



**AGROSE**  
AGRICULTURAL SPRAYERS



# OWNER MANUAL



**BOOM SPRAYERS**  
**(MOUNTED & TRAILED)**



**Manufacturer:**

AGROSE Mak. Tar. Gıda Tek. İnş. San. ve Tic. Ltd. Şti

**Trademark of the Machine:**

AGROSE

**Model of the Machine:**

ATS- 200 / 300 / 400 / 500 / 600 / 800 / 1000  
ATT-A- 200 / 300 / 400 / 500 / 600 / 800 / 1000  
ABP- 200 / 300 / 400 / 500 / 600 / 800 / 1000  
ATH- 600 / 800 / 1000  
ATO- 600 / 800 / 1000  
ATHA- 800 / 1000  
ATFH-X-600-800-1000  
CTS-600 / 1000 / 1200 / 1600 / 2000 / 3000  
CBP- 600 / 1000 / 1200 / 1600 / 2000 / 3000  
CYTH-600 / 1000 / 1200 / 1600 / 2000 / 3000  
CYTFH-600 / 1000 / 1200 / 1600 / 2000 / 3000

**Type of the Machine:**

Mounted and Trailed Types Boom Sprayers



**WARNING!**

Read Operator's Manual before setting up, operating, or maintaining sprayer. Failure to follow safety precautions in this manual and in labels on the product could result in serious injury or death to the operator or bystanders.

Keep manual nearby for further reference. If manual is damaged or illegible, contact your AGROSE dealer or AGROSE at the address below for a replacement.

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**PLEASE READ THIS MANUAL THOROUGHLY!**

Thank you for having chosen AGROSE.

The product you purchased has been designed and built with the greatest attention to the safety of the operator and the environment, never the less there are still some residual risks due to the nature of the product used.

For this reason we recommend reading all of this manual to avoid making mistakes in the first period of use and to get the most out of the working life of the sprayer in time, doing the programmed maintenance at regular intervals.



**1. USING AND KEEPING THE USE AND MAINTENANCE MANUAL**

The manual is an integral part of the machine and should be kept in a safe place where it can be reached easily for consultation.

**1.1. COMPOSITION OF THE MANUAL**

This manual consists of various parts to make it easier to consult by subject and to avoid repetitions; the following are part of the manual:

- a) Sprayers
- b) Pressure Regulator (Control Units)
- c) Optional accessories handbooks ( Premix, cardan shaft, etc.)

AGROSE reserves the right to make changes to the manual without prior warning and the normal printing cycles may vary slightly.



**1.2. GUARANTEE**

The enclosed card indicates the conditions of the AGROSE guarantee. The AGROSE guarantee covers the repair or replacement of parts considered manufacturing flaws, according to the unquestionable judgement of AGROSE, only after the authorized agent for that zone has verified the fault.

**Ambit of the guarantee:** The guarantee doesn't cover cases of normal wear, negligent use, poor maintenance and/or improper use.

**The following materials subject to normal wear are not covered by the guarantee:** gaskets and seals, diaphragms, seal rings, tubes and pipes, nozzles, pressure gauges, oil, tires, friction material of the clutches.

**Evident cases of negligence include:** work speed over that indicated in the spraying tables in the handbook (or too high for the conditions of the terrain), use of herbicide booms without an auto-leveling system or with the auto-leveling system blocked, power-takeoff speed over 540 rpm.

**Mounted sprayers:** activation of the three-point elevator with cardan shaft engaged and power-takeoff operational. And anything else indicated in the present Use and Maintenance Manual.

**Maintenance:** The guarantee is void if the maintenance indicated in the tables in this manual isn't respected, regarding the period and deadline of the interventions, washing the machine and the circuit at the end of the treatment.

**Improper use:** The use the AGROSE machines are designed for is indicated in this manual, any other use is forbidden and makes the guarantee void.

### 1.3. PRODUCT RESPONSIBILITY

AGROSE is not responsible if:

- a) During the working life of the machine the normal maintenance operations aren't performed and documented as indicated in this handbook, in the enclosed handbooks of the pumps-regulators-etc. and in any case as is customary for the normal maintenance of mechanical machinery.
- b) The machine is equipped with non-original accessories or components or parts that aren't acknowledged by AGROSE as their own.
- c) The machine is equipped with original accessories or components that are unsuitable in the measurements, weight or version for the same. Please consult the page of available and recommended fittings.
- d) Not following the instructions in the manual whether totally or partially.
- e) Modifications made to the machine that haven't been authorized by AGROSE.

### 1.4. WARNING SIGNS IN THE MANUAL AND ON THE MACHINE

Below you will find all of the pictograms on the machine, in order to illustrate the warnings, the prohibitions and the correct method of use. The operations that require particular attention are shown in the images beside the text.

#### Key to the symbols

1- Read the Use and Maintenance manual

2- Stop the machine and read the manual before every intervention

3- Don't lubricate while running

4- Don't drink

5- Don't dispose of residue liquids in the environment

6- No smoking

7- Danger, risk or injury, don't get near the machine until the moving machine members have stopped

8- Danger of crushing, don't get your hands near the moving mechanical machine members

9- Danger, risk or injury caused by fluids under pressure

10- Don't climb on the machine during work or transfers

11- Don't climb on the tank

12- Don't enter in the tank

13- Wearing earmuffs is obligatory

14- Wearing a face mask is obligatory

15- Wearing safety footwear is obligatory

16- Wearing protective gloves is obligatory



- 17- Wearing protective overalls is obligatory
- 18- Use a working pressure under that indicated in red on the manometer.
- 19- Don't get your hands near the moving cardan shaft
- 20- Make sure power-takeoff of the tractor turns in the right direction and runs at the right speed.
- 21- Beware of the possibility of the raised boom falling
- 22- Danger of contact with the electric power lines



## 2. SAFETY REGULATIONS AND RESIDUAL RISKS

*In relation to safety, the following terms will be used.*

**Dangerous zones:** any zone inside and/or near the machine where the presence of a person exposed constitutes a risk for the safety and health of the same person.

**Person exposed:** any person who has their body or any part of their body in a dangerous zone.

\*Before starting the machine, the operator must check for any visible faults in the safety devices and the machine itself.

\*Never start the machine until you have told anyone in the range of action of the machine to move away and they have done so.

\*The protective devices must not be removed or disabled when the machine is running.

\*It is obligatory to keep all the plates with danger and safety signs in perfect conditions. If they get damaged or deteriorate, replace them in good time.

\*Replace parts believed to be faulty with others indicated by AGROSE.

\*NEVER try makeshift or hazardous solutions.

\*Don't wear clothes, jewelry, accessories, or anything else that can get caught in the moving machine members.

\*Pay the greatest attention to all the warning and danger signs on the machine.

\*Don't use the machine for any other purpose other than that indicated in the manual.

\*The machine has been designed and built with the appropriate devices to guarantee the safety of the user.

\*In any case there are some residual risks associated with the improper use of the machine by the operator; for this purpose danger signs and symbols and prohibitions are applied near some parts of the machine.

### 2.1. INTENDED USE

The sprayer in this series is built for agricultural use. The materials used are resistant to normal chemical products used in agricultural spraying (or herbicides) at the time of construction.

Any other use is not allowed and the manufacturer is not responsible for any damage caused by aggressive, dense or sticky chemicals.

***THE USE OF THE MACHINE BY PERSONS UNDER 18 YEARS OF AGE IS STRICTLY FORBIDDEN***

The use of liquid fertilizers in suspension is not allowed, while the use of the same in a solution is possible if requested when the machine is ordered from AGROSE and in any case changing some of the parts described in the handbooks of the regulator, such as the manometer (stainless steel), the nozzles (large diameter ceramic) and eliminating the fine mesh filters to prevent blockages.

## 2.2. PROHIBITED USE

- ✓ Using the machine with the following products is strictly forbidden:
- ✓ Paints of any kind and type
- ✓ Solvents or thinners for paints of any kind and type
- ✓ Combustibles or lubricants of any kind and type
- ✓ LPG or gas of any kind and type
- ✓ Flammable liquids of any kind and type
- ✓ Liquid foodstuffs, whether for animals or humans
- ✓ Liquids containing granules or consistent solids
- ✓ Mixtures of various incompatible chemical products
- ✓ Liquid fertilizer or manure in suspension with lumps and/or that is particularly dense
- ✓ Liquids with a temperature of over 40°C
- ✓ Any products that aren't suitable for the specific use of the machine.

## 2.3. USING CHEMICAL PRODUCTS

All pesticides or herbicides can be dangerous to humans and the environment if used erroneously or inadvertently.

Therefore we recommend that only suitably trained persons should use these products (license) and in any case only after having carefully read the instructions on the container.

### 2.3.1. REGULATIONS FOR THE USE OF CHEMICAL PRODUCTS

#### Some recommendations for avoiding damage and accidents:

- ✓ Keep the machine in a suitable, protected place with no access for children or strangers
- ✓ Handle the products with care, wearing rubber acid-proof gloves, goggles face masks or filtering helmets, overalls made of water-repellent fabrics and boots made of rubber or similar materials.
- ✓ If chemical products or mixtures of product come into contact with the eyes or are swallowed consult a doctor immediately, taking the label of the product with you.
- ✓ Wash all clothes that come into contact with the chemical, whether diluted or undiluted, thoroughly before using them again.
- ✓ Don't smoke, drink or eat when preparing or spraying the mix or near or in the fields treated.
- ✓ **DON'T ENTER THE TANK:** The residues of a chemical product can cause poisoning and suffocation.
- ✓ When spraying, respect safe distances from residential areas, watercourses, roads, sports centers and public parks or paths.
- ✓ Thoroughly wash the containers of plant protection products using the relevant accessories, rinsing several times with clean water. The liquids used for washing can be used for treatment.
- ✓ Collect the washed containers and send them to the relevant collection centers. Never dispose of them in the environment and don't use them again for any other purpose. It is good practice to knock a hole in the bottom of the tins so they can't be used again.
- ✓ When you have finished spraying, wash the sprayer thoroughly, diluting the residues with a quantity of water at least 10 times that of the residues, spraying the resulting mix over the treated field.



### 2.3.2.RECOMMENDATIONS

- a) Follow the instructions in this manual for the use and maintenance of the frame, tank, Regulators ( Control Units),Hydraulic Boom, Semi Hydraulic Boom and Windlass.
- b) Please contact the agent in your zone, the nearest authorized workshop or AGROSE directly for any repairs the user feels they aren't capable of performing alone.
- c) Due to the complexity of the equipment and the variety of technologies used (mechanical, hydraulic, oil-pressure and electro technical) operators must not dismantle or modify the equipment. All of the relevant operations must be performed by specialized personnel, authorized by AGROSE.

Use under adverse and not recommended conditions can compromise the integrity of the equipment and components, entailing loss of warranty and disclaimer by the manufacturer for any accident and the resulting consequences.

Avoid parking the equipment on slopes. If necessary, place chocks under the wheels when parking the equipment on upward or downward slopes.

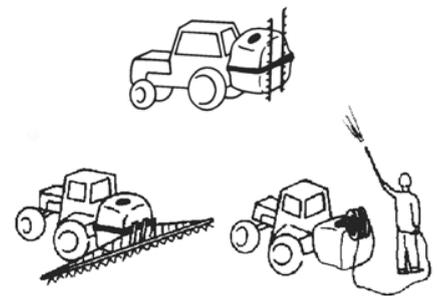
Keep the ladder, platform and handle always clean; oils and greases can cause accidents.

Do not use the equipment if some critical component needs to be repaired.

Provide for the repair before.

This equipment can cause accidents if used improperly or irresponsibly.

Do not step on the machine while it is moving.



**PICTURE-1**

### TAKING PRECAUTIONS AGAINST FIRE HAZARDS

Don't use naked flames or heat sources near the machines.

The atomizers are made with many materials that derive from petroleum: tanks, tubes, pipes and hoses, wheels and plastic parts; furthermore the presence of oils of various nature and residues of chemical products make them potentially flammable.

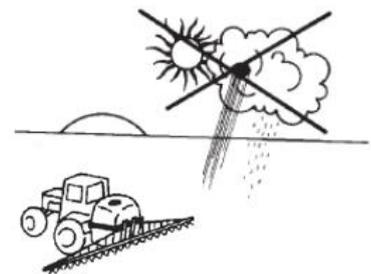
### WEATHER CONDITIONS

We recommend spraying in the early hours of the morning or late in the afternoon, avoiding the hottest time of day.

