



**MAXI 600**

# USE AND MAINTENANCE INSTRUCTIONS



**atomizzatori e impolveratori**

*Dear Customer, thank you very much!*

*We want to congratulate with you, for having chosen a **cima**<sup>®</sup> duster.*

*Your choice shows the wisdom of the well-informed Purchaser, aware of the fact, that the required features of quality, technique and reliability must be satisfied at the right price!*

*Our continuous engagement in R&D and in testing our machines allows us to realize products able to offer the best performances, a high reliability and a great easiness of use at the same time !*

*Our first goal, is to get our Customers happy for having met us!*

The "Spare parts catalogue" of this duster is available in the "owners area" on website [www.cima.it](http://www.cima.it).

In order to accede, use:

User name: **duster**

Password: **546236NQ**

**TRAILED DUSTER**

# **MAXI 600**

**Serial number:**

.....

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## **USE AND MAINTENANCE INSTRUCTIONS**

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**LIST OF THE VALID PAGES**

This publication consists of 42 pages, which are subdivided as here following specified:

<b>PAGES No</b>	<b>RÉVISION</b>	<b>BASIS</b>
from I to IV	00	March 1995
from 1 to 38	00	March 1995

**ADDITIONS' AND VARIATIONS' RECORDING**

<b>REVISION</b>	<b>DESCRIPTION</b>
00	First Edition, March 1995
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## 1.1 - IDENTIFICATION OF THIS PUBLICATION

The manual "USE AND MAINTENANCE INSTRUCTIONS" is an official document issued by the C.I.M.A. S.p.A. company and represents an integrant part of the duster. It is marked by a publication No., mentioned on the third cover page, through which it will be possible to identify it, to trace it and to refer to it.

All information contained in this manual was carefully checked. The C.I.M.A. S.p.A. company reserves to itself the right to modify this information, without any preventive notice, and declines all responsibility about any possible error and/or omission.

## 1.2 - COMPLEMENTARY PUBLICATIONS

— Spare parts' catalogue.

## 1.3 - PURPOSE OF THIS PUBLICATION

All the necessary information, relevant to the use and maintenance of this manual, are addressed to the duster's user. The machine's life and its satisfactory operation, as well as the operator's safety and the respect of the environment, will greatly depend on the strict observance of the here mentioned rules.

Before using the duster, the user shall carefully read and observe all the directions listed in this manual, which were updated to its date of publication.

## 1.4 - REFERENCCESS TO THE SPECIFICATIONS

This manual was realized in accordance with the directions specified in the following documents:

- Enclosure "I" to the Specification 89/392/C and its later amendments (letters "b", "c" of point 1.1.2 and point 1.7.4);
- UNI EN 292/2 - 1992, point 5.5.

## 1.5 - USE OF THE MANUAL

This manual has to be read from the beginning, without omitting any page, and paying a special attention to the meaning of the indications, warning the operator about the possible dangerous situations, which are contained into the text and represented by means of the signals applied on the machine or on its complementary units. All the operations described in the manual shall be carried out with utmost care and attention, and only after having exhaustively understood the possible negative consequences caused by their incorrect realization.

**The manual is divided in two parts.**

- \* The first part, characterized by pages marked with Roman numbers, consists of:
  - Title page
  - List of the valid pages
  - Recording of the additions and variations
  - General index

It allows to identify the publication and to get informed about its updating degree, as well as about its validity, with respect to the product. The general index allows to exactly trace the pages, relevant to the subject you are looking for.

- \* The second part, characterized by pages marked with cardinal numbers, is articulated in order to supply the user with all the information necessary for operating in the full respect of the safety rules during any setup, operative, mouvement and maintenance phase of the duster's operation.

In the manual's text, some "symbols" were used, which point out and visually signal the importance of the different types of information.

Here following you get the graphic representation of those symbols, completed by their meaning:



It indicates a complementary and important information.



The inobservance of the relevant indications can cause even irreparable damages to the duster.



It points out some possible situation of danger for the personnel operating the unit.

The manual, as well as its enclosures and its possible integrations, shall be kept with utmost care and be always complete, integral and readable in every part. Should the manual be lost, it will be immediately necessary to contact the C.I.M.A. S.p.A. company, urging them to send a new copy of it. Should the adhesives originally applied on the machine be either lost, damaged or result to be even only partially unreadable, it will be immediately necessary to replace them.



- This manual shall be kept during the whole life of the duster.
- Any amendment eventually got shall be kept, by inserting it inside this publication.
- The manual shall be handed out to the new owner, together with the duster, if the unit should be sold.

## 1.6 - UPDATINGS

The possible updatings, transmitted by the C.I.M.A. S.p.A. company to the duster's owner, will be accompanied by all the information, necessary for correctly inserting them inside this publication.

Should the unit be sold, the previous owner shall inform the purchaser about the necessity to promptly communicate his address to the C.I.M.A.S.p.A. company, in order to make it possible for them to send him the eventual later integrations to the manual.

## 2.1 - ADOPTED TERMS

Here following, some explanations relevant to the terms referred to the duster and used inside this publication are given.

**FRONT PART:** it is the part on which the duster is coupled to the tractor.

**REAR PART:** it is the part on which the distribution device is mounted.

**RIGHT OR LEFT SIDE:** they are the sides, corresponding with the direction of running, or considered when looking at the machine from the distribution device's side.

The "distribution device" is also referred to as "distribution head".



## 2.2 - ABBREVIATIONS

CV .....	horsepower
dB(A) .....	decibel
g/1' .....	revolutions per minute
kg .....	kilograms
km .....	kilometers
km/h .....	kilometers per hour
kW .....	kilowatt
L qA .....	equivalent sound level
m .....	meters
m <sup>3</sup> /h .....	cubic meters per hour
mm .....	millimeters
m/s .....	meters per second
PTO .....	power takeoff
s .....	seconds

## 2.3 - WARNING ADHESIVES

On the machine, some warning adhesives, relevant to the safety and to the use-maintenance procedures, were applied.

### Safety adhesives

- 1 - 95001 - **STOP THE MOTOR AND REMOVE THE KEY FROM THE TRACTOR'S CONTROL BOARD, BEFORE CARRYING OUT ANY MAINTENANCE OR REPAIR OPERATION.**
  - These warning adhesives are positioned: one on the fan's protection plastic guard and the other one on the protection of the security clutch, which is situated on the left side, under the fan's guard.
- 2 - 95002 - **POSSIBLE DANGER CAUSED BY ROTATING GEARS. BEFORE LIFTING THE COVER, STOP THE TRACTOR AND REMOVE THE KEY FROM THE CONTROL BOARD.**
  - Warning adhesive positioned on and under the tank's cover.
- 3 - 95005 - **POSSIBLE DANGER CAUSED BY ROTATING GEARS. BEFORE REMOVING THE PROTECTIONS, STOP THE TRACTOR, REMOVE THE KEY FROM THE CONTROL BOARD AND MAKE SURE THAT THE ROTATING GEARS HAVE STOPPED.**
  - Adhesive frontally positioned on the tank, near the fan's guard.
- 4 - 95010 - **MAXIMUM WORKING SPEED OF THE POWER TAKEOFF: 540 REVOLUTIONS PER MINUTE.**
  - Adhesive positioned at the side of the PTO protection guard.
- 5 - 95007 - **POSSIBLE DANGER OF SPRAYS, KEEP AT SAFETY DISTANCE.**
  - Adhesive positioned on the tank's rear side.
- 6 - 95006 - **CAUTION, CONSULT THE USE AND MAINTENANCE MANUAL, BEFORE OPERATING THE MACHINE OR UNDERTAKING ANY INTERVENTION ON IT.**
  - Adhesive positioned on the tank's front part, at the fan's guard side.
- 7 - 95059 - **HITCH POINT FOR THE UNIT'S HOISTING.**
  - Adhesives positioned: one frontally, on the fan's support, and two rearly, on the frame's sides.
- 8 - 95055 - **CAUTION: THE DUSTER ISN'T HOMOLOGATED FOR CIRCULATING ON THE ROAD.**
  - Adhesive positioned on the tank's front part, at the fan's guard side.

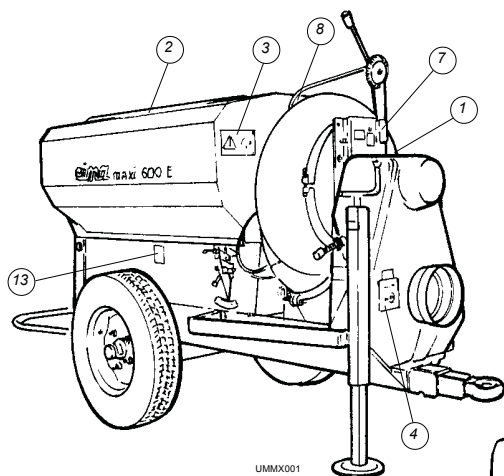
## Use and maintenance adhesives

- 9 - 95052 - **GREASE EVERY 20 HOURS: FAN SHAFT'S BEARINGS.**
  - This adhesive is positioned on the frame, above the fan's guard.
- 10 - 95053 - **GREASE EVERY 50 HOURS: FAN TIGHTENER'S SUPPORT/SECURITY CLUTCH.**
  - These adhesives are positioned one on the guard's left, front side and the other one on the drive's guard.
- 11 - 95051 - **GREASE EVERY 50 HOURS: GEARING CHAINS.**
  - Adhesive positioned on the security clutch's protection, on the machine's left, front side, under the fan's guard.
- 12 - 95054 - **GREASE EVERY 200 HOURS: WHEELS.**
  - Adhesive positioned on the wheels' hub.
- 13 - 95056 - **INDICATION OF THE WHEELS' WORKING PRESSURE.**
  - These adhesives are positioned on the frame's sides, above the wheels.

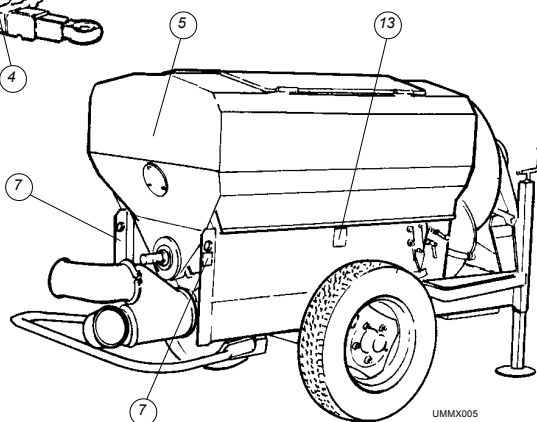


**THE 5 DIGITS NUMBERS ARE CODES TO BE USED WHEN ASKING FOR THE ADHESIVES.**

*Position of the safety, use and maintenance adhesives*

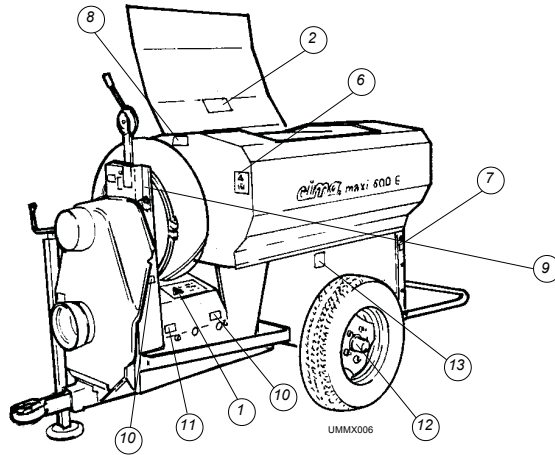


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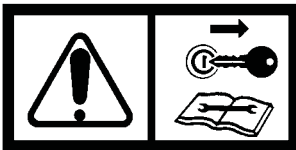


UMMX005

*Position of the safety, use and maintenance adhesives*

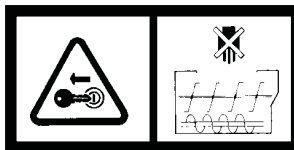


**\* Safety**



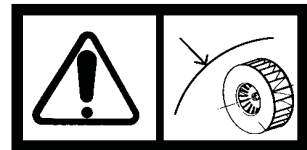
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95001



