Spraying boom

user manual

Serial number

Edition **2**
07 - 2008

INDEX

IMPORTANT SAFETY NOTE
The information published in this booklet regards the pointed out with relevant symbols in order to safeguard operational aspects of the operator unit installed on the people from risks. Remember that prudence is irreplaceable. machine. It is however necessary that you carefully read the Safety is also in the hands of all the operators who interact general safety regulations published in Booklet 1 and those with the machine.

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TECHNICAL INFORMATION

EQUIPMENT GENERAL DESCRIPTION

The spraying boom, from now on called equipment, was designed and built to be installed on a machine for spraying chemical products on tilled land and/or products.

It is to be put on the height adjustment device and on the self-levelling device so that it remains perfectly parallel with the ground, even in the event the ground is uneven.

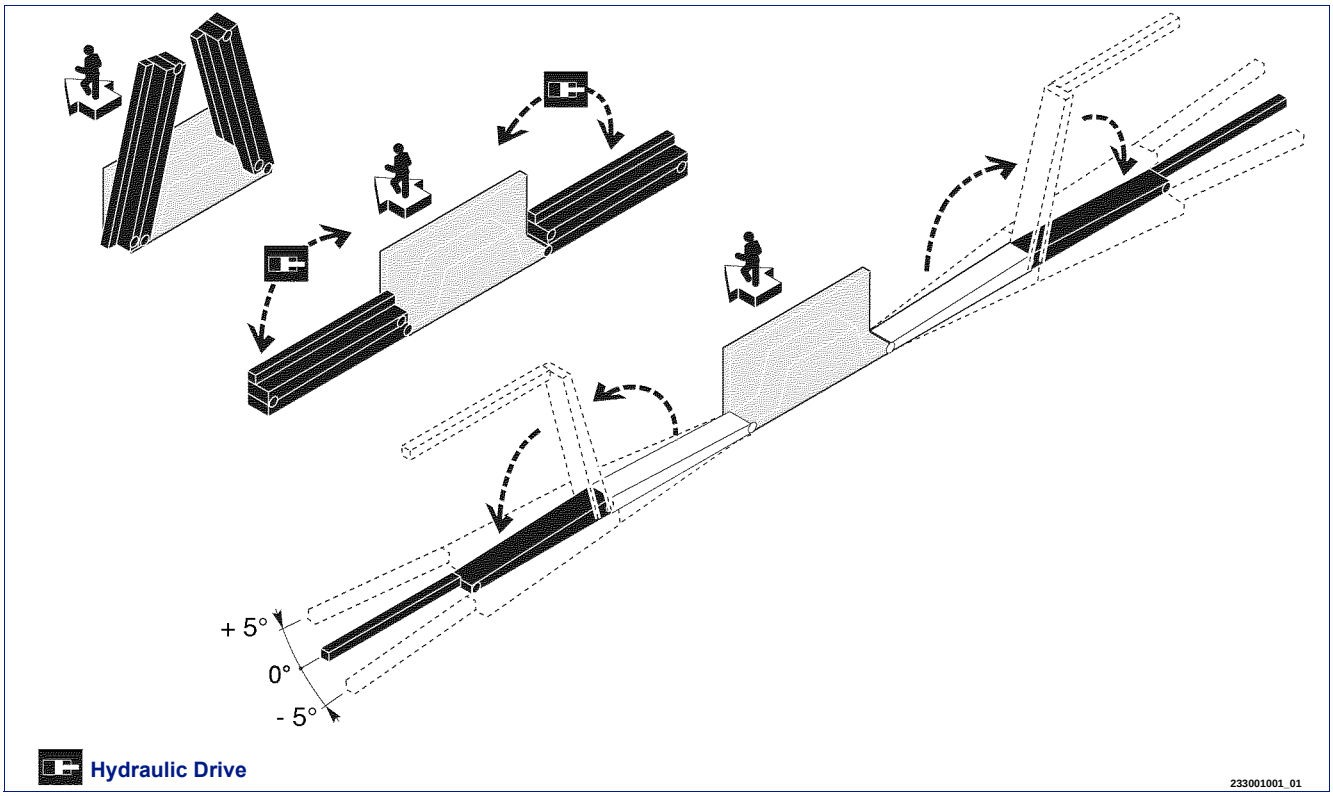
The equipment is divided into folding boom sections in order to adapt it to the spraying width and so as to reduce the space occupied during transfer.

TECHNICAL SPECIFICATIONS

Width (m) W	*Size*			*(*) Weight (kg)*	*Qty. Jets (500 mm)*
	A mm	*B mm*	*C mm*		
15	2500	600	2800	440	30
16	2500	600	2800	442	32
18	2500	600	2900	447	36

(*) Boom with self-levelling devices on maximum configuration.

Technical specification diagram



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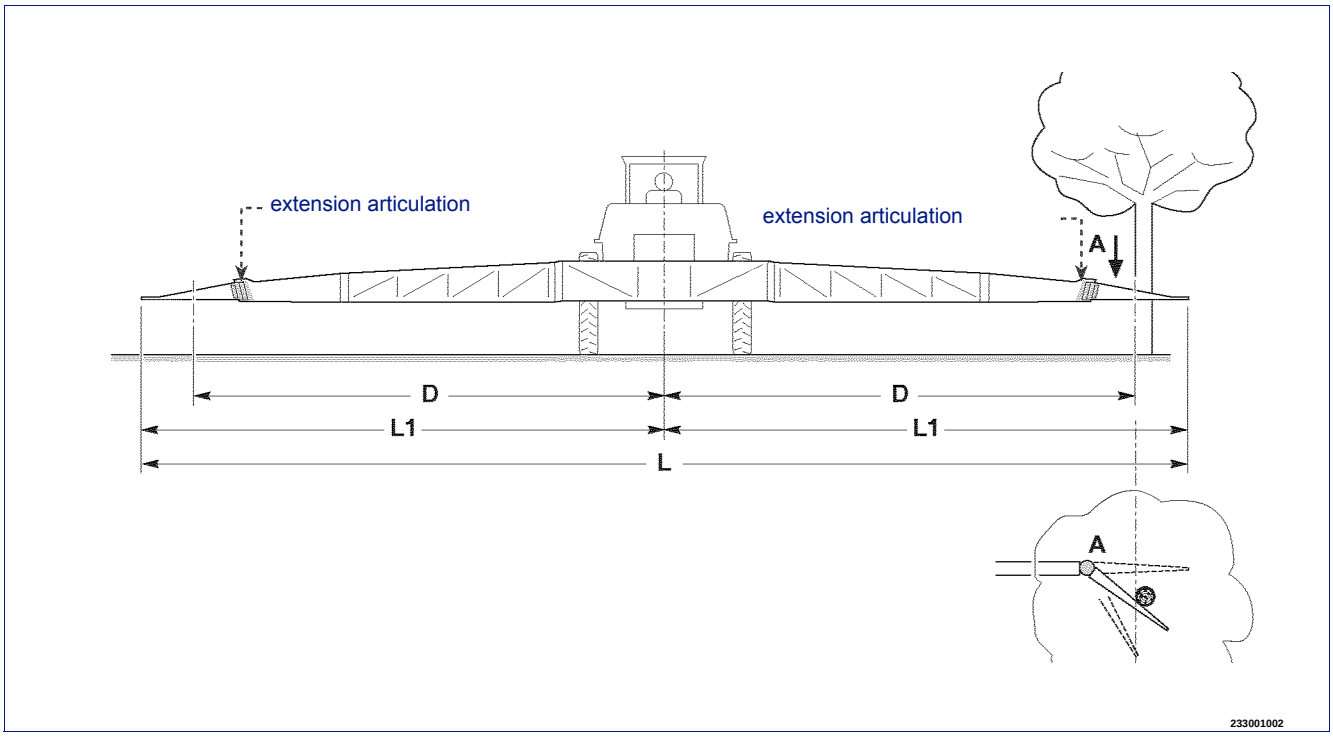
SAFETY DEVICES

- **Extension articulation:** to allow the end of the extension to turn so as to get past obstacles. In order to get past the obstacle without damaging the equip- ment, it is necessary to keep a distance higher than the value (**D**) given in the table.
- **Stop valve:** it allows to stop movements of the various boom sections during use and/or transport of the equipment and to prevent accidental move- ments in the event of an hydraulic hose failure.

Safety distance table

Width W	*Width W1*	*Safety distance D*
15	7,5	6,8
16	8	7,2
18	9	8,1

Safety distance diagram



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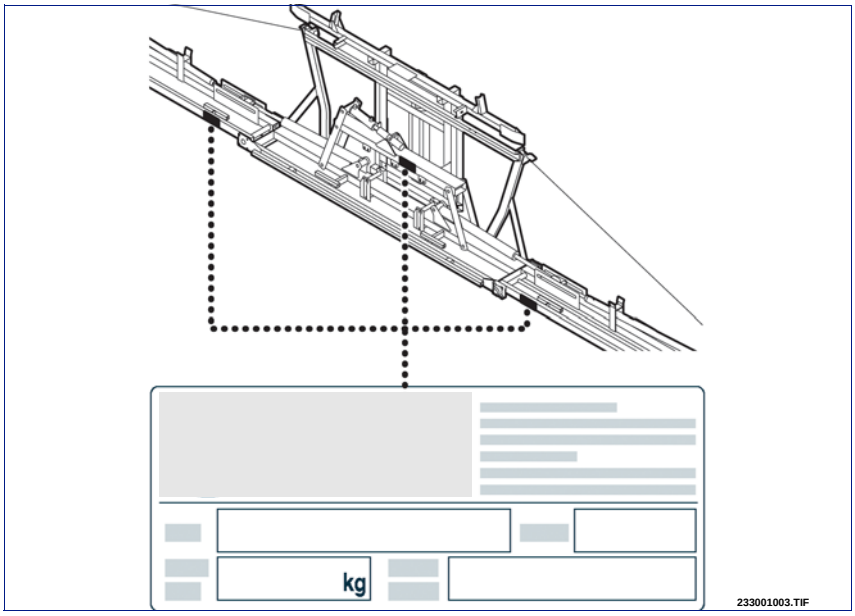
IDENTIFICATION PLATE POSITION

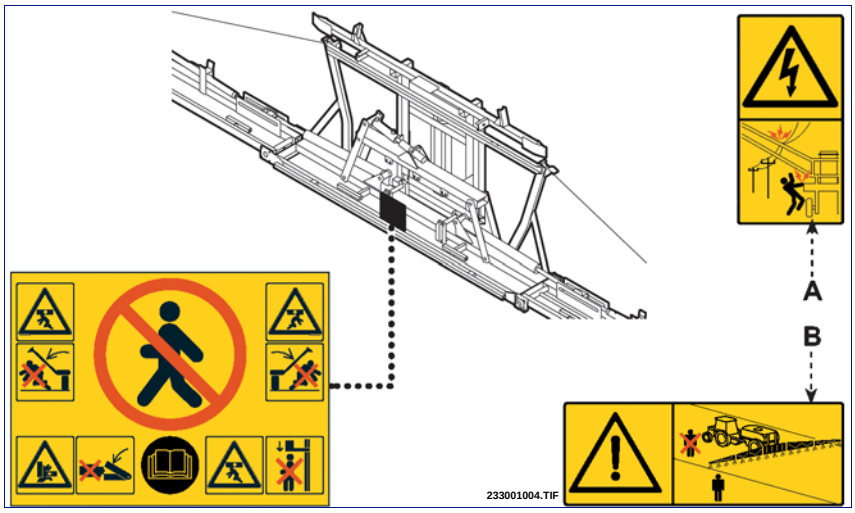
The figure points out the positions of the identification plates of the compo- nents.



