IMPORTANT

Keep this service manual to hand during the machine/ equipment's working life

SELF-PROPELLED SPRAYER
GRIMPEUR 2000 - 2500MC - JC

user manual **ENGLISH**

(Translation of original instructions)

Serial number	Edition **1**
	01-2010

INDEX

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GENERAL AND SAFETY INFORMATION

user manual

Serial number

Edition 2
01-2010

TABLE OF CONTENTS

PURPOSE OF THE MANUAL

This manual has been written by the manufacturer and constitutes an integral part of this machine. The information contained in this manual is intended for persons who are qualified to operate the machine and trained to use it during its expected lifetime.

In addition to adopting good use techniques, the recipients must carefully read and strictly apply this information. This information has been produced by the manufacturer in his own original language (Italian) and can be translated into other languages to satisfy legal and/or commercial requirements.

Time dedicated to reading this information will avoid personal safety, health risks and economic damages.

Should this manual contain additional information compared to the actual parts of the machine, this will not interfere with the reading thereof.

Keep this manual for the entire life of the machine in an easily accessible place for quick reference whenever necessary.

Some of the pictures and pieces of information in this manual may not correspond perfectly to what you have. This does not however hinder operation.

As the manufacturer **is carrying out a policy of continuous product development and updating**, he reserves the right to alter this document without the obligation of prior notice.

To better stress the importance of some passages or to indicate important specifics, symbols, whose meanings are described as follows, have been adopted.

Warning - Caution

Indicates critically dangerous situations that, if neglected, can result in serious personal safety and health hazards.

Danger - Attention

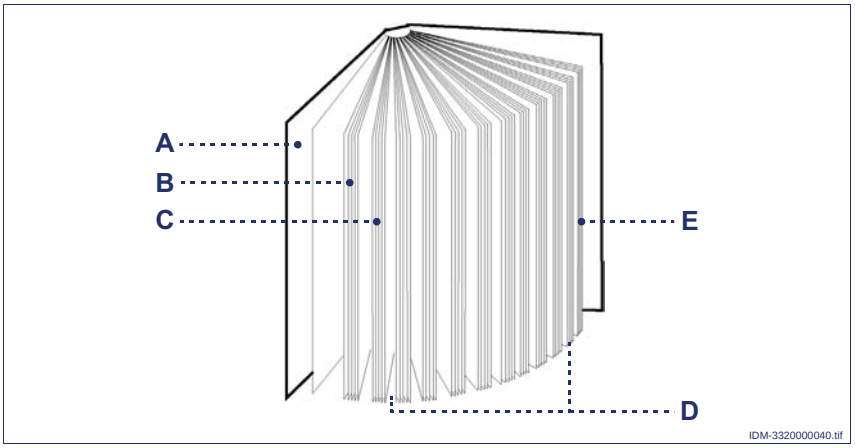
Indicates that suitable actions must be employed in order to avoid personal safety, health hazards and economic damages.

Important

Indicates particularly important technical information that should not be neglected.

COMPOSITION OF THE MANUAL AND METHOD OF REFERENCE

This instruction manual, barring any differences which do not affect the correctness of the information, consists only of the leaflets concerning the machine in question and the operating units which make it up.
The illustration below shows the manual layout.



A) Cover page: indicates the model and the description of the machine including publishing and ID information.
It also contains the list of leaflets relative to the components which can be installed. Some of these components may be missing from this machine.

B) Leaflet 1 - General safety information: contains the information necessary to identify the machine, use the manual as well as all the information regarding safety.

C) Leaflet 2 - General description of the machine: contains the basic principles as well as the manufacturing and operating philosophies.

D) Leaflets 3, 4, 5, 6..... - Information on the operating units installed: they contain all the information relative to each unit installed on the machine.

E) Last leaflet - Technical modifications: it contains any information on the modifications made to the manual over time.

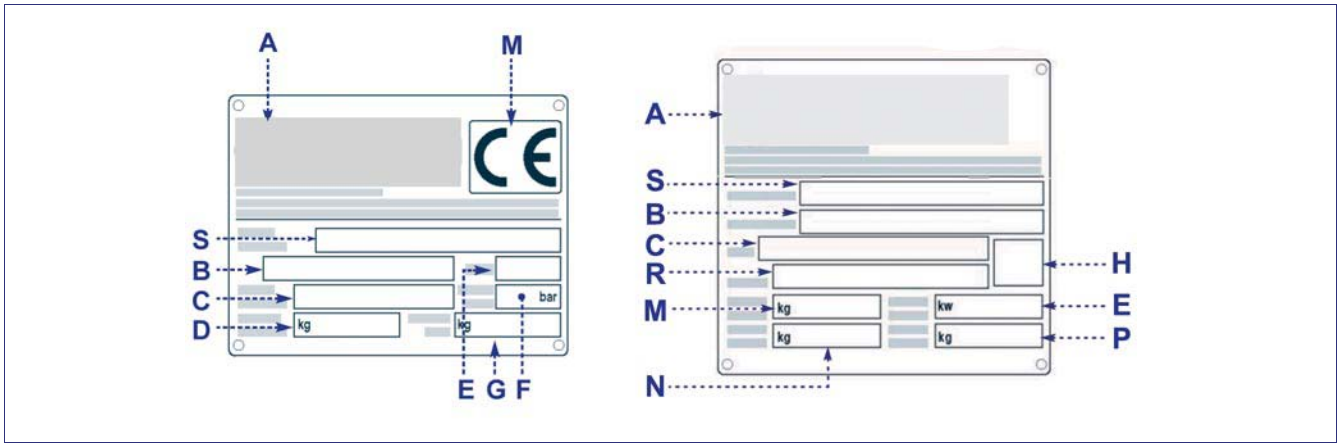
Important

Read this leaflet before the others since it contains more recent information compared to the manual herein.

MANUFACTURER AND MACHINE IDENTIFICATION AND EQUIPMENT

The ID plates shown are applied directly onto the machine.

It contains the references and all the indications necessary for safe operation.



A) Manufacturer identification.
B) Homologation number
C) Machine model.
D) Identification number
E) Total power
F) Year of manufacture.
G) Maximum mass when empty (Kg).
H) Smoke grade index
L) EC conformity mark.
M) Overall maximum mass (kg).
N) Front axle maximum mass (kg).
P) Rear axle maximum mass (kg).
Q) Water system maximum pressure (bar).
R) Frame number.
S) Designation.

SERVICE PROCEDURE

Please refer to the Manufacturer's service centres for any need.
For every technical service request regarding the machine, please indicate the data found on the identification plate, the approximate hours of use and the type of fault detected.

DOCUMENTATION ENCLOSED

The following documentation is included with this manual.
– Wiring diagrams.
– Hydraulic system diagrams.
– Oleodynamic system diagrams.
– Documentation on commercial components (pumps, engine, etc.).
– Warranty.
– EC declaration of conformity.
– Nozzle table.

SAFETY REGULATIONS

General regulations

During the design and construction of the machine, the manufacturer has paid special attention to aspects that could place the personal safety and health of the people in charge of operating the machine at risk. In addition to observing the specific laws in force, the manufacturer has adopted all "exemplary construction technique principles". The purpose of this information is to advise the operators to use extreme caution to avoid risks. However, discretion is invaluable. Safety is also entrusted to the staff who operate the machine.

Carefully read the instructions published in the supplied manual and found directly on the machine while strictly observing those concerning safety. Time dedicated to reading will prevent unfortunate accidents; remembering what one was supposed to do when the damage is already done is always too late.

Pay attention to the meanings of the symbols on the applied stickers; their shape and colour are significant to safety ends. Keep them legible and observe the shown information.

Never tamper, dodge, eliminate or by-pass the safety devices installed on the machine. Neglect to respect this requirement may cause serious risk to personal safety and health.

The staff in charge of carrying out any work on the machine during its entire life must have special technical knowledge, particular skills and certified experience in the specific sector. Neglect to observe these requirements may prove hazardous to personal safety and health.

Only wear and use the protective clothing and/or devices indicated in the instructions provided by the manufacturer or work safety laws in force when operating the machine.

Some phases may require the help of one or more assistants. In these cases such persons should be suitably trained and informed on the type of activity being performed, so as not to cause damage to the health and safety of persons.

Handling and loading specifications

Handling and loading must be carried out as per the instructions on the packaging, on the equipment itself and in the manufacturer's handbook.

Handling, loading and unloading must be carried out by trained personnel with specific competence in this field. During manoeuvres while using the equipment the driver must be familiar with the procedures necessary to carry out these operations safely.

The equipment may only be loaded onto and transported by hoisting devices having sufficient carrying capacity, anchored at the points specified by the manufacturer.

All moving and lifting operations must be carried out in compliance with the information supplied on the packaging, on the machine and in the instructions for use supplied by the manufacturer.

The staff in charge of loading, unloading and moving the machine must have skills and certified experience in the specific sector. During manoeuvres, when using the machine directly, the operator must know the procedures required to carry out these operations in safe conditions.

Lifting and transportation must be carried out using suitable means and anchoring the machine in the places provided by the manufacturer. Personnel who are authorised to perform these operations must possess specific skills and experience, to safeguard themselves and others involved.

Before moving the machine with vehicles, make sure that the machine and its components are suitably anchored to the vehicle and that their volume does not exceed the maximum allowable values. Place the required signals if necessary.

It may be necessary to move the machine frequently. To avoid sudden, uncontrolled movement make sure that all parts which could cause this have been safely locked before transportation.

Approved equipment may be driven on public roads by a licensed driver. In any case, before starting transportation, block the parts which could cause sudden unexpected movements and check that the volume does not exceed the maximum allowable values. If necessary, arrange proper signalling.

Operation and use regulations

Apart from being appropriately informed on the use of the machine, the operator must have the necessary skills and knowledge to carry out the specific type work.

Even after having been adequately trained on machine use, perform trial manoeuvres to familiarise the operator with machine controls and functions, start up and arrest in particular, on first use if necessary.

Only use the machine for the purposes expressly intended by the manufacturer. The improper use of the machine could place the personal safety and health of the staff at risk as well as cause economic damage.

The machine has been designed and constructed to satisfy all the operating conditions indicated by the manufacturer. Tampering with any device to achieve services other than those provided may be hazardous to personal safety and health and provoke economic loss.

Do not use the machine if the safety devices are not perfectly installed or in perfect operating condition. Failure to comply with this requirement could place the personal safety and health of people at risk.

During the preparation and use of all chemicals, appropriate measures must be taken in order to avoid placing people’s health and safety at risk and harming the environment.

All residual chemical substances must be disposed of properly according to local laws and regulations. Avoid polluting the environment.

Park the machine in an appropriate area where it does not create any obstacle or danger to circulation. Turn the engine off and take adequate precautions to prevent unauthorised personnel from accessing the driving seat.

Do not allow unauthorised people to get close to the operating area when the machine is being used. If necessary cease operations immediately and have the area at risk cleared.

Adjustment and maintenance regulations

Keep the machine in perfect working order, performing maintenance as scheduled by the manufacturer. Good maintenance achieves the best machine performance, longer machine life and constant observance of the safety regulations.

Activate all of the security devices provided and evaluate the necessity to adequately inform personnel operating in the near vicinity before performing maintenance or adjustments on the machine. In particular, confine the neighbouring areas to impede access to the devices that could, if activated, produce unexpected danger conditions provoking hazards to personal safety and health.

All maintenance procedures that require precise technical competence or specific skills must be exclusively performed by qualified personnel with acquired certified experience in the specific field.

To perform maintenance in areas that are not easily accessible or dangerous, establish suitable safety conditions for operators and others according to the laws in force pertinent to work safety conditions.

Replace deteriorated parts with originals. Use oils and lubricants indicated in the manual. All these measures can ensure the preservation of the machine and foreseen safety level.

Do not litter the environment with pollutant material; perform disposal according to the pertinent laws in force.

SAFETY AND INFORMATION MARKINGS

Some of the following signals are placed on the equipment, the correct position is shown in the paragraph "signals position". Their meaning is explained below.

Danger: read the manual carefully before any intervention.

Danger: turn the engine off and remove the key from the ignition before any operation.

Danger: do not place any part of your body in the tank.

Danger: do not exceed the pressure shown.

Danger: do not disconnect the battery leads while the engine is running.

Danger - live wires: beware of the electrical wires when the bar is extended and retracted.

Danger to people walking through: make sure there are no unauthorised people in the machine's operating range.

Caution - risk of corrosion: suitable gloves must be worn when handling chemical products.

Caution - risk of falling: do not climb, only use suitable means to access the higher parts of the machine.

Danger: fluid escaping under pressure: do not touch nor approach with any part of your body to avoid abrasions.

Danger of amputation for upper limbs: do not put your hands in mechanisms with moving parts.

Danger: low temperature: disconnect the pressure gauge before winter storage.

Caution - danger to body: do not go near the moving components.

Lifting point: indicates the lifting cylinder inserition points.

Caution: skidding and overturning risk: disable the operating control and that of the "four steering wheels" before beginning the road circulation.

Danger: Hot surfaces: be careful of hot surfaces.

Danger of impact: be careful of protruding parts.

Prohibited use: do not spray water under pressure to avoid damaging parts.

No access to unauthorised people: do not stand in or walk through the machine's operating range.

Grip points: indicates the manual grip points.

Protective gear must be worn: protective earmuffs must be worn while operating the machine.

Mandatory use of fresh water: wash your hands after each contact with the chemicals used.

Mask must be worn: to protect the respiratory tract when handling and using chemicals.

Boots must be worn: to protect feet and legs when handling and using chemicals.

Clean water must be used: to fill up the clean water tank.

Mandatory reading of the User manual. The person in charge of the equipment operation shall read the manual in order to know the position and the function of controls as well as to familiarize with all information contained. Always keep the document within reach.

Gloves must be worn: to protect hands from abrasions.

Protective clothing must be worn: to protect the body when handling and using chemicals.

Height adjustment signal: this indicates the height adjustment points when using a lifting hook.

Emergency exit: marks the emergency exit.

SELF PROPELLED SPRAYER (GRIPEUR 2000-2500MC - JC)

user manual

Serial number

Edition1
11- 2009

GENERAL INDEX

IMPORTANT SAFETY INFORMATION

The information in this booklet concerns the functional aspects of the machine operator unit. Nevertheless, in order to protect people from risks, please read carefully the general safety regulations in Booklet 1 and those marked by the special symbols. We remind you that caution is essential; safety is also in the hands af all the operators driving the tractor.

TECHNICAL INFORMATION

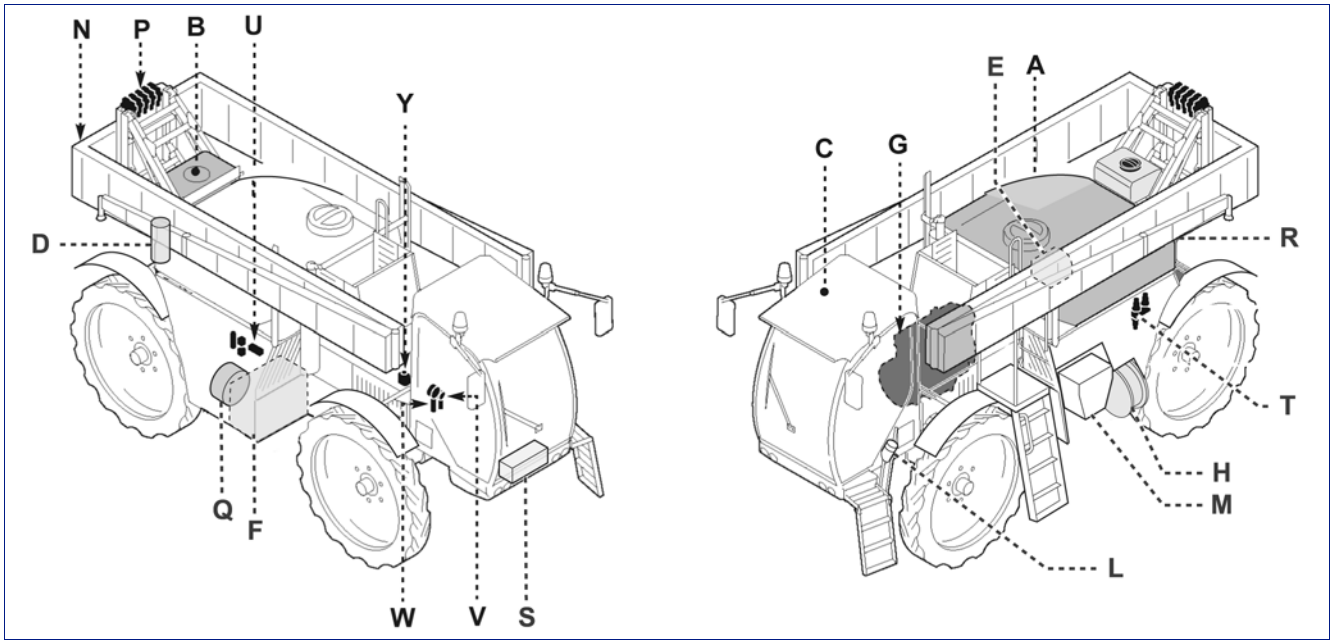
GENERAL DESCRIPTION OF THE MACHINE

The sprayer, hereinafter referred to as the machine, has been designed and built for agricultural use and, more precisely, for spraying medium to large surface areas.

It can be used to spray chemicals (such as fertilisers, herbicides and pesticides) over the field or directly onto the crops. Only one operator is required aboard. The operator must be properly trained to drive and operate the machine safely.

In order to protect the driver from the risks of contamination and in order to guarantee suitable working conditions, the machine is provided with a sound-proof and conditioned cabin with activated carbon filter.

The machine is approved for use on public roads.



Main components

A) Tank: for the product to be sprayed.

B) Clean water tank: to clean the system.

C) Cab (ROPS): for the operator's seat. It is fitted with all the controls and accessories (windshield wipers, rearview mirrors, lights, etc.), is soundproof, with antiglare glass, air conditioning and an active coal filter.

D) Row marker foam tank: to distribute the foam which marks the perimeter of the sprayed area.

E) Clean water tank: for washing hands.

F) Oil tank: to activate the hydraulic devices.

G) Endothermic engine: to supply power to the main components.

H) Hose winder (hydraulic, on request): to fill the tank, complete with hose.

L) Diesel fuel tank: for the engine fuel.

M) Mixer: to mix the liquid for spraying.

N) Spraying bar: to spray the mixed product.

P) Water distribution unit (sectional valves): to select the spraying sectors of the bar.

Q) Pump: to pressurise the product to be sprayed.

R) Centrifugal pump: to fill the tank with water.

S) Batteries: to power the electrical system.

T) Water cocks: to select filling, mixing, spraying and cleaning.

U) General distribution unit: to open and close the supply to the water distribution unit **(P).**

V) Pressure gauge: to measure the pressure of the service water system. Should the central spraying system be retracted or in the event of a pressure gauge **(W)** malfunction, it measures the indicative bar supply pressure.

W) Pressure gauge: to measure the bar operating pressure.

Y) Tank: to store the oil for the pedal service brake.

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GENERAL DESCRIPTION OF THE CAB

The diagram shows the main components.

A) Seat: for the operator to sit on. It is adjustable, to ensure the appropriate ergonomic conditions (see page 27).

B) Steering wheel and controls: adjustable to provide the appropriate ergonomic conditions for the operator (see page 27).

C) Cab controls: to enable the service devices and interior cab light (see page 41).

D) Controls for use and forward motion: to enable all the operating functions of the machine (see page 39).

E) Computer: to programme and manage the spraying functions. It is connected to a sensor **(G)** which measures the sprayer's forward speed, in accordance with which the computer regulates the flow of the product that needs to be sprayed (see leaflet 13).

F) Windshield wiper fluid tank; to store the windshield wiper detergent.

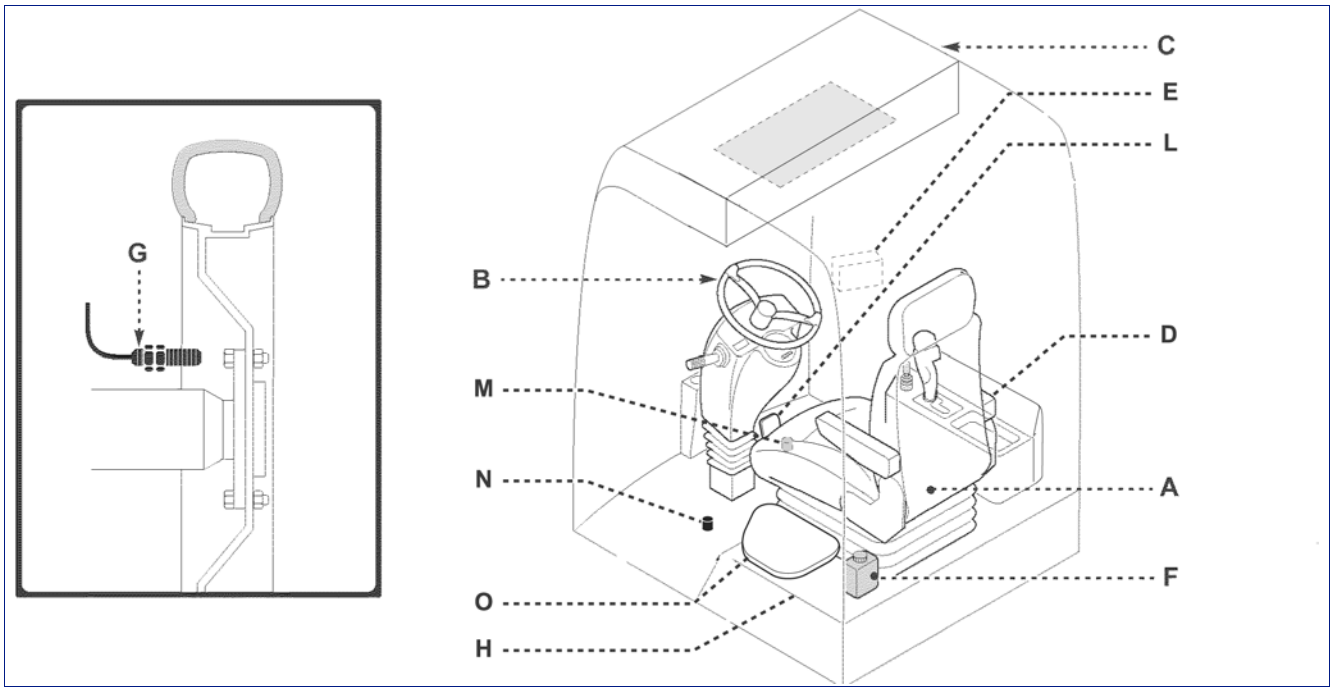
H) Object holder drawer

L) Service brake pedal: to brake the machine.

M) Four steering wheels pedal-operated switch: it activates the automatic mode of the four steering wheels.

N) Water system control unit pedal-operated switch

O) Second person seat



OPERATING PRINCIPLE

The main steps of the operating principle are indicated below.

- Tank filling
- Product mixing
- Product spraying
- System cleaning

Important

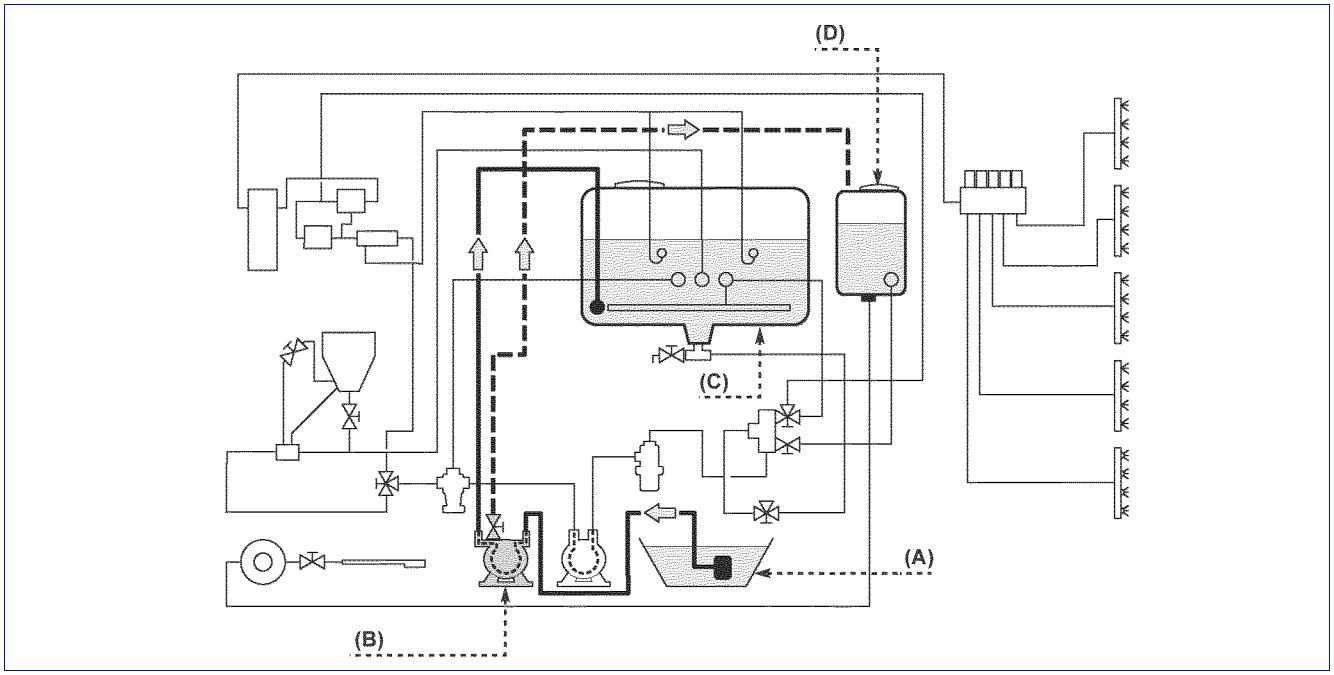
The figures represent the operating principle. For further details, consult the specific diagram of the system for the machine you own.

I) Tank filling

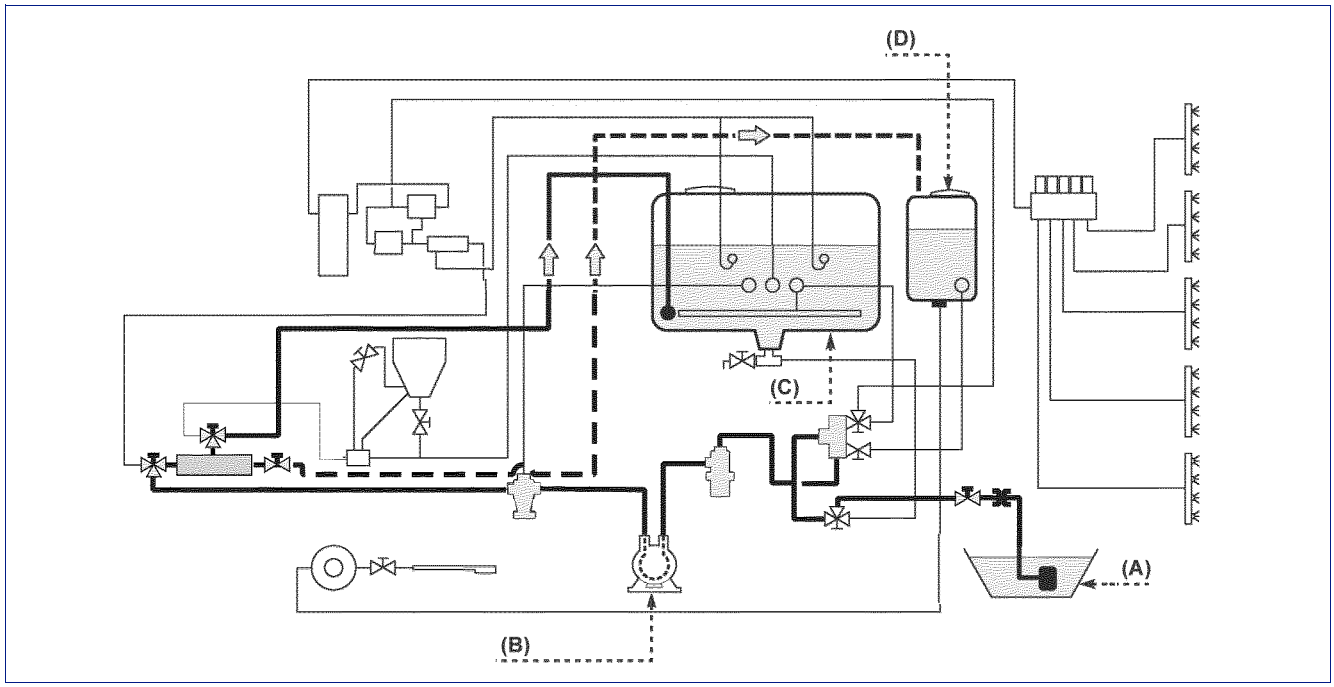
The water is drawn from the water reservoir **(A)** through the intake of the pump unit **(B)** and conveyed to the tank **(C)**.

If necessary, the water supply to the system cleaning tank **(D)** can be opened to fill the latter.

With centrifugal pump



Without centrifugal pump



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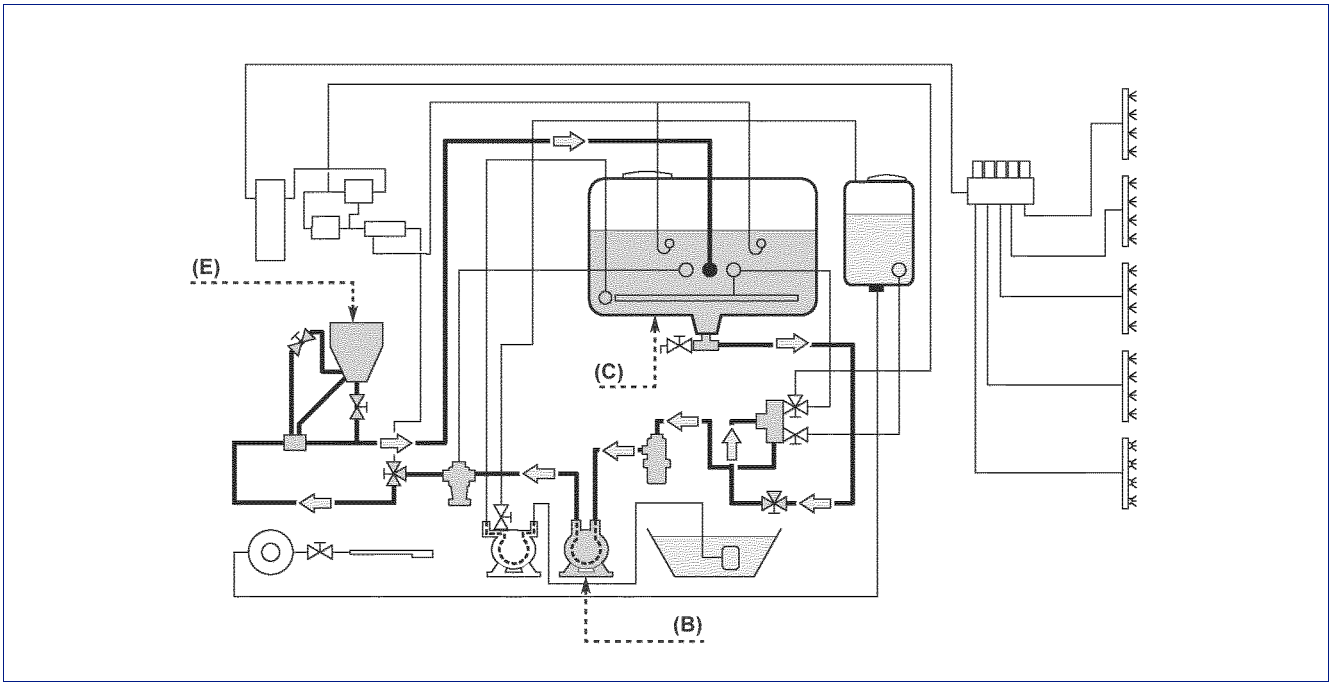
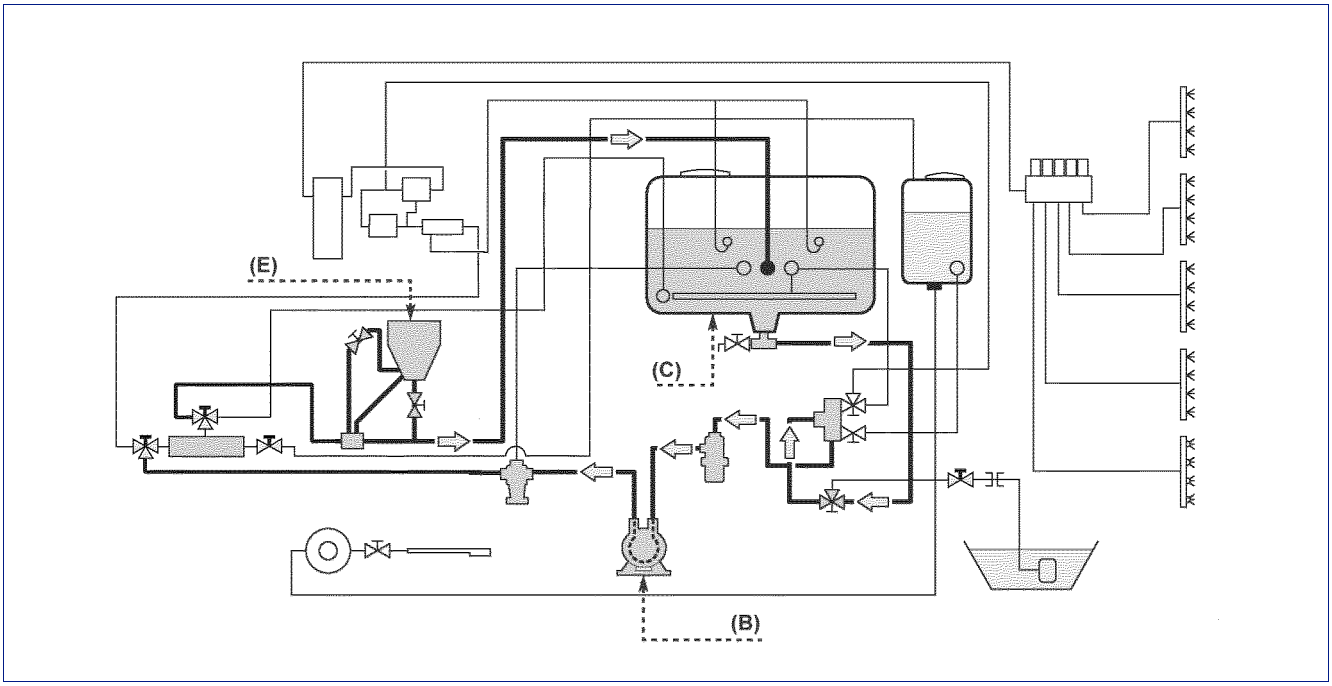
II) Product mixing

The water is drawn from the tank **(C)** through the intake of the pump unit **(B)** and conveyed to the mixer **(E)** to be mixed with the chemical. The mixed liquid returns to the tank **(C)**.

With centrifugal pump



Without centrifugal pump

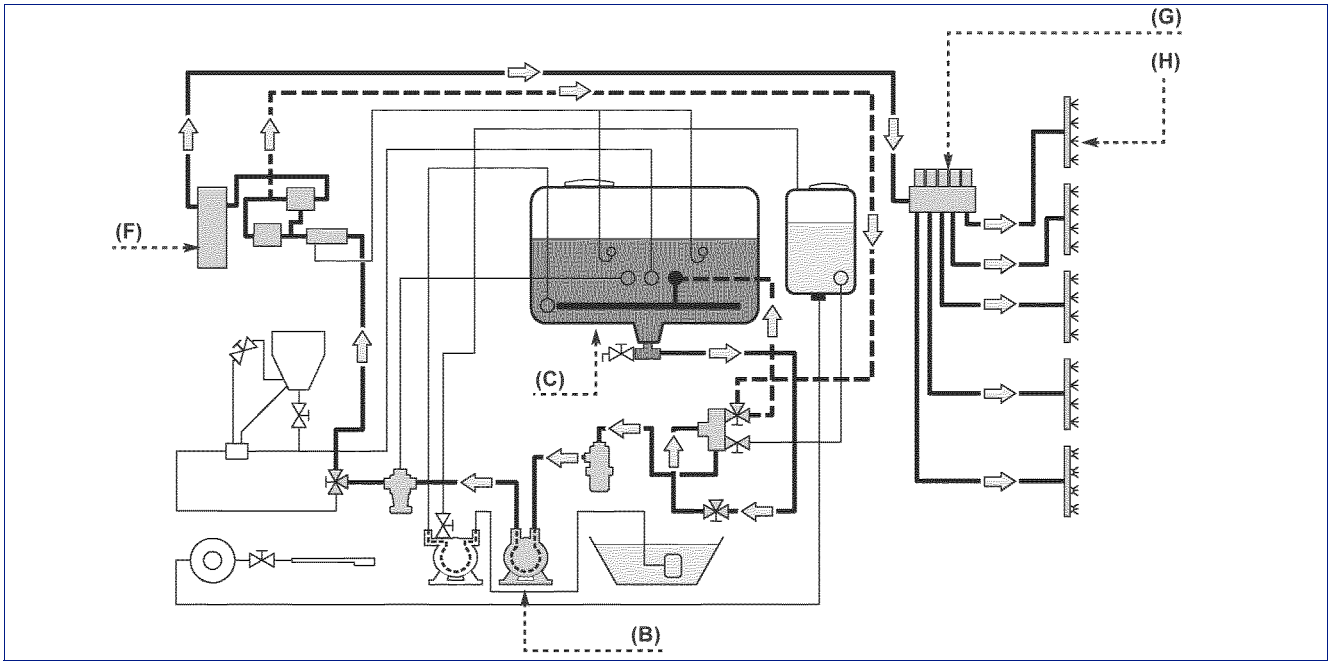


III) Product spraying

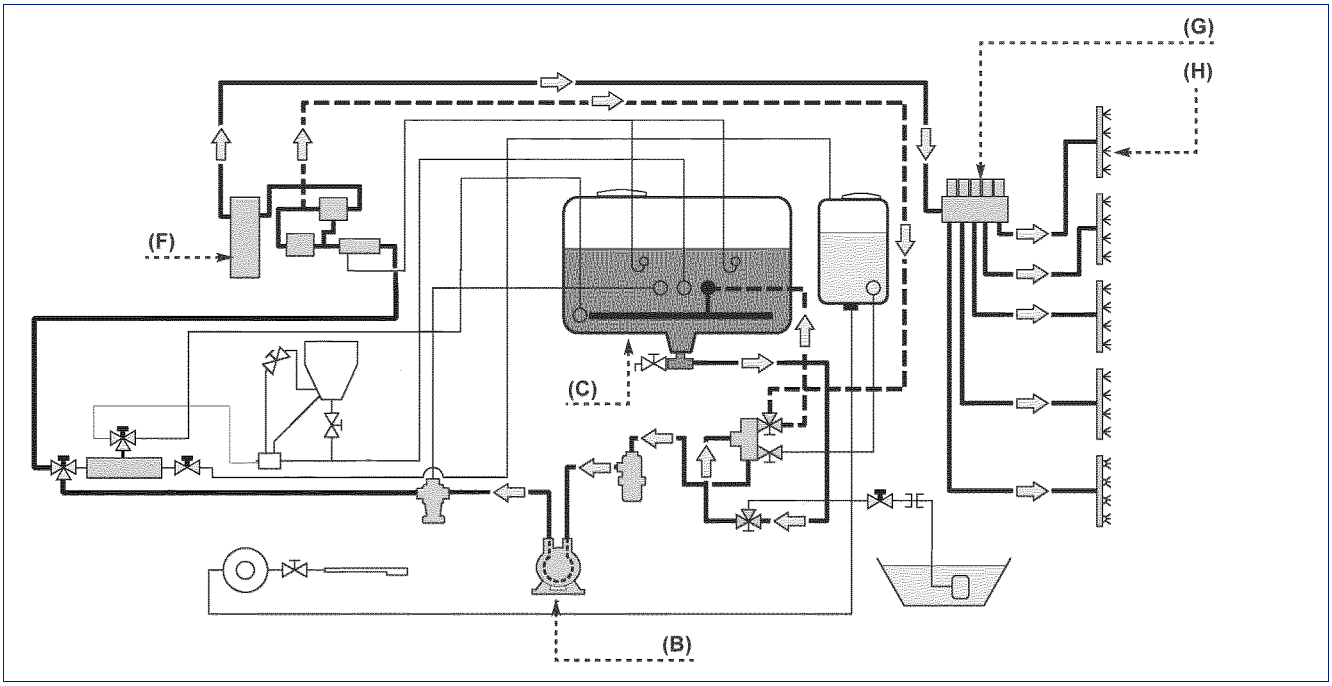
The mixed liquid is drawn from the tank **(C)** through the intake of the pump unit **(B)** and conveyed, under pressure, to the electrical distribution unit **(F)** and to the solenoid valve unit **(G)**.

