EVRARD GROUPE HARDI

ALPHA 2500

OPERATING and MAINTENANCE Manual

Reference : 677824
Edition : 01/02

SUMMARY

1-1 USING THE SELF-PROPELLED ALPHA

The agricultural sprayer is designed for applying plant protection products and liquid fertilizers to crops. It must be used only for this purpose, to the exclusion of all others.

Please follow the Highway Code and any regulations in force with regard to road driving.

We strongly recommend that you obtain training in crop protection and handling plant protection products to ensure crop treatment with total safety for those accompanying you and for the environment.

1-2 DELIVERY REPORT

The delivery report, given when the mobile unit is delivered, must be returned to :

HARDI EVRARD
BP 59
77542 SAVIGNY LE TEMPLE CEDEX
FRANCE

duly completed, dated and signed by the concessionaire and the user, the return of this document causing the guarantee to start running. We would ask you to read carefully the guarantee clauses stipulated in the delivery report.

All the following specifications and characteristics are subject to improvements without notice and immediate revision of this manual.

1-5 PLANT PROTECTION PRODUCTS

Safe use of sprayers is dependent on the user, who must take the usual precautions when he is handling plant protection products and working with machine. It is essential to be aware of the non-compatibility of various different products used and be careful to read the product maker's instructions. The sprayer must be carefully cleaned after each use as chemical residues can damage the spray circuit.
Decree n° 92-1261 of 03 Décembre 1992.

1-5-1 CONTAINERS

Observe local legislation regarding chemical residues and mandatory decontamination methods. If in doubt contact the authorities e.g. Department of Agriculture.

1-5-2 STORAGE OF THE PRODUCTS

Do not store chemicals near the water. Store chemicals behind locked doors. Do not allow unauthorized persons and children to access the chemicals.

1-5-3 PERSONNAL PROTECTION

Chemicals will penetrate gloves, rubber boots etc. after a certain period of contact. This period will vary from a few hours to several days depending on rubber materials and chemical used. Be familiarised with the quality of your protection equipment, and renew them according to the instructions.
Wash your gloves before taking them off. Do not touch the contaminated outer side of the gloves with bare hands when taking them off.
If chemicals are splashed over you, remove soaked clothing at once and was with soap and water instantly. Plant protection chemicals will penetrate the skin, and affect your health. Consult chemical label regarding precautions to be taken against poisoning.

1-5-4 PLANT PROTECTION CHEMICAL

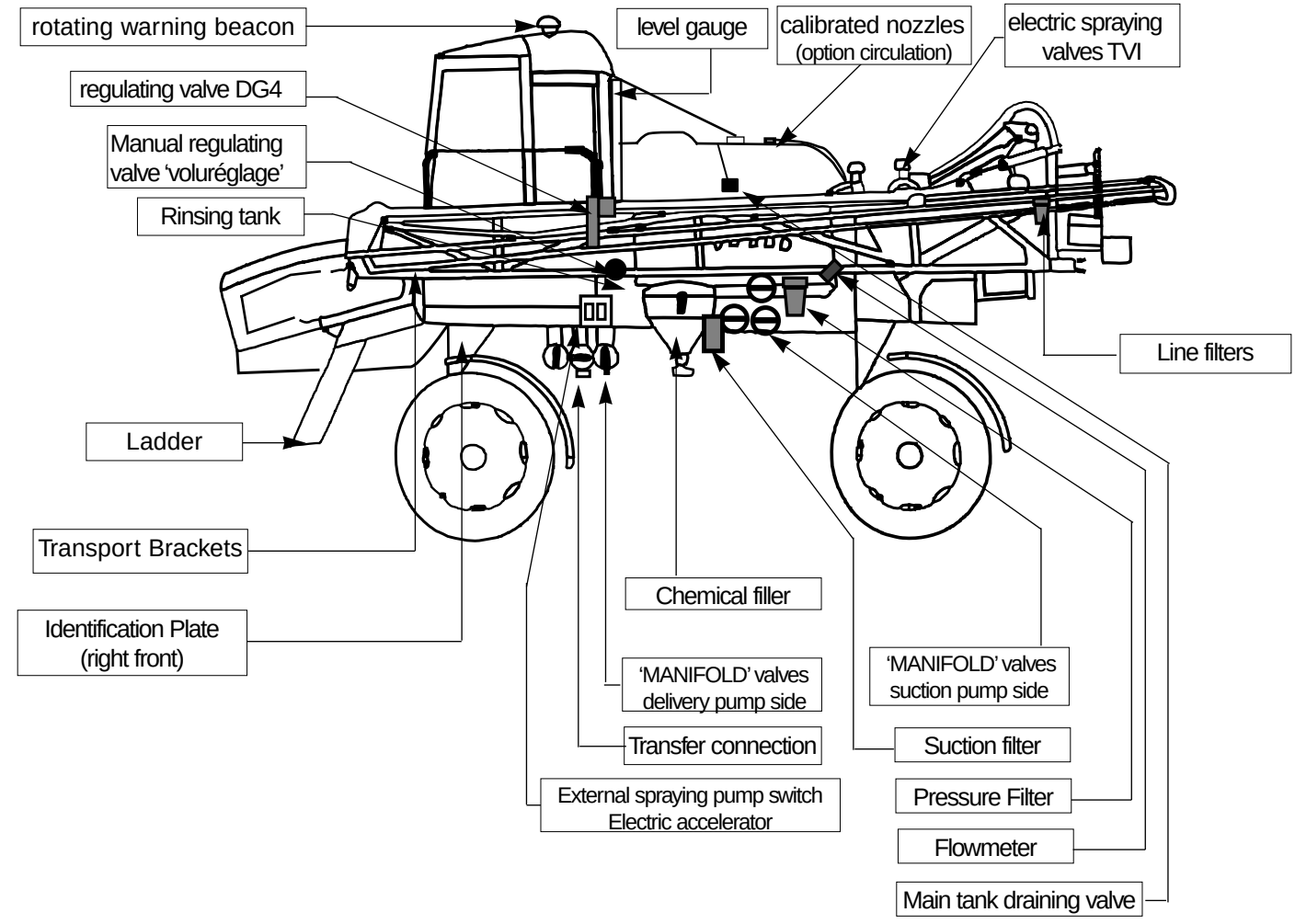
Please obtain current information for decontamination methods (e.g. leaching of pesticides).
If you do not know this legislation, refer to the agricultural authorithies (Department of Agriculture)

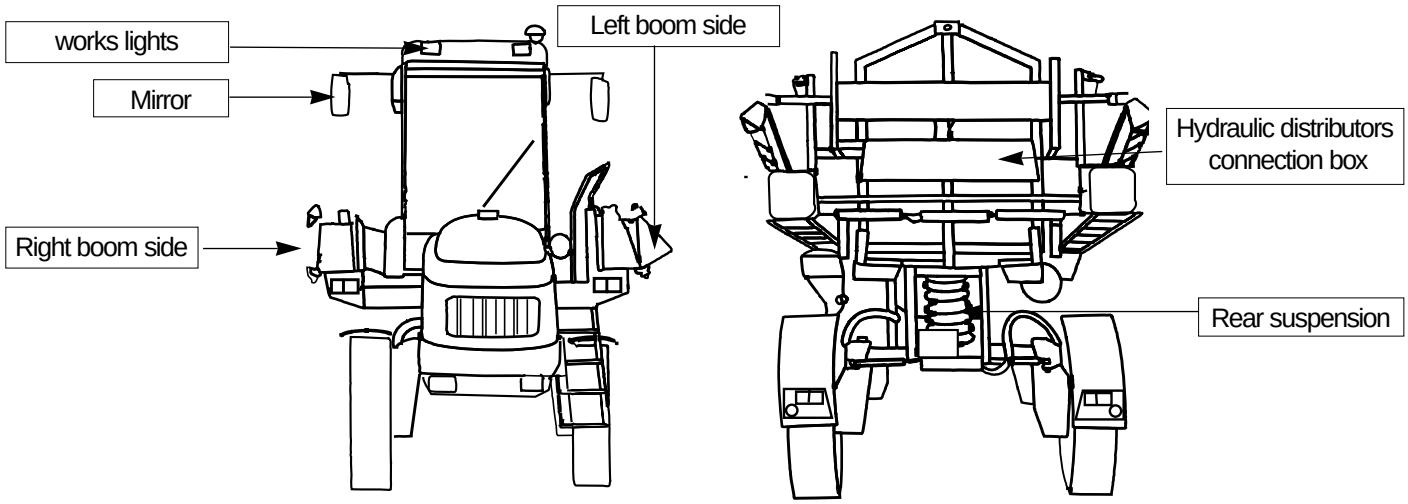
1-6 CLEANING THE SPRAYER

The sprayer must be cleaned on an uncultivated piece of land. There must be no seepage or running to watercourses, gutters, wells or springs. The rinsing water must not discharge into to drains

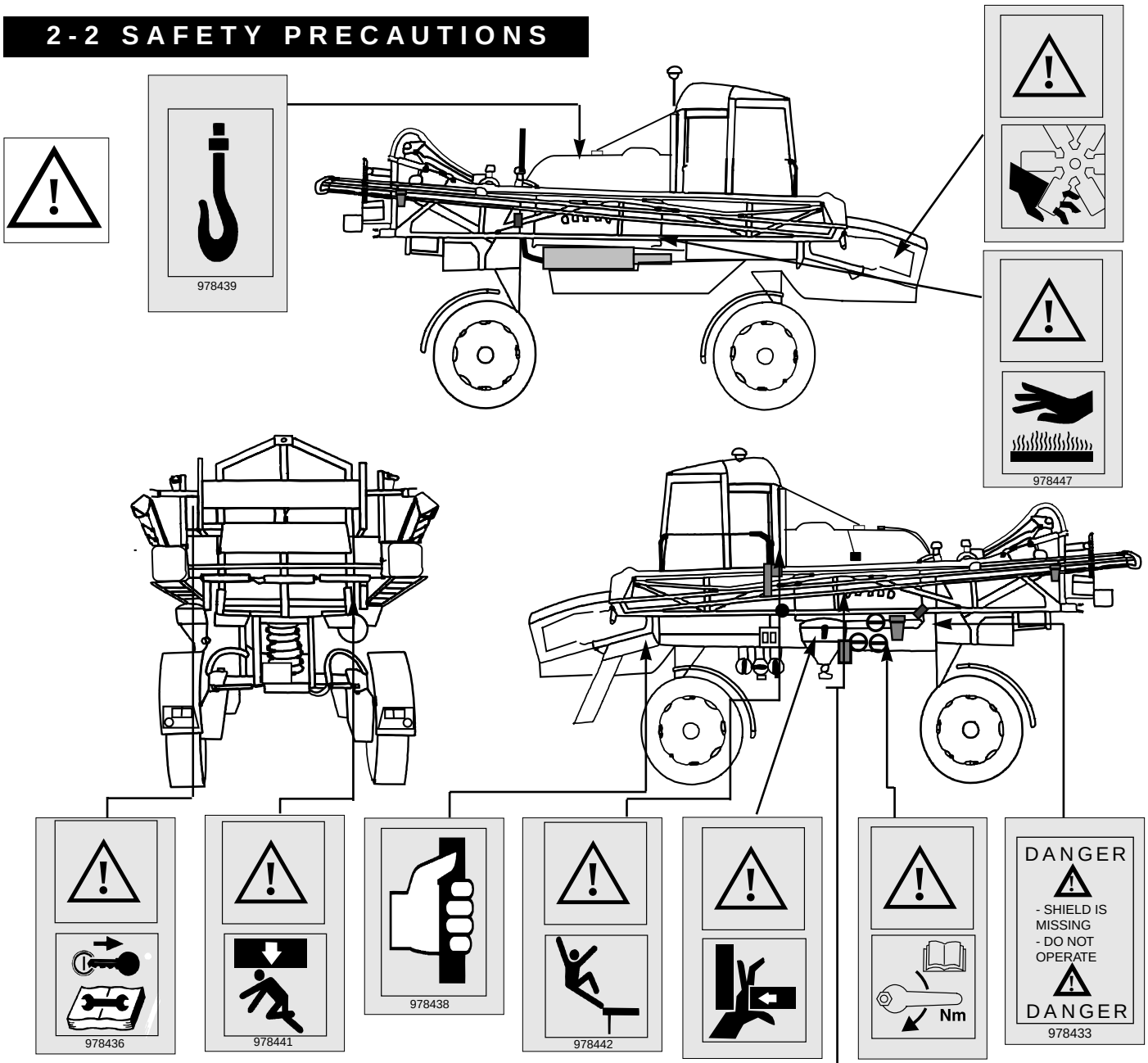
2- DESCRIPTION OF ALPHA SPRAYER

2-1 MAIN EQUIPMENT IDENTIFICATION





2-2 SAFETY PRECAUTIONS



Danger of falling part

use ladder

Danger of user error

Hot parts, danger of burning

Do not use if all protection guards are missing

see operating and maintenance book

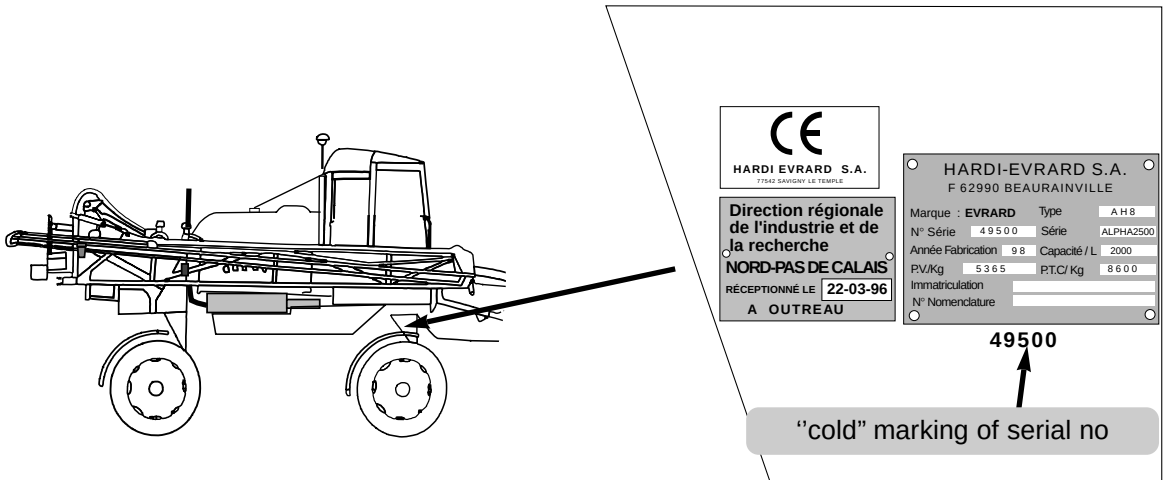
WARNING
ANTI-FREEZE PROTECTION

Antifreeze of spray circuit during winter period

2-3 IDENTIFICATION

The information relating to the identification of the self-propelled Alphat appears on a plate placed on the right-hand side of the machine. (serial number, type of model, manufacturing date, capacity of main tank, empty and full weights).

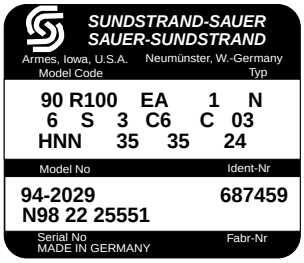
IDENTIFICATION PLATES



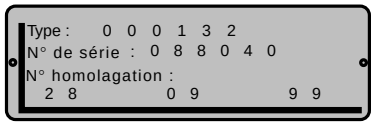
''cold" marking of serial no

Maker :	**EVRARD**
Serial number :	(***5 numbers)***
please use the serial number for information and to order parts for your sprayer	
Type : general type of the mobile unit	**AH8**
Serial : model	***ALP2500***
Capacity / L : tank nominal capacity	***2500***
''P.V./ Kg" : empty weight (*****)	***5720***
P.T.C./ Kg : full weight (*****)	**8700**

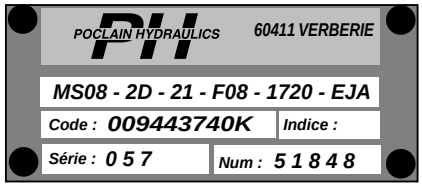
(*) approximate values



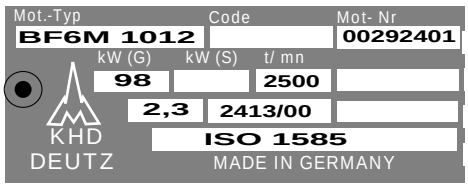
HYDROSTATIC PUMP PLATE



CAB PLATE



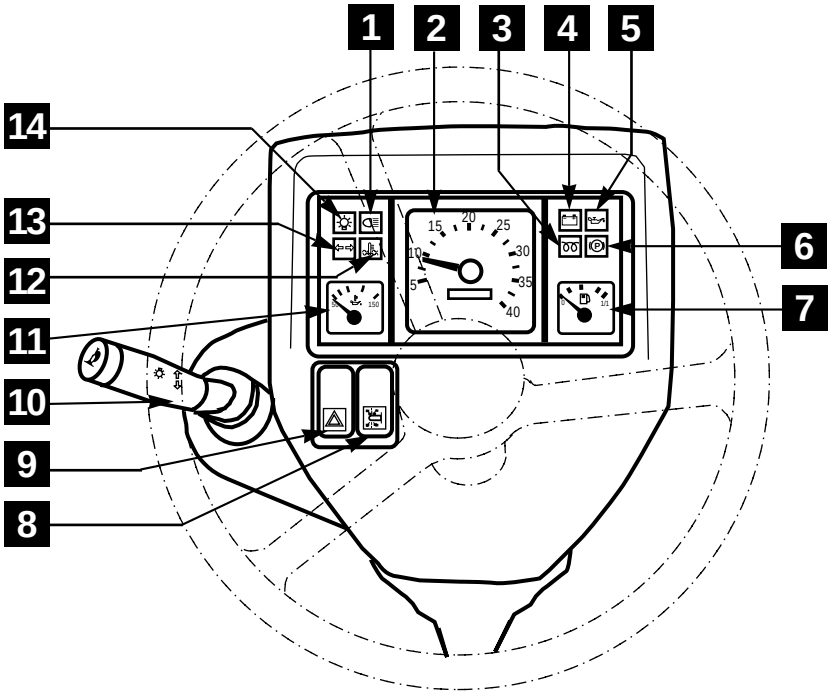
HYDRAULIC WHEEL PLATE



ENGINE PLATE

2-4 CONSOLE DESCRIPTION

2-4-1 STEERING COLUMN MOUNTED INSTRUMENT PANEL



1 Head lamp, main beam

2 Rev. counter and hour meter

3 Pre Heating light

4 Battery charge warning lamp

5 Engine oil pressure warning lamp

6 Parking Brake Light

7 Fuel gauge

8 Rotating amber warning beacon switch

9 Hazard warning light switch

10 Multi-function control switch

11 Engine temperature gauge

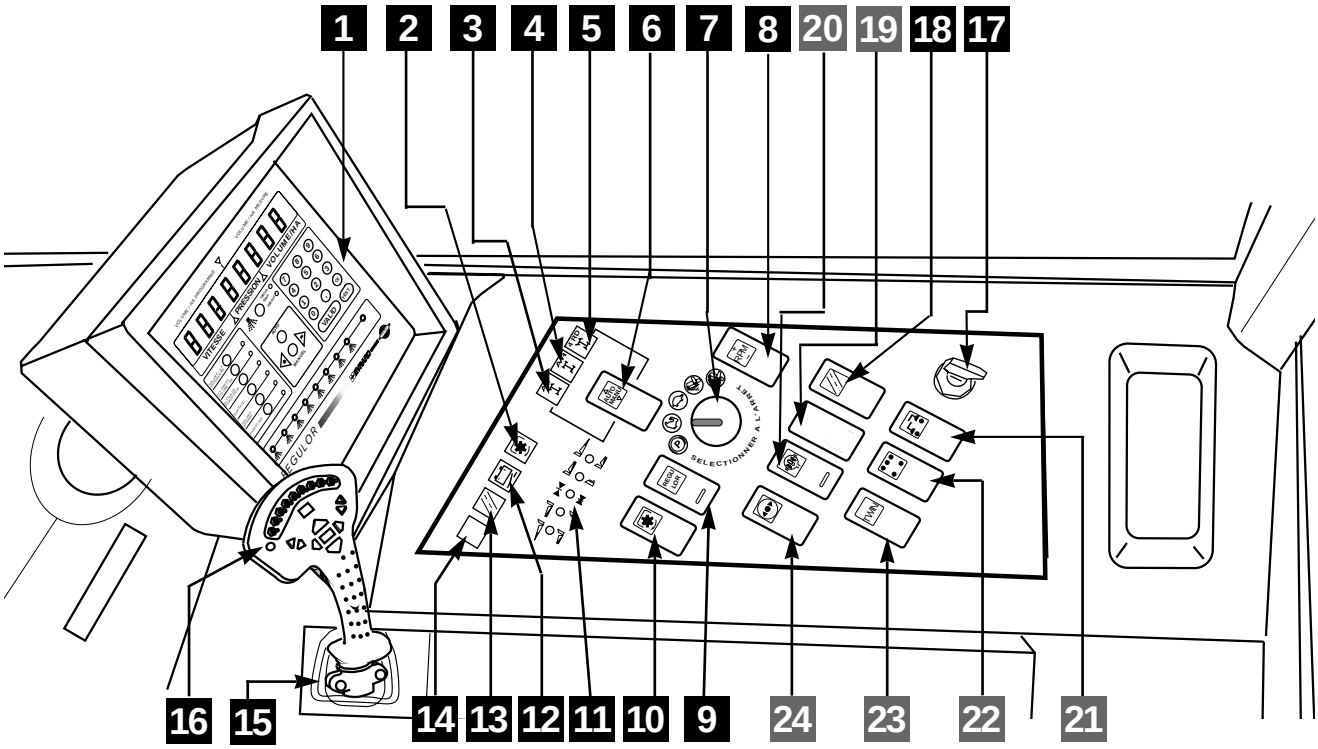
12 Engine temperature and coolant gauge light

13 Direction indicator warning lamp

14 Position lamp and dipped beam control lamp

Horn

2-4-2 CONSOLE



1 Régulor IV console

2 Pump engagement light

3 Steering alignment light front

4 Steering alignment light rear

5 4 Wheel steering mode light

6 4 Wheel steering mode switch

7 Speed selector switch(rotating)

8 Throttle switch

9 Régulor supply switch

10 Liquid pump engagement switch

11 Hydraulic boom folding switches

12 Isolator warning lamp

13 Road security lamp

14 Anti-skid lamp (optional)

15 Joystick forward/reverse

16 Hydraulic and spraying control

17 Ignition switch

18 Road security switch

OPTIONAL

19 Not used

20 Anti-skid switch (optional)

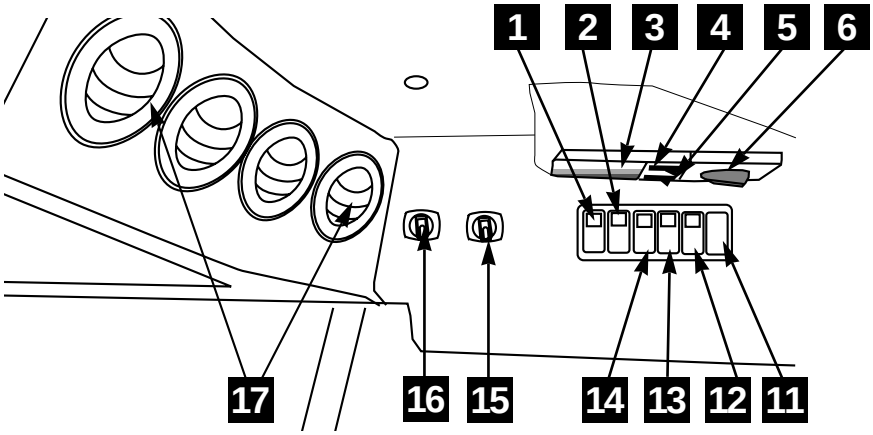
21 Foam maker engage and control switch

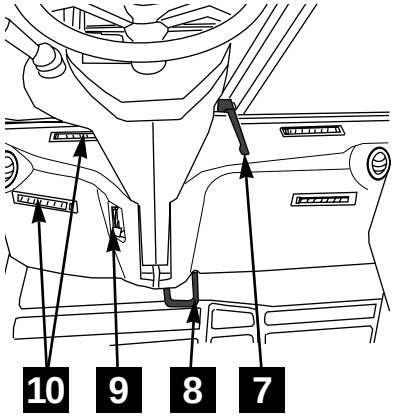
22 Foam maker increase/decrease switch

23 Twin force fan speed switch

24 Agitation / No agitation switch

2-4-3 CAB ACCESSOIRIES



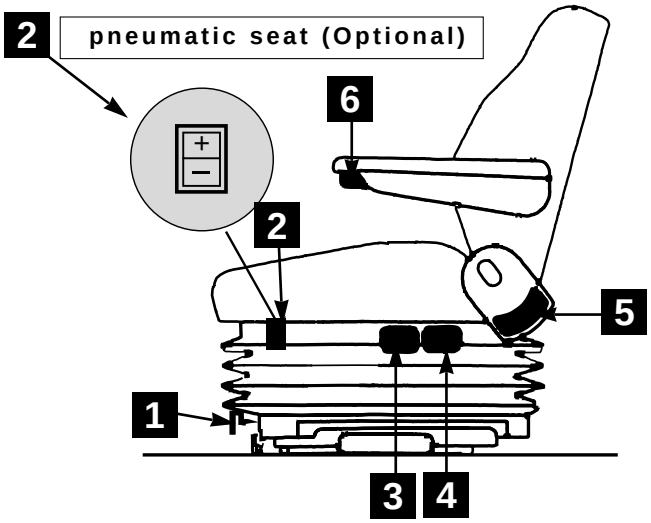


1. Windscreen wiper switch
2. Windscreen washer switch
3. Interior light
4. Map light switch
5. Map reading light switch
6. Map reading light
7. Steering column height adjustment
8. Steering column angle adjustment
9. Heater temperature control
10. Adjustable air vents
11. work lights switch (optional)
12. Rear work lights switch
13. Front work lights switch
14. 2 Speed fan switch
15. Air conditioning fan control 3-speed switch
16. 3 Speed fan switch, air conditioning
17. Air conditioning air vents

2-5 DRIVER'S COMFORT

2-5-1 SEAT

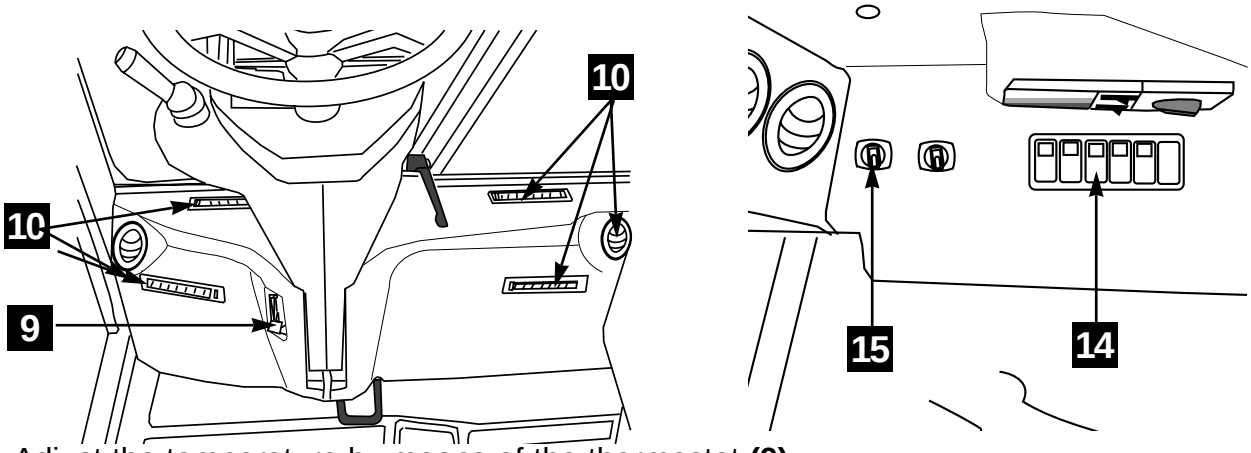
As this is mounted on hydraulic shock absorbers and integrated longituginal suspension, it protects the driver from shaking which inevitably occurs during driving. The various position adjustments, made by means of identifiable levers, improve comfort. The body-contoured seat and back cushions are fitted with aerated fabric which is pleasant to the touch and very strong.



1. Longitudinal adjustment.
2. Adjustment according to weight
3. Front seat cushion angle adjustment
4. Back seat cushion angle adjustment
5. back angle adjustment
6. Arm rest adjustments.

2-5-2 HEATING

The cab heating is provided by the DEUTZ engine. A ventilation unit with adjustable air vents located on both sides of the cab provides heating and window de-misting



1- Adjust the temperature by means of the thermostat **(9)**

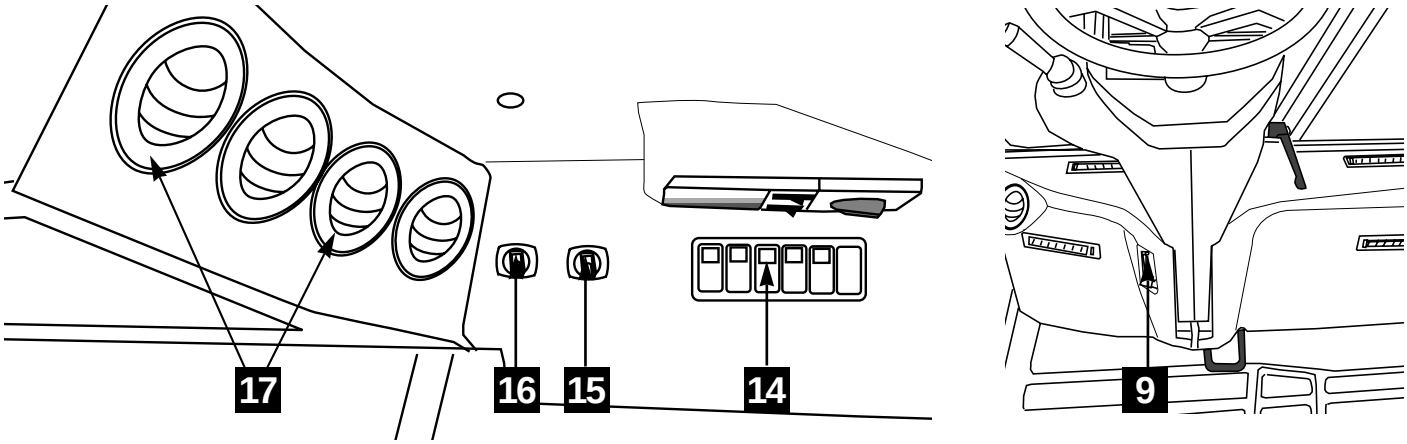
2- Set the flow of warm air by turning the 2-speed fan switch **(14)**

3- Stop the air conditioning by turning the switch **(15)**

4- Open and position the air diffusers **(10)**

2-5-3 AIR CONDITIONING

This includes a unit fitted high up in the cab and a compressor driven by the DEUTZ engine..