2

95002



3

95005



4

95010



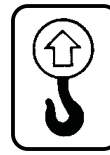
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95007



6

95006



7

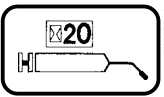
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**ATTENZIONE**  
MACCHINA NON OMOLOGATA  
PER LA CIRCOLAZIONE SU STRADA  
99055

8

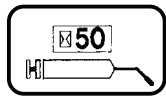
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**\* Use and maintenance**



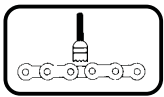
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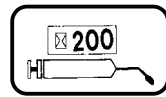
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95053



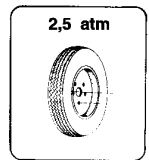
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95051



12

95054



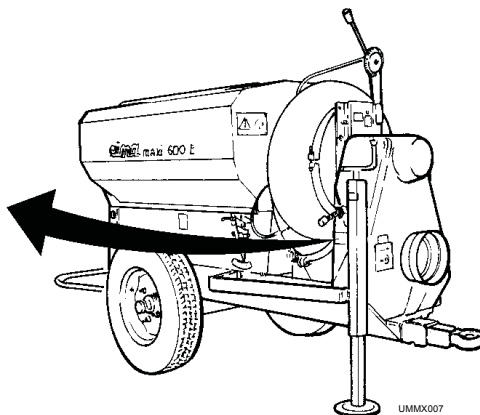
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95056

### 3.1 - MACHINE'S IDENTIFICATION

	<b>cima</b> S.p.A. S.MARIA DELLA VERSA (PV) ITALY ☎ (39) 0385/278223	Fabbr. nel <input type="text"/>
Tipo <input type="text"/>		
Matr. <input type="text"/>	Press. max bar <input type="text"/>	
Peso a V. Kg <input type="text"/>	Peso T. Kg <input type="text"/>	

UMAP001



UMMX007

### 3.2 - CUSTOMERS' TECHNICAL SERVICE

The C.I.M.A. S.p.A. company is at their customers' complete disposal for any kind of intervention eventually required. The names and addresses of their customer's technical service organization, both in Italy and abroad, can be asked by addressing your request to:

**C.I.M.A. S.p.A. - 27040 Montù Beccaria - Loc. Molino Quaroni (PV) - ITALIA**  
**tel. 0385-246636 - fax 0385-246637**  
**when calling from abroad: tel. +39-0385-246636 - fax +39-0385-246637**

### 3.3 - SAFETY WARNINGS

All the setup, use, maintenance, movement and transport operations can be carried out, only after having acquired a perfect knowledge of the instructions supplied inside this publication, as well as the ability to correctly interpret the symbols applied on the machine.



**IT IS FORBIDDEN TO USE THE DUSTER FOR ANY DIFFERENT PURPOSE THAN THE TRADITIONAL ONE, AS THIS UNIT WAS EXCLUSIVELY REALIZED FOR DISTRIBUTING ANTIPARASITICAL PRODUCTS IN A DUST SHAPE ON THE AGRICULTURAL CULTIVATIONS.**

It is necessary to carefully observe the following general rules:



**CLOSE THE DUST'S DELIVERY BEFORE DISENGAGING THE PTO OR WHEN THE FAN ISN'T OPERATING.**

- always stop the tractor's motor before lifting the tank's cover or before carrying out any operation of the duster;
- verify that the tractor's weight and power are compatible with the duster to be used;
- before using the duster, check the correct tightening and the clamping of the machine's different components, paying a special attention to the safety protections and to the operating gears;

- exclusively use driving couplings complete with a protection and accompanied by a EC conformity certificate. Carry out the assembly only if the tractor's and the duster's powers to output are equipped with the protection counterguard;
- verify that the driving coupling's protection is locked by means of the relevant antirotation chains;
- get out of the way all people and animals eventually present on the place, before starting the unit;
- don't wear garments which could get entangled in the moving gears;
- reduce the speed when overcoming cat's backs or when driving across a ditch.



- ANY MAINTENANCE AND REPAIR OPERATION HAS TO BE CARRIED OUT ONLY AFTER HAVING CAREFULLY CLEARED ALL THE MACHINE PARTS FROM ANY PRODUCT'S RESIDUAL.
- BEFORE OPERATING INSIDE THE TANK, IT WILL BE NECESSARY TO CAREFULLY CLEAN ITS INSIDE.
- IT IS FORBIDDEN TO MAKE WELDINGS, IF SOME AMMONIUM SALTS WERE USED.
- IT IS FORBIDDEN TO USE THE UNIT BY PRESENCE OF A POTENTIALLY EXPLOSIVE ATMOSPHERE.
- THE EXPLOITATION OF THE AIR CURRENT FOR DIFFERENT USES THAN THE PHYTOPHARMACOLOGICAL PRODUCTS' DISTRIBUTION ISN'T ALLOWED.

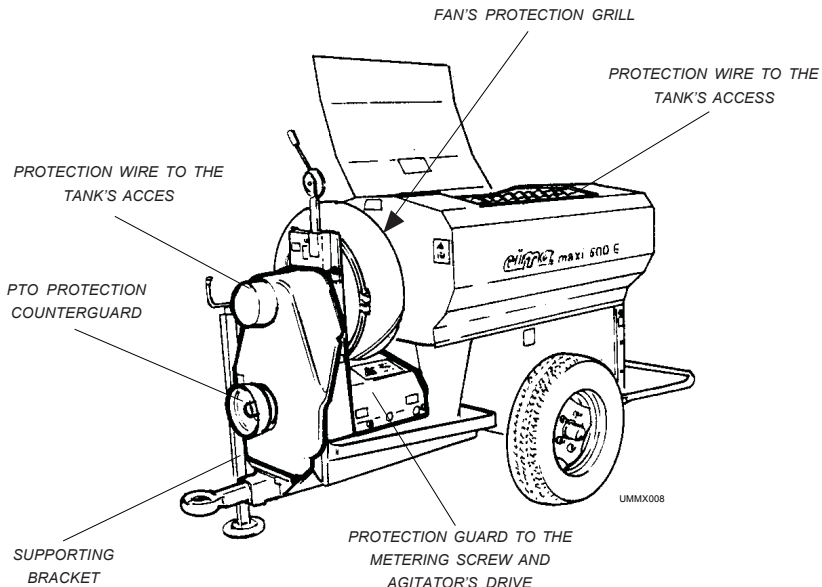
### 3.4 - SAFETY SYSTEMS

All the moving parts of the machine were suitably protected and put into evidence by means of warning adhesives.



- It is forbidden to use the machine without the relevant protections mounted on it.
- Before removing the protections, stop the tractor's motor and take off the key from the control board.
- Before starting to distribute the product, make sure that the cover is closed.

In the Figure, the protected parts of the machine are represented:



### 3.5 - PHYTOPHARMACOLOGICAL PRODUCTS' MANAGEMENT

The **operator** can be contaminated by either contact or inhalation of the products or of the mixtures which are distributed during the treatment.

The **environment** can be polluted by the pouring out of the products, by the uncontrolled conservation of the empty and unwashed product packages and by discharging the products into the water system.

In order to avoid these risks, the filling operations shall be carried out either in places, which are appropriately prearranged and suitably equipped for this purpose, or on the treatment place itself.

#### 3.5.1 - Store

**Fixed/Stationary:** the local used for this purpose shall be ventilated, equipped with doors complete with locks, in order to prevent the access, even fortuitous, either to children or to unqualified people.

**Mobile:** the container has to be equipped with locks and stored in such a way, to prevent the access to it both to children and to unqualified people, when the operator isn't there. All the products' packages, both the new and the open ones, shall be secured in order to prevent them from reversing, or from falling and breaking themselves during the transport.

In both cases, it is absolutely necessary to dispose of:

- a special container for storing the empty packages, if a specific place for this purpose isn't available;
- some clear water for washing the packages, either kept inside a container or thru a connection to the water system;
- some operating fire extinguishers, in case of inflammable products' presence.



- ALL THE PACKAGES, BOTH THE NEW AND THE OPEN ONES, SHALL BE KEPT INTO THEIR ORIGINAL PACKINGS, ON WHICH THE LABELS SHALL ALWAYS BE CLEARLY READABLE.
- THE DIRECTIONS FOR THE STORAGE, THE USE AND THE ELIMINATION MENTIONED ON THE ORIGINAL PACKAGES OF THE PRODUCTS SHALL ALWAYS BE STRICTLY OBSERVED.

#### 3.5.2 - Special instruments

The place chosen for the preparation and the filling of the product inside the duster shall be equipped with the following equipments:

- all the instruments, which facilitate the direct pouring of the products into the tank;
- all the necessary equipments for batching the right quantity of product to be poured into the tank at every filling;
- all the equipments and the required means for mixing up the dusts and for cleaning the operator, in case of his contamination;
- the outfit of garments and special equipments, necessary to prevent any possible contamination either by contact or by inhalation of the products, during the whole operative phase of the intervention.

#### 3.5.3 - Elimination of the phytopharmacological products' residuals and of the relevant empty packages

The phytopharmacological products are classified as "special" trash and their elimination has to be carried out in a different and separate way, with respect to the "city" litter.



- THE EMPTY PACKAGES AND THE CONTAMINATED CONTAINERS TO BE ELIMINATED CAN'T EITHER BE THROWN AWAY, BURNT OR UNDERGROUNDED.
- THE RESIDUALS CONTAINED INSIDE THE TANKS AND THE WATER USED FOR WASHING THE INSTRUMENTS EMPLOYED FOR PREPARING THE MIXTURES CAN'T BE DISCHARGED INTO THE GROUND OR POUED INTO THE DITCHES, THE STREAMS OR THE RIVERS.

The elimination of the special trash is regulated by special rules. In order to carry out this operation, it will be necessary to get informed about the correct procedure at the Local Offices, charged with the management of this subject. The inobservance of these directions can cause serious damages to people, animals and to the environment.

### 3.5.4 - Personal protection means

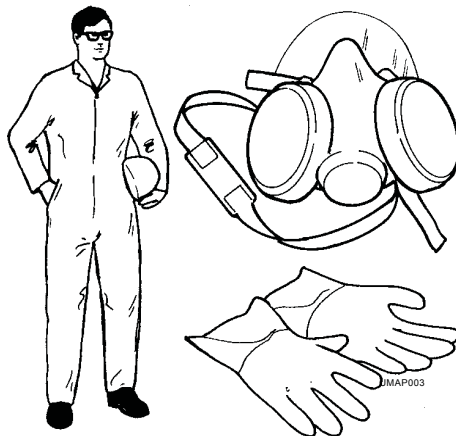
The toxicity of the phytopharmacological products imposes to the personnel using them, both to wear garments and to use protective accessories, able to avoid any contamination risk, both by contact and by inhalation of these products.



During the loading, always wear protective glasses, masks and special gloves.

The here following specified garments and accessories have always to be used:

- Gloves of either polyethylene or polyvinyl.
- An overalls made of waterproof cotton, in order to allow transpiration, with lateral coatings of polypropylene. On trade, it is possible to find overalls made of tyvek, to be used only once, which, after use, (see Figure), have to be eliminated, according with the same modalities required for the toxic trash.
- Half-masks made of polychloroprenic rubber, with either one or two filters. Filters for gases and organic vapours of the european class A1 were foreseen, which can be combined with those protecting against the dust, belonging to the european class P1, those against smokes and annoying dusts, or those belonging to the class P2, against harmful and toxic smokes and dusts.



