

## Mistblowers' Notice of Instructions

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## 1. BASICS

### 1.1. Responsibility

They are of application the “General Conditions of Contract and of Delivery” of Teyme Tecnología Agrícola, S.L. According to these conditions, it is excluded any responsibility on behalf of Teyme Tecnología Agrícola for personal and material damages caused by any or several of these reasons:

- Unadequate use of the machine.
- Not having read the instructions of use as well as the safety indications included on these.
- Constructive modifications of the machine made on one’s own.
- Defficient control of the pieces submitted to wear.
- Repair works which have not been correctly done or not done in the expected delays.
- Use of other spare parts which are not original from the company Teyme Tecnología Agrícola.
- Accidents or damages caused by external reasons or overwhelming forces.

### 1.2. Legal Warranty

They will be of application the “Conditions of contract and delivery” of the company Teyme Tecnología Agrícola, S.L..

The period of duration of the legal warranty includes a year since the machine has been received. We will solve the possible failures in the machine following the guidelines given by TEYME’s legal warranty.

### 1.3. Optional Accessories

The machines of TEYME can be supplied with optional accessories. The notice of use will describe the standard components as well as the optional ones.

We remind that these will differ depending on each variable of the supplied machine.

### 1.4. Declaration of Conformity



**Declaración "CE" de conformidad**  
**"EC" declaration of conformity for machinery**  
**Declaration "CE" de conformité**  
**Dichiarazione "CE" di conformità**

NOMBRE / BUSINESS NAME / NOM / NOME **TEYME TECNOLOGÍA AGRÍCOLA, S.L.**

DIRECCIÓN / ADDRESS / ADRESSE / INDIRIZZO **POL. IND. SAU-3, C/ GIRONA, s/n  
 TEL. (34) 973 750 033 - (34) 973 750 539  
 - (34) 973 751 847  
 FAX (34) 973 751 581**

C.I.F. **B-25554940**

FABRICANTE Nº / MANUFACTURER Nº / FABRICANT Nº / FABRICANTE Nº **25/20602**

INSCRITO EN / REGISTERED IN / INSCRIT SUR / ISCRITO IN **REGISTRE INDUSTRIAL  
 CONSELLERIA D'INDÚSTRIA DE LA  
 GENERALITAT DE CATALUNYA**

Declaramos que el producto / Herewith declares that / Nous déclarons que le produit / Dichiaro che la macchina  
 MARCA / MAKE / MARQUE / MARCA **TEYME**

TIPO / TYPE / TYPE / TIPO

Nº SERIE / SERIAL NUMBER / Nº SÉRIE / MATRICOLA N.

AÑO FABRICACIÓN / YEAR OF CONSTRUCTION / ANNÉE FABRICATION / ANNO FABBRICAZIONE

Corresponde a las exigencias básicas de la directiva de la CE sobre máquinas (Directiva 2006/42/CE), incluidas las modificaciones de la misma y la correspondiente transposición a la ley nacional. Is in conformity with the provisions of the Machinery Directive (Directive 2006/42/CE), as amended, and with national implementing legislation. Correspond aux exigences basiques de la directive de la CE sur machinerie (Directive 2006/42/CE), inclues les modifications et la correspondante transposition á la loi nationale. Corrisponde alle esigenze basiche della direttiva della CE sulle macchine (Direttiva 2006/42/CE), inclusi le modificazioni della stessa e la corrispondente trasposizione alla legge nazionale.

Lleida, a \_\_\_\_\_ de \_\_\_\_\_ de \_\_\_\_\_

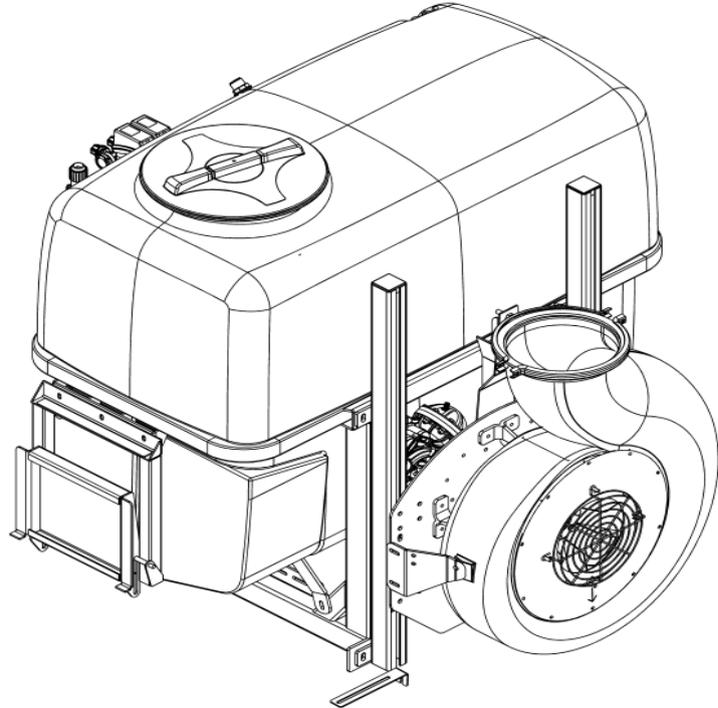
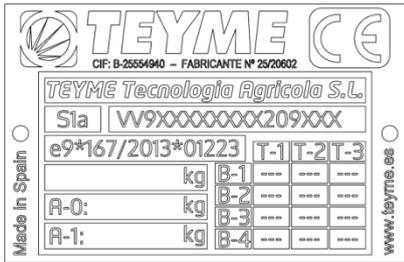
FIRMA / SIGNATURE / SIGNATURE / FIRMA **FERRAN ITURBE RECASENS  
 NIF. 40892839-N**




1.5. Identification Plate

The identification plate, placed in the right front part of the machine and riveted to the structure of the frame indicates the brand, the model, the serial number and the date of manufacture.

The serial number is also found die-cast on the frame of the machine. In the upper part of the right ear of the lower braces.



1*	Position of the identification plate
2*	Position of the number of chassis

2. Safety and Protection

2.1. Classification of Symbols by the Degree of Danger

	This symbol means DANGER. Be careful as your safety is in danger!
	This symbol means CAUTION Be aware as your safety is at stake!
	This symbol means ATTENTION. It will help you to an easy and safe use.

## 2.2. Group of Addressees

This notice of use limits exclusively the use of the machine to qualified staff, as well as to well-instructed personnel.

## 2.3. Proper Use

The machine has been built up according to the latest technical advances and reputed technical safety rules. However, it is probable that, during its use, risks for the life and for the physical integrity of the user or of third parties may appear, as well as damages in the machine or other material impairments. Work only with the machine if you find it in a correct technical condition and use it properly, accordingly with the notice of use and being conscious about the safety and the dangers.

The proper use also includes

- the understanding and observance of the instructions of use and the application of the work steps indicated in these.
- The observance of the safety and precautionary signals in the machine.
- The observance of the limits of power of the tractor and machine.
- The observance of the indications of maintenance, as well as of the further verifications.
- The use of original spare parts.
- The use of indicated oil and accessory substances, as well as their suppression respectful with the Environment.

The safe working is only guaranteed if all indications, adjustments and valid power limits for the machine are respected.

The machine is only suitable for its use in agricultural jobs.

## 2.4. Precautionary Recommendations

Please consider the following recommendations for caution.

- ⚠ Read thoroughly this notice of instructions before using the machine. It is equally important that other users that will operate with the machine, read and understand this notice of instructions.
- ⚠ Some local laws can require that the operator has a certificate to be able to use the machine. Please be ware of the law.
- ⚠ Use suitable protection garment (gloves, helmet, waterproof clothes, etc).
- ⚠ Clean and rinse the machine after its use and before its revision.
- ⚠ Do not ever check or repair the machine while this is working.
- ⚠ Replace always the safety devices and protect them immediately after work.
- ⚠ Do not eat, drink or smoke while you are spraying or working with the machine dirty.
- ⚠ Clean and change your clothes after the spraying. Clean the used tools.
- ⚠ In the event of poisoning, call the medical services. Do not forget to identify the chemicals.
- ⚠ Keep children away from the machine.
- ⚠ If some part of this notice of instructions is not completely clear to you, do not hesitate to contact your TEYME's dealer for a more extensive explanation before using the machine.

- ⚠ Be careful not to hit people or surroundings while maneuvering with the sprayer, specially while this one is turning.
- ⚠ Diminish the speed while circulating on rough plots as there is danger of rollover.
- ⚠ Check the pressure with clean water before carrying out the filling of chemicals.
- ⚠ Disconnect the electrical power and depressurize the machine after its use and before its checking.
- ⚠ Do not try to enter the tank.
- ⚠ Do not stay under the sprayer when this is not well secured to protect yourself against any rollover or crushing.
- ⚠ If you use a welding arch on the machine, turn off all electrical devices before starting with the welding. Keep yourself away from any explosive or inflammable material.
- ⚠ Do not unplug any hose while the machine is working. Unplug the cleaner and the water supply before disassembling the high-pressure hose.
- ⚠ The device of external cleaning should not be used when any important part of the machine is damaged, including safety devices, high pressure, etc.
- ⚠ ON NO ACCOUNT the PTO shaft of the tractor can overcome the 540 r.p.m. due to the big risk of explosion of the air unit.

## 2.5. Rules and Applicable Prescriptions

Herewith they are specified the valid applicable rules for each country, which must be taken into account during the machine's working life:

- Road Traffic Code.
- The rules and regulations about labor safety
- The rules and regulations about road traffic safety.
- The rules and regulations about the user's protection.
- The rules and regulations about protection of the environment.
- The rules and regulations about the proper handling of pesticide products.
- The rules and regulations on plants' protection technology.

## 2.6. Allowed weights of the machine

The weight of the machine is transmitted through the hitching points disposed for this function.

For this reason, the following points must be considered for a safe working of the machine:

- The allowed supporting load for the tractor's hitching must not be exceeded.

## 2.7. Requirements for the tractor

- The tractor must have an appropriate hitching bar for the machine (Cat-I, II and IIN).
- On basis of the established applicable regulations, there must be an appropriate brakes' device available in the tractor.
- The tractor must have a protection for the PTO shaft which proves to be appropriate for the machine.
- The tractor's hydraulic system must be compatible with the machine.
- There must be available in the machine appropriate electrical connections.
- The allowed limit of power of the tractor must be respected.

## 2.8. Obligations of the User

Before starting up, read the handling instructions.

- Respect the indications of safety.
- To carry out all works, use the corresponding protection clothes. This one must fit the body.
- Respect and complete the handling instructions with the general legal regulation and other bonding regulations about accidents prevention and environmental protection.
- The handling instructions are an important component of the machine.
- Make sure that the handling instructions are always available where the machine is working and that they are preserved during its full lifetime.
- In case of sale or owner's change, hand in the handling instructions with the machine.
- Keep all the safety and danger warnings in a readable and complete condition. The warning and safety symbols give valuable information to work without danger. The observance of these is for your own safety.
- Any modification standing for attachments or machine reconstruction which could damage safety cannot be done without the authorization of the manufacturer. The manufacturer excludes itself from any responsibility for any ensuing damage caused by modifications done on one's behalf in the machine.
- Use the machine with full respect for all connection and adjustment values determined by the manufacturer.
- Use only original spare parts.

## 2.9. Safe working of the machine

### 2.9.1. Basics

Before starting the work, get to know all devices and starting elements, as well as their functions.