1- Adjust the temperature by means of the thermostat **(16)**

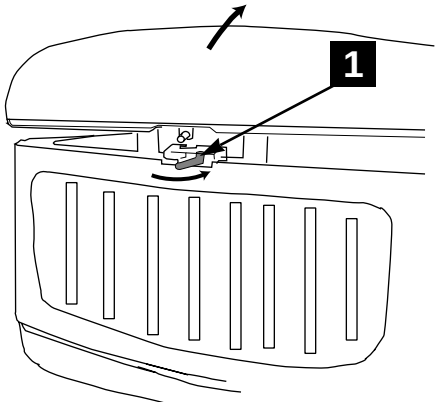
2- Set the flow of cold air by turning the 3-position switch **(15)**

3- Switch off the warm air **(14)** and set the heater temperature control **(9)** and set the heater temperature control to minimum.

Open and position the air diffusers **(17)**

ALWAYS KEEP THE CAB DOOR CLOSED WHEN AIR CONDITIONING IS FUNCTIONING

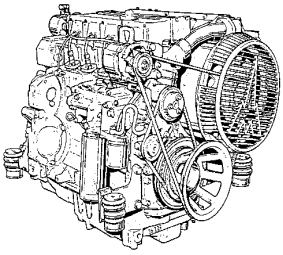
2-6 ENGINE



2-6-1 ENGINE ACCESS

- Open the bonnet **ref 1** by pulling the locking device
- Close the bonnet by pull down it.

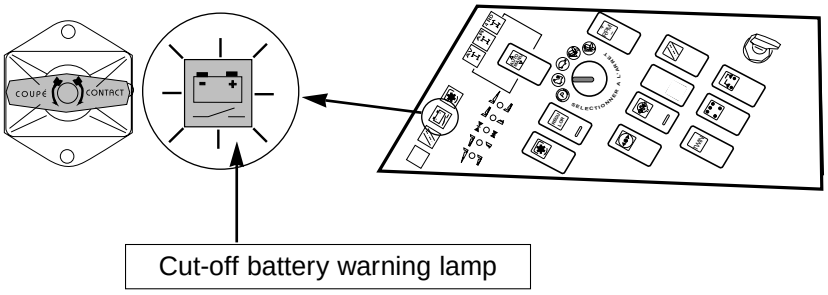
2-6-2 STARTING THE ENGINE

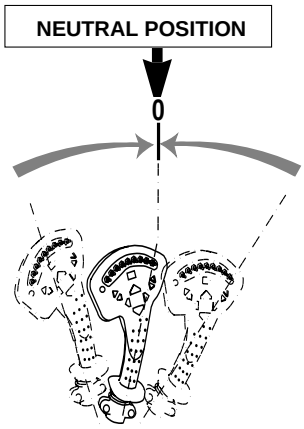


Before starting, the following points must be checked :
- Engine oil level
- Coolant level
- Fuel gauge .
- Hydraulic reservoir oil level

For futher details, see the MAINTENANCE section of this manual and the engine instruction book

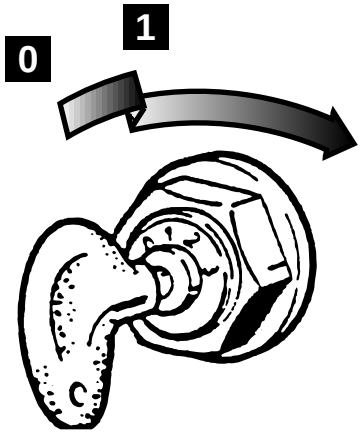
- Turn the battery cut-out horizontally; the warning lamp lights up.



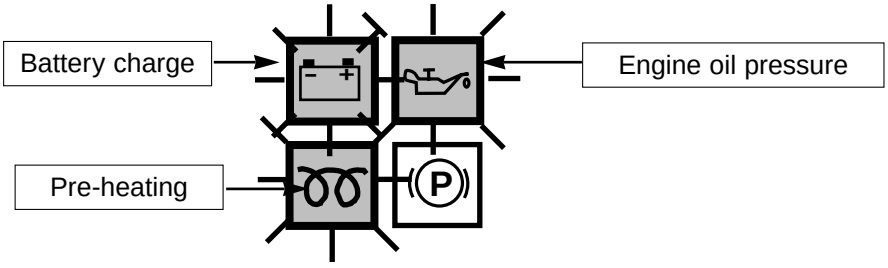


- Place the joystick control lever in the neutral position

A position detector ensures safety when starting



- Turn the ignition key to pos. **1**, the three-warning lampslight up and the Cut-off battery goes off



- Turn the key to position **2** as soon as the pre-heating warning lamp go off
- Release the ignition key as soon as the engine is running, then the engine oil pressure warning lamps and the battery charge warning lamp go off. go off.

WARNING

IMMEDIATLY IF THE ENGINE OIL PRESSURE WARNING LAMP STAYS ON, STOP THE ENGI-

2-6-3 ENGINE ACCELERATOR

The engine accelerator is provided with an electric control switch on cab panel.

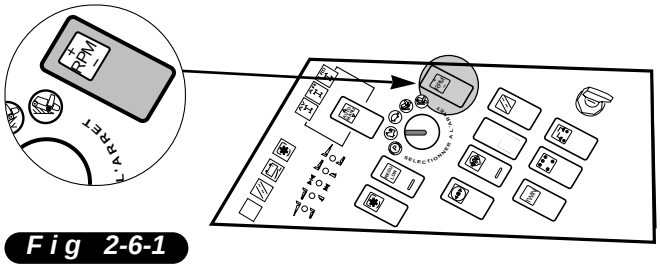


Fig 2-6-1

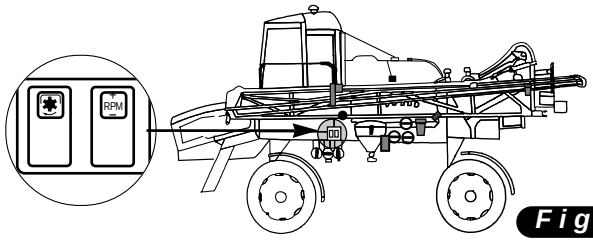
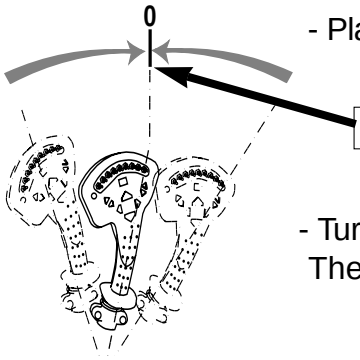


Fig 2-6-2

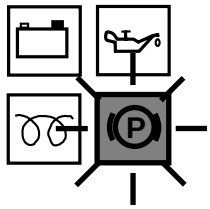
2-6-4 STOPPING THE ENGINE

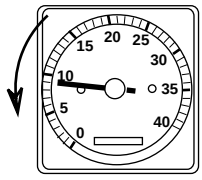


- Place the joystick lever to the ‘‘neutral” position

NEUTRAL POSITION

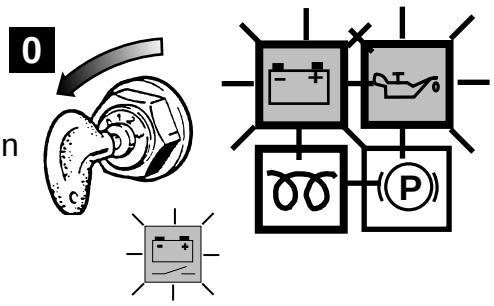
- Turn the selector to position parking brake ***‘‘P ‘‘***
The two parking brake warning lamps light up.



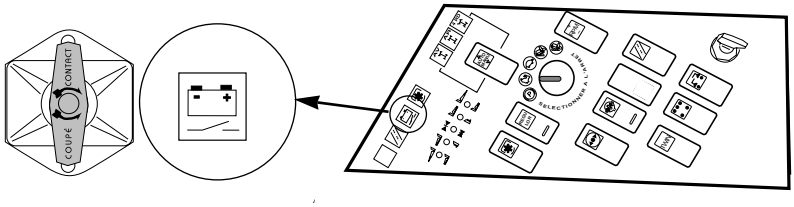


- Réduce engine speed before stopping, in order to stabilize the engine temperature

- Turn the switch key to the left ; The two-warning lamps light up.
The isolator warning lamp light up, as soon as the switch key is on position **0**

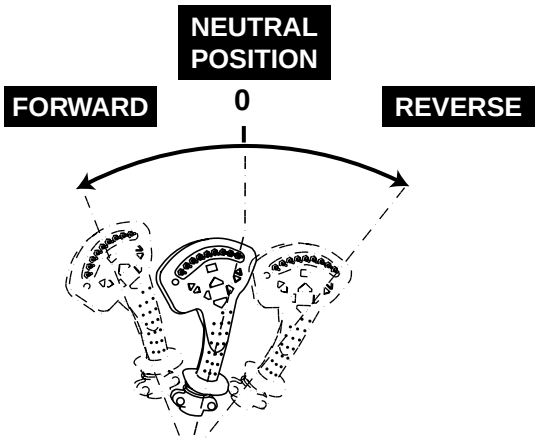


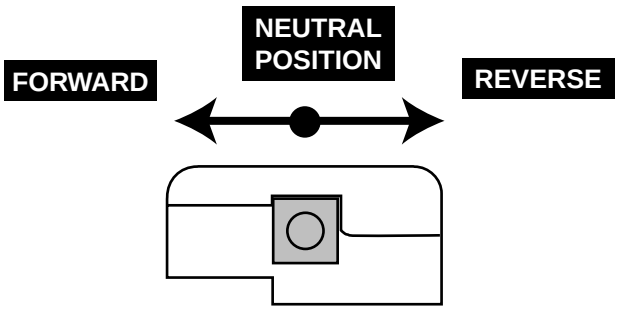
- Turn the battery cut-out control vertically to prevent battery discharge during a lengthly stoppage. The Cut-off battery warning lamp go off



2-7 ADVANCE CONTROL

2-7-1 DRIVER'S CONTROL LEVER





- **Moving** the self-propelled forward by tilting the control lever forward
- **Moving** the self-propelled reverse by tilting the control lever back

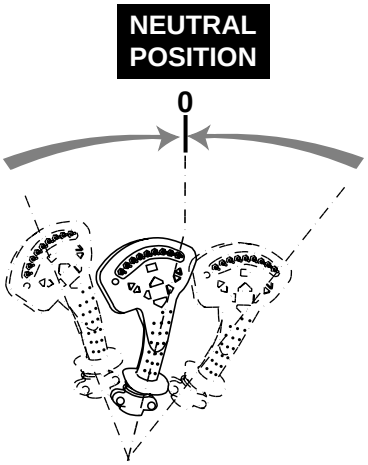
- **Braking** and **stopping** the self-proppeled in the ''neutral position" is carried out by indexing the lever half-away along its travel.

2-7-2 BRAKE ENGINE

WARNING

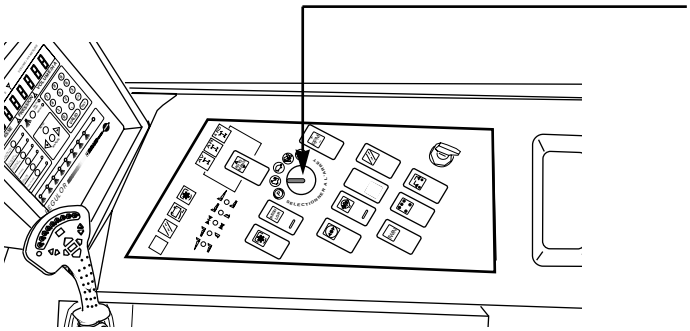
The hydrostatic transmission calls for high engine speed, giving the main hydraulic pump its maximum **drive** and **braking** performance. For this purpose :

adjust the accelerator lever progressively to an engine speed of a **minimum of 1800 to 2000 r.p.m.** before moving off.

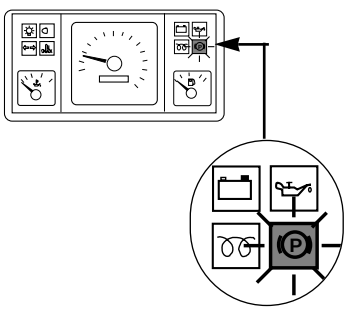


Move the advance lever gently, as the hydraulic brake is very effective)

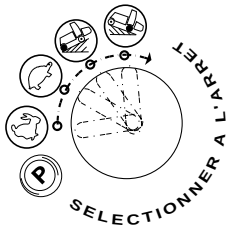
2-7-3 PARKING BRAKE

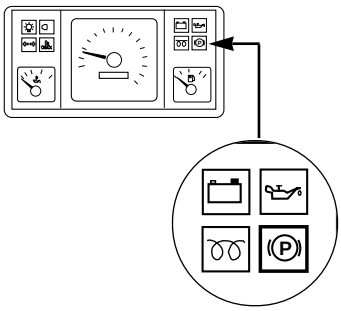


ENGAGED



DISENGAGE

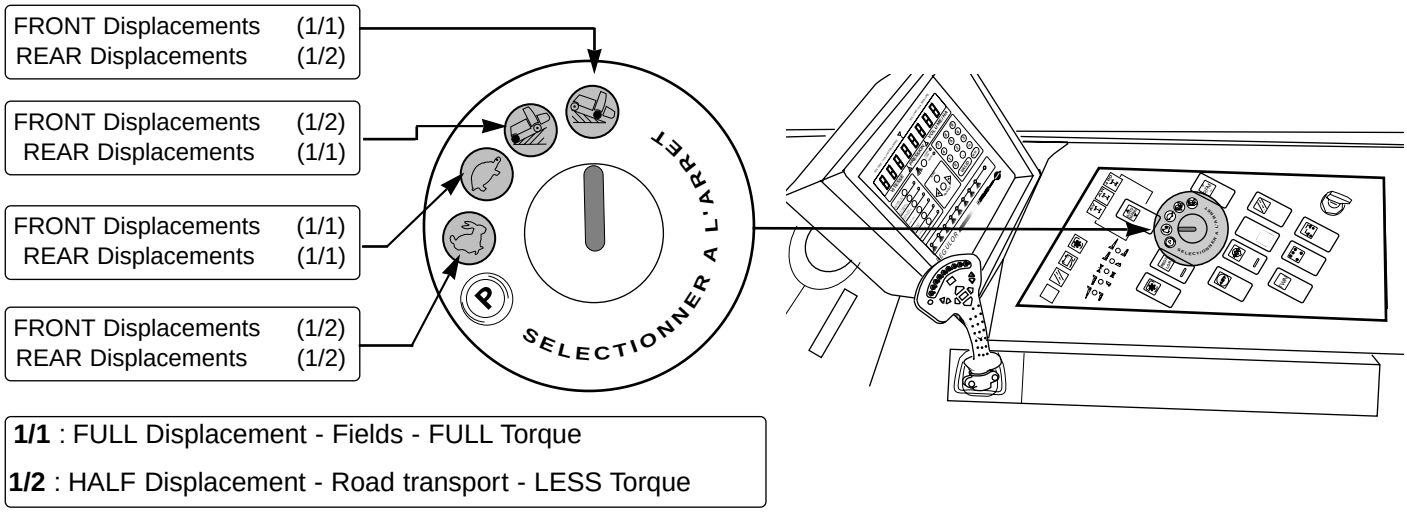




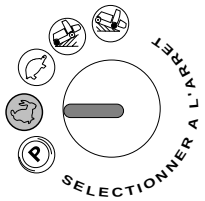
WARNING

FOR YOUR SAFETY, NEVER ACTIVATE THE PARKING BRAKE WHEN THE SELF-PROPELLED IS MOVING !

2-7-4 SPEED SELECTOR



FAST Speed



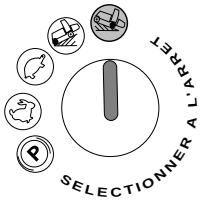
Used for road transport where high speeds are necessary.
Speed range : **0** .. **25** km/h

Slow SPEED

Used for field where full traction are necessary.
Speed range : **0** .. **12.5** km/h..

" INTERMEDIATE" Speed

Used generally for spray in the field when driving uphill in slippery condition where change in weight distribution will cause spinning front wheels
Speed range : **0** .. **18** km/h



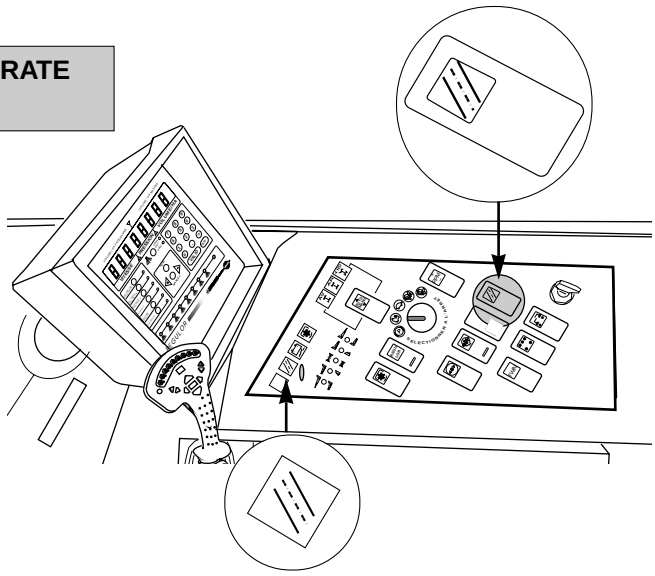
Used generally for spray in the field when driving downhill in slippery condition where change in weight distribution will cause spinning rear wheels.
Speed range : **0** .. **18** km/h.

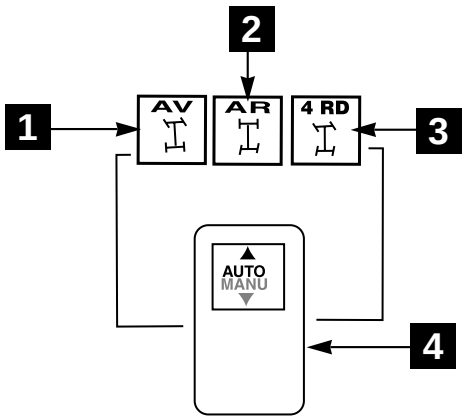
2-8 WHEEL STEERING

2-8-1 DESCRIPTION

The steering is of the hydrostatic type. If the pump fails to work, the steering can be operated in a closed circuit by means of the ‘’ORBITROL” distributor. The pump also operates the hydraulic circuit by means a priority valve.
With a distributor, 2 position pick-ups, a switch and a pedal, the 2-wheel steering functions can be used.

1- SET THE SWITCH TO ‘’*ROAD SECURITY*” TO OPERATE THE 4-WHEEL STEERING FUNCTIONS





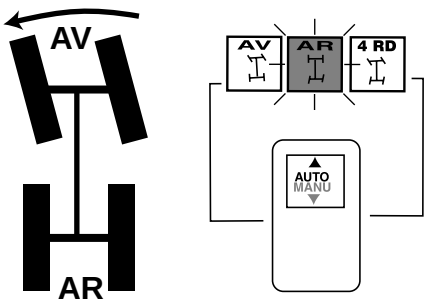
1 **FRONT** wheel warning lamp

2 **REAR** wheel warning lamp

3 **4 -WHEEL** steering warning lamp

4 **AUTO / MANUAL** switch

2-8-2 TWO WHEEL STEERING

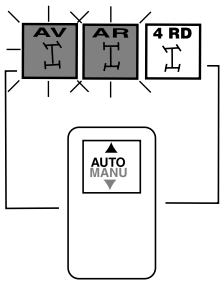


- Set the switch to ***‘AUTO’.***
- Turn the steering control so as to place the rear wheels in straight position; the‘REAR’ warning lamp goes on.

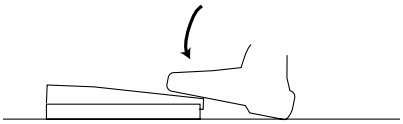
In this operating mode, only the front wheels can steer and the rear wheels remain straight

2- wheel steering is operating

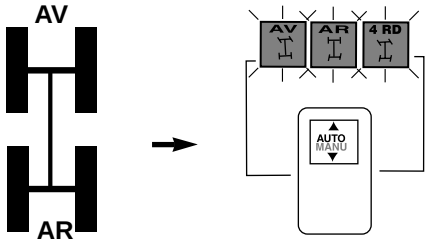
2-8-3 FOUR WHEEL STEERING



In this operating mode, the front and rear wheels steer at the same time and opposite direction.
For this purpose :
- Set the switch to *'AUTO'.*
- Press the 4-wheel pedal.
- Turn the steering control so as to place the front and rear wheels in straight position

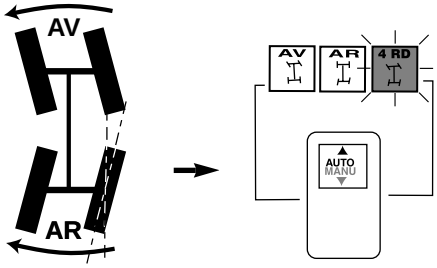


- Keep the pedal depressed as long as 4-wheel-steering is required.

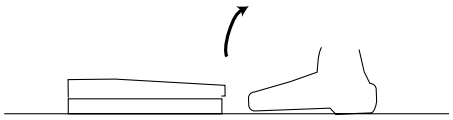


-The green warning lamp is activated (front and rear wheels are in straight position)
- Front and rear wheels steer in opposite direction.

4- wheel steering is operating

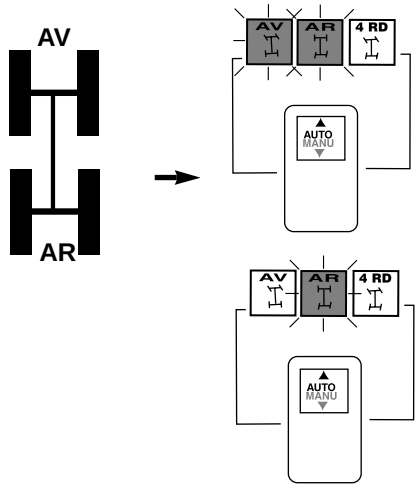


When the wheels are turned, the red warning lamp go out but green warning lamp is still activated..



To return to 2-wheel-steering :

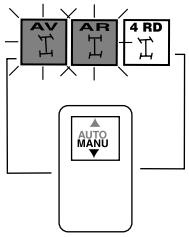
- Release the pedal



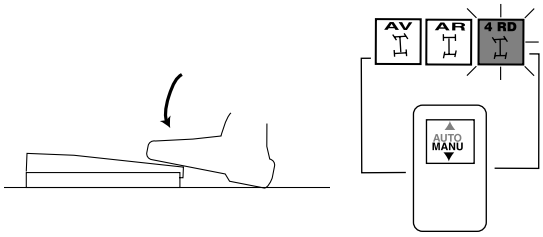
- Turn the steering control so as to return the rear wheels to the straight position, *'REAR' and 'FRONT'* warning lamp lights up. Green warning lamp go out.

2- wheel steering is operating

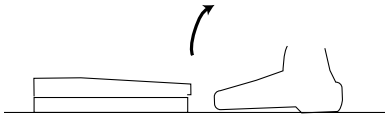
2-8-4 TWO WHEELS IN ‘’CRAB” FORMATION



In this operating mode an adapted crab steer can be done by using the steering wheel and pedal.
For this purpose :
- Set the switch to ***‘MANU’***.
- Turn the steering control so as to place the front and rear wheels in straight position; the ***‘FRONT”*** and *‘**REAR**’* warning lamp lights up.

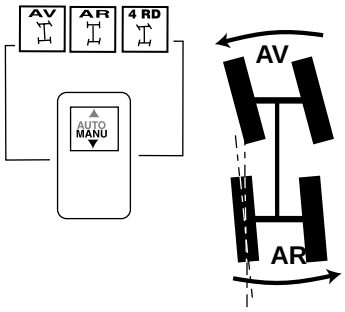


- Press the 4-wheel pedal.
-Turn the steering control so as to the rear wheels position is required. The warning lamp ***‘REAR’*** go out.

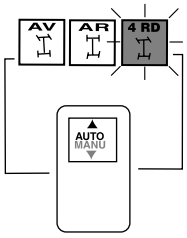


- Release the pedal

In this operting mode, only the front wheels can steer and the rear wheels remain in the same position

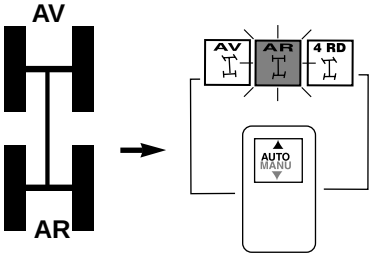


2- wheel steering in ‘’CRAB” is operating



For returning to 4-wheel steering :

- Set the switch to *‘AUTO*’ . The warning lamp *‘4 wheel steering*’ go out

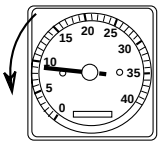


- Turn the steering control so as to put the rear wheels in straight position. The warning lamp *‘REAR*’ goes on

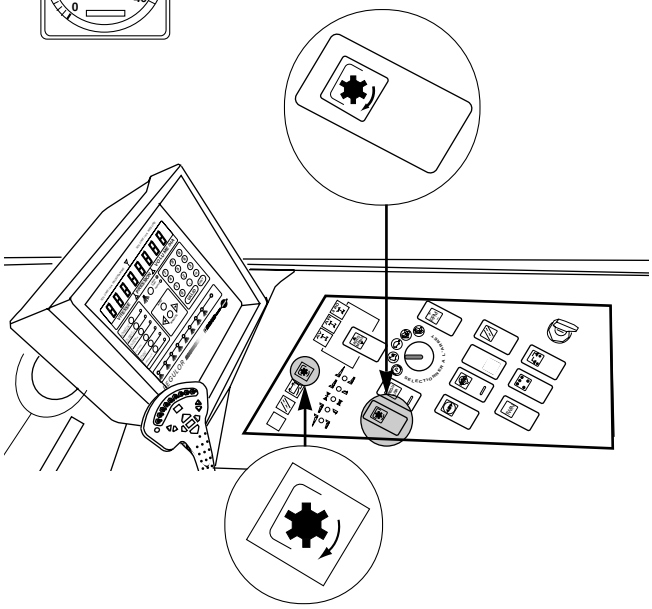
2- wheel steering is operating

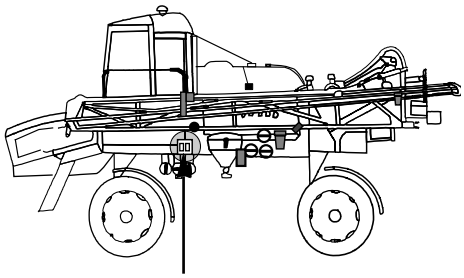
2-9 SPRAY PUMP

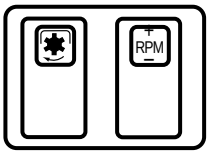
WARNING
IF SPRAY PUMP IS EMPTY IT IS ESSENTIAL TO PRIME IT



- Operate the switch ''***RPM*** '' ref **1** to reduce speed to minimum before engaging







- Switch on the switch

A lamp indicates that the spray pump is engaged.

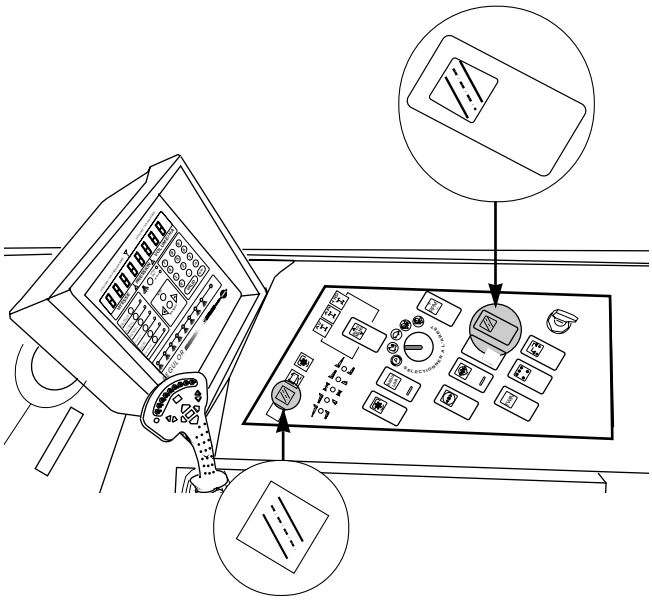
2-10 BOOM FUNCTIONS

2-10-1 SAFETY

- The folding functions must only be operated when sprayer is stationary on a flat area.
Before any movement of the boom, make sure that no ostacle is close to sprayer (post, an individual, road, etc...).
- Reduce engine speed before using the boom hydraulic function.

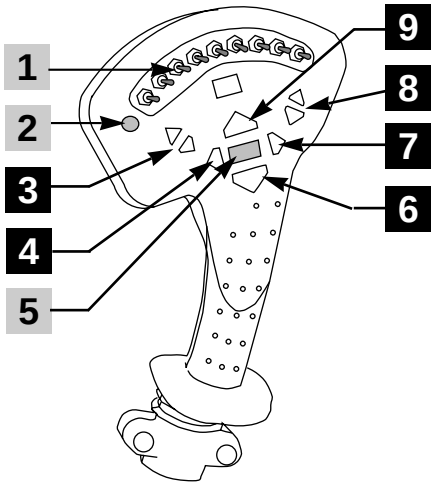
1- SET THE SWITCH TO ''*ROAD SECURITY*'' TO OPERATES THE HYDRAULIC BOOM FUNCTIONS

2- THE PARALLELOGRAM IS EQUIPPED WITH LOCKING DECICE TO PREVENT THE LOWERING OF THE BOOM DURING THE ROAD TRANSPORT. BEFORE UNFOLDING THE BOOM, PLEASE CARRY OUT UNLOCKING PROCEDURE

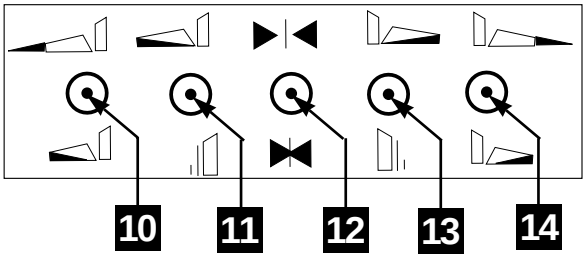


2-10-2 ''JOYSTICK'' DESCRIPTION

Spray control
Hydraulic control

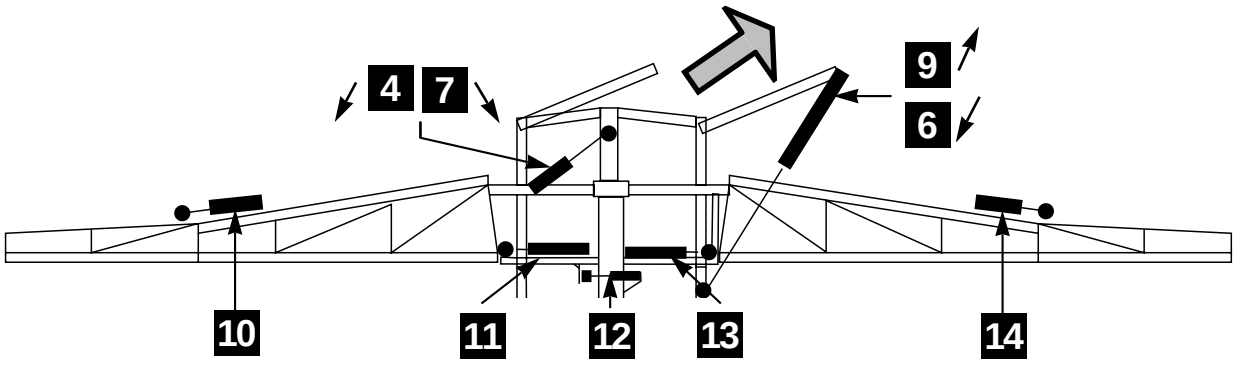


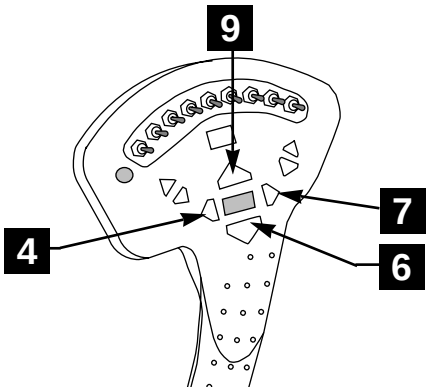
1 Individual spray section switches
2 Spray control lamp
3 Left boom tilt
4 Complete boom tiling
5 Spray on/off
6 Boom lowering
7 Complete boom tiling
8 Right boom tilt
9 Boom lift

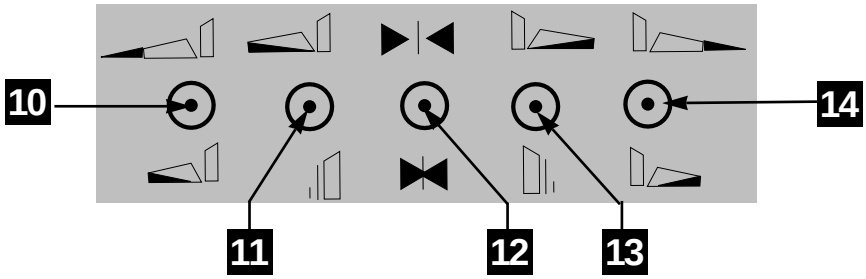


10 Left outer section
11 Left inner section
12 Boom locking
13 Right inner section
14 Right outer section

2-10-3 ''LA" ALUMINIUM BOOM







UNFOLDING

Please carry out following procedure :
- Operate the switch **(9)** to lift the boom clear of the rear transport brackets. Ensure that the booms are clear from the transport brackets before unfolding is commenced
- Operate the switches **(11** and **13)** to open inner sections
- Operate the switch ***(14)*** to open outer sections. - standard ***(10*** and ***14)*** - option (*)
- Operate switch **(6)** to lower the boom and adjust above the crop or ground level
- Operate the switch to unlock the boom ***(12)***
- Operate the switch ***(4*** or ***7)*** to slope the boom.