POSITION OF SIGNALS

The figure shows the location of all safety plates, while their meaning is explained in booklet 1.

The plates (A and B) supplied with the manual have to be placed inside the tractor cab, in a visible position.



INFORMATION ABOUT HANDLING AND INSTALLATION

HANDLING INSTRUCTIONS

Comply with the information provided by the manufacturer, found on the equipment and in the instruction manual, when carrying out handling and loading operations.

PACKING AND UNPACKING

- The equipment is to be placed on a loading platform, protected and adequately secured. To make trans- port easier, it can be shipped with several compo- nents disassembled.
- When unpacking, check that all the components are intact and in the exact quantities.
- The packing material is to be disposed of properly, in observance of the laws in force.

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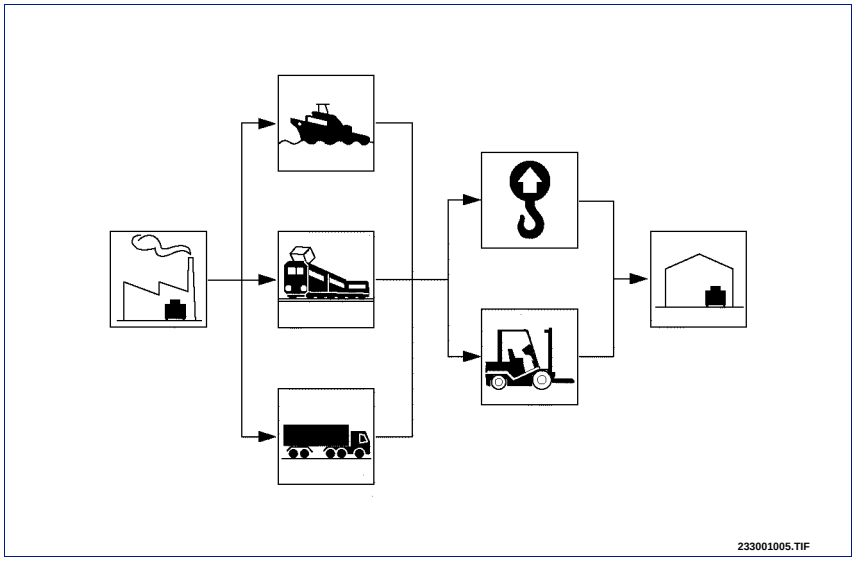
LOADING AND TRANSPORTATION

Depending on the destination, loading and transport can be carried out with different means. The diagram shows the most commonly used solutions. Secure the means properly during transportation in order to prevent untimely shifting.

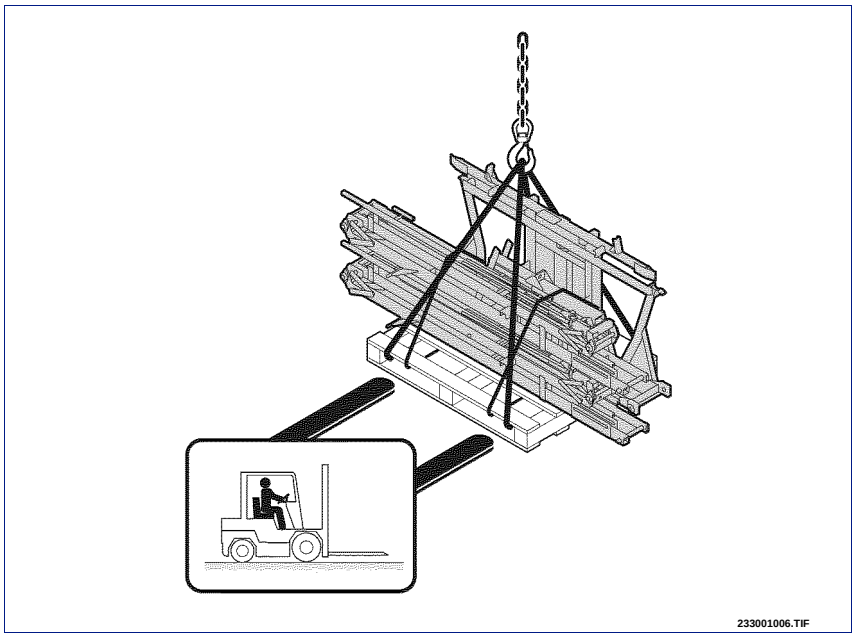


HANDLING AND LIFTING

The equipment can be handled with a lifting device with forks or hooks having a sufficient capacity.
Position the lifting device as shown in the figure.
Avoid sudden manoeuvres.

Danger - Warning

Lifting and handling operations must be carried out by using appropriate means and by skilled staff specialized in this kind of manoeuvres.



INSTALLATION INSTRUCTIONS

Whoever performs the installation must prepare satisfactory safety conditions in advance in order to ensure their own safety and that of the operators involved.

INSTALLATION OF DISASSEMBLED PARTS

Follow the instructions given below so as to install and assemble the spraying boom properly.

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EQUIPMENT INSTALLATION

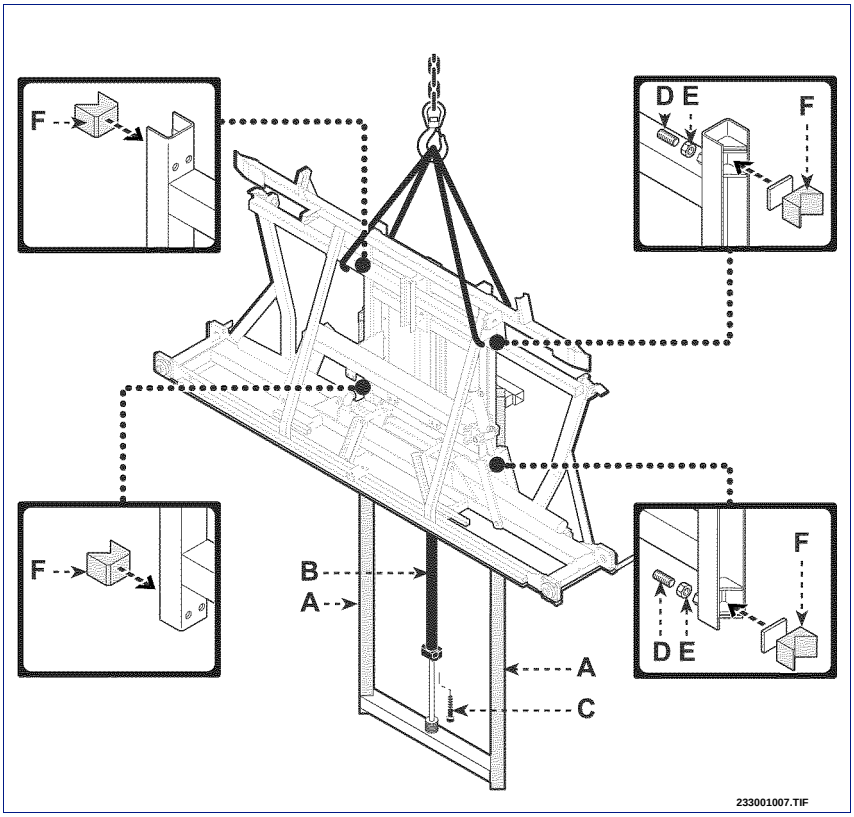
Keep to the following instructions.

1 - Position sliding blocks **(F)** as shown in the figure

2 - Lift the equipment and insert it into guides **(A)** of the lifting device.

3 - Fasten the equipment to lifting cylinder **(B)** by means of screws **(C)**.

4 - Adjust screws **(D)** and tighten counter-nut **(E)** so that the frame can slide along the entire lifting length without excessive play.



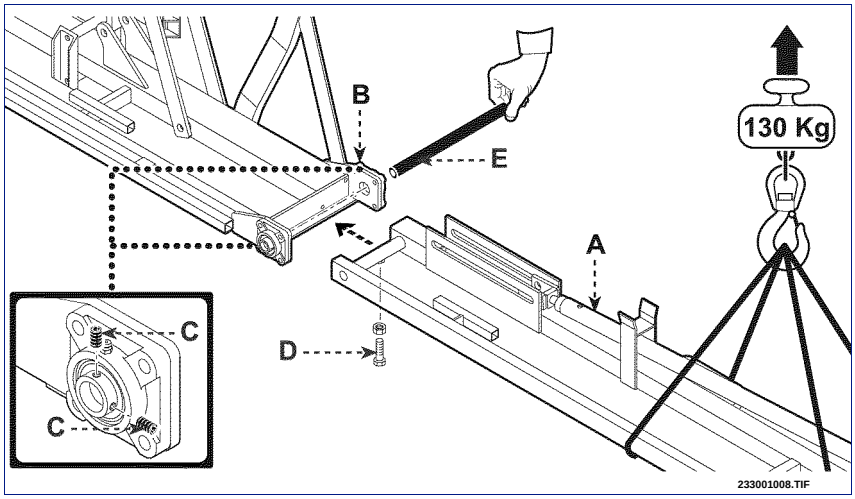
INSTALLATION OF ARM

Keep to the following instructions.

1 - Unscrew dowels **(C)** and screw **(D)** so that pin **(E)** can be inserted without obstructions.

2 - Lift arm **(A)** and fasten it to central frame **(B)** by means of its pins **(E)** after lubricating the parts and their seats.

3 - Tighten dowels **(C)** and screw **(D)** by means of their counter-nut.



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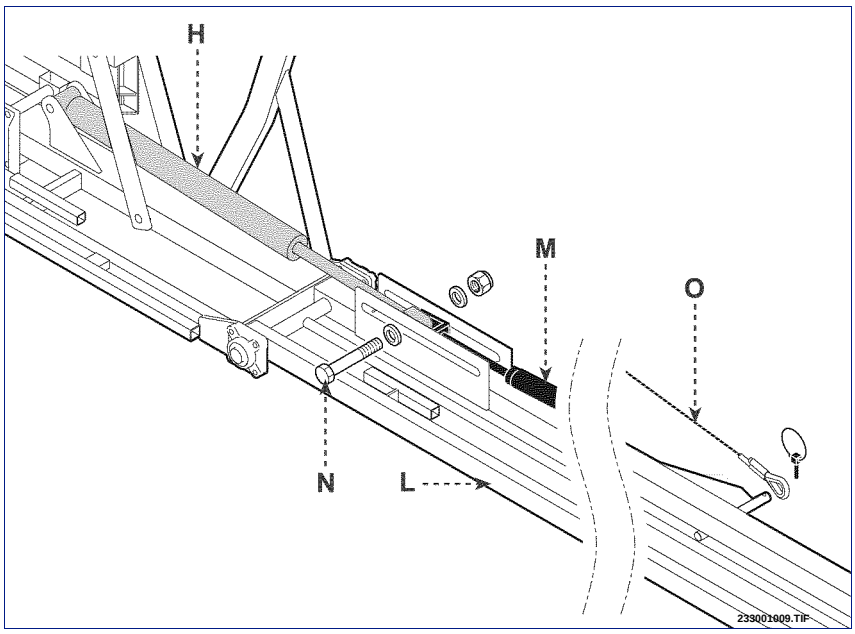
4 - Remove the rod of cylinder **(H)** and fasten it to arm **(L)** and tie-rod **(M)** by means of screw **(N)**.

5 - Install cable **(O)** as shown in the figure.

6 - Install the opposite arm by following the same instructions.



