



AGROSE

AGRICULTURAL SPRAYERS

**OWNER
MANUAL**



**TURBO ATOMIZER
(MOUNTED & TRAILED)**



Manufacturer:

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

Trademark of the Machine:

AGROSE

Model of the Machine:

ATT- 200 / 300 / 400 / 500 / 600 / 800 / 1000

ATT-V 600 / 800 / 1000

ATT-RS 600 / 800 / 1000

ATT-DS 600 / 800 / 1000

CTT / CTT-V / CTT-DS / CTT-K / CTT-RS 600 / 1000 / 1200 / 1600 / 2000

Type of the Machine:

Mounted and Trailed Types Turbo Atomizers / Mist turbo atomizers / Vineyard



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 (manual or electric)
- c) Optional accessories handbooks (marker, 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-levelling system or with the auto-levelling 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 hand book, 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, multiplier, turbo atomizer groups and robotic head / radial cannon.

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.

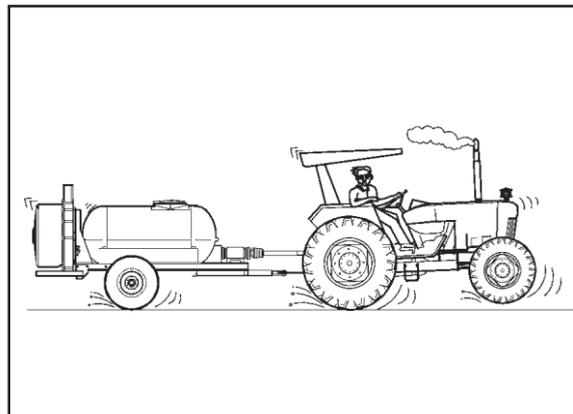
Avoid parking the equipment on slopes. If necessary, place chocks under the wheels when parking the equipment on upward or downward slopes.

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.



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.

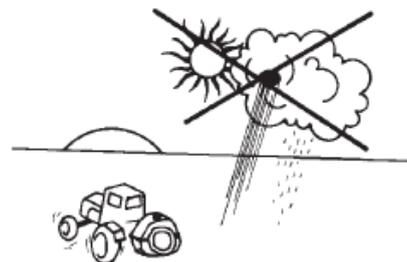
WEATHER CONDITIONS

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.

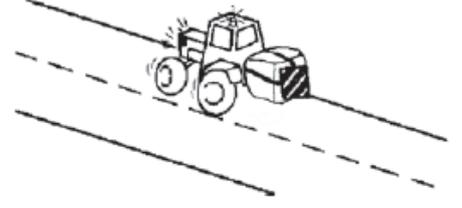


MACHINES DESIGNED TO BE USED ONLY WITH CLEAN WATER

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.

These machines are identified by the word "washing" on the CE plate.



DRIVING ON THE ROAD

The towed atomizers 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 atomizers with axial fans for phytosanitary treatment in orchards and vineyards, in any case for arboreal cultivation in rows of varying nature and type.

It is also valid for robotic head / radial cannon atomizers for the phytosanitary treatment of tall plants and forest trees such as poplars or similar.

The axial atomizers produce a mixed spray, breaking the drops with the pressure and the speed of the air produced by the fan.

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

	AGROSE AGRICULTURAL SPRAYERS www.agrose.com	CE
SERIAL NUMBER	<input type="text" value="....."/>	MADE IN <input type="text" value="TURKEY"/>
CODE	<input type="text" value="....."/>	YEARS <input type="text" value="20.."/>
	<input type="text" value="....."/>	Büyükçayalık OSB.Mah.405.Sk.No:8/1 Konya/TÜRKİYE

PICTURE-1

2.4.1. TABLES OF FITTINGS ALLOWED

Tables N° 3A-3B, 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: 3A - 3B (pages 26-27) SHOULD BE CONSIDERED BINDING FOR THE VALIDITY OF THE DECLARATION OF CONFORMITY.