- Turn on and start up the machine just if all the protection devices are mounted and whenever they are in protection mode.
- Assemble always the machine according to the current regulations and only in the couplings contemplated in these.
- Proceed most carefully to carry out the assembly and disassembly of the machine in or out of the tractor.

It is forbidden to remain in the dangerous area of the machine and step over this one while this is working.

In the parts triggered by external forces there may exist danger of squashing and cuts.

- Activate the hydraulic devices only when there is no person in the danger area.
- Do not stay in the area between the tractor and the machine. This is only allowed if the tractor and the machine are secured against rolling by means of the parking brake and stopping chocks.
- Keep the machine always clean to avoid danger of fire.

### 2.9.2. Staff Qualification

- The driver of the tractor must have the corresponding driving license available.
- All the works in the machine must be exclusively done by instructed and trained staff. The personnel must not be under the effect of drugs, alcohol or medicines.
- The works of maintenance and care will only have to be carried out by instructed specialized staff or by people suitably trained.
- The works in the electrical parts must only be carried out by electricians according to the applicable electrotechnical regulation.

## 3. Effects of certain agrochemicals on the machine

Some admitted pesticides and mixtures can have harmful effects on materials of the sprinkler. Basically, they are sprinkling means and mixtures with solvent.

	<p>CAUTION! When using mixtures with sprinkling methods with acknowledged harmful effects, it is recommended to test the mentioned materials before starting the works, by means of inversion tests during several hours. The pesticides or other products which use to become solid or sticky can not be used in the machine.</p>
	<p>CAUTION! Follow necessarily the indications of the manufacturer of the pesticide before starting to work.</p>

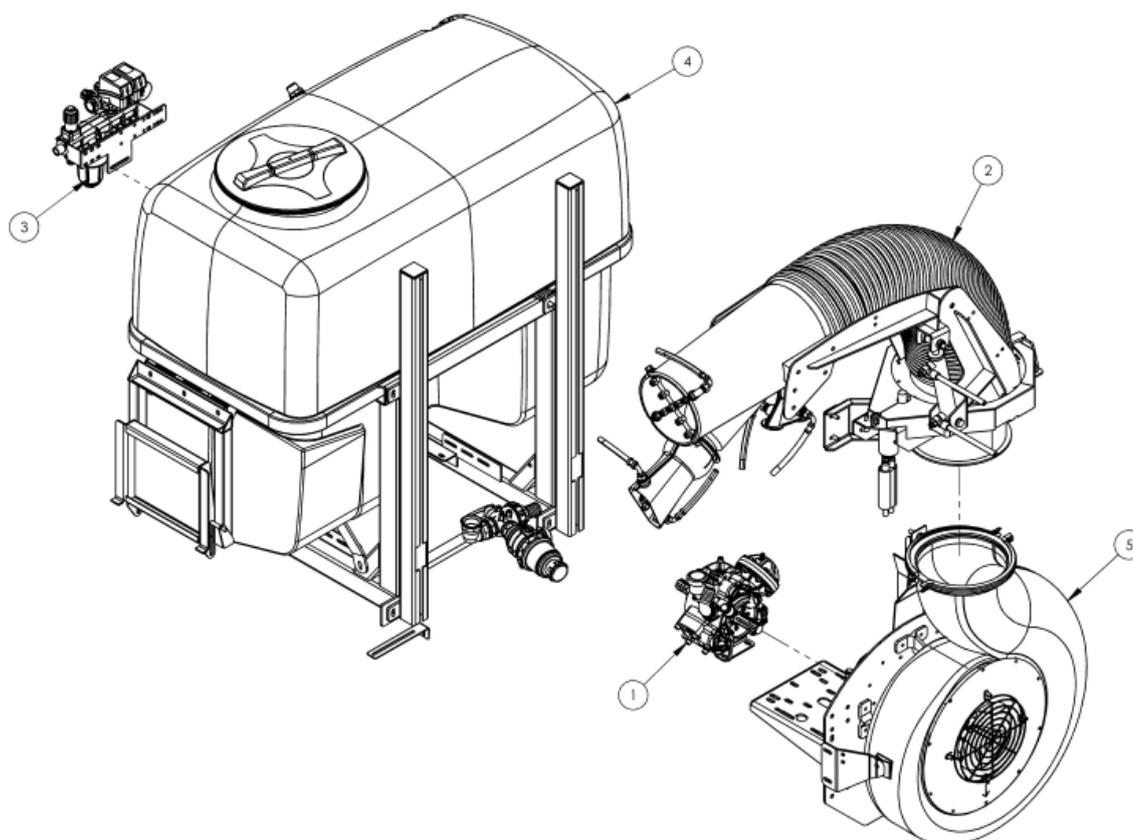
The following components of the machines can suffer from damages: hoses, sprinkling pipes, joints, tanks, pump's diaphragms and nozzle-valves diaphragms.

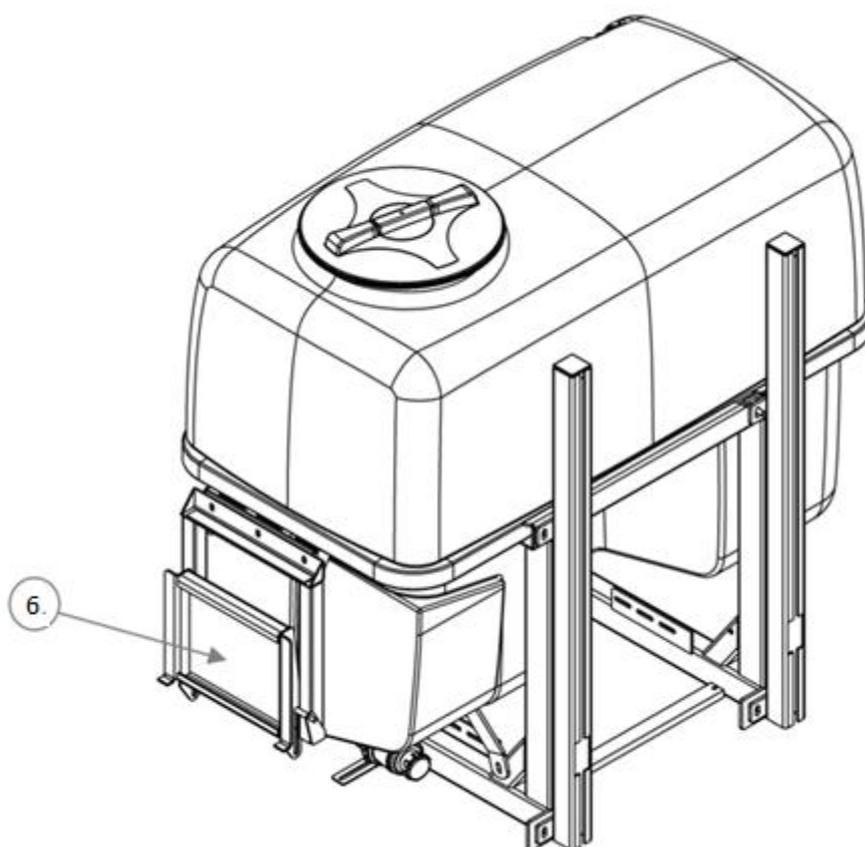
Too soft hoses or swollen joints or diaphragms are symptoms of these harmful effects. The damaged pieces must be immediately replaced. These pernicious effects can be avoided if, immediately after its use, an intensive cleaning is done (for example, some rinsing and suppression of the technical remains in the crop).

#### 4. Description

##### 4.1. General Information

###### 4.1.1 General View





- |   |
|---|
| <ol style="list-style-type: none"><li>1. Pump</li><li>2. Air Kit</li><li>3. Water Control</li><li>4. Base Equipment</li><li>5. Air Unit</li><li>6. Footstep</li></ol> |
|---|

#### 4.1.1. Use of the Sprayer

TEYME's sprayer is designed for the application of chemical products for crops' protection. The machine can be only used with this purpose. It is not allowed the use of this equipment for other purposes. If the local laws do not compel the operator to be certified, it is recommendable to be instructed in order to carry out a correct protection of crops and a safe handling of the chemicals to avoid unnecessary risks for people and the environment while the spraying is done.

#### 4.1.2. Road Traffic traffic

When driving by public roads and other places where it is applicable the traffic code, or places where there are special laws and regulations about signs and lights on agricultural tools, you should furnish your machine respecting these regulations.

#### 4.1.3. Frame

The frame consists in structural tubes, attached by some crossbars in a specific design, which provides the whole with a high toughness and resistance to face usual and high demands of use. To protect it from corrosion a primer of epoxy is applied and covered by highly adhesive monolayer polyurethane painting.

#### 4.1.4. Tanks

The main tank is made of polyethylene and is resistant to impacts, to the UV rays and to chemical products. It has a round design without corners for a better cleaning and emptying. Nominal capacity 53, 79, 105, 158, 211, 264 and 317 gal. It has a transparent gauge located in the right front part of the tank that can be seen from the tractor. The filling mouth is in the left upper part and one can get access to it from a footrest step, depending on the capacity of the tank. That enables the filling of the tank and insertion of chemicals.

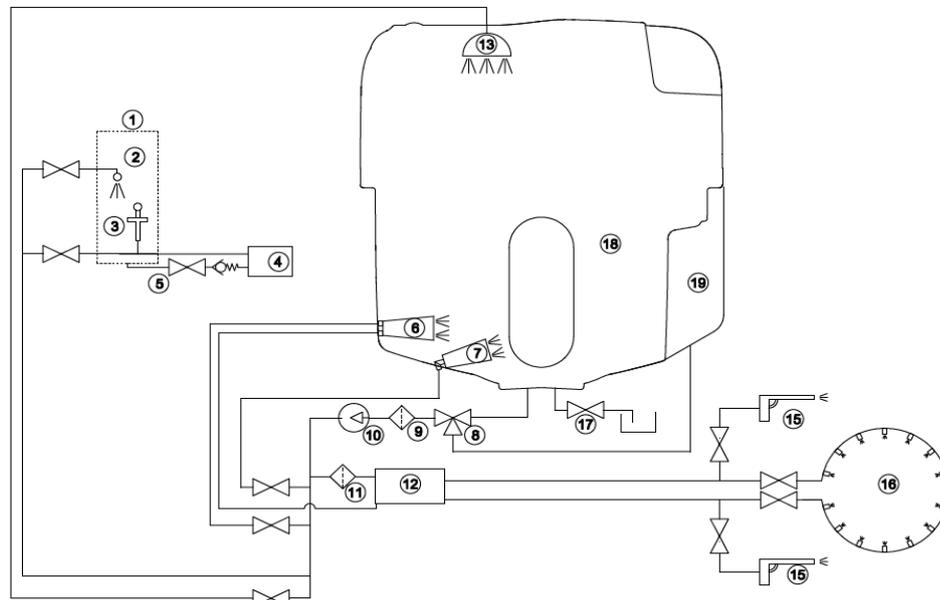
Next to the main tank it can be found a clean water tank or rinsing tank of 10% capacity out of the main tank. And a sanitary water tank of about 4 gallons of capacity.

#### 4.2. Water Circuit

##### 4.2.1. General Information

All sprayers include a high-pressure water circuit to carry out an efficient treatment and to obtain a homogeneous mixture of the product.