Never do any spraying if it's raining or rain is forecast.

Don't spray in strong wind or in any case, in winds above 3/5 m/second.

If you have to spray in windy conditions, use relatively low pressures to obtain quite large drops that are less sensitive to drifting (being heavier the wind has less effect). There are also special anti-drift nozzles available from AGROSE; for information, please contact our offices.



**PICTURE-2**

### MACHINES DESIGNED TO BE USED ONLY WITH CLEAN WATER

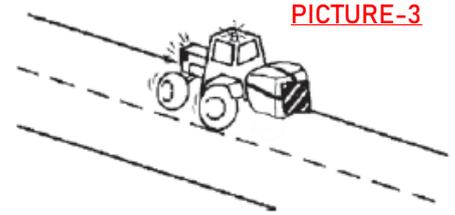
There are versions of the machines designed only to be used with a hose reel for washing with cold clean water.

These machines cannot be used with chemical products as they don't have some of the devices or accessories that are needed to use these products safely.

### DRIVING ON THE ROAD

The Boom Sprayers are not specifically designed for road use. Never the less, many models are also available in the version homologated for road traffic with the tank empty.

You should check with your local reseller on the correct couplings to use and use tractors that meet the regulations in force.



### 2.4.CHARACTERISTICS AND SPECIFICATIONS

This handbook is valid for Mounted/ Trailed Boom Sprayers for phytosanitary treatment in Fields in any case for arboreal cultivation in rows of varying nature and type.

It is also valid for Standard Boom ,Windlass,Hydraulic Lifted and Full Hydraulic for the phytosanitary treatment of crops

These Boom Sprayers produced by AGROSE are identified by the CE plate bearing one of the marks indicated in the tables of the allowed fittings.



**PICTURE-4**

#### 2.4.1.TABLES OF FITTINGS ALLOWED

Tables N° 2, let you identify the version of your machine indicating the basic equipment and all the possible fittings available (optional).

You can also find the other fittings allowed or other versions to meet your requirements in the future.

THE EQUIPMENT DEFINED IN THE TABLES: 2 (page 28) SHOULD BE CONSIDERED BINDING FOR THE VALIDITY OF THE DECLARATION OF CONFORMITY.

Other fittings or setups of basic components and / or options should be considered unsafe and therefore are not covered by the guarantee and aren't AGROSE's responsibility.

The same goes for fittings realised with components or accessories that aren't original AGROSE parts.

## STANDARDS OF REFERENCE:

ISO 9001:2015

Quality management systems

CE:

**TS EN ISO 4254-6:** Agricultural machinery - Safety - Part 6: Sprayers and liquid fertilizer distributors

**TS EN ISO 16119-1:** Agricultural and forestry machinery - Environmental requirements for sprayers - Part 1: General

**TS EN ISO 12100:2010:** Safety of machinery - General principles for design - Risk assessment and risk reduction

**TS EN ISO 14120:2016:** Safety of machinery - Guards - General requirements for the design and construction of fixed and movable guards

**TS EN ISO 61310-2:2008:** Safety of machinery - Indication, marking and actuation - Part 2: Requirements for marking

## DIRECTIVES

**certificate**  
**SERTİFİKA**  
**AT UYGUNLUK BEYANI**  
EC Declaration Of Conformity

Üretici / Manufacturer  
**AGROSE**  
MAKİNE TARIM GIDA TEKSTİL İNŞAAT SANAYİ TİCARET LİMİTED ŞİRKETİ  
Büyükkayacık OSB Mahallesi 405 Nolu Sokak No: 8/1 Selçuklu / KONYA  
Tel: +90332 3460212 – Faks: +90332 3460212  
www.agrose.com - e postası: [export@agrose.com](mailto:export@agrose.com)

**Ürünler / Products**  
**BAHÇE PÜLVERİZATÖRLERİ / GARDEN SPRAYERS**  
ABP-200, ABP-300, ABP-400, ABP-500, ABP-600, ABP-800, ABP-1000, BBP-100, BBP-200, BBP-400, EBP-100, BBP-200, EBP-400, CBP-1000, CBP-1200, CBP-1600, CBP-2000  
**TARLA PÜLVERİZATÖRLERİ / FIELD SPRAYERS**  
ATS-200, ATS-300, ATS-400, ATS-500, ATS-600, ATS-800, ATS-1000, ATH-600, ATH-800, ATH-1000, ATHA-800, ATHA-100, ATFH-800, ATFH-100, ATO-600, ATO-800, ATO-1000, CTS-1000, CTS-1200, CTS-1600, CTS-2000, CYTH-1000, CYTH-1200, CYTH-1600, CYTH-2000, CYTH-3000, CYTFH-1000, CYTFH-1200, CYTFH-1600, CYTFH-2000, CYTFH-3000  
**TURBO ATOMİZERLER / TURBO ATOMIZERS**  
ATT-200, ATT-300, ATT-400, ATT-500, ATT-600, ATT-800, ATT-1000, ATT-V-600, ATT-V-800, ATT-V-1000, ATT-DS-600, ATT-DS-800, ATT-DS-1000, ATT-RS-600, ATT-RS-800, ATT-RS-1000, CTT-600, CTT-1000, CTT-1200, CTT-1600, CTT-2000, CTT-V-1000, CTT-V-1200, CTT-V-1600, CTT-V-2000, CTT-K-1000, CTT-K-1200, CTT-K-1600, CTT-K-2000, CTT-RS-1000, CTT-RS-1200, CTT-RS-1600, CTT-RS-2000, CTT-RS-1000, CTT-RS-1200, CTT-RS-1600, CTT-RS-2000  
**POMPALAR / PUMPS**  
MTS-145 N, MTS-496 D, MTS-496 Z, MTS-496 PK, MTS-371 S, MTS-371 T, MTS371 A, MTS-371 PK, MTS-230 N, MTS-230 K, MTS-230S  
**KONTROL ÜNİTELERİ / CONTROL UNITS**  
MTS-100-BY, MTS-50R-5, MTS-50R-3, MTS-401-R, MTS-301-R

**Beyan / Declaration**  
Kendi sorumluluğumuz altında beyan ederiz ki, yukarıda belirtilen ürünler AB Direktifi olan Makine Emniyet Direktifinin sağlık güvenlik ve emniyet kurallarına uyumlu olarak üretilmiştir.  
Here declare under their own responsibility, the above products with the EU Directive on Machinery Safety Directive is manufactured in accordance with the rules of health, safety and security.

**Harmonize Standartlar / Harmonised Standards**  
**TS EN ISO 4254-6** Tarım makineleri - Güvenlik - Bölüm 6: Pülverizatörler ve sıvı gübre dağıtıcıları / Agricultural machinery - Safety - Part 6: Sprayers and liquid fertilizer distributors  
**TS EN ISO 16119-1** Tarım ve orman makineleri-Pülverizatörler için çevresel gereklilikler Bölüm 1: Genel / Agricultural and forestry machinery - Environmental requirements for sprayers - Part 1: General  
**TS EN ISO 12100:2010** Makinalarda güvenlik - Tasarım için genel prensipler - Risk değerlendirilmesi ve risk azaltılması / Safety of machinery - General principles for design - Risk assessment and risk reduction  
**TS EN ISO 14120:2016** Makinelerdeki Güvenlik - Muhafızlar - tasarım için genel şartlar ve sabit ve hareketli korumaların inşaat / Safety of machinery - Guards - General requirements for the design and construction of fixed and movable guards  
**TS EN 61310-2:2008** Makinalarda güvenlik - Gösterim, işaretleme ve harekette geçirme - Bölüm 2: İşaretleme ile ilgili özellikler / Safety of machinery - Indication, marking and actuation - Part 2: Requirements for marking

**Direktifler / Directives**  
2006/42/AT Makine Emniyet Yönetmeliği / 2006/42/EC Machinery Directive

**Tarih/Date** : 30.12.2019  
**Tip/Type** :  
**Seri No/Serial No** :  
**Yer / Location** : KONYA

**Teknik Dosyayı Hazırlayan / Technical File Prepared:**  
Murat KİNDİRA / RMK Danışmanlık

**Rıfki GÜLHAN**  
Genel Müdür / General Manager

**CE** 

**INTERNATIONAL FIRST CERTIFICATION**

**IFC GLOBAL**

**INTERNATIONAL FIRST CERTIFICATION**

**CERTIFICATE**

This certificate is granted to the organization,

**AGROSE MAKİNE TARIM GIDA TEKSTİL İNŞAAT SANAYİ VE TİCARET LİMİTED ŞİRKETİ**

Büyükkayacık OSB Mahallesi 405 Nolu Sokak No: 8/1 Selçuklu, Konya, TURKEY

Agricultural Machinery, Agricultural Machinery Spare Parts Design, Manufacturing and Sales

according to the scope,

**ISO 9001:2015**

to certify that quality management system in accordance with standard's clauses is established and being implemented.

Date of First Issue : 27.12.2019  
Date of Issue : 27.12.2019  
Certificate Period : 3 year / 26.12.2022  
Reissue Date : 26.12.2020  
Certificate No : IFC-Q-12-19-I-3464

**IAF** **AS**  
ACCREDITED  
Management Systems Certification Body  
MSCB-1703464

System Certificate Approved

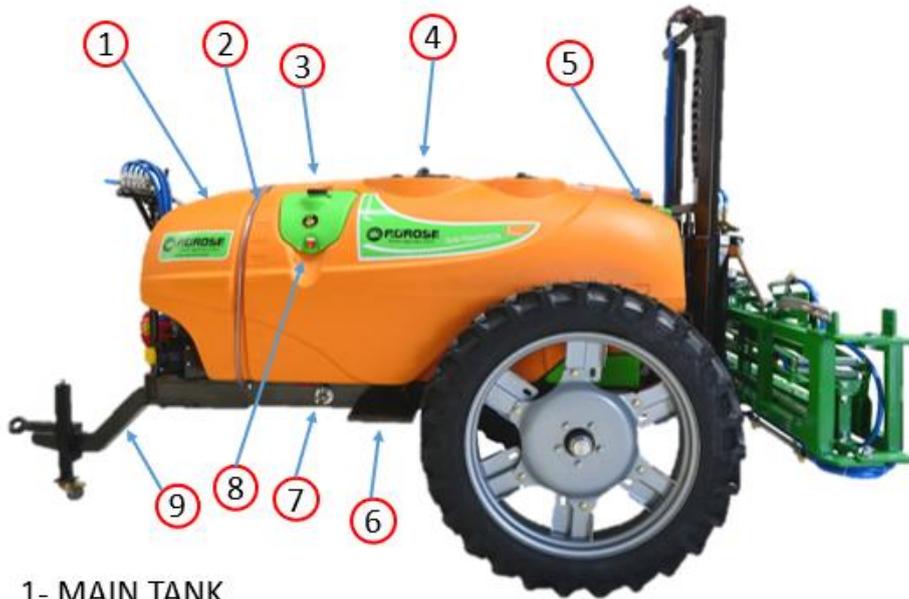
*U. Gülhan*

IFC GLOBAL SERTİFİKASYON NİHAZİNİN VE EĞİTİM MERKEZLERİ ANONİM ŞİRKETİ  
Ahişel Mah. Marmara Bld. No:39/2/233 - Fikriyatı Tavani Barajıka Üstü, TOKİTE 1-90500 304 50 00 / 90 500 304 50 00  
Yıldızba Mahallesi 40075 Sokak No:1/23 Seyhan, Adana, TÜRKİYE T +90 322 234 81 22 Fax: +90 322 232 81 22  
[www.ifcglobal.com](http://www.ifcglobal.com)