The liquid is sent from the solenoid valve unit **(G)** to the relative spraying bars **(H)**; any excess liquid returns to the pump unit and is recycled.

With centrifugal pump



Without centrifugal pump



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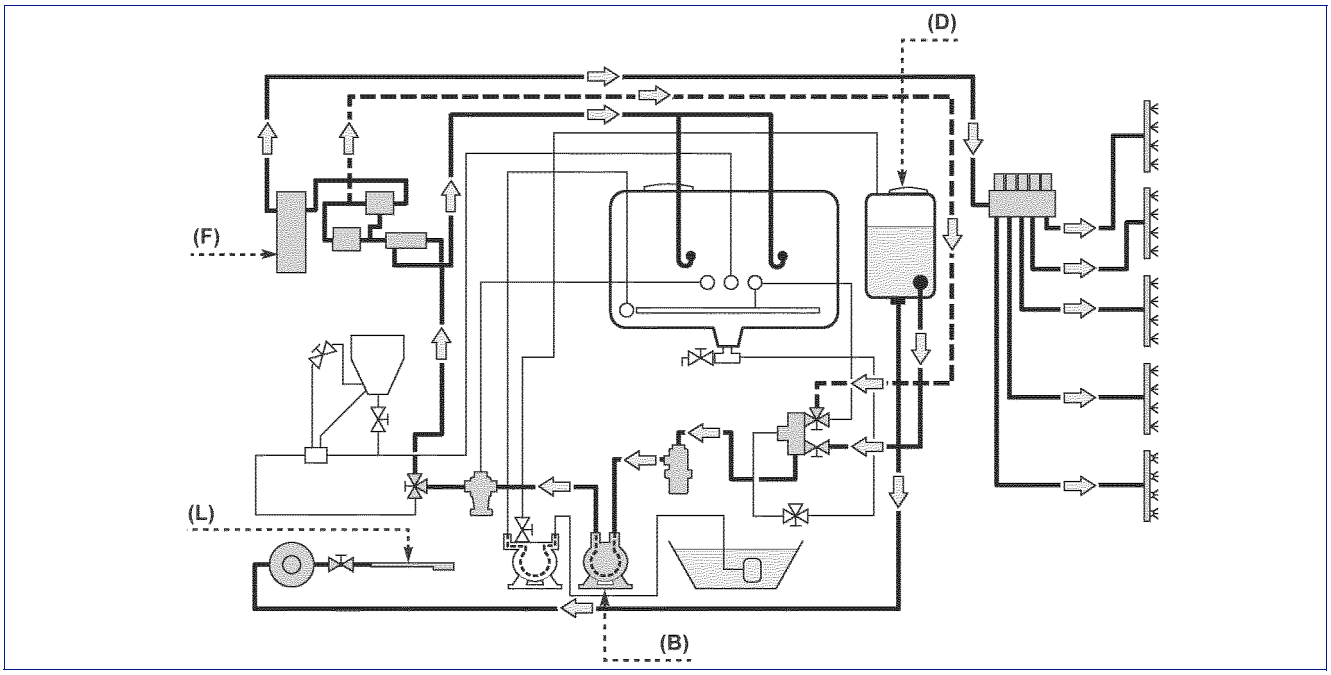
IV) System cleaning

The clean water is drawn from the tank **(D)** through the intake of the pump unit **(B)** and conveyed, under pressure, to the electrical distribution unit **(F)** to then branch out into the various pipes, the tank and the spraying bars, to clean the system thoroughly and remove any chemical residue.

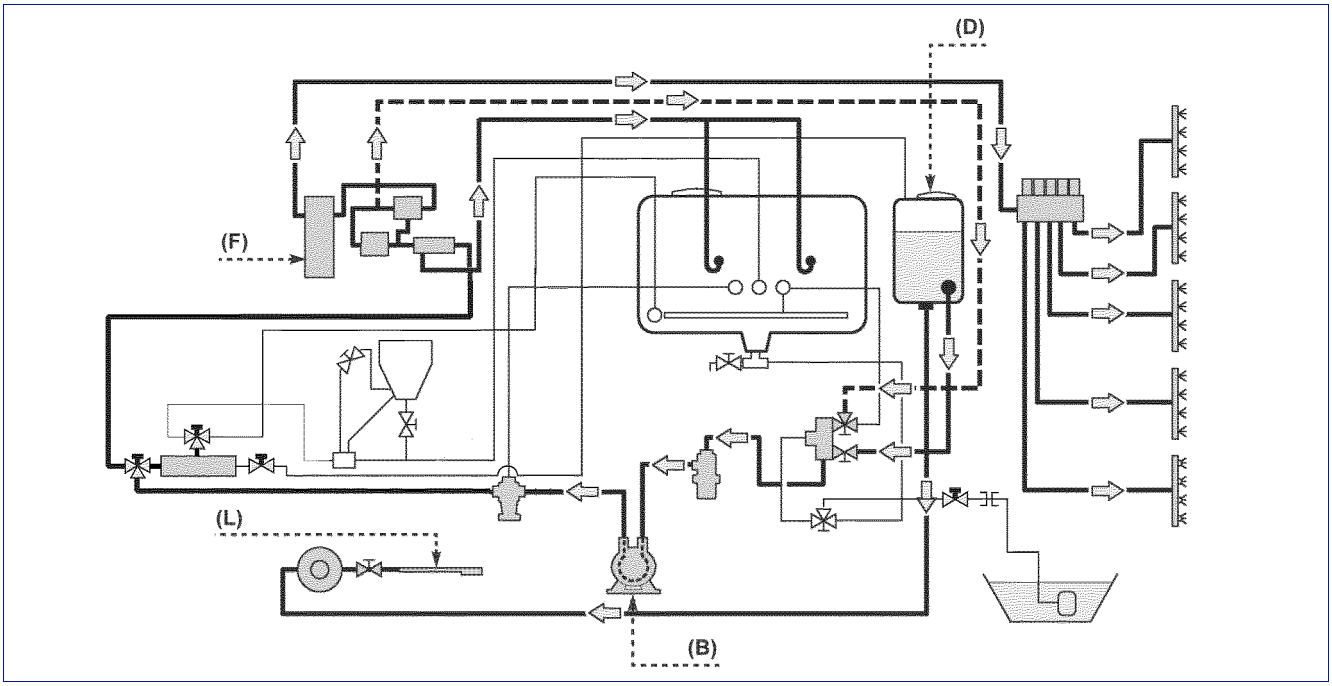
Important

The system is fitted with a range of filters, manifolds, valves and cocks to modify the course of the liquid depending on the operating requirements stated in the instructions for use.

With centrifugal pump



Without centrifugal pump



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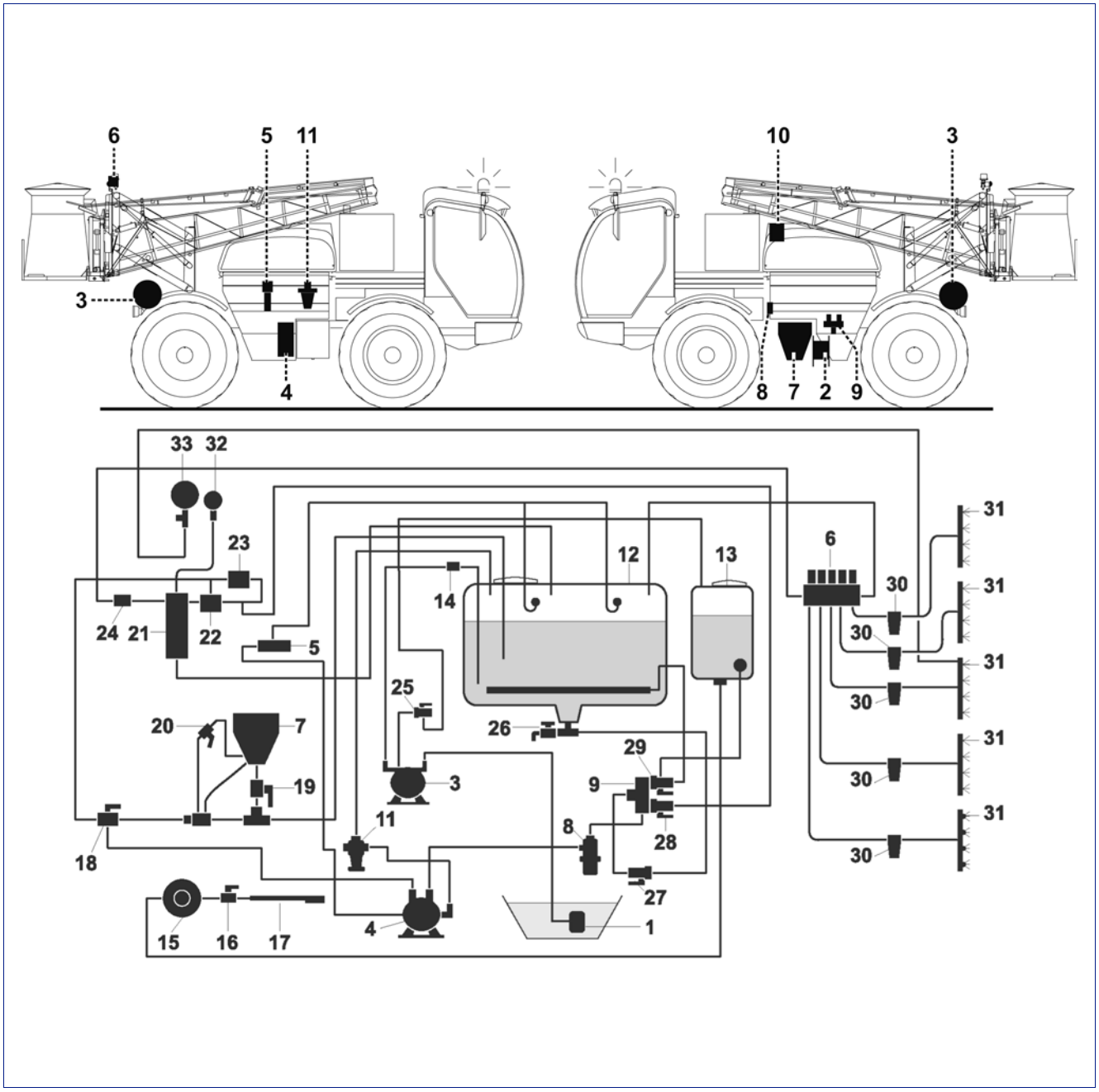
Water system diagram (with “Müller” and “Tee Jet” computer)



Legend

1 - Intake filter (filling)
2 - Hose winder (filling)
3 - Centrifugal pump (filling)
4 - Diaphragm pump
5 - Cock unit
6 - Solenoid valve unit
7 - Mixer
8 - Intake filter
9 - Manifold
10 - Hand-washing tank
11 - Maximum pressure valve
12 - Product tank
13 - Clear water tank (system cleaning)
14 - Load litre counter (filling)
15 - Hose winder for equipment cleaning
16 - Equipment cleaning cock
17 - Equipment cleaning nozzle
18 - Three-way ball valve
19 - Valve for transfer
20 - Ball valve for cleaning
21 - In-line filter on control unit
22 - Main engine
23 - Pressure regulating motor
24 - Non-return valve
25 - Clear water tank filling cock
26 - Tank draining cock
27 - Two-way ball valve
28 - Clear water intake cock
29 - Three-way ball valve
30 - In-line spraying filters
31 - Stainless steel pipes
32 - Operating pressure gauge
33 - Working pressure gauge

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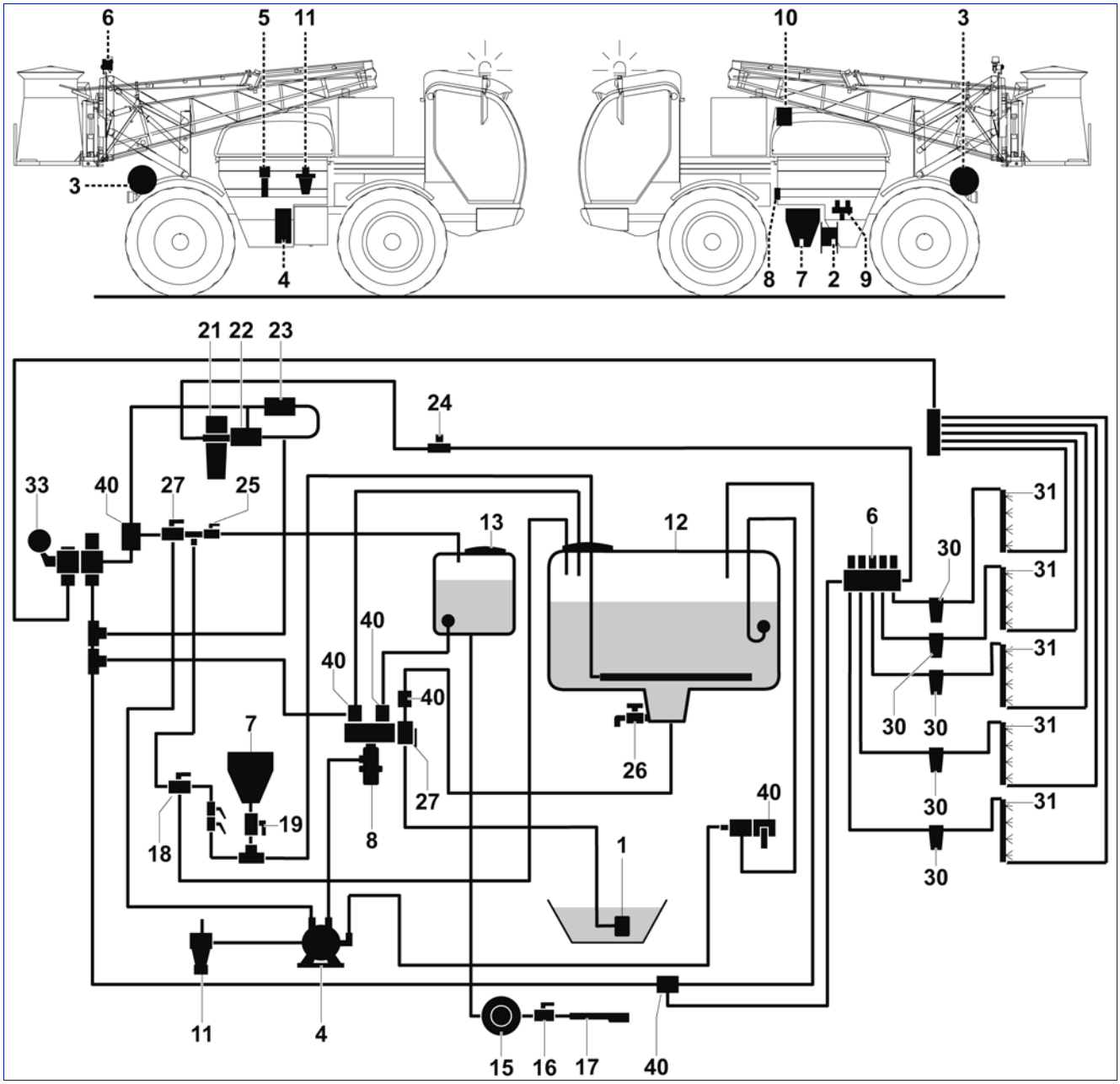
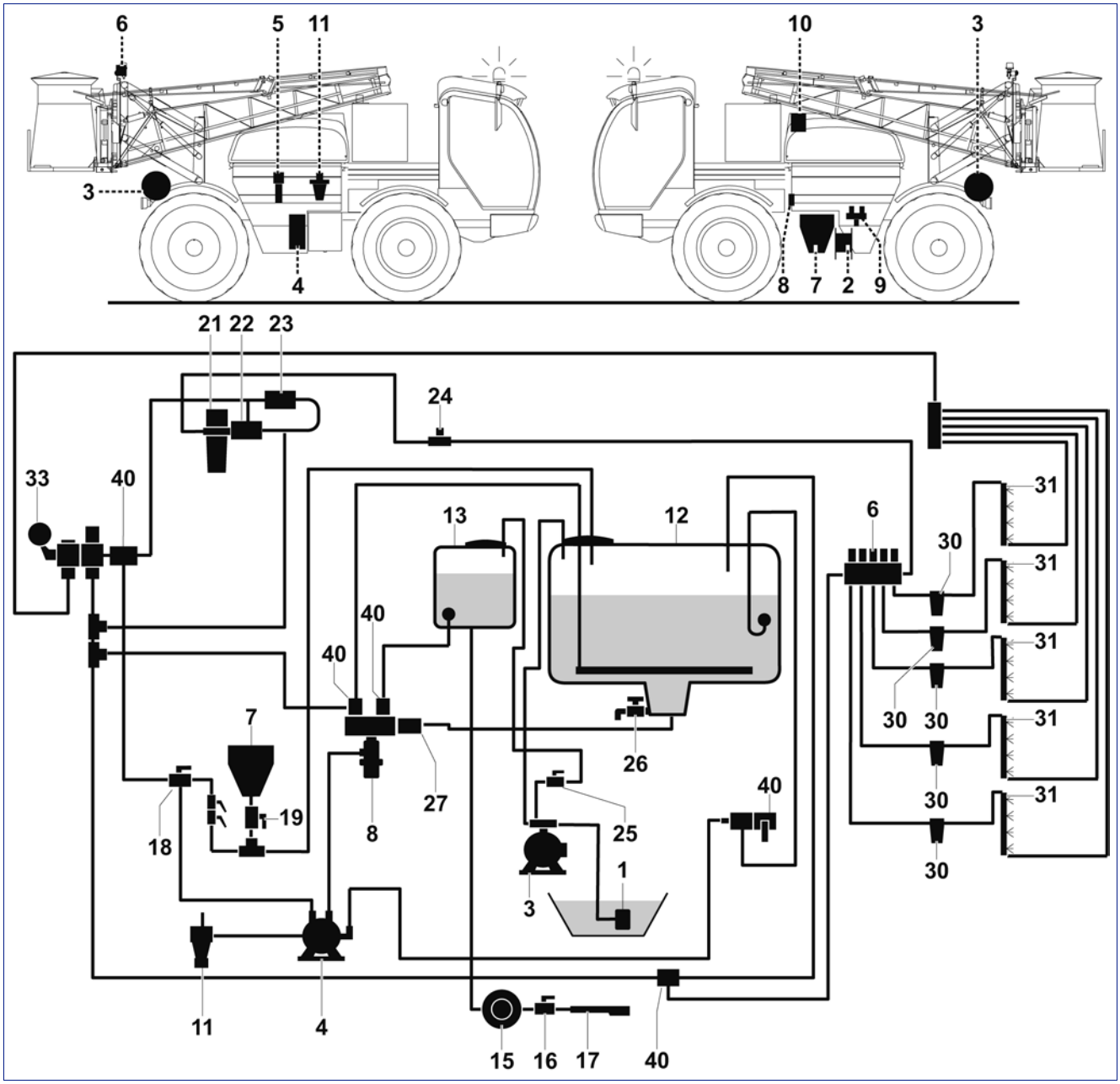
Water system diagram without centrifugal pump (Electrical mode with recirculation)



Legend

1 - Intake filter (filling)
2 - Hose winder (filling)
4 - Diaphragm pump
5 - Cock unit
6 - Solenoid valve unit
7 - Mixer
8 - Intake filter
9 - Manifold
10 - Hand-washing tank
11 - Maximum pressure valve
12 - Product tank
13 - Clear water tank (system cleaning)
14 - Load litre counter (filling)
15 - Hose winder for equipment cleaning
16 - Equipment cleaning cock
17 - Equipment cleaning nozzle
18 - Three-way ball valve
19 - Valve for transfer
20 - Ball valve for cleaning
21 - In-line filter on control unit
22 - Main engine
23 - Pressure regulating motor
24 - Non-return valve
26 - Tank draining cock
27 - Two-way ball valve
28 - Clear water intake cock
29 - Three-way ball valve
30 - In-line spraying filters
31 - Stainless steel pipes
32 - Operating pressure gauge
33 - Working pressure gauge

Water system diagram with centrifugal pump (Manual mode with recirculation)



Legend

1 - Intake filter (filling)
2 - Hose winder (filling)
3 - Centrifugal pump (filling)
4 - Diaphragm pump
6 - Solenoid valve unit
7 - Mixer
8 - Intake filter
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10 - Hand-washing tank
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21 - In-line filter on control unit
22 - Main engine
23 - Pressure regulating motor
24 - Non-return valve
25 - Clear water tank filling cock
26 - Tank draining cock
27 - Two-way ball valve
30 - In-line spraying filters
31 - Stainless steel pipes
33 - Working pressure gauge
40 - Electrical valve

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IMPROPER USE

- Any use of this machine for purposes other than agricultural ends cannot be deemed to comply with the manufacturer's instructions; the manufacturer is consequently relieved of any liability for damages caused by such a use, and the operator shall also be fully liable towards any third parties involved.

Danger - Warning

The use of products which are not specifically authorised for crop spraying is strictly prohibited. Read the instructions on using spray chemicals provided by the manufacturer on the packet carefully.

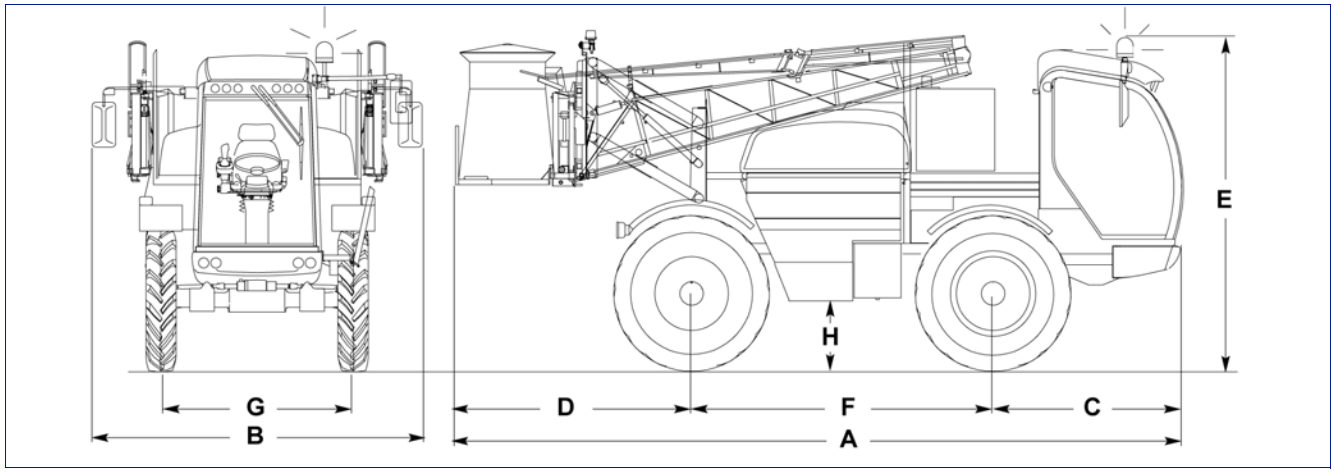
- Observe the regulations and applicable laws in force on the subject of spraying chemicals so as not to damage any flora and fauna. Pay particular attention to food crops destined for human and animal consumption.
- Before operating the machine, it is vital that you check carefully for the presence of any overhead electrical wires which the bars may interfere with, placing the operator's safety at risk.
- During the preparation and use of all chemicals, appropriate measures must be taken in order to avoid placing people's health and safety at risk and damaging the environment.
- Any chemical residue must be disposed of in accordance with the applicable waste disposal regulations in force.
- When operating the machine, only use appropriate protective clothing and/or accessories as indicated in the instructions for use provided by the manufacturer and as provided for by the current regulations in terms of safety in the workplace.
- Do not allow unauthorised staff to get close to the operating area when the machine is being used. If necessary, turn the engine off and clear out the danger zone.
- Do not disconnect any hoses which contain chemicals while the system is under pressure, to avoid any risk of unforeseen contamination. When replacing the hoses, only use original spare parts.
- Road circulation is allowed for authorised machines. Operators must comply with the requirements set forth by the laws in force. In any case, before starting transportation, block the parts which could cause sudden unexpected movements and check that the volume does not exceed the maximum allowable values. If necessary, arrange proper signalling.

LIMITATIONS OF PRODUCT USE

The manufacturer states that no notifications have been made as to any reactions of machine components as a result of the use of authorised chemicals.

The manufacturer also declares not to be aware of any regulations that impose the performance of specific tests to evaluate the reaction of the machines to authorised chemicals for crop spraying.

TECHNICAL DATA



129 KW engine (175 hp)

Brand .....IVECO - AIFO
Type ..... NEF
Cylinders 4
Total CC..... 4400 cm3
Maximum capacity .....107 KW
Cooling ..... system water

Transmission ..... hydrostatic

Hydrostatic pump .....SAUER - S90 R75
Hydrostatic engine .....SAUER - 51D80-11

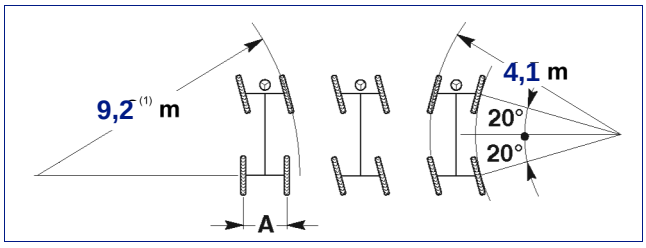
Wheel flanges (front and rear): they allow to modify the track, according to their assembly.

Steering: wheel with power steering system Danfoss OSPC-100LS for two or four wheels

Emergency/parking brakes: oil bath multi-disc brakes with electro-hydraulic control on the rear wheels.

Service brakes: oil bath multi-disc brakes on front and rear wheels with pedal control.

Turning radius



(1) With 2000 mm track (A)

Dimensions

A (MC).....6.17 m (6.77 m with air-assisted kit)
A (JC).....6.49 m (7.09 m with air-assisted kit)
B ..... 2.55 m (3.00 m with bar P5)
C .....1,75 m
D .....1.60 m (2.20 m with air-assisted kit)
E .....4,00 m
F (MC).....2,82 m
F (JC) ..... 3,14 m
G (MC version) ..... 1800-2250 m
G (JC version) ..... 1810-2290 m
H (MC version) ..... 0,600 m
H (JC version) ..... 0,900 m

Weight: (during operation and with operator aboard; values refer to machine fitted with the largest tyres).

MC version

Overall weight ..... (empty) 5900 (full) 8400 kg
Front axle ..... (empty) 3200 (full) 4250 kg
Back axle . ..... (empty) 2700 (full) 4150 kg

JC version

Overall weight ..... (empty) 6800 (full) 9400 kg
Front axle ..... (empty) 3900 (full) 4500 kg
Back axle . ..... (empty) 2900 (full) 4900 kg

Note: the weight of the machine equipped with the air-assisted kit should be increased by 200 kg.

Hydraulic system

Diesel fuel tank .....230 l
Hydraulic oil tank .....165 l
Water pump hydraulic motor .. (DANFOSS OMS-125)
Self-priming pump
hydraulic motor ..... (CASAPPA PLM-20.25)

Hydraulic system (3000 liters tank)

Tank 2000l
Cleaning water tank .....275 l
Hand-washing tank .....17 l

Hydraulic system (3500 liters tank)

Tank .....2500 l.
Cleaning water tank .....250 l
Hand-washing tank .....17 l

Electrical system

Normal voltage ..... 12 Volts
Alternator: n.1 .....120 A
Battery: n.1 .....12 Volts 140 Ah

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TYRE TABLE (FRONT AXLE / REAR AXLE)

Type	Version		Maximum load for wheel (Kg)	Speed (Km/h)	Pressure (bar)	Tracks				
	MC	JC				1800	2000	2200	2250	2350
230/95R40	x		1900	40	3,60	x	x		x	
			2185	25						
270/95R36	x		2240	40	3,60	x	x		x	
270/95R38	x	x	2300	40	3,60	x	x		x	
270/95R42		x	2430	40	3,60	x	x		x	
270/95R48		x	3150	25	3,60	x			x	
			2650	40	3,60					
300/85R42		x	3240	25	3,60	x	x		x	
			2725	40	3,60					
300/95R46		x	3660	25	3,60	x	x		x	
			3080	40	3,60					
320/85R32	x		1900	40	3,60	x	x		x	
			2185	25						
320/85R36	x		1900	40	3,60	x	x		x	
			2185	25						
380/85R28	x		2060	40	1,60		x			
			2286	25						
420/85R38		x	2575	40	1,60	x	x		x	
			3060	25						
540/65R28	x		2650	40	1,40			x		
540/65R38		x	3080	40	1,40	x				
			3660	25						
600/60R28	x		3000	40	1,00				x	
600/65R28	x		3080	40	1,60				x	
600/60 30,5	x		3380	40	1,50				x	
600/55 26,5	x		2900	40	1,30				x	
800/45 26,5	x		3350	40	1,10					x
340/85 36	x		1950	40	2,0					
			2380	25						

Residual volume

The volume of liquid that cannot be sprayed correctly (technical residue) is not in excess of 0,5% of the nominal value plus 2 litres for each metre of the bar. The table below features the values for the technical residue, soluble and non.

2000 (Nominal capacity: 2000 litres / Real capacity 3260 litres)			
2500 (Nominal capacity: 2500 litres / Real capacity 3800 litres)			
Bar size (in metres)	**Soluble * (litres)**	**Not soluble** (litres)**	**Total (litres)**
	24,3	16,7	41
18	24,3	19,5	43,8
20	24,3	21,1	45,4
21	24,3	21,7	46
24	24,3	24,8	49,1

N.B.: Values taken with an AR250 pump

(*) Soluble technical residue during the cleaning phase

(**) Non-soluble technical residue during the cleaning phase

NOISE LEVEL

The table shows the noise levels according to operating conditions and measurement points.

With engine at maximum rpm	LAcq - dB(A)
Operator's seat	
Noise pollution	89

VIBRATION LEVEL

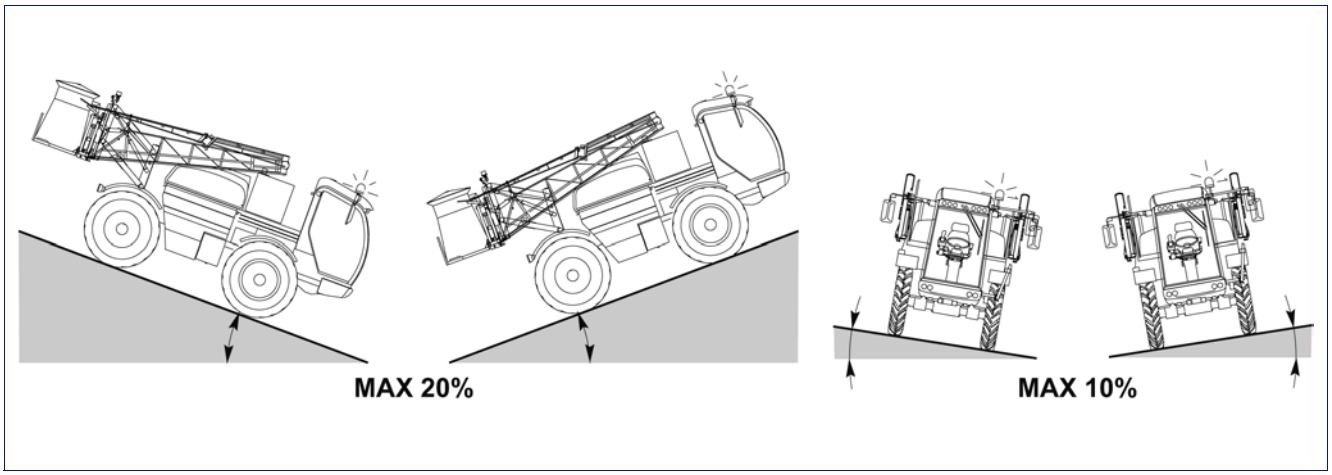
In the operating process, the machine has different vibration levels, as indicated in the table.

Measuring point	Vibration level m/s2)	Highest acceptable value (m/s2)
Operator's seat		0,5

The measurements have been calculated by following the **ISO 2631/1** standards.

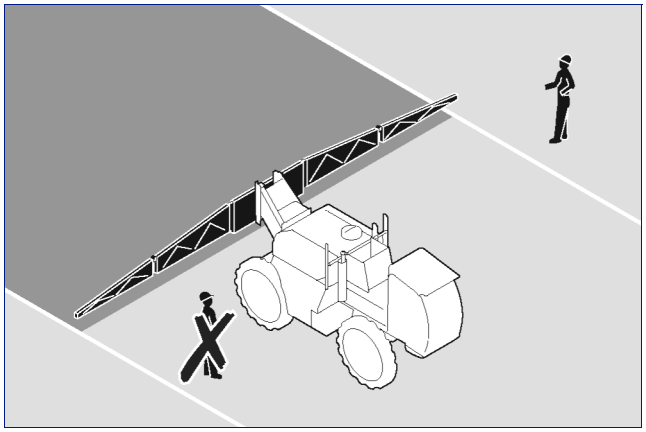
ALLOWABLE SLOPES

The figure illustrates the maximum allowable slope on non-yielding, non-sagging land with the machine in operation and fully loaded.



DANGER ZONE

The figure illustrates the danger zones where no-one should be when the machine is in use. It is the operator's duty to keep such zones out of bounds; if necessary, he should turn the engine off and clear out the danger zone.



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SAFETY DEVICES.

The figure illustrates the position of the safety devices on the machine.

A) Battery connector: to disconnect the batteries from the electrical circuit. The batteries must be disconnected during all maintenance operations. After disabling the ignition key, turn the key towards the left and remove it from its housing.

B) "Product distribution to bar exclusion" switch: to exclude the bar distribution controls, especially during transfer with closed bars

C) "Operating controls exclusion" switch: to enable and disable the operating controls

D) "Rear steering exclusion" switch: to enable and disable the rear steering.

Caution - Warning

4 steering wheels can be activated only if the 1st gear is activated and the 4 wheels are aligned.

Danger - Warning

Disable the "operating control" (C) and that of the rear steering exclusion" (D) before beginning the road circulation.

E) Emergency exit: to get out of the machine in the event of an emergency. Use the hammer **(N)** to break glass

F) Acoustic signal: to warn staff members near the machine that it is reversing or that bar movements are under way

G) Tank level sensors: to prevent the machine from being put into faster gears when there is water in the tank (max. 20 km/h)

H) Spraying bar arm support: to secure the closed bar in order to avoid any sudden extension of the arms during road circulation

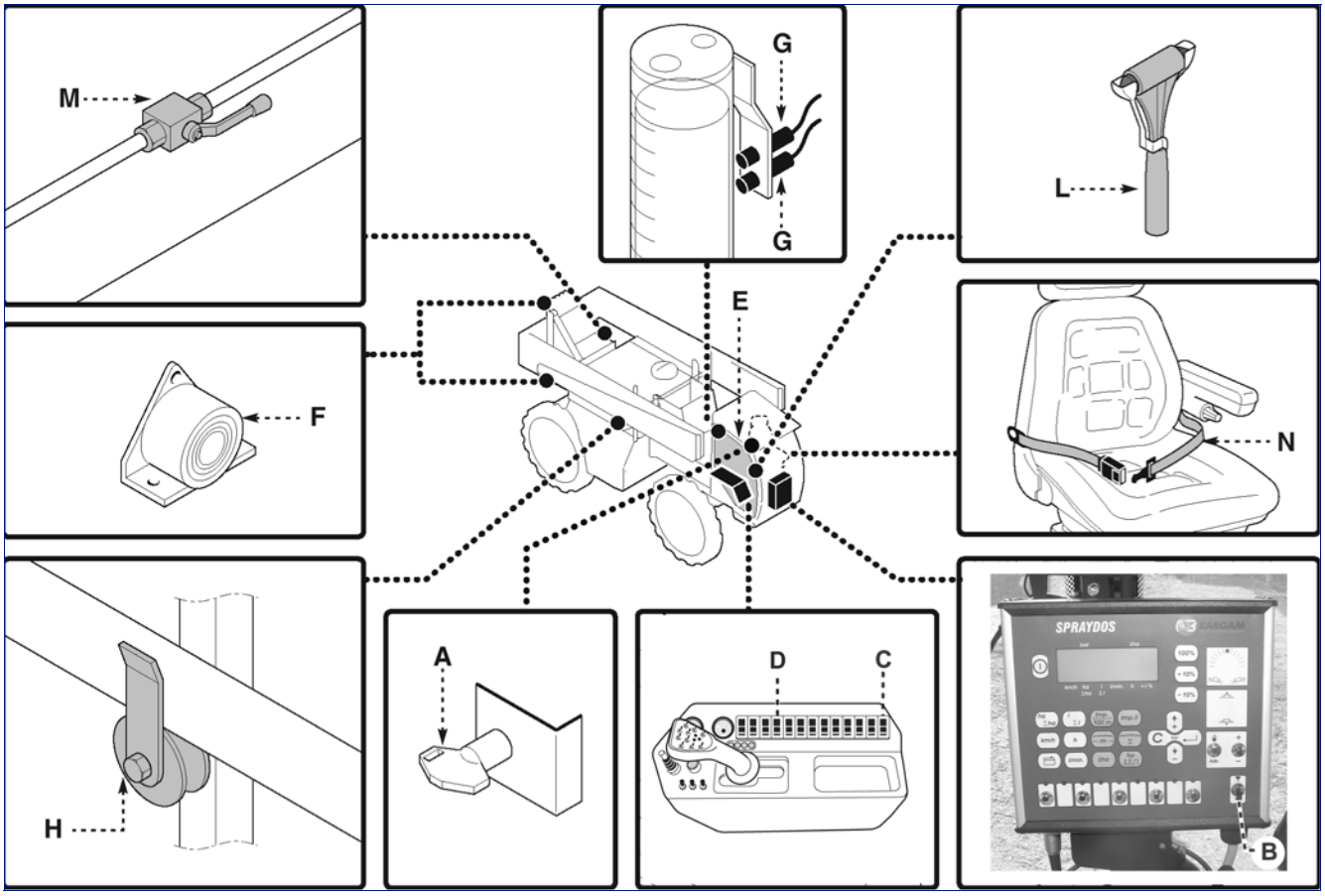
L) Hammer: use to crash glass in an emergency.

