unigreen® S.p.A.
CROP PROTECTION

GB

USE AND MAINTENANCE MANUAL

MISTBLOWERS TURBOTEUTON

MOUNTED MISTBLOWERS
serie TURBOTEUTON - TT:
P Polipo - P SuperSpalliera - RV-GDV

Read this manual carefully before use.

09/2006

the green world partner

Summary

Thank you for having chosen UNIGREEN.
The product you purchased has been designed and built with the greatest attention to the safety of the operator and the environment, nevertheless 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) pump handbook
b) pressure regulator handbook (manual or electric)
c) spraying computer handbook (if fitted)
d) optional accessories handbooks (marker, premix, cardan shaft, etc.)

UNIGREEN 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 UNIGREEN guarantee. The UNIGREEN guarantee covers the repair or replacement of parts considered manufacturing flaws, according to the unquestionable judgement of UNIGREEN, only after the authorised 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, tyres, 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 mistblowers: 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 UNIGREEN machines are designed for is indicated in this manual, any other use is forbidden and makes the guarantee void.

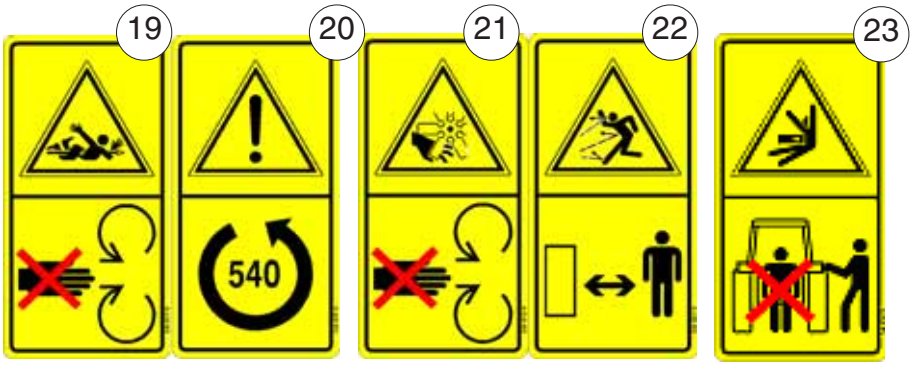
1.3 PRODUCT RESPONSIBILITY

UNIGREEN spa 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-motors-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 UNIGREEN 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 authorised by UNIGREEN.

Libretto composito, consultare i fascicoli specifici dei vari componenti

1.4 WARNING SIGNS IN THE MANUAL AND ON THE MACHINE

Below you will find all of the pictograms on the machine (see FIG.1 for their position), 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.



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 UNIGREEN.
NEVER try makeshift or hazardous solutions.
Don't wear clothes, jewellery, 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 (see previous pictograms).

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- Don't remove the protecting device with fan moving.
22- Material shooting off the machine, stand at a safe distance.
23- Don't stand between the machine and the tractor.

FIG.1

INDICATIVE POSITION OF THE WARNING SIGNS ON THE MISTBLOWERS
NB: the position may vary on the basis of the characteristics of the model.

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 Unigreen 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:

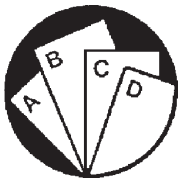
= Keep the machine in a suitable, protected place with no access for children or strangers
= Handle the products with care, wearing rubber acid-proof gloves, goggles-face masks or filtering helmets, overalls made of water-repellent fabrics or TIVEK and boots made of rubber or similar materials.
= If 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, water courses, roads, sports centres 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 centres. 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.

2.4 RECOMMENDATIONS

a) Refer to the present handbook for the use and maintenance of the frame, tank, auto-levelling systems, elevators, mechanical and hydraulic herbicide booms, spray booms and hose reels.

Refer to the enclosed handbooks for the use and maintenance of the pump and pressure regulator and any accessories or motors.
b) Please contact the agent in your zone, the nearest authorised workshop or UNIGREEN S.p.A. directly for any repairs the user feels they aren't capable of performing alone. (see point 8.4)
c) Due to the complexity of the equipment and the variety of technologies used (mechanical, hydraulic, oil-pressure and electrotechnical) operators must not dismantle or modify the equipment. All of the relevant operations must be performed by specialised personnel, authorised by UNIGREEN S.p.A.

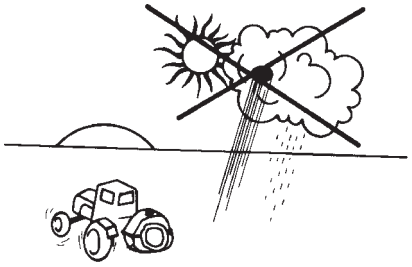


2.4.1 TAKING PRECAUTIONS AGAINST FIRE HAZARDS

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

2.5 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 UNIGREEN S.p.A.; for information, please contact our offices.

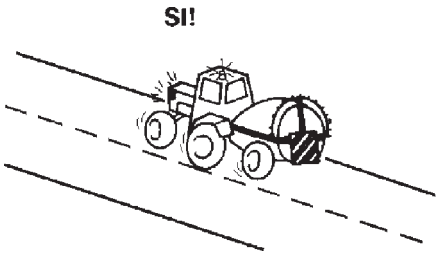


2.6 MACHINES DESIGNED TO BE USED ONLY WITH CLEAN WATER

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.

2.7 DRIVING ON THE ROAD

The towed mistblowers are not specifically designed for road use. Nevertheless, 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.



3 CHARACTERISTICS AND SPECIFICATIONS

This handbook is valid for mounted and towed mistblowers 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 cannon mistblowers for the phytosanitary treatment of tall plants and forest trees such as poplars or similar.
The axial mistblowers produce a mixed spray, breaking the drops with the pressure and the speed of the air produced by the fan.
These mistblowers produced by UNIGREEN SPA are identified by the CE plate (FIG. 2) bearing one of the marks indicated in the tables of the allowed fittings (see the following paragraph).

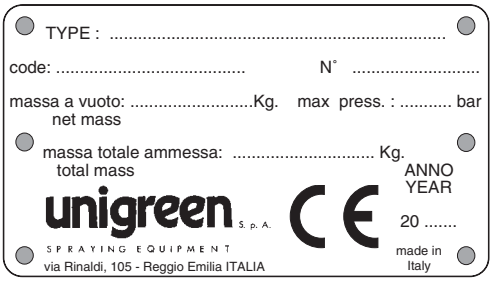


FIG.2

3.1 TABLES OF FITTINGS ALLOWED

Table N° 17a 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 OF THIS HANDBOOK (TAB: 17a, page 34) 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 UNIGREEN's responsibility.
The same goes for fittings realised with components or accessories that aren't original UNIGREEN parts.
UNIGREEN accessories can easily be identified by the label with the yellow background "ORIGINAL UNIGREEN ACCESSORY"

3.2 NOISE LEVEL OF THE MACHINE

Use earmuffs to protect your ears when using the machine, below you will find the data on the maximum noise levels during work.

Atomisers with centrifugal fan rotor (Turboteuton)
ACOUSTIC POWER LEVEL emitted by the machine: **123,8 dBA** in 2nd gear
ACOUSTIC POWER LEVEL AT THE OPERATOR'S POSITION emitted by the machine: 103,2 **dBA** in 2nd gear

Readings taken in accordance with the following standards:
Machines Directive 98/37/CE (89/392 CE Dir. re-codified).
Legislative Decree D.Lgs. n°292 of the 4th of September 2002 concerning the environmental acoustic emission of machines and equipment for use outdoors.
Legislative Decree D.Lgs. 277/91 on the subject of the protection of workers against the risks deriving from exposure to chemical, physical and biological agents.

3.3 STANDARDS OF REFERENCE:

- MACHINES DIRECTIVE 98/37/CEE (89/392 CE Dir. re-codified).
- Directive 86/188/CEE: risks deriving from exposure to noise (implemented in Italy by Legislative Decree D.L 277/1991)
- DPR 547/1955: Regulations for the prevention of accidents and hygiene at work.
- Legislative Decree D.Lgs. n°292 of the 4th of September 2002 concerning the environmental acoustic emission of machines and equipment for use outdoors.
-UNI EN ISO 12100-1/Apr.2005 : Machinery safety - Fundamental concepts, general design principles - Part 1: basic terminology, methodology
-UNI EN ISO 12100-2/Apr.2005 : Machinery safety - Fundamental concepts, general design principles - Part 2: Technical principles
-UNI EN 294/July 1993: Machinery safety, safe distances to avoid reaching hazardous areas with upper limbs.
-UNI EN 349/June 1994: Machinery safety, minimum spaces to prevent crushing of body parts
-UNI EN 907/Nov.1998: Agricultural and forestry machinery - Sprayers and spreaders of liquid fertilizers - Safety.
-UNI EN 954-1/Dec. 1998 : Machinery safety - Fundamental concepts, general design principles
-UNI EN 982/July 1997: Machinery safety. Safety requisites relevant to systems and their components for hydraulic and pneumatic transmissions. Hydraulics.
-UNI EN ISO 4254-1/June 2006: Agricultural machines - Safety - Part 1: General requisites
-ISO 11684/1995: Pictograms - general principles.

4 INSTRUCTIONS

To use the machine the personnel must be suitably trained on the basis of the regulations in force on safety and hygiene at work.
THE USE OF THE MACHINE FOR PERSONS UNDER 18 YEARS OF AGE IS STRICTLY FORBIDDEN

4.1 DESCRIPTION OF THE MACHINE

The mistblowers consist of a structural steel frame and a polyester tank reinforced with fibreglass or high-density polyethylene. The frame is hot-galvanised. 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 UNIGREEN mistblower a highly qualified and efficient piece of equipment.

4.1.1 WORK STATIONS

The use of this machine does not envisage an operator standing constantly near the same, the operator normally sits in the cab of the tractor.
During calibration and maintenance operations the operator will be working near the machine at ground level (for all the calibration and maintenance operations refer to the relevant chapters).
In some special models with controls above 1.5 metres there is a platform to make these operations easier.
This platform must only be used with the machine stopped.

Questo simbolo identifica la cisterna di acqua pulita ad uso lavamani presente sulla macchina

4.1.2 HAND WASHING TANKS

The mistblowers 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.

4.2 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 UNIGREEN 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° 17a (pages 34).
This procedure is necessary because for reasons of space during transportation the machine is often delivered partially dismantled.

