



# OPERATION AND MAINTENANCE MANUAL

## **JAKE D107**



**IMPORTANT:**  
**Read this operation and maintenance manual carefully  
before carrying out any operation with the machine.**

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## A INTRODUCTION

### A1. Introductory information

The JAKE D107 is supplied with a copy of this manual. Read the instruction manual carefully before using the digger. Poor knowledge of the machine, its improper use, and the non-observance of the safety regulations, cause most of the accidents at work. Many of these can be avoided by taking the suitable precautions. Even if the Manufacturer provides the Customer with any and all information on the backhoe (installation, operation and maintenance) at the delivery, the Customer must respect the instructions in this manual. For road use the Manufacturer reminds you that, as well as blocking the backhoe, the customer must respect the rules of the road in force in the country the machine is used in.

### A2. Warranty

The Manufacturer guarantees that all parts of the digger have been examined before delivery and are free of defects. The products are covered by a twelve-month warranty starting from the date of delivery shown on the shipping document. The Manufacturer undertakes to make good by repair or replacement of any defect arising from faulty materials or workmanship and becoming apparent during the warranty period. Examination of the defective parts shall be carried out by the Manufacturer or technical personnel authorised by the manufacturer. The returned parts will be the property of the Manufacturer. Any failures attributable to an improper use of the digger, negligence of the operator, accidents, or normal wear and tear are not covered by this warranty.

### A3. Information on the manual

This manual must be kept in a safe place on the machine, with all its parts intact, so it can be consulted quickly whenever necessary. If there is something you don't understand when reading this manual, contact the Manufacturer. The Manufacturer will provide you with all the necessary explanations and will improve the manual, making it easier to understand and sending you the revised pages. The revised pages can also be sent if the Manufacturer decides to make modifications to the backhoe or improve the information in this manual.

Information relevant to this manual:

- right/left refer to a component seen from the driver's place facing backward from the cabin
- the signal word "**IMPORTANT**" highlights information that must be known by the operator;
- the signal word "**Note**" highlights information that can make the operator's work easier.

### A4. Identification

Each backhoe is identified by the name of the Manufacturer, the model and the serial number. This information is stamped on the relevant metal plate, which is well visible, on the frame of the backhoe. The plate also shows the year of manufacture and the weight in kg.

#### **IMPORTANT**

Altering and/or deleting the data printed on the nameplate or on components of the backhoe is expressly forbidden.



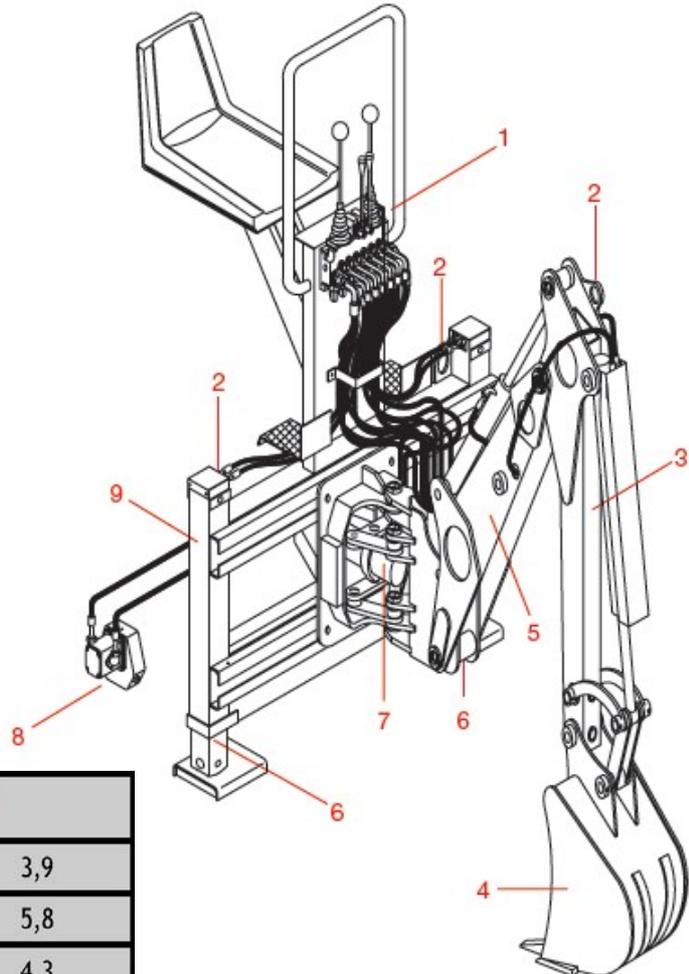
## A5. Main components

- 1 - Distributor controls
- 2 - Lifting points
- 3 - Tilting boom
- 4 - Bucket
- 5 - Main boom
- 6 - Stabilisers
- 7 - Rotation cylinder
- 8 - Pump/multiplier unit
- 9 - Frame

## A6. Standard equipment

- Central rotation at 180°
- Distributor with modular elements
- Anti-shock + anti-cavitation valves
- Pump unit, oil filter, built-in oil tank
- Side-shift frame with hydraulic lock
- Independent hydraulic stabilizers
- Ditch bucket (see below)
- Tempered and rectified pins
- Bushings on all the articulations
- Hydraulic oil

## A7. Technical details



<b>TECHNICAL DETAILS</b>	
Max. Digging depth (m)	3,9
Max. Outreach from legs (m)	5,8
Max. loading height (m)	4,3
Telescope stroke (m)	1,0
Max. Lifting capacity at full outreach (kg)	620
Max. Lift capacity telescope in (kg)	880
Max. Bucket digging force (kg)	2600
Max. Digging arm pulling force (kg)	2100
Max. Turning force at full outreach (kg)	380
Max. Turning force, vertical digging arm (kg)	860
Turning angle (°)	180
Side shift (m)	1,0
Dead weight (kg)	1250



## B SAFETY

### B1. General instructions

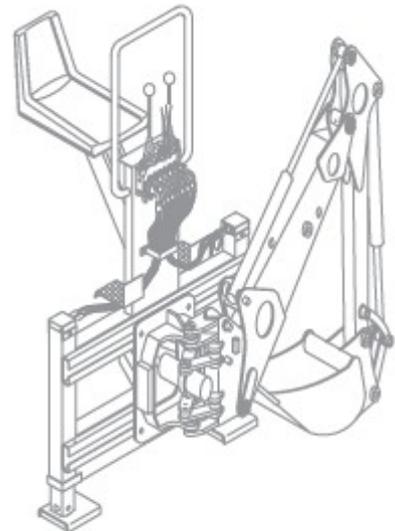
The non-observance of the basic safety regulations is the cause of most accidents at work. In most cases these can be avoided by taking the appropriate safety measures beforehand. Therefore it is obligatory to read this manual and scrupulously follow the instructions before using the backhoe. The backhoe must only be used by qualified personnel, trained for the job. Therefore, the Manufacturer is not responsible for accidents caused by the negligence of the operator or the non-observance of the relevant laws, dispositions and regulations in force.

