IMPORTANT

This manual is an integral part of the machine and it must always come with it in case of sale and until it is dismantled.

GRIMPEUR-J MC _ GRIMPEUR-J JC

user manual ENGLISH

Serial number	Edition
	11 - 2014

INDEX

GENERAL AND SAFETY INFORMATION	Booklet **1**
SELF PROPELLED SPRAYERS	Booklet **2**

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GENERAL AND SAFETY INFORMATION

user manual

Serial number

Edition 4
09 - 2013

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PURPOSE OF THE MANUAL

The current manual is part of the machine and has been supplied by the manufacturer as an essential guide to those who will be involved with the machinery during its working life.

Any supplements added by the manufacturer must be stored with the manual and considered as an integral part of the same manual.

The instructions in this manual are for professional users, who must be aware of the machine modes of use and must be authorised and properly trained.

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.

In the event that supplementary information to the actual machine set up is found in this manual it will not interfere with reading.

Please keep it in a safe, easily accessible place so that it will be handy for reference when required.

In case of transfer or sale of the machine, this manual must always come with it. If the manual is damaged or lost, please request a copy to the machine manufacturer or to the previous owner. The machine is an integral part of the machine.

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.

Danger - Warning

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

Caution - Warning

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

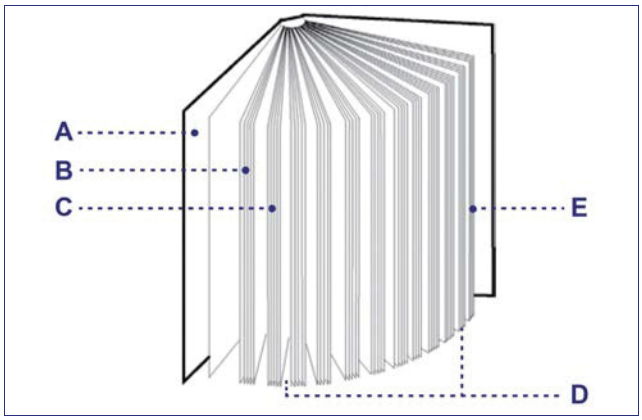
This instruction manual, barring any differences which do not affect the correctness of the information, consists only of the leaflets concerning the machine in question and the operating units which make it up. The illustration below shows the manual layout.

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.

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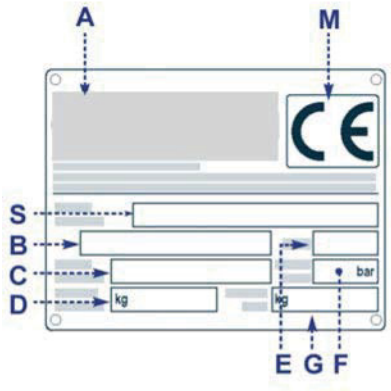
MANUFACTURER AND MACHINE IDENTIFICATION

The ID plates shown are applied directly onto the machine.

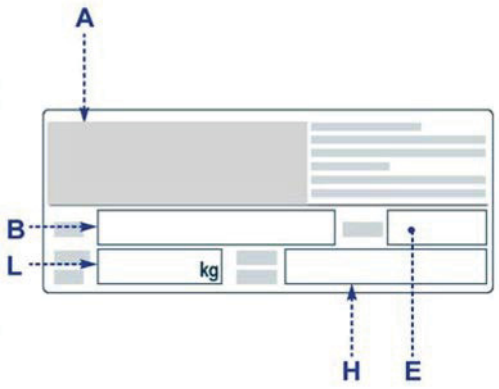
It details references and all important operational safety requirements.

"CE" plates

Machine plates

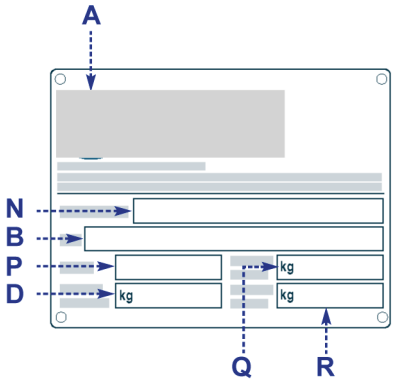


Component plate

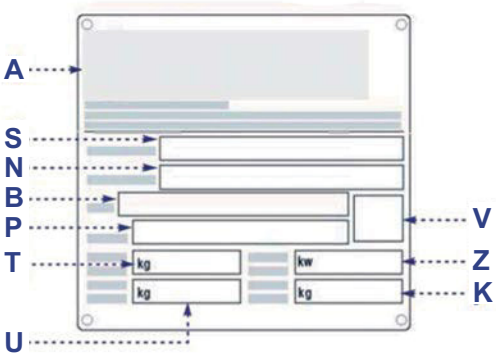


Homologation plates

Trailer and unit plates



Self-propelled plate



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A) Manufacturer ID.
B) Model
C) Identification number
D) Total weight of the maximum configuration
E) Year of manufacture
F) Water system maximum pressure (bar)
G) Empty weight in the maximum configuration (Kg).
H) Manufacturing order number
K) Rear axle maximum mass (kg).
L) Total weight (kg)
M) EC conformity mark.
N) Homologation number
P) Frame number.
Q) Eyelet maximum mass (kg).
R) Axle maximum mass (kg).
S) Assignment
T) Overall maximum mass (kg).
U) Front axle maximum mass (kg).
V) Smoke grade index
Z) Total power

SERVICE PROCEDURE

Please refer to the Manufacturer's service centres for any need.

Important

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, gearboxes, etc.).
- Warranty.
- Nozzle table
- If provided for by Machine Directive 2006/42/EC, the CE Declaration of Conformity is supplied with this manual.

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.

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.

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

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

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.

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.

Road transport is allowed ONLY to approved equipment and to tractor drivers who have the necessary requirements according to 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.

OPERATION AND USE REGULATIONS

The operator must be familiar with the use of the machine and be suitably qualified and experienced for this type of task.

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.

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 damaging the environment.

Any chemical residue must be disposed of in accordance with the applicable waste disposal regulations in force.

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.

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

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.

When maintenance operations involve the access to machine parts that cannot be accessed from the ground, and in any case to positions that are higher than 1.50 m from the ground, use a ladder or platform complying with the regulations in force;

The maximum pressure of the compressed air used in the blowing and cleaning operations must amount to 2 bar. When performing operations with compressed air, protect you eyes with suitable safety goggles with side shields and a mask in order to avoid any personal injury caused by dust particles. The cleaning operations should be performed in ventilated areas;

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.

The hoses and pipes of the hydraulic system must be replaced periodically; the replacement interval depends on the maintenance status of the machine. In any case it shall not exceed 6 years;

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.

Disposal must be carried out in compliance with the regulations in force.

Avoid prolonged and repeated skin contacts with fuel, lubricants and liquids as these might cause skin irritation and other problems.

When performing the cleaning operations and when replacing the filters, make sure that the area is properly ventilated in order to prevent the accumulation of toxic vapours.

Do not weld in closed or non suitably ventilated areas.

Do not weld on painted surfaces or close to them in order to avoid the development of toxic vapours. Remove the paint with suitable products, wash the surfaces and let them dry.

Do not perform welding without having previously emptied and cleaned the spraying circuit and disconnecting the battery.

Pay special attention before removing the caps and covers from tanks, radiators or cylinders: rotate them carefully in order to discharge any possible residual pressure.

When discharging the pressure, keep away from the machine and always wear safety goggles. Slowly loosen the discharge screw by a few turns in order to allow the condensate or fluid to come out.

Discharge the pressure from the circuits before performing any operation.

Never use your hands to find out leaks of fluids under pressure.

The leaks of fluids under pressure can penetrate skin and eyes with extremely serious consequences.

Check every day the condition of pipes and fittings and if they show clear signs of wear (cracking, cuts, etc.) or mechanical damage (buckling or flattening), replace them immediately.

Check periodically the tightening of the bolts and nuts.

Before repairing the tank, clean and empty the spraying circuit.

Always keep the nozzles in good conditions and check periodically that they are free from cracks, obstructions and wear.

FIRE PREVENTION MEASURES

The machine is largely made up of materials obtained from oil. Moreover, the presence of different types of oil and of residues of chemical products makes these materials potentially flammable.

Keep a fire extinguisher with a suitable capacity on the tractor or machine and charge it periodically. Hand-held fire extinguishers can be used only by authorised personnel.

- The personnel using the vehicle should be trained on how to behave in the event of fire.
- All fuels and most lubricants and hydraulic fluids are flammable.
- Never use petrol additives and other flammable or toxic fluids to clean the mechanical parts. Use instead commercial approved additives that are non-flammable and non-toxic.
- Do not perform welding next to piping, tanks, electric cables and all types of flammable materials.
- If welding is to be performed, protect the flammable parts with shields.
- Clean the machine completely at least once a week when the machine is in use.

PLANT PROTECTION PRODUCTS

Spraying is a delicate operation and involves the risk of contamination of people, animals and the environment. For this reason the functionality of all machine components must be carefully ensured.

- The operator is always the most exposed person to the used chemical products and he/she must always adopt all the necessary measures for his/her personal safety at work. Refer to the danger indications on the labels of the products used.
- Always work in the correct weather conditions and follow the weather forecasts for the entire period of application.
- Dose the product to be poured into the tank correctly.
- Make sure that the chemical substances used are compatible with the construction materials of the machine.
- Never leave chemical substances on the tank for more than a few hours.
- Carefully follow the regulations concerning the possession and use of plant protection products and make sure that people and animals cannot access them.
- After each use carefully wash the containers of the mix and the dosing tools that have been used.
- Do not use the machine without hand washing tank or if it is not full.
- The machine should be cleaned in the same place where it is filled, i.e. an area where the water can be collected in a disposal manhole.
- Do not discharge the mixing residues to the watercourses, sewers and public areas.

GUIDELINES FOR ENVIRONMENTAL SAFETY

Each organisation is responsible for applying procedures that must be identified and evaluated and is to check the effect their activities (products, services, etc.) have on the environment.

The procedures to carry out to identify significant environmental impacts must take the following factors into consideration:

– Emissions to the atmosphere
– Liquid discharge
– Waste management
– Soil contamination
– Use of raw materials and natural resources
– Local problems concerning the environmental impact

For this purpose the manufacturer has provided some indications below, that must be taken into account by all of those that, for any reason, work with the machine during its lifespan.

- All packaging components must be disposed of in accordance with the laws of the country where the disposal is made.
- During installation, make sure that there are sufficient changes in the ambient air to prevent concentrations that of air that is harmful for the operators.
- During operating and maintenance do not dispose of pollutants (oils, greases, etc.) into the environment, and dispose of the various products separately in compliance with current laws in this regard.
- When decommissioning the machine separate all the components according to their characteristics and dispose of them separately.

Security for the disposal of Waste Electrical and Electronic Equipment (WEEE Directive 2002/96)

Important

Do not scatter polluting materials in the environment, dispose of the same in compliance with current regulations on the matter.

In terms of the EEEW (Electrical and Electronic Equipment Waste) directive, when scrapping, the user is to separate the electrical and electronic components and dispose of them via authorised collection centres, or they must hand them over, still installed, to the seller when making a new purchase.

All the machines, which must be disposed of according to the WEEE Directive 2002/96, are marked by an appropriate symbol.

The illegal disposal of Waste Electrical and Electronic Equipment shall be punished with sanctions governed by the laws applicable in the territory where the infringement is ascertained.

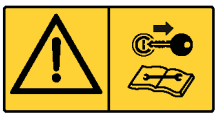
Important

Electrical and Electronic waste may contain hazardous substances that may potentially be harmful to the environment and the health of people. We urge you to dispose of it in the correct manner.

SAFETY AND INFORMATION MARKINGS

Some of the following signals are placed on the machine, 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: before inserting the cardan shaft check the direction of rotation and make sure the max. rpm doesn't exceed the indicated value.

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

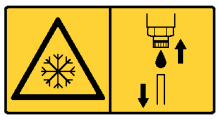
Danger to people walking through: make sure there are no unauthorised people in the machine's operating range.

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.

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Danger of trapping and dragging: do not put your upper limbs in mechanisms with moving parts.

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

Danger of crushing upper limbs: do not access this area while parts are moving.

Danger of crushing upper limbs: be careful during tractor height adjuster hitching.

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.

Gloves must be worn: to protect hands from abrasions.

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

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.

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

Height adjustment signal: this indicates the height adjustment points when using a fork-lifting device.

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

SELF PROPELLED SPRAYERS

user manual

Serial number

Edition 2
07 - 2014

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IMPORTANT SAFETY NOTE

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

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TECHNICAL INFORMATION

EQUIPMENT GENERAL DESCRIPTION

The 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.

Danger - Warning

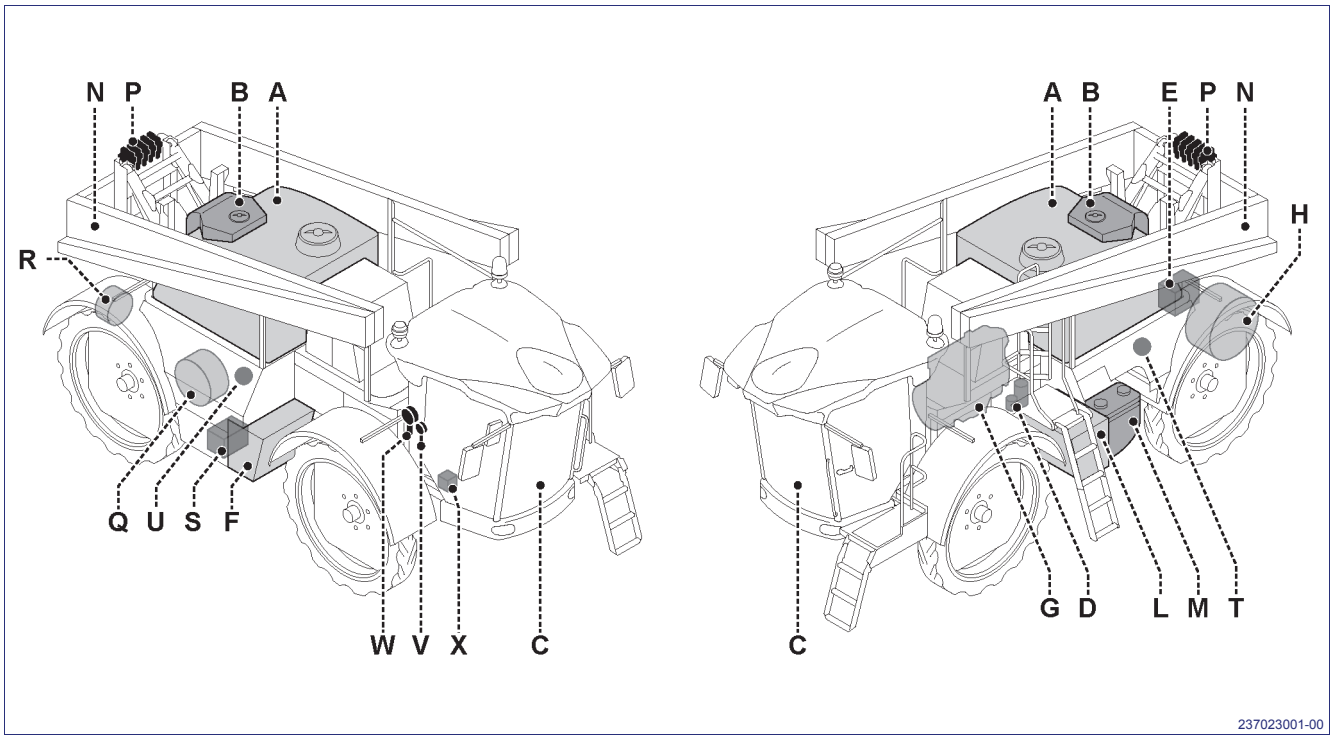
Each machine use that is different from those described above is to be considered forbidden and dangerous.

In order to protect the driver against contamination and ensure proper working conditions, the cab is sound-proofed and pressurised.

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 driver position. It includes all controls and accessories (windscreen wipers, rear view mirrors, lamps, etc.), an is soundproofed and pressurised, with non-reflection glass and A/C.
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
X) Tank: to store the oil for the pedal service brake



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 39).
B) Steering wheel and controls; adjustable to provide the appropriate ergonomic conditions for the operator (see page 38).
C) Cab controls; to enable the service devices and interior cab light (see page 62).
D) Controls for use and forward motion; to enable all the operating functions of the machine (see page 56).
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.
G) Speed sensor: detects the vehicle's speed.
H) Document container: for the use and maintenance manual and for the document showing the name of the plant protection product contained in the tank
L) Four steering wheels pedal-operated switch: it activates the automatic mode of the four steering wheels (optional).
M) Water system control unit pedal-operated switch
N) Differential lock pedal-operated switch
P) Passenger seat.

Important

The passenger seat can only be occupied by an expert instructor during the operator training phase, for instructing the latter on the vehicle's use. Any other use is forbidden.

Important

The cabin is approved for a single operator on board, therefore, it is forbidden to transport persons, objects or animals inside the cabin.

Q) GPS antenna.
R) Refrigerated compartment: for keeping chilled drinks and food.
S) Pressuriser: maintains a cab overpressure of 20 Pa and a minimum flow of fresh air of 30 m3/h.
T) A/C system: controls the cab temperature (see page 62).
U) Sun shade.
V) Service brake pedal: to brake the machine.>

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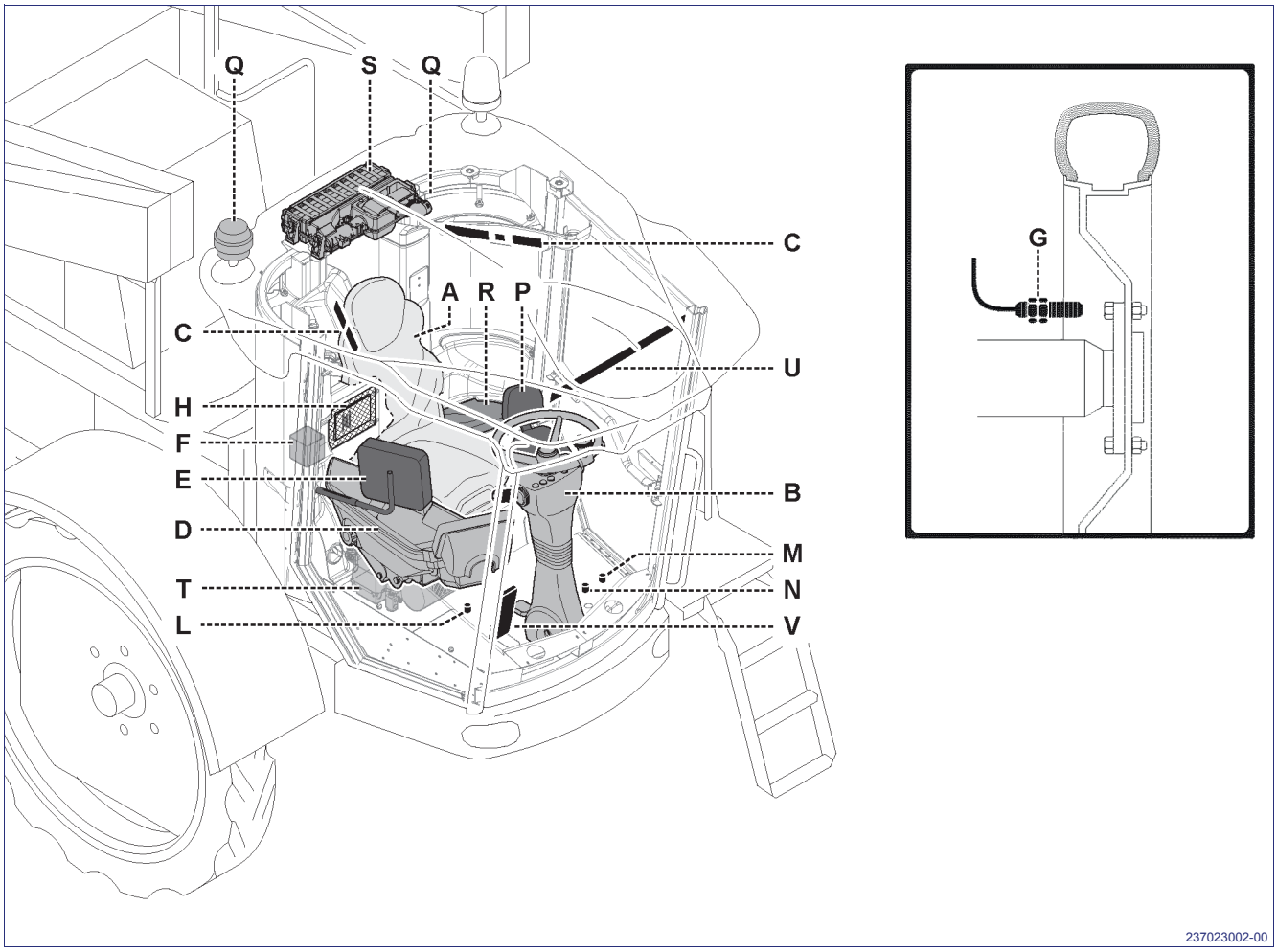
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OPERATING PRINCIPLE

The main steps of the operating principle are indicated below.

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

Important

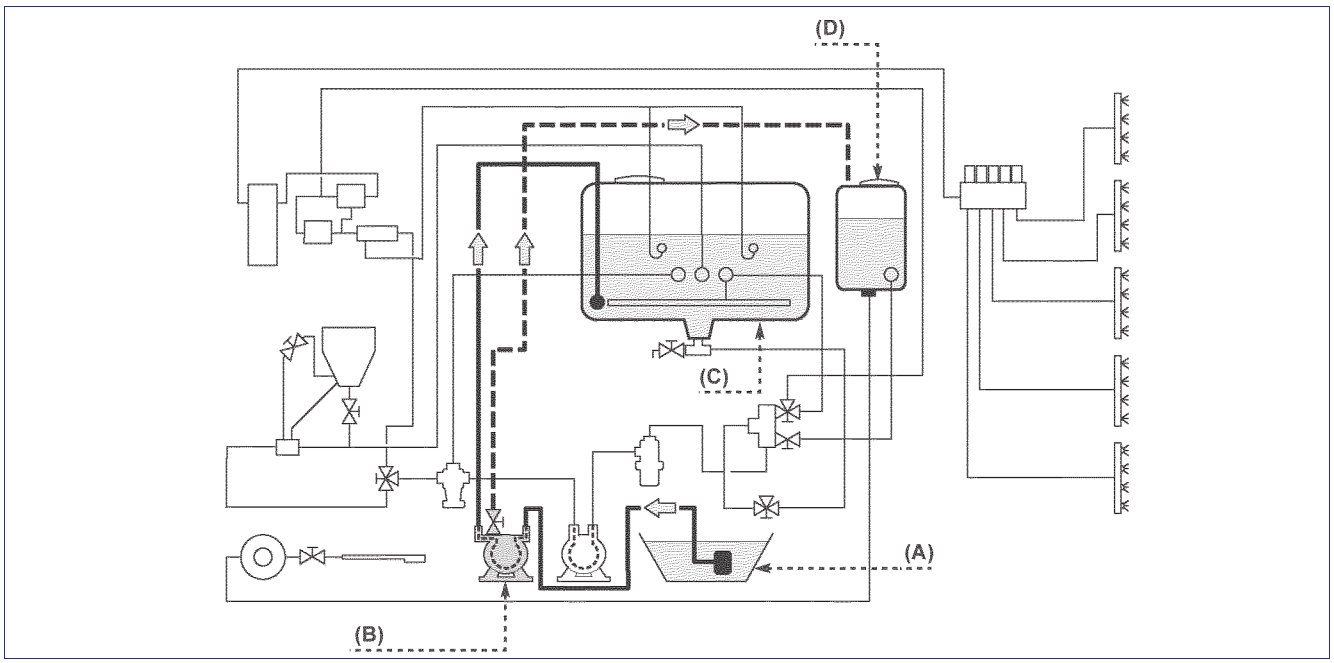
The figures represent the operating principle. For further details, consult the specific diagram of the system for the machine you own.

I) Tank filling

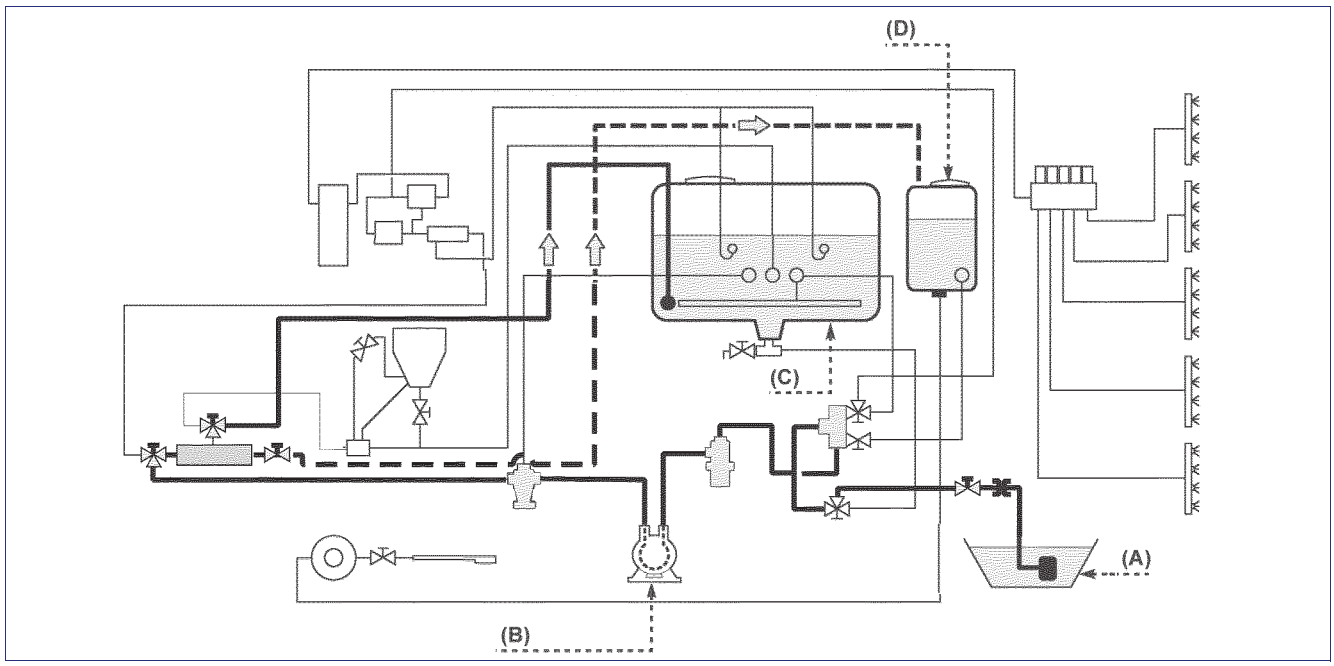
The water is drawn from the water reservoir **(A)** through the intake of the pump unit **(B)** and conveyed to the tank **(C)**.

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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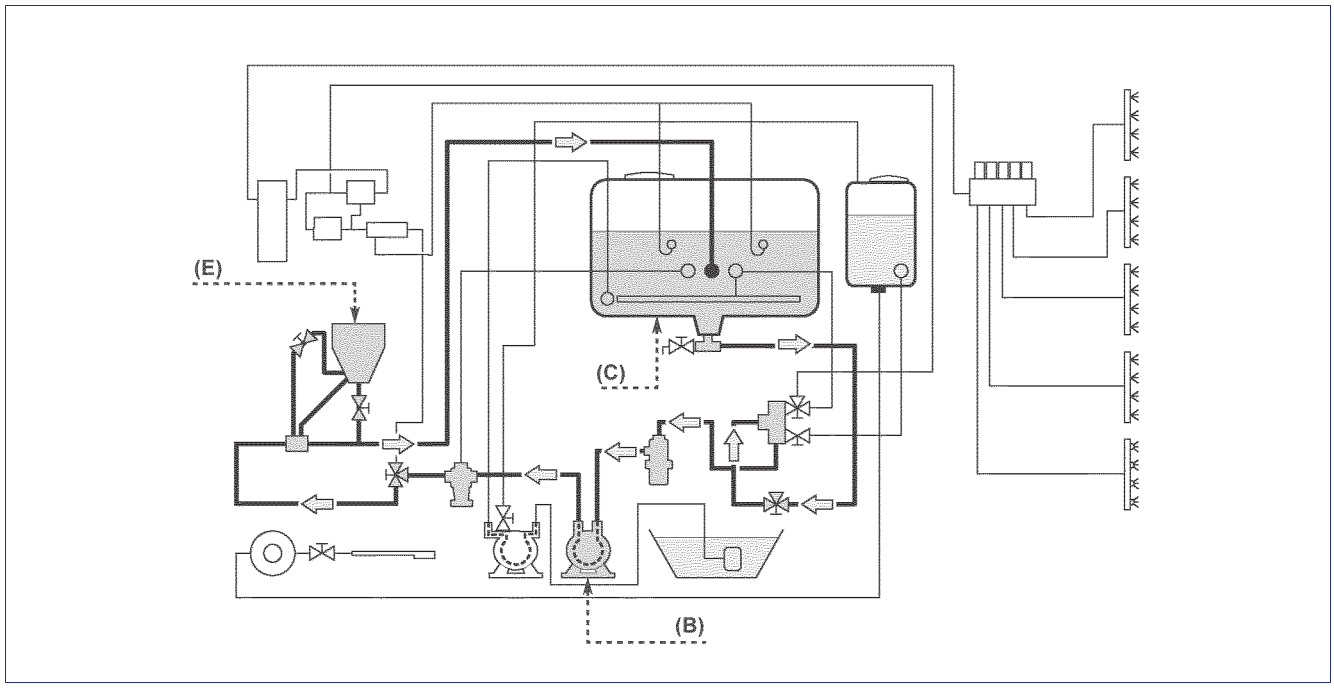
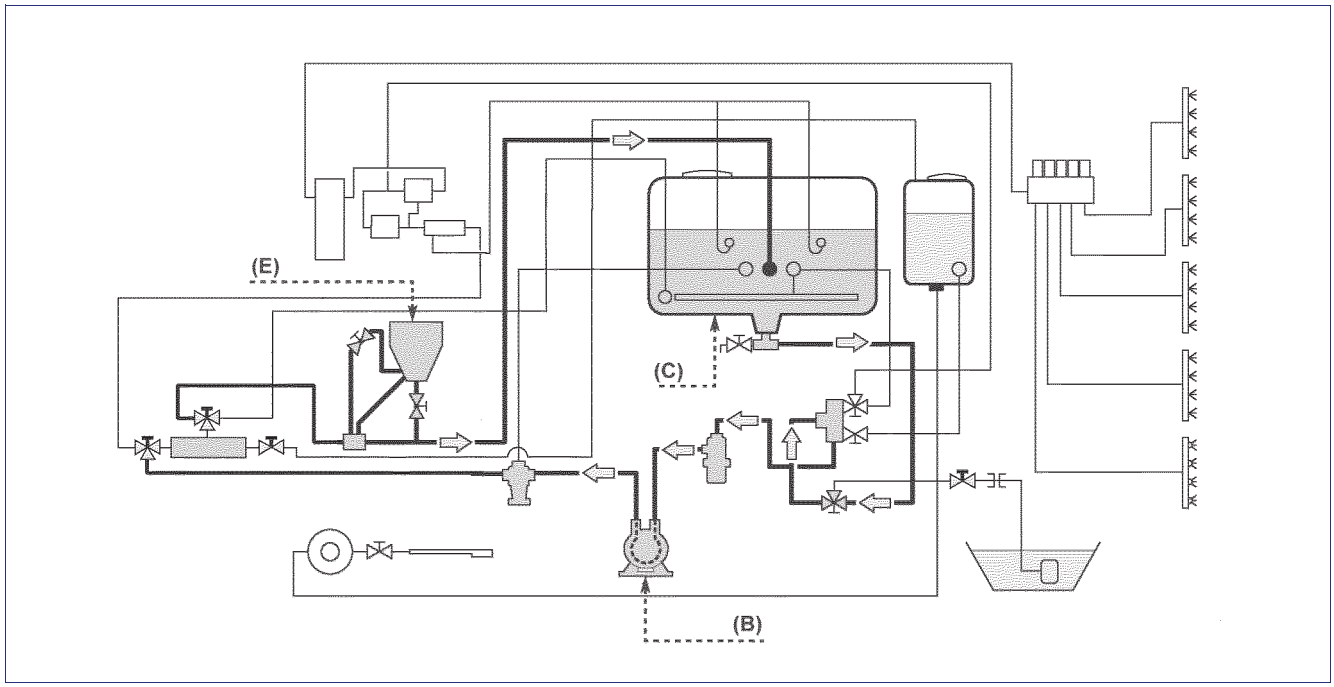
II) Product mixing

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

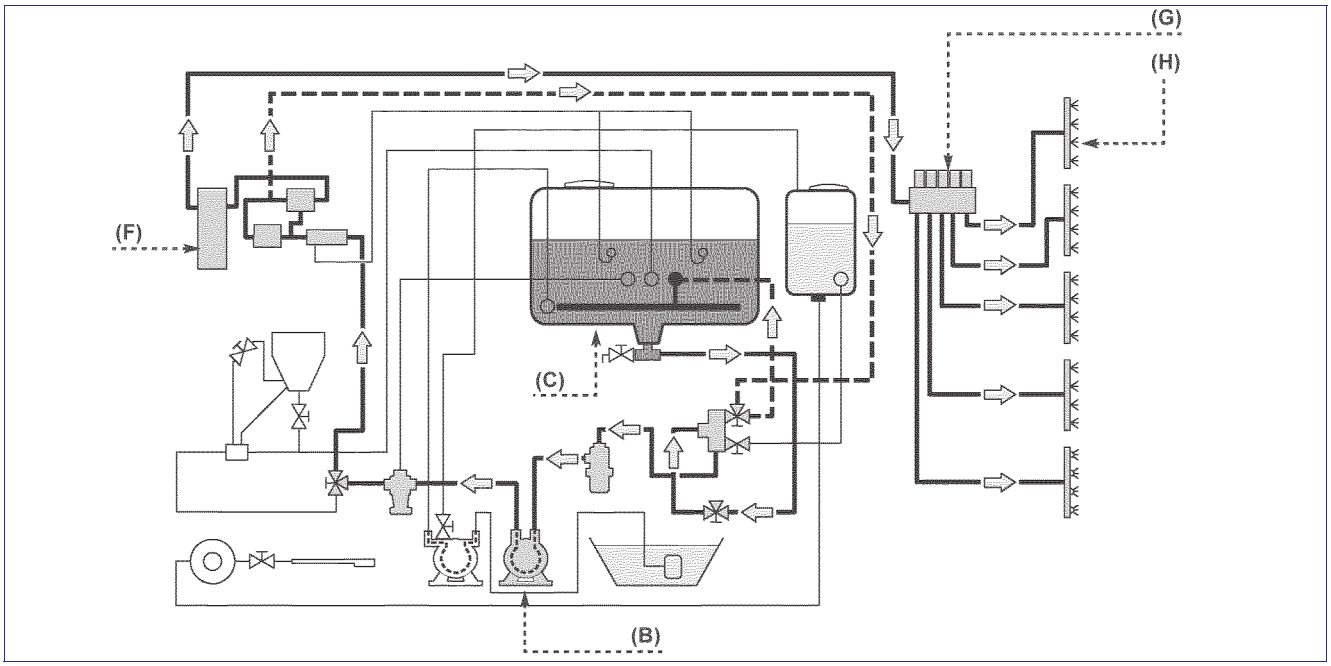


III) Product spraying

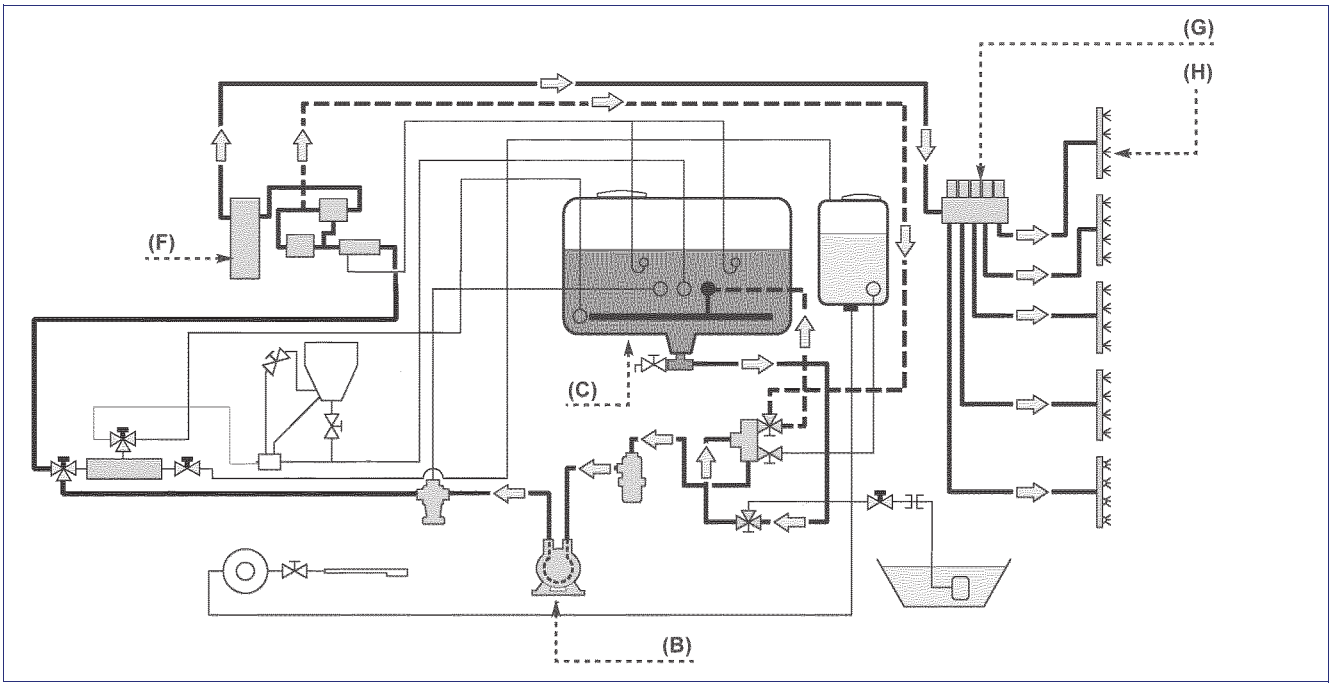
The mixed liquid is drawn from the tank **(C)** through the intake of the pump unit **(B)** and conveyed, under pressure, to the electrical distribution unit **(F)** and to the solenoid valve unit **(G)**.

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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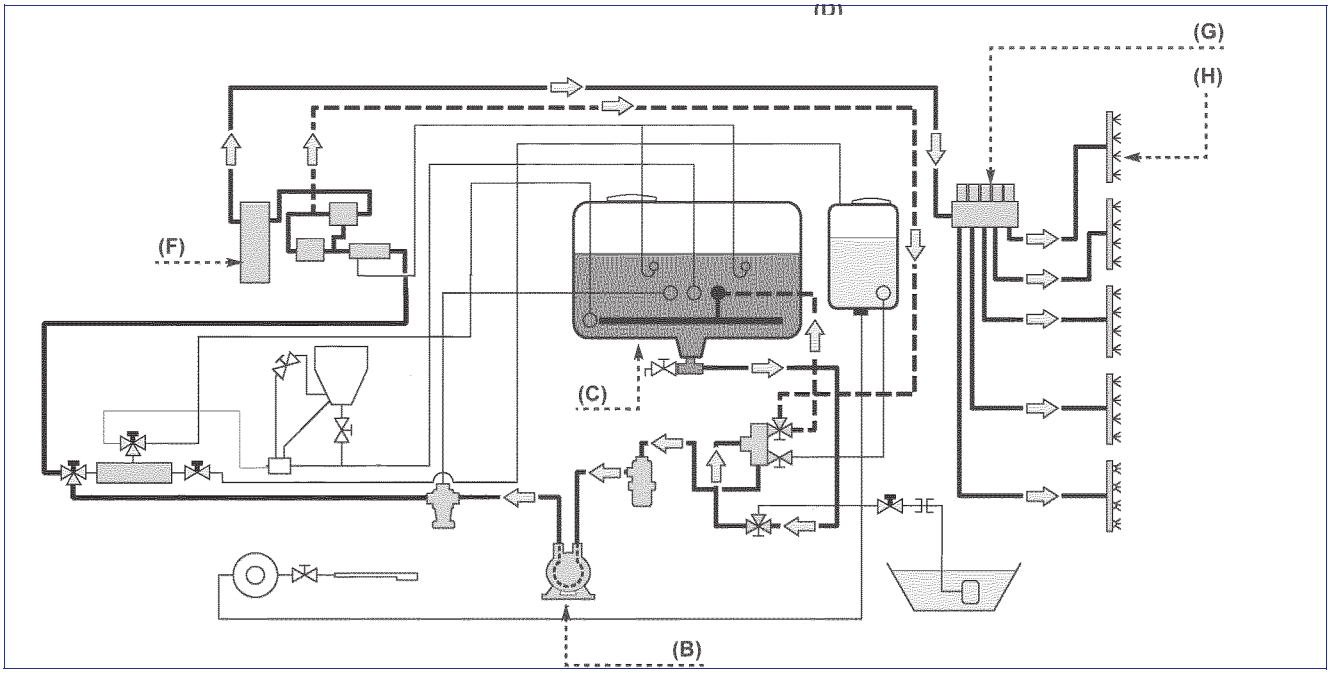
IV) System cleaning

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.

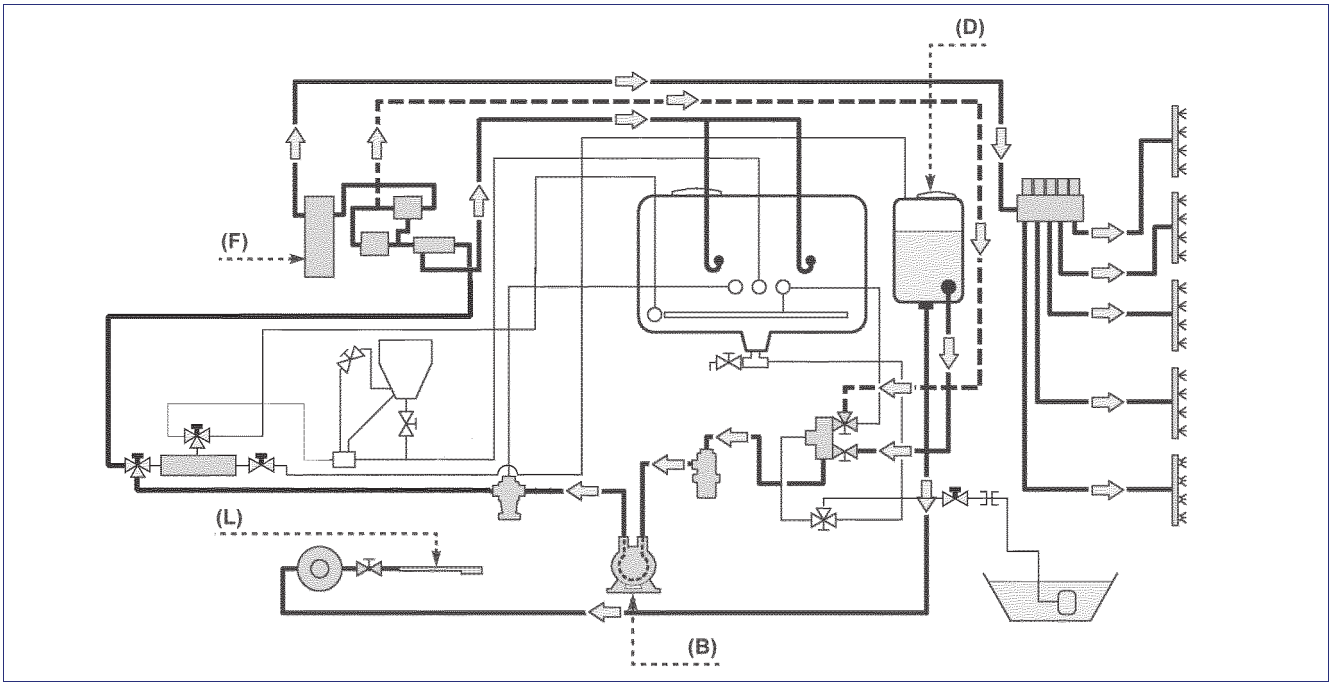
Important

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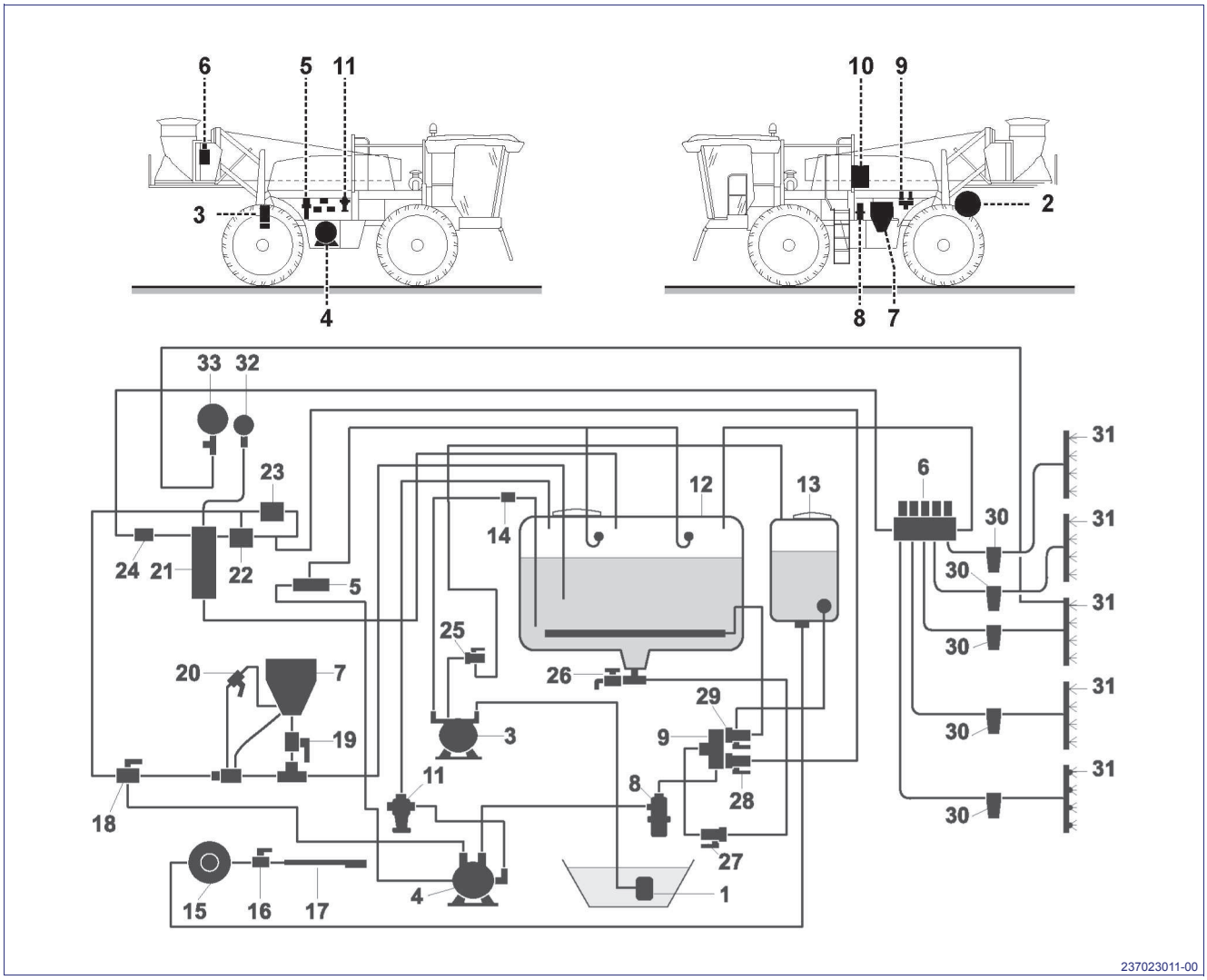
Water system diagram (with “Müller” and “Tee Jet” computer)



Legend

1 - Suction filter (filling)
2 - Hose winder (filling)
3 - Centrifugal pump (filling)
4 - Diaphragm pump
5 - Cock unit
6 - Solenoid valve assembly
7 - Mixer
8 - Suction filter
9 - Manifold
10 - Hand-washing tank
11 - Maximum pressure control valve
12 - Product tank
13 - Clear water tank (system cleaning)
14 - Litre counter (filling)
15 - Hose reel for equipment washing
16 - Equipment washing valve
17 - Equipment washing spray gun
18 - 3-way ball valve
19 - Valve for transfer
20 - Ball valve for cleaning
21 - Control unit line filter
22 - Main engine
23 - Pressure control engine
24 - Non-return valve
25 - Clear water tank filling valve
26 - Tank emptying valve
27 - Two-way ball valve
28 - Clear water suction valve
29 - 3-way ball valve
30 - Distribution line filters
31 - Stainless steel pipes
32 - Pressure gauge
33 - Working pressure gauge