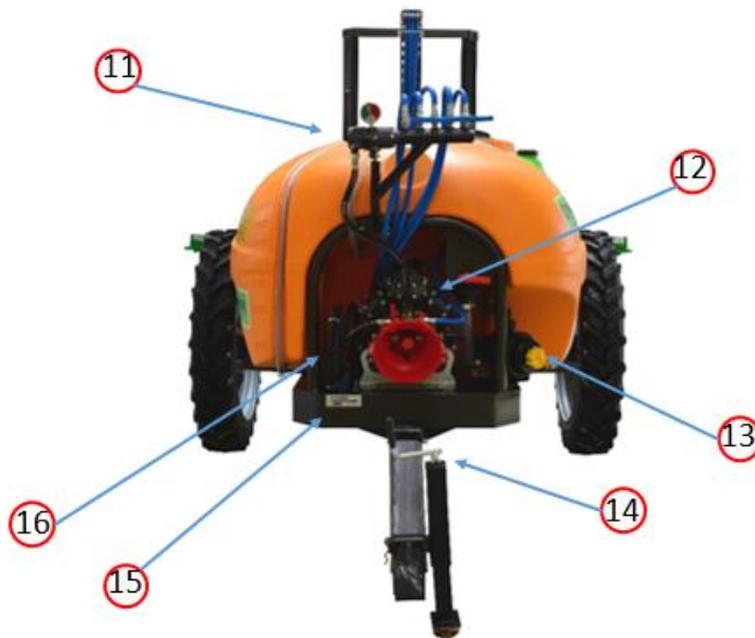
PICTURE-5

## 2.5. COMPONENTS OF SPRAYERS

### 2.5.1. TRAILED TYPE BOOM SPRAYERS COMPONENTS

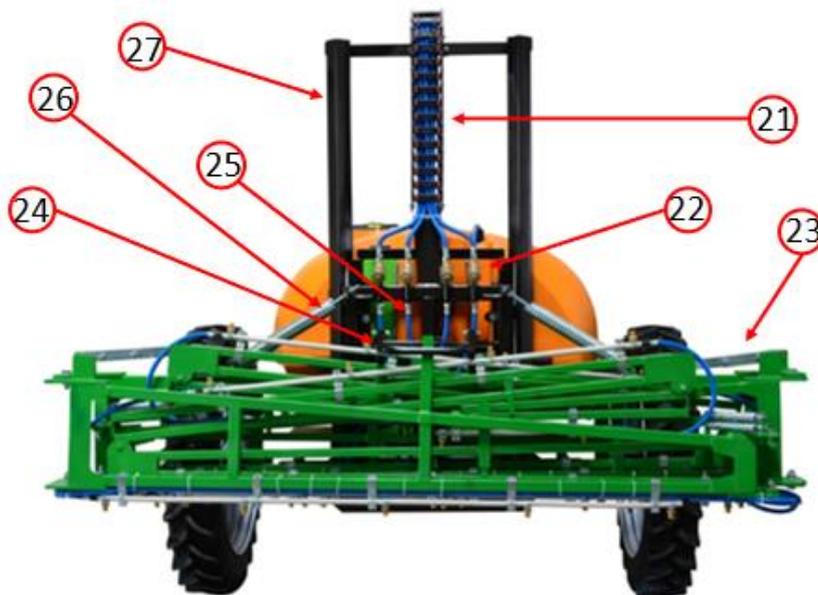


- 1- MAIN TANK
- 2- INDICATOR
- 3- HAND WASHING TANK
- 4- MAIN TANK'S LID
- 5- SYSTEM WASHING TANK'S LID
- 6- STEP
- 7- DISCHARGE VALVE
- 8- HAND WASHING VALVE
- 9- ARROW HEAD
- 11- CONTROL UNIT
- 12- PUMP
- 13- SUCTION FILTER
- 14- LIFTING JACK
- 15- CHASIS LABEL
- 16- HOSES FOR HYDRAULIC ELEVATOR



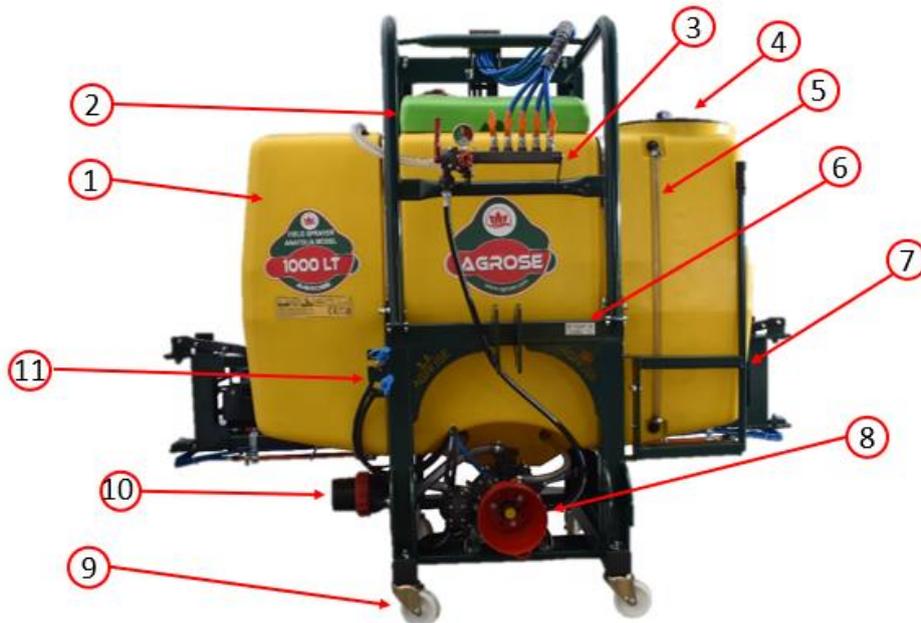


- 17- SYSTEM WASHING TANK
- 18- FITTING EJECTOR
- 19- PLATE MOUNTED BRAKE CASTOR
- 20- TYRE
- 21- HOSE DRAG CHAINS
- 22- BRAS PRESSURE FILTERS
- 23- BOOM FIXING LOCK
- 24- BOOM SECURITY LOCK
- 25- ELEVATOR'S PISTON
- 26- COIL SPRING
- 27- BOOM'S ELEVATOR BARS



**PICTURE-6**

### 2.5.2. MOUNTED TYPE BOOM SPRAYERS COMPONENTS



- 1-MAIN TANK
- 2-HAND WASHING TANK
- 3-CONTROL UNIT
- 4-MAIN TANK'S LID
- 5-INDICATOR
- 6-CHASIS LABEL
- 7-LADDER
- 8-PUMP
- 9-WHEELS
- 10-SUCTION FILTER

- 11-HOSES FOR HYDRAULIC ELEVATOR
- 12-HOSE DRAG CHAINS
- 13- BOOM'S ELEVATOR BARS
- 14-COIL SPRING
- 15-BOOM FIXING LOCK
- 16-BOOM SECURITY LOCK
- 17-ELEVATOR'S PISTON
- 18-BRASS PRESSURE FILTERS



**PICTURE-7**

### 3. USER'S INSTRUCTIONS

#### DESCRIPTION OF THE MACHINE

The Boom Sprayers consist of a structural steel frame and a polyester tank reinforced with fiberglass or high-density polyethylene. The frame is hot galvanized.

The tank is easy to empty and this makes it possible to use the machine even on hillsides.

The pumps are diaphragm pumps

The accessories for completing the fitting, non-drip jets and ceramic nozzles make the AGROSE Boom Sprayers a highly qualified and efficient piece of equipment.



**PICTURE-8**

#### HAND WASHING TANKS

The Boom Sprayers are supplied with an auxiliary hand-washing tank with clean water and a hand tap.

This tank must always be supplied with water and the inside must be clean so you can wash any parts of the body that come into contact with the chemical product used.

Never drink the liquid inside.



**PICTURE-9**

#### PRELIMINARY CHECKS

When you receive the machine, check that it is complete and no parts are missing.

If there are any damaged parts, inform your local reseller or AGROSE directly in good time.

When the machine is delivered, make sure you ask:

a) That the machine is delivered with all of its parts fitted and that the fitting meets the requisites in table N° 2 - This procedure is necessary because for reasons of space during transportation the machine is often delivered partially dismantled.

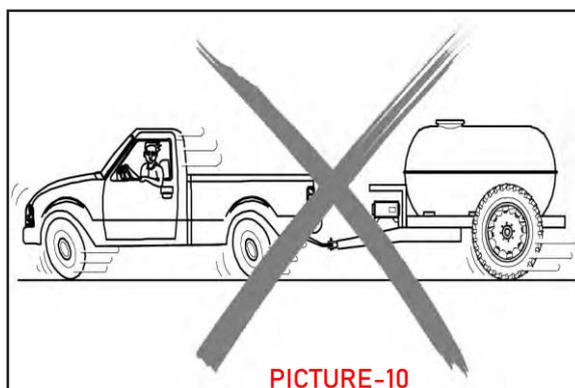
b) That it is tested in your presence in particular checking:

That the suction filter and the inside of the tank are clean and free of work residues.

That the connections are made correctly following the basic layout (PICTURE 32).

That the hose clips and all the unions and connections are tightened properly.

That all of the protective covers are fitted solidly to the machine, in particular the protective cover of the power-takeoff of the pump.

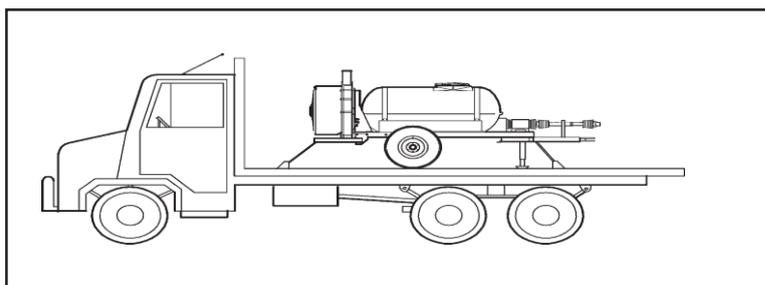


**PICTURE-10**

For Movement and transportation, the use of the trucks or ramps is recommended, taking care for it to be fully fastened to prevent accidents due to poor positioning.

Under no hypothesis operate the equipment without its protection covers or the protection cover on the driveshaft

Equipment fastening to the cart or truck shall be performed by the tying points (see figure below). Any tying carried out at random, while appearing to be safe and secure, is extremely dangerous and can cause serious accidents. If in doubt, contact us.



**PICTURE-11**

#### 4. TRACTOR COUPLING

Refer to the tractor user manual before performing this operation.

Turn off the tractor diesel engine, apply the parking brake and remove the starting key from the contact keyhole before coupling the PTO shaft to the tractor PTO.

Try to couple the PTO shaft to the tractor PTO. If necessary to adjust the PTO shaft length, use the PPEs specific to this operation such as: goggles, gloves, boots, etc.

When coupling the PTO shaft to the tractor, make sure that the safety pin is securely locked.

After length adjustment, clean and lubricate the PTO shaft components. Wear safety gloves for this operation too.

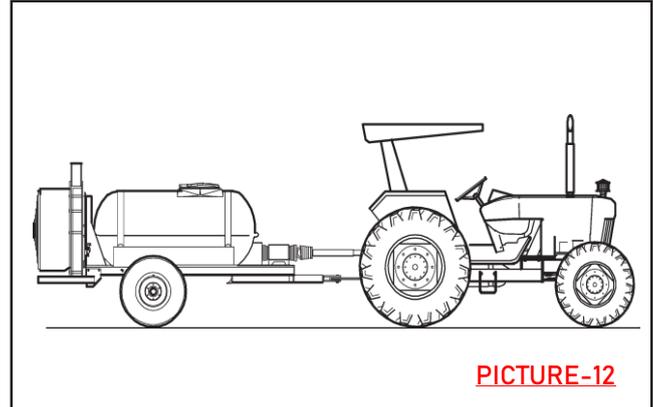
Never use a PTO shaft not fitted with shroud.

Do not perform adaptations for reutilization of the PTO shaft.

Fasten the PTO shaft covering safety chain to the tractor; that chain will prevent the PTO shaft covering from turning together with the PTO shaft.

Before actuating the tractor PTO, fill the main reservoir. It must have a 3-point elevator suitable for safely supporting the weight of the Boom Sprayers. Check this by consulting the table of allowed fittings Tables N° 2

**WARNING:** Make sure there are no persons or things near the Boom Sprayers before starting the machine and while you are using it.



#### 4.1. THREE-POINT COUPLING

**a)** We recommend carefully checking that the tractor is suitable for supporting the weight of the fully-loaded Sprayer safely.

Non-observance can result in a very dangerous situation as the tractor will lose steering sensitivity and can tip over when driving uphill or over bumps.

**b)** Check the diameter of the elevator coupling pins. If necessary position the double diameter pins correctly; there are also appropriate adapter bushes available.

**c)** Adjust the length of the third point tie-rod correctly so the sprayer is perfectly vertical in normal working position.