##### 4.2.2. Water Circuit Diagram



- |    |                                    |    |                          |
|----|------------------------------------|----|--------------------------|
| 1  | Mixer- chemical inductor           | 11 | Pressure Filter          |
| 2  | Stirrer-product mixer              | 12 | Water Distributor        |
| 3  | Can-rinsing robot                  | 13 | Tank-Rinsing robot       |
| 4  | Mixer ventouri suction             | 14 | Powder mixer             |
| 5  | Mixer Draining Valve               | 15 | Spraying Guns            |
| 6  | Euromix (stirrer)                  | 16 | Jets or nozzle-holders   |
| 7  | Hydraulic stirrer (bottom stirrer) | 17 | Main tank draining valve |
| 8  | Three ways valve                   | 18 | Main Tank                |
| 9  | Suction filter                     | 19 | Rinsing Tank             |
| 10 | Water pump                         |    |                          |

##### 4.2.3. Suction Valve

The suction valve is placed to the right of the pump and allows to choose the tank from which the pump will suck, which can be the main tank to carry out the spraying tasks or the rinsing tank to clean the inside of the liquid circuit. The tank can be selected turning the lever of the valve towards the desired function.



4.2.4. Suction Filter

Next to the suction valve there is the suction filter with a 50-mesh stainless steel grid. They have an automatic closing valve for filter cleaning, auxiliary suction entry to fill in the tank and cap for valve's activation.



4.2.5. Pumps

4.2.5.1. High Pressure Piston Pumps

High pressure toughly-built-up pumps. Immersed pistons with ceramic cases. Parts with contact with fluid are manufactured in anodized aluminium.

Sort of pump	Flow rate (gpm)	Highest pressure (psi)	Quantity of pistons
Comet YA 65 Pump	12,42	870	3
Comet YA 75 Pump	15,32	870	3
Comet YA 130 Pump	24,17	870	6
Comet YA 150 Pump	29,85	870	6

4.2.5.2. High Pressure Diaphragm Pumps

High pressure toughly-built-up pumps. They include pressure accumulator and safety valve. NBR diaphragms, parts with contact with the liquid manufactured in anodized aluminium and AISI 303/304.

Sort of pump	Flow rate (gpm)	Highest Pressure (psi)	Quantity of diaphragms
Comet APS-121S pump	30,38	725	3
Comet APS-51 pump	13,39	725	3
Comet APS-61 pump	16,30	725	3
Comet APS-71 pump	17,75	725	3
Comet APS-96 pump	23,25	725	4

Teyme AR-150 pump	37,60	725	4
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#### 4.2.6. Pressure Filter

It is placed on the exit of the pump or placed in the middle of the distributor, with a stainless-steel grid and a VITON watertight o'ring sealed in the cap. Highest working pressure 725 psi. All the filters must be on perfect conditions and regularly cleaned. Take care in choosing a proper combination of filter and grid mesh size. The grid mesh size must be always lower to the average total flow rate of the nozzles.



#### 4.2.7. Stirrers

Inside the tank we can find a two-ways "trumpet"-type stirrer (Euromix). This stirrer is triggered by means of two valves.

In the left lower part of the tank a stirrer is located that stirs the bottoms of the tank. Depending on the capacity of the tank, there can be another bottom stirrer, laid in the right lower part of the tank. They are triggered by means of a valve.

In the inner lodge of each one there is a 0,10 inches diameter restrictor (D).



## Distributing Controls

The sprayer can be provided with different sorts of distributors to control the spraying.

### 4.2.7.1. GRH Hand-operated Control

Distributor with a single-control lever for the spraying selection. A knob is included to raise or lower pressure and a manometer.

	<p><b>DANGER!</b> It is forbidden to use this sort of control in tractors with closed cab.</p>
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### 4.2.7.2. System 1 Electrical Control

Electrical distributor with control box which allows to open and close right and left sides independently. It includes pilot light warning about the opening of sector. This control includes pressure compensation valves and pressure hand-operated regulation.

### 4.2.7.3. System2 Electrical Control

It has the same functions as system 1. Additionally, it allows pressure regulation by an electrical valve and it includes an added selector on the control board.

### 4.2.7.4. System 3 Electrical Control

With the same functions as system 2 with an added electro valve which allows the opening and closing of the general circuit by means of an added selector to the control board. Warning pilot light is included. Possibility of replacing control board by a wireless control with identical functions.

### 4.2.7.5. Bravo 180S Electrical Control

It has the same functions as System 3. It includes a flowmeter in the distributor and a controlling computer in control board. For more automatized and informative processes, a GPS aerial will have to be assembled for speed control, and a pressure sensor in the distributor to inform about working pression and a level sensor in the tank to obtain information at every moment about the remaining liquid volume in the tank.

### 4.2.7.6. Sonar MCK Electrical Control

Electrical control with monitoring computer which allows to open independently right and left sectors which are controlled by an active sonar. This distributor includes hand-operated pressure regulation.

### 4.2.8. Can Rinsing

It is used to rinse the used can once it has been emptied, sparing mostly all the product and avoiding damages in the environment. It is placed in the filling mouth of the tank. It is triggered by a valve of the pressure collector.

### 4.2.9. Mixer/ Chemical Inductor (Optional)

Located at the side of the tank, with the only difference that the one of the upper lid has not draining valve. It only helps to transfer product in liquid or powder to the tank mixing it with water. A can rinsing device is set up with a flow stirring system which causes the mixture of phytosanitary product with the water of main tank. A ventouri system is added to the tank to empty the mixer.



#### 4.2.10. *Jets or Nozzle-holders*

Assembled in the arches of the air unit the nozzle-holders are laid out threaded. They are provided with anti-dripping system and they are rotative, adjustable and steerable. They can include 1 or 2 nozzles.



#### 4.2.11. *Tank Rinsing Robot*

Optimal inner rinsing of tanks of sprayers by means of a turning rinsing robot strategically placed inside the tank.



### 4.3. Centrifugal Air Unit

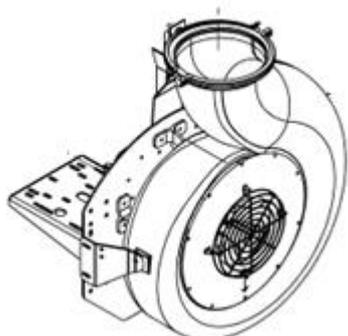
The centrifugal air unit is a unit which suctions the air through the centre of the fan, impelling it out in perpendicular position to the housing, towards a radium and expelling it through a guided exit, to distribute it through different air kits, obtaining different application ranges.

#### 4.3.1. *General Information*

Depending on the capacity of the machine we will be able to set up different centrifugal air units, all of them with polypropylene or painted steel plate blower housing and polyamide or stainless-steel fans. Its reckoned aerodynamics ensures a big air pressure with an optimal distribution and an adjusted consumption. For a more focused application the centrifugal air units can be coupled to different sorts of kits.

The difference of the centrifugal air unit from the axial one (with propeller) lays in the lodgement in its inside of a centrifugal fan, which can be single-sided ( it suctions only by one side of this) or double-sided (it suctions by both sides of the fan). The centrifugal air units usually have available double suction. This one is always perpendicular in the sense of the air exit mouth. Different sorts of fans are available ready to be assembled on their respective

blower housings, in different sizes 10,83", 12,80", 15,75" ,17,72", 18,70", 19,69" y 21,26". Every model of fan can be assembled inside its corresponding housing model. There are different sorts of blower housings depending on the sort of exit mouth (vertical exit, with 8-outlets distributor, side outlet, etc.) Presently, the centrifugal units are classified into 15,75" air units, 17,72"/18,70" in polyethylene and 23,62" in sheet plate.



#### 4.3.2. Sorts of Air Units

The following board identifies the main features of the centrifugal air units: sort of gearbox with the speed ratios, if has or has not clutch, kind of fan and the air exit with the definition of diameter, the width and the sort of material with its finish. .

Centrifugal Air Unit	Gear Box			Clutch	Diameter	Blower Housing
	Sort	1st Ratio	2nd Ration	Si/ No	∅	Finish
OPEN EXIT D 15,75"	DV-3600	6.5	7.5	SI	15,75"	Polyethylene
OPEN EXIT D 19,69"	DV-3600	6.5	7.5	SI	19,69"	Polyethylene
OPEN EXIT D 21,26"	BTV-1	7.5	----	SI	21,26"	Glass Fiber
MURCIA OPEN EXIT	DV-3600	6.5	7.5	SI	19,69"	Polyethylene

- ⚠ UNDER NO CIRCUMSTANCE 540 r.p.m. must be overcome concerning the tractor's PTO shaft because of the risk of explosion in the air unit.
- ⚠ DO NOT APPROACH the air entry or exit while the impeller is working. Some objects could be thrown away through the air exit or some textile garment could be sucked through the air entry.
- ⚠ The air units are the most dangerous part of the machine. Do not try to modify any of their parts without following the advice of your local dealer. The manipulation of the air units to modify its features must be done by qualified staff expressly authorized by TEYME Tecnología Agrícola.

#### 4.3.3. Air Flow of the Units

The following boards show the performances of the different air units, depending on the chosen turning speed of the PTO.

15,75" AIR UNIT

Gear Box Speed		1:6,5		1:7,5	
		I		II	
<u>r.p.m</u>					
450	cfm	<b>6474,36</b>		<b>7886,95</b>	
	mph	<b>129,74</b>		<b>152,11</b>	
	inch H <sub>2</sub> O	<b>9,45</b>		<b>11,42</b>	
	hp   kW	<b>21</b>	<b>15</b>	<b>29</b>	<b>21</b>
500	cfm	<b>6768,65</b>		<b>8887,53</b>	
	mph	<b>149,87</b>		<b>170,01</b>	
	inch H <sub>2</sub> O	<b>11,81</b>		<b>13,78</b>	
	hp   kW	<b>29</b>	<b>21</b>	<b>39</b>	<b>29</b>
450	cfm	<b>8122,38</b>		<b>9593,82</b>	
	mph	<b>156,59</b>		<b>183,43</b>	
	inch H <sub>2</sub> O	<b>13,78</b>		<b>18,90</b>	
	hp   kW	<b>35</b>	<b>26</b>	<b>49</b>	<b>36</b>

19,69" AIR UNIT

Gear Box Speed		1:6,5		1:7,5	
<u>r.p.m</u>		I		II	
450	cfm	4296,62		5179,49	
	mph	109,61		118,56	
	inch H <sub>2</sub> O	9,45		11,42	
	hp   kW	12	9	14	10
500	cfm	4649,77		5532,63	
	mph	123,03		134,22	
	inch H <sub>2</sub> O	11,81		13,78	
	hp   kW	15	11	18	13
450	cfm	5120,63		5944,64	
	mph	134,22		145,40	
	inch H <sub>2</sub> O	13,30		15,75	
	hp   kW	20	15	23	17

21,26" AIR UNIT

Gear Box Speed		1:7,5	
<u>r.p.m</u>		I	
450	cfm	11771,56	
	mph	154,36	
	inch H <sub>2</sub> O	13,78	
	hp   kW	42	31
500	cfm	12948,72	
	mph	170,01	
	inch H <sub>2</sub> O	16,14	
	hp   kW	58	43
450	cfm	14125,87	
	mph	183,43	
	inch H <sub>2</sub> O	18,90	
	hp   kW	75	55