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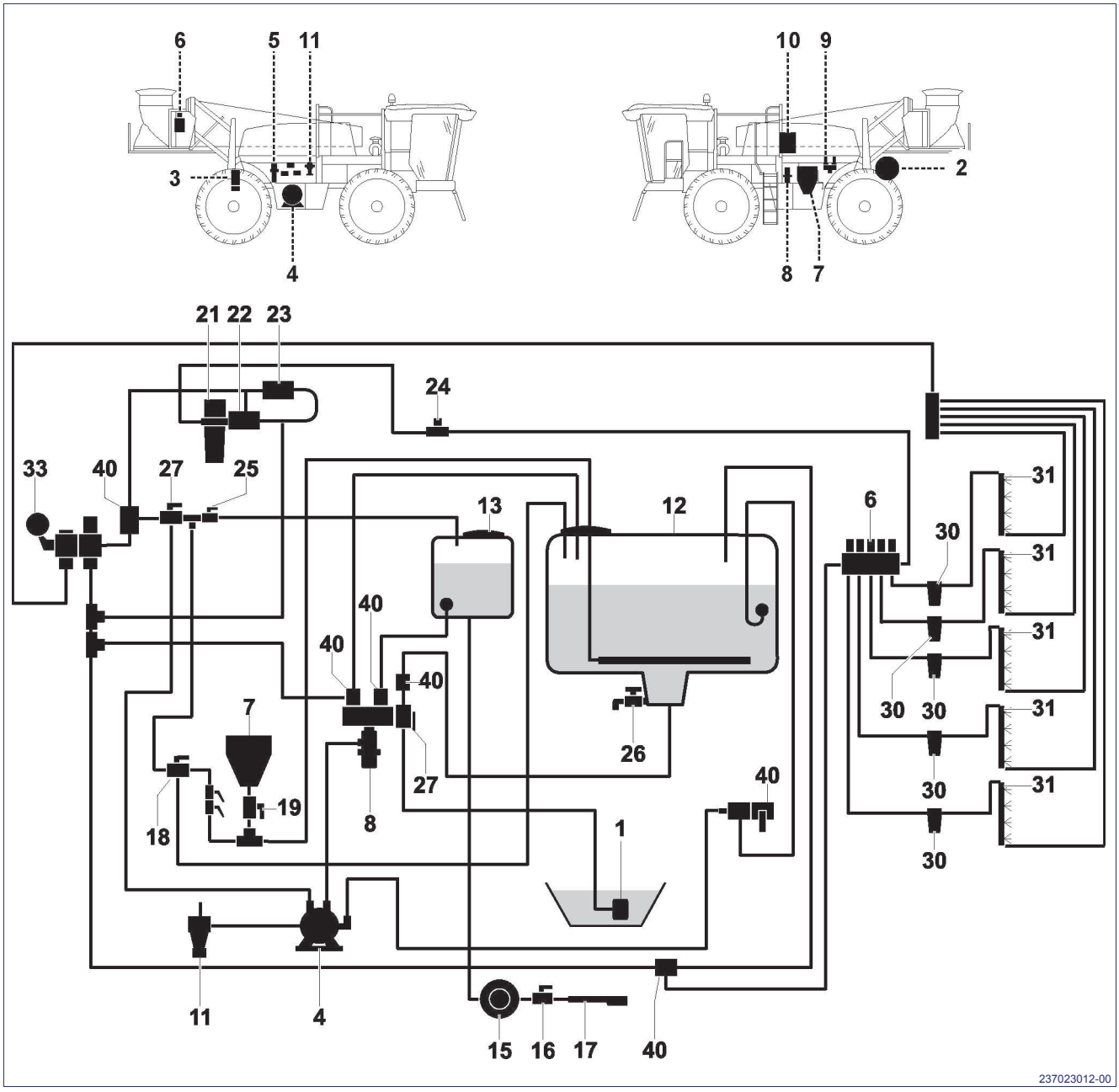
Water system diagram without centrifugal pump (Electrical mode with recirculation)



Legend

1 - Suction filter (filling)
2 - Hose winder (filling)
4 - Diaphragm pump
5 - Cock unit
6 - Solenoid valve assembly
7 - Mixer
8 - Suction filter
9 - Manifold
10 - Hand-washing tank
11 - Maximum pressure control valve
12 - Product tank
13 - Clear water tank (system cleaning)
14 - Litre counter (filling)
15 - Hose reel for equipment washing
16 - Equipment washing valve
17 - Equipment washing spray gun
18 - 3-way ball valve
19 - Valve for transfer
20 - Ball valve for cleaning
21 - Control unit line filter
22 - Main engine
23 - Pressure control engine
24 - Non-return valve
26 - Tank emptying valve
27 - Two-way ball valve
28 - Clear water suction valve
29 - 3-way ball valve
30 - Distribution line filters
31 - Stainless steel pipes
32 - Pressure gauge
33 - Working pressure gauge

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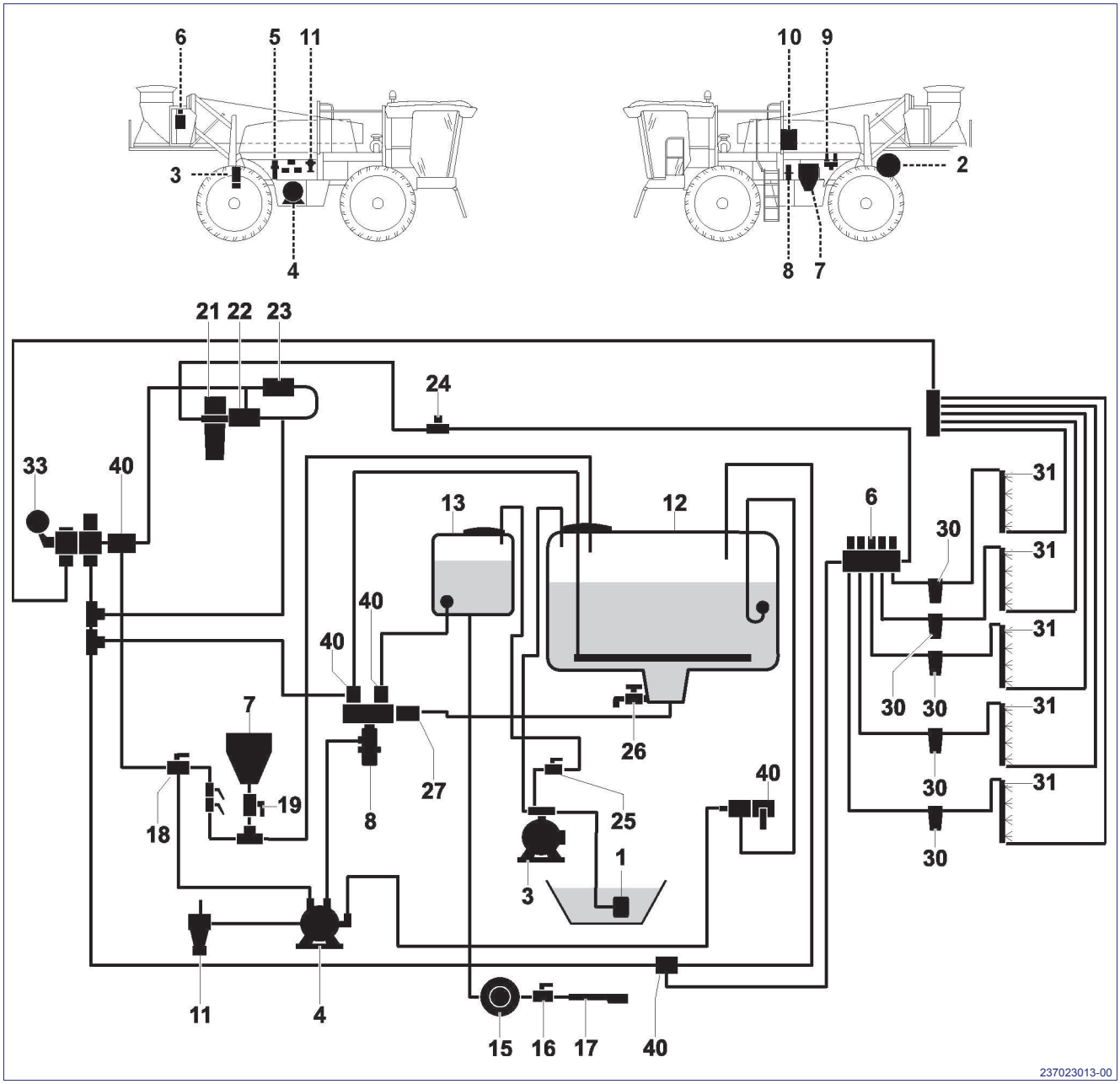
Water system diagram with centrifugal pump (manually with recirculation)



Legend

1 - Suction filter (filling)
2 - Hose winder (filling)
3 - Centrifugal pump (filling)
4 - Diaphragm pump
6 - Solenoid valve assembly
7 - Mixer
8 - Suction filter
9 - Manifold
10 - Hand-washing tank
11 - Maximum pressure control valve
12 - Product tank
13 - Clear water tank (system cleaning)
15 - Hose reel for equipment washing
16 - Equipment washing valve
17 - Equipment washing spray gun
18 - 3-way ball valve
19 - Valve for transfer
21 - Control unit line filter
22 - Main engine
23 - Pressure control engine
24 - Non-return valve
25 - Clear water tank filling valve
26 - Tank emptying valve
27 - Two-way ball valve
30 - Distribution line filters
31 - Stainless steel pipes
33 - Working pressure gauge
40 - Electrical valve

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IMPROPER USAGE

- 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

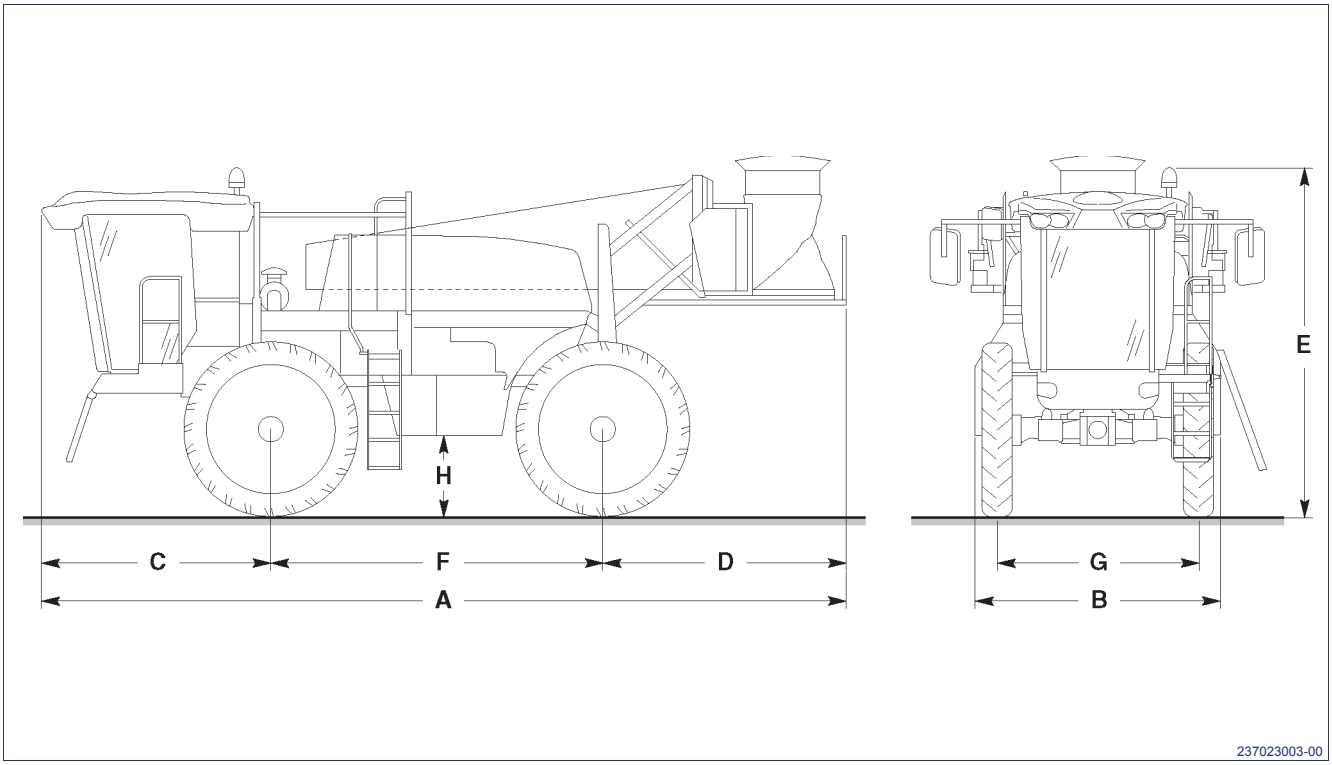
The use of products not specifically authorized for herbaceous crops is not allowed. Thoroughly read the instructions and warnings on the use of chemicals specified by the manufacturer on the container.

- 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.
- Prevent strangers from approaching the working area when the machine is in use. Should it become necessary, stop it immediately and make the people found in the risk area move away.
- 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.
- The vehicle is not designed for being used in ATEX environments.
- Do not use the vehicle as a means of transport or for towing purposes.
- Do not use the spraying boom for hoisting people or objects.
- Do not use the vehicle for working the soil.
- Do not apply any type of interchangeable equipment to the vehicle.
- Ground controls must be activated with the vehicle on and the brakes applied. The controls must not be used simultaneously by two different operators.

PRODUCT USE RESTRICTIONS

The manufacturer states that no reaction has been reported for any equipment component following its coming into contact with authorized chemicals.
It further declares that, to their knowledge, there is no rule requiring the implementation of specific tests to check the reaction of equipment components to the chemicals authorized for spraying onto herbaceous crops.

TECHNICAL SPECIFICATIONS



Size

A .....7.63 m (8.23 m with air-assisted kit)
B ..... 2.50 m (3.00 m with bar P5)
C .....2,48 m
D .....1.85 m (2,45 m with air-assisted kit)
E .....3,40 m
F .....3,30 m
G (MC version) ..... 1800-2250 m
G (JC version) ..... 1810-2290 m
H (MC version) ..... 0.700 m
H (JC version) ..... 0.900 m

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

3000 liters tank

Overall weight .....(empty) 9300 (full) 12850 kg
Front axle .....(empty) 4400 (full) 5500 kg
Back axle.....(empty) 4900 (full) 7400 kg

3500 liters tank

Overall weight .....(empty) 9300 (full) 13350 kg
Front axle .....(empty) 4400 (full) 5650 kg
Back axle.....(empty) 4900 (full) 7750 kg

4000 liters tank

Overall weight .....(empty) 9300 (full) 13850 kg
Front axle .....(empty) 4400 (full) 4850 kg
Back axle.....(empty) 4900 (full) 9050 kg

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

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129 KW engine (175 hp)
Brand..... IVECO - AIFO
Type F4GE0684C
Cylinders 6
Total CCs ..... 6700 cm^3
Maximum capacity ..... 129 KW - 2400 rpm.
Cooling system .....water

Transmission hydrostatic .....

Hydrostatic pump SAUER - S90 R100.....
Hydrostatic engine SAUER - 51D110-1 .....

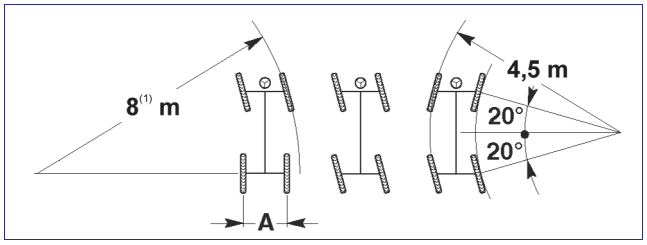
Wheel flanges (front and rear): they allow to modify

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 front wheels.

Service brakes: oil bath multi-disc on the front wheels with pedal control

Turning radius



*(1) With 1800 mm track **(A)***

Hydraulic system
Diesel fuel tank 120 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 .....3000 l
Cleaning water tank .....275 l
Hand-washing tank .....17 l

Hydraulic system (3500 liters tank)
Tank .....3500 l
Cleaning water tank .....250 l
Hand-washing tank .....17 l

Hydraulic system (4000 liters tank)
Tank 4000l
Cleaning water tank..... -
Hand-washing tank..... -

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

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PUMP NOMINAL CAPACITY TABLE

	Annovi Reverberi	*Udor*
250/20	AR 240 bp 225 l/min	-
280/20	AR 250 bp 235 l/min	-
400/20	-	RO 400 390 l/min

TYRE TABLE

JC version

Pneumatic	*Tank 3000 l*	*Tank 3500 l*
270/95R42	-	■
270/95R44	-	■
270/95R48	■	■
270/95R54	■	■
300/95R42	■	■
300/95R46	■	■
320/85R38	-	■
420/85R38	-	■
540/65R34	■	■
540/65R38	■	■

MC version

Pneumatic	*Tank 3000 l*	*Tank 3500 l*	*Tank 4000 l*
270/95R38	-	-	■
270/95R42	-	-	■
270/95R44	-	-	■
270/95R48	-	■	■
300/95R42	■	■	■
300/95R46	■	■	■
320/85R38	-	-	■
340/85R48	■	■	■
380/90R46	■	■	■
420/85R38	-	■	■
460/85R38	■	■	■
520/85R38	■	■	■
540/65R34	■	■	■
540/65R38	■	■	■
600/60R30.5	■	■	■
600/65R28	■	■	■
600/70R30	■	■	■
710/55R30	-	■	■
710/60R30	■	■	■
800/45R30.5	■	■	■

Important

Check that the tyre size is type approved for the machine in the country of use.

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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.

3000 (Nominal capacity: 3000 litres / Real capacity 3260 litres)			
2000 (Nominal capacity: 3500 litres / Real capacity 3800 litres)			
4000 (Nominal capacity: 3500 litres / Real capacity 3800 litres)			
Boom length (meters)	***Soluble * (litres)***	***Non soluble ** (litres)***	***Total (litres)***
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
28	24,3	28,9	53,2
30	24,3	30,2	54,5
32	24,3	32,6	56,9
36	24,3	37,6	61,9

N.B.: Values taken with an AR250 pump

(*) Soluble technical residue during washing

(**) Non soluble technical residue during washing

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NOISE LEVEL

The noise tests recorded a sound level:

89 dB **(A)** ± 1 dB, measured from outside the vehicle.

75 dB **(A)** ± 1 dB, measured on the driving seat.

Based on the recorded data, hearing protection equipment should be worn.

Important

Cleaning, regular maintenance of the vehicle and periodic lubrication help to reduce the vehicle's noise emissions.

Though there is a correlation between noise emission and levels of exposure, this data cannot be used to determine whether precautions are necessary or not.

There are other factors that may influence the level of exposure to noise, such as for example the characteristics of the work environment and the presence of other sources of noise.

The information on the level of noise emitted by the vehicle will nonetheless help the user or employer to draw up the hazard and risk assessment document.

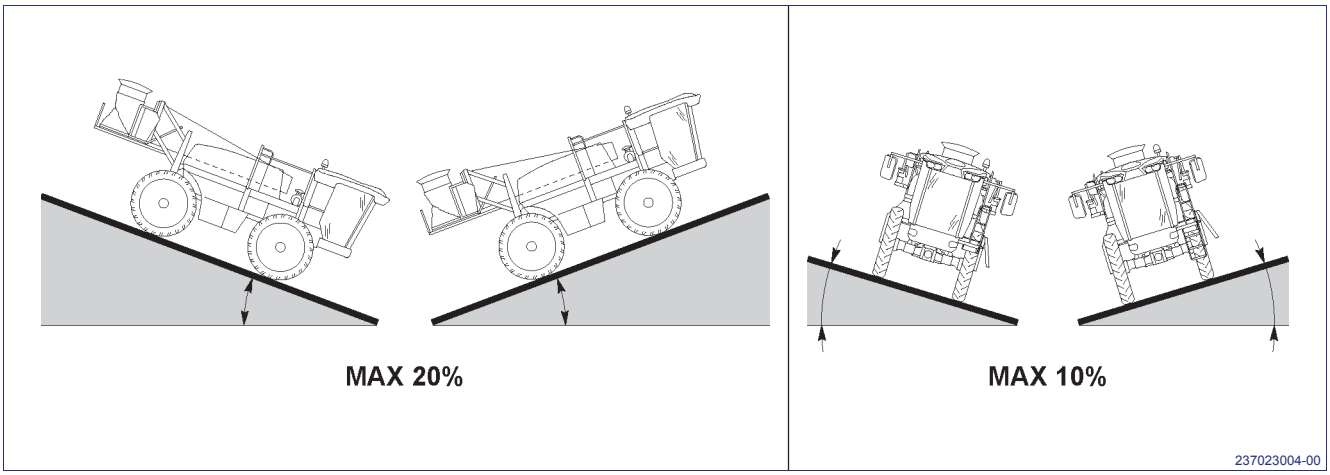
VIBRATION LEVEL

The measurement of the mechanical vibrations transmitted to the entire vehicle body from the driving seat recorded a weighted mean-square value equal to 0.46 m/s^2.

These values are assessed using an accelerometer on an identical vehicle driven on an average gravel road.

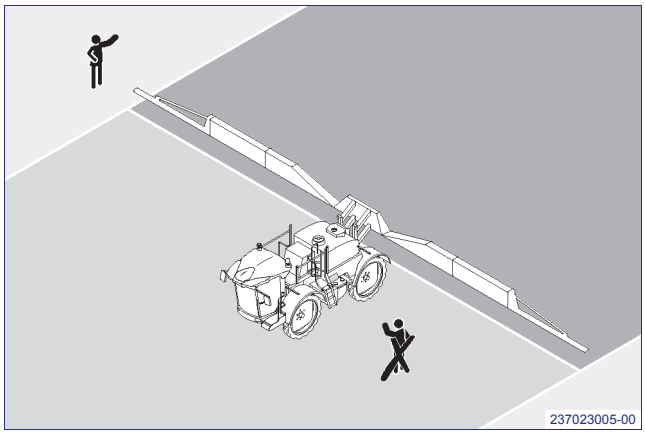
ALLOWABLE SLOPES

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, (s)he should turn the engine off and clear out the danger zone.



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 (optional).

Caution - Warning

The "4 wheel drive" operation can be selected only when in first gear and with the 4 wheels aligned.

Danger - Warning

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

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

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

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

H) Stop valve (hydraulic system with solenoid valve kit): device preventing the boom from dropping suddenly in the event of a leak in the hydraulic hose.

L) Safety belts: to keep the operator harnessed in case of accident or tipping over of the vehicle. The safety belt does not require manual adjustment. The belt automatically adjusts to the most suitable length for the operator and ensures the most ample freedom of movement, provided that these do not occur suddenly. The mechanism is sensitive to changes in the vehicle's set-up, therefore the belt may lock in the following cases:

- braking;
- vehicle on slope.

M) Hammer: can be used for breaking the windows to exit the vehicle in case of emergency. Be very careful to protect delicate parts of the body against glass splinters, then shatter the glass using the hammer and exit the cabin from the opening thus formed in the window.

Whenever possible, use the handle **(Q)** when exiting the cab.

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

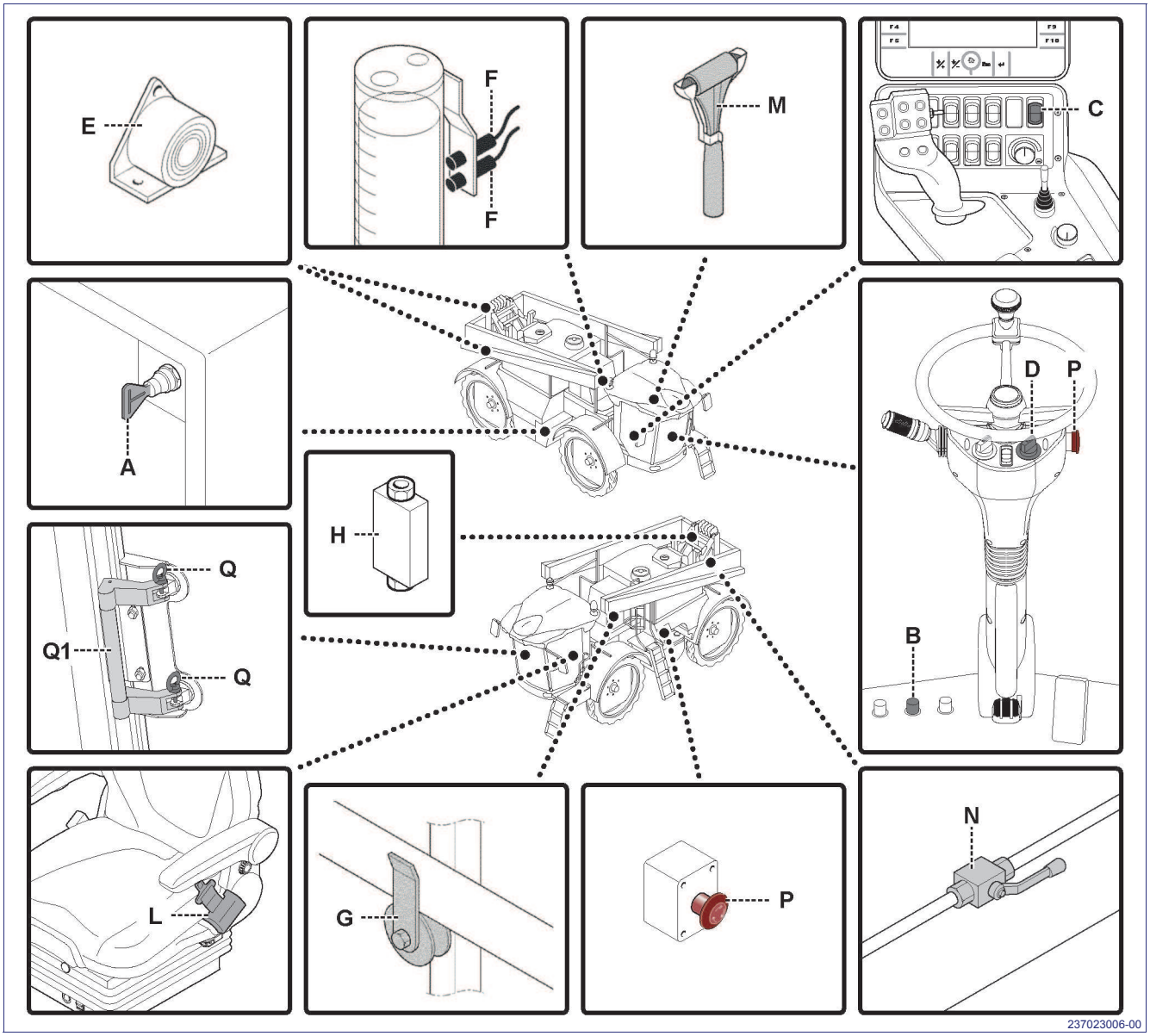
Caution - Warning

Check daily that all safety devices are correctly installed and in working order.

P) Emergency stop button: immediately stops every organ on the machine. After restoring normal operating conditions, the button must be manually released to enable machine restart.

Q) Emergency exit retainers: in case of emergency, remove the retainers **(Q)** on the handle **(Q1)** and push the glass to exit the cab.

If you cannot exit via the right side glass panel, use the hammer **(M)** on the glass to facilitate your escape.

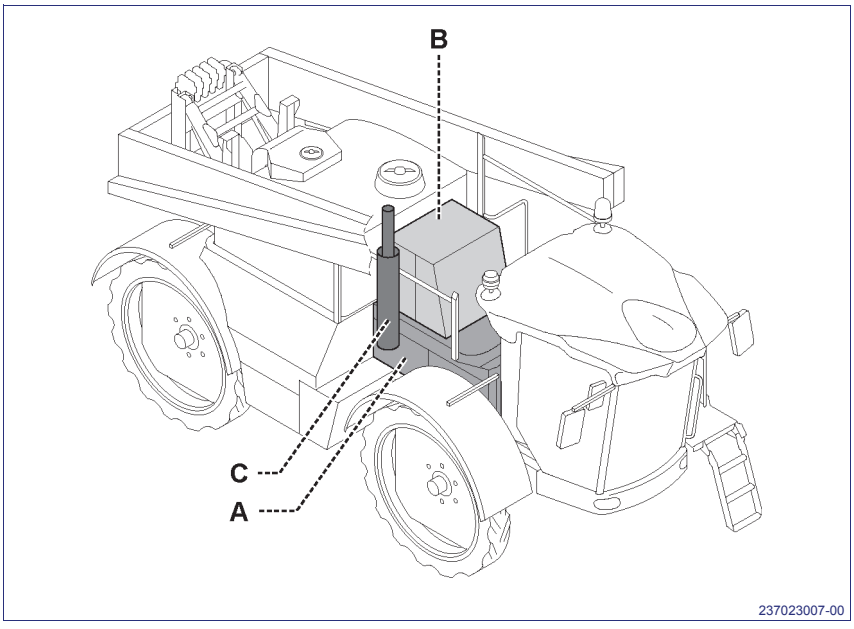


HOT POINTS OF THE VEHICLE

Prior to effecting any maintenance intervention, ensure that the engine is off and cold.

The illustration indicates the position of the vehicle's hot points and the relative protection devices.

A) Engine Bonnet
B) Radiator.
C) Exhaust pipe



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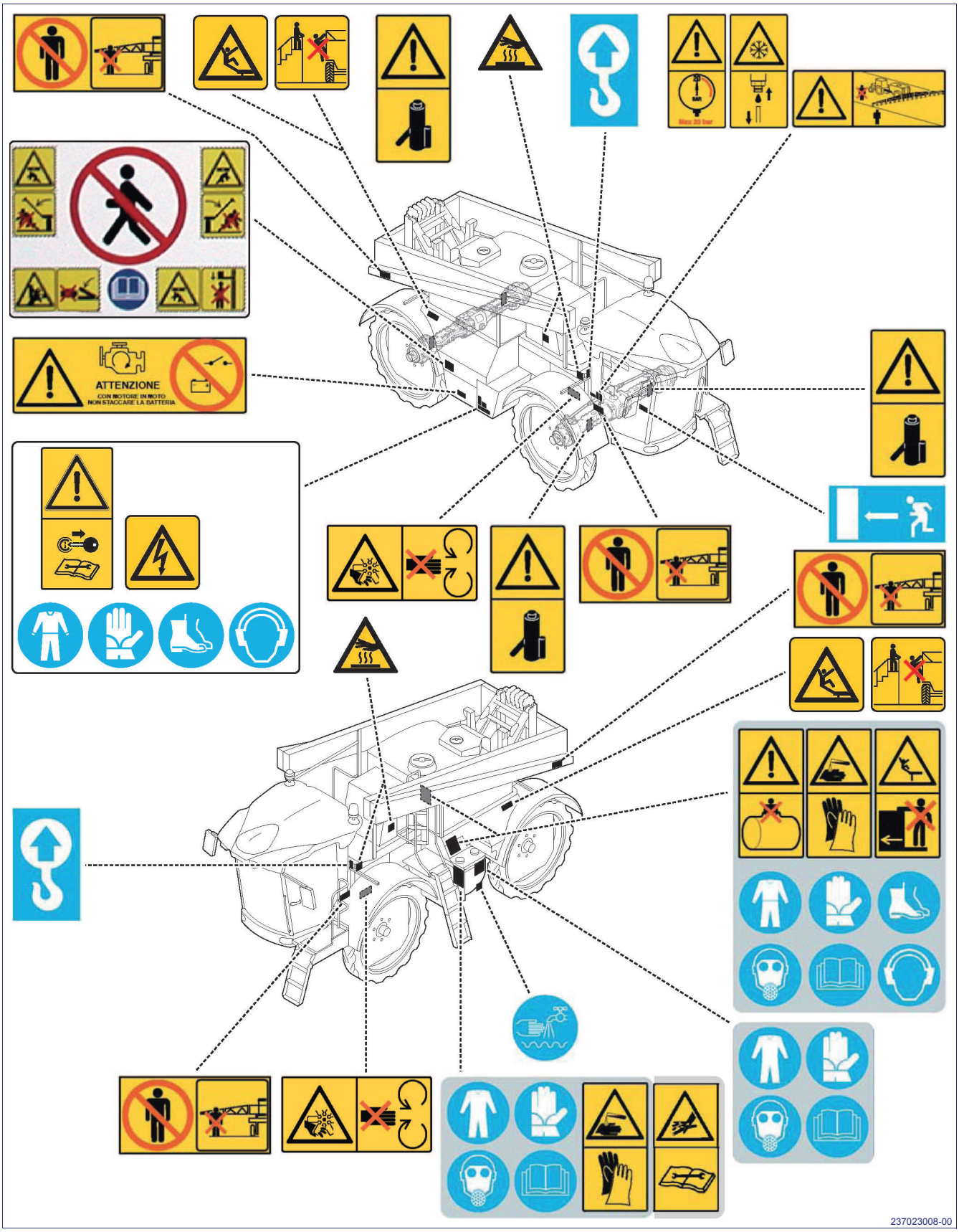
POSITION OF SIGNALS

The figure shows the location of all safety plates, while their meaning is explained in booklet 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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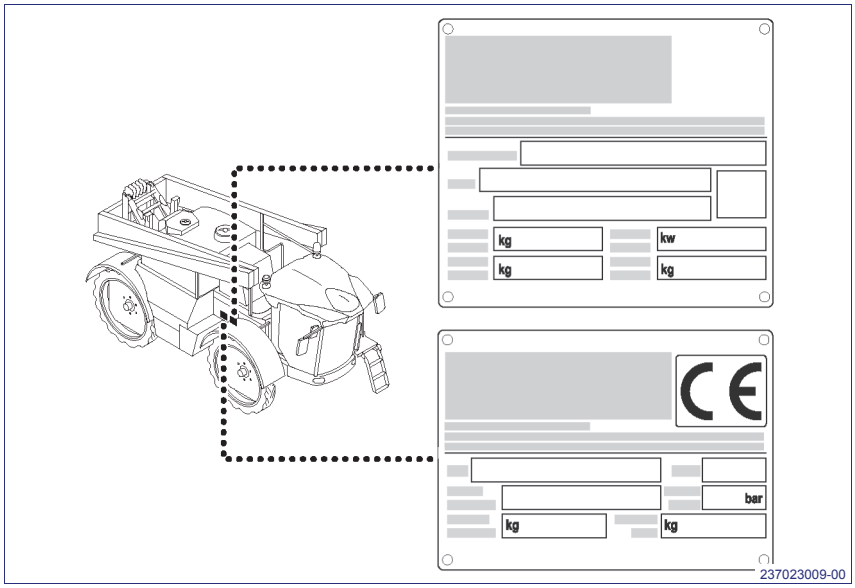
POSITION OF IDENTIFICATION PLATES

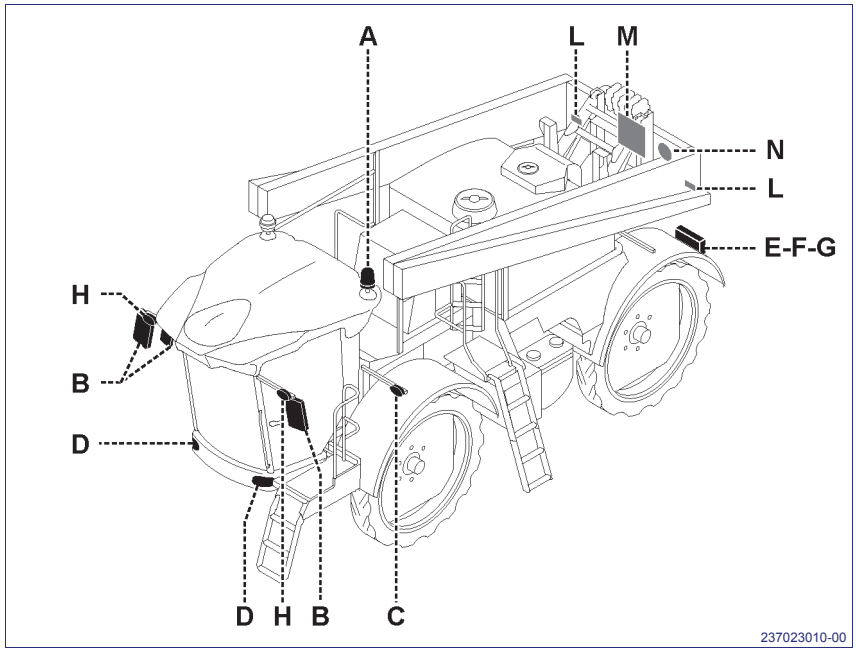
The figure shows the position of the identification plates.



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) Rear overall lights.
M) Refractive panel.
N) Maximum allowable speed panel (homologation).



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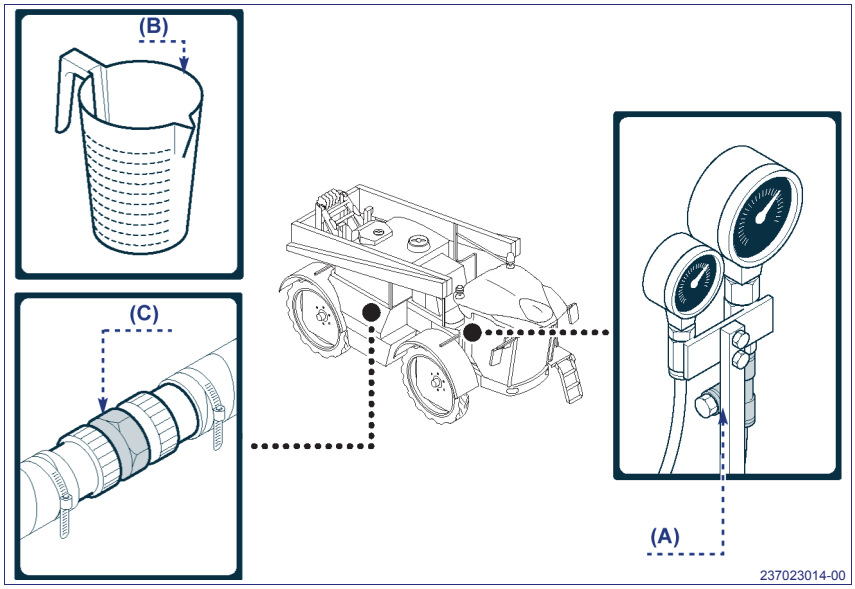
MACHINE OPERATION CONTROL DEVICES

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 nozzle flow check.

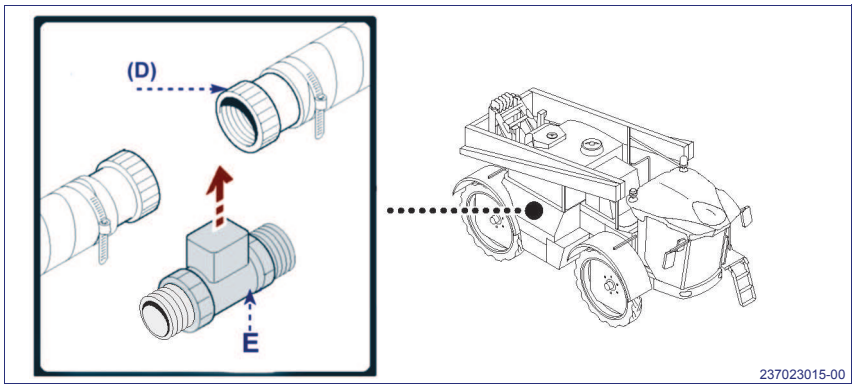
C) Coupling (1' gas) for pump litre counter. It allows the installation of a flow meter to check the flow without damaging the hoses.



Pump litre counter installation

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

2 - Install liter counter **(E)** and connect the hose again.



Checking the nozzle distribution

Any difference between quantity of product to spray and effective quantity sprayed may depend on the following:

- incorrect adjustment of the forward speed of the tractor (see page 81).
- incorrect pressure adjustment (see page 80).
- worn nozzles.

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

Caution - Warning

Use clean water.

1 - Start water supply.

2 - Place a graduated container under the nozzle to check.

3 - Evaluate the actual quantity of product sprayed and repeat the procedure on at least three other 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.

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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

INFORMATION ABOUT HANDLING AND INSTALLATION

INSTRUCTIONS FOR HANDLING AND LOADING

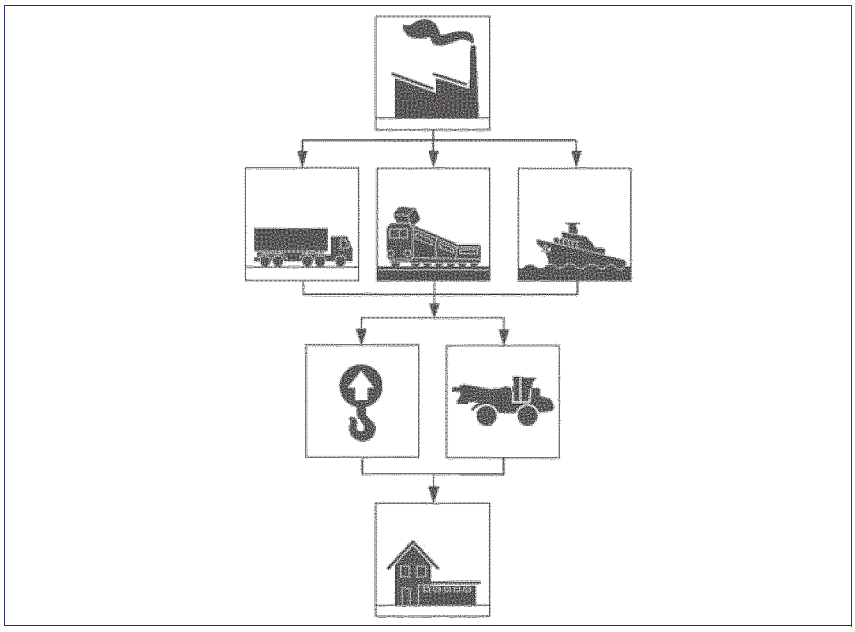
Important

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.

TRANSPORTING

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 29.



Important

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

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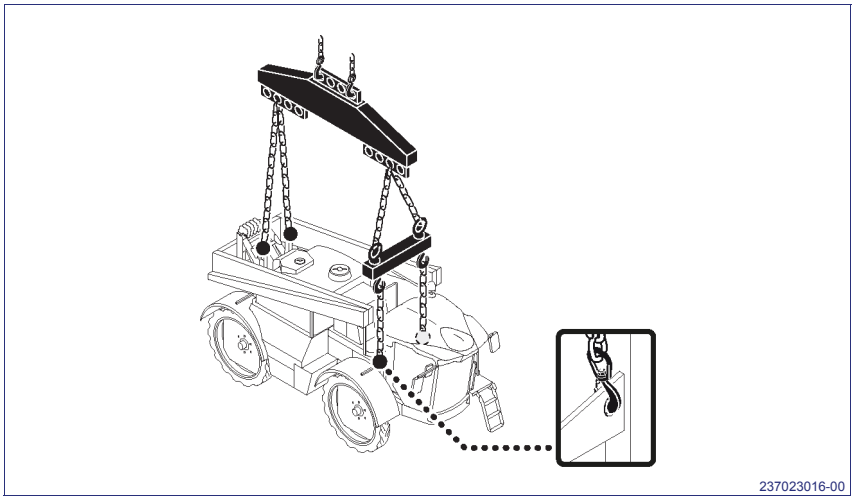
LIFTING FOR TRANSPORTATION

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.

Important

Lift the vehicle with the tank empty, where possible, using a hoisting device capable of bearing the relative load. Consult the 'Technical data' paragraph to find the vehicle's weight in relation to the tank's volume.

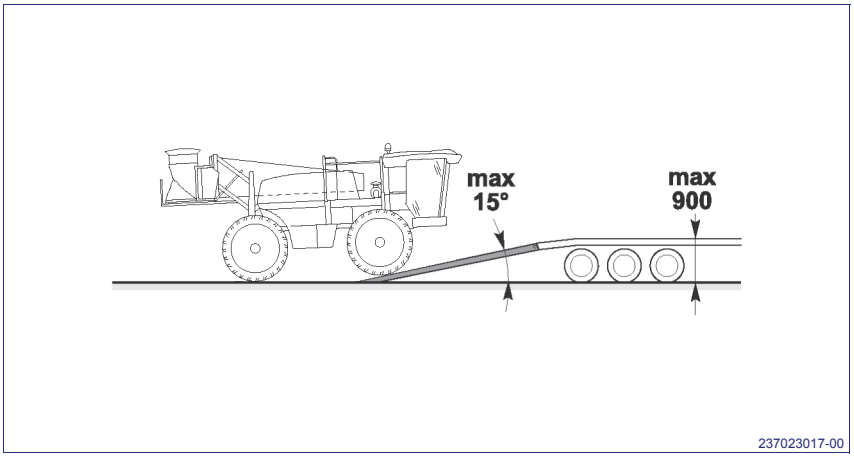
ROAD TRANSPORTATION LOAD

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.



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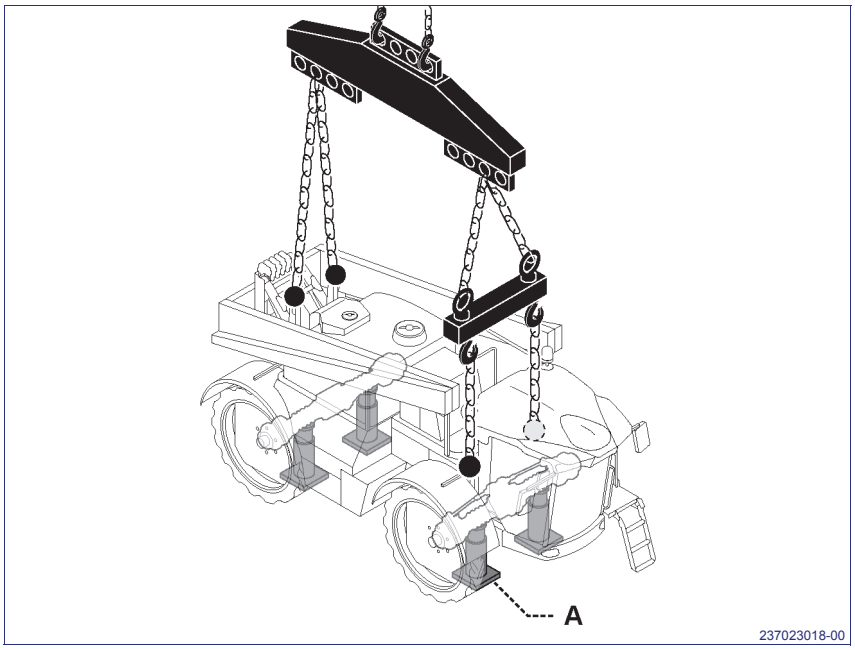
Important

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)**.



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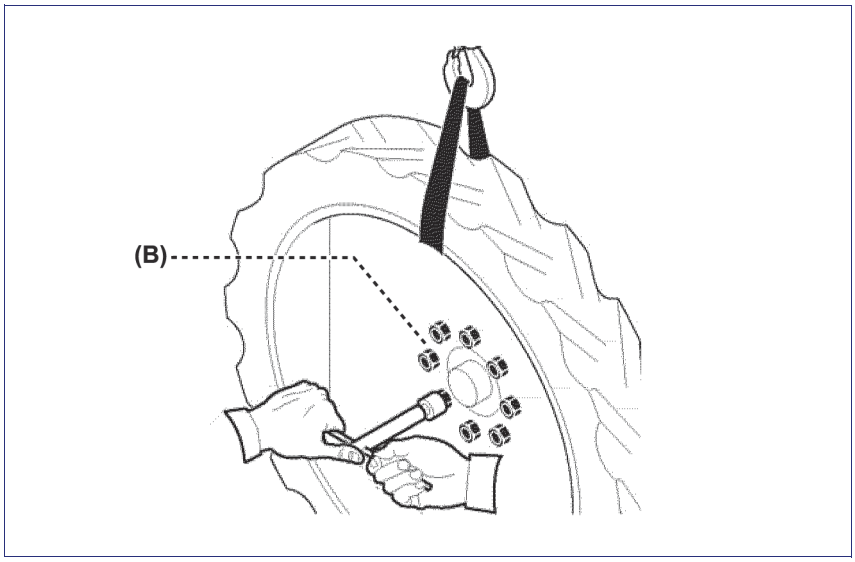
6 - Disassemble the wheels by unscrewing the fixing nuts **(B)**.

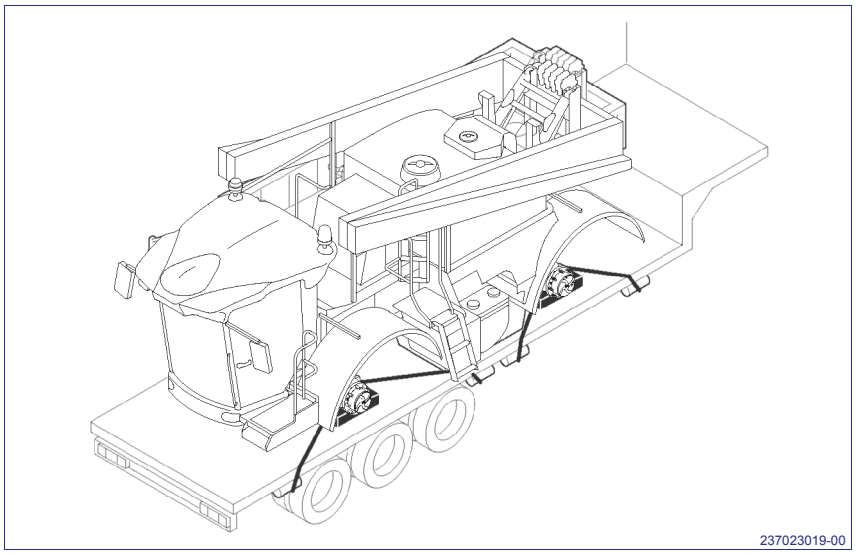
7 - Lift the equipment (see “Lifting for transportation”) and place it on the vehicle.



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.



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TOWING THE MACHINE

Important

The machine may only be towed for short distances, in particular when the diesel engine cannot be used (e.g. safety shutdown of the machine, parking on the roadside, loading onto a trailer, etc.).

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.

If you CANNOT start the diesel engine (e.g. due to an engine failure or damaged transmission), note that:

- You must release the negative brake (see page 32).
- You must disconnect the transmission from the diesel engine, mechanically or hydraulically (see page 33).
- The power steering will not be available for use, so the machine will be harder to steer.
- You will not be able to use the power brake (JC version only).
- You will only be able tow the machine for much shorter distances than when the diesel engine is running.

To tow the machine, proceed as follows.

Important

Attach the vehicle to a towing vehicle of adequate capacity and size approved for road circulation, conforming to the provisions of the applicable national laws. The towing vehicle must be able to exert a towing force of 5,000 N.

1 - Attach the machine to the tow truck with rigid bars **(B)** using the purpose provided attachments.

2 - Arrange the necessary signs for road transport in safe conditions.

Important

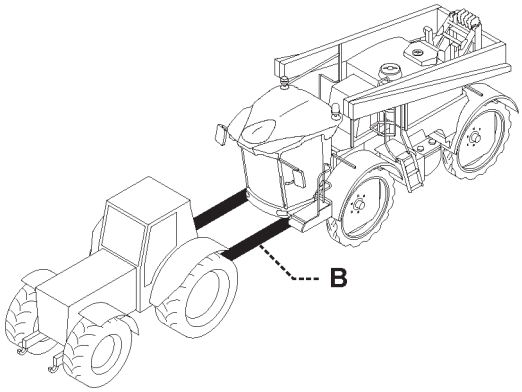
If possible, tow the machine with its diesel engine running so that you can use the power steering and to prevent damage to the transmission.

Important

During towing operations, an operator must always be on board the towed vehicle.