FOLDING

The folding functions must only be operated when sprayer is stationary on a flat area.

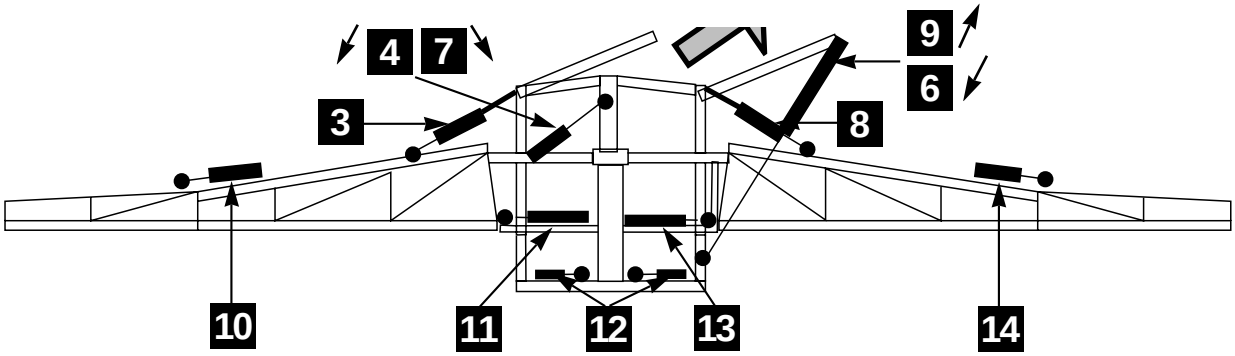
Please carry out following procedure :
- Operate the switch ***(4*** or ***7)*** to control the boom horizontally
- Operate the switch ***(9)*** to lift the boom to upper position
- Operate the switch ***(12)*** to lock the boom.
- Operate the switch ***(14)*** or ***(10*** -***14)*** to close the outer sections
- Operate the switch (**11** and **13)** to close inner sections
- Operate the switch ***(9)*** to lower the boom until boom rests on rear transports brackets.

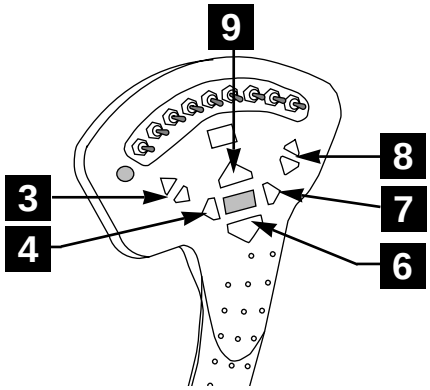
(*) Individual outer boom sections folding as option:

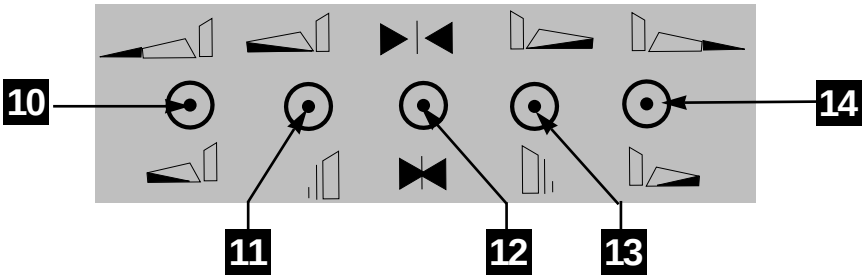
The locking of the boom is used to unfold one outer section at a time, for this purpose :
- Operate the switch ***(12)*** to lock the boo
- Operate the switch to close the LEFT outer section **(10)** or to close the RIGHT outer section ***(14)***

The locking must be only used when a obstacle is close to the boom (post, road, etc. ...).

2-10-4 ''GVA'' ALUMINIUM BOOM WITH VARIABLE GEOMETRY







UNFOLDING

Please carry out following procedure :
- Operate the switch **(9)** to lift the boom clear of the rear transport brackets. Ensure that the booms are clear from the transport brackets before unfolding is commenced
- Operate the switches **(11** and **13)** to open inner sections
- Operate the switch ***(14)*** to open outer sections. - standard ***(10*** and ***14)*** - option (*)
- Operate switch **(6)** to lower the boom and adjust above the crop or ground level
- Operate the switch ***(12)*** to unlock the boom
- Operate the switch ***(4*** or ***7)*** to slope the boom
- Operate the switch **(8)** to raise RIGHT tilt
- Operate the switch **(3)** to raise LEFT tilt

FOLDING

The folding movement should be carried out on level ground.

Please carry out following procedure :
- Operate the switch ***(4*** or ***7)*** to control the boom horizontally
- Operate the switch ***(9)*** to lift the boom to upper position
- Operate the switch ***(12)*** to lock the boom.
- Operate the switch ***(14)*** or ***(10 -14)*** to close the outer sections
- Operate the switch (**11** and **13)** to close inner sections
- Operate the switch ***(9)*** to lower the boom until boom rests on rear transports brackets.

(*) Individual outer boom sections folding as option:

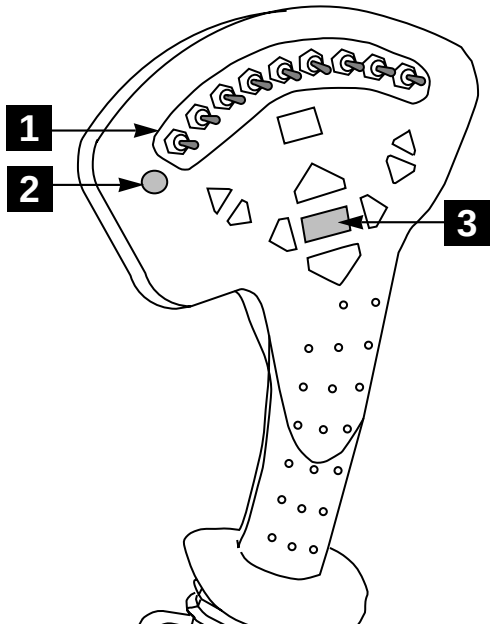
The locking of the boom is used to unfold one outer section at a time, for this purpose :
- Operate the switch ***(12)*** to lock the boo
- Operate the switch to close the LEFT outer section **(10)** or to close the RIGHT outer section ***(14)***

The locking must be only used when a obstacle is close to the boom (post, road, etc. ...).

2-11 SPRAY

2-11-1 SPRAY SECTIONS SWITCHES

This brings the following functions together for single-hand operation (indivudual spray section switches **(1),** opening/closing main spray switch **(3)** and a spray control lamp **(2)**.



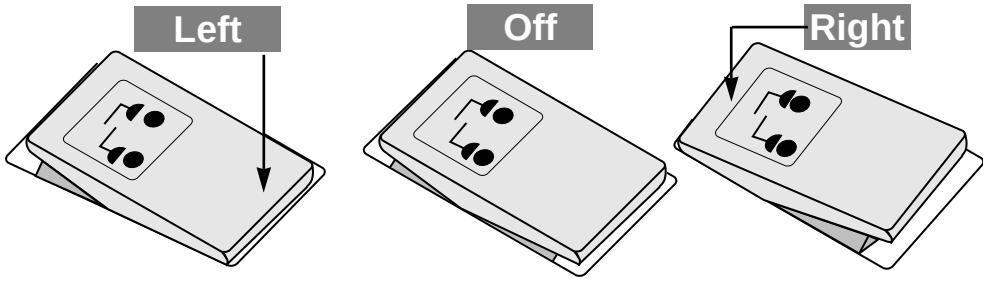
1 Individual spray section switches

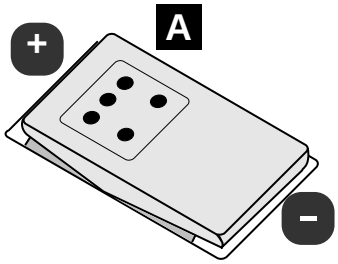
2 Spray control lamp

3 Opening / closing for spray

2-11-2 FOAM MARKER

- Flick switch torward to open RIGHT-hand side
- Flick switch backward to open LEFT-hand side
- Place switch to middle position to stop the foam marker





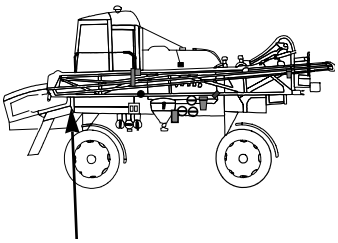
- Press switch ref **A** to adjust distance between blob interval

Follow instructions given in the ‘’Electric remote Foam Marker” ref : 673325 for use and maintenance

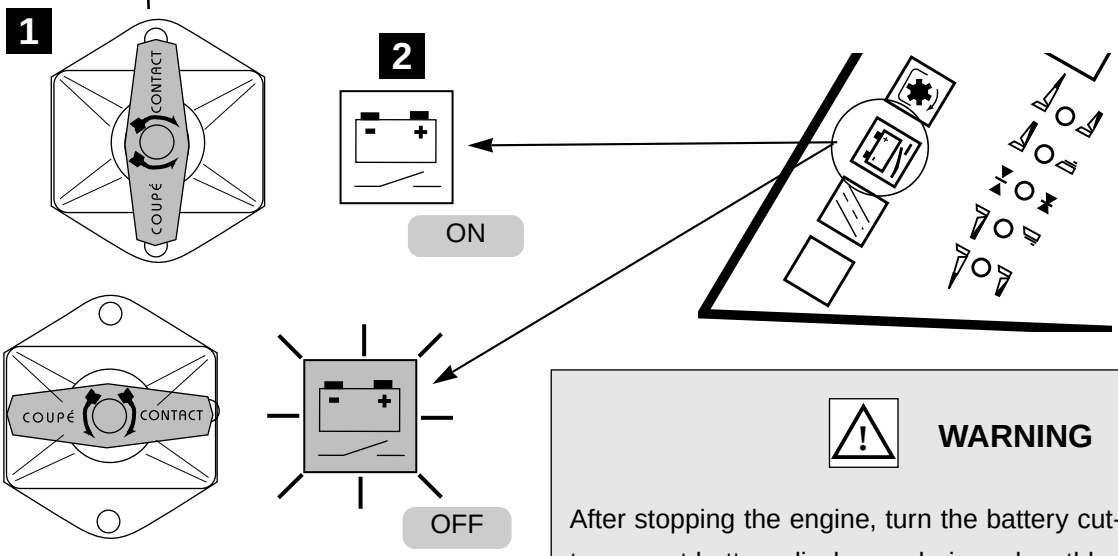
3- PREPARATION

As your equipment has been assembled for being transported, it is important to prepare the sprayer before it is used for the first time.

3-1 ELECTRIC CIRCUIT



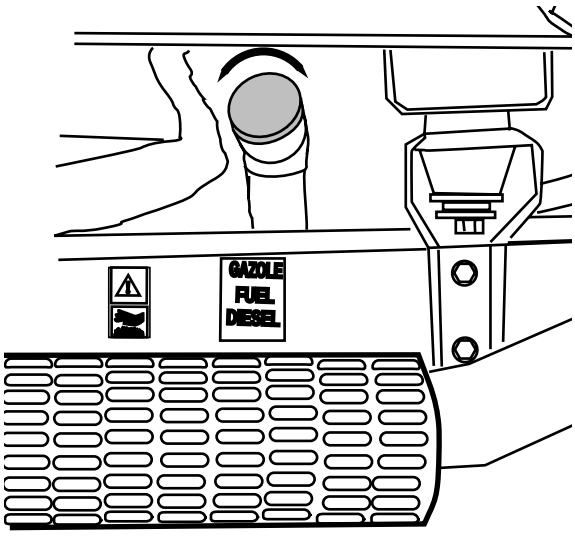
- Check the tighness of the battery terminals
- Turn the driver's control lever horizontally to put the electrical system in use. A voltage present warning lights up on the instrument panel.
- Check the lighting and signals.



WARNING

After stopping the engine, turn the battery cut-off control vertically to prevent battery discharge during a lengthly stoppage

DIESEL TANK

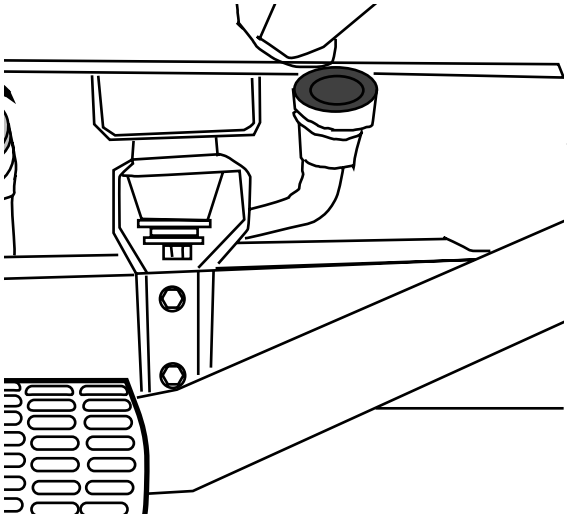


The **180** litre diesel oil tank is located on the right-hand side. Before filling the tank, you must :

- Stop the engine
- Do not smoke.
- Carefully clean the tank cap **(1).**
- Do not let any impurities in; use a funnel if necessary.
- Be careful about the quality of fuel used, particularly in winter.
- Take care that the tank is not emptied completetly so as to avoid the entry of impurities or air into the system.

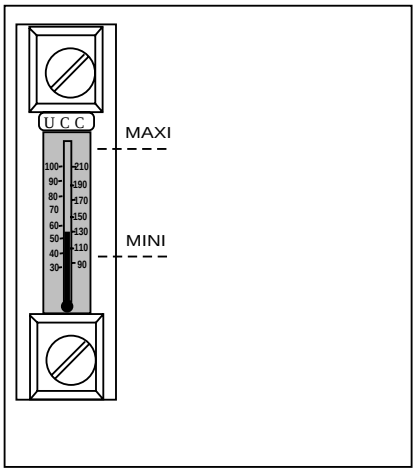
Fuel tank sight glass **(2)** indicates the maximum fuel level in the tank.

3-3 HYDRAULIC OIL RESERVOIR



This **60** litre reservoir is located under the cab. The filler cap is situated on the reservoir on the right-hand side of the machine **(1)**

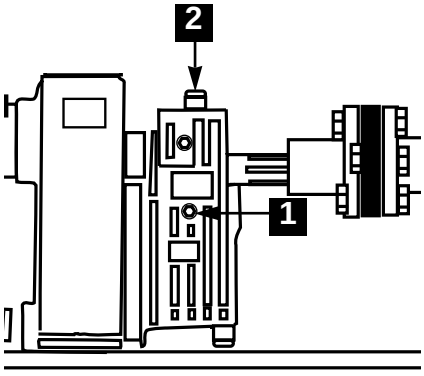
- Carefully clean the tank cap.
- Do not let any impurities in; use a funnel if necessary.
- Take care do not let any water in the oil tank
- Always fill the reservoir with hydraulic oil of the same characteristic as those of previous oil. (***TOTAL EQUIVIS ZS46***).



Sight-glass and temperature

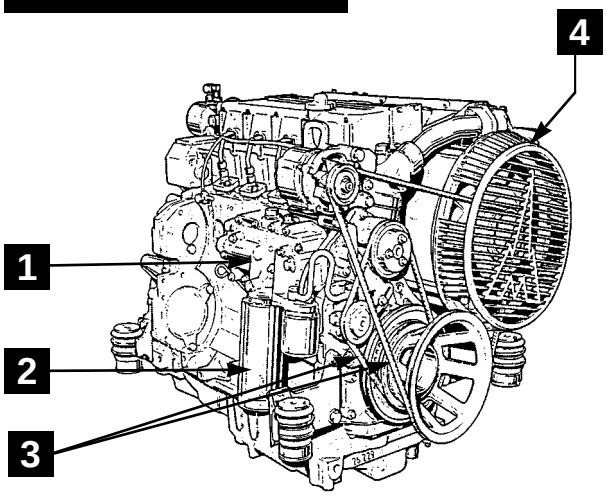
- Check the hydraulic oil level through a sight glass situated on the reservoir. A thermometer indicates the oil temperature.

3-4 PUMP STEP-UP GEAR CASE



- Check the oil level by means unscrew the oil level cap **(1)**
- Fill by means the filler cap **(2)**

3-5 ENGINE



As the engine is a major element in itself, a specific manual has been provided. Please study it carefully before continuing. The main points, however, must be checked before the **first starting**, particulary

- Oil level ref.**1**.
- Correct tightening of the oil filter cartridge ref.**2**.
- Tension of the engine belts ref.**3**.
- Coolant level ref. **4**.

3-6 TYRES

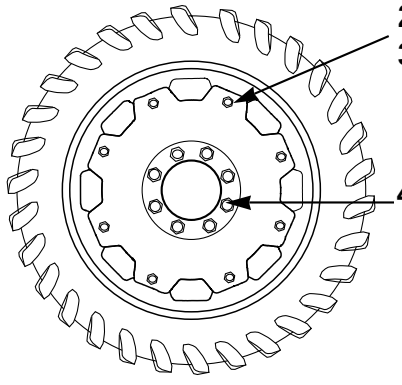
3-6-1 PRESSURE

- Check the tyre pressure which should be in accordance with the following table :

ALPHA **2500**	bar
11,2 R 32****	4
14,9 R 24	2,4
16,9 R 24	2,4
540 x 65 x 24	1,6
340/ 85 R 28 TRAKER	1,6

3-6-2 BOLTS TIGHTING

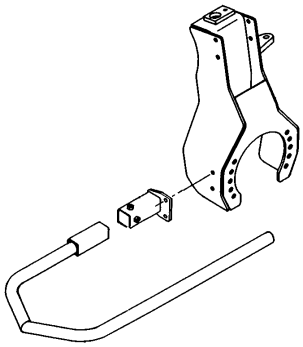
- Check wheels and bolts using a torque wrench after **1** hrs, **2** hrs and **8** hrs of operation and then periodically.



24,5 daN.m for diameter :14 mm
35,0 daN.m for diameter :16 mm

46 daN.m

Straw dividers (option)



The straw divider equipment is used to reduce the crops damage.

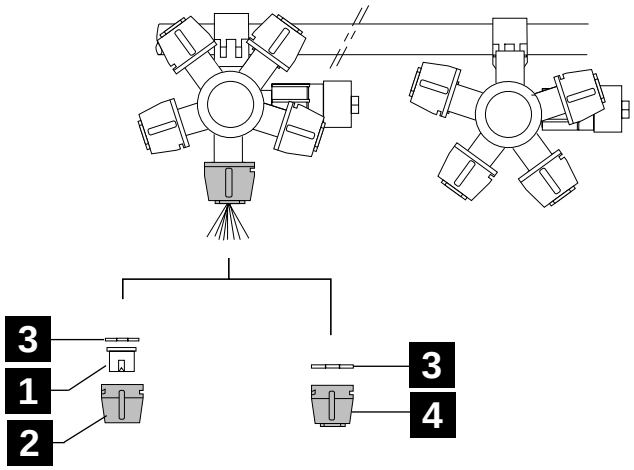
- Never lubricate wheels bolts or threads
- It is essential to follow the recommended wheel bolt torques.

3 - 7 SPRAY

3-7-1 FITTING THE NOZZLES

Choosing the **type of nozzle**,***volume/ha***, ***speed*** and ***pressure***, refer to the*'Technical Application"*.

- Fit the nozzles to the Four-way nozzles, ensuring that the nozzles seals are in place.



1 Buse
2 Ecrou de buse
3 Joint de buse
4 Ecrou et buse intégrés ''Color Tips"

3-7-2 FILTERS

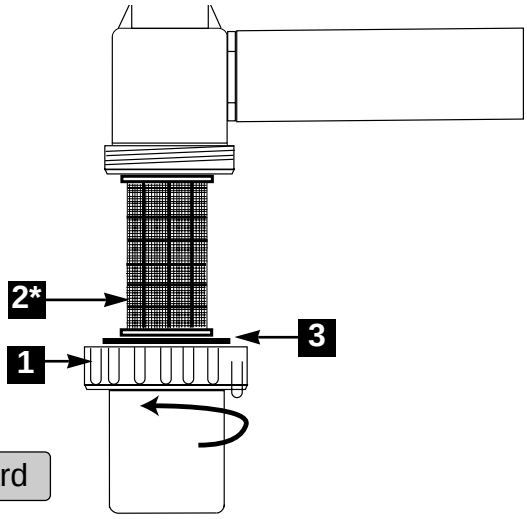
Check the assembly of the filtration elements :
- A inlet filler is present.
- A suction filter.
- A delivery filter.
- In-line filter.

Sprayers components such as valves, diaphragms and operating unit may be blocked or damaged during operation
Nozzles blockages do not occur whilst spraying
Long life of the pump. A blocked suction filter will result in pump cavitation.

Suction filter

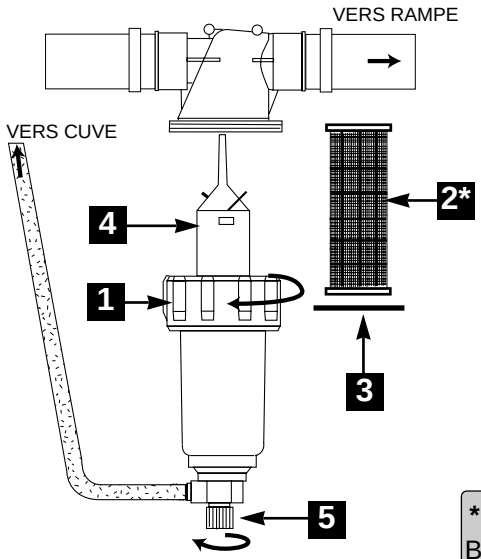
- Undo the nut ***(1)*** and remove the bowl

- Clean element ***(2)*** in clean water
- Check the presence of the seal ***(3)***
- Replacer l'élément filtrant.
- Reassemble the filter unit.



***** White color element filter (**32** mesh) delivered as standard

Delivery filter



The delevery filter is located at the left-hand side of the machine.
Prior to any spraying, it is essential to put filter element into the filter.

- Undo the nut ***(1)*** to remove the bowl
- Check the filter element ***(2)*** , seal ***(3)*** and the tube ***(4)***

The cleaning filter is automatic, for this purpose :

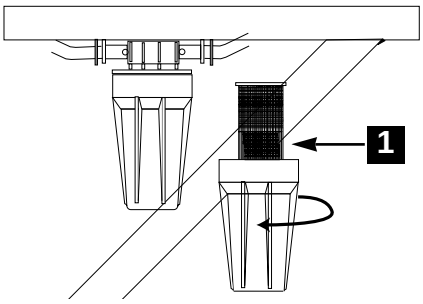
- Keeping the draining valve ***(5)*** opened, the impurities are chanelled to tank

*** White f**ilter element **600 microns (32mesh),**delivered as standard
Blue filter element **300 microns (50mesh)**

In-line filters (semi-continuous circulation)

The in-line filters are mounted directly to the boom

- Close the boom supply by means of the Regulor.
- Remove the bowl of the filter **(1)**
- Clean the filter element **(2)**
- Choose appropriate element filter and the density of chemical products to prevent the blockage of the nozzles.



*** blue filter 300 microns (50 mesh), delivery as standard**
Red filter element 175 microns (80 mesh)
Yellow filter element 140 microns (100 mesh)

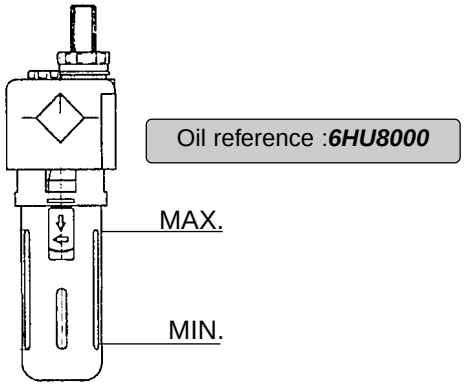
3-7-3 DRAIN VALVES AND FLOATING GAUGE

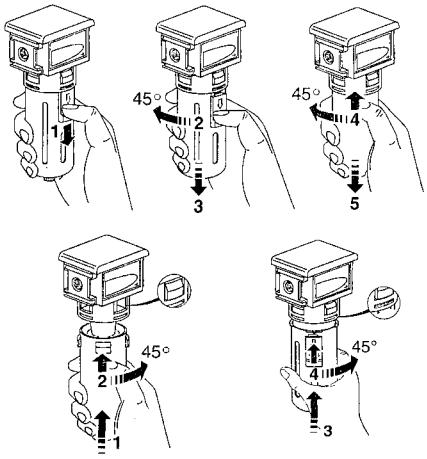
- Check that the red handle of the drain valve located on the left side of the self-propelled is released
- Check that the cord of floating gauge is free.

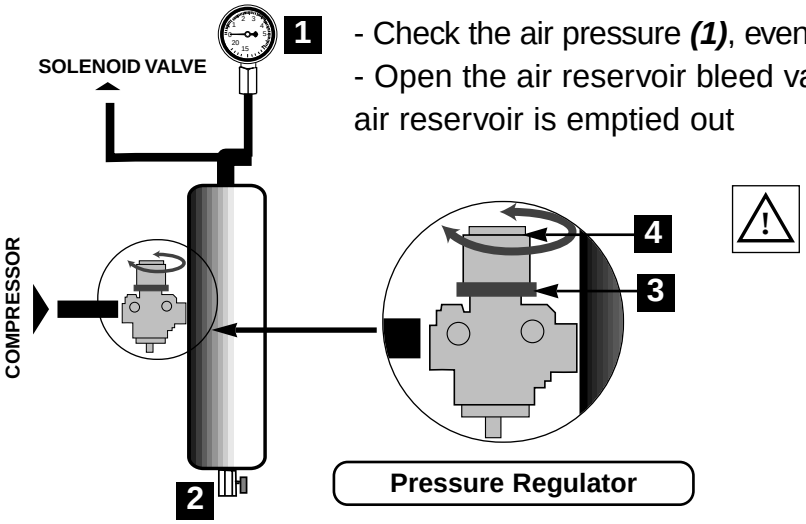
3-7-5 PNEUMATIC CIRCUIT (OPTION)

Filter-lubrificator unit (Pentabuse option)

- Check the oil level
- Depressurized the lubrificator before filling the bowl







- Check the air pressure ***(1)***, eventually re-set at **4,5** bar and **5** bar maximum
- Open the air reservoir bleed valve ***(2)***, the condensed water contents odf air reservoir is emptied out

The regulator have been adjusted in factory. The maximum pressure is **5** bar.

To adjust the air pressure :
- Undo the locknut ***(3)***.
- Adjust the air pressure by screwing the nut ***(4)*** to increase pressure or by unscrewing to discrease the pressure.
- Tigh the nut ***(3)***.

4- SPRAYING

This chapter sets out the principle of normal circulation, semi-continuous and return spray.

Choosing the type of nozzle and working pressure, refer to the ‘’Spray Technique” manual.

4- 1 PRINCIPLE OF CIRCULATION

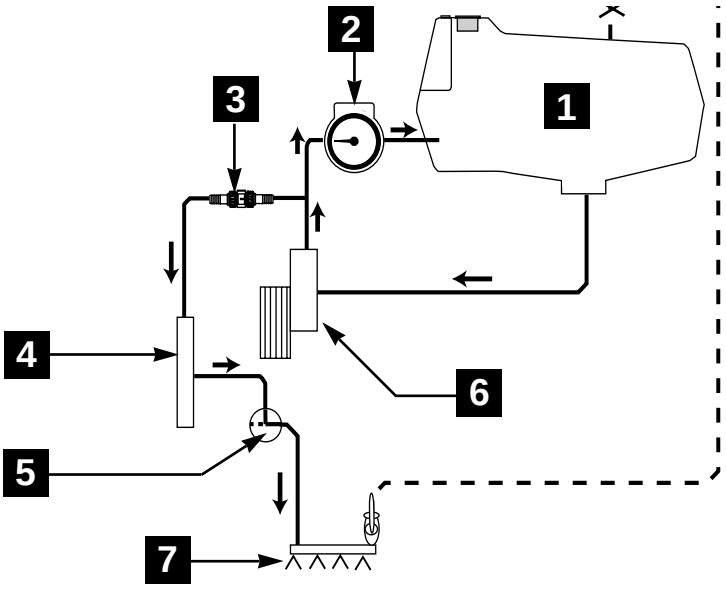
4-1-1 NORMAL CIRCULATION

The mobile unit is equipped, as standard, with semi-continuous circulation. The configuration of Normal circulation is generally suitable for delivery exceeding **200** l/ha.

During spray, the pump delivery is distributed between :
- The spray boom equipped with nozzles.
- The return to the tank via the regulating valve DG4.

All the liquid reaching the boom is sprayed. Regulation is achieved by the regulating valve operated by the Regulor in accordance with the programming carried out by the user.

When spray stops :
- The remote valves are in the closed position.
- All the delivery from the pump returns to the tank via the regulating valve.