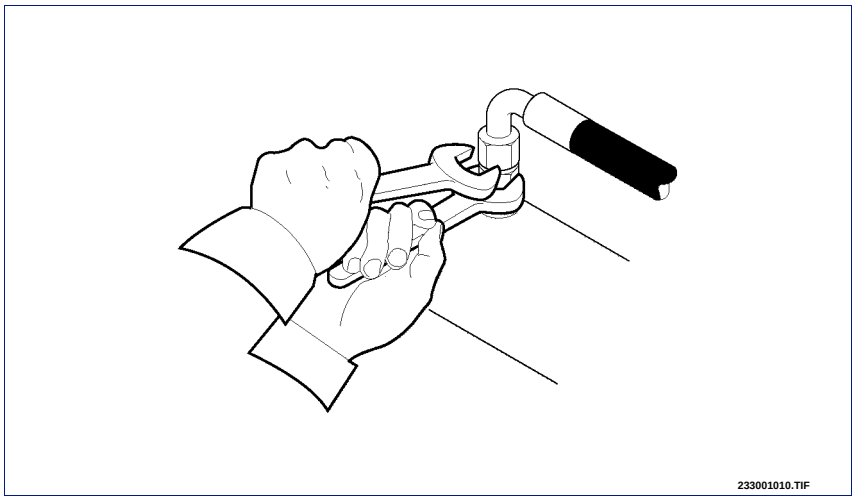
INSTALLATION OF THE HYDRAULIC SYSTEM

Proceed in the way indicated.

1 - Connect the hoses to the cylinders (see the hydraulic diagram).

Important

Do not tighten the unions too much so as to damage the sealing taper fit.



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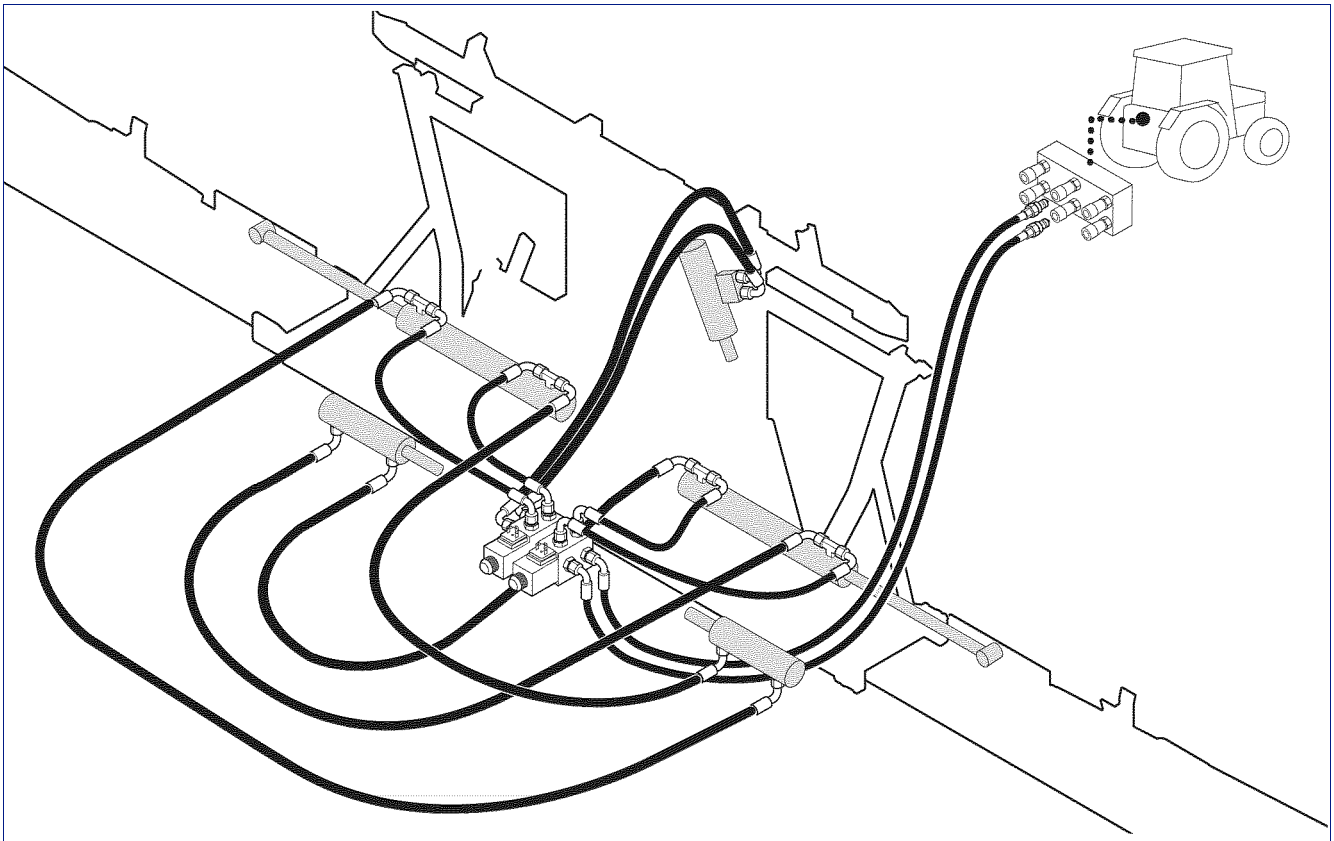
3-function hydraulic system (with electric switch and control panel)



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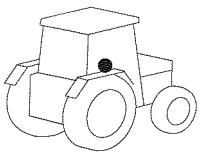
The control is performed from the control panel and is activated from the tractor's driver's seat.

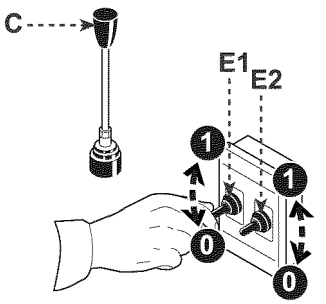
The control panel is installed so that the driver can easily activate it.

Electric switch with control panel

How to use the controls

1 - Select the function by means of switches (**E**). Activate the selected function by means of lever (**C**) of the tractor's control unit
E1 Pos. 0 / **E2** Pos. 0 = Correction of position
E1 Pos. 1 / **E2** Pos. 0 = Unfolding / folding of left arm
E1 Pos. 0 / **E2** Pos. 1 = Unfolding / folding of right arm





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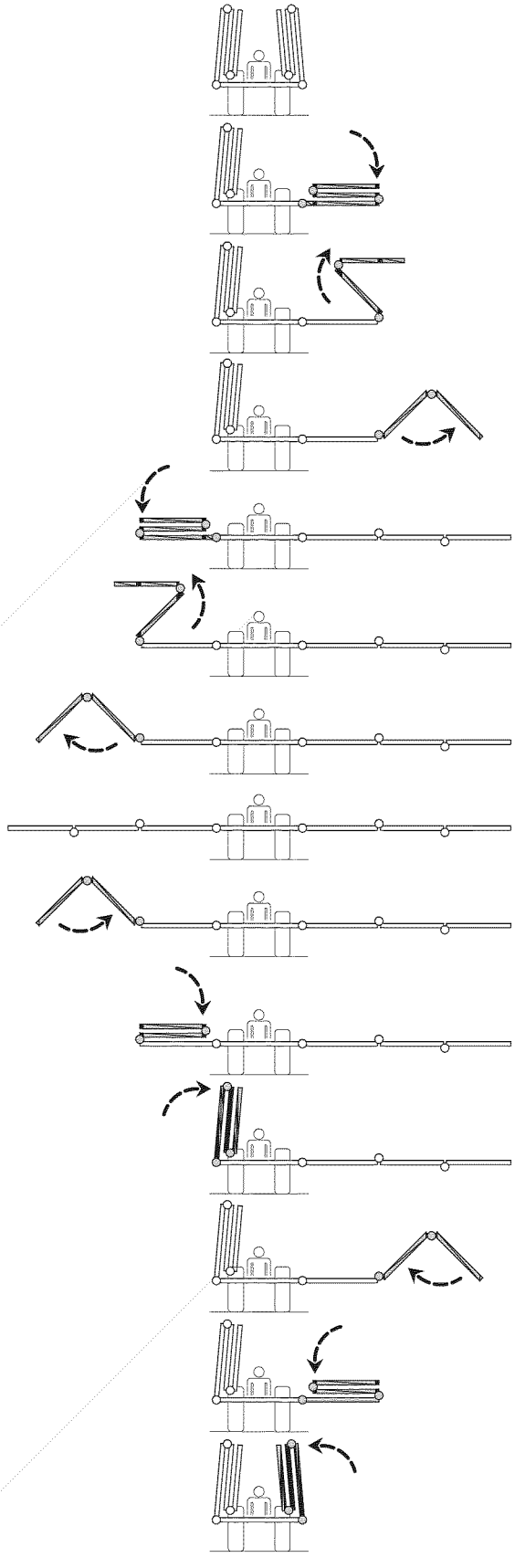
Boom unfolding and folding

The figure indicates the procedure to follow when unfolding and folding the boom.

Please note: the two arms can be folded or unfolded independently of each other.



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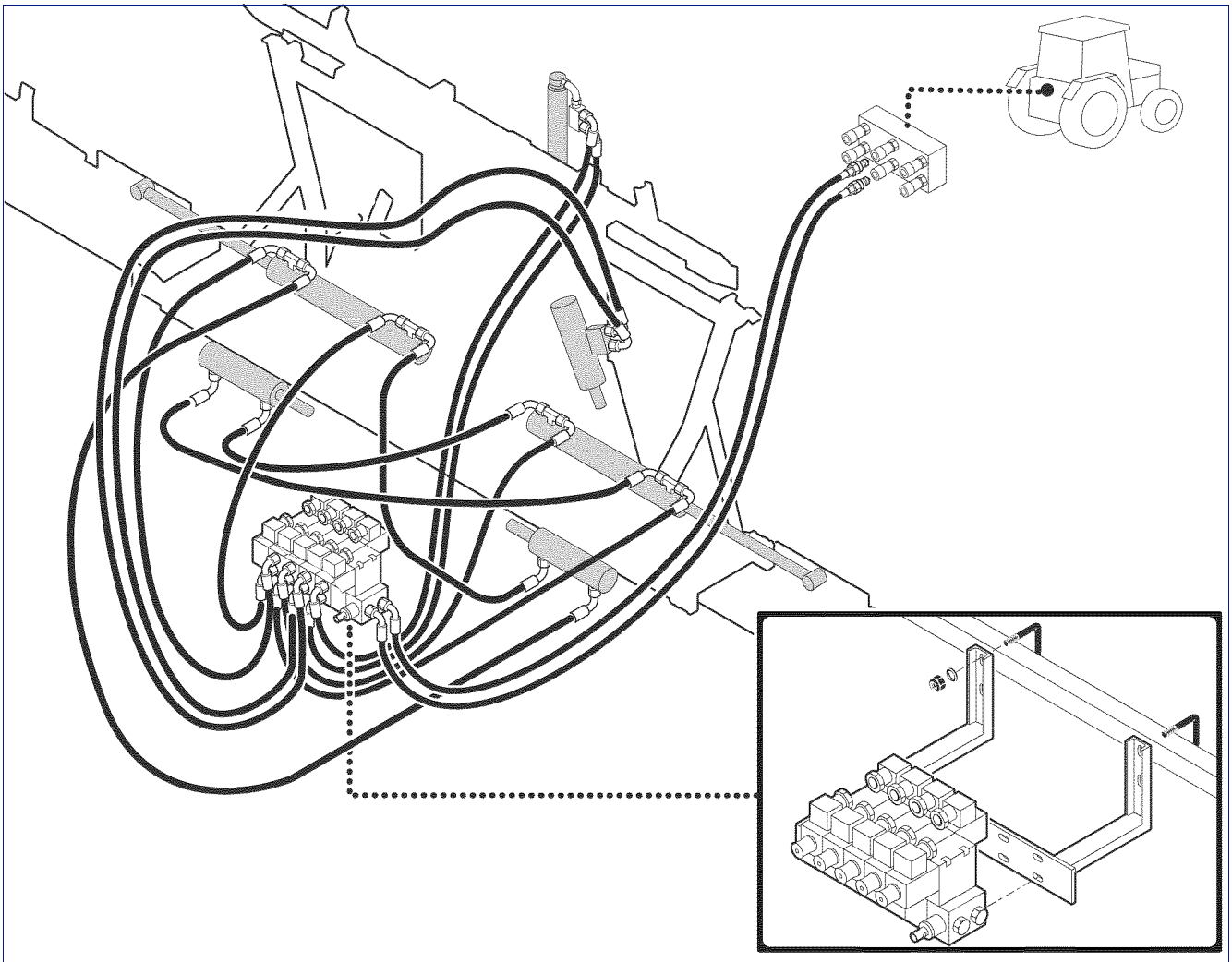
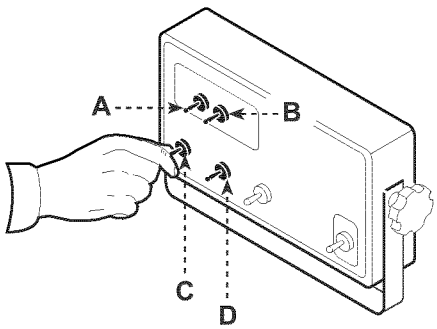
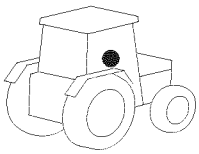
4-function hydraulic system (with double effect solenoid valves)