Danger - Warning

Do not stop or transit near vehicles being towed.



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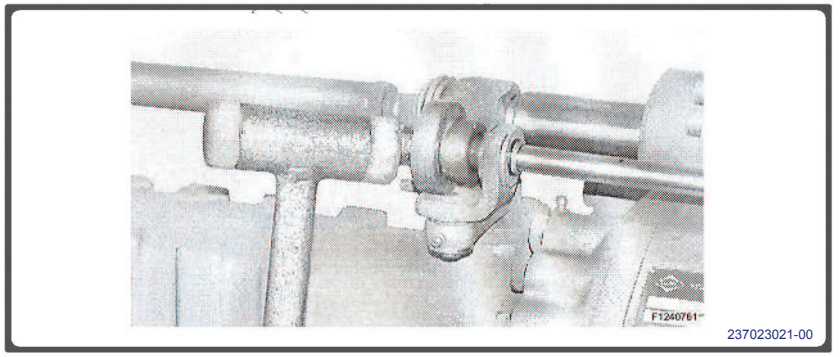
Negative brake hydraulic unlock

MC version

Proceed as follows:

1 - Disable the cylinder by slightly striking the external ring with a hammer, as shown in the figure.



JC version

To release the negative brake on the rear axle, following the instructions for both brake controls (right and left).

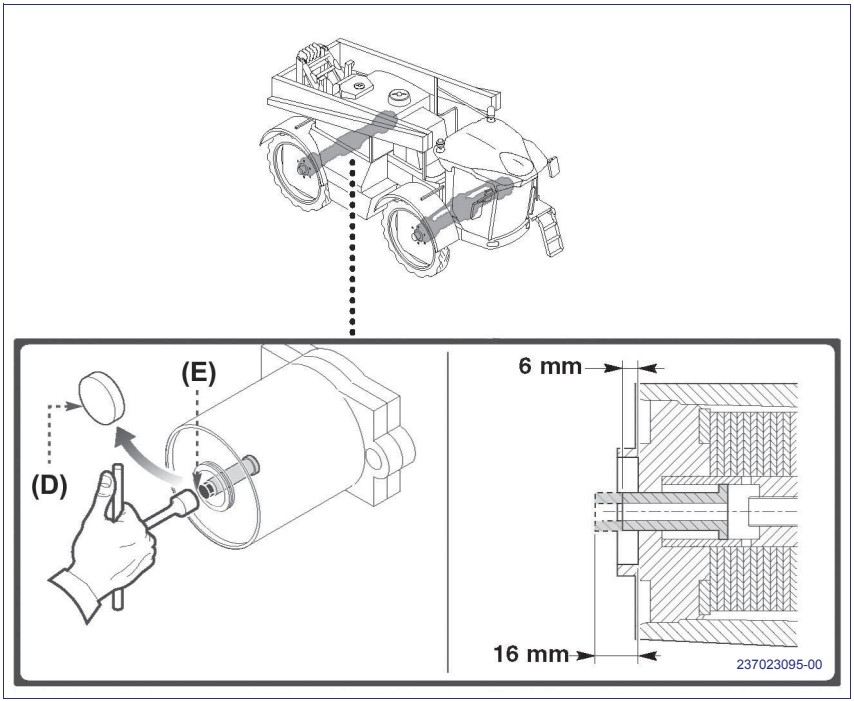
1 - Slacken off the cover **(D)**.

2 - Undo screw **(E)** with a 13 mm wrench, until the distance shown in the figure is 16 mm.

After towing the machine, restore the operation of the negative brake as indicated below.

3 - Tighten down the screw **(E)** to restore the initial distance of 6 mm (see figure).

4 - Restore off the cover **(D)**.

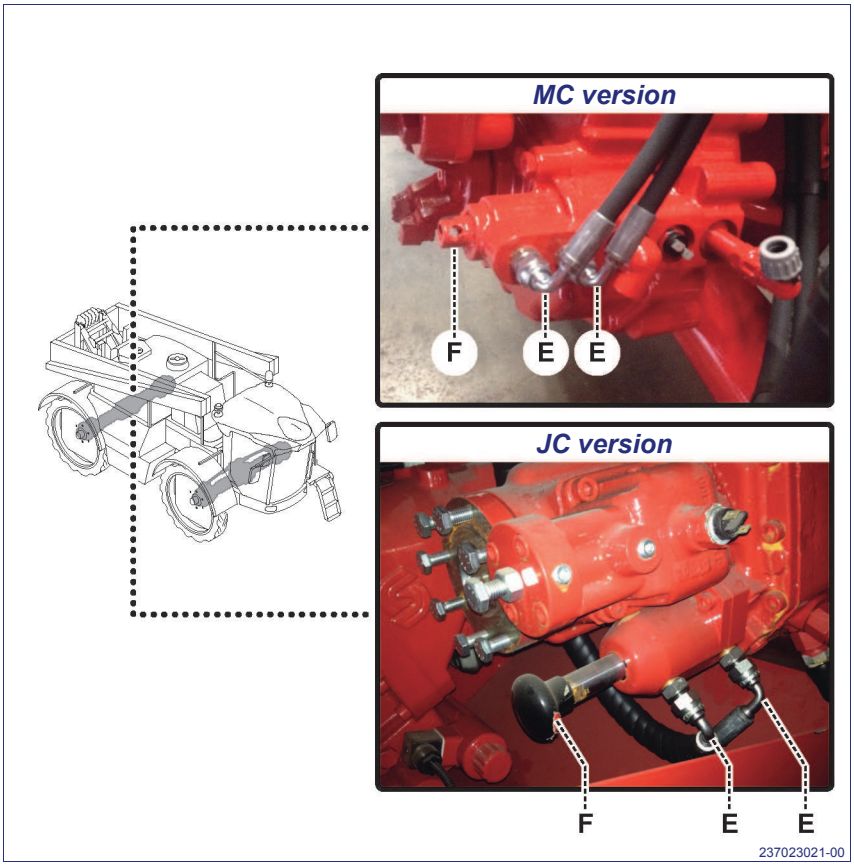


Disconnecting the transmission from the diesel engine

The diesel engine can be disconnected from the transmission, so that the towing vehicle does not have to overcome the resistance of the engine brake, in 2 ways: mechanically (recommended) or hydraulically.

Mechanical disconnection

Mechanically disconnecting the transmission allows the machine to be moved short distances, such as from the work area to the closest road for loading onto a trailer, for putting it under cover, running a safety shutdown or parking it on the side of the road. To do so, a number of hydraulic lines must be disconnected, which can lead to fluid leaks.



1 - Position a container in the desired area.

2 - Disconnect hoses **(E)** and carefully dispose of the oil.

3 - Close the fittings on the two hydraulic lines with caps.

4 - Use the knob **(F)** to set it to the idle position (middle position).

5 - Close the gearbox hydraulic fittings with caps to prevent foreign matter entering them and to protect the threads.

6 - Once the machine has been towed to its new position, reconnect the two lines to the gearbox.

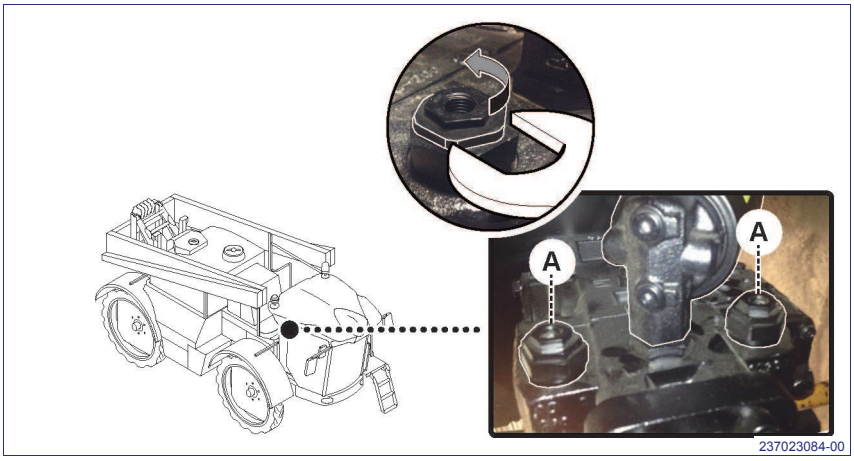
Hydraulic disconnection

If the transmission is disconnected hydraulically, it can only be towed for extremely short distances (especially if the diesel engine is out of service) and at a speed of no more than 1 kph. It will thus only be possible to run a safety shutdown, park the machine at the side of the road or load it onto a trailer. The only tool required is a 19 mm wrench.

To bypass the pump, proceed as follows.

1 - Use a 19 mm wrench to turn both nuts **(A)** three full turns CCW.

2 - Once the machine has been towed, tighten the nuts **(A)** back down.



INFORMATION ABOUT ADJUSTMENTS

INSTRUCTIONS FOR 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

Depending on the distances of the rows and type of tyres mounted, various track width configurations can be obtained **(A)**1800 mm - 2000 mm - 2250 mm.

A greater track width improves vehicle stability on sloping terrains, while a narrower track width facilitates loss of vehicle stability during use.

Pay particular attention to the track width chosen in relation to the terrain on which the vehicle operates.

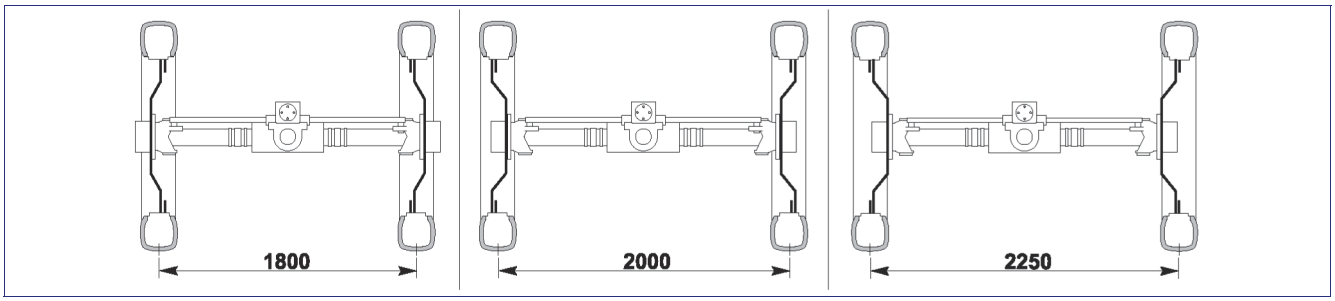
The diagrams give the various possible combinations in relation to the type of flange and its direction of installation.

Diagram for 1800-2000-2500 track

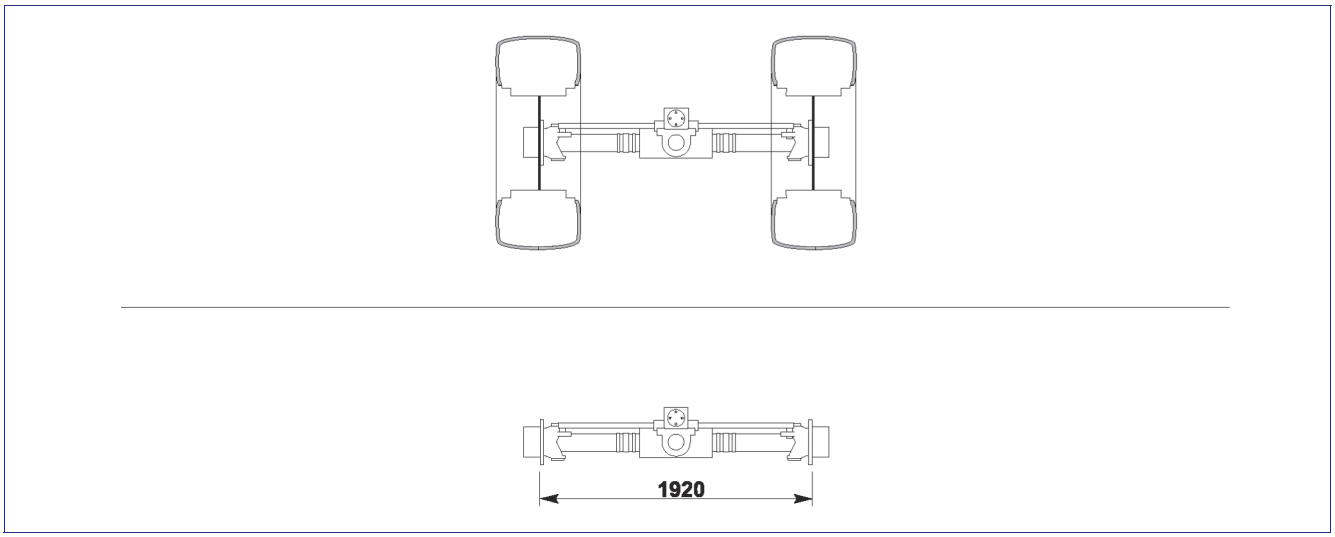
For tyres of width up to:

460 for MC version

420 for JC version



For other tyres:



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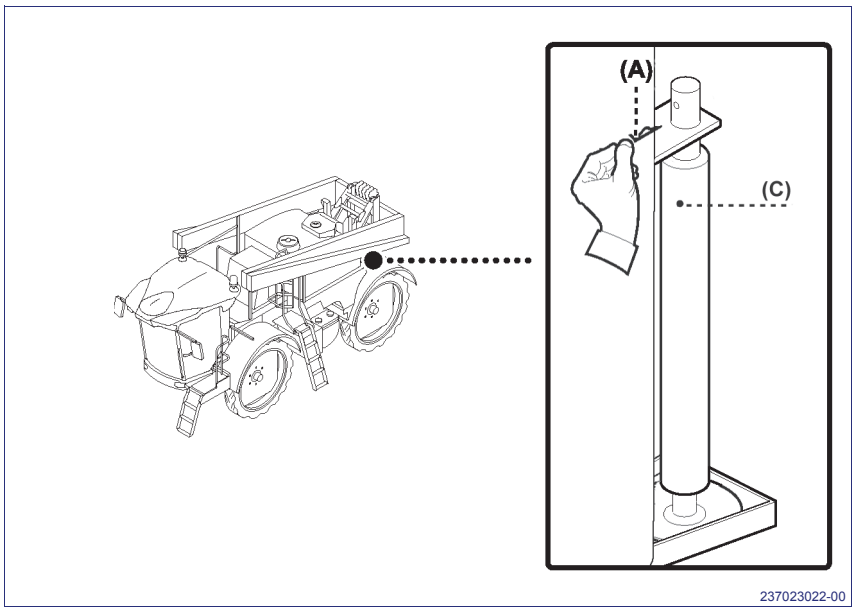
TRACK ADJUSTMENT

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.

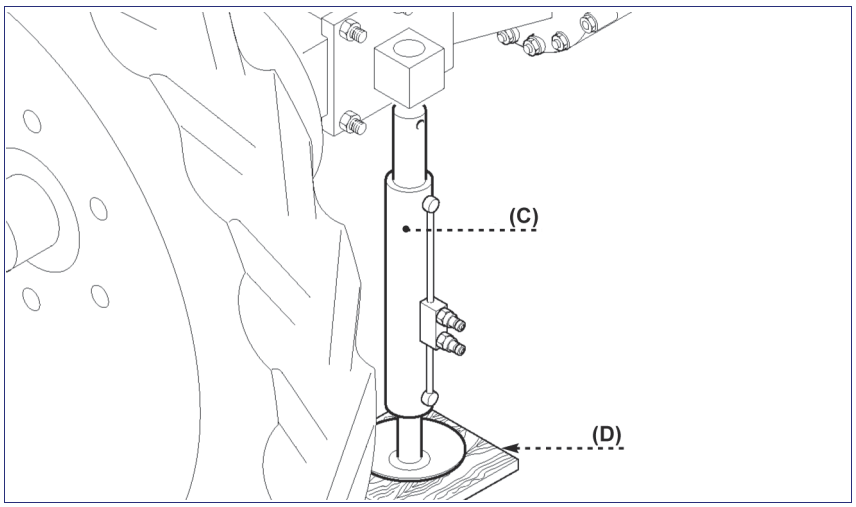
Make the adjustment one wheel at a time.

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



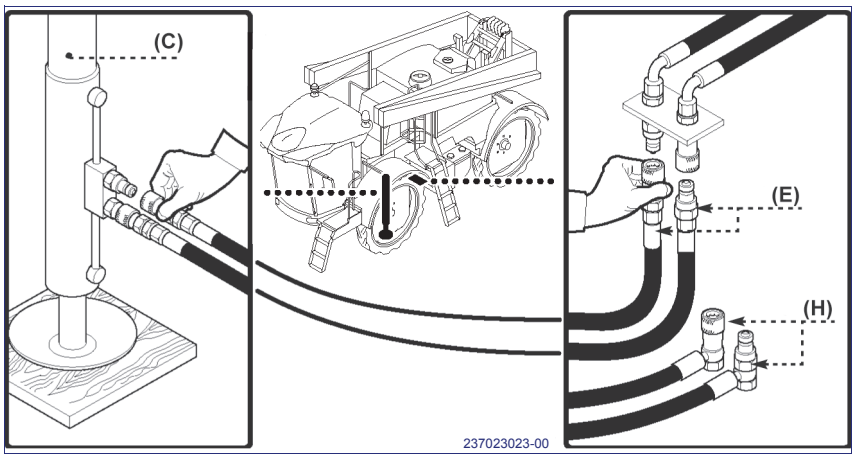
2 - Insert the cylinder **(C)** in the housing provided to lift the axle which needs to be adjusted.

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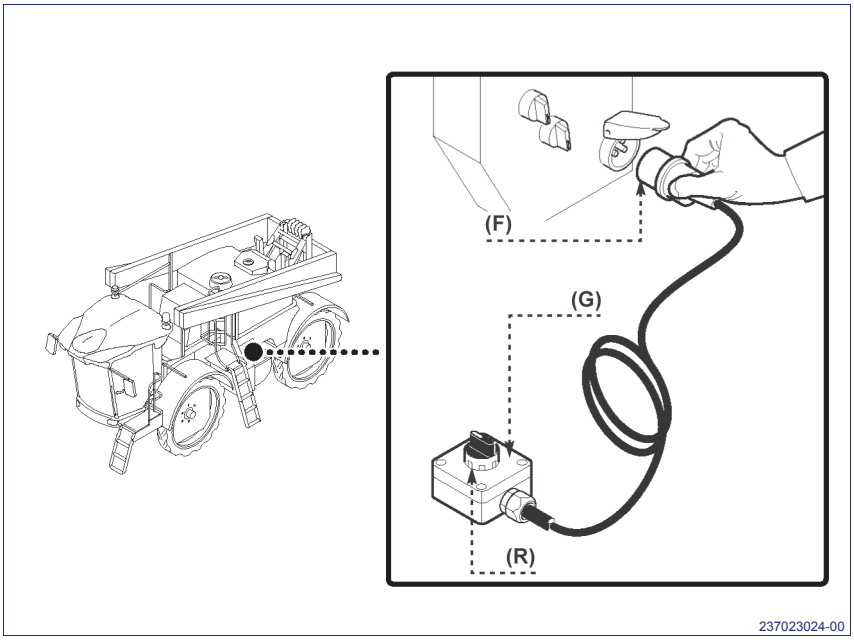
6 - Insert the plug **(F)** to enable the control electrically **(G)**.

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

8 - Insert a support to ensure that the wheel remains off the ground.



9 - Loosen the wheel fastening nuts

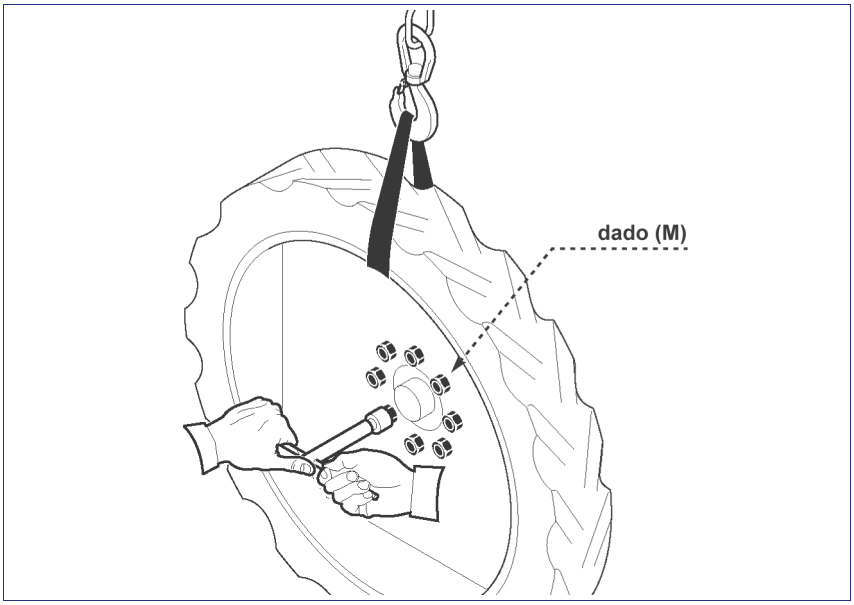
10- Put the wheel back on and secure it with the nuts.

Important

Apply a tightening torque of 550 N•m (405 lb•ft).

11- Raise the axle with the switch **(R)** and remove the previously installed safety support.

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



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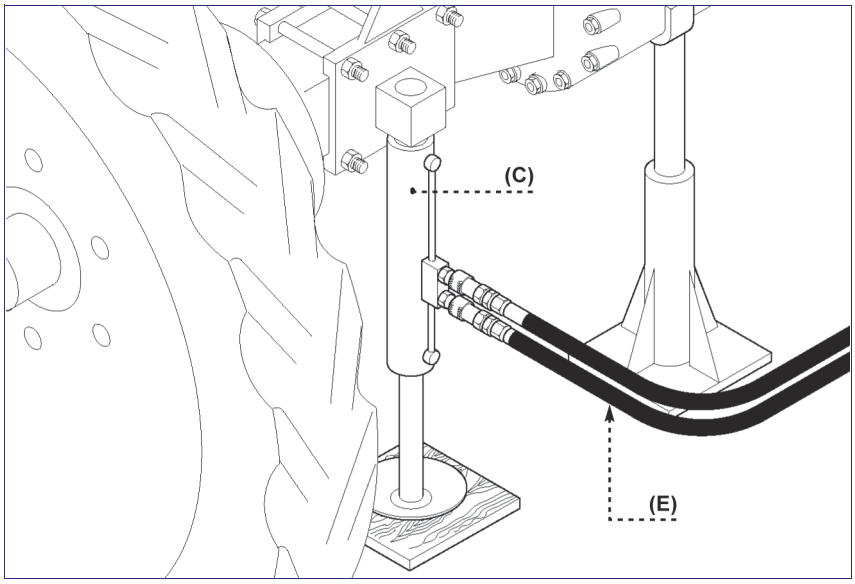
13- **Cl**ose the lifting cylinder completely **(C)** and remove it from he support once the operation has been completed.

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.



ADJUSTING THE DIVER POSITION STEERING WHEEL

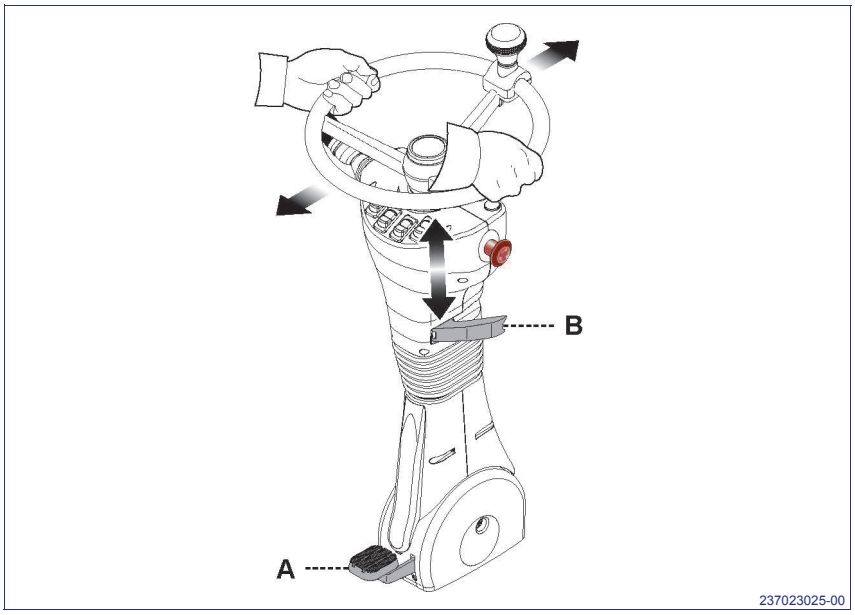
Danger - Warning

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

To set the steering wheel ergonomically, proceed as follows.

Press the pedal **(A)**, tilt the steering wheel to the desired position, and release the pedal **(A)**.

Slacken off the lever **(B)**, adjust the height of the steering wheel, and lock it in position with the lever **(B)**.

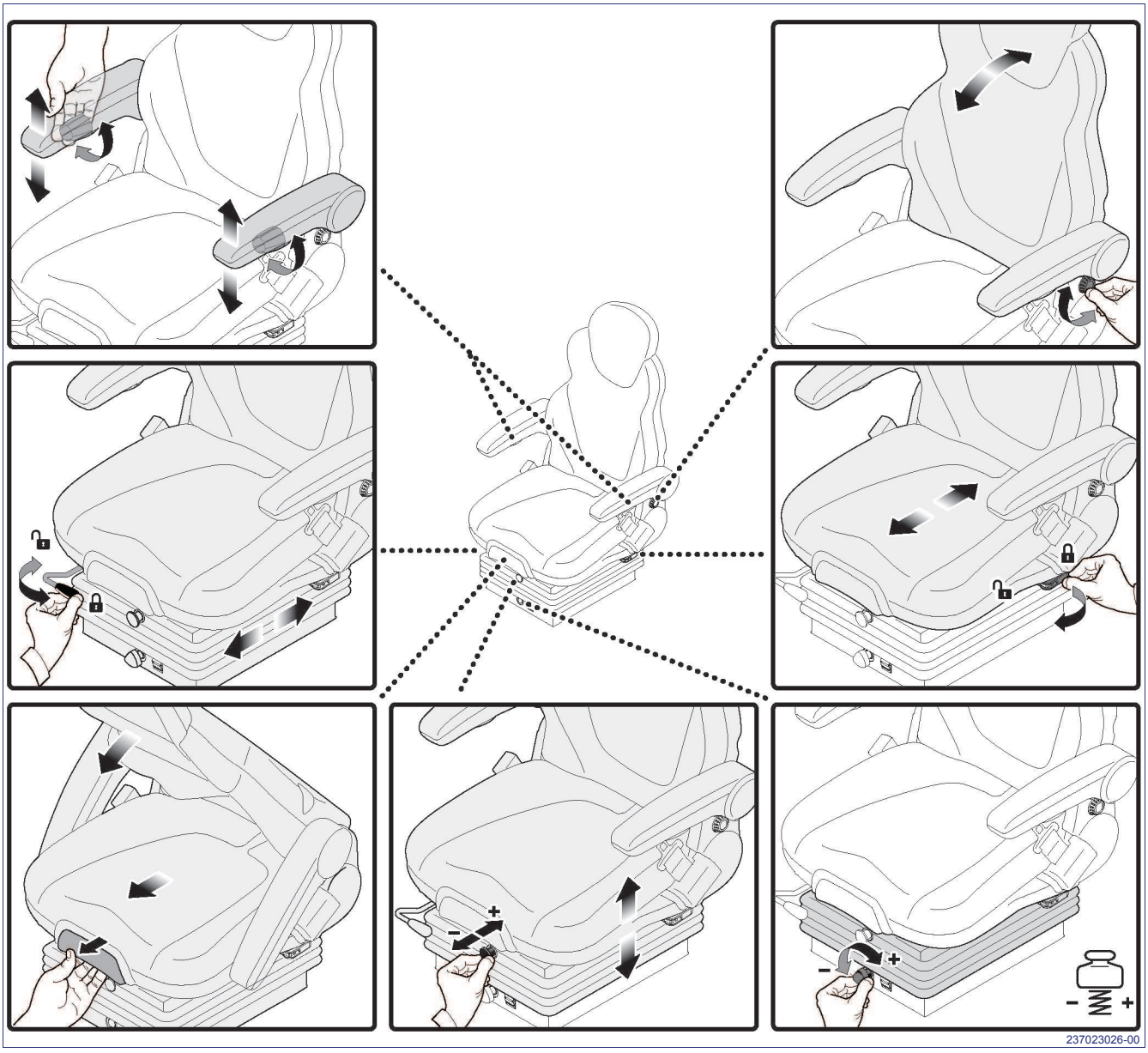


SEAT ADJUSTMENT

Danger - Warning

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

To adjust the seat, refer to the figures with the various positions. Pneumatically-adjustable seat (the control panel must be switched on for this operation).



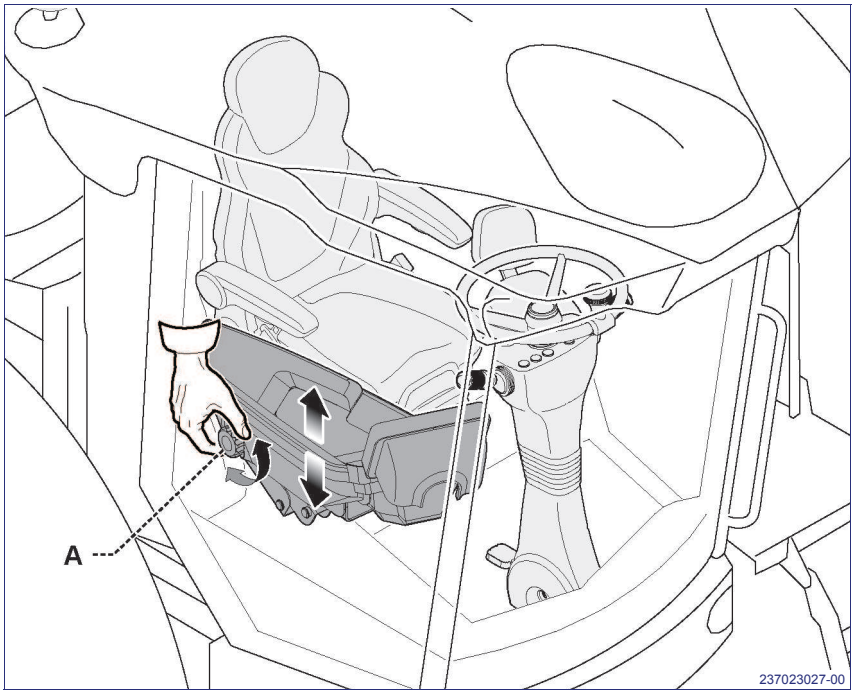
ARMREST ADJUSTMENT

Danger - Warning

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

To set the steering wheel ergonomically, proceed as follows.

Slacken off the knob **(A)**, adjust the height of the armrest, and lock it in position with the knob **(A)**.



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 41);
- with connection to the machine's hydraulic system (see page 42) (with the engine on).

Danger - Warning

This kind of operation must be carried out by skilled and specialized technicians, at adequately equipped garages.

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.

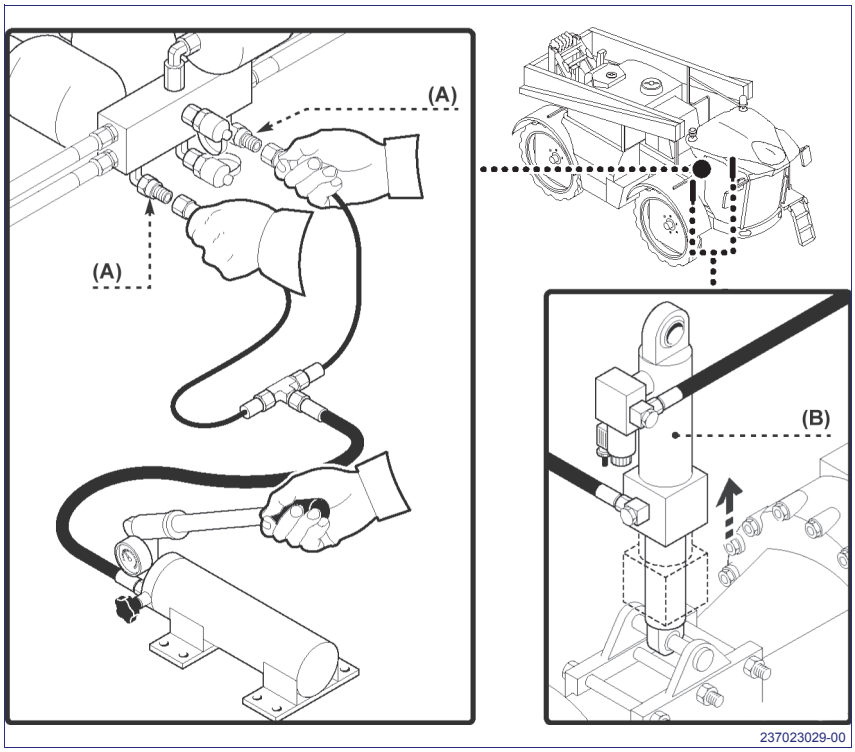
Proceed as follows.

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

Caution - Warning

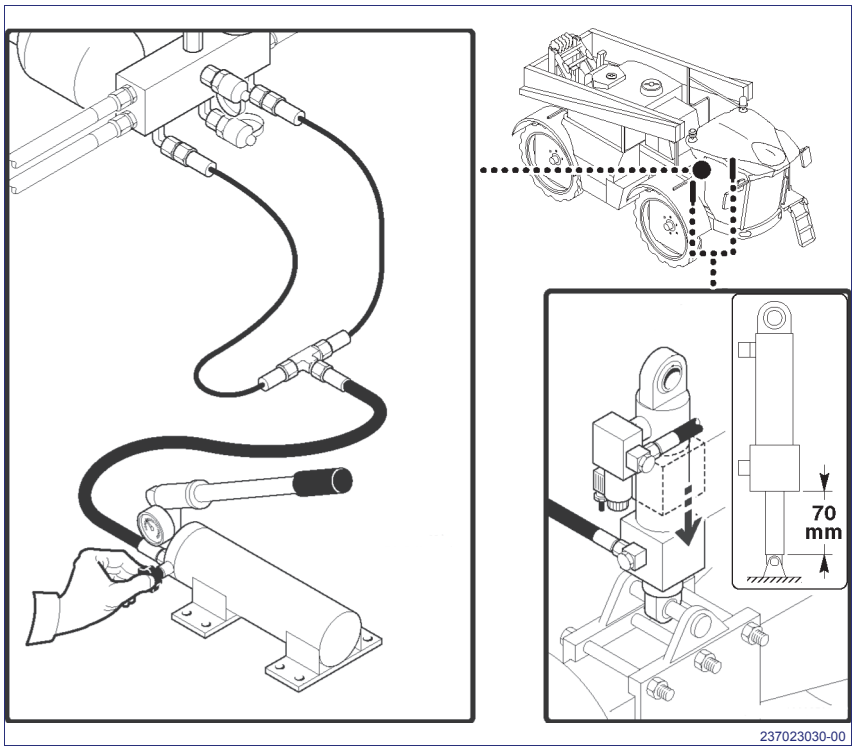
Screw the capillary hoses simultaneously to the pressure taps (A) to avoid any oil leaks.

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



3 - Drain the oil from the pump until 70 mm of the shaft remains extended.

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



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

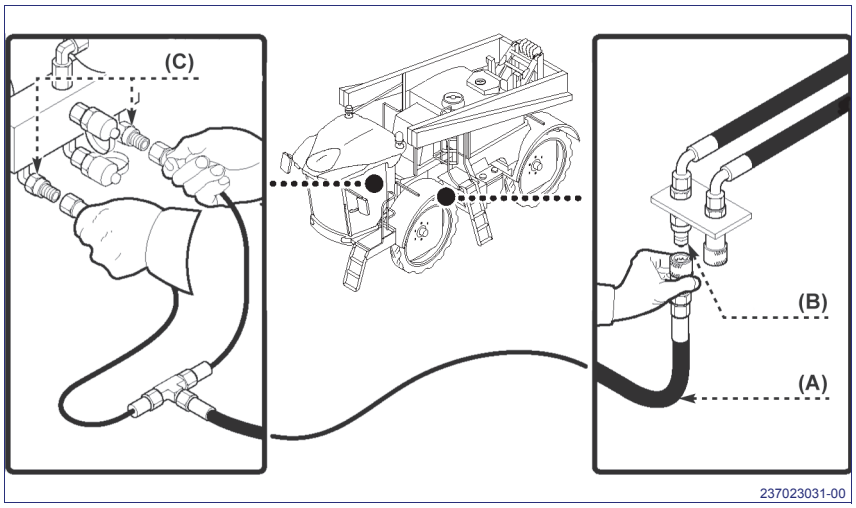
Important

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

Proceed as follows.

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.

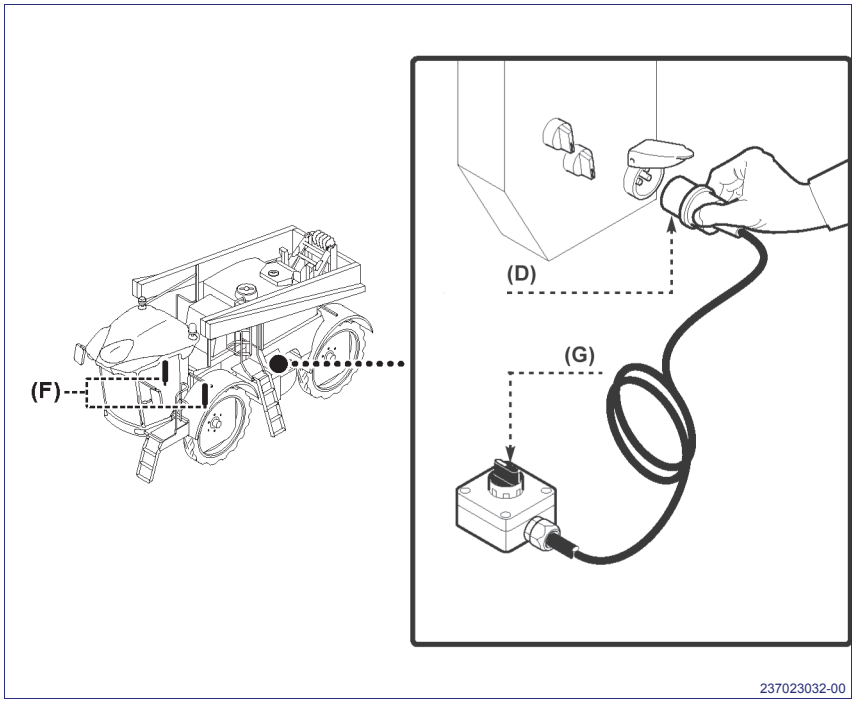


Caution - Warning

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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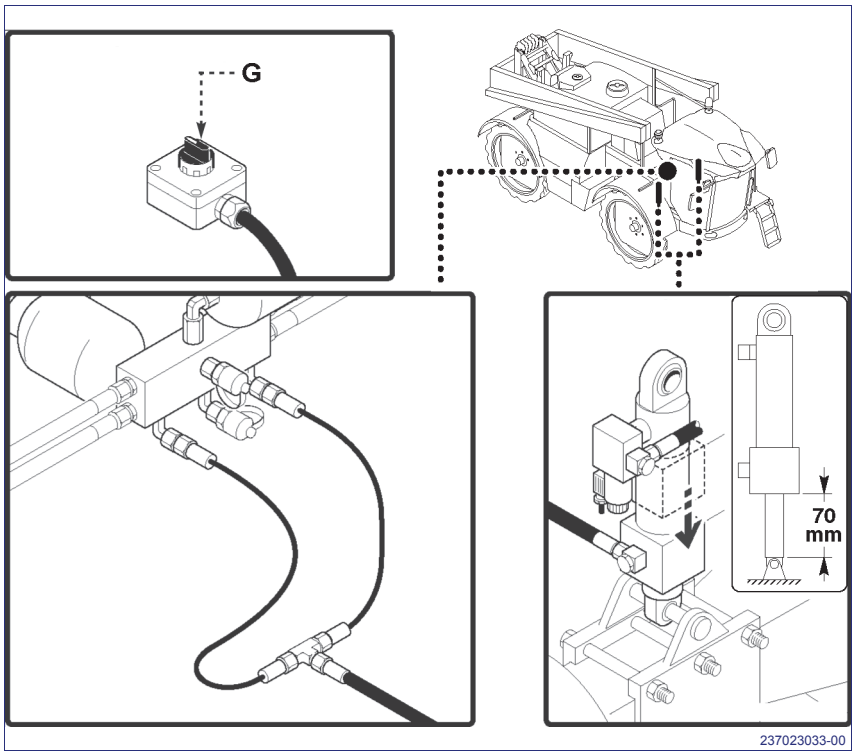
5 - Intervene on switch **(G)** to discharge the hydraulic oil **(F)**, until 70 mm of the shaft remains extended.

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



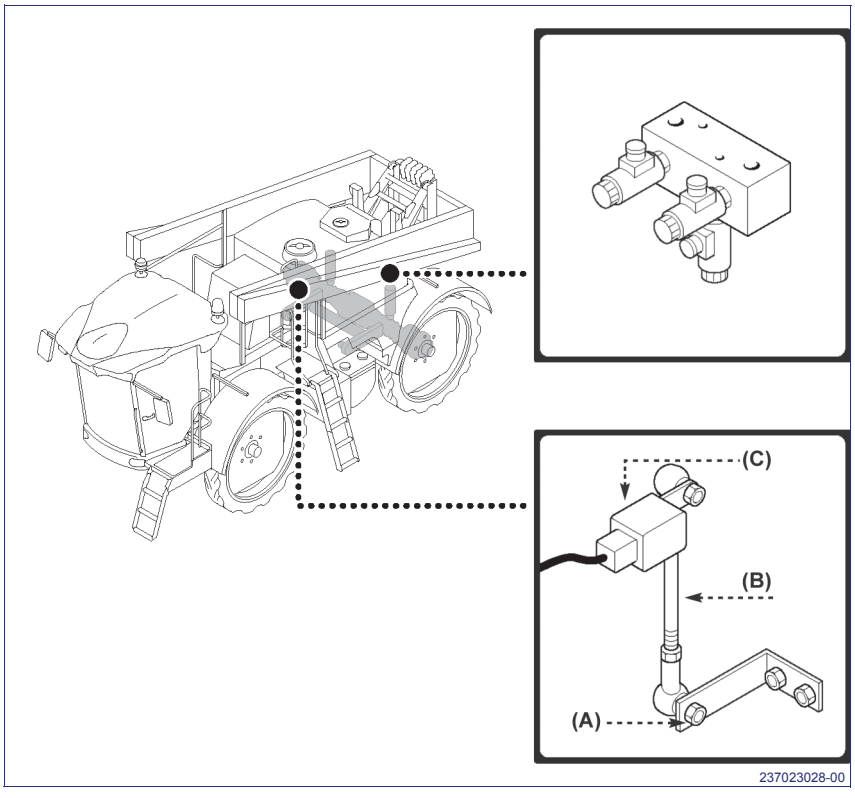
SELF-ADJUSTING REAR SHOCK ABSORBER (ELECTRIC) ADJUSTMENT

Proceed as follows.

1 - Loosen the nut **(A)** and use the tie rod **(B)** to adjust the height of the shock absorbers **(C)**.

2 - Turn the tie rod **(B)** clockwise to lower the shock absorbers or anti-clockwise to raise them.

3 - Tighten the nut **(A)** when the adjustment has been made.



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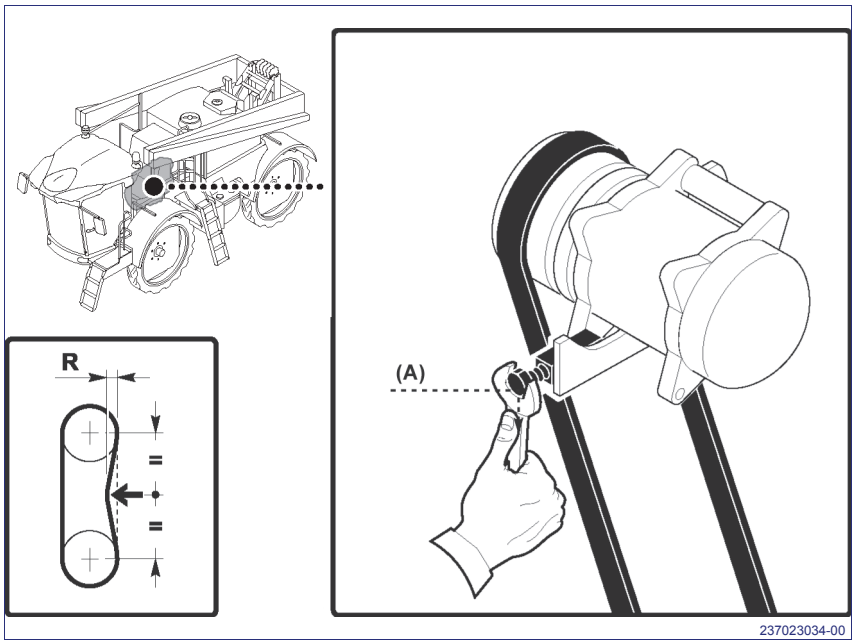
AIR CONDITIONING COMPRESSOR BELT ADJUSTMENT

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.



WATER DISTRIBUTION PUMP ADJUSTMENT

Important

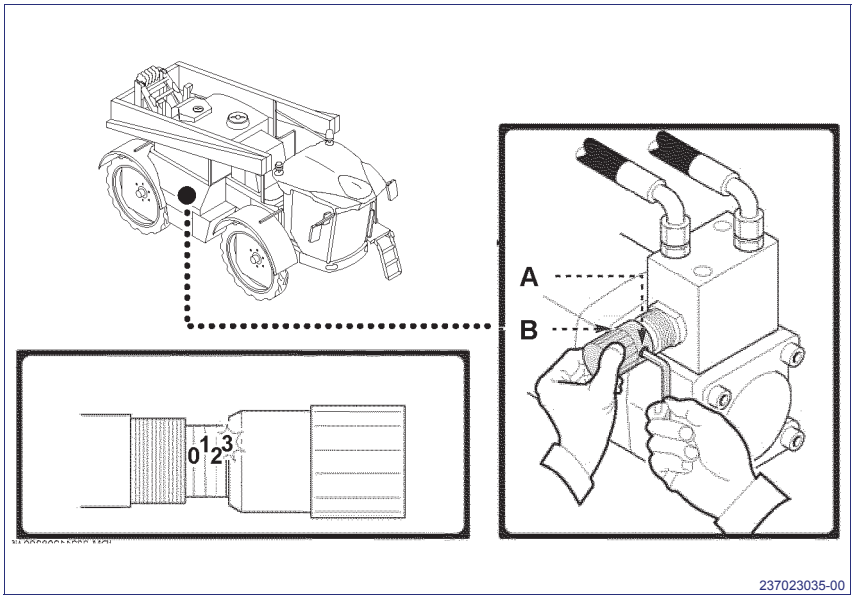
The number of pump revolutions is already adjusted by the manufacturer.

In the event of a fault, to bring the number of pump revolutions back to the optimum value, proceed as illustrated.

1 - Unscrew the dowel **(A)**.

2 - To adjust the speed of the hydraulic pump, completely screw and unscrew knob **(B)** by 3 turns in case of AR 250 pump or by 2 1/2 turns in case of AR 280 pump (see figure).

3 - Screw the dowel back on **(A)**.



Caution - Warning

The pump is adjusted by the manufacturer to operate at 530 rpm with the engine operating at 2000 rpm. In the event of a pump fault, always contact an authorised workshop for repair.

INFORMATION ABOUT USE

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.