M) Shut-off valve: hydraulic device to block lifting device during maintenance.

N) Seat belt

Caution - Warning

Check every day that the safety devices are installed and function properly.

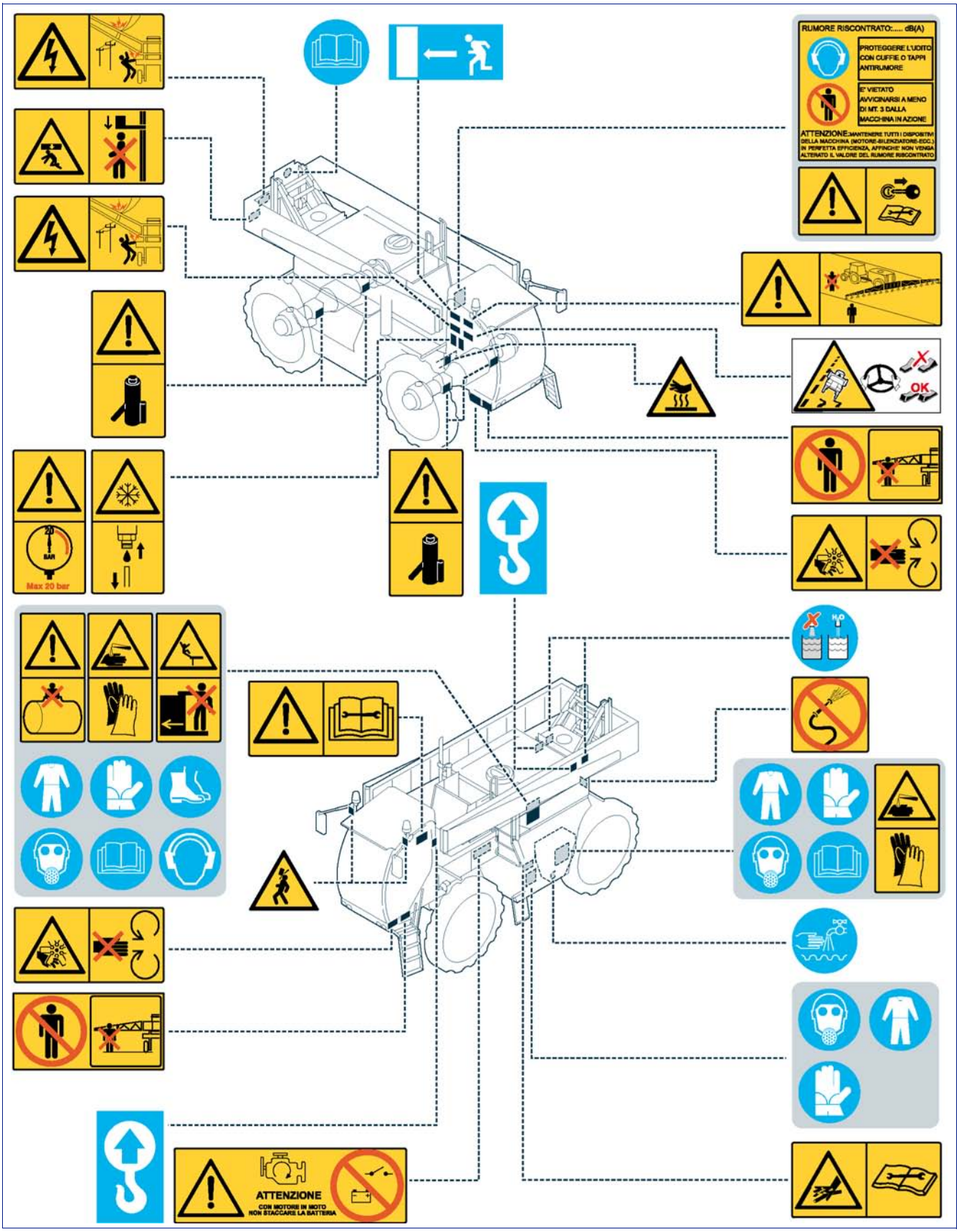


POSITION OF PLATES

The figure illustrates the positions of the safety plates, what they mean is described in leaflet 1.

Important

Make sure the plates are completely legible; if this is not the case, replace them and reposition them in their original place.



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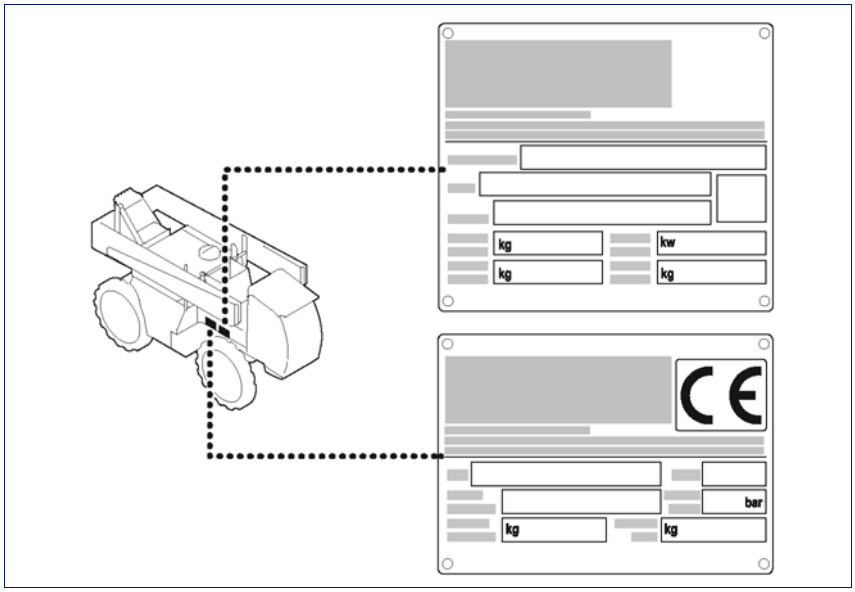
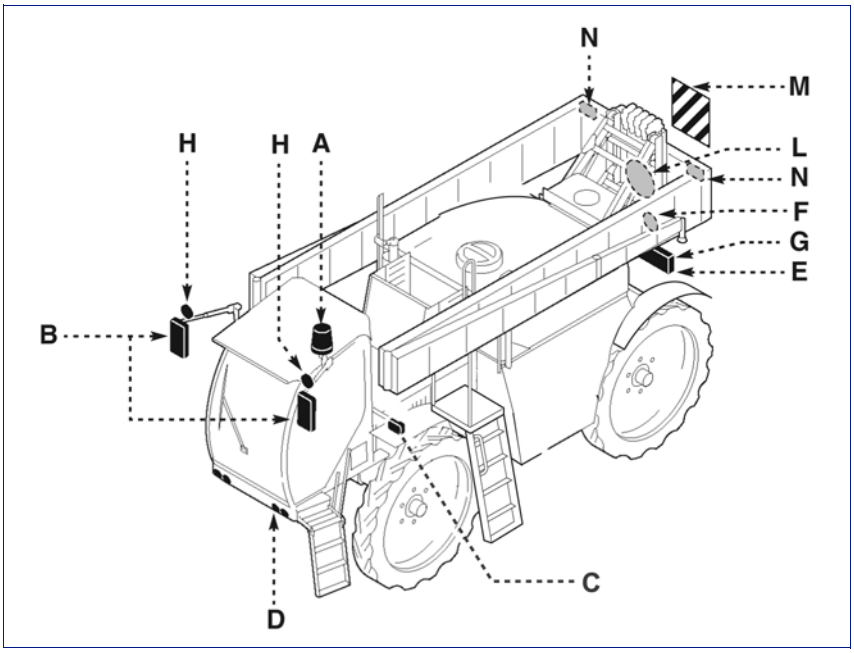
POSITION OF IDENTIFICATION PLATES

The figure shows the position of the identification plates.



DEVICES FOR ROAD CIRCULATION

The machine is provided with all the devices for road circulation in compliance with the regulations in force.
The figure shows the position of the safety devices.

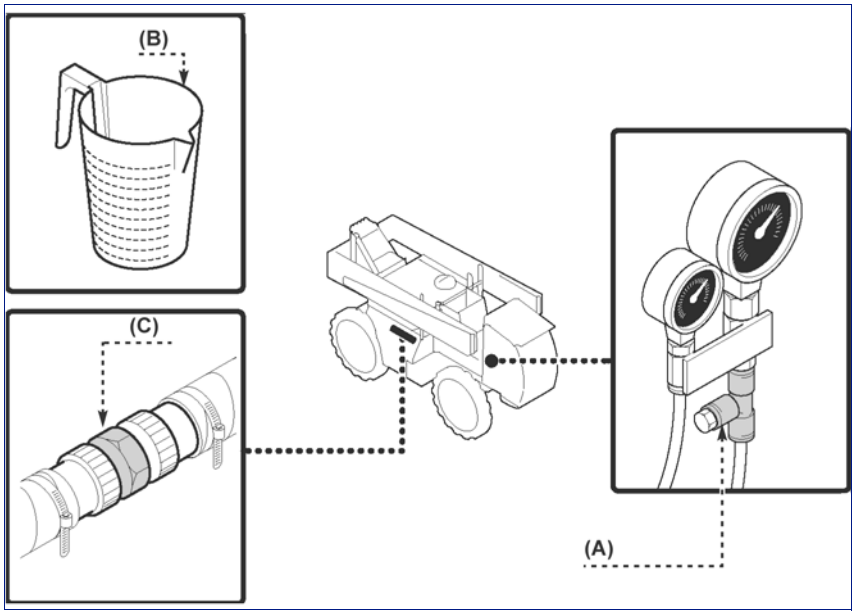


A) Flashing light.
B) Rear-view mirrors.
C) Front direction indicator lights.
D) Front lights.
E) Rear lights (position lights, direction indicator lights, brake lights).
F) Rear reflectors.
G) Licence plate light.
H) Front overall lights.
L) Maximum allowable speed panel (homologation).
M) Refractive panel.
N) Rear overall lights.

MACHINE OPERATION CONTROL DEVICES

The machine is supplied with devices to check the main functions.

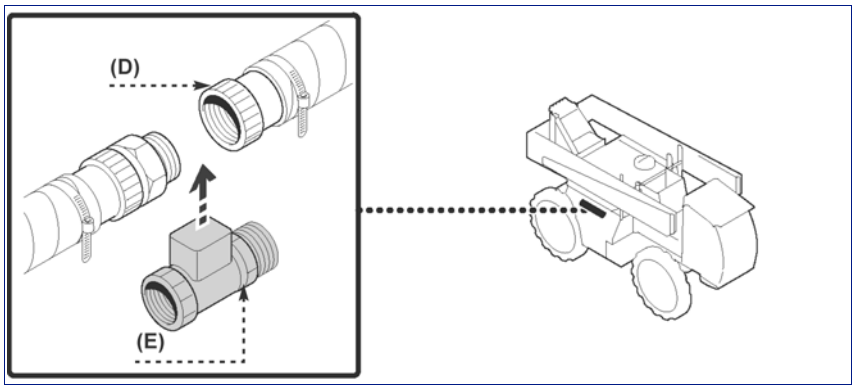
A) Fitting for the attachment of the pressure control pressure gauge (1/4" Gas female).
B) Graduated container for the nozzle flow rate control (upon request).
C) 1' Gas fitting for the attachment of the pump litre counter. It allows for the installation of a flow meter to check the flow rate without damaging the hoses



Pump litre counter installation

1 - Unscrew the ring nut **(D)** to disconnect the hose.

2 - Install litre counter **(E)** and reconnect the pipe.



Checking the nozzle distribution

Any differences between the product to be sprayed and the product actually sprayed can derive from:
- incorrect adjustment of the forward speed of the tractor (see page 50).
- incorrect pressure adjustment (see page 50).
- nozzle wear.

To ascertain the cause of the nozzle wear, perform the check as follows:

Danger - Warning

Use clean water.

1 - Start up the water distribution.

2 - Position a graduated container beneath the nozzle being checked.

3 - Check the actual quantity of product distributed and repeat the operation on at least three nozzles.

Important

This type of check should be performed the first time the equipment is used and then once a year or every time the nozzles are found to be worn.

TOOL KIT

The following tools are supplied standard with the machine:
- 1 (one) set of 6÷32 ordinary spanners.
- 2 (two) screwdrivers.
- 1 (one) set of pliers.
- 1 (one) hydrostatic transmission pump filter
- 1 (one) oil tank filter.
- 2 (two) hydraulic system filters.
- 1 (one) foaming agent container (2.5 l).
- 2 (two) complete jets.
- 2 (two) flexible hoses for shock absorber adjustment.
- 2 (two) ø 1/4" flexible hoses for shock absorber adjustment and machine lifting.
- 1 (one) cable joystick to adjust suspensions and to lift the machine.
- 1 "Kit Air Assisted" pump filter

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INFORMATION ABOUT HANDLING AND INSTALLATION

INSTRUCTIONS FOR HANDLING AND LOADING

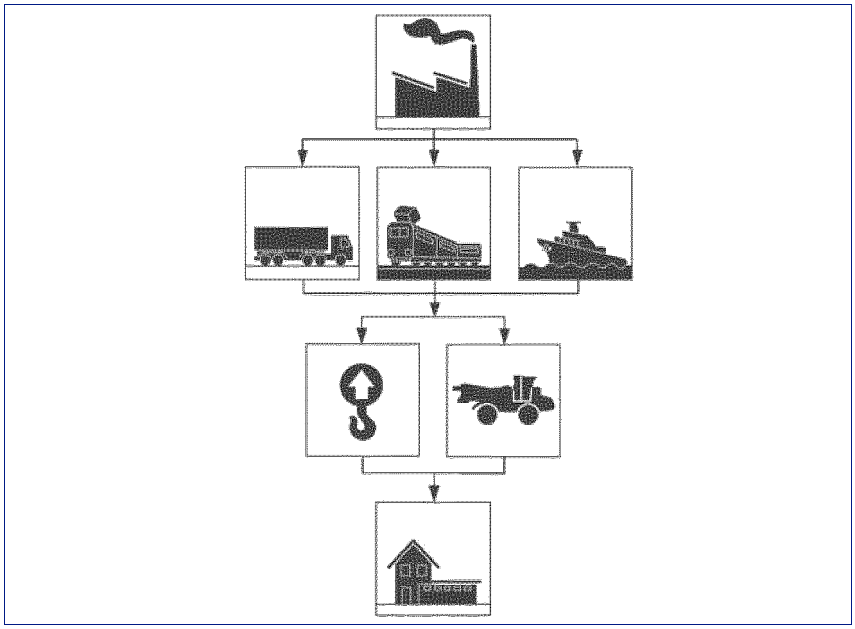
Important

All handling and loading operations must be carried out in compliance with the information supplied on the packaging, on the machine and in the instructions for use supplied by the manufacturer. If necessary, the person in charge of these operations must organise a “safety plan” to guarantee the personal safety of the operators.

TRANSPORTATION

Based on the destination, the machine can be transported in different ways. The diagram shows the most commonly used solutions.

During transportation, if the machine exceeds the allowable overall dimensions, reduce them as indicated on page 21.

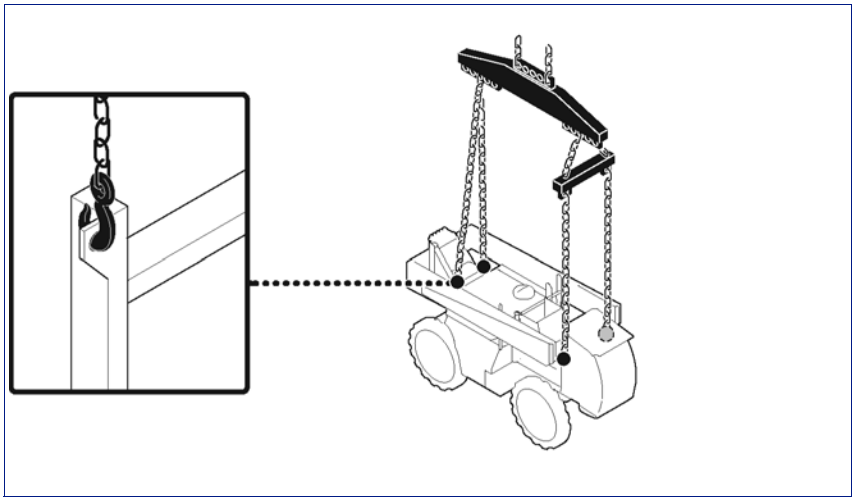


Important

Transport the machine with the spraying product and water tanks empty.

LIFTING FOR TRANSPORTATION

The machine can be lifted using a hook truck featuring a suitable load bearing capacity, with the hooks inserted in the purpose-provided areas on the machine. When transporting in open top containers, if the maximum height allowed is exceeded disassemble the boom side arms - see boom user manual.



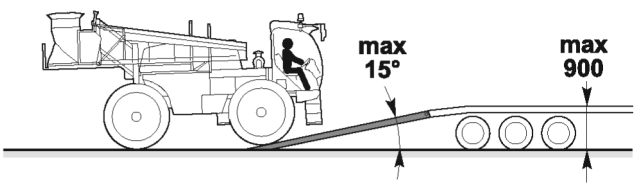
Important

The lifting devices are not provided with the equipment.

ROAD TRANSPORTATION LOAD

Important

The machine must be transported with a lowboy.



Load the machine as indicated below.

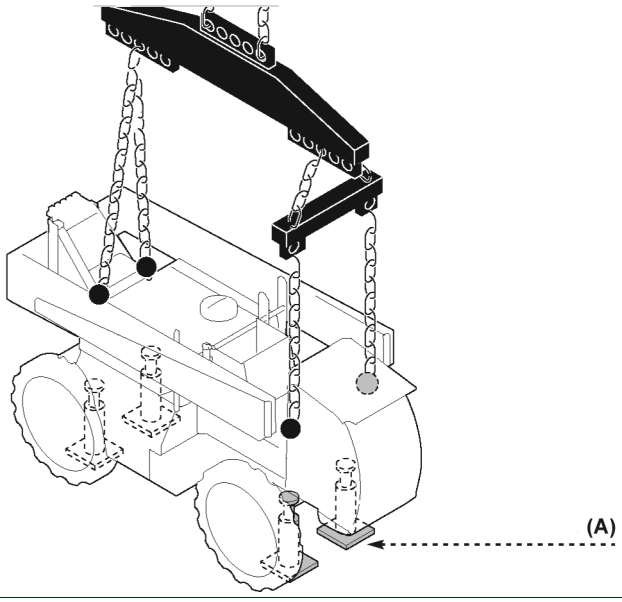
1 - Disassemble the lateral arms of the bar (see instruction manual of the bar) if the bar exceeds 2.55 m in width.
2 - Seal the fittings of any disconnected hoses with caps to avoid leaks.
3 - Load the machine onto the vehicle manoeuvring it from the operator's seat.
4 - Activate the parking brake.

Important

The staff in charge of loading, unloading and moving the machine must have skills and experience acquired in the specific sector. During manoeuvres, when using the machine directly, the operator must be informed on the procedures required to carry out these operations safely.

If the maximum height allowed is exceeded, disassemble the wheels as described below.

5 - Lift the equipment (see "Lifting for transportation") and place it on supports **(A)**.Lifting for transportation



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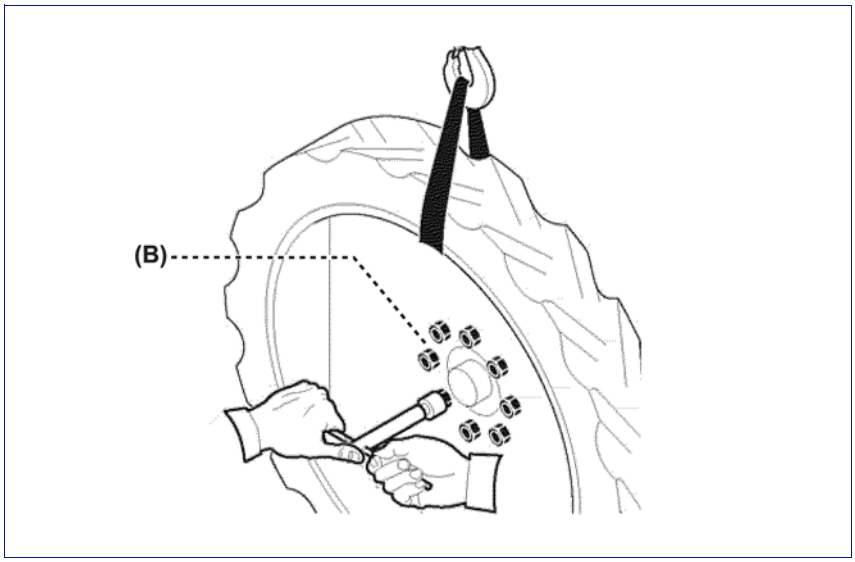
6 - Disassemble the wheels by unscrewing the fixing nuts **(B)**.

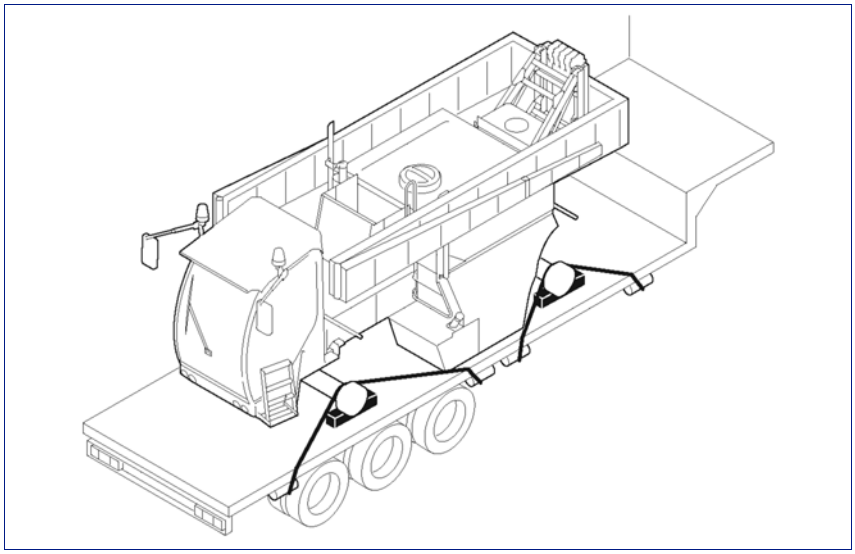
7 - Lift the equipment (see “Lifting for transportation”) and place it on the vehicle.Lifting for transportation



8 - Secure the machine and the disassembled components to the vehicle using ropes and wedges (as shown in the figure).

Important

Secure the ropes to the main frame of the machine.



TOWING THE MACHINE

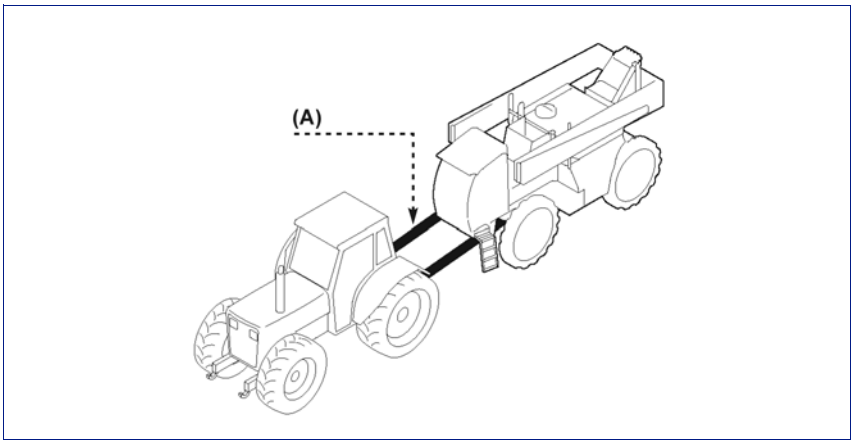
Important

The machine can only be towed for short distances at a speed of no more than 1 km/h. When towing is complete, restore the initial conditions.

For this operation follow the procedure below.

Important

Hook the machne onto a tow truck featuring a suitable load bearing capacity and appropriate dimensions.



1 - Connect the machine to the trailing device with approved rigid bars **(A)** by means of the special couplings.

Important

When towing with the machine engine off, the negative brake should be released.

Rear axle

1 - Disconnect hoses **(B)** and carefully dispose of the oil.

2 - Carefully close all (male and female) fittings with caps, in order to avoid the intrusion of waste and to protect threads.

3 - Use knob **(C)** to set the transmission in neutral.

4 - Tow the machine with the operator in the driver's seat.

5 - When towing is complete, restore the initial conditions.

Please note: if the diesel engine does not function, proceed as follows.

Rear axle (JC version)

1 - Position a container in the desired area.

2 - Unscrew cover **(D)**.

3 - Unscrew shaft **(E)** until the end of stroke to unlock the brake.

4 - Once trailing has been completed, screw shaft **(E)** again, until it reaches the distance shown in the figure.

5 - Screw cover **(D)**.

Important

Since trailing is carried out with stopped engine, steering will exert higher resistance.

Rear axle (MC version)

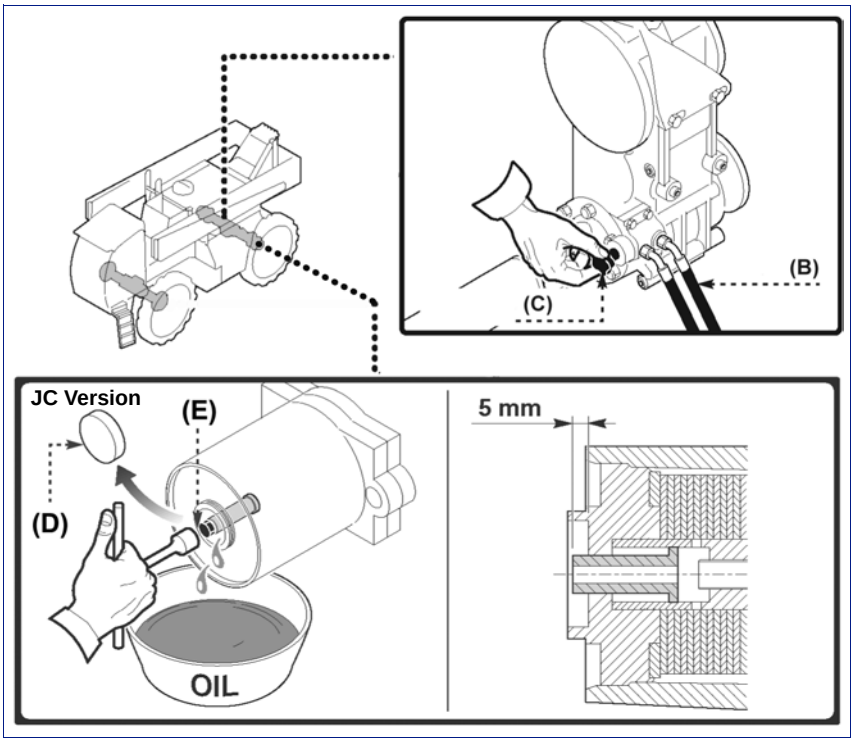
1 - Connect an external pump to the "P1" fitting and deliver 25 bar (max) pressure to eliminate the pressure of the Belleville springs.

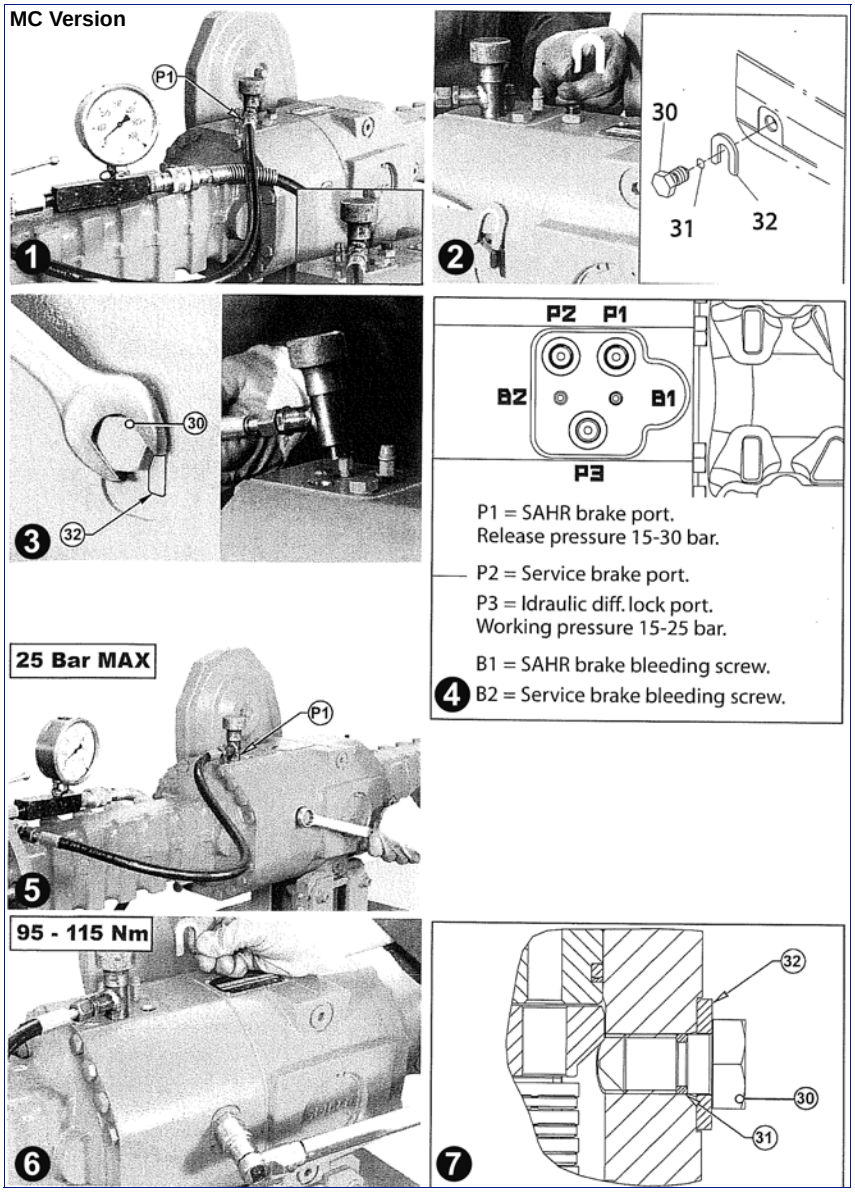
2 - Loosen unlocking screws **(30)** and remove stopping spacers **(32)** from both of them.

3 - Insert the unlocking screws to the end of stroke and release pressure.

4 - Deliver 25 bar (Max) pressure and loosen the mechanical unlocking screws.

5 - Insert both "U"-shaped spacers and lock the **95-115 Nm** tightening torque screws. ***PLEASE NOTE: position of unlocked negative brake.***





Danger - Warning

Since trailing is carried out with stopped engine, steering will exert higher resistance.

INFORMATION ON THE ADJUSTMENTS

INSTRUCTIONS FOR THE ADJUSTMENTS

Important

Before carrying out any setting or adjustment, activate all the safety devices required and consider whether it may be necessary to provide proper information to the operators and to the staff working near the machine. In particular, provide proper signs in the areas surrounding the machine and do not allow anyone to access any devices that, when activated, may cause unexpected dangerous conditions, resulting in damages to personal safety and health.

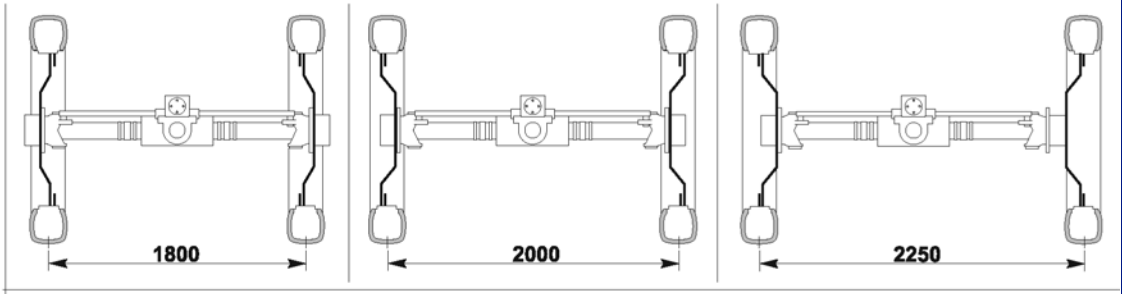
TRACK CONFIGURATION

Different track configurations can be obtained according to the work distance and type of tyre.

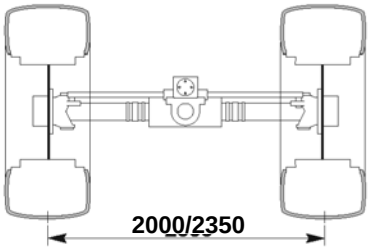
The diagrams illustrate the various combinations possible, also depending on the type of mount.

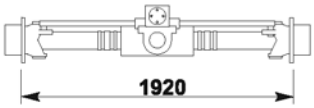
Diagram for 1800-2000-2500 track

Tyres
230/95R40
270/95R36
270/95R38
270/95R42
270/95R48
300/85R42
300/95R46
320/85R32
320/85R36
380/85R28
420/85R38



Tyres
540/65R28
540/65R38
600/60R28
600/65R28
600/60R30,5
600/55R26,5
800/45R26,5





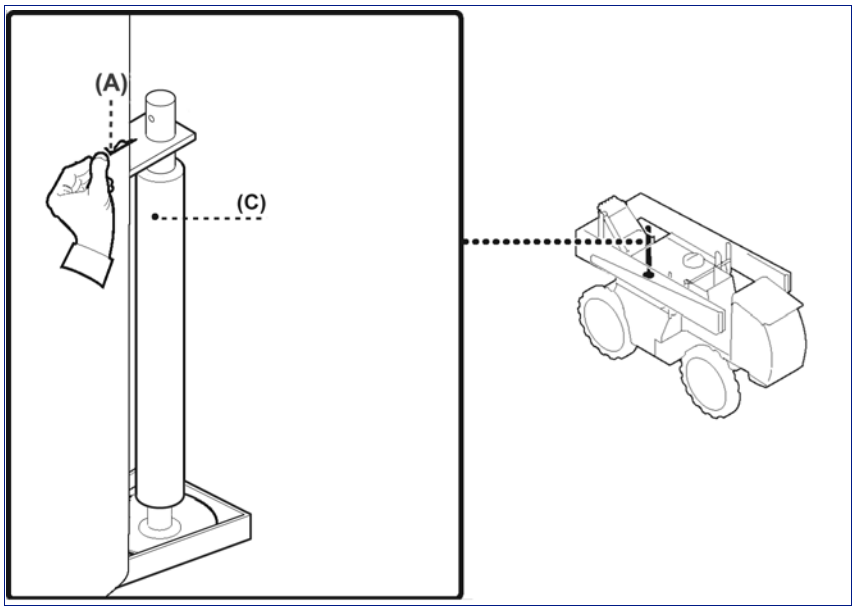
TRACK ADJUSTMENT

Caution - Warning

Adjust with the engine on at 1000 revs/min and with the machine standing on level and compact ground to guarantee the stability of the lifting devices.

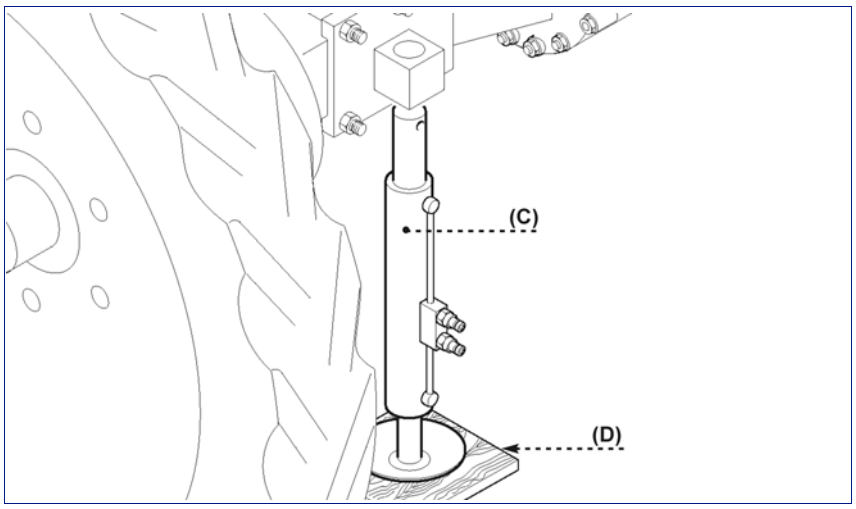
Make the adjustment one wheel at a time.

1 - Extract splint pin **(A)** to remove cylinder **(C)**.



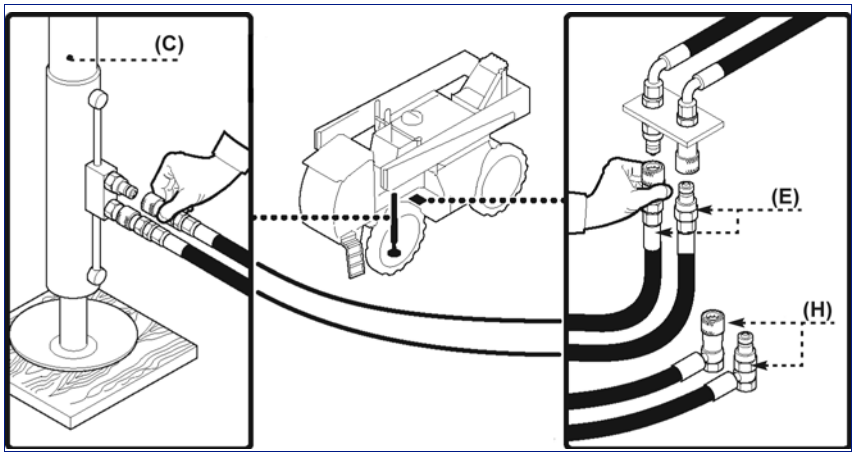
2 - Insert the cylinder **(C)** in the housing provided to lift the axle which needs to be adjusted.