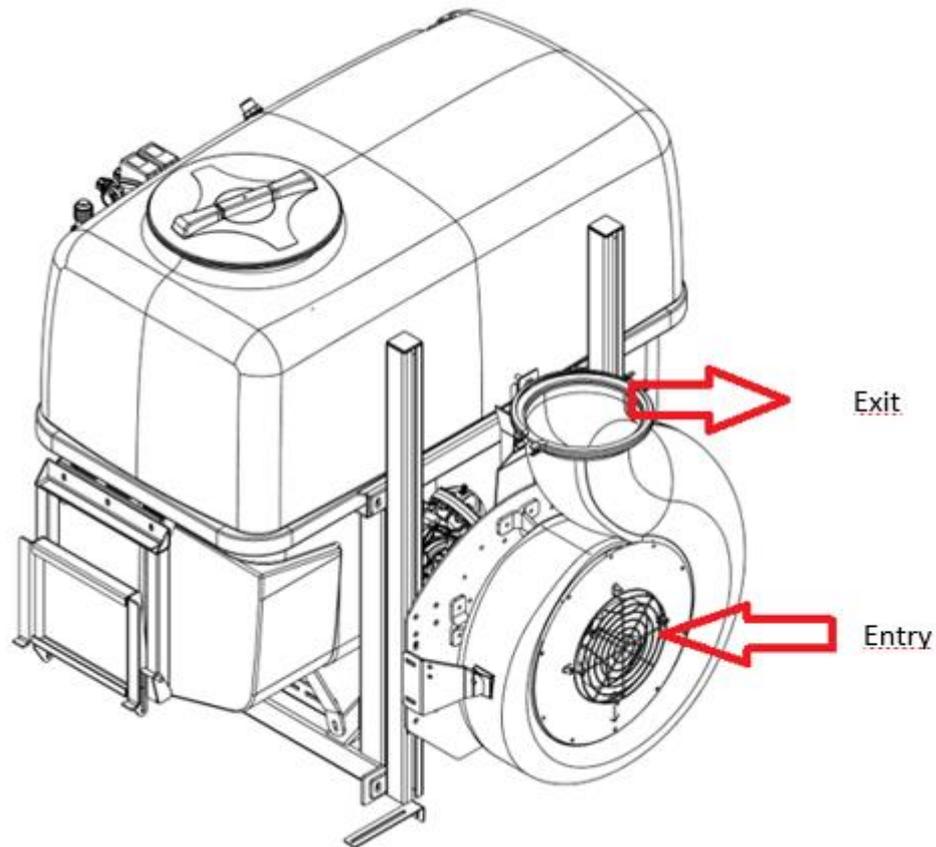
## MURCIA EXIT AIR UNIT

Gear Box Speed		1:6,5		1:7,5	
		I		II	
<u>r.p.m</u>					
450	cfm	6474,36		7886,95	
	mph	129,74		152,11	
	inch H <sub>2</sub> O	9,45		12,99	
	hp   kW	12	9	14	10
500	cfm	7357,23		8887,53	
	mph	149,87		170,01	
	inch H <sub>2</sub> O	11,81		16,14	
	hp   kW	15	11	18	13
450	cfm	8122,38		9593,82	
	mph	156,59		183,43	
	inch H <sub>2</sub> O	13,78		18,90	
	hp   kW	20	15	23	17

## 4.3.4. Protection Grid

Air units are provided with protection grids following ISO rules. They are fundamental to avoid accidents or the introduction of external objects in the inside of air unit.

- ⚠ It is completely forbidden the use of the air unit without the protection grid.
- ⚠ In no way do come close to the impeller when this is working.
- ⚠ Do not introduce external objects through the grid whether the impeller is working or not.
- ⚠ Protect your ears from noise during your working hours with EN 352-1:1992 homologated helmets or similar ones.
- ⚠ In case of vibrations or blows, stop immediately the impeller.



#### 4.3.5. Gear Box

In the board of the chapter 4.3.2. several models of assembled gear box are shown, classified according to the air unit and the number of speeds and ratios of long and short gear change. The gear boxes will go attached by the front part by means of bolts and nuts to the frame and depending on the model, they will be attached too in the low part by means of 4 screws. All are provided with a system of speeds selector which prevents the gear from jumping off during the progress or during the journey by road.



DV-3600 MODEL



BTV-1 MODEL

4.3.6. Fan

Different sorts of fans are assembled con diferentes diámetros dependiendo del grupo de aire. In the board of chapter 4.3.2. different kind of axial fans are shown with the diameter.

The Blades of these are fixed and their inclination cannot be regulated.



Turbina A



Turbina B

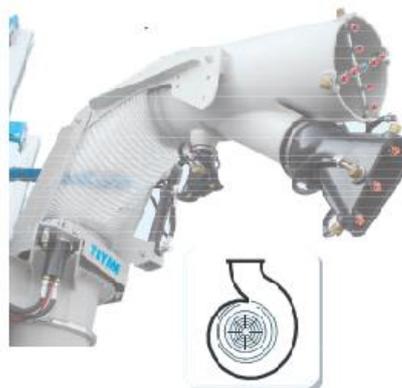
4.3.7 Air Kits

Depending on the sort of air unit different air kit can be mounted. These can be hand-operated or with hydraulic regulation. Check with TEYME the options to insert them in your air unit. They direct the air flow, making the task easy and adapting it to the crop to be treated. del tipo de grupo de aire se podrán montar diferentes kits de aire tanto de ajuste manual como hidráulico, consultar con Teyme para la posibilidad de adherirlas a su grupo de aire. Tienen la función de redireccionar el flujo de aire con el fin de optimizar el trabajo dependiendo del cultivo a tratar.

4.3.7.1 Sorts of Hydraulic Kits



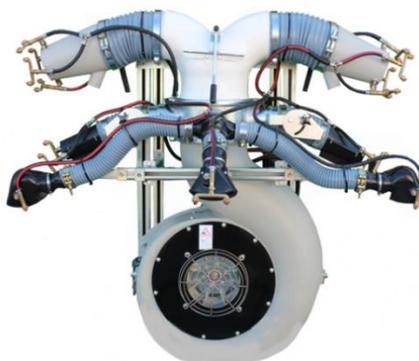
Almeria Cannon



Long Range and Height Cannon



Murcia Cannon



Row Crops Cannon

#### 4.4. Equipment

##### 4.4.1. Lights Kit (In option)

The lights kit is an equipment that is used when the tractor's lights can not be seen properly, when machine is hitched.

The kit comes mounted on a turning support which allows its folding to avoid nuisance when working. The connection to the tractor is made by a 7 poles ISO-1724 plug.

#### 5. Adjustments and How To Start Up

##### 5.1. Machine's Load or Unload.

During the loading and unloading tasks of the machine in an out of the lorry, be sure of using straps or belts in good condition and resistant enough

##### 5.2. PTO shaft

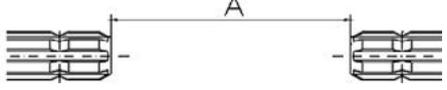
To avoid accidents and personal damages, take into account the following recommendations of prevention and practices for a safe handling:

- ⚠ Stop the engine before hitching the PTO shaft to the PTO of the tractor.
- ⚠ Make sure that the locking pin is completely closed. Push and pull the shaft until it gets blocked.
- ⚠ Make sure that the PTO shafts include the protection shields and the chains are intact, covering all turning parts.
- ⚠ Do not touch or come close to the PTO shaft when it is spinning. Safety distance: 4,92 ft.
- ⚠ Tighten the chains of the protection shields to prevent these from spinning with the move of the shaft.
- ⚠ Stop the engine and take out the contact key before carrying out the upkeep or the preparation of the PTO shaft or of some of its parts.
- ⚠ To ensure a long lifetime of the PTO shaft and avoid possible damages in the machine, it is recommended not to work with the PTO switched on with angles higher than 20°.

##### 5.2.1. Coupling of the PTO Shaft

The initial assembly of the PTO shaft could imply having to cut the shaft to adapt it to the tractor to which this one is going to be hitched. To carry out the first hitching the next steps must be followed:

1. Stop the engine and take out the contact key.
2. Hitch the mistblower to the tractor keeping the lesser distance as possible between the PTO and the pump.
3. If the PTO shaft must be cut, disassemble the two parts of the shaft. Introduce both sides of the shaft one to the tractor and the other to the shaft of the mistblower's pump and measure the length that must be cut. Mark the protection shields.
4. Measure the distance between the PTO and the pump. From this measure mark again the shield, cutting this one according to the next board (in inches):

	
23,62	1,57
31,50	2,36
39,37	3,15
47,24	3,94
55,12	5,51

5. Cut with a saw both parts of the shaft on the marked area leaving the same size of tube in both sides. Afterwards, polish all tubes to leave out all the burrs.
6. Check that the tubes of the PTO shaft remain attached in at least a 60% of their working length with the machine and the tractor levelled and lined up
7. Grease the tubes and assemble again the PTO shaft to the tractor and to the machine.

⚠ **DANGER!** Remember that all knots in the tractor and in the machine, as well as the PTO shaft, must be perfectly protected; in case of accident the user is the only responsible if the machine has not the adequate protections in perfect conditions of maintenance.

### 5.3. Hydraulic Plugs

Make sure that the couplings are clean before mounting them.

The hydraulic couplings come marked with colours depending on the activation position and with a symbol indicating upwards or downwards direction.



Colour	Symbol	Activation	Mouvement
Green	+	Left Activator	Up
	-		Down
Blue	+	Right Activator	Up
	-		Down
Red	+	Central activator or electrovalves block	Up
	-		Down

After activating the hydraulic systems and having filled up the system with oil, check the hydraulic oil level of the tractor and fill it up if necessary.

### 5.4. Electrical Plugs

#### 5.4.1. Basics

If the machine includes some electrical components, some details will have to be born in mind to carry out correctly the connection and avoid problems during the work.



The voltage which the electrical components require is 12 V. Before connecting any of them, make sure that the polarity is the correct one.  
Red Wire = 12V (+ positive) Cable Black = (- negative)

The connectors assembled in the electrical components follow the standards of the big majority of the most modern tractors. If you have a tractor with another sort of power connector it will be necessary to disassemble the current connector and adapt it to the tractor's one.

All the electrical machines which are to be assembled will have protection fuses set up.

#### 5.4.2. Lighting and Signs (In Option)

Connect correctly the plug of 7 poles of the trailer to the pin of the tractor. The electrical circuit is protected against overintensities with a fuse included in the plug. Check that the fuse is in good condition.

The supports of the rear lights will have to remain perpendicular to the marching sense when the machine moves through the public roads, whether urban or interurban.

#### 5.4.3. *Water Distributor*

Search a place in the tractor's cab where it could be possible to adapt the control box to handle it in the most comfortable way. The most suitable place is at the right side of the seat of the driver.



The control box must be well attached to avoid any blow or excessive vibrations. The box includes self-rechargeable fuses.

## 5.5. Water Circuit

### 5.5.1. Suction Filter

Check that the suction as well as the pressure filters are closed, contain the filtering cartridges and these are clean and complete.

The filter will be able to be replaced or cleaned, depending on necessity, unthreading directly the lid. The filters-bearer has a system which closes in the circuit the water which comes from the tank preventing this from overflowing in case the tank would have liquid. Check the o'ring joint before assembling again the lid and replacing it if this is damaged.



**ATTENTION!** For a better water tightness of the lid and the o'ring joint, moist with grease all the area which fits the lid. Any small leakage or suction of air will have to be repaired.

### 5.5.2. Piston Pump

On no account this sort of pump should work in dry for more than 30 seconds. If that was the case, the pistons will finish burned and would have to be replaced.

Before starting, check the oil level of the pump. It must be between the highest and lowest level of the rod which is placed in the upper part of the pump.



### 5.5.3. Diaphragm Pump

Before starting, check the oil level. It must be between the highest and lowest level of the vase placed in the upper part of the pump



**ATTENTION!** For further instructions or more specific information, check the notice of instructions of the pump handed in with the machine.

### 5.5.4. Air Pot

The air tank included in the pumps it is adjusted according to default factory conditions to a pressure of 72,52-101,53 psi to cover spraying pressure from 145,04 to 290,08 psi.