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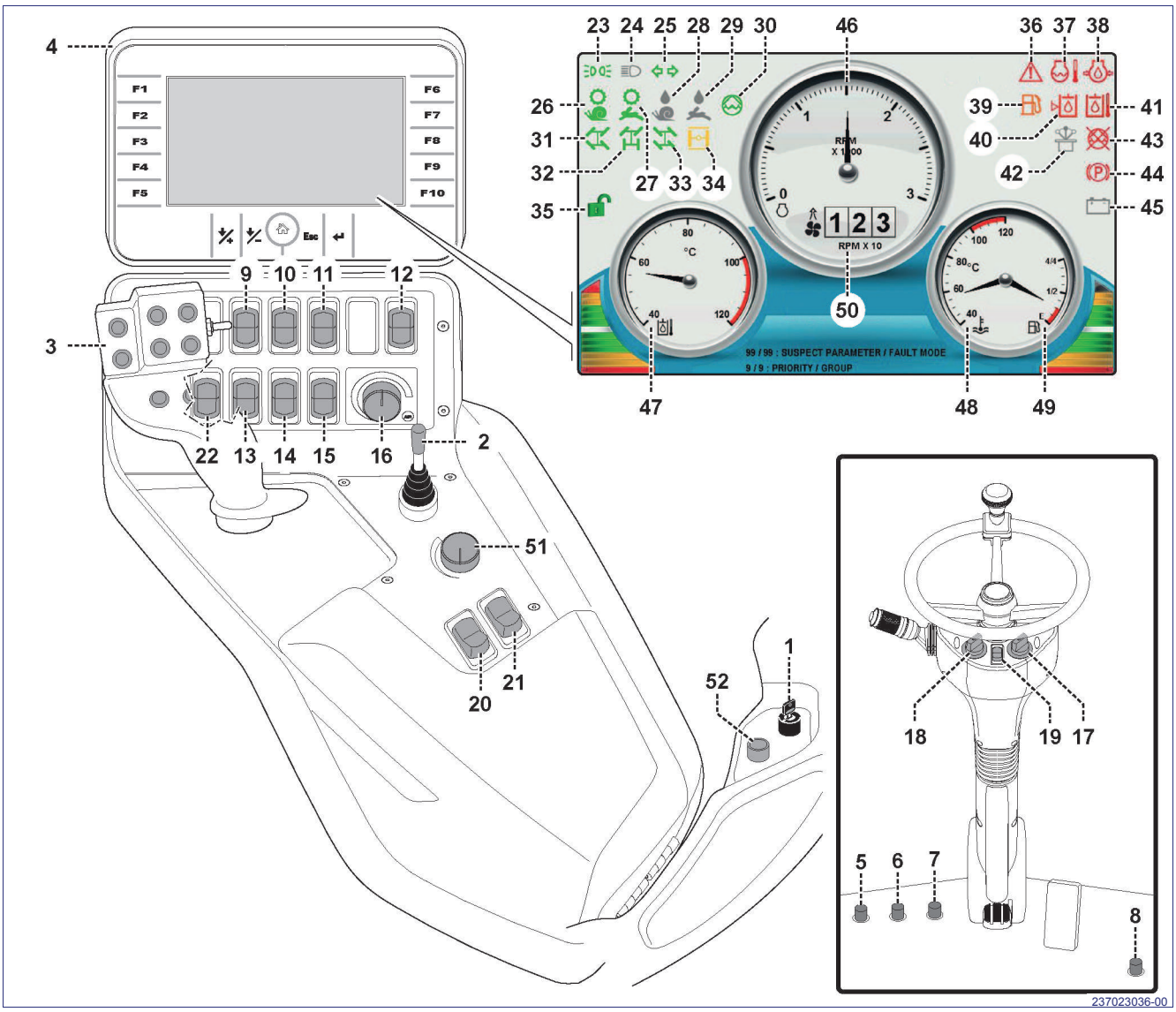
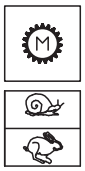
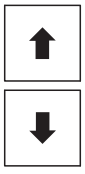
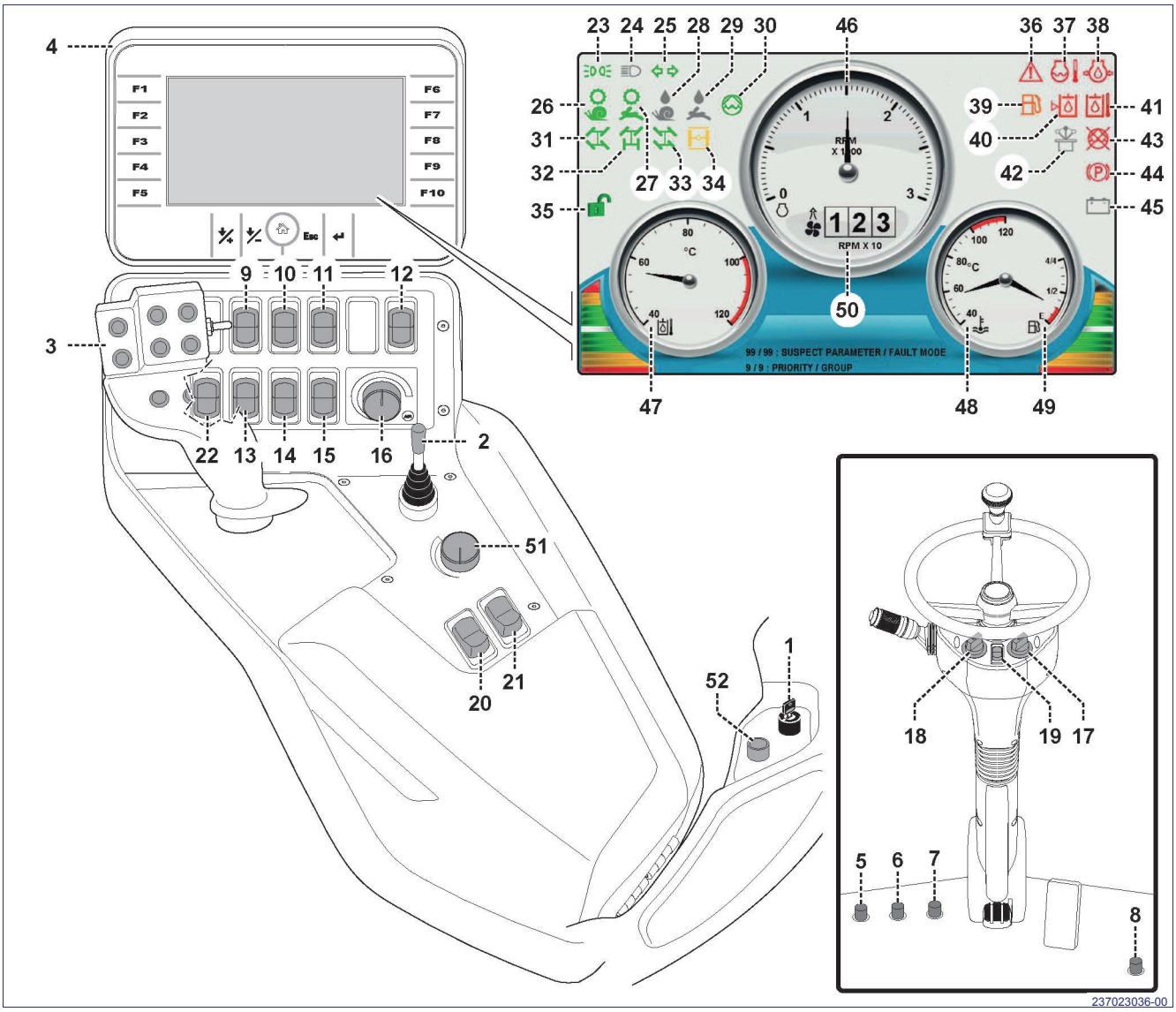
CONTROL BOARD



Ref.	Symb.	Name	Function
1		Ignition key.	Turn in a clockwise direction to start the engine. Turn in a counter-clockwise direction to preheat the spark plugs.
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**
3		Control lever for vehicle forward motion and spraying boom movements	See "Forward motion and brake lever".
4		TERA 7 operator terminal	Please refer to the terminal's user guide.
5		Autopilot pedal control (optional)	Press to deactivate the autopilot temporarily. **Important** **Autopilot mode remains in memory, since it is deactivated with the switch (13).** Press again to reactivate the autopilot. *Note: the command is only enabled when:* - *the driver is seated on the driver's seat;* - *the main steering switch **(17)** is set to **ON;*** - *switch **(13)** is disabled.*
6		Water circuit control pedal	Press to activate. Press again to deactivate *Note: this command is only present on certain machine configurations.*
7		Differential lock pedal control	Hold down to activate. Release to deactivate. *For further information, please refer to par. "Differential lock".*
8		Pedal control for excluding rear-wheel steering	Press to deactivate two steering wheels. Indicator light **(31)** turns on in the fixed mode and indicator light **(32)** starts flashing to remind the driver that the 'Four-wheel steering' mode is still selected. Press again to activate *Note: the control is only active when switch **(18)** is set to 'Four-wheel steering' and the spraying boom is switched off.*

Ref.	Symb.	Name	Function
9		Hydraulic gear switch.	To enable fast/slow speed. *Note: Change the speed only when the machine is stopped.* *Hydraulic fast speed can be activated, when mechanical fast speed is activated, only if the tank is empty and rear steering is deactivated.* *For further information, please refer to par. "Hydraulic speed change".*
10		Mechanical gear switch	To enable fast/slow speed. *Note: Change the speed only when the machine is stopped.* *For further information, please refer to par. "Mechanical speed change".*
11		Suspension lock switch	To lock the suspensions. *For further information, please refer to par. "Suspension lock".*
12		Work control switch	To enable / disable the operating controls. **Danger - Warning** **Deactivate the control before road circulation begins.**
13		Autopilot switch (optional)	Press to activate the autopilot. Press again to deactivate the autopilot. With autopilot enabled, the machine detects the work area with its GPS antenna and drives around it according to the route set with the computer. *Note: the command is only active when the driver is seated on the driver's seat and the main steering switch **(17)** is set to **ON.***
14		Start/stop switch for water circuit pump	
15		Switch for opening/closing ladder for accessing the cabin	
16		Air hose speed adjustment potentiometer (optional)	



Ref.	Symb.	Name	Function
17		Main rear wheel steering switch	Set the switch to **ON** to enable switch **(18)**. Set the switch to **OFF** to disable rear wheel steering. **Danger - Warning** **Deactivate the control before road circulation begins.** *Note:* *When switch **(17)** is enabled and mechanical fast speed is activated, fast speed cannot be engaged.*
18		Steering main switch	Select the steering mode: Four steering mode for lateral movement.
			Two wheel drive.
			Four wheel drive indicator light.

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Ref.	Symb.	Name	Function
19		Parking brake control switch	Release the safety catch and activate or deactivate the brake.
20		Water system washing and working switch (optional)	
21		Internal tank washing activation/ deactivation switch (optional)	
22		Additional mixing pump switch (*)	
23		Green position lights indicator light	On: position lights on. Off: position lights off.
24		Full beam headlights on warning light (blue)	On: high beams on. Off: high beams off.
25		Hazard lights indicator (green)	Flashing: hazard lights on. Off: hazard lights off.
26		Mechanical slow speed indicator (green)	Steady on: speed engaged. Flashing: speed being engaged. Off: speed not engaged.
27		Mechanical fast speed indicator (green)	Steady on: speed engaged. Flashing: speed being engaged. Off: speed not engaged.
28		Hydraulic slow speed indicator (green)	On: gear activated. Off: speed not engaged.
29		Hydraulic fast speed indicator (green)	On: gear activated. Off: speed not engaged.
30		Water system pump indicator (green)	On: water pump running. Off: water pump off.
31		'Four-wheel steering' mode indicator light (green)	Steady on: steering mode activated. Flashing: steering mode being activated. Off: steering mode deactivated.
32		'Two-wheel steering' mode indicator light (green)	Steady on: steering mode activated. Flashing slowly: wheels not properly centred. Flashing quickly: steering mode being activated. Off: steering mode deactivated.
33		'Crab steering' mode indicator light (green)	Steady on: steering mode activated. Flashing: steering mode being activated. Off: steering mode deactivated.

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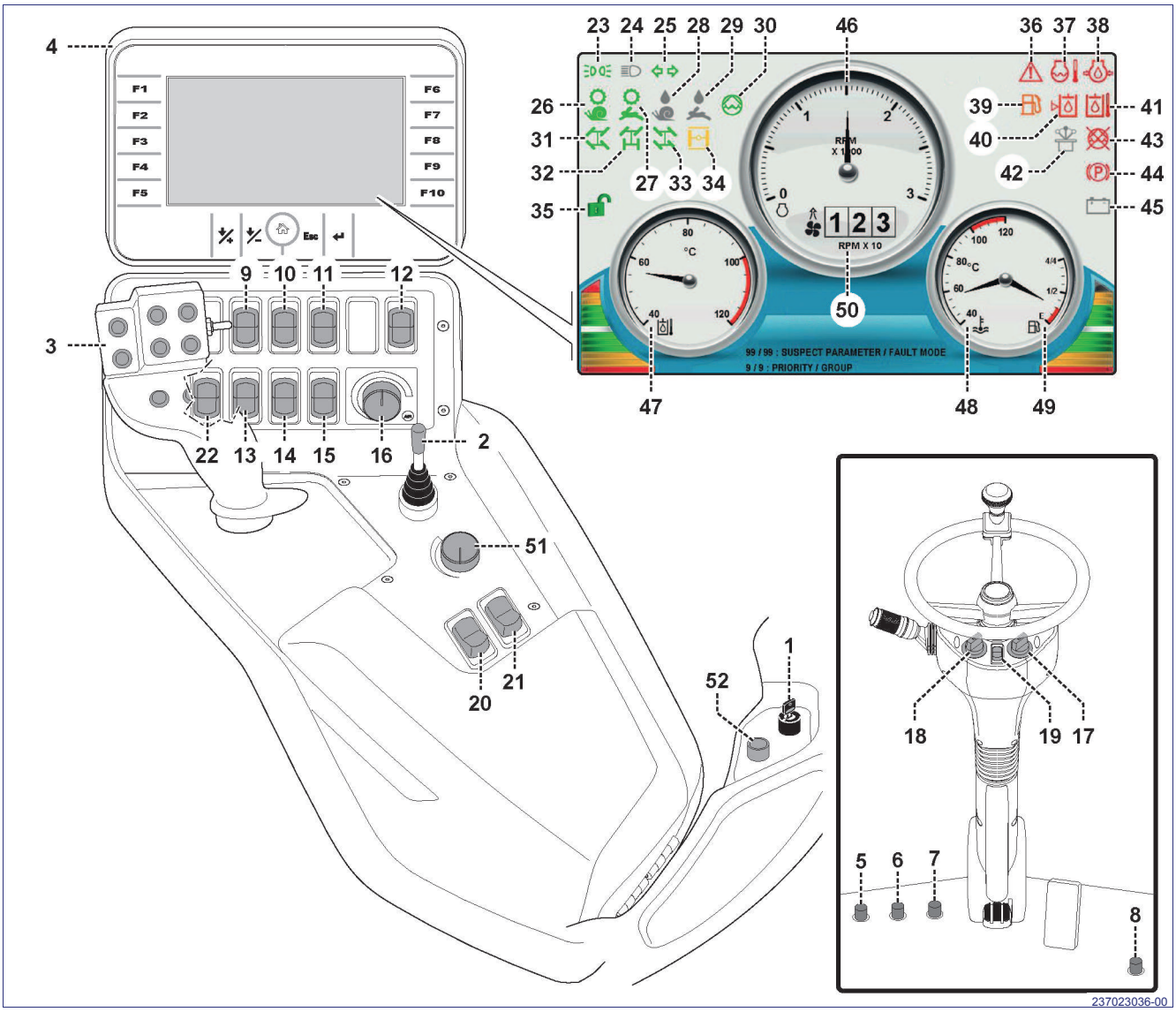

Ref.	Symb.	Name	Function
34		Differential lock indicator (yellow)	On: differential lock engaged. Off: differential lock disengaged.
35		Road/work mode indicator	Green padlock open: spraying boom in work mode. Red padlock closed: spraying boom in road mode.
36		Emergency stop indicator (red)	On: emergency stop button activated. Off: emergency stop button deactivated.
37		Red cooling liquid temperature ndicator light.	On: high temperature. Off: normal temperature.
38		Red engine oil pressure indicator light.	On: insufficient pressure. Off: sufficient pressure.
39		Low fuel warning light	

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Ref.	Symb.	Name	Function
40		Insufficient hydraulic oil level warning light (red)	
41		Hydraulic fluid temperature indicator (red)	On: the hydraulic fluid temperature has reached the alarm level. Off: the hydraulic fluid temperature is normal.
42		Starter alarm indicator (red)	On: you have attempted to start the machine with the travel lever not in the centre position. Off: all other circumstances.
43		Water pump alarm indicator (red)	On: the oil level is insufficient or the diaphragms are broken. Off: the oil level is sufficient or the diaphragms are intact.
44		Red parking brake indicator light.	On: brake activated. Off: brake deactivated.
45		Red alternator indicator light.	On: the alternator is not charging the battery. Off: the alternator is charging the battery.
46		Revolution counter	
47		Engine water temperature indicator	
48		Engine water temperature indicator.	
49		Fuel level indicator.	
50		Air hose fan tachometer (optional)	
51		Motor revolution number adjusting knob	To run the motor speed at: IV - 2400 rpm III - 2000 rpm II - 1800 rpm I - 1500 rpm
52		Electric lighter.	

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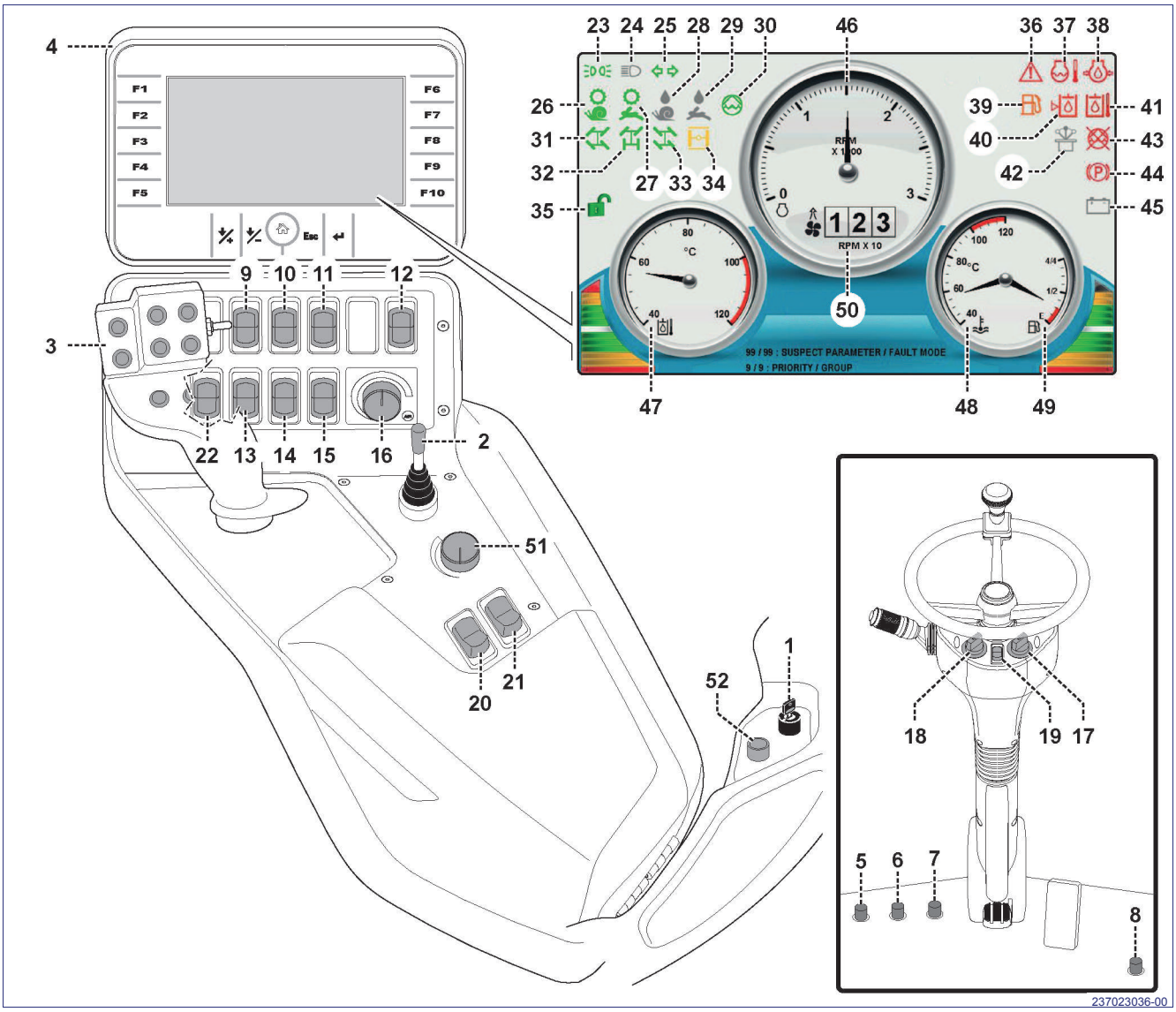
4
F1
F2
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F5
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RPM X 1000
RPM X 10
1 2 3
50
99 / 99 : SUSPECT PARAMETER / FAULT MODE
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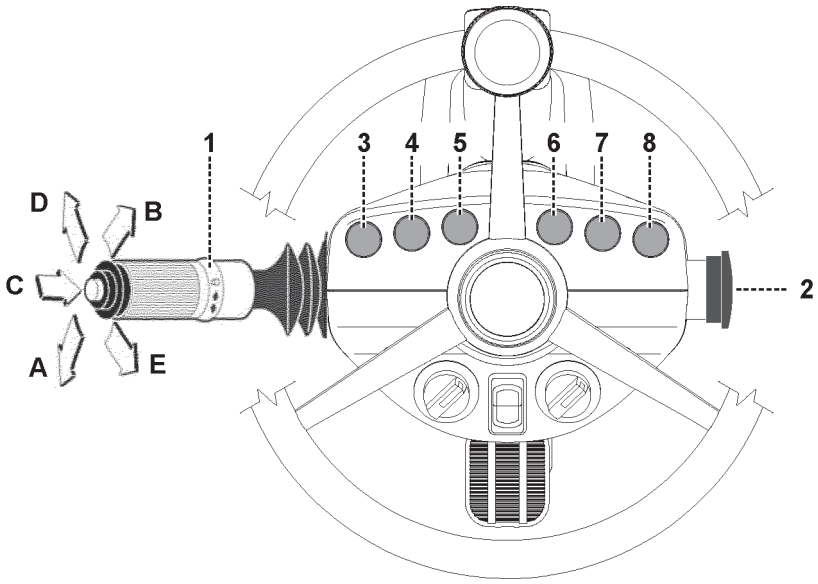
CONTROL PANEL



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Ref.	Symb.	Name	Function	Symb.	Indication
1		Light control lever.	Position lights.		Turn the dial.
			Low beams.		Turn the dial.
			High beams. High beam flashing.		Lever in position **(A)**. 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		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.
3		Left direction indicator (green)			On: left direction indicator on. Off: left direction indicator off.
4		Hazard lights indicator (red)			On: hazards lights on. Off: hazard lights off.

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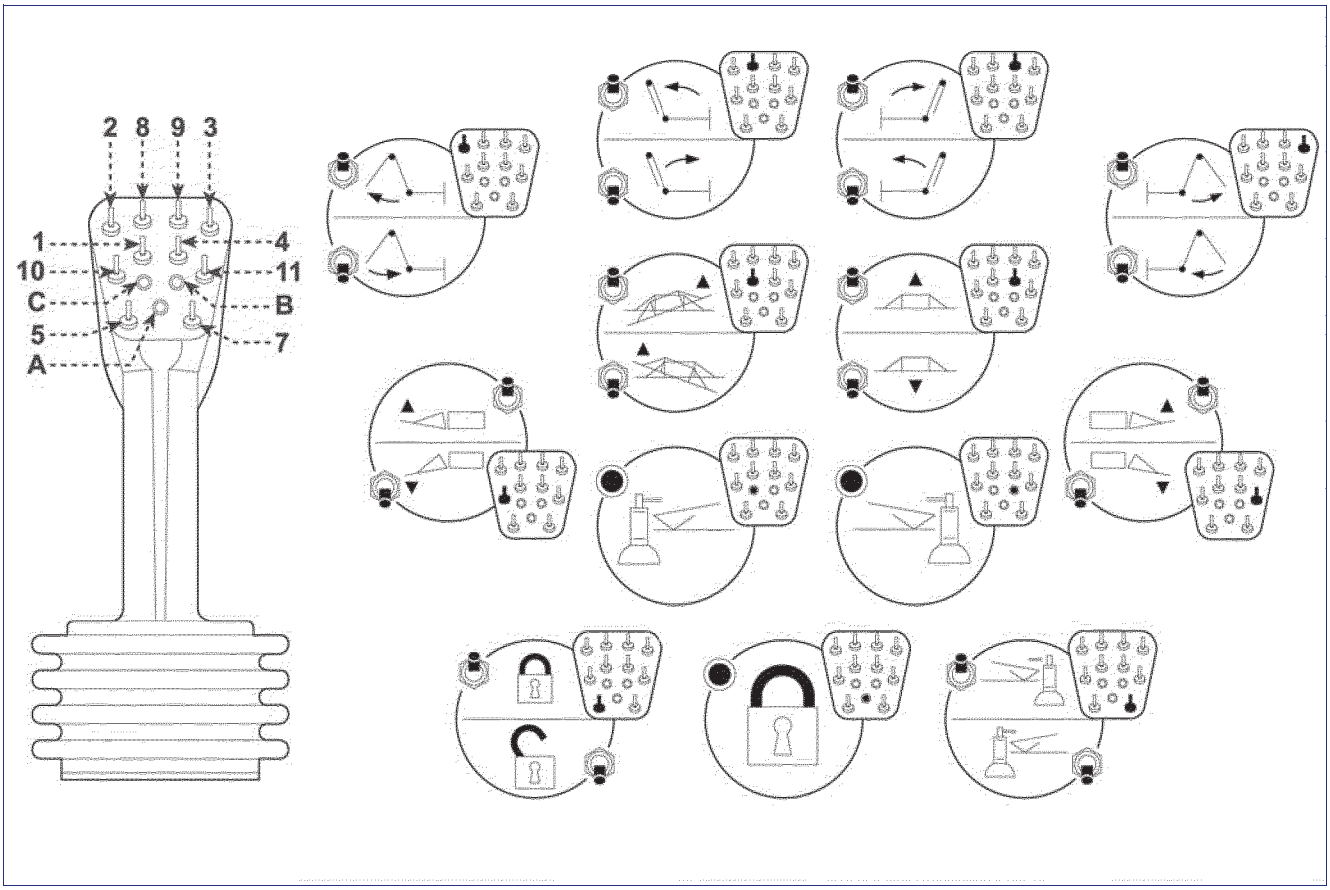
Ref.	Symb.	Name	Function	Symb.	Indication
5		Red parking brake indicator light.			On: brake activated. Off: brake deactivated.
6		Blue high-beam indicator light.			On: high beams on. Off: high beams off.
7		Green position lights indicator light			On: position lights on. Off: position lights off.
8		Right direction indicator (green)			On: right direction indicator on. Off: right direction indicator off.

FORWARD MOTION AND BRAKE LEVER CONTROLS

The information below is only a part of the entire information available. For further details, consult leaflet 13.



Ref.	Symb.	Name	Function
1		Bar levelling switch.	
2		Left extension opening/closing switch	
3		Right extension opening/closing switch	
4		Bar height control switch.	
5		Bar balancer locking and unlocking button.	Note: When green pilot light (A) is on, it signals that the equaliser is locked.

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Ref.	Symb.	Name	Function
7		Row marker activation/deactivation switch	If the right-hand row marker activates, the red indicator light (B) turns on. If the left-hand row marker activates, the red indicator light (C) turns on.
8		Left arm opening/closing switch	
9		Right arm opening/closing switch	
10		Left arm partial levelling switch.	
11		Right arm partial levelling switch.	
12		Control lever for machine movement.	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.**

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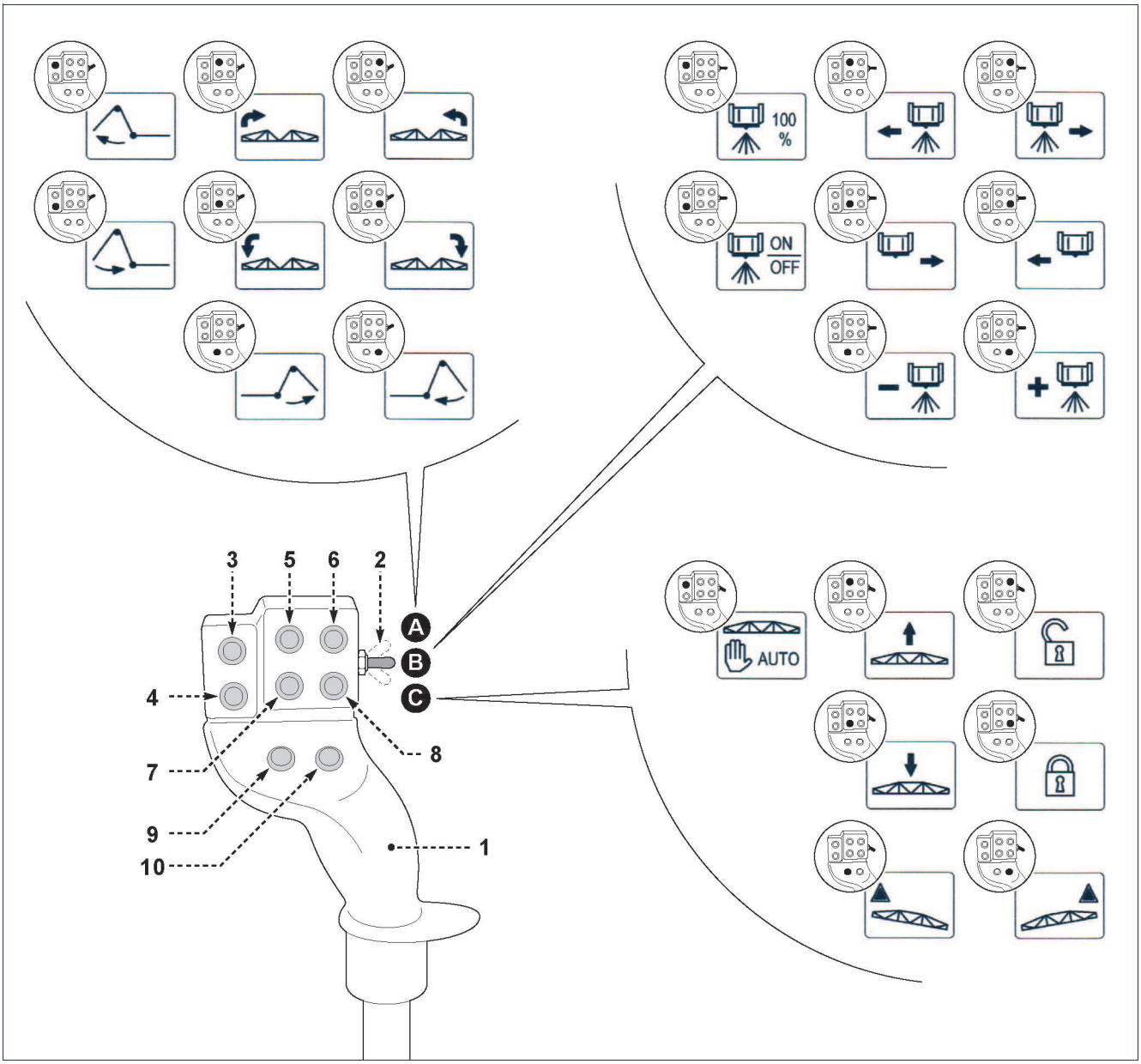
FORWARD MOTION AND BRAKE LEVER CONTROLS (OPTIONAL)

The information below is only a part of the entire information available. For further details, consult leaflet 13.



Ref.	Name	Symb.	Function
1	Control lever for machine movement.		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.**
2	Control function selector switch		Move the switch to position **(A)**, **(B)** or **(C)** depending on the function to be assigned to the buttons.

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Ref.	Name	Symb.	Function
3	Button		With switch **(2)** in position **(A)**: - activates opening of the left-hand extension arm.
			With switch **(2)** in position **(B)**: - resets the spraying modifications effected through buttons **(9)** and **(10)**.
			With switch **(2)** in position **(C)**: - selects the spraying mode: automatic or manual.
4	Button		With switch **(2)** in position **(A)**: - activates closing of the left-hand extension arm.
			With switch **(2)** in position **(B)**: - starts spraying.
			With switch **(2)** in position **(C)**: - No operation.
5	Button		With switch **(2)** in position **(A)**: - activates closing of the left-hand arm.
			With switch **(2)** in position **(B)** and no section of the boom spraying: - activates spraying on the leftmost section of the boom. With switch **(2)** in position **(B)** and one or more boom sections spraying: - activates, each time the button is pressed, spraying on other sections of the boom from right to left.
			With switch **(2)** in position **(C)**: - activates raising of the boom.
6	Button		With switch **(2)** in position **(A)**: - activates closing of the right-hand arm.
			With switch **(2)** in position **(B)** and no section of the boom spraying: - activates spraying on the rightmost section of the boom. With switch **(2)** in position **(B)** and one or more boom sections spraying: - activates, each time the button is pressed, spraying on other sections of the boom from left to right.
			With switch **(2)** in position **(C)**: - activates releasing of the boom leveller.

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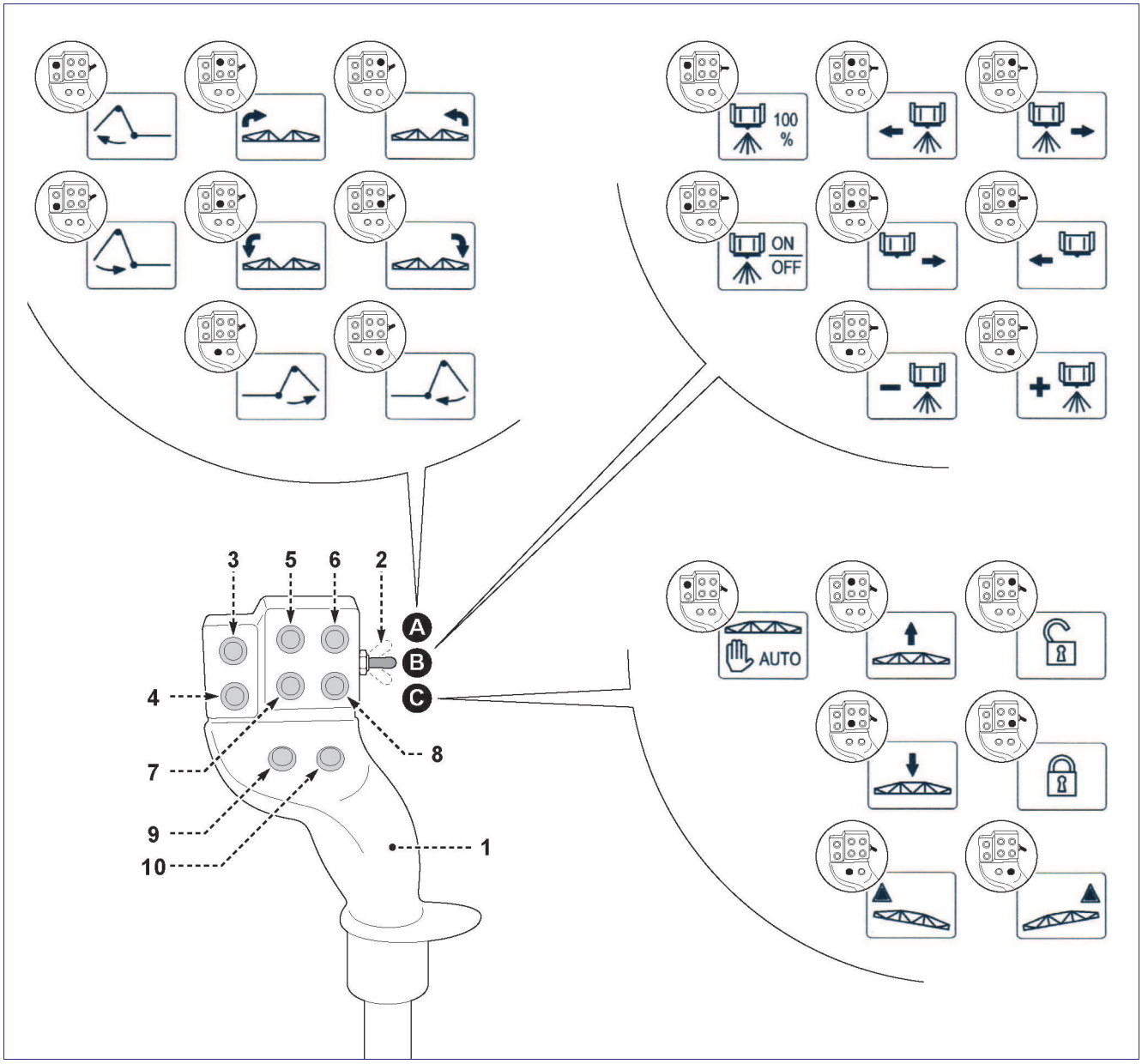
Ref.	Name	Symb.	Function
7	Button		With switch **(2)** in position **(A)**: - activates opening of the left-hand arm.
			With switch **(2)** in position **(B)**: - deactivates, each time the button is pressed, spraying on sections of the boom from left to right.
			With switch **(2)** in position **(C)**: - activates lowering of the boom.
8	Button		With switch **(2)** in position **(A)**: - activates opening of the right-hand arm.
			With switch **(2)** in position **(B)**: - deactivates, each time the button is pressed, spraying on sections of the boom from right to left.
			With switch **(2)** in position **(C)**: - activates locking of the boom leveller.
9	Button		With switch **(2)** in position **(A)**: - activates opening of the right-hand extension arm.
			With switch **(2)** in position **(B)** and automatic mode engaged: - spraying flow rate drops by 10% whenever the button is pressed. With switch **(2)** in position **(B)** and manual mode engaged: - spraying flow rate drops whenever the button is pressed.
			With switch **(2)** in position **(C)**: - activates inclination of the boom.
10	Button		With switch **(2)** in position **(A)**: - activates closing of the right-hand extension arm.
			With switch **(2)** in position **(B)** and automatic mode engaged: - spraying flow rate increases by 10% whenever the button is pressed. With switch **(2)** in position **(B)** and manual mode engaged: - spraying flow rate increases whenever the button is pressed.
			With switch **(2)** in position **(C)**: - activates inclination of the boom.



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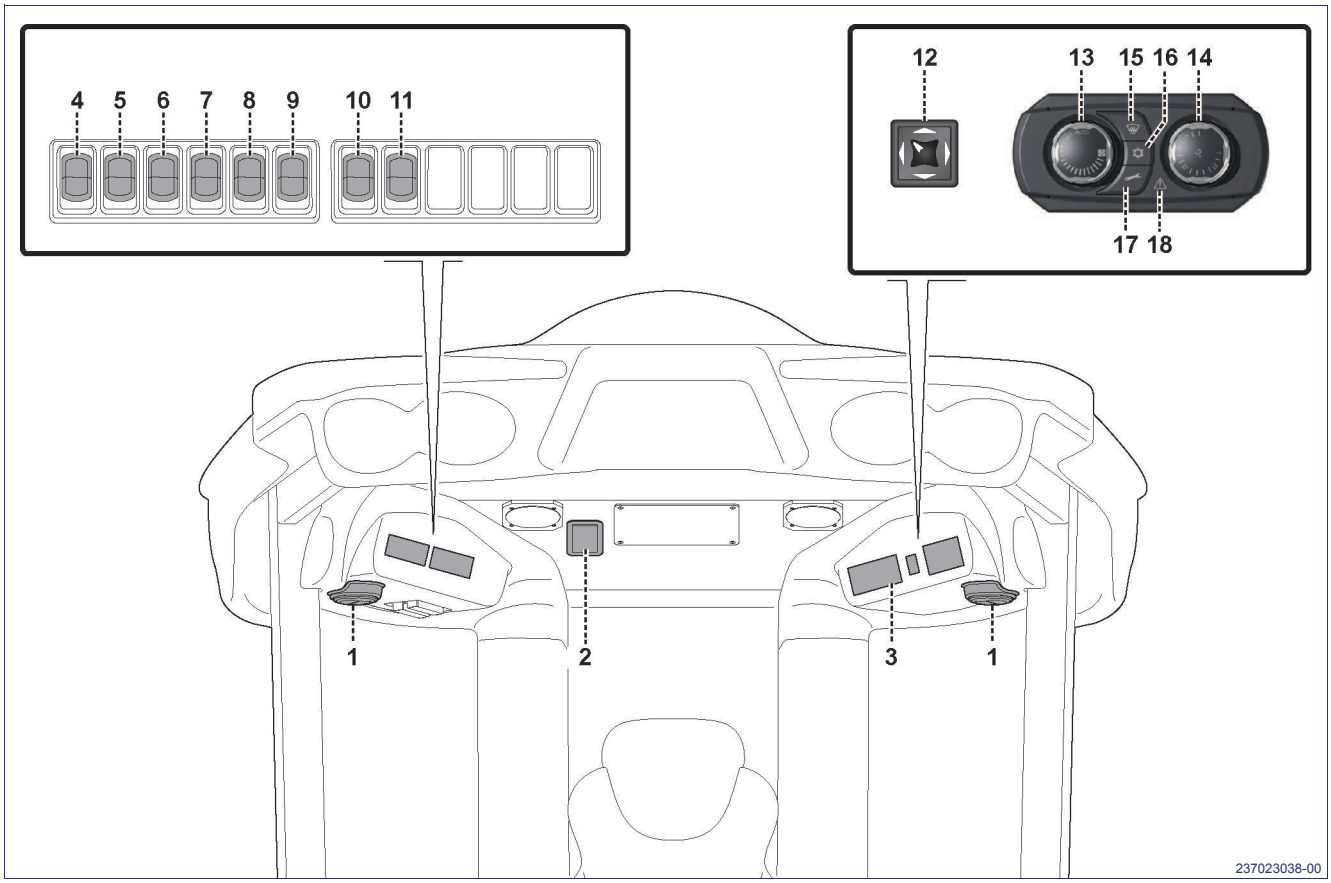
SERVICE AND INTERIOR CAB LIGHT CONTROLS



Ref.	Symb.	Name	Function
1		Adjustable air conditioning vents.	Circulates the air throughout the cab.
2		Cab top light.	To light the operator's seat.
3		Car radio	See radio user manual.
4		Working light swtich.	
5		Working light swtich.	
6		Working light swtich.	
7		Working light swtich.	
8		Two speed windshield wiper switch.	To activate the windshield wiper
9		Flashing switch	To switch the flashing light on

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Ref.	Symb.	Name	Function
10		Switch with light for emergency lights.	To switch the emergency lights.
11		Rear-view mirror heating switch	To activate the heating of the rear-view mirrors
12		Rear-view mirror adjustment switch	To adjust the position of the rear-view mirrors.
13		Fan speed regulator	Sets the fan speed.
14		Temperature regulator	Sets the cab temperature.
15		Defroster switch	Used for quickly removing condensation or ice on the windscreen.
16		A/C switch	Press to start the A/C system.
17		Service button	See following paragraph.
18		Internal pressure indicator	Steady on: the cab has not reached its minimum internal pressure (20 Pa). Flashing: the control panel temperature is too high or a short circuit has been detected. Check the wiring, fuses, relays and power draw of the A/C and pressuriser units.

Service

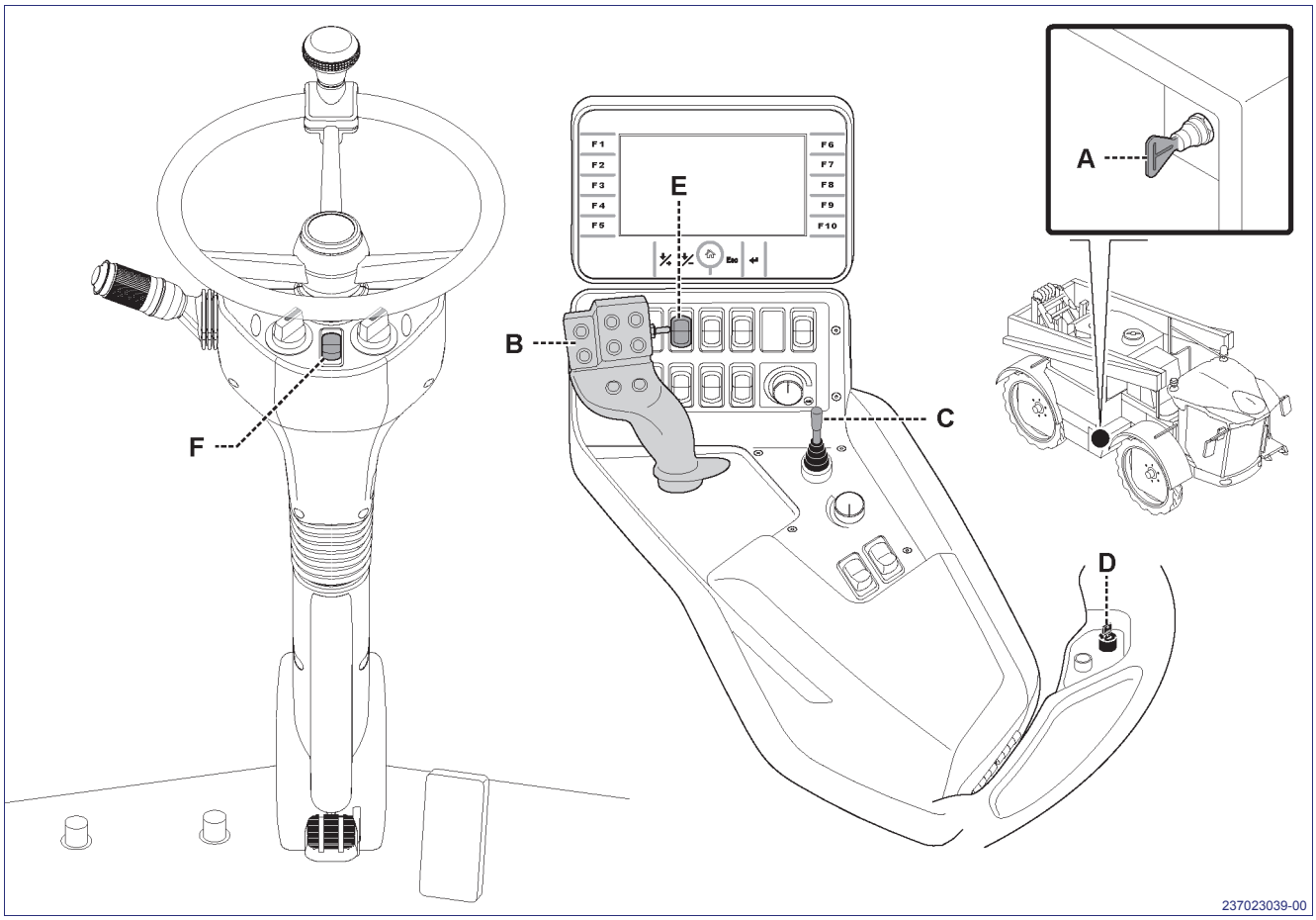
When the machine is operating, the device scales down the hours before the next Service.

The service button is backlit. When you reach 200 hours of operation, the light grows brighter to indicate that the filter must be replaced (see "Replacing the cab intake filter", page 118).

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

To reset the counter, hold the service button down for 5 seconds.

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.

Prior to operating with the vehicle, it is important to familiarise with the latter's stability characteristics.

Prior to using the vehicle, adjust the rear-view mirrors properly so as to obtain the best possible view of the manoeuvre zones.

To start the machine follow the procedure below.

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

2 - Check that the control **(B)** is in the central position **"0"**.

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 - Select the gear with switch **(E)**.

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

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.

At all events, always operate with all parts of the body within the cabin and keep the doors closed to minimise exposure to any external hazards.

MACHINE STOP

Proceed as follows.

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 **(F)**.

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.

Before getting out of the vehicle and prior to any maintenance and adjustment operations, pull the parking brake, switch the engine off, remove the ignition key from the dashboard and wait for all moving parts to stop.

OPENING THE PASSENGER SEAT (OPTIONAL)

Proceed as follows.

1 - Use the lever **(A)** to release the seat **(B)**.

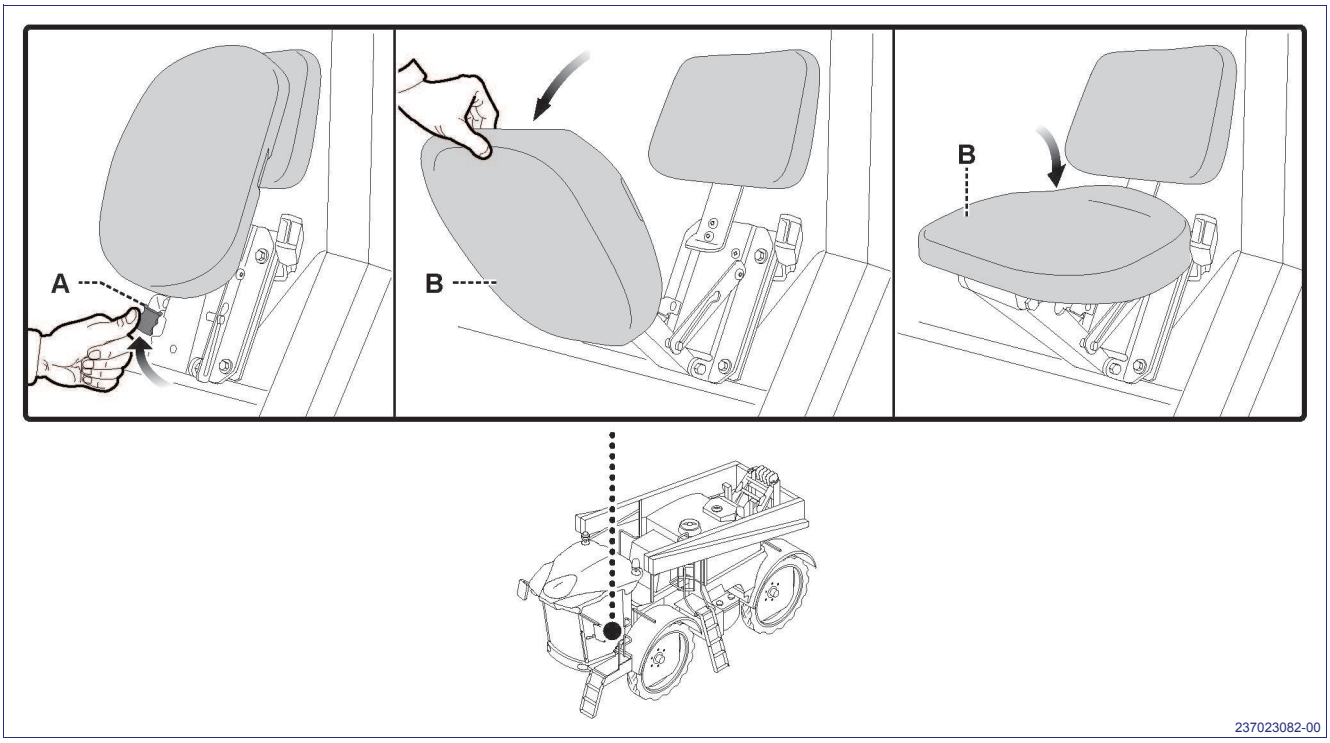
2 - Pull the seat **(B)** to move its guides forwards.

3 - Rest the seat in position **(B)** as shown in the figure.

4 - When training is completed, close the passenger seat by running the above procedure in reverse order.

Important

The passenger seat can only be occupied by an expert instructor during the operator training phase, for instructing the latter on the vehicle's use. Any other use is forbidden.
The cabin is approved for a single operator on board, therefore, it is forbidden to transport persons, objects or animals inside the cabin.



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BAR RETRACTION STEPS

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

Caution - Warning

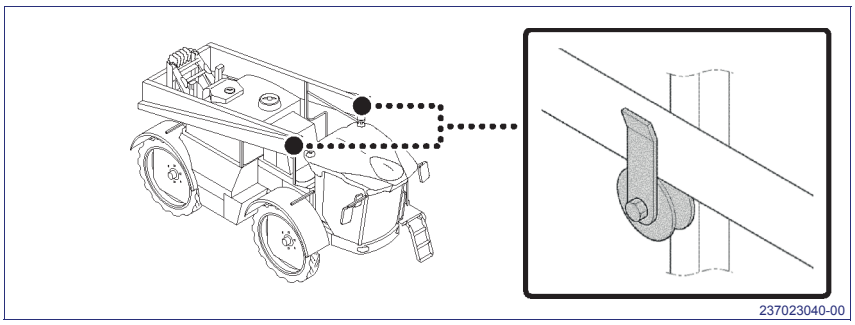
Pay special attention to the rearview mirrors when the bar is extended or retracted.

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.