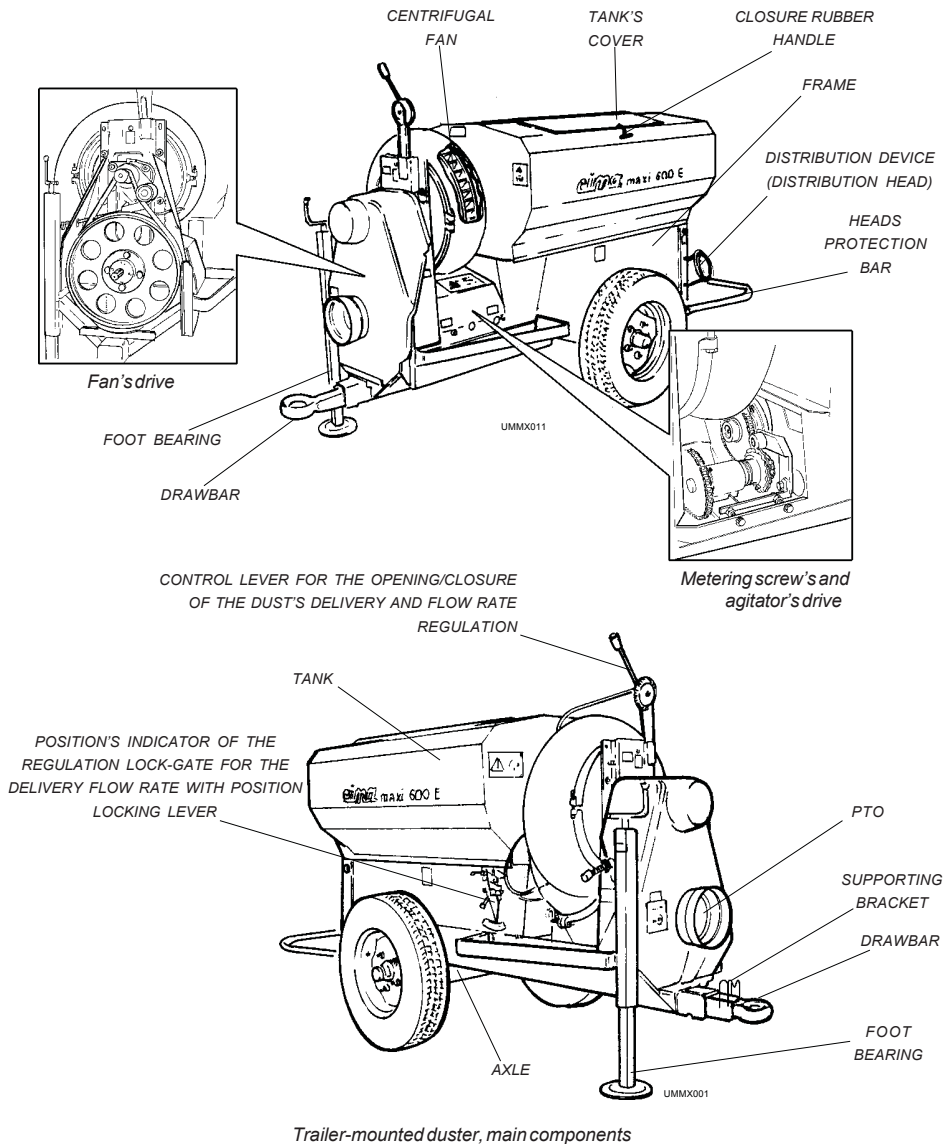
The filters have to be replaced:

- as soon as you notice a smell/taste of phytopharmacological product, as far as the class A1 with activated carbon is concerned;
- as soon as you start having some respiratory difficulty, as far as those of the classes P1 and P2 are concerned.

Anyway, the half-masks shall be used according with the manufacturer's instructions.

**4 STRUCTURAL ANALYSIS OF THE MACHINE 4**

The Figure shows the position of the duster's main components.

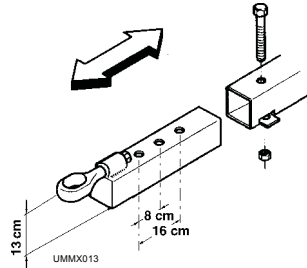
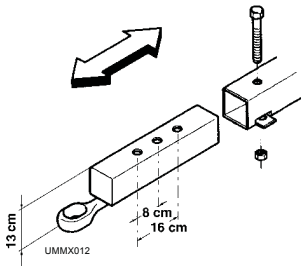




## 4.1 - FRAME WITH DRAWBAR

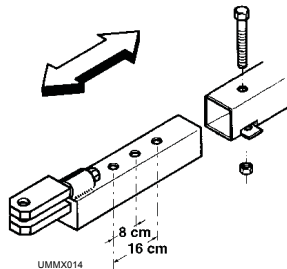
**DRAWBAR WITH standard TRAIL EYE.** It is housed in the frame's front part and is clamped to it by means of a through screw with keep plate and a self-locking nut.

- It is adjustable in **height** of 13 cm.
- It is adjustable in **length** through two shiftings of 8 and 16 cm.



**DOUBLE BRACKET DRAWBAR** upon request. It is housed in the frame's front part and is clamped to it by means of a through screw with keep plate and a self-locking nut.

- It is adjustable in **length** through two shiftings of 8 and 16 cm.

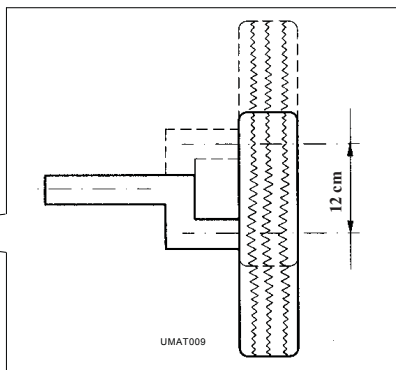
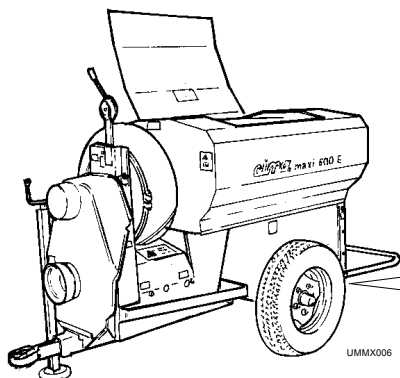


**AXLE.** The wheels' axle shafts, which are housed inside the frame's axle and locked there by means of special screws, allow to adjust the **gauge's width**, adapting it to the intervention's requirements.

- The misalignment between the axle shaft and the wheel's hub allow to adjust the **axle's height** from the ground. By turning the wheels' axle shafts, it is possible to get a variation of 12 cm.



After any adjustment, carefully tighten the screws and the nuts concerned with the operation.



**WHEELS.** The wheels' hubs are equipped with grease nipples, for the bearings' lubrication (see para. 14. 1). As far as the tyres' size and their working pressure are concerned, see para. 4.5.2.

**THE FOOT BEARING** with crank adjustment guarantees the machine's stability, when the duster isn't coupled to the tractor.



**THE FOOT BEARING shall always be lifted during the machine's operation.**



**THE DRAWBAR CAN NEVER BE USED AS THE MACHINE'S BEARING POINT, INSTEAD OF THE FOOT BEARING.**

**HEADS PROTECTION BAR.** To the frames, a distribution devices' (distribution heads') protection bar is applied, which has to be mounted in the most effective position, with respect to the working conditions and to the distribution head's type.

**BRACKET.** When the machine isn't coupled to the tractor, the driving coupling has to be housed inside the relevant support bracket, which is mounted on the drawbar.



**WHEN THE DRIVING COUPLING IS MOUNTED ON THE 2 PTO, THE BRACKET SHALL ALWAYS BE LOWERED.**

**THE RESPONSIBILITY OF THE WHEELS' SETTING, ASSEMBLY AND DISASSEMBLY OPERATIONS IS CHARGED TO THE OPERATOR, WHO HAS TO PROVIDE AND TO GUARANTEE ALL THE REQUIRED SECURITY CONDITIONS, IN ORDER TO PREVENT ANY POSSIBLE ACCIDENT.**

## 4.2 - FRAME WITH STEERING DRAWBAR (UPON REQUEST)

IT IS NECESSARY TO USE A WIDE-ANGLE DRIVING COUPLING ON THE MACHINE'S SIDE.

The steering drawbar is mounted instead of the drawbar with standard trail eye. It is clamped to the frame by means of a through screw with keep plate and self-locking nut. It shows a coupling triangle with 2 pins and the pin of the third point preset for hydraulic elevators of the class "2".

\* Class "2": pins with diameter 28,5 mm - pin of the third point with diameter 25 mm .

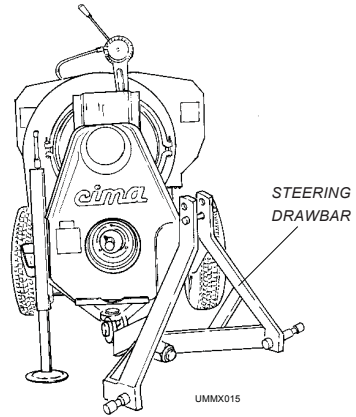
On the drawbar, a bracket was foreseen, for housing there the driving coupling when the atomizer isn't hitched to the tractor.



**WHEN THE DRIVING COUPLING IS MOUNTED ON THE 2 PTO, THE BRACKET SHALL ALWAYS BE LOWERED.**

The coupling triangle is supported by a spring, when it isn't inserted in the elevator's arms.

The frame's features are identical to the standard frame's ones (see para. 4.1).



### 4.3 - TANK

- It is a sheet metal tank and is clamped to the frame. Capacity: 600 liters (approximately 400 + 450 kg of sulphur).
- Sheet metal cover with closure rubber handle.



- BEFORE LIFTING THE COVER, STOP THE TRACTOR AND TAKE OFF THE KEY FROM THE CONTROL BOARD.

- BEFORE STARTING THE TRACTOR AGAIN, MAKE SURE THAT THE COVER WAS CORRECTLY CLOSED.

- Protection grill for the loading's opening.
- Exhaust opening for the product's residuals or for the cleaning water, positioned in the rear section, on the tank's bottom.
- Triangular opening for the product's distribution on the tank's bottom, on the centre of the housing, into which the metering screw turns.
- Sheet metal realized lock-gate for the opening, the closure and the setting of the delivery flow rate.

### 4.4 - MULTIPLIER - FAN

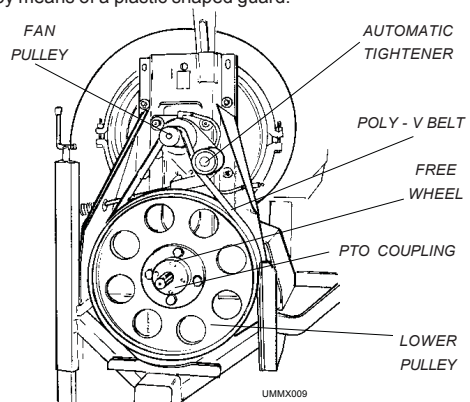
It is positioned in the machine's front part and is protected by means of a plastic shaped guard.

#### Multiplier

The poly-V belt, transmitting the movement to the fan, is equipped with an automatic tightener, which eliminates any maintenance necessity (see Figure).

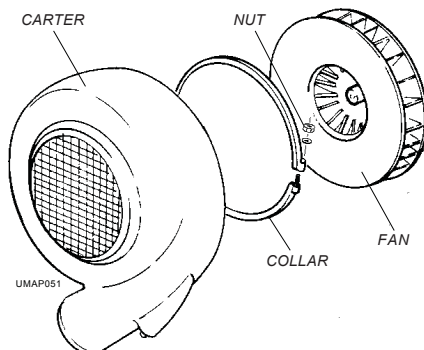
#### Upon request:

between the multiplier's PTO and its lower pulley, a free wheel is inserted. Should it be necessary to suddenly decelerate or should the motor suddenly stop, the free wheel allows the fan to go on turning in a free way, avoiding to transmit violent solicitations to the gears, which are involved in the movement.



## Fan

Centrifugal fan with high pressure closed blades, plastic guard and sheet metal fan.