3 - Insert a support plate **(D)** to guarantee a surface which is large enough to support the lifting cylinder **(C)**.



4 - Disconnect hoses **(H)** for ladder control.

5 - Connect the hoses **(E)** on the lifting cylinder **(C)** and on the points of attachment on the machine.



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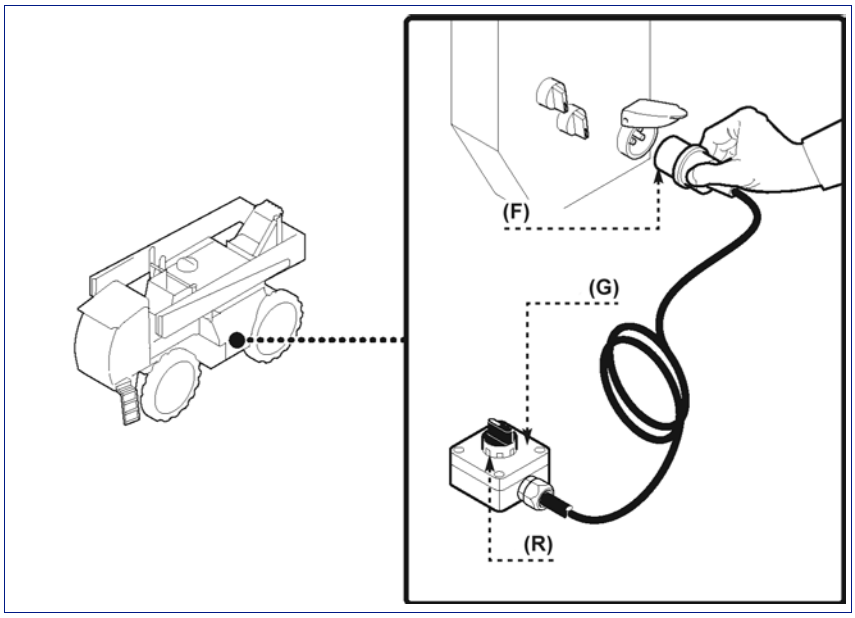
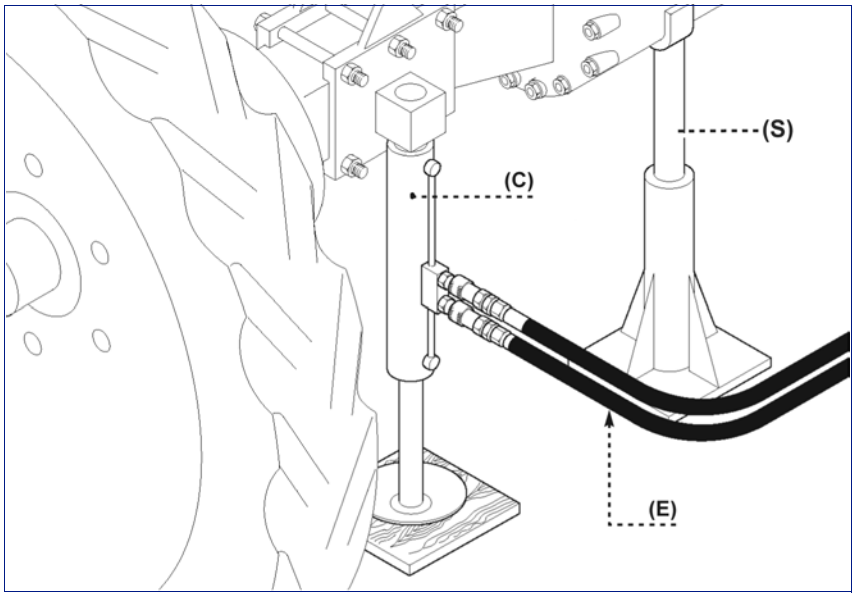
6 - Insert the plug **(F)** to enable the control electrically **(G)**.

7 - Use switch **(R)** to lift the wheel above the ground.



8 - Insert the support **(L)** to ensure that the wheel remains off the ground.

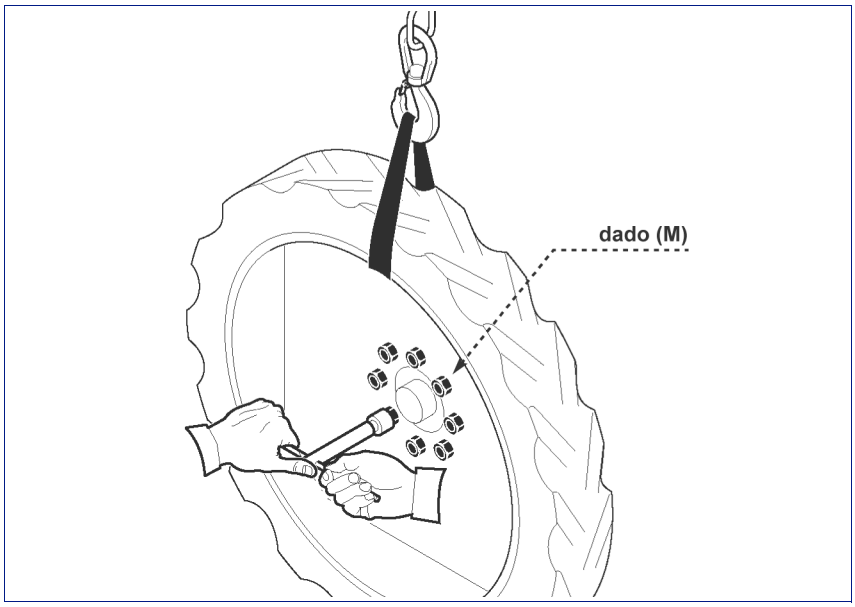


9 - Unscrew the nuts **(M)** that secure the wheel to remove it and turn the flange.

10- Put the wheel back on and secure it with the nuts.

11- Press the switch **(R)**,to lift the axle and remove the support **(L)**.

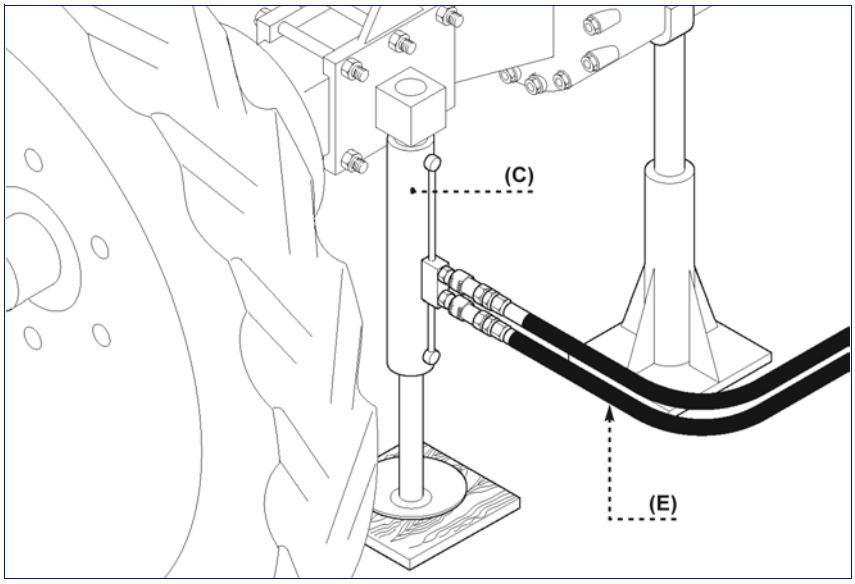
12- Use switch **(R)**, until the machine has been lowered completely.



13- Close the lifting cylinder completely **(C)** and remove it from he support once the operation has been completed.

14- Repeat the above operations to make the adjustments on the othe wheels.

15- When the adjustments are complete, disconnect he hoses **(E)** and disassemble the lifting cylinder **(C)**. Reposition it in the housings provided when the operation is complete.



OPERATOR'S SEAT ADJUSTMENT

The steering wheel and the seat may be adjusted by the operator to obtain suitable ergonomic conditions.

Important

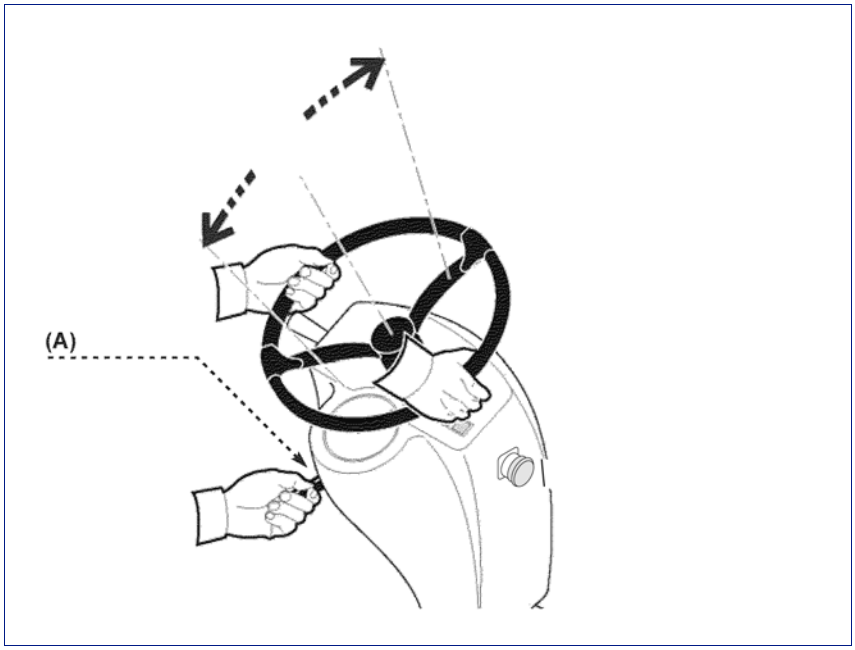
Adjustments must be made when the machine is not in motion.

Steering wheel adjustment

Loosen the lever **(A)**, tilt the steering wheel to the desired position and secure it with the lever **(A)**.

Seat adjustment

To adjust the seat, refer to the figures with the various positions.



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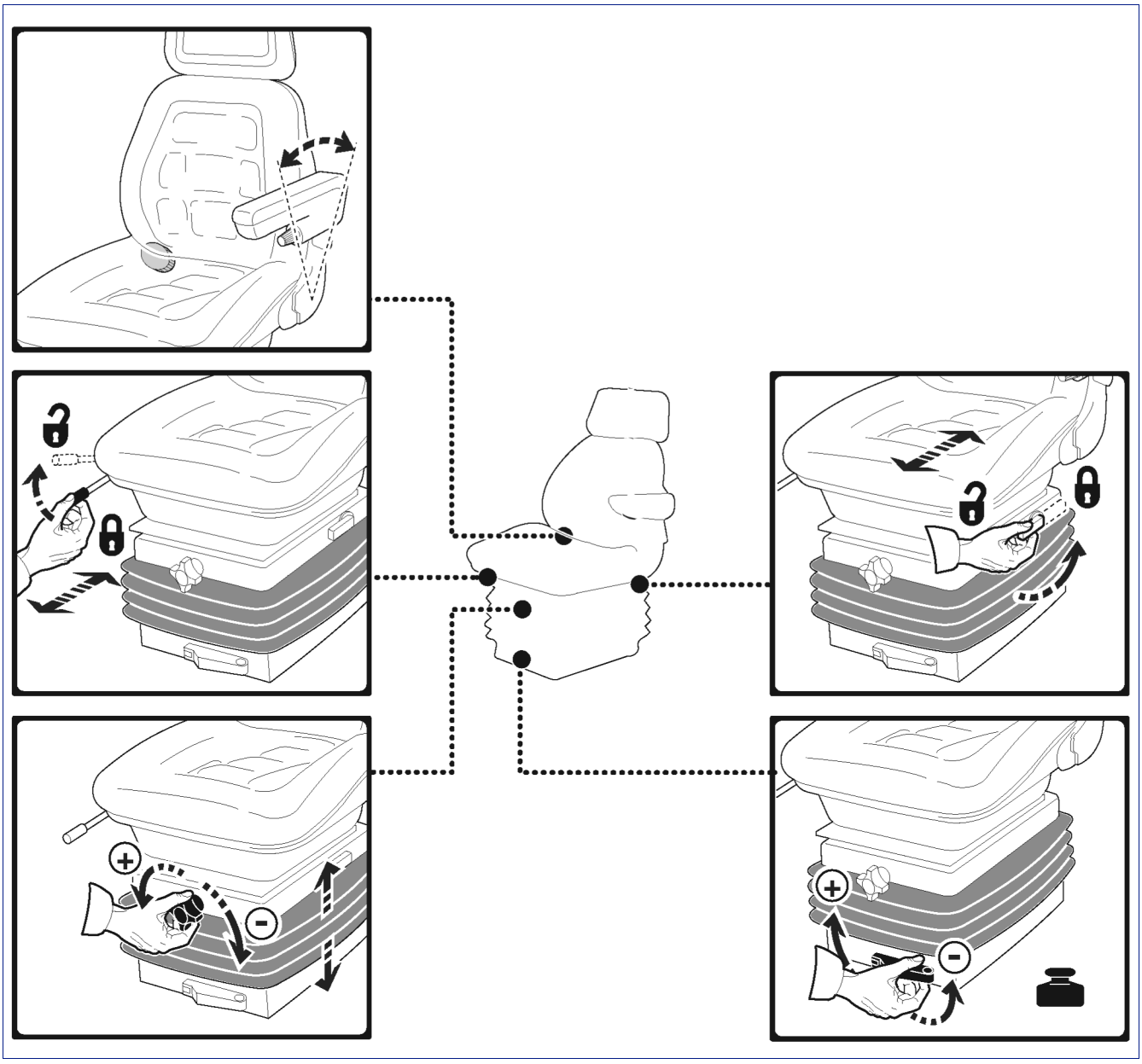
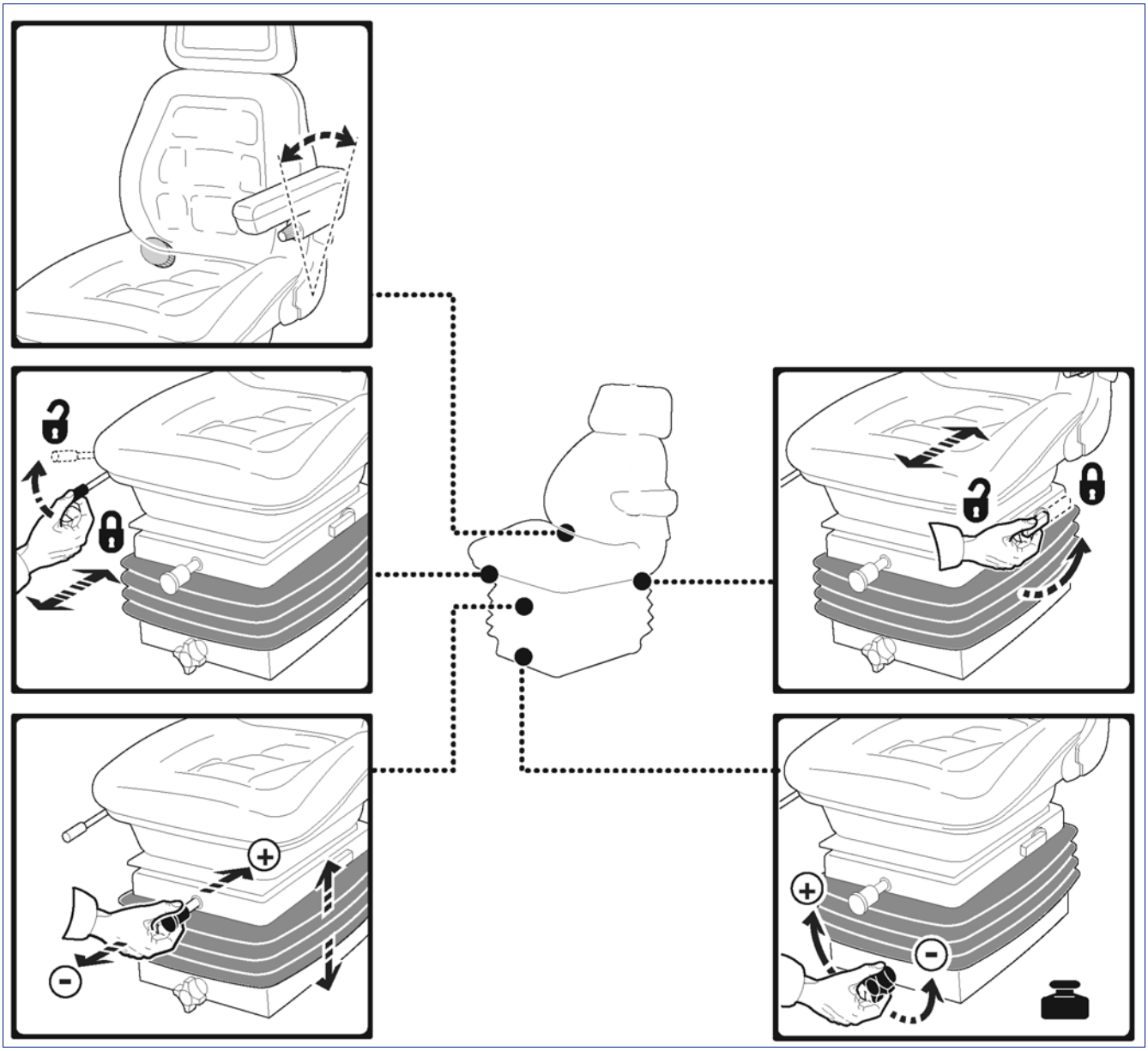
Manually regulated seat



Pneumatically-adjustable seat (the control panel must be switched on for this operation).



SHOCK ABSORBER ADJUSTMENT

On delivery, the machine shock absorbers may be empty. Before operating the machine, refill the shock absorbers.

This can be done in two different ways:

- with a manual pump (see page 30);
- with connection to the machine's hydraulic system (see page 31) (with the engine on).

Danger - Warning

All maintenance must be carried out by specially-trained staff in workshops which are adequately equipped.

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SHOCK ABSORBER ADJUSTMENT (WITH A MANUAL PUMP)

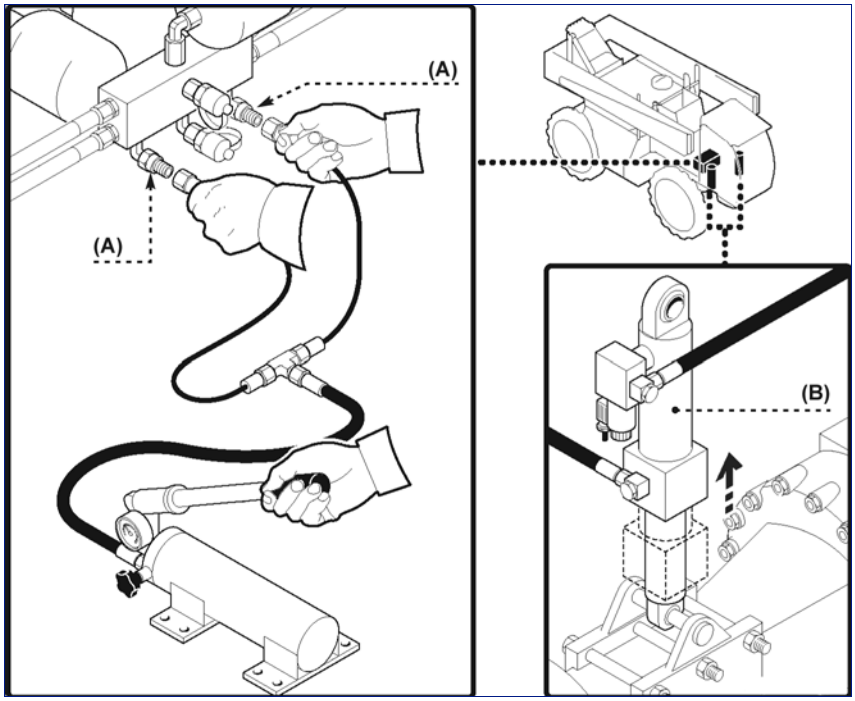
Front shock absorbers

Important

Carry out this operation with an empty tank and with the spraying bar retracted.

For this operation follow the procedure below.

1 - Connect the manual pump to the pressure taps **(A)** using the capillary hoses provided.



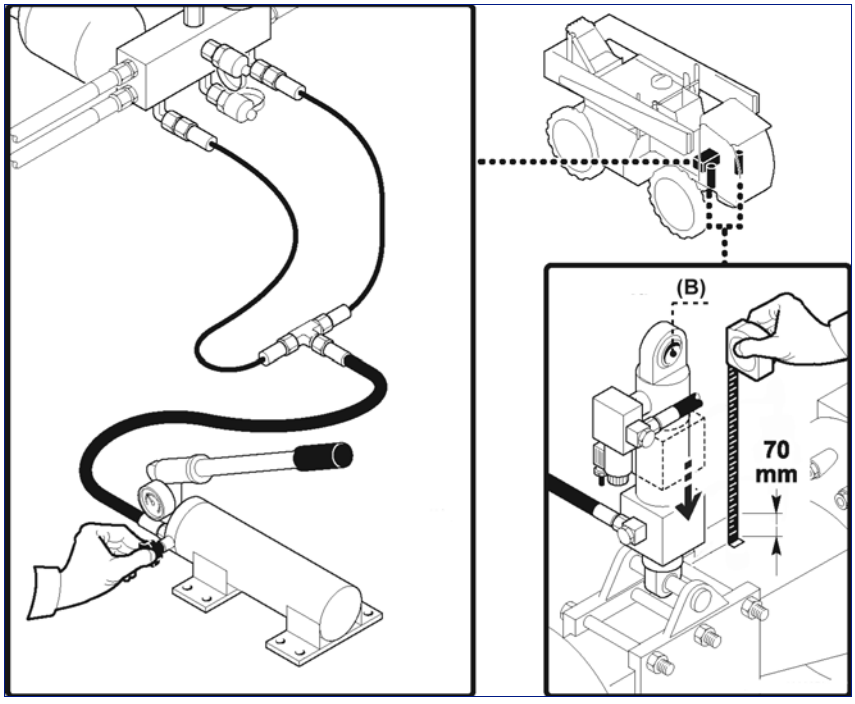
Caution - Warning

Screw the capillary hoses simultaneously to the pressure taps (A) to avoid any oil leaks.

2 - Inject hydraulic oil until the cylinders **(B)** are in the maximum extension position.

3 - Discharge oil until a 70 mm space is left between axle and piston **(B)**.

4 - Disconnect the hoses and the pump when the operation is complete.



SHOCK ABSORBER ADJUSTMENT (WITH THE MACHINE'S HYDRAULIC SYSTEM)

Front shock absorbers

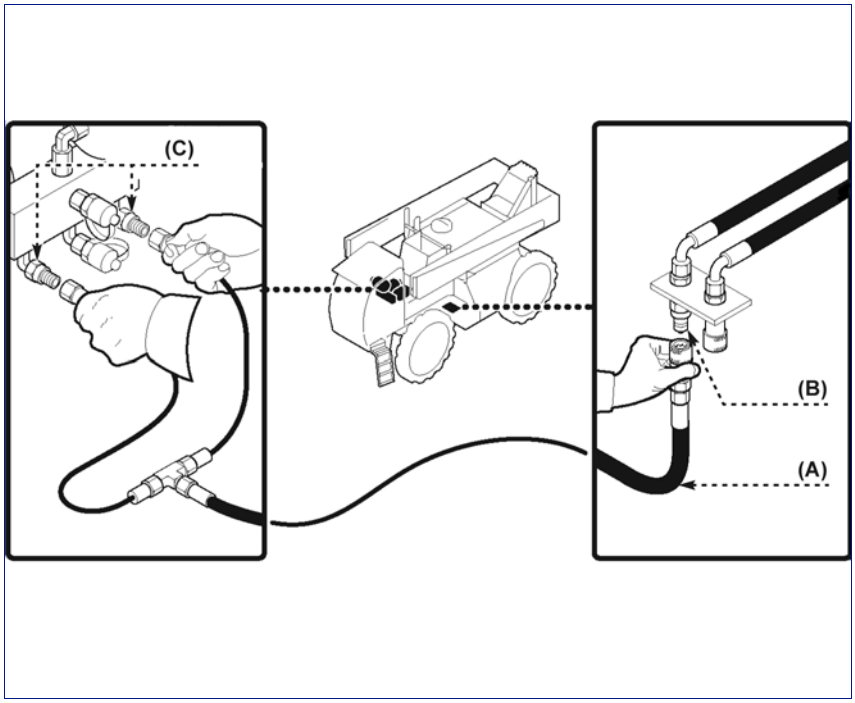
Important

Carry out this operation with an empty tank and with the spraying bar retracted.

For this operation follow the procedure below.

1 - Connect the hose **(A)** provided to the fast attachment **(B)**, replacing the hose for the movement of the step ladder.

2 - Connect the hose **(A)** to the pressure tap **(C)** using the capillary hoses provided.

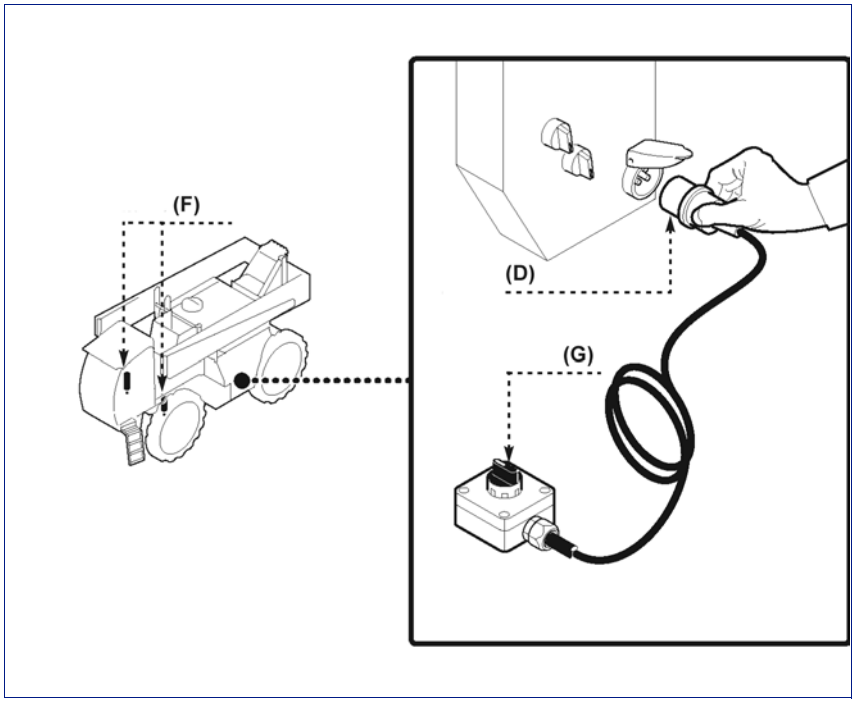


Caution - Warning

Screw the capillary hoses simultaneously to the pressure taps (C) to avoid any oil leaks.

3 - Connect the plug **(D)**.

4 - Use switch **(G)**, to inject hydraulic oil until the cylinders **(F)** are in the maximum extension position.



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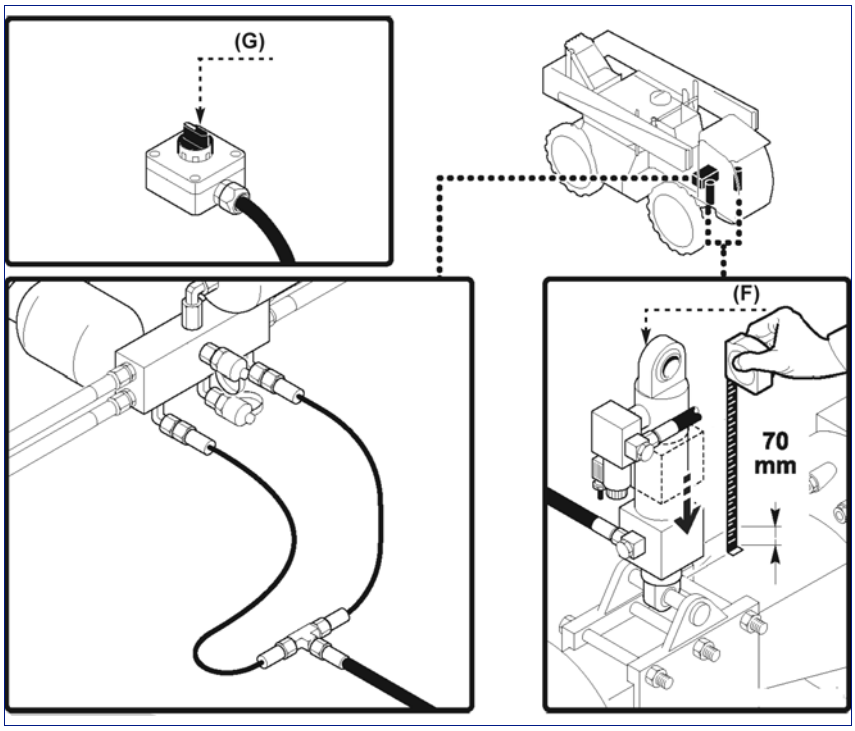
5 - Press switch **(G)** to discharge hydraulic oil and to lower pistons **(F)** to a 70 mm level from the axle.

6 - Disable and disconnect the hoses and the plug of the push-button panel once the operation has been completed.

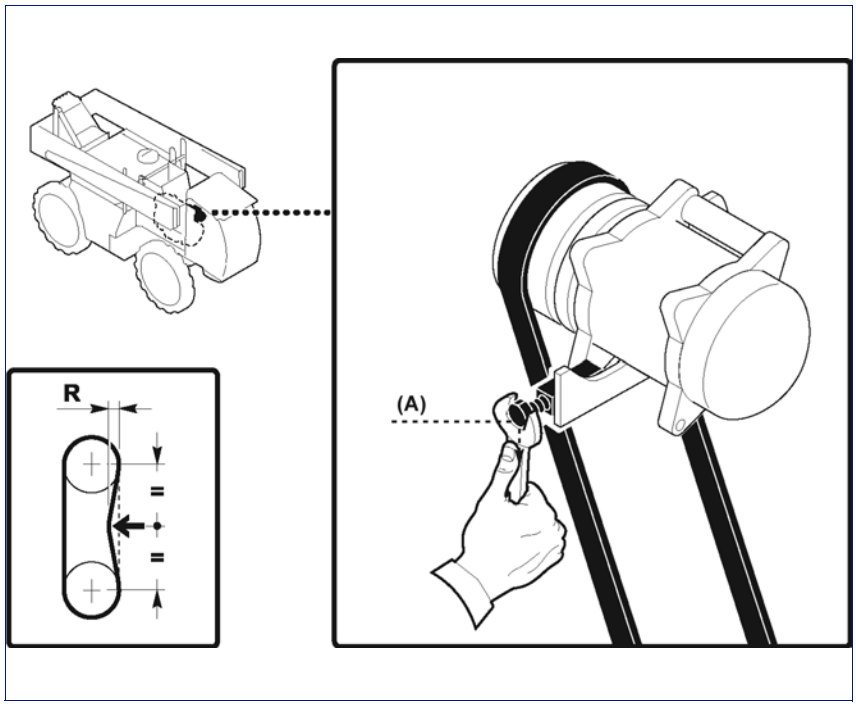


AIR CONDITIONING COMPRESSOR BELT ADJUSTMENT

Turn the screw **(A)** to adjust the tension of the belt.

Important

Check the tension as indicated in the figure. The resulting value (R) must be 10÷15 mm.



OPERATING INSTRUCTIONS

INSTRUCTIONS FOR USE AND OPERATION

Important

The incidence of accidents related to the use of the machine depends on multiple factors that are not always easy to prevent and control. Some accidents may depend on unforeseeable environmental factors; others are caused by the behaviours of the staff using the machine. Apart from being authorised and properly informed, if necessary, when using the machine for the first time, operators must simulate some manoeuvres in order to get familiar with controls and main functions. Use the machine exclusively for the purpose 7 intended by the manufacturer. Do not tamper with any device to obtain a different performance. Before using 8 the machine, make sure that the safety devices are 9 correctly installed and in perfect working conditions. Apart from complying with these requirements, operators must apply all safety regulations in force and carefully read the description of the various controls and the instructions on how to operate the machine.

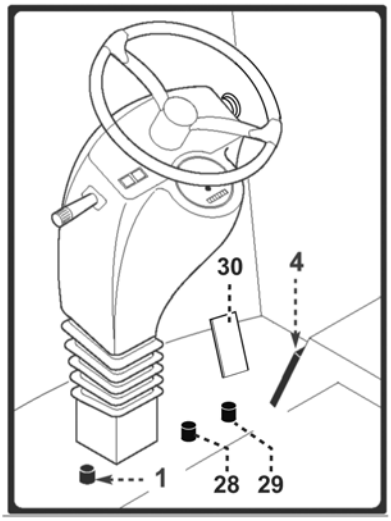
DESCRIPTION OF CONTROLS

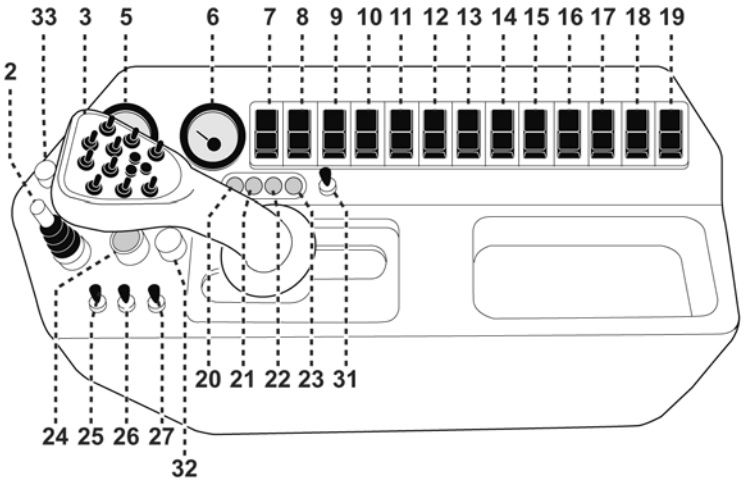
All the controls used to operate and transfer the machine are located near the operator's seat in the cab. Below are the symbols, the position and the function of the controls.

Important

Some button controls have a safety device for preventing accidental operation. This safety device should be unlocked before using buttons.

CONTROL PANEL





Pos	Symb.	Name	Indication
1		Pedal button for water system distribution unit control.	Press to activate. Press again to deactivate
2		Accelerator lever.	Push the lever to accelerate. Pull the lever to decelerate. **Important** **The seat is provided with a sensor that detects the driver's presence. The accelerator lever is active only when the driver is sitting on his/her seat**

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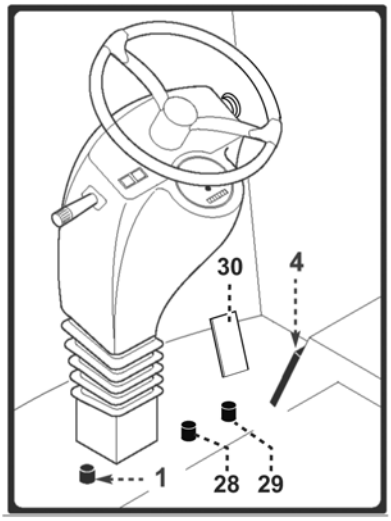

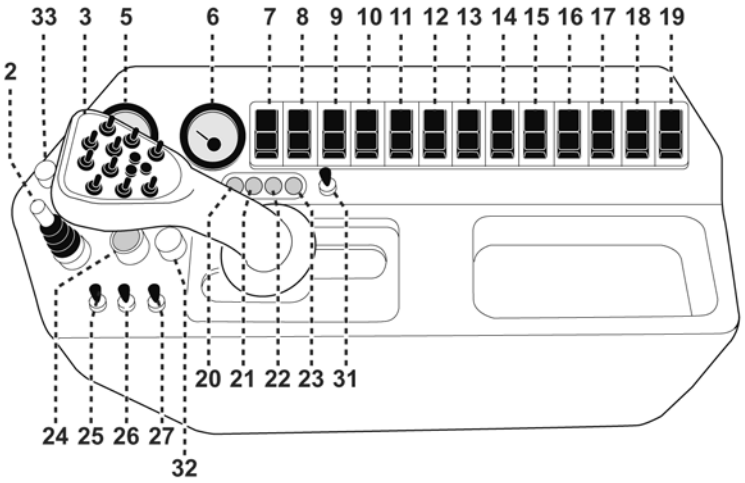

Pos	Symb.	Name	Indication
3		Spraying bar hydraulic controls and machine handling lever.	
4		Fuse box	
5		Air sleeve revolution indicator	
6		Engine water temperature indicator	
7		Air hose switch.	To activate and deactivate the air sleeve
8		Air hose speed switch	To increase or decrease the fan rotation speed
9		Switch for selecting steering wheels.	To change the steering mode – Four steering wheels – Two steering wheels – Parallel Axis Steering
10		Steering main switch	To activate and deactivate the four steering wheels.
11		Mechanical gear switch	To select the first or second gear. *The gear can be changed only when the machine is stopped.* *When the control light is on, the quick gear is selected.*
12		Water system pump control switch.	To activate or disactivate the pump.
13		Front suspension lock switch	To lock the suspensions on the front axle
14		Hydraulic gear switch.	To insert the first or second speed. Change the speed only when the machine is stopped.
15		Front working lights swtich.	To switch on the four central working light
16		Working light swtich.	To switch on or switch off the front and rear working lights.
17		Ladder switch.	Use to open and close the adder.