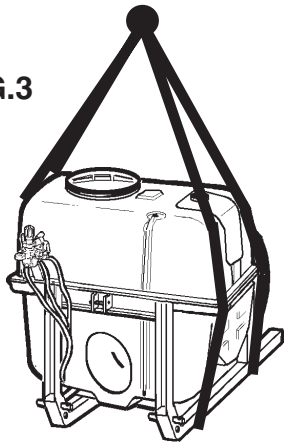
b) that it is tested in your presence in particular checking:
= that the suction filter and the inside of the tank are clean and free of work residues.
= that the connections are made correctly following the basic layout (FIG. N° 16, page 16).
= that the hose clips and all the unions and connections 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.

4.3 TRANSPORTING AND MOVING THE MACHINE

Every time you have to lift the machine, before starting the operation, always make sure the lifting gear and the relevant tools and equipment (cables, hooks, etc..) are suitable for lifting the load and check the stability of the same.
It is forbidden to unhook and move the machine with the tank full.
The dry weight of the machine at the maximum level of fitting and with all the accessories allowed is stamped on the nameplate (FIG.2); use slings and lifting gear with a adequate load-bearing capacity (FIG.3).
Never lift or move the mistblowers by hand if there is liquid in the tank. The machine will weigh more and the movement of the liquid can change the centre of gravity causing uncontrolled movements.
We recommend using slings as shown in the figure, the lifting points to use on the machine are indicated with the relevant symbol.
Don't lift the machine with the forks of a forklift truck because the machine can tip over due to the overhanging weight of the blower group.
Don't pass or stand under the machine when it is being lifted.

Questo simbolo identifica i punti di aggancio della macchina

FIG.3



Movimentare e sollevare la macchina solo con cisterna vuota

4.3.1 MOUNTED ATOMISERS

PARKING
Don't stand the atomiser on unstable ground or steep slopes, the machine is designed to be parked safely on compact ground with a slope of up to 8.5°

MOVING
To lift the machine, follow the instructions above.

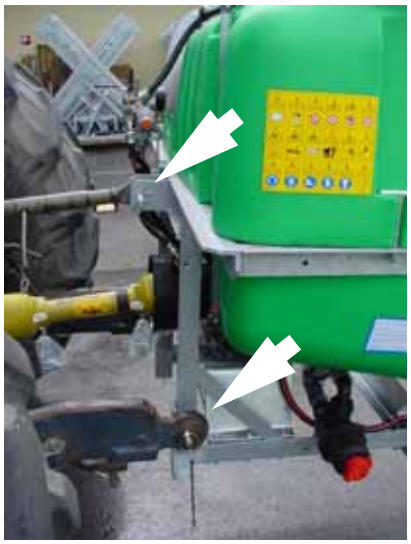


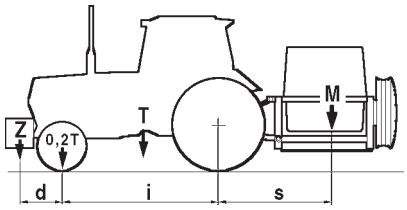
FIG.4

Attacco alla Trattrice

4.4 TRACTOR COUPLING

The tractor must have 1”3/8 ASAE DIN 9611/A power-takeoff that runs at 550 rpm. It must have a 3-point elevator suitable for safely supporting the weight of the atomiser.
Check this by consulting the table of allowed fittings N° 17a (pages 34).

WARNING: make sure there are no persons or things near the atomiser before starting the machine and while you are using it.



M x s < 0,2 T x i + Z x (d + i)

i = interasse ruote trattrice
d = distanza dell’asse anteriore dalle zavorre
s = sbalzo dall’asse posteriore della macchina operatrice
T = massa della trattrice + operatore (75 kg)
Z = massa della zavorra
M = massa della macchina operatrice

4.4.1 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 nameplate in FIG. 2 and also (in the version with the maximum fittings allowed) in tables N° 17a (pages 34).
For verification use the formula shown here.

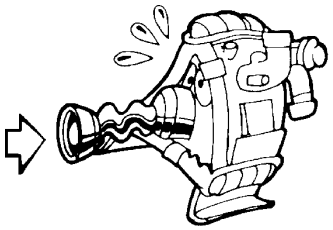
Non-observance can result in a very dangerous situation as the tractor will lose steering sensitivity and can tip over when driving uphill or over bumps.
b) Check the diameter of the elevator coupling pins. If necessary position the double diameter pins correctly; there are also appropriate adapter bushes 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 jumping off the connecting pins.

4.4.5 HYDRAULIC CONNECTION TO THE DISTRIBUTORS

Machines that need a hydraulic connection to drive the movements of the 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.

4.5 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 TELESCOPIC TUBES MUST NEVER BE LESS THAN 1/3 OF THE LENGTH OF THE TUBES.

FIG. 6

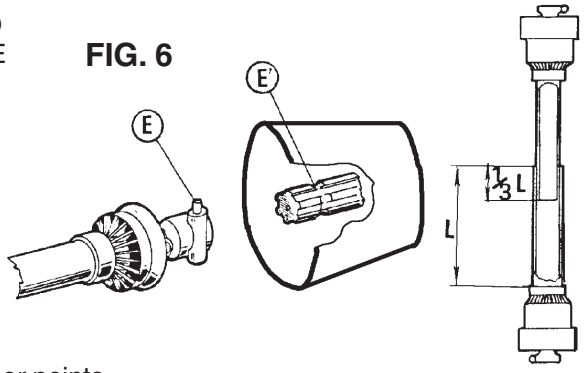
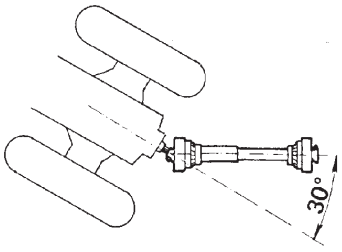


FIG. 7



The power that can be transmitted by the cardan shaft must be at least equal to that required to run the mistblower.
These power ratings are indicated in tables N° 17a (page 34).

a) Hook any safety chains to solid anchor points
b) Check that the button or ringnut "E" (FIG. 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 a part of the frame of the machine (ex. control unit support).
f) For towed mistblowers with a steering drawbar, be very careful not to lift the arms of the elevator too high to prevent the cardan shaft touching parts of the drawbar.
l) For towed mistblowers, avoid very tight steering circles with the cardan shaft turning (max 30°) as this could damage both the cardan shaft and the feet of the pump (FIG. 7).

NEVER USE THE CARDAN TRANSMISSION IF THE FOLLOWING PROTECTIVE COVERS ARE MISSING:

- TRACTOR POWER-TAKEOFF PROTECTIVE COVER
- CARDAN SHAFT PROTECTIVE COVER
- FIXED PROTECTIVE COVER ON THE PUMP SHAFT

4.6 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 550 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.

4.7 SUCTION FILTER

The sprayer is fitted with a suction filter with filter cartridges that have roughly a 50-gauge mesh, which is equivalent to a hole of 0.4 at 0.35 mm.
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.

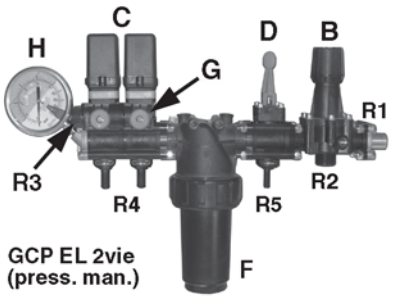
Before removing the cover of the filter, make sure that the same is isolated from the tubing by unscrewing the relevant rear valve (FIG. N°8) or on the 3-way deviator (FIG. N° 10, page 14).
After washing the cartridge, reassemble the cover making sure you connect the same to the circuit again, using the valves described above in the opposite order.
WARNING!: Don't disperse the washing residues in the environment!!

FIG. 8

Don't use the sprayer without having consulted the enclosed handbook.

4.8 PRESSURE REGULATOR

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 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 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. If the tractor has a waterproof cabin the use of electrical controls is obligatory.

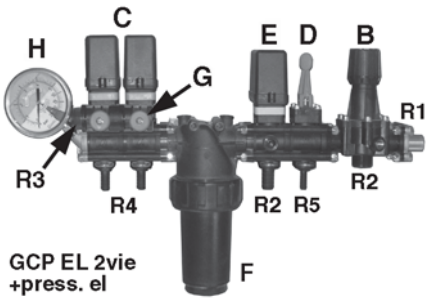


GCP EL 2vie
(press. man.)

4.8.1 COMPONENTS OF THE PRESSURE REGULATOR

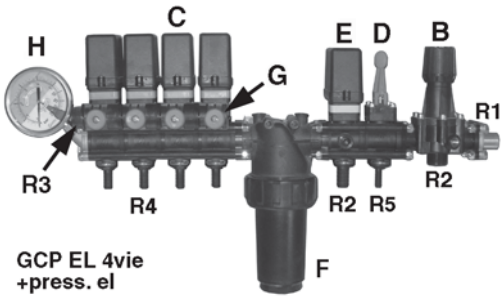
Below you will find the indications for the main models fitted on Unigreen products.

A main ON-OFF command: "open" lets the fluid flow into the circuit in use; "closed" empties the tank.
B maximum pressure valve: adjusted by hand with the relevant knob (drains the excess liquid when the set pressure is reached).
C jets section tap: opens the corresponding jet boom or drains to the compensation regulator (G).
D auxiliary tap: can be used for various accessories (it is always manual).
E volumetric pressure valve (proportional):
(when present) it regulates the spraying pressure. The valve automatically compensates variations in speed (within the scope of the same gear ratio), keeping the quantity of liquid supplied per surface unit (litres/hectare) unchanged.
F self-cleaning filter: filters the delivery liquid.
G compensation regulators: suitably regulated, these make it possible to keep the pressure constant when one or more sections of jets is closed, they don't influence treatments with the boom fully open.
H manometer: indicates the working pressure.



GCP EL 2vie
+press. el

Connections:
R1 supply union
R2 drain union
R3 volumetric drain union
R4 jets section delivery union
R5 auxiliary delivery union



GCP EL 4vie
+press. el

Control box for GCP ELETTRICO electrical regulators
I1 main control valve switch
I2 volumetric pressure valve switch (proportional)
I3 jets section valves switches

4.8.2 GENERAL INSTRUCTIONS

When using the pressure regulator, scrupulously observe the instructions in the enclosed handbook, below you will find generic indications for the major models fitted by Unigreen.
All the regulation and adjustment tests must be carried out with clean water.

Pressure regulators without a volumetric valve (GCP3-way - GRH-RVA)
Adjusting the maximum pressure valve
= put main control **A** in the drain position ("OFF").
= loosen the hand wheel of maximum pressure valve **B** completely (anticlockwise).
= start the pump by activating the power-takeoff of the tractor at 540rpm
= open main control **A** (position "ON"), the manometer will be activated
= open all of the section valves **C** (position "ON")

= adjust maximum pressure valve **B** to the working value (in any case less than the safe maximum pressure the system can reach).