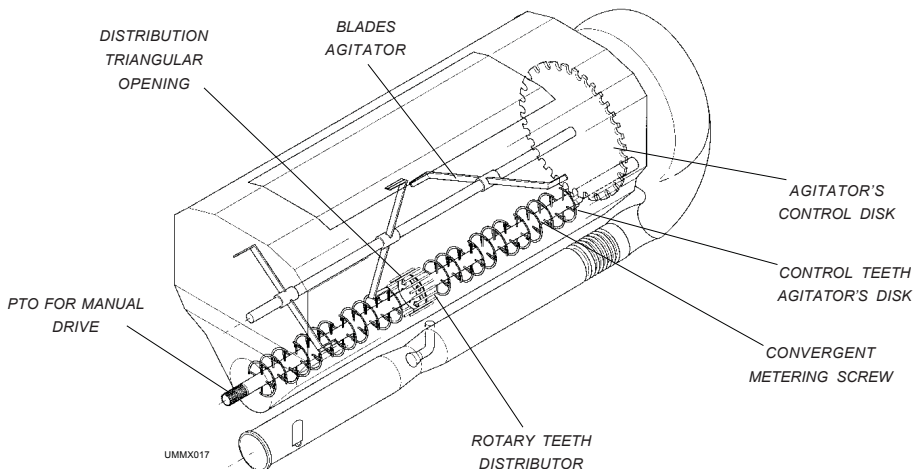
## 4.5 - DISTRIBUTION UNITS

The dust's delivery is realized by means of a mechanical-pneumatic distribution system.

### 4.5.1 - Convergent metering screw

It turns inside the relevant housing, which is machined on the tank's bottom. The metering screw carries out approximately 48 revolutions per minute with the PTO at 540 rpm. The spiral's shape causes the product to gather in direction of the rotary teeth distributor, which is mounted on the metering screw's centre, in correspondence with the triangular opening for the product's distribution. This system allows to completely use the product loaded inside the tank. A scraper locking ring, mounted above the distribution's triangular opening, prevents the distributor's rotary teeth from getting obstructed.

The metering screw is operated by a crown gear, which is mounted externally to the tank, where the chain, which transmits the movement from the PTO, operates. On the metering screw's axis, inside the tank, near the front wall, 6 teeth have been foreseen, which activate the toothed disk of the blades agitator. Behind the machine and externally to it, the metering screw shows a power takeoff, which is protected by means of a small plastic cover. This power takeoff has to be manually activated by means of a wrench, when the agitator gets obstructed, because of a product's compacting.



#### 4.5.2 - Blades agitator

It has the purpose of moving the product's mass inside the tank and to prevent it from getting too compact. It carries out approximately 10 revolutions per minute, with the PTO at 540 rpm. The blades agitator is controlled by a 30 teeth-sheet metal disk, which is mounted inside the tank, against the front wall. It consists of three groups of respectively 2 blades, which are opposite-positioned and welded on a bush. This last one is inserted on the agitator's axis and clamped there by means of a screw.

#### 4.5.3 - Security clutch

It consists of two toothed disks and of a series of Belleville washers. The toothed disk on the inner side is equipped with a grease nipple.

The clutch is inserted inside the driving and reduction gears, which are mounted in the machine's left front side and are protected by means of a protection guard.

Long transfers with the full loaded machine and the PTO disconnected, can cause the product to compact inside the tank, with the consequent possible obstruction of the agitator and of the metering screw.

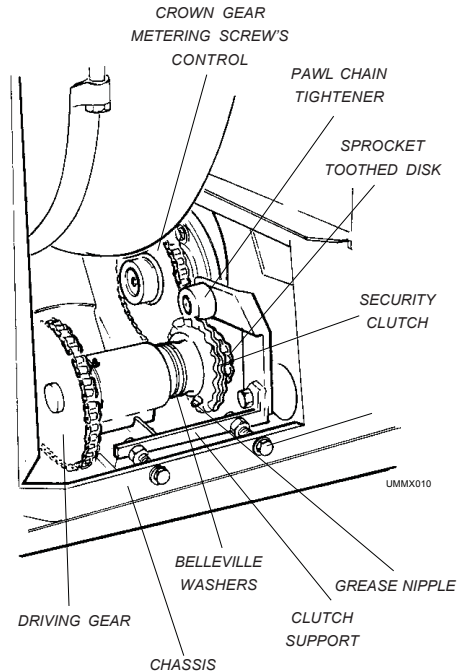
Purpose of the clutch is to interrupt the drive, in order to safeguard the functionality of the obstructed gears.

The motion is transmitted by a pinion, which is mounted on the multiplier's lower pulley, oppositely positioned with respect to the PTO.

A chain connects it to the crown gear of the drive's bearing.

The chain's tension can be adjusted, by modifying the bearing's anchorage position on the 2 screws, which are clamped to the frame.

A second chain, which is equipped with a spring-tightener, transmits the motion from the clutch's pinion with toothed disk to the crown gear, which controls the convergent metering screw.



#### 4.5.4 - Mechanical - pneumatic distribution

##### Mechanical distribution

The rotary teeth distributor allows a constant and uniform distribution of the product.

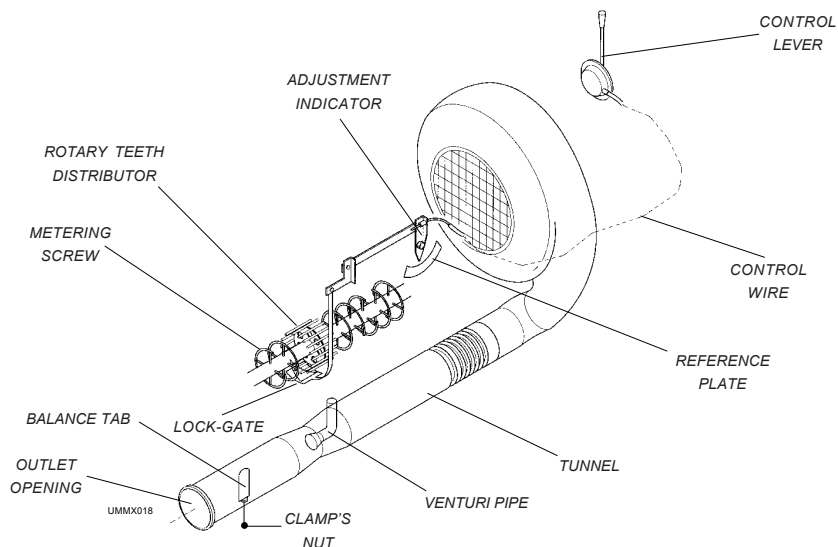
The flow rate necessary to the treatment, is determined by the positioning of the stainless lock-gate, which is mounted in a position, corresponding with the distribution opening, under the tank.

A remote control, with release-adjustment lever, operates the lock-gate, by means of a sheath covered wire.

The adjustment indicator is positioned on the machine's right side.

It consists of:

- a reference plate with graduated scale from 0 to 3. It shows the opening's width of the dusts' delivery. "0" indicates the opening's complete closure, while "3" corresponds to the maximum delivery.
- indicator of the delivery's orifice opening point.
- locking handle of the fixed delivery point. After every closure, it locks the indicator's stroke in the wished opening position, always assuring the same delivery.



### Pneumatic distribution.

A sheet metal tunnel, positioned under the tank, conveys the fan's air to the rear outlet opening.

A "Venturi" effect, created in correspondence with the distribution opening, under the tank, suctions the product and causes it to enter into the tunnel's air flow, which supplies the distribution head.

Inside the tunnel, before reaching the outlet opening, there is an air flow's balance tab. This one has to be used, when the product isn't uniformly distributed on both sides. It is enough to remove the distribution head, to release the nut under the tunnel, to lightly turn the tab and to carefully tighten again the nut. It isn't possible to give very exact indications on this subject, as the setting depends on the type do product, on the distributed quantity and on the humidity conditions present at the treatment's time.

## 4.6 - TECHNICAL DATA

### 4.6.1 - Dimensions and weight (without distribution head and driving coupling)

— LENGTH mm .....	2800
— WIDTH mm .....	1180
— HEIGHT mm .....	1270
— EMPTY WEIGHT kg .....	398
— MAXIMUM WEIGHT kg .....	793



The weight of the different distribution heads is indicated at Point 6.1, and has to be added to that of the machine and of the cardan shaft.



Weight of the steering drawbar kg 38: to be added to the weight of the atomizer, when used. The installation of the steering drawbar DOESN'T modify the machine's total length.

#### 4.6.2 - Wheels - Gauge

— SIZE .....	6.50 x14
— HUB .....	5 holes
— GAUGE (minimum external one) mm .....	
— GAUGE (maximum external one) mm .....	
— WORKING PRESSURE kg/cm <sup>2</sup> .....	2,5

#### 4.6.3 - Functional features

##### Fan

— FAN'S SPEED rpm .....	4500
— AIR VOLUME m <sup>3</sup> /h .....	5400
— AIR SPEED m/s .....	188
— POWER ABSORBED on the PTO kW .....	17



The stated performances are reached when the PTO is working at 540 rpm.  
This condition has never to be exceeded, when the machine is operating.



Engage the PTO and gradually release the clutch.

The fan has to win the inertia condition and to acquire a given rotation speed, before it will be possible to fully press on the accelerator. Transmitting a great deal of the power to the motor, in order to win the starting pickup moment, can cause the breaking of the gears involved with this operation.

#### 4.6.4 - Technical features

##### Duster

— TANK'S CAPACITY lt .....	600
— TANK'S CAPACITY kg .....	approximately 400/450

##### Fan

— CLOSED BLADES FAN .....	centrifugal type
— FAN'S DIAMETER mm .....	450
— FAN'S PROTECTION GUARD .....	plastic realized
— PTO SHAFT .....	1" 3/8 SAE (DIN 9611/A)
— MAIN PULLEY'S DIAMETER mm .....	450
— FAN'S CONTROL BELT .....	650 J32
— FAN PULLEY'S DIAMETER mm .....	52
— REAR OUTLET OPENING'S DIAMETER mm .....	175

## 5.1 - COUPLING TO THE TRACTOR



THE DUSTER ISN'T HOMOLOGATED FOR CIRCULATING ON THE ROAD.



The tractor's PTO has to deliver a higher power, with respect to that absorbed by the duster, on any working condition.

**COUPLING POWER WITH TRACTORS** delivering at least a power of  
45 CV = 33 kW

### 5.1.1 -Duster equipped with standard drawbar

#### REALIZATION

1. The coupling has to be realized on a plane surface, after having preventively sent away the people not charged with the operation, as well as the children and the animals eventually present on spot.
2. The tractor's drawbar has to be centrally positioned.
3. Drive the tractor near the duster and align them.



4. **STOP THE TRACTOR. TAKE OFF THE KEY FROM THE CONTROL BOARD.**

5. Adjust the drawbar's length. As far as possible, the towing point has to be positioned at the same distance from the 2 PTO.
6. Select the position of the trail eye: either up or down.  
The duster has to operate as far as possible in an horizontal position. If the ground allows it, intervene, by also adjusting the axle's height.
7. Secure the drawbar to the frame.
8. Position the drawbar's trail eye at the towing fork's height, by acting on the foot bearing.
9. Start the tractor and insert the trail eye into the fork, by acting according with the instructions already given at point 1.



10. **STOP THE TRACTOR. TAKE OFF THE KEY FROM THE CONTROL BOARD.**





11. Lock the coupler, by inserting the relevant pinion, with release security pin.
12. Completely lift the foot bearing.
13. Position near the driver, the remote control for operating the delivery's regulation lock-gate.

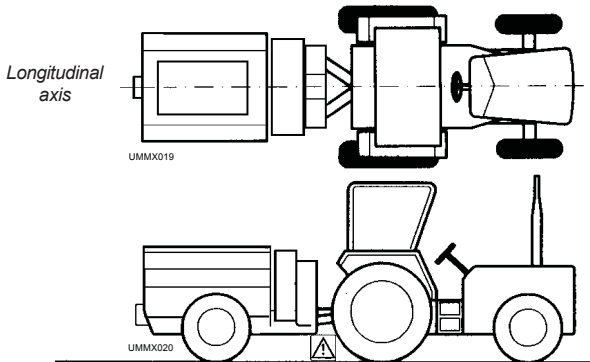
### 5.1.2 -Duster equipped with steering drawbar

#### REALIZATION

1. The coupling has to be realized on a plane surface, after having preventively sent away the people not charged with the operation, as well as the children and the animals eventually present on spot.
2. Release the chains of the elevator's arms.
3. Start the tractor and lift the elevator's arms to the height of the steering drawbar's pins.