CGA CONTROL PANEL

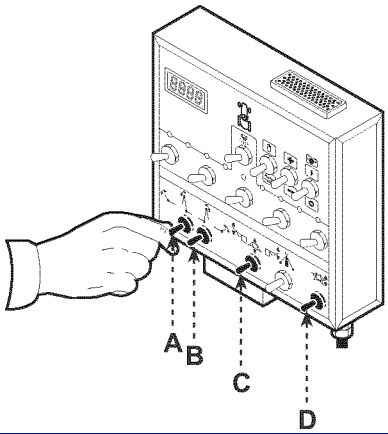
A) Unfolding of left arm
B) Unfolding of right arm
C) Lifting
D) Correction of hydraulic tilt





MÜLLER CONTROL PANEL

A) Unfolding of left arm
B) Unfolding of right arm
C) Lifting
D) Correction of hydraulic tilt



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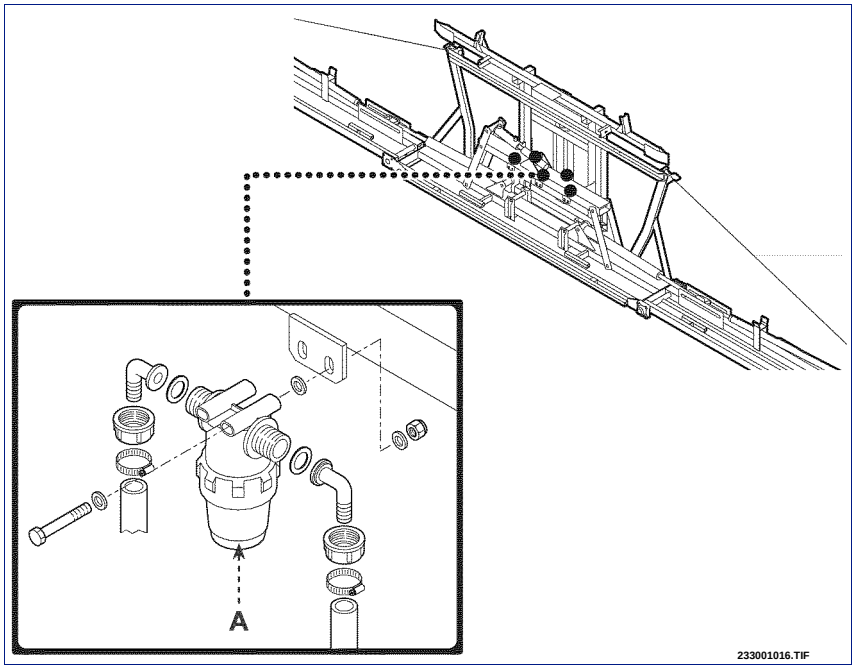
INSTALLATION OF LINE FILTERS (IF REQUIRED) AND JETS

Proceed in the way indicated.

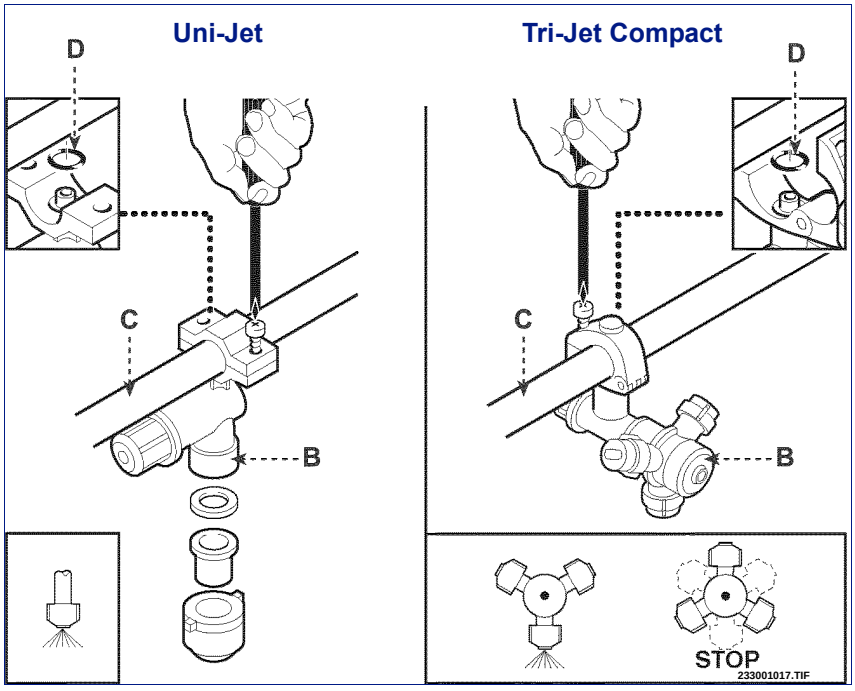
1 - Install the line filters (**A**) as shown in the figure.



2 - Mount the jets (**B**) next to the outlet holes of the stainless steel pipes (**C**) (see the “Jet Layout” diagram, page 12).

Important

Properly mount the seals (D).



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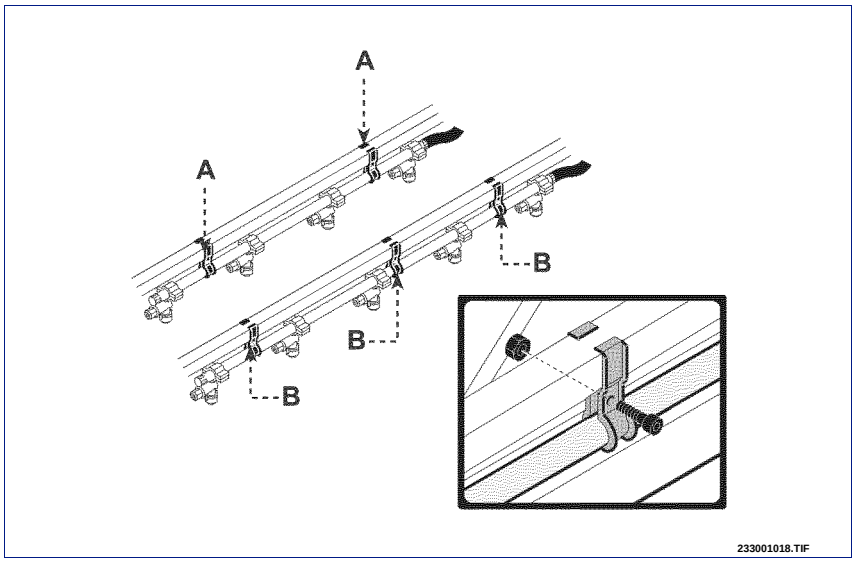
NUMBER OF JETS ON EACH BOOM SECTION

Position the nozzle holder hoses depending on the boom length (see diagram).

The diagram shows as well position and number of supports on each hose and installation instructions, depending on the number of supplies.

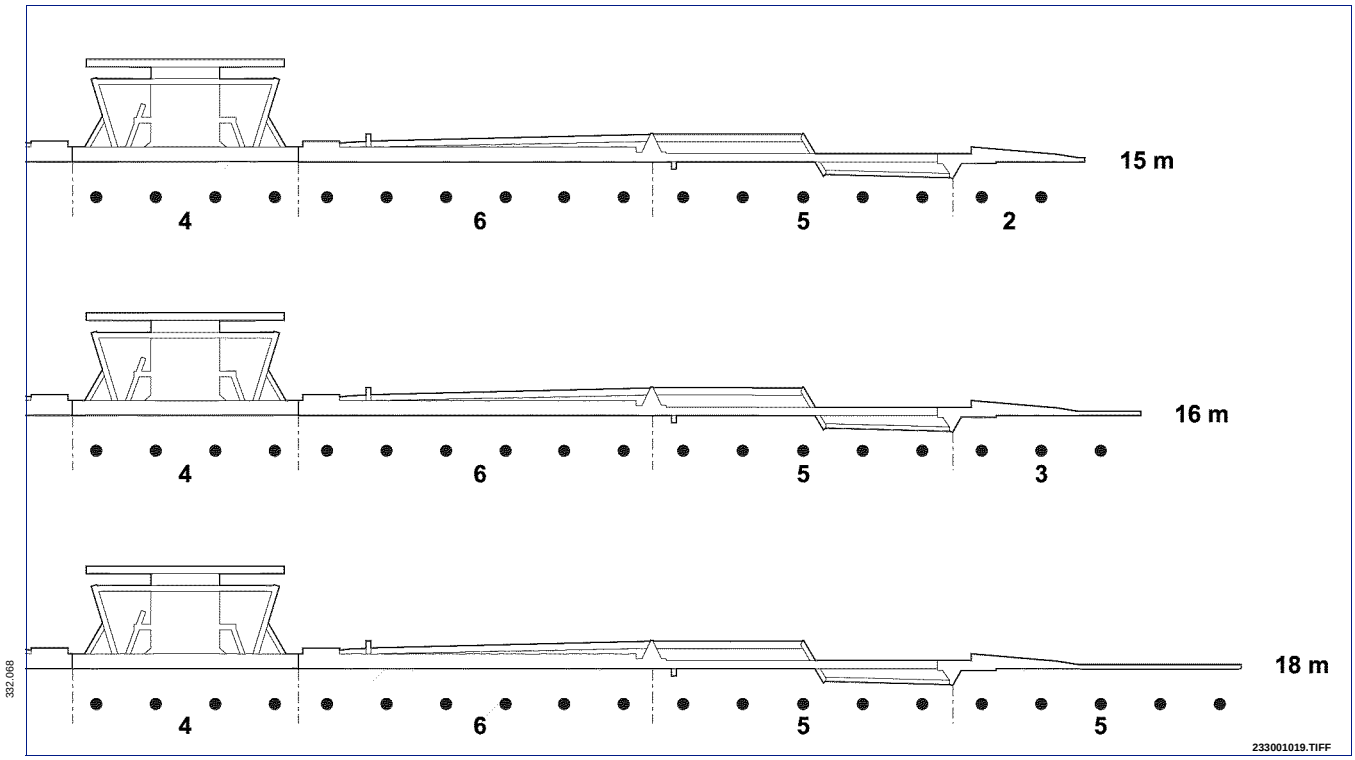
If the equipment is supplied disassembled, the diagram is enclosed with the small items of the boom.