### B2. Safe transportation, installation and use

#### B2.1 Transportation

The backhoe is delivered by the Manufacturer. If the customer collects the machine from the Manufacturer, the same will lift onto and anchor the machine to the means of transport. In any case, the customer must use a crane and slings with suitable characteristics for the load to lift, the weight of which is indicated on the nameplate. Trained personnel should lift the backhoe, using the lifting points on the frame, indicated in paragraph A5. When the backhoe has been mounted on the tractor and must be transported to the place of use, it is essential to block it in the following way:

- make sure the stabilizers are retracted. The hydraulic blocking valves on the jacks of the stabilizers stop them moving if there is a pressure drop
- retract the bucket as far as possible towards the tilting boom, then retract this towards the main boom, and finally retract the latter completely
- turn the retracted unit as far as possible towards the frame and lock everything in place inserting the blocking plate (1) in the envisaged points of the rotation support and the main boom. Then block the plate in place with two cotter pins (2) as shown in the picture.

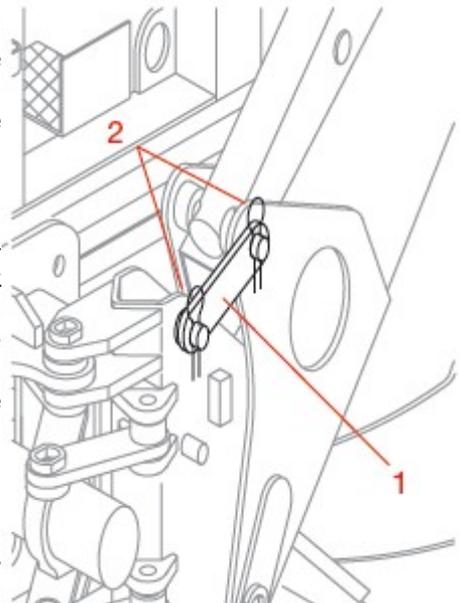


#### B2.2 Installation

Generally the backhoe is installed on farm tractors using their 3-point linkage system or a JAKE Mounting Kit. The tractors must have a Roll-bar or cab with ROPS or FOPS homologation, as indicated by the regulations in force. The backhoe can also be installed on trailers or wheel loaders, as long as these have the protective systems envisaged by the regulations and the suitable characteristics established by the Manufacturer.

#### B2.3 Use

The backhoe must only be used for the operations it has been designed and built for and can only operate with the accessories supplied by the Manufacturer. Therefore, it cannot be used with implements such as grabs, magnets, truck grabs, etc. Without Manufacturer's particular permit. Furthermore, the technical characteristics of the excavator must not, in any way, be changed to alter the performance. In these cases the guarantee of the machine is





void and the Manufacturer is no longer responsible in any way. Before using the backhoe you must observe the place where it will be used. If you are near power lines, obtain information from the competent authorities on the voltage of the same. If it isn't possible to turn the power of the line off, keep a five-metres safety clearance to the power line. Obtain information from the competent bodies, if there are water and gas pipes in the zone where the backhoe will be used. In this case operate with the maximum caution, at a low speed and, in any case, in presence of technicians appointed by the relevant bodies. Use the backhoe in the same way if you are informed of the presence of canals, ducts or drains. The working temperature range the backhoe is designed for must be between -20 and +40°C. Outside this temperature range the Manufacturer is not responsible for accidents or the backhoe malfunctioning. It is important to choose a solid ground for the stabilizers. It must be free of obstacles and able to support the pressure produced by the stabilizers. If this pressure, transmitted by the feet to the ground, exceeds that which can be sustained by the ground, you should increase the supporting surfaces using stable material (wood planks or metal plates). In this case the feet must be positioned at the centre of the new supporting surfaces. This can be calculated on the basis of the reaction of the stabilizers and the load-bearing capacity of the ground. The overall weight of the backhoe and the tractor on which it is mounted will determine the same reaction in the stabilizers.

#### **IMPORTANT**

**The operator must not use the backhoe with the stabilizers off the ground.**

### **B3. Personal safety**

As mentioned above, the backhoe must be used by qualified, trained personnel and this manual must be read by the same for their own safety. Furthermore, before using the backhoe, the operator must take note of the signs onboard the machine and information in this manual.

The safety regulations of the backhoe are:

- Risk of serious injury. Cordon off the zone of use of the machine, considering the rotary movement of the main boom, with white/red signal tape.
- Danger of serious injury. Having people in the zone of use of the machine is extremely dangerous.
- It is strictly forbidden for people to move around in the zone of use, with the machine operating.
- It is forbidden to lubricate, adjust or repair parts with the machine running. If necessary, proceed with the greatest caution.
- Obligation to read the Use and Maintenance Manual.
- In case of road use fit reflectors to the back of the tractor/earthmoving machine and, therefore, also the backhoe to warn of its overall dimensions.

