilizing feet on the ground keeping the backhoe frame in horizontal position.
- Rotate the backhoe arm so that it makes an angle of 90° with the frame.
- If the backhoe is equipped with telescopic swinging arm, make it retract completely and lock it with the suitable pin and the safety pin.
- Completely lift the main arm, open the bucket and lay it on the ground keeping the swinging arm slightly open, in order to have, with stabilizing feet lowered, three support points on the ground.
- Discharge the pressure in the machine auxiliary system as recommended in the relevant Use and maintenance manual, and disconnect the auxiliary hydraulic circuit.
- Switch off the machine engine, engage the parking brake and remove the key from the dashboard.
- Wear safety clothes (overalls, gloves, goggles, etc.).
- Disconnect pipes (**4**-**5**) of the backhoe hydraulic system from the relevant quick couplings (**2**-**3**) positioned on the machine, and insert the protection plugs (**7**) on all fittings.
- Remove the safety cotters from the pins fixing the auxiliary supports to the plate bolted at machinery frame and extract the auxiliary supports from the coupler flanges (**1**).
- Remove pins (**8**) fixing the upper side of the backhoe frame on auxiliary supportss (**9**).

Danger

Perform these movements slowly and at very low speed to avoid compromising the backhoe stability.

- Climb into the driver’s seat of the machine and start the engine.



- Lower and tilt the machine tool holder plate forward, so as to make it come out of its seats on the backhoe frame.
- Reverse the operating machine.
- Check the perfect backhoe stability.
- Lock the distributor levers to prevent accidental movements that may compromise its stability.

Attention

During this operation pay close attention not to move the distributor levers.

Danger

Make sure that people from outside cannot reach the backhoe or its control levers.

- Make sure that free pipes are closed with proper protection plugs, or connect them together using the quick coupling.

If the backhoe is left outdoors for a long time, it is recommended to cover it with a breathable sheet to protect it from the weather. Periodically check pipes and gasket seal.

General warnings regarding the controls

- Keep all machine controls in perfect working order at all times.
- Ensure the controls identification plates are always perfectly readable.
- Do not place beverages or other liquid containers on the control console or on other electrical equipment to avoid electric shock hazard in the event of spillage of liquids on electrical parts.

Attention

Before restarting the machine or parts of the machine after an emergency stop, ensure that the causes of the emergency stop have been remedied, and check carefully that there are no persons or obstacles in potentially dangerous areas.

Controls

Backhoes are equipped with series distributors with 6/7/8 components, each of which is provided with anti-shock valves.

Distributor controls are of the lever type with automatic return to zero position, after release, excluding the control for sideshift lock. A maximum pressure valve is inserted in the distributor, calibrated by the Manufacturer during workshop testing. Functions of levers are indicated on the plate positioned near the distributor, through unified symbology pursuant to the law. Symbols used indicate the effect obtained by moving the lever in the direction of the arrow. On demand, backhoes may be supplied with one of the following distributors:

Type A

Modular distributor with 6 standard elements or 7 elements with AUX for breaker hammer line and hydraulic blocking of the arm'side shift on the frame (Deluxe Version only); suitable for backhoes model: **E24 - E28 - E32**.

Limited movements of the levers allow carrying out small and gradual movements. To reach to maximum motion speed, bring levers to the end of stroke. Avoid keeping levers at the end of stroke too long, when cylinders have reached the end of stroke as well, to avoid an excessive oil overheating with consequent energy dispersion and deterioration of cylinder gaskets. The distributor is equipped with maximum pressure valve, calibrated by the Manufacturer during workshop testing, which limits and maintains a system constant maximum pressure.

Hydraulic sideshift control in distributors is equipped by piloted one-way valve, then after having moved the relevant lever to "Free sideshift" position, it is necessary to operate one of the distributor levers to allow the opening of hydraulic vices that lock the base on the frame slide guides.

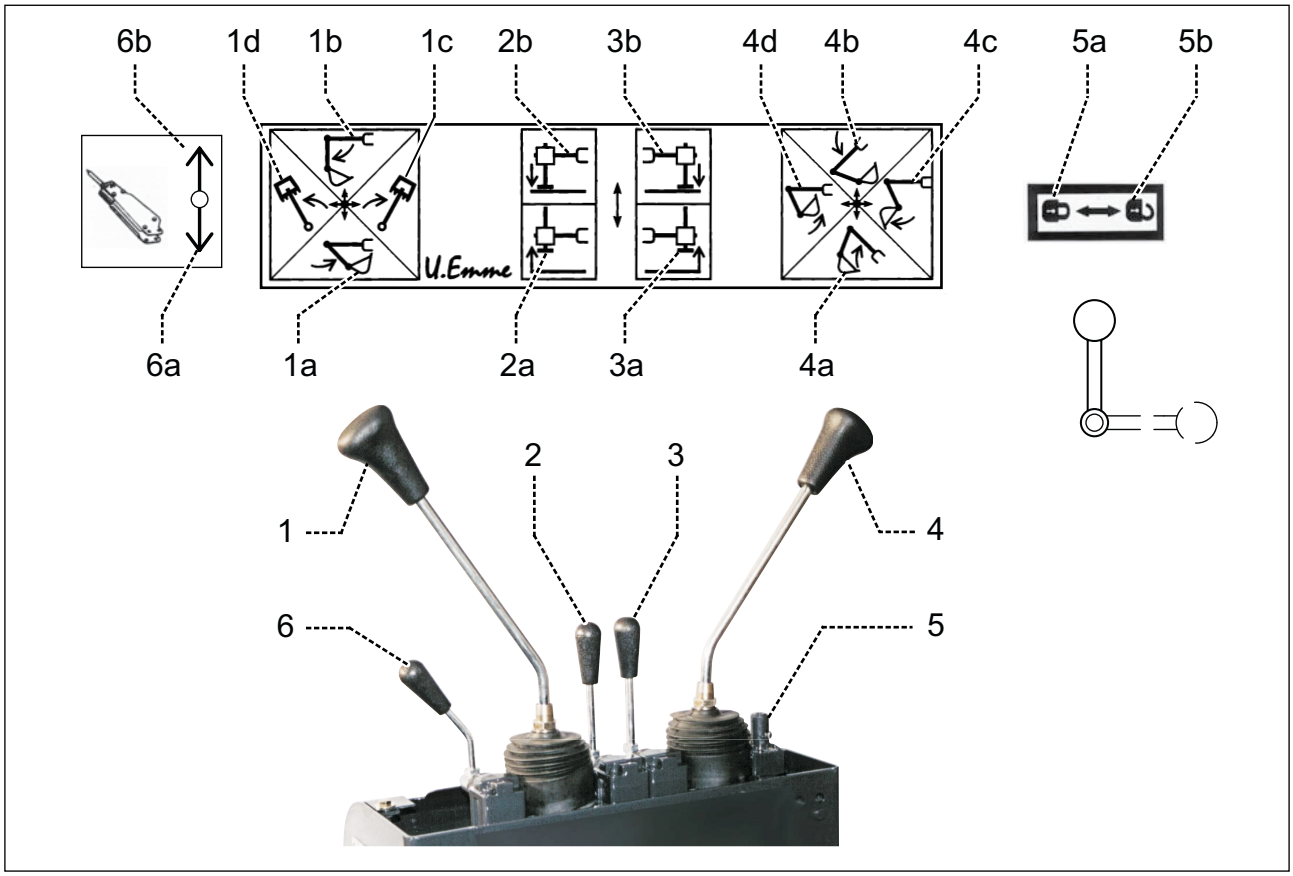
Modular distributor

Modular distributor with 6/7* elements (* equipped with AUX and sideshift lock control R.T.C.). This distributor is suitable for backhoes model: **E24 - E28 - E32**. Controls of this type of distributor are:

1a - Swinging Arm Closing
1b - Swinging Arm Opening
1c - Arm rotation to the right
1d - Arm rotation to the left
2a - Lifting of left Stabilizer
2b - Descent of left Stabilizer
3a - Lifting of right Stabilizer
3b - Descent of right Stabilizer
4a - Lifting of main Arm
4b - Lowering of main Arm
4c - Bucket Opening
4d - Bucket Closing
*5a - sideshift locked
*5b - sideshift unlocked
*6a - Aux IN (optional) (Hammer)
*6b - Aux OUT (optional)

Note

Points 6a and 6b may have different functions according to the accessory installed (usually, with the lever on "6a" position, the delivery is on the block indicated with "IN").



Sideshift lock control of the arm on the frame

Sideshift control (**5a / 5b**) in distributors is directly integrated in the distributor and is equipped with piloted one-way valve. With control in *"sideshift locked"* position, the one-way valve prevents the opening of the 4 hydraulic vices that lock the sliding of the mobile frame along the sliding guides, ensuring the continuous clamping. The clamping pressure of the 4 vices is maintained constant, through the intervention of the maximum pressure valve available on the distributor. By rotating the lever (**5**) to *"sideshift unlocked"* position and activating any distributor lever, the system pressure activates the one-way valve opening (through piloting), allowing unlocking hydraulic vices.