Important

For hoses with up to four jets use two pairs of clamps (A); for hoses with more than four jets use three pairs of clamps (B).

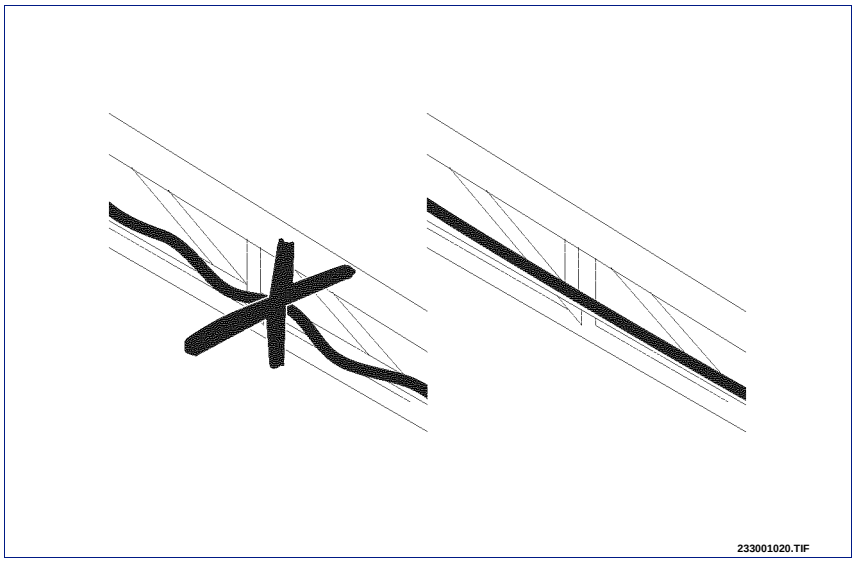
Jet number diagram for each boom section (500 mm pitch)



INSTALLATION OF WATER HOSES

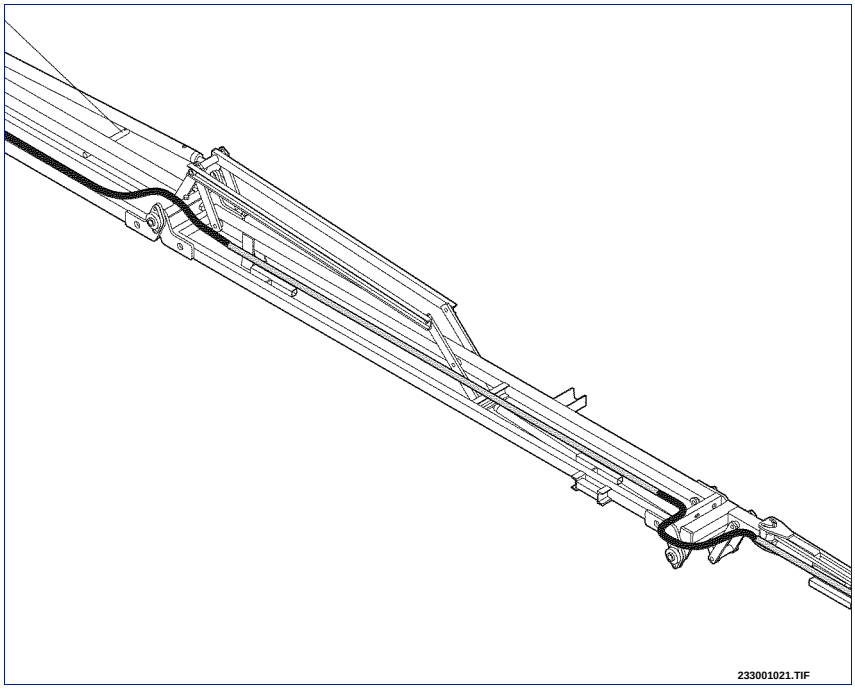
Proceed in the way indicated.

1 - Lay the hoses down on the boom linearly (see the figure).



2 - Leave sufficient length so as to not impede the movements at the articulation points of the boom.

3 - Connect the hoses (see “water connection diagram”).



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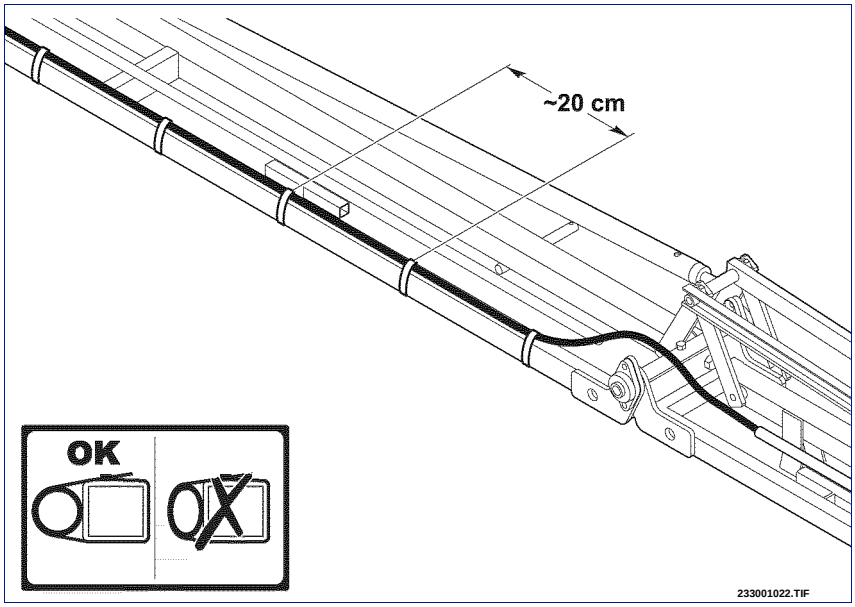
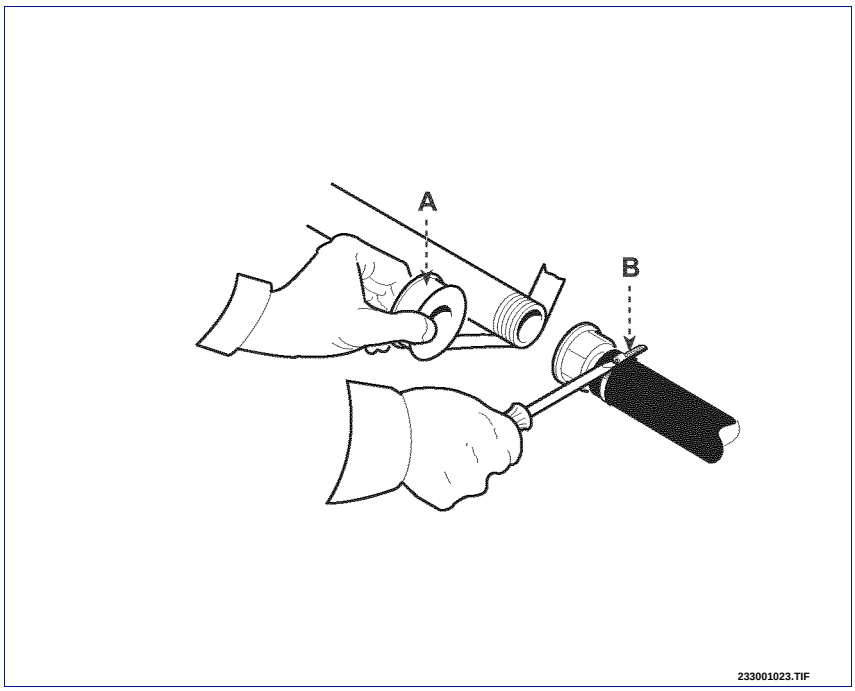
4 - Secure the hoses to the boom with clamps spaced out ~ 20 cm.

Important

Do not tighten the clamps too much so as to avoid throttling.



5 - Use the Teflon seal (**A**) and tighten the stainless steel clamps (**B**) in order to ensure tightness in the joints.



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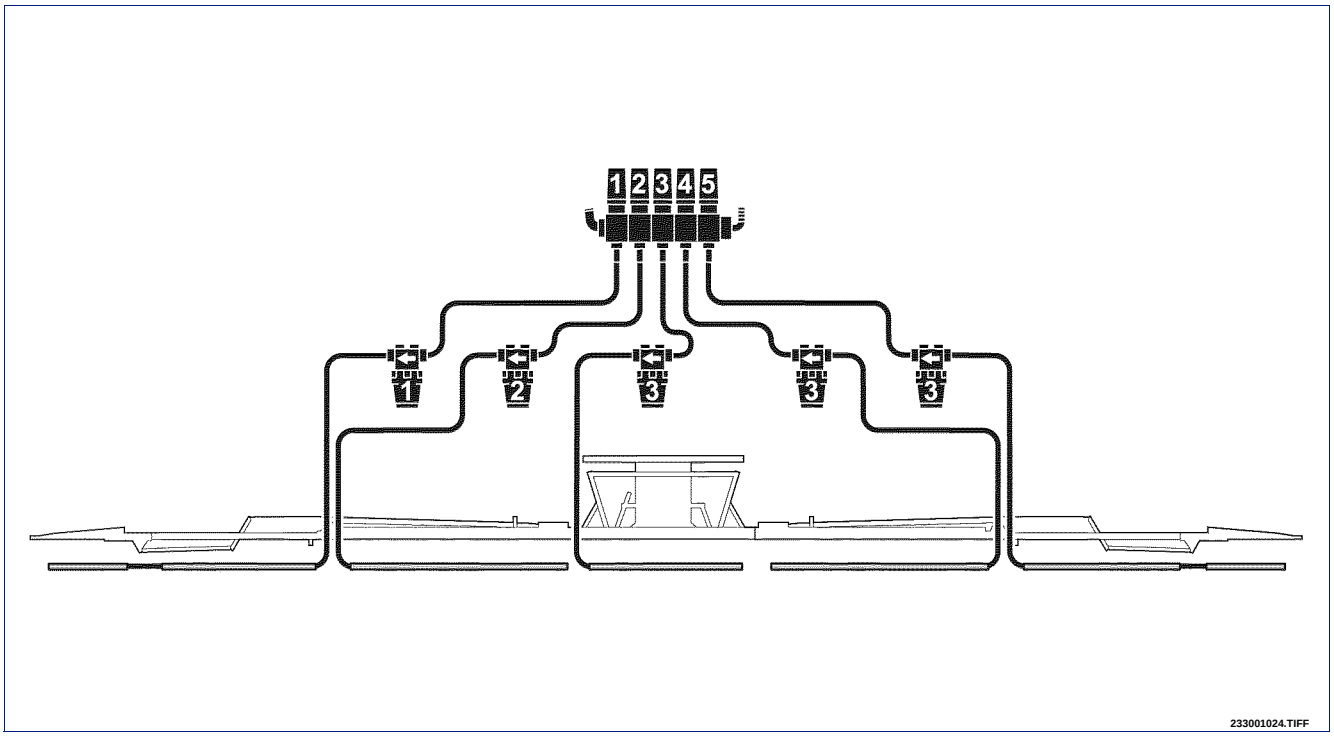
5-supply water connection diagram