Pressure regulators with a volumetric valve (GCP ELETTRICO)

Adjusting the maximum pressure valve

= put main control **A** in the drain position ("OFF").

= loosen the hand wheel of maximum pressure valve **B** completely (anticlockwise).

= open volumetric valve **E** completely.

= start the pump by activating the power-takeoff of the tractor at 540rpm

= open main control **A** (position "ON"), the manometer will be activated

= open the drain tap on filter **F** slightly (only **GCP ELETTRICO**).

= close volumetric valve **E** completely. If the pressure rises over the maximum limit of the system, make sure maximum pressure valve **B** is open (see previous indications)

= open all of the section valves **C** (position "ON")

= adjust maximum pressure valve **B** to a value over that of the working pressure (generally 10-14bar) and in any case lower than the safe maximum pressure that the system can reach.

Adjusting the volumetric pressure.

= with the volumetric pressure valve **E** adjust the pressure to the value the treatment will be done at (the pressure is indicated on the nozzles tables on the basis of the tractor speed and litres/hectare to spray)

Warning! The working pressure must be adjusted with the volumetric valve and not with the maximum pressure valve. In the case the working pressure is too near to the calibrated pressure of the maximum pressure valve, the proportional valve may not be able to compensate the speed variations correctly.

Adjusting the compensated returns

= close only one tap of section **C** (position "OFF").

= adjust the corresponding compensator **G** until you return to the pressure set previously (displayed on the manometer).

= open and close the tap of section **C** and check that the pressure remains constant.

= repeat the above operations for all the section taps.

If the types of nozzles aren't changed the regulations carried out will guarantee a constant spraying of the liquid also per treatments that are done at different working pressures.

NB: if the type of nozzle is changed then the calibrating will have to be done again.

4.8.3 DELIVERY FILTERS (ONLY EQUIPPED MODELS)

This is particularly useful when using small nozzles (low volume), they are normally mounted on the jet booms and have a filter cartridge with a 40-gauge mesh (the equivalent of a 0.4 mm hole).

At the end of each treatment cycle you should clean the cartridge: turn the jets to the closed position, put the command under pressure and open the tap under the filter to drain the tank for a few minutes.

You should clean the cartridge by hand periodically, on the basis of the product used. Stop the pump to clean. Wear rubber gloves and the other personal protective equipment when cleaning.

4.9 AUXILIARIES TAPS BLOCK

A collector is installed (FIG. 9) in the machines with taps for the utilities and accessories, which require a working pressure that is independent from the spraying pressure:

- Tank washing jet: see paragraph 4.13.1
- Ejector: see paragraph 4.10
- Agitators (2 independent taps): see paragraph 4.12

The taps are identified by the relevant sticker and the methods of use are described in the paragraphs indicated.

The pressure is normally regulated to 30-35 bar with the relevant valve (using a yellow knob) and displayed on the manometer installed; opening the utilities makes the pressure drop.

FIG. 9

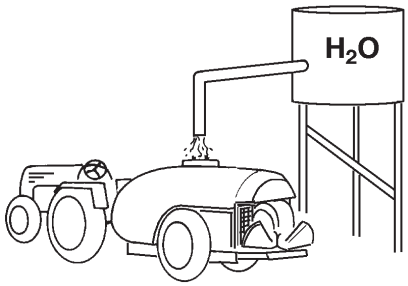


FIG. 10

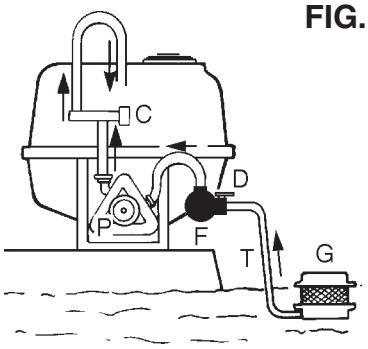
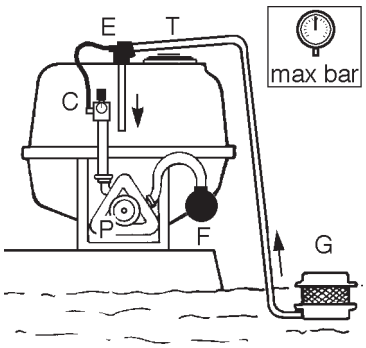


FIG. 11

FIG. 12



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.

4.10 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 waterworks.
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 Unigreen on their production machines or on request are antipollution and stop the liquid overflowing out of the tank.

a) FILLING WITH THE 3-WAY DEVIATOR (Fig. 10- Fig. 11).
It is possible to fill the tank using the pump and the floating filter kit **G** (cod.1002/0080F) with 6 metres of rubber hose (the floating filter lets you always and only suck up clean water).
= connect hose **T** to deviator **D** using the union hose adaptor supplied.
= turn the lever of deviator **D** to the filling position.
= place the other end of the hose, on which you fitted filter **G**, in the watering point.
= start the power-takeoff leaving pressure regulator **C** in the draining position (you don't have to put the pump under pressure).
= the filling speed in litres/minute is equal to the delivery of pump **P**.
= visually check the level of the liquid in the tank and after filling stop the pump and put the lever of deviator **D** back in the working position.
= disconnect pipe **T** from deviator **D**.

b) FILLING WITH THE SUCTION FILTER (Fig. 3- Fig. 11).
If the 3-way deviator isn't fitted you can fill the tank using the coupling on the cover of the suction filter. Unscrew the rear wing nut 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 litres/minute is equal to the delivery of the pump.

c) FILLING WITH THE ANTIPOLLUTION EJECTOR (Fig. 12)
If you are filling with an antipollution hydroejector (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 auxiliary taps, see point 4.9).
= 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.

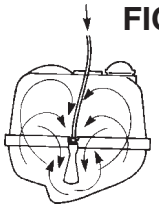
4.11 TEST WITH CLEAN WATER

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

4.12 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).
The machines in the Airdrop-MFC range can be equipped with 2 hydro-pneumatic agitators, supplied by the relevant taps in the auxiliaries taps block (paragraph 4.9).
o mix the product in the tank run the stirrer (or ejector) for roughly 10-15 minutes at the maximum pressure available

FIG. 13



4.12.1 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.).
WARNING: the indications to follow for using chemical products are indicated in paragraph 2.2.1.

4.12.2 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.

4.12.2 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.

FIG. 15

Box washing device on cover

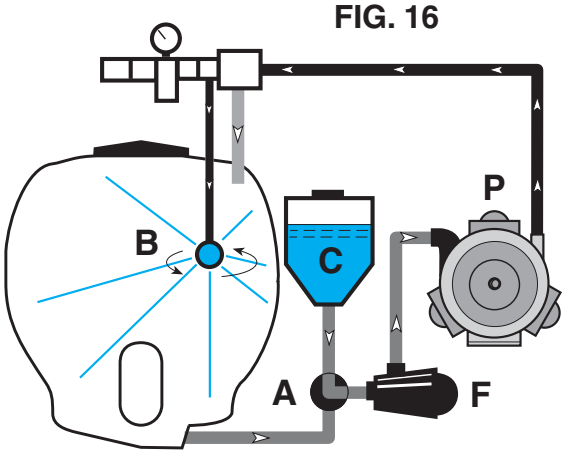
4.12.4 COVER WASHER FOR CHEMICAL CONTAINERS(OPTIONAL)

The washer for chemical containers (FIG.15) is installed as standard in the hatch on the entire Airdrop-MFC range.
To wash the container, proceed as follows:
-Lift the cover of the tank
-Open auxiliary tap (D) of the pressure regulator (see paragraph 4.8.1) supplying it with a pressure of under 8 bar
- Introduce the tin into the hopper, inserting the washing pipe into the tin.
-Press the tin onto the pipe until it has been washed clean.
-At the end of the operations close the tap (D) of the pressure regulator again.

4.13 WASHING THE ATOMISER

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.
WARNING: the indications to follow for using chemical products are indicated in paragraph 2.2.1.

FIG. 16



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.

This symbol identifies the clean water tank on the machine used to wash the circuit

4.13.1 CIRCUIT WASHER AND TANK WASHER

Some machine models are fitted with a circuit washer tank (FIG.17). 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 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.

5 BLOWER GROUP

All the mistblowers 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.

5.1 MULTIPLIER - FAN UNIT

The Airdrop range is fitted with two versions of a Ø500 centrifugal fan: STD (max absorption 30 HP) and XP (max 50 HP).
The transmission of the drive from the pump to the fan is done through a multiplier with one or two gears, plus neutral.
Normally the rotation speed of the fan is 3240 RPM in first gear and 3620 RPM in second in the 2-speed multiplier (multiplied ratios 1:6 - 1:6.7) with the power takeoff 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).

WARNING: the gear change lever must only be used with the power-takeoff disengaged and the fan stopped. If it is difficult to engage, turn the cardan shaft slightly by hand to find the right position of the lever (make sure the tractor is turned off).

For the maintenance of the multiplier (see point "Multiplier Lubrication"

Ø500 fan with multiplier, 2-speed plus neutral.

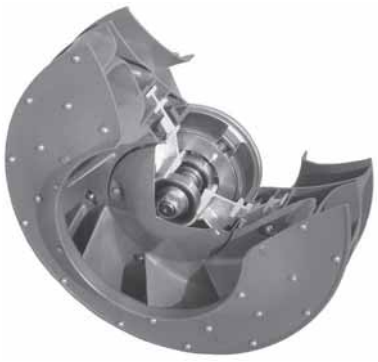
WORK TEMPERATURE

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 on any cast iron box on request.

5.5 CLUTCH

Fans have a centrifugal type clutch that makes it possible to engage the fan rotor gradually.
This prevents jerky starts, due to the inertia of the fan rotor, which can have a negative effect on the transmission.
For the centrifugal clutch to work properly the speed of the power-takeoff mustn't be less than 450 rpm, especially if you are using the first gear of the multiplier.
Generally clutches with shoes/plates made of sintered material with a high coefficient of friction are fitted, on some low power models rubber clutches may be fitted.

WARNING! As there is a high multiplication ratio, the fan must be started gradually. Suddenly engaging the power-takeoff clutch (at high speed) can damage the gears.

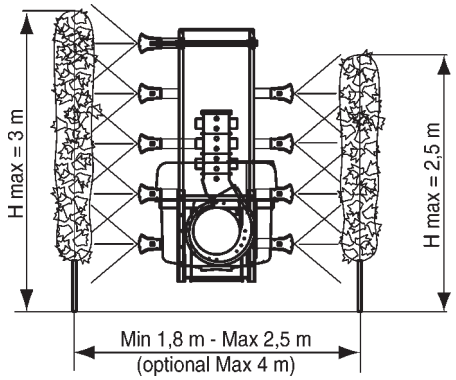


Ø500 Nylon impeller with sinterized expansion clutch.