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ROAD TRANSPORT

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:

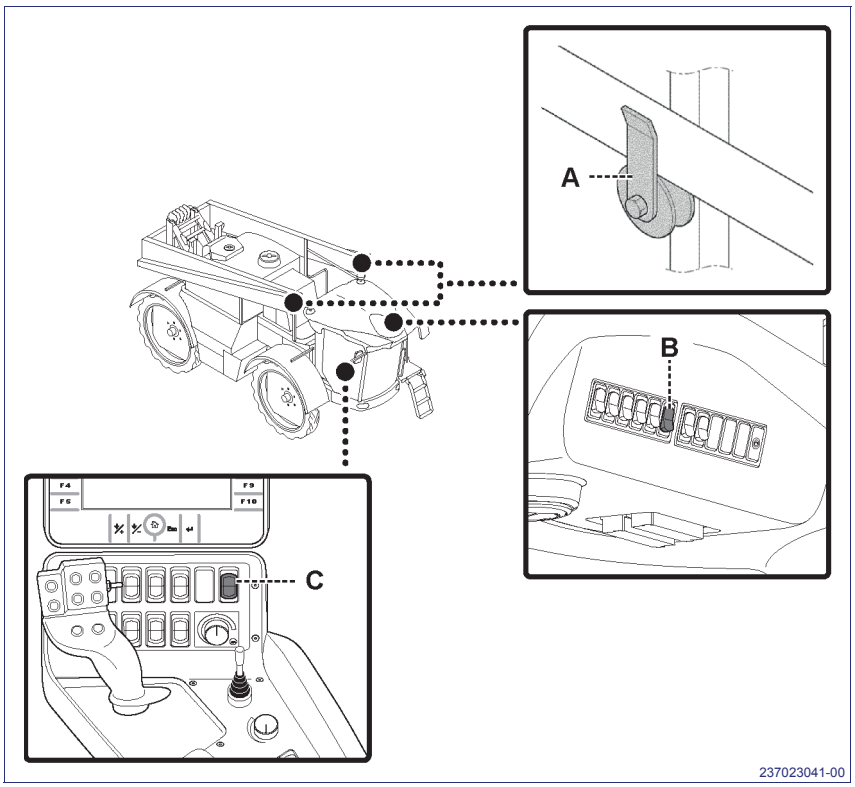
- lock the parts that may cause sudden and unexpected movements.
- make sure that the equipment does not exceed the maximum permitted overall dimensions.
- if necessary, arrange proper signalling
- Completely empty the tank.

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 boom is properly closed and positioned on its supports **(A)**.
- intervene on switch **(B)** to turn the warning light on;
- ensure all the road signalling devices are working perfectly.
- intervene on switch **(C)** to exclude the operation controls;



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 transport requires the knowledge and the observance of the regulations contained in the manual "Road transport regulations".

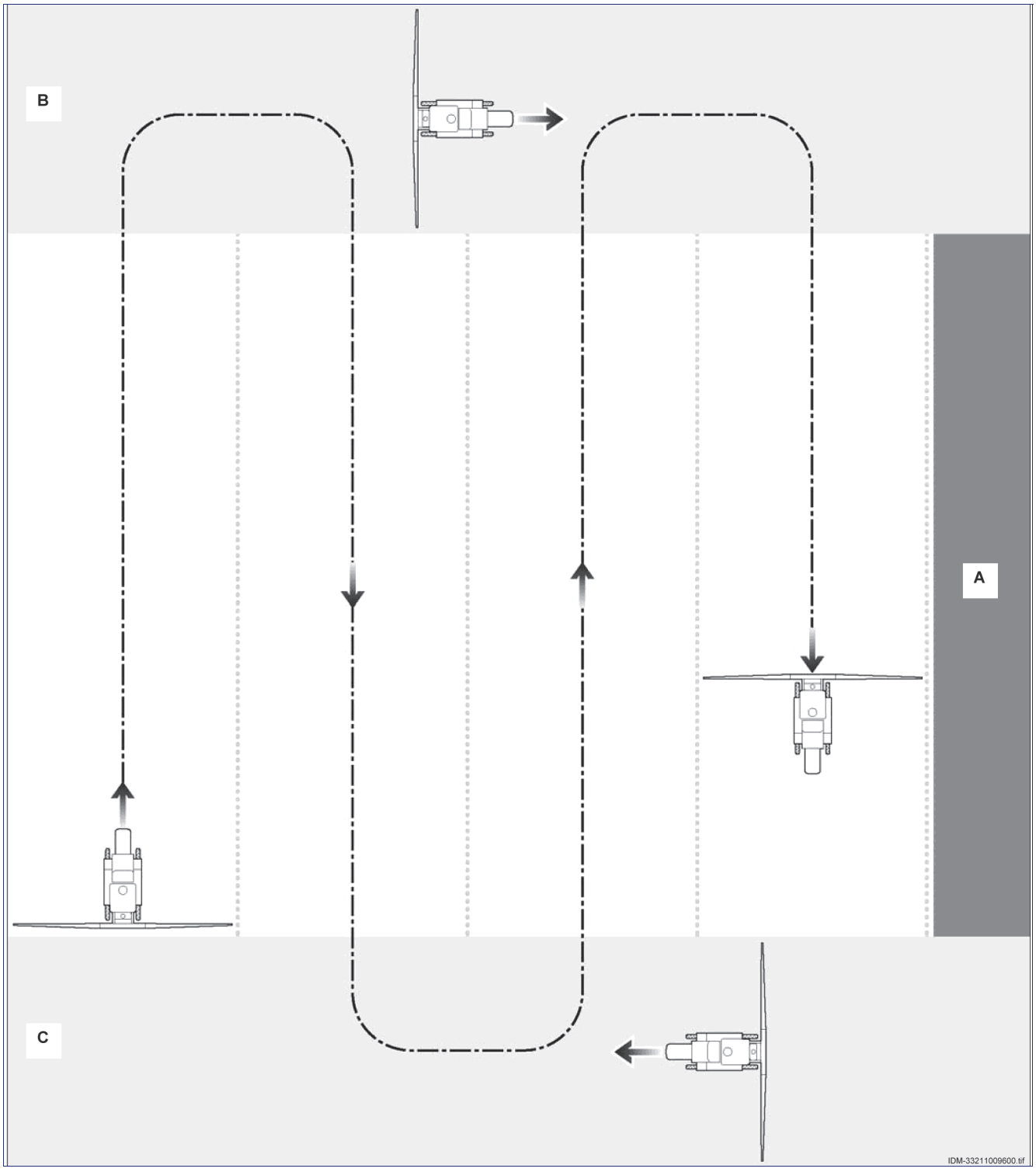
Before accessing a public road after travelling on gravel or dirty roads, any mud residues must be carefully cleaned off tyres in order to avoid dirtying the tarmac.

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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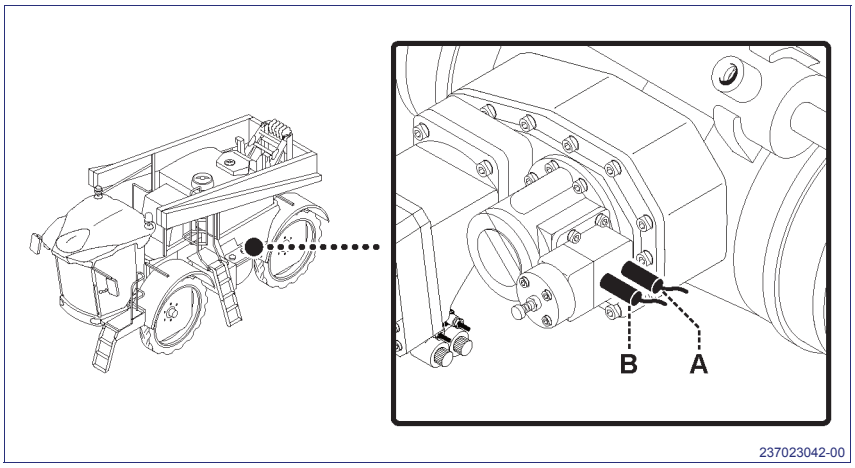
MECHANICAL SPEED CHANGE

Important

The fast speed can only be engaged when the machinery is stationary.

The mechanical speed has two sensors **(A)** and **(B)**. Sensor **(A)** detects whether the machine is stationary to enable the speed to be engaged.

Sensor **(B)** tells the driver that the speed has been engaged successfully.



Important

If the speed's indicator starts flashing during the speed change, this means that it has not engaged properly. To engage the speed, drive the machine forwards very slowly until the indicator for the speed in question turns on steady.

HYDRAULIC SPEED CHANGE

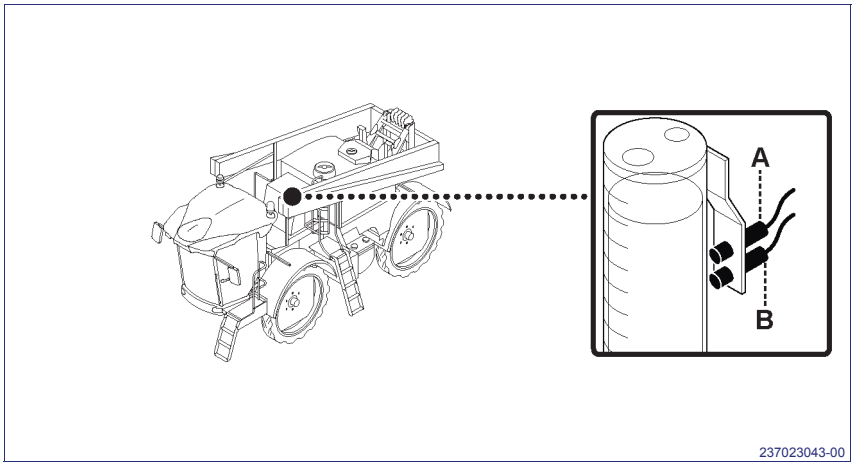
Important

The fast speed can only be engaged when the machinery is stationary.

Hydraulic fast speed can always be engaged when the mechanical low speed is engaged.

Hydraulic fast speed can only be engaged when the mechanical fast speed is engaged if:

- **the tank is empty;**
- **rear steering is deactivated.**



The tank level sensors **(A)** and **(B)** detect the amount of liquid contained in it.

The fast speed can only be engaged if the LEDs of both sensors are turned on.

The sensors must be positioned 3-4 mm from the float.

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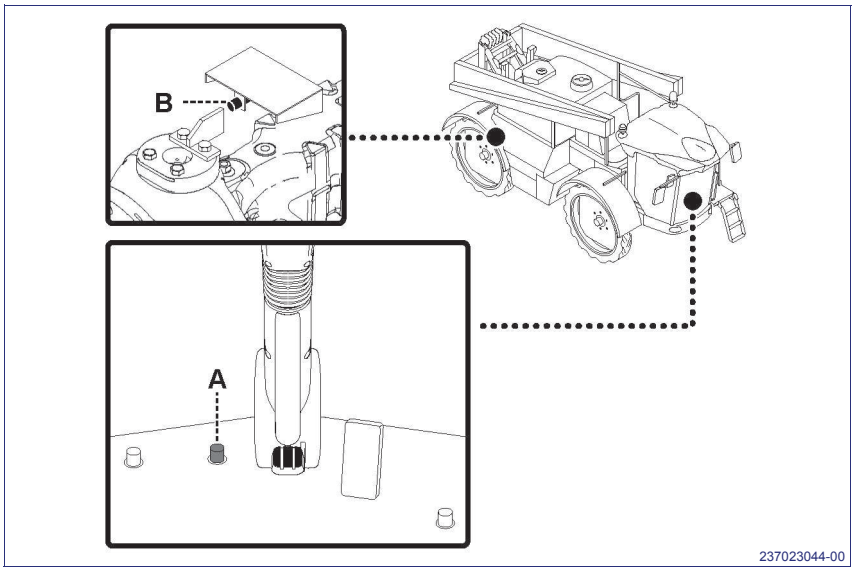
DIFFERENTIAL LOCK

Important

The differential lock can be engaged with button (A) only if:

- **mechanical slow speed is engaged;**
- **sensor (B) says that the rear wheels are properly centred.**



SUSPENSION LOCK

Important

The suspensions should only be locked when the terrain is steeply sloping, to prevent the machine from slipping sideways. In normal working conditions, the suspensions must be released.

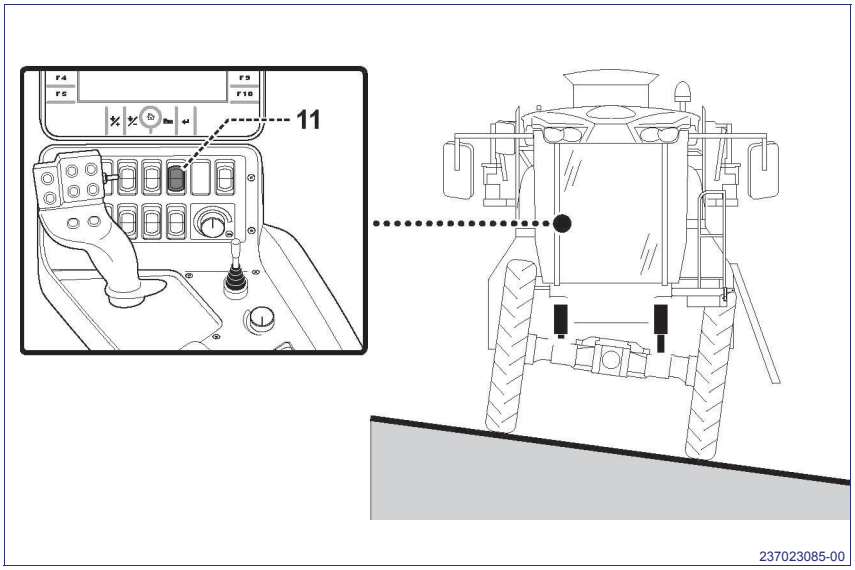
Caution - Warning

Operating the machine for extended periods of time with the suspension locked can cause the chassis to fail. The machine is not designed to operate for long periods with the suspensions locked.

Proceed as follows:

1 - Press switch **(11)** to lock the suspensions.

2 - As soon as you have finished working on the sloping terrain, press switch **(11)** again to release the suspensions.



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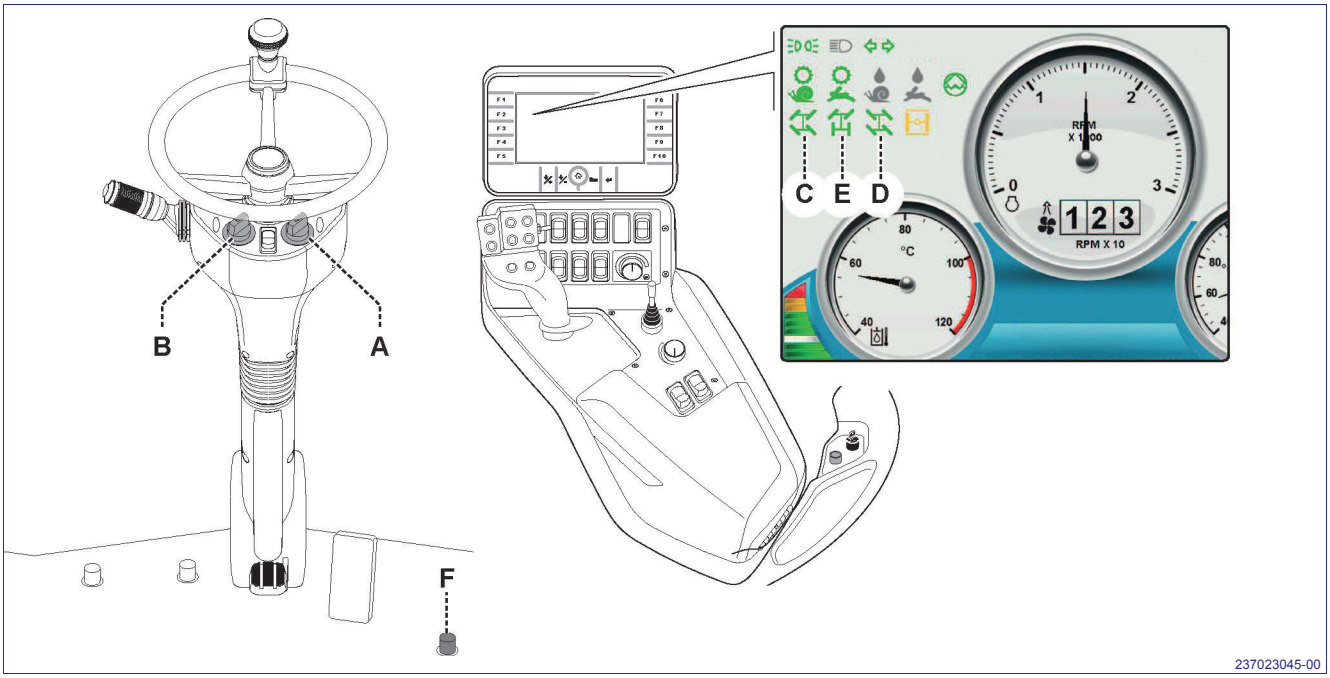
STEERING MODE



Activation of the ’Four-wheel steering’ (’4WS’) or ’Crab steering’ modes is necessary to facilitate steering of the vehicle during reverse gear motion and/or for getting around obstacles.

To select the steering modes, proceed as indicated below.

1 - Use switch **(A)** to activate rear wheel steering.

2 - Use switch **(B)** to select the steering mode (’4WS’  or ’Crab’ ).

3 - Turn the steering wheel until the front wheels fall within the safety angle (± 10° compared to the centred wheel).

Once the wheels are within the safety angle, the automatic positioning of the rear wheels activates.

Once this operation is completed, the steering mode changes and the relative ’4WS’ **(C)** or **’**Crab’ **(D)** indicator light turns on.

4 - To return to the two-wheel steering mode (’2WS’), put switch **(B)** in the intermediate position and turn the steering wheel until the front wheels fall within the safety angle.

Once the wheels are within the safety angle, the automatic centring of the rear wheels activates.

Once this operation is completed, the steering mode changes and the ’2WS’ **(E)** indicator light turns on.

5 - During the ’4WS’ steering mode and with the boom open, it is possible to switch to the ’2WS’ mode by pressing the appropriate pedal control **(F)** and turning the steering wheel until the front wheels fall within the safety angle.

6 - To return to the ’4WS’ mode, press the pedal control **(F)** again and turn the steering wheel until the front wheels fall within the safety angle.

Important

Deactivate switch (A) only after you have activated ’2WS’ mode (indicator light (E) on). With switch (A) active, the fast speed is deactivated.

Caution - Warning

Rear wheel steering cannot be activated at speeds exceeding 11 kph. Once the speed falls below 11 kph, the steering mode change is activated.

Caution - Warning

If the vehicle with rear-wheel steering active exceeds 13 km/h, a buzzer sounds to signal the obligation to slow down. The buzzer deactivates only once the speed falls below 13 km/h.

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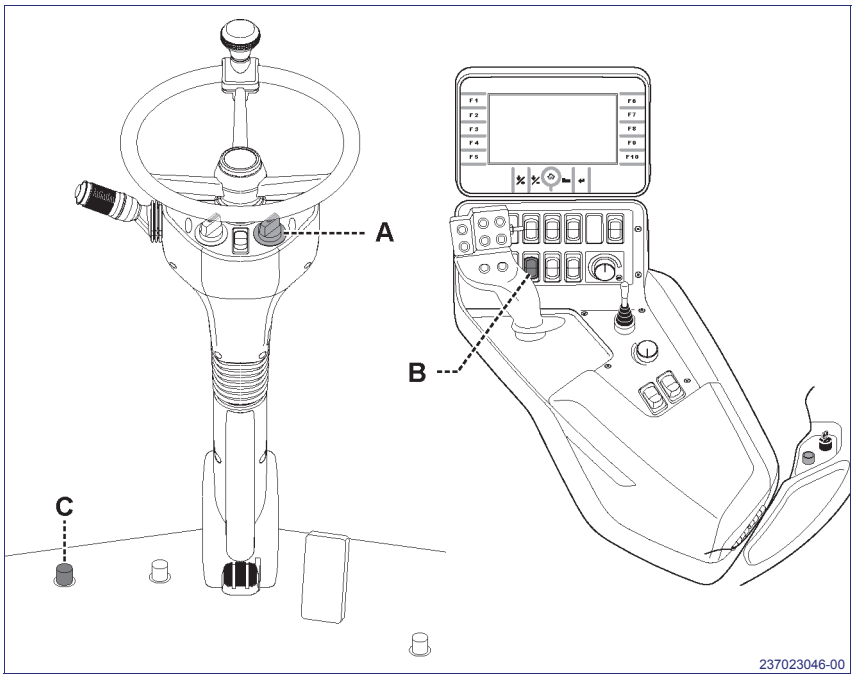
AUTOPILOT FUNCTION (OPTIONAL)

The autopilot operates with both 2 and 4 wheel steering. For greater precision, we recommend using it in 2 wheel steering mode.

It is activated as follows.

1 - Use switch **(A)** to activate rear wheel steering.



Important

The autopilot operates properly at speeds up to 18 kph. Above this speed, its precision falls off considerably.

2 - Use switch **(B)** to enable the autopilot.

3 - Activate the autopilot by pressing pedal **(C)**. Press pedal **(C)** again to deactivate the autopilot.

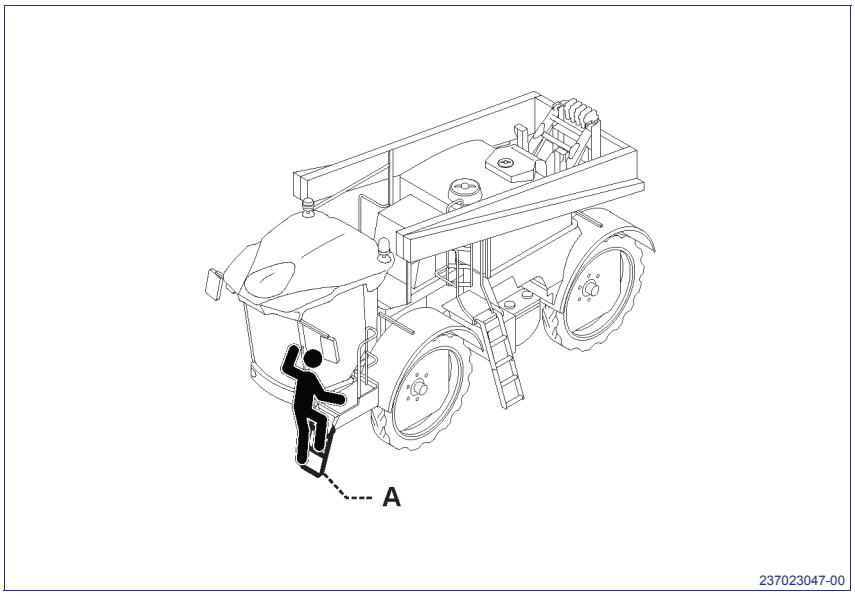
Important

When the autopilot is engaged, the driver must remain seated at his position so that he can take action in case of need. The autopilot deactivates as soon as the driver stands up from his seat.

CABIN ENTRY AND EXIT MODE

For climbing in and out of the cabin, use the hydraulic ladder **(A)**.

Prior to moving the vehicle, lift the ladder **(A)** using the appropriate control.



Caution - Warning

Prior to lowering or lifting the ladder, make sure that nobody lies within its range of movement.

Danger - Warning

Do not climb onto or off the vehicle by gripping onto it or using the mud-guards above the wheels for support.

Climb onto the vehicle without rushing and use the appropriately mounted support points (handles and steps), which must be kept clean.

Clean the cabin floor and platform, and make sure they are free of objects.

Any non-indispensable equipment or personal objects must be removed or secured safely.

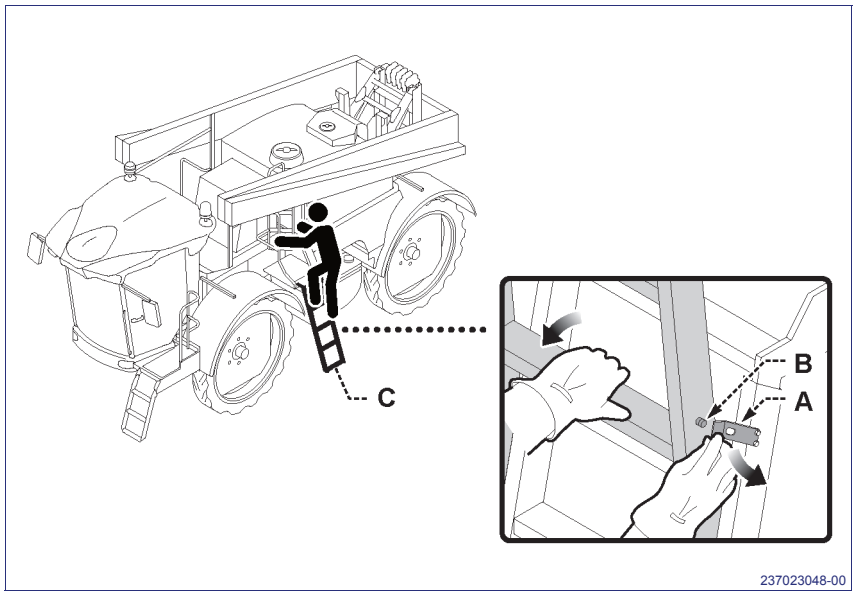
Prior to entering the cabin, inspect the vehicle all around to verify its integrity.

CLIMBING ON AND OFF THE VEHICLE

For climbing onto and off the vehicle, use the ladder **(C)** as shown below.

1 - Pull the tab **(A)** towards the right to disengage the pin **(B)**.

2 - Grip the mobile part of the ladder and pull it gently downwards.



Caution - Warning

Grip the mobile part of the ladder tightly and be careful that it does not bump against people or objects.

Danger - Warning

Do not climb onto or off the vehicle by gripping onto it or using the mudguards above the wheels for support.

Climb onto the vehicle without rushing and use the appropriately mounted support points (handles and steps), which must be kept clean.

Important

Reclose the ladder (C) when it is no longer needed and, at all events, before moving the vehicle.

REFUELLING

All fuels are flammable. Loss or leakage of fuel on hot surfaces and on electrical components may cause fires.

Prior to refuelling, switch off the engine and lights.

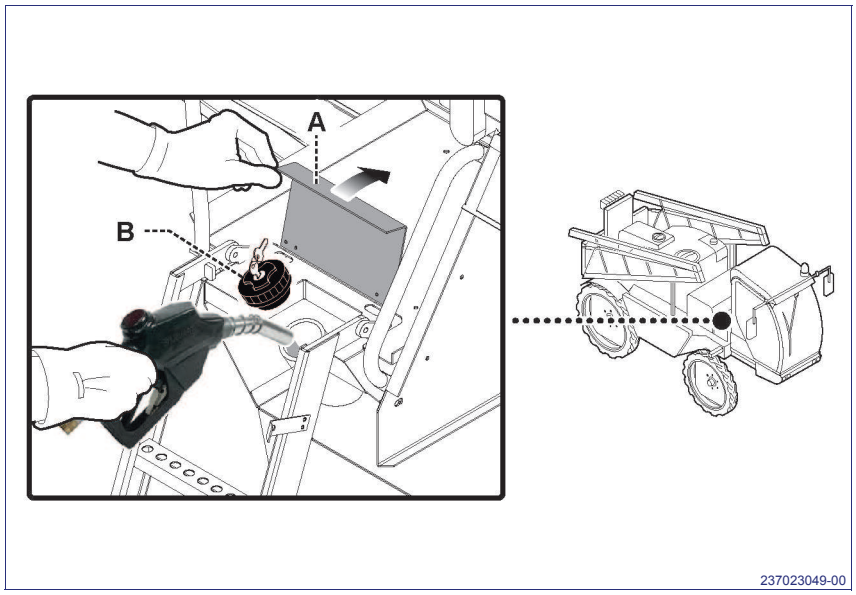
Danger - Warning

Avoid eating and drinking during refuelling operations. Strictly avoid smoking or using open flames during refuelling operations.

1 - Raise board **(A)**.

2 - Remove the cap **(B)** and fill the tank without filling it completely.

3 - Screw the cap back on after completing the operation.



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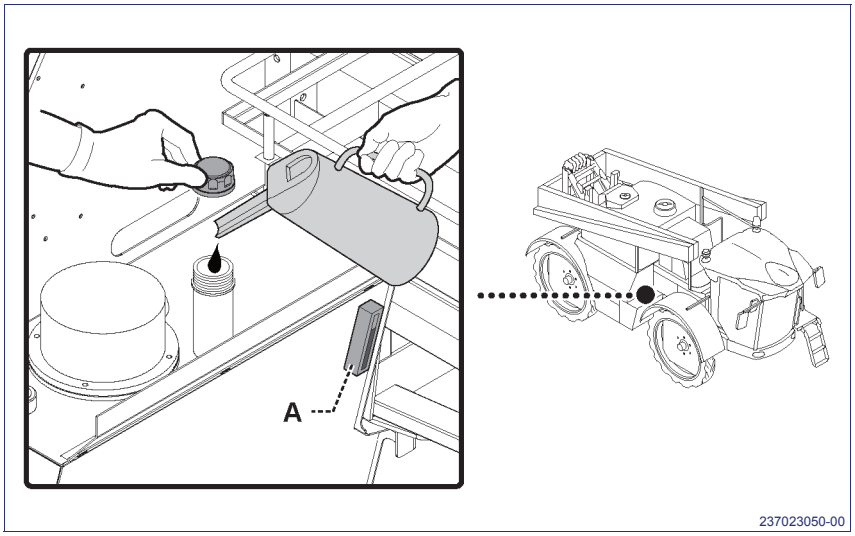
HYDRAULIC OIL TOP-UP

Prior to refuelling, switch off the engine and lights.

The use of unsuitable hydraulic oil, other types of oil or the potential presence of impurities jeopardise and damage beyond repair the parts of the vehicle's hydraulic system.

1 - Remove the cap **(A)** and top-up until the correct oil level shown on the indicator **(B)**.

2 - Screw the cap back on after completing the operation.



TANK FILLING USING THE CENTRIFUGAL PUMP

Proceed as follows.

1 - Start the machine's engine (see page 64).

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

3 - Pull the hose to unwind it.

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

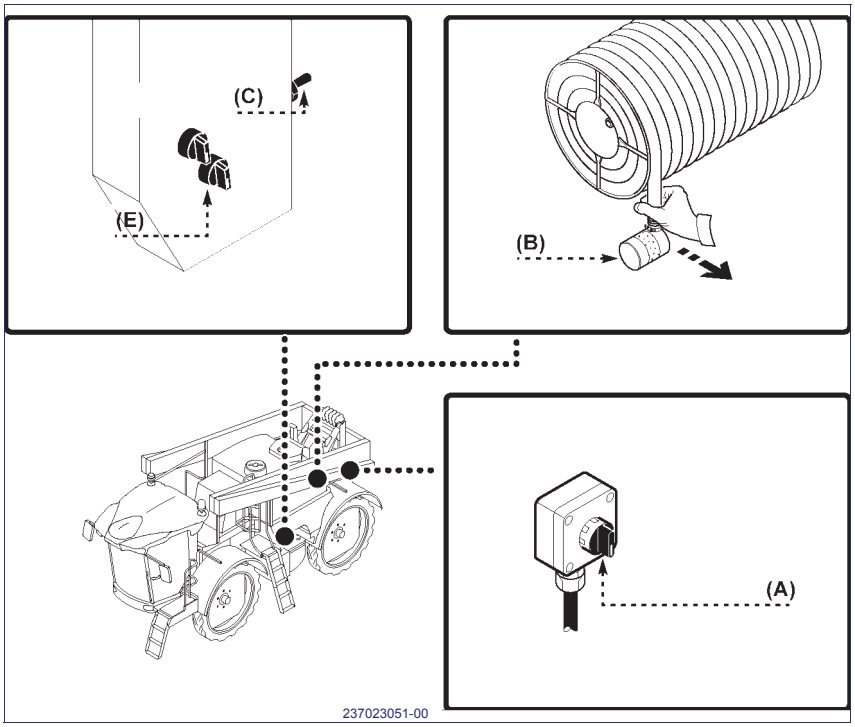
Note: if the machine is fitted with an electronic litre counter, consult the relevant instruction manual before you fill the tank.

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.

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TANK REFILLING WITHOUT CENTRIFUGAL PUMP

Proceed as follows.

1 - Start the machine's engine (see page 64).

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.).

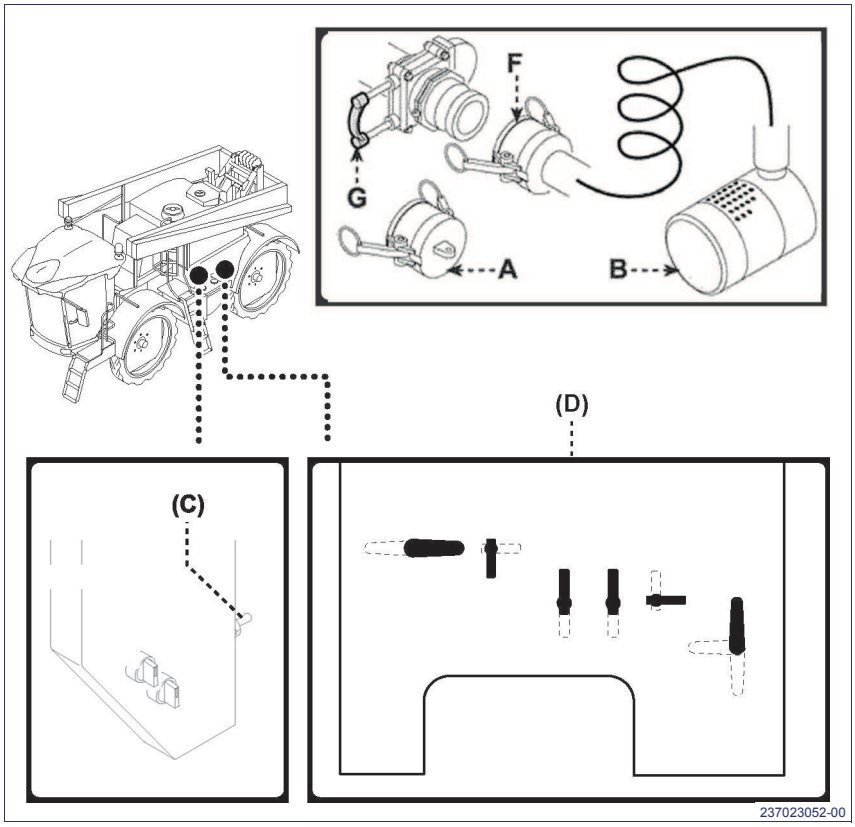
Note: if the machine is fitted with an electronic litre counter, consult the relevant instruction manual (see leaflet 14) before you fill the tank.

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 - 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.



Caution - Warning

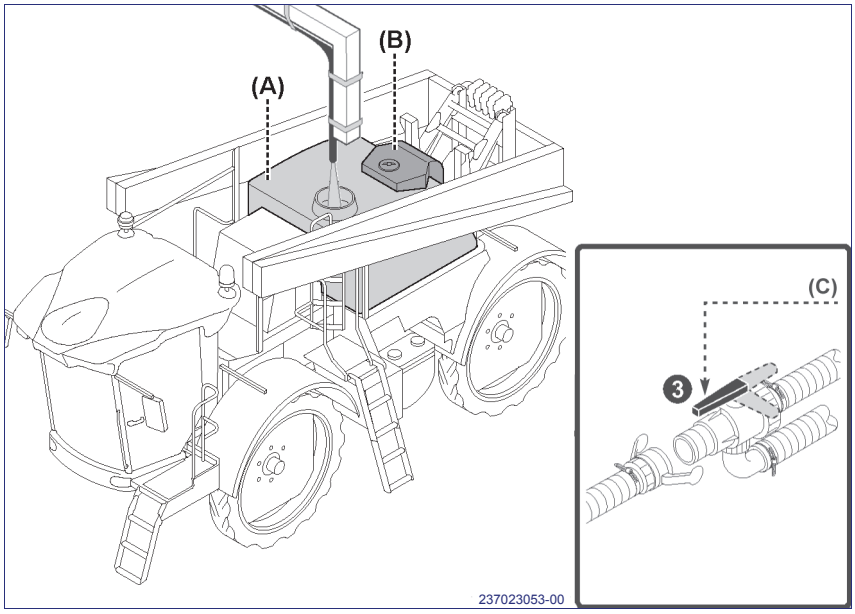
The hose must not come into contact with chemicals to avoid the contamination of the water source.

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.

Important

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



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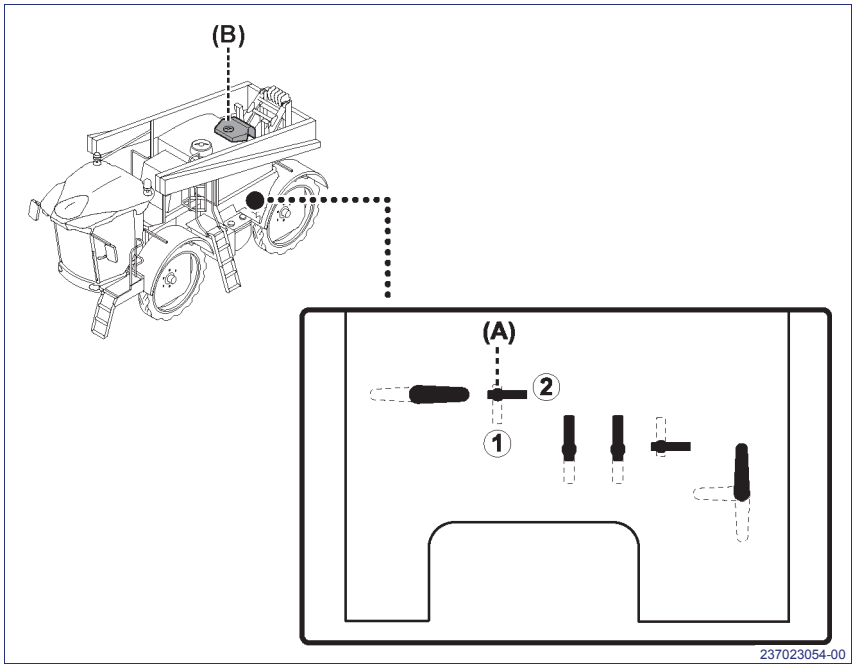
REFILLING OF PLANT WASHING TANK WITHOUT CENTRIFUGAL PUMP

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.



FILLING WITH WATER FROM A HEIGHT

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

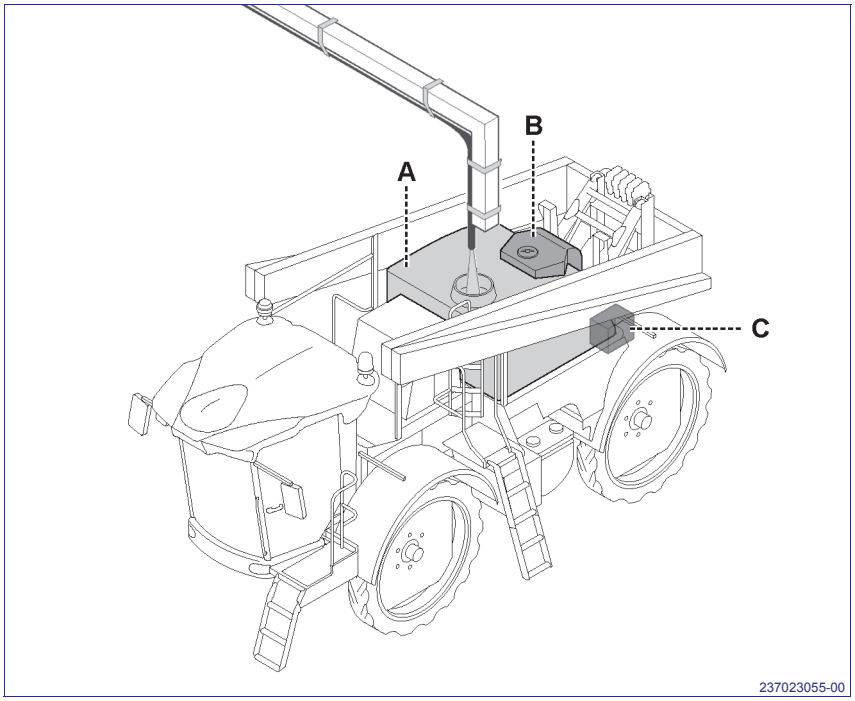
Fill tank **(C)** with hand-washing water

Important

Tank filling opening (A) must be equipped with the basket filter (mesh size 1 mm).

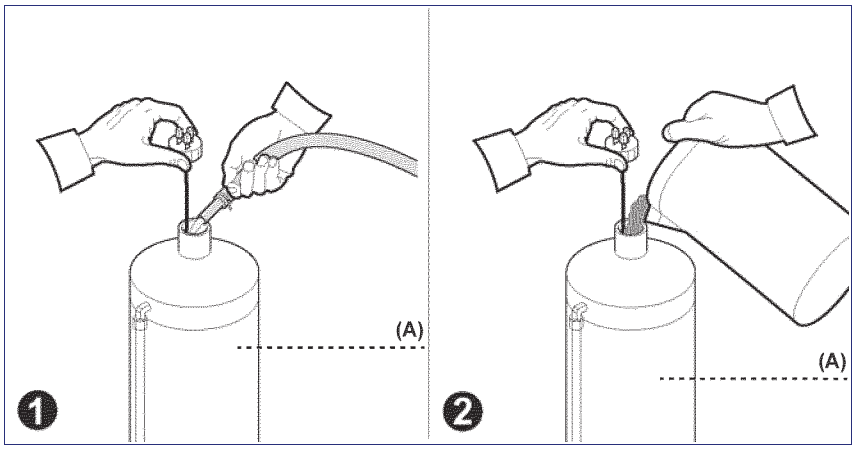
Important

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).

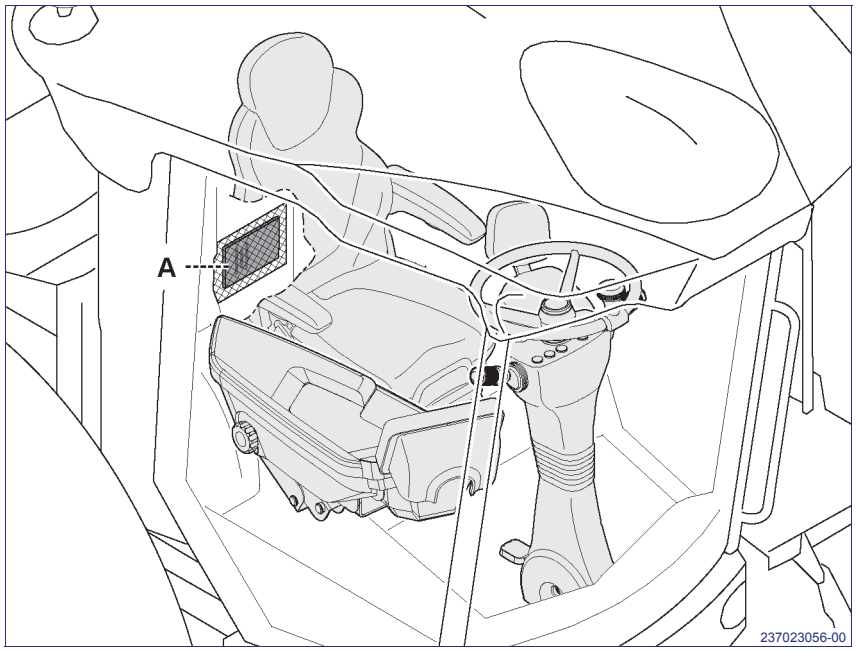


CHEMICAL PRODUCT PREPARATION

Danger - Warning

Every time that a chemical product is poured into the tank for a treatment, the operator must insert a document in document container (A) that clearly shows the name of the plant protection product inside the tank.

The name of the plant protection product must be made available in case of accidents, driver's fainting fit and/or contamination of watercourses.



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.

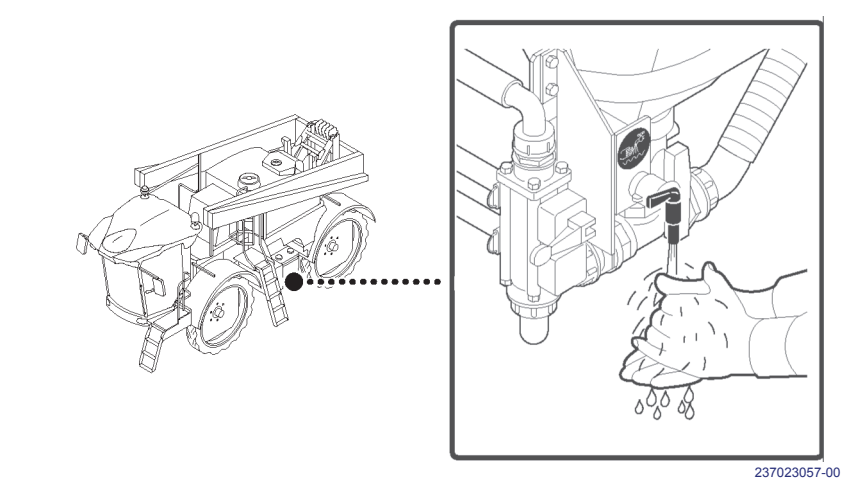
Before starting the preparation of the chemical product, adopt all measures that are necessary to avoid contamination danger and risks for humans, animals and the environment. In particular:

- Wear personal protection clothes able to prevent chemicals from coming in contact with the skin, especially when wounded.
- Wear protective devices to protect the face, head, hands, using rubber gloves, gas masks, goggles and a helmet.
- Do not use protection devices that are not in perfect operating conditions, in particular check the state of the gas mask and cab filters.
- Keep chemicals out of the reach of unauthorized or unqualified people (such as children and disabled persons).
- Have all the equipment ready beforehand to handle both product and mixture for the following stages: preparation, filling, emptying, tank cleaning, spraying, adjustment, replacement, phytosanitary product change and add, and maintenance.
- Calculate the correct quantity to mix for the area to be worked and keep to phytosanitary product manufacturer's instructions. Do not mix different products.

- 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, mixture or other polluting materials in the environment. Dispose of them according to the local 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 76) and in the “clean water” tank (see page 77).

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.

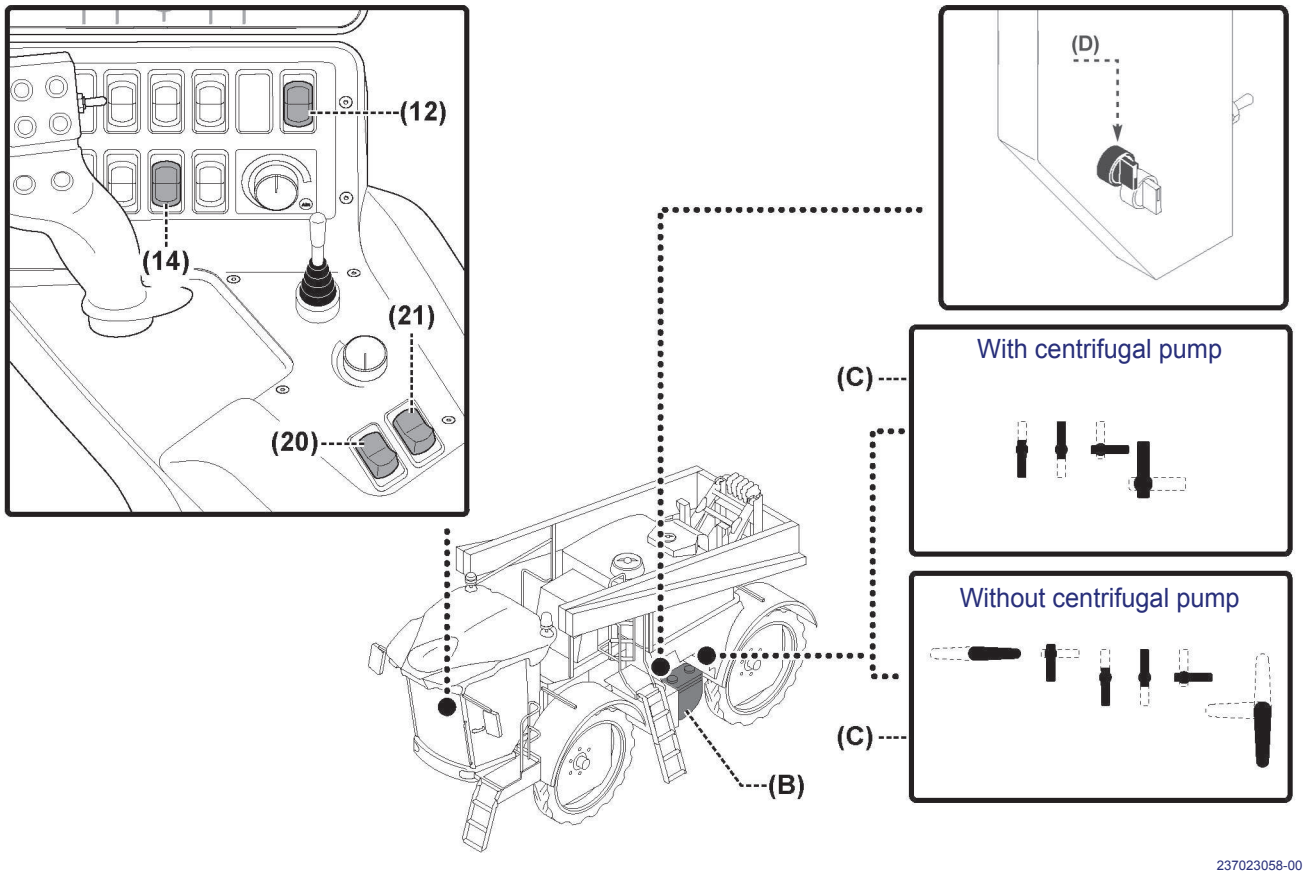
5 - Use switch **(12)** to activate operation controls.

6 - Use the switch **(14)** to activate the pump.

7 - Move switch **(20)** to the working position and switch **(21)** to OFF (version with electrical controls only).

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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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.

Distribution 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

Example of value search

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

The use of these values (see highlighted part of the table) will allow you to work out the correct pressure to apply, which, in this case, is 1.5 bars.

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.

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FORWARD SPEED DURING SPRAYING

Calculate the forward speed as follows:

1 - determine the correct forward speed, according to the number of revolutions of the tractor engine over a short distance;

2 - drive on a previously marked 100m strip, at a chosen speed and with a constant engine rpm, taking care to note the time elapsed 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

FILTERING ELEMENT SIZING

The efficacy of the filtering system depends on the correct sizing of the filter meshes in the different points of the circuit.