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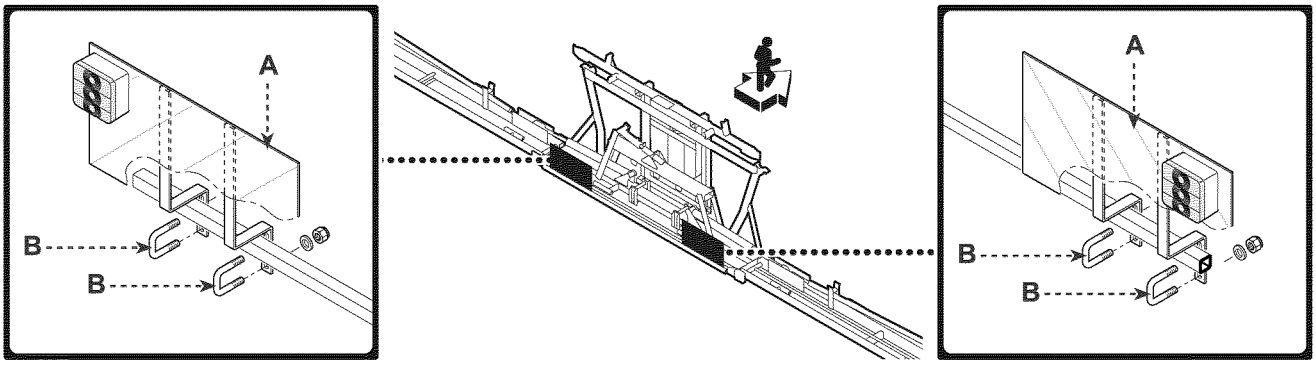
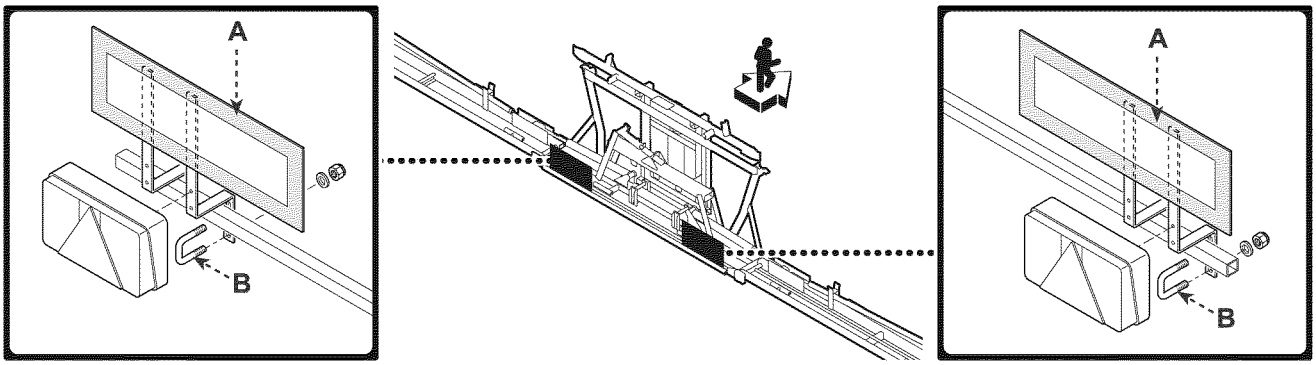
INSTALLATION OF REAR LIGHT KIT

Install the rear light kit (**A**) and fasten it with U bolts (**B**).

Rear light kits for mounted units with rear-reflecting panels



Rear light kits for trailed tanks with rear-reflecting panels



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INFORMATION ABOUT ADJUSTMENTS

INSTRUCTIONS FOR ADJUSTMENTS

Whoever makes the adjustments must prepare satisfactory safety conditions in advance in order to ensure their own safety and that of the operators involved.

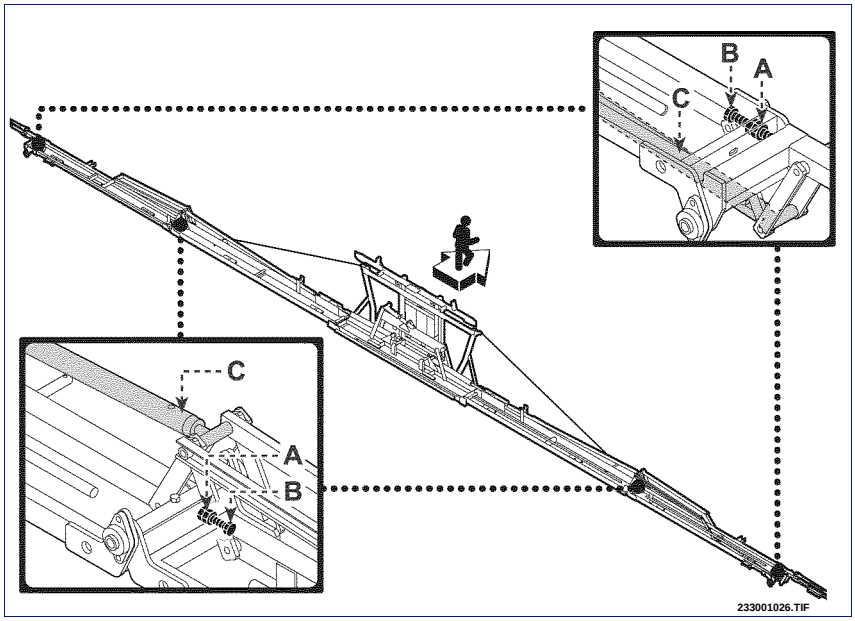
ADJUSTMENT OF ARM ALIGNMENT

Proceed in the way indicated.

1 - Unfold boom completely

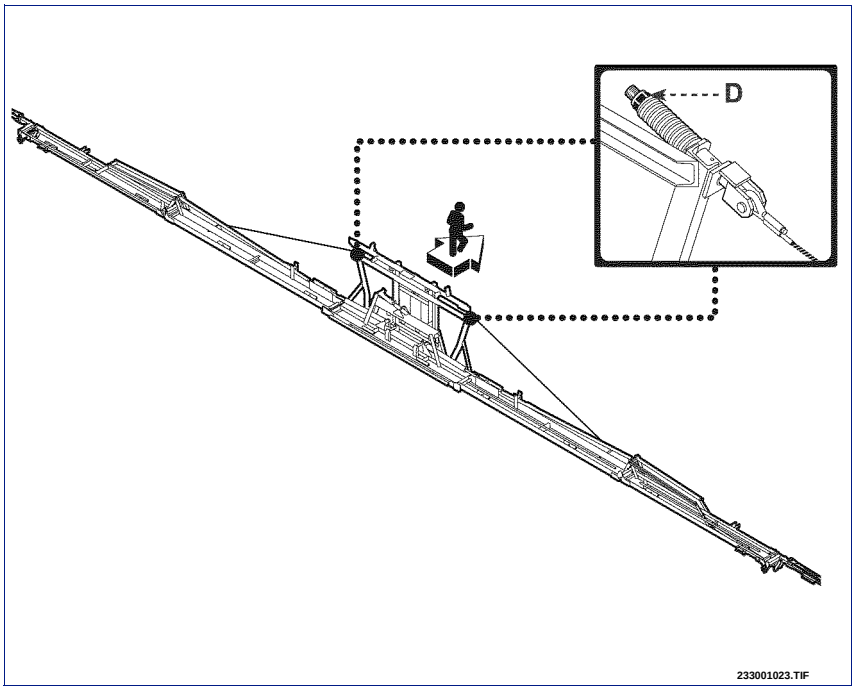
2 - Loosen counter-nuts **(A)** and align the arms by means of screws **(B)**. If necessary, increase the cylinder thrust by means of tie-rods **(C)**.

3 - Tighten counter-nuts **(A)**.



4 - Make the same adjustment on the other arm.

5 - Adjust the horizontal position of the complete arm so that it is parallel to the ground by means of nut **(D)**.



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INFORMATION ABOUT USE

OPERATING ADVICE

Important

Information on hydraulic connections is to be found in the "Hydraulic system" diagram. The boom unfolding and folding procedure, variable depending on the type of control installed, is de- scribed in "Boom Unfolding and Folding".
The information mentioned is not published in the manual if the equipment is installed on units be- longing to other manufacturers.

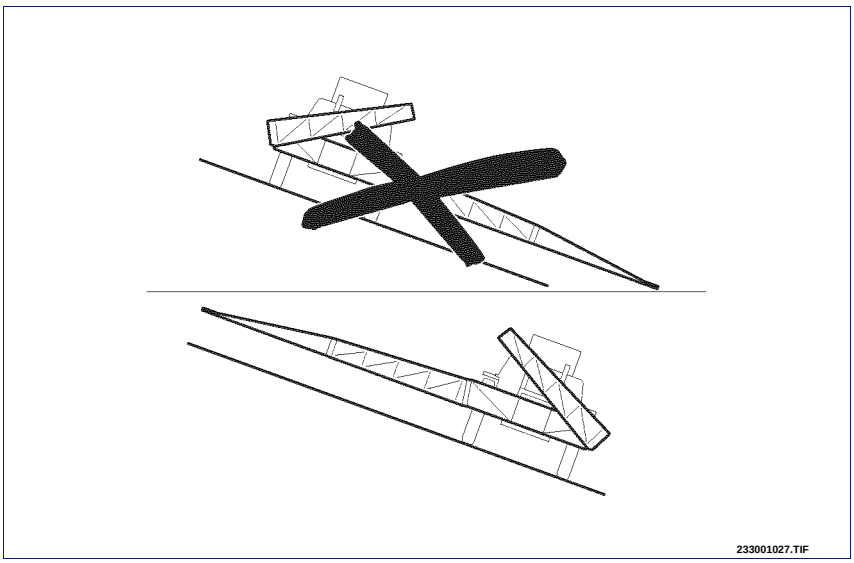
BOOM FOLDING AND UNFOLDING

Important

The environmental and territorial conditions of the area where you plan to operate have to be checked every time the equipment is set up for spraying.

Evaluate the following requirements.

- Check whether or not there are electric lines and assess the risks of contact with the spraying boom.
- Check the gradient of the land so as to evaluate the most suitable conditions for operating in safety. Always bear in mind the maximum gradient limits allowed.
- In the event of spraying with pro- gress transversal to the gradient, carefully follow the instructions given:
  1) Boom unfolding stage: always unfold the one uphill first, and then the one downhill.
  2) Boom folding stage: always fold the one downhill first, and then the one uphill.
- Never work if just the downhill arm is open.
- Keep the forward speed moderate (8-10 km/h max) so as to prevent the boom from swinging and getting uneven spraying.



Important

If it is windy, also stay below the maximum allowed limits (5 m/sec) so as to prevent the product from being dispersed in the surrounding environment. Keep the boom at a lower height and increase the volume of the droplets.

Caution - Warning

Prevent strangers from approaching the working area when the machine is in use. Should it become necessary, stop it immediately and make the peo- ple found in the risk area move away.