Pos	Symb.	Name	Indication
18		Parking brake control switch	Release the safety catch and activate or deactivate the brake.
19		Work control switch	To enable and disable the controls. Unlock the safety device before pressing the switch **Danger - Warning** **Deactivate the control before road circulation begins.**
20		Two steering wheels control light (GREEN COLOUR)	If on, it shows that both steering wheels are selected.
21		Parallel axis steering control light (GREEN COLOUR)	If on, it shows that parallel axis steering wheels are selected.
22		Four steering wheels control light (GREEN COLOUR)	If on, it shows that four steering wheels are selected.
23		Mechanical gear change control light (Yellow)	If on, it shows that the gear is selected.
24		Electric lighter.	
25		Water system washing and working switch	To activate and deactivate the water system washing and working function.
26		Water tank washing and working switch (*)	To activate and deactivate the water system washing and working function.
27		Additional mixing pump switch (*)	To activate and deactivate the additional mixing pump.
28		Differential gear locking switch	The differential lock is activated when the wheels are perfectly aligned. When the differential lock is activated, steering is not possible until the switch is released.
29		Four steering wheel automatic mode switch	Press to activate the four steering wheels (only with working controls selected)
30		Service brake pedal	Press the pedal to carry out service braking.
31		System for activating "distance holding" device or recirculation pump (Optional)	To activate or disactivate the device.
30		Fixed revolutions accelerator control	
33		Manual accelerator control	

(*) Available only with electrical water system

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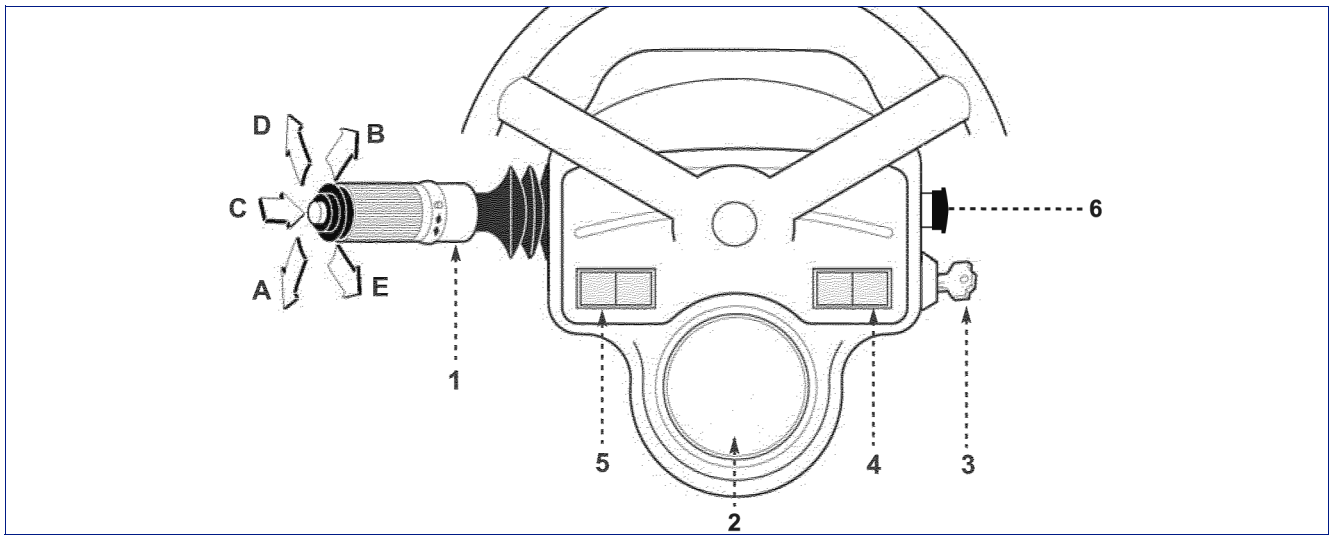
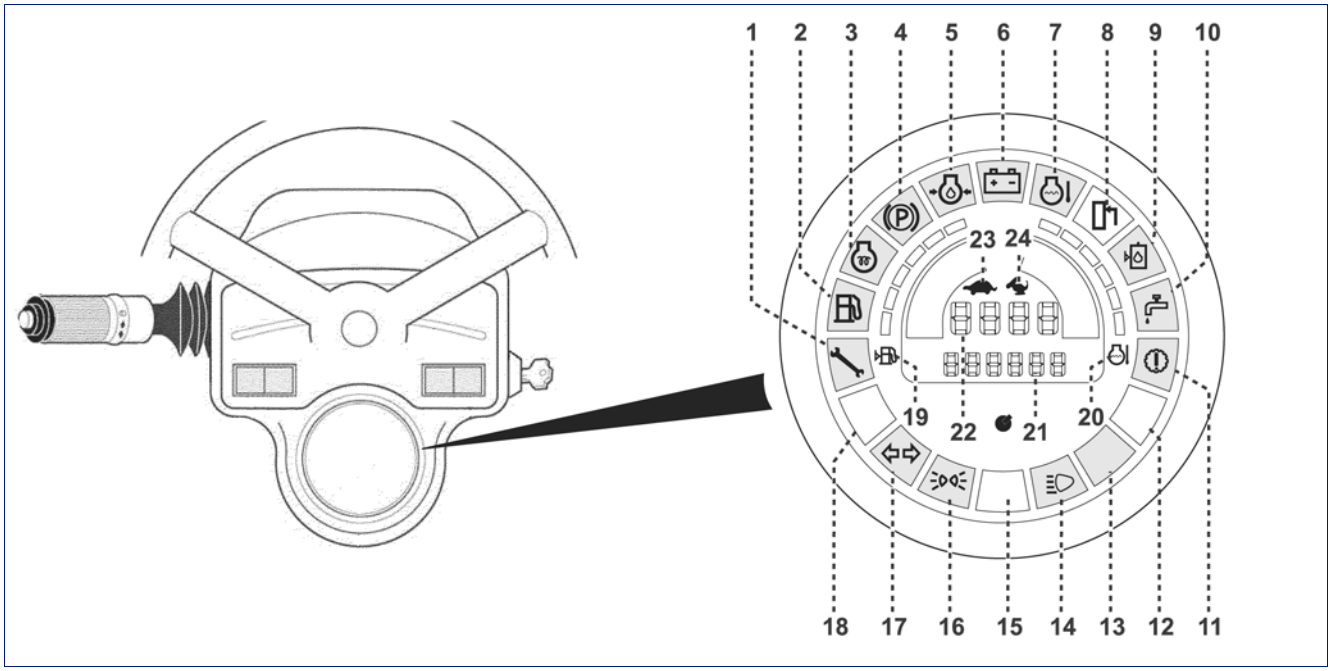
CONTROL PANEL



Pos	Symb.	Name	Function	Symb.	Indication
1		Light control lever.	Position lights.		Turn the dial.
			Low beams.		Turn the dial.
			High beams.		Lever in position **(A)**.
			High beam flashing.		Lever in position **(B)**.
			Acoustic signal.		Press in direction **(C)**.
			Right-hand direction indicator. Left-hand direction indicator.		Lever in position **(D)**. Lever in position **(E)**.
			Windshield wiper fluid button.		Press in direction **(C)**.
2		Revolution counter	Indicates the number of engine revolutions and the total work hours of the machine.		
3		Ignition key.	Turn in a clockwise direction to start the engine. Turn in a counter-clockwise direction to preheat the spark plugs.		
4		Switch with (red indicator) light for emergency lights.	To activate the emergency lights.		
5		Revolution counter setting switch	For the assistance service only		
6		Emergency button.	In case of an emergency, press to stop.		When the button is pressed, the motor does not start. Rotate the button to enable the motor switching on again.

REVOLUTION COUNTER AND HOUCOUNTER



Pos	Symb.	Name	Indication
1		Service yellow warning light	See chapter "Service" page 38 38
2		Fuel indicator light	On: low fuel level
3		Yellow engine preheating indicator light.	On: spark plug preheating in progress. Off: spark plug preheating completed (the engine can be started).
4		Red parking brake indicator light.	On: brake activated. Off: brake deactivated.
5		Red engine oil pressure indicator light.	On: insufficient pressure. Off: sufficient pressure.
6		Red alternator indicator light.	On: the alternator is not charging the battery. Off: the alternator is charging the battery.
7		Red cooling liquid temperature ndicator light.	On: high temperature. Off: normal temperature.
8		Water pump oil level yellow control light	On: the pump oil level is low
9		Red hydraulic oil level indicator light.	On: oil level under minimum value. Off: oil level ok.
10		Water pump green warning light	On: pump activate Off: pump disactivate

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Pos	Symb.	Name	Indication
11		Differential locking red warning light	On: Differential locked
12		Disponibile	
13		Forward movement Poclain control unit yellow control light	On: Forward movement Poclain control unit error
14		Blue high-beam indicator light.	On: high beams on. Off: high beams off.
15		Disponibile	
16		Green position lights indicator light	On: position lights on. Off: position lights off.
17		Green direction indicator light.	On: indicator lights on. Off: indicator lights off.
18		Disponibile	
19		Fuel level.	
20		Engine water temperature	
21		Houcounter	
22		Revolution counter	
23		Hydraulic quick gear control light	
24		Hydraulic low gear control light	

Service

When the machine is operating, the device scales down the hours before the next Service.

Once the Service has been carried out, the retailer can reset the count.

The lower part of the display shows the number of hours before the next Service for 3 seconds after the display check, together with control light **1**.

When the number of hours before the service is lower than 20 units, control light **1** must always stay on, even during standard operation.

When the number of hours before the service becomes negative, control light **1** must always stay on and blinking.

To reset the service, the operator must keep the external button pressed for 20 seconds. After 20 seconds, the display will show the **rESEt** message and the control light will turn on.

To reset the count, the operator must release pressure from the button and press it again for two seconds.

After two seconds, the new Service interval will be displayed and after 3 seconds the panel will still function at standard mode.

If the key is removed before the operation ends up or the sequence is not the shown one, the Service shall not be reset.

The Service intervals are the following:

50h: first interval

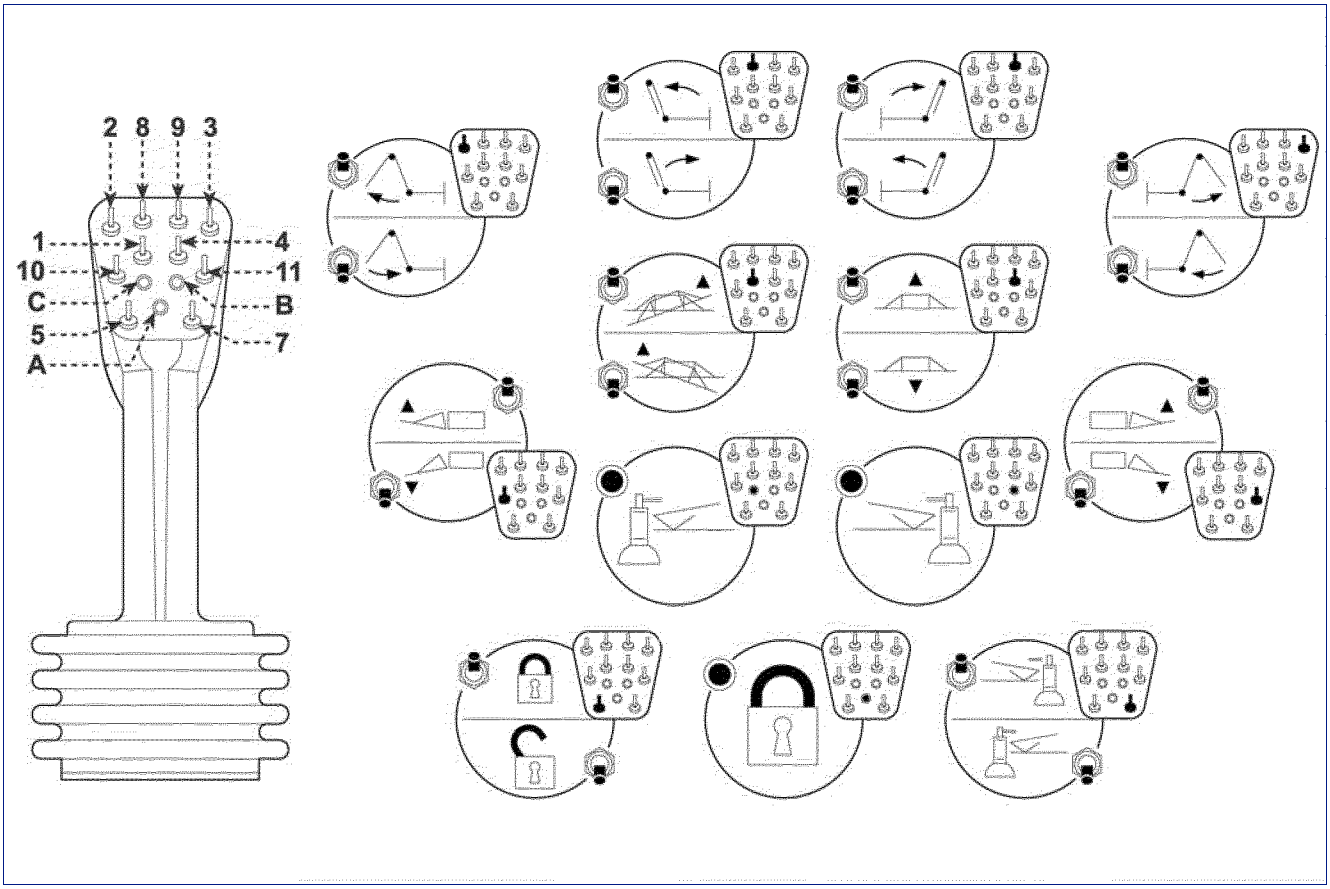
150h: second interval

150h: third interval

150h: fourth interval

FORWARD MOTION AND BRAKE LEVER CONTROLS

The information below is only a part of the entire information available. For further details, consult



leaflet 13.

Pos	Symb.	Name	Function	Symb.	Indication
1		Bar levelling switch.	Controls the bar inclination to the right or left.		Use the switch to tilt the bar in the desired direction.
2		Left extension arm switch.	To extend and retract the extension arm.		Use the switch to extend or retract the left extension arm.
3		Right extension arm switch.	To extend and retract the extension arm.		Use the switch to extend or retract the right extension arm.
4		Bar height control switch.	Controls the lifting and lowering of the bar.		Use the switch to lift or lower the bar.
5		Boom equaliser locking and unlocking button	To lock and unlock the boom equaliser.		Press the button to lock and unlock the boom. When green pilot light **(A)** is on, it signals that the equaliser is locked.

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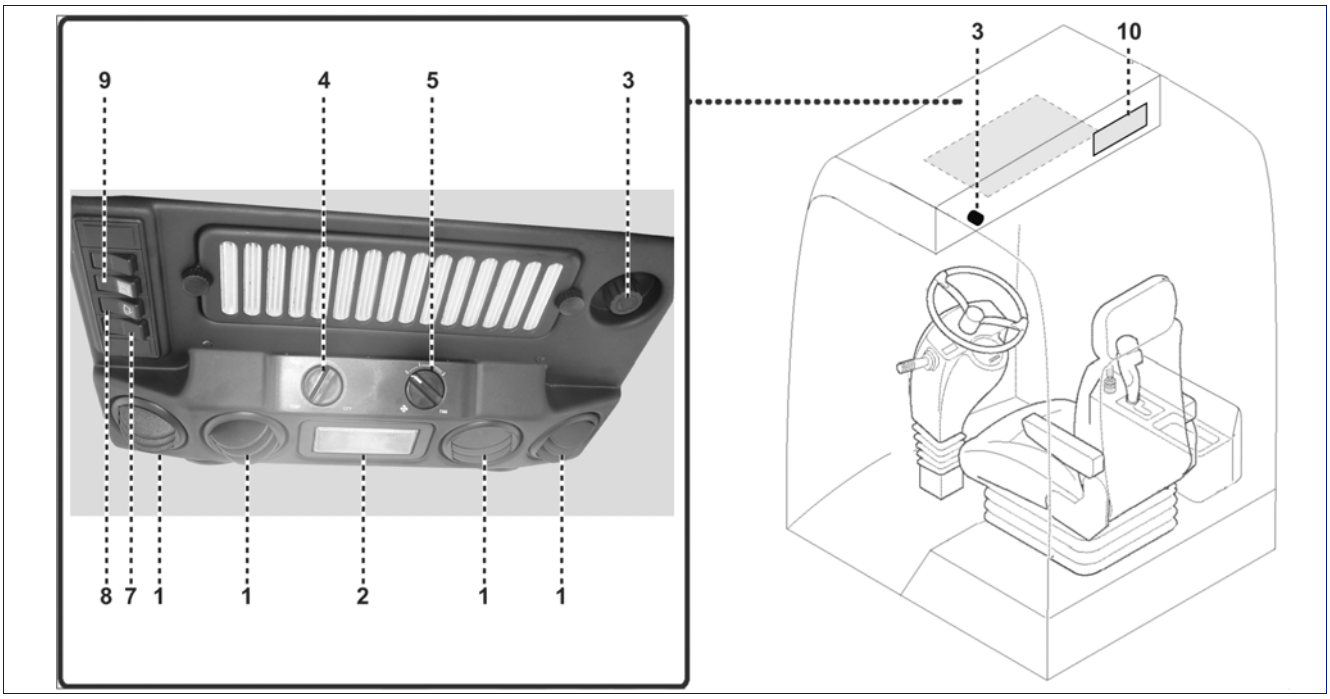
Pos	Symb.	Name	Function	Symb.	Indication
7		Row marker switch.	To activate the row marker.		Use the switch to activate the right-hand row marker (the red indicator light **(B)** lights up) or the left-hand row marker (the red indicator light **(C)** lights up).
8		Left arm control switch.	To extend and retract the arm.		Use the switch to extend or retract the arm.
9		Right arm control switch.	To extend or retract the arm.		Use the switch to extend or retract the arm.
10		Left arm partial levelling switch.	To lift or lower the arm.		Use the switch to lift or lower the arm.
11		Right arm partial levelling switch.	To lift or lower the arm.		Use the switch to lift or lower the arm.
12		Control lever for machine movement.	To move the machine forward or in reverse.		Push the lever to move forward. Pull the lever to brake. **Important** **The engine cannot be started if the lever is not in central position.**

SERVICE AND INTERIOR CAB LIGHT CONTROLS



Pos	Symb.	Name	Function	Symb.	Indication
1		Adjustable air conditioning vents.	Circulates the air throughout the cab.		
2		Cab top light.	To light the operator's seat.		Use the switch **(A)** to turn the light on and off.
3		Hot air cock			Open the cock to heat the cabin.
4		Thermostat.	To adjust the temperature of the air inside the cab.		Turn to increase or decrease the temperature.
5		Interruttore Fan switch.	To activate the fan.		Turn to activate and deactivate the fan.
6		Rear-view mirror adjustment switch (Optional)	To adjust the position of the rear-view mirrors.		Use it to adjust the position of the rear-view mirrors.
7		Rear-view mirror heating switch (Optional)	To activate the heating of the rear-view mirrors		Use to turn the mirror heating on and off
8		Two speed windshield wiper switch.	To activate the windshield wiper		Use to activate and deactivate the windshield wiper
9		Flashing switch	To switch the flashing light on		Press to switch the flashing light on and off.
10		Car radio			

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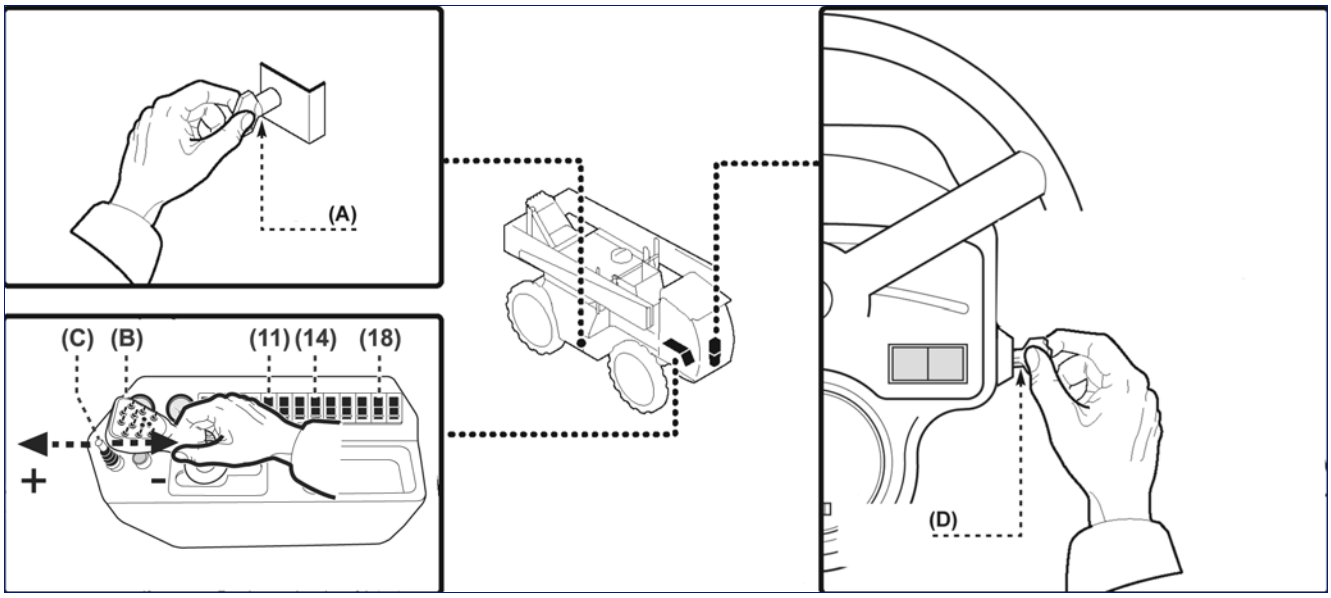
MACHINE START-UP AND MOVEMENT



Important

After obtaining the necessary information, when using the machine for the first time, if necessary, the operator can simulate some manoeuvres to get used to the controls and their main functions, especially the starting and braking operations.

To start the machine follow the procedure below.

1 - Use key **(A)** to engage the batteries.

2 - Make sure that joystick **(B)** is in central position **"0"** (The engine cannot be started if the lever is not in central position).

3 - Insert key **(D)** and turn clockwise (first section) to preheat glow plugs. Wait for 4-5 seconds then turn the key clockwise again to start the engine.

4 - Push the lever **(C)** forward to increase the number of engine revolutions.

5 - Press switches **(11)** and **(14)** to select the gear.

6 - Deactivate the parking brake with switch **(18)**.

7 - Use the control **(B)** to move the machine in one of the two directions.

Important

When the outside temperature is low and the engine cold, consult the engine operating manual before starting it.

Do not try to start the machine for more than 15 seconds. However, if the engine seems to be starting up, you may keep the ignition key turned for a maximum of 30 seconds.

Wait at least one minute before two consecutive engine start-up attempts; attempts should not be too frequent in order to preserve the battery.

In reverse gear and in high-risk conditions, the presence of a co-worker is recommended in order to signal dangers and obstacles that may not be visible from the operator's seat.

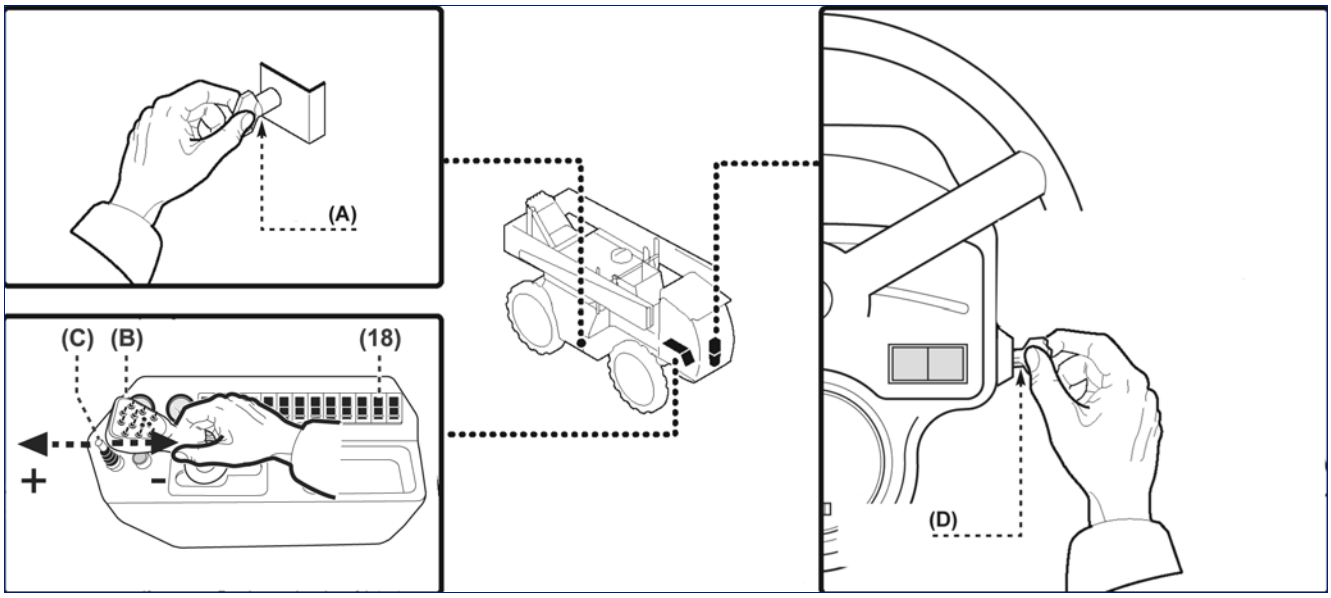
Important

Do not actuate the control too rapidly when inverting the machine direction to avoid damaging the hydrostatic components.

Caution - Warning

Drive safely taking all the operating conditions into account. In particular, slow down on uneven ground. Pay special attention when going round bends in order not to impair the machine stability, especially when the tank is full.

MACHINE STOP



For this operation follow the procedure below.

1 - Set the control **(B)** to the **"0"** position.

2 - Pull the lever **(C)** backwards to decrease the number of engine revolutions.

3 - Activate the parking brake with switch **(15)**.

4 - Turn the ignition key **(D)** to position **"0"**.

5 - Remove the ignition key **(D)**.

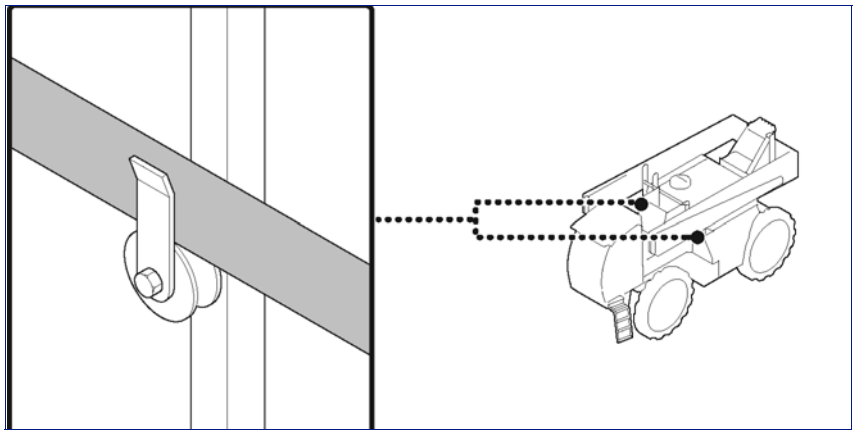
6 - Use the key **(A)** to disengage the batteries.

Important

Park the machine in a suitable area, where it does not represent an obstacle or danger to circulation, where access is restricted to authorised staff, with all the necessary measures for safety purposes.

BAR RETRACTION STEPS

The bar retraction operations should be carried out very carefully, given the actual extension that the bars actually feature.



Important

The method and sequence of the bar extension and retraction are included in leaflet 9.

Before performing the bar retraction, lift the bar using the lifting device.
Then lower the bar so that it rests correctly on the device provided to avoid any sudden extension of the arms.

Caution - Warning

Pay special attention to the rearview mirrors when the bar is extended or retracted.

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ROAD CIRCULATION

Road circulation is allowed for authorised machines. Operators must comply with the requirements set forth by the regulations in force. In any case, before road circulation begins:

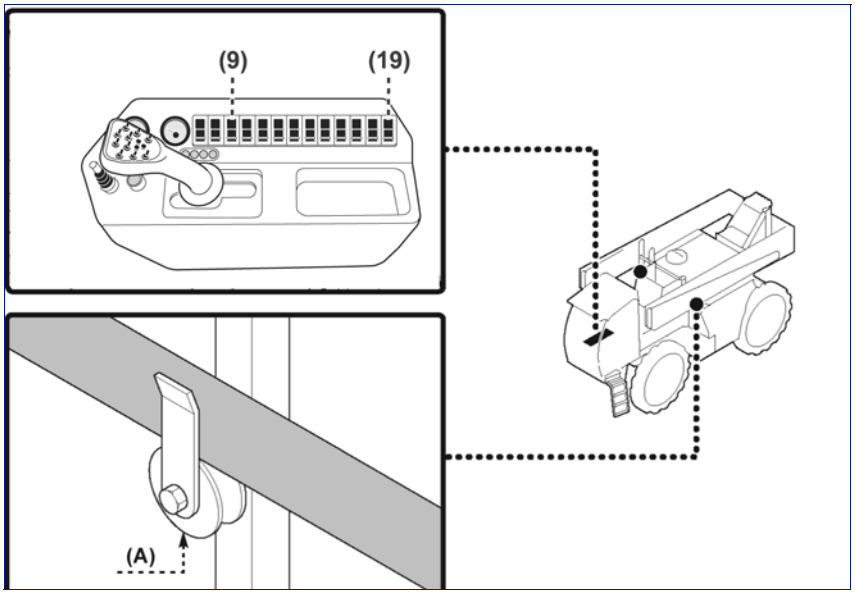
- block the parts which could cause sudden unexpected movements;
- check that the volume does not exceed the maximum allowable values;
- if necessary, arrange proper signalling
- drain the tank completely.

Note: the road circulation may also take place when there is only water in the tank; in this case, the maximum speed is limited to 20 km/h (the 2nd fast gear can not be selected).

Caution - Warning

For machines authorised to circulate on the roads with the tank full, the liquid must not be mixed with hemicals for spraying.

- Make sure that the bar is retracted correctly and placed on its supports **(A)**;
- turn on the flashing light;
- ensure all the road signalling devices are working perfectly.
- deactivate the operating controls **(19)**.
- deactivate the four wheel drive **(9)**.



Danger - Warning

Road circulation without disconnecting the working controls can be extremely dangerous because of the risk of deviation and overturning of the machine with serious damages.

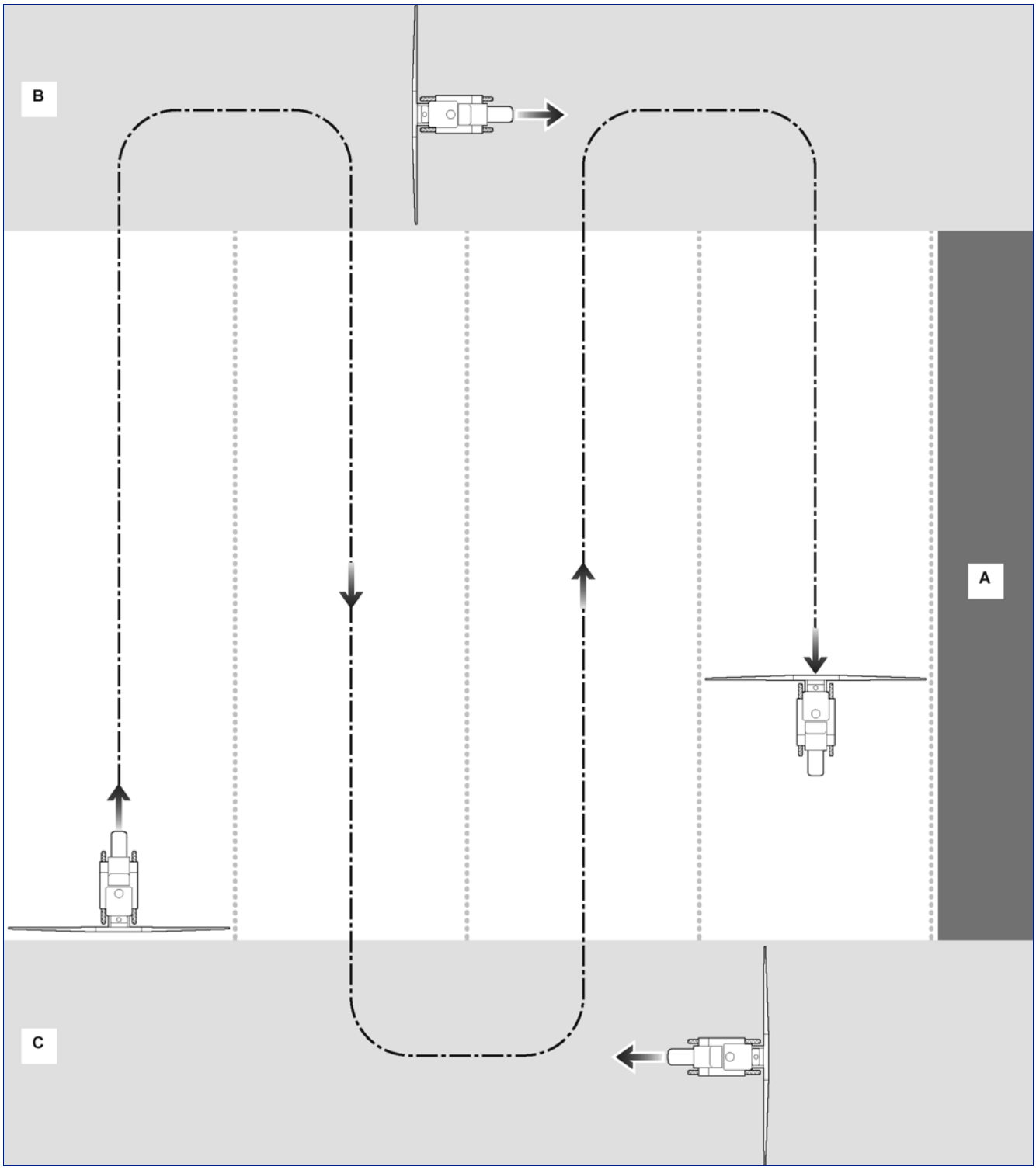
Road circulation involves being aware of and observing the rules stated in the manual entitled “Requirements for road circulation”.

RECOMMENDATIONS FOR USE

To treat the surface to be sprayed, we recommend you follow the path indicated in the figure, keeping in mind that the row marker foam tank identifies the previous areas covered.

If the last time the machine covered a given area, the full length of the bar (area **A**) was not necessary, deactivate one or more sectors (see leaflet 13).

Cover the areas **(B - C)** to complete the treatment of the surface.



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TANK FILLING USING THE CENTRIFUGAL PUMP

For this operation follow the procedure below.

1 - Start the machine's engine (see page 42).

2 - Use the selector **(A)** to put the hose winder in neutral.

3 - Pull the hose to unwind it.

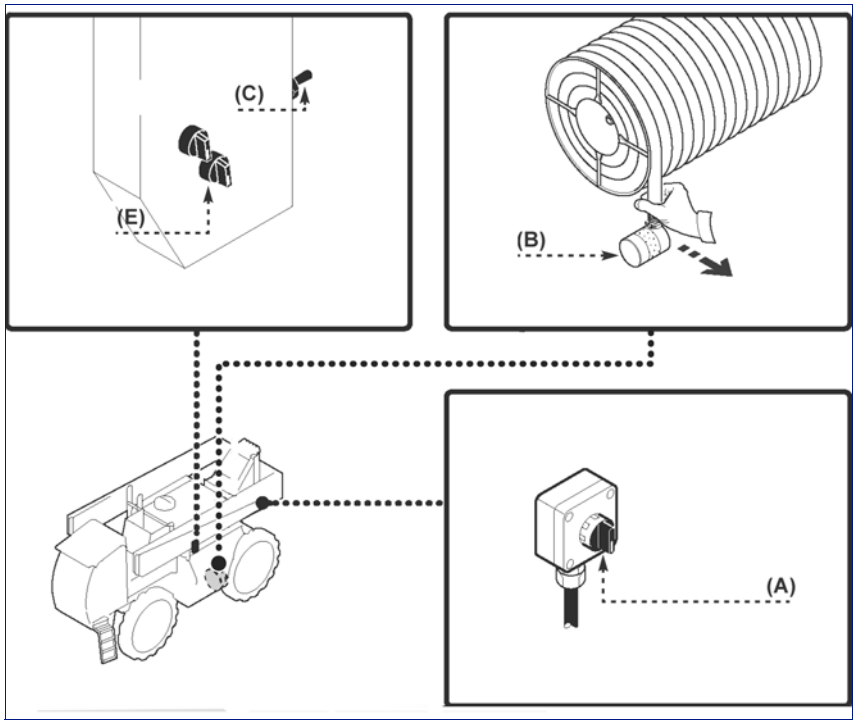
4 - Position the filter **(B)** in the clean water drawing area (reservoir, river, canal, etc.).

Note: if the machine is fitted with an electronic litre counter, consult the relevant instruction manual (see leaflet 14) before you fill the tank.

5 - Use switch **(C)** to set the motor to 1000 rpm. Note: Switch **(C)** is active only when the driver is not sitting on his/her seat

6 - Use the selector **(E)** to activate the centrifugal pump and deactivate it when the desired water level has been reached.

7 - Use the selector **(A)** to rewind the hose when the operation is complete.



Caution - Warning

The hose must not come into contact with chemicals to avoid the contamination of the water source.

TANK REFILLING WITHOUT CENTRIFUGAL PUMP

For this operation follow the procedure below.

1 - Start the machine's engine (see page 42).

2 - Remove cover **(A)** and insert pipe **(F)**.

3 - Open valve **(G)**.

4 - Position the filter **(B)** in the clean water drawing area (reservoir, river, canal, etc.).

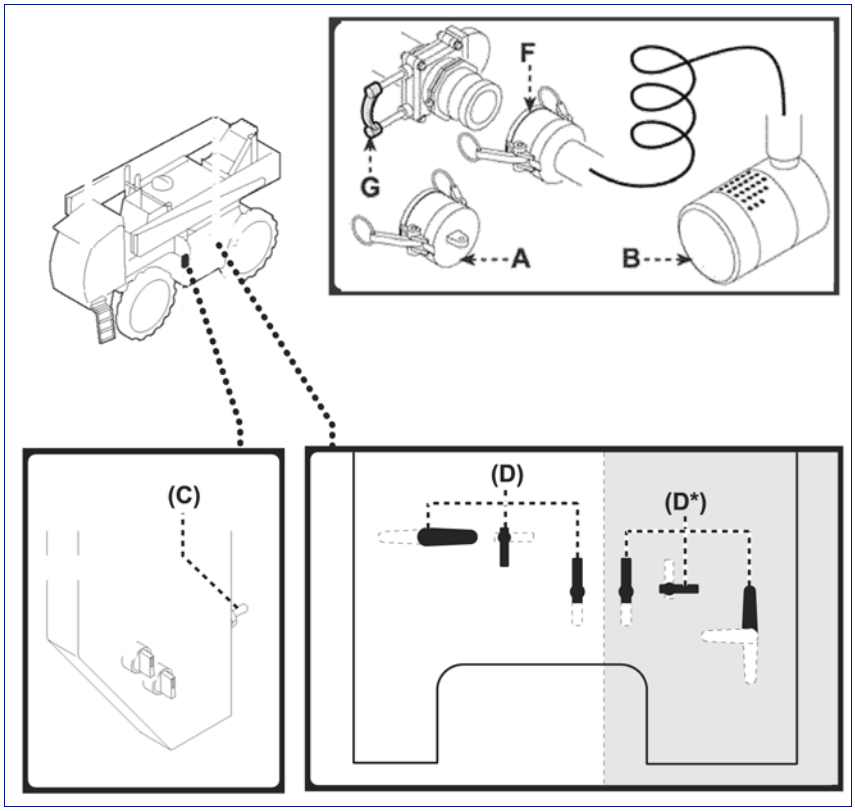
Note: if the machine is fitted with an electronic litre counter, consult the relevant instruction manual before you fill the tank.