5.3 DISTRIBUTOR ACCESSORIES

Various configurations of accessories or distributors are fitted to the outlet of the fans. At present these are:
Polipo - Super Spalliera - RV GDC
WARNING: for all adjustments, always observe the safety indications in the chapters relevant to maintenance and repair of this manual, as well as paragraph 2.3.1 relevant to the use of chemical products.

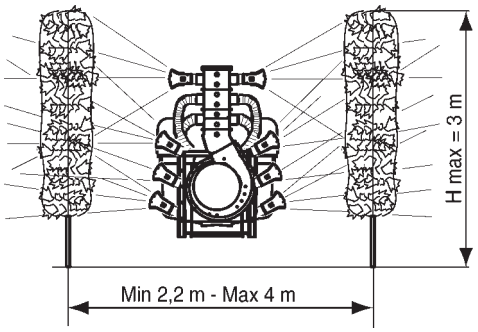
POLIPO SPALLIERA



5.3.1 POLIPO FOR ESPALIER

Tangential flow accessory that brings the diffusers closer to the walls to treat, for targeted and localised interventions. The vertical construction puts the distributors parallel with the walls of the vegetation, guaranteeing a uniform treatment with limited absorption.
Versions with 4 or 5 distributors per side are available to choose from on the basis of the height of the row.
The height of the arms can be adjusted by hand and the distributors can be inclined to direct the chemical product in the best way for the configuration of the vegetation. All the adjustments are made by hand using knobs and screws.
When treating particularly wide rows (up to 4 m) OPTIONAL extendable arms are available.
The "POLIPO" accessory is used with STD version fans.

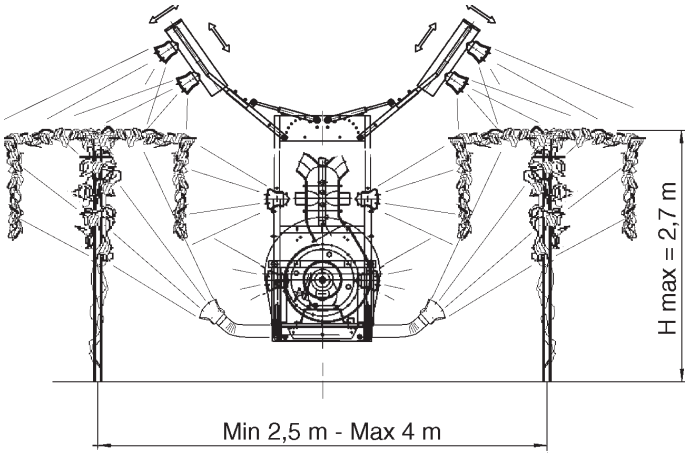
SUPER SPALLIERA



5.3.2 SUPER SPALLIERA FOR ESPALIER

With this accessory you can treat particular espaliers with thick vegetation. It is especially indicated where you need to pass beyond the rows, using a lot of air and power.
The variable diffusers let you direct the product in relation to the requirements of the vegetation. All of the adjustments are done by hand using the knobs and screws.
The SUPER SPALLIERA accessory is used with XP fans.

RV per GDC



5.3.3 RV BOOM FOR GDC

This boom has lateral diffusers (variable and moveable) and two top arms with hydraulic or manual adjustment, so the jets can be directed onto the vegetation to be treated.
In the bottom part there are two adjustable, telescopic distributors for GDC treatment.
The height of the structure can be adjusted by hand for different types of vegetation.
The RV-GDC accessory is used with XP fans.

5.4 HYDRAULICS

The RV, VL, VLX, FXF and FXL model distributor accessories have hydraulics that can be controlled by the operator directly from the seat in the cab.
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.

The hydraulic plant can be fed from the hydraulic pump of the tractor.
The hydraulics can be controlled using the lever of the tractor (RV and VL) or a hydraulic distributor with mechanical or electro-hydraulic command with switches in the cabin (VLX, FXF and FXL).
- 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.

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.

5.4.1 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 aluminium 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 ringnuts 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.

FIG. 18

FIG. 19

Getto aperto (ON) Getto chiuso (OFF)

FIG. 20

6 SPRAYING

WARNING: the indications to follow for using chemical products are indicated in paragraph 2.2.1.

6.1 DESCRIPTION OF THE DIFFUSERS

The distributor accessories of the TurboTeuton range are equipped with variable diffusers (FIG. 18) so you can direct the airflow (and consequently the treatment) onto the vegetation to treat on the basis of your needs. According to the configuration of the accessory the diffusers have outlet mouths with different shapes and sections. The diffusers can be equipped with a double series of non-drip jets on request (FIG. 19).

6.1 DESCRIPTION OF TYPE OF 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 ringnuts. The jets used normally have high volume, Ø18, ceramic plates and low volume conical nozzles (Albuz ATR or Teejet TXB). The jets for cannons have a jet holder with adjustable delivery and spray that has high volume, ceramic plates, Ø15 instead of 18.

All the jets normally used have three positions (FIG. 21):
a) spray - if the nozzle is pointing outwards, away from the blower group, parallel with the non-drip valve
b) 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 blower group
c) nozzle second spray - when these are pointing towards the outside of the blower group parallel with the non-drip valve.

6.2 DESCRIPTION OF TYPE OF NOZZLES

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.

6.2.2 LOW VOLUME CONICAL NOZZLES (150-500L/HA)

Made of two ceramic pieces with colour-coded plastic inserts, they are available in various sizes identified by the colour (see table 3 page 32). They have been specifically designed to obtain a large number of small drops with strong turbulence even at low pressures (2-3 bar). This turbulence makes them suitable for penetrating luxuriant vegetation and so they are suitable for fungicides and insecticides. The nozzles of the TR Lechler and TXA Teejet series are in this category.

6.2.3 ANTI-DRIFT NOZZLES

Specific anti-drift nozzles are available from Unigreen. The main characteristic of these nozzles is that they eliminate the fog effect caused by the presence of drops that are too small and are particularly sensitive to drifting. For further information please contact Unigreen for the relevant instruction handbook.

6.3 CALIBRATING TURBO TEUTON

The tables on pages 26-31 let you easily calculate the distribution in litres/hectare of the mistblowers with the standard fittings, proceeding as indicated below:

a) Choose the table relevant to the blower group of the mistblower 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, TR or TXA).

c) In the horizontal strip, choose the working speed and the distribution in litres/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 litres/hectare of the distance between the 4 m 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.

If the mistblower is fitted with non-standard nozzles, the spraying tables of the single nozzles per mistblower are on page 32.

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

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

where:

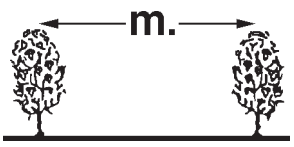
- **Vd** = volume to distribute (L/ha)
- **Q** = sum of the nozzles delivery (L/min)
- **I** = distance between the rows (m)
- **V** = tractor speed (Km/h)

EXAMPLE:
Distance between the rows: **5 m**
Speed: **6 Km. / h**
Working air pressure 30 bar
Fan **Ø 800** with 14 standard, high volume nozzles (Ø 1.0)

Q total delivery of the nozzles *(Tab. 1 page 34)* **2.96x14= 41.44 L/min**

$$Vd = \frac{600 \times 41.44}{5 \times 6} = 829 \text{ L/ha}$$

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 litres per hectare using lower pressures or closing one or more jets of the fan.



N.B. to calculate the different ranges it is sufficient to multiply the value lt/hectare by the corresponding width indicated in the table and divide it by the new width.

Example-
In the table: 907lt/ha with row distance 3m.

$$\frac{907 \times 3}{2{,}8} = 971 \text{ Lt/ha with row distance 2,8m}$$

FIG. 22

7 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, mitra 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 mitra 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 TAB.4 and TAB.5 (page 32).

8 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 mistblower is essential for maintaining a high level of safety. Also consult the single handbooks of the main components of the mistblower.

WARNING: the indications to follow for using chemical products are indicated in paragraph 2.2.1.

8.1 PROGRAMMED MAINTENANCE

(TAB. N° 7, page 33)

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

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

8.2 ROUTINE MAINTENANCE

= After every treatment wash the inside of the tank and the entire circuit as indicated in paragraph 4.13

= 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 (viton and desmopan) 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 galvanising.

To prevent chemical attacks we recommend spraying transparent paint on the parts that are most exposed to the product and equipping the mistblower with stainless steel pressure gauges.

8.2.1 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.

8.2.2 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.

8.2.3 MULTIPLIER LUBRICATION

The multiplier and disengaging boxes are normally lubricated in an “oil bath”, in special cases NLGI n.0 grease is used. 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 recommended using SAE 90 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.
The quantity of oil needed is indicated on the sticker near the multiplier (FIG. 23)
WARNING: waste oil must not be dispersed in the environment, to dispose of waste oil see paragraph 8.7.1.

FIG. 23

8.3 EXTRAORDINARY MAINTENANCE

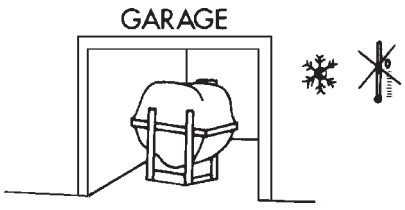
At the end of a season of intense use, or every two years of normal use, it is a good idea to have a specialised service technician perform a general check on the machine.

8.4 REPAIRS

We recommend having the normal UNIGREEN assistance service available from our reseller perform any repairs or contact a specialised workshop.
During all of the repairs, in particular when welding, the machine and the circuit must be clean of any residues of chemical product.
If the machine has to be lifted (for example to change a wheel) follow the instructions in point 4.3 of the present handbook.
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.

8.5 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.
To transport the machine follow the instructions in point 4.3 of the present handbook.



8.6 PUTTING BACK INTO SERVICE AFTER WINTER LAYUP

Before using the machine again after a long period of inactivity you should perform some general checks, following the instructions in point 4.2 and drain any antifreeze.
Never start the shaft of the pump if you think there may by 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 (see point 4.4) following

the instructions in the present user's handbook and in the enclosures of the pump, pressure regulator and accessories.

8.7 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, follow the instructions in point 4.13 of the present handbook.
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.
Remember that waste is understood as any substance or object that enters into the categories shown in attachment A in part IV of Legislative Decree 152/2006, that the holder has destroyed, has decided or is obliged to destroy.
Waste deriving from the demolition of the machine is classifiable as special waste.

