

Spraying boom

user manual

Serial number

Edition 1
05 - 2008

INDEX

<i>title</i>	<i>pag</i>	<i>title</i>	<i>pag</i>
TECHNICAL INFORMATION	2	INFORMATION ABOUT	
equipment general description	2	ADJUSTMENTS	20
technical specifications	2	instructions for adjustments	20
technical specification diagram	2	adjustment of the swinging sliding	
fittings on demand	3	shoes.....	20
safety devices	3	adjustment of the automatic blocking	
safety distance table	3	device	20
safety distance diagram	3	adjustment of arm alignment	21
identification plate position	4	boom folding support adjustment	22
position of signals	4		
INFORMATION ABOUT		INFORMATION ABOUT USE	22
HANDLING AND INSTALLATION	4	operating advice	22
handling instructions	4	boom folding and unfolding	23
packing and unpacking	4	adjustment of tilt	23
loading and transportation	5		
handling and lifting	5	INFORMATION ABOUT	
installation instructions	5	MAINTENANCE	24
installation of disassembled parts	5	maintenance schedule table	24
equipment installation	6	lubrication points diagram	25
installation of arm	6	cleaning nozzles	25
installation of the hydraulic system	7	prolonged inactivity	26
2-function hydraulic system (with electric			
switch and control panel)	8	TROUBLESHOOTING	26
installation of line filters (if required)		troubles, causes, remedies	26
and jets	14		
number of jets on each boom section ...	15	INFORMATION ABOUT	
jet number diagram for each boom s		REPLACEMENTS	28
ection (500 mm pitch)	16	replacement of spring and terminal	
installation of water hoses	16	joint pin	28
5-supply water connection diagram	18	replacement of corrector of position	
installation of rear light kit	19	spring	29
		disposing of the equipment	29

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.

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.

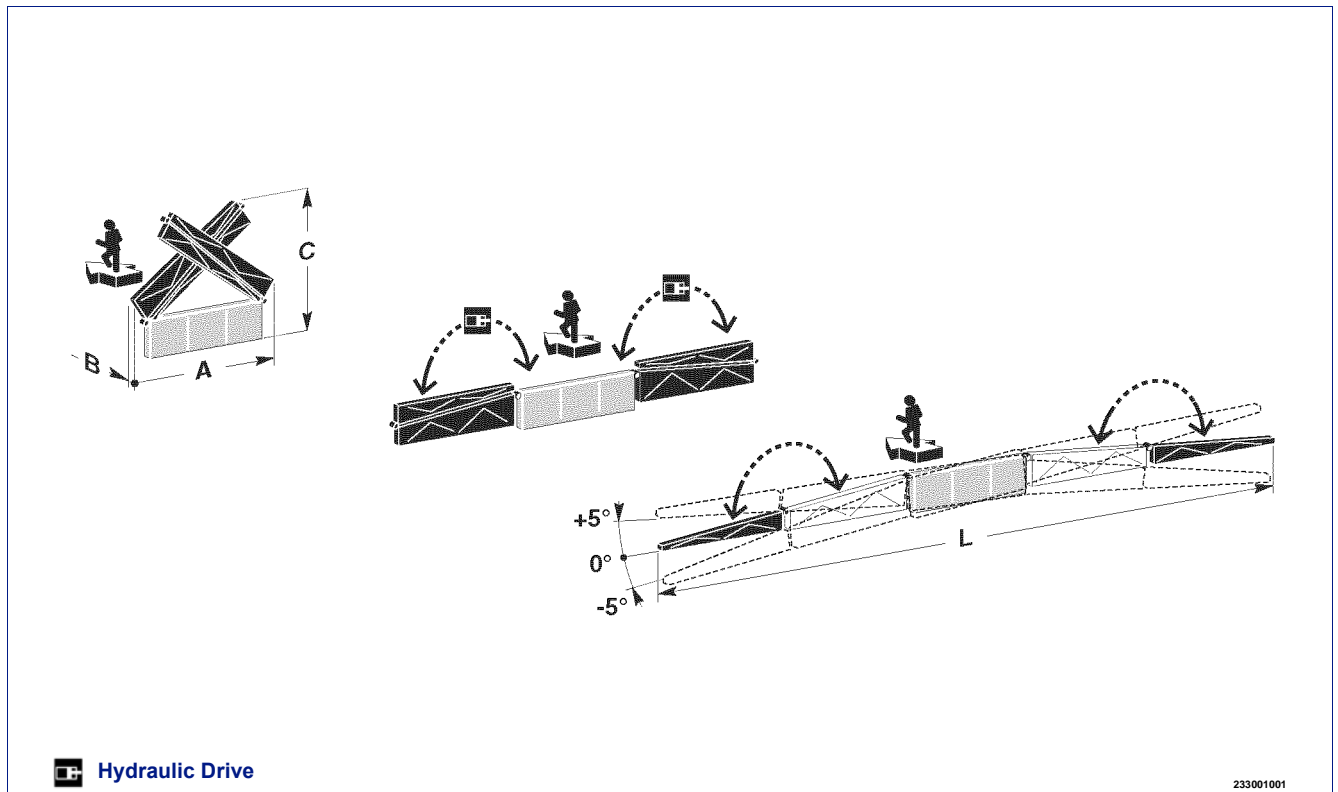
The equipment is divided into folding boom sections in order to adapt it to the spraying width and so as to reduce the space occupied during transfer.

TECHNICAL SPECIFICATIONS

Width (m) W	Size			(*) Weight (kg)	Qty. Jets (500 mm)
	A mm	B mm	C mm		
12	2450	350	2420	290	24
15,5	2520	350	2900	315	30

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

Technical specification diagram



FITTINGS ON DEMAND

Integral protection kit that protects nozzles from impacts (ground, plants, etc.).

SAFETY DEVICES

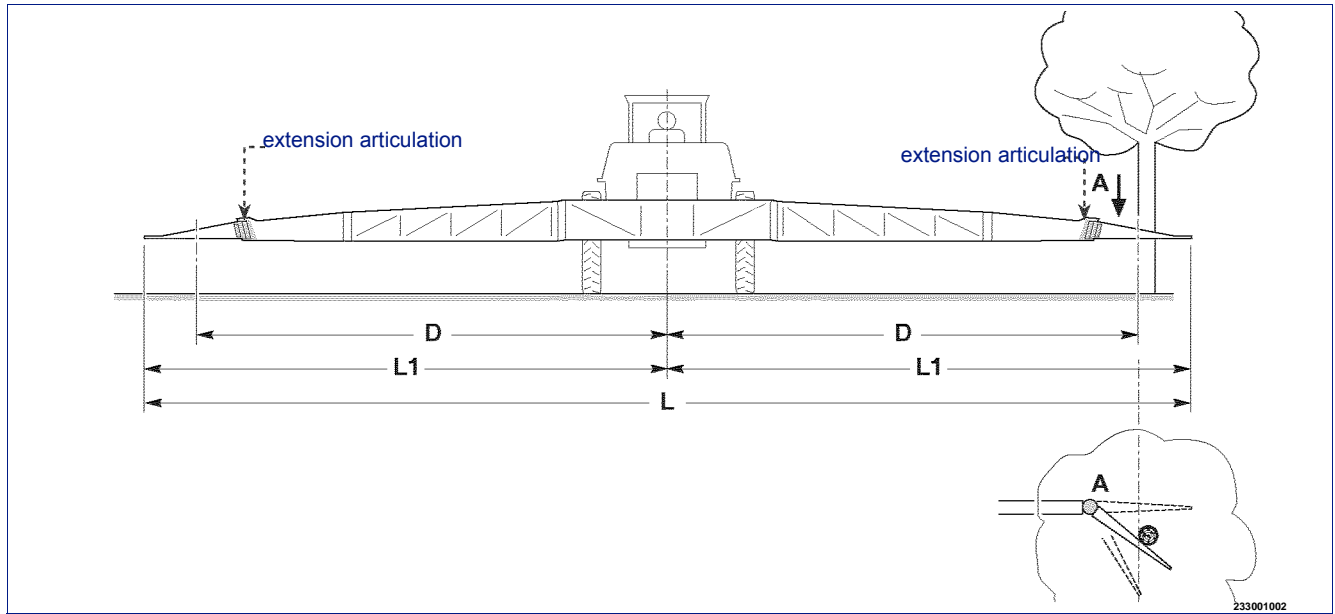
Extension articulation (in case of hydraulic tilt): to allow the end of the extension to turn so as to get past obstacles. In order to get past the obstacle without damaging the equip- ment, it is necessary to keep a distance higher than the value (**D**) given in the table.

Stop valve: it allows to stop movements of the various boom sections during use and/or transport of the equipment and to prevent accidental movements in the event of an hydraulic hose failure.

Safety distance table

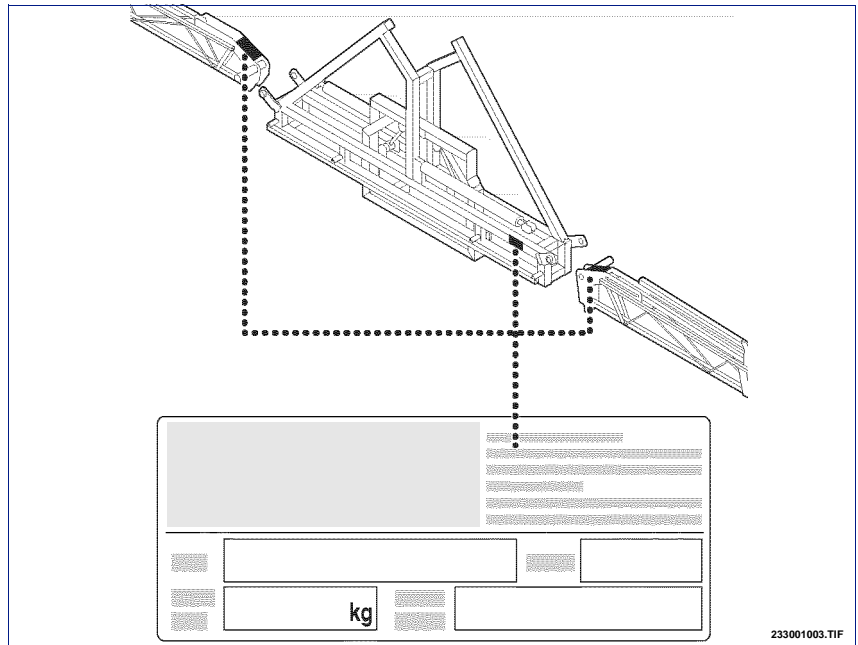
Width <i>W</i>	Width <i>W1</i>	Safety distance <i>D</i>
12	6	5,4
15,5	7,5	6,8

Safety distance diagram



IDENTIFICATION PLATE POSITION

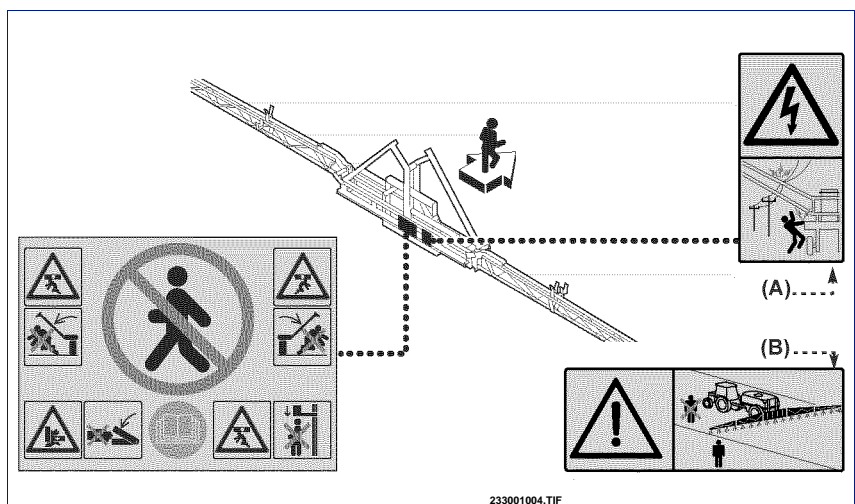
The figure points out the positions of the identification plates of the components.



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

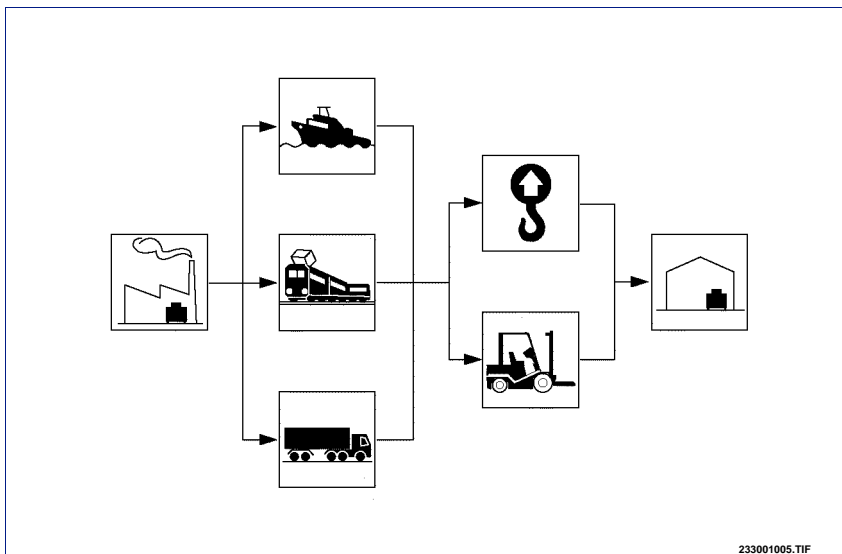
manual, when carrying out handling and loading operations.