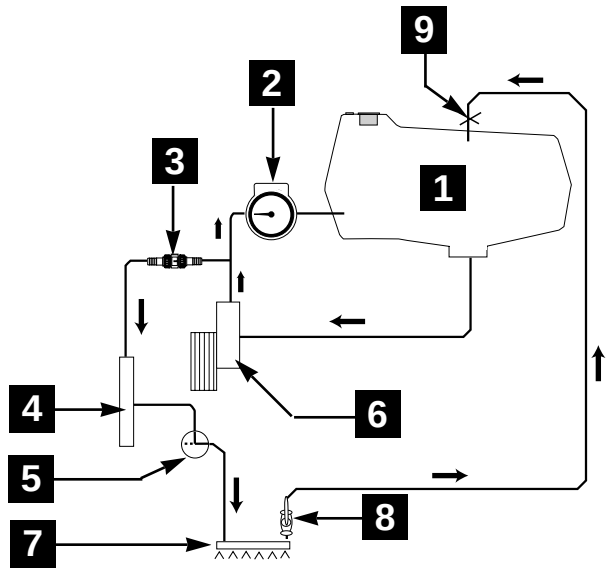


1 Tank
2 Type DG4 regulating valve
3 Type Heliflux Flowmeter
4 Boom manifold
5 Type TVI remote valve
6 Spray pump
7 Boom section

4-1-2 SEMI-CONTINUOUS CIRCULATION

Semi-continuous circulation is generally suitable for delivery lower than 200 l/ha. Because of a circulation rate two or three time greater than that in normal circulation, there is no sedimentation of the products in the piping and therefore no blocking of nozzles.

However, circulation of the fluid in the boom section is not carried out when spray stops.



1 Tank
2 Type DG4 regulating valve
3 Type Heliflux Flowmeter
4 Boom manifold
5 Type TVI remote valve
6 Spray pump
7 Boom section
8 Manual valve
9 Calibrated nozzles

In semi-continuous circulation, the pump delivery is distributed between :

- The spray boom equipped with nozzles.
- Return to the tank via the calibrated nozzles ***(CN).***
- Return to the tank via the regulating valve DG4 operated by the Regulor.

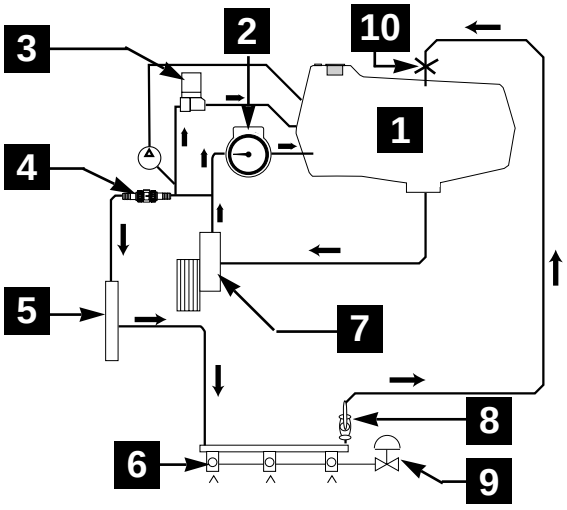
When spray stops, the remote valves are closed. All the delivery from the pump returns directly to the tank through the regulating valve.

4-1-2 CONTINUOUS CIRCULATION (OPTION)

Semi-continuous circulation is generally suitable for delivery lower than 200 l/ha. Because of a circulation rate two or three time greater than that in normal circulation, there is no sedimentation of the products in the piping and therefore no blocking of nozzles.

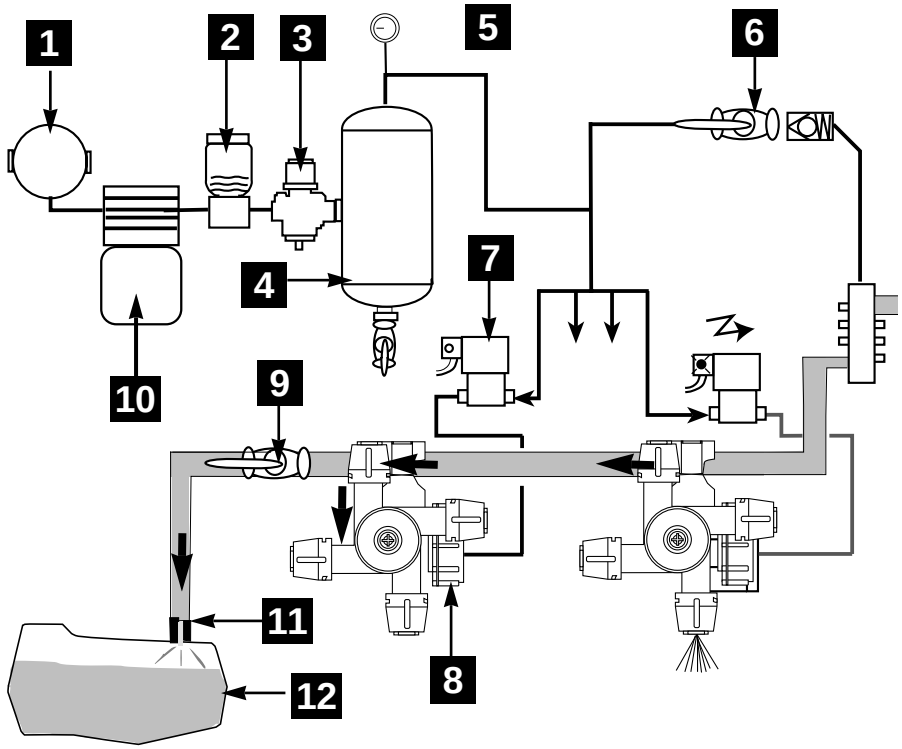
Circulation of the fluid is carried out in the spray piping when spray stops.

In comparison with Normal Circulation, there is the addition of a supplementary stream of liquid in the boom piping and this stream returns to the tank ***(CN)***, including when spray stops.
During spray, the pump delivery is distributed between :
- The spray boom equipped with nozzles.
- Return to the tank via the calibrated nozzles
- Return to the tank via the regulating valve DG4, operated by the Regulor.



1 Tank
2 Type DG4 regulating valve
3 Discharge valve
4 Type Heliflux Flowmeter
5 Boom manifold
6 Clean Cut-offf
7 Spray pump
8 Manual valve
9 Solenoid valve
10 Calibrated nozzles

When spray stops :
- The ‘’Coupe-net” instantly block spray at the nozzles.
- The delivery returns to the tank through the regulating valve, the boom-end return supplies via the calibrated nozzles and via the by-pass valve operated by the Regulor.



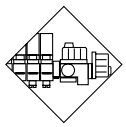
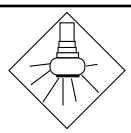
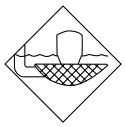
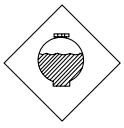
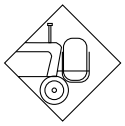
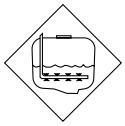
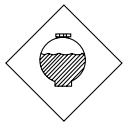
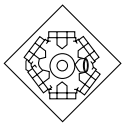
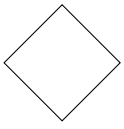
1 Engine air filter
2 Antifreeze
3 Regulator
4 Air compressed reservoir
5 Air pressure gauge
6 Air bleed valve
7 Solenoid valve
8 Claen Cut-off
9 Return valve for circulation
10 Air compressor
11 Calibrated nozzle
12 Tank

4- 2 DETAILS FOR SPRAYING STAGES

4-2-1 PICTOGRAMS

On the sprayer, each valves is indicated by :
- A number (1, 2, 3, 4,5,8 and 9)
- A pictogram
- A coloured disc (green : pressure, black : suction, blue : return).

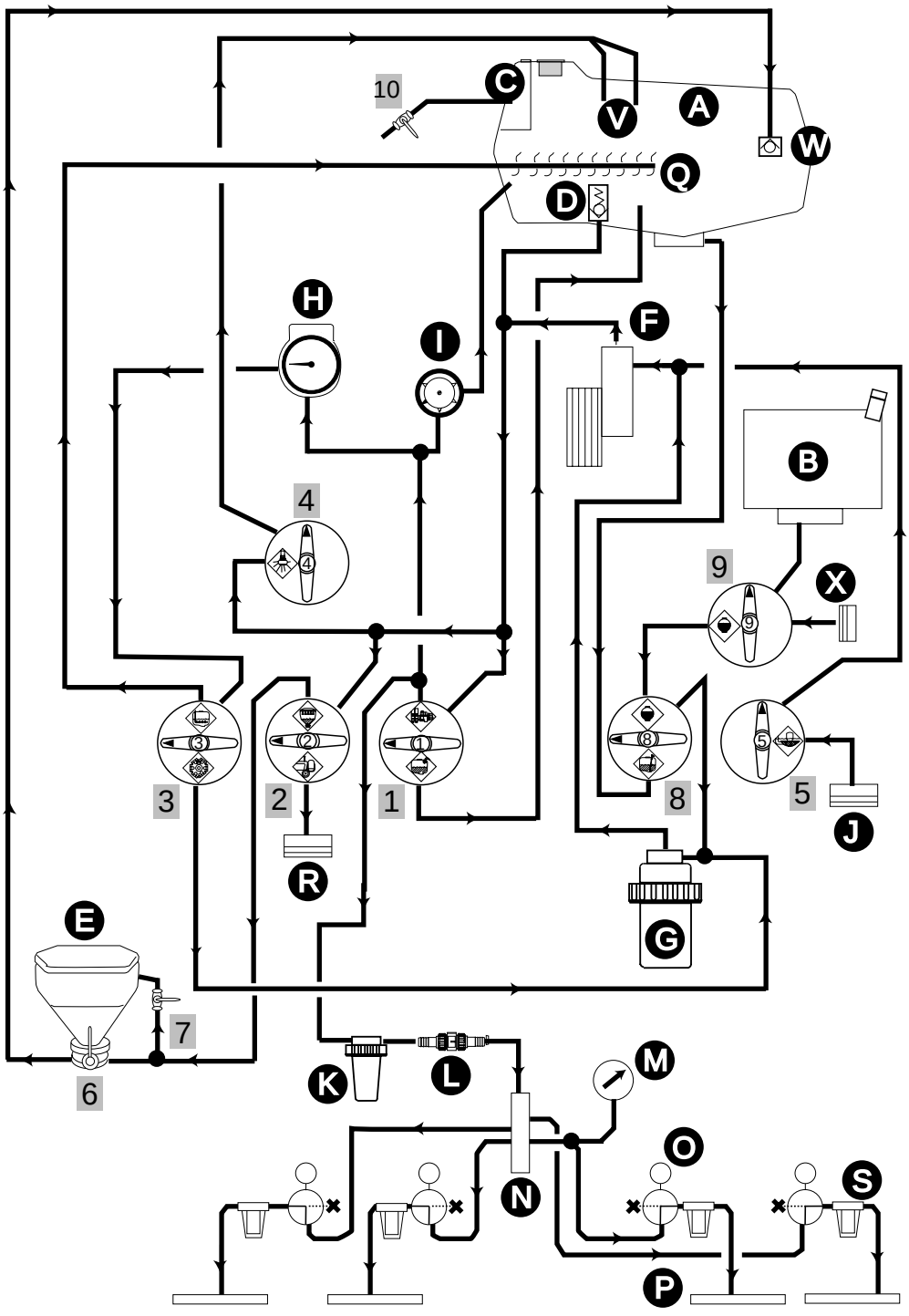
The figure below gives details of these pictogram.

N° and color	Pictogram	Operation	N° and coulor	Pictogram	Opreration
1 Green		Spraying	**4** Green		Rinsing the main tank
		Filling the main tank	**5** Black		External suction
2 Green		Admixture of products mix/ admixture	**8** Black		Rising tank suction
		Transfer the main tank to the outside			Suction from main tank
3 Blue		Spraying with agitation	**9** Black		Rising tank suction
		Spraying without agitation			Filling the rinsing tank

- Wear personal protection (gloves,overalls,rubber boots and face protection shields) before used chemicals

- Always read the chemical label prior to use and follow instructions given on the label

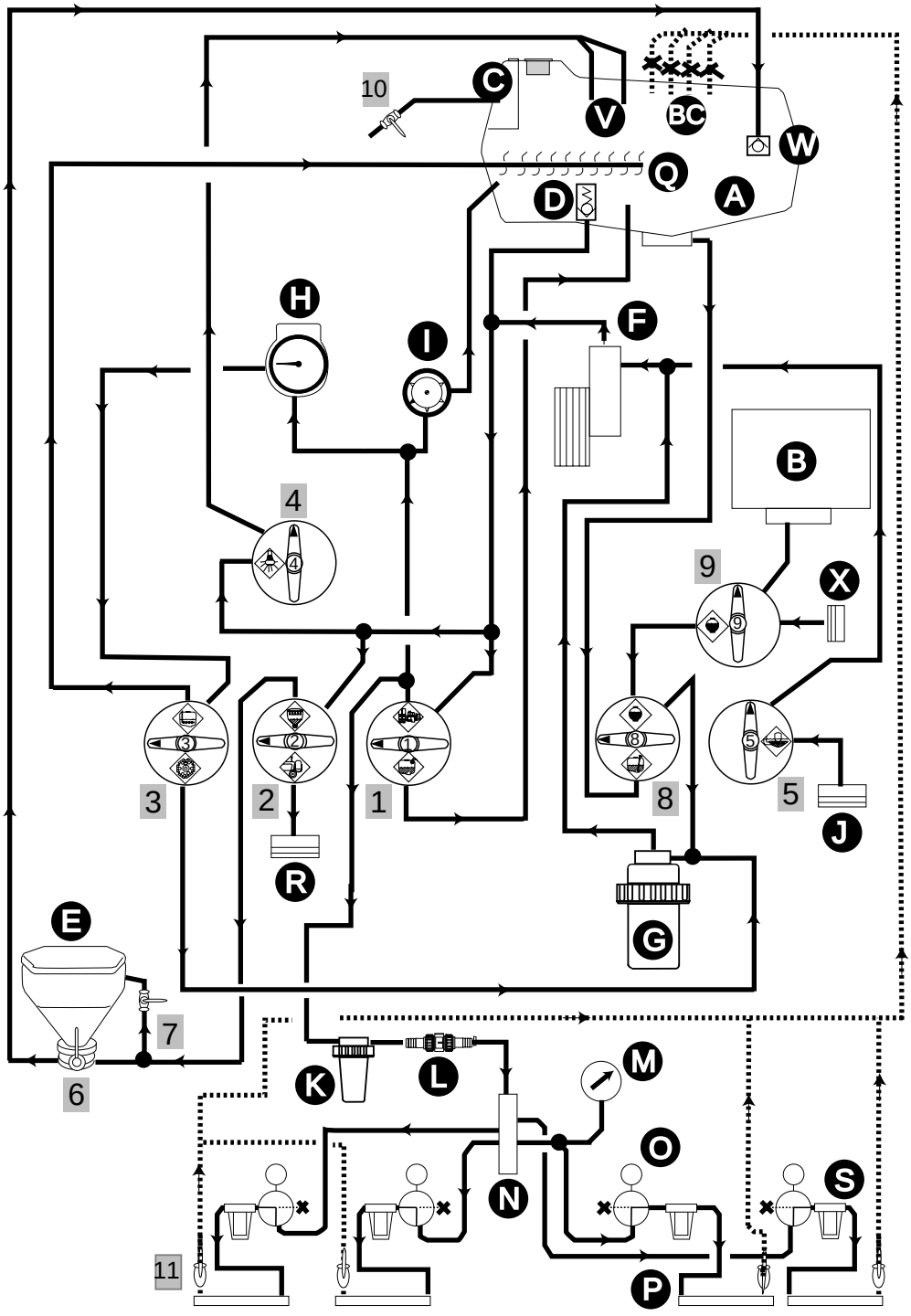
4-2-2 CIRCULATION NORMAL



- A Main tank
- B Rinsing tank
- C Clean water tank (Hand Wash)
- D Safety valve
- E Mixing unit
- F Pump
- G Suction filter
- H Regulation valve DG4
- I Manual volume regulation valve
- J Self fill suction
- K Delivery filter
- L Flowmeter
- M Pressure gauge
- N Boom manifold
- O Remote valve
- P Spray boom
- Q Agitation pipe
- R Transfer connection
- S In-line filter
- BC Calibrated nozzle
- W No-return valve
- X Direct filling of rinsing tank

1. Spraying / Direct filling
2. Admixture / Transfer
3. Spraying with agitation / No agitation
4. Rinsing the main tank
5. External suction
6. Admixture unit opening valve
7. Rinsing the admixture unit
8. Main tank suction/ Rinsing tank suction Manifold Rinsing
9. tank suction/ Direct filling rinsing tank
10. Hand washing valve

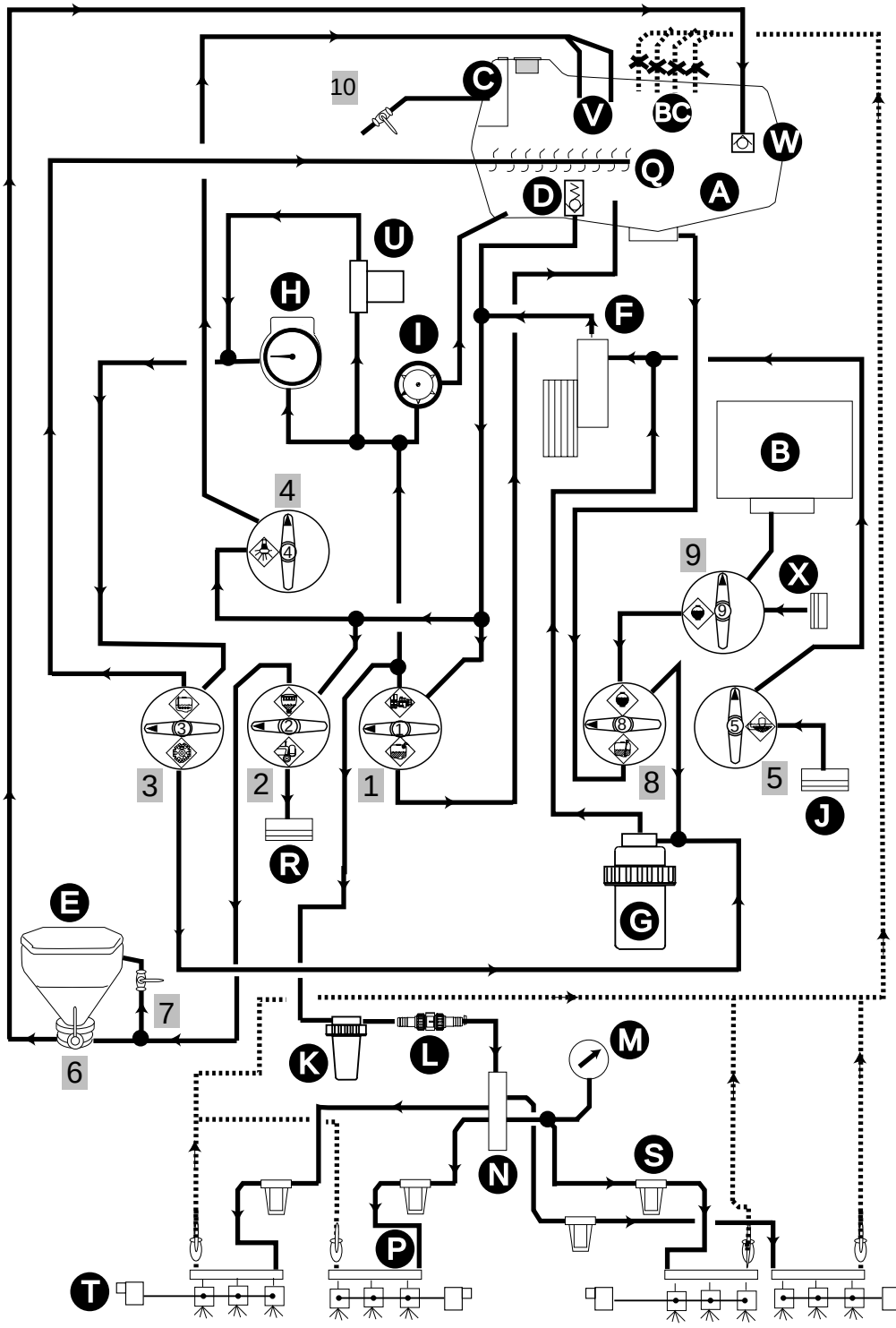
4-2-3 SEMI-CONTINUOUS CIRCULATION



- A Main tank
- B Rinsing tank
- C Clean water tank (Hand wash)
- D Safety valve
- E Mixing unit
- F Pump
- G Suction filter
- H DG4 Regulating valve
- I Manual volume regulation valve
- J Self fill suction
- K Delivery filter
- L Flowmeter
- M Pressure gauge
- N Boom manifold
- O Remote valves
- P Spray boom
- Q Agitation pipe
- R Transfer connection
- S In-line filter
- BC Calibrated nozzles
- W No-return valve
- X Direct filling of rinsing tank

1. Spraying / Direct filling
2. Admixture / Transfer
3. Spraying with agitation / No agitation
4. Rinsing the main tank
5. External suction
6. Admixture unit opening valve
7. Rinsing the admixture unit
8. Main tank suction/rinsing tank suction manifold rinsing
9. Rinsing tank suction / Filling rinsing tank
10. Hand washing valve
11. Semi-continuous circulation valves

4-2-4 CONTINUOUS CIRCULATION



- A Main tank
- B Rinsing tank
- C Clean water tank (Hand wash)
- D Safety valve
- E Mixing unit
- F Pump
- G Suction filter
- H Regulating valve DG4
- I Manual volume regulation valve
- J Self fill suction
- K Delivery filter
- L Flowmeter
- M Pressure gauge
- N Boom manifold
- P Spray boom
- Q Agitation pipe
- R Transfer connection
- S In-line filter
- BC Calibrated nozzles
- T Solenoid valve
- U Discharge valve
- W No-return valve
- X Direct filling of rinsing tank

1 Spraying / Direct filling

2 Admixture / Transfer

3 Spraying with agitation / No agitation

4 Rinsing the main tank

5 External suction

6 Admixture unit opening valve

7 Rinsing the admixture unit

8 Main tank suction/rinsing tank suction manifold rinsing

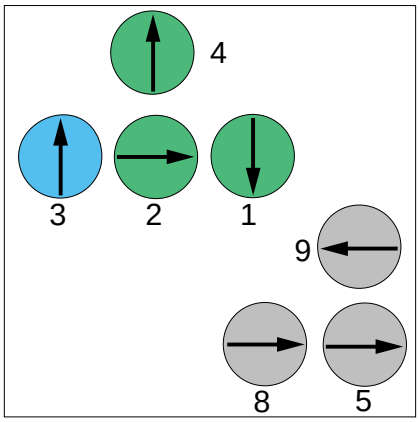
9 Rinsing tank suction / Filling rinsing tank

10 Hand washing valve

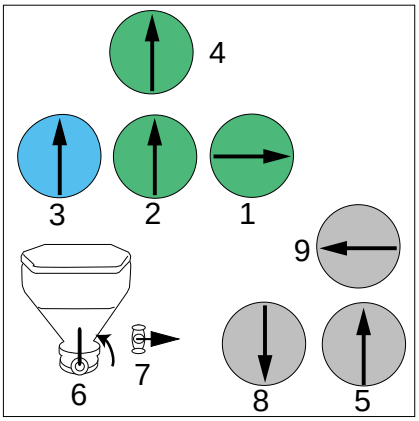
11 Semi-continuous circulation valves

MANIFOLD TOP POSITION OF ALPHA

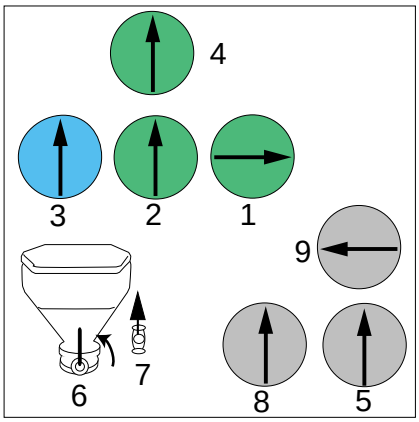
REMPLISSAGE
Filling main tank



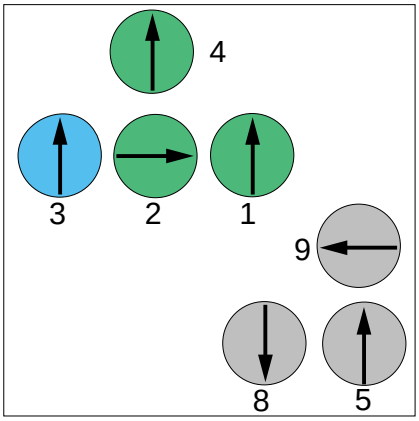
INCORPORATION PRODUITS
Chemical filling



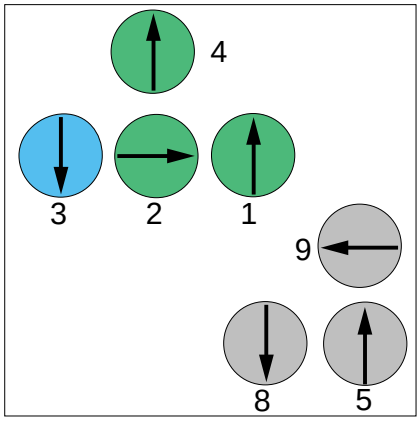
RINCAGE INCORPORATEUR
Chemical filling rinsing



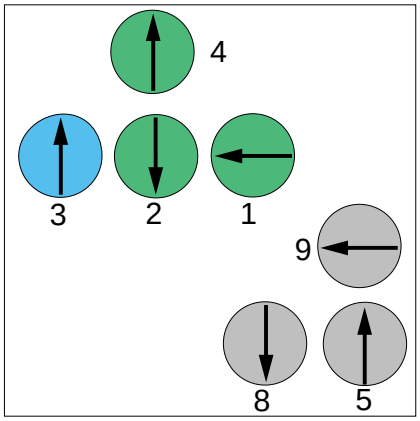
PULVERISATION AVEC AGITATION
Spraying with agitation



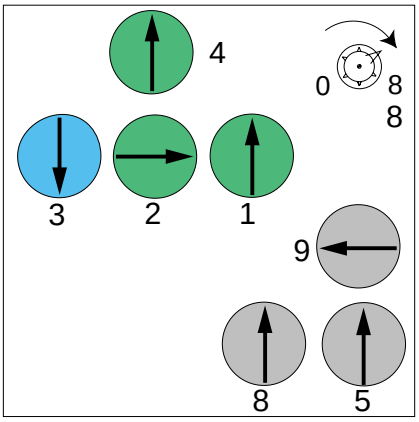
PULVERISATION SANS AGITATION
Spraying without agitation



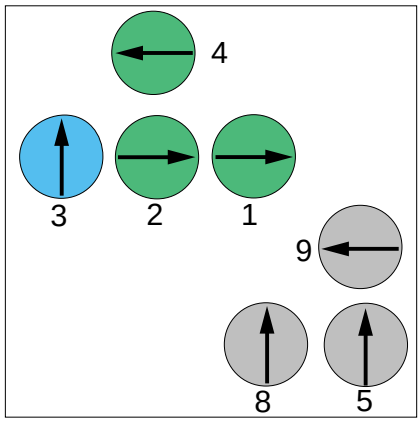
TRANSFERT
Transfer



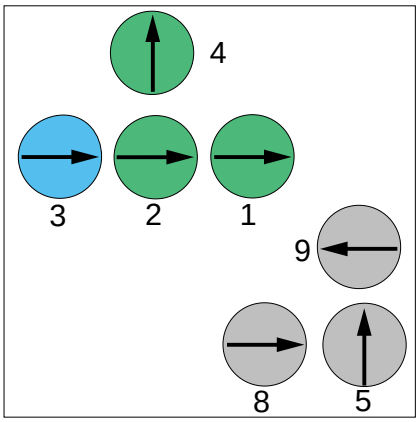
RINCAGE RAMPE
Boom rinsing



RINCAGE CUVE
Tank rinsing



NETTOYAGE FILTRES
Filters cleaning



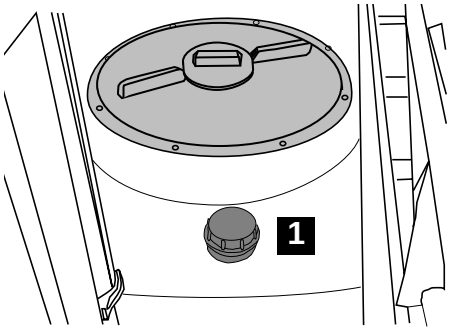
EVRARD GROUPE HARDI

978794

4- 3 SPRAYING CIRCUIT OPERATING

4-3-1 FILLING THE HAND WASHING TANK AND THE RINSING TANK

Hand washing



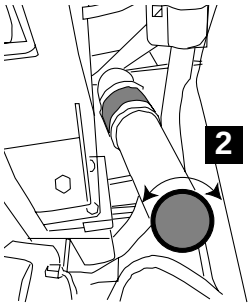
This **30** liter tank is incorporated in the main tank. It must be filled by gravity exclusively **with clean water ref.A**. It is solely for washing hands and rinsing when any toxic product is accidentally spashed

Turn on valve n° ***10*** for opening.

For your safety, take care never to put chemical products in this tank and make sure it is always filled with clean water during work

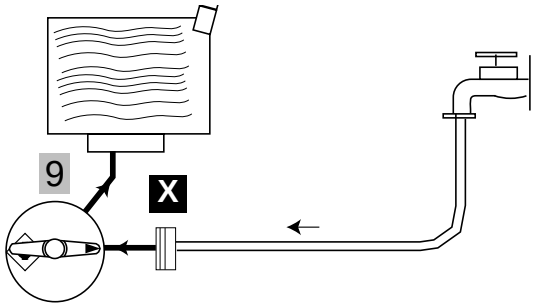
Rinsing tank

This **200** liter tank is incorporated into the main tank. It must be **filled by gravity exclusively with clean water (1)**.
- It will be only used for rinsing the spray circuit



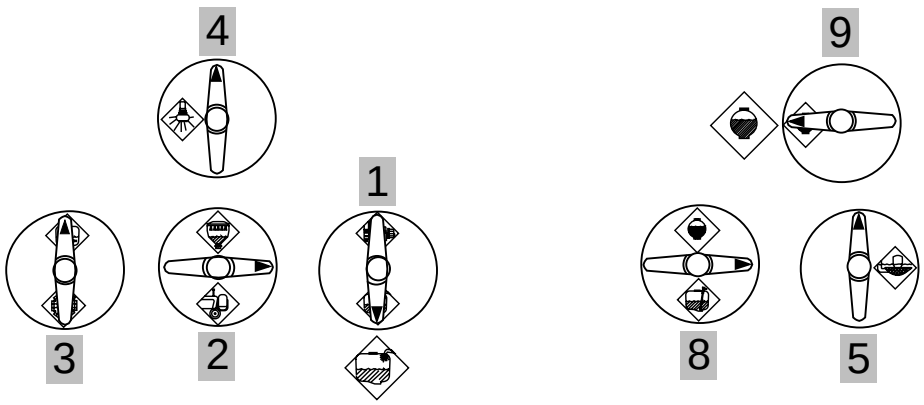
Rinsing tank filler cap **(2)**

Connect a pipe to connector (**X)** and open valve **(9)** to filling the rinsing tank.