Replacement of bucket or tools

Position the equipment on the ground on a flat surface so that it does not overturn after the extraction of pins that fix it to the arm and proceed as follows:

- Stop the machine, engage the parking brake.
- Depressurize the auxiliary hydraulic system of the backhoe, operating the distributor lever that controls it. Depressurize and disconnect the machine auxiliary hydraulic system and remove the keys from the dashboard.

Danger

During these operations it is compulsory to use safety clothing (goggles, helmet, protection gloves and safety footwear).

- If the equipment is connected to the backhoe auxiliary hydraulic circuit, disconnect hydraulic pipes of the equipment from fittings (**4**-**5**) placed on the swinging arm of the backhoe. Close with suitable plugs the equipment pipes and the fittings (**6**-**7**) on the arm.
- Unscrew and remove screws (**1**) that lock pins (**2**-**3**).
- Extract the two lateral pins (**2**-**3**) that fix the equipment to the arm. If pins resist, use a plastic hammer and a punch obtained from a brass or aluminium bar to avoid the deformation of pins and the accidental ejection of splinters.

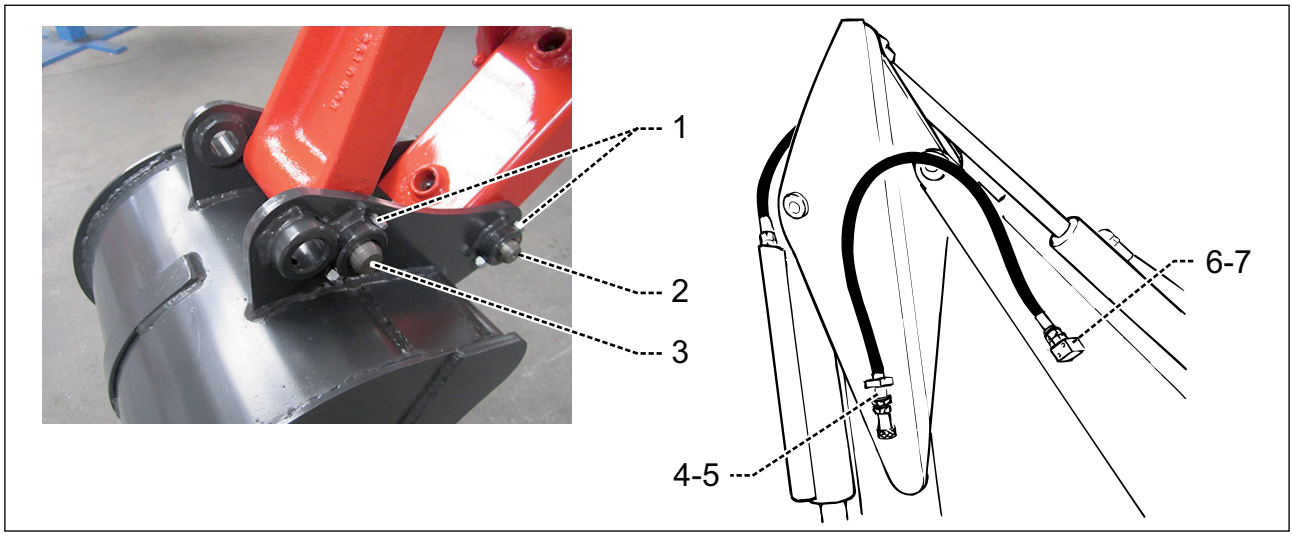
Danger

Do not allow any person to stand in the area of possible falling of the equipment.

- Climb into the driver's seat of the machine and start its engine.
- Carefully lift the arm till extracting it completely from the equipment. Pay the maximum attention not to drag or drop the equipment.
- Move the backhoe arm and reach fixing points of the accessory you intend to use and, slowly moving the arm and the bucket cylinder match their connection points.
- Engage the parking brake and stop the machine, or stay at the control position with the parking brake engaged and seek the assistance of another expert equipped with safety clothes (gloves, safety footwear, etc.).
- Insert the pins (**2**-**3**) using a plastic hammer and lock them with their screws.

Danger

Never align holes using your fingers: use a suitable centring device.



Auxiliary hydraulic circuit connection (Deluxe line only)

If the accessory applied must work with the hydraulic circuit, it is necessary to connect delivery and return pipes to the respective fittings of the backhoe auxiliary circuit (provided as optional), operating as follows:

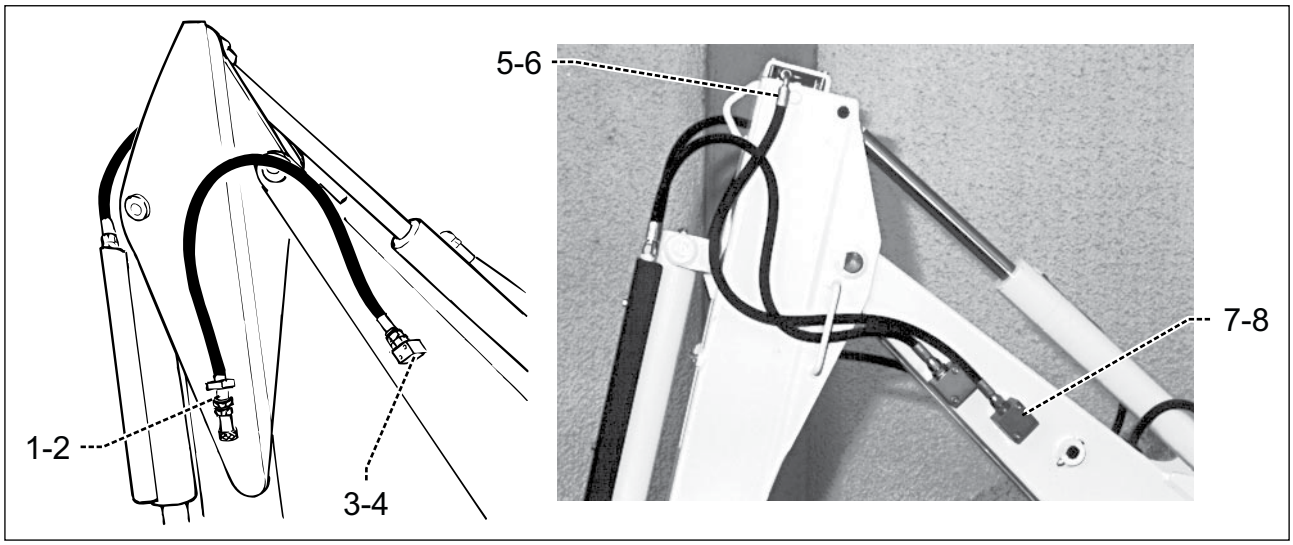
- Lay the tool on the floor, stop the machine and engage the parking brake.
- Discharge the pressure of the auxiliary hydraulic system of the backhoe, operating on the lever that controls it. Depressurize and disconnect the working machine auxiliary hydraulic system and remove the keys from the dashboard.
- Wear goggles and safety clothing (overalls, gloves, etc.).
- Unscrew plugs from fittings (**1**-**2**) of the auxiliary circuit placed on two sides of the backhoe swinging arm and remove plugs placed at the end of the hydraulic pipes of the accessory.
- Connect pipes of the accessory hydraulic system to fittings (**1**-**2**) respecting the circuit delivery and return. The **Delivery** must be connected to the fitting coming from block (**3** or **4**) indicated with "**IN**", while the **Return** must be connected to the pipe coming from the block indicated with "**OUT**".
- Climb into the driver's seat of the machine and operate it in empty conditions for several minutes using all cylinders to bleed the hydraulic system from remaining air.
- Using the "Auxiliary Control" lever of the distributor the accessory installed can be activated.

Attention

The use of the demolition hammer is extremely hard for the hydraulic system of the working machine. We recommend to carry out the installation of the demolition hammer at an authorised workshop and to intervene on the machine, which will be able to optimize the hydraulic system to make this use less hard.

Attention

When using the demolition hammer, the telescopic swinging arm must always be retracted and locked with the proper pin and the relevant safety pin.



Troubleshooting

Problem	Main causes	Remedy
Controls do not respond	Hydraulic system pipes not connected.	Connect pipes.
	Power take-off not connected (**Farming** version).	Connect power take-off.
	Auxiliary circuit not connected.	Activate hydraulic circuit.
	Machine hydraulic system damaged.	Refer to a workshop authorised to repair the machine.
	Hydraulic pump damaged.	Replace pump.
	Low oil.	Add oil up to the right level.
Jerky movement of cylinders.	Air in the hydraulic system.	Make the machine operate empty for several minutes, using all cylinders (one at a time) to bleed the hydraulic circuit from remaining air.
Arm and/or stabilisers move without activating controls.	Worn cylinder gaskets.	Replace gaskets.
Oil overheat.	Dirty filter.	Replace filter.
	Squeezed tubes.	Check and change.
	Low oil.	Add oil.
Oil leakage.	Slack fitting.	Tighten fitting.
	Worn gasket.	Replace gasket.
Poor bucket penetration.	Machine hydraulic system damaged.	Refer to a workshop authorised to repair the machine.
	Worn hydraulic pump.	Replace pump.
	Low fluid level.	Restore fluid level.
	Maximum pressure valve with out of calibration or worn.	Check the calibration of the maximum pressure valve at an Authorised Workshop.
	Dirty filter.	Clean filter.
	Oil leakage.	Find leakage and remove it.
	Worn cylinder gasket.	Replace gasket.
Translation locked.	Translation stop cylinders locked.	Lift and open the arm with empty bucket and activate the relevant impulse cylinders to shake the mobile frame that should release the translation stop cylinders.
	One-way valve of the hydraulic vice system out of order.	Replace valve.
The mobile frame moves along longitudinal members of the frame.	Translation lock not activated.	Place the diverter lever to "Translation locked" position.
	Oil leakage from relevant circuit.	Check and remove the leakage.
	Worn cylinder gaskets.	Replace gaskets.