The following table gives and indication on the minimum filtration capacity requested for a filtration that is suitable for the treatment, load loss limits and reduced maintenance times and costs.

Installed nozzle	**Quantity of product to be sprayed (8 Km/h - 3bar)**	**Filter mesh (number of yarns per inch) MESH**		
		Suction	**Delivery**	**Boom (if present).**
ISO 11001 ÷ 11002	< 120 l/ha	50*	80*	100*
ISO 11003 ÷ 11006	120 ÷ 450 l/ha	32	50	80
ISO > 11008	> 450 l/ha	16	32	50

* Standard filter installed on the equipment.

FILTER CARTRIDGE COLOUR TABLE

The following table shows the filter cartridge colours according to the requirements of Standard ISO 19732:2007.

Colour	**Filter mesh (number of yarns per inch) MESH**
Brown	16
Red	32
Blue	50
Yellow	80
GREEN	100
GRAY (not ISO)	120
ORANGE	150
Pink	200

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MACHINE CALIBRATION

For a correct selection of the product volume to be used, the user must be aware of the quantity of delivered mix per hectare and of the following important parameters.

Maximum limit of the concentration of the used plant protection product

This value is indicated on the pack of the plant protection product and is expressed in droplets per cm2.

Coverage intensity

The coverage intensity is the optimal number of droplets on a cm^2 .

Leaf area index

Leaf surface area and ground surface area ratio (LAI).

Spraying degree

The spraying degree is the size of the droplets created by the sprayer nozzles.

Knowing this parameter is very important: small drops borne in the air being able to change direction are necessary in order to cover the leaves on both sides of the vegetable mass. Small drops mean low volume mix per hectare and hence wider, more homogenous and persistent coverage. Fine drops (100-200 µm) adhere well to inclined surfaces, while coarse drops (400-500 µm) tend to separate, remove the product and create leaks to the ground.

Ultra-fine drops (< 50 µm) tend to be removed by light air currents.

The size of the drops is reduced with:

- wider aspersion angle;
- smaller nozzles (lower capacity);
- higher pressure.

If nozzles with fine jets are used, the leaf surface covered by the plant protection product can be increased remarkably.

Limit losses to the widest extent

The losses of plant protection product are mainly caused by:

- loss in the atmosphere caused by drift and evaporation of drops smaller than 100 µm;
- ground losses by dripping;
- Lack of homogeneity in the treatment caused by a wrong position or adjustment of the nozzles and conveyors;
- Lack of homogeneity in the treatment caused by the different concentration when the tank is emptied when paste or wettable powdery products are used;
- Lack of homogeneity in the treatment concerning the lack of proportionality between the forward speed and the capacity of the sprayers;
- Dosing errors in the preparation of the mix;
- Sprayer washing after the treatment.

Efficacy of the nozzles

Always make sure that the machine is equipped with nozzles that can create a fine and homogenous jet and that are in perfect working conditions.

Efficacy and direction of the air jet

The machine can be equipped with an air jet facing the area to be treated (Airassisted).

NOZZLE SPRAY CHECK

After product spray parameters have been set, it is necessary to check that the value of the quantity sprayed matches that of the table.

Nozzle spraying test (l/min)

1 - Place a graduated container under a nozzle spraying clean water for exactly one minute at the preset pressure.

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

3 - Repeat this procedure on three or four nozzles.

Spraying test - 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 81;

2 - fill the tank completely;

3 - spray water with the boom unfolded on the 100-meter 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.

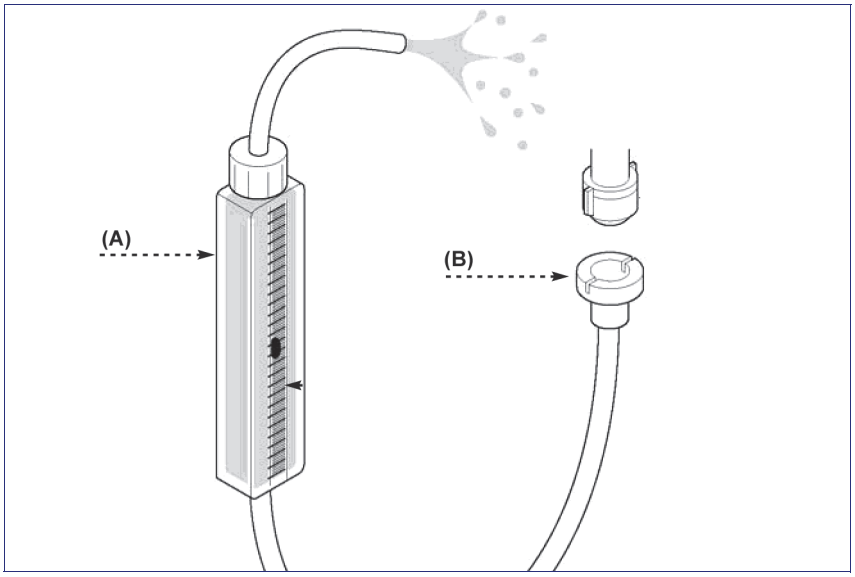

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Table for spraying test carried out on a hundred meters

Quantity of product to spray in l/ha	boom lenght (m)																	
	6	8	10	12	12,5	14	15	16	18	20	21	24	27	28	30	32	33	36
100	6	8	10	12	12,5	14	15	16	18	20	21	24	27	28	30	32	33	36
150	9	12	15	18	18,7	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	162	168	180	192	198	210

If the test is carried out on a 500-meter distance, more accurate results will be obtained, but the quantity of water would be five times the value shown in the table.

Formula to check the quantity of liquid sprayed - litres per hectare (l/ha)

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

This formula can also be transformed to determine the required forward speed or the liquid quantity per nozzle.

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

$$\text{Liquid per nozzle l/min} = \frac{\text{Quantity sprayed (l/ha) x jet spacing x speed km/h}}{\text{Constant 600}}$$

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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).

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 - Turn cocks **(C)** as shown in the figure (version without electrical controls only).

3 - Access the operator's seat and use the switch **(12)** to activate the operating controls.

4 - Use switch **(14)** to start the water pump.

5 - Move switch **(20)** to the working position and switch **(21)** to OFF (version with electrical controls only).

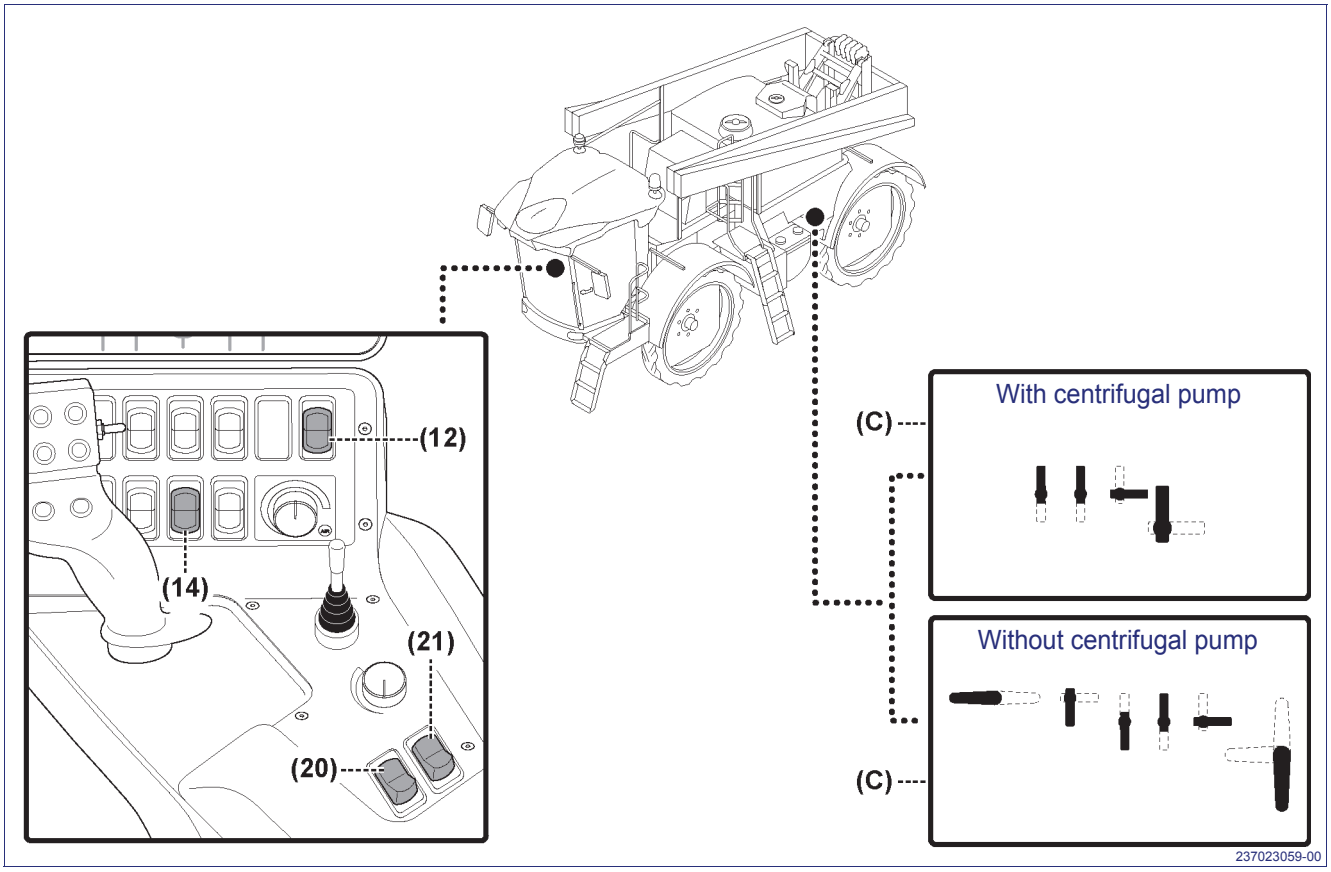
6 - Set the operating parameters on the computer (see leaflet 13).

7 - Carry out the nozzle spraying check operations (see page 80).

8 - Use the appropriate controls to extend the spraying bar (see page 56).

Danger - Warning

The cab is pressurised to protect the driver against exposure to chemical products. During the work phase, always make sure the cab door and right window are properly closed, to prevent the chemical product entering the cab.



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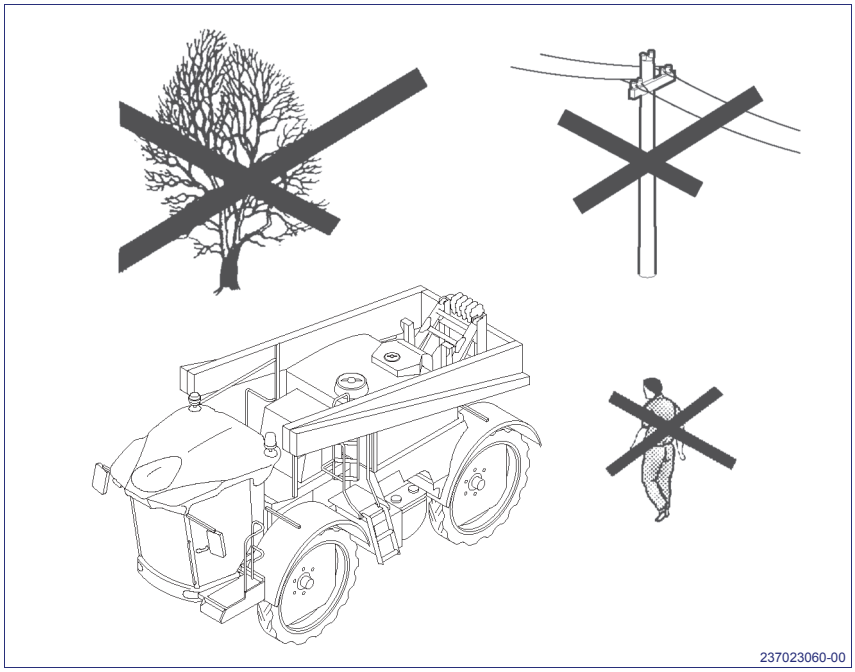
Danger - Warning

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



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

Important

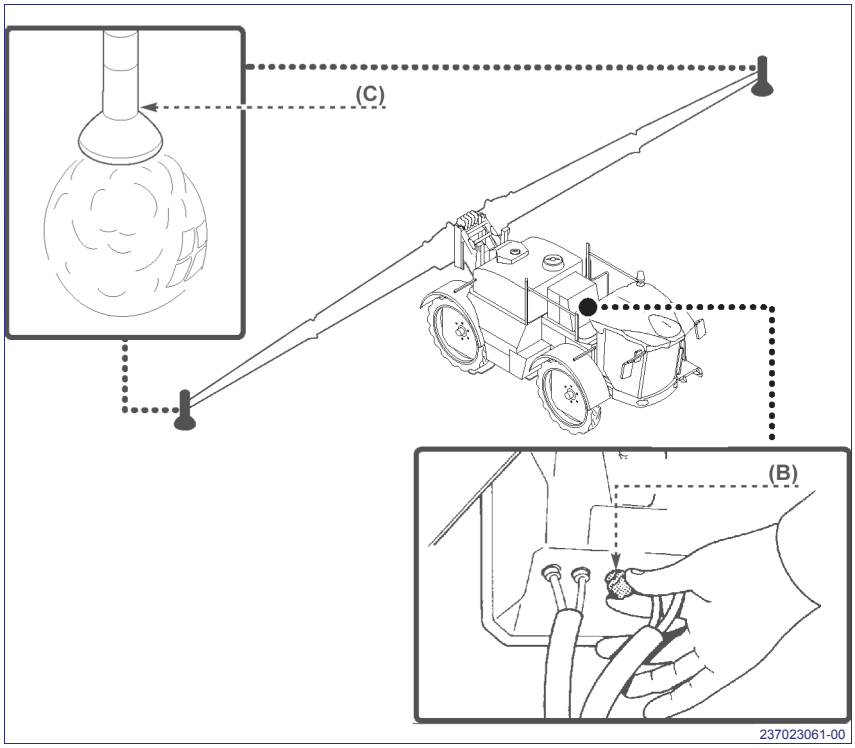
The fan revolution speed must be adjusted according to the operating requirements. This speed must be set at minimum values on bare ground or with low vegetation crops.

10- If necessary, fill the row marker product (see page 78).

11- 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)**.

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

13- 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 40).

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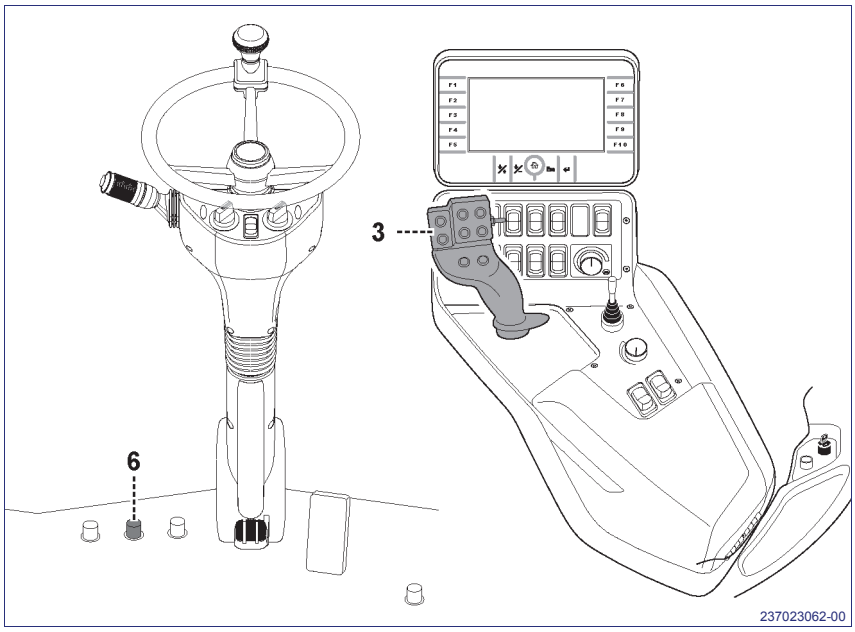
14- Use the pedal **(6)** (or Müller joystick **(3)**, if present) to start dispensing the product.

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 78).

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 85).

2 - Turn cocks **(C)** as shown in the figure (version without electrical controls only).

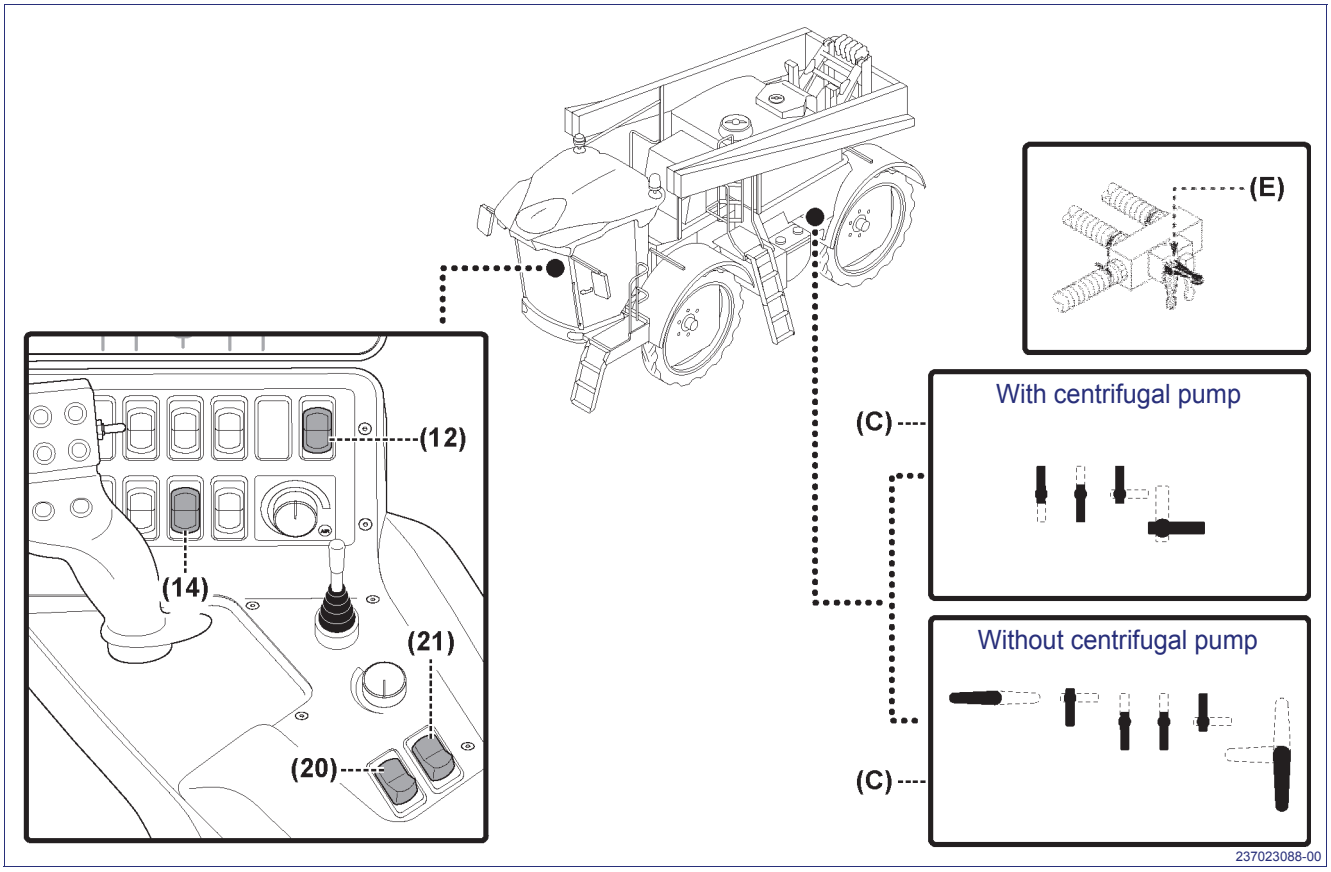
3 - Use switch **(12)** and then switch **(14)** to start the pump at a pressure of 3 to 5 bar (see file 13).

4 - Move switch **(20)** to OFF and switch **(21)** to the wash position (version with electrical controls only).

5 - Use the pedal **(6)** (or Müller joystick **(3)**, if present) to start dispensing the product.
The system will be clean when clean water comes out of the nozzles.

6 - Open cock **(E)** to wash the interior of the tank (version without electrical controls only).

7 - Move switch **(20)** to the wash tank position and switch **(21)** to the wash position to wash the interior of the tank (version with electrical controls only).



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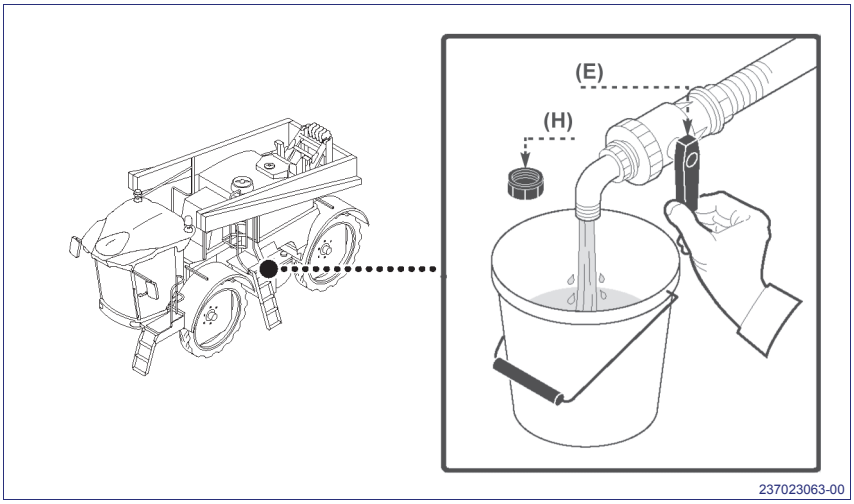
8 - Arrange a container with suitable capacity in order not to dispose the product in the environment, unscrew the cap **(H)** and open the cock **(E)**. When the operation has been completed, close the cock **(E)** and screw the cap on **(H)**.



CLEANING THE SUCTION FILTER

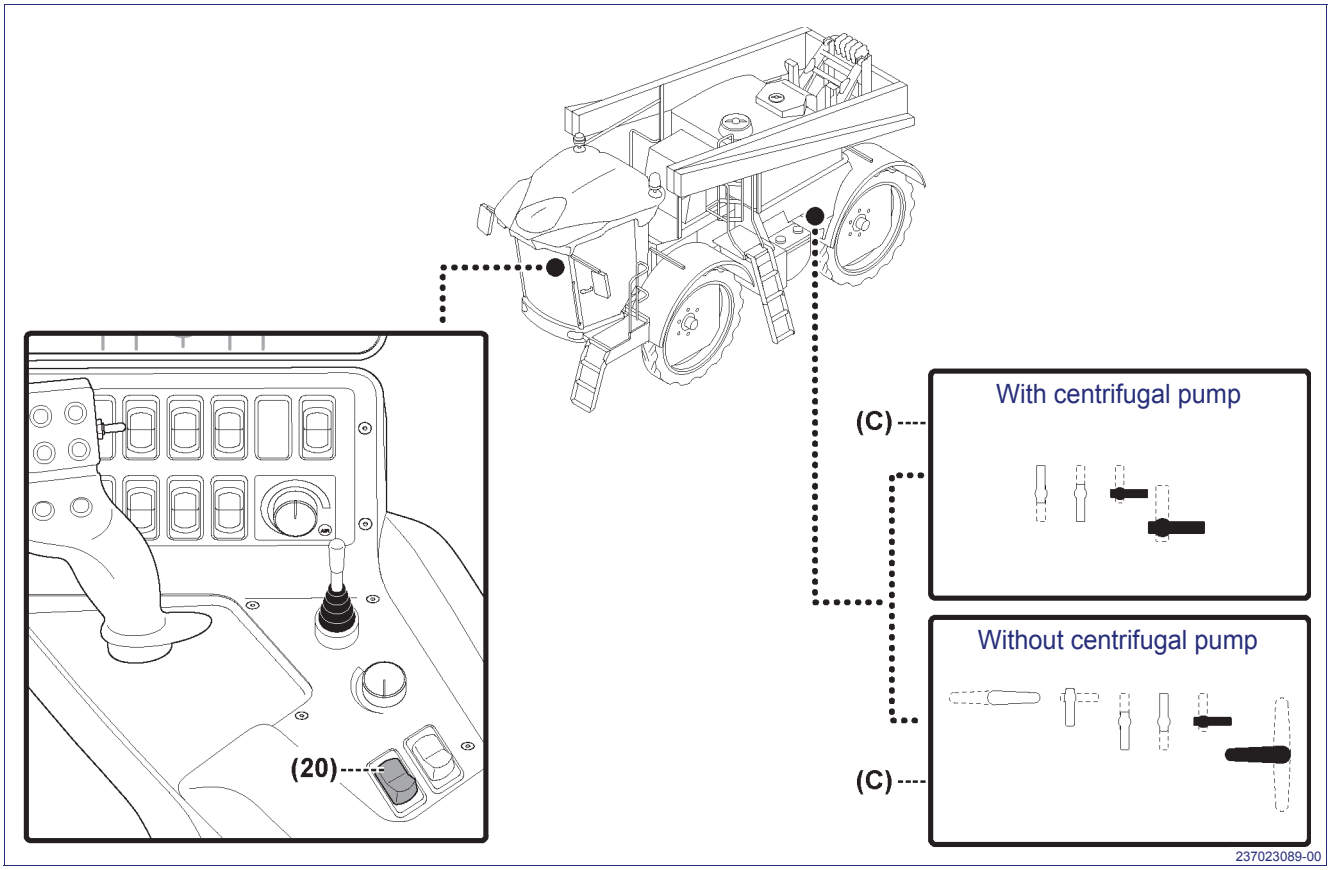
Danger - Warning

Wear personal protective equipment to protect your face, head and hands, use rubber gloves, dust masks, safety glasses and helmet.

Proceed as follows.

1 - Make sure that switch **(20)** is set to OFF (version with electrical controls only).

2 - Turn cocks **(C)** as shown in the figure (version without electrical controls only).



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3 - Place a receptacle beneath the filter **(A)**.

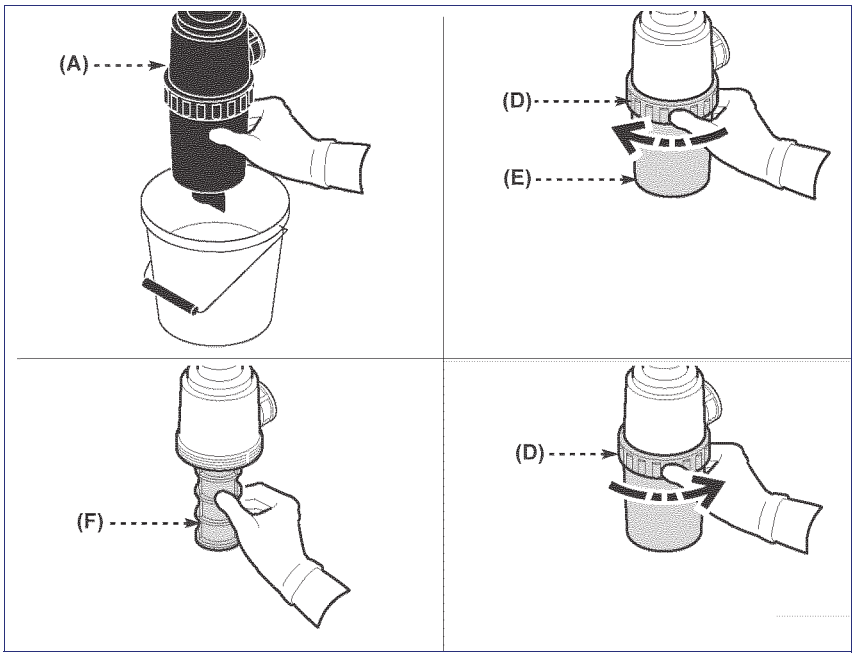
4 - Loosen the ring nut **(D)** and remove the filter cover **(E)**.

5 - Blow high pressure air and water through the filter cartridge to clean it.

6 - Replace the cartridge **(F)** and tighten the ring nut **(D)**.

Important

Make sure the seal is properly inserted.



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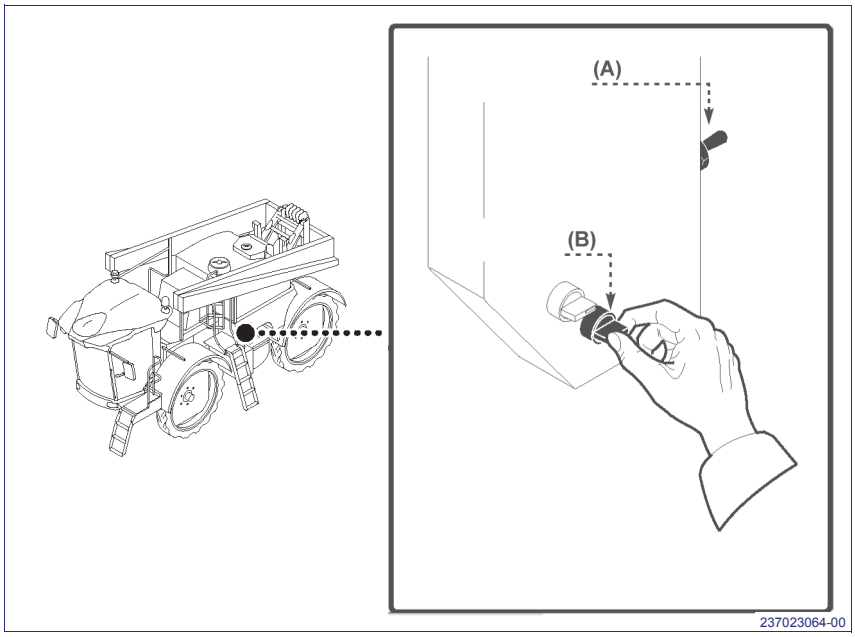
MACHINE WASHING WITH HIGH-PRESSURE CLEANER (OPTIONAL)

Proceed as follows.

1 - Start the machine's engine (see page 64).

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

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



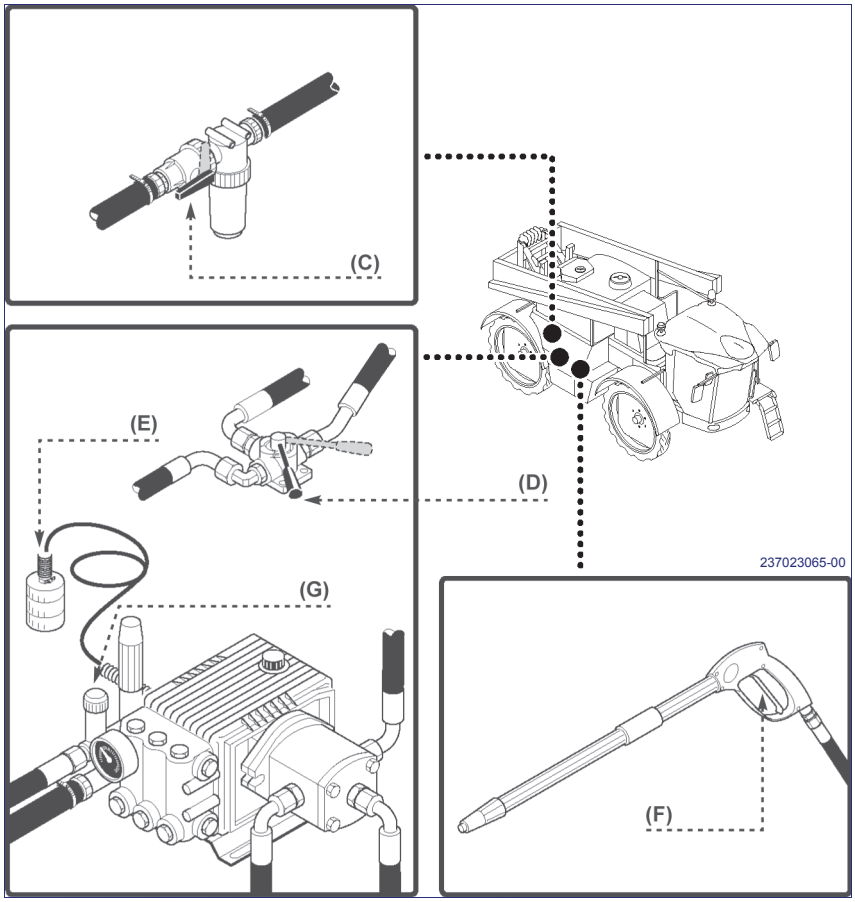
4 - Turn the cocks **(C)** as indicated in the figure.

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.

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EXTENDED MACHINE DOWNTIME

Caution - Warning

Position the machine in a place protected from weather agents. Protect it in order to prevent it from being damaged and make sure that it can be accessed only by its operators. Make sure that the storage temperature is included between 0 °C and 50 °C.

1 - Perform scheduled maintenance

2 - Carefully wash the water system (see "System cleaning and draining the residue").

3 - Carefully clean all the equipment.

4 - Carefully empty all the tanks and tubes in order to prevent the components from breaking in case of very low temperatures (pump, control unit, filters, tubes, etc.).

5 - Disconnect the pipes from the pressure gauges and disassemble the filters. In case of extremely low temperatures pour a mix of water and anti-freeze liquid into the spraying circuit in order to protect the pump and all the other components in contact with the liquid (control units, nozzles and filters).

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

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

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

9 - disconnect the batteries;

RE- COMMISSIONING

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

- Use water-repellent grease to lubricate all grease nipples and sliding surfaces (see "Lubrication points diagram" on page 98).
- check the battery conditions;
- check all levels (oil, water, fuel);
- Check overall condition of the machine
- Check that the controls are in working order.
- Check that main screws are fastened tightly.
- Check and replace worn or damaged parts.
- carry out all the necessary maintenance operations;
- replace or, if necessary, change the filters of the water system;
- check the general conditions of the hydraulic hoses;
- Check the efficiency of all safety devices.
- carry out a general cleaning, with special care for the operator's seat and the control panel;
- Check tyre pressure.
- start the system, bring it to the maximum pressure level and check for any liquid leaks.
- Check and reset the oil level in the pump, if necessary.
- Check any liquid leaks. For this purpose, pour clean water and start the spraying unit of the machine at its maximum pressure (10÷12 bar). If necessary, tighten all the hose clamps and joints and replace the worn parts.
- Make sure that the suction filter and the tank inside are clean and free from residues.
- Check the correct operation of the pressure gauges because the quantity of the sprayed product depends on the correct pressure in the circuit.

INFORMATION ABOUT MAINTENANCE

MAINTENANCE INSTRUCTIONS

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.

Moreover, consult the General Safety Rules appearing in File 1.

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

All maintenance work, except when otherwise stated, must be conducted while the engine is off, and with the key totally removed. Those authorised to carry out maintenance work must take all precautions to ensure the safety of all persons involved, in compliance with the requirements of current legislation pertaining to safety in the workplace.

Caution - Warning

All maintenance interventions must be effected in well-lighted conditions.

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Important

Replace worn components with original spare parts. Use oils and greases recommended by the manufacturer. This will ensure proper and safe running of the equipment. Pollutant liquids, old parts, residue substances and maintenance rejects must be properly disposed of in compliance with current legislation.

When maintenance operations involve the access to machine parts that cannot be accessed from the ground, and in any case to positions that are higher than 1.50 m from the ground, use a ladder or platform complying with the regulations in force;

Caution - Warning

Perform all maintenance and replacement activities at least four hours after the engine is switched off, so as to avoid coming into contact with hot parts of the vehicle.

Danger - Warning

The maximum pressure of the compressed air used in the blowing and cleaning operations must amount to 2 bar. When performing operations with compressed air, protect you eyes with suitable safety goggles.

When using compressed air to clean the filters, wear safety glasses with side shields and a mask, so as to avoid personal injury caused by dust particles.

Danger - Warning

Prior to effecting any interventions on tyres or wheel rims, deflate the tyre completely to avoid sudden explosions.

When inflating tyres, keep to the side with respect to the tyre shoulder.

Never perform welding operations on wheel rims with the tyre mounted on, so as to avoid explosions or fire.

Important

When performing the cleaning operations and when replacing the filters, make sure that the area is properly ventilated in order to prevent the accumulation of toxic vapours.

Danger - Warning

Do not weld in closed or non suitably ventilated areas.

Do not weld on painted surfaces or close to them in order to avoid the development of toxic vapours. Remove the paint with suitable products, wash the surfaces and let them dry.

Do not perform welding without having previously emptied and cleaned the spraying circuit and disconnecting the battery.

Caution - Warning

Pay special attention before removing the caps and covers from tanks, radiators or cylinders: rotate them carefully in order to discharge any possible residual pressure.

When discharging the pressure, keep away from the machine and always wear safety goggles. Slowly loosen the discharge screw by a few turns in order to allow the condensate or fluid to come out.

Discharge the pressure from the circuits before performing any operation.

Do not use the hands to identify pressurised fluid leakages. Pressurised fluid leakages can penetrate the skin and eyes causing very serious consequences.

Important

Do not keep the vehicle's engine running in closed rooms not equipped with a ventilation system capable of expelling hazardous gases present in the air.

Avoid prolonged and repeated skin contacts with fuel, lubricants and liquids as these might cause skin irritation and other problems.

Do not ingest fuel/lubricants/fluids.

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MAINTENANCE SCHEDULE TABLE

Interval	Component	Type ofintervention	Operation	Reference
After the first 50 hours	Engine oil.	Replace.	Refer to the engine's instruction manual.	
Each treatment	Suction filter	Cleaning		
	System washing and hand washing tank water level	Level check	Fill before staring a new treatment	
Each 4 emptying operations	System washing and hand washing tank water level	Level check	Fill before staring a new treatment	
Each working day	Engine radiator fluid	Check the level.		106
	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.	105
	Engine oil.	Check the level.		
	Engine intake filter cartridge.	Check the efficiency.	Clean with a water jet.	
	Wheel screws. Tyres	Check how tight they are. Check the pressure.		
	Safety devices	Check the efficiency.		
	Water system.	Carry out the cleaning.		88
	Machine.	Clean and wash		
Every 100 hours	Engine cooling fan belt.	Check the tension.	Refer to the engine's instruction manual.	
	Air conditioning compressor belt.	Check the tension.	Adjust	44
	Components.	Grease.		
Every 150 hours	Engine oil.	Replace.	Refer to the engine's instruction manual (carry out the first change after 50 hours).	
Every 300 hours	Engine oil filter	Replace.		
	Diesel filter	Replace.		
	Water tank filter.	Clean or replace.		117
	Cab filter.	Replace when unpleasant pesticide or herbicide odours are detected in the cab (maximum 36 months).		118
	Hydraulic system filters.	Replace the cartridge.		117
Every 1000 hours	Hydraulic system oil.	Replace.		117
	Engine.	Carry out the general check.	Refer to the engine's instruction manual.	
	Front axle Rear axle	Check play between surfaces	Adjust	

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Interval	Component	Type ofintervention	Operation	Reference
Every year	Distribution pump.	Check the efficiency.	Contact an authorised workshop.	
	Brake oil.	Check the level.	Top up to restore the oil level if necessary	
	Brake calipers	Wear check	Contact an authorised technical assistance centre	
Every 6 years and whenever damaged.	Hydraulic system pipes	Replace.		

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.

Proceed as follows for spraying:

1 - Clean the system and drain the residue (see page 88).

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.

First 50 hours of operation

1 - After every cold start, let the engine idle for a minute or so, and only then slowly start increasing the engine speed.

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.

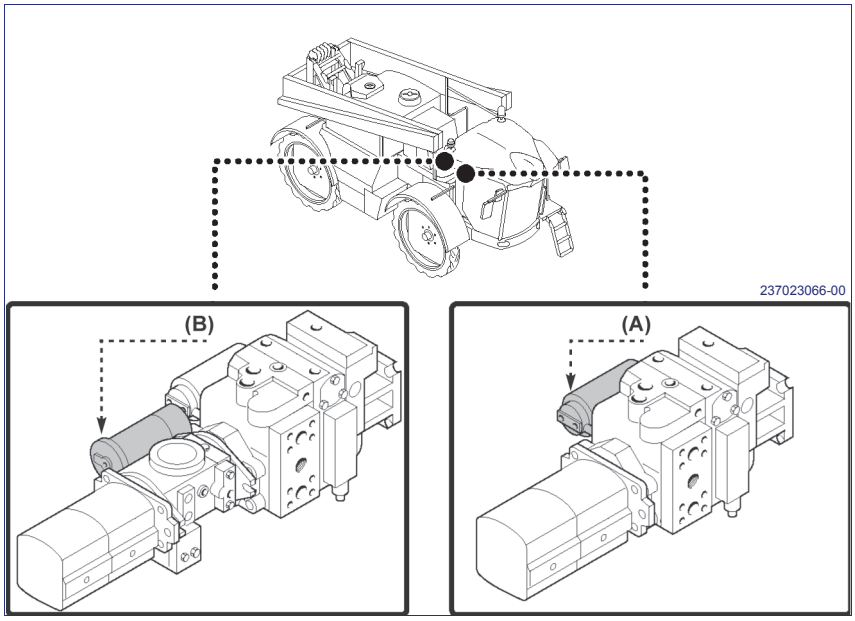
5 - Check that the hydraulic connections, bolts and nuts and wheel fixing screws are tightened.

6 - After the first 50 hours, change the engine oil and the filter.

First 100 hours of operation

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

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

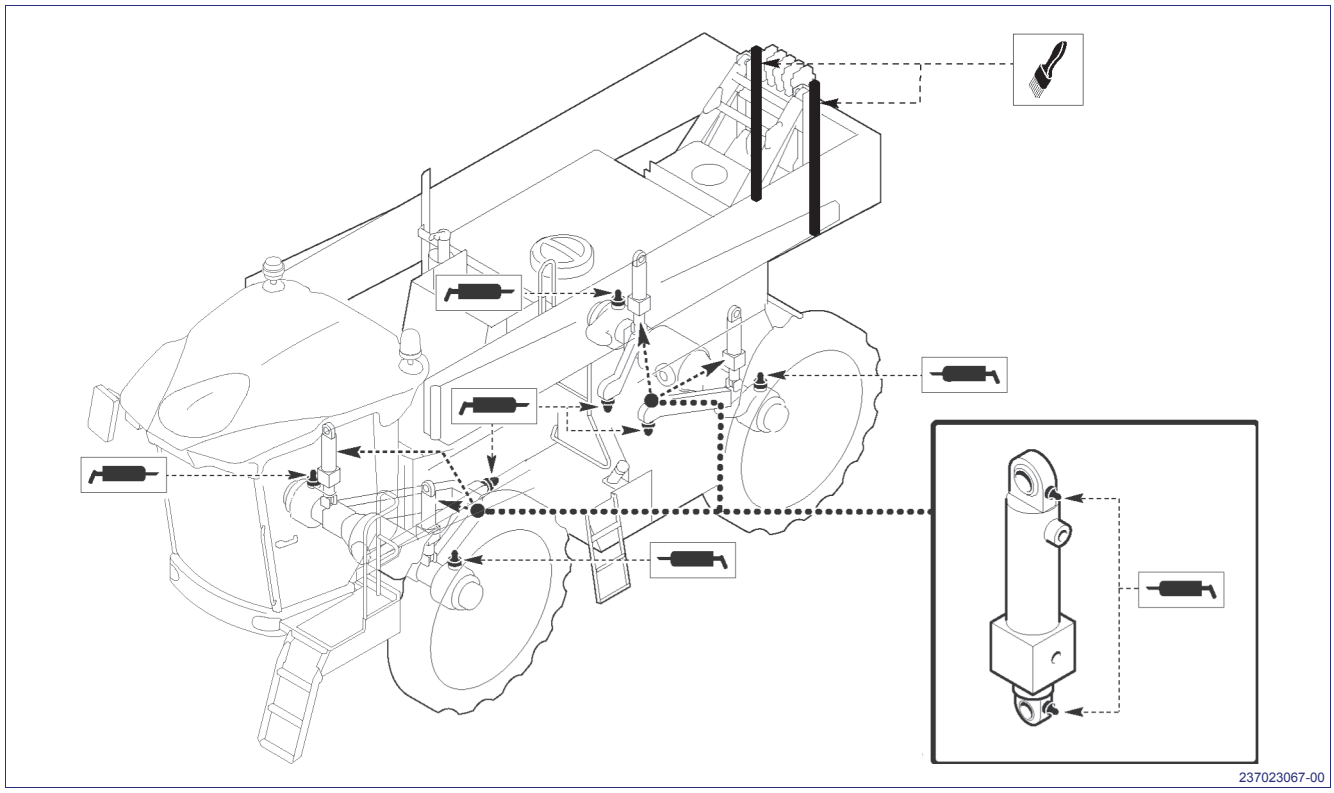


LUBRICATION POINTS DIAGRAM

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.



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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)	18
		21,2 (rear).	19,08
SHELL TRANSAXLE OIL 75W 90 API GL- 5	Gearbox (JC version)	3,5 (rear).	3,15
ANTIFREEZE	Cooling liquid	-	-

Hydraulic oil table

Manufacturer	Type
AGIP	ARNICA 46
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

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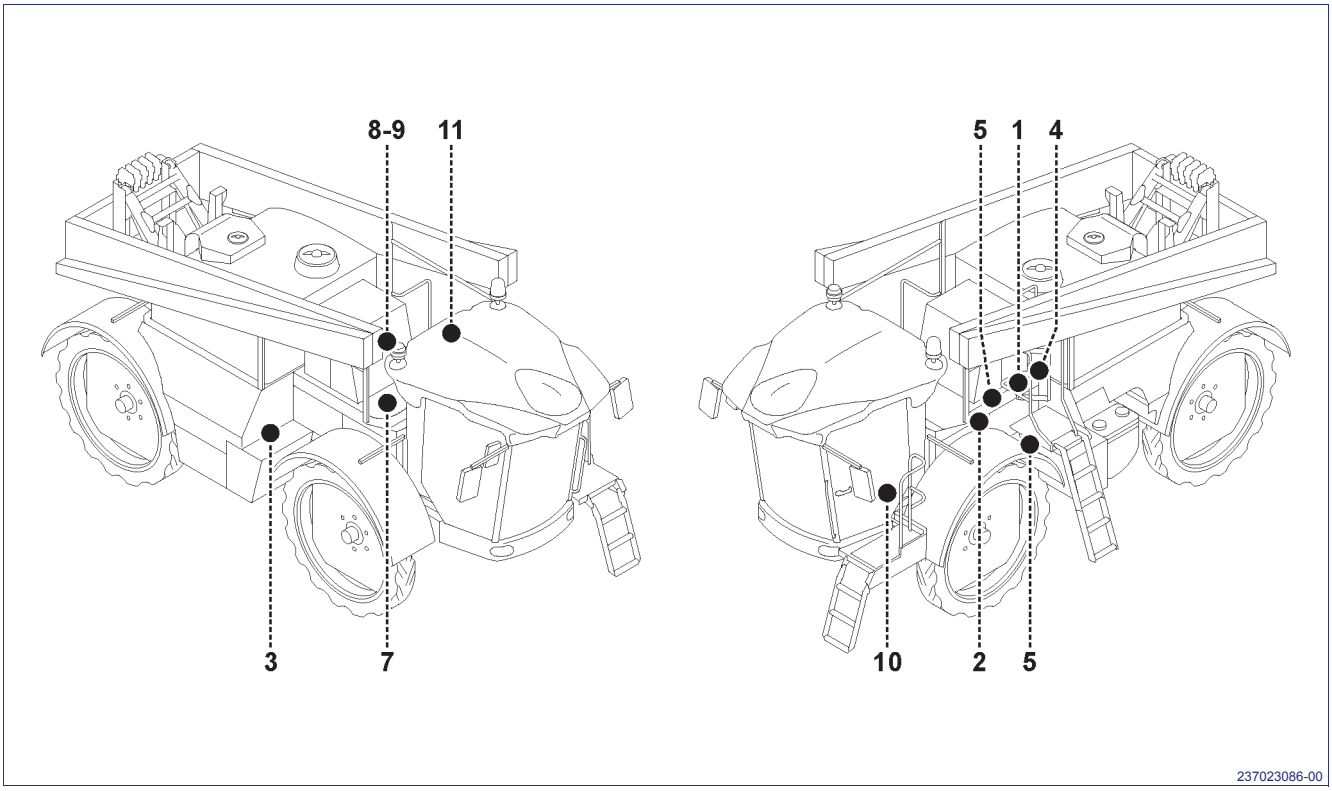
Filter table

Ref.	Type	Code	Quantity
1	Hydrostatic transmission pump filter	BB32336501	1
2	High pressure filter cartridge	BG023090	1
3	Hydraulic circuit return filter cartridge	BG022785	1
4	Air hose pump filter cartridge (optional)	BB32399001	1
5	Diesel filter (tank)	BB32319300	1
6	Diesel filter	BB32313200	1
7	Engine oil filter	BG002921	1
8	Engine air filter	BG026746	1
9	Engine air filter safety element	BG026745	1
10	Cab air recirculation filter	BG026357	1
11	Cab pressurisation system filter (class 4)	-	1

The figure shows the positions of the filters indicated in the table.



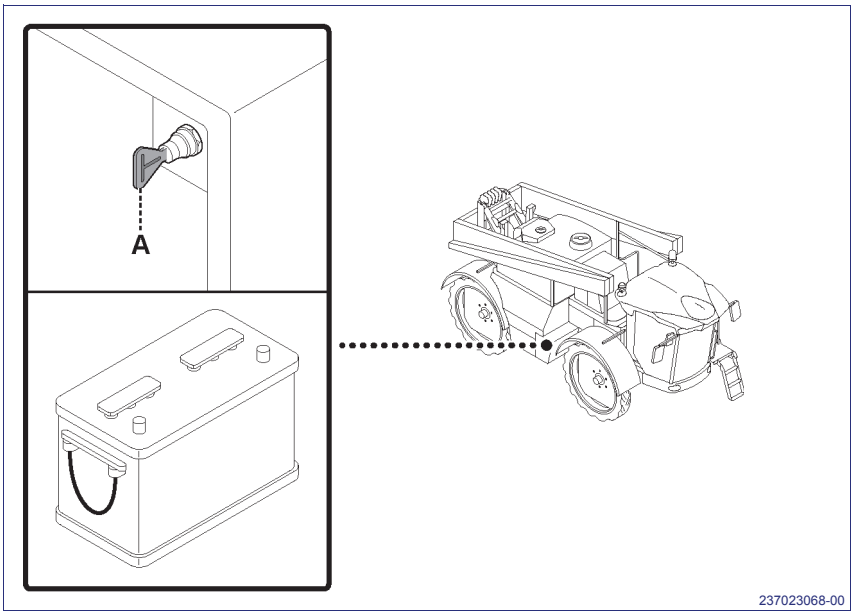
BATTERY CHECK

Important

Prior to any maintenance or replacement activities, switch the vehicle off and disconnect the batteries from the electrical circuit using the key (A).