4-3-2PRIMING THE PUMP

In the event that the pump is completely emptied, it is essential to prime it. Act as follow :
- Fill up completly the rinsing tank
- Position the valves as above



Filling by external suction

- Make sure that the boom sections are turned off on the Regulor
- Connect the suction pipe with the strainer to the symetrical connection of valve n° ***5.***
- Position the valves according to the above (fig 1- 1)
- Operate the switch to engage the pump at idle speed and progressively accelerate the engine approx. ***2000*** rpm.

When the tank is full (fig 1- 1)
close valve n° **5** and then open valve n° **8**

Fig 1-1

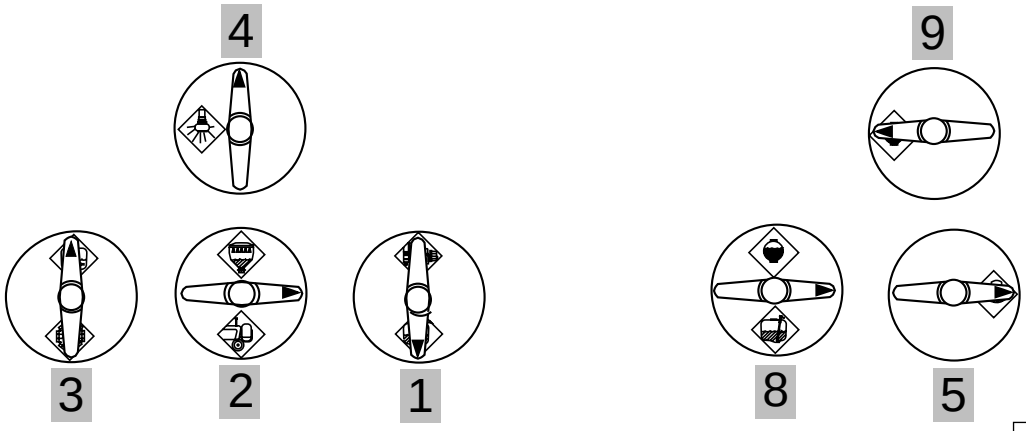
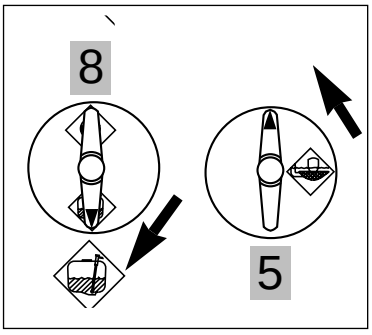


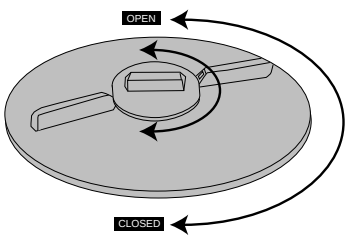
Fig 1-2



Filling by means of the main tank

- Make sure that the boom sections are turned off on the Regulor

- Close the Manifold valves n° ***5*** and ***8*** .
- Release the draining valve of the main tank
- Progressively pour the product into the main tank.
- Agitate the tank to thoroughly mix the product
- Go on to the paragraph ‘’Spraying”



Opening :
- Turn the lid to the **LEFT**

Closing
- Turn the lid to the **RIGHT**

4-3-3 FILLING THE MAIN TANK

We recommend to fill up the main tank to half capacity before incorporating chemical product. When filling, continually check the level in the tank so as to prevent pollution by any overflowing. Plant protection products can be added by suction or gravity.

4-3-4 ADDING THE PRODUCTS

WARNING: Wear gloves, glasses and face protection shield when operating. Fill up the main tank to half capacity before incorporating chemical product..Consult chemical label regarding precaution to be taken when filling.

Adding by gravity

The main tank is half-filled with water.
- Incorporate slowly chemical through the tank filter to prevent rust or other particles.

Adding by means of the mix/admixture unit

WARNING : Avoid contamination or personal injury. Do not open suction valve towards suction filling device unless pump is running and filling hose is connected. If this valve is opened without running, liquid will stream out of the valve.

- Make sure that the boom sections are turned off on the Regulor
- Engage the pump at idle speed and progressively accelerate approx. ***2000*** rpm

- Close valve n° ***6*** (fig ***2-1***).
- Position valve as above. (fig ***2-2***).

Fig 2-1

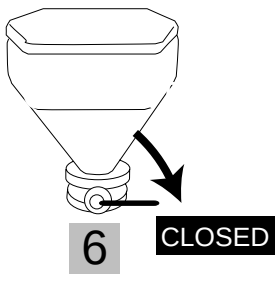
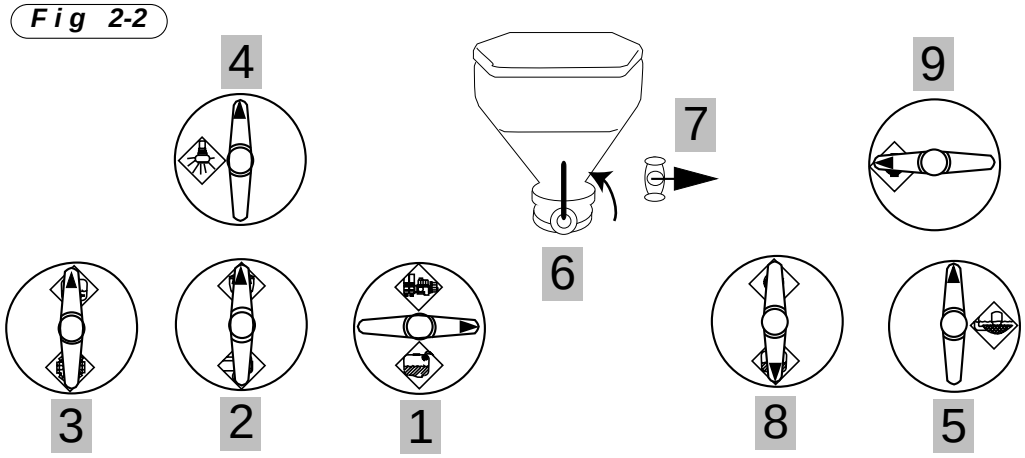


Fig 2-2



- Pour the product into the mixer. Check the quantity with the graduated gauge in the mixer.

- Progressively open valve n° **6** . The product drawn up mixes with the contents of the tank (fig ***2-3***)

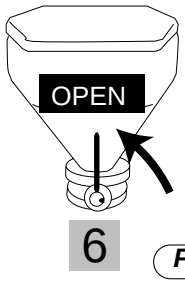


Fig 2-3

4- Use the handle to rinse the chemical containers. Water is dispersed from a large number of powerful jets for the purpose of rinsing out plant protection product container. (fig ***3-1***)

5- Position valves n° **8** et **9** for 'Rinsing the tank" , (only to use new chemical product) (fig ***3-2***)

6- Open valves n° **6** and n°***7*** to clean the mixer. (fig ***3-3***)

Fig 3-1

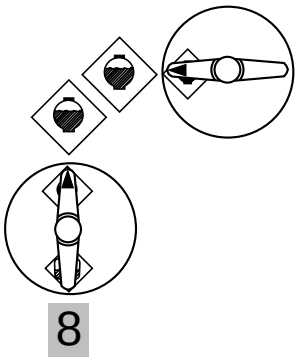


Fig 3-2

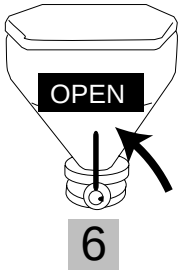


Fig 3-3

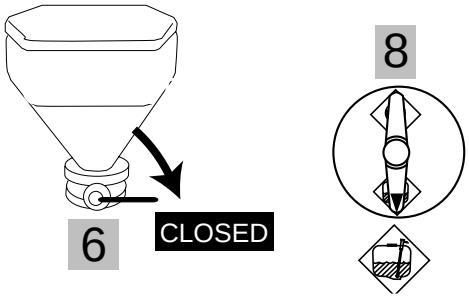


Fig 3-4

4-3-5 AGITATION OF MAIN TANK

Prior to any spraying, it is essential to put plant protection products back into suspension by agitation.

- Make sure that the boom sections are turned off on the Regulor

- Position the valves as above (fig **3-5**)
- Position the regulating valve at position **0** .. **5** if necessary to increase agitation capacity.
- Engage the pump at idle speed and progressevely accelerate the engine in order to reach the nominal speed of the spray pump.

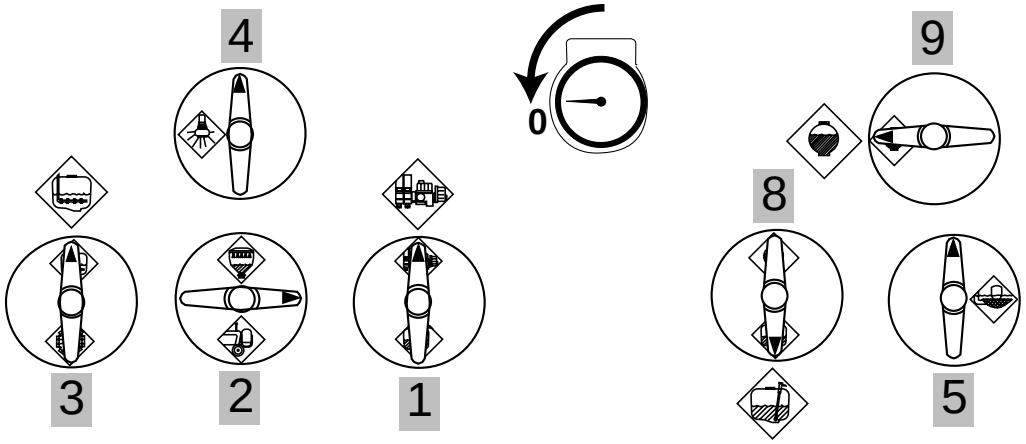
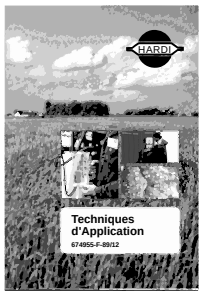


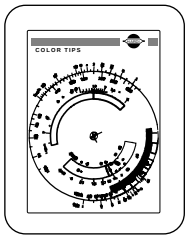
Fig 3-5

4-3-6 SPRAYING

Before proceeding, please refer to :

- The ‘’Spray techniques” manual for further information on choosing and using nozzles etc.
- Chapter 10 ‘’Regulor” for details relating to flow control. The minimum information on use is provided in this section.





In NORMAL Circulation

To program the desired volume/hectare, Press 'Valid' key and commence spraying. The control of volume/hectare is automatic

In SEMI-CONTINUOUS or CONTINUOUS circulation

- Press the ***‘Nozzle’*** key.
- Select the nozzle number and then press ***‘Validation’*** .
- Programm the volume/hectere required.
- Press ***‘Validation’*** key and start spraying.. Volume/hectare regulation is automatic.

This section deals exclusively with the various different types of spraying. For additional information on the Regulor, please see the ‘’*Regulor operating manual”*

RADAR UNIT ADJUSTMENT

- Adjust the height of the radar (**0,50** m .. **1,00** m) from ground or crops.
- Select ***‘RADAR’*** in **TEST 2** to use the radar mode.

4-3-7 SPRAYING WITH AGITATION

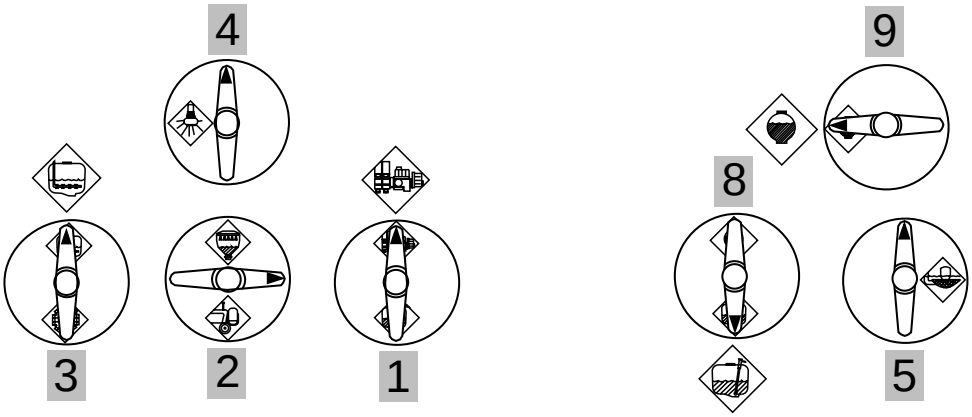


Fig 4-1

SPRAYING STAGES

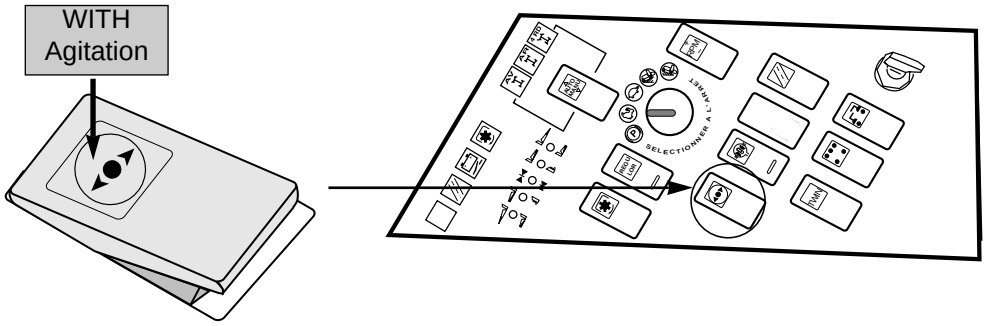
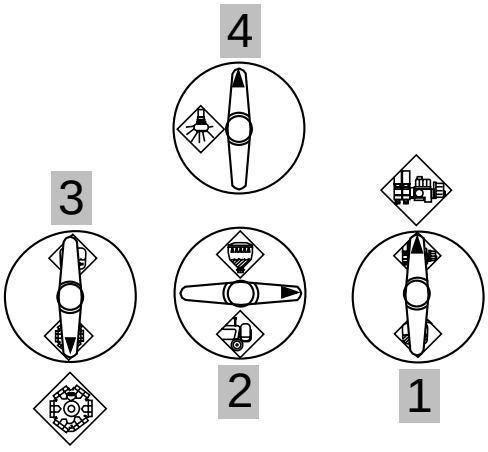


Fig 5-1

4-3-8 SPRAYING WITHOUT AGITATION

This mode of spraying must be only used with a practically empty tank so as to limit the agitation in the tank Act as follows

- Make sure that the boom sections are turned off on the Regulor
- Position the valves as above. (fig **5-2**)or position the switch (fig **5-3)** (électric valve as option)
- Operate the switch to engage the pump at idle speed and progressively accelerate the engine.
- Advance and start spraying by means of the Regulor.



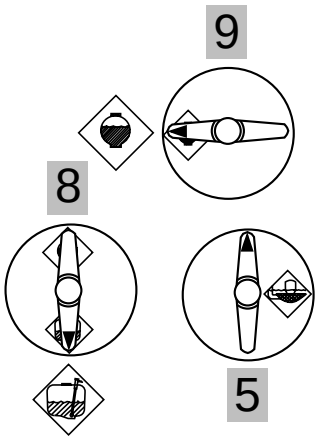


Fig 5-2

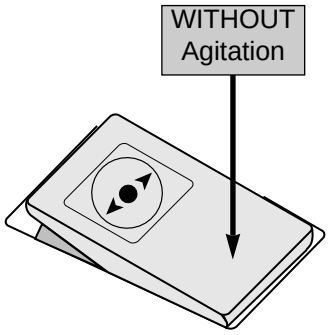


Fig 5-3

4-3-9 LOW VOLUME SPRAYING

A manual ‘’volume-régulating” valve is required for the low volumes. The return flow to the tank is modulate by using the manual ‘’volume-regulating” valve.
- Position the valves as above. (fig **6-1**)
- Operate the switch to engage the pump at idle speed and progressively accelerate the engine.
- Open the boom supplies by means of the Regulor.

NOTICE : It is recommended to use the semi-continuous or continuous circulation for low volume.
- Open valve n° **3** to ***‘SPRAYING WITHOUT AGITATION’*** , particulary with a practically empty tank..

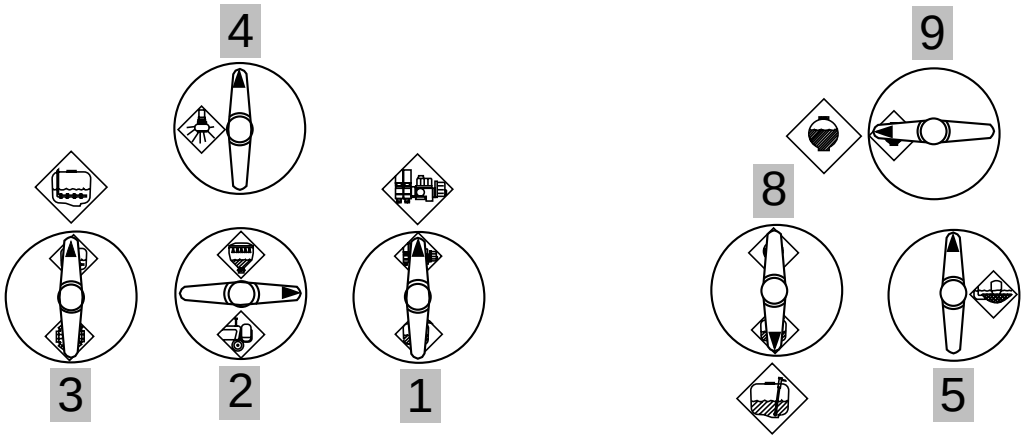


Fig 6-1

- Modulate the return to the tank by using the manual ‘’Volume-regulating” valve. (fig **6-2**)

Valve ***W*** to **MINUS** ; regulating valve ***H*** to **PLUS**

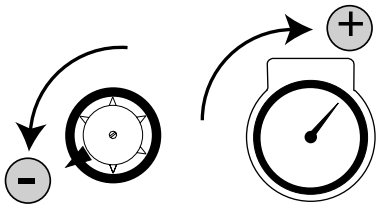


Fig 6-2

4-3-10 RINSING THE BOOM

To prevent accumulation of chemical residue in the piping when the machine is stored or changing chemical product, we recommend to rinse the spraying circuit
The piping and nozzles are rinsed by the contents of the rinsing tank

- Position the valve as above (fig **6-3**).
- Open the boom supplies by means of the Regulor..

The clean water from the rinsing tank passes through the piping and boom.

NOTICE : Close the valves for semi-continuous or continuous circulation, if the sprayer is equipped with this option, to limit the return of clean water to the main tank. It is advisable, however, to open them at the end of the rinsing cycle in order to clean the semi-continuous or continuous circulation piping.

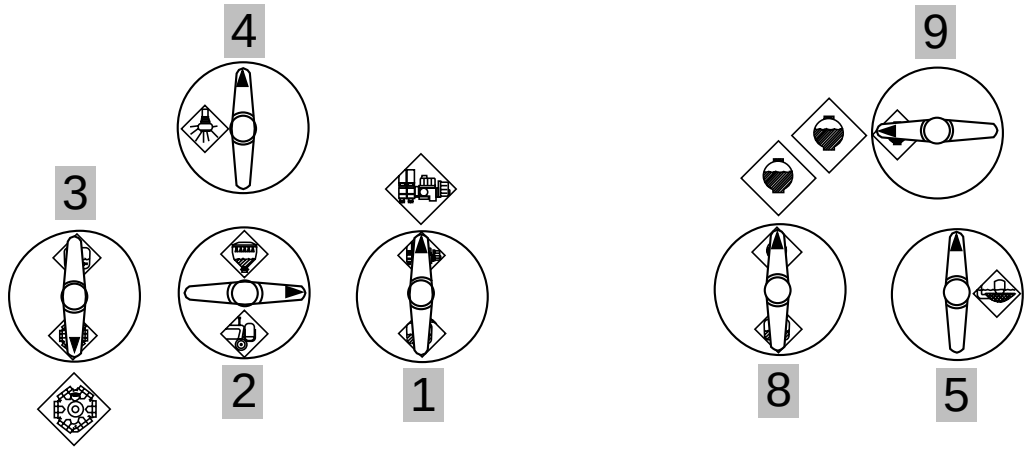


Fig 6-3

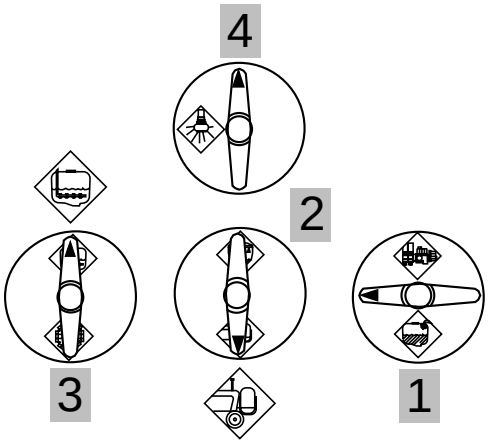
- Turn the ***‘volurégulating valve***’ to the right-hand to reduce the mixing of clean water in the main tank

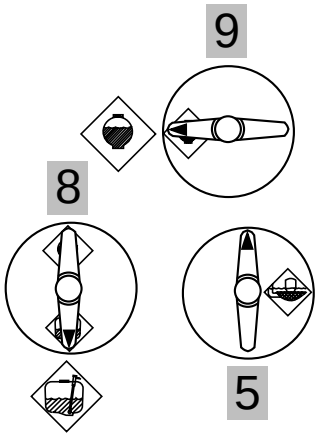
4-3-11 TRANSFER

The contents of the main tank are transferred to another external tank by means of the symetrical transfer connection.

- Make sure that the boom sections are turned off on the Regulor

- Couple the transfer pipe to the connection valve at one end and the receiving tank.
- Position the valves as above. (fig **7-1**)
- Engage the spray pump at idle and then progressively accelerate the engine.The main tank empties



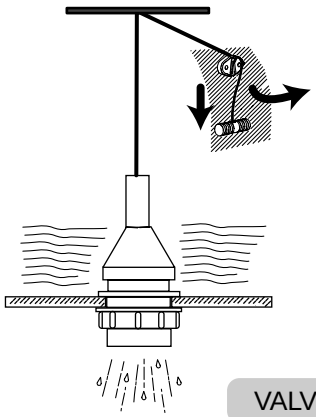


4-3-12 EMPTYING THE MAIN TANK

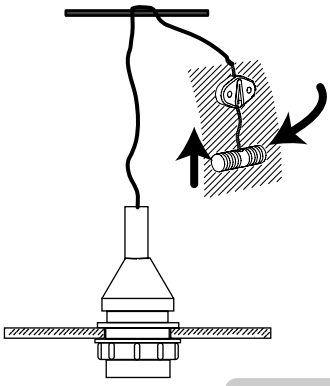
Empty the main tank completely after rinsing in compliance with local legislation.

For this purpose :

- Pull the red handle located on the left side of the sprayer in order to empty the main tank completely.
- When this is released, the valve closed again. To keep it open, secure the cord around the locating device.



VALVE OPEN



VALVE CLOSED

4-3-13 MAIN TANK RINSING

The main tank is rinsing by clean water held in the rinsing tank. Note local legislation regarding dumping of residues and rinsing water.

Act as follows :
- Make sure that the main tank has been completely emptied and that the red handle of the drain valve has been released. (fig **11-4)**
- Switch off the spraying sections
- Engage the spray pump at idle and then progressively accelerate the engine
- Empty the main tank.

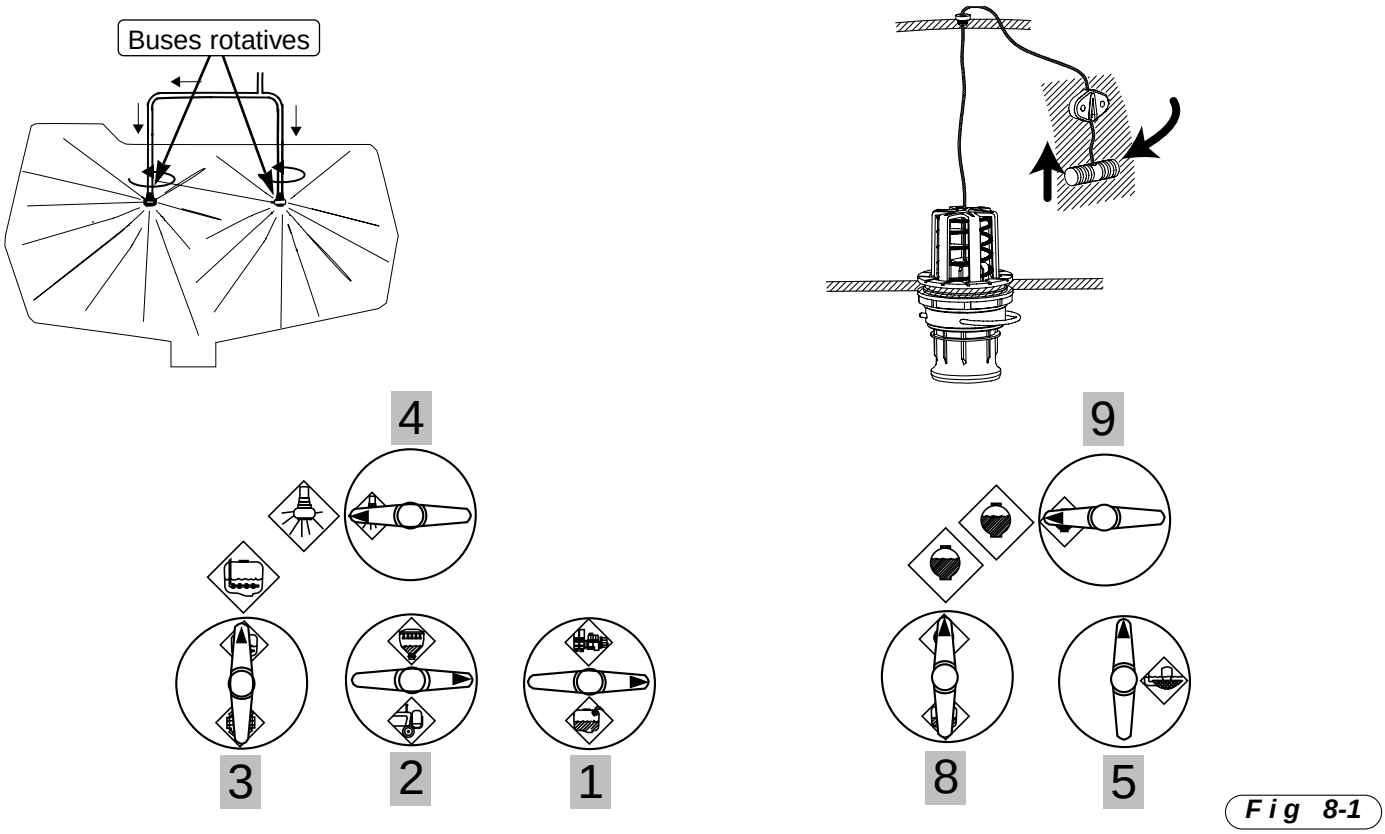
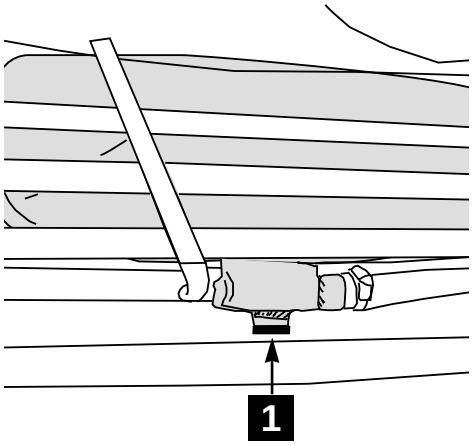


Fig 8-1

4-3-14 EMPTYING THE RINSING TANK

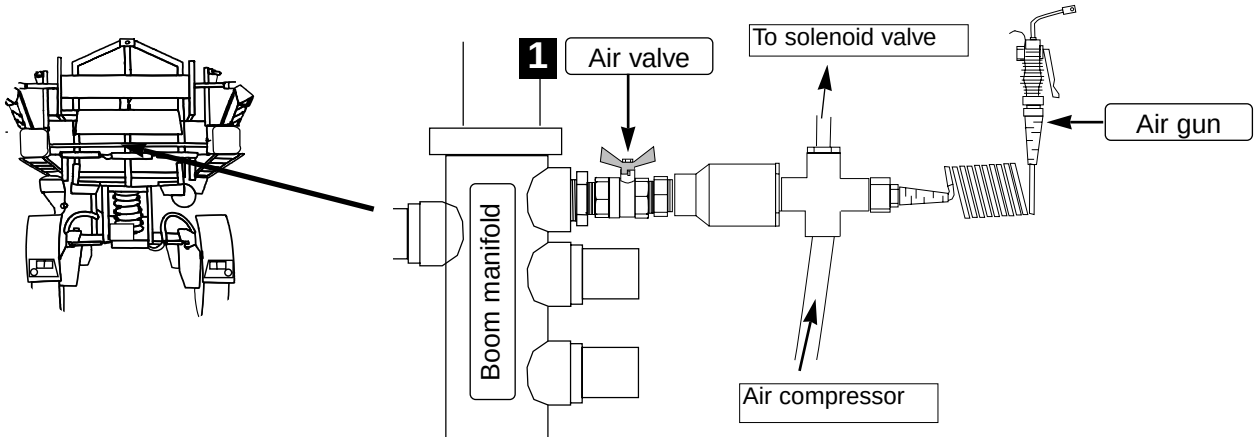


It is advisable to empty this tank from time to time so as to clean it

- Remove the underbelly cover
- Undo the draining screw **(1)** located at the left hand-side of machine
- Rinse the rinsing tank with clean water and refit the draining plug

4-3-15 EMPTYING THE BOOM PIPING (Clean Cut-off only)

To prevent draining and depositing of products in the piping and nozzle holders, it is **compulsory** to empty the piping with a flow of air



Act as follows :
- Close valves n° **1** and n° **3** and close the manual ***volume-regulating*** valve to PLUS.
- Close the boom supplies by means of the Regulor
- Open the booms out.
- Open bleed valve **(1)**
- open one section by one section by using the individuals switches on the joystick to emptying the section piping
- repeat for all spray boom sections
- Close the air valve **(1)**

Use a air gun to cleaning the nozzles.

5- CARE AND MAINTENANCE

This chapter describe operations maintanance on the machine. To keep the machine in good, safe and reliable working order, as well as keeping the maintenance and repair costs to a minimum it is essential to follow the preventive maintenance programme given hereafter.