General precautions

Before proceeding with use of the equipment you must have read and understood the previous chapters and in particular section “C - Safety”.

If there are still some doubts, refer directly to the Manufacturer’s assistance service.

Also read carefully the use and maintenance instructions of the operating machine on which the equipment is installed.

The machine must only be used by qualified staff, which is aware of the position and function of all controls and the instructions given on the various plates.

Uemme guarantees perfect mixing with a load equal to hole capacity (see “Technical specifications”)

Inspections and examinations before starting

For a correct use and compliance with the safety parameters, the following inspections must be carried out before every operation:

- Correct hitching of equipment to operating machine.

Attention

All blocking joint pins must have their cotters ensuring a correct coupling.

- Check integrity of the hydraulic hoses and any oil seepage from hoses and fittings.
- Inspection of the carpentry and detection of possible fissures and cracks, paying special attention to the welded areas (discontinuities and cracks in paint that could anticipate damages to the structure).
- Integrity and legibility of diagrams, symbols and warnings present on the equipment.
- Safety devices correct operation.

Also check:

- that the various parts intended to be greased have been lubricated.
- that protections have been correctly fitted;
- the conditions and tightening of the various parts;
- that the envisioned daily maintenance operations have been carried out.

Attention

When restarting work after a stop or after having moved away from the equipment temporarily, make sure that the devices which were set before going away have not been modified or that the equipment has not undergone vandalism or tampering.

Danger

Before starting any operation, make sure that nobody is present within machine working area.

Pre-warn of the start of manoeuvres with relevant signals and make persons and animals present in the machine work area move away.

Check the integrity of the control indications.

Check the hydraulic oil level of the operating machine (see relevant Use and Maintenance Manual).

Attention

If breakage, even partial, of equipment components is detected, immediately contact a workshop authorised by the Manufacturer, in order to perform the necessary repair operations before using the machine.

Attention

It is strictly forbidden to perform makeshift repairs in order to start work.

During use

- It is strictly forbidden to lean on moving parts.
- Do not use the equipment for any purpose other than that intended by the Manufacturer.
- Always check in a precautionary manner that the operation of the equipment and of its units, even auxiliary, do not trigger dangerous situations for persons, objects or animals.
- Get individual protecting systems foreseen by the prevailing accident prevention standards.
- In case of risk forecast, stop the operations and start working again only after all risk conditions have been eliminated.
- Before beginning work, inspect the operating area to pre-emptively ascertain the presence of obstacles.
  Avoid hitting against obstacles since they could damage the equipment or jeopardise the stability of the operating machine.

Attention

Pre-emptively check for the presence of pipes or manhole covers, as well as ground loading capacity.

- Put the equipment in transport position, even for brief journeys (see “Road circulation”).
- In case of operation on inclined ground always turn the bucket upstream; otherwise the stability of the machine is prejudiced.
- Always climb up or downhill with the bucket lowered and facing the hill.
- Never exceed the maximum gradients allowed by the Manufacturer of the operating machine.

Danger

During the job, always keep the machine manoeuvre area under control and prevent persons and animals from approaching.

Stop the operating machine immediately if Safety Standards are not respected.

- Make sure you have full vision of the operating area.
  Make sure that lighting is sufficient in the event of night-time work.
  If necessary, indicate the work area using the relevant signs.
- Do not work close to open excavations, without respecting the minimum safety distances.
- Activate controls only from the control position of the machine, or from the backhoe’s seat when available and the work allows it. If there is a minimum risk of overturning, of rockfall or fall of material, it is strictly forbidden to use the control station on the external seat.
- Before moving backhoe arms, engage parking brake of the machine, remove safety locks of the arms and lower stabilizing feet.
- Get stabiliser plates down, lying on the ground, without discharging the tyres of the machine, to avoid the excessive raising of it. This is extremely important to avoid losing the tyre grip which improves the stability, i.e. relying only on stabilisers to carry the load and the machine.

- Do not activate the backhoe before having checked that stabilisers are positioned on a solid and compact ground. Check the degree of stability according to the operating conditions. If the ground on which stabilisers lean is not compact or is soft, it is necessary to increase the support surface of stabiliser plates, interposing proper plates to increase the support, or hardwood planks.
- Before handling the backhoe, make sure that connection pins of the arm and of the equipment and pins that fix the backhoe to the machine are correctly inserted and kept by proper cotters or safety locks. Moreover make sure that the wedges or pins of the quick coupling devices between backhoe and machine are perfectly inserted inside their seats.
- Avoid sudden movements, act smoothly and gradually on control levers.
- Rotate with suspended loads, not dragging on the ground.
- Do not work close to power and telephone lines, without respecting the minimum safety distances.
- Inform about the operation start with specific signals.
- Avoid to rotate the arm over working or transit zones. If that cannot be avoided, inform about the operation start with specific signals.
- Excessive heating of the oil provokes damage to hydraulic circuit gaskets and the deterioration of the fluid. Heating may be caused by an extended working with jack at end of stroke or by an excessive pump flow rate. In the first case, just avoid to operate controls always at end of stroke, while in the latter case it is necessary to decrease the engine rpm of the machine.
- Before starting operations, make sure you have full vision of the operating area. Make sure that lighting is sufficient in the event of night-time work. Always signal the working area with proper signs.
- Do not perform adjustments or interventions on the equipment while it is working.

Danger

Do not dig too close or under the stabilisers.

Do not dig near underground power lines.

Be careful when lifting the stabilizing feet, because in some cases they represent the only reliable support against the machine overturning during digging operations.

Attention

Check preventively for the presence of pipes or manhole covers, as well as ground solidity.

Always put the control lever of the direction inverter or gearbox in “NEUTRAL” position when working with the backhoe.

While working always keep the working area under control and prevent people from approaching. If safety provisions are not respected stop work immediately.

At the end of the work, before leaving the machine, place the machine and backhoe in a flat place, with limited access to unauthorised people, and lean firmly on the ground the stabilisers and the bucket. Stop the machine and engage the parking brake. Never leave the ignition key on the machine.

Climbing onto and off of the operating machine

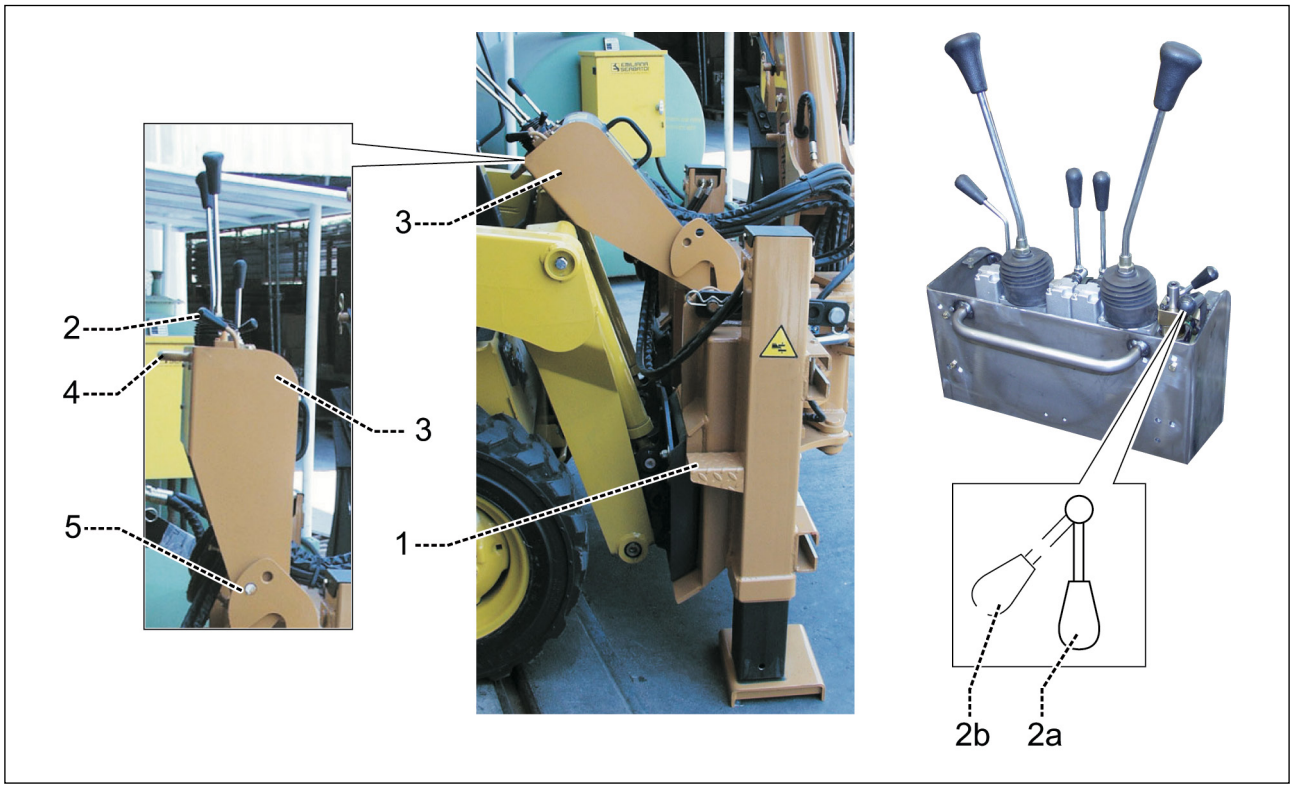
On the right side of the backhoe (and in some models also on the left side, when there is enough space) there are footboards (**1**) to facilitate access to the driving position of the machine. Always go up and down from the right side of the machine, paying maximum attention not to stumble in the hydraulic pipes that supply the circuit of the backhoe.