5 - Use switch **(C)** to set the motor to 1000 rpm.

Note: Switch (C) is active only when the driver is not sitting on his/her seat

6 - Turn the cocks **(D)** as indicated in the figure.

7 - Use switch **(E)** to start the water system pump and to stop it after reaching the desired water level.



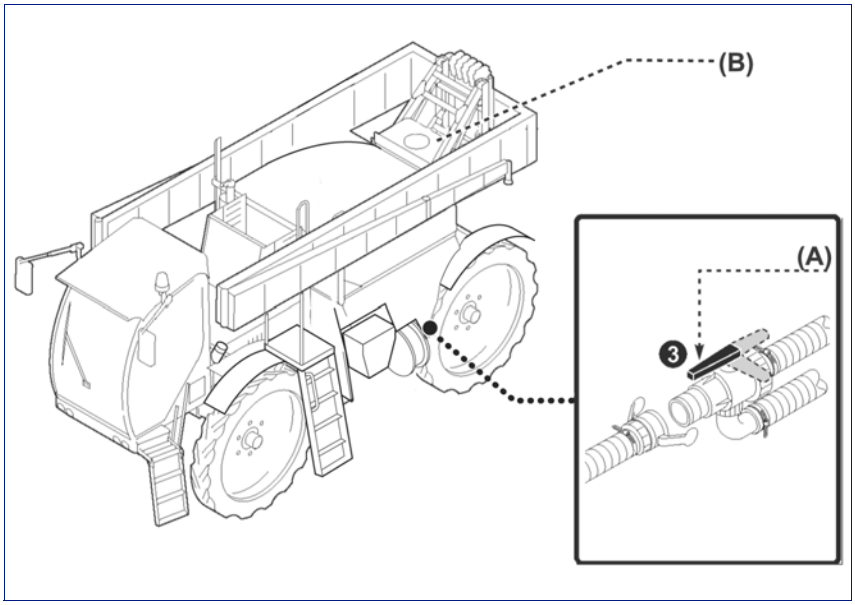
(*) Available only in the version without electrical controls

Caution - Warning

The hose must not come into contact with chemicals to avoid the contamination of the water source.

FILLING THE SYSTEM CLEANING TANK USING THE CENTRIFUGAL PUMP

When the tank is being filled, turn on the cock **(A)** to fill the tank **(B)**, and turn off when the desired level has been reached, which can be seen on the indicator **(C)**.

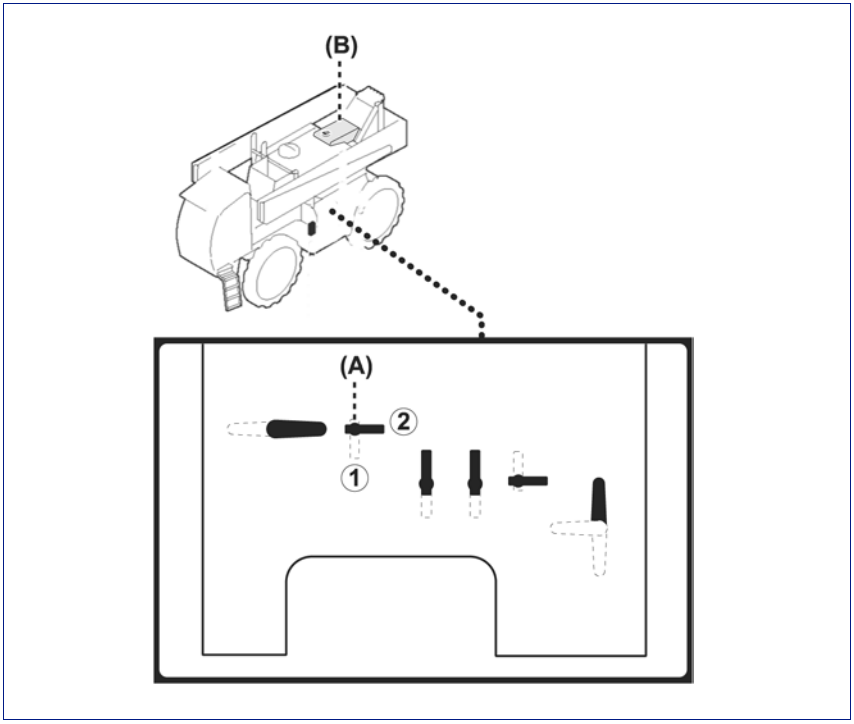


Important

The tank (B) must be filled with clean water.

REFILLING OF PLANT WASHING TANK WITHOUT CENTRIFUGAL PUMP

During supply from the tank, open (pos. "**2**") cock **(A)** to fill tank **(B)** and close it (pos. "**1**") simultaneously when the desired level is reached. The level can be seen on indicator.



Important

The tank (B) must be filled with clean water.

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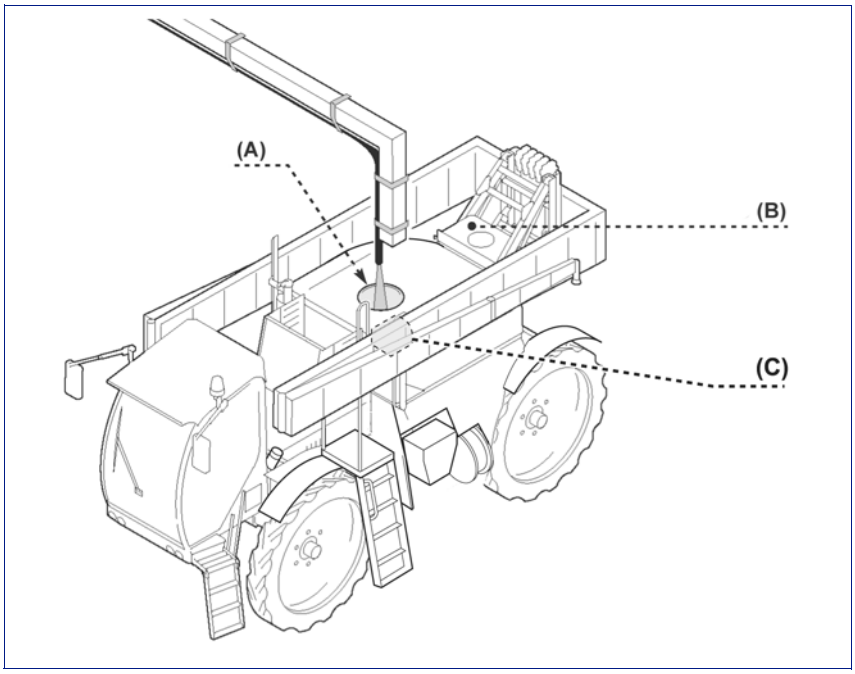
FILLING WITH WATER FROM A HEIGHT

Use an external water source or a reservoir situated higher up than the tank inlet **(A-B)**.

To fill the fuel tank **(C)**, use an water handwashing



Important

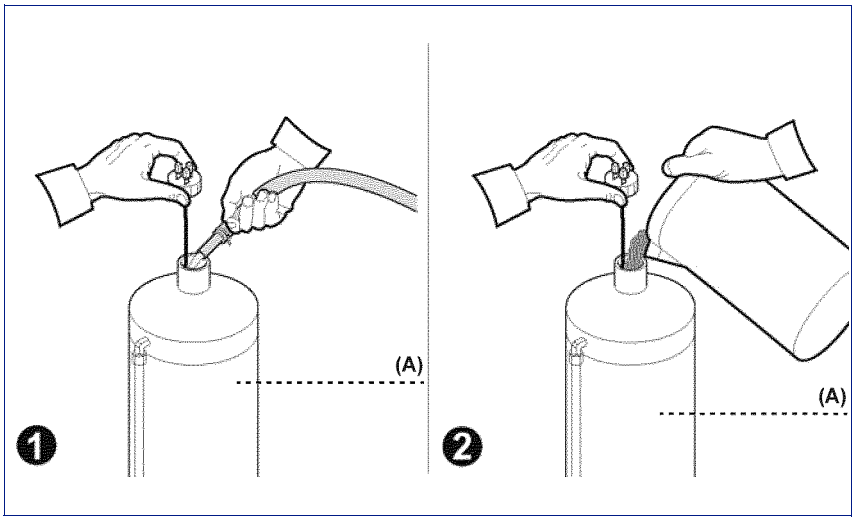
The cup filter (1 mm mesh size) must be fitted over the tank filling inlet (A).

Important

The tank (B) must be filled with clean water.

ROW MARKER PRODUCT FILLING

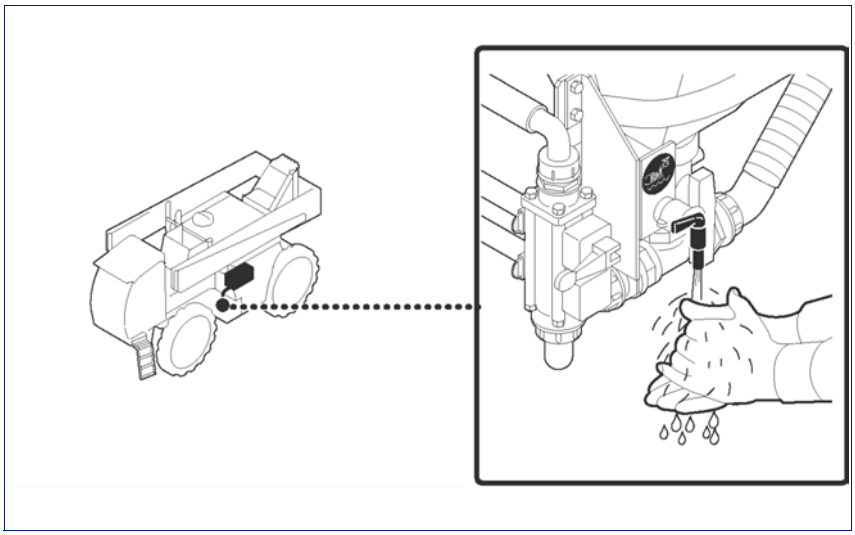
Fill the container **(A)** with water and add the foaming agent (about 0.5 litres for a full tank).



CHEMICAL PRODUCT PREPARATION

Danger - Warning

The use of products which are not specifically authorised for crop spraying is strictly prohibited. Read the instructions on using spray chemicals provided by the manufacturer on the packet carefully.



Before starting the preparation of the chemical product, adopt all measures that are necessary to avoid

contamination danger and risks for humans, animals and the environment. In particular:

- Wear protective clothing to avoid direct contact with parts of the body, especially in the presence of wounds.
- Wear protective devices to protect the face, head, hands, using rubber gloves, gas masks, goggles and a helmet.
- Do not use individual protective devices that are not in perfect condition, in particular check the condition of the gas mask and cab filters.
- Keep the chemical products out of the reach of unauthorised persons (especially children and the disabled).
- Arrange all the equipment that is necessary to handle the chemical product and the mixture during the preparation, filling, draining and cleaning of the tank, as well as during the product spraying, adjustment, replacement or addition of pesticides or herbicides and during maintenance operations.
- Calculate the exact quantity of product to be mixed according to the surface to be treated and comply with the instructions supplied by the herbicide/ pesticide manufacturer. Do not mix different products together.
- In case of accidental contact of the product or mixture with the skin, wash immediately with clean water. In the event of discomfort, seek medical assistance, showing the product label.

Caution - Warning

Do not dispose of the product, the mixture or other pollutant in the environment. Disposal must be carried out in compliance with the regulations in force.

To mix the product, follow the procedure below.

1 - Make sure the system is clean and fill the necessary amount of water for treatment in the tank (see page 46) and in the “clean water” tank (see page 47).

2 - Manually lower mixer **(B)** to facilitate refilling operations.

3 - Turn the cocks **(C)** as indicated in the figure.

4 - Rotate the Mixer cock to the low.

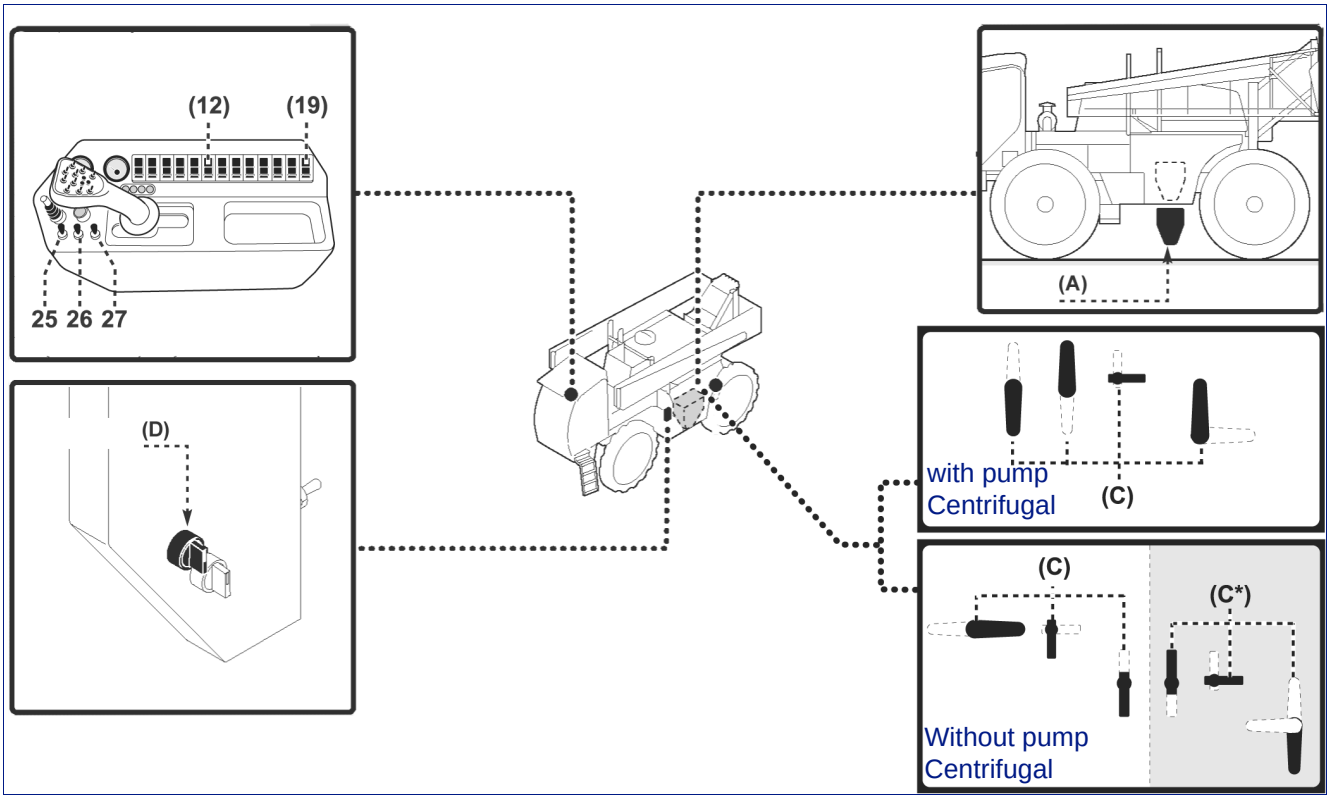
5 - Use switch **(19)** to activate operation controls.

6 - Use the switch **(12)** to activate the pump.

7 - Press switch **(27)** (Only in the version with electrical controls).

8 - Carry out the operations for the preparation and mixing of the chemical (see leaflet 5).

9 - When the operation is complete, raise the mixer.



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(*) Available only in the version without electrical controls

SPRAYING PARAMETER SETTING

The parameters should be set according to the machine forward speed, (chosen according to the conditions of the land), to the quantity of product to be sprayed in litres per hectare (see instructions on the product packet) and depending on the type of nozzle used.

Thanks to these parameters, the operating pressure can be obtained by consulting the data in the spraying table positioned directly on the tank. The table below is merely an illustration to provide an example of consultation and search for the necessary values.

Spraying table

	ISO	bar	l/min	4 km/h	5 km/h	6 km/h	7 km/h	8 km/h	9 km/h	10 km/h	12 km/h	14 km/h	16 km/h	18 km/h	20 km/h
Yellow	11002	1,5	0,56	168	134	112	96	84	75	67	56	48	42	37	34
		2	0,66	198	158	132	113	99	88	79	66	57	50	44	40
		3	0,8	240	192	160	137	120	107	96	80	69	60	53	48
		4	0,91	273	218	182	156	137	121	109	91	78	68	61	55
		5	1,02	306	245	204	175	153	136	122	102	87	77	68	61
Blue	11003	1,5	0,85	255	204	170	146	128	113	102	85	73	64	57	51
		2	0,98	294	235	196	168	147	131	118	98	84	74	65	59
		3	1,2	360	288	240	206	180	160	120	120	103	90	80	72
		4	1,39	417	334	278	238	209	185	139	139	119	104	93	83
		5	1,55	465	372	310	268	233	207	155	155	133	116	103	93
Red	11004	**1,5**	1,13	339	271	226	194	170	**151**	136	113	97	85	75	68
		2	1,31	393	314	262	225	197	175	157	131	112	98	87	79
		3	1,6	480	384	320	274	240	213	192	160	137	120	107	96
		4	1,85	555	444	370	317	278	247	222	185	159	139	123	111
		5	2,07	621	497	414	355	311	276	248	207	177	155	138	124

Value search example

Quantity to spray indicated
on the product .....151 litres per hectare (l/ha)
Forward speed .....9 km/h
Nozzle .....red type 11004

If you search for these values (see highlighted part of the table), you will obtain the correct pressure to use, which in this case is 1.5 bar.

Caution - Warning

The operating pressure must remain between 1.5÷5 bar.

If the pressure value obtained from the table is not within the above pressure range, change the forward speed value or the type of nozzle used.

Carry out a trial spraying with clean water to check that the adjustment has been made correctly.

FORWARD SPEED DURING SPRAYING

To calculate the forward speed, proceed as follows:

1 - establish the correct forward speed, according to the number of tractor engine revolutions covering a section of land;

2 - cover a one hundred metre section previously marked, at the chosen speed and with a constant number of engine revolutions, measuring the amount of time taken in seconds;

3 - consult the speed control table to obtain the forward speed covered according to the amount of time taken.

Speed control table

Speed (km/h)	4	5	6	7	8	10	12
Time x 100 m (sec)	90	72	60	51	45	36	30

NOZZLE SPRAYING CHECK

After setting the product spraying parameters, you must check that the value for the quantity of product sprayed corresponds to the value in the table.

Individual nozzle spraying check (l/min)

1 - Place a graduated container beneath a nozzle operating with pressurised clean water at the chosen pressure for exactly one minute.

2 - 2-Check that the quantity of water collected in the graduated container corresponds to the value in the spraying table.

3 - Repeat this operation on three or four nozzles.

Spraying check of litres per hectare (l/ha)

This check should be carried out by performing a spraying test with clean water on a one hundred metre long section of land, proceeding as follows:

1 - set the forward speed value and the operating pressure value as described on page 50; 50

2 - fill the tank completely;

3 - spray water with the bar extended on the one hundred metre distance;

4 - fill the tank up, measuring the litres of water used;

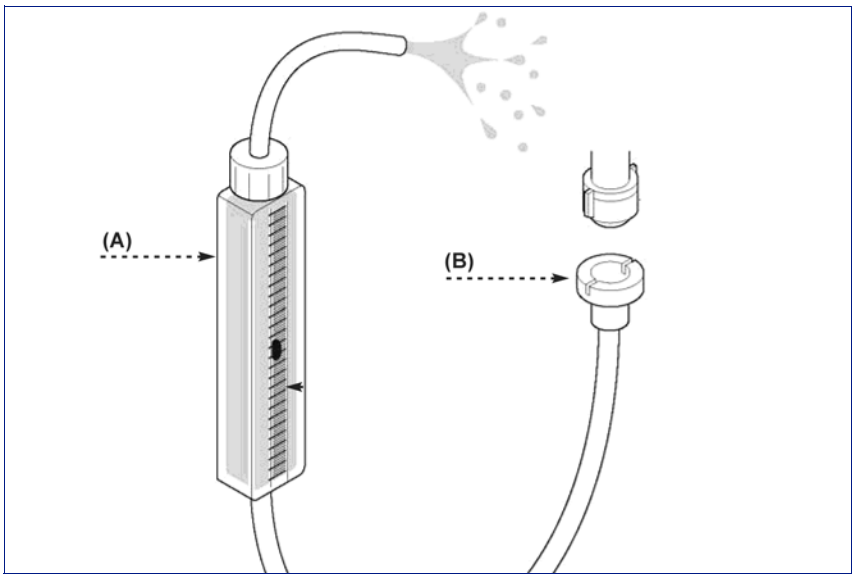
5 - check in the spraying table for the hundred metre test that the value indicated under the quantity of product to be sprayed (e.g.: 200 l/ha) and the bar length (e.g.: 10 m) corresponds to the litres of water used.

Measurement with “nozzle tester” (upon request)

1 - Connect tester **(A)** with adapter **(B)** to the central nozzle of every boom section.

2 - Read the quantity of l/m by means of the graduated scale.

3 - In the distribution table, check that for the 100-meter test the value indicated matches the number of litres used.



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Spraying table for the one hundred metre test

Quantity of product to be sprayed in l/ha	bar length (m)																	
	6	8	10	12	12,5	14	15	16	18	20	21	24	27	28	30	32	33	36
	6	8	10	12	12,5	14	15	16	18	20	21	24	27	28	30	32	33	36
150	9	12	15	18	18,5	21	22,5	24	27	30	31,5	36	40,5	42	45	48	49,5	54
200	12	16	20	24	25	28	30	32	36	40	42	48	54	56	60	64	66	72
300	18	24	30	36	37,5	42	45	48	54	60	63	72	81	84	90	96	99	108
400	24	32	40	48	50	56	60	64	72	80	84	96	108	112	120	128	132	144
500	30	40	50	60	62,5	70	75	80	90	100	105	120	135	140	150	160	165	180
600	36	48	60	72	75	84	90	96	108	120	126	144	132	168	180	192	198	210

litresx 100 m

If this check is carried out on a five hundred metre section, more precise data will be obtained; in this case, however, the value for the litres of water used will be five times that indicated in the table.

Formula to check the liquid sprayed in litres per hectare (l/ha)

$$\text{Quantity sprayed (l/ha)} = \frac{\text{Liquid per nozzle (l/min) x constant 600}}{\text{Distance between jets (0.5 m) x speed km/h}}$$

This formula can also be transformed to establish the forward speed necessary or to determine the quantity of liquid for each nozzle.

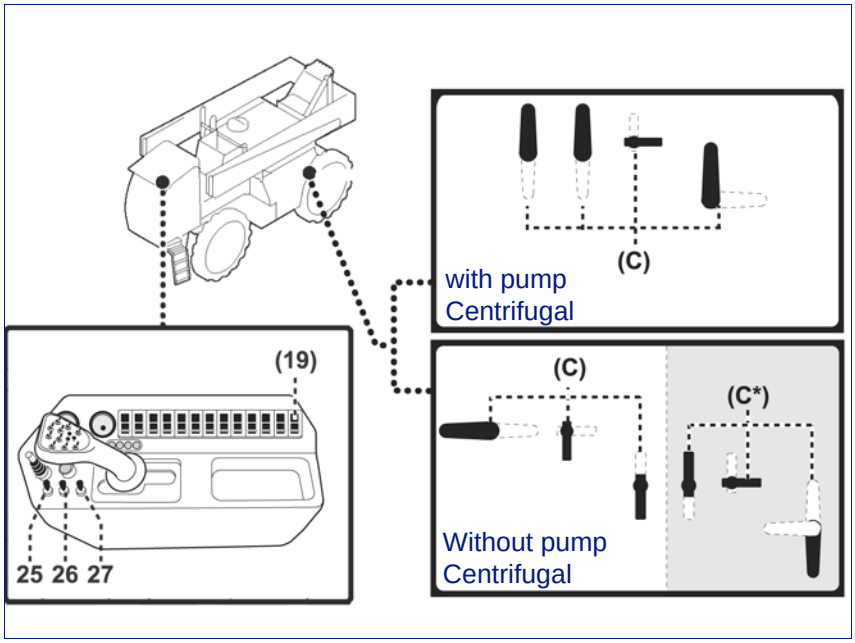
$$\text{Speed km/h} = \frac{\text{Liquid per nozzle (l/min) x constant 600}}{\text{Quantity sprayed (l/ha) x distance between jets}}$$

$$\text{Liquid per nozzle l/min} = \frac{\text{Quantity sprayed (l/ha) x distance between jets x speed km/h}}{\text{Costant 600}}$$

PRODUCT SPRAYING

Important

Before starting the treatment, consider whether the weather conditions can guarantee an effective treatment. Do not spray the product when the wind is stronger than 5 m/ sec. In case of moderate winds, use all the necessary measures to avoid any product spraying outside the area to be treated (reduce the bar height and mist).



(*) Available only in the version without electrical controls

To spray the product follow the procedure below:

1 - Install the correct nozzles for the product to be sprayed (see the purpose provided table attached to the manual).

2 - Rotate cocks **(C)** as shown in the figure (*) Version with electrical controls.

3 - Access the operator's seat and use the switch **(19)** to activate the operating controls.

4 - Press switches **(25)** and **(26)**. (Only in the version with electrical controls).

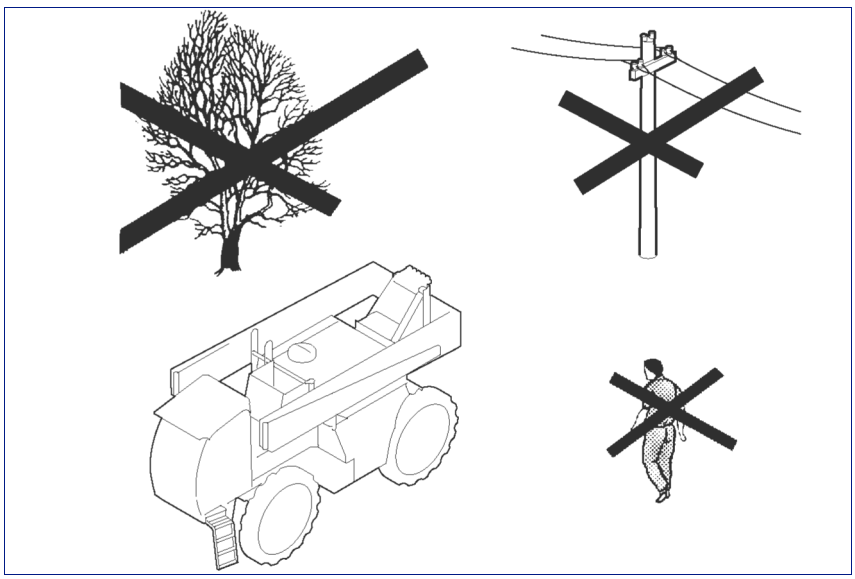
5 - Set the operating parameters on the computer (see leaflet 13).

6 - Carry out the nozzle spraying check operations (see page 50).

7 - Use the appropriate controls to extend the spraying bar (see page 39).

Danger - Warning

Make sure that there are no persons or obstacles in the bar extension area.



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8 - Activate the air hose, where present (see leaflet 10).

Important

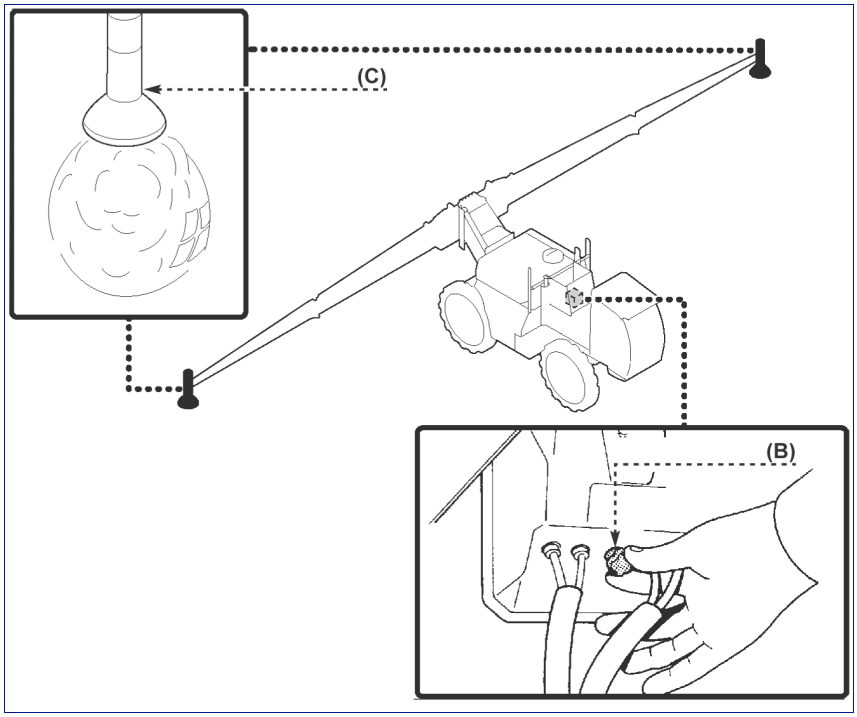
The fan revolution speed must be adjusted according to the operating requirements. This speed must be set at minimum values on bare ground or with low vegetation crops.

9 - If necessary, fill the row marker product (see page 48).

10- Activate the row marker foam tank (see leaflet 13) and use the regulator **(B)** to adjust the quantity of foam distributed by the diffusers **(C)**.

11- Supply the desired bar sections (see leaflet 13).

12- Bring the engine to 2000 rpm and move to the desired spraying location.

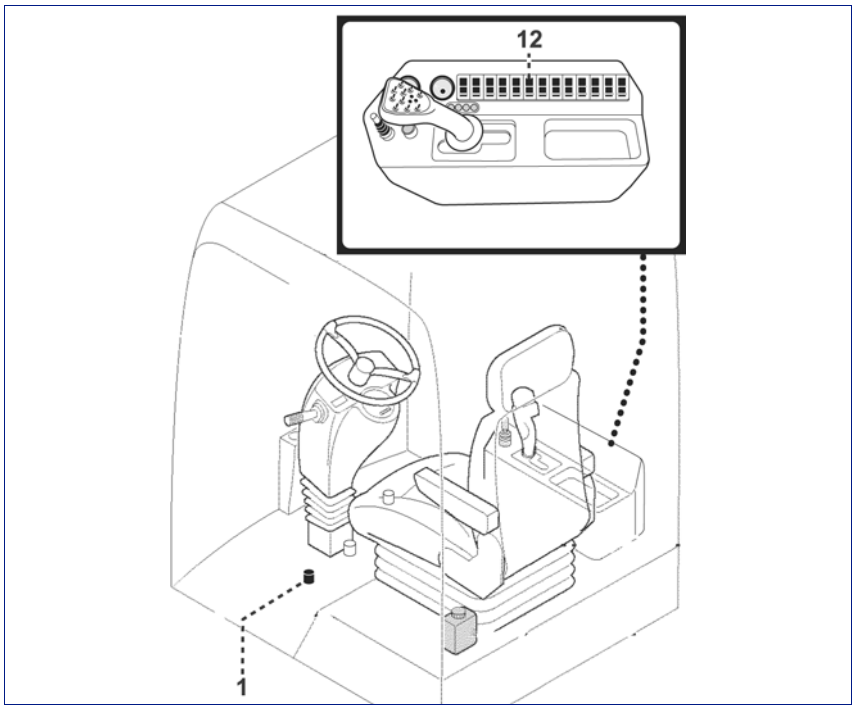


Important

Block the balancing device when working on a counter slope or with part of the bar retracted (see page 39).

13- Activate the “Four wheel drive” mode.

14- Use the switch **(12)** and then the button **(1)** to start spraying.



Important

To reduce the bar oscillations and obtain a very uniform spraying, maintain a forward speed of 8÷10 km/h.

15- Close the distribution and deactivate the product spraying pump once spraying is complete.

16- Close the bar extensions and retract them in their transportation position.

Important

If the machine is fitted with an air hose and a side extension closing spraying bar, stop the fan before retracting the bar extensions. If the machine is fitted with an air hose and a top extension closing spraying bar, reduce the number of fan revolutions to 1000 rpm and retract the bar extensions, then stop the fan.

SYSTEM CLEANING AND DRAINING THE RESIDUE

Important

At the end pf every work day, before changing the product, and after any interval longer than an hour, wash the system carefully. Clean the system according to the instructions provided in "Chemical product preparation" (see page 46).Chemical product preparation 48

For this operation follow the procedure below.

1 - Dilute any liquid residue in the bottom of the tank with clean water with 1:10 ratio and spray it on the treated surface (see page 53).

2 - Position the cocks **(C)** as indicated in the figure.

3 - Press switches **(25)** and **(26)**. (Only in the version with electrical controls).

4 - Press switch **(19)** and then button **(1)** to activate the pump at 3-5 bar pressure (see brochure 13). System cleaning will be completed when clean water comes out of the nozzles.

5 - Turn on the cock **(D)** to clean the inside of the tank.

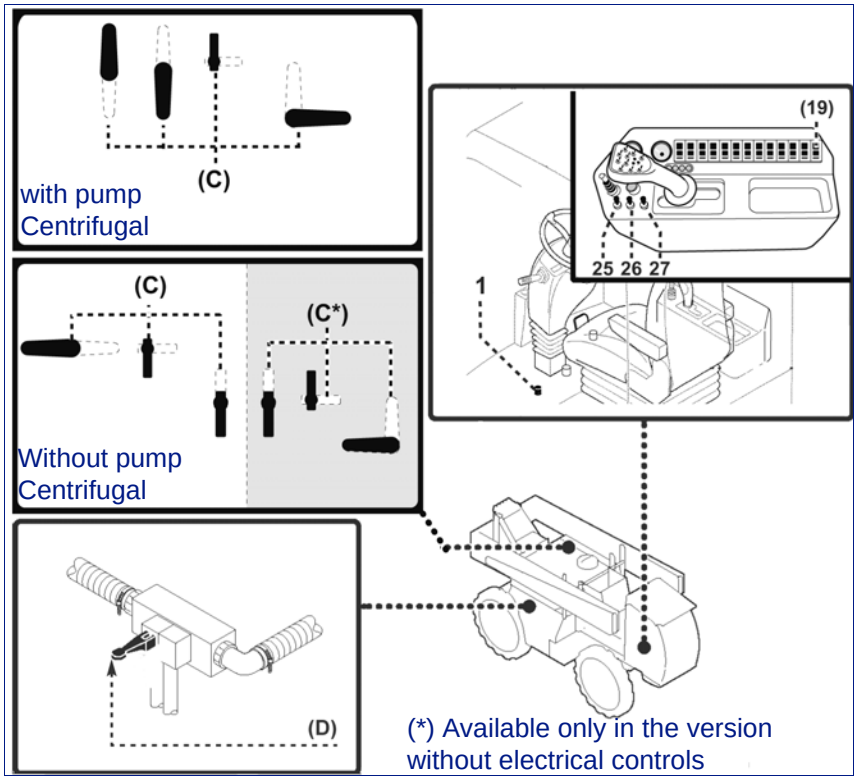
6 - Arrange a container with suitable capacity in order not to dispose the product in the environment, unscrew the cap **(H)** and open the cock **(E)**. When the operation has been completed, close the cock **(E)** and screw the cap on **(H)**.

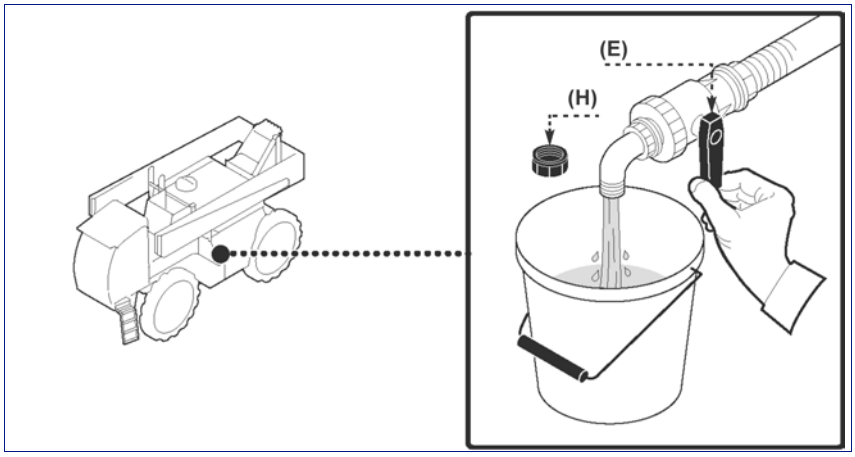
7 - Open valve **(L)** to clean filter **(F)**.

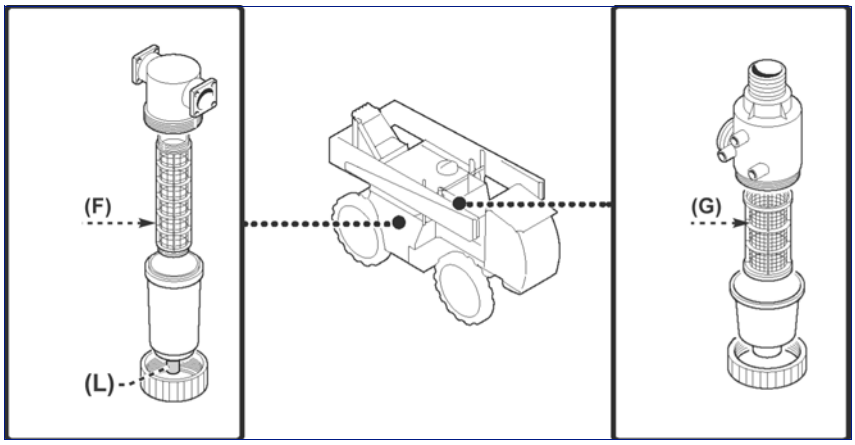
8 - Remove the intake filter **(G)**, mesh size 0.25 mm, and wash it with a water jet.

9 - Remove the in-line bar filters (see leaflet 9) and wash them with a water jet.

10- Wash the outside of the tanks and the areas in contact with the product with a water jet.