5- 1 TABLE OF LUBRICANTS

Elements	Capacity	Lubricant
DEUTZ Engine **6** cylindres	**15,5** l	**Rubia 4400** **API CG-4 API SG** **ACEA E2/B2/A2-96**
Hydrostatic transmission Hydraulic system	**60** l	**EQUIVIS ZS 46** **AFNOR NF E 48-603 HV** **ISO 6743/4 HV**
Pump step-up gear case centrifugal pump	**1** l	**TRANSMISSION TM SAE 80W-90** **API GL5** **MIL-L-2105 C,D**
General lubrication		**Multis EP2** **ISO -L- XBCFB 2**
Coolant	**15** l approx.	**ORGANICOOL** **ASTM D 4985 - ASTM D 3306**

5- 2 MAINTENANCE DURING THE RUNNING-IN-PERIOD

Interval	Equipments concerned
After **1** h After **2** h	Tighten wheel bolts
After **10** h	Check that hydraulic circuit is oil tight. Tighten wheel bolts.
After **50** h	Check engine for leaks. (*). Change engine oil and Change engine oil filter (*). Replace fuel filter (*) Check belts (*). Replace hydraulic circuit filters.
After **250** h	Change oil in hydraulic reservoir. Check air conditioning Drain water on fuel pre-filter

(*) follow instructions given in the DEUTZ manual without fail.

5-3 PERIODIC & PREVENTIVE MAINTENANCE

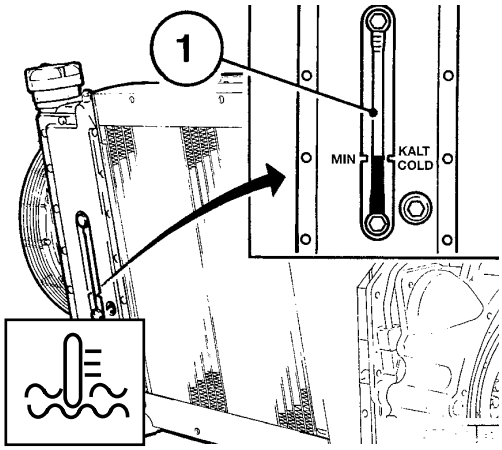
Interval	Equipments
Every hour	Check spray filters..
Daily or Everys **10** h	Check engine oil level (*) Check fuel level Check hydraulic oil level Clean air conditioning condenser Drain the condensed water in the air réservoir (Clean Cuts-off- option)
Every **50** h	Check boom / Grease nipples and chassis Lubrificate regulating valve DG4 Lubrificate spray remote valves Grease HARDI spray pump Clean cooler (coolant, hydraulic) (*) Clean air-intake filter and engine cooler (*)
Every **100** h	Check oil level level of lubrificator (‘Pentabuse option)
Every **250** h	Replace hydraulic filters Replace cab charcoal filters Check flow meter bearing bushes Remove and check Pentalet diaphragm Change engine oil and replace engine oil filter (*) Drain water on fuel pre-filter
Every **500** h	Check v-belts of engine (*) Replace diesel oil filter and clean fuel pre-filter Check the refrigerant level (R134a) of air conditioning
Every **1000** h	Drain diesel oil tank and diesel oil tank strainer Change oil in hydraulic reservoir Change oil of pump step-up gear case Check the valves and diaphragms in diaphragm pumps Check the engine air intake, check for leakage (*) and pre-heating plugs (*) Remplacement du filtre à air de sécurité Check the electrolyte of the battery (*) Replace the engine coolant water (*) Check the steering

5-3-1 ENGINE MAINTENANCE

This chapter discribe operations maintenance on DEUTZ engine. Refer to the specific manual for the DEUTZ engine for all further information

10 - Engine oil level
- Fuel level

Coolant Level 10



- When the engine is cold, coolant level shoud be above the ‘’MIN” mark. Top up with coolant if the level falls below the minimum mark on the sight glass, or if the coolant warning switch commes on.

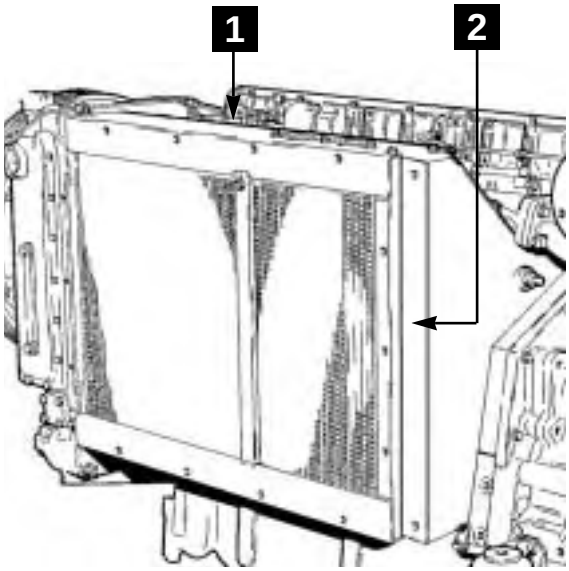
- Start and run engine (1500 R.P.M approx).
- Turn on the heating valve on cab
- Unscrew the filler cap
- Fill up coolant up to upper edge of the filler neck
- Replace filler cap **(1)**

Use only cooling protective liquid indicated in the table of lubricants

Reference : **TOTAL ORGANICOOL** for a protection of engine until - 30°C

WARNING : Never mix with other coolant. In case of doubt, drain completly the engine coolant liquid.

Heat exchanger cleaning 50



- Remove the service flap on the exchangert ref **1** and **2**
- Blow out heat exchanger with compressed air

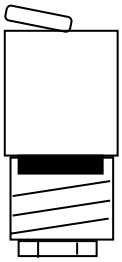
Be careful not to damage the cooling fins

- Wash out loosened dirt with a hose.
- Re-fit device flap.
- Run the engine up to normal operating temperature to evaporate any remaining water.

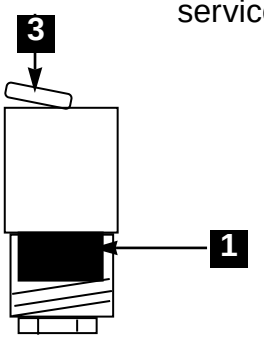
The amount of contamination in the cooling system depends on the spray application. Frequency of cleaning must be increase in the case of dusty environment

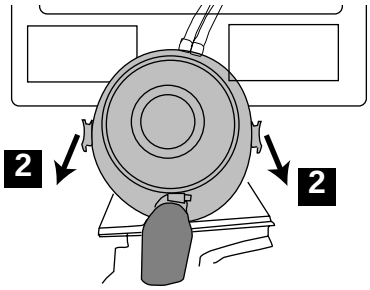
Air filter

50



A indicator is located on the engine air-intake.
If the red signal **(1)** is fully visible when the engine is off, you must clean the filter cartridge. Act as follow :
- Undo clip fasteners **(2)** and take off hood
- Blow out from inside out with dry compressed air (max. 5 bar). In difficult cases, tap out, taking care not to damage the cartridge.
- After carrying out service work, reset the signal by pressing the button **(3)** on the service indicator.





Changing Engine oil

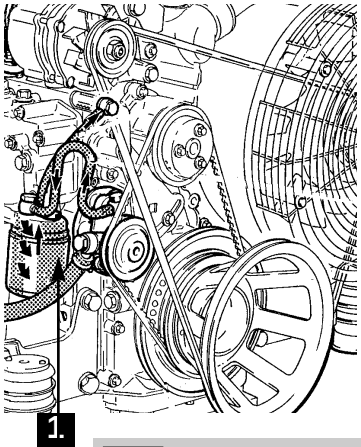
250

- Only use quality lube oil (see table of lubricant).
- Ensure that the engine is on level surface
- Allow the engine to warm up (oil temperature approx. 80°c /146°F.)
- Place oil tray under the engine
- Drain oil and replace the oil filter
- Fit oil drain plug with a new gasket and tighten firmly
- Fill with lube oil (see table of lubricant) and check oil level, if necessary top up with oil as far as the upper bar

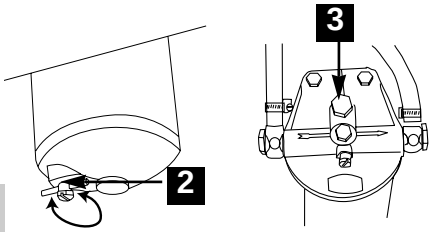
⚠ It is essential to use the maker's genuine oil filter

Changing Fuel Filter
Draining Fuel Préfilter

250

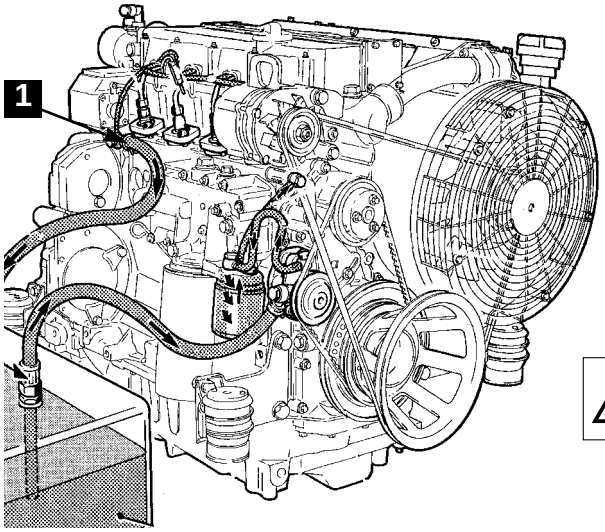


- Replace the fuel filter **(1)**
- Draining water from the prefilter, by loosing the drain screw **(2)**
- Unscrew the vent srew to fill up the bowl **(3)**
- Vent the engine fuel circuit (see chapter below)



⚠ It is essential to use the maker's genuine fuel filter cartridge

Fuel circuit Venting



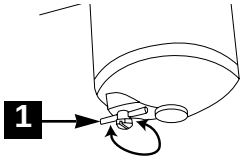
The fuel system must be vented when the engine is started after maintenance or if the tank has been run empty.

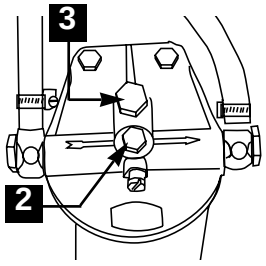
- Undo the banjo bolt with pressure-regulating valve ref **1**
- Start the engine and run it until the fuel runs out
- Tighten the banjo bolt.

⚠ Never undo the line to injector to vent the fuel circuit

Fuel Préfilter

1000

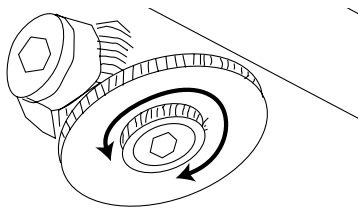




- Place a fuel collecting container below the prefilter
- Loosen the drain screw **(1)** and drain the fuel
- Unscrew the clamping screw **(2)** and remove the filter housing
- Clean any dirt which might be present off the sealing surface of the filter carrier and the filter element housing
- Insert a new O-ring (*ref : 218030*) and the filter element (replace if necessary)
- Unscrew the vent srew to fill up the bowl **(3)**.
- Vent the engine fuel circuit (see chapter Fuel Circuit Venting)
- After the engine has been started, check for leaks

Fuel Tank

1000

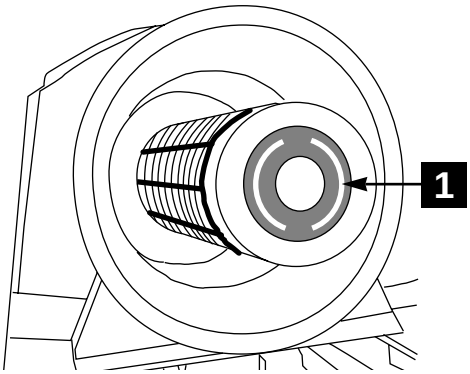


- Remove the drain plug when the fuel level is at the minimum.
- Clean the diesel oil tank to eliminate impurities and condense.
- When clean fuel is streaming out, fit the drain plug again.

Safety Cartridge

1000

This safety cartidge is located in the air filter . After **five** air cleaner service or after **two** years at the latest, replace safety cartridge (never clean).

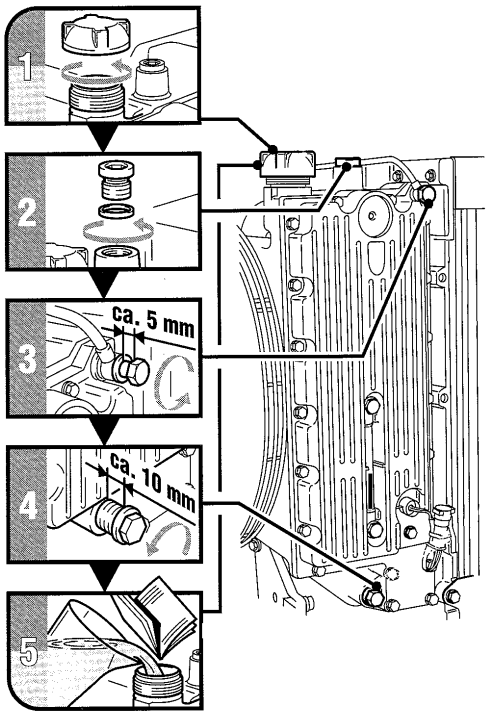


- Take off hood and extract the air filter
- Pull out the splint **(1)** to extract the safety cartridge
- Install new safety cartridge
- Replace air filter and hood, do up clip fasteners

Never clean safety cartridge. Always install a new cartridge

Draining Cooling System

1000



Capacity : **15** l approx.

DRAINING

- Open the heater valve in cab
- Unscrew drain plug (**4)**, fully
- Rinse the engine coolant circuit with pure water

FILLING UP

- Unscrew cap filler **(1)**
- Turn out bleed plug **(2)**
- Relax screw plug **(3)**
- Screw drain plug **(4)** in up to first groove

(Do not screw completly the drain plug)

- Top up coolant to filler neck up edge. The coolant runs out from bleed plug **(2)**.

After filling coolant, tighten **(2)**, **(3)** and **(4)**

- Start and run the engine up to normal operating temperature to open the thermostat housing. Check coolant level and add coolant if necessary
- Open the heater valve in cab to circulate coolant in the circuit
- Check coolant level and top up if necessary

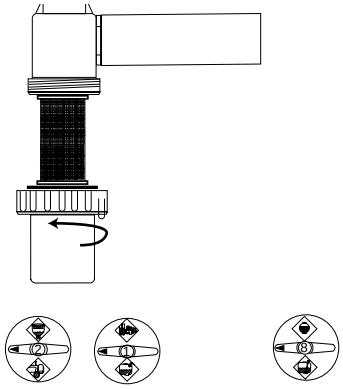
WARNING

Use only cooling protective liquid indicated in the table of lubricants

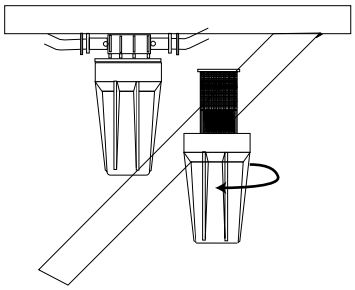
Reference : **TOTAL ORGANICOOL** for a protection of engine until - 30°C

5-3-2 EVERY HOUR

Delivery filter **1**

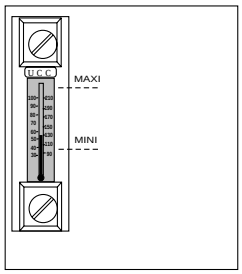


In-line filters



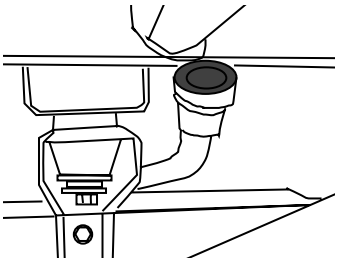
5-3-3 EVETY 10 HOURS OR DAILY

hydraulic oil level **10**



ALWAYS USE A SIMILAR HYDRAULIC OIL

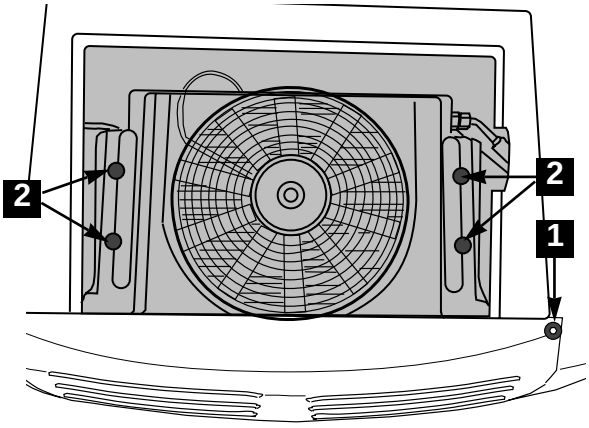
- Check the hydraulic oil level through the sight glass situated on the reservoir An audible warning located on under the instrument panel indicates a lack of oil in the hydraulic system. Check the hydraulic circuit immediately for leaking and refill oil into the hydraulic tank.



- Clean the area around the filling cap.
- Fill hydraulic oil through a filter unit to guarantee the purity. Filter ratio : 10 micron absolute or better.

For a good draining of the oil , it is preferable for the machine to have been running prior to the hydraulic oil change

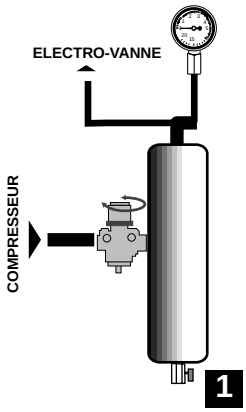
Air conditioning Condenser **10**



- Remove the service flap on the condenser **(1)**
- Remove the fan support **(2)**.
- Blow out air conditioning the exchanger with compressed air
- Refit the assembly

Air compressed Reservoir **10**

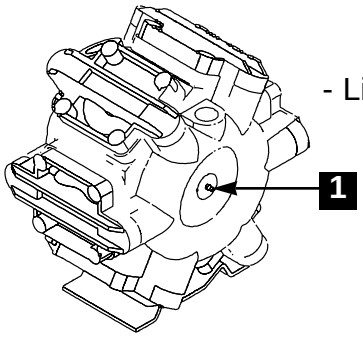
This placed at the proximity of ladder



- Open air reservoir bleed valve pos. **(1)**, the condensed water contents of air reservoir is emptied out.

5-3-4 EVERY 50 HOURS

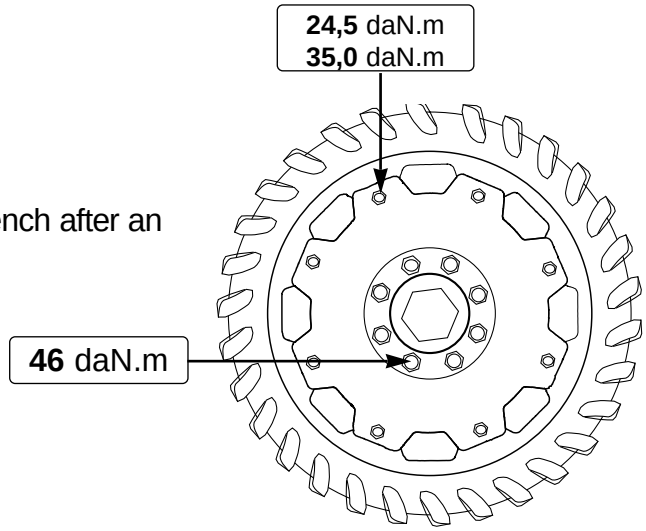
Diaphragms Pump H463 **50**



- Lightly grease the nipple **(1)** of the pump

Wheels **50**

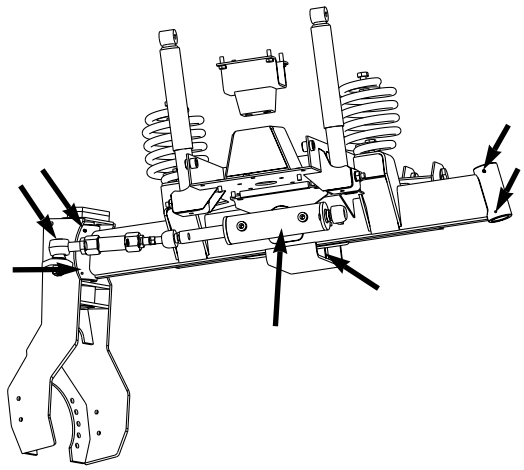
- Re-tighten wheels bolts and studs using a torque wrench after an **1** hour then **2** hours.

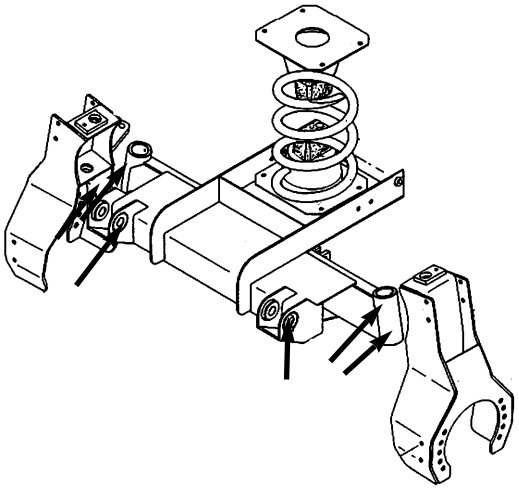


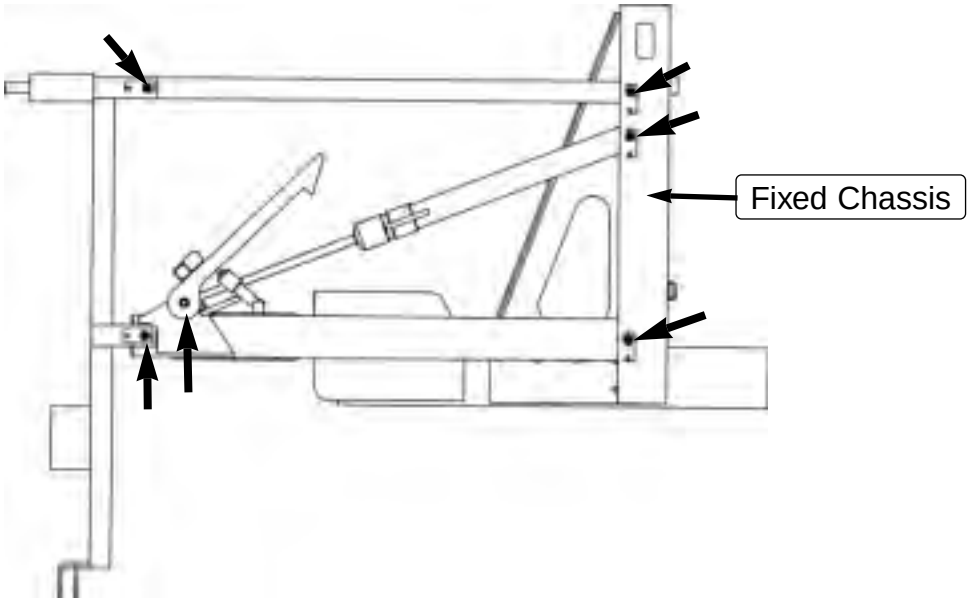
ALPHA **2500**	bar
270/95 R32 (11,2 R 32)	4
380/85 R24 (14,9 R 24)	2,4
420/85 R24 (16,9 R 24)	2,4
540/65 R24	1,6
340/85 R28 TRAKER (13,6R 28)	1,6

- Check the tyre pressure wich should be in accordance with the following table :

Chassis and Boom **50**





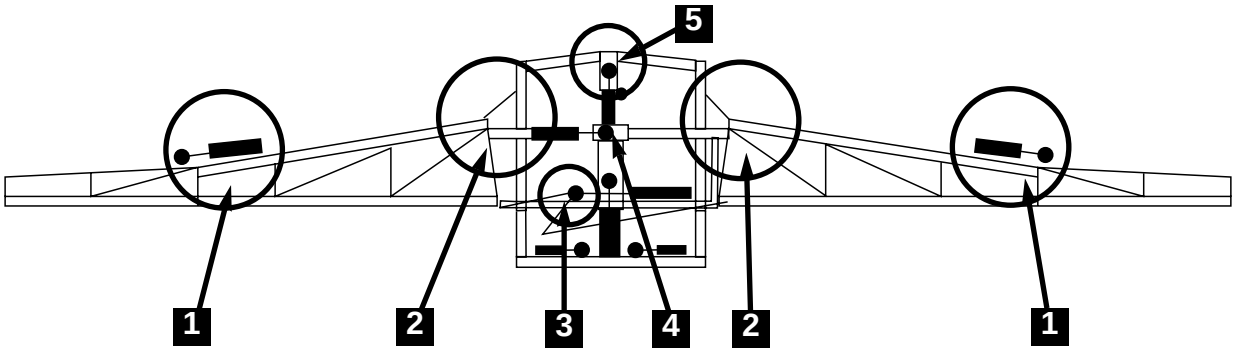


- Grease all grease nipples in break-away

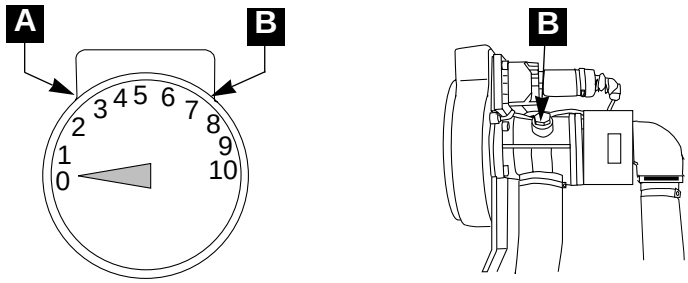
Greasing can be different following the boom model

- Grease joint of the outer sections **(1)**
- Grease joint and ram of the left and right variable geometry **(2)**
- Grease joint of the inner sections pos. **(3)**
- Grease the central slide of the boom **(4)** and **(5)**.

.



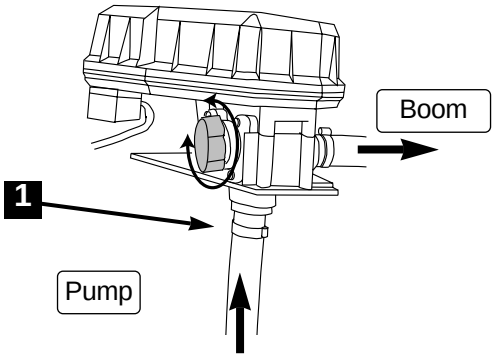
DG Regulating Valve **50**



- Place the valve in position ***0***
- Remove plug **B** and replace with the lubrificator **A** located on the other side of the valve .
- Lubricate very lightly the spherical part of the valve. Excessive lubrication may lead to clogging of the spray nozzles.
- Replace the lubricator and plug in their original position.

Lubrificate the regulating valve before a lengthly stoppage

TVI REMOTE VALVE **50**



- Remove the plug **(1)** from the valve.
- Spray aerosol lubrificant on to the spherical valve, turning the valve at the same time.
- Check for correct rotation of the valve. Failing this, replace the seals.
- Re-fit the plug to the valve
- Remove the plug **(2)** to cleaning the piping

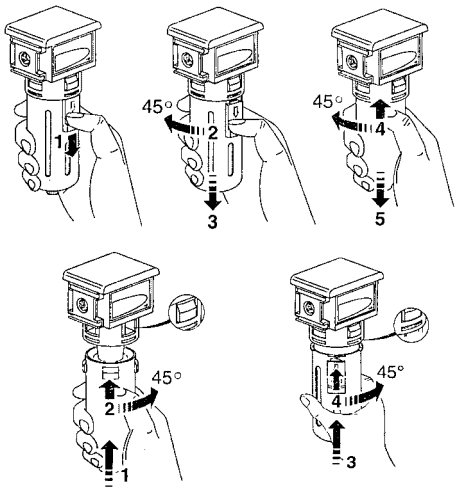
The torque of the electric motor of the remote valve is very strong. Never place your finger or any part in the stainless steel ball.

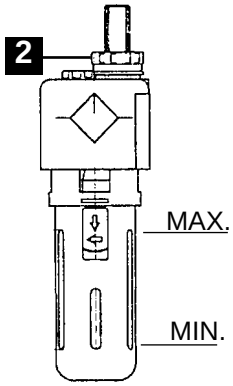
Gently lubrificate the remote valve before a lengthly stoppage

5-3-5 EVERY 100 HOURS

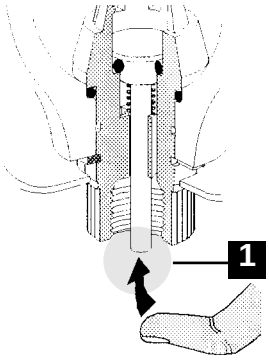
Filter-Lubrificator Unit **100**

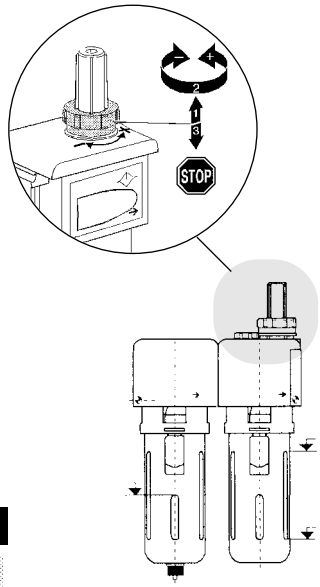
- Depressurized the lubrificator before filling the bowl





Oil reference : ***6HU8000***



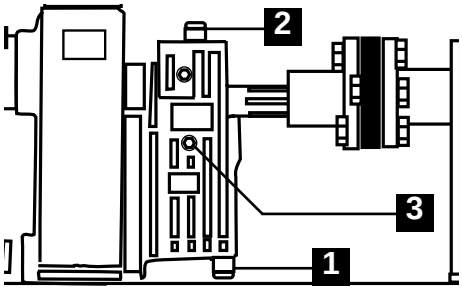


- It a semi-automatic drain (Open when depressurized). Can be operated manually by pressing plunger ***(1)*** when bowl is under pressure.
- Check the oil flow rate : 1 drop of oil per 4/5 On/Off spray operating unit. Adjustment by means of knob ***(2)*** with type ‘’Pull-Turn-Push’’ locking system.