- Turn the lever (**2**) clockwise (**2b**), until the control unit (**3**) is unlocked. Grasp the handle (**4**) and lift in vertical position the distributor support (control inside the cab), to provoke the intervention of the snap locking device (**5**) that locks it in vertical position and the lever (**2**) gets back to position (**2a**).
- Enter in the cab of the machine and, before sitting in the driver seat, grasp the handle (**4**), rotate the lever (**2**) clockwise (**2b**), that unlocks the snap locking device, and lower the control unit **(3)** supporting it**,** to avoid accidental shocks to the lower limbs.
- To get off the machine turn the lever (**2**) clockwise (**2b**), until the control unit (**3**) is unlocked. Grasp the handle (**4**) and lift in vertical position the control unit, to provoke the intervention of the snap locking device (**5**) that locks it in vertical position and the lever (**2**) gets back to position (**2a**).

Danger

Do not climb onto or off of the machine using systems other than those prescribed by the Manufacturer (such as the wheels of the machine or other supports as a step).

Always use the slip-proof steps or platforms provided by the Manufacturer of the machine and equipment.



Road circulation

When riding on the road, strictly comply with regulations in force regarding road transportation in the country where you are operating.

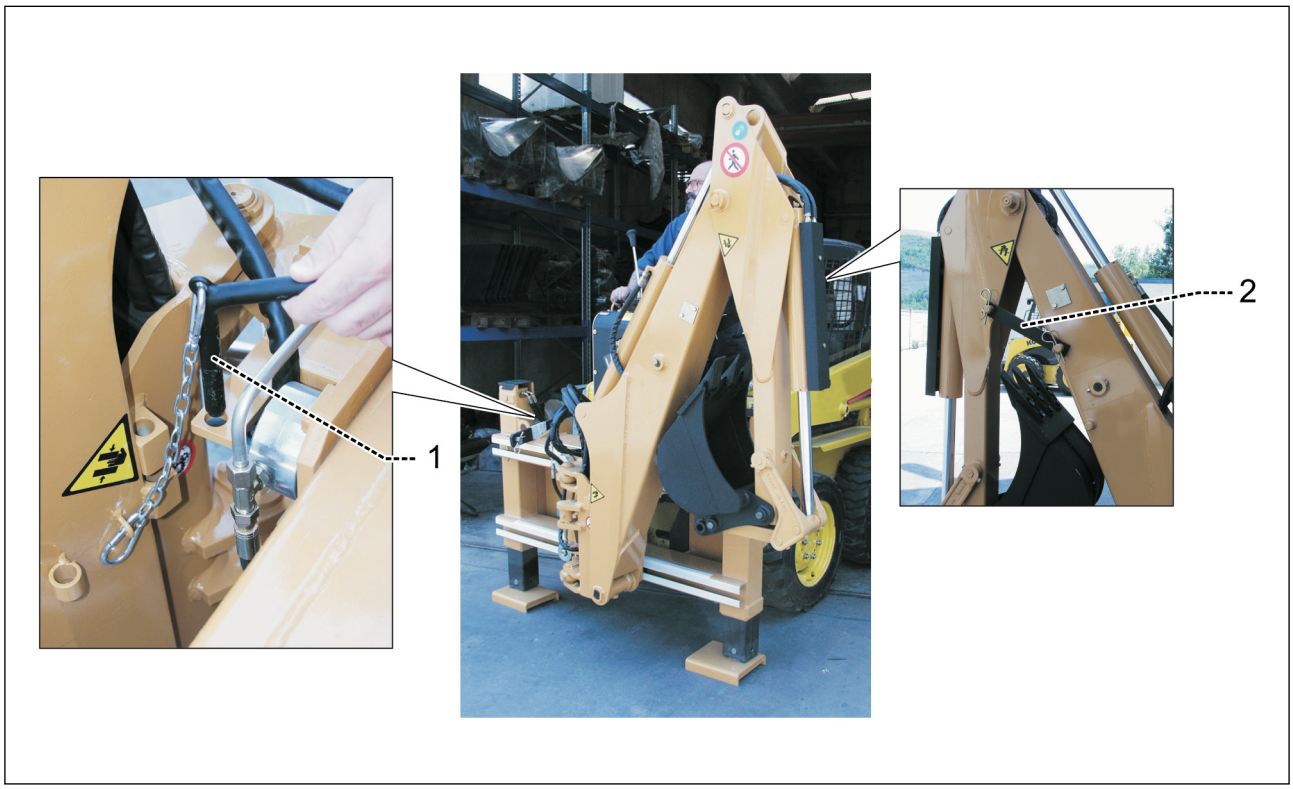
- Make sure that oil does not leak on the road.
- Turn the equipment in such a way for the driver of the operating machine to see well.
- Do not circulate on roads if the application is not type-approved in the ways envisioned and recorded in the operating machine log book.
- If the machine-equipment coupling is type-approved to circulate on roads, respect the following provisions unless they do not oppose those indicated on the type-approval certificate (or similar document):
  - Yellow rotary light present on the operating machine.
  - Move at a moderate speed, paying attention to pedestrians, bicycles and obstacles.
  - Block any pins present with the relevant safety cotters.
  - Position the signal devices (profiles or reflecting panels for projecting loads, retro reflectors, lights, etc.), which are requested by the standards in force or indicated on the type-approval certificate.
- Circulating on roads or on public land, as long as it is allowed, the regulations prescribed by the Highway Code in force in the country of use must be respected.
- During road circulation, pay great attention close to inhabited areas, crossroads, bridges, subways, level crossings etc.

Attention

If the equipment is not type-approved for road circulation, it must be disconnected from the machine and loaded onto a suitable means of transport.

Close and lock the backhoe proceeding as follows:

- translate the backhoe art to end of stroke on the right side of the frame and lock the translation;
- Completely close the bucket and the swinging arm;
- lock the swinging arm with the main arm installing the red connecting rod (**2**) on the proper pins;
- Completely lift the main arm, rotate it completely to the left and lock it into position by inserting the red pin (**1**);
- lift the stabilizing feet to the highest position;
- fix the connecting rod (**2**) and the pin (**1**) with proper safety cotters.



Recommendations for using the equipment in cold climates

If the equipment must be used in cold climates, with the temperature between **-10°C** and **+5°C**, it is very important:

- Check that the hydraulic oil contained in the machine is suitable for these temperatures (see lubricant table, if provided with the working machine).
- Before starting the equipment, start the working machine and operate one at a time all the controls for several minutes always at empty conditions to bring the hydraulic system to the correct temperature.

Operating speed

Operating speed of the backhoe depends on the number of engine rpm. Oil flow must not exceed the value indicated in chapter *"D - Technical Specifications"*, according to the backhoe model. Conform the engine speed (on average about 1800 rpm) in order not to exceed this flow. Excessive speed with consequent increase of the pump flow, causes the overheating of the hydraulic fluid, forced to flow through the outlet of the distributor maximum pressure valve.

Stabilisation of the backhoe

Stabilising feet installed on the backhoe are independent and equipped with large road pads, to ensure maximum stability. After having reached the working area, position the backhoe in order to make the work easier, without compromising safety. Respect minimum distances required (from digs, ditches, power lines, etc.), choose the point where stabilisers must be placed, so that the ground is levelled and solid, then proceed as follows:

- lower stabilisers feet one at a time alternatively, operating the relevant distributor levers;
- level the backhoe, without taking the wheels of the tractor or of the machine off the ground, since they contribute to stability;
- in case of works on slopes, level the machine always keeping one of the two rear wheels in contact with the ground.

Danger

If the ground is not solid enough, increase the support surface of stabilisers, interposing between stabilizing feet and the ground, proper plates of stable material (hardwood planks, etc.), ensuring that the foot leans in the centre of the plate.

Always respect general safety rules in force in each country, before stabilizing and using the backhoe.