Other fittings or setups of basic components and / or optionals 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
Büyükkayacak OSB Mahallesi 405 Nolu Sokak No: 8/1 Selçuklu / KONYA
Tel: +90332 3460212 – Faks: +90332 3460212
www.agrose.com - e postası: 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, BBP-100, BBP-200, BBP-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-230B
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 ve orman makineleri - Güvenlik - Bölüm 6: Pülvemizörler ve sıvı gübre dağıtıcıları / Agricultural machinery - Safety - Part 6: Sprayers and liquid fertilizer distributors
TS EN ISO 16119-1 Tarım ve orman makineleri - Pülvemizörler 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 Makinalarda güvenlik - Muvafakat - 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 hareket etme - Bölüm 2: İşaretleme ile ilgili özellikler / Safety of machinery - Indication, marking and actuation - Part 2: Requirements for marking

Direktifler / Directives
2006/42/AT Makine Emniyeti 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

Rfıkı: GÜLHAN
Genel Müdür / General Manager

INTERNATIONAL FIRST CERTIFICATION



INTERNATIONAL FIRST CERTIFICATION

CERTIFICATE

This certificate is granted to the organization,

AGROSE MAKİNE TARIM GIDA TEKSTİL İNŞAAT SANAYİ VE TİCARET LİMİTED ŞİRKETİ

Büyükkayacak 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-12-19-1-3464



ACCREDITED
Management System
Certification Body
MSCB-170-3464

System Certificate Approved

U. Ceylan

IFC GLOBAL SERTİFİKASYON MÜHÜRLEME VE DENETİM HİZMETLERİ ANONİM ŞİRKETİ
Adıllı Mah. Manis Bn. No:39/2/203 - Folkart Towerı Başvaks Lisesi, TÜRKİYE T: +90 332 304 35 00 F: +90 332 304 35 00
Yıldızba Mahallesi 46075 Sokak No:1/23 Seyhan, Adana, TÜRKİYE T: +90 322 214 81 22 Fax: +90 322 232 81 22
www.ifcglobal.com

TRAILED TYPE TURBO ATOMIZERS COMPONENTS



1-MAIN TANK

2-FAN

3-NOZZLE

4-PRESSURE FILTER

5-TIRE

6-RIM

7-CHASSIS



8-CONTROL UNIT

9-PUMP

10-SUCTION FILTER

11-TANKS LID

12-PROPOLLER

13-TANK WASHING

14-HAND WASHING TANK

15-INDICATOR

16-DISCHARGE VALVE

17-ARROW HEAD

18-LIFTING JACK

19-CHASSIS LABEL

20-NOZZLES HOLDER



PICTURE 2

MOUNTED TYPE TURBO ATOMIZERS COMPONENTS



PICTURE 3

3. USER'S INSTRUCTIONS

DESCRIPTION OF THE MACHINE

The atomizers 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 generally diaphragm pumps but in some cases they are fitted with pistons.

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



PICTURE 4

HAND WASHING TANKS

The atomizers 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.

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° 3A-3B- 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 14).

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

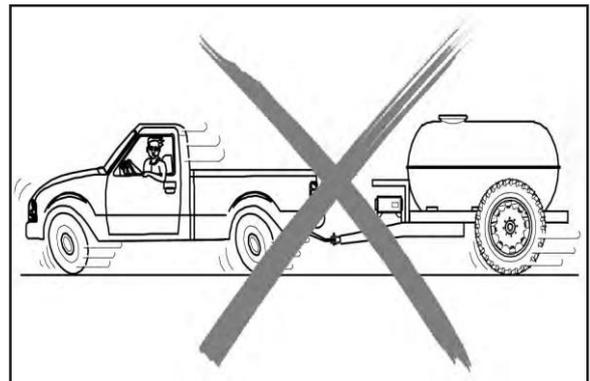
That all of the protective covers are fitted solidly to the machine, in particular the protective cover of the power-takeoff of the pump.

That the multiplier is sufficiently supplied with lubricant oil.

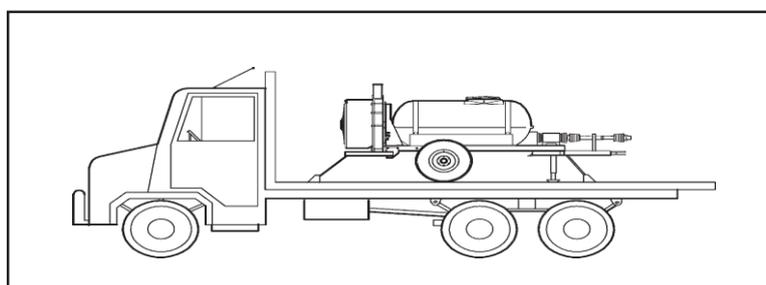
That the zone where the fan turns hasn't been bent by knocks during transportation.

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 drive shaft



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.



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.