**d)** Check for the presence of the safety pins that stop the arms of the tractor from jumping off the connecting pins.



#### 4.2. HYDRAULIC CONNECTION TO THE DISTRIBUTORS

Machines that need a hydraulic connection to drive the movements of the semi-hydraulic or hydraulic booms are equipped with 1/2", "Push-Pull", quick-fit male couplings. You can connect the pipes by simply pushing them in, making sure you:

Do so only with the engine turned off;

Lower any tools connected to the elevator of the tractor;

Carefully clean the two parts that will be coupled

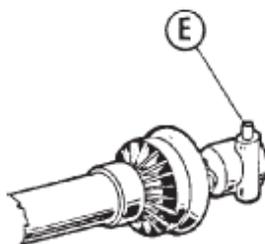
**WARNING:** The hydraulic cylinders used are the "Double Effect" type.

Consult the use and maintenance manual of the tractor.

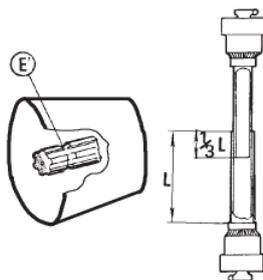


### 4.3. CARDAN SHAFT

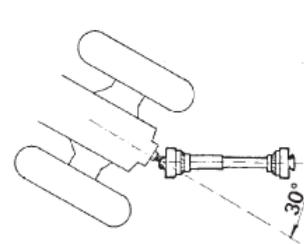
- ✓ In some models this is supplied on request.
- ✓ The cardan shaft must bear the CE Mark.
- ✓ It must always have its own instructions that must be followed scrupulously and it should come with a cover bearing the mark, integrated in every part.
- ✓ You should have previously checked the length to avoid:
- ✓ If it is too long, DANGEROUS THRUST ON THE PUMP SHAFT
- ✓ If too short, the POSSIBILITY OF DANGEROUS BREAKAGES
- ✓ THE MINIMUM OVERLAP OF THE TWO TELESCOPICTUBES MUST NEVER BE LESS THAN 1/3 OF THE LENGTH OF THE TUBES.



PICTURE-15



PICTURE-16



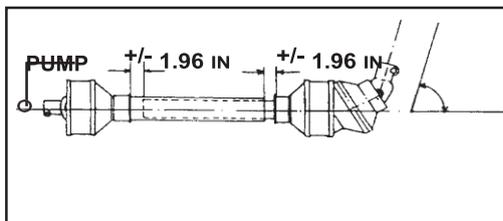
PICTURE-17

#### Adjusting the PTO shaft male and female tubes;

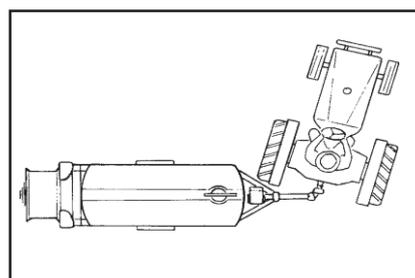
Position the tractor until its rear tire gets close to the sprayer's tongue.

Connect the PTO shaft.

Adjust the male and female tube lengths (recommended overlap: 1.96 in).



PICTURE-19



PICTURE-18

The power that can be transmitted by the cardan shaft must be at least equal to that required to run the Boom Sprayers.

- a) Hook any safety chains to solid anchor points
- b) Check that the button or ringnut "E" (PICTURE. 15) is correctly engaged and blocked both on the pump side and on the tractor side.
- c) Don't exceed an inclination of 30° in any direction for any reason
- d) With the machine stopped, periodically grease the spiders and the pipes, keeping the connecting zone particularly clean
- e) Avoid letting the end of the cardan shaft comes into contact with the ground with the machine stopped; use the relevant support on some versions for this, if your machine has no support, hook the external safety chain to apart of the frame of the machine (ex. control unit support).





### NOTE:

Before cutting the PTO, shaft tubes, check for all the possibilities of adjustment on both tractor's drawbar and sprayer's tongue. Make sure the hitch pin is mounted with cotter pin.

- ✓ **NEVER USE THE CARDAN TRANSMISSION IF THE FOLLOWING PROTECTIVE COVERS ARE MISSING:**
- ✓ **TRACTOR POWER TAKE-OFF PROTECTIVE COVER**
- ✓ **CARDAN SHAFT PROTECTIVE COVER**
- ✓ **FIXED PROTECTIVE COVER ON THE PUMP SHAFT**

#### 4.4. PUMP

When using the pump scrupulously observe the instructions in the enclosed handbook supplied by the manufacturer.

The pump can be identified by the ratings plate on the same; the main data on the pressure and delivery are easy to find on this plate.

Normally the pumps mustn't exceed 540 RPM; a higher speed won't improve performance but there is a risk of compromising the life and safety of the pump.

There is a safety valve on the pump, calibrated to prevent overpressure. Don't tamper with this valve for any reason and don't block or obstruct the pipes connected to it in any way.



**PICTURE-20**

#### 4.5. SUCTION FILTER

An efficient filter lets the Sprayer work properly.

You should periodically check that the filter cartridge is clean, this check should be done more often if the rear impurities in the liquid. To inspect the filter cartridge wear rubber acid-pro of gloves as the liquid in the filter can come into contact with your hands when you open the filter.

Don't perform this operation with the pump running as the depression produced blocks the cover preventing the removal.

Before removing the cover of the filter, make sure that the same is isolated from the tubing by unscrewing the relevant rear valve (PICTURE N°21).

After washing the cartridge, reassemble the cover making sure you connect the same to the circuit again, using the valves described above in the opposite order.

**WARNING:** Don't disperse the washing residues in the environment!!

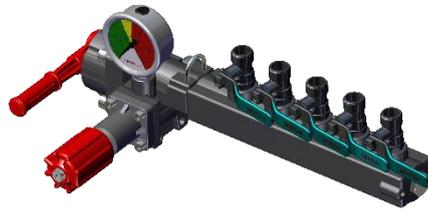


**PICTURE-21**

#### 4.6. PRESSURE REGULATOR



MTS-401 R



MTS-50R-5



MTS-50 R-3

**PICTURE-22**

The pressure regulator controls all of the most important spraying functions, the thorough knowledge of its functions makes work easier and more precise.

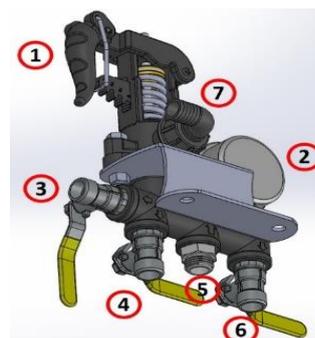
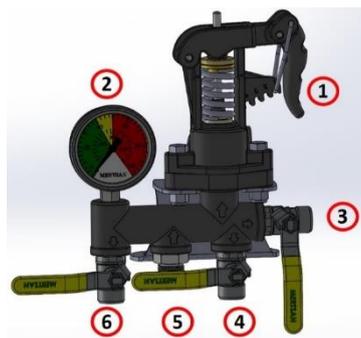
The working pressure and the maximum pressure of the Sprayer are determined by the pressure regulator which also protects the circuit from overpressure in any work conditions. (In serious but very rare cases, if the connecting pipes get blocked the pressure relief valve lets the pressure off)

In some setups there may be a pump that can reach a pressure of 50 bar controlled by a regulator designed for 100 bar.

The regulators can be manual, mounted on the Sprayer or at a distance to make the controls easier to use; or electrical with a control panel in the cabin.

There are also regulator versions with mechanical remote controls with a cable.

#### MTS-401 CONTROL UNIT



**PICTURE-23**

1-Adjust Pressure

3- Fitting ejector (receiving water)

5- Input

7- Output

2- Manometer

4- Delivery Water to Boom/Fan on Right Side

6- Side Delivery Water to Boom/Fan on Left Side

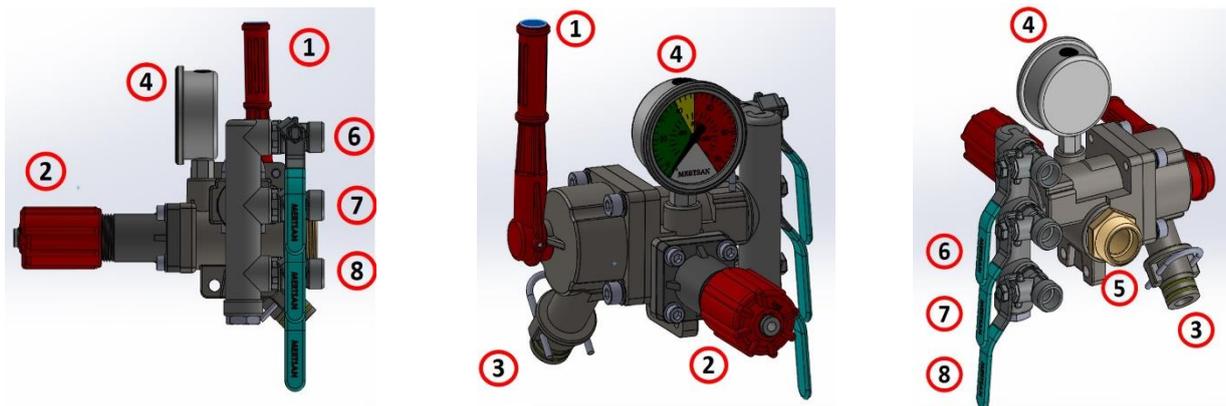
**MTS-50R- 5 CONTROL UNIT**



**PICTURE-24**

- |                                         |                                                     |
|-----------------------------------------|-----------------------------------------------------|
| 1- On / Off                             | 2- Manometer                                        |
| 3- Adjust Pressure                      | 4- Delivery Water From Pump to Control Units /Input |
| 5- Output                               | 6- Fitting Ejector (Receiving Water)                |
| 7- Delivery Water to Boom/ Left Side-1  | 8- Delivery Water to Boom/ Left Side-2              |
| 9- Delivery Water to Boom/ Right Side-1 | 10- Delivery Water to Boom/ Right Side-2            |

**MTS-50R- 3 CONTROL UNIT**



**PICTURE-25**

- |                                                     |                                           |
|-----------------------------------------------------|-------------------------------------------|
| 1-On / Off                                          | 2-Adjust Pressure                         |
| 3-Delivery Water from Pump to Control Units (Input) | 4-Manometer                               |
| 5-Output                                            | 6-Fitting Ejector (Receiving Water)       |
| 7-Delivery Water to Boom/Fan on Right Side          | 8-Delivery Water to Boom/Fan on Left Side |

**4.7. HYDRAULIC CONTROL UNITS**

In our Semi-Hydraulic and Full Hydraulic models, Booms movements are used by means of Hydraulic oil pressure systems of the tractor.

Semi-Hydraulic models do not have an extra control unit. Direct movement of the Booms up and down is provided by means of hydraulic control levers on the tractor.

In Full Hydraulic models, the opening and up-and-down movements of the wings are performed through the control lever mounted on the machine



**PICTURE-26**

## 5. FILLING THE TANK

The machines for defensive crop treatments, in consideration of the safety of persons, animals and the protection of the environment, must only be filled indirectly from open water courses and only by free-falling water from the water works.

The pipe used for filling must never come into contact with the liquid inside the tank and therefore the water must always fall over the upper edge of the filling in let and through the filter installed on it.

The tank is fitted with a transparent graduated band that shows the exact quantity of liquid inside. This reading is precise if the tank is on a flat ground; the actual total capacity coincides with the highest number. All the filling systems fitted by AGROSE on their production machines or on request are antipollution and stop the liquid overflowing out of the tank.



Level Indicator

**PICTURE-27**

### a) FILLING WITH THE SUCTION FILTER

If the 3-way deviator isn't fitted you can fill the tank using the of the filter and using a G1"1/2 threaded union, connect pipe T with the floating filter to the coupling. (PICTURE-29)

Also, in this case the filling speed in liters /minute is equal to the delivery of the pump.



**PICTURE-28**

### b) FILLING WITH THE FITTING EJECTOR

If you are filling with a Fitting Ejector (mounted as standard on some models) then you should proceed as follows:

Put roughly 20-30 Lt. of water in the tank and start the pump.

Remove the cap of ejector E and insert filling pipe T.

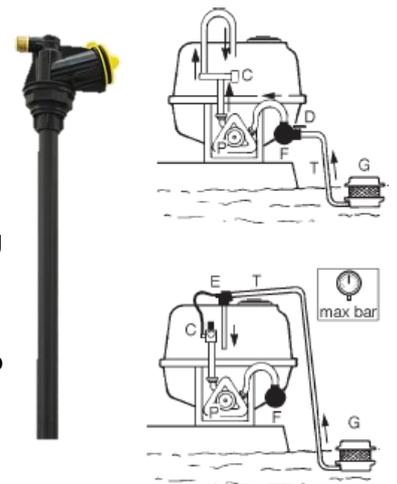
Place the other end of the hose, on which you fitted filter G, in the watering point.