Bowls with guard of polycarbonat, never use a solvant, use an alkaline solution (soapy water) for cleaning

5-3-6 EVERY 250 HOURS

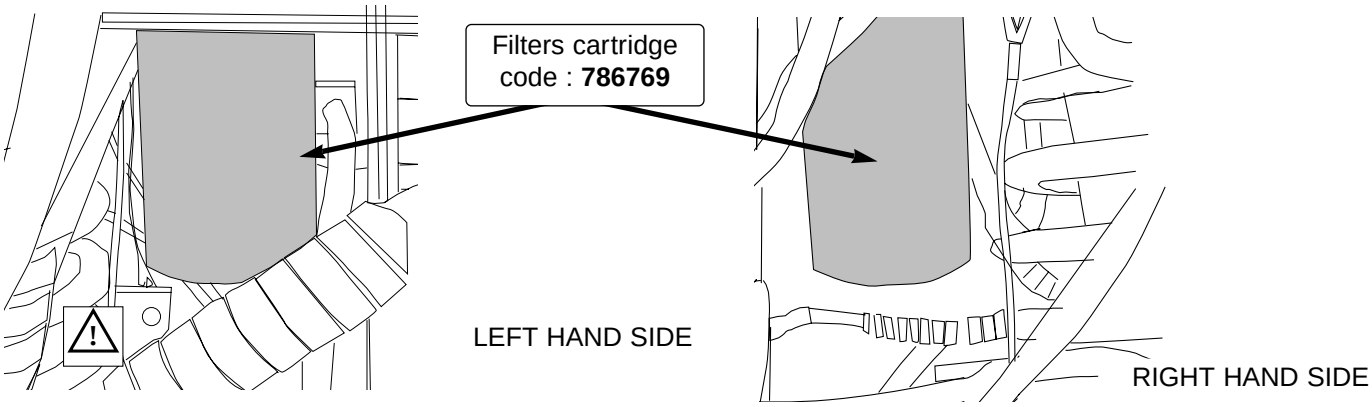
Pump step-up gear case oil level **250**



Gear box lubrificant :”Hydraulic oil” **80W90**
Capacity : **1** l
- Unscrew the draining plug **(1)** and re-fit it.
- Filling the new oil **(2)**.
- Check the oil level by means unscrew the oil level cap **(3)**

Hydraulic Filters **250**

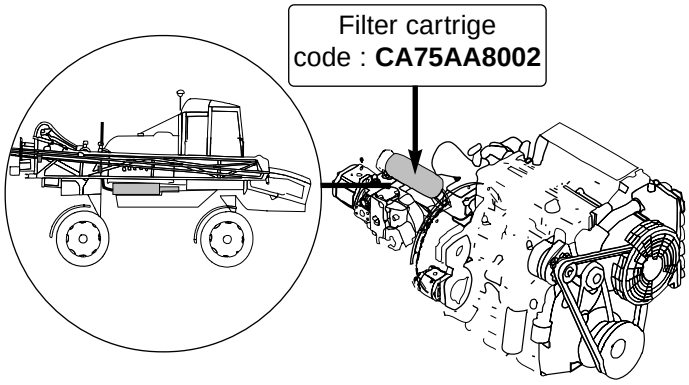
It is essential to use the marker's genuine hydraulic filters



The filter cartridges ***(1)*** are located on the each side of the machine.
- Unscrew the filter cartridges
- Lightly oil the joint.
- Screw on the new filter cartridge and turn 1/2 turn by hand

The filter cartridge is located on the hydrostatic pump

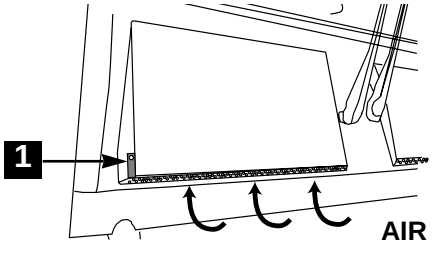
- Unscrew the filter cartridge located on the hydrostatic pump
- Lightly oil the joint
- Screw on the new filter cartridge and turn 1/2 turn by hand
- Check for leaks after re-assembly

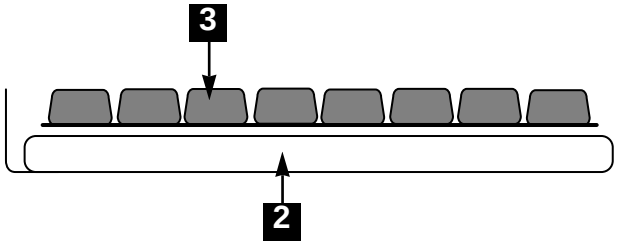


Carbon Cab Filters **250**

This is located above the cab. Perfect operational condition of the filtration system is of pr mary importance for the user's health.

Frequency of replacement must be increased in the case of intensive and prolonged use

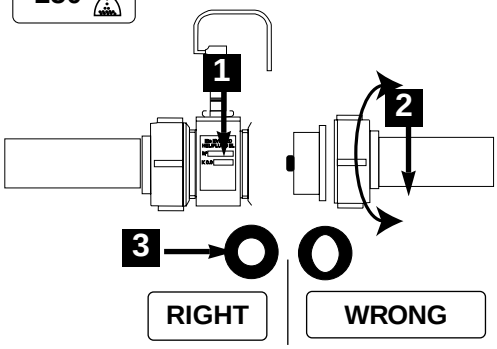




The carbon cab filters are located on either side of the cab close to the windscreen . Act as follows :
- Unscrew the fixing screw **(1)**
- Pull out the carbon filter cover **(2)** to extracting the carbon filter **(3)**
- Replace the new carbon cab filters (reference : **278238**) and refit the assembly

It is essential to replace the <u>two</u> carbon cab filters simultaneously

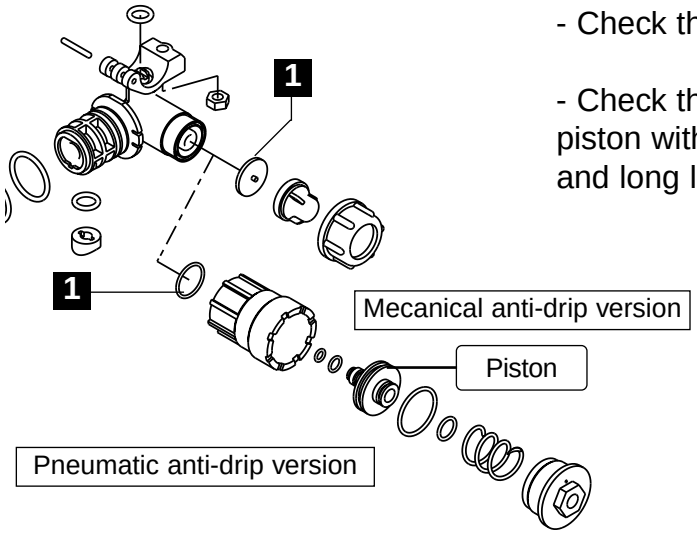
Héliflux flowmeter **250**



- Remove the flow meter by unscrewing the two nuts **(1)**.
- Pull out the bearing with the rotor **(2).**
- Check the condition of the bearing bushes **(3)**. Never lubricate the internal parts of the flowmeter
- If necessary, replace the bearing bushes For this purpose :
- Remove the bushes from the bearing
- Carefully clean the bearings with compressed air if necessary
- Fit the new bearing bushes by pushing them with your thumb.
- Re-fit the rotor on the first bearing and then on the second bearing.

N.B. : Opening the valves too quickly can damage the flow meter. Make sure that the flow in the piping increases gradually

Pentalets **250**



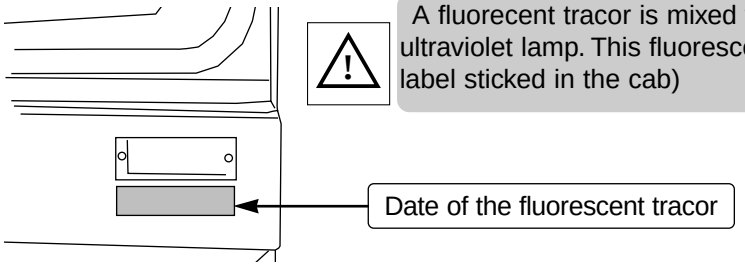
- Check the diaphragms **(1)**

- Check the 'Pentalet', if necessary lubricate very lightly the piston with a special grease for synthetic (plastic/plastic) and long lige grease (pneumatic anti-drip version)

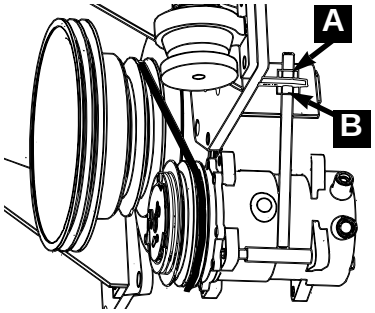
5-6-7 EVERY 500 HOURS

Air conditioning **500**

If the air conditionning fails, it is preferable that the air conditioning unit be inspected for leaks and refilled by a specialist as soon as possible.



A fluorecent tracor is mixed with refrigerant. Leaks of gaz is determined with a ultraviolet lamp. This fluorescent tracor is available for a during 5 years (see the label sticked in the cab)



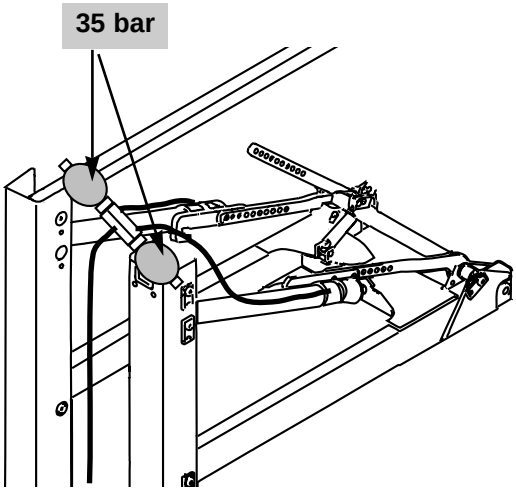
Check the tension of the air conditioning belt, for this purpose :

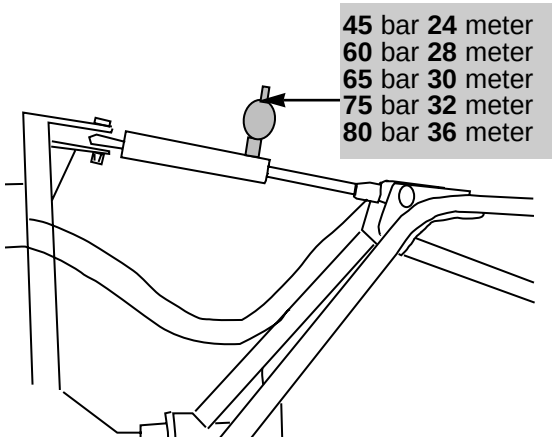
- Unscrew the locknut **(A)** of the belt tightener
- Screw the nut **(B)** to tension the belt and re-fit the locknut.
- Check the tension after **15** mn use.

5-3-8 EVERY 1000 HOURS OR ANNUAL

Nitrogen accumulator **1000**

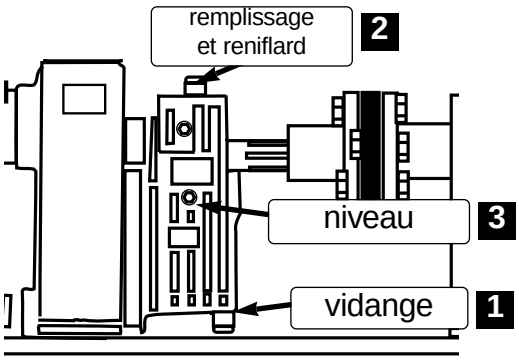
Please contact a HARDI-EVRARD concessionaire for maintenance.
For your own safety as well as the others , the user must not remove the nitrogen reservoir, nitrogen tube valve on the reservoir and oil filling plug.
Before maintenance lower completely the boom.





Draining the step-up gear case

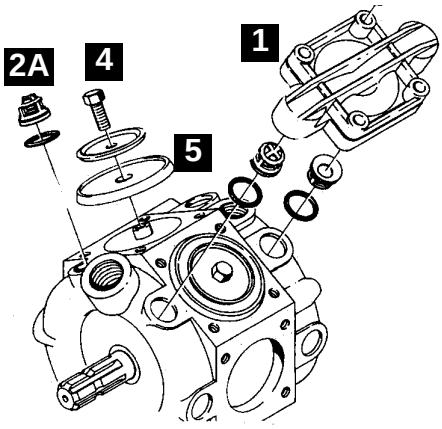
1000



- Unscrew the draining plug **(1)** and re-fit it.
- Filling the new oil **(2)**. (Hydraulic oil" **80W90**, capacity 1 l)
- Check the oil level by means unscrew the oil level cap **(3)**
- Remove the pump and check the straight wheel with blades and the flange fixing with screws.
- Position the pick-up **0,4** mm from the straight wheel with blades

Valves and diaphrams

1000



Valves

- Remove valve cover **(1)**.
- Before changing valves note their orientation so they replaced correctly. A spécial valve **(2A)** is used
- It's recommended to use new gaskets **3** when changing or checking valves

Diaphrams

- Remove the diaphram cover **(4)**
- Replace the diaphrams if fluids have reached the crankcase
- Re-assembly with the torque setting : **90** Nm

Battery care

1000

To obtain a long life of the battery and ensure that the machine always is ready for use, the battery should be recharged regularly.
To prevent any risk of damage to electrical and electronic components or cause severe personal injury , take the following precautions:

WARNING

- Wear rubber gloves and goggles
- Never disconnect the battery terminals while the engine is running
- Never charge a frozen battery, it may be explode (minimum temperature : 16°).
- Check the density of electrolyte. (see DEUTZ notes).
- Check the polarities before reconnecting the terminals.
- Disconnect the terminals of the battery and place the latter in a well ventilated place, free from any source of sparks and flames (no smoking), before charging it.
- Disconnect the battery terminals and the alternator before to carry out electric welding on the machine
- A defective battery can damage electronic equipment
- Clean the battery terminals if necessary

Cab

The roof of the cab must be cleaned carefully. You can use a sponge or chiffon, soak and rub very gently the fiber
Use carefully : Potassuim chloride, ammoniac.
Prohibited products : acéton, concentrated acid, trichloréthylen, white spirit, toluen

Spots	**Cleaning recommended**
Colour ink (Ball-pen ...)	Stain remover for Woven / Water solution+ use lightly Potassuim chloride
Blood	Hydrogen peroxide 10 vol.
Vegetal spot (coffee,wine, flowers...)	Hydrogen peroxide 10 vol. / Ammoniac diluted to 15%
Spot of oil ,Spot of grease, dirty oil, tar ,Fats	Use lightly stain remover degreaser Water +soap (mir...) / Spray aerosol stain remover for carpet
Mud	Aerosol stain remover for carpet / water+soap
Stick / adhesive	Stain remover for ahesive
Rust	Chlorhydric acid dilued to 5% and rinsing with water

Theses recommendations are indicatives and no exhaustives. Use others cleaning products after a test beforehand.

6- GARAGING

This chapter deals with the actions to be taken for the purpose of garaging the sprayer in the winter period. They must be followed scrupulously as the guarantee does not cover damage caused by freezing

6- 1 OFF-SEASON STORAGE

- Protect the electrical components (alternator,branch box, connectors, regulating valve) from splashes of water.
- Clean the sprayer completely - inside and outside. Make sure that all valves, hoses and auxiliary equipment have been cleaned with detergent and flushed with clean water afterwards, so no chemical residue is left in the sprayer
- Renew possible damaged seals and repair possible leaks.
- Empty the sprayer completely and let the pump work for a few minutes. Operate all valvess and handles to drain as much water off the spraying circuit as possible. Let the pump run until air is coming out of all nozzles. Remember to drain the rinsing tank also.

- Pour ***80*** to***100*** litres of water with antifreeze into the main tank. See the antifreeze instructions to obtain sufficient protection from freezing.
- Spray for a few moments at the nozzles to protect the nozzles.
- Engage the pump and operate all valves and functions on the Manifold, operating , filler etc. allowing the anti-freeze mixture to be distribued around the entire circuit. Open the operating unit main on/off valve and distribution valves so the anti-freeze is sprayed through the nozzles as well. The anti-freeze will also prevent O-rings, seals, diaphragms etc. from drying out.
- Lubricate all lubricating points according to the lubricating scheme - regardless of intervals stated.
- Lightly lubricate the spherical part of the valve. Excessive lubrication may lead to clogging of the spray nozzles. See chapter ***6***.
- Protect the valve from freezing.
- When the sprayer is dry, remove rust from possible scratches or damages in the paint and touch up the paint.
- Remove the glycerine-filled pressure gauges and store them frost free in vertical position.
- Apply a thin layer of anti-corrosion oil on all metal parts. Avoid oil on rubber parts, hoses and tyres.
- All electric plugs and sockets are to be stored in a dry place. Remove the Hardi Nova control box and display from the cab and store them dry and clean (in-house).
- Apply grease on all hydraulic ram piston rods which are not fully retracted in the barrel to protect against corrosion.
- Chock up the wheels, to prevent moisture damage and deformation of the tyres.
- Fill up completely the fuel tank to prevent condensed water into the tank.
- Clean the engine air filter
- Cut the battery cut-off and disconnect the battery.
- Fill completely the diesel oil tank to prevent the condensed water in the tank.
- Place the mobile unit under cover

6- 2 PREPARATION AFTER OFF-SEASON STORAGE

After a storage period the sprayer should be prepared for the next season the following way :

- Connect again the battery.
- Adjust the tyre pressure.
- Wipe off the grease from hydraulic ram piston rods.
- Fit the pressure gauges again.
- Connect the Hardi Nova control boxes.
- Drain oil and coolant of the engine, check V-belts tension, and check /replace engine air filter
- Replace carbon cab filters.
- Replace all hydraulic filters and drain the hydraulic oil tank.
- Check the air conditioning.
- Check all hydraulic and electric functions.
- Check the flow meter
- Drain and rinse the spraying circuit with clean water.
- Check the spraying filters and nozzles.

7- FAULTS IN OPERATION

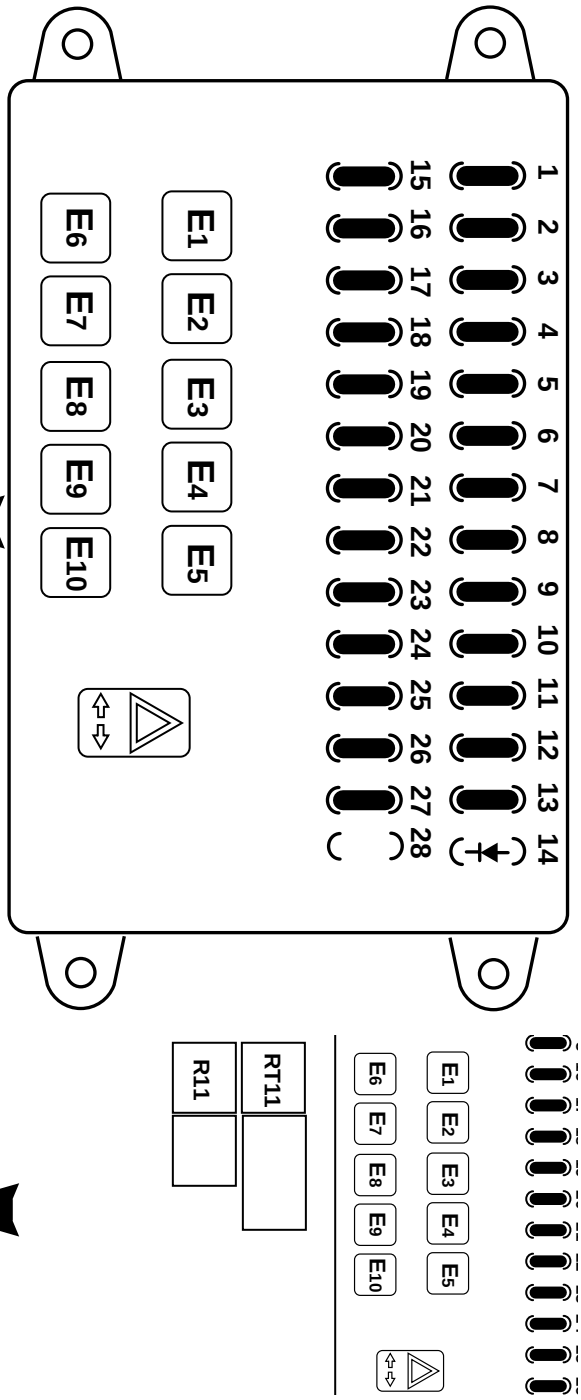
This chapter lists the hazards which might arise in the course of using the sprayer. Some components can be repaired by the user. However, other elements can be repaired only by your concessionaire.

7-1 ELECTRIC CIRCUIT

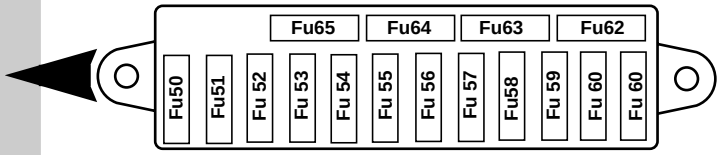
7-1-1 FUSES AND RELAY

1	10A	Clutch air conditioning compressor
2	20A	Air conditioning condenser motor
3	25A	Air conditioning evaporator
4	15A	Rear working lights
5	7,5A	Windscreen washer motor
6	7,5A	Front Windscreen wiper motor
7	15A	Fan control (heater)
8	15A	Front working lights
9	2,0A	Cab light (overheat)
10	10A	Car radio
11	20A	Boom working lights (optional)
12	3,0A	Front hydr. motor displacement control
13	3,0A	Rear hydr. motor displacement control
14	**(**6,0A)	Diode for directional indicators
15	7,5A	Preheating engine control
16	7,5A	Advance unit
17	7,5A	hydr. motor displacement control & parking
18	7,5A	Pneumatic seat
19	7,5A	Oil hydraulic alarm- pressure switch for stop lights engine accelerator control- Engine temperat. +
20	7,5A	4- wheels steering unit
21		Not used
22	7,5A	Spray pump control
23	2,0A	Road safety (hydraulic boom & 4-wheels drive)
24		Not used
25	7,5A	Engine accelerator
26	5,0A	Agitation - no agitation valve
27	3,0A	Working lights (optional)
28	7,5A	Ladder control

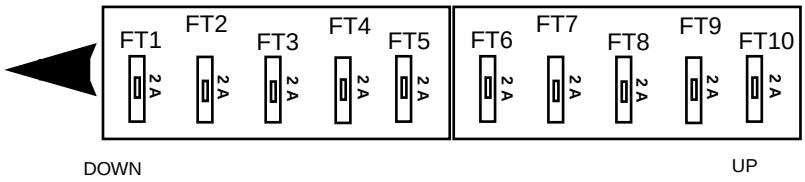
E1	Clutch air conditioning compressor relay
E2	Air conditioning condenser relay
E3	Accelerator relay
E4	Accelerator relay
E5	Battery cut-off relay
E6	
E7	
E8	Working lights relay
E9	Safety start relay
E10	Hydraulic oil level alarm relay
g c	Flasher unit
RT11	Intermitant windscreen wiper relay
R11	Windscreen wiper relay



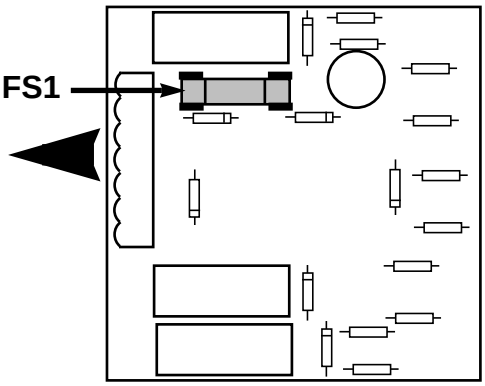
Fu50	7,5A	Electrical stoppage of engine
Fu51	7,5A	Warning lamp and back lights switches
Fu52	15A	Warning beacon
Fu53	7,5A	Right direction indicator lights
Fu54	7,5A	Horn
Fu55	7,5A	Flaher unit control
Fu56	7,5A	Right position lamps
Fu57	7,5A	Left position lamps
Fu58	7,5A	Right head lights Dipped beam
Fu59	7,5A	Left head lights- Dipped beam
Fu60	10A	Head lights- Main beam
Fu61	7,5A	Left direction indicator
Fu62	20A	Multi-function switch and warning lights
Fu63		Hardi Nova +12 V electronic
Fu64		Hardi Nova +12 V power
Fu65		Not used



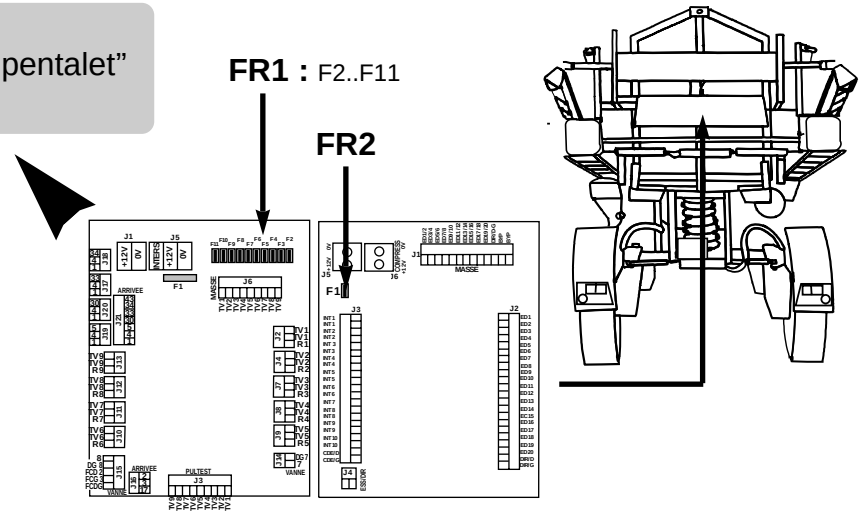
FT1	2,0A	Regulating valve
FT2	2,0A	Regulating valve
FT3	2,0A	Remote valve n°1
FT4	2,0A	Remote valve n°2
FT5	2,0A	Remote valve n°3
FT6	2,0A	Remote valve n°4
FT7	2,0A	Remote valve n°5
FT8	2,0A	Remote valve n°6
FT9	2,0A	Remote valve n°7
FT10	2,0A	Remote valve n°8



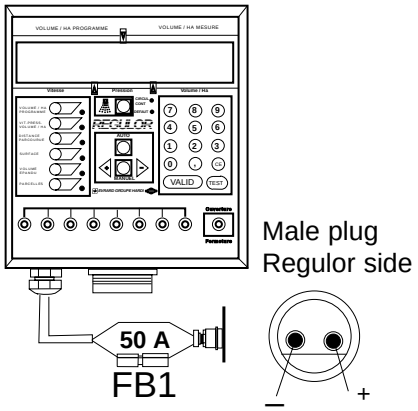
FS1	1,0A	Parking brake and
(slow blow fuse)		displacement control



FR1	10A	Remote valves
	2,0A	solenoid ‘’Pneumatic pentalet”
FR2	10A	Hydraulic distributors



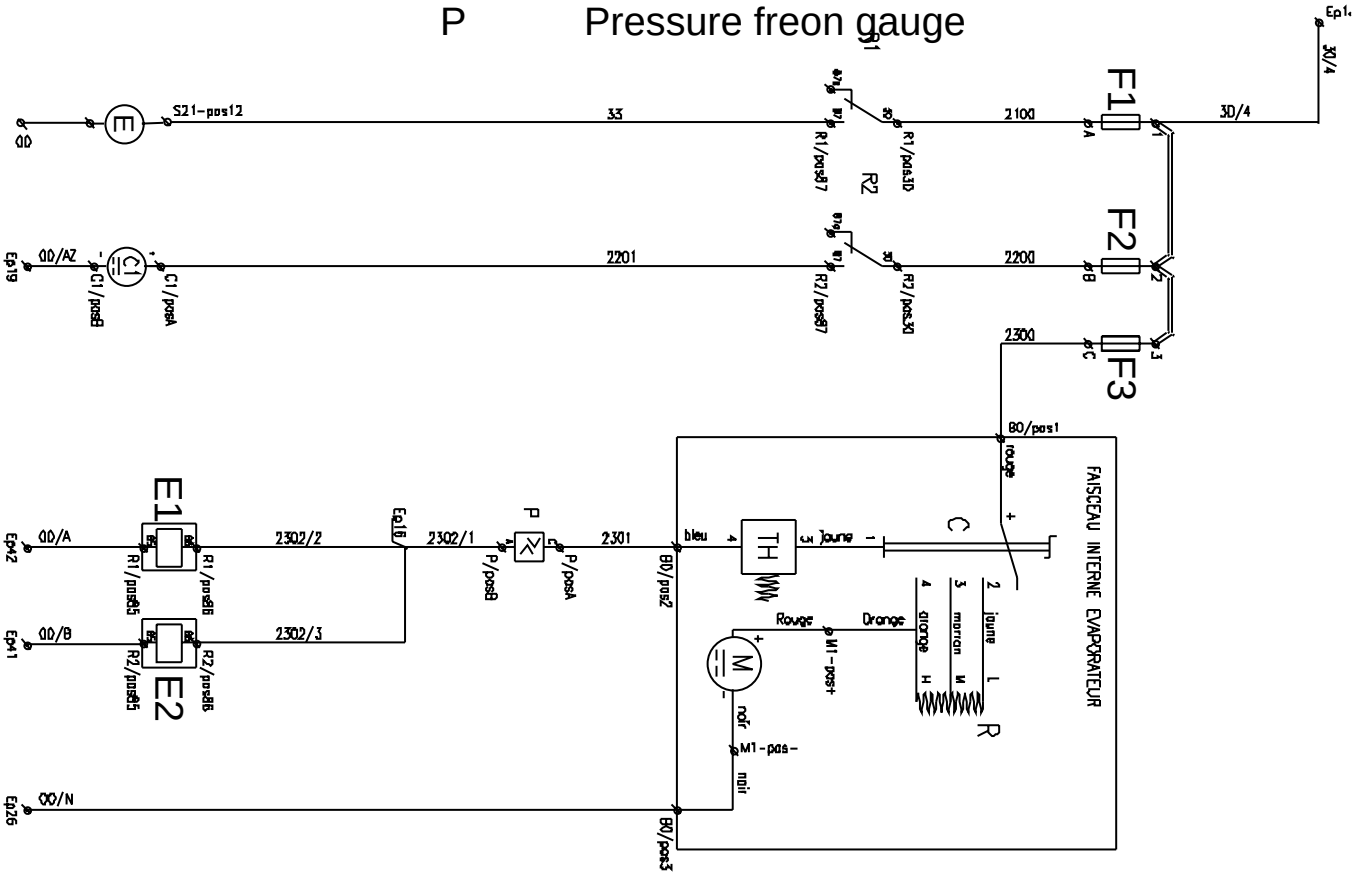
FB1	50A	Power of Regulor 4



7-1-2 PRINCIPLE WIRING DIAGRAM

7-1-3 AIR CONDITIONING WIRING DIAGRAM

F1	Compressor fuse
F2	Condenser fuse
F3	Evaporator fuse
E1	Clutch air conditioning relay
E2	Condenser relay
C1	Condenser motor
C	Air conditioning speed control switch
TH	Thermostat
M	Evaporator motor
R	Resistor
P	Pressure freon gauge



PROBLEMS	SOLUTIONS
The compreesor does not work The condenser do not work	- Check that the thermostat works correctly - Check the relay *(E1)* and fuse *(F1)* of the compressor clutch - Check the relay *(E2)* and fuse *(F2)* of the condenser controller - Check that the ''binary" pressure works correctly. - Check the gas pressure and that the refrigeration circuit is air tight - Clean the condenser.
The evaporator do not work	- Check fuse *(n°3)* - The cabin fan does not work

7-1-4 ENGINE

PROBLEMS	SOLUTIONS
Engine is too warm	- Check engine coolant - Clean the engine cooler
il pressure warning lamp goes on **STOP IMMEDIATELY THE ENGINE**	- Checl the engine oil level - Check the electrical circuit
Battery charge warning lamp goes on	- Check the terminals of the battery - Check the alternator
No electric current	- Check battery charge and connections - Check the battery cut-off
Engine does not start	- Place driver's control lever in neutral position - Check the neutral position switch - Check the starter motor
The engine is turns over but does not start	- Check level of fuel in tank an diesel oil filters - Check pre-heating fuse *(n°15).* - Check pre-heating plug - Check the stopping unit
The engine runs but does not accelerate	- Check fuse *(n°25)* and accelerator unit

7-1-5 FOUR-WHEELS STEERING

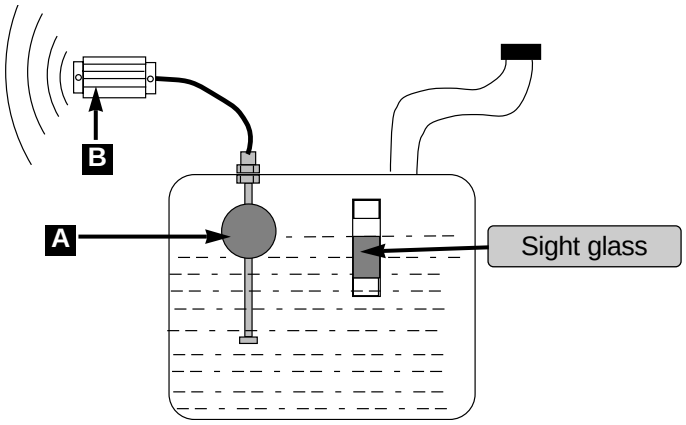
PROBLEMS	SOLUTIONS
No signal from inductive sensor	- Check the fuse *(n°20)*. - Check electrical circuit and control unit
Faulty front or rear inductive sensor	- Check distance between disc and sensor - Check the inductive sensor - Check electrical circuit and control unit
Faulty of hydraulic distributor control (the LED on the coil goes out)	- Check the 2 red warning lamp are lights up - Check the pedal - Check the hydraulic distributor - Check electric circuit and control unit
Faulty of hydraulic distributor (the LED on the coil goes on)	- Check the hydraulic pressure *(130 bars)*. - Replace the hydraulic distributor.