Check the level of the electrolyte and add liquid, if the level is too low.

Attempting to start the vehicle without the batteries, or disconnecting the batteries while the engine is running, may seriously damage the electrical circuit.



Danger - Warning

The battery fluid is extremely hazardous it contains sulphuric acid! It is advisable to protect the eyes, face and hands when performing maintenance.

If the acid comes into contact with the skin, wash the exposed part immediately and thoroughly with water.

If the acid comes into contact with the eyes, wash them thoroughly with water and immediately visit a medical centre.

In case of acid ingestion, immediately visit a medical centre.

Check the battery leads and verify that there are no abrasions or cuts on the insulating sheath.

If necessary, replace the battery leads.

Check that the battery terminals are not oxidised or corroded. If necessary, clean the terminals using an iron brush.

Danger - Warning

The batteries can produce explosive gases. Do not smoke near the battery, keep sparks and flames at a safe distance.

Danger - Warning

Charge the batteries only in well-ventilated zones.

After cleaning the terminals, smear them with neutral grease to prevent oxidation.

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SHOCK ABSORBER CHECK (WITH A MANUAL PUMP)

Important

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

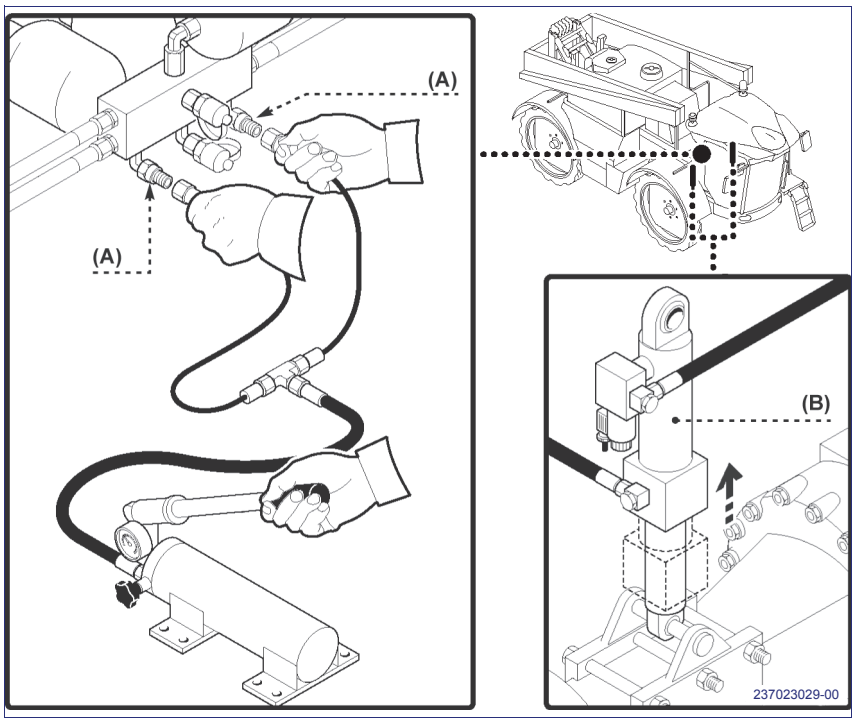
Proceed as follows.

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.

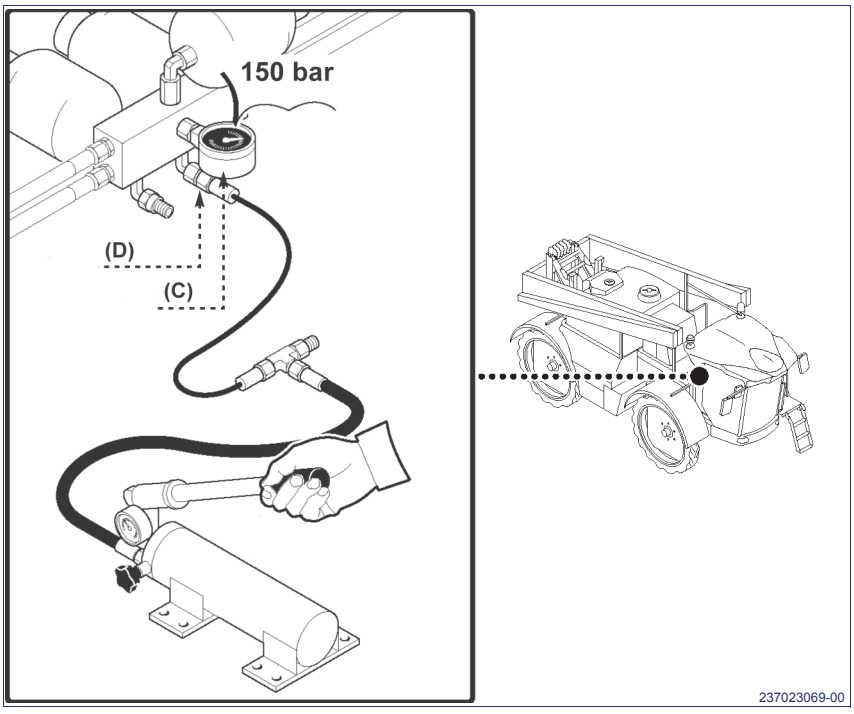


3 - Insert a pressure gauge **(C)** on the pressure tap.

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

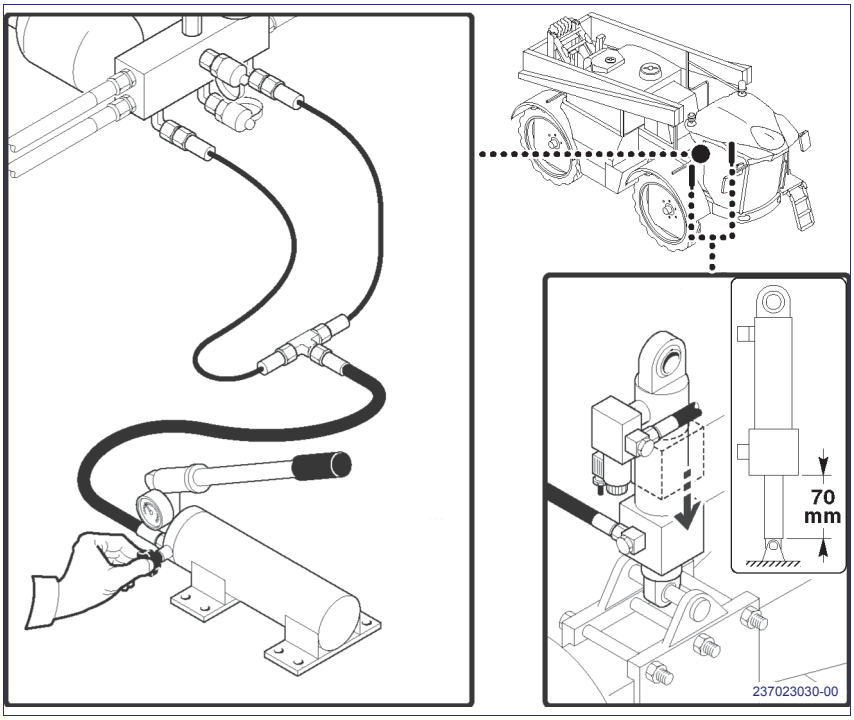
5 - If necessary, inject hydraulic oil until you reach a pressure of 150 bar.

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



7 - Drain the oil from the pump until 70 mm of the shaft remains extended.

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



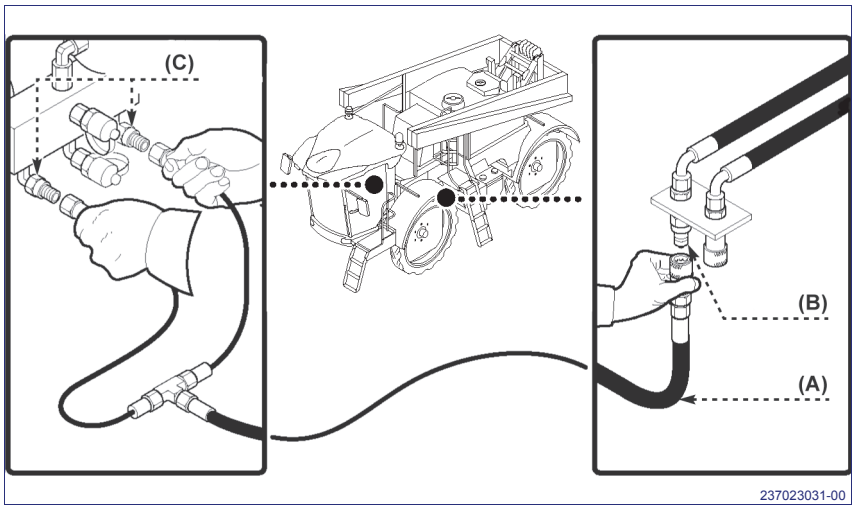
SHOCK ABSORBER CHECK (WITH THE MACHINE'S HYDRAULIC SYSTEM)

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

Proceed as follows.

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.

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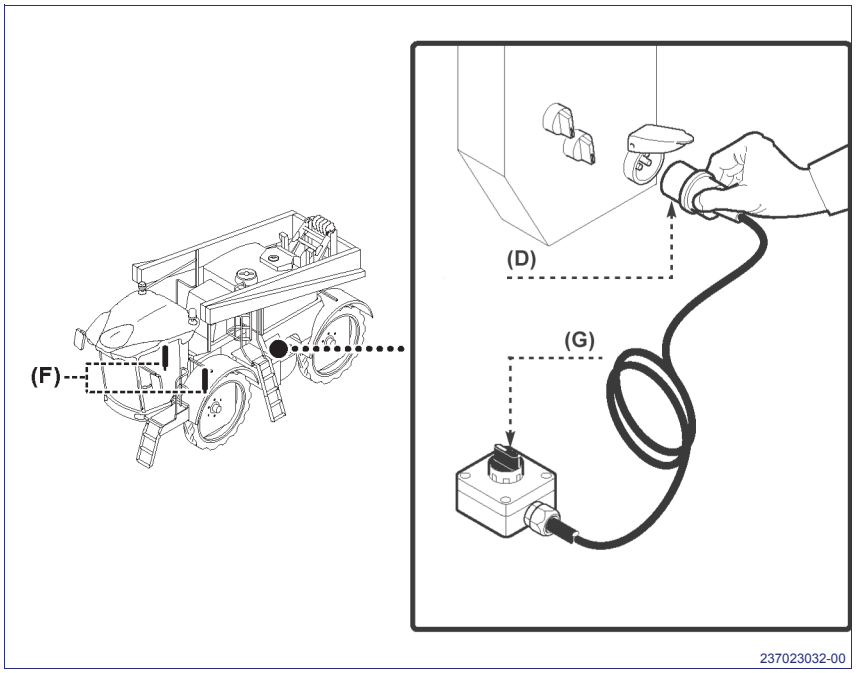
3 - Connect the plug **(D)**.

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

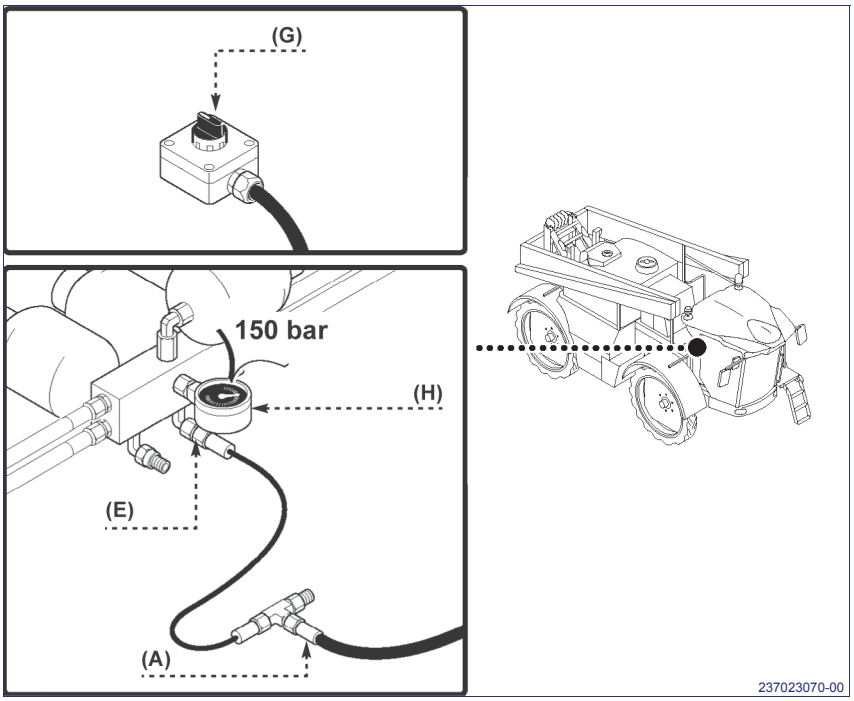


5 - Insert a pressure gauge **(H)** on the pressure tap.

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.



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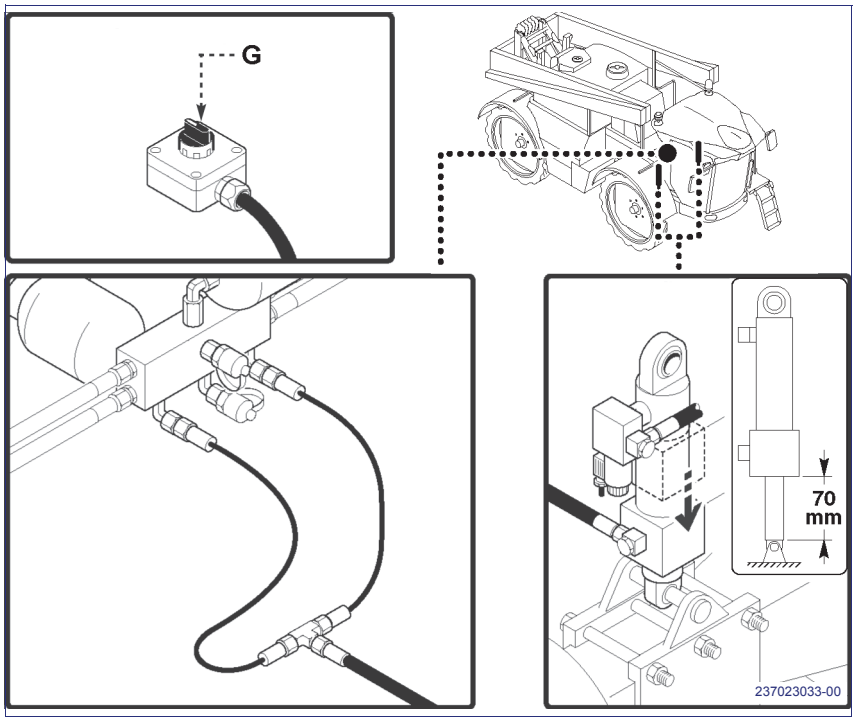
9 - Intervene on switch **(G)** to discharge the hydraulic oil, until 70 mm of the shaft remains extended.

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

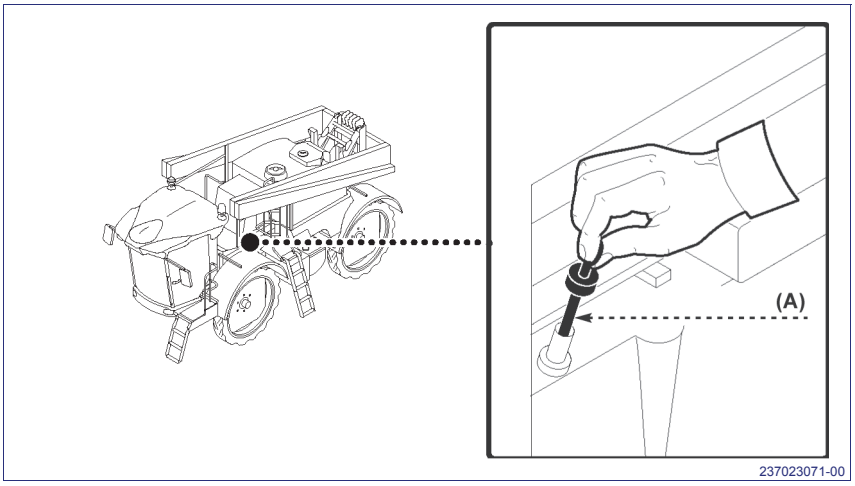


ENGINE OIL LEVEL CHECK

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

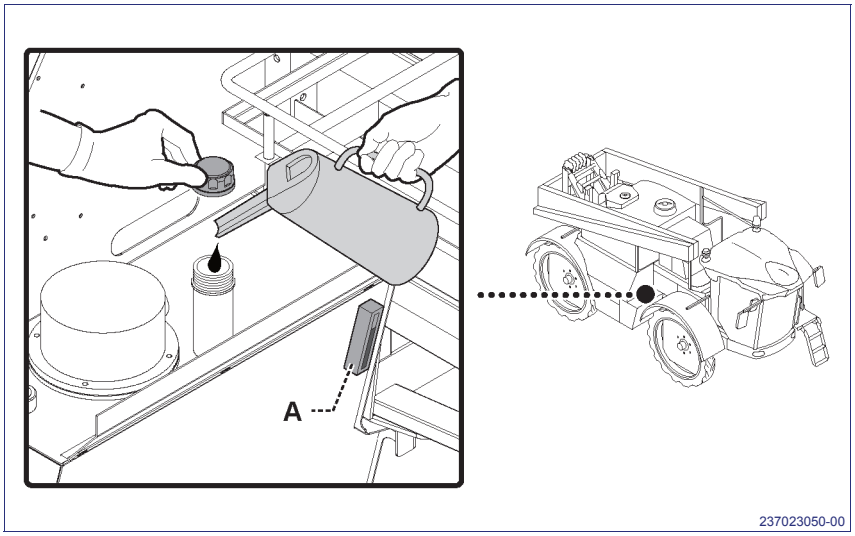
Important

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.



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RADIATOR COOLING FLUID LEVEL CHECK

Important

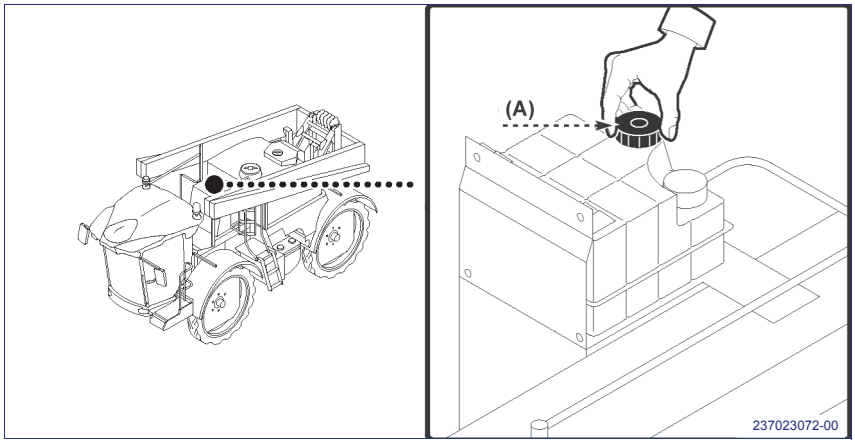
The radiator must be maintained at the correct level with a mixture of water and anti-frost fluid for protection purposes. Check the concentration of the mixture with a suitable device at least once a year.

Danger - Warning

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

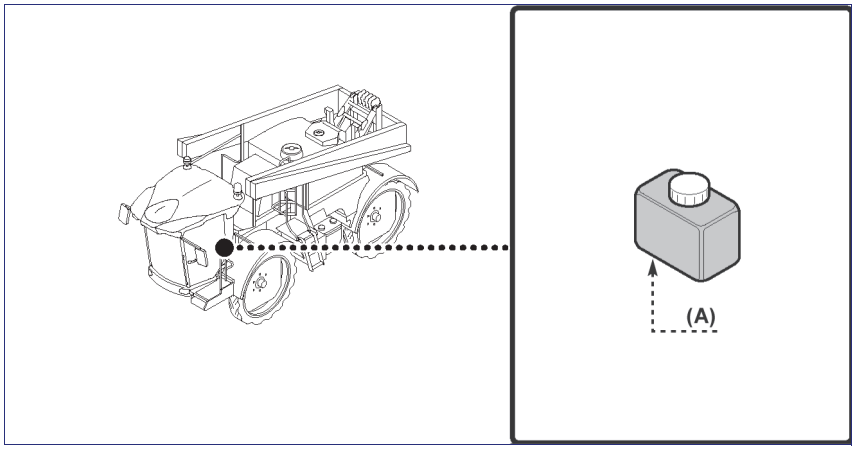
Remove the radiator cap **(A)** slowly: the cooling circuit is pressurised and the liquid (hot) may spill out vigorously if the pressure is released too quickly.

Check the level of the radiator fluid and, if necessary, top up.



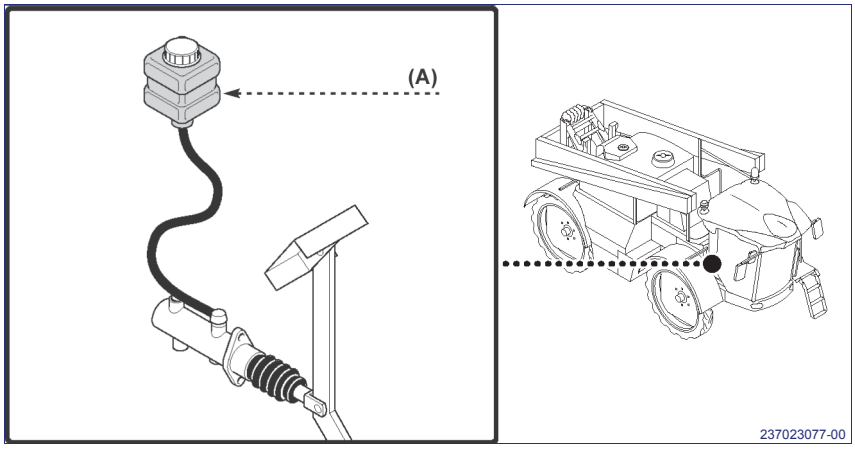
WINDSHIELD WIPER FLUID LEVEL CHECK

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



WINDSHIELD WIPER FLUID LEVEL CHECK

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



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CLEANING THE "RAPID CHECK" UNIT

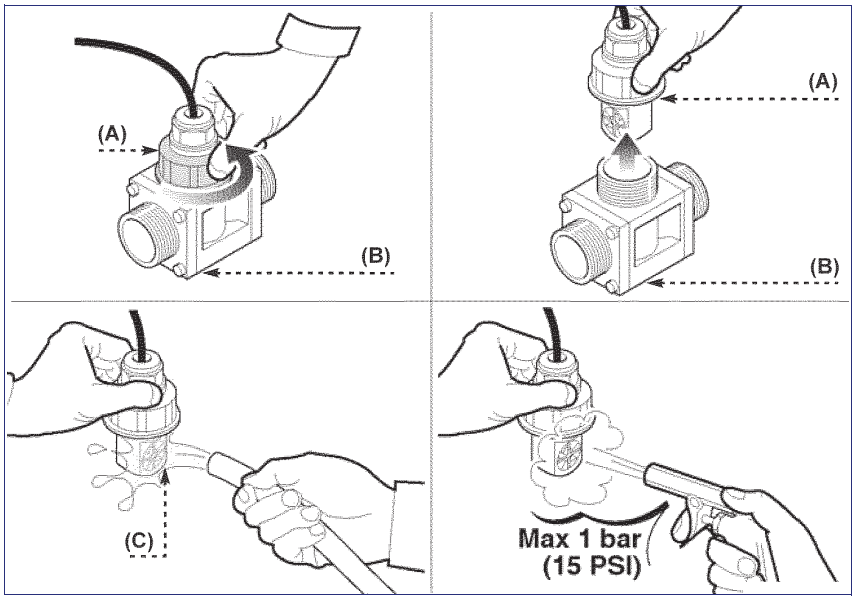
Proceed as follows.

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.



EXTRAORDINARY CLEANING "RAPID CHECK"

Proceed as follows.

1 - Unscrew the sensor **(A)**.

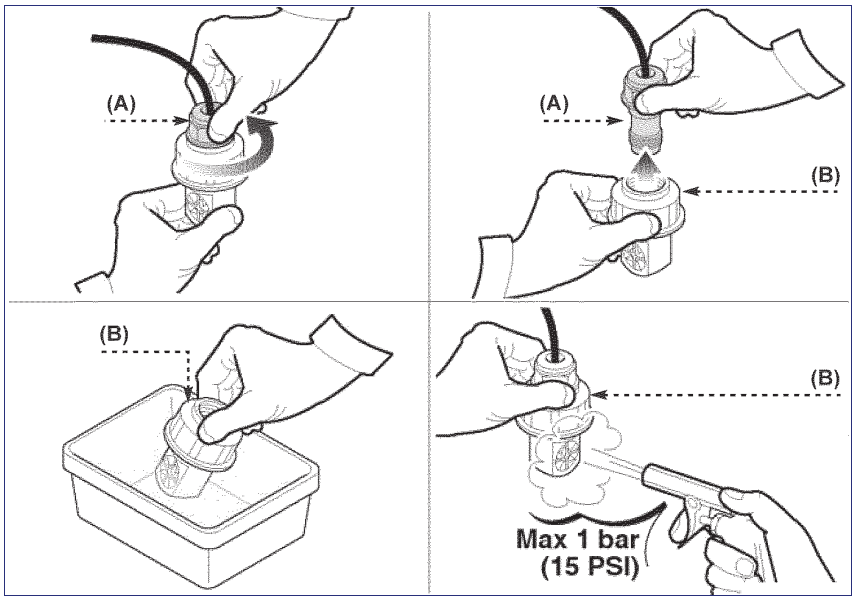
2 - Separate the sensor **(A)** from the "Rapid Check" unit **(B)**.

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).



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CLEANING THE HYDRAULIC CIRCUIT AIR/OIL HEAT EXCHANGER

Exclusively use compressed air at a maximum pressure of 2 bar to clean the front and rear of the radiator, while keeping at a distance of roughly 10 cm.

Pressurised water should not be used as it may deform the heat exchanger fins, thus obstructing the flow of air and causing the oil in the hydraulic circuit to overheat.

UNSCHEDULED 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.

This kind of operation must be carried out by skilled and specialized technicians, at adequately equipped garages.

Replace all hydraulic system hoses every 6 years, starting from the manufacture date. These components are exposed to wear and tear.

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.

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POLYETHYLENE TANK REPAIR

1 - Carefully clean the area near the break with a solvent.

2 - Using a cutter cut into the tank so that a V-shaped slot is made along the break. This slot is used for the material that will be melted for the repair.

3 - Put the road next to the break and start heating with a hot air sealer (temperature of 400°C ÷ 450°C) until the rod starts melting. Follow this procedure along the length of the break.

4 - In order to make sure that the material is perfectly glued, the sides around the break must also achieve a temperature close to melting. Turn the rod during repair so that the melted material is removed.

5 - Repeat the same operation until the V-shaped slot around the break is totally filled with new material.

TROUBLESHOOTING

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.

Troubles	*Cause*	*Remedy*
The machine drops suddenly.	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
The rear-wheel steering does not activate (’4WS’ or ’Crab’).	Steering board failure.	Replace the board.
	Failure of the proximity sensor on the front right wheel.	Replace the sensor.

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Hydrostatic transmission system

Troubles	*Cause*	*Remedy*
Difficulty or inability to find the "0" position (neutral).	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.
The two steering wheels ('2WS') do not activate	Steering board failure.	Replace the board.
	Failure of the analogue sensor on the rear right wheel.	Replace the sensor.

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Spraying pump and centrifugal pump system

Troubles	*Cause*	*Remedy*
The product spraying pump and self-priming pump are not turning regularly.	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 the motors.

Power steering system

Troubles	*Cause*	*Remedy*
Faulty front and rear steering system.	Faulty power steering.	Replace the power steering.
	Faulty valve on power steering input.	Replace valve.
	Damaged pump.	Replace the pump.

Bar lifting, balancing and suspension system

Troubles	*Cause*	*Remedy*
One of the bar's hydraulic components is not functioning.	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.

Product spraying system

Troubles	*Cause*	*Remedy*
The bar does not spray the product.	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.

INFORMATION ABOUT REPLACEMENTS

INSTRUCTIONS ON COMPONENT PART REPLACEMENT

Prior to any maintenance operation, enable all safety devices and consider whether it is necessary to properly inform the operator and the nearby staff. In particular, properly mark the surrounding areas and prevent anyone from accessing all those devices that, if activated, may cause unexpected risks to equipment safety and personal health.
If worn components must be replaced, use original parts only. The manufacturer cannot be held responsible for damages to persons or components arising from the use of non-original parts or for unscheduled maintenance that may modify the equipment safety requirements without the manufacturer's prior authorization.
To order spare parts, follow the instructions provided in the relevant catalogue.

TYRE REPLACEMENT

Danger - Warning

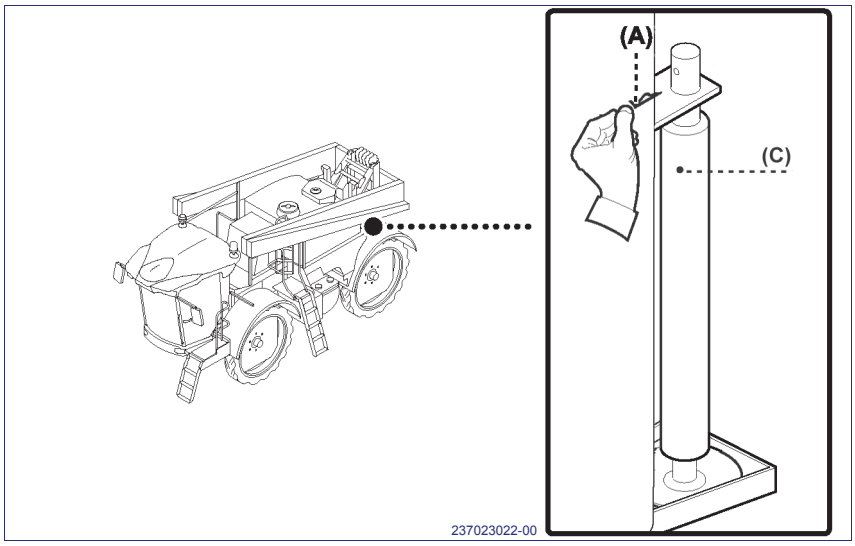
Pull the parking brake prior to changing tyres.
Immobilise the vehicle using the appropriate wheel chocks.

Important

The vehicle must be lifted preferably with the tank completely empty.

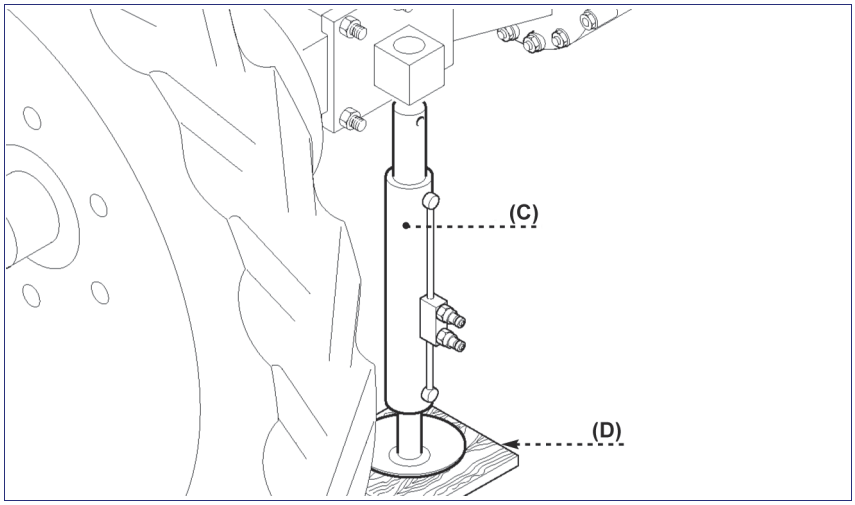
Proceed as follows.

1 - Extract split pin **(A)** to remove the provided 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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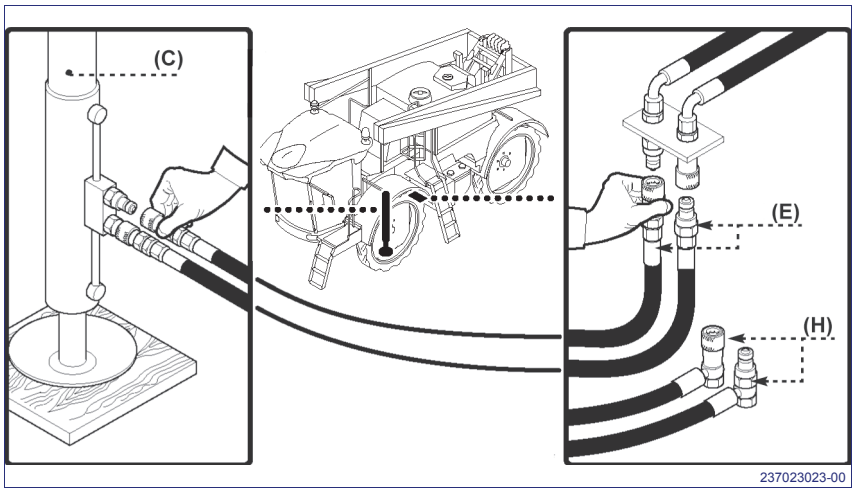
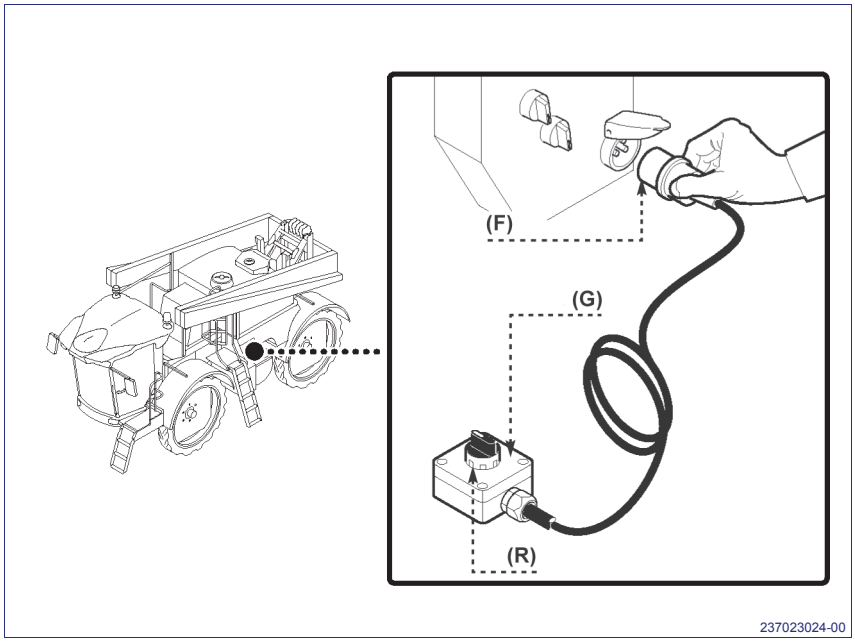
4 - Disconnect hoses **(H)** for ladder control.

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

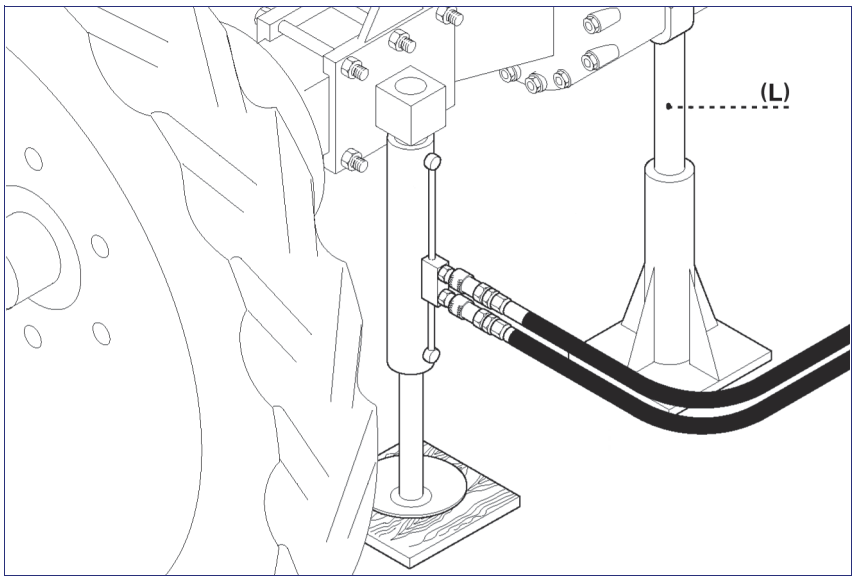


6 - Insert the plug **(F)** to enable the control electrically **(G)**.

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



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



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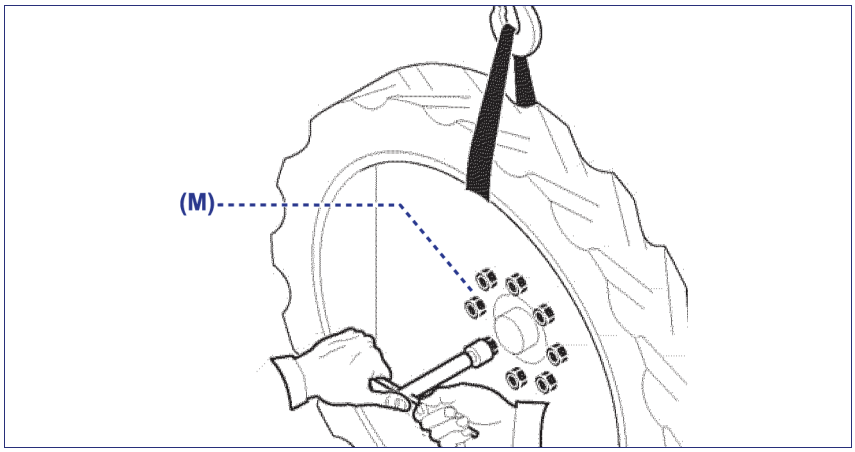
9 - Unscrew the nuts **(M)** that secure the wheel to remove it and change the tyre.

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



Important

Apply a tightening torque of 550 N•m (405 lb•ft).

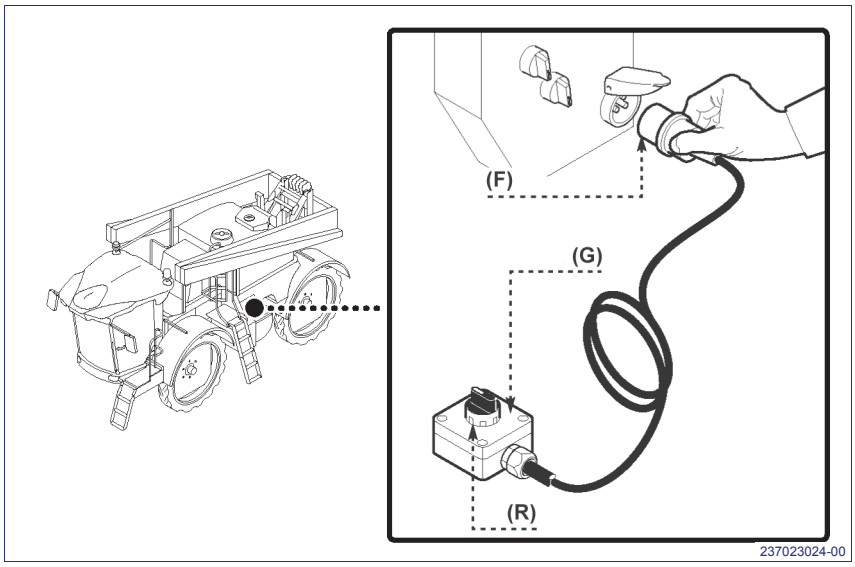
11- Use switch **(R)**, to lift the axle and remove the support **(L)**.

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

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

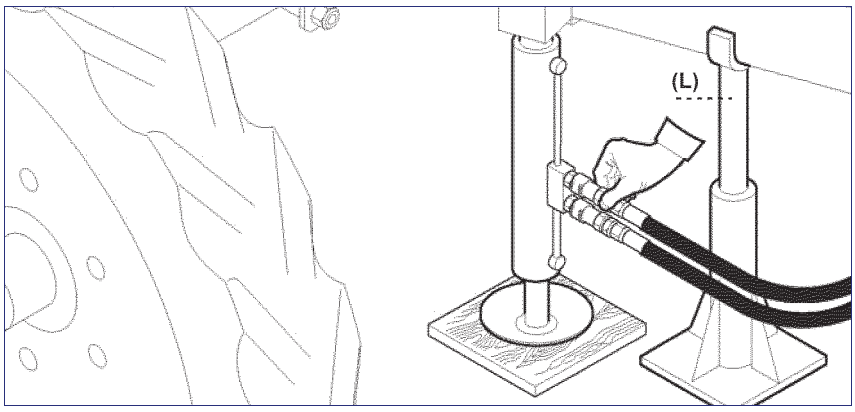
14- Disconnect the hoses **(E)** and the plug of the control **(R)**.

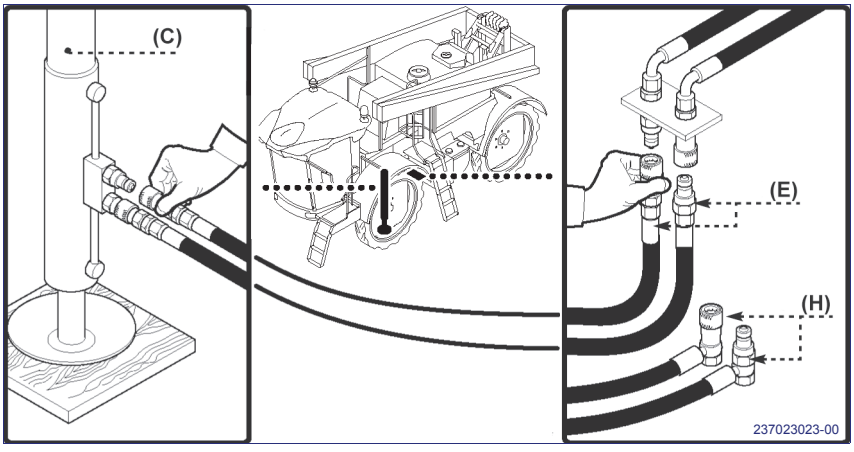
15- Put the lifting cylinder back in its place.



Important

Check the tyre pressure.





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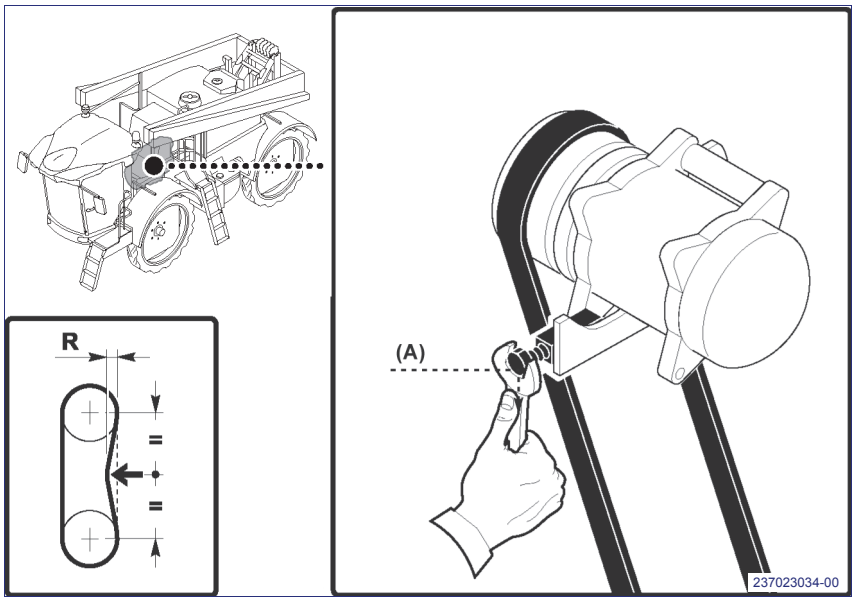
AIR CONDITIONING COMPRESSOR BELT REPLACEMENT

Proceed as follows.

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

2 - Remove and change the belt.

3 - Adjust the belt tension (see page 44).

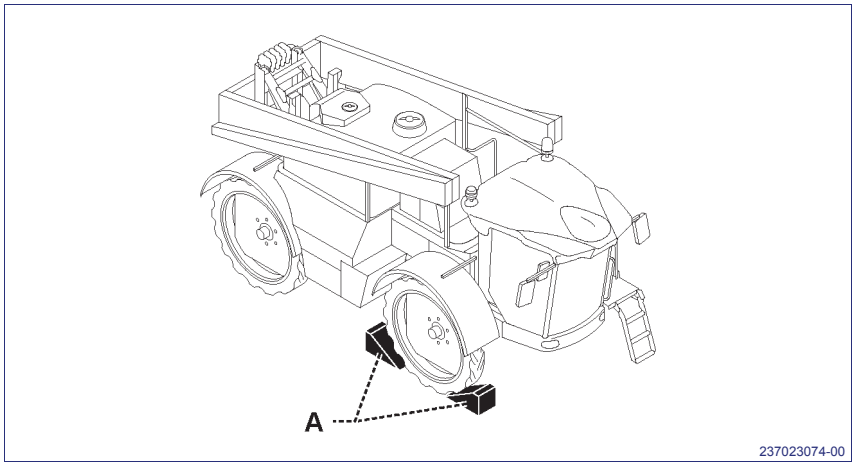


ACCUMULATOR REPLACEMENT

Proceed as follows.

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 40).

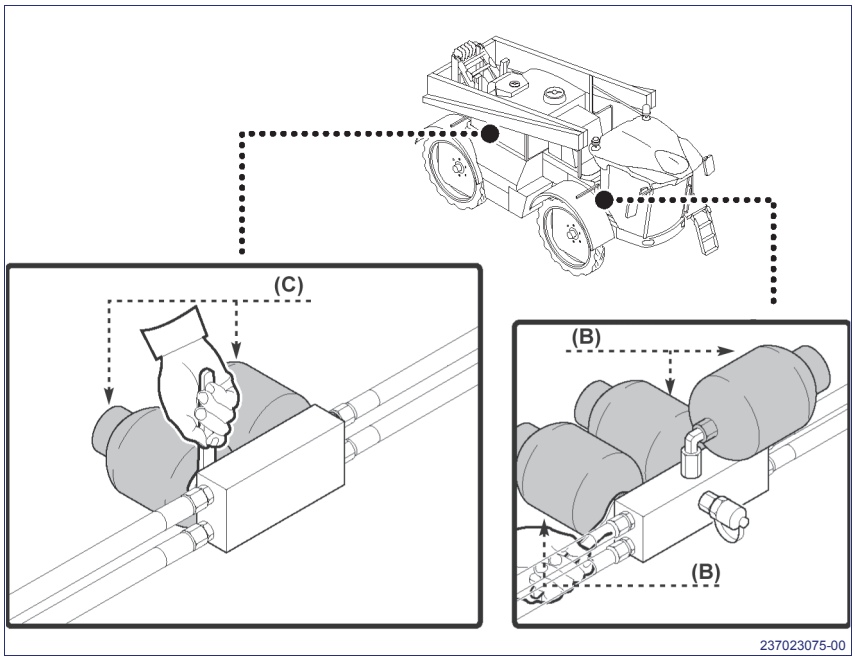


3 - Remove the front **(B)** and rear **(C)** accumulators.

4 - Replace the accumulators - either new or repaired - and fill the shock absorber system (see page 40).

Danger - Warning

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



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HYDRAULIC SYSTEM OIL CHANGE

Proceed as follows.

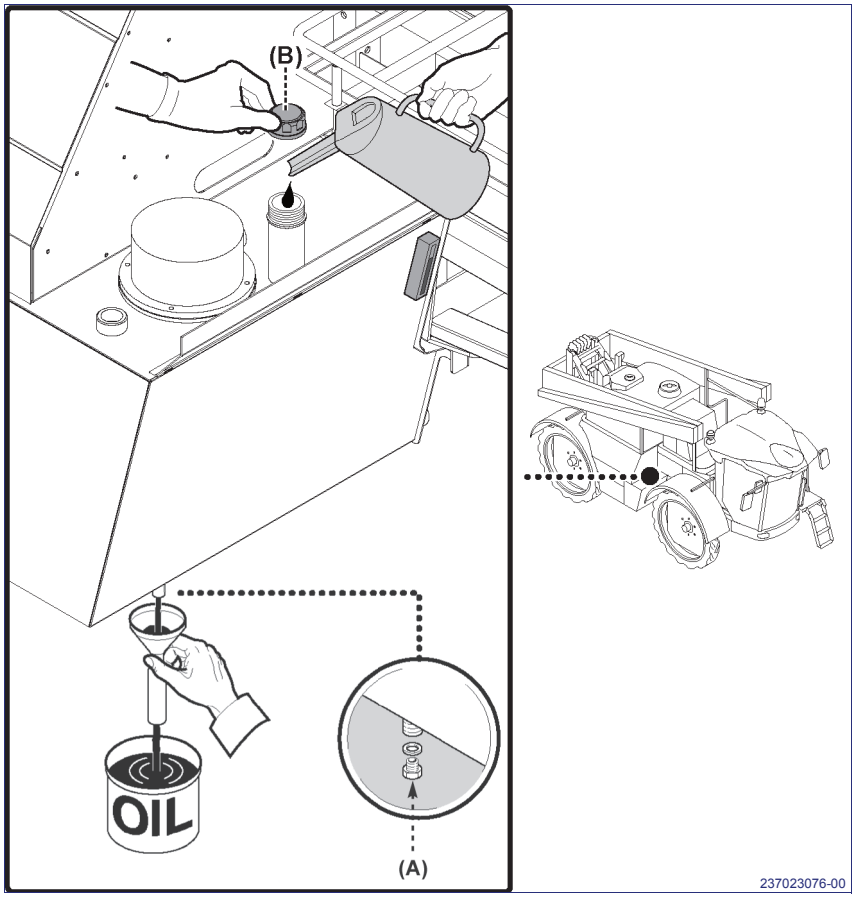
1 - Prepare a container with suitable capacity.