8.7.1 MATERIALS FOR DEMOLITION

Non-dangerous special waste is that which can be recovered, according to the February 1998 Ministerial Decree:

- Iron, aluminium, stainless steel and copper materials
- Plastic materials
- Electronic cards
- Hydraulic oil
- Electrical plant

8.7.2 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 authorised carriers and receivers carry out its transport and disposal/recovery.

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

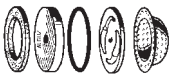
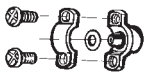
8.7.3 ELECTRICAL AND ELECTRONIC APPARATUS WASTE (EEAW)

The Italian government has adopted the European Parliament directives in the matter of the disposal of electrical and electronic waste (EEAW) (2002/95/CE and 2003/108/CE Directives) with Legislative Decree n° 151,July 25 2005).
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.

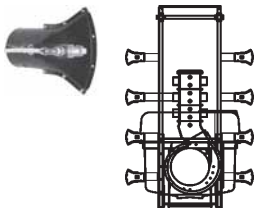
The decree imposes the limitation and elimination of several substances present in EEAW: lead, mercury, cadmium, chrome, hexavalent chrome, polybrominated biphenyl, polybrominated diphenyl and polybrominated diphenyl ethers.
The machine has been designed and created in conformity with this directive. 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 centres instituted by the Local Authorities or the UNIGREEN Company directly, or request withdrawal by the dealer, in order to carry out correct disposal of the waste.

Commonly used spare parts

part	description			code
	single Ø18 non-drip jet for mistblower with diaphragm (1/4" mount) without nozzles			**1224/0194F**
	double Ø18 non-drip jet for mistblower with diaphragm (1/4" mount) without nozzles			**1224/0195F**
	double 15 + Ø18 non-drip jet Ø for cannon with diaphragm (1/4" mount) without nozzles			**1224/0199F**
	ceramic conical nozzle high volume for Ø18 mistblower jet		Ø0,8 Ø1,0 Ø1,2 Ø1,5 Ø1,8 Ø2,0	**3400/0394F** **3400/0395F** **3400/0396F** **3400/0397F** **3400/0398F** **3400/0399F**
	diffuser Ø18 mm. for mistblower jet		closed Ø1,0 Ø1,2 Ø1,5 Ø1,8	**B1606.0011** **B1606.0012** **B1606.0013** **B1606.0014** **B1606.0015**
	filter for Ø18 jet		holes Ø 0,8	**1002/0110F**
Ceramic, conical nozzle kit, filter diffuser and seal for Ø18 mm jet 	Nozzle Ø0,8 Nozzle Ø1,0 Nozzle Ø1,2 Nozzle Ø1,5 Nozzle Ø1,8 Nozzle Ø2,0	Dif. Ø1,0 Dif. Ø1,0 Dif. Ø1,2 Dif. Ø1,5 Dif. Ø1,8 Dif. Ø1,8	Filter Ø0,8 Filter Ø0,8 Filter Ø1,0 Filter Ø1,0 Filter Ø1,0 Filter Ø1,0	**3400/0400F** **3400/0401F** **3400/0402F** **3400/0403F** **3400/0404F** **3400/0405F**
	Clamp kit for fixing G1/4" jets on Ø1/2" booms			**1805/0034F**
	Clamp kit for fixing G1/4" jets on Ø1/2" booms+ M8 F thread			**1805/0050F**
Lechler 	ISO nozzle ceramic conical with slinger + OR	**TR 80-005** **TR80-067** **TR80-01** **TR80-015** **TR80-02** **TR80-03** **TR80-04** **TR80-05**	Lilac Olive Orange Green Yellow Blue Red Brown	**3400/0577F** **3400/0578F** **3400/0579F** **3400/0580F** **3400/0581F** **3400/0583F** **3400/0584F** **3400/0585F**

TurboTeuton CALIBRATING TABLES



TABLES FOR CALIBRATING POLIPO 4+4 (8 NOZZLES) NARROW ROWS

unigreen spa **Tabella erogazione in Litri/ettaro Turbo Teuton 8 getti** ISO 8 GETTI

Lt./ha spreading rate table for Turbo Teuton 8 NOZZLES

		ISO ARANCIO -Orange							ISO GIALLO -Yellow								Larghezza di lavoro *working width*
PRESSIONE bar		5	7	10	12	15	18	20	5	7	10	12	15	18	20		
Velocità Km/h *speed*	3,5	390	457	552	590	667	733	771	771	905	1086	1190	1324	1448	1533	Litri/ha	
	4	342	400	483	517	583	642	675	675	792	950	1042	1158	1267	1342		
	5	273	320	387	413	467	513	540	540	633	760	833	927	1013	1073		
	6	228	267	322	344	389	428	450	450	528	633	694	772	844	894		
	7	195	229	276	295	333	367	386	386	452	543	595	662	724	767		**1,8 m.**
Velocità Km/h *speed*	3,5	351	411	497	531	600	660	694	694	814	977	1071	1191	1303	1380	Litri/ha	
	4	308	360	435	465	525	578	608	608	713	855	938	1043	1140	1208		
	5	246	288	348	372	420	462	486	486	570	684	750	834	912	966		
	6	205	240	290	310	350	385	405	405	475	570	625	695	760	805		
	7	176	206	249	266	300	330	347	347	407	489	536	596	651	690		**2 m.**
Velocità Km/h *speed*	3,5	281	329	398	425	480	528	555	555	651	782	857	953	1042	1104	Litri/ha	
	4	246	288	348	372	420	462	486	486	570	684	750	834	912	966		
	5	197	230	278	298	336	370	389	389	456	547	600	667	730	773		
	6	164	192	232	248	280	308	324	324	380	456	500	556	608	644		
	7	141	165	199	213	240	264	278	278	326	391	429	477	521	552		**2,5 m.**
Litri/min.		4,1	4,8	5,8	6,2	7,0	7,7	8,1	8,1	9,5	11,4	12,5	13,9	15,2	16,1		
ug. sing.		0,51	0,6	0,72	0,78	0,88	0,96	1,01	1,01	1,19	1,42	1,56	1,74	1,9	2,01		

Tab. 3215/0000F

N.B. to calculate the different ranges it is sufficient to multiply the value lt/hectare by the corresponding width indicated in the table and divide it by the new width (see chapter 6.3, page 21).

TABLES FOR CALIBRATING POLIPO 4+4 (16 NOZZLES) NARROW ROWS

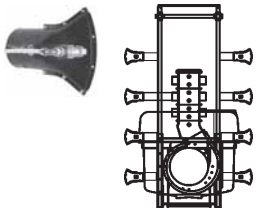
unigreen spa **Tabella erogazione in Litri/ettaro Turbo Teuton 16 getti** ISO 16 GETTI

Lt./ha spreading rate table for Turbo Teuton 16 NOZZLES

		ISO OLIVA -Olive							ISO ARANCIO -Orange								Larghezza di lavoro *working width*
PRESSIONE bar		5	7	10	12	15	18	20	5	7	10	12	15	18	20		
Velocità Km/h *speed*	3,5	533	629	743	819	914	1010	1067	781	914	1095	1190	1343	1467	1543	Litri/ha	
	4	467	550	650	717	800	883	933	683	800	958	1042	1175	1283	1350		
	5	373	440	520	573	640	707	747	547	640	767	833	940	1027	1080		
	6	311	367	433	478	533	589	622	456	533	639	694	783	856	900		
	7	267	314	371	410	457	505	533	390	457	548	595	671	733	771		**1,8 m.**
Velocità Km/h *speed*	3,5	480	566	669	737	823	909	960	703	823	986	1071	1209	1320	1389	Litri/ha	
	4	420	495	585	645	720	795	840	615	720	863	938	1058	1155	1215		
	5	336	396	468	516	576	636	672	492	576	690	750	846	924	972		
	6	280	330	390	430	480	530	560	410	480	575	625	705	770	810		
	7	240	283	334	369	411	454	480	351	411	493	536	604	660	694		**2 m.**
Velocità Km/h *speed*	3,5	384	453	535	590	658	727	768	562	658	789	857	967	1056	1111	Litri/ha	
	4	336	396	468	516	576	636	672	492	576	690	750	846	924	972		
	5	269	317	374	413	461	509	538	394	461	552	600	677	739	778		
	6	224	264	312	344	384	424	448	328	384	460	500	564	616	648		
	7	192	226	267	295	329	363	384	281	329	394	429	483	528	555		**2,5 m.**
Litri/min.		5,6	6,6	7,8	8,6	9,6	10,6	11,2	8,2	9,6	11,5	12,5	14,1	15,4	16,2		
ug. sing.		0,35	0,41	0,49	0,54	0,60	0,66	0,70	0,51	0,6	0,72	0,78	0,88	0,96	1,01		

Tab. 3215/0000F

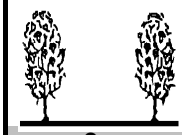
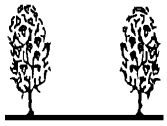
TurboTeuton CALIBRATING TABLES



TABLES FOR CALIBRATING POLIPO 4+4 (8 NOZZLES) WIDE ROWS OPTIONAL

unigreen spa **Tabella erogazione in Litri/ettaro Turbo Teuton 8 getti** ISO 8 GETTI

Lt./ha spreading rate table for Turbo Teuton 8 NOZZLES

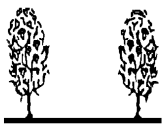
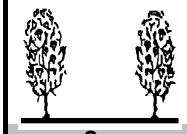
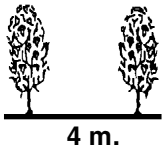
		ISO ARANCIO -Orange							ISO GIALLO -Yellow								Larghezza di lavoro *working width*
PRESSIONE bar		5	7	10	12	15	18	20	5	7	10	12	15	18	20		
Velocità Km/h *speed*	3,5	281	329	398	425	480	528	555	555	651	782	857	953	1042	1104	Litri/ha	 2,5 m.
	4	246	288	348	372	420	462	486	486	570	684	750	834	912	966		
	5	197	230	278	298	336	370	389	389	456	547	600	667	730	773		
	6	164	192	232	248	280	308	324	324	380	456	500	556	608	644		
	7	141	165	199	213	240	264	278	278	326	391	429	477	521	552		
Velocità Km/h *speed*	3,5	234	274	331	354	400	440	463	463	543	651	714	794	869	920	Litri/ha	 3 m.
	4	205	240	290	310	350	385	405	405	475	570	625	695	760	805		
	5	164	192	232	248	280	308	324	324	380	456	500	556	608	644		
	6	137	160	193	207	233	257	270	270	317	380	417	463	507	537		
	7	117	137	166	177	200	220	231	231	271	326	357	397	434	460		
Velocità Km/h *speed*	3,5	176	206	249	266	300	330	347	347	407	489	536	596	651	690	Litri/ha	 4 m.
	4	154	180	218	233	263	289	304	304	356	428	469	521	570	604		
	5	123	144	174	186	210	231	243	243	285	342	375	417	456	483		
	6	103	120	145	155	175	193	203	203	238	285	313	348	380	403		
	7	88	103	124	133	150	165	174	174	204	244	268	298	326	345		
Litri/min.		4,1	4,8	5,8	6,2	7,0	7,7	8,1	8,1	9,5	11,4	12,5	13,9	15,2	16,1		Tab. 3215/0000F
ug. sing.		0,51	0,6	0,72	0,78	0,88	0,96	1,01	1,01	1,19	1,42	1,56	1,74	1,9	2,01		

N.B. to calculate the different ranges it is sufficient to multiply the value lt/hectare by the corresponding width indicated in the table and divide it by the new width (see chapter 6.3, page 21).