### **B4. Prohibitions**

The use of the backhoe is forbidden:

- when the speed of the power takeoff of the tractor is different to that of its pump/multiplier unit
- in a zone where there is a fire hazard
- in closed environments

#### **IMPORTANT**

**Improper use could damage the backhoe and, as a consequence, create dangerous situations for the operator. In this case the guarantee of the machine is void and the Manufacturer cannot be held responsible.**



## C INSTALLATION

### C1. Introductory information

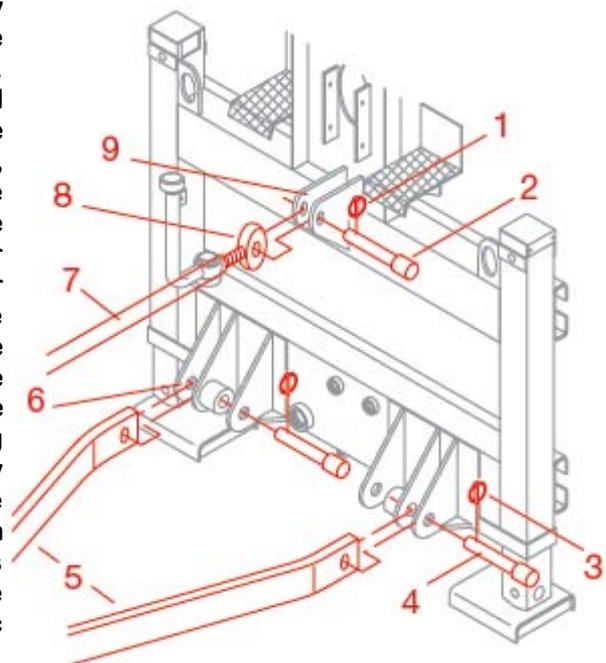
The JAKE D107 backhoe can be mounted on any tractor that has either a power lift with a universal 3-point linkage, or the JAKE Mounting Kit. All of the machines are delivered packed, with the feet of the stabilizers partially pulled out, with both the arms (main and tilting) slightly open, and with the bucket completely closed. This conformation guarantees excellent stability overall. In any case the backhoe must be placed on a flat surface, inside an area prepared for connecting it to the tractor. Expert and trained persons are necessary to perform this operation. One should drive the tractor with extreme caution and the other on the ground, at a safe distance and moving with great care, should give indications on centering the machine. Both persons must be aware of the safety measures required for this operation.

#### IMPORTANT

The alignment or centering of the holes in the arms of the hydraulic lift of the tractor with those of the respective seats on the frame of the backhoe must never be done using your hands, but with a tool suitable for this use.

### C2. Installation on 3-point linkage system

The operator driving the tractor must first completely lower the hydraulic lift, then slowly move up to the backhoe so the other operator can centre the two. After this operation, the operator on the ground inserts the lift arms (5) in the respective seats on the frame of the backhoe (6), and blocks them in place, one at a time, using pins (4) that are blocked in place with cotter pins (3). Then the operator inserts the adjustable tie rod (7) in the relevant seat on the tractor and fixes it with the pin and cotter pin. The operator screws the body of the tie rod up or down, leaving the female screw (8) free, so the same coincides with the seat on the frame of the backhoe (9). He blocks the tie rod in place with pin (2) and then blocks this in place with cotter pin (1). He adjusts the tie rod by turning the body, until the frame of the backhoe is perfectly vertical. Then he tightens the locknut. At this point the operator stops the tractor, leaves the hydraulic lift in the low position and blocks the lever in place. He puts the parking brake on and removes the keys from the dashboard. Finally he blocks the arms of the hydraulic lift with the tie rods or chains supplied.



#### IMPORTANT

This is necessary to avoid lateral oscillations of the backhoe when working.

### C3. Installation of supplementary tie rods

When the backhoe has been fitted to the 3-point linkage of the tractor, supplementary tie rods should be fitted to guarantee improved safety for the operator. The two tie rods (10) should be fitted in the bottom holes in the lateral mounts of the backhoe and the top holes of the central support of the tractor (as shown in the picture). On the backhoe, remove the safety cotter pins (3) and pull out pins



(4) one by one, enough to insert the female screws of the two tie rods in the respective seats. Fully insert the pins, then lock them in place with the cotter pins. On the tractor, position the central support tie rods one, aligning the respective holes, and insert the bolts or the through pin (11) supplied with the tractor. Block the bolts or the pin with the respective safety stops.

#### C4. Installation with the JAKE Mounting Kit

Follow the mounting instructions delivered with the JAKE Mounting Kit.

#### C5. Hydraulic connections

##### C5.1 Independent hydraulic system

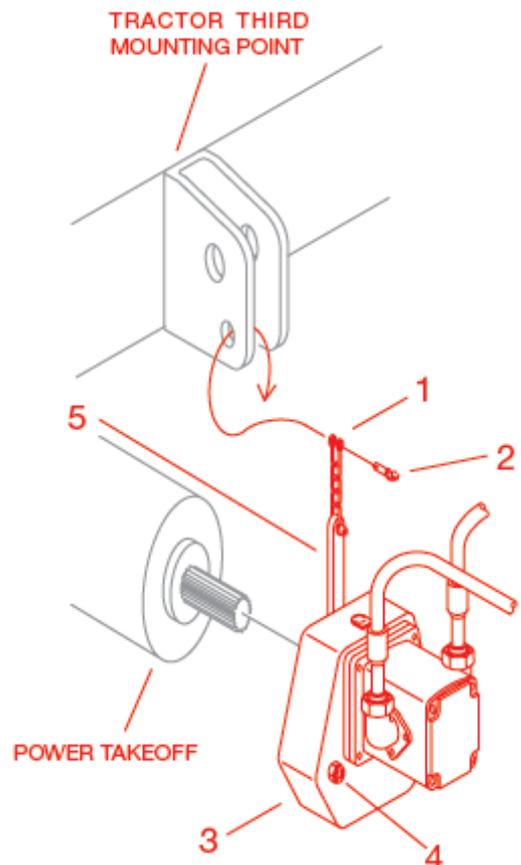
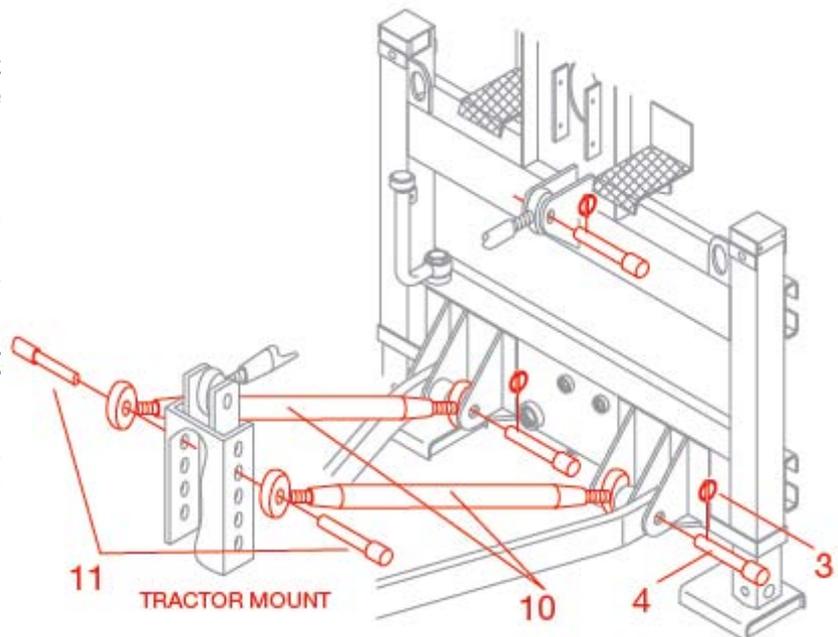
The JAKE D107 is supplied with an independent hydraulic system with a tank, filters and pump/multiplier unit. To activate the circuit of the backhoe its pump/multiplier unit must be mounted on the power takeoff of the tractor. First, you should check that this can run at a speed of 540 rpm or 1000 rpm if indicated so. Insert the pump/multiplier unit (3) on the power takeoff of the tractor and fix it with the relevant bracket (5) using chain (1), to a fixed point of the tractor (generally near the third mounting point, as shown in the picture). The chain will be blocked by a link with threaded terminals where the fixing screw (2) is screwed in. Check the oil level in the multiplier, through indicator (4) (to top up, see the chapter on maintenance). Start the tractor and engage the power takeoff, letting it turn slowly. Engage the parking brake and put the gearbox or forwards/reverse selector into neutral. Try the controls, using the respective levers, one at a time with great caution.