Dig

In special cases (limited manoeuvre spaces, particular conformation of the ground, etc.) it may be necessary to change the mode of use of the backhoe described in this chapter. In these cases the experience of the operator and the compliance with safety rules will be decisive to choose the most appropriate manoeuvres.

- stabilize the machine as indicated in the previous chapter;
- operating the relevant control, open the bucket so that teeth are aligned with the swinging arm;
- open arms and lean on the ground the bucket teeth in the point to dig. The best results are obtained with the main arm and the swinging arm forming an angle of about 120°;
- operating on the arm controls make the bucket penetrate the ground. A better penetration force can be obtained by combining the movement of the swinging arm with the movement of the main arm;
- with the bucket into the ground simultaneously close the swinging arm and the bucket, until the bucket is full. If the bucket stops, slightly lift the first arm and keep on filling the bucket;
- lift the bucket over the top of the dig, adapting its position, in order not to drop the material collected, then rotate the arm and empty the bucket on the pile of removed material or on the mean of transport of the material, dropping the material at the minimum distance;
- repeat the previous operations, until the work is completed.

Danger

During digging there is always a risk of landslides or landslips. Always check the conditions of the ground and of the material piled up. Prop up where necessary to prevent landslides or landslips, paying the maximum attention in critical cases (dig near previous excavations filled with filling material; digging of degraded material or poorly compact; digging in areas prone to vibrations, caused by other working machines, train paths, busy roads; digging in wet areas or with seepage of water, etc.).

Arm translation

The lateral motion of the arm with respect to the backhoe frame must be carried out with stabilized machine, proceeding as follows:

- rotate the translation control to *"Translation unlocked"* position to activate the release of vices that lock the arm base on the frame sliding guides;
- open and shake the arm until the hydraulic vices release;
- rotate 90° the arm in the desired translation direction;
- . lay firmly the bucket to the ground, fixing teeth in the ground;
- moving the main arm and the swinging arm, drag the arm base to the desired position;
- rotate the translation control to *"Locked translation"* position, making the arm base moving together with the backhoe.
- operate the bucket or main arm control until you reach the end of stroke of the cylinder involved. In this way you activate the maximum pressure valve that ensures the locking of hydraulic vices with the maximum pressure of the system.

Attention

It is strictly forbidden to operate with the translation unlocked.

Foreword – General warnings

Attention

All the operations described in this section are the responsibility of maintenance operators, qualified and trained personnel for this purpose.

Danger

Even if not expressly instructed, it is imperative that the machine is cut off from all power supplies before any maintenance work (part replacement, repairs, cleaning, lubrication, etc.) is performed.

Make sure that no other persons are present close to the equipment during use and maintenance.

Attention

Wear suitable Personal Protective Equipment before carrying out maintenance operations.

Maintenance operations must be carried out at least at the recommended intervals, although the exact frequency depends on the conditions of use of the machine.

During maintenance, repair, cleaning and adjustment operations, indicate machine standstill in a visible manner using a sign positioned in the driver's seat or on the distributor indicating "WORK IN PROGRESS".

Attention

Before starting the machine up again, correctly refit and tighten all the parts which have been removed (in particular fixed and moving covers and safety components).

Any operation NOT listed below must be performed by specialised personnel authorised by the Manufacturer.

Danger

Read the "Safety" section of this manual in its entirety before starting work.

- Methodical and accurate maintenance reduces the risk of damage or accidents and preserves the equipment over time.
- The main cause of accidents is due to:
  - lack of oil and grease;
  - dirt accumulated on the various units or components;
  - safety devices out of order; hydraulic system failure (worn flexible hoses, loose fittings; etc.);
  - errors made during maintenance.

- If some operations require the operating machine arms to be lifted, these must be suitably locked in position with relevant stays.
- Never postpone maintenance or repair operations.
- Always follow maintenance and repair procedures requesting previous authorisation.
- Stop the engine and make sure that the pressure has been discharged from all systems before removing casing, guards and covers.
  See the machine Use and Maintenance Manual.
- Use the relevant handholds and steps to climb on and off of the machine.
- Do not wear rings, watches, jewellery, open and loose clothing, e.g. ties, ripped items, scarves, unbuttoned jackets or overalls with open zips that may become entangled in moving parts.
  It is advised to use approved items for accident-prevention purposes: helmets, slip-proof shoes, protective gloves, anti-drumming hearing protection, reflecting jackets, anti-dust masks, breathing apparatus, safety goggles, when the job requires the same.
  Consult the employer for the safety prescriptions in force and use of the accident-prevention devices.
- Do not go under the equipment when this is just lifted.
- If it is absolutely necessary to lift the equipment disconnected from the working machine, use suitable means (see “Lifting and handling”). After having lifted it, always insert a stand or tail prop, leaving the lifting means always in traction.
- Never introduce your head, body, limbs, hands, feet or fingers into a shearing area, without guards, without first having locked tightly any parts that can move.
- Never align holes or slots using your fingers; use a suitable centring device.
- When using compressed air to clean parts, use protective goggles with side visors.
  Limit pressure to a maximum of 2 bar.
- Never use petrol or solvents or other flammable liquids for cleaning.
  Use authorised, non-flammable and non-toxic solvents available on the market.
- Do not lubricate, repair or adjust the equipment when it is working, unless expressly requested in the Use and Maintenance Manual.
- Never use tools improperly or in bad conditions, e.g. pliers instead of the special spanners etc.
- Keep the maintenance area clean and dry, and immediately dry any traces of water and oil.
- The leaks of pressurised fluid through small holes are almost invisible and can be strong enough to hole your skin.
  Before checking for leaks, protect your eyes with protective goggles with side visors.
  Do not use your hands, but use a piece of cardboard or wood, to detect suspected leaks of pressurised liquid.
  Wounds caused with pressurised fluid can cause serious infections. In this case, consult a doctor immediately.
- Do not gather oily or greasy cloths as they constitute a fire risk.
  These cloths must be deposited in a closed metal container.
- Immediately replace any Danger, Attention or Instruction warning plate that is no longer readable or missing.

Attention

Never perform jobs with the removal or deposit of material (welding, drilling, sanding) without the Manufacturer’s authorisation and instructions.

- At the end of maintenance or repair operations, before starting the machine, check that no tools or other material are left inside the compartments containing moving parts or close to moving parts.
- Always ensure that both the machine and relevant accessories are in good order.

Danger

- **Before restarting the machine ensure that all maintenance operations have been completed correctly and that starting of the machine will not result in any risk conditions.**
- **Immediately after having completed the operation, restore and check the safety devices that were removed during the maintenance or repair operation.**

Attention

All untreated surfaces (guides, racks, etc.) should be cleaned and then lubricated.

Key to symbols used in the chapter:	
	Brush greasing
	Inject grease through the grease nipple Grease by means of a grease gun

Consultation of technical documents

Before performing maintenance work on the machine, read the technical documentation supplied by the Manufacturer and the suppliers of individual commercial parts of the machine.

In particular consult:
- the “operating instructions”;
- the “user instructions for the operating machine”;
- the diagrams of the electrical, hydraulic, pneumatic systems, etc.

In any case work on the machine only if you are in possession of adequate technical know-how.

The Manufacturer’s technical service is at your complete disposal for any information concerning maintenance work to be carried out on the parts supplied.

Attention

In case of operating faults, do not attempt to solve any anomalous situations that may occur using makeshift means.

Spare parts

The use of non-authentic spare parts may cause machine malfunctions, which in turn may lead to hazardous situations for the operator and any individuals working near the machine.

Attention

Always use authentic spare parts.

Layout of equipment

- Before carrying out any maintenance operations, place the backhoe as follows:
  - stabilising feet placed on the ground;
  - bucket completely open placed on the ground;
  - tractor gear lever or direction inverter on neutral position;
  - parking brake engaged and wedges under the wheels;
  - engine stationary;
  - ignition key removed from the dashboard.

If the equipment must be disconnected from the operating machine, see “Equipment removal”.

Pollution hazard

It is prohibited to disperse old brushes, rubber or plastic components, solvents, oil and lubricants into the environment.

Collect and dispose of these components according to the provisions in force in each country.

Scheduled maintenance

Daily checks

- Check the oil level in the tank or in the machine tank as indicated in the respective user manual.
- Check the flexible hoses, the fittings and the other components of the hydraulic system so as to prevent breakage and pressurised oil leaks.
  Eliminate any leaks in the hydraulic system.
- Check that all the guards are correctly installed and that the safety devices are efficiently operating.
- Check that the structure of the equipment and of the respective accessories is in good conditions and shows no signs of cracks or deformations.
- Check that the backhoe can be easily activated and that controls go back easily to neutral position.
- Wipe all unpainted parts with a cloth soaked in oil.
- Wash the equipment.
- Refill with grease all the greasers available on the backhoe.