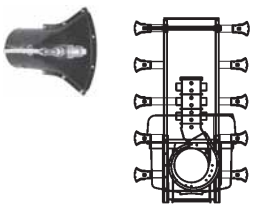
TABLES FOR CALIBRATING POLIPO 4+4 (16 NOZZLES) WIDE ROWS OPTIONAL

unigreen spa **Tabella erogazione in Litri/ettaro Turbo Teuton 16 getti** ISO 16 GETTI

Lt./ha spreading rate table for Turbo Teuton 16 NOZZLES

		ISO OLIVA -Olive							ISO ARANCIO -Orange								Larghezza di lavoro *working width*
PRESSIONE bar		5	7	10	12	15	18	20	5	7	10	12	15	18	20		
Velocità Km/h *speed*	3,5	384	453	535	590	658	727	768	562	658	789	857	967	1056	1111	Litri/ha	 2,5 m.
	4	336	396	468	516	576	636	672	492	576	690	750	846	924	972		
	5	269	317	374	413	461	509	538	394	461	552	600	677	739	778		
	6	224	264	312	344	384	424	448	328	384	460	500	564	616	648		
	7	192	226	267	295	329	363	384	281	329	394	429	483	528	555		
Velocità Km/h *speed*	3,5	320	377	446	491	549	606	640	469	549	657	714	806	880	926	Litri/ha	 3 m.
	4	280	330	390	430	480	530	560	410	480	575	625	705	770	810		
	5	224	264	312	344	384	424	448	328	384	460	500	564	616	648		
	6	187	220	260	287	320	353	373	273	320	383	417	470	513	540		
	7	160	189	223	246	274	303	320	234	274	329	357	403	440	463		
Velocità Km/h *speed*	3,5	240	283	334	369	411	454	480	351	411	493	536	604	660	694	Litri/ha	 4 m.
	4	210	248	293	323	360	398	420	308	360	431	469	529	578	608		
	5	168	198	234	258	288	318	336	246	288	345	375	423	462	486		
	6	140	165	195	215	240	265	280	205	240	288	313	353	385	405		
	7	120	141	167	184	206	227	240	176	206	246	268	302	330	347		
Litri/min.		5,6	6,6	7,8	8,6	9,6	10,6	11,2	8,2	9,6	11,5	12,5	14,1	15,4	16,2		Tab. 3215/0000F
ug. sing.		0,35	0,41	0,49	0,54	0,60	0,66	0,70	0,51	0,6	0,72	0,78	0,88	0,96	1,01		

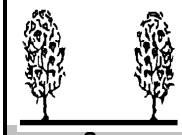
TurboTeuton CALIBRATING TABLES



TABLES FOR CALIBRATING POLIPO 5+5 (10 NOZZLES) NARROW ROWS

unigreen spa **Tabella erogazione in Litri/ettaro Turbo Teuton 10 getti** ISO 10 GETTI

Lt./ha spreading rate table for Turbo Teuton 10 NOZZLES

		ISO ARANCIO -Orange							ISO GIALLO -Yellow								Larghezza di lavoro *working width*
PRESSIONE bar		5	7	10	12	15	18	20	5	7	10	12	15	18	20		
Velocità Km/h *speed*	3,5	486	571	686	743	838	914	962	962	1133	1352	1486	1657	1810	1914	Litri/ha	 1,8 m.
	4	425	500	600	650	733	800	842	842	992	1183	1300	1450	1583	1675		
	5	340	400	480	520	587	640	673	673	793	947	1040	1160	1267	1340		
	6	283	333	400	433	489	533	561	561	661	789	867	967	1056	1117		
	7	243	286	343	371	419	457	481	481	567	676	743	829	905	957		
Velocità Km/h *speed*	3,5	437	514	617	669	754	823	866	866	1020	1217	1337	1491	1629	1723	Litri/ha	 2 m.
	4	383	450	540	585	660	720	758	758	893	1065	1170	1305	1425	1508		
	5	306	360	432	468	528	576	606	606	714	852	936	1044	1140	1206		
	6	255	300	360	390	440	480	505	505	595	710	780	870	950	1005		
	7	219	257	309	334	377	411	433	433	510	609	669	746	814	861		
Velocità Km/h *speed*	3,5	350	411	494	535	603	658	693	693	816	974	1070	1193	1303	1378	Litri/ha	 2,5 m.
	4	306	360	432	468	528	576	606	606	714	852	936	1044	1140	1206		
	5	245	288	346	374	422	461	485	485	571	682	749	835	912	965		
	6	204	240	288	312	352	384	404	404	476	568	624	696	760	804		
	7	175	206	247	267	302	329	346	346	408	487	535	597	651	689		
Litri/min.		5,1	6,0	7,2	7,8	8,8	9,6	10,1	10,1	11,9	14,2	15,6	17,4	19,0	20,1		
ug. sing.		0,51	0,6	0,72	0,78	0,88	0,96	1,01	1,01	1,19	1,42	1,56	1,74	1,9	2,01		

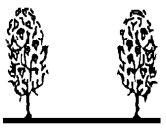
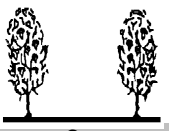
Tab. 3215/0000F

N.B. to calculate the different ranges it is sufficient to multiply the value lt/hectare by the corresponding width indicated in the table and divide it by the new width (see chapter 6.3, page 21).

TABLES FOR CALIBRATING POLIPO 5+5 (20 NOZZLES) NARROW ROWS

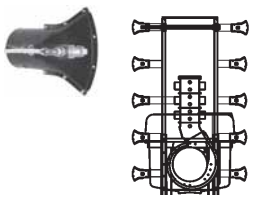
unigreen spa **Tabella erogazione in Litri/ettaro Turbo Teuton 20 getti** ISO 20 GETTI

Lt./ha spreading rate table for Turbo Teuton 20 NOZZLES

		ISO OLIVA -Olive							ISO ARANCIO -Orange								Larghezza di lavoro *working width*
PRESSIONE bar		5	7	10	12	15	18	20	5	7	10	12	15	18	20		
Velocità Km/h *speed*	3,5	667	781	933	1029	1143	1257	1333	971	1143	1371	1486	1676	1829	1924	Litri/ha	 1,8 m.
	4	583	683	817	900	1000	1100	1167	850	1000	1200	1300	1467	1600	1683		
	5	467	547	653	720	800	880	933	680	800	960	1040	1173	1280	1347		
	6	389	456	544	600	667	733	778	567	667	800	867	978	1067	1122		
	7	333	390	467	514	571	629	667	486	571	686	743	838	914	962		
Velocità Km/h *speed*	3,5	600	703	840	926	1029	1131	1200	874	1029	1234	1337	1509	1646	1731	Litri/ha	 2 m.
	4	525	615	735	810	900	990	1050	765	900	1080	1170	1320	1440	1515		
	5	420	492	588	648	720	792	840	612	720	864	936	1056	1152	1212		
	6	350	410	490	540	600	660	700	510	600	720	780	880	960	1010		
	7	300	351	420	463	514	566	600	437	514	617	669	754	823	866		
Velocità Km/h *speed*	3,5	480	562	672	741	823	905	960	699	823	987	1070	1207	1317	1385	Litri/ha	 2,5 m.
	4	420	492	588	648	720	792	840	612	720	864	936	1056	1152	1212		
	5	336	394	470	518	576	634	672	490	576	691	749	845	922	970		
	6	280	328	392	432	480	528	560	408	480	576	624	704	768	808		
	7	240	281	336	370	411	453	480	350	411	494	535	603	658	693		
Litri/min.		7,0	8,2	9,8	10,8	12,0	13,2	14,0	10,2	12,0	14,4	15,6	17,6	19,2	20,2		
ug. sing.		0,35	0,41	0,49	0,54	0,60	0,66	0,70	0,51	0,6	0,72	0,78	0,88	0,96	1,01		

Tab. 3215/0000F

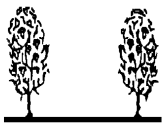
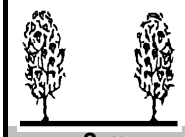
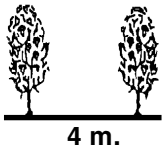
TurboTeuton CALIBRATING TABLES



TABLES FOR CALIBRATING POLIPO 5+5 (10 NOZZLES) WIDE ROWS OPTIONAL

unigreen spa **Tabella erogazione in Litri/ettaro Turbo Teuton 10 getti** ISO 10 GETTI

Lt./ha spreading rate table for Turbo Teuton 10 NOZZLES

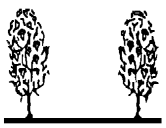
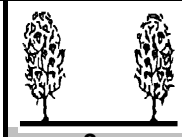
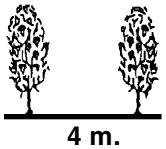
		ISO ARANCIO -Orange							ISO GIALLO -Yellow								Larghezza di lavoro *working width*
PRESSIONE bar		5	7	10	12	15	18	20	5	7	10	12	15	18	20		
Velocità Km/h *speed*	3,5	350	411	494	535	603	658	693	693	816	974	1070	1193	1303	1378	Litri/ha	 2,5 m.
	4	306	360	432	468	528	576	606	606	714	852	936	1044	1140	1206		
	5	245	288	346	374	422	461	485	485	571	682	749	835	912	965		
	6	204	240	288	312	352	384	404	404	476	568	624	696	760	804		
	7	175	206	247	267	302	329	346	346	408	487	535	597	651	689		
Velocità Km/h *speed*	3,5	291	343	411	446	503	549	577	577	680	811	891	994	1086	1149	Litri/ha	 3 m.
	4	255	300	360	390	440	480	505	505	595	710	780	870	950	1005		
	5	204	240	288	312	352	384	404	404	476	568	624	696	760	804		
	6	170	200	240	260	293	320	337	337	397	473	520	580	633	670		
	7	146	171	206	223	251	274	289	289	340	406	446	497	543	574		
Velocità Km/h *speed*	3,5	219	257	309	334	377	411	433	433	510	609	669	746	814	861	Litri/ha	 4 m.
	4	191	225	270	293	330	360	379	379	446	533	585	653	713	754		
	5	153	180	216	234	264	288	303	303	357	426	468	522	570	603		
	6	128	150	180	195	220	240	253	253	298	355	390	435	475	503		
	7	109	129	154	167	189	206	216	216	255	304	334	373	407	431		
Litri/min.		5,1	6,0	7,2	7,8	8,8	9,6	10,1	10,1	11,9	14,2	15,6	17,4	19,0	20,1		Tab. 3215/0000F
ug. sing.		0,51	0,6	0,72	0,78	0,88	0,96	1,01	1,01	1,19	1,42	1,56	1,74	1,9	2,01		

N.B. to calculate the different ranges it is sufficient to multiply the value lt/hectare by the corresponding width indicated in the table and divide it by the new width (see chapter 6.3, page 21).