#### IMPORTANT

When a backhoe is installed for the first time you should use it without putting it under load for a few minutes. The activation of all movements, one at the time, makes it possible to bleed any air out of the hydraulic circuit.

#### Note:

Make sure there are no signs of blow-by or leaks of oil, otherwise you should eliminate these.





### C5.2 Independent hydraulic system with auxiliary circuit

As mentioned in paragraph C5.1, the backhoes are supplied with an independent hydraulic system. This system may have an auxiliary circuit or two, generally as an optional, to power an accessory or tool (such as a grapple for example), installed in place of the bucket. Connect the delivery and return pipes on the tool to the respective fittings or blocks of the auxiliary circuit installed on the sides of the main boom. The auxiliary circuit, and therefore the tool, is controlled using the relevant lever on the controls distributor. Before connecting the tool/circuit a few operations are necessary. Stop the tractor, engage the parking brake and lower the bucket to the ground. The last operation is done with the control lever of the tilting boom on the backhoe distributor. The consequent depression in the hydraulic circuit lets the bucket drop slowly to the ground under the effect of gravity. Remove the bucket and install the tool, as described in the following paragraph.

#### IMPORTANT

When a tool is installed for the first time you should use it without putting it under load for a few minutes. The activation of all movements, one at the time, makes it possible to bleed any air out of the hydraulic circuit.

#### Note:

Make sure there are no signs of blow-by or leaks of oil, otherwise you should eliminate these.

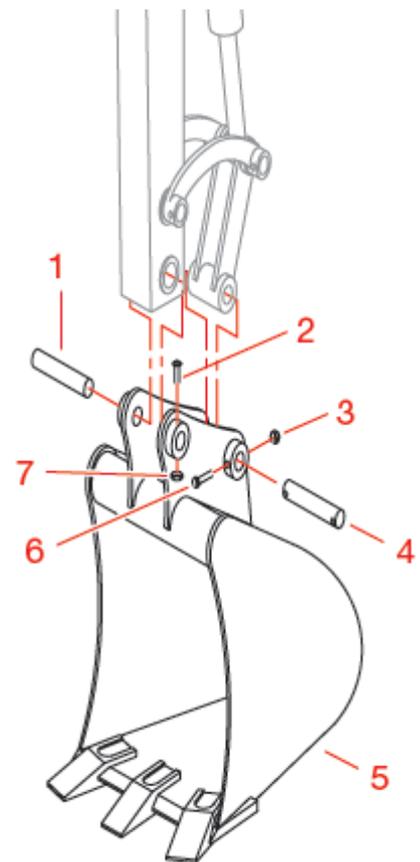
### C5.3 Installing tools and/or removing the bucket

Each backhoe is normally delivered to the customer with the bucket installed, so, if you want to use a tool (a grapple for example), the bucket should be removed. Before removing the bucket, some operations are necessary. Stop the tractor, engage the parking brake and lower the bucket to the ground. The last operation is done using the control lever of the tilting boom on the backhoe distributor. The consequent depression in the hydraulic circuit lets the bucket drop slowly to the ground under the force of gravity. Proceed by removing. Unscrew the nuts (3 and 7), remove the screws (6 and 2) and pull out the pins (4 and 1) from the housing seats (as shown in the picture), if necessary using a plastic hammer. Start the tractor, get on the backhoe and slowly activate the control lever of the main boom. As the tilting boom rises, it will pull off the bucket (5).

#### IMPORTANT

The bucket may remain stuck on the tilting boom and then fall off. Therefore, no operators or anyone else should stand near the backhoe during this operation.

Move the tilting boom and bring it over the mounting points of the tool you want to use. Move the tilting boom slowly, until the mounts of the backhoe coincide with those of the tool. Stop the tractor to finish the installation safely. Insert the pins (1 and 4) using a plastic hammer. Insert the screws (2 and 6) and block them in place with the nuts (7 and 3). If the tool is running off the auxiliary circuit, make the connection, as described in the previous paragraph.