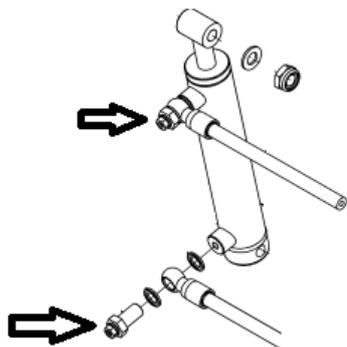
Depending on the pressure with which we are going to work, the pressure of the air tank will have to be changed accordingly to what it is indicated in the following board:

Pump's working pressure (in psi)	Accumulator's inflating pressure (in psi)
29-72,52	29
72,52-145,04	29-72,52
145,04-290,08	72,52-101,53
290,08-725,19	101,53

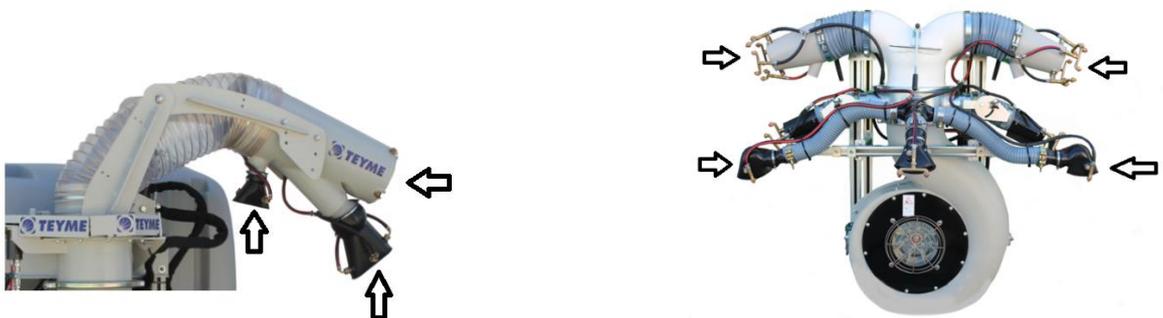
**5.6. Air Unit**

Before adjusting the air unit, the needed air flow and speed will have to be determined for the treatment of the plantation. Check with Teyme or make your own calculations by means of the calibration notice of instructions that Teyme will hand to you. Once we know the air flow rate to be applied, we will look up the boards of the corresponding air unit in which, depending on the speed of spinning of the PTO, the chosen speed gear, we will obtain the desired flow rate.

Concerning the kits, we will make sure that the mobile parts of these work at a correct speed. We will be able to regulate the flow of oil inside the pistons through the knobs of the cylinders.



Whether in the hand-operated or hydraulic kit, you must remember to orientate the exit from the cannons to your crops, to have an optimal spraying for your application.

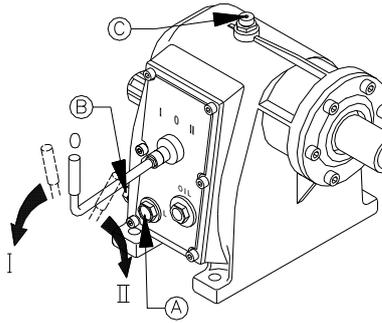


**5.6.1. Gear Box**

It allows to choose the long, short gear or neutral point of the gear box through a lever adapted for this purpose. In the left rear part of the machine we can find the lever for gear selection. To change speed, make sure that the PTO is disconnected, turn the lever left or right depending on the required gear. The neutral point is in the middle part.

If the speed does not change, you will have to turn a 1/4 the entry of gear box.

⚠ Verify the oil level by means of the A viewer..



## 6. Working

### 6.1. Water Circuit

#### 6.1.1. Filling of the Main Tank

The tank is possible to be filled in through the upper lid by gravity or by means of the pump's suction.



**ATTENTION!** It is not advisable to leave the sprayer with liquid inside. On the contrary, all valves should be closed for safety reasons.

#### 6.1.2. Filling through the Upper Lid of the Tank

The water is introduced into the tank taking out the lid placed on the upper part of the tank and to which one gets access by the step. It is advisable to use water as clean as possible for a good spraying. Fill in always through the basket filter to avoid the particles to get inside the tank.



**CAUTION!** Do not place the filling hose inside the tank. Keep it always out of the tank directed towards the inside. If the pressure hose is inside the tank and there is a pressure drop in the supply of water, the chemical product could siphon itself and pollute the supply line.

#### 6.1.3. Filling by pump suction

All pumps are self-filling. The maximum height of suction by means of this system is 9,84 feet.

The next steps to use this system are:

1. Introduce the pine in the pool.
2. Unthread and leave out the yellow cap placed in the suction filter.
3. Thread the fitting directly on the suction filter of the machine.
4. Set the PTO on spinning, opening the euromix and botmix taps, closing the sectors.

#### 6.1.4. Filling of the Rinsing Tank

Next to the main tank in the lower rear part we can find the rinsing tank. Take out the lid of this tank and fill in it with clean water. Afterwards, place the lid again.

The nominal capacity of these tanks is a 10% of the capacity of the main tank.

Fill in only with clean water. To avoid the formation of algae, rinse the liquid circuit with clean water if the machine is not going to be used during a long time.

#### 6.1.5. Filling of the sanitary Water Tank

The sanitary water tank is placed in the right upper part of the main tank or in the left side of the air unit. It is used to clean hands, gloves, nozzles, etc. after having been in contact with the chemical product.



**CAUTION!** Even though this tank can only be filled up with clean water, this one cannot be drunk.

### 6.2. Emptying Valve

The emptying valve is found in the front low part of the machine.

To empty the tank, the handle of the ball valve will have to be turned in parallel position to the exit of flow. To fill in anew the tank, close the valve.



CAUTION! When opening the valve be careful that the liquid does not spill your hands or your feet.

### 6.3. Introduction of chemical product

There are different systems to introduce the product in the tank. The next steps must be followed:

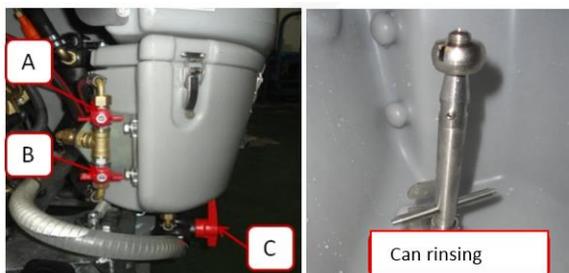
- The tank must be filled in at 1/3 of its capacity with clean water before including the chemical product.
- Activate the pump, automatically the stirring system will start. Check visually from the access hole to the tank that the system works correctly.
- If your machine has no chemical inductor available, empty directly the liquid products inside the tank.
- If your machine has no powder mixer available, it is convenient to dissolve previously the solid products in a can exclusively for this usage before introducing it to the tank.

**⚠ DANGER!**

Follow always the instructions which appear in the label of the product.

#### 6.3.1. Chemical Inductor/ Mixer (Optional)

- Open the lid of the tank and include the product in liquid or powder with all the circuit valves closed.
- Close the lid and open the mixing valve (A) caring that the mixer tank is not full.
- Open the discharge-can-rinsing valve (B) and the draining valve (C) located in the lower part of the tank.
- Valves must be opening and closing until the mixer tank remains empty and without traces of product.
- The can will be cleaned introducing this one upside down and getting the opening of the can inside the T-shaped system of can rinsing inside the mixer tank and pushing the legs of the T to the can, with valves (B) and (C) open.



#### 6.3.2. Powder Mixer

- Introduce the powder directly in the basket with grid located in one of the lids of the main tank.
- Open the valve of the powder mixer located in one of the pump's exits or in the distributor.
- Once all the powder is dissolved, close the valve.

### 6.4. Cleaning of the water system

Every time that the working time is finished or whenever the phytosanitary product is changed, a cleaning of all water system will have to be carried out. With the main tank empty and the clean water tank full of water without chemical product, follow the next steps:

- With the PTO disconnected, turn on the 3-positions valve connecting the suction to the clean water tank.
- Close all valves, the distributors' and the sectors' valves and open the valve of the nozzle/s rinsing (rinsing robot).
- Connect the PTO, with the pump working and cleaning all the walls of the tank.
- Stop the PTO when more than 1/3 of the clean water tank has been absorbed.
- Change the position of the 3-ways valve to the main tank, close the valve of the nozzle rinsing (rinsing robot) and open the other valves.

- 6) Connect the PTO and open the sectors, throwing this water to the plantation we have been treating.
- 7) Repeat twice all steps until emptying the clean water tank.



ATTENTION! With these steps a correct cleaning of the whole circuit and the main tank is guaranteed. A good cleaning of the machine extends the lifetime of the components.

#### 6.4.1. Cleaning of Filters

The cleaning of the filters assures that:

- The sprayers' components like the valves, the diaphragms and the distributor do not get obstructed or damaged while they are working.
- The nozzles do not get obstructed during the spraying work.
- The pump has a long lifetime. The obstruction of the suction filter will give as a result a cavitation of the pump. The suction filter is the element which protects all the main components of the sprayer. Check this one regularly.

#### 6.5. Controls

The sprayer can be supplied with different sort of controls to regulate spraying. Before starting the treatment, you must choose a model of nozzle to use and know at which pressure you are going to work (it is recommended working in a scope between 116-174 psi). See the book "Spraying techniques".



ATTENTION! All the distributors must be regulated with clean water before spraying with chemical products.

#### 6.5.1. GRH Hand-Operated Control

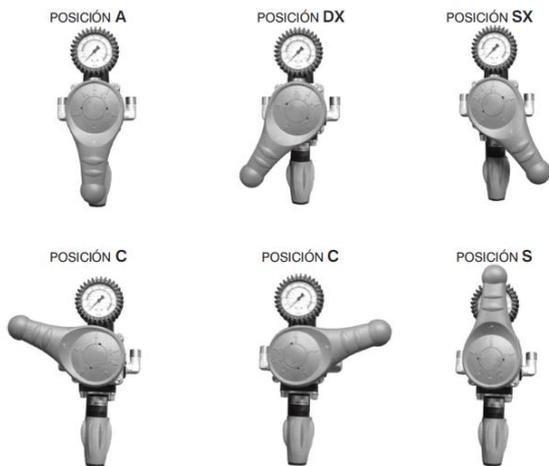
##### 6.5.1.1. Pressure Adjustment:

- 1) Turn the selection lever into by-pass systems position (S)
- 2) Plug the PTO and make it turn to the revolutions at which it is going to work.
- 3) Turn the selection lever towards position of opening both sections (A)
- 4) Turn the lever of pressure to the desired pressure. Clockwise turn stands for raising pressure. Counterclockwise one for lowering pressure. If you spray only in one side of the machine place the lever in right position (DX) or left one (SX) and start again regulating the pressure by turning the lever towards the desired working pressure.

##### 6.5.1.2. Working

Graved on the lever several indications with the following meanings can be read:

- A position: both sectors are open.
- DX position: the right sector is open.
- SX position: the left sector is open.
- C position: the system is at pressure, and all the product goes to return.
- S position: the system is not at pressure, and all the product goes to return.