Every 200 operating hours or every month

- Check the integrity of seals available on the backhoe. If necessary refer to our Service Department to restore missing or damaged seals.
- Check tightening of bolts that connect the different parts of the backhoe.
- Check tightening of hose and pipe fittings.
- Check securing devices and other safety devices.
- Check that safety stickers and instruction plates are available and legible. If not, replace them or attach the missing ones.
- Clean filters of the hydraulic system.
- Check oil level.
- Check multiplier oil level (if available).
- Check integrity of hydraulic pipes protective sheaths. In case of excessive breakage or tear, replace them with Original Spare Parts.

- Perform an operation test of the backhoe, listening that there are no abnormal noises. Otherwise, determine the cause and eliminate the problem.

Every 200 operating hours or every year

- Clean the backhoe.
- Contact a Workshop Authorised by the Manufacturer to have an operation and safety check performed.
- Check the equipment used.
- Replace completely the hydraulic fluid in the backhoes equipped with control unit.
- Replace the drain filter of hydraulic fluid (if available).

Check of hydraulic fluid level

- Place the machine on a flat surface, extend to the maximum all cylinders available on the backhoe, stop the machine and engage the parking brake. Check the hydraulic fluid level, as indicated in the *"Use and Maintenance Manual"* of the working machine and in case fill in with oil of the same type.

Attention

Do not mix oils of different brand or type, use the same type of oil contained in the tank.

Lubrication

Preliminary information

Pollution hazard

It is prohibited to disperse waste oil into the environment.

Place oily cloths, lubricants, solvents and filtering cartridges inside suitable containers and dispose of them in compliance with the provisions and Standards in force in each single country.

Attention

Do not mix different types of oil, restore the level of lubricants exclusively with lubricants of the same type as those contained in the respective tanks.

Only use the lubricants recommended by the Manufacturer or the corresponding lubricants indicated in the relative table.

Danger

Only use the greases indicated.

Other products may be incompatible with the product used by the manufacturer for the first greasing.

Incompatible greases that are mixed or used at a second stage can develop substances affecting machine operation with potentially serious safety consequences.

Lubricating grease comparative table

	TOTAL	MOBIL	ESSO	AGIP	IP	BP
Grease	HERELDA 2	FARM T.GREASE	CAZAR K2	GREASE 16	AUTO GR CH	GREASE A
Grease	MULTIS EP 2	MOBILUX EP 2	BEACON EP 2	GR MU EP 2	ARTHESIA GR EP 2	ENERGREASE NM EP 2
Protective oil	OSYRIS ACR	MOBILARMA 246	RUSBAN 398	RUSTIA 82	IDEX FLUID PM GR 2	C.P.F. 21

Lubricating points

Lubrication intervals scheduled by the Manufacturer are:

- Grease every 8 working hours or every day using a pump for greasers.
- Brush grease at least once a day.
- Check the level once a month and change the oil about every 1200 working hours.
- Check daily and if necessary restore the level of hydraulic fluid in the machine with fluid of the same type of the one contained in the tank. When scheduled, change the hydraulic fluid.

Attention

In heavy duty work and environmental conditions, shorten the frequency of the lubrication intervals.

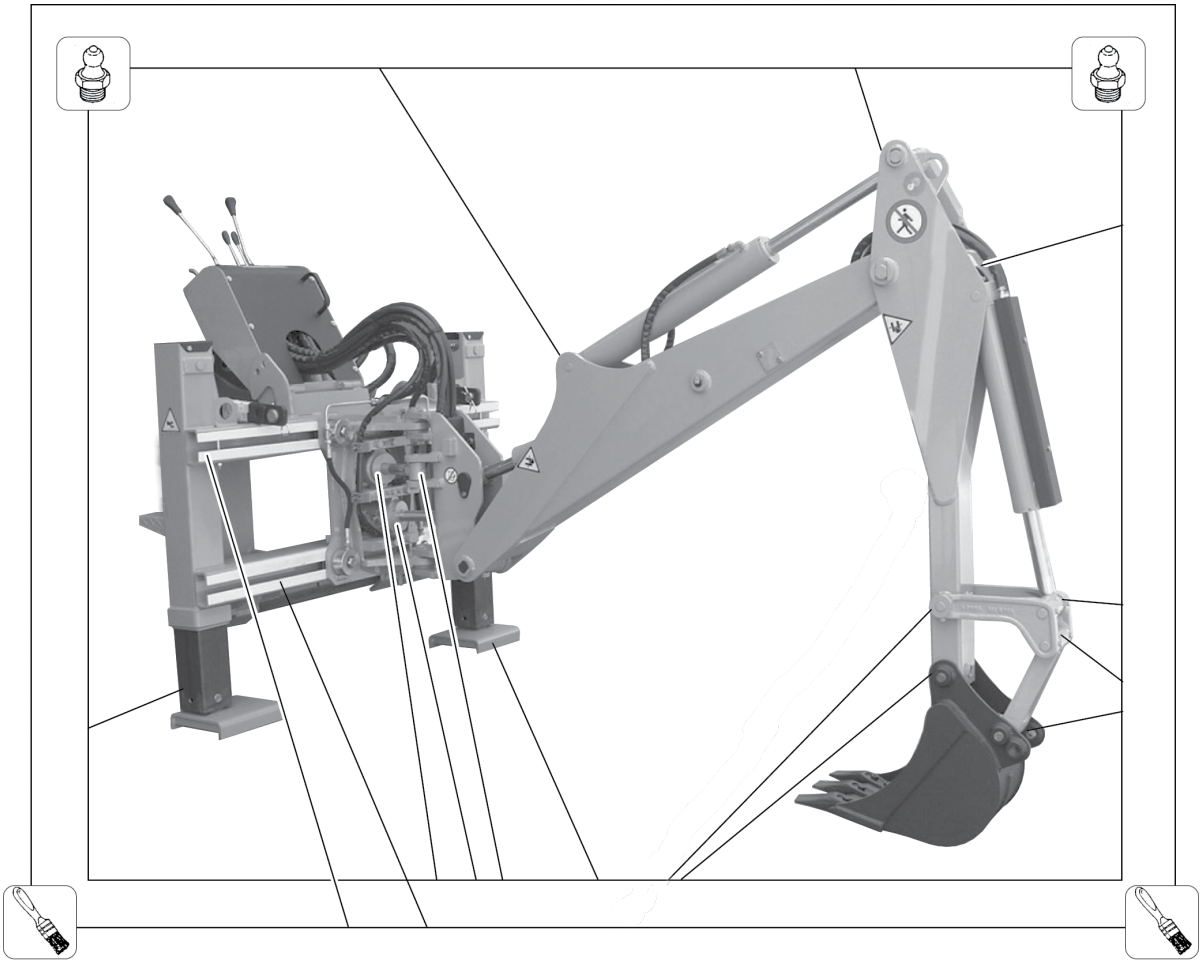
Supply grease nipples

Top-up the greasers present on the equipment as follows:

- Always clean the greasing heads to prevent the infiltration of dirt.
- Feed all greasers using a standard grease pump.
  Fill the type of grease described in the “Lubricants correspondence table”.
  Clean the excess waste grease using a cloth.

Attention

In heavy duty work and environmental conditions, shorten the frequency of the lubrication intervals.



Tightening torque table

Unless differently indicated, tighten the screws present on the backhoe using the tightening torque values (Nm) indicated in the following table.

Dimensions of the screws	Tightening torques (Nm)		
	Class		
	8.8	10.9	12.9
M4	2.7	3.8	4.6
M5	5.5	8.0	9.5
M6	9.5	13.0	16.0
M8	23.0	32.0	39.0
M10	46.0	64.0	77.0
M12	80.0	110.0	135.0
M14	125.0	180.0	215.0
M 16	195.0	275.0	330.0
M18	270.0	390.0	455.0
M20	385.0	540.0	650.0
M22	510.0	720.0	870.0
M24	660.0	930.0	1100.0
M27	980.0	1400.0	1650.0
M30	1350.0	1850.0	2250.0

Ordering spare parts

Consult the specific spare parts catalogue when you need to order spare parts.

Spare parts must be ordered from the retailer or assistance centre and the orders must include the following indications:

- Type and model of equipment.
- Part number of the requested part.
  If you do not have this number, list the number of the table in which the corresponding reference is provided.
- Name of the part and desired quantity.
- Preferred transportation means.
  If this item is not specified, the retailer or assistance centre, though dedicating special care to this service, will not respond to shipping delays due to force majeure.
  Shipping costs are always charged to the addressee.

Placing the machine out of service for a prolonged period of disuse

In the event of prolonged disuse perform the following operations on the machine:

- Thorough cleaning.
- Get the equipment in transport configuration.
- Lubrication of all moving parts.
- Anti-rust surface treatment on all unpainted metal parts (apply oil or MoS2 spray).
- Cover the machine with a waterproof tarpaulin to protect it from dust and damp.
- Store in a dry and protected place with access limited to authorised persons only.

Service life

The actual service life of the equipment, if all the checks, the envisioned maintenance operations and inspections are carried out, is 10 years from its first start up. After this period of time the use of the equipment is prohibited if not overhauled and checked by the Manufacturer.

Further overhauls must be carried out every 2 years.

Control register

Storage instructions

This Control register must be considered as a part of the equipment and must accompany it during its whole life until its final dismantling.

Instructions for the drawing up

These instructions are supplied according to the provisions known when the equipment was first placed on the market.