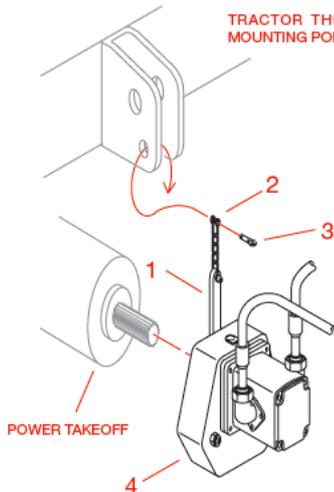
## D DISCONNECTING

### D1. Introductory information

Before removing the backhoe from the tractor, some operations are necessary. Prepare an area with a flat surface free of any equipment, protected from atmospheric agents, and off-limits to unauthorised persons. With the tractor running, activate the control levers of the stabilizers on the distributor of the backhoe until they rest on the ground. Keep the frame of the backhoe in a vertical position. Turn the main boom to form a 90° angle with respect to the frame. Open the two arms slightly, and the bucket all the way. Lower this to the ground so there are three points of support with the stabilizers. Fully lower the hydraulic lift of the tractor, stop the same and engage the parking brake.

### D2. Removal from the 3-point linkage

On the tractor remove the bolts or through pin (14) that fix the supplementary tie rods to the central support. On the backhoe remove the cotter pins (11) and pull out the pins (12) enough to remove the supplementary tie rods one at a time. Free the arms of the hydraulic lift of the tractor from the tie rods or chains. Completely remove the pins (12) and the arms of the power lift from the backhoe (5). Remove the cotter pin (9) and pull out the pin (10) to free the adjustable tie rod (7) from the seat on the frame of the backhoe, first loosening the locknut and then loosening the body. To finish removing the backhoe, disconnect the pump-multiplier unit from the power takeoff of the tractor. Unscrew the fixing screw (3), pull out the chain (2) from the fixed point of the tractor and disconnect the pump/multiplier unit (4) from the power takeoff. Insert pins (12) in the bottom seats of the backhoe (6) and block them with cotter pins (11). Insert the pin (10) in the top seat of the backhoe (8) and block it with the cotter pin (9). Insert the chain (2) in the same seat, passing it around the pin and blocking it with the link, using the threaded terminals. Insert the screw (3) and screw down. Block the arms of the tractor power lift with the tie rods or chains supplied, start the tractor and, with extreme caution, move away from the backhoe. To protect and store the machine, consult the relevant paragraph below.



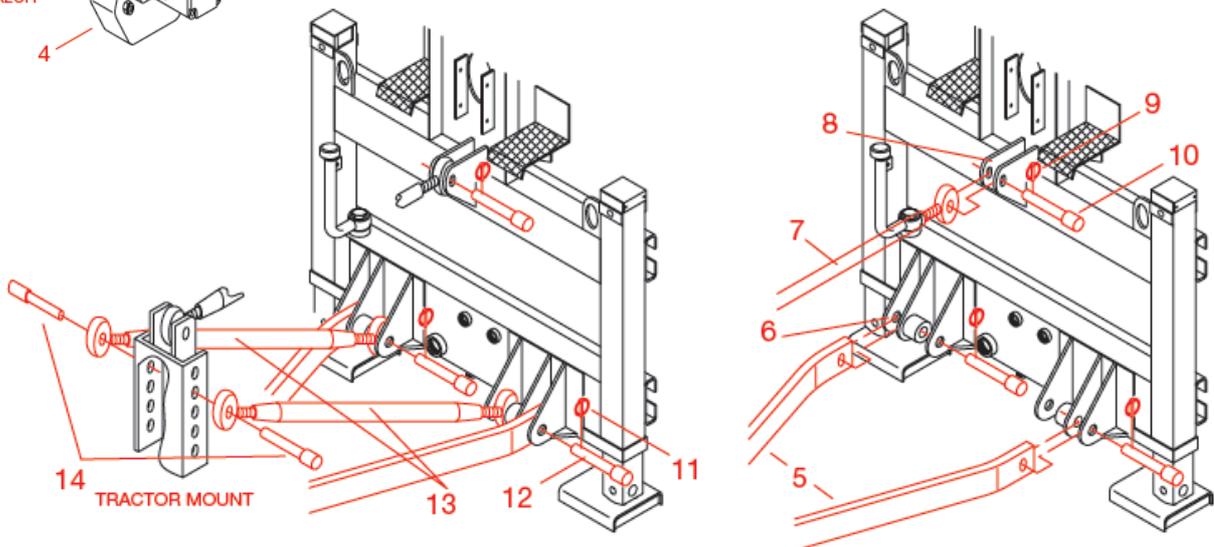
TRACTOR THIRD MOUNTING POINT

POWER TAKEOFF

TRACTOR MOUNT

### D3. Removal from the JAKE Mounting Kit

See the instructions of the JAKE Mounting Kit.





## **USE AND OPERATION**

### **E1. Use**

#### **E1.1 General warnings**

The backhoe must only be used by a qualified operator who has been trained to use the machine and knows its functions. Therefore, the operator must have learnt the instructions in this manual, those on all the labels, the functions of the controls, and all the safety regulations, for their own safety and that of others, as well as to avoid damage to the backhoe. To use the backhoe correctly, it is essential that the maintenance programmes envisaged by the Manufacturer and described below, are respected.

#### **E1.2 Stabilizing the backhoe**

For instructions on transporting the machine and the precautions to take on the place of use, consult chapter B (Safety). With the tractor running, and with the backhoe already in the position of use, activate the control levers of the stabilizers one at a time. Lower the feet to the ground, without taking pressure off the tyres of the tractor, as this would lift the same off the ground. When working on a slope, level the backhoe, always keeping one of the rear wheels of the tractor in slight contact with the ground.

#### **E1.3 Operating speed**

The operating speed of the backhoe depends on the speed of the tractor engine, which determines the oil flow in the pump-multiplier unit. As a consequence, the engine speed must be kept down to avoid a too high flow. This would make the hydraulic oil overheat and deteriorate, and damage the seals of the hydraulic circuit. Check the values of the maximum flow allowed for each model of backhoe in the table in paragraph A7.

#### **E 1.4 Excavation**

Operation to perform after stabilizing the backhoe. Extend both the main boom and the tilting boom, so there is an angle of 120° between the two. Open the bucket fully and lower it to the ground. Close the bucket, lift it (combining the movement of the two arms) and move it (turning the main boom with respect to the frame) to the position where you want to empty it. Move the bucket as near as possible to where it will be discharged and open it, to let the contents drop out.