TABLES FOR CALIBRATING POLIPO 5+5 (20 NOZZLES) WIDE ROWS OPTIONAL

unigreen spa **Tabella erogazione in Litri/ettaro Turbo Teuton 20 getti** ISO 20 GETTI

Lt./ha spreading rate table for Turbo Teuton 20 NOZZLES

		ISO OLIVA -Olive							ISO ARANCIO -Orange								Larghezza di lavoro *working width*
PRESSIONE bar		5	7	10	12	15	18	20	5	7	10	12	15	18	20		
Velocità Km/h *speed*	3,5	480	562	672	741	823	905	960	699	823	987	1070	1207	1317	1385	Litri/ha	 2,5 m.
	4	420	492	588	648	720	792	840	612	720	864	936	1056	1152	1212		
	5	336	394	470	518	576	634	672	490	576	691	749	845	922	970		
	6	280	328	392	432	480	528	560	408	480	576	624	704	768	808		
	7	240	281	336	370	411	453	480	350	411	494	535	603	658	693		
Velocità Km/h *speed*	3,5	400	469	560	617	686	754	800	583	686	823	891	1006	1097	1154	Litri/ha	 3 m.
	4	350	410	490	540	600	660	700	510	600	720	780	880	960	1010		
	5	280	328	392	432	480	528	560	408	480	576	624	704	768	808		
	6	233	273	327	360	400	440	467	340	400	480	520	587	640	673		
	7	200	234	280	309	343	377	400	291	343	411	446	503	549	577		
Velocità Km/h *speed*	3,5	300	351	420	463	514	566	600	437	514	617	669	754	823	866	Litri/ha	 4 m.
	4	263	308	368	405	450	495	525	383	450	540	585	660	720	758		
	5	210	246	294	324	360	396	420	306	360	432	468	528	576	606		
	6	175	205	245	270	300	330	350	255	300	360	390	440	480	505		
	7	150	176	210	231	257	283	300	219	257	309	334	377	411	433		
Litri/min.		7,0	8,2	9,8	10,8	12,0	13,2	14,0	10,2	12,0	14,4	15,6	17,6	19,2	20,2		Tab. 3215/0000F
ug. sing.		0,35	0,41	0,49	0,54	0,60	0,66	0,70	0,51	0,6	0,72	0,78	0,88	0,96	1,01		

TurboTeuton CALIBRATING TABLES

TABLES FOR CALIBRATING SUPER SPALLIERA 4+4 (8 NOZZLES)

unigreen spa **Tabella erogazione in Litri/ettaro Turbo Teuton 10 getti** ISO 10 GETTI

Lt./ha spreading rate table for Turbo Teuton 10 NOZZLES

		ISO ARANCIO -Orange							ISO GIALLO -Yellow								Larghezza di lavoro
PRESSIONE bar		5	7	10	12	15	18	20	5	7	10	12	15	18	20		*working width*
Velocità Km/h *speed*	3,5	350	411	494	535	603	658	693	693	816	974	1070	1193	1303	1378	Litri/ha	
	4	306	360	432	468	528	576	606	606	714	852	936	1044	1140	1206		
	5	245	288	346	374	422	461	485	485	571	682	749	835	912	965		
	6	204	240	288	312	352	384	404	404	476	568	624	696	760	804		
	7	175	206	247	267	302	329	346	346	408	487	535	597	651	689		**2,5 m.**
Velocità Km/h *speed*	3,5	291	343	411	446	503	549	577	577	680	811	891	994	1086	1149	Litri/ha	
	4	255	300	360	390	440	480	505	505	595	710	780	870	950	1005		
	5	204	240	288	312	352	384	404	404	476	568	624	696	760	804		
	6	170	200	240	260	293	320	337	337	397	473	520	580	633	670		
	7	146	171	206	223	251	274	289	289	340	406	446	497	543	574		**3 m.**
Velocità Km/h *speed*	3,5	219	257	309	334	377	411	433	433	510	609	669	746	814	861	Litri/ha	
	4	191	225	270	293	330	360	379	379	446	533	585	653	713	754		
	5	153	180	216	234	264	288	303	303	357	426	468	522	570	603		
	6	128	150	180	195	220	240	253	253	298	355	390	435	475	503		
	7	109	129	154	167	189	206	216	216	255	304	334	373	407	431		**4 m.**
Litri/min.		5,1	6,0	7,2	7,8	8,8	9,6	10,1	10,1	11,9	14,2	15,6	17,4	19,0	20,1		Tab. 3215/0000F
ug. sing.		0,51	0,6	0,72	0,78	0,88	0,96	1,01	1,01	1,19	1,42	1,56	1,74	1,9	2,01		

N.B. to calculate the different ranges it is sufficient to multiply the value lt/hectare by the corresponding width indicated in the table and divide it by the new width (see chapter 6.3, page 21).

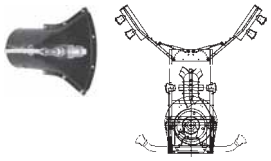
TABLES FOR CALIBRATING SUPER SPALLIERA 4+4 (16 NOZZLES)

unigreen spa **Tabella erogazione in Litri/ettaro Turbo Teuton 20 getti** ISO 20 GETTI

Lt./ha spreading rate table for Turbo Teuton 20 NOZZLES

		ISO OLIVA -Olive							ISO ARANCIO -Orange								Larghezza di lavoro
PRESSIONE bar		5	7	10	12	15	18	20	5	7	10	12	15	18	20		*working width*
Velocità Km/h *speed*	3,5	480	562	672	741	823	905	960	699	823	987	1070	1207	1317	1385	Litri/ha	
	4	420	492	588	648	720	792	840	612	720	864	936	1056	1152	1212		
	5	336	394	470	518	576	634	672	490	576	691	749	845	922	970		
	6	280	328	392	432	480	528	560	408	480	576	624	704	768	808		
	7	240	281	336	370	411	453	480	350	411	494	535	603	658	693		**2,5 m.**
Velocità Km/h *speed*	3,5	400	469	560	617	686	754	800	583	686	823	891	1006	1097	1154	Litri/ha	
	4	350	410	490	540	600	660	700	510	600	720	780	880	960	1010		
	5	280	328	392	432	480	528	560	408	480	576	624	704	768	808		
	6	233	273	327	360	400	440	467	340	400	480	520	587	640	673		
	7	200	234	280	309	343	377	400	291	343	411	446	503	549	577		**3 m.**
Velocità Km/h *speed*	3,5	300	351	420	463	514	566	600	437	514	617	669	754	823	866	Litri/ha	
	4	263	308	368	405	450	495	525	383	450	540	585	660	720	758		
	5	210	246	294	324	360	396	420	306	360	432	468	528	576	606		
	6	175	205	245	270	300	330	350	255	300	360	390	440	480	505		
	7	150	176	210	231	257	283	300	219	257	309	334	377	411	433		**4 m.**
Litri/min.		7,0	8,2	9,8	10,8	12,0	13,2	14,0	10,2	12,0	14,4	15,6	17,6	19,2	20,2		Tab. 3215/0000F
ug. sing.		0,35	0,41	0,49	0,54	0,60	0,66	0,70	0,51	0,6	0,72	0,78	0,88	0,96	1,01		

TurboTeuton CALIBRATING TABLES



TABLES FOR CALIBRATING RV-GDC 5+5 (10 NOZZLES)

unigreen spa **Tabella erogazione in Litri/ettaro Turbo Teuton GDC 10 getti** ISO 10 GETTI

Lt./ha spreading rate table for Turbo Teuton GDC 10 NOZZLES

		ISO ARANCIO -Orange							ISO GIALLO -Yellow								Larghezza di lavoro *working width*
PRESSIONE bar		5	7	10	12	15	18	20	5	7	10	12	15	18	20		
Velocità Km/h *speed*	3,5	350	411	494	535	603	658	693	693	816	974	1070	1193	1303	1378	Litri/ha	
	4	306	360	432	468	528	576	606	606	714	852	936	1044	1140	1206		
	5	245	288	346	374	422	461	485	485	571	682	749	835	912	965		
	6	204	240	288	312	352	384	404	404	476	568	624	696	760	804		
	7	175	206	247	267	302	329	346	346	408	487	535	597	651	689		**2,5 m.**
Velocità Km/h *speed*	3,5	291	343	411	446	503	549	577	577	680	811	891	994	1086	1149	Litri/ha	
	4	255	300	360	390	440	480	505	505	595	710	780	870	950	1005		
	5	204	240	288	312	352	384	404	404	476	568	624	696	760	804		
	6	170	200	240	260	293	320	337	337	397	473	520	580	633	670		
	7	146	171	206	223	251	274	289	289	340	406	446	497	543	574		**3 m.**
Velocità Km/h *speed*	3,5	219	257	309	334	377	411	433	433	510	609	669	746	814	861	Litri/ha	
	4	191	225	270	293	330	360	379	379	446	533	585	653	713	754		
	5	153	180	216	234	264	288	303	303	357	426	468	522	570	603		
	6	128	150	180	195	220	240	253	253	298	355	390	435	475	503		
	7	109	129	154	167	189	206	216	216	255	304	334	373	407	431		**4 m.**
Litri/min.		5,1	6,0	7,2	7,8	8,8	9,6	10,1	10,1	11,9	14,2	15,6	17,4	19,0	20,1		Tab. 3215/0000F
ug. sing.		0,51	0,6	0,72	0,78	0,88	0,96	1,01	1,01	1,19	1,42	1,56	1,74	1,9	2,01		

N.B. to calculate the different ranges it is sufficient to multiply the value lt/hectare by the corresponding width indicated in the table and divide it by the new width (see chapter 6.3, page 21).