PACKING AND UNPACKING

- The equipment is to be placed on a loading platform, protected and adequately secured. To make transport easier, it can be shipped with several components 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.

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.

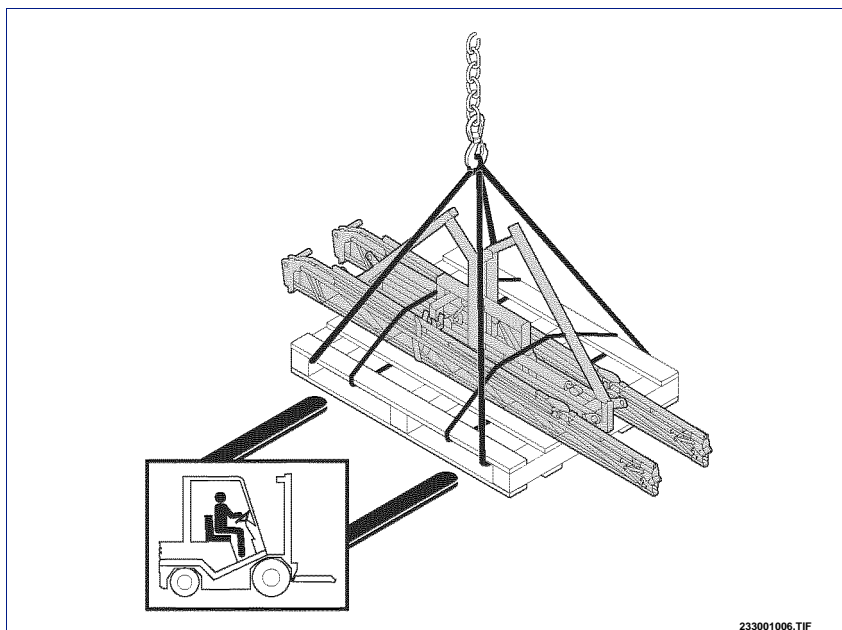
Position the lifting device as shown in the figure.

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.

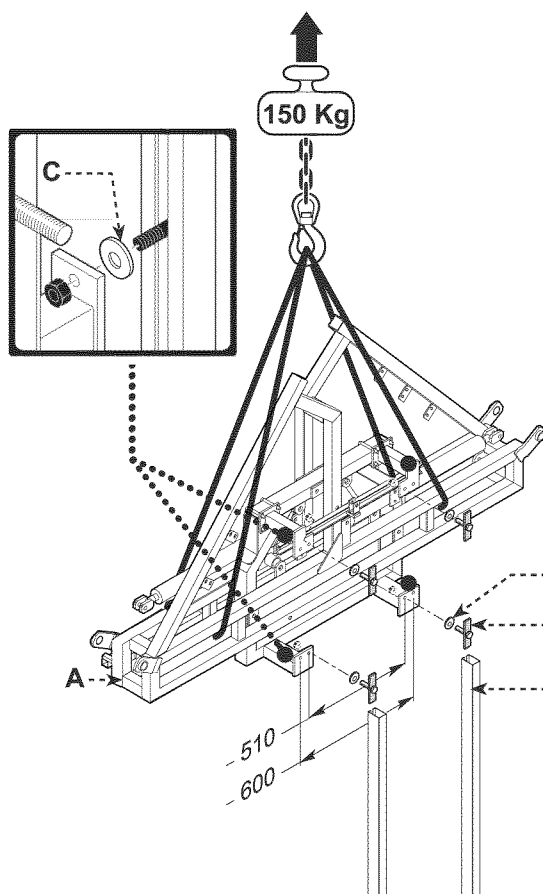
EQUIPMENT INSTALLATION

Keep to the following instructions.

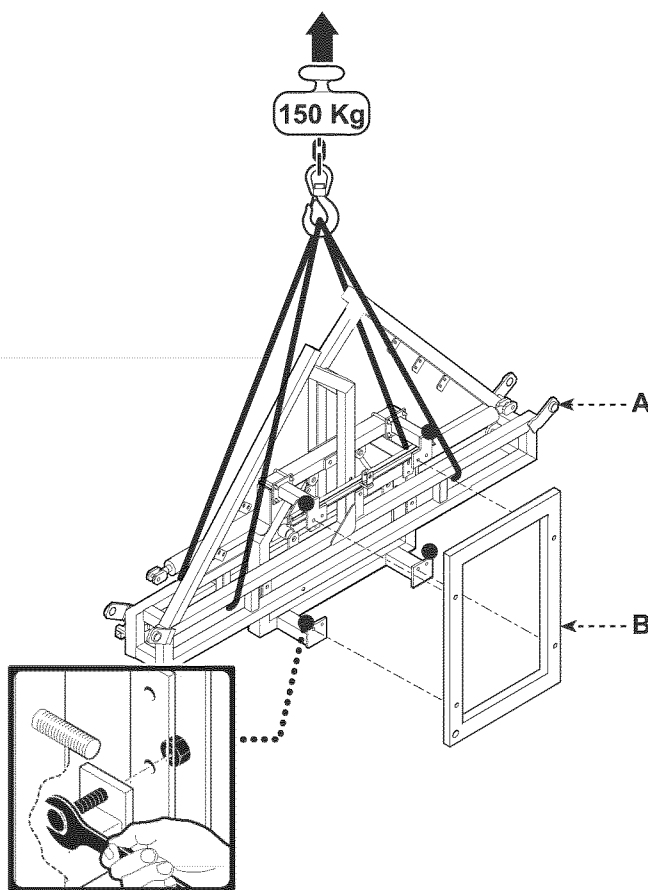
- 1 - Insert fastening plates (D) into guides (B).
- 2 - Insert nylon washers (C) into the screws outside guides (B).

- 3 - Lift the middle frame (A) of the boom already mounted on the self-levelling device (see "Self-levelling Device" booklet) and fasten it to the sliding frame of the lifting device (B) or to the shock absorber, if required.

Installation on a slide lifting device



Installation on guide or parallelogram lifting device

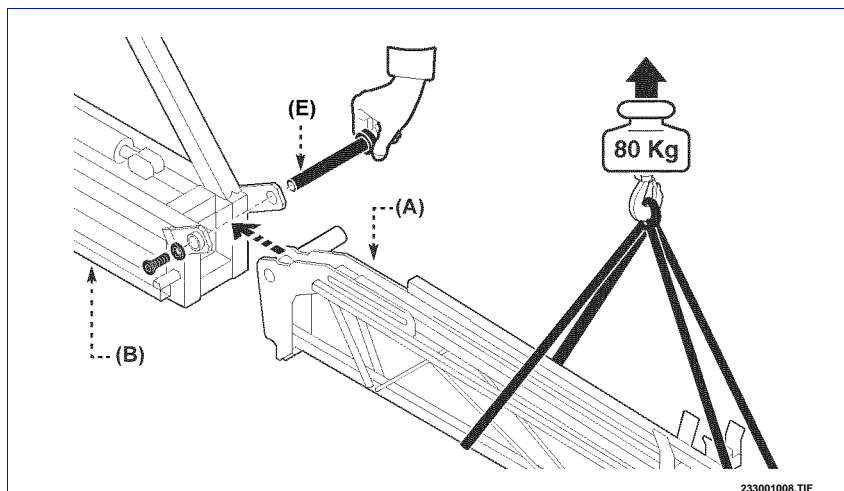


233001007.TIF

INSTALLATION OF ARM

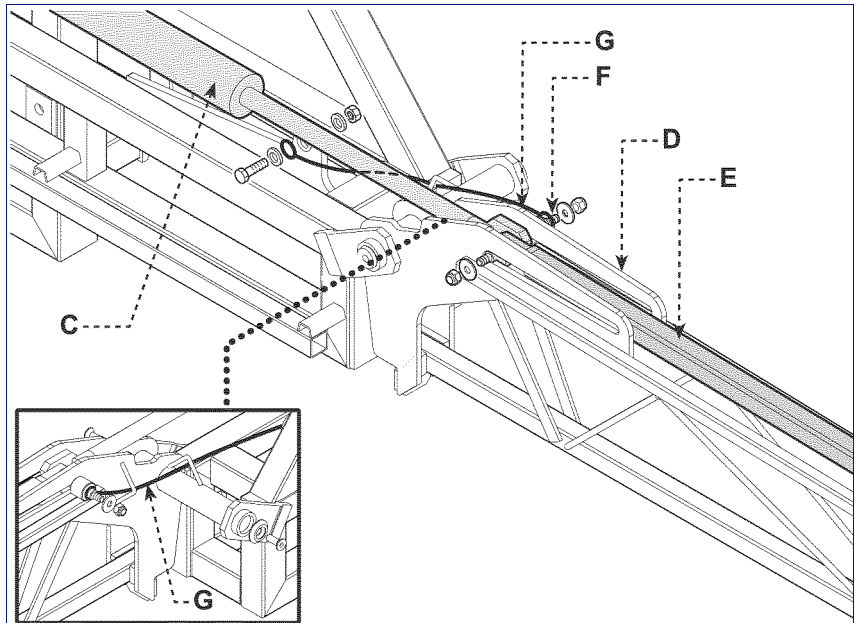
Keep to the following instructions.

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



233001008.TIF

- 2 - Remove the rod of cylinder (C) and fasten it to arm (D) and tie-rod (E) by means of pins (F).
- 3 - Install cable (G) as shown in the figure.
- 4 - Install the opposite arm by following the same instructions.



INSTALLATION OF THE HYDRAULIC SYSTEM

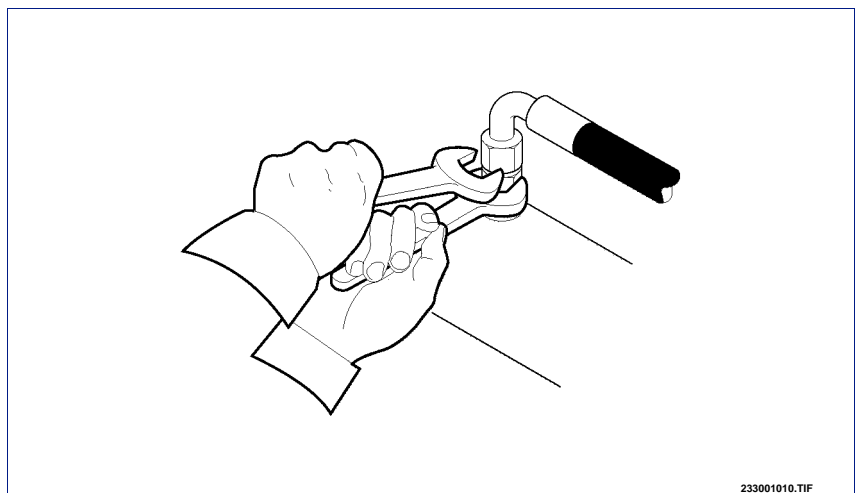
Proceed in the way indicated.

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



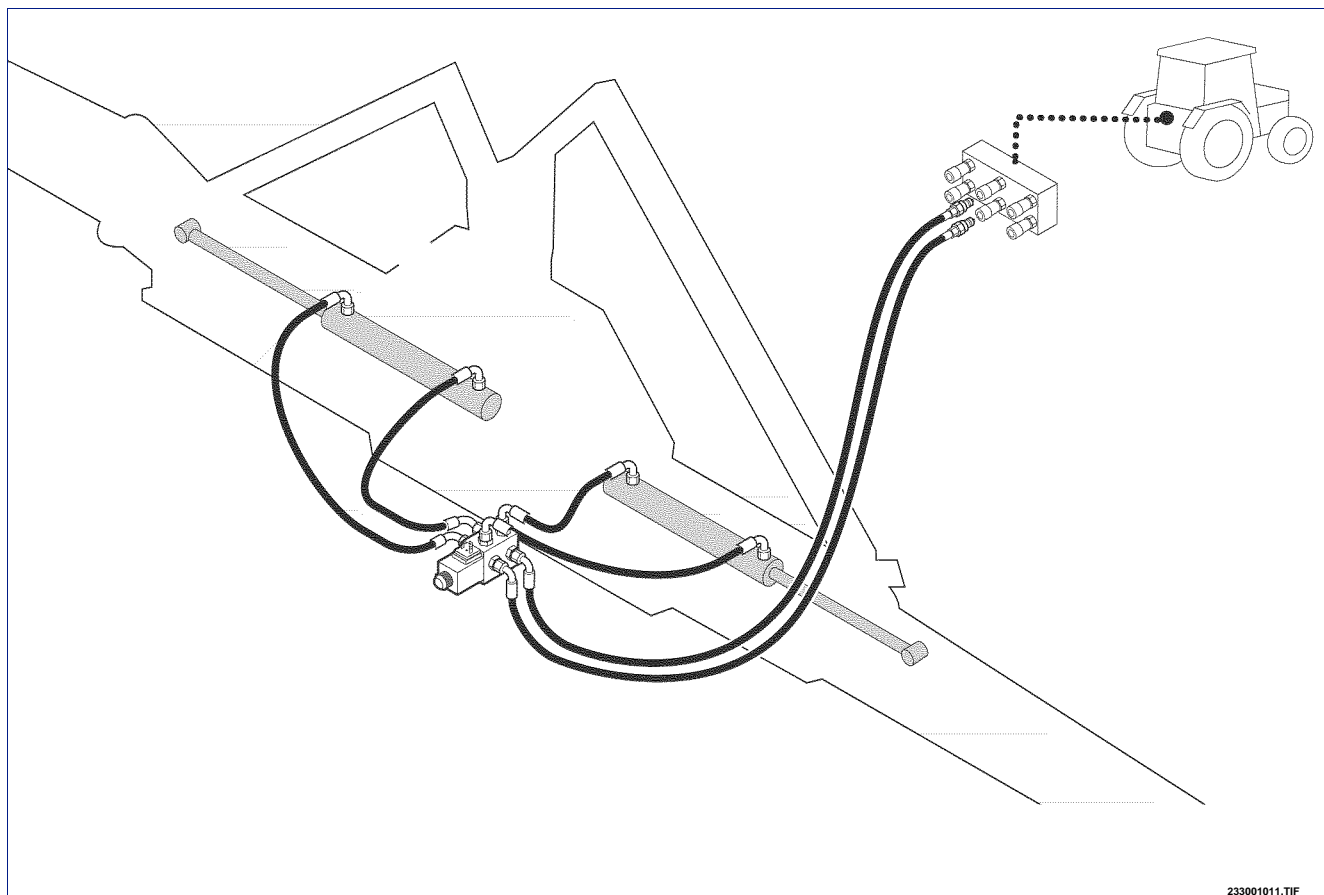
Important

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



233001010.TIF

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



233001011.TIF

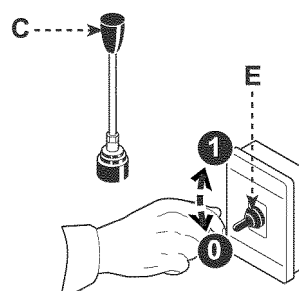
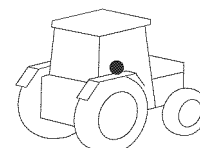
The control is performed from the control panel and is activated from the tractor's driver's seat.