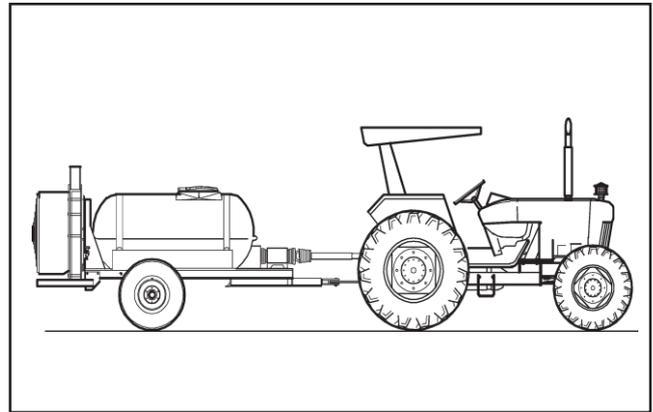
Never use a PTO shaft not fitted with shroud.

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 atomizer. Check this by consulting the table of allowed fittings Tables N° 3A-3B

WARNING: make sure there are no persons or things near the atomizer 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. The total weight of the Sprayer with all of its accessories and fittings is indicated on the name plate in PICTURE. 1 and also (in the version with the maximum fittings allowed) in Tables N° 3A-3B

For verification use the formula shown here.

Non-observance can result in a very dangerous situation as the tractor will lose steering sensitivity and can tip over when driving up hill 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 jumping off the connecting pins.

4.2. HYDRAULIC CONNECTION TO THE DISTRIBUTORS

Machines that need a hydraulic connection to drive the movements of the robotic head / radial cannon 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.

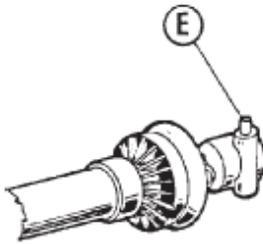
Consult the use and maintenance manual of the tractor.

4.3. CARDAN SHAFT

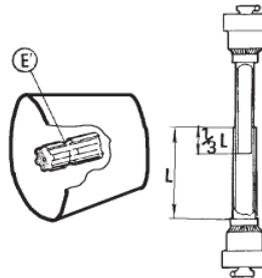
- ✓ In some models this is supplied on request.
- ✓ The cardan shaft must bear the CE mark.
- ✓ It must always have its own instructions that must be followed scrupulously and it should come with a cover bearing the mark, integrated in every part.
- ✓ You should have previously checked the length to 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.



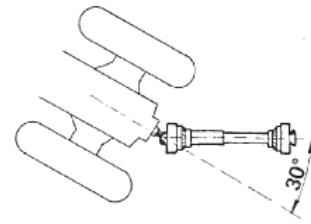
PICTURE 5



PICTURE 6



PICTURE 7

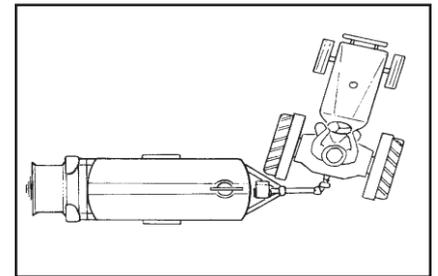
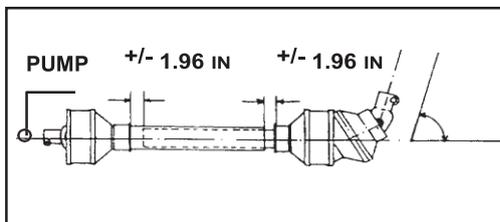


Adjusting the PTO shaft male and female tubes;

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

Connect the PTO shaft.

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



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

These power ratings are indicated in Tables N° 3A-3B-(pages 26-27)

a) Hook any safety chains to solid anchor points

b) Check that the button or ringnut "E" (PICTURE. 6) 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 come 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.



ATTENTION!

When maneuvering, disengage the PTO and keep the tire from touching the sprayer's tongue, otherwise this will damage the sprayer's transmission.

- ✓ **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 8

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 there are impurities in the liquid. To inspect the filter cartridge wear rubber acid-proof 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°9).

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 9

4.6. PRESSURE REGULATOR



MTS-401 R



MTS-100 BY



MTS-50 R-3

PICTURE 10

To use the pressure regulator, follow the instructions in the enclosed handbook scrupulously. 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 over pressure 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 20 bar. In this case the maximum pressure that can be reached is 20 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.