#### **E1.5 Traversing the main boom**

The main boom can be traversed the full width of the frame, by letting the support-rotation cylinders unit slide in the relevant guides on the frame. On the basis of the type of blocking, the traversing is done as follows: turn the flow deviator, near or behind the distributor to the position "Free traversing" to deactivate the four cylinders that (hydraulically) block the support-rotation cylinders unit sliding. Turn the main boom in the desired traversing direction; open the bucket and place it on the ground in a stable position. Perform a pulling action with the bucket, moving both arms, to obtain the lateral movement of the supportcylinders unit. Block the sliding, putting the flow deviator back into the "Traversing blocked" position.

#### **E1.6 Use in cold climates between -20 and +5° C**

Use hydraulic oil suitable for the temperature. Before starting work, let the pump run without putting it under load for roughly 5 minutes, to bring both the oil and the pump-multiplier unit up to working temperature. Then, activate all the controls for a few minutes, again without putting the machine under load, to bring the hydraulic system up to temperature.



## E2. Operation

### E2.1 Control distributor

The backhoe is operated using the control distributor installed on the JAKE Mounting Kit or, in case of 3-point linkage connection, to the rear part of the cabin (depends on the installer). The distributor consists of eight sections, anti-shock valves, control levers and a pressure relief valve. The distributor is also equipped with a deviator that blocks the traversing of the side-shift frame.

### E2.2 Control levers

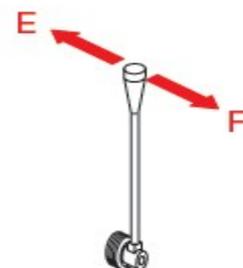
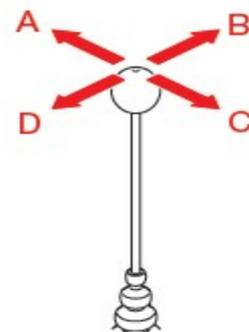
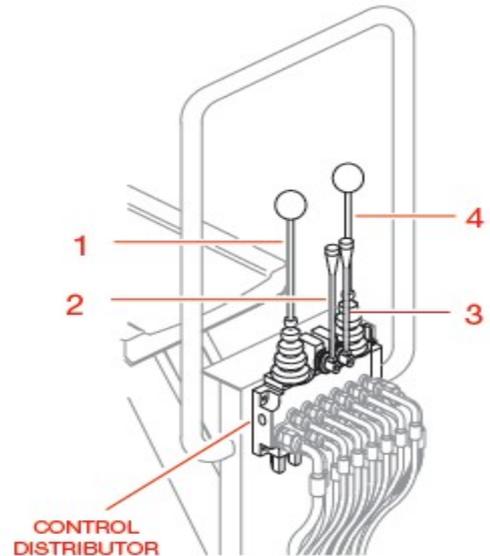
The control levers can be used in two or four positions and, as a rule, are the automatic return type: when they are released, they return to the initial or neutral position on their own. The movement of a lever to a particular position lets you realise a precise function, opening the bucket for example. All the functions described below, with the corresponding movement of the levers, are shown on an adhesive plate on the frame, near the distributor.

The levers and their functions are as follows:

1. Tilting boom and bucket
  - A. lift tilting boom
  - C. lower tilting boom
  - B. close bucket
  - D. open bucket
2. Right stabilizer
  - F. stabilizer down
  - E. stabilizer up
3. Left stabilizer
  - F. stabilizer down
  - E. stabilizer up
4. Main boom
  - A. lift boom
  - C. lower boom
  - B. rotate boom left
  - D. rotate boom right
5. Telescopic boom
  - G. Tele in push-button
  - H. Tele out push-button
6. Additional attachment (e.g. grapple)
  - J. Push-button of 6/2-valve

#### Note

Limited movements of the levers let you perform small and gradual movements. With the levers at the end-of-travel you obtain the fastest movement. Avoid keeping the levers at the end-of-travel for a long time, as this can make the hydraulic oil overheat.



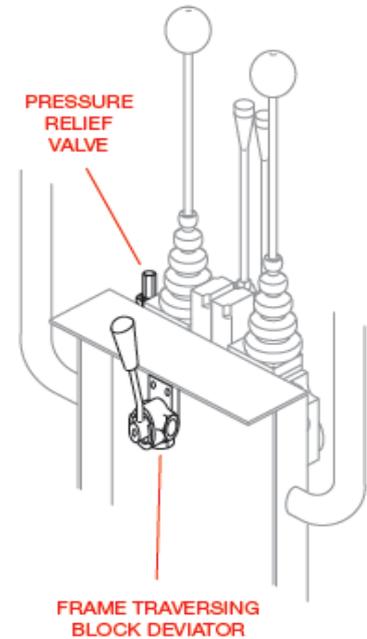


### E2.3 Traversing block deviator

This deviator is incorporated in the distributor. This device blocks the traversing of the side-shift frame, so the backhoe can be used. For this reason, the deviator must always be positioned on "TRAVERSING BLOCKED". In this position, the hydraulic oil under pressure flows into the blocking cylinders installed on the slide, which, when activated, stop the traversing. A piloted non-return valve, connected to the deviator prevents the hydraulic oil draining, to guarantee continuous blocking. The positions of the deviator "TRAVERSING BLOCKED" and "FREE TRAVERSING" are indicated on the adhesive plate near the device, and are represented by a closed (blocked) or open (free) padlock.

### E2.4 Pressure relief valve

The pressure relief valve on the distributor keeps the working pressure of the hydraulic fluid within the calibration values. It acts by stopping the oil flow in case of pressure rises or drops in the circuit. Calibration and adjustments must be done by the Manufacturer who will seal the valve to avoid any tampering with the valve.