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)
 position 1 = Unfolding / folding of left arm
 position 0 = Unfolding / folding of right arm
- 2 - Activate the selected function by means of lever (C) of the tractor's control unit.

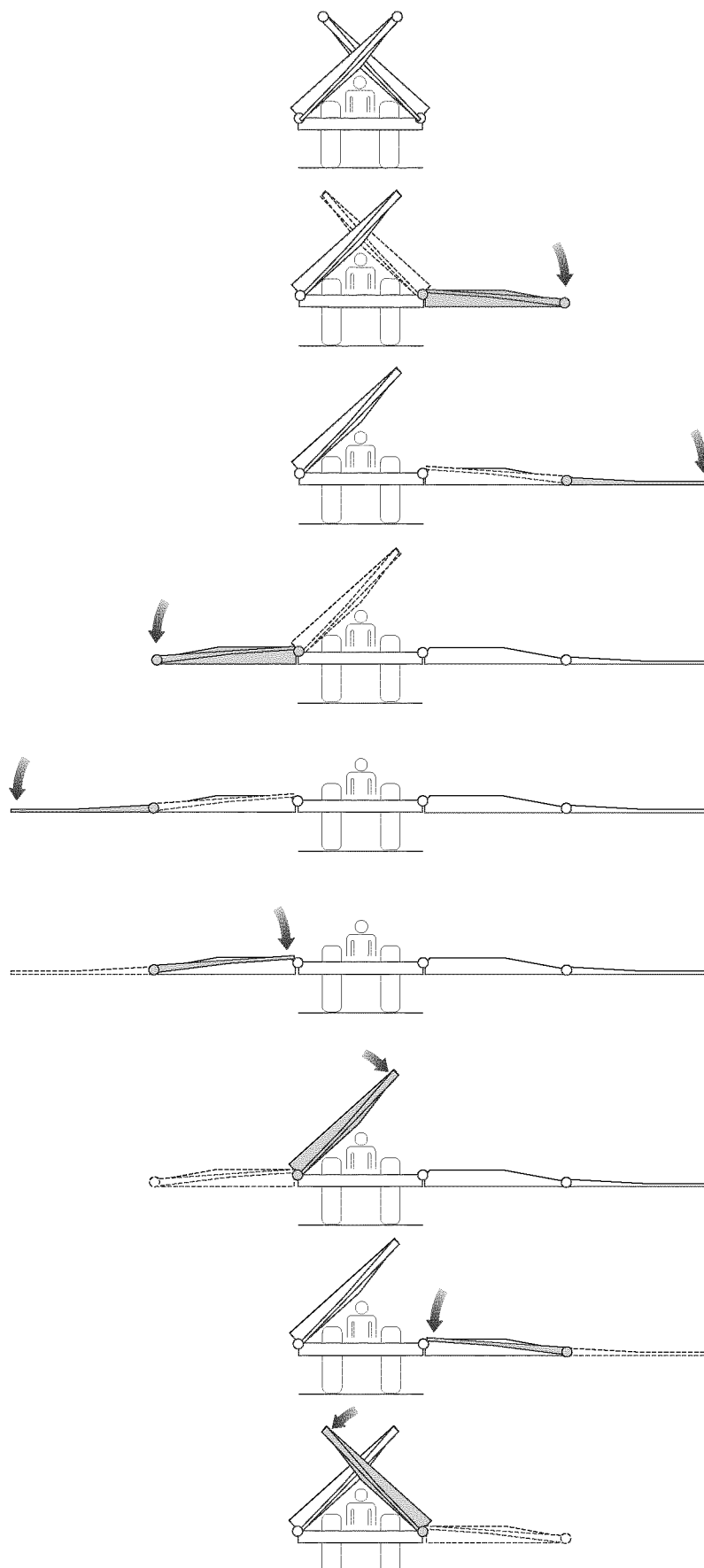


233001012.TIF

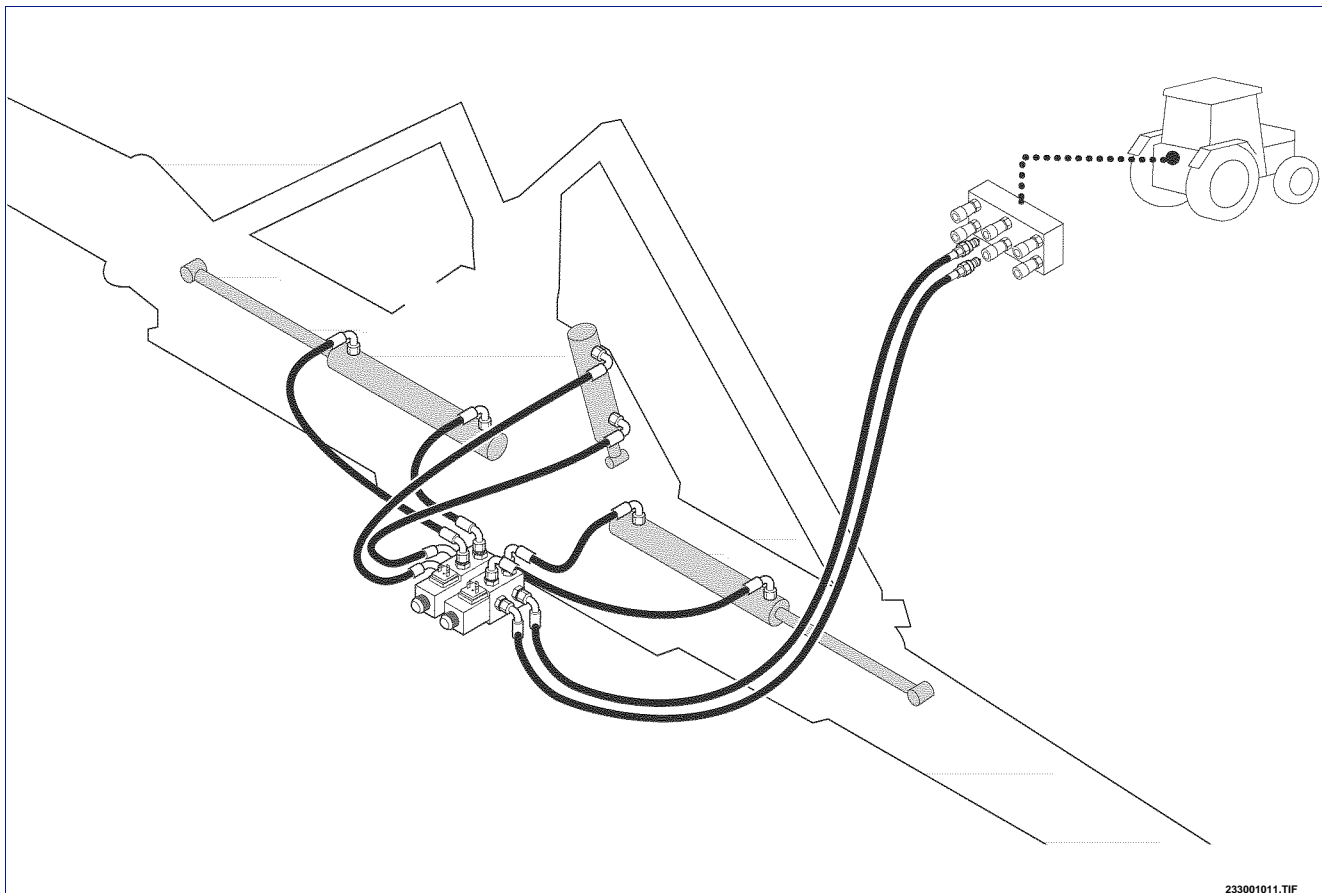
Boom unfolding and folding

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.



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



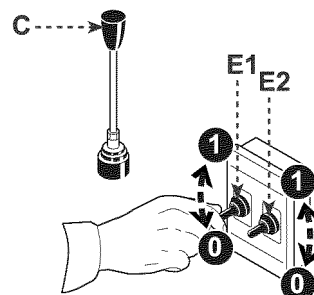
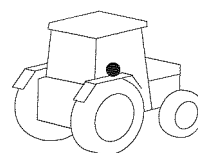
The control is performed from the control panel and is activated from the tractor's driver's seat.

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

Electric switch with control panel

How to use the controls

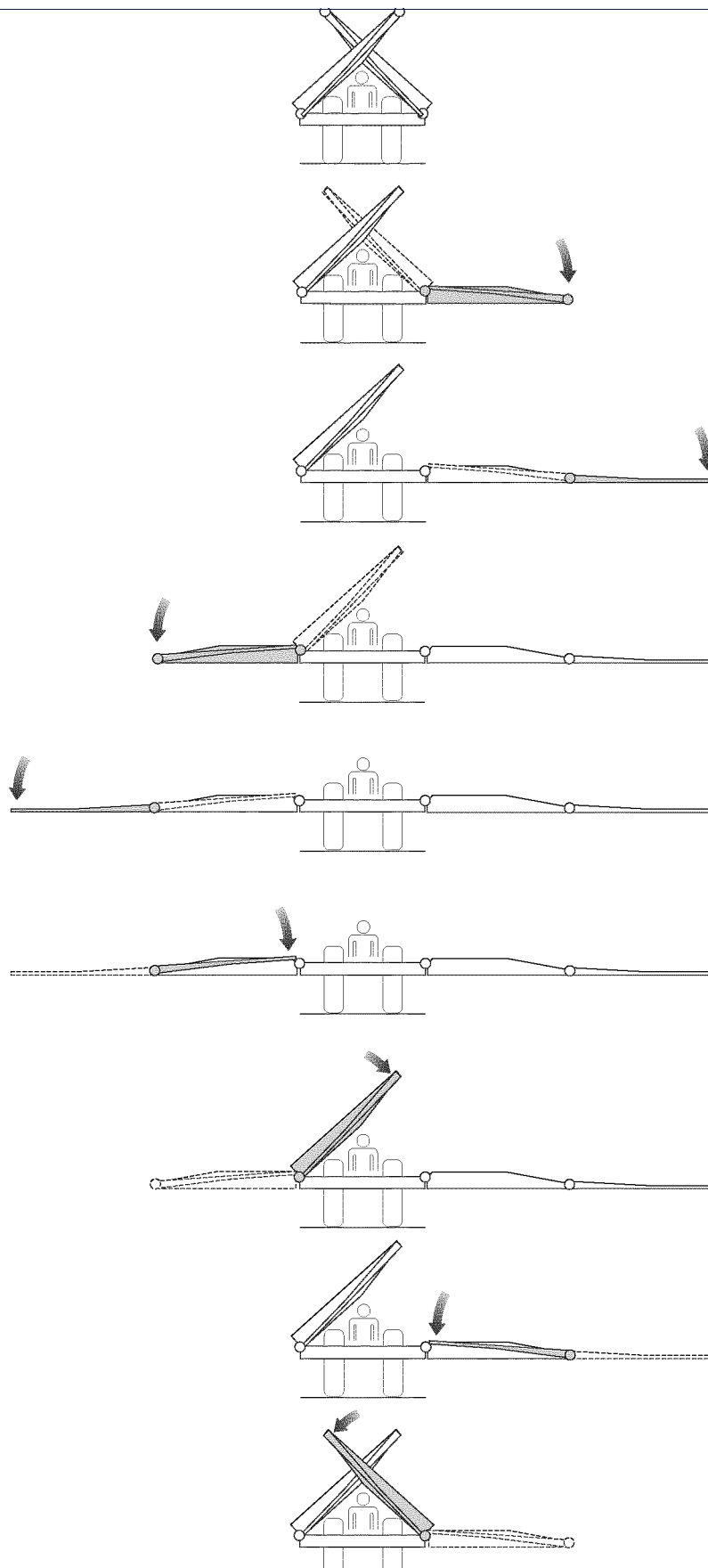
- 1 - Select the function by means of switches (E) and activate the selected function by means of lever (C) of the tractor's control unit
- E1 Pos. 0 / E2 Pos. 0** = Correction of position
E1 Pos. 1 / E2 Pos. 0 = Unfolding / folding of left arm
E1 Pos. 0 / E2 Pos. 1 = Unfolding / folding of right arm.