Open the tap that supplies the ejector (on pump P or pressure regulator C).

Increase the pressure until it reaches a value which is sufficient to suck up the liquid.

Visually check the level of the liquid inside the tank and after filling.

Disconnect pipe T from the ejector, close the tap and replace the cap.



**WARNING:** using the taps on the pump or in any case on the front of the machine puts the operator near the cardan shaft. Despite the presence of CE standard protective covers you should take great care.

**PICTURE-29**

## 6. TEST WITH CLEAN WATER

It is good practice to do a test with clean water (without chemical product in the tank) before the first treatment to make sure the Boom Sprayers are working properly and to get to know the controls. For instructions on how to proceed with the treatment see the chapter SPRAYING.

### 6.1. MIXING

The active principle can be mixed using the relevant stirrers before and during the treatment. Correct mixing and stirring is the basis of the correct distribution on the crops. We recommend some useful accessories such as the premixer for powders and liquids (see the following paragraph).

To mix the product in the tank proceed as follows:

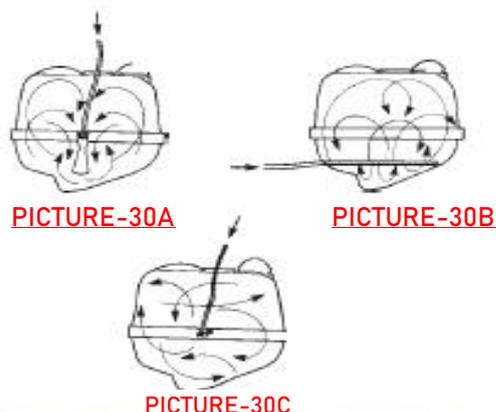
**a)** High-pressure machines from 30 to 60 bar (PICTURE. N° 30A): run the stirrer (or ejector) for roughly 10-15 minutes at the maximum pressure available

**b)** Low-pressure machines, max 20 bar

With a drilled pipe on the drain, run the pump at roughly 540 RPM with the pressure regulator on drain for at least 10-15 minutes. (PICTURE. N° 30B)

With the stirrer on a delivery, run the pump supplying the stirrer (or ejector) at the maximum pressure available for at least 10-15 minutes. (PICTURE. N° 30A)

Some models with very small tanks aren't equipped with mixers, you should use the drain of the pressure regulator: run the pump at roughly 540 RPM with the pressure regulator in the drain position for at least 10-15 minutes. (PICTURE. N°30C)



### 6.2. MANUAL PREMIXING

Dilute the active principle by hand before introducing it into the tank. (you must wear suitable protective clothing such as rubber gloves, a mask or goggles, overalls, etc.).

### 6.3. PREMIXER ON COVER (OPTIONAL):

Open the cover and pour all of the chemical powder into the filter, close the cover and open the supply tap until all of the powder has dissolved.



PICTURE-31

### 6.4. WASHING THE BOOM SPRAYER

After every treatment, thoroughly clean the equipment, washing it with water inside and out. Dirty equipment is very dangerous for people and in particular for children.

Discharging the residues of washing in the environment without taking precautions is forbidden as this pollutes water courses. Distribute the residues on the field or the crops where they won't cause any damage.

## 7. CIRCUIT WASHER AND TANK WASHER

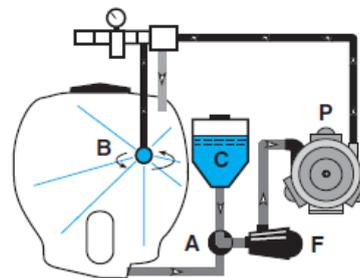
Some machine models are fitted with a circuit washer tank (PICTURE 32). This tank must be filled with clean water and used to rinse the entire circuit including the suction, delivery, pump, pressure regulator, jets and nozzles. Thanks to the practical rotary nozzle it also rinses the inside surfaces of the tank.

**NB:** To completely clean the tank and the pipes of any residues of the various active principles, we recommend adding 2 kg of soda to the washing liquid for every 100 LT. of water.

At the end of the treatment, wash the circuit and the tank.

- a) Stop the diaphragm pump disengaging the power-takeoff.
- b) Check you have filled the circuit washer tank (C).
- c) Make sure the main control of the pressure regulator is OFF and that all the boom sectors are closed.
- d) Turn suction deviator A to the circuit washer position (H<sub>2</sub>O).
- e) Start the diaphragm pump by engaging the power-takeoff.
- f) Increase the engine speed until all of the liquid in circuit washer tank C has been sucked up.
- g) Turn the diaphragm pump off and turn deviator A to the work position (TANK).
- h) Turn the main control to ON, so there is pressure in the circuit.
- i) Start the diaphragm pump again and use the tank washing tap on the regulator (or on pump P) that supplies jet B.
- j) After a few minutes you can close the tank washing tap
- k) Distribute the washing residues over a portion of the field where it won't cause damage.
- l) After you have finished washing, stop the diaphragm pump.

**NB:** At the end of the washing cycle, if there is the risk of frost, pour roughly 500 grams of normal antifreeze for auto vehicles into the tank.



**WARNING:** using the taps on the pump or in any case on the front of the machine puts the operator near the cardan shaft. Despite the presence of CE standard protective covers you should take great care.

**PICTURE-32**

## 8. BOOMS GROUP

### 8.1. STANDARD MANUEL BOOMS

These are made of steel painted with oven painted. The booms are made of stainless steel and with oven painted the nozzles mounted normally with a spacing of 35/ 50 cm.

All of the booms are folded on the central body and the external arms have safety joints to prevent breakages, if the end hits an obstacle during work. In the case of a knock the boom bends to avoid the obstacle and normally returns to the working position automatically. In any case the operator should try to avoid knocking against objects as this could damage both the boom and the obstacle in time; all the more so if the two elements can get stuck.



**PICTURE-33**  
*Hydraulic Boom Locking Hooks*



**PICTURE-34**  
*Manuel Boom Locking Hooks*

It is easy to see how to open and close the mechanical booms and where to put your hands which are indicated by the relevant stickers.

Check the connection and disconnection of the blocking devices on the mobile arms, indicated by the relevant stickers.

Take care as there is the risk of crushing the upper limbs in the hinges.

Check that no one and nothing is in the area where the booms will open; particular attention should be paid to the presence of any electric power lines.



**PICTURE-35**  
*Boom Fixed Lock*

## 8.2. SEMI-HYDRAULIC AND HYDRAULIC BOOMS

The hydraulic herbicide booms are similar to mechanical booms.

As these booms are opened and closed hydraulically, they are generally built to be stronger.

The hydraulic plant can be fed from the hydraulic pump of the tractor or be fully independent.

The hydraulics are controlled by a hydraulic distributor with mechanical or electro-hydraulic controls and switches in the cabin.

All of the controls on both versions are sustained action controls and each lever or switch has a pictogram of the relevant operation it controls.

With hydraulic booms that open to the side, you have to free the booms from the support stops by lifting them, opening the arms only when the boom is completely free.

**WARNING:** With hydraulic booms, don't stand in the range of action of the machine.

Pay attention to the integrity and efficiency of the hydraulic components and in particular to the pipes to prevent the risk of bursting.

Do a full check on the pipes and components at least once a year, we recommend replacing hydraulic pipes every 3-4 years.

### 8.2.1. LIFTING

The lifting devices are very useful to adjust the height of the boom on the basis of the height of the vegetation to be treated.

The height of the boom is adjusted as follows:

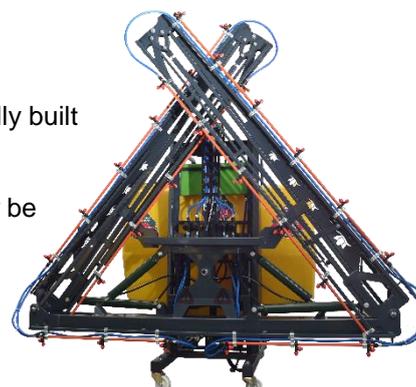
#### Mechanical and Windlass Lifting

Check that the support cable of the boom is inserted correctly in the winch and that the handle of the same is positioned so the cable is under tension.

Loosen the 4 blocking screws positioned along the channels.

Adjust the height of the boom with the handle of the winch to the desired height.

The winch can be either the type with an automatic clutch or a manual ratchet with sustained action to avoid accidental release. Nonetheless, please take care when making adjustments.



**PICTURE-36**



**PICTURE-37**



**PICTURE-38**



**PICTURE-39**  
*Blocking Screws*

After making the adjustment, tighten the 4 blocking screws again as the jolts caused by working on uneven ground could make the cable or the winch wear quickly.

**DON'T STAND** under the boom when adjusting the height.

### Hydraulic lifting

The hydraulic version has a double-effect cylinder controlled by a special parachute stop valve.

To lift and lower the boom use the control units push button panel or the quick-fit couplings connected to the lifting cylinder.

Periodically lubricate the sliding guides with grease and check the guide bolts are tightened properly, with a suitable play.

### 8.3. VERTICAL SPRAY BOOMS

Designed for high-pressure spraying in espalier orchard vineyards, they are best for spraying high volumes.

STRAIGHT BOOMS in the versions 3+3, 4+4, 5+5 with P39 brass butterfly jets with conical ceramic nozzle



**PICTURE-40**

### 9. WORK TEMPERATURE

Heat is generated by the friction between the various moving components and on the basis of the power transmitted. The temperature of the multiplier or disengaging box depends on the capacity to dissipate heat to the surrounding environment and therefore the surfaces involved in the heat exchange and the environmental conditions.

The specifications refer to environmental conditions with a temperature between -10° +50°C (14°C - 122°F).

The working temperature limit of the box is 90°C (200°F) established to prevent the ageing of the seals and guarantee a sufficient viscosity of the oil. The heat makes the air in the box expand and therefore increases the pressure inside. The correct use of the oil seals is guaranteed up to an internal pressure of 0.5 bar. Boxes designed to be used for particularly heavy duty work are equipped with a breather cap that can be fitted

### 10. OIL FEED FROM TRACTOR

#### (For Hydraulic Systems)

Connect the delivery and discharge quick-fit coupling to the respective connections, respecting the direction of flow.

The distributor inlet pipe is connected to the aluminum flow separator valve next to the distributor.

The flow separator must be adjusted correctly so it sends less than 4-5 L/1° to the distributor.

To prevent the cylinders moving at a dangerous speed, adjust the relevant chokes near the cylinders. If the registration ring nuts aren't visible then fixed chokes are fitted. The chokes are fitted on the discharge line of the movement to slow.

Any impurities in the oil could block the chokes and as a consequence block the cylinder; remove the dirt if necessary. The maximum pressure valves of the distributors are regulated to a pressure of around 150 bar.

To prevent the excessive heating of the oil we recommend supplying the distributor of the sprayer only when the cylinders are being used.

We recommend having qualified personnel do any adjustments.



**PICTURE-41**

Pay attention to the integrity and efficiency of the hydraulic components and in particular to the pipes to prevent the risk of bursting.

Do a full check on the pipes and components at least once a year, we recommend replacing hydraulic pipes every 3-4 years.

## 11.SPRAYING

### 11.1. DESCRIPTION OF TYPE OF BOOMS NOZZLES

Various types of Nozzles are fitted; with a single fixed (threaded or quick-fit) or with multiple heads.

Generally they have a non-drip diaphragm and are made out of reinforced plastic, suitable for pressures up to 15-20 bar, some models are nickel-plated brass for pressures up to 40 bar. There are versions with 2-3-4 plastic nozzle heads and with brass heads or plastics.



The nozzles are extremely important to obtain a correct distribution on the vegetation to be treated. Poor quality or worn nozzles have a tendency to create unevenly treated strips.

The nozzles are produced in various sizes, to work with a precise pressure range, to create certain types of larger or smaller drops; using nozzles for a purpose they are not envisaged for prejudices the precision and duration of the nozzles.



PICTURE-42

**a) Conical Nozzles**

Generally made of ceramics, these nozzles consist of two parts; the actual nozzle and the slinger. They are particularly resistant to wear and designed to work from 1 to 16 bar producing a high density of small drops with a strong turbulence. This turbulence makes them suitable for penetrating luxuriant vegetation and so they are suitable for fungicides and insecticides. When necessary they can also support slightly higher pressures.