7-2 HYDRAULIC CIRCUITS

7-2-1 OIL RESERVOIR ALARM

A oil level indicator **(A)** is situated at the top of the hydraulic reservoir. If audible alarm buzzer a located under the instrument panel indicates a leak of oil in the hydraulic system

- Stop immediatly the engine.
- Check the leak of the hydraulic circuit.
- Fill the reservoir with the same characteristic hydraulic oil.



7-2-2 TOWING

Prior to any towing of the mobile unit as aresult as a result of failure of the engine or hydraulic circuit, it is essential to :

1- RELEASE THE FOUR BRAKES OF THE HYDRAULIC MOTOR
2- CANCEL THE SETTING OF THE HIGH PRESSURE VALVE OF HYDROSTATIC PUMP

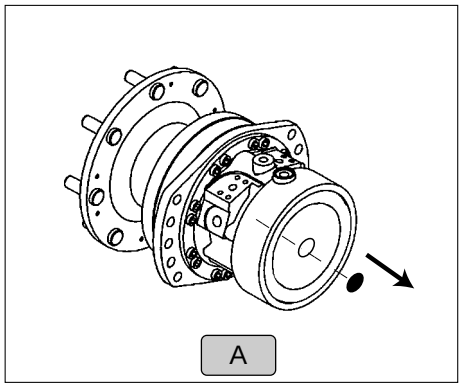
In order for the mobile unit to be towed in case of problems, use the on-board kit placed in the cab, i.e. :
4 M16 threaded rods ref. **A.**
4 release bars ref. **B.**
4 M16 nuts ref. **C.**
1 box spanner, size 24 mm ref **D.**
1 open-ended spanner, size 19 mm ref. **E.**
1 hexagonal spanner ref. **F.**
(size 5 mm for 90R100 / size 8 mmfor 90R130).

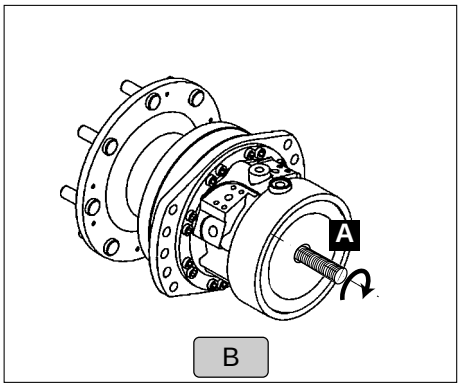
Action on wheel motors

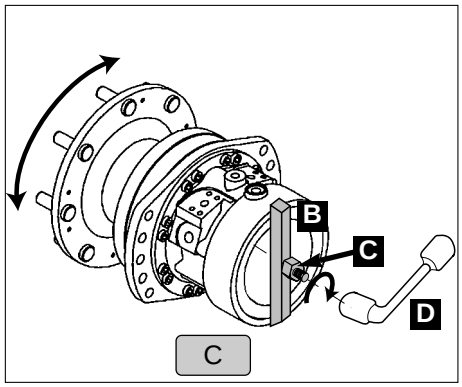
A - On each wheel motor, remove the centre rubber plug and fit parts refs. 1,2 and 3

B - Position the M16 threaded rods on the hydraulic motor

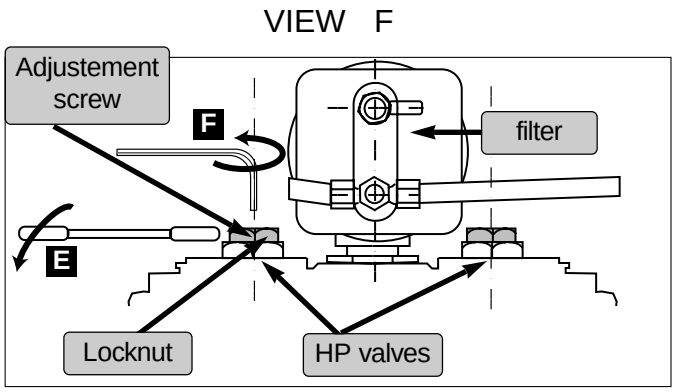
C - With release bar, ref.3, coming up against the wheel motor, turn nut, ref.2, to free the wheel.

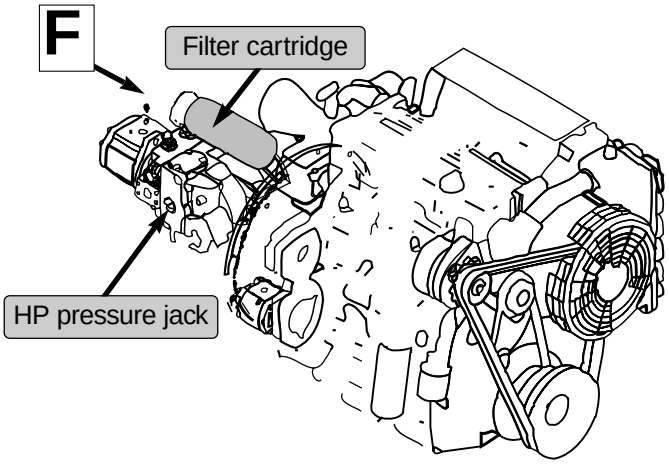






Action on the advancing hydrostatic pump





D: Slacken locknuts ref.**E.**

E : Completely unscrew the 2 Hc bolts situated in the safety nuts to cancel the setting of the valves (size 5 spanner 90R100 / size 8 spanner 90R130).

After this 2 operations, the mobile unit can be towed a distance of ***25 to 50 metres maximum*** and for a speed of ***5 km/h maximum)***.

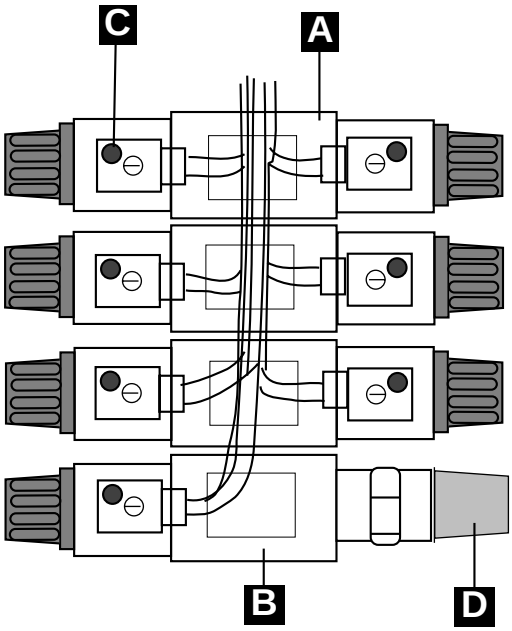
After this, the valves must be set at 420 bars, to do this :

- Position a hydraulic pressure gauge to HP jack ***(600 bars)*** .
- Remove the parts and put them back in the on-board kit.
- Activate the parking brake.
- Start the engine and move the advance lever gently towards.
- Adjust the high pressure valve to obtain ***420 bars*** maximum.
- move the advance lever to neutral position.
- screw the locknut.
- Set the advance lever to reverse.
- Adjust the second high pressure valve to obtain ***420 bars*** maximum.

IN THE EVENT OF FAILURE OF HYDROSTATIC CIRCUIT, ACTIVATE THE PARKING BRAKE

PROBLEMS	SOLUTIONS
The mobile unit is moving when the advance lever is on neutral position	- Adjust the neutral position switch (do not adjust the connecting rod between the joystick lever and the controller). - Check the mechanical neutral position of the hydrostatic pump.
The machine does not moving	- Check fuse *(n°16)*. - Check the parking brake is deactivate - Check by means the manual servo - Check the feeder pressure *(about 30 bar)*. - Check the high pressure circuit
The speed of mobile unit is unstable	- Check the battery - Check the voltage control unit - Check hydraulic filters
The speed of mobile unit is too slow	- Check the H.P. valves - Check the feeder pressure - Check leak of internal componants (hydrostatic pump, motors, etc...).
Hydraulic circuit too warm	- Check the oil level in the reservoir - Clean the oil radiator (see engine manual). - Check H.P. valves and leak of internal componants
No control of the hydraulic boom functions	- Check if the safety road switch is deactived - Check manually distributor, by pressing the manual control of the distributor and by-pass.
1- Faulty hydraulic system	In this case the LED of distributor and by-pass are lights up : - Check the pressure, the restrictor of the ram, the coil of the distributor.
2- Faulty of electrical system	In this case the LED of distributor and by-pass are lights off : - check battery, fuse, the control switch - Check the electrical circuit.

7-2-3 BOOM CONTROL DISTRIBUTOR



A Boom control distributor

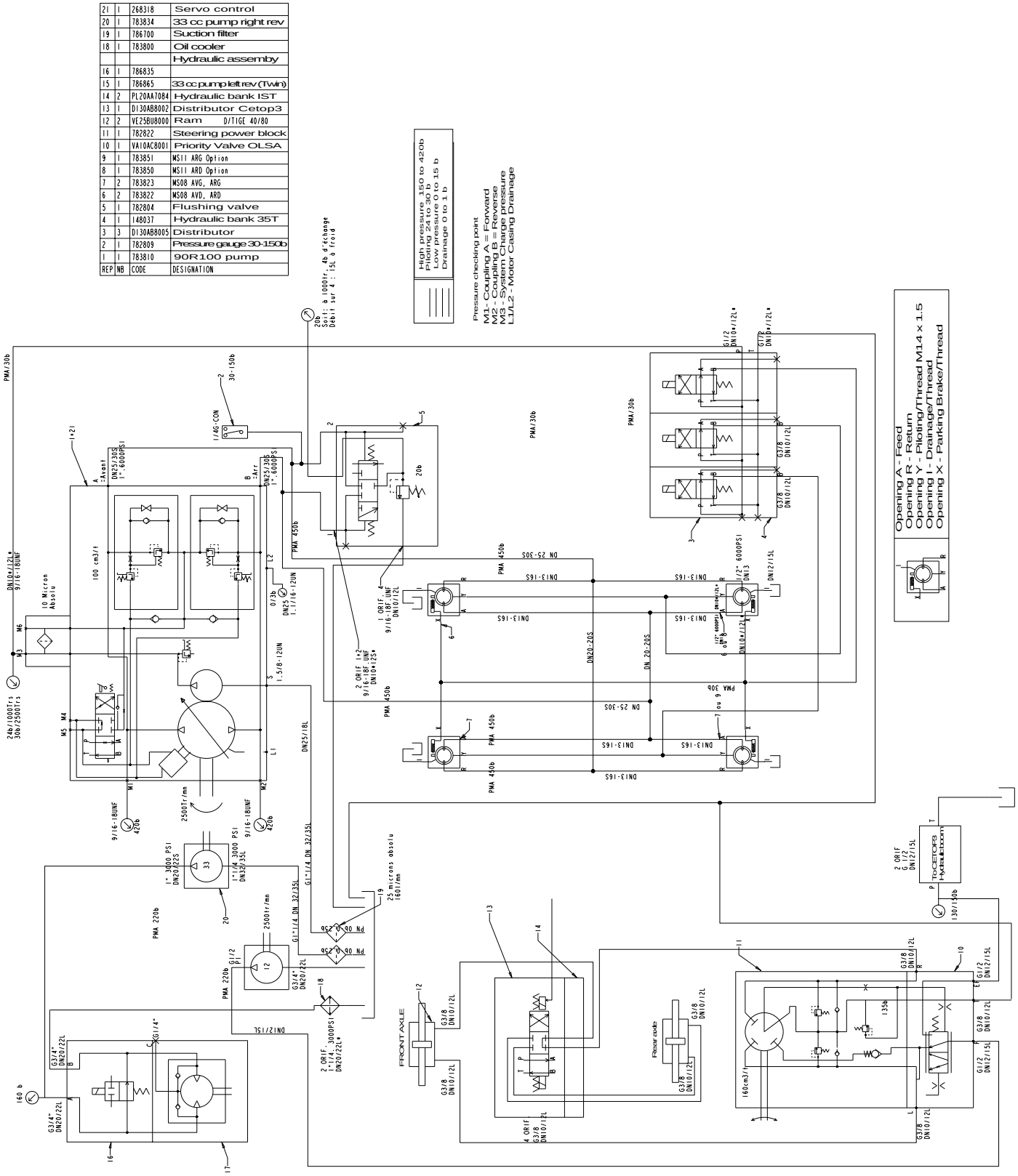
B Boom control by-pass

C Warning control Led

D Boom control limiter (**180 bar maxi**)

7-2-4 HYDRAULIC CIRCUIT

REP	NB	CODE	DESIGNATION
21	1	268318	Servo control
20	1	783834	33 cc pump right rev
19	1	786700	Suction filter
18	1	783800	Oil cooler
			Hydraulic assemby
16	1	786835	
15	1	786865	33 cc pump left rev (Twin)
14	2	PL20AA7084	Hydraulic bank IST
13	1	DI30AB8002	Distributor Cetop3
12	2	VE25BU8000	Ram D/TIGE 40/80
11	1	782822	Steering power block
10	1	VA10AC8001	Priority Valve OLSA
9	1	783851	MSII ARG Option
8	1	783850	MSII ARD Option
7	2	783823	MS08 AVG, ARG
6	2	783822	MS08 AVD, ARD
5	1	782804	Flushing valve
4	1	148037	Hydraulic bank 35T
3	3	DI30AB8005	Distributor
2	1	782809	Pressure gauge 30-150b
1	1	783810	90R100 pump



7-3 SPRAYING CIRCUIT

7-3-1 PUMP DOES NOT PRIME

PROBLEMS	SOLUTIONS
Incorrectly positioned valves Intake filter blocked Air taken in pump	- Check positions of valves - Clean filters - Check connections and seals. - look into pump maintenance (adjustment) or air taken in at pump - re-fit plugs

7-3-2 FOAM FORMS

PROBLEMS	SOLUTIONS
Excessive agitation	- Use an anti-foam additive - Reduce the speed of pump - Air taken in the piping - Do not use agitation

7-3-3 NO ADMIXTURE OF PRODUCTS

PROBLEMS	SOLUTIONS
Incorrectly positioned valves	- Check positions valves.
Insufficient pump delevery	- Accelerate the pump - Clean suction filter
Suction filter clogged	- Check connections and seals

7-3-4 INCORRECT SPRAYING

PROBLEMS	SOLUTIONS
Suction and delivery filters clogged	- Clean filters
Faulty pump	- Check turbine and adjustments.
Crushed piped	- Replace pipe
Foreign body at suction end	- Clean suction circuit
Air taken in	- Tighten the corresponding connections - Check the pipe porosity. - Check seals - Check filters - Check the valves - check nozzles wear- check spray pressure gauge - check speed rotation pump
Pressure drop	- Position valve N° 3 on "No agitation"
Pressure increase	- Nozzles blocked- filters blocked - Check the pressure gauge and the pipe of pressure gauge.

7-3-5 NO SPRAYING

PROBLEMS	SOLUTIONS
Pump does not prime	- See section ‘’Pump does not prime”
No pressure	- Check positions of valves - Check filters (suction and delivery). - Inappropriate nozzles - Check condition of safety valve - Check the calibrated nozzles
Remote valves not working	- Check the electrical supply (voltage and reversed polarities) - Check fuses *(FT1..FT8)* and *(FR1 FR11)*. - Check for mechanical jamming of valves.
Nozzles blocked	- Clean nozzles and spray circuit

7-3-6 VOLUME/HA CANNOT BE OBTAINED

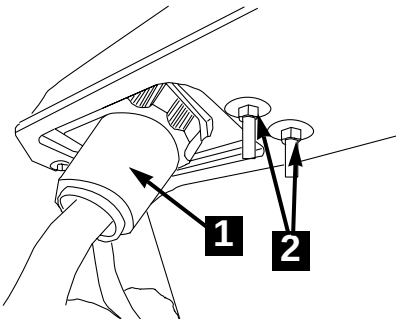
PROBLEMS	SOLUTIONS
Faulty limit switch of the regulating valve	- Adjustment of the manual ‘’volume-regulating” valve
Filters	- Clean filters - Match the filter mesh to the spraying
Incorrect volume/ha	- Adjust the machine speed - Check programming of the REGULOR IV. - Check flow meter ans speed sensor
Inappropriate nozzles	- Select semi-continuous ou continuous circulation - Check the semi-continuous ou continuous valve - Match the nozzles to the flow per ha

7-3-7 REGULOR

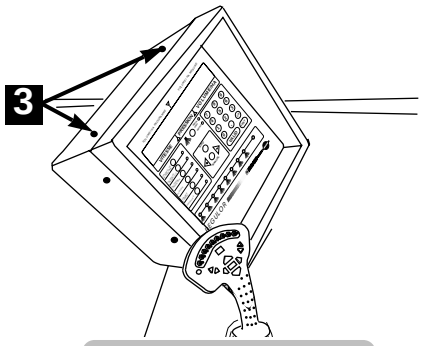
PROBLEMS	SOLUTIONS
No display	- Check the electrical circuit, minimum of 12 V and fuse *FB*1.
No speed information Error in distance travelled	- Check Regulor unit fuse - Check programming - Check electrical circuit, minimum of 12 V - Check sensor/disc distance. (See Test 41). - Replace the wheel sensor. - Check for wheel distortion. (See Test 41). - Adjust Test 3 , if error is less 10 %.

PROBLEMS	SOLUTIONS
Error in delivery/ha Error in volume spray	- Check programming (Test 1,3,4,9,20..29) - Ckeck condition of flow meter (unit value and bearing bushes - Check /replace flow meter sensor.
Other faults	- Consult your dealer

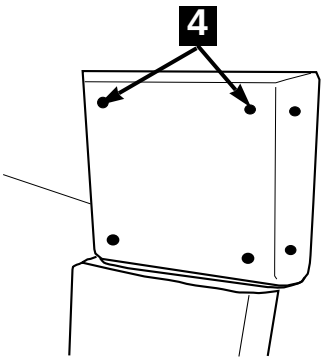
Removal of Regulor unit



Inside view



Inside Cab view



Back view of Regulor

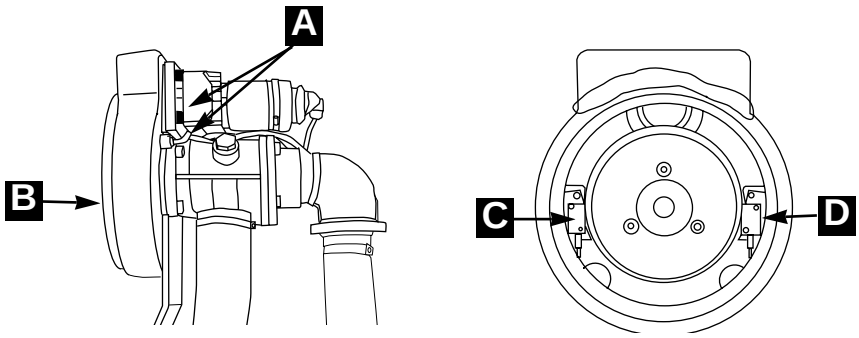
- Unscrew the connector **(1)**
- Unscrew the 4 nuts **(2)**
- Undo the fixing screws **(3)** and **(4)**
- Remove the Régulor unit from the internal support

7-3-8 DG4 REGULATING VALVE

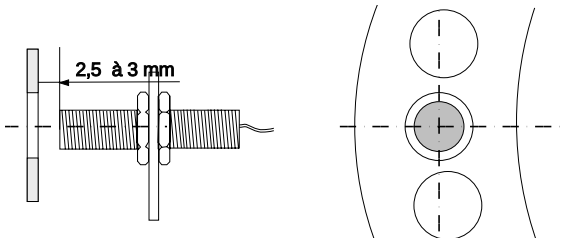
PROBLEMS	SOLUTIONS
Mechanical jamming	- remove and lubricate
Faulty regulating valve	- Check fuses - Check limit switch **C** and **D** - Check electrical connections

USE THE REGULOR IV IN MANUAL MODE

Remove **ref.A** the motor of the regulating valve by using a hexagonal spanner,size 6 mm.
Position the index **ref.B** of the regulating valve, by using a spanner, size 19 mm.



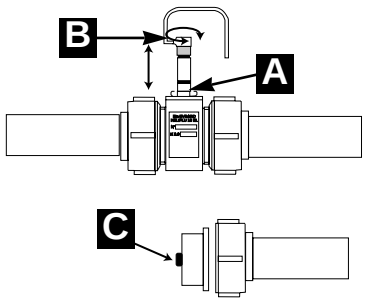
7-3-9 WHEEL SENSOR



- Check sensor / disc distance, 3mm maximum
- Check for disc distortion.
- Check for wheel distortion (wheel bearing)

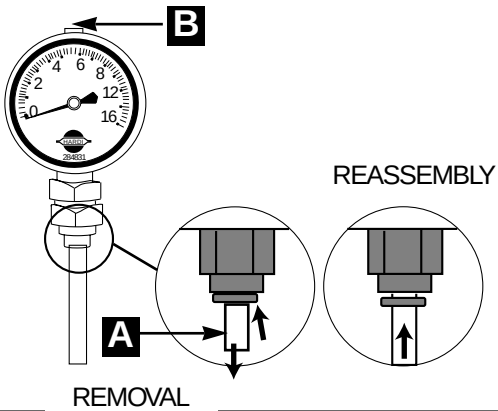
7-3-10 HELIFLUX FLOWMETER

- Position correctly the sensor in the flow meter **(A)**
- Check electrical plugging **(B)**
- Check the bushes **(C)**



7-3-11 PRESSURE GAUGE

PROBLEMS	SOLUTIONS
False reading Does not rest to zero	**N.B. : The operator may be splashed with liquid unexpectedly** - Check pressure gauge and circuit- Bleed the circuit - Remove the pipe **(A)** - Bleed the circuit with clean water - Remove the top plug **(B)** to reposition the needle at zero.



8- LIST OF MAIN PARTS

Code	Désignation
	Engine
CA75AA8003	Oil filter cartridge,6 cylinder
CA75AA8007	Diesel oil filter cartridge
278211	Filter element for prefilter
218030	Prefilter O ring
278015	Fan belt
278014	Fan and alternator belt
278017	Water pump belt, 4/6 cylinder
	Cab
278238	Active carbon filter
	Speed sensor
268158	Inductive speed sensor
268159	Cable for inductive speed senso
	Steering ; automatic re-alignment
268055	Rear wheel alignment sensor
268122	Front wheel alignment sensor
268123	Cable for wheel alignment sensor
DI30AB8002	Hydraulic distributor
	Fuses
268127	Autofuse 2A
268417	Autofuse 3A
268330	Autofuse 5A
268027	Autofuse 7,5A
268160	Autofuse 10A
268028	Autofuse 15A
268418	Autofuse 20A
268313	Autofuse 25A
268139	Microfuse 10A
268163	Microfuse 2A
268428	Slow blow fuse (5x20) 1A
	Pneumatic Circuit
RA15AA7240	1/8"Straight connection, D 4mm
RA15AA7236	4 mm elbow connection D 4mm
TU10AJ7143	Pneumatic pipe, D 4mm
TU10AJ7144	Pneumatic pipe, D 6mm
EL20AA7022	Complete pneumatic solenoid valve (Pentalet)
BO05AA7252	Coil for pneumatic solenoid valve
6HU8000	Pneumatic oil for lubrificator

Code	Désignation
	Pressure gauge
284831	Complete pressure gauge
	Four-way nozzle& Clean cut-off
ME20AB7042	Spray end diaphram
ET10AA7004	Fixing stirrup piece
BA30CI7376	Fixing collar O-ring
CL10AF8000	Valve
167681	Structural wrench
	Hydraulic equipment
CA75AA8002	Hydrostatic pump filter cartridge
786769	Hydraulic suction filter cartridge
782835	Boom control by-pass
782116	Boom control distributor
782835	Boom control pressure limiter
786835	Spray pump distributor with integrated limiter
783862	Spray pump hydraulic motor (OMS125)
783863	33 cc spray pump hydraulic motor
783832	12cm hydraulic pump
BO40DJ7250	Hydraulic reservoir plug
	Chassis and boom
288089	Front sling D 6 mm L: 455 mm
288090	Rear sling D 6 mm L: 475 mm
288033	Amortisseur châssis
YPE7013YA	Blue paint
AE10AA8000	Aérosol blue paint
962701	Aérosol grey paint
	Spray suction filter
278137	32 Mesh white filter element (600 microns)
	Spray line filter
729673	Complete spray line filter
615443	300 microns blue filter element (50 mesh)
615444	175 microns red filter element (80 mesh)
615445	140 microns yellow filter element (100 mesh)
	Spray return filter
278049	32 mesh white filter element
278050	50 mesh blue filter element
	Gauge
981566	Cable D 0,7mm

Code	Désignation
	Spray centrifugal pump
RO46AC7314	Straight wheel with blades
FL10AB7031	Flange
VI40AM7136	Flange fixing screw
JE10AB7180	Gasket set
MU20AA7007	1/8 step-up
738000	Flexible coupling
MU20AA7008	1/9,36 step-up
	Regulating valve
6380000	Anti-interference assembly
268006	Reduction motor
MI10AA7001	Microswitch
JE10AC8000	Gasket set
	Remote valve
MI10AA7001	Microswitch
JE10AC8003	Gasket set
MO40AA8000	Reduction motor
JO10AA8001	4 plugs set
CI20AA8000	Printed circuit
	Flow meter
CO90AA7443	Bush
268104	Inductive sensor
268124	Inductive sensor cabler
	Valves
841059	3 way S93 Manifold valve
841062	3 way S67 Manifold valve
741065	Manifold stickers
BA30DI7192	Seal for Manifold valve
288356	Complete drain valve

9- TECHNICALS SPECIFICATION

9-1 ENGINE

Model	BF6M1012	BF6M1012C
Number of cylinders	6	6
Power (HP/kW)	133/94	167/118
Max.Torque Nm to 2500 min^{-1}	447	564
Turbo charger	Yes	Yes
'Intercooler'	No	Tes
Engine oil, incl. filter (litre)	16,5	16,5
Engine oil, without filter (litre)	15,5	15,5
Coolant capacity (litre)	12,2	13,6

9-2 TRANSMISSION

Typ	hydrostatic
Pump make : Sauer	Serial 90
Displacement	100 cm^3
Feed pressure	28/30 bar
Working pressure Max.	420 bar
Motor make : Poclain	
Model	MS08
Motor displacement	S08 (934/467 $cm^{3)}$
	S11 (1529/629 $cm^{3)}$

9-3 SUSPENSION

Type	2-Front helicoidal springs
	1-Rear helicoidal spring
FRONT Axle	Oscillating
REAR Axle	Fixed

9-4 STEERING

Wheel steering	4	2
Turning radius(m)	5,70	8,90
(track de 1,80 m)		

9-5 TRACK

Track(m)	Fixe : 1,80 - 2,00 - 2,25 m

9-6 BRAKES

Parking brake	Multi-disques
Service brake	Transmission hydrostatique

9-7 CAB

Typ	Closed panoramic type
Filtration	Active carbon filter
Chauffage	Eau chaude moteur
Air conditioning refrigerant	R134a

9-8 TYRES

Standard	270/95 R32 (11,2x32)
Options	340/85 R28 (13,6x28)
	380/85 R24 (14,9x24)
	420/85 R24 (16,9x24)
	540/65 R24 Traker

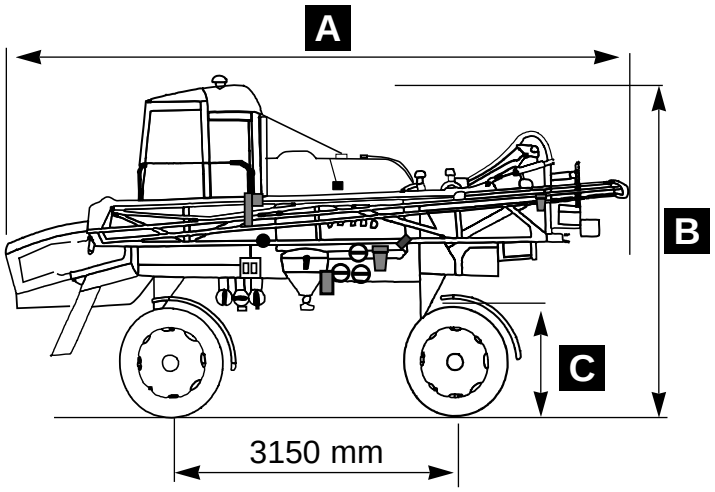
9-9 TANK AND RESERVOIRS

Main tank	2000 / 2500 l +5%
Rinsing tank	200 l
Hand washing tank	15 l
Mixer unit	25 l
Diesel tank	185 l
Hydraulic tank	60 l
Screen wash bottle	2 l
Air cond. refrigerant	1000 - 1100 g R134a
Step-up gear	1 l

9-10 ELECTRICAL SYSTEM

Alternator	14 V 90 Amp
Starter engine	12 V 3,1 KW
Battery	12 V 160 Ah

9-11 OVERALL DIMENSIONS



A	24 m aluminium 28 m aluminium 30 m aluminium	7590 mm 7310 mm 7600 mm
B	4000 mm (Ground clearance 1000 mm)	
C	930 mm 1030 mm 1130 mm (Track mini : 2,00 m)	

9-12 WEIGHT

ALPHA 2500 133 ch ALUMINIUM boom (Folding boom)

	EMPTY			FULL		
Boom	Front	Rear	Total	Front	Rear	Total
28 m	2870	2840	5710	3780	4910	8690
30 m	2880	2840	5720	3780	4900	8700

ALPHA 2500 133 ch ALUMINIUM boom (unfolding boom)

	EMPTY			FULL		
Boom	Front	Rear	Total	Front	Rear	Total
28 m	3430	2280	5710	4390	4300	8690
30 m	3440	2280	5720	4400	4300	8700

9-13 SPRAYING

Pump	Centrifugal 500 l/Mn
Régulation	Electronic Régulor
Flowmeter	Héliflux
Regulating valve	DG4
Vannes pulvérisation	3 way Manifold
Remote valve	TVI
Circulation	Standard, semi- continuous Continuous (optional)
Canalisation rampe	Stainless steel pipework en option
Boom	suspensed boom suspension Slant correction - Variable geometry
Gauge	Dry gauge with float