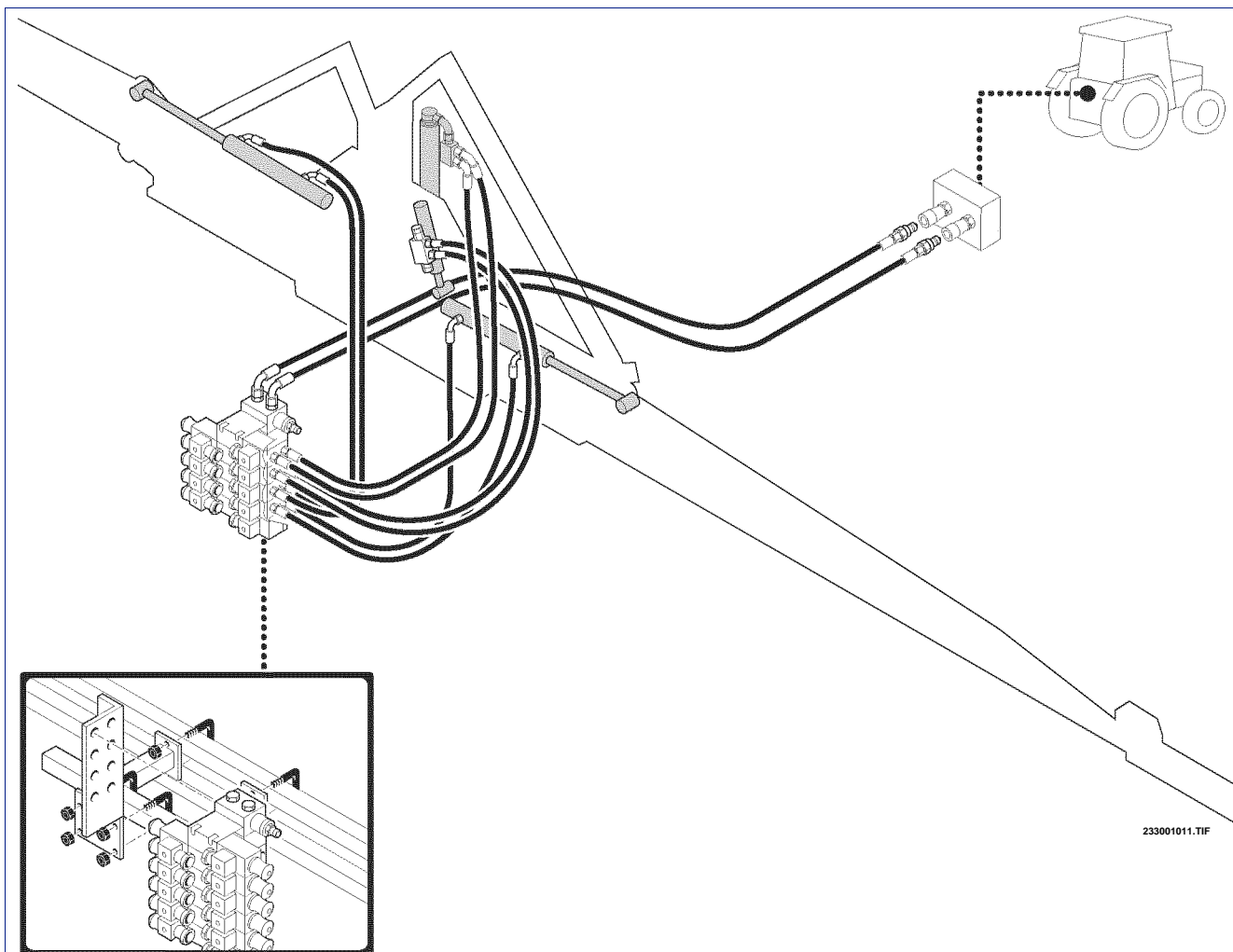
Boom unfolding and folding

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.



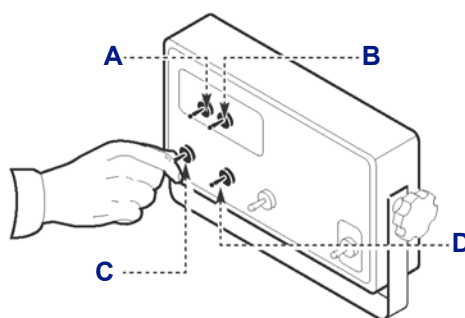
4-function hydraulic system (with double effect solenoid valves)



233001011.TIF

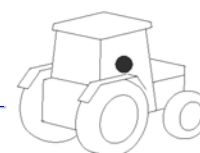
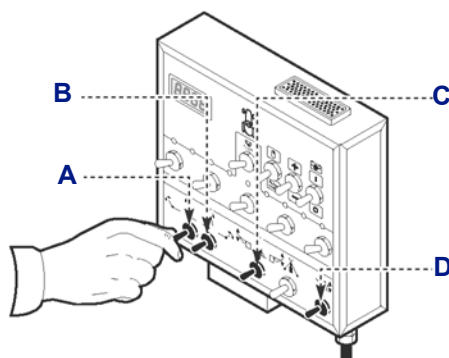
CGA CONTROL BOARD

- A) Unfolding of left arm
- B) Unfolding of right arm
- C) Lifting
- D) Hydraulic tilt adjustment



MÜLLER CONTROL BOARD

- A) Unfolding of left arm
- B) Unfolding of right arm
- C) Lifting
- D) Hydraulic tilt adjustment

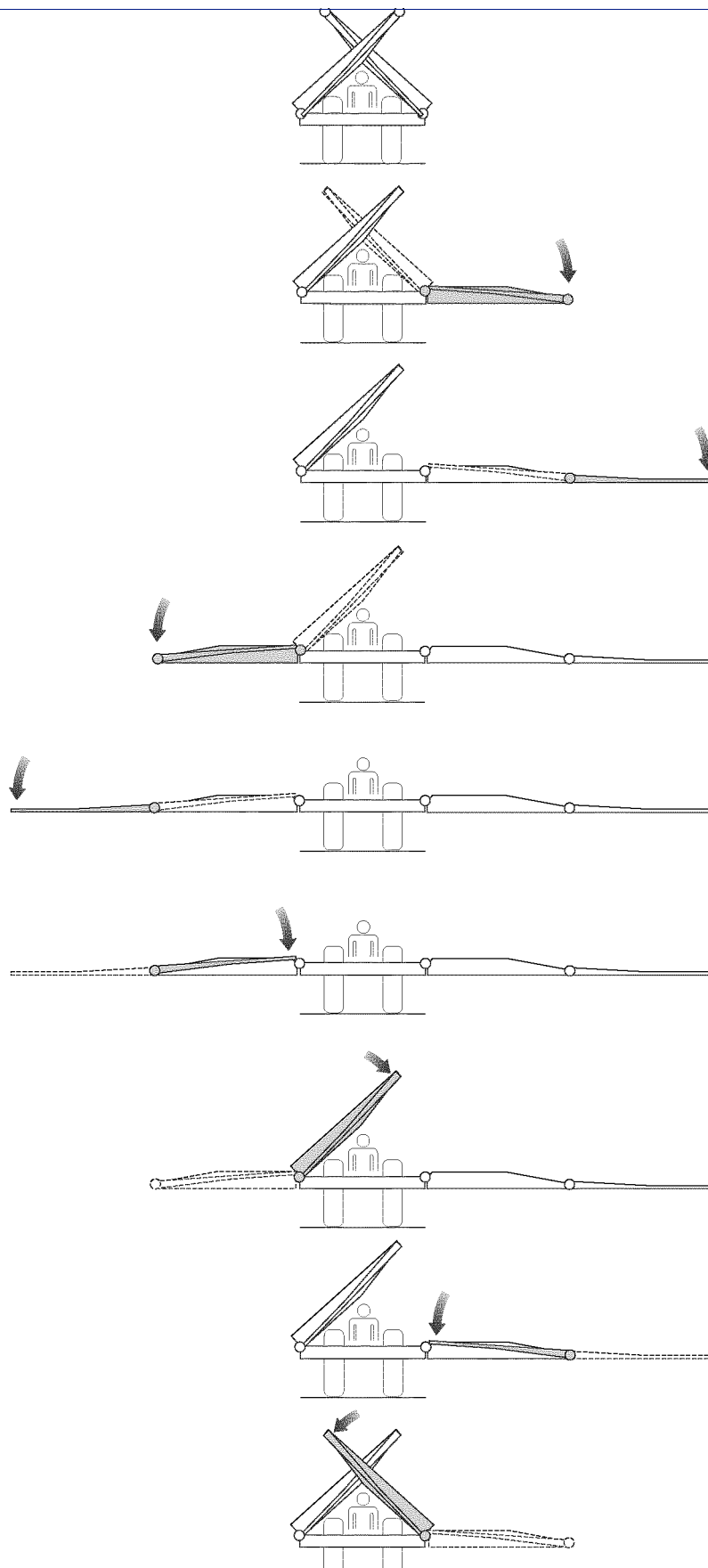


233001012.TIF

Boom unfolding and folding

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

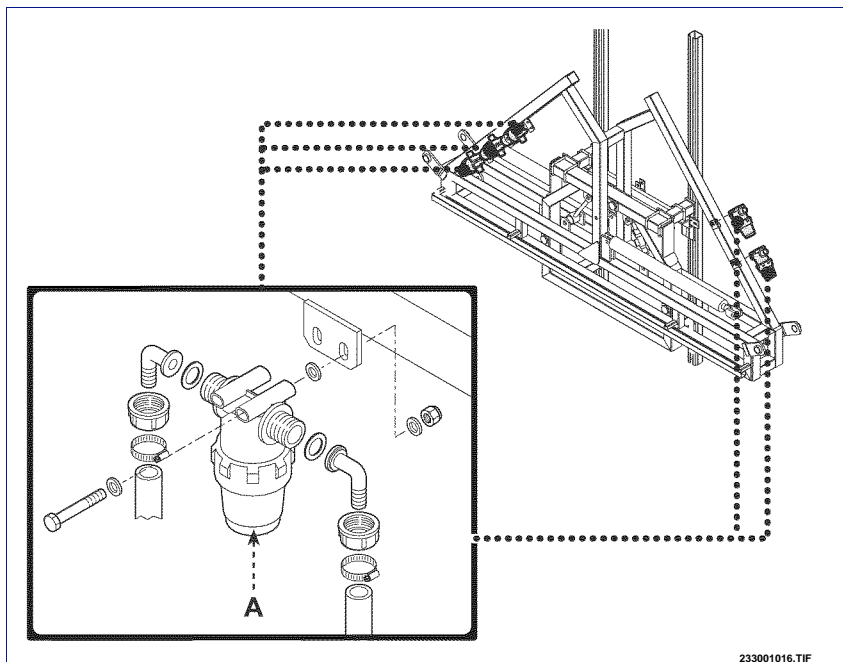
Please note: the two arms can be folded or unfolded independently of each other.



INSTALLATION OF LINE FILTERS (IF REQUIRED) AND JETS

Proceed in the way indicated.

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

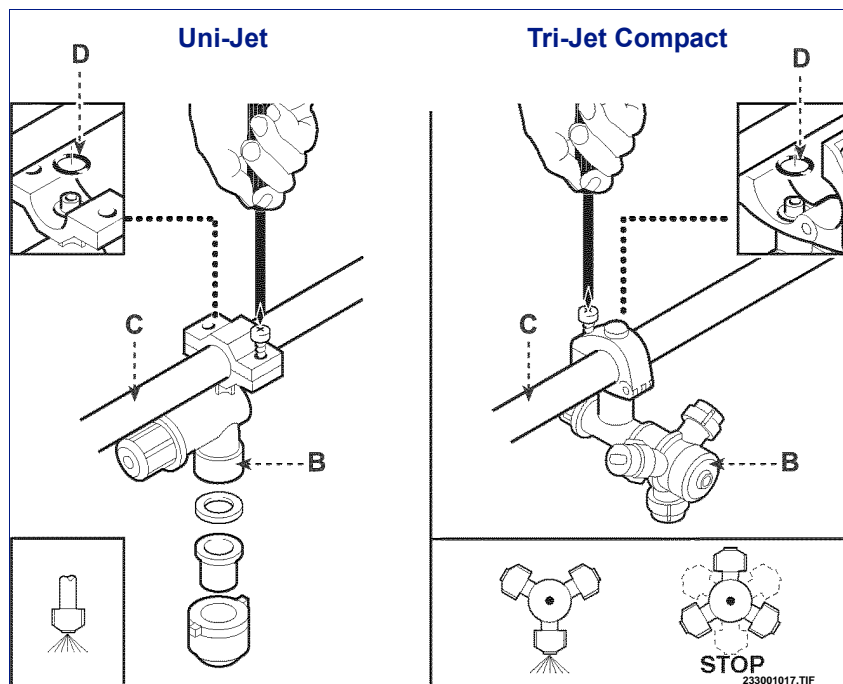


- 2 - Mount the jets (B) next to the outlet holes of the stainless steel pipes (C) (see the “Jet Layout” diagram, page 12).



Important

Properly mount the seals (D).