4.   **STOP THE TRACTOR. TAKE OFF THE KEY FROM THE CONTROL BOARD.**
5. Insert the articulated joints on the machine's gudgeons, and clamp them there, by means of the release security pins.
6. Secure the tie rod of the tractor's 3<sup>rd</sup> point on the steering drawbar, by clamping it there, by means of the gudgeon and the release security pin. In order to facilitate the operation, act on the crank, which adjusts the position of the machine's foot bearing.
7. Completely lift the foot bearing.
8. Start the tractor and hoist the duster, up to get the 2 PTO positioned at the same height.
9.   **STOP THE TRACTOR, TAKE OFF THE KEY FROM THE CONTROL BOARD AND MAKE SURE THAT NOBODY GETS IN A POSITION TO ACT ON THE ELEVATOR'S HYDRAULIC CONTROLS. AVOID BOTH STANDING AND OPERATING UNDER THE MACHINE OR WITHIN THE AREA INTERESTED BY ITS POSSIBLE SUDDEN LOWERING.**



10. Position the axes of the 2 PTO on the same plane, by acting on the tie rod of the 3<sup>rd</sup> point.
11. Lock the coupling, by pulling the chains of the elevator's arms.



When the operation will be completed, the 2 PTO shall be positioned on the same axis.

## 5.2 - ASSEMBLY OF THE DRIVING COUPLING



**THE INSERTION, THE DISASSEMBLY OR ANY POSSIBLE INTERVENTION ON THE DRIVING COUPLING, SHALL BE EXCLUSIVELY CARRIED OUT WHEN THE MOTOR IS TURNED OFF AND THE STARTING KEY IS DISINSERTED FROM THE TRACTOR'S CONTROL BOARD.**



Exclusively use driving couplings complete with EC certificate.

### 5.2.1 - Driving couplings

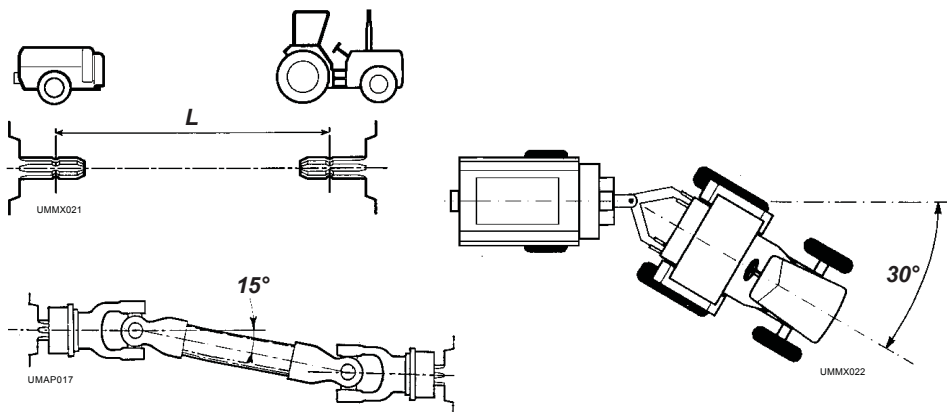
The driving coupling has to be assembled when the 2 PTO will result to be coaxial, or, if this should prove to be impossible, when their axes will be parallelly positioned. In this case, the misalignment shall be such one, to PREVENT the driving coupling's joints to work with angles exceeding a width of 15°.

These working conditions can be also reached, by acting on the drawbar, which is adjustable both in height and in length.

When affording curves, while the power takeoff is operating, the steering angle can be of 30°, only provided that the drafting point is positioned at the same distance from the power takeoffs. Beyond such a value, it will be necessary to disengage the power takeoff, in order to avoid both dangerous situations and possible mechanical breakings.

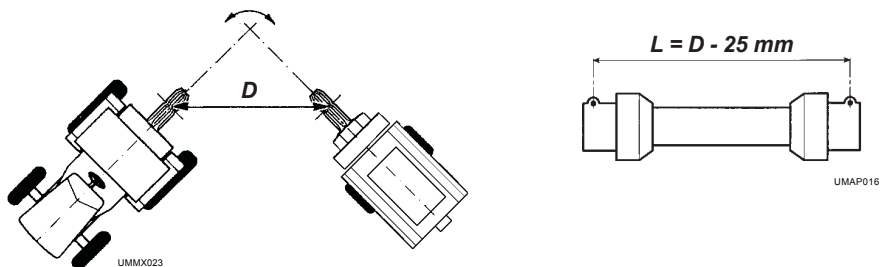


**ANYWAY, THE USER IS BOUND TO FOLLOW AND TO OBSERVE ALL THE DIRECTIONS CONTAINED IN THE USE AND MAINTENANCE HANDBOOK, SUPPLIED BY THE DRIVING COUPLING'S MANUFACTURER.**



### DETERMINATION OF THE DRIVING COUPLING'S LENGTH.

1. After having coupled the atomizer to the tractor, drive the operative unit to its maximum possible steering position.
2. Measure the distance "D", existing between the notches present on the 2 PTO.
3. The length "L" of the driving coupling to be used, shall be at least 25 mm shorter than the distance D:  
**"L = D-25mm"**



### 5.3 - REMOTE CONTROL'S INSTALLATION

- 1 - Fix the anchoring bracket on the tractor, at operator's reach distance.
- 2 - Insert the bayonet support of the remote control for the delivery's regulation lock-gate into the anchoring bracket.

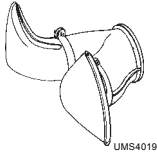
**6**

**DISTRIBUTION DEVICE**

**6**

**6.1 - TYPES - IDENTIFICATION CODES - WEIGHTS**

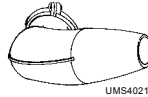
- SWINGING GUN'S JET ..... IMP.CGO.MAXI ..... weight kg. 2,5
- SWINGING GUN'S JET  
with additional fan ..... IMP.GC2.MAXI ..... weight kg. 5,5



*I.2V.MAXI.01*

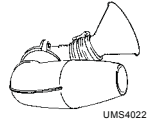
UMS40XX

*I.CC.MAXI.01*



UMS4021

*IMP.GCO.MAXI.01*



UMS4022

*I.GC2.MAXI.01*

**7**

**LOADING MODALITIES**

**7**



**BEFORE LIFTING THE TANK'S COVER, STOP THE TRACTOR AND TAKE OFF THE KEY FROM THE CONTROL BOARD. ALSO VERIFY THE CORRECT COVER'S CLOSURE, BEFORE STARTING THE TRACTOR.**



**WHEN CARRYING OUT THE LOADING OPERATION, THE PROTECTION GRILL FOR THE TANK'S OPENING SHALL BE MOUNTED. ALWAYS WEAR PROPER GARMENTS AND USE THE DESCRIBED PROTECTIVE ACCESSORIES, IN ORDER TO AVOID ANY RISK OF BOTH NUISABLE INHALATIONS OR CONTACT WITH THE DISTRIBUTED PRODUCT: MASKS, GLASSES, GLOVES, OVERALLS, ETC..**

**7.1 - WHEN THE DUSTER IS NEW OR AT BEGINNING OF EVERY TREATMENT**

1. Before loading the tank, unscrew the locking handle.
2. Move the control lever to the maximum opening's position (indicator pointing to 3). Then lock again the handle and move the lever to the complete closure's position (indicator pointing to 0).
3. Load the tank and secure the cover's closure.
4. Select the most suitable delivery for the treatment to be carried out and start the distribution.

**7.2 - DURING THE TREATMENT**



**BEFORE LIFTING THE TANK'S COVER, STOP THE TRACTOR AND TAKE OFF THE KEY FROM THE CONTROL BOARD.**

1. Before loading the tank, close the delivery, by moving the control lever to the complete closure's position (indicator pointing to 0).
2. When this operation is completed, secure the cover's closure by means of the relevant rubber handle.



**We suggest to avoid covering long distances with a full loaded tank.**

This operation can be carried out, only after having fixed some parameters, bound to the structure of the cultivation, as well as to the kind of treatment to be carried out.

In this perspective, it is absolutely necessary to indicate what these parameters exactly are, and, even more important, what are the modalities to be followed, in order to define them.

**1 Virtual width of the treatment = “Lm”**

**This measure identifies the width of the ground, comprehending the number of rows to be treated at every passage.**

In order to facilitate the determination of this parameter, you have to consider that a row occupies a stripe of ground, whose width corresponds to the distance existing between the rows themselves.

Indeed, in a cultivation, where the distance between two adjacent rows corresponds to 2,5 meters, each row occupies a ground's stripe, which is 2,5 m. wide: 1,25 m. on one side and 1,25 m. on the other one. If 6 rows, corresponding to 6 ground's stripes, are covered at each passage, the treatment's virtual width will correspond to 15 m.

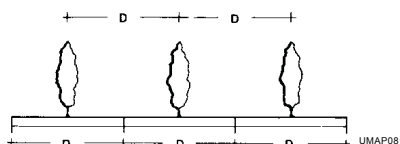
THE VIRTUAL WIDTH OF THE TREATMENT, therefore, IS CALCULATED BY MULTIPLYING THE NUMBER OF THE ROWS TREATED AT EACH PASSAGE BY THE DISTANCE, EXPRESSED IN METERS, EXISTING BETWEEN THE ROWS OF THE CULTIVATION. Eventually, in the calculation, also the half-rows shall be considered.

The determination of this parameter is very easy, because it is drawn from the measures, defined and well-known, which characterize the installation on which it is necessary to intervene.

• REPRESENTATION OF THE TREATMENT'S VIRTUAL WIDTH = “Lm”

PRELIMINARY CONSIDERATION - “D” indicates the distance expressed in meters, existing between the cultivation's rows. This measure corresponds to the width of the ground's stripe occupied by each row.

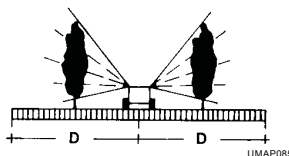
In order to give an exemplifying hypothesis, “D” is fixed at 2,5 m.



**NUMBER OF ROWS COVERED AT EACH PASSAGE**

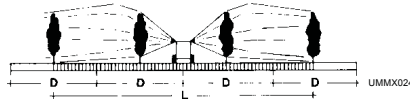
**2 = TWO ROWS, Lm = 2D (m 5)**

The virtual width corresponds to a ground's stripe having a double width with respect to the distance existing between the rows. It requires the passage of a row out of two.



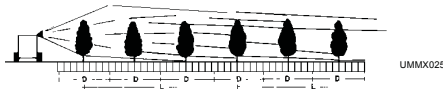
**4 = FOUR ROWS**,  $L_m = 4D$  (m 10)

The virtual width corresponds to a ground's stripe having a 4 times larger width with respect to the distance existing between the rows. It requires the passage of a row out of four.



### LATERAL DELIVERY

The virtual width is drawn, by multiplying the number of the covered rows by the distance, expressed in meters, existing between the cultivation's rows, or it corresponds to the distance, expressed in meters, effectively covered by the dusting.



## 2 Advancement speed = "km/h"

By this parameter, the speed of the operative unit, tractor - duster, during the realization of the treatment, is meant.

The advancement speed has to be practically defined on the field, by adapting it to the ground conditions, to the system by which the cultivation was installed and to the type of duster used. Moreover, it is absolutely necessary to select a speed which respects the functional features of the machine.

THE ADVANCEMENT SPEED, EXPRESSED IN km/hour, IS DRAWN AMONG THOSE STATED ON EACH TRACTOR, IN CORRESPONDENCE WITH THE SPEED, SELECTED FOR REALIZING THE TREATMENT.

In order to give you a further information, we want here to add that, by knowing the length of a row, expressed in meters (m), and by calculating the time, expressed in seconds (s), necessary for covering it, it is possible either to check or to calculate the advancement speed. It is enough to apply the following formula: " $m \times 3,6 : s = km/h$ " (length of the row expressed in meters, to be multiplied by 3,6 and to be divided by the seconds which were necessary for covering it = kilometers/hour).

## 3 Surface worked per hour = "ha/h"

It is the surface of ground, comprehending the cultivation, covered after an hour of effective treatment

The idle times of setup, new loading, transfer of the unit and similar operations aren't here considered.