**b) Diaphragm Check Valve Nozzle**

There are various models of nozzles that make it possible to reduce the effect of drift.

**11.2. DISTRIBUTION**

a) Check that all the nozzles are in a good condition and are positioned correctly on the boom. The automatic positioning with quick heads is done for threaded heads with the relevant adjustment wrench.

Check that the total capacity of the nozzles is at least 25% less than the capacity of the pump.

b) Make sure the suction and delivery filters, as well as the non-drip membranes are clean and in a good condition and that the same quantity of liquid is supplied along the entire width of the boom.

c) Check that the height of the boom from the crops is suitable for regular distribution. For a boom with nozzles fitted at 35/50 cm from each other; this height is roughly 50 cm.

d) Working pressure.

To assess the data, consult tables N° 3 (pages 29).

These tables are valid for spaces between the nozzles of 35/50 cm.

To meet particular requirements AGROSE can supply booms with different spaces between the nozzles and setups suitable for running at pressures over 20 bar.

**12. HAND LANCES**

When using hand lances bear in mind the following notes:

Don't direct the Lances of liquid towards electric power lines or zones where there is electrical current, houses or where people might pass.

Don't use the Lances at people or animals.

The Lances can cause serious injuries simply due to the mechanical force of the liquid under pressure.

Never block the spraying lever of the lance in an open position because if the lance falls it will be uncontrollable.

At the end of work after you have stopped the pump, make sure that any residual pressure in the pipes under pressure has been drained to avoid unexpected jets when putting the lance away. There are various types of lances; with a lever, spray gun and pistol grip.



**PICTURE-43**

**12.1. HOSE REEL**

Available in the following sizes 20-50-100 , with mechanical, After work it is important to block the winding roller to stop the hose unwinding while you are moving the sprayer.



**PICTURE-44**

### 13. MAINTENANCE

All of the maintenance operations and repairs must be carried out with the machine and cardan shaft stopped and the tank and circuit clean of any residues of chemical products.

The maintenance of the atomizer is essential for maintaining a high level of safety. Also consult the single handbooks of the main components of the atomizer.



### 14. PROGRAMMED MAINTENANCE

We recommend using a table of programmed maintenance to follow in time to keep the atomizer in an efficient working condition.

For major and important maintenance jobs we recommend using the normal AGROSE assistance service available from your reseller, (if necessary) replacing parts using original spare parts only.



#### 14.1. ROUTINE MAINTENANCE

- ✓ After every treatment wash the inside of the tank.
- ✓ Periodically check that the suction and delivery filters are clean.
- ✓ Check the oil level in the volumetric compensator of the pump.
- ✓ The use of chemical products that are particularly damaging for a nitrile rubber mix can cause the diaphragm to break before time.
- ✓ In these conditions check the state of the components more often. There are diaphragms made of special materials that are available on request.
- ✓ When doing treatments with copper hydroxide you should take great care to thoroughly clean the system, washing it after each treatment because hydroxides attack parts that aren't painted or protected by hot galvanizing.
- ✓ To prevent chemical attacks we recommend spraying transparent paint on the parts that are most exposed to the product and equipping the atomizer with stainless steel pressure gauges.

**TABLE OF PROGRAMMED MAINTENANCE**

OPERATION	8 H	50 H	300 H	END OF SEASON
Check the level and state of the oil	0			
Check the accumulator pressure		0		
Check the suction (hoses, pipes, unions)		0		
Check and clean the suction and delivery filters	0			
Check the pump fixing feet and screws in general		0		
Check the diaphragm and the oil and change if necessary			X <sup>(1)</sup>	X <sup>(2)</sup>
Check the suction /delivery valves			X	X
Check the pump screws and bolts are tight				X
Check and clean the nozzles and the non-drip diaphragm	0			
Check the wear of the nozzles			0	
Check the hydraulic oil level		0		
Check any failures or cracking of the welds especially herbicide booms				0
Grease the articulated joints and the wheel hubs check the tyre pressure			0 0	

**NOTE:**

**0** = Operation to be carried out by the operator

**X** = Operation to be carried out by a specialised technician or in an authorized workshop

<sup>(1)</sup> = First Oil change

<sup>(2)</sup> = Change at the same time as changing the diaphragm

**14.2. CLEANING THE NOZZLES**

- ✓ Check the state of wear of the nozzles and replace them when the delivery is over 30-35% of the theoretical level.
- ✓ If you notice even a partial blockage of a nozzle proceed as follows:
  - Drain the pressure and stop the machine
  - Dismantle the screw or bayonet ringnuts holding the nozzles
  - Clean with a small brush or compressed air, don't use nails, punches or bradawls
  - Reassemble the nozzles and the ringnuts, replacing the filters and seals.

**14.3. LUBRICATION**

The moving mechanical components must be lubricated to prevent wear and overheating. This lubrication can be done with grease or oil: oil allows significantly higher speeds, in general grease is used to lubricate bearings with a vertical or inclined axis as it stays in the zone for longer.

**NOTE: For all the pumps (in name of MERTSAN) recommended: 20W50**



#### 14.4. EXTRAORDINARY MAINTENANCE

At the end of a season of intense use, or every two years of normal use, it is a good idea to have a specialized service technician perform a general check on the machine.

We recommend having the normal AGROSE assistance service available from our reseller perform any repairs or contact a specialized workshop. During all of the repairs, in particular when welding, the machine and the circuit must be clean of any residues of chemical product.

Also make sure the machine is stopped, connected to the tractor, and use the relevant chocks to block the wheel still on the ground.

If you use a jack (manual or hydraulic) make sure you use a jack that is suitable for the frame so it can't slip and put it in the right position. The jack must be placed under the mainframe of the machine near the wheel to change. Make sure the ground is compact: if necessary use wooden beams or other sufficiently resistant material to broaden the supporting base of the jack.

#### 15. STORAGE IN A WAREHOUSE AND TRANSPORTATION

The sprayer must be kept in a closed place away from excessive humidity and protected from frost. Especially if electrical pressure regulators, electrical motors, a spraying computer or similar components are fitted.

Before storing the machine, after you have washed it, apply a light coat of oil.

If the temperature might drop to below zero, drain any residual liquid or add roughly 0.5 Lt. of normal antifreeze for auto vehicles.

##### 15.1. PUTTING BACK INTO SERVICE AFTER WINTER LAYUP

Before using the machine again after a long period of inactivity you should perform some general checks, and drain any antifreeze.

Never start the shaft of the pump if you think there may be ice inside. To check this, make sure you can turn the shaft by hand without connecting it to the tractor.

After you have connected the machine to the tractor following the instructions in the present user's handbook and in the enclosures of the pump, pressure regulator and accessories.

#### 16. DEMOLITION AND DISPOSAL

When the sprayer will be put out of service you should wash it with great care to remove any residues of chemical product.

**Attention:** It is necessary to adopt appropriate Individual Protection Devices in manipulating waste.

The disposal of waste deriving from the demolition of the machine must be carried out respecting the environment, avoiding soil, air and water pollution.

Local legislation in force in the matter must be respected in any case.

Waste deriving from the demolition of the machine is classifiable as special waste.



### 16.1. MATERIALS FOR DEMOLITION

Non-dangerous special waste is that which can be recovered.

Iron, aluminum, stainless steel and copper materials

Plastic materials

Hydraulic oil

Electrical plant



### 16.2. INDICATIONS FOR A SUITABLE TREATMENT OF WASTE

The Correct management of special waste envisages:

Stocking in suitable places, avoiding mixing dangerous waste with the non-dangerous.

Ensuring that authorized carriers and receivers carry out its transport and disposal/recovery.

Transport of one's waste to authorized collection centers is allowed exclusively if you are enrolled in the Environmental Management Register.

#### ELECTRICAL AND ELECTRONIC APPARATUS WASTE (EEAW)

The measures: in particular, the decree established measures and procedures aimed at:

- a)** Forestalling the production of EEAW;
- b)** Promoting the re-use, recycling and other forms of EEAW recovery, in order to reduce the quantity to send for disposal;
- c)** Improving, in terms of the environment, the actions of the subjects who participate in the life-cycle of these apparatuses (producers, distributors, consumers and operators directly involved in the treatment of EEAW);
- d)** Reducing the use of dangerous substances in electrical and electronic apparatus.



The decree imposes the limitation and elimination of several substances present in EEAW: lead, mercury, cadmium, chrome, hexavalent chrome, polybrominated biphenyl, polybrominated diphenyl and polybrominated diphenyl ethers.

The machine has been designed and created in conformity with this directive. Follow the indications shown below.

The symbol to the side, showing a barred garbage can on wheels, indicates the separate collection of the electrical and electronic apparatuses of the machine.

The user of the present machine can contact the collection centers instituted by the Local Authorities or the AGROSE Company directly, or request withdrawal by the dealer, in order to carry out correct disposal of the waste

## ALLOWED FITTINGS TABLE

**TABLE-2A**

BOOM SPRAYER		ATS-ATT-A-ATHA-ATFH-ATO-ATH							CTS-CYTH-CYTFH					
		200	300	400	500	600	800	1000	600	1000	1200	1600	2000	3000
TANK	POLYESTER	X	X	X						X			X	
	POLYETHELENE	X	X	X	X	X	X	X	X	X	X	X	X	X
PUMP	30	X	X											
	71			X	X	X	X	X	X					
	96						X	X	X	X	X	X	X	X
	145						X	X	X	X	X	X	X	X
BOOM	6	X												
	8		X	X										
	10				X	X								
	12				X	X	X	X	X	X	X	X	X	X
	14					X	X	X	X	X	X	X	X	X
	15					X	X	X	X	X	X	X	X	X
	16					X	X	X	X	X	X	X	X	X
	18					X	X	X		X	X	X	X	X
	20						X	X			X	X	X	X
	22						X	X			X	X	X	X
	24						X	X			X	X	X	X
PRESSURE REGULATOR	401- R	X	X	X	X	X								
	50-R-3						X	X	X	X	X	X	X	X
	50-R-5						X	X	X	X	X	X	X	X
	BY-MATIC													
NOZZLE ( with Diaphragm Check Valve)		X	X	X	X	X	X	X	X	X	X	X	X	X
EXTERNAL MIXER									X	X	X	X	X	X

**TABLE-2B**

GARDEN SPRAYER WITH PISTOLET		ABP							CBP					
		200	300	400	500	600	800	1000	600	1000	1200	1600	2000	3000
TANK	POLYESTER	X	X	X						X			X	
	POLYETHELENE	X	X	X	X	X	X	X	X	X	X	X	X	X
PUMP	30	X	X											
	71			X	X	X	X	X	X					
	96						X	X	X	X	X	X	X	X
	145						X	X	X	X	X	X	X	X
PRESSURE REGULATOR	401- R	X	X	X	X	X								
	50-R-3						X	X	X	X	X	X	X	X
PISTOLET	LONG TYPE							X	X	X	X	X	X	X
	SHORT TYPE	X	X	X	X									
HOSE REEL	SINGLE REEL	X	X	X	X	X	X	X	X	X	X	X	X	X
	DOUBLE REEL							X	X	X	X	X	X	
EXTERNAL MIXER									X	X	X	X	X	X