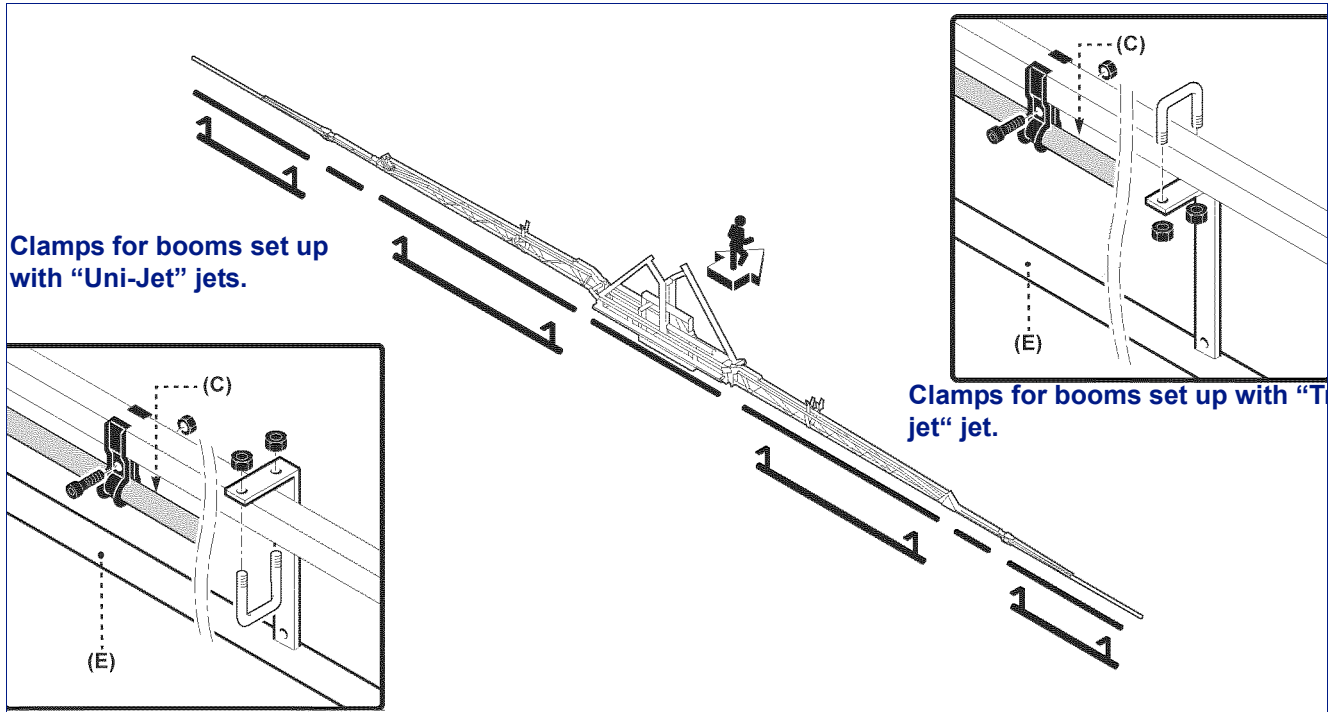


Fasten stainless steel pipes (C) and guards (E) to the spraying boom with the special supports.



Important

The type of support must be chosen according to the type of installed boom and jets (see picture)



NUMBER OF JETS ON EACH BOOM SECTION

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

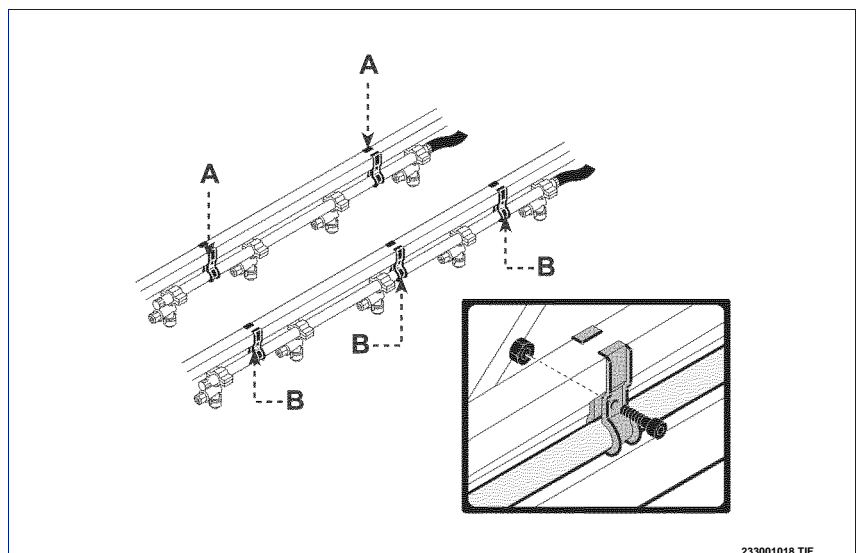
The diagram shows as well position and number of supports on each hose and installation instructions, depending on the number of supplies.

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



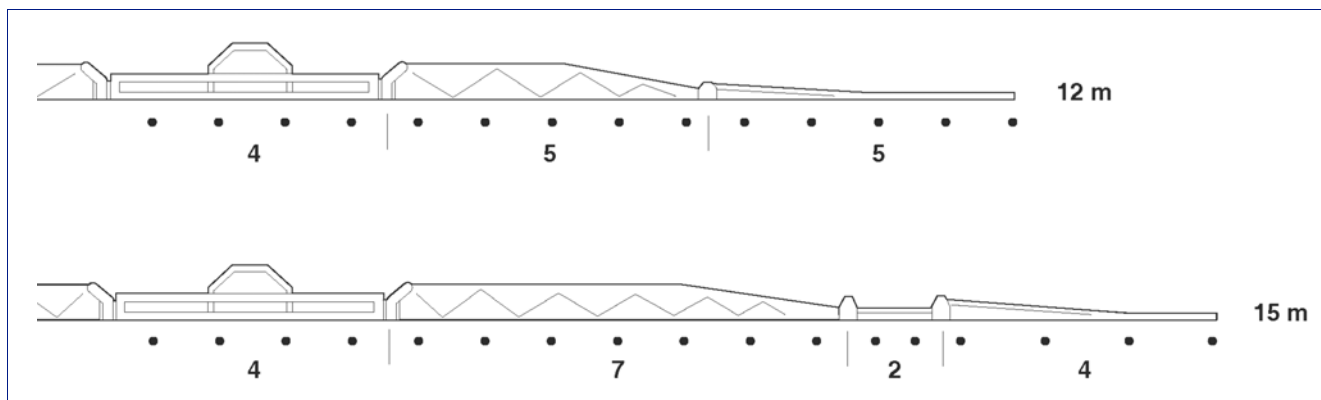
Important

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).



233001018.TIF

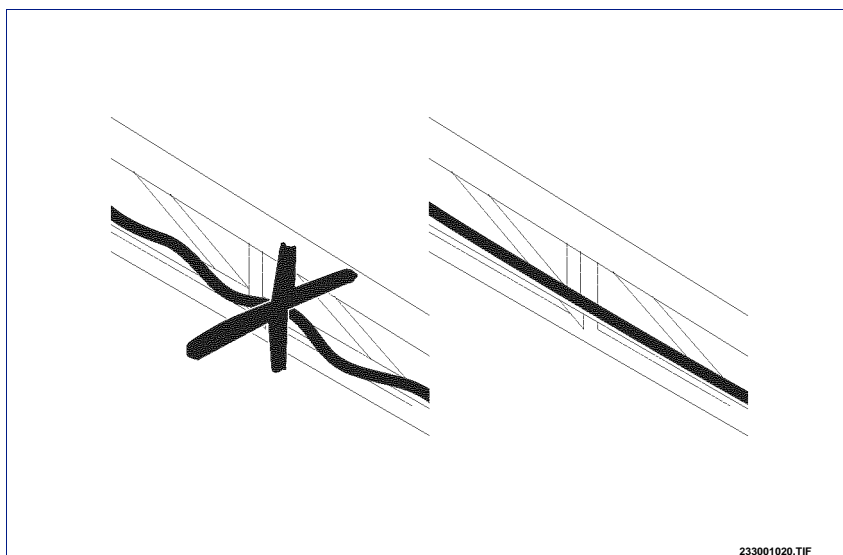
Jet number diagram for each boom section (500 mm pitch)



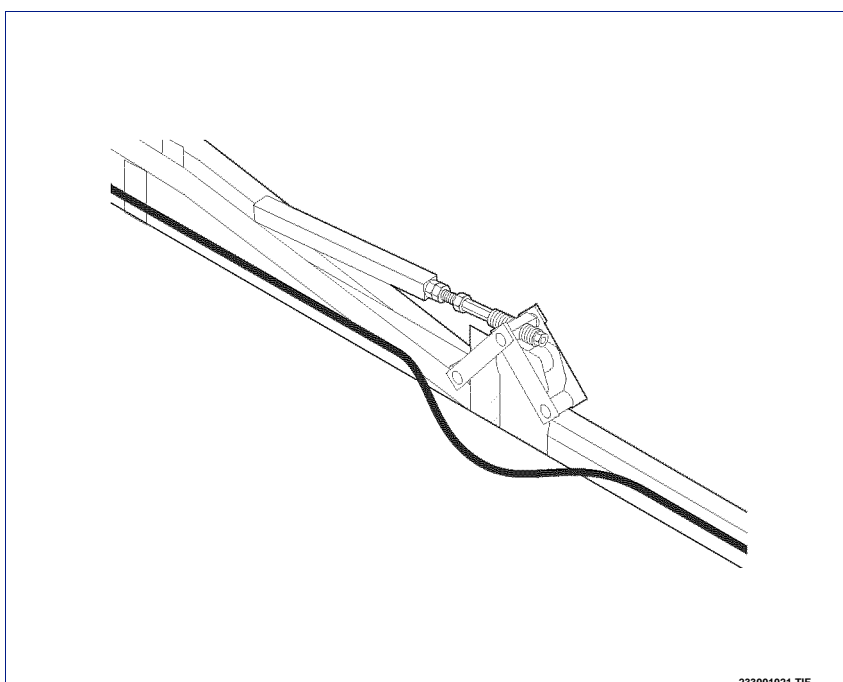
INSTALLATION OF WATER HOSES

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").

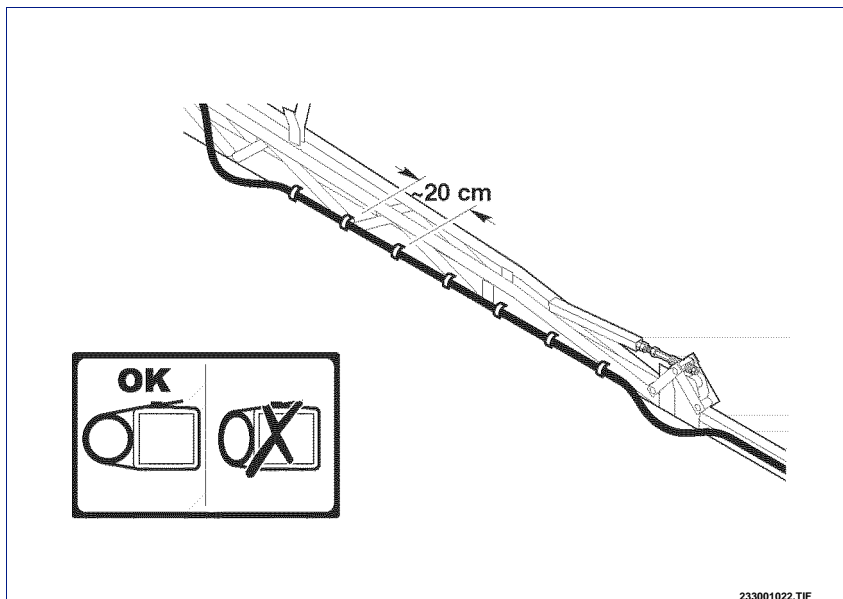


- 4 - Secure the hoses to the boom with clamps spaced out ~ 20 cm.