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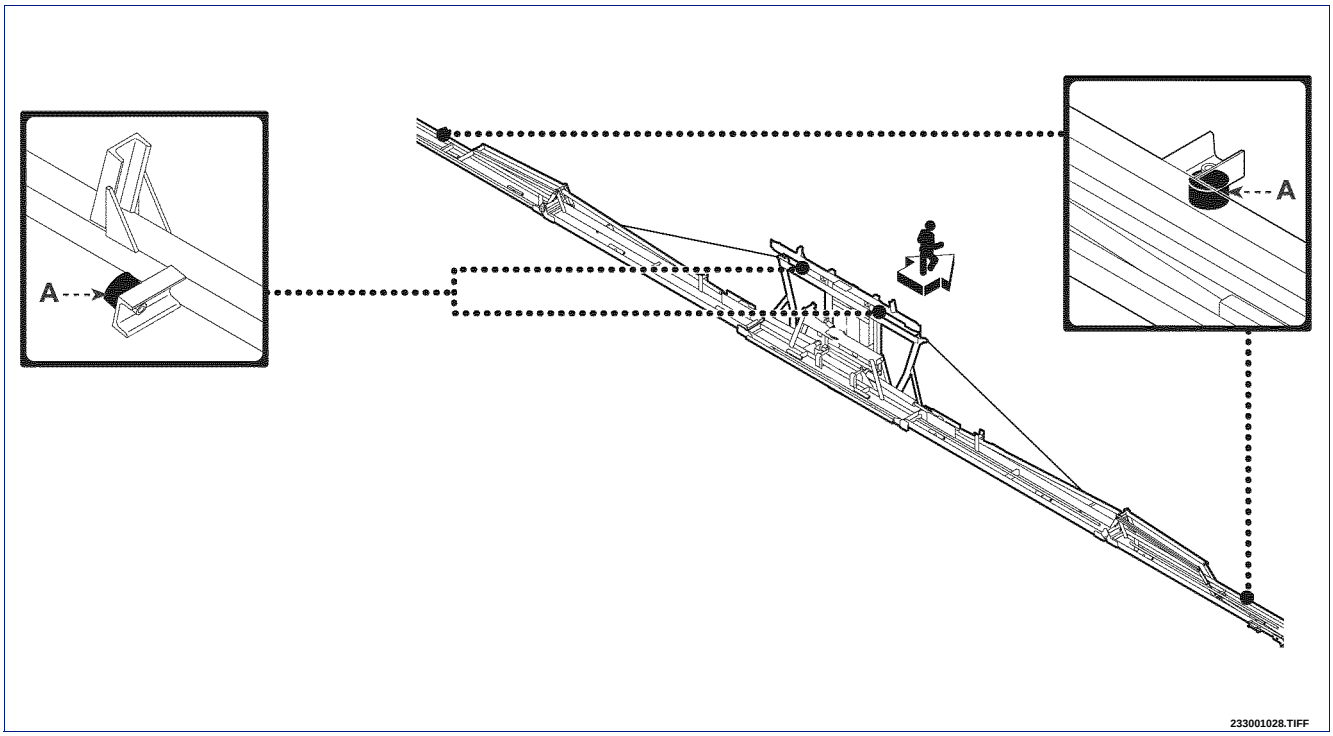
INFORMATION ABOUT MAINTENANCE

MAINTENANCE SCHEDULE TABLE

Interval	Component	Type of intervention	Operation	Page
Each working day and with each interval higher than one hour	Jets and nozzles	Clean and rinse the water supply	Make the clean water come out of the nozzles	
Each working day	Jets and nozzles	Check operation	Clean and replace if necessary	See “nozzle cleaning”, page 20
	Jets, nozzles antidrip valve	Check installation	Install properly	
	Complete equipment	Clean and wash	Use a clean jet of water	
Every 40 hours of work	Complete equipment	Check the greased parts	Grease if necessary	See “Lubrication points diagram” page 20
		Check the condition and tightness of the screws	Tighten and replace if necessary	
		Check the painted surfaces	Touch up the parts the paint has come off of if necessary	
	Boom limit stop bumper (**A**) (see figure below)	Check its condition	Replace if necessary	
	Endpiece articulation springs	Check its effectiveness	Replace if necessary	See “Replacement of spring and terminal joint pin” page23



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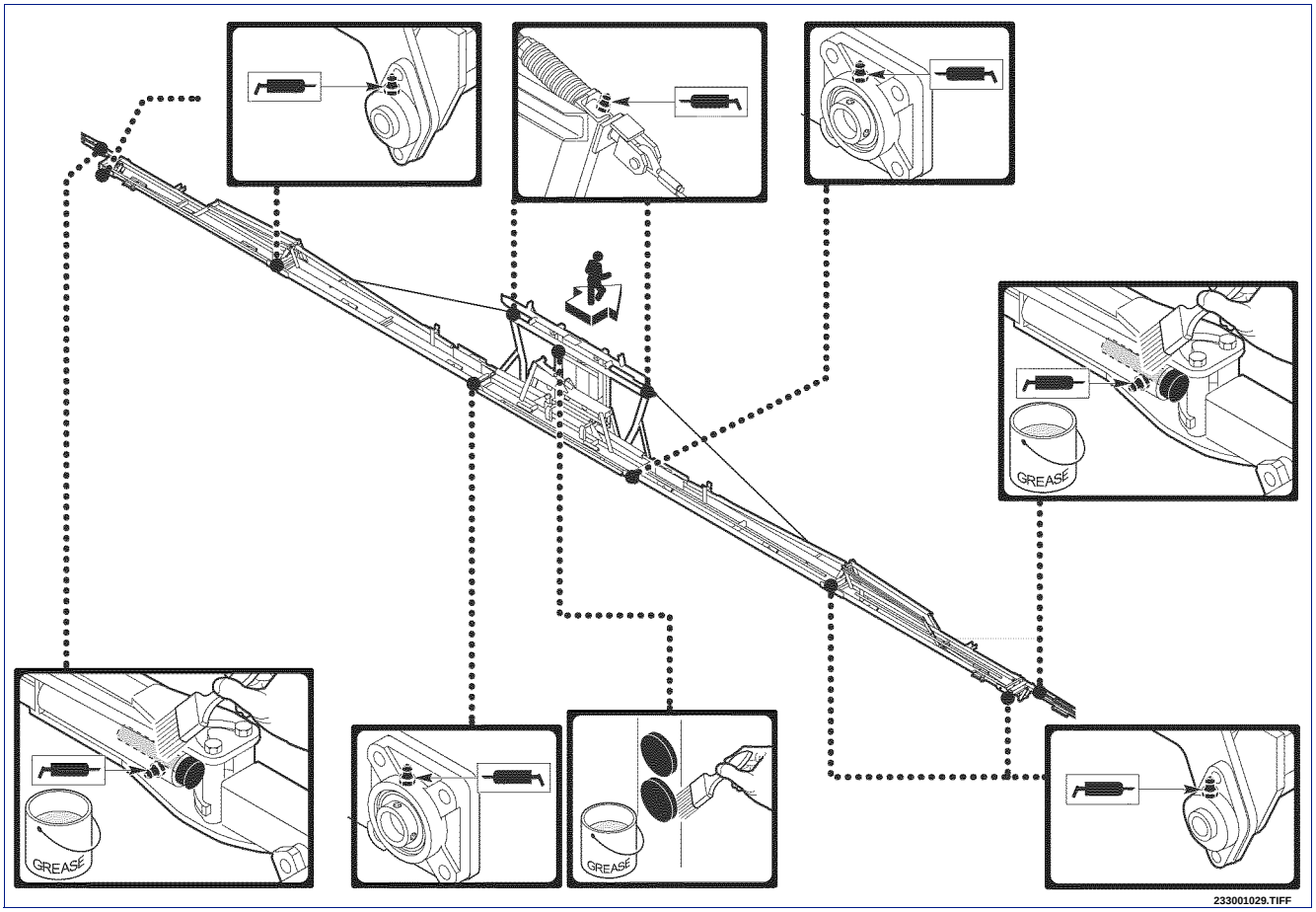
LUBRICATION POINTS DIAGRAM



Use PERSIAN POLIGREASE 2 grease

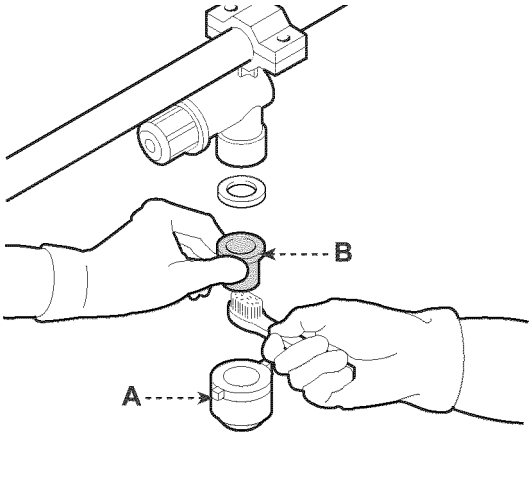
CLEANING NOZZLES

1 - Wear protective gloves for this operation.Disassemble the bayonet (**A**) and nozzle (**B**).

2 - Clean the nozzle with a jet of air and a small soft-bristle brush.

Important

Do not use pointed or sharp objects so as to not damage the hole of the nozzle.



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PROLONGED INACTIVITY

If the equipment is not used for a long time, adopt the procedures given below.

1 - Perform the scheduled maintenance (see page 27).

2 - Perform the general cleaning (see page 29).

3 - Put in antifreeze fluid or completely empty the hoses in order to prevent the components (pump, control unit, filters, hoses, etc.) from breaking in the case of severe temperatures.

4 - Disconnect the hoses from the pressure gauges.

5 - Grease all the components provided with a grease nipple.

6 - Place the equipment in a sheltered place accessible only to the operators.

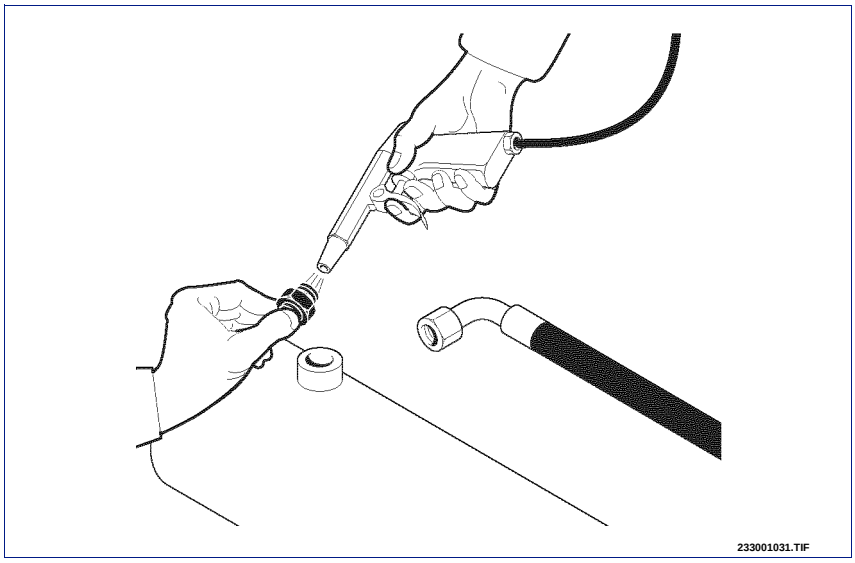
TROUBLESHOOTING

TROUBLES, CAUSES, REMEDIES

Trouble: the boom unfolds halfway and then stops.

Cause: impurities in the calibrated joints of the jacks.