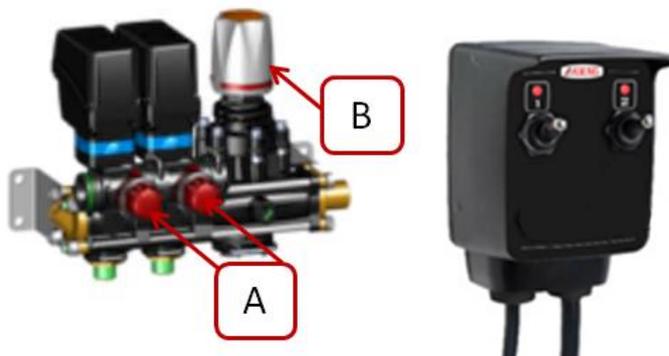


**⚠ DANGER!** Follow all the instructions which appear on the product's label.

6.5.2. System 1 Electrical Distributing Control

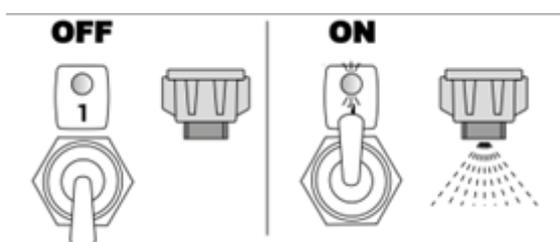
6.5.2.1. Pressure Adjustment

1. With the PTO disconnected, place the switches 1 and 2 of the control in OFF (lower position- turned off leds).
2. Turn the knobs of the regulators of the self-compensated system (A) in open position (0 position).
3. Connect the PTO to the working planned revolutions.
4. Place the switches 1 and 2 in ON (high position – turned on leds).
5. Turn the pressure knob (B) to the desired pressure, clockwise turn stands for raising pressure, counterclockwise turn for lowering pressure.
6. Close the sector 1 (left).
7. Turn the knob of the regulator of the self-compensated system of the closed sector (left) until the pressure achieved is the same as the one previously achieved with both sectors open.
8. Open again the sector and repeat the operation closing and compensating the other side.



6.5.2.2. Working

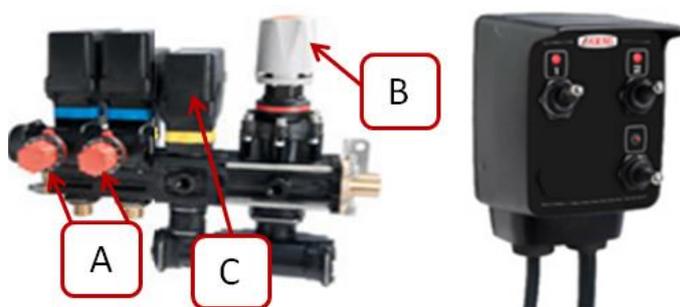
The electrical control consists of 2 switches 1 (left sector) and 2 (right sector). By moving each one of the switches upwards, spraying of the corresponding sector will be activated. The lit light signs indicate the activation of each sector.



### 6.5.3. System 2 Electrical Distributing Control

#### 6.5.3.1. Pressure Adjustment

1. With the PTO disconnected set the control switches 1 and 2 in OFF (lower position – turned off leds)
2. Keep the switch of pressure activated downwards for 5 seconds until leaving the electrical regulator without pressure (see manometer).
3. Turn the knobs of the regulators of the self-compensated system (A) in open mode (0 position).
4. Connect the PTO to the planned working revolutions.
5. Place the switches 1 and 2 in ON mode (upper position – turned on leds)
6. Turn the pressure knob (B) to the highest desired pressure. Clockwise turn stands for increasing pressure, counterclockwise for diminishing pressure.
7. Close the sector 1 (left).
8. Turn the knob of the regulator of the self-compensated system (A) of the closed sector (left) until achieving the marked pressure with both sectors open.
9. Open again the sector and repeat the operation closing and compensating the right sector.
10. Open both sectors and adjust the desired pressure with the pressure switch.



#### 6.5.3.2. Working

It has the same functions as system 1, except for pressure regulation which is carried out by means of an electrical valve (C) and an added selector in the control box.

### 6.5.4. System 3 Electrical Distributing Control

#### 6.5.4.1. Pressure Adjustment

1. With the PTO disconnected set the switches 1 and 2 (5) or the general (6) of the control in OFF (lower position – turned off leds).
2. Keep the pressure switch (7) activated downwards for 5 seconds in order to suppress the pressure of the electrical regulator.
3. Turn the knobs of the regulators of self-compensated system (A) in open mode (0 position).
4. Connect the PTO to the planned working revolutions.
5. Set the switches 1, 2 and the general in ON (upper position – turned on leds).
6. Turn the knob of pressure (B) to the highest desired pressure, Clockwise turn stands for increasing pressure, counterclockwise for diminishing pressure.
7. Close sector 1 (left).
8. Turn the knob of the regulator of self-compensating system (A) of the closed sector (left) until reaching the attained pressure with both sectors open.
9. Open again the sector and repeat the operation closing and compensating sector 2.
10. Open the two sectors or/and the general and adjust the desired pressure with the pressure switch.



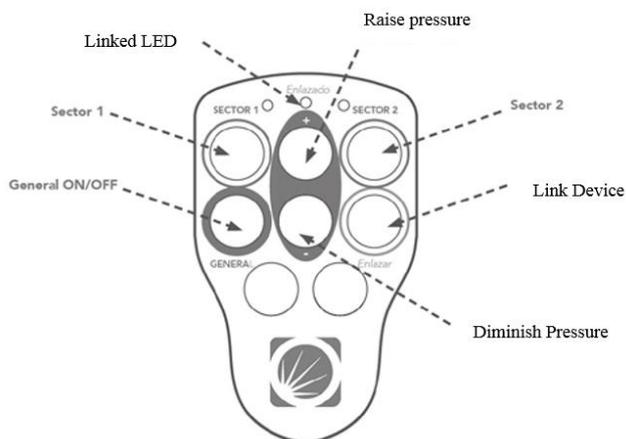
6.5.4.2. Working

With the same functions as system 2, with an added electrovalve which allows the opening or the closing of general circuit by means of a selector added to the control box. Light indicator is included. There is the possibility of replacing the control box by a wireless control with identical functions. See next “Quick guide of working of wireless control”

6.5.5. Wireless Control

6.5.5.1. Start Up

Set the control on working tapping the button “Link device”. The “Linked LED” will blink in green colour at regular periods, indicating that the control is on and that the receiver can be contacted correctly. If the device does not get previously linked, the usage of the expected monitoring functions in the control will not be possible.



6.5.5.2. General On/OFF Switches

Tap the button “General ON/OFF” to activate the general electrovalve and allow the usage of the rest of functions. A second tap will disconnect the electrovalve and the sectors which are working. If the general electrovalve is not activated, the use of any of the control functions will not be possible, either the pressure regulation.

6.5.5.3. Main Functions

From this moment on, the sectors and the regulation of pressure can be activated individually, tapping the buttons indicated in the scheme.

6.5.5.4. Memory Function

At any moment, the button “General ON/OFF” allows to “memorize” the last status of sectors opening; in a way that it is possible to control the partial closure functions when tractor is turning.

6.5.5.5. Closing of Daily work

When finished the daily work, the connection with the receiver must be cut off, tapping the button “Link Device”, the “Linked LED” turning briefly on in red colour. Since that point, the LED will give up blinking.

	<p>ATTENTION! If the system loses the connectivity because of any circumstance, the receiver forces the closing of all electrovalves, as a safety measure.</p>
---	--

#### 6.5.6. Bravo 180S Electrical Distributing Control

##### 6.5.6.1. Pressure Adjustment

The adjustment is made in the same way as the system 3.



##### 6.5.6.2. Working

It has the same functions than the system 3, it includes a flowmeter in the distributor and a computer which controls the processes with the control box. For more automatization and information, a GPS can be mounted for speed control, a pressure sensor in the distributor to inform about working pressure and a tank level sensor to obtain information at every moment about the remaining liquid volume.

To see the functions of the control, check the "Quick instructions guide of Bravo 180 for sprayers."

**bravo180S**

**Quick reference guide  
ORCHARD SPRAYER**

USA



**PREPARING THE TREATMENT**

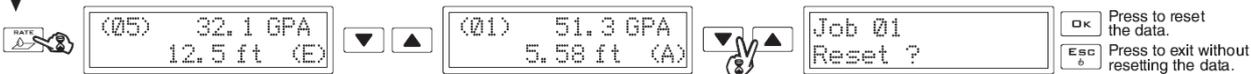
**1 Job selection**

From the Spraying Menu, press key and hold to select spraying job.



**2 Reset total counters**

From the Spraying Menu, press key and hold to select spraying job.



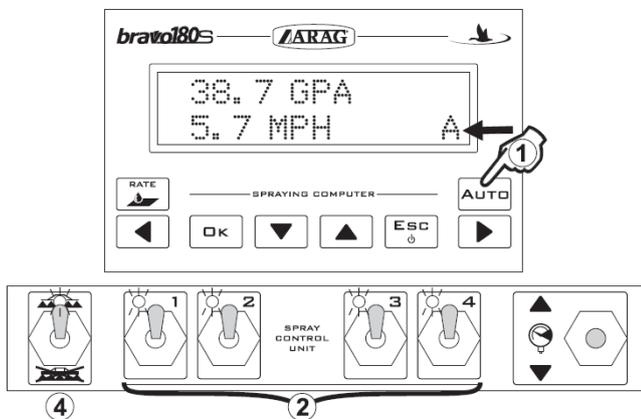
**3 Tank Filling**

From the Spraying Menu, press to select the value to be set.



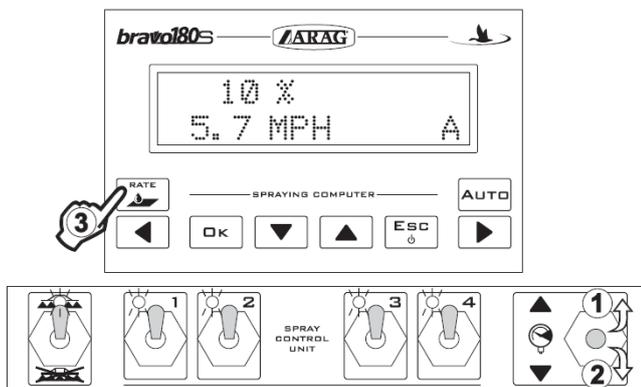
**USE**

**1 Automatic treatment control**



- ① Press to enable automatic mode.
- ② Turn on the section valves required.
- ③ Drive to the start of the field.
- ④ Set the main control switch up.
- ⑤ Run the treatment.

**2 Temporary variation in rate**



- ① Press the switch up to increase the delivery value.
- ② Press the switch down to decrease the delivery value.
- ③ Press to reset the rate variation percentage.

### KEY TO ITEMS ON DISPLAY

Percentage of the variation relative to the set delivery value → 10 %

Delivery value during spraying → 32.1 GPA

Spraying disabled → Master OFF

Tank level below reserve value set

AUTOMATIC operation ON (A)

MANUAL operation ON (M)

Operating data displayed during spraying:

- Speed
- Pressure
- Flow rate
- Area
- Sprayed fluid
- Sprayed rows
- Tank level
- Time
- Distance

Speed simulator active: the value is to the left of the symbol

---

### OPERATING ALARMS

- The computer is not receiving the speed of the tractor and spraying is enabled (main control switch "ON"). The messages shown flash alternating.

Machine stopped!

0.0 MPH A

0.0 GPA

0.0 MPH A

---

- The computer detects zero flowrate and spraying is active (main switch valve "ON"). The messages shown flash alternating.

Missing flow!

0.0 GPM A

0.0 GPA

0.0 GPM A

---

- Speed to high or low for the set dosage.

Accelerate!

1.99 MPH A

Slow down!

6.65 MPH A

---

- **For 4-section Bravo 180S only**  
One section out of four or three sections out of four are closed, or the two upper or lower sections are closed: spray rate is changed to keep pressure constant.