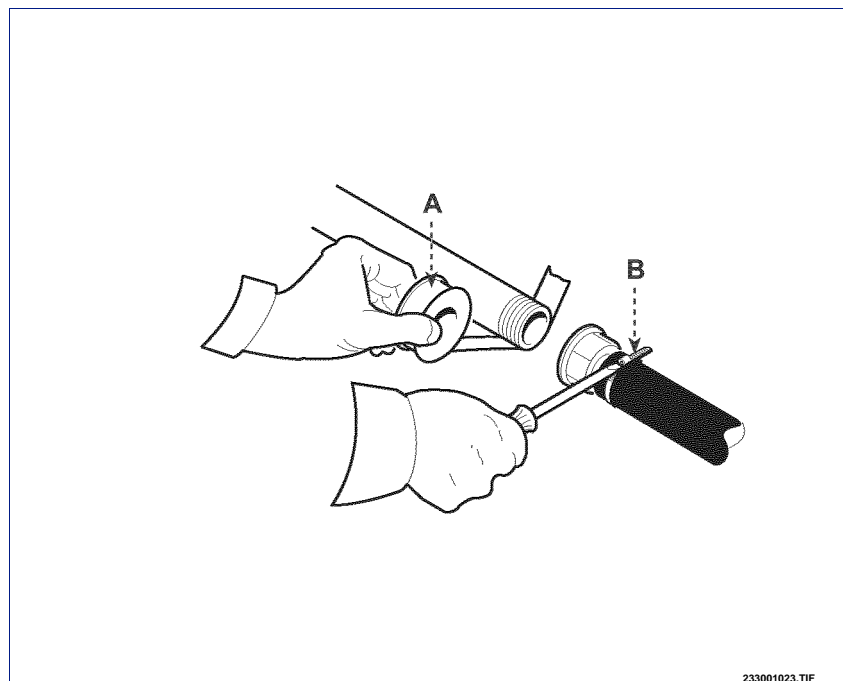


Important

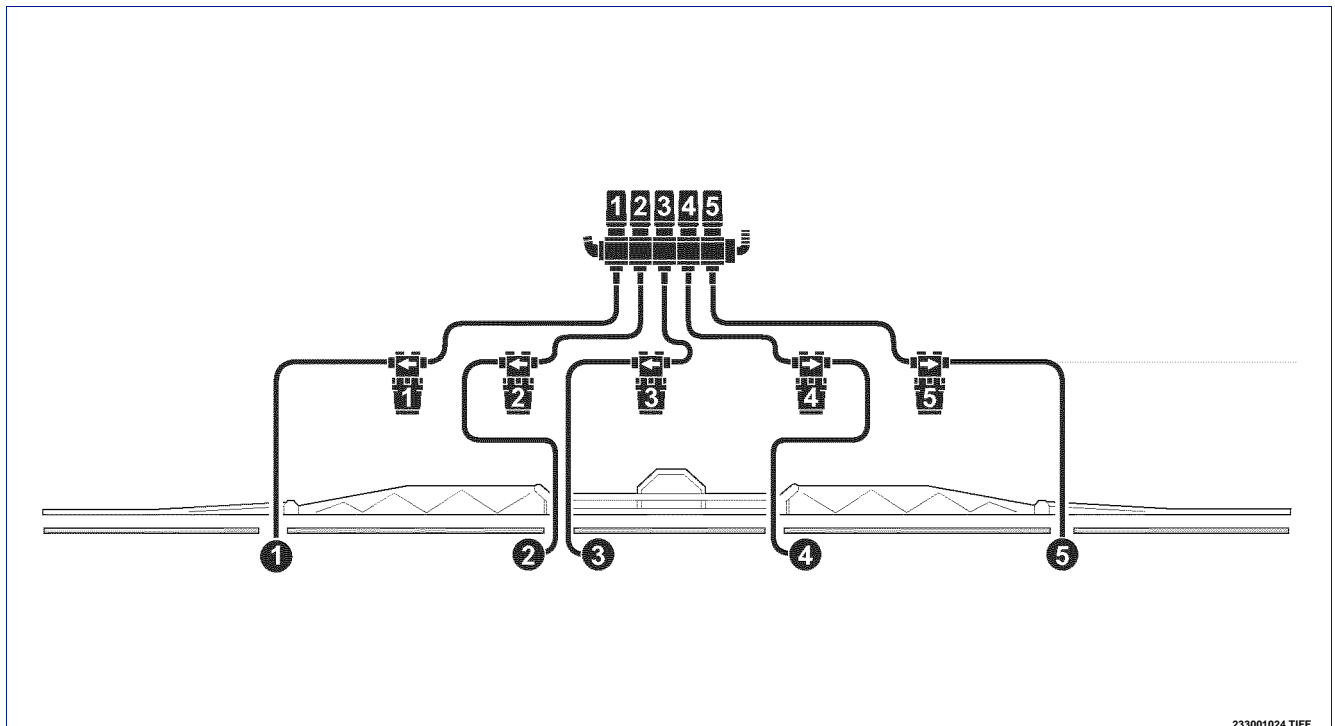
Do not tighten the clamps too much so as to avoid throttling.



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



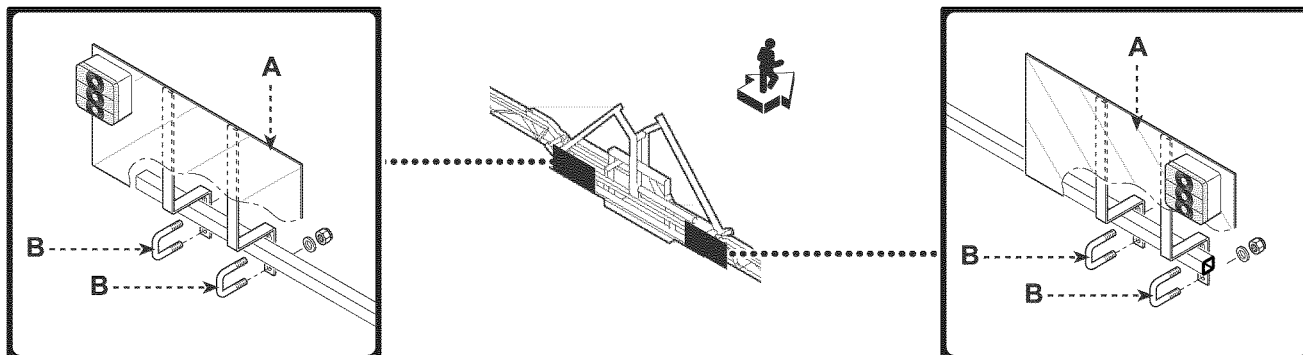
5-supply water connection diagram



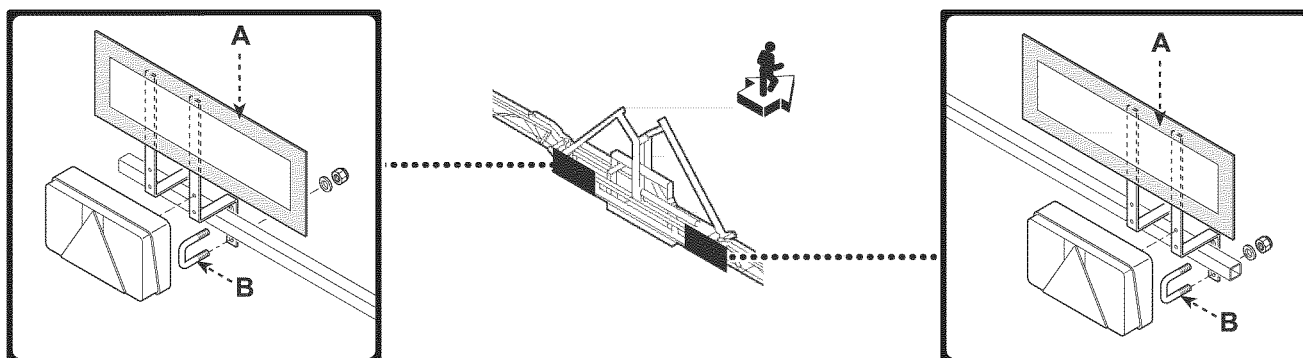
INSTALLATION OF REAR LIGHT KIT

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



233001025.TIFF

INFORMATION ABOUT ADJUSTMENTS

INSTRUCTIONS FOR ADJUSTMENTS

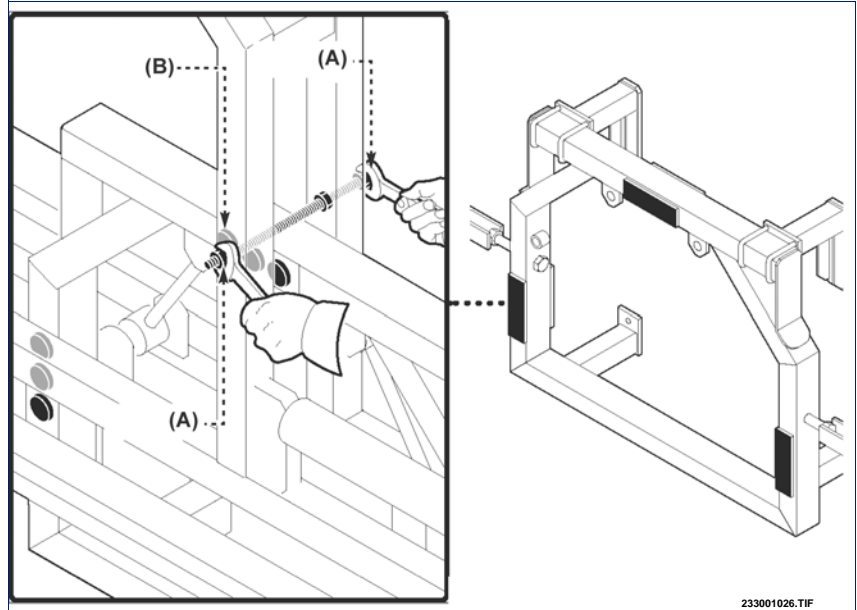
Whoever makes the adjustments must prepare satisfactory safety conditions in advance in order to ensure

their own safety and that of the operators involved.

ADJUSTMENT OF THE SWINGING SLIDING SHOES

In order to ensure the correct swinging of the device, adjust play between surfaces according to the sliding shoes wear. Proceed as indicated.

- 1 - Use nuts (A) to bring nylon pads (C) closer.
- 2 - If play between surfaces is still too much, remove Belleville washers (B).
- 3 - If the situation does not change despite all these operations, replace nylon pads (C).



ADJUSTMENT OF THE AUTOMATIC BLOCKING DEVICE



Important

For this adjustment the extension of the spraying boom must be folded (see booklet 9).

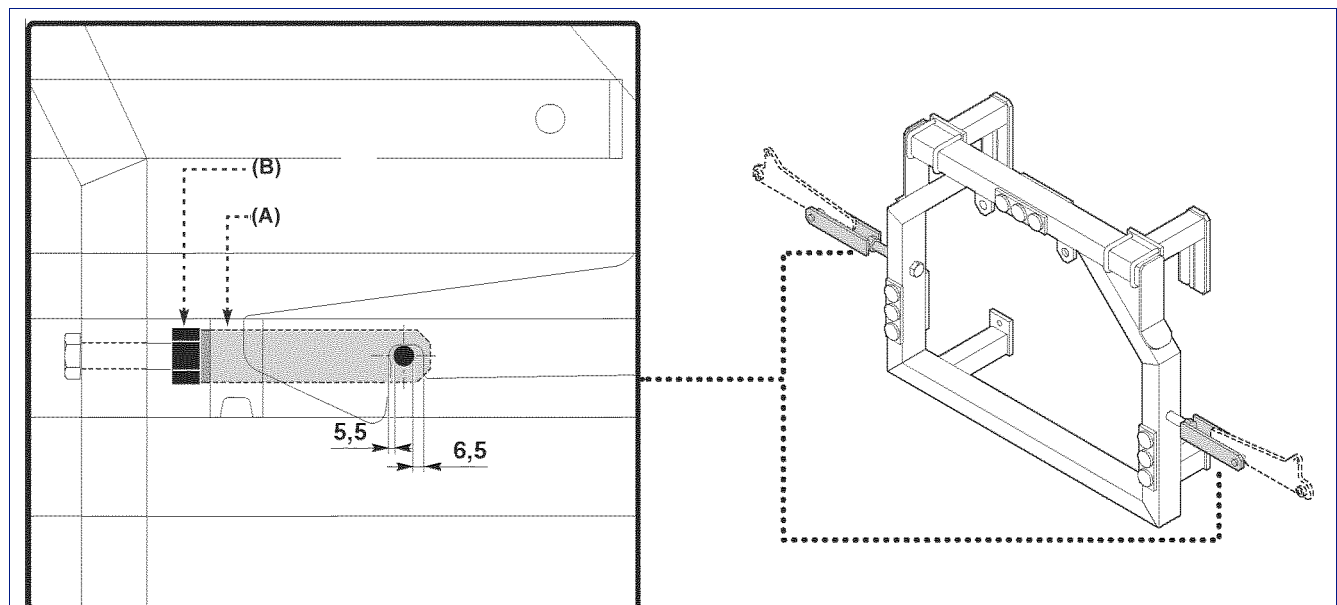
Keep to the following instructions.

- 1 - Insert the blocking device (see page 8).

- 2 - Loosen nut (A).

- 3 - Adjust the position of support (B) until the indicated levels are obtained (see picture).

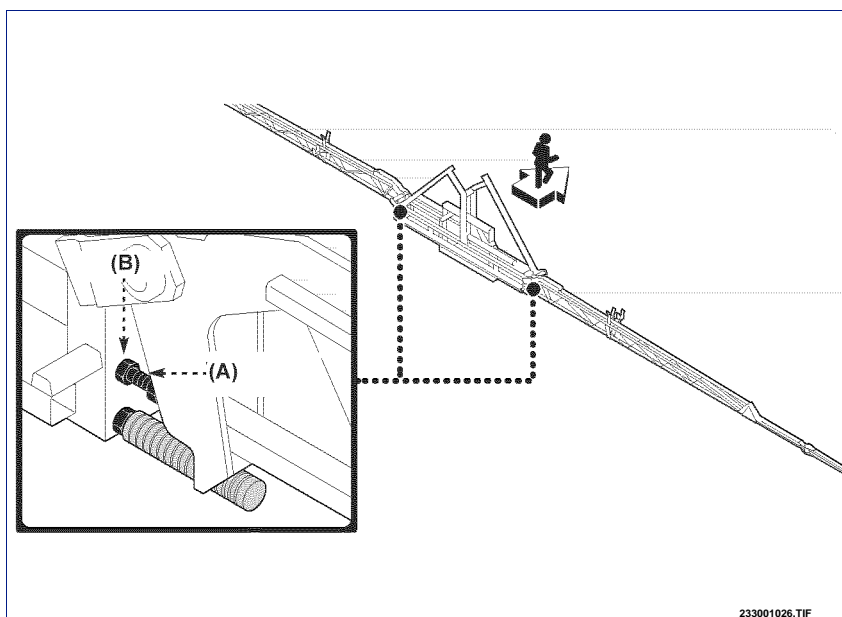
- 4 - After completing this operation, tighten nut (A).



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)**.
- 3 - Tighten counter-nuts **(A)**.
- 4 - Make the same adjustment on the other arm.



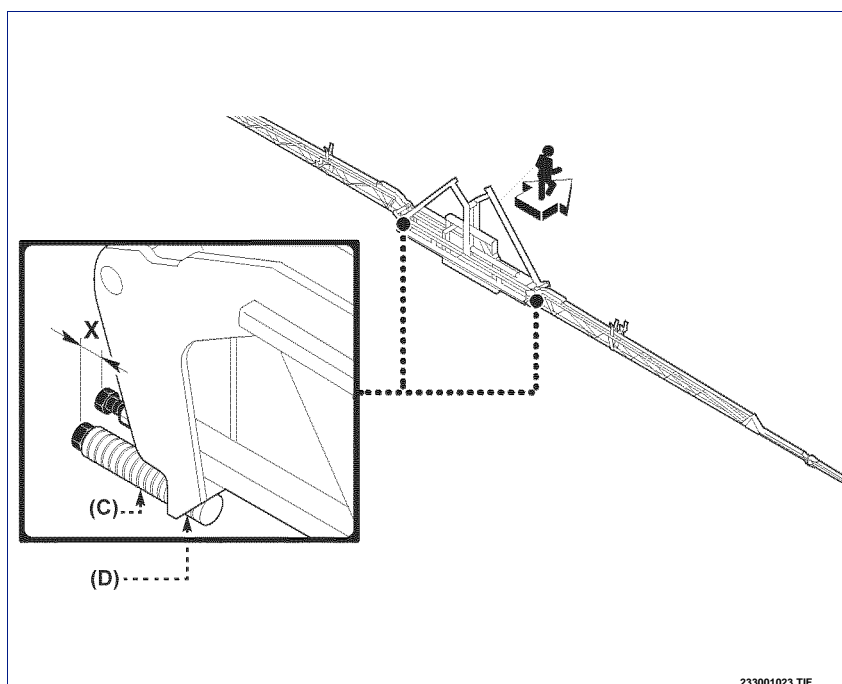
- 5 - When the boom is folded, make sure that distance **(X)** does not exceed 4 mm.