## F MAINTENANCE

### F1. Warnings relevant to maintenance

The Manufacturer, after the functional tests, has envisaged maintenance programmes for the backhoe which, if followed in time and done scrupulously by the customer, will keep the efficiency and performance of the machine constant and prevent damage to the same. Before carrying out any maintenance, follow all of the indications in paragraph D1. If you need to lift the booms you must block them in position, with a strut. The operator must be qualified and trained to perform these interventions. Nevertheless, you must not trust these operations to memory, but always read the instructions in this manual and follow them to the letter. In any case, once you start doing the maintenance you must finish the job, and never put it off. In the same way you must do repairs. Finally, for the safety of the operator and to prevent damage to the machine, before doing any work you must hang up a sign in a well-visible place on both on the tractor and the backhoe saying "Machine being serviced". The use of the equipment to do maintenance is subject to the relevant accident prevention regulations. Only use authorised products, and don't use them in an improper way, such as for example, using petrol to clean parts, or pliers instead of a spanner. Replace faulty or worn components with original spare parts or components recommended by the Manufacturer. After any maintenance or repairs, clean the area of any water, oil, grease, dirty rags, tools or other material.

#### IMPORTANT:

- Take great care when checking for leaks of fluid under pressure. Proceed with great caution because when fluid under pressure leaks out of even tiny (almost invisible) holes can puncture the skin and cause serious infections. Therefore, use goggles with lateral protection and a piece of cardboard or wood to look for leaks.
- Some parts of the backhoe are made of special steel with a high limit of elasticity, so it is forbidden to do work such as welding, drilling or grinding. If necessary, ask the Manufacturer for authorisation and all the necessary instructions for the job.



## F2. Programmed maintenance

### F2.1 Daily check

Perform the following checks every day before starting work:

- verify the integrity of all the adhesive plates
- verify the automatic return of the control levers
- verify the integrity of all of the pipes (check for leaks or blow-by of hydraulic oil)
- verify the level of the hydraulic oil in both the pump gear and the oil tank
- check for the presence of the safety cotter pins on all pins
- verify the state of the framework
- grease all the lubricators on the backhoe, using the relevant pump
- brush grease into the sliding guides and on the telescopic boom

### F2.2 Monthly check, or after each 150 working hours

Perform the following checks after each month or each 150 working hours:

- everything described in paragraph F2.1
- verify all the pipes, tightness of the connections and integrity of the protective sheaths
- check for the presence and integrity of the fixing and safety devices
- verify the tightness of the bolts holding the various parts on the backhoe
- verify the integrity of the lead seals on the backhoe, contact the Manufacturer if they are broken
- verify the state of the framework
- perform a functional test on the backhoe and listen for any strange noises

### F2.3 Annual check, or after each 1200 working hours

Perform the following checks after each year, or each 1200 working hours:

- everything described in paragraph F2.1 and F2.2
- change the hydraulic oil and the filter
- perform a complete test drive checking possible unusual movements and noise

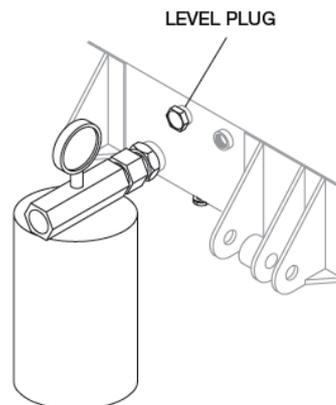
## F3. Lubrication

### F3.1 Greasing points (see the picture on the next page)

To grease the lubricators on the backhoe shown in the picture on the next page, first you have to remove the respective protective caps, then inject grease into the lubricators using the relevant pump. Clean the lubricators and the caps of any traces of dust and after the operation, with the caps fitted, clean off any excess grease. Grease the sliding guides too by brushing on grease. On backhoes with a telescopic tilting boom, grease the extendable element.

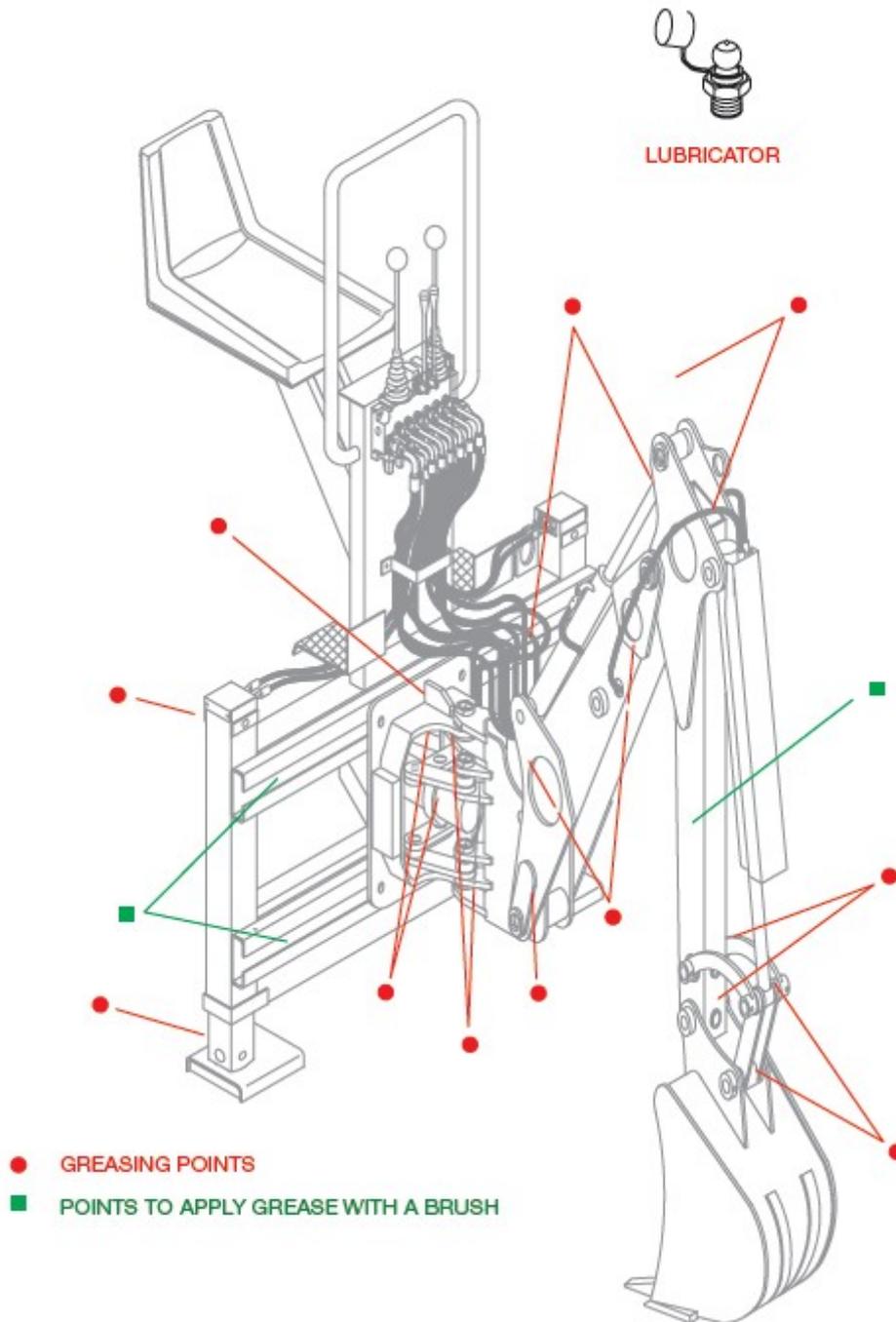
### F3.2 Checking the hydraulic oil level