Easy to be defined, this parameter is drawn, by using the two parameters previously obtained. This is of primary importance, because, only by knowing the exact surface worked per hour, it will be possible to set the duster, in order to deliver the right and fixed quantity of product per hectare. Briefly, in order to determine how many hectares of ground can be worked in an hour, it is sufficient to apply the following formula:

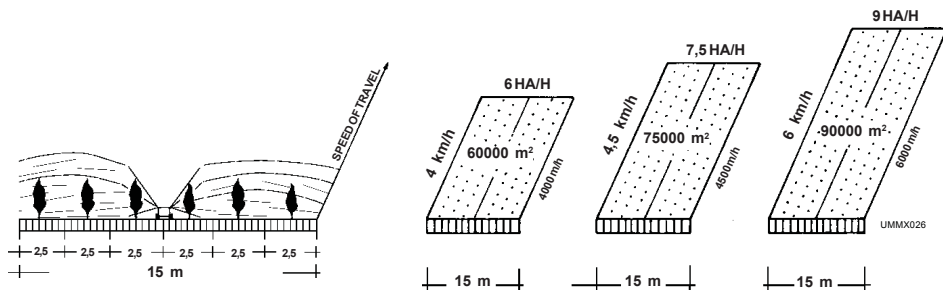
$$L_m \times \frac{km/h}{10} = ha/h$$

BY MULTIPLYING THE VIRTUAL WIDTH OF THE TREATMENT, EXPRESSED IN METERS ( $L_m$ ), BY THE ADVANCEMENT SPEED, EXPRESSED IN KILOMETERS, DIVIDED BY TEN ( $\text{km/h} : 10$ ), IT IS POSSIBLE TO DRAW THE SURFACE WORKED IN AN HOUR, EXPRESSED IN HECTARES ( $\text{ha/h}$ ).

It is easy to understand, that, by keeping the working width unchanged during the treatment, the hectares worked per hour will accordingly change, depending on the increased or on the reduced speed.

In the case of a cultivation, where the distance between two adjacent rows is 2,5 meters, and where 6 rows are covered at every passage, the virtual working width of 15 m. ( $2,5 \text{ m} \times 6$ ), keeps always unchanged, while the surface worked in an hour changes, according with the speed selected for the treatment:

at 4 km/h	= (4 x 15 m = 60, divided by 10)	<b>6</b>	ha/h	worked
at 5 km/h	= (5 x 15 m = 75, divided by 10)	<b>7,5</b>	ha/h	worked
at 6 km/h	= (6 x 15 m = 90, divided by 10)	<b>9</b>	ha/h	worked



#### 4 Determination of the quantity of product to be delivered per hectare = “kg/ha”

After having defined the previous parameters, it will be necessary to determine how many kilograms of

product have to be used, in order to treat an hectare.

The determination of this quantity, which is only limited by the necessary condition to cover the whole cultivation, is left to the user’s discretion, according with the requirements of the treatment and with the user’s operative abilities. The quantity of sulphur used for an hectare of vineyard varies from a minimum of 10/15 kg up to a maximum of 25/30 kg. This indication, of course, only represents an average value between the quantities normally used. Indeed, the quantity of product to be used per hectare, will depend on the structure of the plants, on the richness of their foliage and on the weather

5 conditions, at the intervention’s time.

#### Delivery flow rate per hour = “Q”

It indicates how many kilograms the duster has to deliver in an hour, in order to realize the treatment,

by using the quantity of product determined per hectare.

By applying the indications previously supplied, this parameter is practically already defined.

BY MULTIPLYING THE HEACTARES WORKED IN AN HOUR ( $\text{ha/h}$ ) BY THE KILOGRAMS OF PRODUCT DETERMINED PER HECTARE, ( $\text{kg/ha}$ ) IT WILL BE POSSIBLE TO DRAW THE REQUIRED DELIVERY FLOW RATE PER HOUR ( $\text{kg/h}$ ).

$$\text{ha/h} \times \text{kg/ha} = \text{kg/h}$$

## 6 Machine setting

In the setting table of the machine, in correspondence with the different opening positions of the delivery lock-gate, the values relevant to the flow rates are indicated, expressed in kilograms per minute (kg/1')


After having drawn the delivery per hour Q, it is therefore necessary to divide it by 60, in order to define the value, expressed in kilograms per minute (kg/1').

$$Q : 60 = \text{kg}/1'$$

In the setting table, in correspondence with the delivery value (kg/1') determined, the opening position is indicated, by which the treatment has to be carried out.

**MAXI 600 SETTING TABLE**

DELIVERY PER MINUTE	OPENING POSITION
Kg 1,5 .....	0,5
Kg 3 .....	1
Kg 4 .....	*
Kg 5 .....	1,5
Kg 6 .....	*
Kg 7 .....	2
Kg 8 .....	*
Kg 9 .....	2,5
Kg 10 .....	*
Kg 11 .....	3

 THE PRODUCTS TO BE DISTRIBUTED BY MEANS OF THE DUSTER, SHOW DIFFERENT PHYSICAL FEATURES, WHICH CAN GREATLY VARY, ACCORDING WITH THE TEMPERATURE AND HUMIDITY CONDITIONS PRESENT AT THE TREATMENT'S TIME. THE DATA CONTAINED IN THE TABLE ARE ONLY INDICATIVE, AND HAVE TO BE CHECKED AND COMPARED WITH THOSE EXPERIENCED DURING THE PREVIOUS TREATMENTS.

### Practical example of setting

Intervention realized by using a MAXI 600 duster on 9 hectares of cultivation, with rows disposed at a distance of 2,50 m, and 6 rows covered at every passage.

1	<b>Lm WORKING WIDTH</b>	If 6 rows, distanced 2,50 m the one from the other, are covered at each passage, the working width to be considered is: (6 rows x m 2,50) ..... =	<b>15 m</b>
2	<b>Km/h 10 ADVANCEMENT SPEED</b>	After having practically operated on the field, an advancement speed of 6 Km/h is selected. This value divided by 10 gives as a result a parameter of ..... =	<b>0,52</b>

<b>3</b>	<b>ha/h SURFACE WORKED PER HOUR</b>	The hectares worked in an hour can be drawn, by multiplying the working width (Lm) by the parameter of the advancement speed (2); (15 m x 0,6) ..... =	<b>9 ha</b>
<b>4</b>	<b>kg/ha KILOGRAMS PER HECTARE</b>	It is established to carry out the treatment, by using a given quantity of product per hectare ..... =	<b>25 kg</b>
<b>5</b>	<b>Q DELIVERY FLOW RATE PER HOUR</b>	It is possible to calculate how many kgs of product the duster has to deliver in a working hour, parameter which is useful in order to calibrate the machine, by multiplying the surface worked per hour (3) by the kg/ha determined (4); (9 ha x 25 kg) ..... =	<b>225 g/ha</b>
<b>6</b>	<b>SETTING OF THE MACHINE  kg/1'</b>	It is possible to calculate how many kgs of product the duster has to deliver per minute, by dividing the delivery flow rate per hour Q by 60, (225 : 60) = 3,75 kg/1'. In the setting table, this value is positioned between the delivery flow rates of 3 and 4 kg/1'. It indicates that the opening indicator, during the treatment, shall be kept approximately on a middle position between the reference marks 1 and 1,5 of the opening positions.	

<b>9</b>	<b>PROCEDURES FOR THE USE</b>	<b>9</b>
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## 9.1 - PRELIMINARY OPERATIONS BEFORE REALIZING THE TREATMENT

### THE OPERATOR SHALL:

- a. Make sure that the conditions of the cultivation, the development of the malady or the necessity to prevent it, justify the treatment's realization.
- b. Get informed about the weather conditions forecast for the whole time period necessary for completing the treatment.
- c. Avoid, if possible, to distribute the product by presence of a strong wind or when the product gets dispersed out of target (windage).  
It is suggested to interrupt the treatment, when the wind's speed exceeds 3m/s (10 km/h).
- d. Calculate the product's exact quantity, required in order to complete the treatment.
- e. Verify that the product is available in a quantity sufficient to complete the intervention.
- f. Carefully read the instructions about the product's use, in order to check the conditions required for its utilization, the correct batching and the validity terms.



## 9.2 - PRESETTING OPERATIONS TO THE TREATMENT

THE LOADING HAS TO BE CARRIED OUT WHEN THE MACHINE IS STANDING ON A PLANE SURFACE.  
THE OPERATOR SHALL:



Stop the tractor and take off the key from the control board, before lifting the cover.  
Check the cover's correct closure, before starting the tractor again.

- a. Wear the garments and use the protective accessories, in order to avoid possible contaminations by inhalation or by contact with the products used, such as overalls, waterproof garments, gloves and masks.



- The masks protecting against the dusts don't offer any protection against the nuisable fumes.  
- Avoid to wear garments, which could get entangled in the moving gears.

- b. Carry out the checking and maintenance operations, required in order to setup the machine.
- c. Carry out the loading in a well ventilated place. If this operation is carried out outside, the presence of the wind could increase the risk of contamination.
- d. Avoid to operate in proximity of free flames, glowing fires or incandescent bodies, if any inflammable product is present.
- e. Wash the equipments and the tools used during the products' preparation, and keep them in the place reserved to the storage of the chemical products.
- f. Always leave the place used for the loading and the preparation of the products in a suitable condition, in order to avoid any possible risk of contamination for the people or the animals, or of environmental pollution.
- g. If necessary, mark the field or the area interested by the machine's passages, in order to supply a reference of the area to be treated and to avoid that either uncovered spots can be left or other points can be covered twice.



- AT COMPLETION OF THE OPERATIONS REQUIRED IN ORDER TO CARRY OUT THE INTERVENTION, MAKE SURE THAT THE PLACES RESERVED TO THE STOCK-STORAGE OF THE PRODUCTS ARE LEFT IN THE CONDITIONS REQUIRED BY THEIR PREVENTING AND PROTECTING PURPOSES.

- BEFORE STARTING THE TRACTOR, SEND AWAY THE PEOPLE AND THE ANIMALS EVENTUALLY PRESENT AND NEVER LEAVE THE VEHICLE WITHOUT SURVEILLANCE DURING THE SETUP OPERATIONS.

## 9.3 - TREATMENT

IT IS SUGGESTED TO START THE TREATMENT IN CORRESPONDENCE WITH THE HEADLANDS.



During the machine's operation, the tractor's PTO has never to exceed the limit of 540 rpm.

THE OPERATOR SHALL:



ENGAGE THE PTO AND GRADUALLY RELEASE THE CLUTCH.

The fan has to win the inertia condition and to acquire a given rotation speed, before that it is possible to fully press on the accelerator. By transmitting a good deal of the motor's power, in order to win the starting point, it is possible to cause the breaking of the gears, interested in the driving unit.

- a. If the tractor isn't equipped with a pressurized cabin, complete with ventilation filters, use the same personal protections, already indicated for the loading and the mixtures' preparation.
- b. Should the weather become windy, follow the indications already given in the preliminary operations' description.
- c. During the work's interruptions, stop the motor, take off the key from the tractor's control board, and, if the duster is equipped with a steering drawbar, lower the elevator.
- d. Act with a special care and attention, when carrying out the treatment in proximity of property borders, houses, water streams, public roads or pathways.

## 9.4 - END OF TREATMENT - STORAGE

THE OPERATOR SHALL:

### 9.4.1 - Daily

- a. Store the machine in a ventilated place, sheltered from the rain and the sun: the sun rays, indeed, can damage the plastic and rubber parts of the machine more than any other agent.

### 9.4.2 - End of the seasonal cycle

- a. Empty the tank from any product's residual and clean the distribution opening, by washing them carefully with clear water.
- b. Grease those parts, which are equipped with a grease nipple.
- c. Check the functionality of the machine's gears and structures. Should any trouble be found out, contact our customers' service and ask for an intervention.
- d. Store the machine in a ventilated place, sheltered from the rain, the frost and the sun rays.