Important

If the desired adjustment cannot be obtained, move one or more pairs of springs from area **(C)** to **(D)**, or vice versa, according to needs.

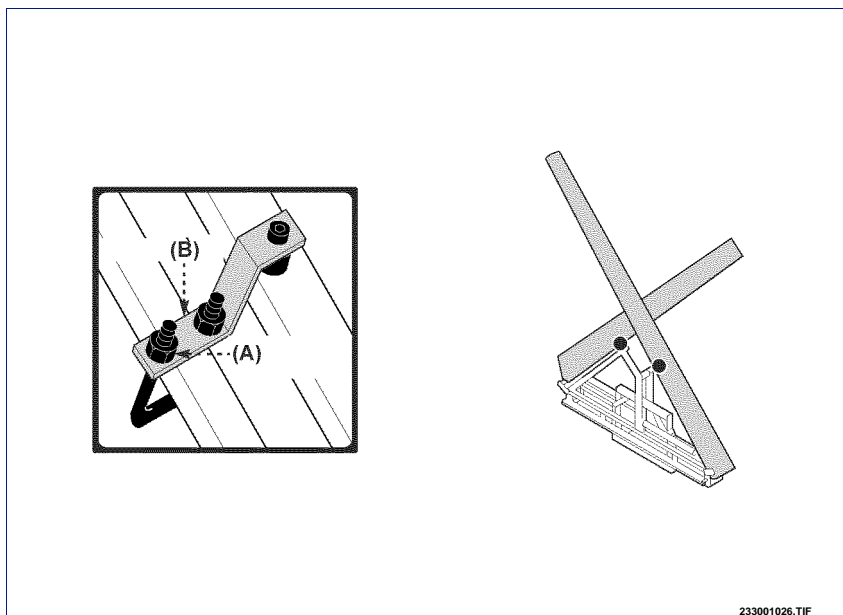
- 6 - Perform the same adjustment on the other arm.



BOOM FOLDING SUPPORT ADJUSTMENT

Keep to the following instructions.

- 1 - Fold the arms of the boom.
- 2 - Loosen nuts (A) and move support (B) to the desired position.
- 3 - After completing this adjustment, tighten nuts (A).



233001026.TIF

INFORMATION ABOUT USE

OPERATING ADVICE



Important

During operation, disconnect blocking device (A) of the self-levelling device in order to allow the spraying boom to swing, and keep it parallel to the ground, also in sloping and / or uneven areas.



Important

Blocking device (A) must be used only when the equipment is moved with folded boom.

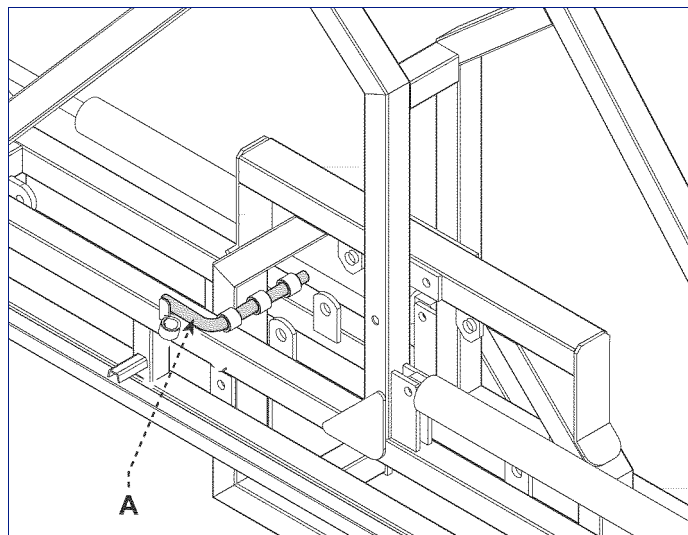
- Locking device (A) must be used only during transport while the boom is closed.

Please note: if the blocking operation is difficult, lightly swing the boom until the pin is inserted in its housing.



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 described in "Boom Unfolding and Folding".



The information mentioned is not published in the manual if the equipment is installed on units belonging 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.

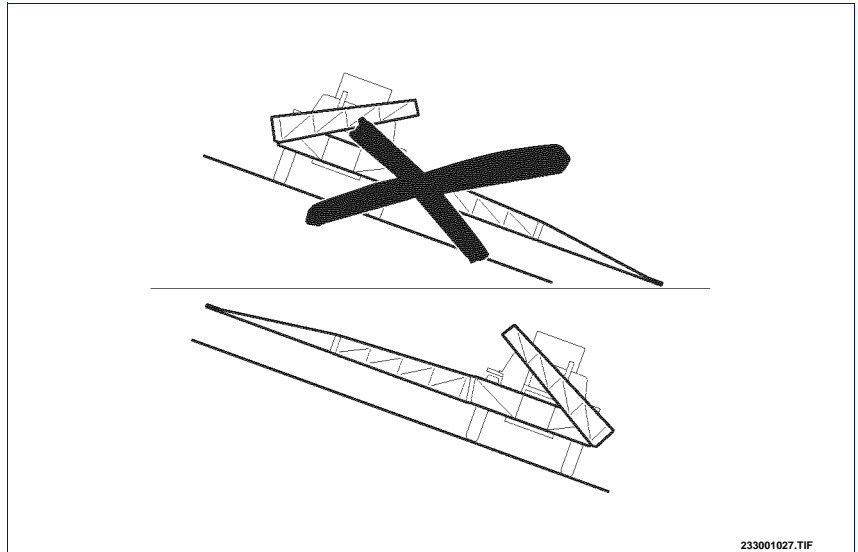
Evaluate the following requirements.

- 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 progress 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.



233001027.TIF



Danger - Warning

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

ADJUSTMENT OF TILT

Equipment tilt can be modified according to the different ground slopes.

Proceed as indicated.

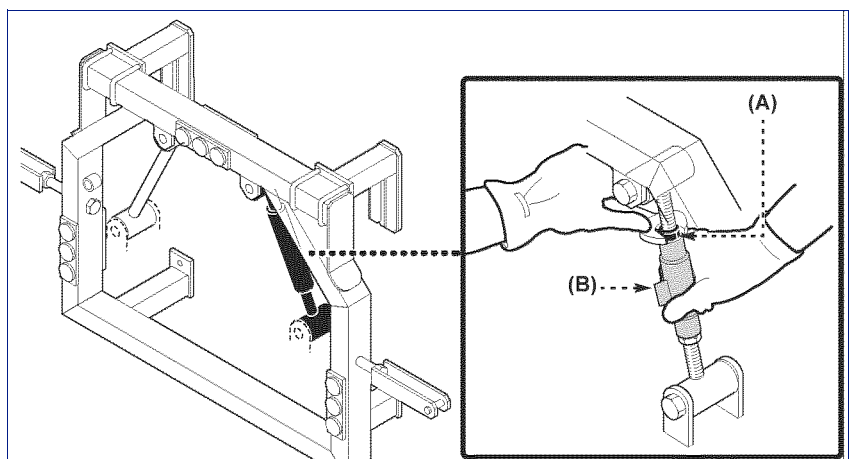
- Disengage locking device

Tilt with adjustable connecting rod

- Loosen the lock nut (A) and rotate the register (B) to adjust the tilt.
- Tighten the lock nut (A) when the operation is completed.

Tilting with electric or hydraulic control

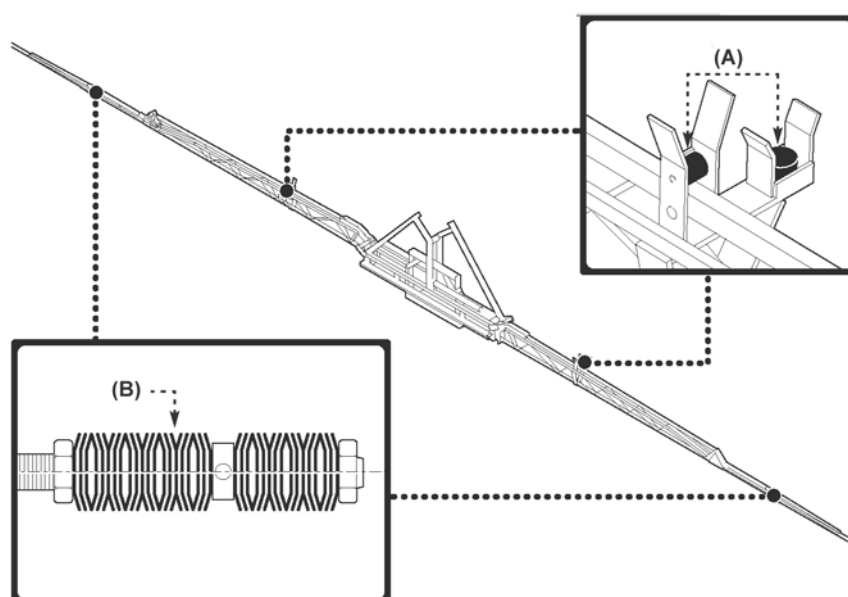
Use the special control



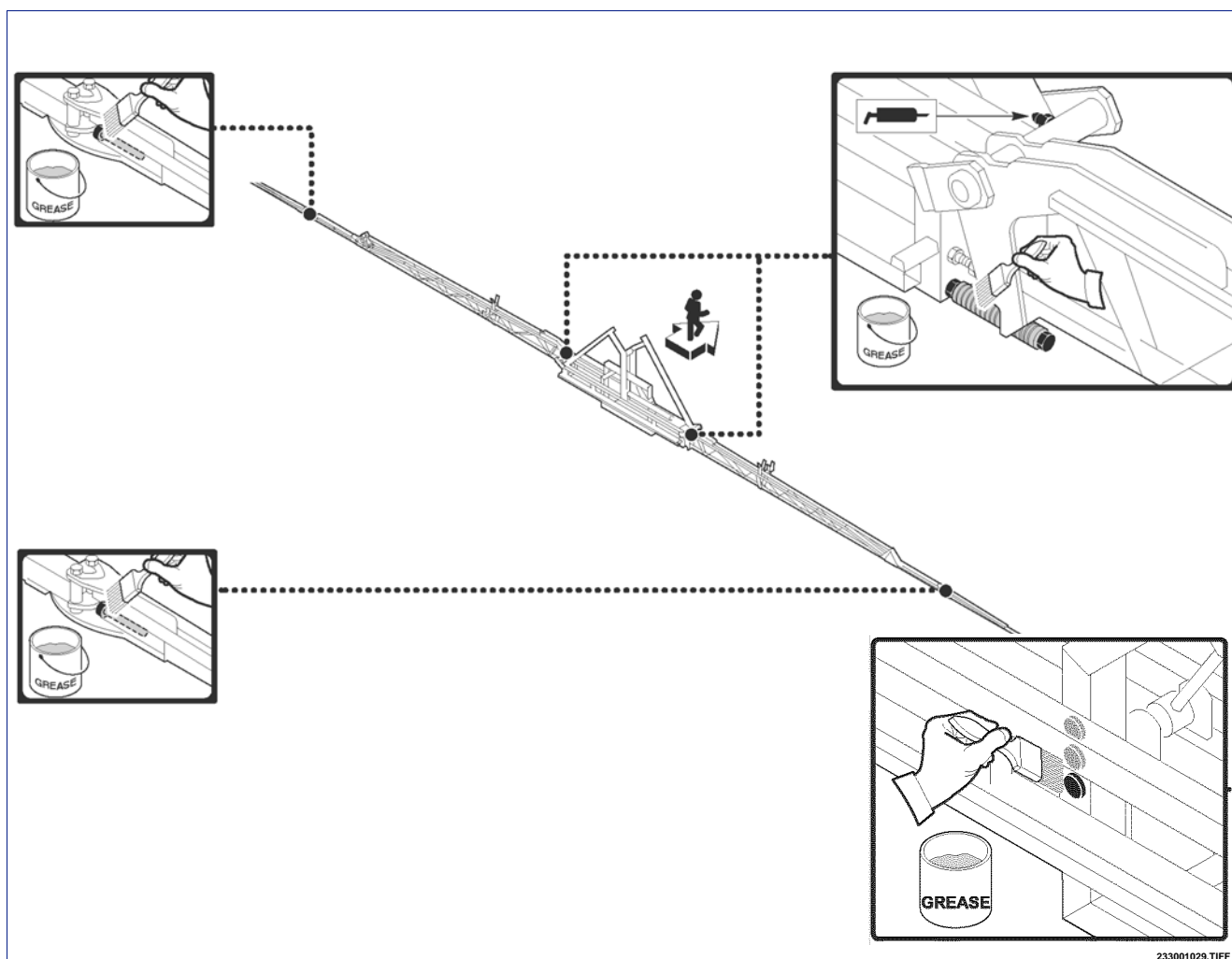
INFORMATION ABOUT MAINTENANCE

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 25
	Jets, nozzles antidrip valve	Check installation	Install properly	
	Complete equipment	Clean and wash	Use a clean jet of water	
	Complete equipment	Check the greased parts	Grease if necessary	See "Lubrication points diagram" page 25
Every 40 hours of work	Complete equipment	Check the condition and tightness of the screws	Tighten and replace if necessary	
	Complete equipment	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" page 28
	Belleville springs (B) corrector of position	Check its effectiveness	Replace if necessary	See "Replacement of corrector of position springs" page 29



LUBRICATION POINTS DIAGRAM



233001029.TIFF

Use *PERSIAN POLIGREASE 2* grease

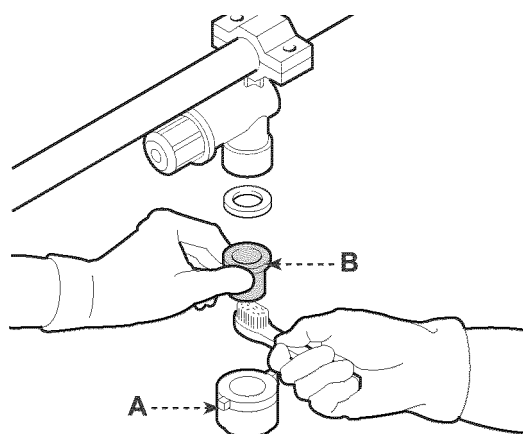
CLEANING NOZZLES

- 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.