**TABLE-3**
**17- CALIBRATION OF NOZZLES**

Nozzle size	Pressure psi	Flow rate US gal/min	Numbers in Table Body are mph (15" nozzle spacing)															
			3 gpa	4 gpa	5 gpa	6 gpa	7 gpa	8 gpa	9 gpa	10 gpa	12 gpa	14 gpa	16 gpa	18 gpa	20 gpa			
AGS 01 Orange	30	0.09	11.4	8.6	6.9	5.7	4.9	4.3	3.8	3.4	2.9	2.4	2.1	1.9	1.7			
	40	0.10	13.2	9.9	7.9	6.6	5.7	5.0	4.4	4.0	3.3	2.8	2.5	2.2	2.0			
	50	0.11	14.8	11.1	8.9	7.4	6.3	5.5	4.9	4.4	3.7	3.2	2.8	2.5	2.2			
	60	0.12	16.2	12.1	9.7	8.1	6.9	6.1	5.4	4.8	4.0	3.5	3.0	2.7	2.4			
	70	0.13	17.5	13.1	10.5	8.7	7.5	6.5	5.8	5.2	4.4	3.7	3.3	2.9	2.6			
	80	0.14	18.7	14.0	11.2	9.3	8.0	7.0	6.2	5.6	4.7	4.0	3.5	3.1	2.8			
	100	0.16	20.9	15.7	12.5	10.4	8.9	7.8	7.0	6.3	5.2	4.5	3.9	3.5	3.1			
AGS 015 Green	30	0.13	17.1	12.9	10.3	8.6	7.3	6.4	5.7	5.1	4.3	3.7	3.2	2.9	2.6			
	40	0.15	19.8	14.9	11.9	9.9	8.5	7.4	6.6	5.9	5.0	4.2	3.7	3.3	3.0			
	50	0.17	22.1	16.6	13.3	11.1	9.5	8.3	7.4	6.6	5.5	4.7	4.2	3.7	3.3			
	60	0.18	24.2	18.2	14.5	12.1	10.4	9.1	8.1	7.3	6.1	5.2	4.5	4.0	3.6			
	70	0.20	26.2	19.6	15.7	13.1	11.2	9.8	8.7	7.9	6.5	5.6	4.9	4.4	3.9			
	80	0.21	28.0	21.0	16.8	14.0	12.0	10.5	9.3	8.4	7.0	6.0	5.3	4.7	4.2			
	100	0.24	29.7	22.3	17.8	14.9	12.7	11.1	9.9	8.9	7.4	6.4	5.6	5.0	4.5			
AGS 02 Yellow	30	0.17	22.9	17.1	13.7	11.4	9.8	8.6	7.6	6.9	5.7	4.9	4.3	3.8	3.4			
	40	0.20	26.4	19.8	15.8	13.2	11.3	9.9	8.8	7.9	6.6	5.7	5.0	4.4	4.0			
	50	0.22	29.5	22.1	17.7	14.8	12.6	11.1	9.8	8.9	7.4	6.3	5.5	4.9	4.4			
	60	0.24	32.3	24.2	19.4	16.2	13.9	12.1	10.8	9.7	8.1	6.9	6.1	5.4	4.8			
	70	0.26	34.9	26.2	21.0	17.5	15.0	13.1	11.6	10.5	8.7	7.5	6.5	5.8	5.2			
	80	0.28	37.3	28.0	22.4	18.7	16.0	14.0	12.4	11.2	9.3	8.0	7.0	6.2	5.6			
	100	0.32	41.7	31.3	25.0	20.9	17.9	15.7	13.9	12.5	10.4	8.9	7.8	7.0	6.3			
AGS 025 Lilac	30	0.22	28.6	21.4	17.1	14.3	12.2	10.7	9.5	8.6	7.1	6.1	5.4	4.8	4.3			
	40	0.25	33.0	24.8	19.8	16.5	14.1	12.4	11.0	9.9	8.3	7.1	6.2	5.5	5.0			
	50	0.28	36.9	27.7	22.1	18.4	15.8	13.8	12.3	11.1	9.2	7.9	6.9	6.1	5.5			
	60	0.31	40.4	30.3	24.2	20.2	17.3	15.2	13.5	12.1	10.1	8.7	7.6	6.7	6.1			
	70	0.33	43.7	32.7	26.2	21.8	18.7	16.4	14.6	13.1	10.9	9.4	8.2	7.3	6.5			
	80	0.35	46.7	35.0	28.0	23.3	20.0	17.5	15.6	14.0	11.7	10.0	8.8	7.8	7.0			
	100	0.40	49.5	37.1	29.7	24.8	21.2	18.6	16.5	14.9	12.4	10.6	9.3	8.3	7.4			
AGS 03 Blue	30	0.26	34.3	25.7	20.6	17.1	14.7	12.9	11.4	10.3	8.6	7.3	6.4	5.7	5.1			
	40	0.30	39.6	29.7	23.8	19.8	17.0	14.9	13.2	11.9	9.9	8.5	7.4	6.6	5.9			
	50	0.34	44.3	33.2	26.6	22.1	19.0	16.6	14.8	13.3	11.1	9.5	8.3	7.4	6.6			
	60	0.37	48.5	36.4	29.1	24.2	20.8	18.2	16.2	14.5	12.1	10.4	9.1	8.1	7.3			
	70	0.40	52.4	39.3	31.4	26.2	22.5	19.6	17.5	15.7	13.1	11.2	9.8	8.7	7.9			
	80	0.42	56.0	42.0	33.6	28.0	24.0	21.0	18.7	16.8	14.0	12.0	10.5	9.3	8.4			
	100	0.47	62.6	47.0	37.6	31.3	26.8	23.5	20.9	18.8	15.7	13.4	11.7	10.4	9.4			
AGS 035 Brown Red Hypro GA, GAT	30	0.30	40.0	30.0	24.0	20.0	17.1	15.0	13.3	12.0	10.0	8.6	7.5	6.7	6.0			
	40	0.35	46.2	34.7	27.7	23.1	19.8	17.3	15.4	13.9	11.6	9.9	8.7	7.7	6.9			
	50	0.39	51.7	38.7	31.0	25.8	22.1	19.4	17.2	15.5	12.9	11.1	9.7	8.6	7.7			
	60	0.43	56.6	42.4	33.9	28.3	24.2	21.2	18.9	17.0	14.1	12.1	10.6	9.4	8.5			
	70	0.46	61.1	45.8	36.7	30.6	26.2	22.9	20.4	18.3	15.3	13.1	11.5	10.2	9.2			
	80	0.49	65.3	49.0	39.2	32.7	28.0	24.5	21.8	19.6	16.3	14.0	12.3	10.9	9.8			
	100	0.55	73.0	54.8	43.8	36.5	31.3	27.0	24.3	21.9	18.3	15.7	13.7	12.2	11.0			
AGS 04 Red	30	0.35	45.7	34.3	27.4	22.9	19.6	17.1	15.2	13.7	11.4	9.8	8.6	7.6	6.9			
	40	0.40	52.8	39.6	31.7	26.4	22.6	19.8	17.6	15.8	13.2	11.3	9.9	8.8	7.9			
	50	0.45	59.0	44.3	35.4	29.5	25.3	22.1	19.7	17.7	14.8	12.6	11.1	9.8	8.9			
	60	0.49	64.7	48.5	38.8	32.3	27.7	24.2	21.6	19.4	16.2	13.9	12.1	10.8	9.7			
	70	0.53	69.8	52.4	41.9	34.9	29.9	26.2	23.3	21.0	17.5	15.0	13.1	11.6	10.5			
	80	0.57	74.7	56.0	44.8	37.3	32.0	28.0	24.9	22.4	18.7	16.0	14.0	12.4	11.2			
	100	0.63	83.5	62.6	50.1	41.7	35.8	31.3	27.8	25.0	20.9	17.9	15.7	13.9	12.5			
AGS 05 Brown	30	0.43	57.2	42.9	34.3	28.6	24.5	21.4	19.1	17.1	14.3	12.2	10.7	9.5	8.6			
	40	0.50	66.0	49.5	39.6	33.0	28.3	24.8	22.0	19.8	16.5	14.1	12.4	11.0	9.9			
	50	0.56	73.8	55.3	44.3	36.9	31.6	27.7	24.6	22.1	18.4	15.8	13.8	12.3	11.1			
	60	0.61	80.8	60.6	48.5	40.4	34.6	30.3	26.9	24.2	20.2	17.3	15.2	13.5	12.1			
	70	0.66	87.3	65.5	52.4	43.7	37.4	32.7	29.1	26.2	21.8	18.7	16.4	14.6	13.1			
	80	0.71	93.3	70.0	56.0	46.7	40.0	35.0	31.1	28.0	23.3	20.0	17.5	15.6	14.0			
	100	0.79	99.0	74.3	59.4	49.5	42.4	37.1	33.0	29.7	24.8	21.2	18.6	16.5	14.9			
AGS 06 Gray	30	0.52	68.6	51.4	41.2	34.3	29.4	25.7	22.9	20.6	17.1	14.7	12.9	11.4	10.3			
	40	0.60	79.2	59.4	47.5	39.6	33.9	29.7	26.4	23.8	19.8	17.0	14.9	13.2	11.9			
	50	0.67	88.5	66.4	53.1	44.3	37.9	33.2	29.5	26.6	22.1	19.0	16.6	14.8	13.3			
	60	0.73	97.0	72.7	58.2	48.5	41.6	36.4	32.3	29.1	24.2	20.8	18.2	16.2	14.5			
	70	0.79	104.8	78.6	62.9	52.4	44.9	39.3	34.9	31.4	26.2	22.5	19.6	17.5	15.7			
	80	0.85	112.0	84.0	67.2	56.0	48.0	42.0	37.3	33.6	28.0	24.0	21.0	18.7	16.8			
	100	0.90	118.8	89.1	71.3	59.4	50.9	44.6	39.6	35.6	29.7	25.5	22.3	19.8	17.8			
AGS 08 White	30	0.69	91.5	68.6	54.9	45.7	39.2	34.3	30.5	27.4	22.9	19.6	17.1	15.2	13.7			
	40	0.80	105.6	79.2	63.4	52.8	45.3	39.6	35.2	31.7	26.4	22.6	19.8	17.6	15.8			
	50	0.89	118.1	88.5	70.8	59.0	50.6	44.3	39.4	35.4	29.5	25.3	22.1	19.7	17.7			
	60	0.98	129.3	97.0	77.6	64.7	55.4	48.5	43.1	38.8	32.3	27.7	24.2	21.6	19.4			
	70	1.06	139.7	104.8	83.8	69.8	59.9	52.4	46.6	41.9	34.9	29.9	26.2	23.3	21.0			
	80	1.13	149.3	112.0	89.6	74.7	64.0	56.0	49.8	44.8	37.3	32.0	28.0	24.9	22.4			
	100	1.20	158.4	118.8	95.0	79.2	67.9	59.4	52.8	47.5	39.6	33.9	29.7	26.4	23.8			
AGS 10 Light Blue	30	0.87	114.3	85.7	68.6	57.2	49.0	42.9	38.1	34.3	28.6	24.5	21.4	19.1	17.1			
	40	1.00	132.0	99.0	79.2	66.0	56.6	49.5	44.0	39.6	33.0	28.3	24.8	22.0	19.8			
	50	1.12	147.6	110.7	88.5	73.8	63.2	55.3	49.2	44.3	36.9	31.6	27.7	24.6	22.1			
	60	1.22	161.7	121.2	97.0	80.8	69.3	60.6	53.9	48.5	40.4	34.6	30.3	26.9	24.2			
	70	1.32	174.6	131.0	104.8	87.3	74.8	65.5	58.2	52.4	43.7	37.4	32.7	29.1	26.2			
	80	1.41	186.7	140.0	112.0	93.3	80.0	70.0	62.2	56.0	46.7	40.0	35.0	31.1	28.0			
	100	1.50	198.0	148.5	118.8	99.0	84.9	74.3	66.0	59.4	49.5	42.4	37.1	33.0	29.7			
	1.58	208.7	156.5	125.2	104.4	89.4	78.3</											

<b>18. TROUBLESHOOTING</b>		
<b>FAILURE</b>	<b>CAUSE</b>	<b>REPAIR</b>
Pump does not suck enough water or is not working.	Valves are not seated well.	Check valve seats. Service.
	The external filter is clogged.	Remove external filter cap, clean the filter.
	Air in the suction line.	Tighten the suction hose clamps.
		Check the suction elbow O-rings.
6 m external suction hose is not sucking. Ejector does not work.	Ejector takes air from the joining elements.	Check the tightness of the ejector connections.
	Ejector nozzle is clogged.	Clean the ejector nozzle.
	Air in the 6 m external suction hose.	Tighten the 6 m external suction hose clamps.
		Check the O-rings on the ejector side of the external suction hose.
6 m external suction filter is clogged.	Clean 6 m external suction filter.	
	Air in the suction line or air is not released from the pump thoroughly.	Check suction hose and line, run the pump while the taps are open.
		Not enough air pressure in the air chamber or diaphragm is torn.
	Air in the air chamber is not correct.	Check the air chamber pressure (It must be 1/10 <sup>th</sup> of the working pressure).
Low volumetric rate or pressure is not enough.	Distributing valve failure.	Service.
	Air in the suction line.	Tighten the suction hose clamps.
		Check the suction elbow O-rings.
		Tighten the nut and cap of the external filter with check valve and its connections.