10

## HOISTING AND TRANSPORT

10



**THE TRAILER-MOUNTED DUSTERS AREN'T HOMOLOGATED FOR CIRCULATING ON THE ROAD.**

**IT IS FORBIDDEN TO:**

- Either transport or hoist the duster, when some product's residuals are present inside the tank, for different purposes than its traditional use.
- Use the duster, in order to transport either animals or things.
- Use the duster, in order to tow either vehicles or equipments.
- Tow the duster on road.



**The duster's transport on road has to be realized by fully observing the highway code's rules in force in the Country, where the machine is used.**

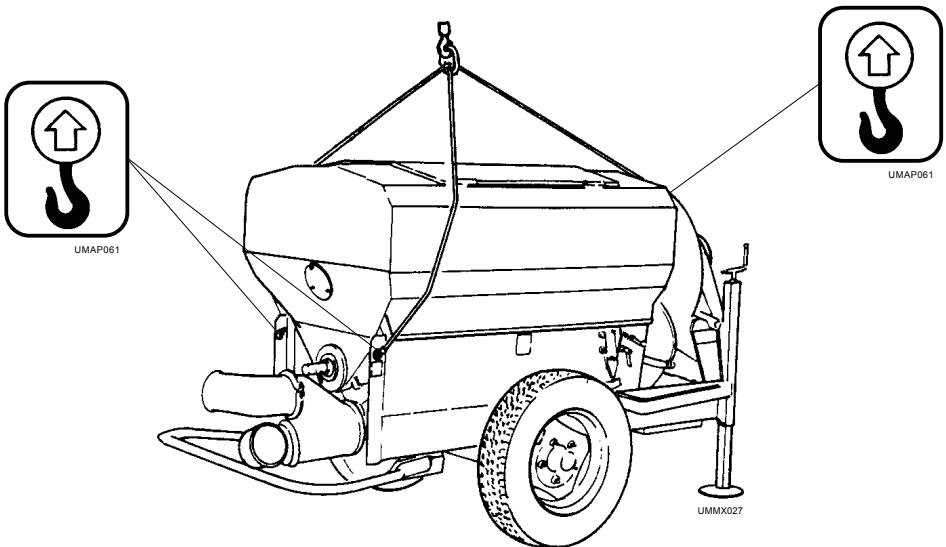
**The operator is held as responsible for the possible violations and for the inobservance of these rules.**

• **Hoisting and transport of the duster**



**BEFORE CARRYING OUT ANY OPERATION, IT IS ABSOLUTELY NECESSARY TO VERIFY THAT NO PRODUCT RESIDUAL IS PRESENT INSIDE THE TANK.**

1. Make sure that both the wires and the chains are appropriated to the weight to be hoisted (machine-distribution devices-accessories).
2. Hook the machine in the relevant supporting points, which are indicated on the adhesive applied on the frame, checking the correct tightening of all the parts involved with this operation.
3. Hoist the machine, checking its correct balance.



4. Position the atomizer on the vehicle used for the transport, making sure that it was correctly and safely fixed.
5. During the transport, the machine shall keep perfectly still and be correctly fixed to the transport vehicle, by means of a suitable sling.

**11**

**MAINTENANCE OPERATIONS**

**11**



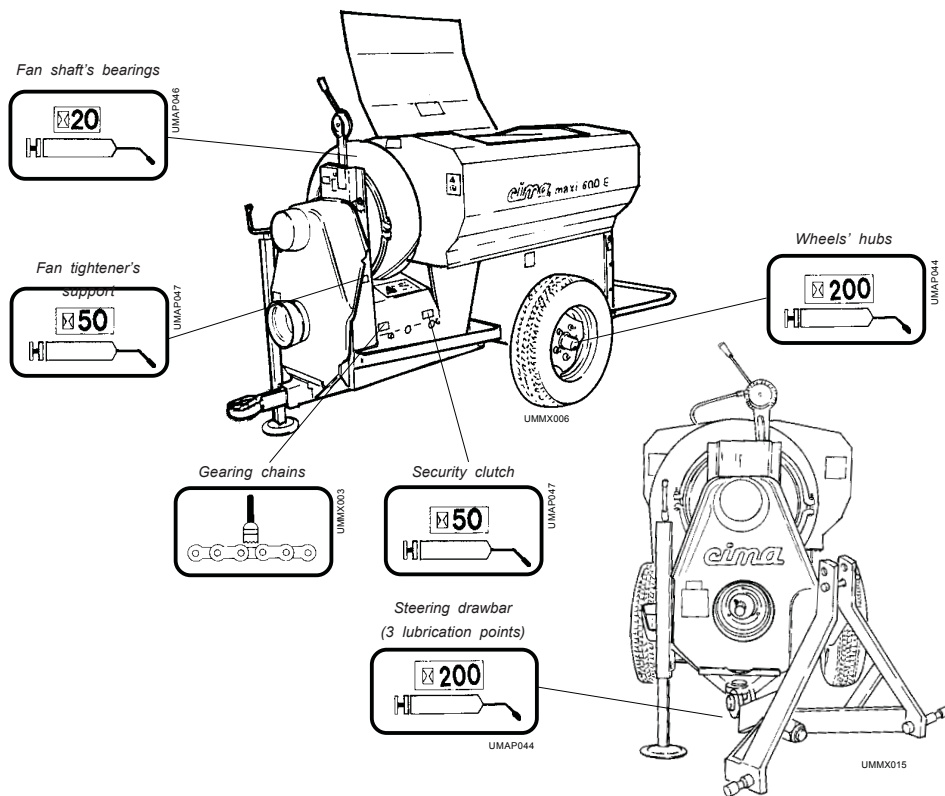
**ALL THE OPERATIONS ON THE MACHINE SHALL BE EXCLUSIVELY CARRIED OUT WHEN THE MOTOR IS TURNED OFF AND THE STARTING KEY IS REMOVED FROM THE CONTROL BOARD.**

## 11.1 - LUBRICATION

Maintenance point	Action	Material to be used	Periodicity
Support of the fan shaft's bearings	Lubricate	Grease type EP Class NLGI 2	20 hours
Fan tightener's support	Lubricate	Grease type EP Class NLGI 2	50 hours
Security clutch	Lubricate	Grease type EP Class NLGI 2	200 hours
Free wheel (if foreseen)	Lubricate	Grease type EP Class NLGI 2	200 hours
Wheel's hub	Lubricate	Grease type EP Class NLGI 2	200 hours
Steering drawbar (if foreseen)	Lubricate	Grease type EP Class NLGI 2	200 hours



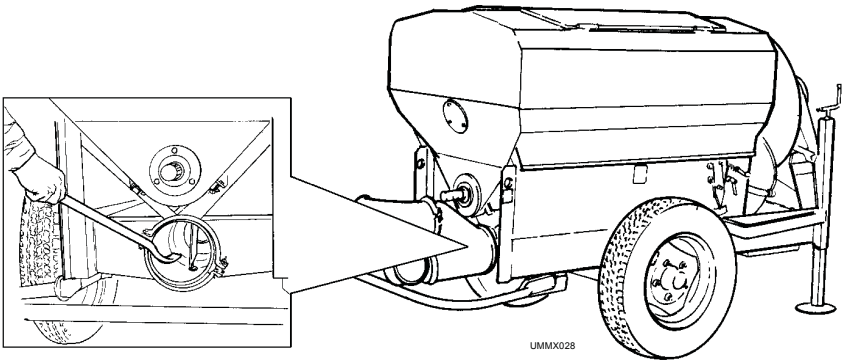
- Carefully clean both the grease nipples and the oil intake, in order to avoid that, during the lubrication, also some dirt can be introduced.
- If the machine is intensively used, the lubrication intervals shall be proportionally reduced.



## 11.2 - CLEANING OF THE VENTURY DEVICE

This operation could be necessary, when a reduction in the delivery takes place. In order to carry out this intervention, use the special tool, delivered with the duster.

1. Disassembly the distribution device (distribution head), by removing the collar, fixing it to the duster.
2. Through the rear outlet opening of the machine, introduce the tool into the dusts' outlet duct, which is centrally positioned inside the tunnel.
3. By lightly scraping, remove all the possible product's residuals and incrustations present inside the dusts' exhausting bend pipe.



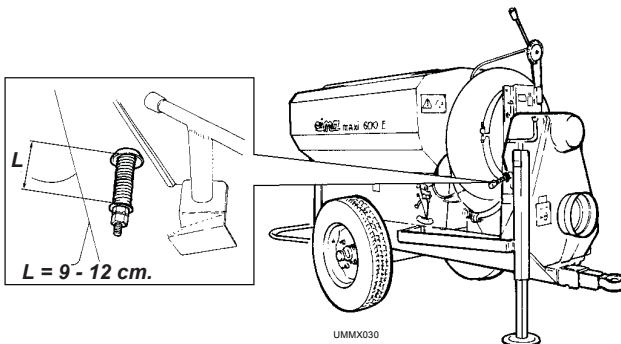
## 11.3 - FAN'S CLEANING



WHEN THE MACHINE WILL HAVE BEEN IN USE FOR QUITE A LONG TIME, SOME POSSIBLE DIRT DEPOSITS OR INCRUSTATIONS COULD SET THE FAN OUT OF BALANCE, CAUSING IT TO VIBRATE. THE FAN'S CLEANING HAS TO BE CARRIED OUT AT A C.I.M.A. TECHNICAL SERVICE POINT.

## 11.4 - FAN'S TIGHTENER

Check the spring's length "L" (see Figure): it shall be in tension, when corresponding to a length, comprehended between 9 and 12 cm.



## 11.5 - CHAINS - CLUTCH TENSION

**PRIMARY CHAIN:** it shall always be in tension.

The eventually required setting has to be carried out, by acting on the 4 adjustment screw nuts, 2 internal and 2 external, which are positioned on the edge of the clutch's supporting plate. After having released them, turn in a clockwise direction, in order to release the chains' tension, by moving away the plate from the frame, and in a counterclockwise direction, in order to stretch the chains, by approaching the plate to the frame.

Anyway, before it is necessary to remove the clutch's protection guard and to release the 2 screws positioned on the plate's center, which clamp it to the frame, in order to be in a position to move it.

**SECONDARY CHAIN:** it has to work with the chain tightener's spring in tension.

The replacement of the chain tightener's spring can be carried out, after having released the chain's tension.

Either release or stretch the chain, by following the operations described for the primary chain.

In order to replace the nylon pawl, it is necessary to remove the chain tightener's support, after having released the chain's tension and detached the spring.

Unscrew the screw pin, replace the pawl and screw the new one tight.



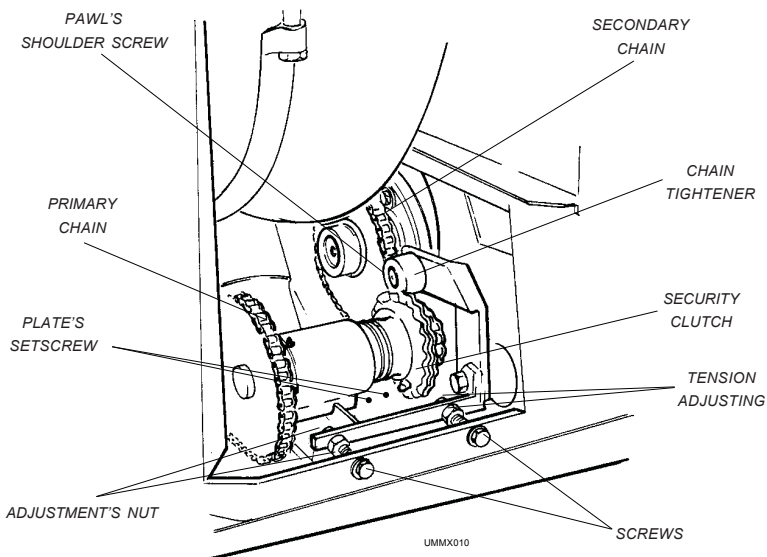
Carefully tighten all the nuts and screws involved in the operations eventually carried out.




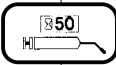
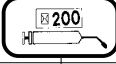
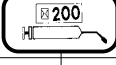
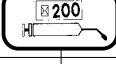

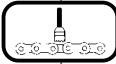
AFTER HAVING CARRIED OUT ANY OPERATION, REASSEMBLE THE CLUTCH'S PROTECTION GUARD BY CAREFULLY LOCKING IT BY MEANS OF THE 2 SCREWS.