233001030.TIF

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.

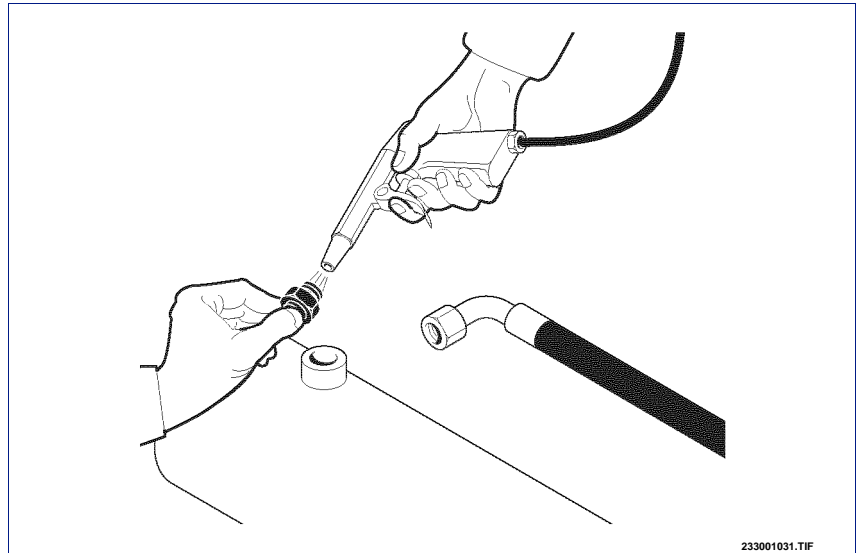
TROUBLESHOOTING

TROUBLES, CAUSES, REMEDIES

Trouble: the boom unfolds halfway and then stops.

Cause: impurities in the calibrated joints of the jacks.

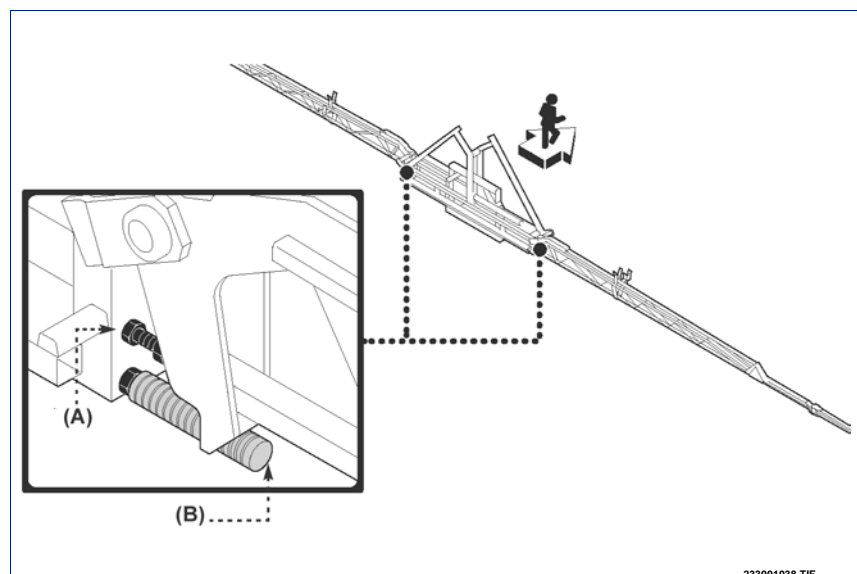
Cures: disassemble the joints and clean them.



Trouble: the boom is not aligned when unfolded.

Cause: unfolding cylinder not adjusted.

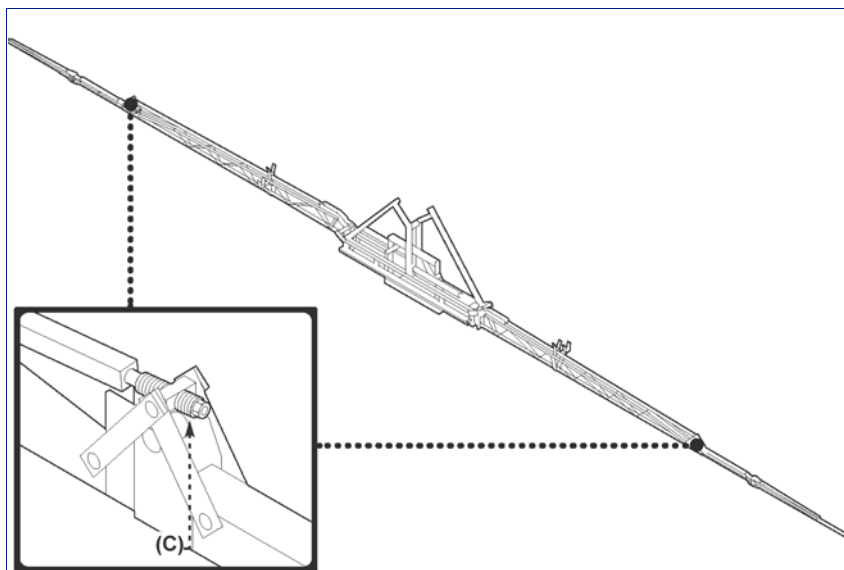
Cures: adjust the alignment of the arms (see "arm alignment adjustment")



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.

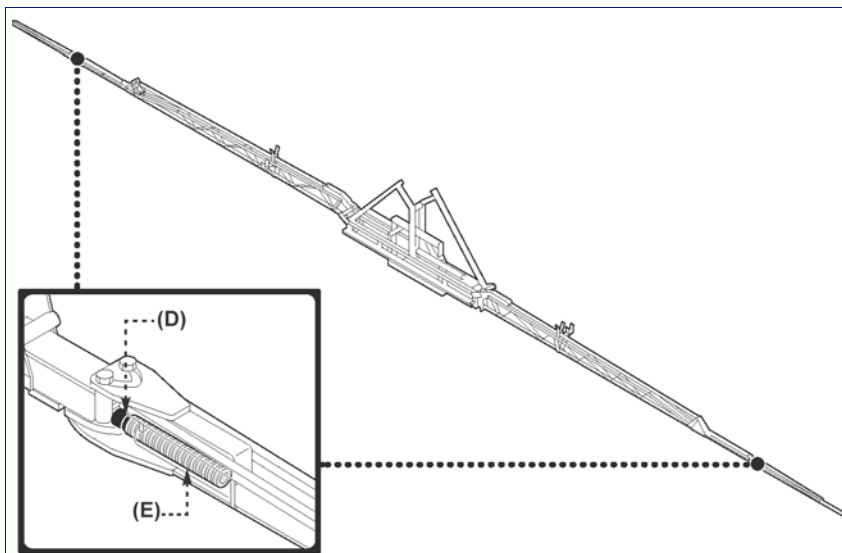
Cures: adjust the tie-rods so that the arms stop against the adjusting screws.



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").

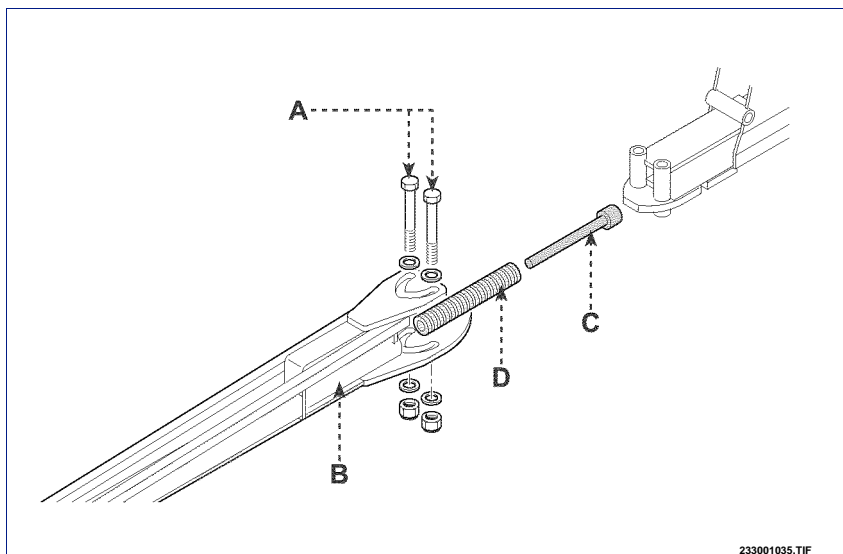


INFORMATION ABOUT REPLACEMENTS

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)**.

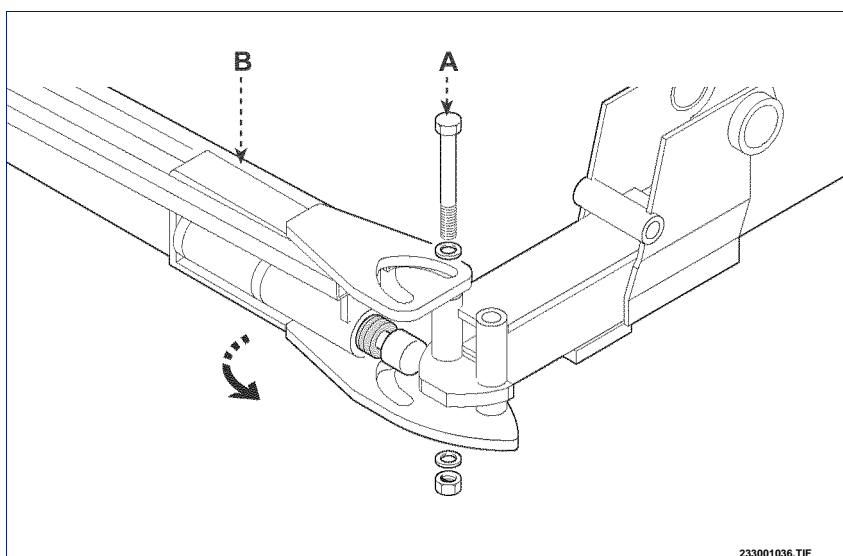


- 4 - When terminal joint **(B)** is rotated by 90° in relation with the primary arm, insert first screw **(A)**.
- 5 - Align the terminal joint and the primary arm and insert second screw **(A)**.



Important

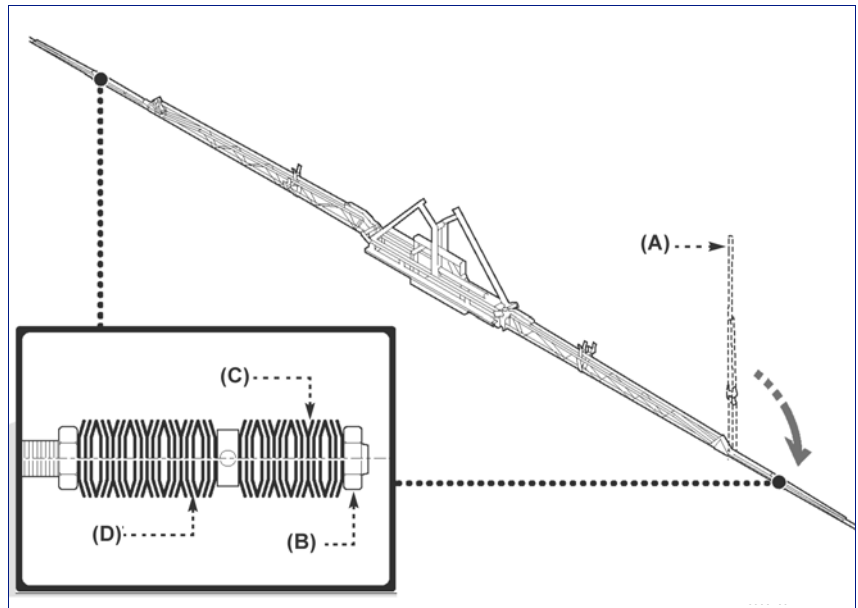
Screws **(A)** must not be tightened because the terminal joint must be free to rotate.



REPLACEMENT OF CORRECTOR OF POSITION SPRING

Proceed in the way indicated.

- 1 - Unscrew nut **(B)** and remove Belleville springs **(C)**.
- 2 - Unscrew screw **(E)** and remove cylinder **(F)**
- 3 - Remove Belleville springs **(D)**.
- 4 - Replace and divide the springs (see figure).
- C)** 15 double pack springs + 1 spring.
- D)** 15 double pack springs + 1 spring.
- 5 - Reposition the cylinder, tighten screw **(E)** and nut **(B)** so that 2 threads protrude.



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.