The output flowrate is decreasing or pump is noisy.	Low oil level.	Add oil.
	Valves are not seated well. There is dirt.	Check valve seats. Clean. Service.
Water with oil is coming out of the pump or water is mixed with oil.	One or more diaphragms are torn.	(Technical service) Drain out pump oil. Remove caps and replace diaphragm. Put 20W-50 engine oil (Diesel) up to the required level.
Nozzles are not spraying enough.	Filters at the nozzle inlet are clogged or not working.	Remove, clean or replace.
	Nozzle tips are clogged or not working.	Remove, clean or replace.
Water leakage from pressure hose connections.	Pressure hose gaskets are worn.	Service.
	Pressure hose ringnuts are loose.	Tighten.
Hydraulic mixer does not work.	Hydraulic mixture nozzles are clogged	Remove, clean.
The lever of the distributing valve is rotating hard or does not rotate at all.	Distributing valve is dirty, clogged, calcified, distributing valve failure.	Service.
Fluid leaking from bottom of pump	1-Diaphragms defective of pump 2-Crack in main pump housing or front cover	Service.
Fluid leaking around diaphragm	1-Cover retaining bolts loose covers 2-Valve o-rings defective 3-Pinched diaphragm 4-Diaphragm cover cracked	Service.
Loss of pressure while spraying	1-Suction filter beginning to plug 2-Pin hole in suction hose 3-In-line or tip screen filters plugging 4-Pin hole in suction tube 5-Excessive return fluid around bottom of suction tube 6-Foreign material lodging in pump valves	Service.
Sprayer nozzles are dropping fluid, although the pressure is decreased.	Nozzle anti-drop parts are dirty. Failure.	Service.
Chemical tank is supported loosely on the chassis.	The bolts of the belts used for the tank connections are loose or broken.	Tighten, replace.



# 19. PRE-DELIVERY CHECK LIST

The Pre-Delivery Check List **must be completed by the Dealer & signed by both the Dealer and the Owner**, and the white copy returned by the Dealer to Agrose.

<i>Tick each box to affirm completion</i>	<input type="checkbox"/>	Grease universal joints	<input type="checkbox"/>	Check fenceline spray operation	<input type="checkbox"/>	Postcode:.....
<b>Operator's Manuals Supplied:</b>		Check safety shields are in place	<input type="checkbox"/>	<b>Lift Device</b> (if fitted):		Phone:.....
Sprayer Operators Manual	<input type="checkbox"/>	Suction Lines Undamaged	<input type="checkbox"/>	Undamaged	<input type="checkbox"/>	.....
<b>Spray Tank:</b>		Hoses-no kinks or restrictions	<input type="checkbox"/>	Bolts tight	<input type="checkbox"/>	Mobile:.....
Undamaged	<input type="checkbox"/>	All joins sealed (no air leaks)	<input type="checkbox"/>	Connect and confirm hydraulic system	<input type="checkbox"/>	.....
Check lid opens & seal shut correctly	<input type="checkbox"/>	Filter clean & sealed	<input type="checkbox"/>	Confirm free and smooth operation	<input type="checkbox"/>	Email:.....
Basket strainer in place	<input type="checkbox"/>	Tighten all hose clamps	<input type="checkbox"/>	<b>Boom &amp; Fold</b>		Signature of Owner
<b>Fresh Water &amp; Flush Tanks</b>		<b>Pressure Lines:</b>		Undamaged	<input type="checkbox"/>	.....
Undamaged	<input type="checkbox"/>	Undamaged	<input type="checkbox"/>	Check height adjustment	<input type="checkbox"/>	Date: .....
Check fittings	<input type="checkbox"/>	Hoses-no kinks or restrictions	<input type="checkbox"/>	Check boom mounting bolts tight	<input type="checkbox"/>	<b>DEALER:</b>
Check operation	<input type="checkbox"/>	All hoses sealed(no leakages)	<input type="checkbox"/>	Unfold the boom	<input type="checkbox"/>	Dealership Name: (Print)
Check All Tank Fittings Are Sealed Suction Line	<input type="checkbox"/>	Filter clean & sealed	<input type="checkbox"/>	Check nozzle mountings tight	<input type="checkbox"/>	.....
Drain outlet	<input type="checkbox"/>	Tighten all hose clamps	<input type="checkbox"/>	Grease boom hinge points	<input type="checkbox"/>	.....
By-pass line	<input type="checkbox"/>	Agitation Check both agitators work	<input type="checkbox"/>	Fold boom to transport position & check hoses do not kink or jam on folding	<input type="checkbox"/>	Address:.....
Mixing basket line	<input type="checkbox"/>	Check hoses are properly sealed	<input type="checkbox"/>	<i>Tick each box to affirm completion</i>	<input type="checkbox"/>	.....
Agitators	<input type="checkbox"/>	Tighten all hose clamps	<input type="checkbox"/>	Other		.....
<b>Pump:</b>		<b>Automatic Controller(s)</b>		.....	<input type="checkbox"/>	Postcode:.....
Check mountings	<input type="checkbox"/>	Check installation	<input type="checkbox"/>	.....	<input type="checkbox"/>	Email:.....
Check oil level	<input type="checkbox"/>	Check battery connection	<input type="checkbox"/>	.....	<input type="checkbox"/>	.....
Check air chamber pressure (10-15psi)	<input type="checkbox"/>	Calibrate controller(s)	<input type="checkbox"/>	<b>OWNER:</b>		Signature of Dealer Representative
Check operation	<input type="checkbox"/>	Fully check controller operation	<input type="checkbox"/>	Farmer <input type="checkbox"/> Contractor <input type="checkbox"/>		.....
PTO Drive		Nozzles Undamaged	<input type="checkbox"/>	Owner's Name: (Print)		Date: .....
Check quick release pins operate		Nozzle filters clean	<input type="checkbox"/>	.....		<b>Machine Serial #:</b>
Easily and lock in to place	<input type="checkbox"/>	Nozzles correct type throughout	<input type="checkbox"/>	Address:.....		.....
Check universal joints work correctly	<input type="checkbox"/>	Nozzle caps sealed (no leakages)	<input type="checkbox"/>	.....		.....
Adjust PTO length to suit tractor	<input type="checkbox"/>	Non-drip diaphragms working	<input type="checkbox"/>	.....		.....
Grease telescopic sliding shaft	<input type="checkbox"/>			.....		.....

## 20. WARRANTY POLICY

### Warranty Policy

AGROSE warrants to its authorized Dealer, who in turn, warrants to the original purchaser (Owner) that each new AGROSE sprayer, part or accessory will be free from proven defects in material and workmanship for twenty-four (24) months from the date of delivery to the first Owner according to the conditions outlined. This warranty does not cover damages resulting from abuse, accidents, alterations, normal wear or failure to maintain or use the AGROSE product with due care.

During the warranty period, the authorized AGROSE Dealer shall repair or replace, at AGROSE option, without charge for parts and labour any part of the AGROSE product, which fails because of defects in material or workmanship. The Owner must provide the authorized Dealer with prompt written notice of the defect (within 14 days of its occurrence), and allow reasonable time for replacement or repair. Repair may, at AGROSE option, include the replacement of parts with functionally equivalent reconditioned or new parts. Replacement parts will be warranted for the balance of the original warranty period or for ninety (90) days, whichever is longer. AGROSE (at its option) may request failed parts to be returned to the factory. Any travel time of a service technician and /or transportation of the AGROSE product to the authorized servicing Dealer for warranty work are the responsibility of the Owner.

**EXCLUSIVE EFFECT OF WARRANTY AND LIMITATION OF LIABILITY THIS WARRANTY IS IN LIEU OF ALL WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PURPOSE OR OTHER REPRESENTATIONS,**

**WARRANTIES OR CONDITIONS, EXPRESSED OR IMPLIED.** The remedies of the Owner set forth herein are exclusive. AGROSE neither assumes nor authorizes any person to assume for it any other obligation or liability in connection with the sale of covered machines. Correction of defects, in the manner and for applicable period of time provided above, shall constitute fulfillment of all responsibilities of AGROSE to the Owner, and AGROSE shall not be liable for negligence under contract or in any manner with respect to such machines.

**INNOEVENT SHALL THE OWNER BE ENTITLED TO RECOVER FOR INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES SUCH AS BUT NOT LIMITED TO, LOSS OF CROPS, LOSS OF PROFITS OR REVENUE, OTHER COMMERCIAL LOSSES, INCONVENIENCE OR COST OF RENTAL OR REPLACEMENTE QUIPMENT.**

### Conditions of Warranty

The warranty is not transferable.

The Warranty Registration Form must be returned to Agrose by the Owner Operator within 14 days of taking delivery of the unit. Only when warranty registration is completed and returned, can Agrose fulfill all warranty obligations.

### Schedule of components and conditions not covered by warranty are:

- Normal Wear** Normal wear and consumable items such as: oils and lubricants, diaphragms, filter elements, flow meters, clutches, bearings, fan belts, drivebelts, pivot pins, paint, light bulbs and nozzles are considered to be normal wear items and are not warranted.
- Maintenance** Component failure caused by not performing scheduled maintenance service such as: oils, grease, failure to clean tanks, pumps, filters, spray lines, nozzles or any other blocked components. Not tightening or replacing loose or missing bolts, nuts, fittings, shields and covers.

- Damage** Damages or machine failure caused by carelessness or accidental damage, improper operation, excessive speed during travel and operation, inappropriate transportation or storage of the sprayer or attachment.
- Alterations** Any unauthorized alteration, modification, attachments or unauthorized repairs to the Agrose sprayer or attachments. Written approval must be obtained from Agrose for any such items to maintain warranty.
- Removal & Installation** The time taken to remove and re-install a warranted part or component into other brands of sprayers will not be covered by Agrose warranty. Only parts and labour directly attributable to the repair of the Agrose unit is covered.  
  
Agrose do not pay for cleaning the sprayer, parts, accessories or work area before or after the warranty repair. Clean-up time is affected primarily by the application or conditions in which the sprayer is operated and maintained. Since clean-up time can be so variable, cleaning time should be considered a customer expense.
- Clean-up Time**
- Transportation** Warranty does not cover transportation or insurance costs for sprayers or other equipment needing repair or replacement of warranted components. Nor does it cover any freight or insurance costs in obtaining new parts or returning old parts to Agrose for inspection purposes.
- Costs** Warranty does not cover time required to diagnose a warranty problem. Diagnostic time is affected greatly by the training and expertise of the technician



# 21.WARRANTY REGISTRATION

Warranty Registration: The Owner acknowledges that the Owner has read & understood all terms & conditions of the Agrose's warranty policy contained in this manual.

The warranty policy will commence upon installation.

This Warranty Registration **must be completed & signed by both the Owner & the Dealer**, & the white copy returned by the Dealer to Agrose.

**Model:**.....  
**Size:**.....  
**Serial No:**.....  
**Purchase Date:**.....  
**Pre-Delivery Completion Date:**.....

**OWNER:**  
 Owner's Name: (Print) .....  
 Address:.....  
 .....  
 ..... Postcode:.....  
 Phone: ..... Mobile:.....  
 Email:.....  
 Signature of Owner: .....  
 Date: .....

**DEALER:**  
 Dealership Name: (Print) .....  
 Address:.....  
 .....  
 ..... Postcode:.....  
 Phone: ..... Mobile:.....  
 Email:.....  
 Signature of Dealer Representative: .....  
 Date: .....

**IMPORTANT:**

By executing this Warranty Registration:

**1) The Owner:**

- a) Agrees that the Owner will read the Operator's Manual before using the Sprayer; will follow all procedures in the operator's manual for the use of the Sprayer, and will exercise due care in the use of the Sprayer;
- b) Agrees that Agrose liability for any loss or damage suffered by the Owner in connection with the Owner's use of the Sprayer is limited to the cost of repair or replacement of the Sprayer;
- c) Agrees that the Owner will bear any loss the Owner suffers as a consequence of any failure by the Owner to comply with 1(a) above;
- d) Acknowledges that the owner is trained and is fully responsible for the safe and correct operation of the Sprayer; and Agrees that the Owner will fully train any person who might be required to operate the Sprayer as to how to operate the Sprayer in a safe and proper manner.

**2) The Dealer** undertakes that the Dealership has met the obligations of Sprayer pre-delivery, installation, service and warranty start up.

**Owner's Machinery Register:** *(This information will assist us in providing first class back-up and parts service)*

1- Type of purchaser (please tick):       Owner/Farmer     Share Farmer     Contractor

2- Major activities (please number in order of importance):

Vineyards     Cereal Crop                       Cotton     Vegetables

Flowers         Fruit Trees                       Nuts         Sugar Cane

Others         .....

3- What is the size of your holding (hectares)? .....

4- What are your reasons for purchasing the Agrose Sprayer?.....  
 .....  
 .....  
 .....