All the cylinders mounted on the backhoe are double-acting so whether they are fully extended or retracted, the quantity of hydraulic oil in the tank should remain almost the same. Through the level plug, which is transparent, check that the oil covers the red indicator at the centre of the plug; if this is not the case top up with hydraulic oil, following the instructions below.





Greasing points:



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### F3.3 Checking the oil level in the pump gear

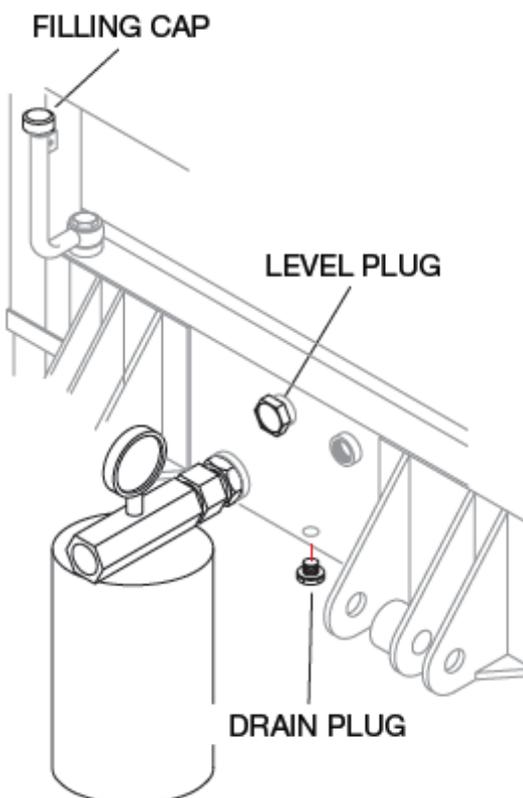
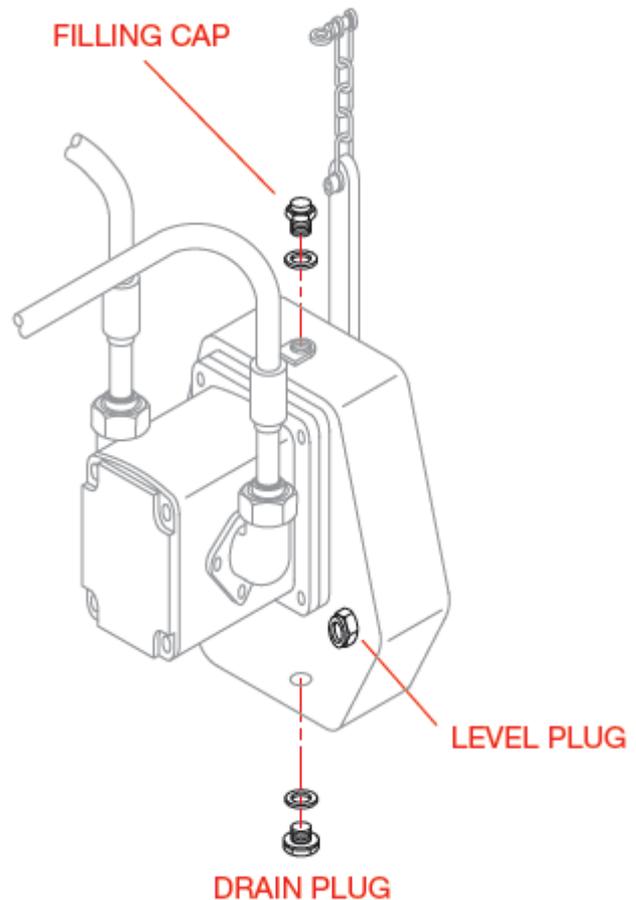
To do this check you should keep the pump/multiplier unit perfectly vertical, as shown in the picture. Through the level plug, which is transparent, check that the oil covers the red indicator at the centre of the plug; If this is not the case top up with hydraulic oil, following the instructions below.

### F3.4 Changing the hydraulic oil

Pump/multiplier unit:

Place a small container (3-lt. capacity) under the drain plug of the multiplier. First, unscrew the filling cap and then the drain plug, letting the hydraulic oil drain completely. At the end of the operation, screw the drain plug back in, after changing the seal. Start filling the multiplier with the oil recommended by the

Manufacturer, using a funnel. When you see that the fluid has reached the red indicator, by looking through the level plug, stop filling and screw the filling cap back on after changing the seal.



Backhoe:

Place a container of adequate size under the tank. First unscrew the filling cap and then the drain plug, letting the hydraulic oil drain completely. At the end of the operation, screw the drain plug back in, after changing the seal. Start filling the tank with the oil recommended by the Manufacturer, using a funnel. When you see that the fluid has reached the red indicator, looking through the level plug, stop filling and screw the filling cap back on.

**Note:** It is recommended to drain the oil when it is hot, so it flows easier. Therefore, it is a good idea to perform this operation immediately after finishing work. Before starting, prepare the backhoe as described in paragraph F1. Do not mix oils of different types. Always use the same type in the tank or sump of the multiplier.

**IMPORTANT:** To avoid polluting, it is absolutely forbidden to dispose of oils, lubricants, filters, cartridges or other noxious materials in the environment. Scrupulously observe the dispositions in force in the country the machine is used in on the disposal of liquid and solid substances.