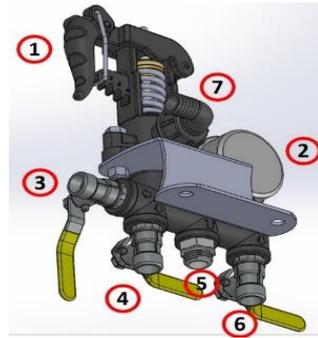
MTS-100 BY CONTROL UNIT



- 1- On/Off the fans sides
- 3- Delivery Water To Boom / Fan On Right Side
- 5- Manometer
- 7- Output

- 2- Adjust Pressure
- 4- Delivery Water To Boom/Fan On Left Side
- 6-Delivery Water From Pump To Control Units (input)

MTS-401 CONTROL UNIT



1- Adjust Pressure

3- Fitting ejector (receiving water)

5- Delivery Water To Boom/Fan On left

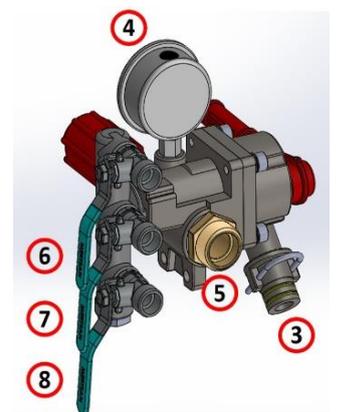
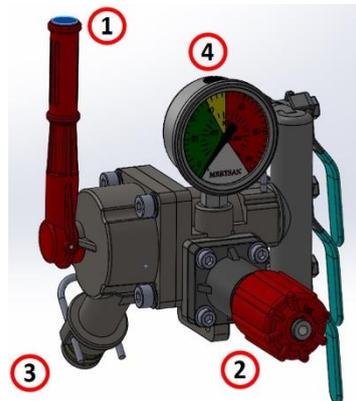
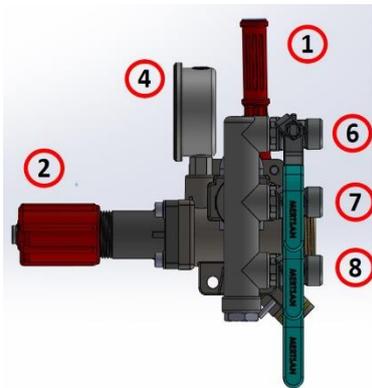
7- Output

2- Manometer

4- Delivery Water To Boom / Fan On Right Side

6-Side Delivery Water To Boom/Fan On Left Side

MTS-50R- 3 CONTROL UNIT



1-On / Off

3-Delivery Water From Pump To Control Units (Input)

5-Output

7-Delivery Water To Boom/Fan On Right Side

2-Adjust Pressure

4-Manometer

6-Fitting Ejector (Receiving Water)

8-Delivery Water To Boom/Fan On Left Side

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 inlet 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 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.

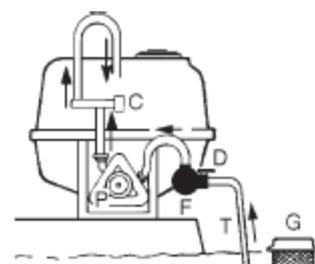


PICTURE 11

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.

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



PICTURE 12

b) FILLING WITH THE FITTING EJECTOR

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

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

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

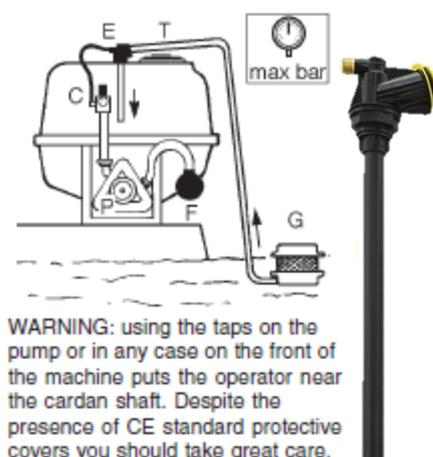
Place the other end of the hose, on which you fitted filter G, in the watering point.

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.

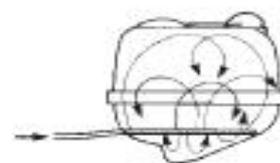


6. TEST WITH CLEAN WATER

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 atomizer is working properly and to get to know the controls. For instructions on how to proceed with the treatment see the chapter SPRAYING.



PICTURE 13A



PICTURE 13B



PICTURE 13C

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° 13A): 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° 13B)

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° 13A)

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°13C)

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.

6.4. WASHING THE ATOMIZER

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.14). 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 2kg of soda to the washing liquid for every 100 L 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 (H₂O).

e) Start the diaphragm pump by engaging the power-takeoff.

f) Increase the engine speed until all of the liquid in circuit washer tank Chas 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.

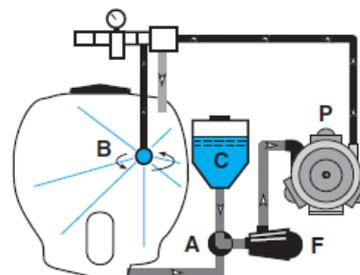
i) Start the diaphragm pump again and use the tank washing tap on the regulator (or on pump P) that supplies jet B.