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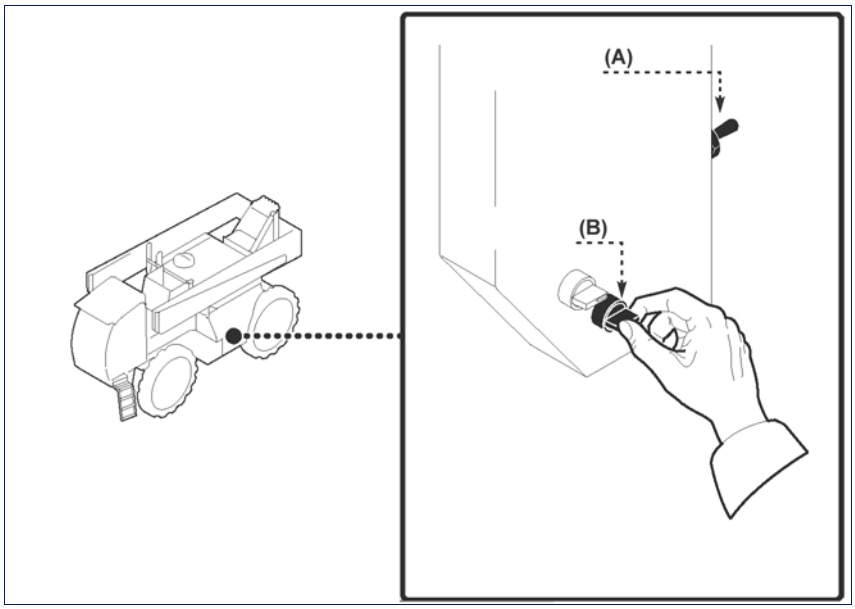
MACHINE WASHING WITH HIGH-PRESSURE CLEANER (OPTIONAL)

For this operation follow the procedure below.

1 - Start the machine's engine (see page 42).

2 - Use switch **(A)** to set the motor to 1000 rpm.

3 - Use the selector **(B)** to activate the centrifugal pump.



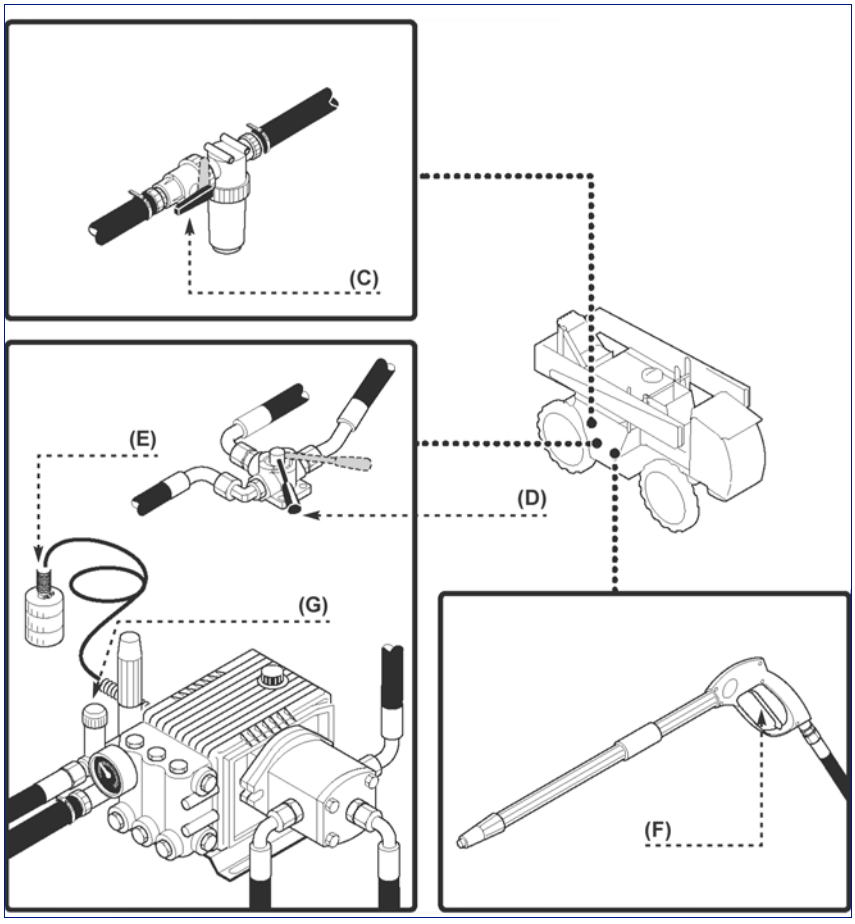
4 - Turn the cocks **(C)** as indicated in the figure.

5 - Position the lever **(D)** as indicated in the figure.

6 - Insert the hose **(E)** into the soap container and turn the knob **(G)** to enable the intake of soap.

7 - Take hold of the nozzle and unwind the hose.

8 - Use the lever **(F)** on the nozzle to begin cleaning.



Important

Do not direct the pressurised water jet towards electrical parts.

9 - When this operation is complete, rewind the nozzle hose, pulling it slightly outwards and then releasing it, and carry out the above operations in the reverse order.

EXTENDED MACHINE DOWNTIME

If the machine is not used for a long period of time, follow the procedure below:

1 - carry out a general cleaning;

2 - grease the components provided with greaser;

3 - disconnect the batteries;

4 - store the machine in a well protected place with access reserved to authorised staff only;

5 - apply an anti-rust treatment on all non-painted parts;

6 - check all the machine components and replace them, if necessary;

7 - clean the water system thoroughly (see page 55);

8 - drain the tanks containing the water and the product completely;

9 - remove the water system filters.

RECOMMISSIONING THE MACHINE

Before using the machine after a long period of inactivity, carefully check that the main components are working correctly. In particular:

1 - check the battery conditions;

2 - check all levels (oil, water, fuel);

3 - check that the main fixing screws are tightened;

4 - check and replace worn or damaged parts;

5 - lubricate all greasing points;

6 - carry out all the necessary maintenance operations;

7 - replace or, if necessary, change the filters of the water system;

8 - check the general conditions of the hydraulic hoses;

9 - check the efficiency of all safety devices;

10- carry out a general cleaning, with special care for the operator's seat and the control panel;

11- check the pressure of the tyres;

12- start the system, bring it to the maximum pressure level and check for any liquid leaks.

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INFORMATION ON MAINTENANCE WORK

INSTRUCTIONS FOR MAINTENANCE

Before carrying out any maintenance work, activate all the safety devices and consider whether it may be necessary to provide appropriate information to the operators and the staff working near the machine. In particular, provide proper signs in the areas surrounding the machine and do not allow anyone to access any devices that, when activated, may cause unexpected dangerous conditions, resulting in damages to personal safety and health.

Danger - Warning

Always wear a gas mask before carrying out any intervention inside the main tank. However, any intervention must be carried out by authorized technicians.

Caution - Warning

Unless otherwise expressly indicated, maintenance work must be carried out with the engine turned off, the ignition key not inserted and kept by the operator. The person in charge of the maintenance work must consider all the necessary measures to guarantee the safety of the persons participating in the work, in compliance with the requirements set forth by the regulations in force on safety in the workplace.

Important

Replace worn components with original spare parts. Use oils and greases recommended by the manufacturer. This will ensure the perfect operation of the machine and the safety level required. Do not dispose of polluting liquids, used parts and maintenance material into the environment. Disposal must be carried out in compliance with the current regulations in force.

TABLE OF MAINTENANCE WORK

Frequency	Component	Type of intervention	Action	Page
After the first 50 hours	Engine oil.	Replace.	Refer to the engine's instruction manual.	
	Engine radiator water.	Check the level.		66
	Radiator.	Check if the radiator fins are clogged.	Clean with compressed air or a water jet.	
	System oil.	Check the level.	Fill up with the same type of oil.	66
	Engine oil.	Check the level.		
Every work day	Engine intake filter cartridge.	Check the efficiency.	Clean with a water jet.	
	Wheel screws.	Check how tight they are.		
	Tyres.	Check the pressure.		
	Safety devices.	Check the efficiency.		
	Water system.	Carry out the cleaning.		55
	Machine.	Clean and wash.		
	Engine cooling fan belt.	Check the tension.	Refer to the engine's instruction manual.	
Every 100 hours	Air conditioning compressor belt.	Check the tension.	Adjust	32
	Components.	Grease.		
Every 150 hours	Engine oil.	Replace.	Refer to the engine's instruction manual.	

Frequency	Component	Type of intervention	Action	Page
Every 200 hours	Diesel filter	Replace.		
	Water tank filter.	Clean or replace.		77
	Cab filter.	Replace when unpleasant pesticide or herbicide odours are detected in the cab (maximum 36 months).		77
	Engine intake filter.	Replace.		
Every 1000 hours	Hydraulic system oil.	Replace.		76
	Hydraulic system filters.	Replace the cartridge.		77
	Engine.	Carry out the general check.	Refer to the engine's instruction manual.	
	Front axle Rear axle	Check play between surfaces	Adjust	

MACHINE CLEANING

At the end of every work day, the whole machine should be cleaned. To do so, wear all the individual protective devices (rubber gloves, boots, goggles, etc.) necessary to avoid contact with the product.

Caution - Warning

Never leave any chemical residue on or in the machine. Do not dispose of the liquid in the environment; it could contaminate the rivers and water beds. Dispose of the product containers in accordance with the provisions set forth by the applicable laws in force. Do not leave the product and/or residue within children's reach.

To clean the machine, follow the procedure below:

1 - Clean the system and drain the residue (see page 55).

2 - Clean the mixer and all hoses (see leaflet 5).

3 - Clean the exterior of the machine with a strong jet of pressurised water.

Caution - Warning

Do not direct pressurised water jets towards electrical parts to avoid damaging them.

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FIRST USE

The machine is delivered by the manufacturer in operating condition after it has been run in for a few hours. When using the machine for the first times, the following indications must be complied with.

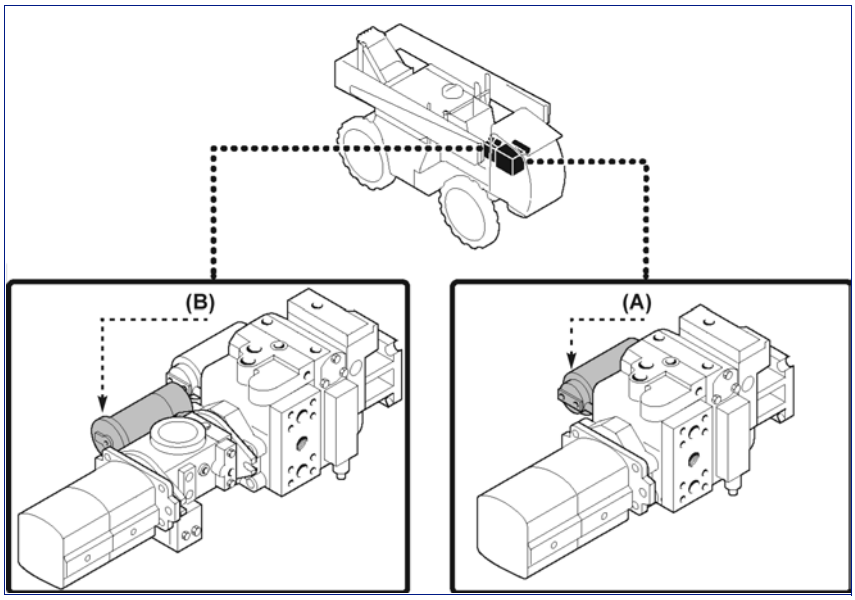
1 - After a cold start, run the engine at low speed for a few minutes.

2 - Refer to the engine's instruction manual to run the machine in properly.

3 - Do not run the engine at maximum speed for long periods of time.

4 - Check all levels frequently.

5 - Check that the hydraulic connections, bolts and nuts and wheel fixing screws are tightened.



After the first 100 hours, change the filter cartridge **(A)**.

After the first 300 hours, change the engine oil and the filter.

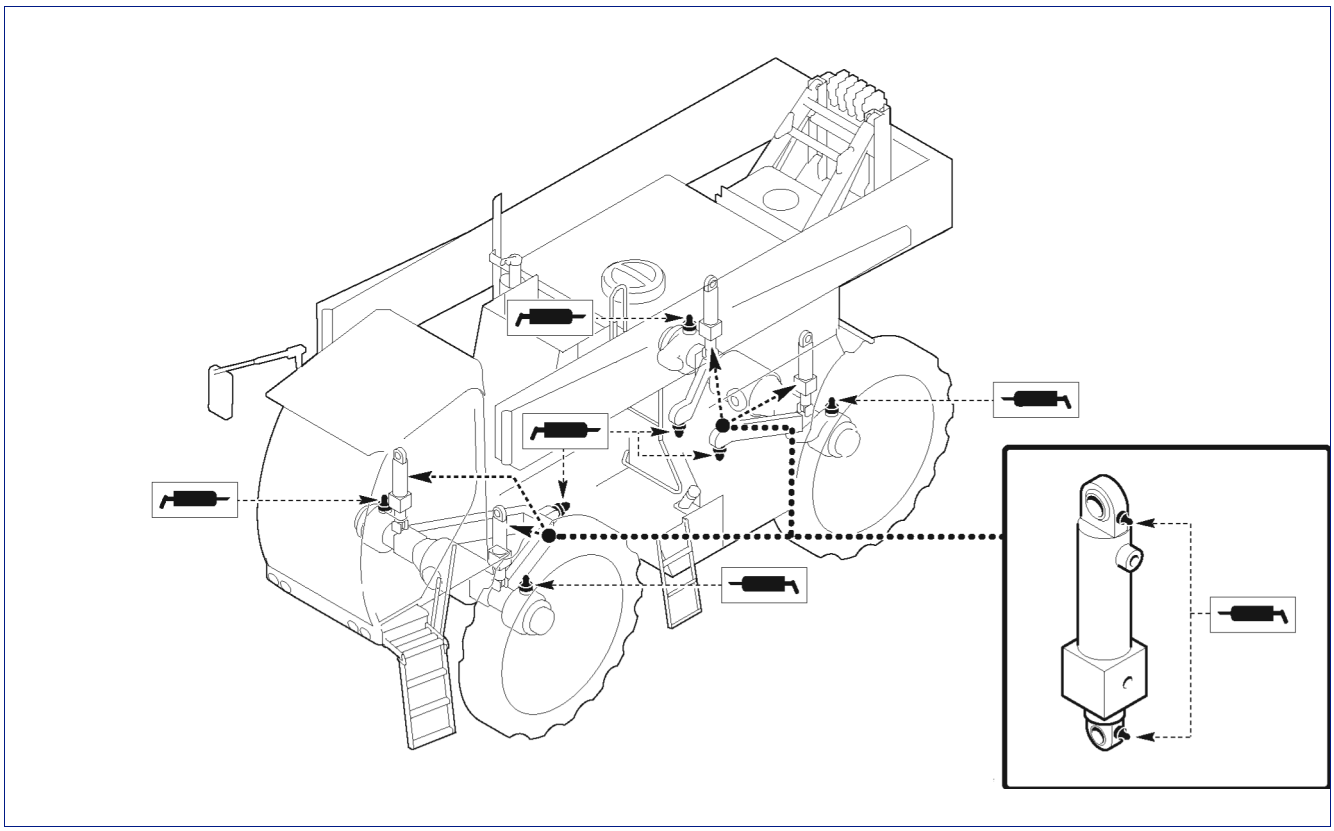
If the machine is provided with an air hose, change the filter **(B)** of the pump.

DIAGRAM OF LUBRICATING POINTS

Lubricate all greasing points and all sliding surfaces using waterproof grease, particularly after every high-pressure wash.

Important

To identify all the lubricating points of the operating units installed on the machine, see the relative leaflets.



OIL COMPARISON TABLE

Lubricant table

Manufacturer	Parts to lubricate	Quantity	
		Litres	Kg
AGIP-SIGMA TURBO 15W/40	Crankcase sump and filters	15	13,3
	Only crankcase	14	12,4
	AR 250-280 pump	2,6	2,3
	IMOVILLI P 246 pump	3,6	3,2
SHELL HV 46	Hydraulic system and oil tank	220	191
	Hydraulic oil tank	200	174
MP 80W-90	Front bridge	10	9
	Front right epicyclic reduction unit	1	0,9
	Front left epicyclic reduction unit	1	0,9
	Rear bridge	10	9
	Rear right epicyclic reduction unit	1	0,9
	Rear left epicyclic reduction unit	1	0,9
	Gearbox	2	1,8
AGIP-GR MU EP/2	Grease lubrication	-	-
SHELL SPIRAX A 85W 140 API GL-5	Swinging bridges (JC version)	20 (Front) 21,2 (Rear)	18 19,08
SHELL TRANSAXLE OIL 75W 90 API GL- 5	Gearbox (JC version)	3,5 (Rear)	3,15
ANTIFREEZE	Cooling liquid	-	-
API ATF DEXRON II D	Brake system	1	0,9

Hydraulic oil table

Manufacturer	Type
AGIP	ARNICA 46(1)
API	H S46
BP	ENERGOL SHF 46
CASTROL	HYSPIN AWH 46
ESSO	INVAROL EP 46
FIAT	AP 51
FINA	HYDRAN HW 46
IP	HYDRUS OIL H1 46
MOBIL	DTE 15
PERSIAN OIL	IDROL-T 46
ROL	LI 46 HIV
SHELL	TELLUS OIL T 46
SHELL	HV 46

(1) When the outdoor temperatures are high (in excess of 35° C), we recommend you replace the hydraulic oil with the “ARNICA 68” or corresponding oil type.

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Filter table

Type	Code	Quantity
Hydrostatic transmission pump filter	BB32336501	1
Oil filter tank	BG012015	1
Oil filter tank cartridge	BG017923	1
Hydraulic system filter	BG002934	1
Hydraulic system filter cartridge	BG003686	1
Engine oil filter	BG002921	1
Diesel filter	BB32313200	1
Air-assisted pump filter	BB32399001	1
Cab air filter	BG002979	1
Engine air filter	BB32399046	1
Engine air filter safety element	BB32399047	1

SHOCK ABSORBER CHECK (WITH A MANUAL PUMP)

Important

Carry out this operation with an empty tank and with the spraying bar retracted.

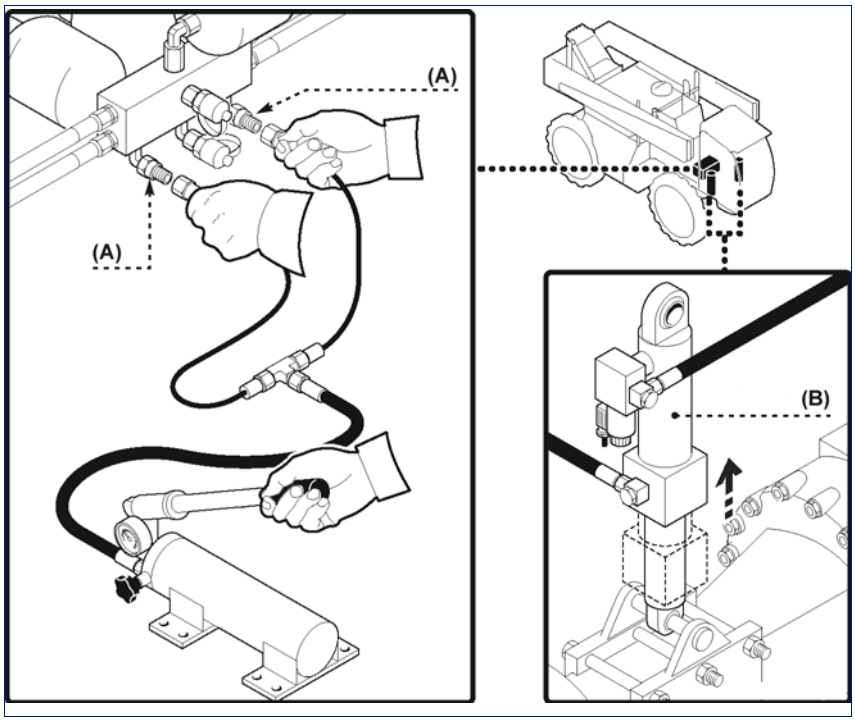
For this operation follow the procedure below.

1 - Connect the manual pump to the pressure taps **(A)** using the capillary hoses provided.

Caution - Warning

Screw the capillary hoses simultaneously to the pressure taps (A) to avoid any oil leaks.

2 - Inject hydraulic oil until the cylinders **(B)** are in the maximum extension position.

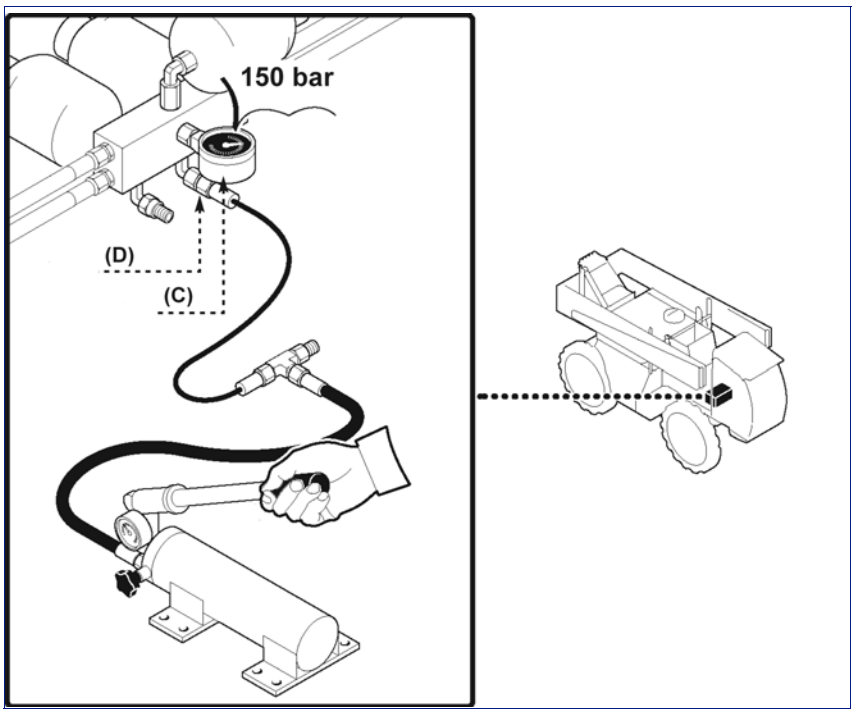


3 - Insert a pressure gauge **(C)** on the pressure tap.

4 - Connect the manual pump to pressure socket **(D)** by using the hoses supplied.

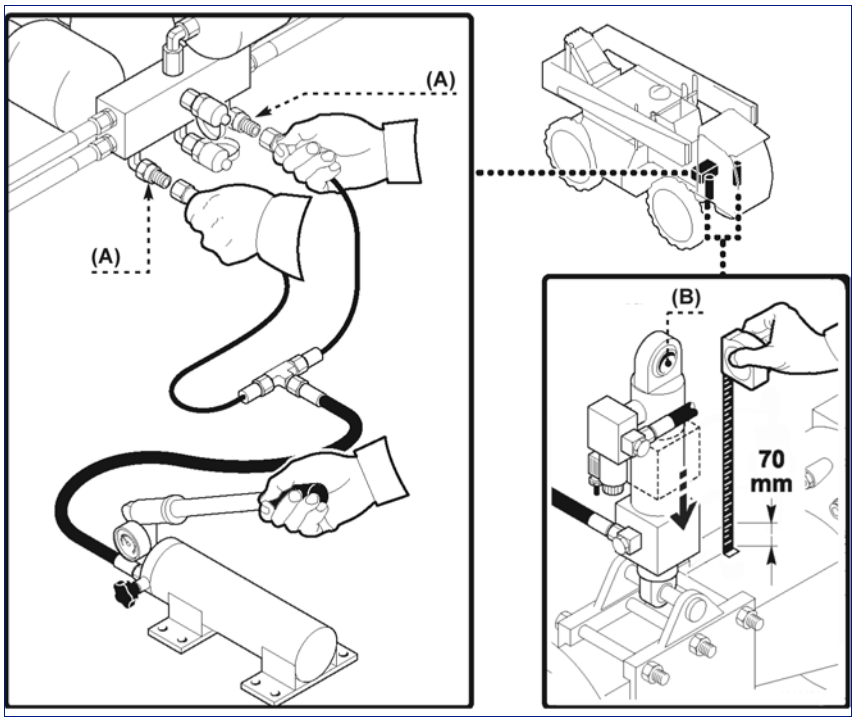
5 - If necessary, inject hydraulic oil until you reach a pressure of 150 bar.

6 - Disconnect the pump and remove the pressure gauge **(C)**.



7 - Discharge oil until a 70 mm space is left between axle and piston **(B)**.

8 - Disconnect the hoses and the pump when the operation is complete.



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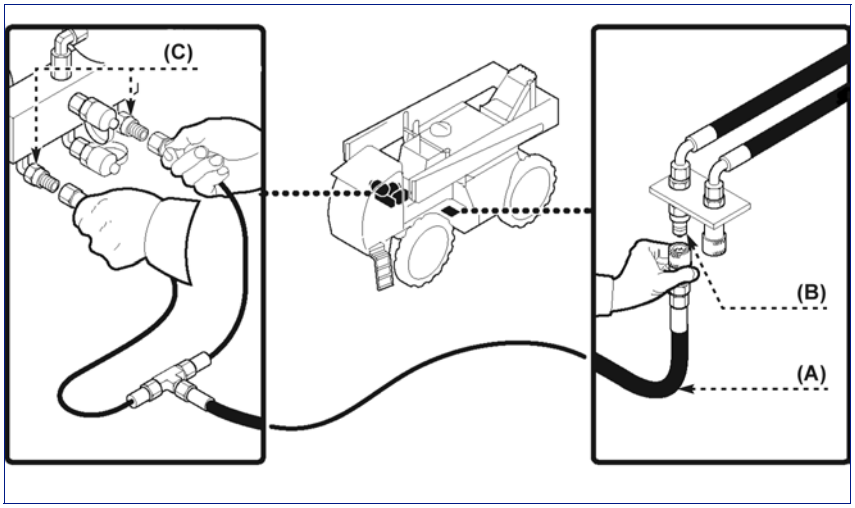
SHOCK ABSORBER CHECK (WITH THE MACHINE'S HYDRAULIC SYSTEM)

Carry out this operation with an empty tank and with the spraying bar retracted.

For this operation follow the procedure below.



1 - Connect the hose **(A)** provided to the fast attachment **(B)**, replacing the hose for the movement of the step ladder.

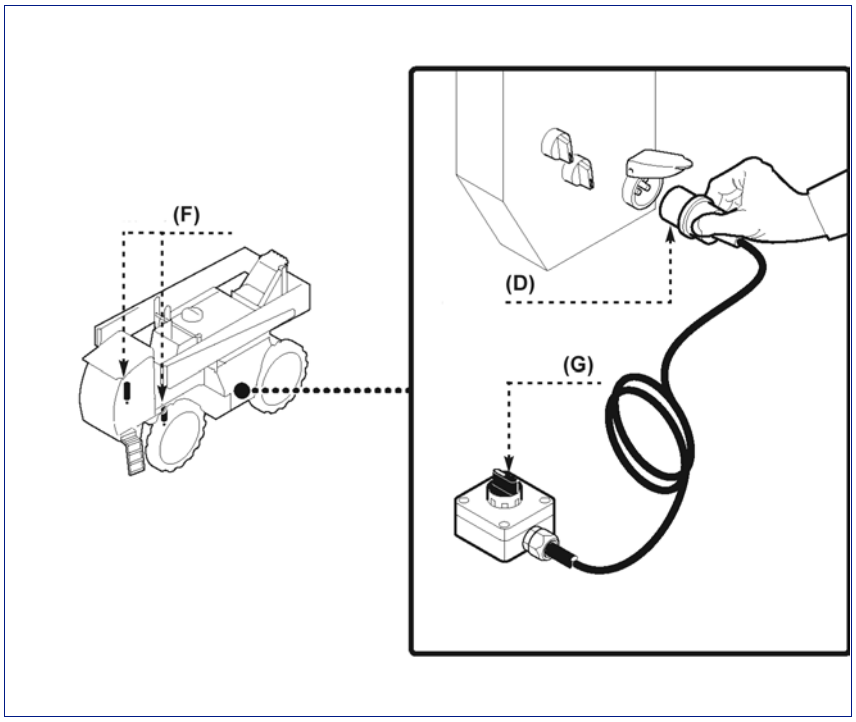
2 - Connect the hose **(A)** to the pressure tap **(C)** using the capillary hoses provided.

Caution - Warning

Screw the capillary hoses simultaneously to the pressure taps (C) to avoid any oil leaks.

3 - Connect the plug **(D)**.

4 - Use switch **(G)**, to inject hydraulic oil until the cylinders **(F)** are in the maximum extension position.

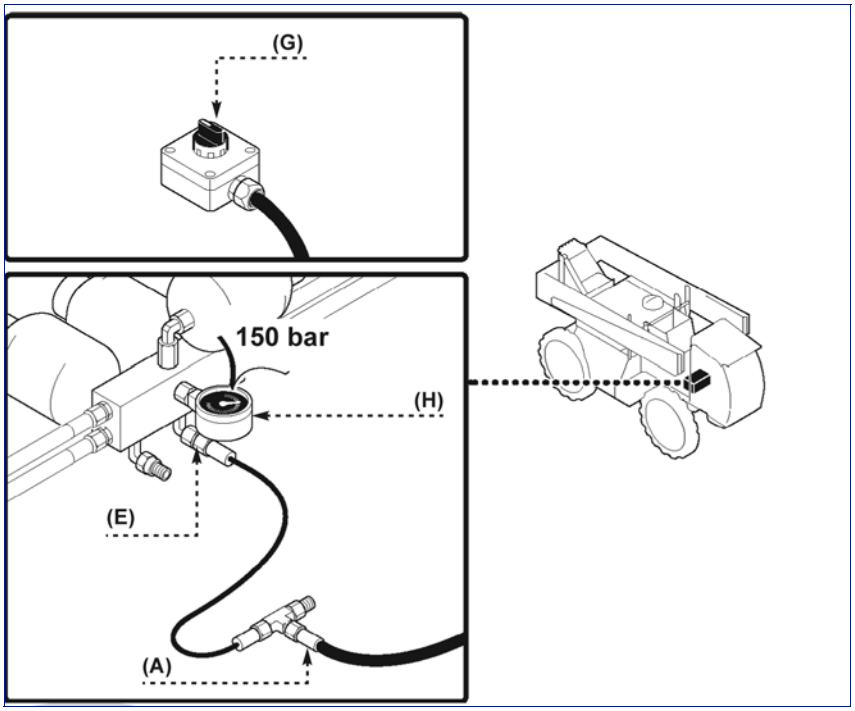


5 - Insert a pressure gauge **(H)** on the pressure tap.

6 - Connect the hose **(A)** to the pressure tap **(E)** using the capillary hoses provided.

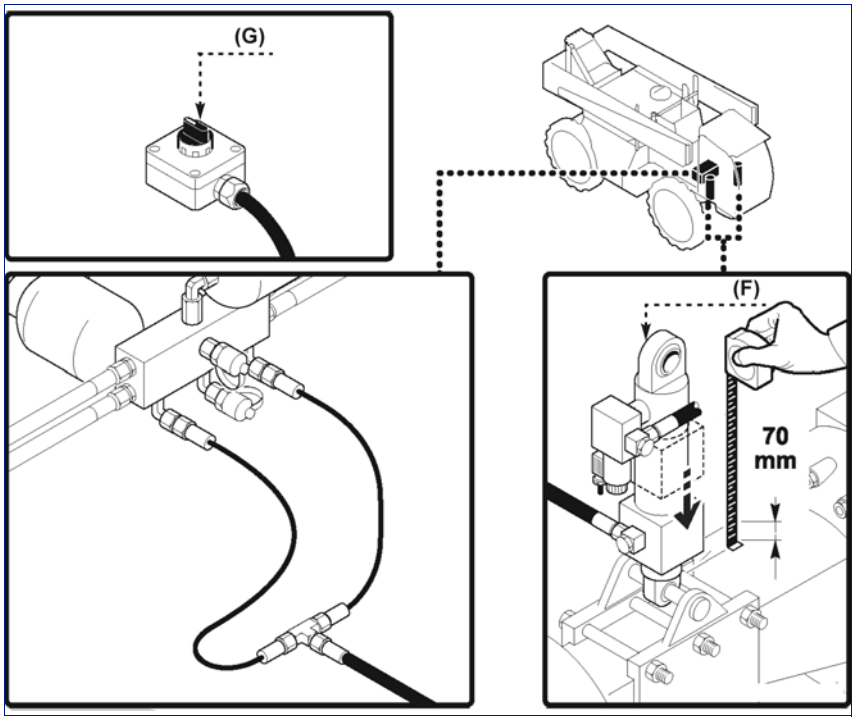
7 - Use switch **(G)**, to inject hydraulic oil until you reach a pressure of 150 bar.

8 - Disable and disconnect the hoses and the pressure gauge **(H)** when the operation has been completed.



9 - Operate switch **(G)** to discharge the hydraulic oil, until pistons **(F)** move downward up to 70 mm from the axle.

10- Disable and disconnect the hoses and the plug of the push-button panel once the operation has been completed.



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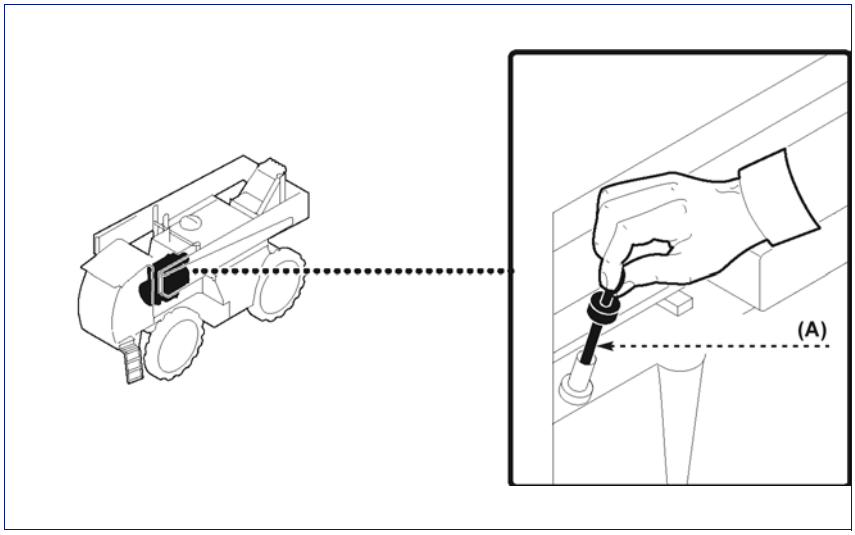
ENGINE OIL LEVEL CHECK

Pull out the dipstick **(A)** and check the oil level; if necessary, fill up.

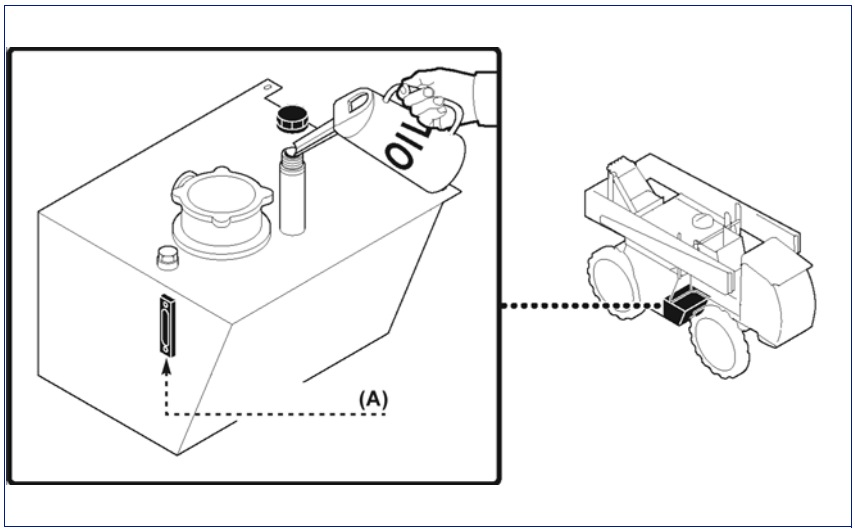


Important

This operation must be performed when the machine is perfectly level and the engine is cold.

HYDRAULIC OIL LEVEL CHECK

Check the oil level by means of the indicator **(A)** and re-fill, if necessary.

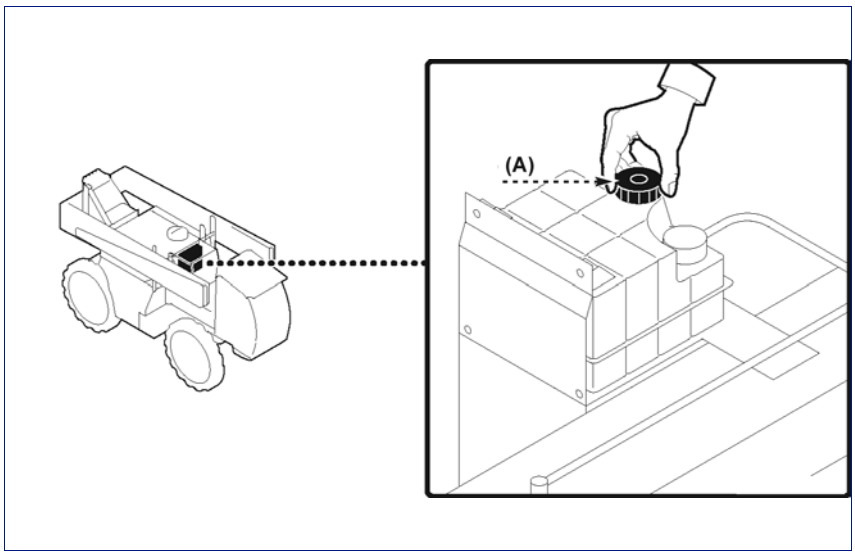


RADIATOR COOLING FLUID LEVEL CHECK

Important

The radiator must be maintained at the correct level with a mixture of water and anti-frost fluid for protection purposes. Check the concentration of the mixture with a suitable device at least once a year.

Unscrew the plug **(A)** to check the level of the fluid inside the radiator and, if necessary, fill it up.

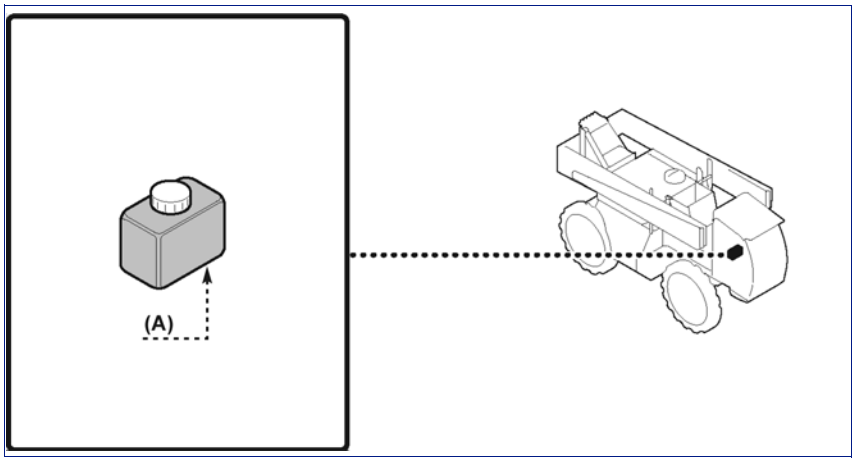


Danger - Warning

Do not open the radiator plug until the cooling fluid temperature is lower than 60°C.