32.1 GPA ?

6.21 MPH A

-25%

6.21 MPH A

---

### SELECTING THE WHEEL TYPE (CONSTANT)

From the Spraying Menu, hold down to access the User Menu.

Menu

User

▼ ▲

Wheel selection

...

OK

Wheel 1/3

20.09 in./pls

▼ ▲

Wheel 3/3

19.68 in./pls

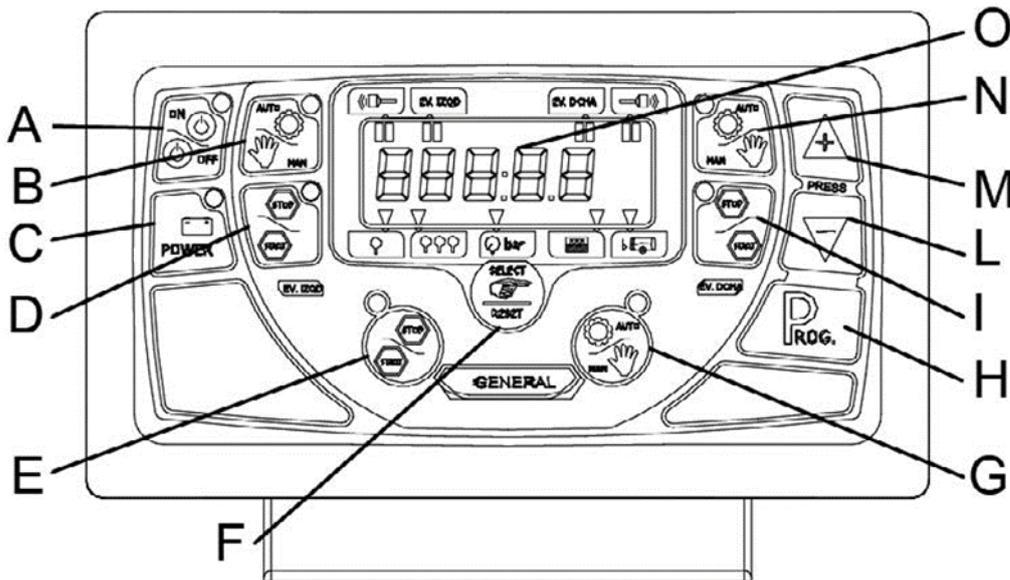
OK

ESC

---

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6.5.7.1. Control Basics



A	General ON-OFF key with green led.
B	Left "AUTO/HAND OPERATED" key with green led
C	"VOLTAGE FEEDING" green led
D	Left "START/STOP" key with red led
E	General "START/STOP" key with red led
F	"SELECT / RESET"key for display and reset indications.
G	General "AUTO/HAND-OPERATED" key with green led
H	"PROG" key for constant programming
I	Right "START/STOP" key with red led
L	"-" key to diminish values in programming phase.
M	"+" key to increase values in programming phase
N	Right "AUTO/HAND-OPERATED" key with green led
O	5 numbers back-lit LCD display with green leds to view

6.5.7.2. Pressure Adjustment

1. Switch on the control, tapping the ON button (A position).
2. If needed set the control on hand-operating mode (tap B and N buttons, switching off thus the green leds).
3. Close the electrovalves of the sectors (tap D and I buttons, it is convenient, switching on the red colour leds).
4. Connect the PTO and make it spin to the planned working revolutions.
5. Open the electrovalves of the sectors (tap D and I switching off the colour red leds).
6. Turn the pressure knob of the distributor to the wanted pressure, Clockwise turn stands for increasing pressure, counterclockwise for diminishing pressure.

6.5.7.3. Automatic Adjustment of Opening and Closing Times



The time of opening and closing the sectors will have to be reckoned. For this, the distance between the sensor and the place where start the nozzles or nozzle-holders will have to be measured. If we know the speed to which the machine is going to work, an approximate reckoning of programmed closing and opening will be able to be done applying this formula:

$t(sec) = \frac{sensor\ distance - jet[ft]}{working\ speed\ [mph] \times 3,6}$	<p>Example: If you are going to work at a speed of 3,11 mph and the distance between the sensor and the jet is 9,84 feet, the time of opening and closing will be 0,16 seconds</p>
--	--

With the reckoned time we proceed to program the control following the next steps:

1. Tap once the start up button (ON/OFF) and wait 5 seconds for the 3 (AUTO/HAND-OPERATED) green lights for being lighted up.
2. Tap once the GENERAL (START/STOP) button.
3. To program the time of opening and closing of the sectors, keep tapped the (PROG) button until it appears (tO 0.3), "tO" is the time gap for the opening of sectors. With (+) y (-) right buttons, insert the value previously reckoned.
4. Tap the (PROG) button to change to screen (tC 0.3), "tC" is the gap time for the closing of the sectors. Proceed to introduce the reckoned value.
5. Tap thrice the (PROG) button, until going back to the main menu.

#### 6.5.7.4. Working

Job will be able to be done in automatic mode (detection of presence of the tree by sonar) or hand-operated one. In the control the general buttons of hand-operated/automatic and START/STOP (G and F Position) always will rule both sectors at once. Every sector will be able to be controlled separately with the buttons B/N and D/I.

##### 6.5.7.4.1. Automatic Mode

1. Turn on the control tapping ON/OFF (A position).
2. Set the control in automatic working mode (tap B, N y G, if necessary, turning on the green colour leds).
3. To start working the START/STOP buttons must be in START position (tap D, I and E, if necessary, turning off the red colour leds).
4. If you want to deactivate both sectors at once tap general START/STOP (E position, turned on red led) if you want to deactivate one sector tap sector START/STOP (D and I positions, turned on red led).
5. To start activating again, tap again START/STOP switching off the red led.

##### 6.5.7.4.2. Hand-operated Mode

With this mode, sectors will be able to be opened or closed when required without any sort of delay.

1. Set the control in hand-operated working mode (tap B, N y G, if this is convenient, turning off thus the green leds).
2. To open or close the sectors tap the START/STOP buttons (tap D, I and E, OPEN = TURNED OFF RED LED, CLOSED = TURNED ON RED LED).

## 6.6 Air kit

In the setting of the air unit, several air kits can be added to improve the focusing of treatment in your crops.

### 6.5.5. Air Kits

There are several air kits, hydraulic and hand-operated. It is recommended to check all the mobile points of the kit in order to ensure an optimal working of this.

Check the position towards which the kit air exit is steered. It must be orientated to the crop in order to have an optimal application.

#### 6.6.2.1 Long Range and Height and Almeria Cannons

In the Long Range and Height and Almeria cannons, you can treat 180 degrees horizontally and 90 degrees vertically.

This movement allow you to reach all sort of crops in range and height and any side following the marching sense.

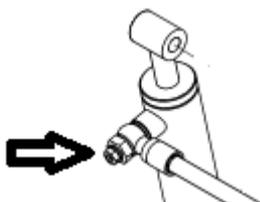
They are provided with a 7,87" diameter exit with a cross with 9 nozzle-holders.

It is provided too with a 5,51" diameter auxiliary cannon with 2 parallel nozzle-holders.

##### 6.6.2.1.1 Kit's Adjustment

1. First we have to set the power on with the tractor stopped. and connecting the hydraulic plugs to the tractor's control. Check chapter 5.3 of this manual of instructions (hydraulic plugs).

2. When you have set the hydraulic plugs, you will have to regulate the speed of the hydraulic functions to obtain and adequate movement depending on your marching speed and crop. To this aim, you will need to regulate the entry and exit of oil from the lifting piston and the cannon turning engine piston.



3 . Once the speed of the hydraulic functions has been regulated, you have to steer the cannons' exit to your crop to obtain a deeper penetration inside the vegetation

To achieve this, you must pull the hydraulic pressure lever of the tractor, to steer the main cannon and steer manually the auxiliary cannon. You must loosen the clamp before steering.

#### 6.6.2.2 Murcia Cannon Kit

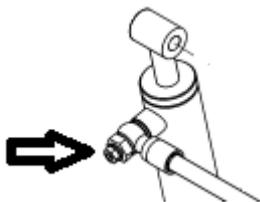
The Murcia cannon kit will allow you to have a vertical angle of application, with only one air exit and 14 nozzle-holders for the treatment.

As in the Long Range and Height Cannon you will have a hydraulic cylinder to control the cannon's angle position.

##### 6.6.2.2.1 Kit's Adjustment

1. First we have to set the power on with the tractor stopped. and connecting the hydraulic plugs to the tractor's control. Check chapter 5.3 of this manual of instructions (hydraulic plugs) .

2 . When you have set the hydraulic plugs, you will have to regulate the speed of the hydraulic functions to obtain an adequate movement depending on your marching speed and crop. To this aim, you will need to regulate the entry and exit of oil from the lifting piston.



3. As in the Long Range and Height Cannon, you must direct the main cannon to your crop to start treatment, pulling the tractor's hydraulic pressure lever.

### 6.6.2.3 Row Crops' Cannon Kit

The row crops' cannon kit will allow you to treat horizontally until a coverage of 16 mts with until 7 air outlets and 26 nozzle-holders.

#### 6.6.2.3.1 Kit's Adjustment

1 .In order to treat accurately, you will have to steer the air outlets proportionally towards the crop, avoiding overlapping the different spraying exits (you will have to loosen every clamp of each spout and once these are steered to tighten them again).

### 6.6.2.4 Medium Range and Height Cannon

The Medium Range and Height Cannon will allow you to treat 180 degrees horizontally and 90 degrees vertically. It is provided with a main cannon with 6 nozzle-holders and an auxiliary cannon with 2 nozzle-holders.

#### 6.6.2.4.1 Kit's Adjustment

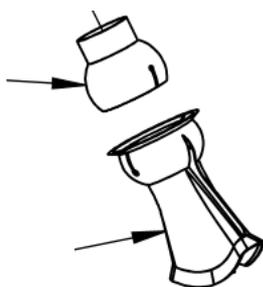
1 . The movement system is mechanical. It has positions available in order to leave it tare weighed. To achieve this, the pin of the main cannon must be removed. This has to be locked to avoid movement.



2 . Secondly, you must steer the air exit to the crop.

3 . Once you have steered cannon, you will set again the pin in order to lock it. C

4 . Once it has been locked, you will have to steer the auxiliary cannon (you will have to loosen first the clamp before steering this. Once it is steered, tighten this again).



## 7 Maintenance

### 7.1. General Information

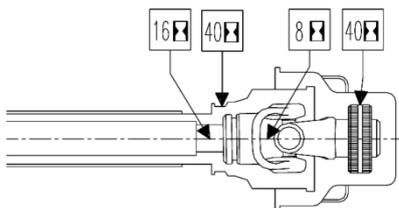
Keep all the lubricants clean and stored in a fresh and dry place to avoid pollution by dirt or condensate water. Keep clean the oil cans, funnels and grease pistols before storing them and the points of lubrication once they have been greased. Avoid contact for prolonged periods of time of the oil products with the skin.

Follow always the advice about recommended amounts. If the recommended amount is not shown, place grease until this is made visible. The pictograms about lubrication refer to the working hours before the next lubrication.

- **DANGER!** If the sprayer is cleaned with a pressure water gun, lubrication on all the machine is recommended

### 7.2. PTO Axle and PTO Shaft

Grease the knots of the PTO shafts (internal/external) every 8 working hours; the points of turning of the protector and the fixation of the PTO shaft will have to be greased every 40 hours. For a better gliding, it is necessary to grease the PTO shaft tubes every 16 hours.