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 14

8. TURBO ATOMIZERS GROUP

All the atomizers have a high speed fan rotor. You must take great care and beware of the effects that this can provoke: such as the aspiration and projection of foreign bodies which, although of a small size, can be very dangerous especially for the eyes and face.



Belt Tensioning System 1



PICTURE 15

8.1. AXIAL TURBO ATOMIZERS GROUP WITH PULLEY

The atomizers that have a drive transmission between the pump and fan with pulleys are equipped with a neutral gear.

You should periodically check the tension of the belts; if they become too slack you should tension them again.

To do this for the models equipped with a specific system belt tensioning system, use the screw indicated to the side

For all the other models use an adjustable wrench on the nut indicated in the figure to the side to move the base and tension the belts

8.2. AXIAL TURBO ATOMIZERS GROUP WITH MULTIPLIER

The transmission of the drive from the pump to the fan is done through a multiplier with one or two neutral gears.

Normally the rotation speed of the fan is 1890 RPM in first gear and 2430 RPM in second in the multiplier with 2 gear ratios (multiplied ratios 1:3.5 - 1:4.5) and 2,430 RPM in the multiplier with one gear ratio (1:4.5) with the power-take off running at 540 RPM.

You can change from one gear to the next with the lever on the multiplier, made accessible through the opening on the side in the rear left part of the machine or at a distance on the right side. The lever has 2 or 3 positions depending on the number of gears and the central position is neutral (to use only the pump without the fan).

There are two models of turbo atomizer groups with rear suction:

Axial turbo atomizer used for treatments similar to traditional multiplier turbo atomizer groups, with delivery of the air in a circular crown.

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. OPTIONAL DEFLECTORS AND ACCESSORIES

The atomizers are fitted with deflectors underneath for the optimal regulation of the airflow towards the zone to be treated.

To adjust these, simply pull or push the deflector, positioning it in the desired way.

Top deflectors can also be supplied on request to improve the regulation of the air flow towards the lateral zones without dispersing the product upwards. To adjust these, simply loosen the black lever, position the deflectors and lock the lever again.



PICTURE 16

11. ROBOTIC HEAD / RADIAL CANNON GROUP

The robotic head / radial robotic cannon group is equipped with a multiplier similar to the normal axial turbo atomizer groups and all of its operating characteristics are the same.

The main difference with respect to the axial turbo atomizer groups is that the centrifugal fan rotor is made of galvanized steel, the fan rotors in this type are fixed and can't be adjusted, for the clutch see the previous paragraph. This fan rotor can usually produce a delivery which is much higher with a very high speed airflow.

The robotic head / radial robotic cannon fan is mounted on a thrust block that can be adjusted by hand by unscrewing the relevant locking screw. This adjustment must be done with the fan rotor stopped because the high speed of the air make the movement of the fan dangerous.



PICTURE 17

11.1. HYDRAULIC DRIVEN HEADS

On request hydraulic pivoting (inclination 90° roughly) and rotating (max rotation 270°) heads are available.

11.2. HYDRAULIC DRIVES

The robotic head / radial cannon fans can be equipped with hydraulic drives: with the cylinder fitted directly (30° inclination roughly) or a motor with a pinion and chain (180° inclination roughly).

12. 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/l° 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.

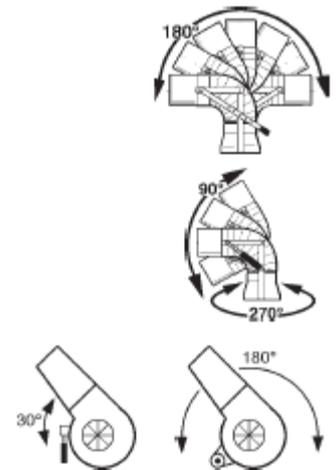
Any impurities in the oil could block the chokes and as a consequence block the cylinder; remove the dirt if necessary. The maximum pressure valves of the distributors are regulated to a pressure of around 150 bar.

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.

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.



PICTURE 18



PICTURE 19

13. SPRAYING

13.1. DESCRIPTION OF TYPE OF T-JETS

Various types of jets are fitted; with a single or double head.

Generally they have a non-drip diaphragm and are made out of brass, suitable for pressures up to 40 bar, some models are nickel plated.