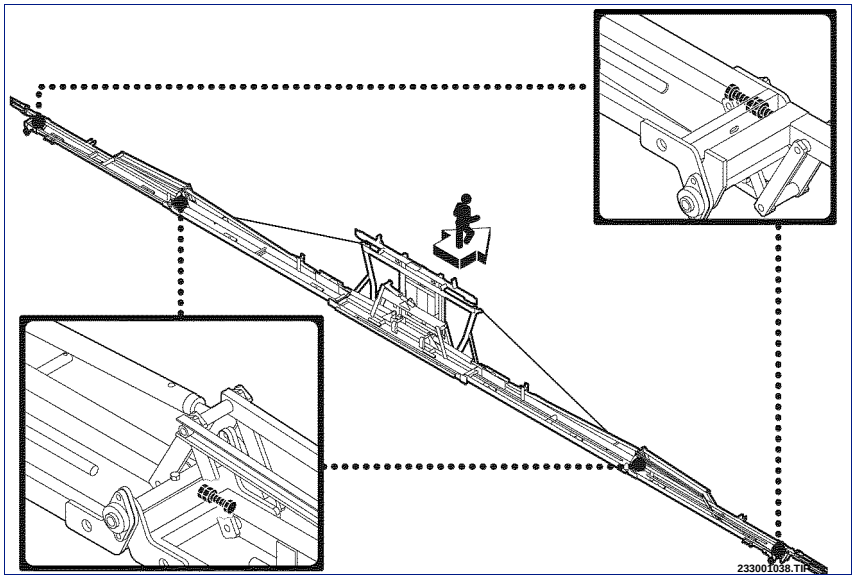
Cures: disassemble the joints and clean them.



Trouble: the boom is not aligned when unfolded.

Cause: unfolding cylinder not adjusted.

Cures: adjust the alignment of the arms (see “arm alignment adjustment”)



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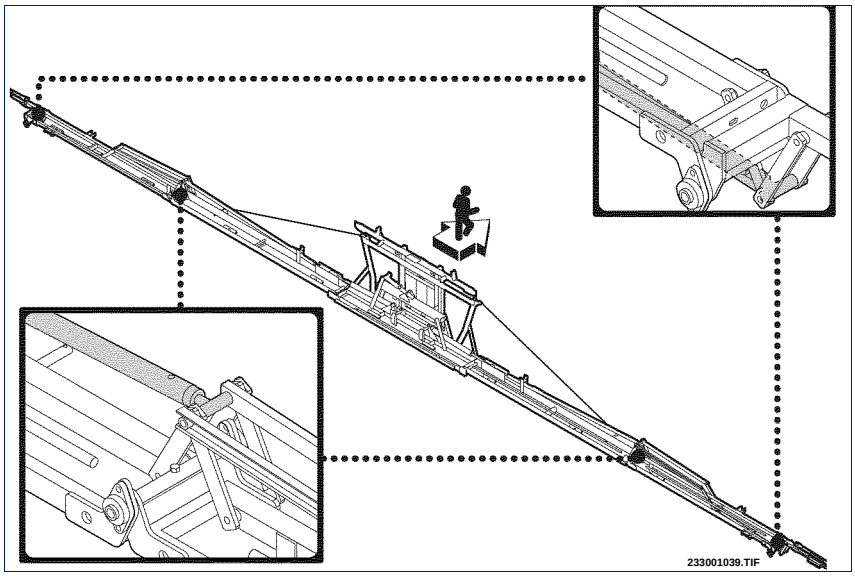
Trouble: when the boom is unfolded and / or folded, the complete extension moves in relation with the primary arm

Cause: anomaly in the adjustment of tie-rods.

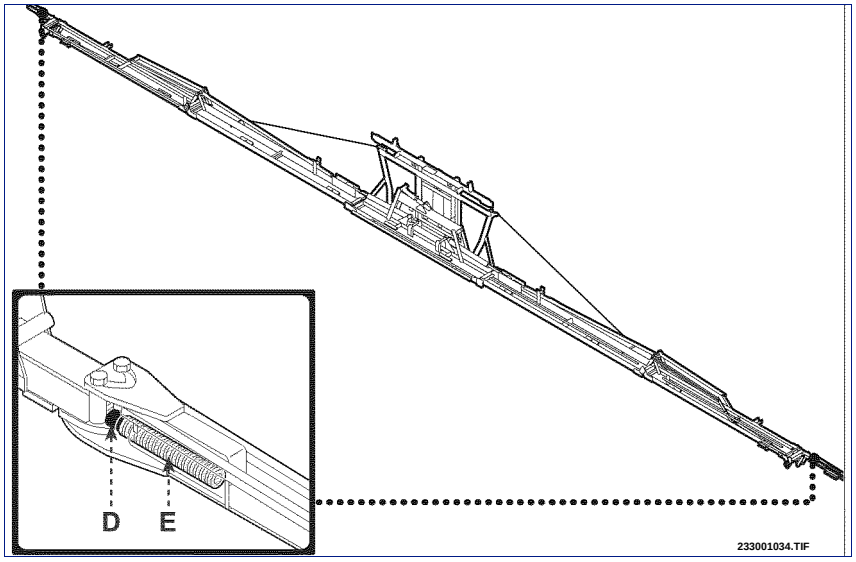
Cures: adjust the tie-rods so that the arms stop against the adjusting screws.



Trouble: the endpiece extension is not steady enough with the boom unfolded.

Cause: the articulation is loose.

Cures: replace pin **(D)** and / or spring **(E)** (see "Replacement of spring and terminal joint pin").



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INFORMATION ABOUT REPLACEMENTS

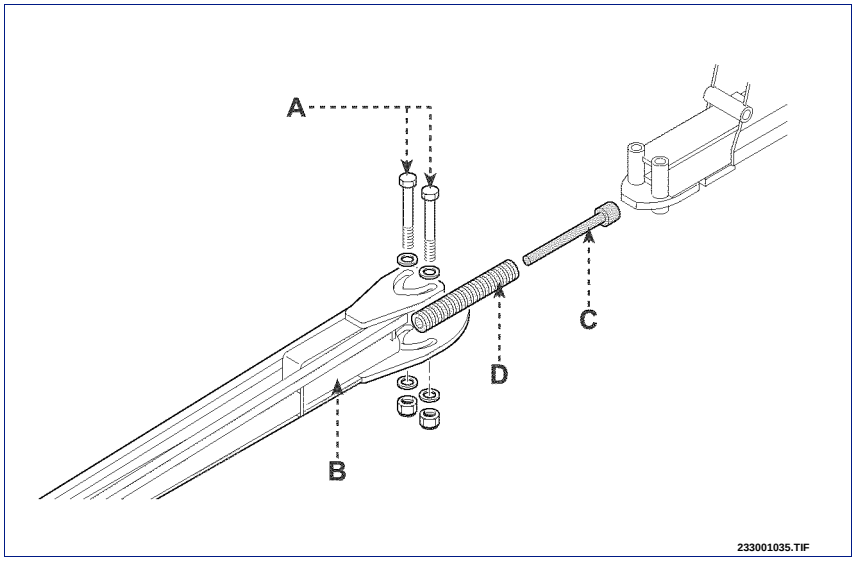
REPLACEMENT OF SPRING AND TERMINAL JOINT PIN

Proceed in the way indicated.

1 - Unscrew screws **(A)** and remove terminal joint **(B)**.

2 - Remove pin **(C)** and spring **(D)**.

3 - Insert the new spring and pin **(C)**.

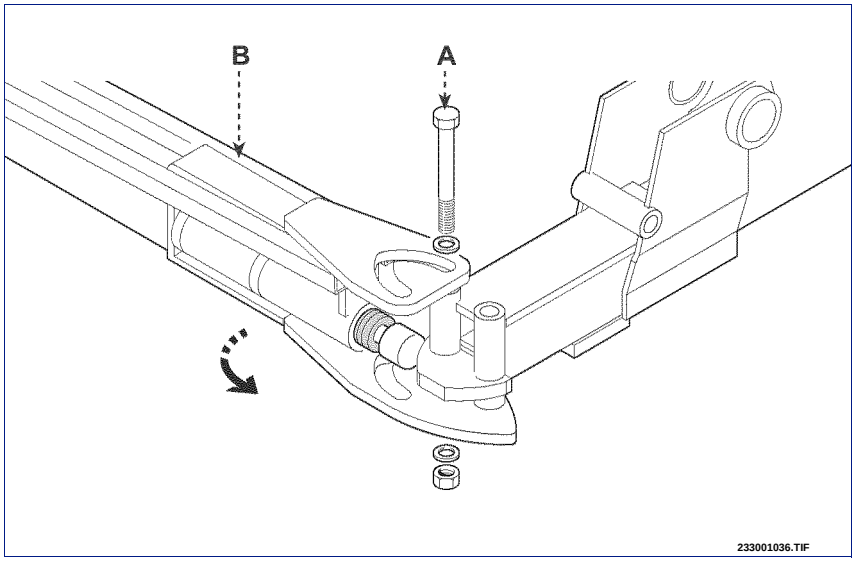


4 - When terminal joint **(B)** is rotated by 90° in relation with the primary arm, insert first screw **(A)**.

5 - Align the terminal joint and the primary arm and insert second screw **(A)**.

Important

Screws (A) must not be tightened because the terminal joint must be free to rotate.



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REPLACEMENT OF SELF-LEVELLING TILTING RAM BUSHING

Proceed in the way indicated.

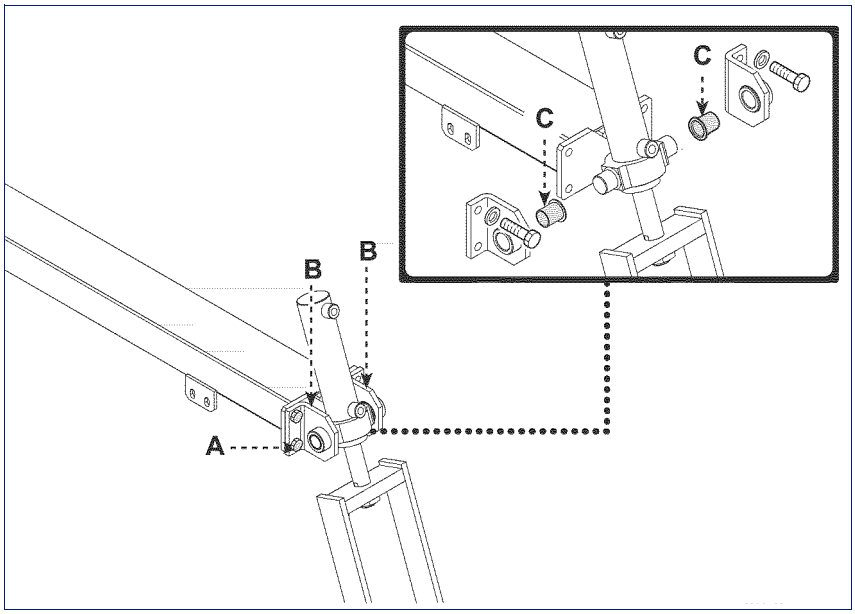
1 - Unscrew the screws **(A)**

2 - Remove the supports **(B)**

3 - Unthread the bushings **(C)**

4 - Replace the bushings.

5 - Reassemble the supports **(B)**



DISPOSING OF THE EQUIPMENT

Important

This intervention has to be carried out by skilled technicians and in accordance with the current safety regulations. Do not disperse in the environment non-biodegradable products, lubricating oils and non-ferrous components (rubber, PVC, resins, etc.).
Dispose of them according to the local regulations in force.

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