The register is arranged to take note of the following events regarding the useful life of the equipment according to the layouts proposed:

- Transfers of ownership
- Replacing mechanisms, structural elements, safety devices and relative components.
- Serious failures and their repairs.
- Maintenance and periodical checks.

Note

Whether the sheets of the present register were not enough, add the necessary sheets, drawn according to the schedules here indicated.

The user must include the identification data of the equipment on the additional sheets.

These sheets will be an integral part of the present register.

Authorised persons

This documentation must be drawn up by the owner of the equipment, or by someone directly delegated by him, as must the tests to be carried out by specialised personnel; verification calculations (stability, secondary frame, etc.) must be carried out by legally qualified persons.

Storage of the control register

This Register, summarising the essential technical features and data of the equipment, must be kept for the entire working life of the equipment.

The subsequent checks to be carried out within the legally envisioned times and methods and the execution of the servicing checks must also be recorded on it, as well as the inspections before commissioning.

The inspections and any extraordinary checks to be carried out in case of constructive changes, structural repairs or use change compared to that established by the manufacturer must also be recorded.

Identification of equipment

Equipment model: .....

Serial number and year of manufacture: .....

Type and frame n° of operating machine: .....

Manufacturer information: **U.EMME s.r.l.**
Via dell'artigianato 19 - 47015 Modigliana (FC)
Tel. +39 0546 941725 - Fax +39 0546 940050
e-mail: info@uemme.com
www.uemme.com

Note

For all technical data of the equipment and operating instructions, refer to the "Use and maintenance manual" this register is attached to.

OPERATING MACHINE

- Manufacturer: .....
- Frame Number: . .....
- Plate: .....

EQUIPMENT:

- Manufacturer: .....
- Type: ..... Year of manufacture: .....
- Date of commissioning: .....
- Serial No.: .....
- CE Declaration of Conformity: .....

INSTALLED SAFETY DEVICES

❑ YES.....

.....

.....

.....

❑ NO

OPERATING MACHINE CONTROL STATION

❑ .....

STRESS CHECK

- ❑ YES
- ❑ NO

ATTACHMENTS

- ❑ Use and maintenance manual: .....
- ❑ Check register: .....
- ❑ .....: .....
- ❑ .....: .....

Place ..... *Date* .....

Equipment delivery to first owner

The equipment and the optionals listed below have been delivered from the Company U.Emme to the Company:

.....

according to the conditions established in the contract.

Machine	Serial No.	Year of manufacture

Date.....

Transferring the property

On ....

The ownership of the concerned equipment is transferred to the Firm/Company: ....
....
....
....

We certify that, on the above-written date, the technical, dimensional and functional features of the concerned equipment comply with those intended originally and that any variations have been transcribed in this Register.

Seller .... Buyer ....

On ....

The ownership of the concerned equipment is transferred to the Firm/Company: ....
....
....
....

We certify that, on the above-written date, the technical, dimensional and functional features of the concerned equipment comply with those intended originally and that any variations have been transcribed in this Register.

Seller .... Buyer ....

On ....

The ownership of the concerned equipment is transferred to the Firm/Company: ....
....
....
....

We certify that, on the above-written date, the technical, dimensional and functional features of the concerned equipment comply with those intended originally and that any variations have been transcribed in this Register.

Seller .... Buyer ....

Mechanism replacement

Date: ..... Replaced element .....
Manufacturer..... Supplier .....
Reason for the replacement: .....
.....
.....

The representative of the company responsible for the replacement The user
....

Date: ..... Replaced element .....
Manufacturer..... Supplier .....
Reason for the replacement: .....
.....
.....

The representative of the company responsible for the replacement The user
....

Structural elements replacement

Date: ..... Replaced element .....
Manufacturer..... Supplier .....
Reason for the replacement: .....
.....
.....

The representative of the company responsible for the replacement The user
....

Date: ..... Replaced element .....
Manufacturer..... Supplier .....
Reason for the replacement: .....
.....
.....

The representative of the company responsible for the replacement The user
....

Safety device and relevant component replacement

Date: ..... Replaced element .....
Manufacturer..... Supplier .....
Reason for the replacement: .....
.....
.....

The representative of the company responsible for the replacement The user
....

Date: ..... Replaced element .....
Manufacturer..... Supplier .....
Reason for the replacement: .....
.....
.....

The representative of the company responsible for the replacement The user
....

Serious failures and their repairs

Failure description: .....
.....
Causes: .....
.....
Performed repair: .....
.....
.....
Place and Date: .....

The representative of the company responsible for the replacement The user
....

Failure description: .....
.....
Causes: .....
.....
Performed repair: .....
.....
.....
Place and Date: .....

The representative of the company responsible for the replacement The user
....

Periodical inspections

The user must respect the maintenance and surveillance programme described in this user's manual.

The person responsible for the equipment must report, in the following pages, the check and maintenance operations for the periodical inspections on the equipment.

The check must be carried out in relation to the use intensity of the equipment and the particular work environment.

All routine and extraordinary maintenance operations must be transcribed in the following servicing checks, specifying the operation carried out, the date, the work hours and who carried them out (operator, qualified workshop and manufacturer).

The equipment must be taken for a check at an Authorised workshop at least once a year.

The correct use of the equipment is the sole responsibility of the final user, responsible for choosing the product for dimensions and capacities, being the dealer unable to guarantee that the equipment is suitable for its effective use without knowing the same that, however, must fall within the use limits envisioned by the use and maintenance manual.

For maintenance operations, please refer to section M - maintenance of the equipment.

Inspections

General

In order to assure the safe functioning of the equipment, the correct working and functioning conditions must be maintained. Therefore a regular check is necessary.

Inspections must be scheduled by the user.

Inspection before use

Before use the operator must check the equipment.

Intervals between inspections

Depending on the duration and operating conditions and work place, the equipment must be inspected how and when required, but at least once a year.

Description of action	Executor	Operating hours	Date	Signature

EVERY YEAR

- ❑ ***IDENTIFICATION PLATES***
- ❑ ***CAPACITY/FLOW RATE PLATES***
- ❑ ***LOADLESS OPERATING TESTS***
- ❑ ***OPERATING TESTS AT PLATE LOAD VALUES***
- ❑ ***WEAR, CLEARANCES***
- ❑ ***DEFORMATIONS***

Various: .....
.....
.....

Comments and notes: .....
.....
.....

Date.....

Authorised workshop *The machine manager*

....

Forms for periodical inspections

Comments: .....
.....
.....

Name / Company of Inspector: .....
.....
.....

The periodical inspection **has** / **has not** been carried out.
Faults **have** / **have not** been detected: see test result (*)
.....
.....

Date..... Signature.....

The periodical inspection **has** / **has not** been carried out.
Faults **have** / **have not** been detected: see test result (*)
.....
.....

Date..... Signature.....

The periodical inspection **has** / **has not** been carried out.
Faults **have** / **have not** been detected: see test result (*)
.....
.....

Date..... Signature.....

The periodical inspection **has** / **has not** been carried out.
Faults **have** / **have not** been detected: see test result (*)
.....
.....

Date..... Signature.....

(*) Delete unwanted part.

Warning

The equipment does not require particular attention for disposal because more than 90% (in weight) is made up from materials that can be re-cycled.

Scrapping must be performed using safety measures taking into account the logistic, environmental and wear conditions of the equipment itself.

Nonetheless, follow the general rules below:

- Wear protective clothing and accessories (helmet, safety footwear, gloves, safety goggles and face mask if necessary) approved in accordance with the prevailing accident-prevention standards.
- Disconnect the machine from all energy sources.
- Use suitable lifting means as indicated in the “Transport” section of the “Lifting systems” chapter.