- ✓ The jets can be equipped with different types of nozzles, changing the locking ring nuts.
- ✓ The jets used normally have high volume, Ø20, ceramic plates.
- ✓ The jets used normally have Medium volume, Ø18, Ø15 ceramic plates.
- ✓ The jets used normally have Low volume, Ø12, Ø10, Ø8, ceramic plates.



PICTURE 20

All the jets normally used have three positions:

Spray - if the nozzle is pointing outwards, away from the turbo atomizer group, parallel with the non-drip valve

Closed - if the nozzle is at 90° with respect to the non-drip valve or, for the single jet if it is facing inwards towards the turbo atomizer group

Nozzle second spray - when these are pointing towards the outside of the turbo atomizer group parallel with the non-drip valve.

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.

14. CALIBRATING AXIAL FAN ATOMIZERS

Tables N° 1 let you easily calculate the distribution in liters /hectare of the atomizers with the standard fittings, proceeding as indicated below:

- a) Choose the table relevant to the turbo atomizer group of the atomizer in question (the main reference is the number of jets)
- b) Find the distance between the rows of the vegetation and the diameter of the nozzles used (ceramic plates,).
- c) In the horizontal strip, choose the working speed and the distribution in liters /hectare and on the vertical scale find the pressure to use.
- d) Adjust the pressure to obtain the treatment required.

If the distance between the rows is different from that in the table you can easily calculate the distribution in proportion: for example with a distance between the rows of 8 m, divide the figure for the liters /hectare of the distance between the 4m rows by half, with a distance between the rows of 2.5 m double the figure for the distance between the 5 m rows.

The last line of the table indicates the overall delivery of the fan.

To calculate the distribution in liters /hectare, use the following formula:

$$Vd = \frac{600 \times Q}{I \times V}$$

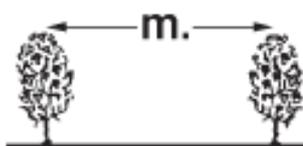
I x V

where: **Vd** = volume to distribute (Lt/ha)

Q = sum of the nozzles delivery (Lt/min)

I = distance between the rows (m)

V = tractor speed (Km/h)



NB: for calculating a different space between rows simply multiply the litres/hectare value by the corresponding width indicated in the table and divide it by the new width.

EXAMPLE:
in the table: 907 Lt/ha with a space between the rows of 3m

$$\frac{907 \times 3}{2,8} = 971 \text{ Lt/ha with a space between the rows of 2.8m}$$

TABLE 1

AGROSE ENJEKTÖRLERDEN İLAÇ ÇIKIŞ DEBİSİ OUTPUT FLOW FROM NOZZLES				SERAMİK NOZUL CERAMICAL NOZZLE		
DEBİ FLOW	YÜKSEK DEBİ HIGH FLOW	ORTA DEBİ MEDIUM FLOW		DÜŞÜK DEBİ LOW FLOW		
ÇAP	2	1.8	1.5	1.2	1.0	0.8
BAR	LİTRE/DAKİKA			LITRES/MINUTE		
8	4.94	3.40	2.51	1.74	1.33	1.03
10	5.50	3.70	2.80	1.92	1.47	1.13
12	6.01	4.06	2.99	2.10	1.61	1.19
14	6.40	4.37	3.26	2.25	1.74	1.30
16	6.77	4.67	3.52	2.40	1.86	1.41
18	7.17	4.96	3.79	2.51	1.99	1.50
20	7.60	5.22	4.16	2.70	2.09	1.58
25	8.67	5.87	5.08	3.07	2.34	1.78
30	9.75	6.52	6.01	3.44	2.59	1.98
35	10.83	7.17	6.94	2.82	2.84	2.18
40	11.91	7.82	7.87	4.20	3.09	2.38
İLAÇLAMA SPRAYING						

N.B. : Depending on the season the vegetation may be more or less luxuriant; bear this in mind before starting the treatment. If the plants don't have much foliage you should diminish the quantity of liters per hectare using lower pressures or closing one or more jets of the fan.

14.1. CALIBRATING ROBOTİC HEAD / RADİAL CANNON ATOMIZERS

Atomizers with a robotic head / radial cannon turbo atomizer group are mainly intended for treating forest trees or other tall plants that it is impossible to drive into with the sprayer (for example tobacco or similar cultivations). They are also frequently used in cultivation under mobile greenhouses.



PICTURE 21

When shooting the atomized chemical mix at distances, that can even be over 40 m, it isn't possible to verify with the exact distribution on the area treated.

Due to the effect of the wind, the presence of turbulence and the obstacle of the same plants being treated, we don't recommend using robotic head / radial cannons with chemical products that need to be distributed with great precision.

Don't use herbicides or similar products.