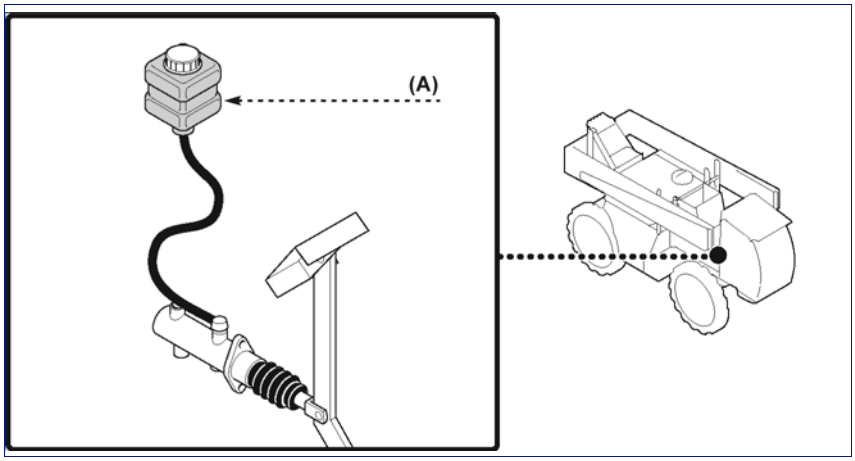
WINDSHIELD WIPER FLUID LEVEL CHECK

Regularly check, and if necessary top up the windshield wiper fluid in the tank **(A)**.



SERVICE BRAKE OIL LEVEL CHECK

Regularly check, and if necessary top up the oil level in the tank **(A)**.



CLEANING THE "RAPID CHECK" UNIT

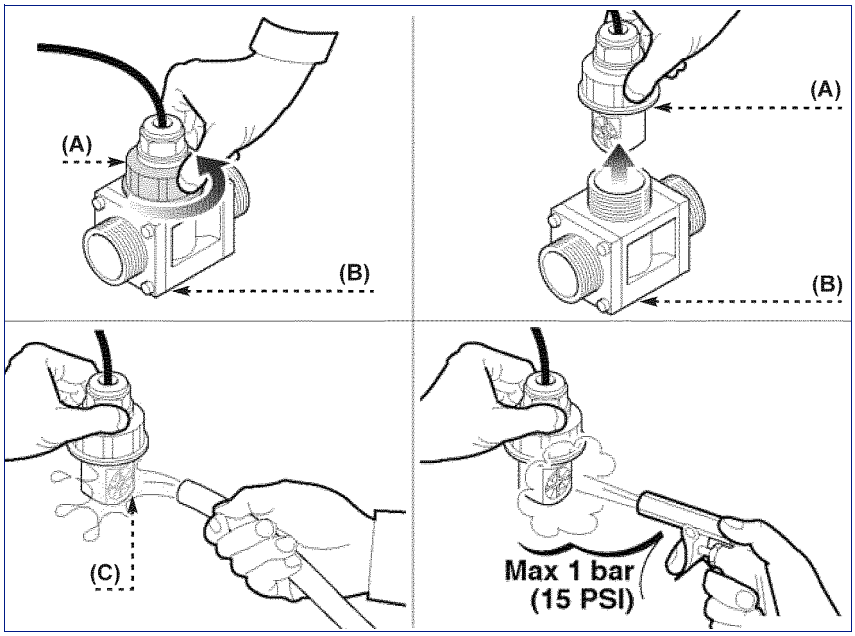
For this operation follow the procedure below.

1 - Unscrew the assembly that holds the "Rapid Check" unit **(A)** in the body **(B)**.

2 - Remove the "Rapid Check" **(A)** unit from the body **(B)**.

3 - Use clean water to wash any impurities out of the removable turbine unit **(C)**.

4 - Use compressed air to verify that the turbine unit rotates freely.



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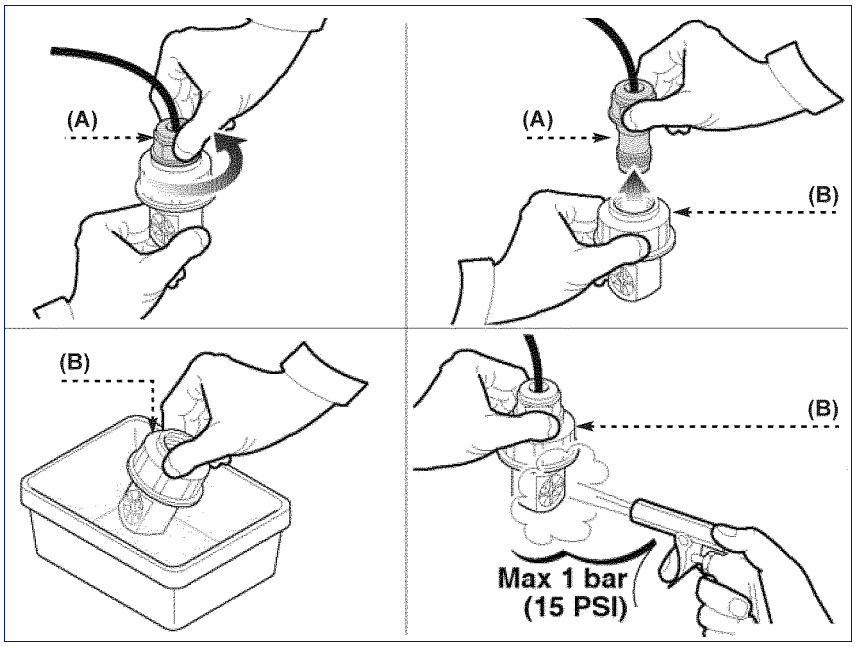
EXTRAORDINARY CLEANING “RAPID CHECK”

For this operation follow the procedure below.

1 - Unscrew the sensor **(A)**.
2 - Separate the sensor **(A)** from the “Rapid Check” unit **(B)**.
3 - Place the “Rapid Check” unit **(B)** in a detergent bath for a few hours.
4 - Remove the “Rapid Check” unit **(B)** from the detergent bath. Use compressed air to verify that the turbine unit rotates freely. If necessary, replace the Rapid Check unit with a new one.



Important

In the event of replacement, carry out the pulse adjustment of the new unit (see leaflet 13).

SPECIAL MAINTENANCE

Although the machine was designed and built to work in difficult environmental conditions, after a few years special maintenance must be carried out to preserve perfect efficiency and guarantee general safety.

All special maintenance must be carried out by specially-trained staff, in workshops which are adequately equipped.

The flexible hoses in the hydraulic system must be replaced every six years from the date of production. These components are subjected to stress due to ageing.

Caution - Warning

Before doing any welding, deactivate the connection device of batteries, and clean the spraying system of the machine.

Do not carry out welding near flammable material or electric/electronic components.

Important

Before carrying out special maintenance work on the machine, the tank must be completely drained.

TROUBLES, CAUSES, REMEDIES

The purpose of the following information is to identify and correct possible faults and malfunctions that may occur when using the machine.

Trouble	*Cause*	*Remedy*
	Faulty accumulators.	Replace the accumulators
	The shock absorber jacks are not adjusted correctly.	Adjust the shock absorber system
	Lack of oil in the shock absorber system.	Adjust the shock absorber system
The machine does not start.	Flat battery.	Replace battery.
	No fuel in the tank.	Fill it up.
	Fuel injection pump empty.	Fill the pump and eliminate the air from the fuel system.
	Lever for machine movement not calibrated correctly.	Reset the lever in neutral position “0”
The oil temperature exceeds normal values (70° C).	Filters dirty and clogged.	Clean or replace the filters.
	Heat exchanger clogged.	Clean the heat exchanger.
	Oil level is too low in the tank.	Add oil to the tank.
You can hear noise coming from the front shock absorbers.	Front jacks not adjusted correctly.	Adjust the front jacks
The rear shock absorbers do not self-adjust (only for machines with self-adjusting shock absorbers).	No voltage at the potentiometer.	Check the electrical connections.
	Faulty potentiometer.	Replace the potentiometer.
	Faulty solenoid valves.	Replace the solenoid valves

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Hydrostatic transmission system

Trouble	*Cause*	*Remedy*
	Faulty servo control.	Replace or repair the servo control.
Overheating of oil in the tank (over 80°C).	Oil level too low.	Add oil to the tank.
	Oil radiator clogged.	Clean the radiator.
	Unsuitable hydraulic oil.	Replace with suitable oil.
	Filter clogged or intake hose blocked.	Replace the filter and clean or replace the intake hose.
	Maximum pressure valves dirty or faulty.	Remove the maximum pressure valves and clean or replace them.
	Faulty pump or motors.	Replace the pump or the motors.
Noisy transmission.	Oil level too low.	Add oil to the tank.
	Air in the intake hose.	Eliminate the air in the hose.
	Faulty pump or motors.	Replace the pump or the motors.
Delay in motion in both directions.	Clogged filter.	Replace the filter.
	Air in the transmission.	Eliminate the air in the hose.
	Maximum pressure supply valve is dirty or faulty.	Replace or clean the valve.
	Throttle valve opening for the servo control is clogged.	Take down the servo control valve and clean the opening in the throttle valve.
	Faulty pump or motors.	Replace the pump or the motors.
The machine does not move forwards or backwards.	Too little oil in the tank.	Add oil to the tank.
	Faulty forward motion lever.	Replace the forward motion lever.
	Breakage of the coupling between the pump and the diesel engine.	Replace the coupling.
	Faulty pump or broken drive shaft.	Replace the pump or drive shaft.
	Filter clogged or intake hose blocked.	Replace the filter or the intake hose.
	Maximum pressure supply valve is dirty or faulty.	Replace or clean the valve.
	Faulty shutoff valve in the supply circuit.	Call for assistance.
	Internal damage to the pump or motors.	Replace the pump or the motors.
The machine does not have enough drive or does not move in one of the directions.	Maximum pressure valve for the given direction is faulty or dirty.	As a check, invert the maximum pressure valves. If the same problem occurs in the other direction, the valve is either dirty or faulty. In this case, clean or replace the valve.
	Faulty servo control.	Replace or repair the servo control.

Spraying pump and centrifugal pump system

Trouble	Cause	Remedy
	Maximum pressure valve on the solenoid valve block is clogged.	Loosen the valve by 4-5 turns and run the pump at 2000 rpm 3/4 times. Screw the valve back on to its original position.
	Pump is broken.	Replace the pump.
The product spraying pump and self-priming pump are not turning	Electrical connection is interrupted.	Check the electrical connection on the solenoid valve block.
	Faulty motors.	Replace motors.

Power steering system

Trouble	Cause	Remedy
	Faulty power steering.	Replace the power steering.
	Faulty valve on power steering input.	Replace the valve.
	Damaged pump.	Replace the pump.
The rear steering is not functioning.	Faulty solenoid valve block.	Replace the solenoid valve block.
		Check the electrical connections on the solenoid valve block.
	Faulty distribution unit.	Replace or repair the distribution unit.
		Check the distribution unit's electrical connections.

Bar lifting, balancing and suspension system

Trouble	Cause	Remedy
	Solenoid valve electrical system. There is no power supply to the general valve.	Check the wires in the cab controls and the connector above the solenoid valve.
	Solenoid valve electrical system. The general valve is functioning, but the one concerned is not.	Check the wires of the switch concerned in the cab and of the connector above the valve.
	Solenoid valve clogged.	Remove the solenoid valve and clean with compressed air.
		Replace the solenoid valve.

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Product spraying system

Trouble	*Cause*	*Remedy*
	Mixer operating cock turned towards the mixer.	Turn the cock in the opposite direction.
	Clogged intake filter.	Clean the filter.
	The general ON-OFF valve is not functioning.	Check the electrical connectors on the solenoid valves (contacts could be oxidised). Clean or replace the contacts.
	Clogged nozzles.	Disassemble the nozzles and clean them.
The machine is not spraying the product correctly (also see leaflet 13).	The flow meter is not functioning.	Disassemble the flow meter and replace the bearings with the kit provided.
		Check that the fan is not broken. Replace it.
		Check the sensor connector. Make sure that all the wires are connected.
	The odometer is not functioning.	Check the distance between the sensor and the magnet (5-6 mm) of the wheel hub.
		Replace the sensor.
	Clogged filters.	Clean the filters or replace them.
The pressure adjustment valve not functioning.	Valve clogged.	Remove the valve from the distribution unit, clean or replace it.
	5 A fuse is blown.	Replace the fuse.
	Motor valve is burned out.	Replace the valve.

DETAILS ON THE REPLACEMENT OF PARTS

INSTRUCTIONS FOR PART REPLACEMENT

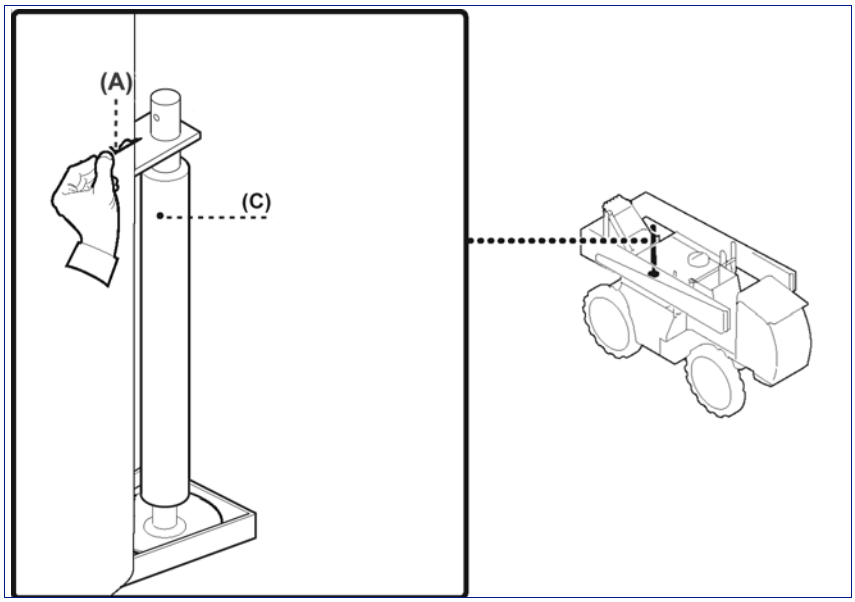
Before carrying out any maintenance work, enable all the safety devices and consider whether it may be necessary to provide appropriate information to the operators and the staff working on or near the machine. In particular, provide proper signs in the areas surrounding the machine and do not allow anyone to access any devices that, when activated, may cause unexpected dangerous conditions, resulting in damages to personal safety and health.

If worn components must be replaced, only use original spare parts. The manufacturer will not be liable for damages to persons or components resulting from all use of non-original spare parts and special interventions that could modify the safety requirements, which have not been approved by the manufacturer himself.
To order components, refer to the indications given in the spare parts catalogue.

TYRE REPLACEMENT

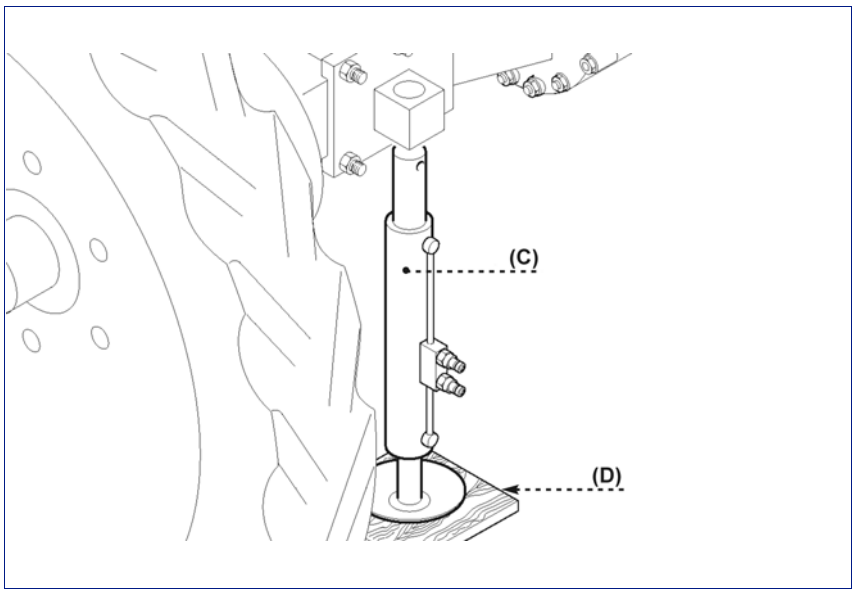
For this operation follow the procedure below.

1 - Extract splint pin **(B)** to remove supplied lifting cylinder **(C)**.



2 - Insert the lifting cylinder **(C)** in the housing provided to lift the tyre which needs to be replaced.

3 - Insert a support plate **(D)** to guarantee a surface which is large enough to support the lifting cylinder **(C)**.



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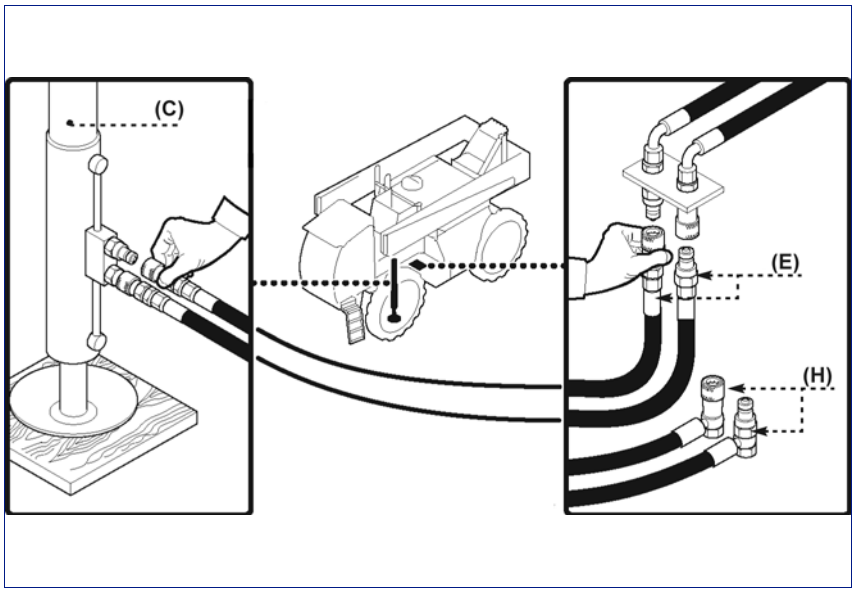
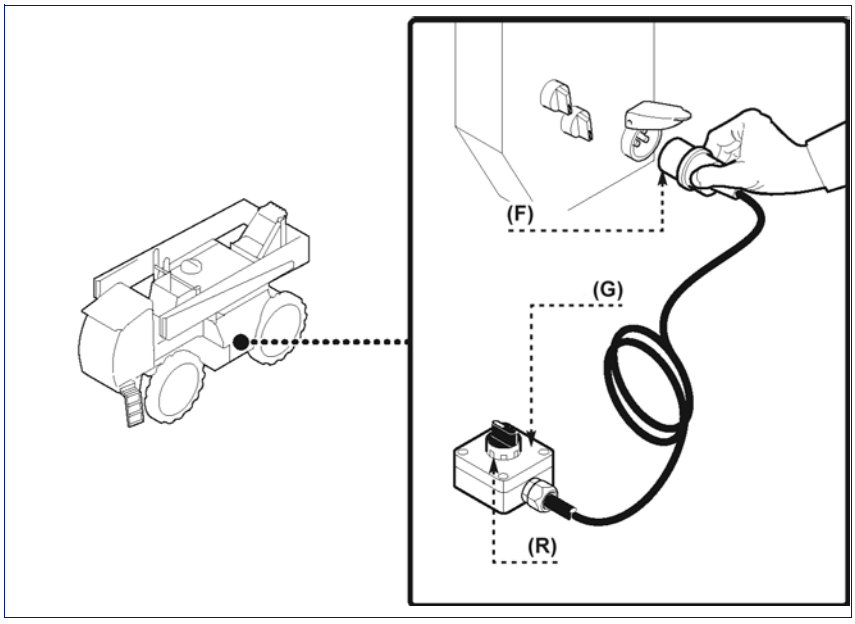
4 - Disconnect hoses **(H)** for ladder control.

5 - Connect the hoses **(E)** on the lifting cylinder **(C)** and on the points of attachment on the machine.

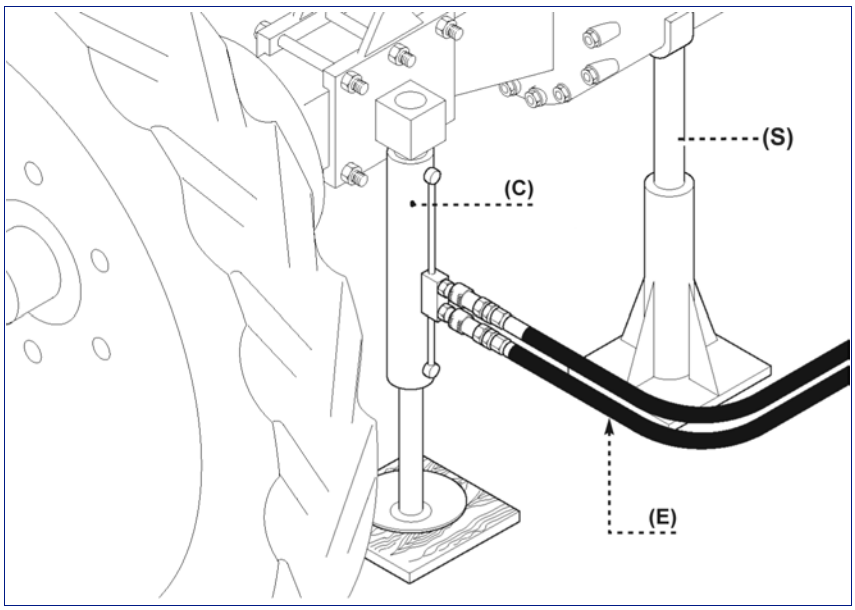


6 - Insert the plug **(F)** to enable the control electrically **(G)**.

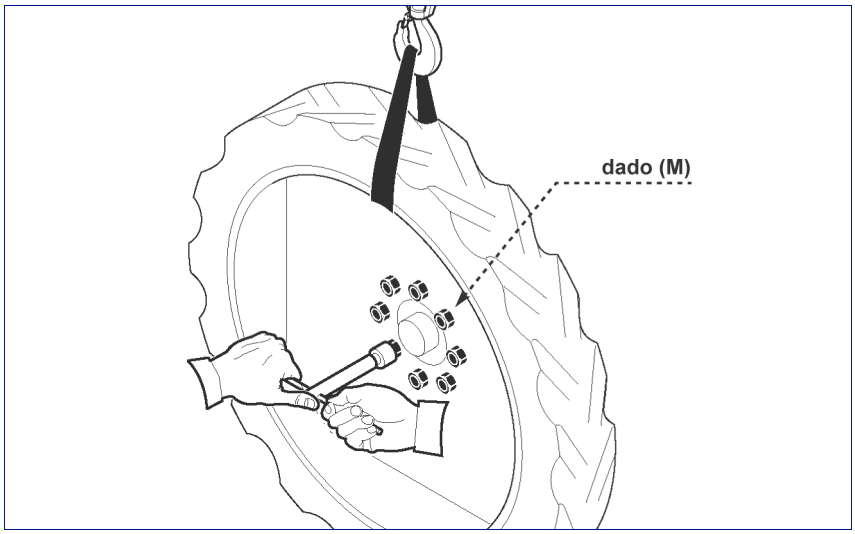
7 - Use switch **(P)** to lift the wheel above the ground



8 - Insert the support **(L)** to ensure that the wheel remains off the ground.



9 - Unscrew the nuts **(M)** that secure the wheel to remove it and change the tyre.
10- Put the wheel back on and secure it with the nuts.
11- Press the switch **(P)**,to lift the axle and remove the support **(L)**.
12- Use switch **(P)**, until the machine has been lowered completely.
13- Close the lifting cylinder completely **(C)** and remove it from the support once the operation has been completed.
14- Disconnect the hoses **(E)** and the plug of the control **(G)**.
15- Put the lifting cylinder back in its place.



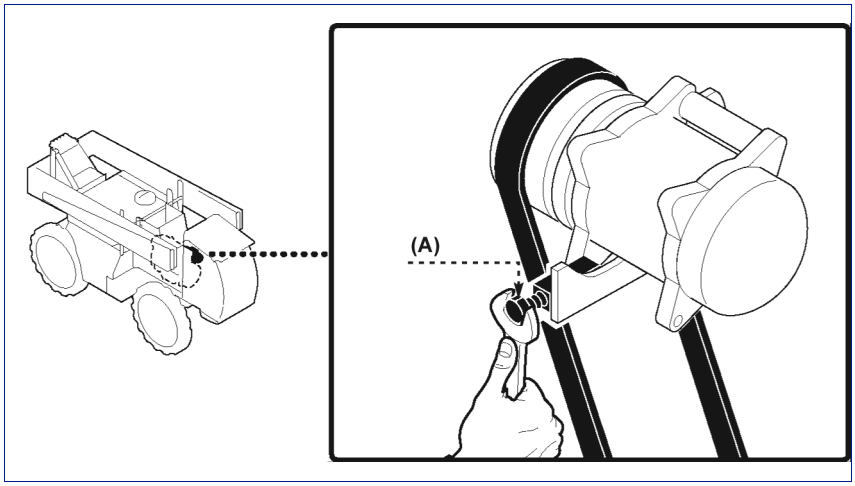
AIR CONDITIONING COMPRESSOR BELT REPLACEMENT

For this operation follow the procedure below.

1 - Turn the screw **(A)** to loosen the belt.

2 - Remove and change the belt.

3 - Adjust the belt tension (see page 32).

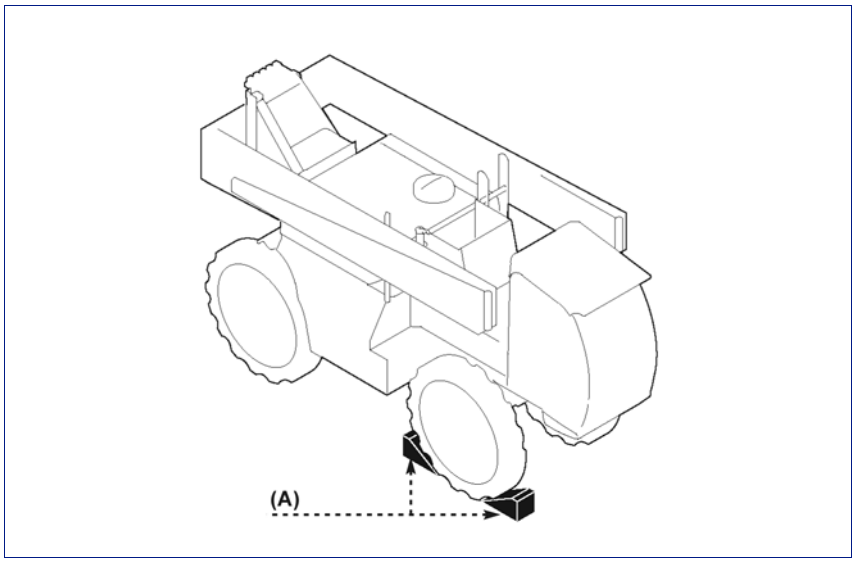


ACCUMULATOR REPLACEMENT

For this operation follow the procedure below.

1 - Place two safety wedges **(A)** as shown in the figure.

2 - Drain the hydraulic oil from the shock absorbers using a manual pump or by connecting to the lifting system of the machine (see page 29).



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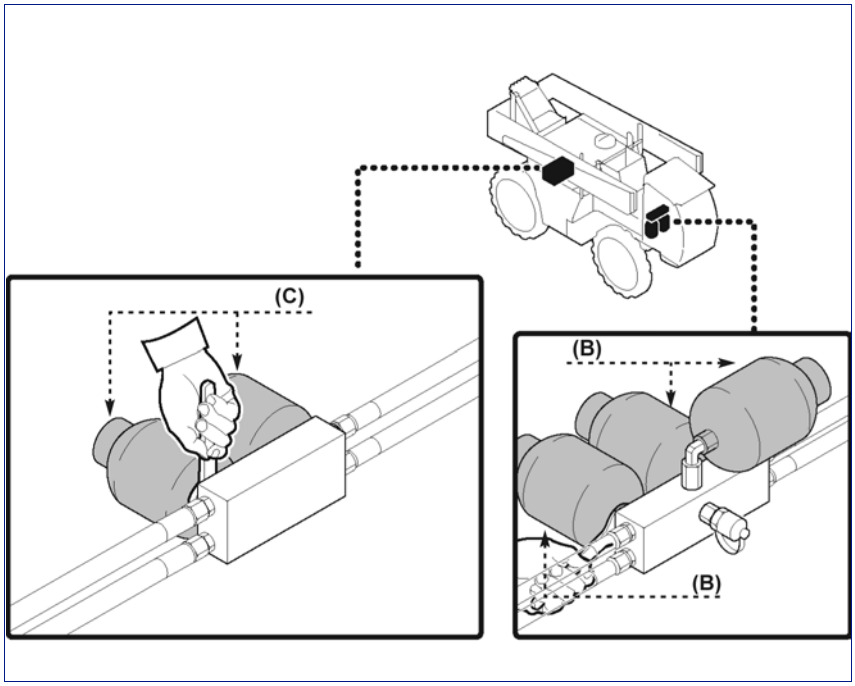
3 - Remove accumulators **(B)**.

4 - Replace the accumulators - either new or repaired - and fill the shock absorber system (see page 29).

Danger - Warning

Do not tamper with the accumulators. They are pressurised containers and can be regenerated by authorised personnel only.



HYDRAULIC SYSTEM OIL CHANGE

For this operation follow the procedure below.

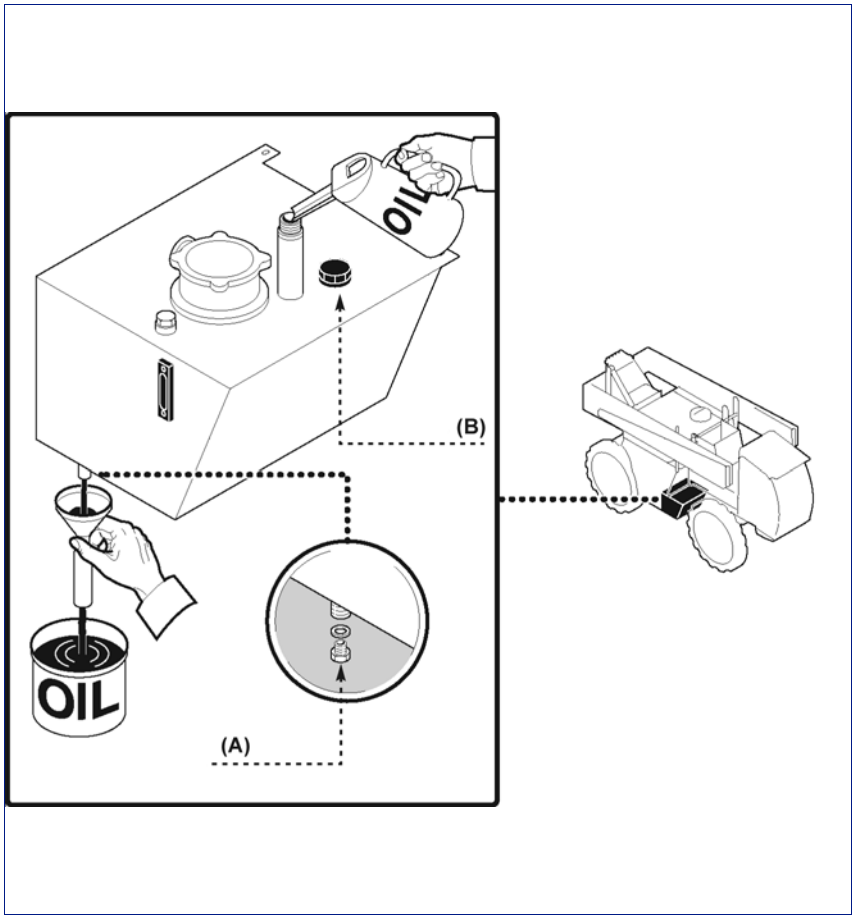
1 - Prepare a container with suitable capacity.

2 - Unscrew the drain plug **(A)** and drain the oil in the container completely.

3 - Screw the drain plug back on.

4 - Introduce the new oil through the load plug up to the correct level displayed on the indicator.

5 - Retighten the filler plug **(B)** and check for leaks.

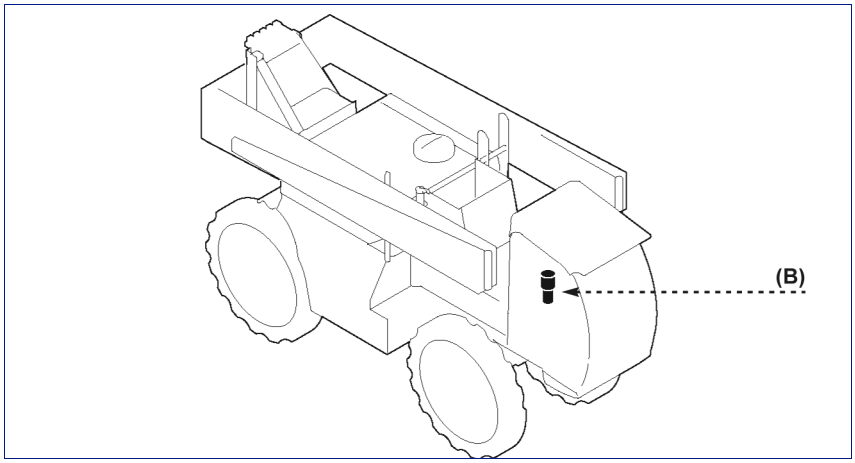


HYDRAULIC SYSTEM CARTRIDGE REPLACEMENT

For this operation follow the procedure below.

1 - Prepare a container for possible leakage.

2 - Take down the filters **(B)**, change the cartridges and replace the filters with the screws.



CAB FILTER REPLACEMENT

For this operation follow the procedure below.

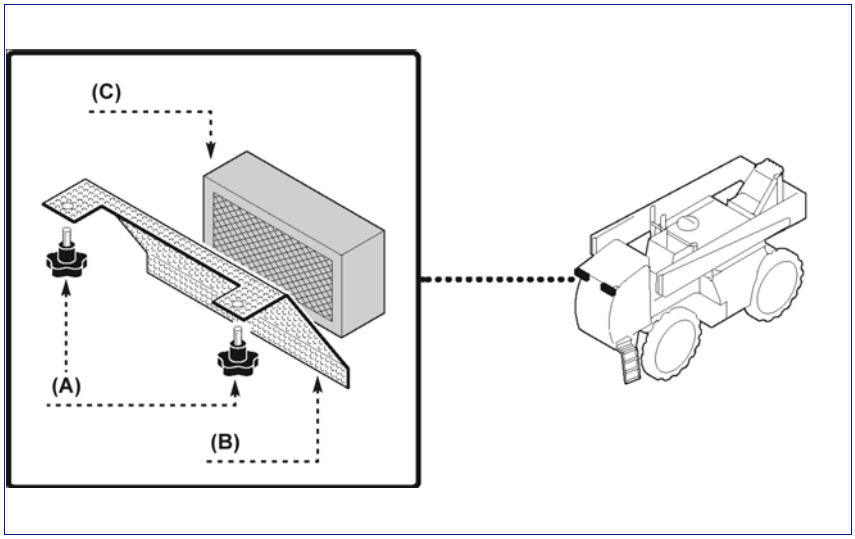
1 - Loosen knobs **(A)** and remove guard.

2 - Remove and replace the filter **(C)**.

3 - Replace the guard **(B)**.

Important

Check the gasket seal and replace the filter in the presence of toxic od ours.



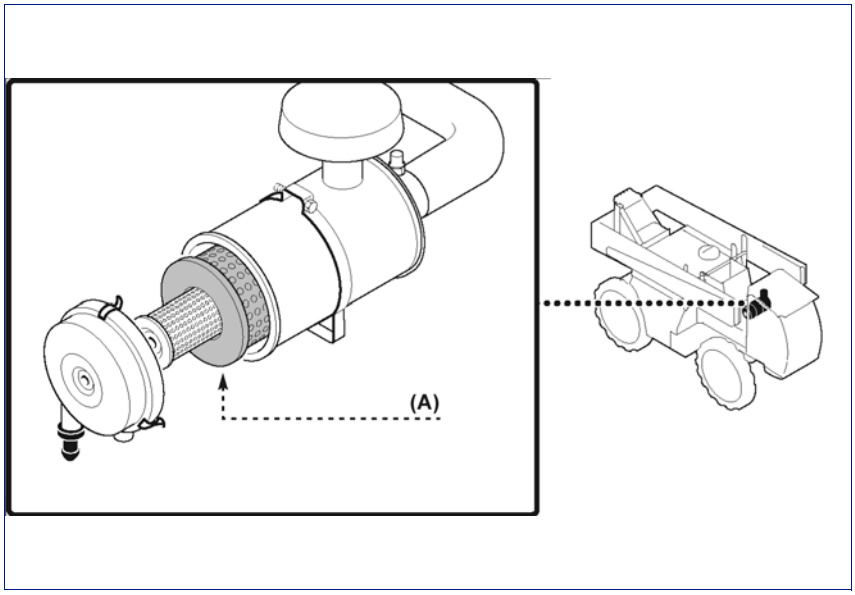
ENGINE AIR FILTER REPLACEMENT

For this operation follow the procedure below.

1 - Remove the cartridge **(A)**.

2 - Clean the container and the drain valve.

3 - Install a new cartridge, paying attention not to damage the seal gasket.



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MACHINE DISPOSAL

Important

This operation must be made by expert operators, in the respect of safety norms on work and waste disposal. In order to avoid any injury to operators and the people nearby, do not leave the tools unattended in the working areas. Before gibing the tools to the autorised personnel (waste collects or dischargers), it is absolutely necessary to deposit the tools in zones closed to no-authorised personnel. Do not throw away non-biodegradable products, such as lubricant oils, batteries and non-iron components (foam, PVC, resins etc.). These products must be disposed in the respect of environment protection laws. In particular, deliver the used oils and batteries only to authorised collectors.

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