Replace the protections if they are damaged or broken.

### 7.3. Water Pumps

#### 7.3.1. Ordinary Maintenance

MAINTENANCE PERIOD	INTERVENTION
Every time it is used	<ul style="list-style-type: none"> <li>• Level and oil status control</li> <li>• Suction Filter's Control and eventual Cleaning</li> </ul>
Every 50 hours	<ul style="list-style-type: none"> <li>• Control of inflating pressure of the accumulator</li> <li>• Control of the fixation of the pump to the structure that holds it</li> </ul>

#### 7.3.2. Extraordinary Maintenance

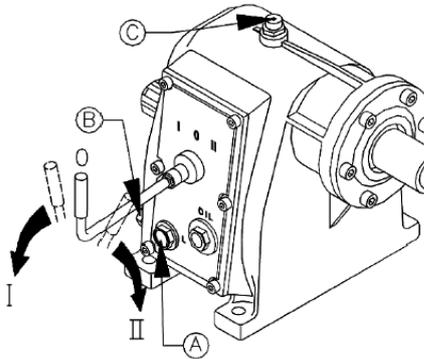
MAINTENANCE PERIOD	INTERVENTION
The first 50 hours (piston pumps) The first 300 hours (diaphragm pumps)	Carry out the change of oil
Every 300 hours	<ul style="list-style-type: none"> <li>• Check that the pumps' screws are tight.</li> <li>• Check that the pressure limiting valve and the safety valve works.</li> <li>• Check that the valves of suction and delivery work.</li> <li>• Check status of o'rings joints in piston pumps and replace them if needed</li> </ul>

<p>Every end of the season or once a year</p>	<ul style="list-style-type: none"> <li>• Change of oil</li> <li>• Check and eventually replace diaphragms</li> <li>• Check and eventually replace joints in piston pumps.</li> </ul>
---	--

**7.4. Gear Box Unit**

Check the oil level by means of the A viewer; the first oil change must be done after 100/150 hours and successive ones every 250/300 working hours.

Use for this purpose SAE-20/40 HD oil emptying it with the B cap and filling it with the C cap.



**7.5. Fan and Air Kits**

**7.5.1 Fan**

Check visually possible defects or notches, replacing the blade in case of severe defects which could cause excessive vibrations or even breakage of all the air unit.

Counterweight the fan every time a change of this one is done or whenever an excessive vibration of the air unit is observed.

**7.5.2 Long Range and Height Cannon and Almeria Cannon**

**Daily Revision**

It is necessary before starting the treatment view the condition of the air kit.

You must check that there aren't oil leaks in the hydraulic system.

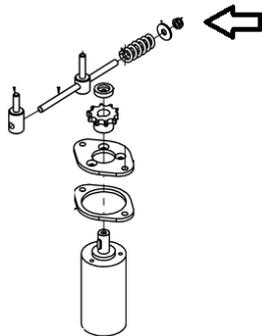
You must check that the turning system of the kit is perfectly greased.

We will inspect that the hoses, whether the water ones or the air ones, are not deteriorated. If they are not in good condition, they must be replaced.

**Annual Revision**

It is recommended to do an annual revision to avoid problems with the air kit during the season.

For this reason, we will tension the chain of the turning part of the kit. In order to stretch the chain, you will have to tighten the tensor of the upper part of the hydraulic pump. (You will have to stretch, until reaching a play gap of approximately 3 mm)



Once this is done, you will have to grease the parts which are in contact with the chain, and the chain itself.

You will have to check if all the components of the kit are right. If that is not the case, you will have to replace the damaged elements.

### 7.5.3 Murcia Cannon Kit

#### Daily Revision

It is necessary before starting the treatment view the condition of the air kit.

You must check that there aren't oil leaks in the hydraulic system.

You must check that the turning system of the kit is perfectly greased.

You must check that the water hoses have any leak. .

#### Annual Revision

It is recommended to do an annual revision to avoid problems with the air kit during the season.

You must check that the turning system of the housing has not play when working.

You must grease the crown of the turning system.

You will have to check if all the components of the kit are right. If that is not the case, you will have to replace the damaged elements.

### 7.5.4 Row Crops' Cannon Kit

#### Daily Revision

It is necessary before starting the treatment view the condition of the air kit.

Check the air and water hoses. In the event of creasing, replace the damaged element.

Check that the air and water outlets are in their due position in order to do an effective treatment.

#### Annual Revision

It is recommended to do an annual revision to avoid problems with the air kit during the season.

Check the air and water hoses. In the event of vices or defects, replace them.

Check the spouts and cannons for defects detection. If there are defects, the damaged elements will have to be replaced.

As with the spouts, if any water nozzle-holder has defects, you will have to replace them.

Grease the mobile parts of the hand-operated joints of the kit.

### 7.5.5 Medium Range and Height Cannon

#### Daily Revision

It is necessary before starting the treatment view the condition of the air kit.

Check the air and water hoses. In the event of creasing, replace the damaged element.

Check that the air and water outlets are in their due position in order to do an effective treatment.

You must check that the turning system of the housing has not play when working.

You must grease the crown of the turning system.

#### Annual Revision

It is recommended to do an annual revision to avoid problems with the air kit during the season.

We will inspect that the hoses, whether the water ones or the air ones, are not deteriorated. If they are not in good condition, they must be replaced.

You must check that the turning system of the housing has not play when working.

You must grease the crown of the turning system.

### 7.6. Filters and Fittings

Check the filters every 50 working hours. Apart from being clean, check that the mesh is in perfect conditions. If not, the effectiveness of the filter will be non-existent.

Whenever you disassemble some filter or hose you will have to be careful not to pinch the o'rings assembled on these. When the fitting is put again in its place, spread oil and grease on the o'ring so that this fits easily its slot.



To have the filters in bad conditions, may imply plenty of non-wanted stops during the working day and lengthen thus unnecessarily the working time.



Every time that a fitting is disassembled to check the condition of the joint or for any other need, remember to lubricate the closure joint with oil or grease to prevent this one from pinching itself and breaking when the fitting is placed again in its lodging.



The lack of grease of the pump would cause that this would overheat, and all internal mobile parts could become broken.

#### 7.7. Nozzles

To clean or replace them you will have to help yourself with a key to unthread the bolt (D). Take out the nozzle and clean it with air, water or with a suitable brush.



**ATTENTION!** Do not ever use a wire or needle because it would damage irretrievably the nozzle.

If some nozzle drips when the sectors are being closed, you will have to replace the antidrip diaphragm (E).



#### 7.8. Winter Storage

Before storing your machine for the winter pause, it is advisable to give it a special care:

- Make sure that the tank is empty and free of wastes.
- Replace the joints and the possible losses.
- In areas where the temperature is prone to descending below 0°C, fill the tank with 13,21 gallons of water mixed with antifreeze and set the pump on working with the jets closed, until being sure that the pump and all the circuit is full of antifreeze.
- Leave the tank with the charging hole uncovered to avoid possible accumulation of gases.
- After a full cleaning of the machine, check the paint of the frame; repair the rusted places, as the phytosanitary products accelerate corrosion in damaged areas.
- Start a general greasing process and change the oil in the pump and in the gear box.
- Disassemble the manometer of pressure and keep it away of frosts and in vertical position.
- Keep the machine in a safe, aired and closed place.
- Make sure that the pressure regulation valve is in "zero" position.
- Check that all protections of the machine are in perfect condition.
- All the electrical connectors should be kept in plastic bags to protect them from humidity, dirt and corrosion.
- Disassemble the control box if the tractor has one and keep it in a dry and clean place.

7.9. Preparation of the machine to use it after its storage

After the storage period, the machine should be arranged to start the job of the new season with guarantees. For a correct start, follow the next steps:

- Assemble again the manometer of pressure. Replace the old teflon.
- Connect the machine to the tractor including electrical wires and hydraulic adapters.
- Check the brake.
- Empty the tank until no waste of freeze remains.
- Rinse completely the liquid circuit with clean water.
- Fill in the tank with clean water and check all functions.

7.10. Periods of Maintenance

7.10.1. Every 10 working hours.

Fill in the tank with clean water, activate all functions and check potential losses using a bigger pressure than the usual one.

Check visually the cone of the nozzles to detect potential imperfections.

Clean the suction and pressure filters.

Control of oil level and condition in the water pump.

7.10.2. Every 50 working hours.

Revise the condition of the PTO shaft protection. Replace damaged parts if there are any. Tighten again the screws of the areas which carry out bigger efforts or twisting.

Make sure that the pressure of the air tank of the pump are correct. Check the PTO shaft.

Check the fixation of the water pump.

7.10.3. Every 250 working hours.

Check all hoses of the circuit.

Replace the gear box oil. Check the gear box holder and tighten again the attachment screws.

7.10.4. Every 1000 working hours.

Make a full revision of all elements previously described.

8. Failures Detection

8.1. General Information

On practically all the failures, the same factors use to have some influence:

1. Small pores or air intakes in suction will reduce the capacity of the pump or will completely stop the suction.
2. An obstructed suction filter causes the pump not to suck correctly.
3. The obstructed pressure filters will make the pressure increase in the manometer but descend in the nozzles' exit.
4. External objects in the valves can cause that the valve does not close completely. This will reduce the efficacy of the pump.
5. Bad assembly of the pump, specially the cases of the diaphragms, will cause air suction and therefore reduction or poor suction of the pump.

For this reason, check ALWAYS that:

1. The filters of section, pressure and nozzles ones are clean.
2. The hoses have not leakages or pores, particularly those of suction.
3. Joints and o' rings are in good condition.
4. The manometer marks perfectly. The correct dosage depends on it.
5. The distributor works correctly. Use clean water to test it.

8.2. Liquid Circuit

FAILURE	PROBABLE CAUSE	POSSIBLE SOLUTION
---------	----------------	-------------------

When activating the system there is no spraying	Air in the suction	Check the o'ring of the suction filter. Check the suction pipe and hose fittings. Check the assembly of the lids of the head of the pump and the diaphragms.
	Air in the system	Prepare the pump filling in the hose with water.
	Suction/pression filters are obstructed.	Clean the filters Check the suction fitting and make sure that the mouth of this is not too close from the tank's bottom.
Loss of pressure	Incorrect Assembly	The spring of the safety valve is damaged The suction fitting is obstructed The suction filter is obstructed
	Clogged or worn out pump valves	Check obstructions and wear
	Defective manometer	Check if there is dirt in the entry
Pressure leaps	Clogged filters	Clean the filters. Clean with clean water. If you use powder, make sure that the stirring is activated.
	Worn-out nozzles	Check that the flow of the nozzles does not exceed the 10%
	Clogged tank's air vent	Check the air vent
	Air Suction	Reduce revolutions in the PTO or pressure of the circuit
Pressure increase	Obstructed pressure filters	Clean the filters
Foam Creation	Air in the circuit	Check o'rings, joints, hoses and suction fittings
	Excessive stirring	Reduce revolutions in the PTO or circuit pressure Check the tension of the safety valve and of the self-cleaning filter. Make sure that there is return to tank. Use additive against-foaming action
FAILURE	PROBABLE CAUSE	POSSIBLE SOLUTION
Loss of Liquid of the Pump	Damaged diaphragms	Replace
	Damaged piston	Replace
The distributor does not work	Interrupted Connection	Check potential cable rupture Check that the wires are well-connected
	The valves do not close correctly	Check possible obstructions in the valves Check the endings of paths
	There is not electrical current	Wrong polarity. Brown is pos. (+), Blue is neg. (-). Check the electrical plate Check that the fuse makes good contact with your electrical support.