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.

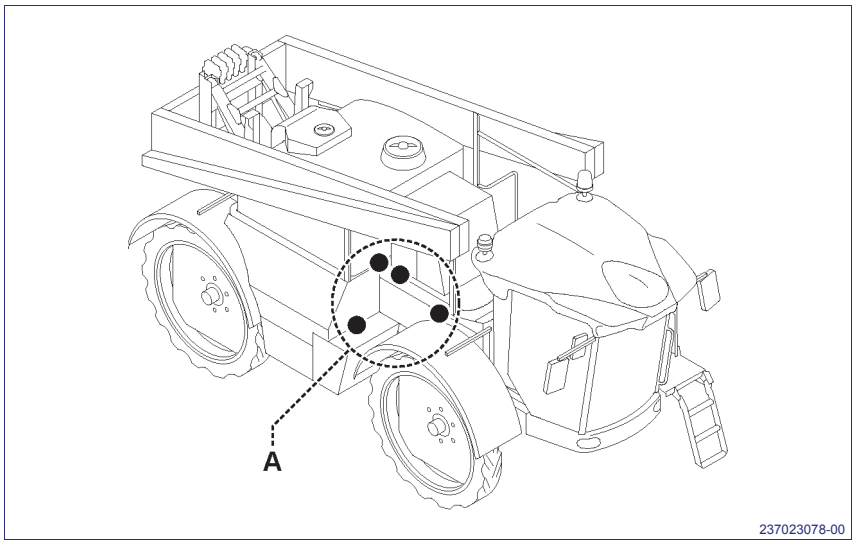


HYDRAULIC SYSTEM CARTRIDGE REPLACEMENT

Proceed as follows.

1 - Prepare a container for possible leakage.

2 - Remove filters **(A)**, replace their cartridges and screw the filters back in. Follow the instructions given on page 100 when replacing the filters.



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REPLACING THE CAB INTAKE FILTER

Proceed as follows.

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

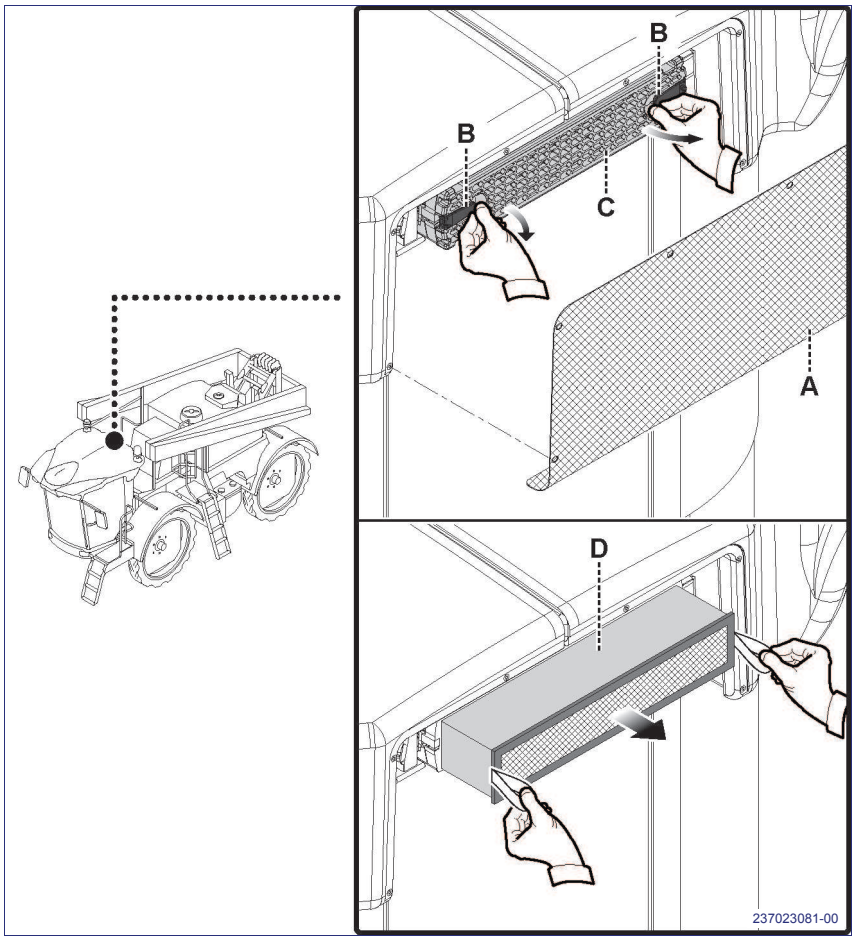
2 - Use lever **(B)** to slacken off cover **(C)** and remove it.

3 - Extract filter **(D)** by pulling on the straps, as shown in the figure.

4 - Replace the filter with a new one and restore cover **(C)**.

5 - Refit the guard **(A)**.

6 - Reset the hour meter (see page 63).



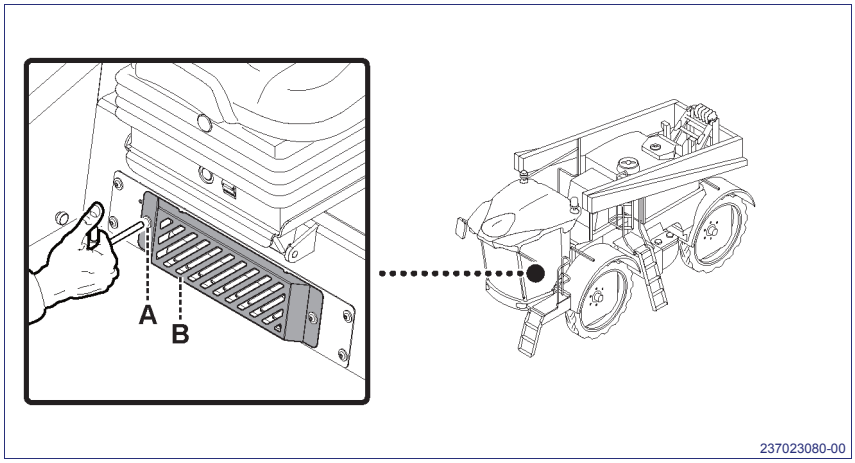
REPLACING THE CAB AIR RECIRCULATION FILTER

Proceed as follows.

1 - Unscrew the screws **(A)** and remove the casing **(B)**.

2 - Remove and replace the filter.

3 - Reassemble the casing **(B)** and secure it with the screws **(A)**.



REPLACING THE FUSES

The figure shows the position of the fuse box and relays.

A) Machine system fuses.

B) Cab system fuses.

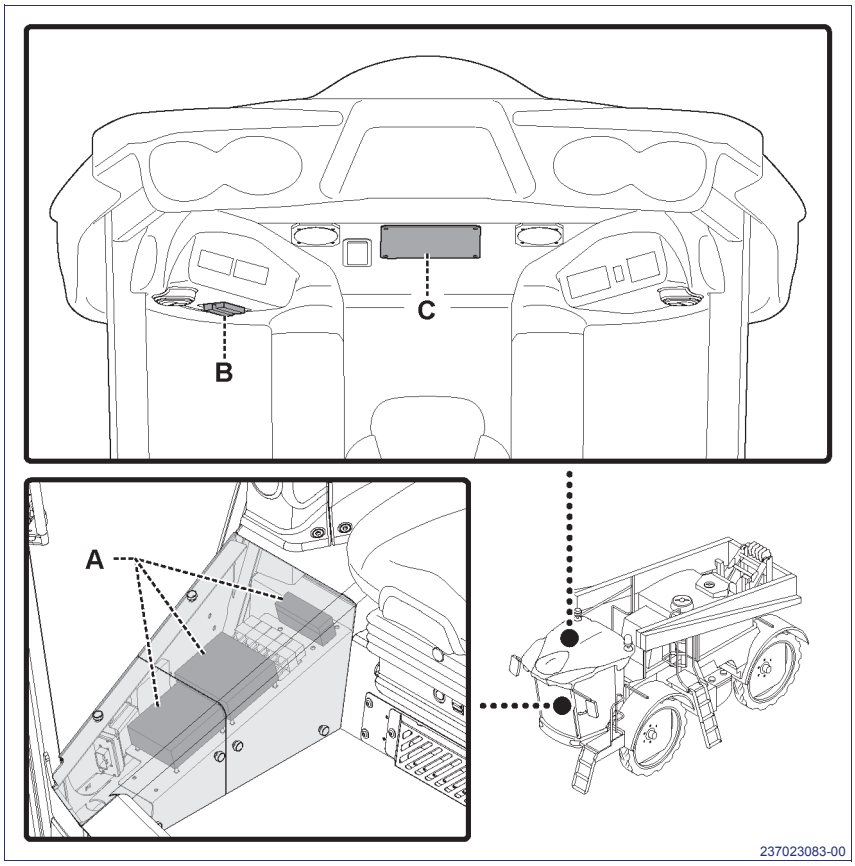
C) Cab system relays and intermittent lights.

Prior to replacing a fuse, switch the vehicle off or disengage the corresponding switch.

A burnt fuse indicates the malfunctioning of a component.

The latter must be replaced after the cause of the malfunction has been resolved.

For further information, consult the wiring diagram and the enclosed 'Fuses and relays' sheets.



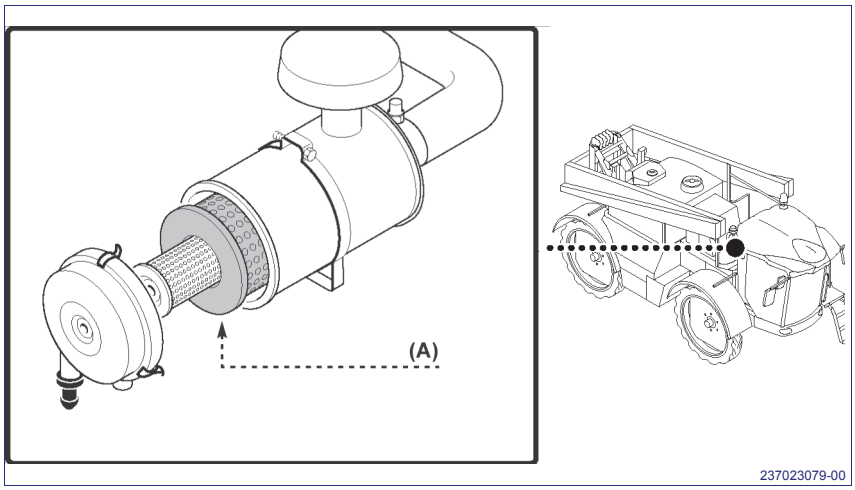
ENGINE AIR FILTER REPLACEMENT

Proceed as follows.

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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REPLACING A HYDRAULIC TUBE

Prior to replacing a hydraulic tube, be careful to adopt all the safety measures applicable to maintenance interventions, switch the vehicle off and close the hydraulic circuit valves.

Danger - Warning

Prior to removing a hydraulic tube, make sure to have bled any residual pressure from the circuit.

Identify the damaged tube precisely and use an appropriate spanner to loosen the two connection points, while being careful about possible hydraulic fluid leakage.

Replace the damaged tube exclusively with original spare parts.

Ensure that the attachment points (threads, seals, etc.) are in good condition prior to mounting the new tube.

Use appropriate spanners to turn clockwise any hydraulic tube fittings that leak.

Important

Do not tighten excessively so as to avoid ruining the threads of the fittings.

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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 discarding the equipment, carefully clean it by washing it inside and outside.

The discharge of the washing residues to the environment without precautions is forbidden as it pollutes the water of the aquifers.

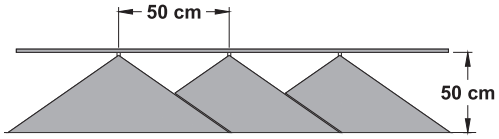
Do not throw away non-biodegradable products, such as lubricant oils, batteries and non-iron components (foam, PVC, resins etc.). These products must be disposed in the respect of environment protection laws.

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.

The used oil must be suitably recovered and must not be discharged to the environment. According to the current regulations, used oil is classified as hazardous waste material and as such it must be sent to the special collection centres.

The parts made up only of plastic, aluminium and steel can be recycled provided that they are collected by the special centres.

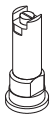
NOZZLE TABLE



XR / LU
1,5 - 5,5 bar

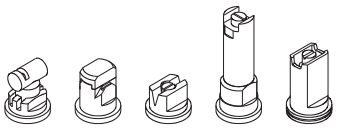
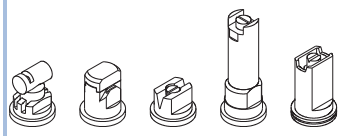
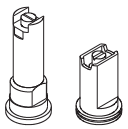
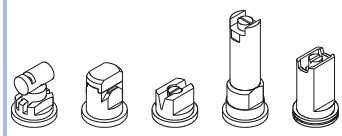
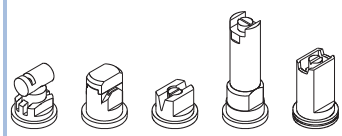
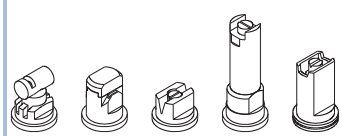
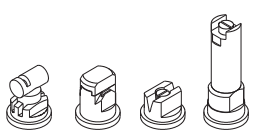
TT
1,5 - 6 bar

TJ
2 - 4 bar



AI / ID
2 - 8 bar

AIRMIX
1,5 - 6 bar

Ugelli Nozzle / Buses / Düsen		bar	l/min	l/ha												
				4 km/h	5 km/h	6 km/h	7 km/h	8 km/h	10 km/h	12 km/h	16 km/h	18 km/h	20 km/h	25 km/h	30 km/h	35 km/h
	**01** Arancione Orange Orange Orange	1,0	0,23	69,0	55,2	46,0	39,4	34,5	27,6	23,0	17,3	15,3	13,8	11,0	9,2	7,9
		2,0	0,32	96,0	76,8	64,0	54,9	48,0	38,4	32,0	24,0	21,3	19,2	15,4	12,8	11,0
		3,0	0,39	117	93,6	78,0	66,9	58,5	46,8	39,0	29,3	26,0	23,4	18,7	15,6	13,4
		4,0	0,45	135	108	90,0	77,1	67,5	54,0	45,0	33,8	30,0	27,0	21,6	18,0	15,4
		5,0	0,50	150	120	100	85,7	75,0	60,0	50,0	37,5	33,3	30,0	24,0	20,0	17,1
		6,0	0,55	165	132	110	94,3	82,5	66,0	55,0	41,3	36,7	33,0	26,4	22,0	18,9
	**015** Verde Green Vert Grun	1,0	0,34	102	81,6	68,0	58,3	51,0	40,8	34,0	25,5	22,7	20,4	16,3	13,6	11,7
		2,0	0,48	144	115	96,0	82,3	72,0	57,6	48,0	36,0	32,0	28,8	23,0	19,2	16,5
		3,0	0,59	177	142	118	101	88,5	70,8	59,0	44,3	39,3	35,4	28,3	23,6	20,2
		4,0	0,68	204	163	136	117	102	81,6	68,0	51,0	45,3	40,8	32,6	27,2	23,3
		5,0	0,76	228	182	152	130	114	91,2	76,0	57,0	50,7	45,6	36,5	30,4	26,1
		6,0	0,83	249	199	166	142	125	99,6	83,0	62,3	55,3	49,8	39,8	33,2	28,5
		7,0	0,90	270	216	180	154	135	108	90,0	67,5	60,0	54,0	43,2	36,0	30,9
		8,0	0,96	288	230	192	165	144	115	96,0	72,0	64,0	57,6	46,1	38,4	32,9
	**02** Giallo Yellow Jaune Gelb	1,0	0,46	138	110	92,0	78,9	69,0	55,2	46,0	34,5	30,7	27,6	22,1	18,4	15,8
		2,0	0,65	195	156	130	111	97,5	78,0	65,0	48,8	43,3	39,0	31,2	26,0	22,3
		3,0	0,79	237	190	158	135	119	94,8	79,0	59,3	52,7	47,4	37,9	31,6	27,1
		4,0	0,91	273	218	182	156	137	109	91,0	68,3	60,7	54,6	43,7	36,4	31,2
		5,0	1,02	306	245	204	175	153	122	102	76,5	68,0	61,2	49,0	40,8	35,0
		6,0	1,12	336	269	224	192	168	134	112	84,0	74,7	67,2	53,8	44,8	38,4
		7,0	1,21	363	290	242	207	182	145	121	90,8	80,7	72,6	58,1	48,4	41,5
		8,0	1,29	387	310	258	221	194	155	129	96,8	86,0	77,4	61,9	51,6	44,2
	**025**	2,0	0,81	243	194	162	139	122	97,2	81,0	60,8	54,0	48,6	38,9	32,4	27,8
		3,0	0,99	297	238	198	170	149	119	99,0	74,3	66,0	59,4	47,5	39,6	33,9
		4,0	1,14	342	274	228	195	171	137	114	85,5	76,0	68,4	54,7	45,6	39,1
		5,0	1,28	384	307	256	219	192	154	128	96	85,3	76,8	61,4	51,2	43,9
		6,0	1,40	420	336	280	240	210	168	140	105	93,3	84	67,2	56,0	48,0
		7,0	1,51	453	362	302	259	227	181	151	113	101	90,6	72,5	60,4	51,8
		8,0	1,62	486	389	324	278	243	194	162	122	108	97,2	77,8	64,8	55,5
	**03** Blu Blue Bleu Blau	1,0	0,68	204	163	136	117	102	81,6	68	51	45,3	40,8	32,6	27,2	23,3
		2,0	0,96	288	230	192	165	144	115	96	72	64,0	57,6	46,1	38,4	32,9
		3,0	1,18	354	283	236	202	177	142	118	88,5	78,7	70,8	56,6	47,2	40,5
		4,0	1,36	408	326	272	233	204	163	136	102	90,7	81,6	65,3	54,4	46,6
		5,0	1,52	456	365	304	261	228	182	152	114	101	91,2	73,0	60,8	52,1
		6,0	1,67	501	401	334	286	251	200	167	125	111	100	80,2	66,8	57,3
		7,0	1,80	540	432	360	309	270	216	180	135	120	108	86,4	72,0	61,7
		8,0	1,93	579	463	386	331	290	232	193	145	129	116	92,6	77,2	66,2
	**04** Rosso Red Rouge Rot	1,0	0,91	273	218	182	156	137	109	91,0	68,3	60,7	54,6	43,7	36,4	31,2
		2,0	1,29	387	310	258	221	194	155	129	96,8	86,0	77,4	61,9	51,6	44,2
		3,0	1,58	474	379	316	271	237	190	158	119	105	94,8	75,8	63,2	54,2
		4,0	1,82	546	437	364	312	273	218	182	137	121	109	87,4	72,8	62,4
		5,0	2,04	612	490	408	350	306	245	204	153	136	122	97,9	81,6	69,9
		6,0	2,23	669	535	446	382	335	268	223	167	149	134	107	89,2	76,5
		7,0	2,41	723	578	482	413	362	289	241	181	161	145	116	96,4	82,6
		8,0	2,58	774	619	516	442	387	310	258	194	172	155	124	103	88,5
	**05** Marrone Brown Marron Braun	1,0	1,14	342	274	228	195	171	137	114	85,5	76	68,4	54,7	45,6	39,1
		2,0	1,61	483	386	322	276	242	193	161	121	107	96,6	77,3	64,4	55,2
		3,0	1,97	591	473	394	338	296	236	197	148	131	118	94,6	78,8	67,5
		4,0	2,27	681	545	454	389	341	272	227	170	151	136	109	90,8	77,8
		5,0	2,54	762	610	508	435	381	305	254	191	169	152	122	102	87,1
		6,0	2,79	837	670	558	478	419	335	279	209	186	167	134	112	95,7
		7,0	3,01	903	722	602	516	452	361	301	226	201	181	144	120	103
		8,0	3,22	966	773	644	552	483	386	322	242	215	193	155	129	110
	**06** Grigio Grey Gris Grau	1,0	1,37	411	329	274	235	206	164	137	103	91,3	82,2	65,8	54,8	47,0
		2,0	1,94	582	466	388	333	291	233	194	146	129	116	93,1	77,6	66,5
		3,0	2,37	711	569	474	406	356	284	237	178	158	142	114	94,8	81,3
		4,0	2,74	822	658	548	470	411	329	274	206	183	164	132	110	93,9
		5,0	3,06	918	734	612	525	459	367	306	230	204	184	147	122	105
		6,0	3,35	1005	804	670	574	503	402	335	251	223	201	161	134	115
		7,0	3,62	1086	869	724	621	543	434	362	272	241	217	174	145	124
		8,0	3,87	1161	929	774	663	581	464	387	290	258	232	186	155	133

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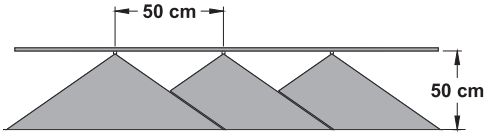
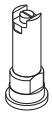


XR / LU
1,5 - 5,5 bar

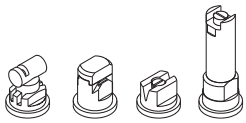
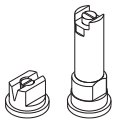
TT
1,5 - 6 bar

TJ
2 - 4 bar



AI / ID
2 - 8 bar

AIRMIX
1,5 - 6 bar

Ugelli Nozzle / Buses / Düsen		bar	l/min	l/ha												
				4 km/h	5 km/h	6 km/h	7 km/h	8 km/h	10 km/h	12 km/h	16 km/h	18 km/h	20 km/h	25 km/h	30 km/h	35 km/h
	**08** Bianco White Blanc Weiss	1,0	1,82	546	437	364	312	273	218	182	137	121	109	87,4	72,8	62,4
		2,0	2,58	774	619	516	442	387	310	258	194	172	155	124	103	88,5
		3,0	3,16	948	758	632	542	474	379	316	237	211	190	152	126	108
		4,0	3,65	1095	876	730	626	548	438	365	274	243	219	175	146	125
		5,0	4,08	1224	979	816	699	612	490	408	306	272	245	196	163	140
		6,0	4,47	1341	1073	894	766	671	536	447	335	298	268	215	179	153
		7,0	4,83	1449	1159	966	828	725	580	483	362	322	290	232	193	166
		8,0	5,16	1548	1238	1032	885	774	619	516	387	344	310	248	206	177
	**10**	1,0	2,28	684	547	456	391	342	274	228	171	152	137	109	91,2	78,2
		2,0	3,23	969	775	646	554	485	388	323	242	215	194	155	129	111
		3,0	3,95	1185	948	790	677	593	474	395	296	263	237	190	158	135
		4,0	4,56	1368	1094	912	782	684	547	456	342	304	274	219	182	156
		5,0	5,10	1530	1224	1020	874	765	612	510	383	340	306	245	204	175
		6,0	5,59	1677	1342	1118	958	839	671	559	419	373	335	268	224	192
		7,0	6,03	1809	1447	1206	1034	905	724	603	452	402	362	289	241	207
		8,0	6,45	1935	1548	1290	1106	968	774	645	484	430	387	310	258	221
	**15**	1,0	3,42	1026	821	684	586	513	410	342	257	228	205	164	137	117
		2,0	4,83	1449	1159	966	828	725	580	483	362	322	290	232	193	166
		3,0	5,92	1776	1421	1184	1015	888	710	592	444	395	355	284	237	203
		4,0	6,84	2052	1642	1368	1173	1026	821	684	513	456	410	328	274	235
	**20**	1,0	4,56	1368	1094	912	782	684	547	456	342	304	274	219	182	156
		2,0	6,44	1932	1546	1288	1104	966	773	644	483	429	386	309	258	221
		3,0	7,89	2367	1894	1578	1353	1184	1052	789	592	526	473	379	316	271
		4,0	9,11	2733	2186	1822	1562	1367	1093	911	683	607	547	437	364	312

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ANNEXES

TABLE OF CONTENTS

title	page
ANNEXES	**2**
Machine system fuses and relays	2
Part 1	2
Part 2	4
Part 3	6
Cab system fuses.	8
Cab system relays	10

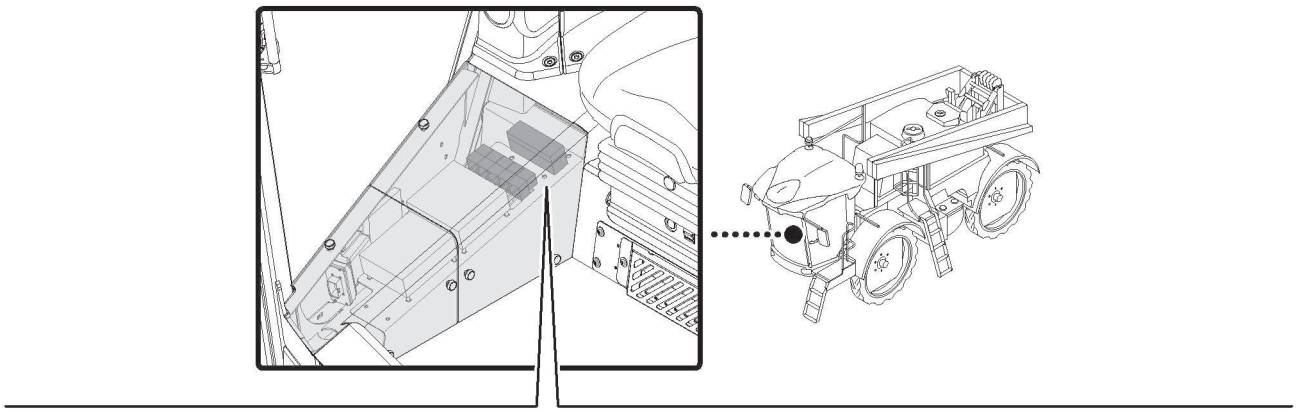
IMPORTANT SAFETY NOTE

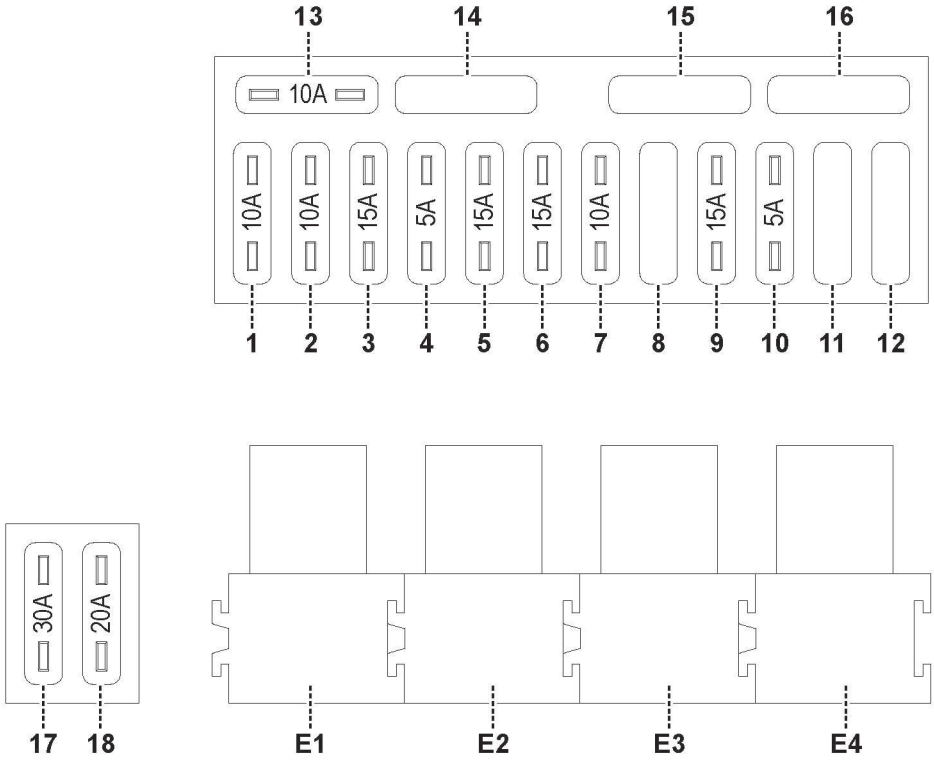
The information published in this booklet regards the pointed out with relevant symbols in order to safeguard operational aspects of the operator unit installed on the people from risks. Remember that prudence is irreplaceable. machine. It is however necessary that you carefully read the Safety is also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

ANNEXES

MACHINE SYSTEM FUSES AND RELAYS

Part 1



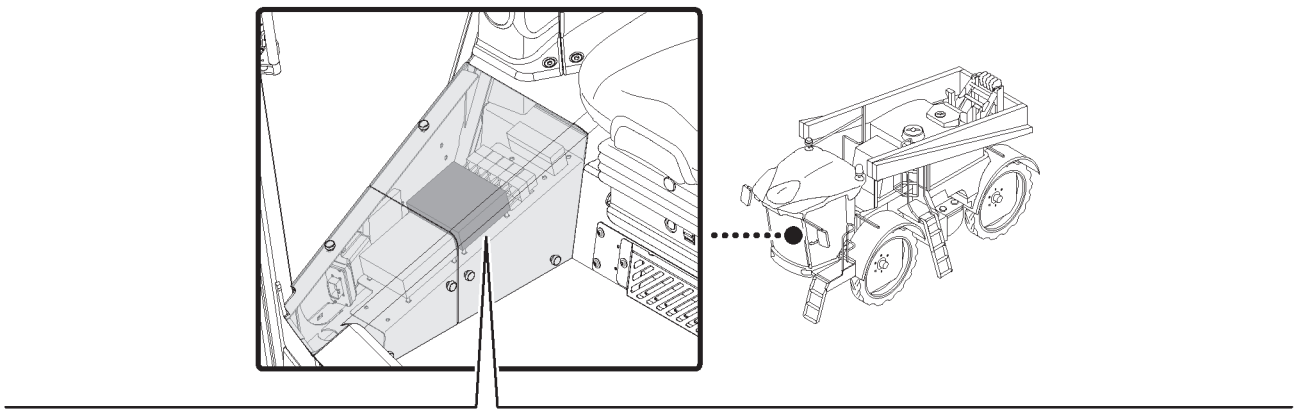


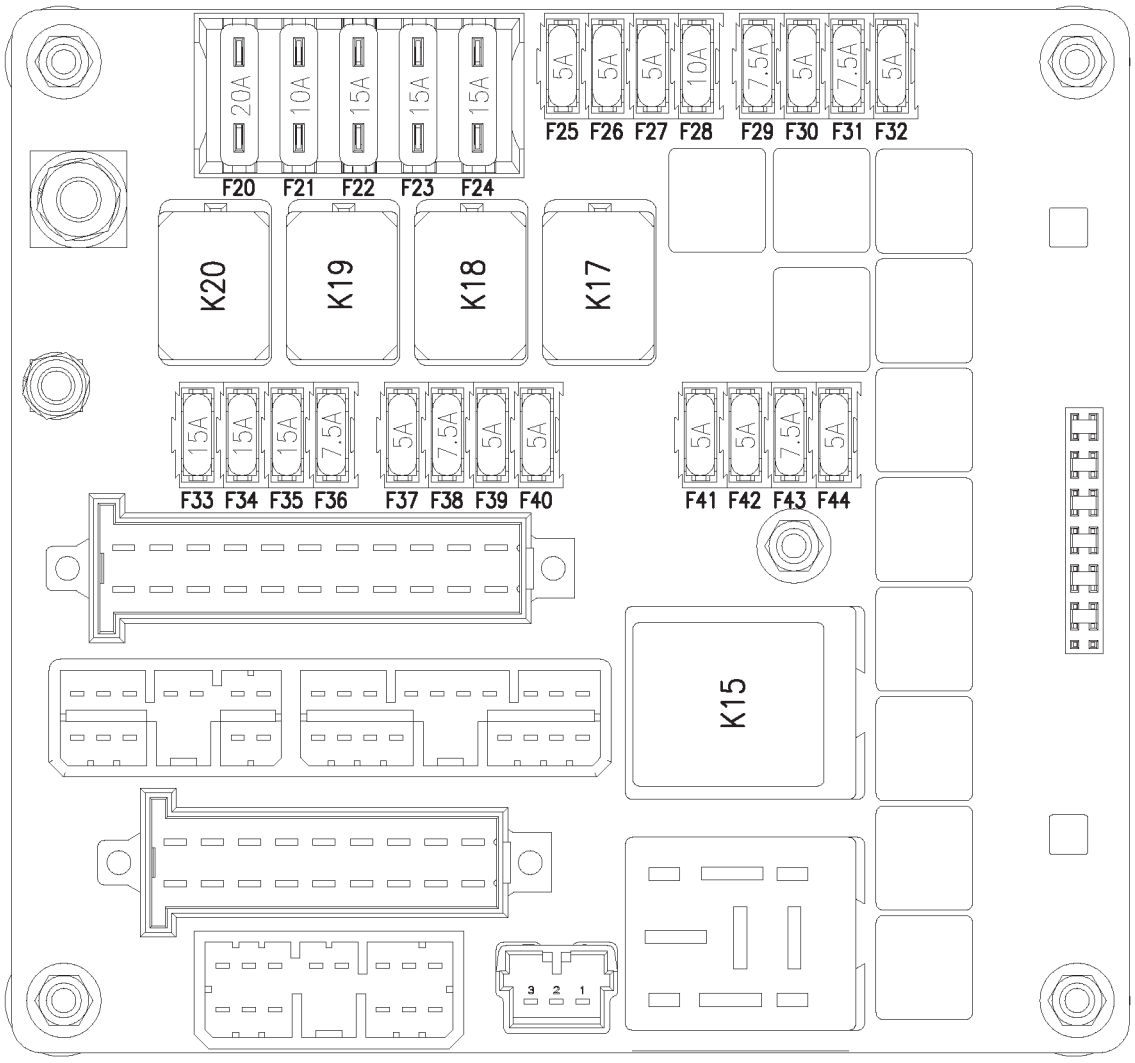
Allegati.fm

237023090-00

Pos	Name	Indication
1	Fuse	Water pump, external button pad
2	Fuse	Row marker
3	Fuse	Self-priming pump
4	Fuse	Suspension lock switch, sensors
5	Fuse	Joystick
6	Fuse	Boom movements
7	Fuse	Air hose system
8	Fuse	*Available*
9	Fuse	24 V sensor power
10	Fuse	24 V sensor power
11	Fuse	*Available*
12	Fuse	*Available*
13	Fuse	12 V socket / cigarette lighter
14	Fuse	*Available*
15	Fuse	*Available*
16	Fuse	*Available*
17	Fuse	Computer
18	Fuse	Air recirculation system
E1	Relay	Air recirculation system
E2	Relay	Air recirculation system
E3	Relay	Air recirculation system
E4	Relay	Enabling of controls

Part 2





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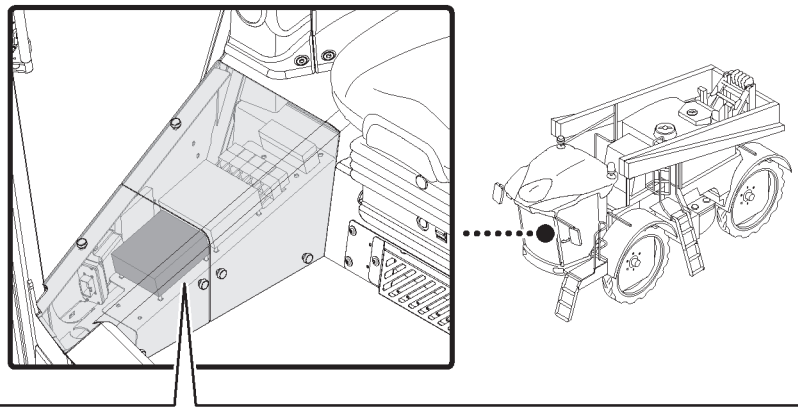
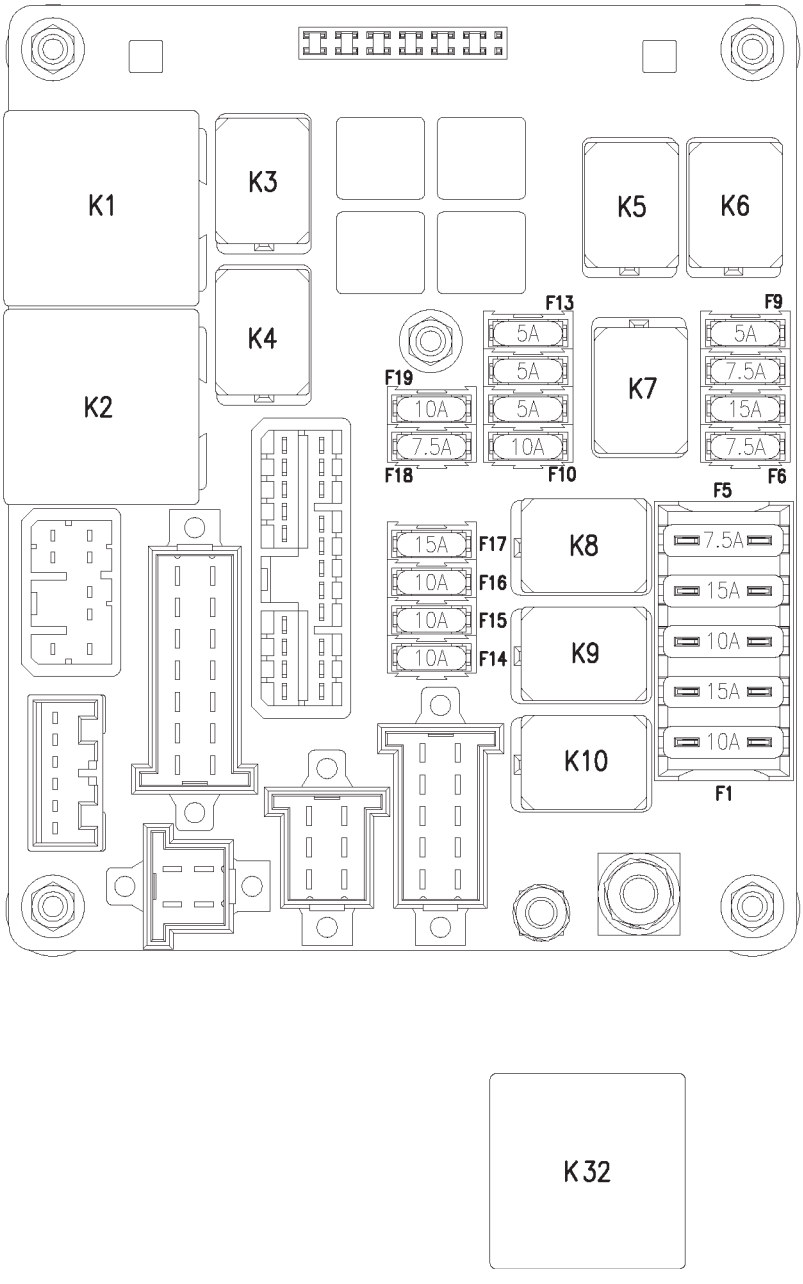
Pos	Name	Indication
F20	Fuse	Computer supply
F21	Fuse	*Available*
F22	Fuse	High beams.
F23	Fuse	GPS
F24	Fuse	Low beams.
F25	Fuse	Diagnostics connectors
F26	Fuse	Tera 7 display
F27	Fuse	Windscreen wiper pump
F28	Fuse	Differential lock switch power
F29	Fuse	Position lights.
F30	Fuse	*Available*
F31	Fuse	Brake lights
F32	Fuse	Speed control switch
F33	Fuse	Pneumatic seat
F34	Fuse	Greasing
F35	Fuse	Midac control unit
F36	Fuse	Hose winder.
F37	Fuse	*Available*
F38	Fuse	Diagnostics connectors
F39	Fuse	Brake pump, reversing buzzer
F40	Fuse	Steering system
F41	Fuse	*Available*
F42	Fuse	*Available*
F43	Fuse	*Available*
F44	Fuse	*Available*
K15	Relay	Computer supply
K17	Relay	Pcor solenoid valve
K18	Relay	Low beams.
K19	Relay	High beams.
K20	Relay	Position lights.

Part 3





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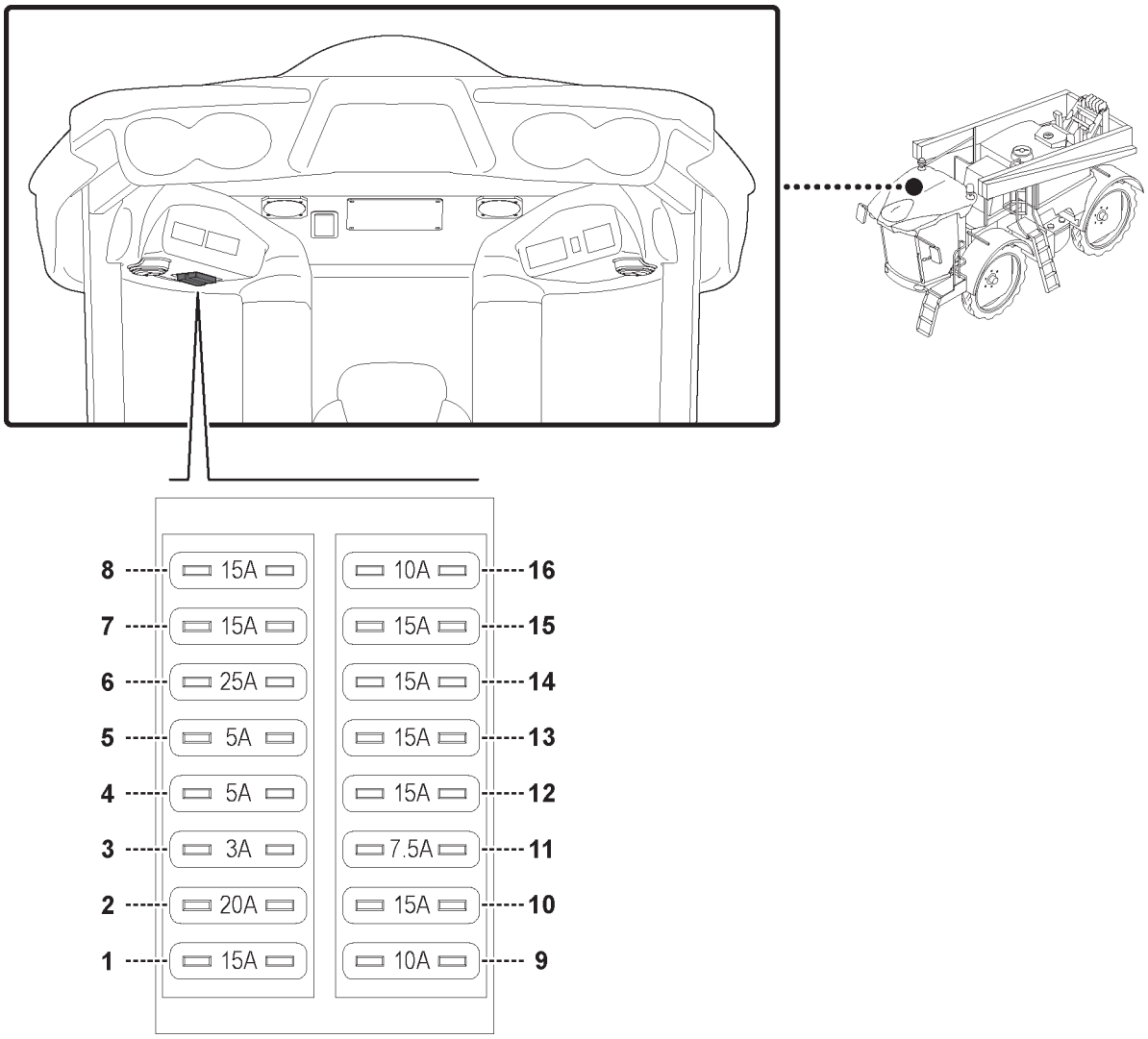
Allegati.fm

Pos	Name	Indication
F1	Fuse	Engine stop control
F2	Fuse	*Available*
F3	Fuse	*Available*
F4	Fuse	*Available*
F5	Fuse	Acoustic signal.
F6	Fuse	Tank full sensor power supply, supplementary mixing pump
F7	Fuse	Sauer control unit, Fluid System control unit, parking brake, operating controls switch
F8	Fuse	Reversing signal, reversing light
F9	Fuse	*Available*
F10	Fuse	Ramp.
F11	Fuse	Front right and rear left clearance light
F12	Fuse	Front left and rear right clearance light
F13	Fuse	*Available*
F14	Fuse	Accelerator actuator
F15	Fuse	Light switch, emergency stop button
F16	Fuse	Self-levelling board
F17	Fuse	Mixer bag washer
F18	Fuse	*Available*
F19	Fuse	Seat, Tera 7 display, Midac control unit, water alarm sensor
K1	Relay	*Available*
K2	Relay	*Available*
K3	Relay	Differential lock steering enable
K4	Relay	Differential locking indicator light
K5	Relay	Reversing signal, reversing light
K6	Relay	Forwards drive, (P), operating controls switch
K7	Relay	Tank full sensor power supply, supplementary mixing pump
K8	Relay	Acoustic signal.
K9	Relay	*Available*
K10	Relay	Engine emergency stop
K32	Relay	Ignition key

CAB SYSTEM FUSES.

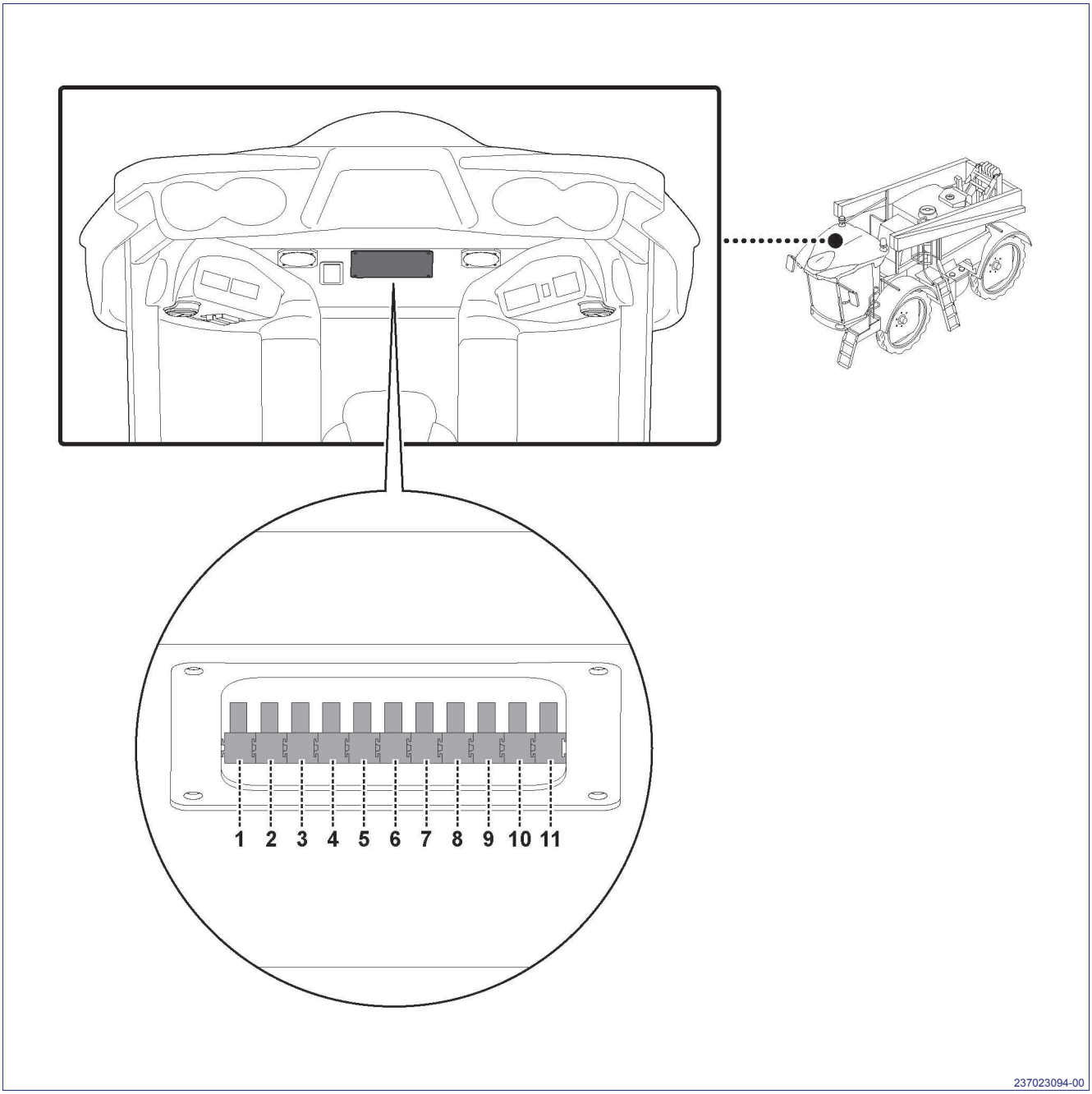


237023093-00

Allegati.fm

Pos	Name	Indication
1	Fuse	Rear working lights
2	Fuse	Cab fans
3	Fuse	Water valve power
4	Fuse	Cab pressurisation unit
5	Fuse	A/C compressor relay
6	Fuse	Heating unit, A/C
7	Fuse	Centre rear work lights
8	Fuse	Flashing
9	Fuse	Windscreen wiper
10	Fuse	Rotating light, electrical mirrors
11	Fuse	Car radio, hazard indicators
12	Fuse	Centre work lights
13	Fuse	Side work lights
14	Fuse	Rear working lights
15	Fuse	Rear working lights
16	Fuse	Car radio, hazard indicators, ceiling light

CAB SYSTEM RELAYS



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Pos	Name	Indication
1	Relay	X707 - Direction indicator flashing
2	Relay	X469 - A/C system power
3	Relay	X706 - Cab rear work lights
4	Relay	X705 - Windscreen wiper
5	Relay	X704 - Cab centre work lights
6	Relay	X703 - Cab side work lights
7	Relay	X702 - Cab rear work lights
8	Relay	X701 - Cab front work lights
9	Relay	X461 - Cab rear side work lights
10	Relay	X462 - Flashers
11	Relay	X468 - A/C compressor