14.2. TREATMENTS ON TALL PLANTS

- Use the table's N° 1 choosing the one relevant to the type of robotic head / radial cannon to use and the number of jets.
- On the last line choose the delivery in L/minute that goes with the chosen working pressure.
- Then spray the liters desired on the plant defining the necessary treatment time. When treating a poplar grove or in similar situation there are photocells for the automatic management of the opening of the jet in the presence of the plant to treat, available on request.

14.3. TREATMENTS ON HERBACEOUS CULTIVATIONS

- Use the Tables N° 1 choosing the one relevant to the type of robotic head / radial cannon to use same Nozzles.
- Find the range and the diameter of the nozzles used (ceramic plate).
- In the horizontal strip, choose the working speed and the distribution in liters /hectare and on the vertical scale find the pressure to use.
- Adjust the pressure to obtain the treatment required.

Note: the minimum range indicated in the table can vary significantly according to the adjustment of the single jets (screwed in more or less).

To verify the exact delivery of the fan do tests with clean water.

14.4. HAND LANCES

When using hand lances bear in mind the following notes:

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

Don't point the jet at people or animals.

The jet 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.

For further information please refer to the handbook in the package.

The lever lance is controlled by opening lever A which, depending on how much it's pressed, produces a conical spray or direct jet. The standard nozzle is Ø 1.5

The spray gun can produce a direct jet or a conical spray and the type of spray is selected by pushing lever B forwards or backwards. Use lever C to open the jet. The standard nozzle is Ø 2.5

Replacement nozzles are available for all of the lances and the capacities are indicated in the tables TABLES N° 1.

LONG



SHORT



TRIGGER GUN



PICTURE 22

15. 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.



16. 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.



TABLE 2				
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 ⁽¹⁾	X ⁽²⁾
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 ⁽¹⁾ = First Oil change ⁽²⁾ = Change at the same time as changing the diaphragm				

16.1. 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.

16.2. 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.

16.3. LUBRICATION

The moving mechanical components must be lubricated to prevent wear and over heating. 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) using oil: 20W50

16.4. MULTIPLIER LUBRICATION

The viscosity is an essential characteristic of a lubricant oil and this is indicated by the SAE (SOCIETY OF AUTO-MOTIVE ENGINEERS) classification of the oils for gearboxes and differentials. Special additives improve the capacity of the oil to maintain a lubricant film also at high pressures and temperatures. We recommend using SAE 140 oil for the multiplier and disengaging boxes. The quantity of oil is established by the level cap. A greater quantity of oil doesn't improve the conditions of lubrication and can cause overheating in the box. Changing the oil protects the parts from the dangers associated with wear and the presence of metallic particles that can be present, especially in the first period of use. We recommend replacing the oil after the first 50 working hours and then subsequently every 500 hours.

WARNING: the oil used mustn't be dispersed in the environment and must be collected the relevant containers.

16.5. 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 main frame 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.

17. 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 L of normal antifreeze for auto vehicles.

17.1. 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.



18. 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.

18.1. MATERIALS FOR DEMOLITION

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

Iron, aluminium, stainless steel and copper materials

Plastic materials

Hydraulic oil

Electrical plant

18.2. 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:

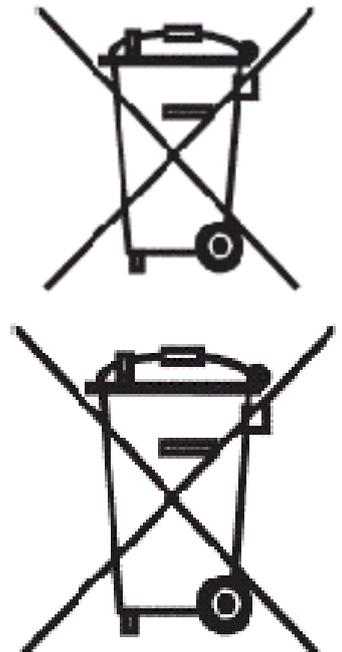
- a) Forestalling the production of EEAW;
- b) Promoting the re-use, recycling and other forms of EEAW recovery, in order to reduce the quantity to send for disposal;
- c) Improving, in terms of the environment, the actions of the subjects who participate in the life-cycle of these apparatuses (producers, 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