TABLES FOR CALIBRATING RV-GDC 5+5 (20 NOZZLES)

unigreen spa **Tabella erogazione in Litri/ettaro Turbo Teuton GDC 20 getti** ISO 20 GETTI

Lt./ha spreading rate table for Turbo Teuton GDC 20 NOZZLES

		ISO OLIVA -Olive							ISO ARANCIO -Orange								Larghezza di lavoro *working width*
PRESSIONE bar		5	7	10	12	15	18	20	5	7	10	12	15	18	20		
Velocità Km/h *speed*	3,5	480	562	672	741	823	905	960	699	823	987	1070	1207	1317	1385	Litri/ha	
	4	420	492	588	648	720	792	840	612	720	864	936	1056	1152	1212		
	5	336	394	470	518	576	634	672	490	576	691	749	845	922	970		
	6	280	328	392	432	480	528	560	408	480	576	624	704	768	808		
	7	240	281	336	370	411	453	480	350	411	494	535	603	658	693		**2,5 m.**
Velocità Km/h *speed*	3,5	400	469	560	617	686	754	800	583	686	823	891	1006	1097	1154	Litri/ha	
	4	350	410	490	540	600	660	700	510	600	720	780	880	960	1010		
	5	280	328	392	432	480	528	560	408	480	576	624	704	768	808		
	6	233	273	327	360	400	440	467	340	400	480	520	587	640	673		
	7	200	234	280	309	343	377	400	291	343	411	446	503	549	577		**3 m.**
Velocità Km/h *speed*	3,5	300	351	420	463	514	566	600	437	514	617	669	754	823	866	Litri/ha	
	4	263	308	368	405	450	495	525	383	450	540	585	660	720	758		
	5	210	246	294	324	360	396	420	306	360	432	468	528	576	606		
	6	175	205	245	270	300	330	350	255	300	360	390	440	480	505		
	7	150	176	210	231	257	283	300	219	257	309	334	377	411	433		**4 m.**
Litri/min.		7,0	8,2	9,8	10,8	12,0	13,2	14,0	10,2	12,0	14,4	15,6	17,6	19,2	20,2		Tab. 3215/0000F
ug. sing.		0,35	0,41	0,49	0,54	0,60	0,66	0,70	0,51	0,6	0,72	0,78	0,88	0,96	1,01		

TAB. 3 TABLE OF DELIVERY OF NOZZLES FOR ATOMISERS

TABLE OF DELIVERY IN LITRES / MIN.
LOW VOLUME TR CONICAL NOZZLES FOR ATOMISER

NOZZLE TR80 ISO		LILLAC 005	OLIVE 0067	ORANGE 01	GREEM 015	YELLOW 02	DARK BLUE 03	RED 04	BROWN 05
PRESSURE	**5 bar**	0,25	0,35	0,51	0,76	1,03	1,53	2,04	2,55
	7 bar	0,30	0,41	0,60	0,90	1,22	1,81	2,41	3,01
	**10 bar**	0,36	0,49	0,72	1,07	1,45	2,17	2,88	3,60
	12 bar	0,39	0,54	0,78	1,18	1,60	2,38	3,16	3,94
	15 bar	0,44	0,60	0,88	1,31	1,79	2,66	3,53	4,41
	18 bar	0,48	0,66	0,96	1,44	1,96	2,91	3,87	4,82
TAB. 3	**20 bar**	0,51	0,70	1,01	1,52	2,07	3,07	4,08	5,09
	Code :	3400/0577F	3400/0578F	3400/0579F	3400/0580F	3400/0581F	3400/0583F	3400/0584F	3400/0585F

TABLE 4-5 TABLES OF DELIVERY OF NOZZLES FOR HAND LANCES

TABLE OF DELIVERY IN LITRES / MIN. OF THE CONICAL NOZZLES FOR LEVER LANCE
note: standard Ø1,5 nozzle

DIAMETER NOZZLE			**Ø 1,0**	**Ø 1,2**	**Ø 1,5**	**Ø 1,75**	**Ø 2,0**	**Ø 2,2**	**Ø 2,5**
PRESSURE (BAR)		JET	CAPACITY (Lt / min)						
	**5**	cone	1,16	1,40	1,90	2,25	2,65	2,90	3,50
		direct jet	1,40	1,70	2,50	3,95	4,7	6,00	7,70
	8	cone	1,40	1,80	2,60	2,80	3,40	3,65	4,45
		direct jet	1,70	2,20	3,40	4,85	6,00	7,60	9,80
	10	cone	1,50	1,96	2,90	3,10	3,90	4,10	5,00
		direct jet	1,90	2,40	3,75	5,40	6,95	8,55	11,0
	15	cone	1,88	2,40	3,40	3,80	4,50	5,00	6,10
		direct jet	2,30	3,00	4,50	6,65	8,30	10,4	13,4
	30	cone	2,60	3,40	4,80	5,40	6,30	7,10	8,70
		direct jet	3,20	4,20	6,40	9,40	11,7	14,7	19,1
TABLE. 4	**50**	cone	3,40	4,40	6,20	6,80	8,10	9,20	11,2
		direct jet	4,10	5,40	8,30	11,8	15,1	19,1	24,6

TABLE OF DELIVERY IN LITRES / MIN. OF THE CONICAL NOZZLES FOR MITRA SPRAY GUN
note: standard Ø2,5 nozzle

DIAMETER NOZZLE			**Ø 1,0**	**Ø 1,2**	**Ø 1,5**	**Ø 1,8**	**Ø 2,0**	**Ø 2,3**	**Ø 2,5**	**Ø 3,0**
PRESSURE (BAR)		JET	CAPACITY (Lt / min)							
	**15**	cone	2,45	3,60	4,60	5,90	6,90	8,10	9,20	11,5
		direct jet	2,50	3,80	5,10	7,30	8,80	10,8	13,0	18,4
	25	cone	3,00	4,25	5,70	7,20	8,10	10,2	11,4	14,4
		direct jet	3,10	4,60	6,50	9,30	11,7	14,1	16,4	24,1
	35	cone	3,40	4,70	6,60	8,50	10,2	12,9	14,0	18,0
		direct jet	3,50	5,40	7,40	10,8	13,4	16,8	19,1	28,2
	40	cone	3,55	5,20	6,90	9,20	10,9	13,7	14,5	18,8
		direct jet	3,65	5,90	7,80	11,7	14,3	17,9	21,0	30,1
TABLE. 5	**50**	cone	4,00	5,60	7,70	10,5	12,5	14,9	16,4	20,9
		direct jet	4,10	6,30	8,60	12,7	15,8	19,7	23,0	33,0

TABLE 7 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 on herbicide booms				0
Grease the articulated joints and the wheel hubs Check the tyre pressure		0 0		

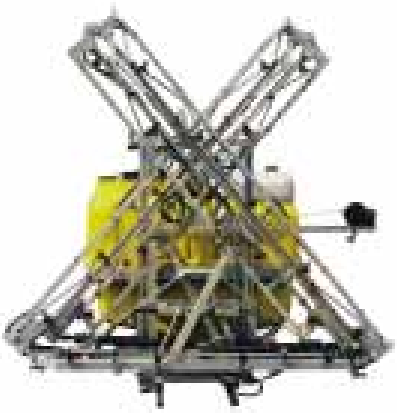
NOTE: 0 Operation to be carried out by the operator
X Operation to be carried out by a specialised technician or in an authorised workshop
(1) First oil change
(2) Change at the same time a changing the diaphragm

TABLE 8 PROBLEMS, CAUSES AND SOLUTIONS

PROBLEMS	CAUSES	SOLUTIONS
The pump won't charge	Air suction	Check the suction system
	Adjustment valve closed (Command group isn't at zero pressure)	Position the lever correctly
	Valves and/or valve seats suction and delivery worn or dirty	Replace or clean (*)
The pump doesn't reach the set pressure	Valve and/or valve seat adjustment worn	Replace (*)
	Valves and/or valve seats suction and delivery worn or dirty	Replace or clean (*)
	Insufficient rpm	Bring speed up to correct rpm always in the field of 350 ÷ 550 rpm.
	The nozzles used are worn or have holes that are too big	Replace
	Suction blocked	Clean the cartridge of the filter or remove the blockage
Irregular pressure (with impulses)	Valves and/or valve seats suction and delivery worn or dirty	Replace or clean (*)
	Air suction	Check the suction system
Excessive vibrations at delivery	Pressure accumulator discharged or incorrect air pressure	Bring the air pressure back up to the right value (see pump handbook) (*)
Noisiness and the level of the oil has dropped	Blocked suction	Check the suction system
Water in the oil	Breakage of one or more diaphragms	Replace (*) If the replacement isn't done immediately, drain the water out of the pump and introduce clean oil without water (also used) or diesel to stop rust attacking the internalparts
No liquid comes out of the nozzles	Delivery filter dirty Non-drip filters dirty Nozzles blocked	Clean

NOTE: (*) Only specialised technician

2005	TYPE OF MACHINE	MOUNTED ATOMISERS Polyethylene Tank							
TABLE 17 a		TURBO TEUTON P							
		P300		P400		P500		P600	
FITTING	Nominal capacity (L.)	300	300	400	400	500	500	600	600
FAN GROUP	CENTRIFUGO Ø500 STD	X		X		X		X	
	CENTRIFUGO Ø500 XP		X		X		X		X
COMET PUMPS	POMPA APS 96	X	X	X	X	X	X	X	X
PRESSURE REGULATOR	GCP 2 ELECTRIC	X	X	X	X	X	X	X	X
	GCP 2 ELECTRIC +PRES	X	X	X	X	X	X	X	X
DISTRIBUTOR ACCESSORIES	POLIPO 4+4	X		X		X		X	
	POLIPO 5+5	X		X		X		X	
	SUPER SPALLIERA 4+4		X		X		X		X
	RV-GDC 5+5				X		X		X
NOZZLES	SINGLE Ø18	X	X	X	X	X	X	X	X
	DOUBLE Ø18	X	X	X	X	X	X	X	X
NOZZLE-TIPS	Ceramic CONE	X	X	X	X	X	X	X	X
OPTIONALS	CIRCUIT WASHING DEVICE	X	X	X	X	X	X	X	X
	EJECTOR	X	X	X	X	X	X	X	X
	MIXER LP83	X	X	X	X	X	X	X	X
	WHEELS KIT	X	X	X	X	X	X	X	X
	EXTENDABLE ARMS	X		X		X		X	
TOTAL MASS in Kg	EMPTY MAX FITINGS	295	295	430	430	440	440	450	450
	FULL MAX FITINGS	670	670	980	380	1090	1090	1200	1200
P HP	POWER NECESSARY	35	59	35	59	35	59	35	59



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