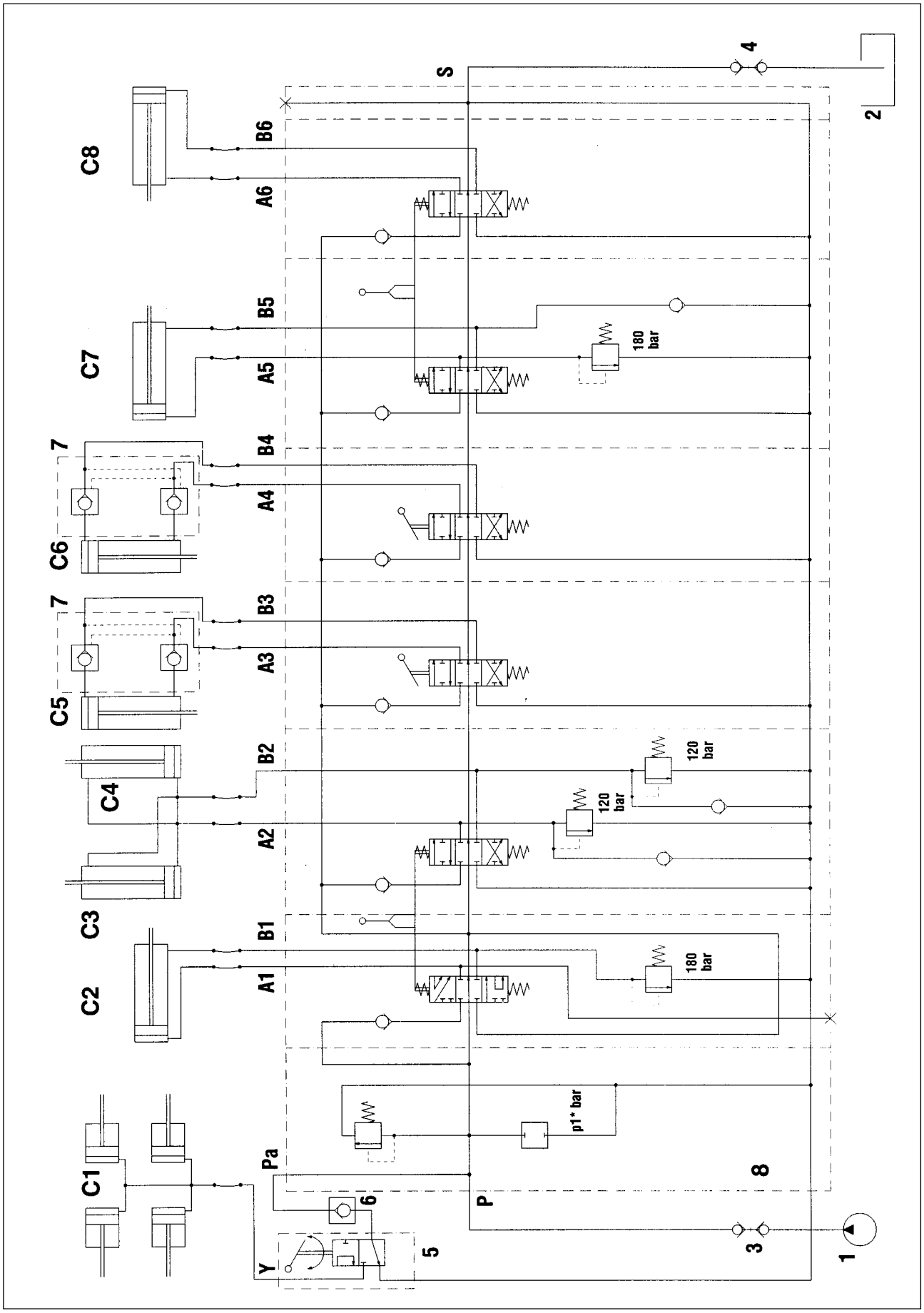
Attention

The machinery must be demolished and disposed of by specialized, qualified technicians in accordance with all rules on the scrapping of industrial products.

Hydraulic diagram

Hydraulic system with 6-element distributor and 3-way external tap

Ref.	Description	Q.ty
1	working machine auxiliary delivery	-
2	working machine auxiliary return	-
3	Delivery quick coupling	1
4	Return quick coupling	1
5	Translation lock diverter	1
6	Non-return valve	1
7	Hydraulically piloted check valve	2
8	6-element distributor	1
C1	Translation lock cylinder	4
C2	Main arm cylinder	1
C3	Left rotation cylinder	1
C4	Right rotation cylinder	1
C5	Left stabilizing cylinder	1
C6	Right stabilizing cylinder	1
C7	Swinging arm cylinder	1
C8	Bucket cylinder	1
P	Pressure inlet	-
Pa	Diverter pressure	-
P1	Maximum pressure valve calibration pressure	1
S	Unloading	-
Sa	Diverter discharge	-
Y	Use of translation lock cylinders	-
A…	Distributors upper use	-
B…	Distributors lower use	-

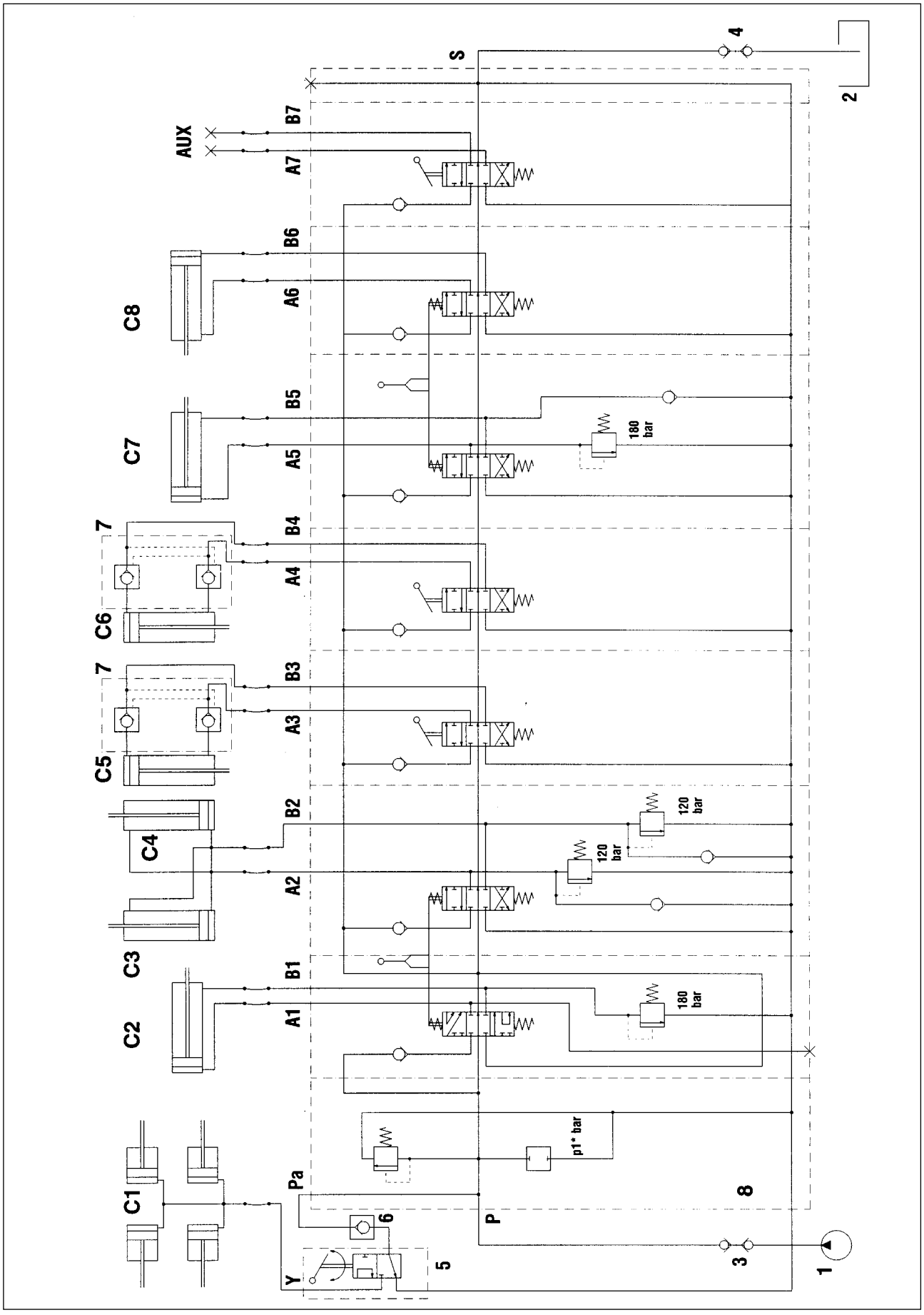

S
4
2
B6
A6
C8
B5
A5
C7
180 bar
7
B4
A4
C6
7
B3
A3
C5
B2
120 bar
120 bar
A2
C4
C3
B1
180 bar
A1
C2
p1* bar
Pa
8
C1
6
P
3
1
Y
5

Hydraulic system with 7-element distributor and 3-way external tap

Ref.	Description	Q.ty
1	Operating machine auxiliary flow	-
2	Operating machine auxiliary return	-
3	Flow quick coupling	1
4	Return quick coupling	1
5	Translation lock diverter	1
6	Non-return valve	1
7	Hydraulically piloted check valve	2
8	7-element distributor	1
AUX	Auxiliary (optional)*	1
C1	Translation lock cylinder	4
C2	Main arm cylinder	1
C3	Left rotation cylinder	1
C4	Right rotation cylinder	1
C5	Left stabilizing cylinder	1
C6	Right stabilizing cylinder	1
C7	Swinging arm cylinder	1
C8	Bucket cylinder	1
P	Pressure inlet	-
P1	Maximum pressure valve calibration pressure	1
S	Unloading	-
Y	Use of translation lock cylinders	-
A…	Distributors upper use	-
B…	Distributors lower use	-

Note

*** The auxiliary hydraulic circuit is an optional device supplied on demand.**


S
4
2
AUX
B7
A7
B6
A6
C8
B5
A5
C7
180 bar
7
B4
A4
C6
7
B3
A3
C5
B2
120 bar
120 bar
A2
C4
C3
B1
A1
C2
180 bar
p1* bar
Pa
C1
8
P
6
5
3
1
Y

NOTES

NOTES

NOTES

NOTES

CASE CONSTRUCTION

CNH Industrial France
16-18 rue des Rochettes
91150 Morigny - Champigny, France