19. ALLOWED FITTINGS

TABLE 3A

1

TURBO ATOMIZER		ATT							CTT					
		200	300	400	500	600	800	1000	600	1000	1200	1600	2000	
TANK	POLYESTER	X	X											
	POLYETHELENE		X	X	X	X	X	X	X	X	X	X	X	X
PUMP	30													
	71	X	X	X	X	X	X	X	X					
	96			X	X	X	X	X	X	X				
	145					X	X	X	X	X	X	X	X	X
FAN	60	X	X	X	X		X							
	75			X	X	X	X	X	X	X	X	X	X	X
	90						X	X	X	X	X	X	X	X
TRANSMISSION	PULLEY	X	X	X	X	X	X	X	X					
	MULTIPLIER (GEARBOX)							X	X					
PRESSURE REGULATOR	401 R	X												
	50-R 3		X	X	X	X	X	X	X					
	50-R 5													
NOZZLE (With Diaphragm Check Valve)	BY-MATIC											X	X	X
		X	X	X	X	X	X	X	X	X	X	X	X	X
EXTERNAL MIXER												X	X	X

ALLOWED FITTINGS

TABLE 3B

TURBO ATOMIZER		ATT-V/ ATT-DS /ATT-RS			CTT-K/CTT-V/CTT-DS				
		600	800	1000	600	1000	1200	1600	2000
TANK	POLYESTER								
	POLYETHELENE	X	X	X	X	X	X	X	X
PUMP	30								
	71								
	96								
	145	X	X	X	X	X	X	X	X
FAN	60								
	75								
	90								
	V FAN	X	X	X	X	X	X	X	X
	TOWER FAN	X	X	X	X	X	X	X	X
	CANON FAN	X	X	X	X	X	X	X	X
	RADIAL FAN	X	X	X	X	X	X	X	X
TRANSMISSION	PULLEY								
	MULTIPLIER (GEARBOX)	X	X	X	X	X	X	X	X
PRESSURE REGULATOR	401 R								
	50-R 3	X	X	X	X	X	X	X	X
	50-R 5								
	BY-MATIC	X	X	X	X	X	X	X	X
NOZZLE (With Diaphragm Check Valve)		X	X	X	X	X	X	X	X

TABLE 4A

20.TROUBLESHOOTING

FAILURE	CAUSE	REPAIR
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 th 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.
Turbo fan 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.
Turbo fan impeller is not rotating. No transfer of rotation to the gear box.	Shaft failure.	Service.
Turbo fan impeller is not rotating. There is transfer of rotation to the gear box. The impeller shaft is not rotating.	Gear box failure.	Service.
Impeller is rotating unbalanced.	One of more than one of the impeller vanes are broken.	Service.
	There is dirt among the the impeller vanes.	Service.
Impeller is touching the fan cover.	Bolts for the connections of the fan, gear box support and gear box are loosened or dropped.	Check, tighten.
Turbo 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.



21.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:.....
Operator's Manuals Supplied:		Check safety shields are in place	<input type="checkbox"/>	Lift Device (if fitted):		Phone:.....
Sprayer Operators Manual	<input type="checkbox"/>	Suction Lines Undamaged	<input type="checkbox"/>	Undamaged	<input type="checkbox"/>
Spray Tank:		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"/>	Boom & Fold	
Fresh Water & Flush Tanks		Pressure Lines:		Undamaged	<input type="checkbox"/>	Signature of Owner
Undamaged	<input type="checkbox"/>	Undamaged	<input type="checkbox"/>	Check height adjustment	<input type="checkbox"/>
Check fittings	<input type="checkbox"/>	Hoses-no kinks or restrictions	<input type="checkbox"/>	Check boom mounting bolts tight	<input type="checkbox"/>	Date:
Check operation	<input type="checkbox"/>	All hoses sealed(no leakages)	<input type="checkbox"/>	Unfold the boom	<input type="checkbox"/>	DEALER:
Check All Tank Fittings Are Sealed Suction Line	<input type="checkbox"/>	Filter clean & sealed	<input type="checkbox"/>	Check nozzle mountings tight	<input type="checkbox"/>	Dealership Name: (Print)
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	
Pump:		Automatic Controller(s)		<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"/>	OWNER:		Signature of Dealer
Check operation	<input type="checkbox"/>	Fully check controller operation	<input type="checkbox"/>	Farmer <input type="checkbox"/> Contractor <input type="checkbox"/>		Representative
PTO Drive		Nozzles Undamaged	<input type="checkbox"/>	Owner's Name: (Print)	
Check quick release pins operate		Nozzle filters clean	<input type="checkbox"/>		Date:
Easily and lock in to place	<input type="checkbox"/>	Nozzles correct type throughout	<input type="checkbox"/>	Address:.....		Machine Serial #:
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"/>		

22. 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.

INNOEVEN 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 REPLACEMENT EQUIPMENT.

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



23.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?.....