ALL THE OPERATIONS AND THE INTERVENTIONS CARRIED OUT EITHER ON THE CLUTCH OR ON THE MOTION DRIVING GEAR, HAVE TO BE REALIZED WHEN THE MACHINE IS UNCOUPLED FROM THE TRACTOR.



## 11.6 - MAINTENANCE OPERATIONS' TABLE

TREATMENTS'	SEASONBEGIN- NING	BEFOREANY TREATMENT	END OF ANY TRE- ATMENT	TREATMENTS' SEASONEND
Fan tightener's spring: CHECKITS LENGTH betwe- en 9-12 cm.	YES	YES	**	**
Chain's tension: TO BE CHECKED	YES	YES	**	**
Fan shaft's support: TO BELUBRICATED	YES	** 	**	YES
Fan tightener's support: TO BELUBRICATED	YES	** 	**	YES
Security clutch: TO BELUBRICATED	YES	** 	**	YES
Wheels' bearings: TO BELUBRICATED	YES	** 	**	YES
Free wheel (if foreseen): TO BELUBRICATED	YES	** 	**	YES
Foot bearing: TO BE LUBRICATED YES	YES	**	**	YES
Drewbar (if foreseen): TO BELUBRICATED	YES	** 	**	YES
Pneumatic circuit and tank: TO BE CLEANED AND COM- PLETELY EMPTIED	**	**	**	YES
Tyres' pressure: TO BE CHECKED	**	YES	**	**
Duster: EXTERNAL WASHING	**	**	YES	YES
Duster: TO BE STORED	**	**	**	YES
Chain: TO BELUBRICATED	YES	** 	**	YES

**A. TROUBLE: Vibration of the fan unit**

- 1<sup>st</sup> CAUSE Dirty fan.  
**REMEDY:** Clean it. As far as the series P55DE and S, contact the Cima spa customers' technical service.
- 2<sup>nd</sup> CAUSE The 2 power takeoffs aren't aligned or they aren't parallelly positioned.  
**REMEDY:** Correctly position the 2 PTO.

**B. TROUBLE: Abnormal and continuous noise, accompanied by vibrations of the fan unit**

- 1<sup>st</sup> CAUSE Breaking of the fan shaft's bearings.  
**REMEDY:** Contact the Cima spa customers' technical service.

**C.TROUBLE: More abundant delivery on one side:**

- 1<sup>st</sup> CAUSE The humidity's and temperature's environmental conditions don't allow a perfect and uniform dust-air mixture.  
**REMEDY:** Modify the position of the balance tab inside the tunnel. This operation is carried out, by disassembling the distribution head and by acting on the tab's clamping nut.
- 2<sup>nd</sup> CAUSE The balance tab is uncorrectly positioned.  
**REMEDY:** As for point 1.

**D.TROUBLE: Insufficient delivery:**

- 1<sup>st</sup> CAUSE The distribution's triangular opening is dirty.  
**REMEDY:** Contact a Cima spa assistance point
- 2<sup>nd</sup> CAUSE The lock-gate can only partially be opened.  
**REMEDY:** Contact a Cima spa assistance point
- 3<sup>rd</sup> CAUSE The Venturi pipe is obstructed.  
**REMEDY:** Clean it.

**E.TROUBLE: The dust's delivery is missing:**

- 1<sup>st</sup> CAUSE The feeding opening is obstructed.  
**REMEDY:** Contact a Cima spa assistance point.
- 2<sup>nd</sup> CAUSE The lock-gate is closed and locked.  
**REMEDY:** Contact a Cima spa assistance point.
- 3<sup>rd</sup> CAUSE The chain is broken.  
**REMEDY:** Contact a Cima spa assistance point.
- 4<sup>th</sup> CAUSE The clutch slips.  
**REMEDY:** Contact a Cima spa assistance point.
- 5<sup>th</sup> CAUSE The Belleville washers are broken.  
**REMEDY:** Contact a Cima spa assistance point.

**F. TROUBLE: Noise caused by the chain's jump:**

- 1<sup>st</sup> CAUSE The chains are not sufficiently stretched.  
**REMEDY:** Restore the chains' tension.
- 2<sup>nd</sup> CAUSE The chain's tightener is broken.  
**REMEDY:** Replace the spring.
- 3<sup>rd</sup> CAUSE The tightener pawl is broken.  
**REMEDY:** Replace the pawl.





THE OPERATOR ISN'T AUTHORIZED TO INTERVENE, IN ORDER TO MODIFY THE DUSTER'S STRUCTURES OR ITS OPERATION. SUCH A KIND OF INTERVENTION ON THE OPERATOR'S SIDE WOULD CAUSE THE IMMEDIATE CEASING OF ANY KIND OF WARRANTY EVENTUALLY IN FORCE AND WOULD RELEASE THE CIMA S.p.A. COMPANY FROM ANY CONSEQUENT RESPONSIBILITY BOUND.

ANY INTERVENTION WHICH SHOULD EVENTUALLY PROVE TO BE NECESSARY, SHALL BE CARRIED OUT BY A CIMA ASSISTANCE POINT, EXCEPTION MADE FOR THOSE SPECIFIED IN THIS PUBLICATION.

### 13.1 - SETTING INTO TENSION OF THE GEARING CHAINS

Before using the duster, it is recommended to check that the gearing chains' tension is correct, by carrying out the following procedure:

- Remove the protection guard.
- Check that the chains don't show an excessive backlash, and that they aren't either too loose or too stretched.



Restore the gearing chains' correct tension, by acting on the adjusting nuts.

### 13.2 - REPLACEMENT OF THE CHAIN TIGHTENER'S SPRING

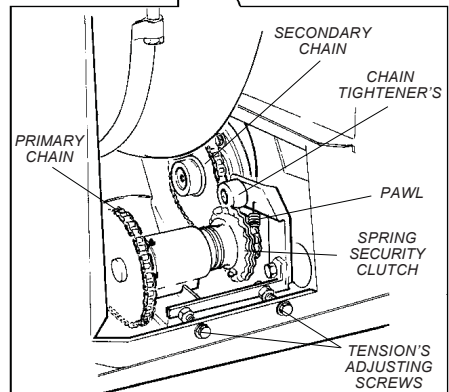
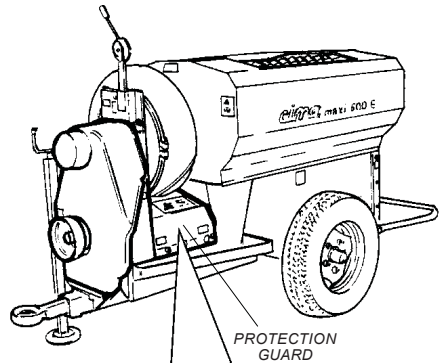
- Remove the protection guard.
- Slack the gearing chains, by acting on the adjusting nuts (see point 11.5).
- Release the chain tightener's spring and remove it, then proceed to replace it.



Restore the gearing chains' correct tension, by acting on the adjusting nuts.

### 13.3 - REPLACEMENT OF THE CHAIN TIGHTENER'S PAWL

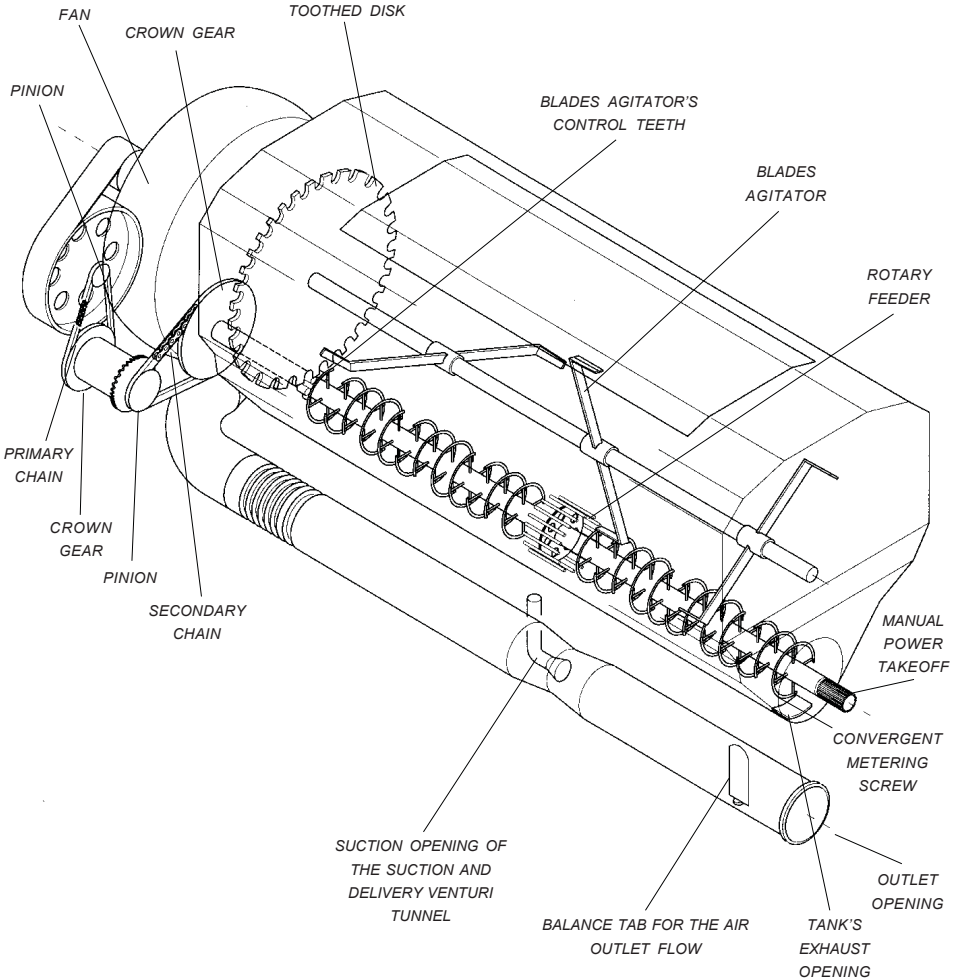
- Remove the protection guard.
- Slack the gearing chains, by acting on the adjusting nuts.
- Release the chain tightener's spring and remove it, then proceed to replace it.
- Unscrew the nut of the chain tightener's fulcrum pin and remove the chain tightener itself.
- Remove the chain tightener's pawl.
- Reassemble the chain tightener and hook the spring.



UMMX031



Restore the gearing chains' correct tension, by acting on the adjusting nuts.



**L<sub>qA</sub>**: Average equivalent sound level measured, expressed in dB(A) =

94,2 ± 0,2



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The machine is covered by the warranty for a period of 12 months, starting from the delivery date. During this period, the spare parts which aren't exposed to wear but which proved to be defective, will be replaced free of charge, exception made for the transport and the labour costs.

The warranty will be invalidated in the following cases:

- a. If any repair is carried out, without having previously been authorized to it, either by the manufacturer or by one of its sales agencies.
- b. If any spares, different from the original ones are used.
- c. If the machine is used for any other purpose, different from the traditional one, for which it was realized.
- d. In case of inobservance of the instructions given both in this manual and in the complementary documents, supplied with the machine's integrative parts.



**DICHIARAZIONE DI CONFORMITÀ** CE  
 ai sensi della direttiva 98/37/CE del 22/06/98 e successive modificazioni

**DECLARATION OF CONFORMITY** CE  
 as directive: 98/37/CE - 22/06/98  
 and subsequent modifications

**DECLARATION DE CONFORMITE** CE  
 selon la directive 98/37/CE - 22/06/98  
 et modifications ultérieures

**ÜBEREINSTIMMUNGS-ERKLÄRUNG** CE  
 lt. Direktiven 98/37/CE - 22/06/98  
 und nachfolgenden Änderung

**DECLARACION DE CONFORMIDAD** CE  
 con arreglo a la Directiva 98/37/CE - 22/06/98  
 y modificaciones siguientes

**CIMA s.p.a. 27040 MONTÙ BECCARIA (PV) - ITALY - Loc. Molino Quaroni**

DICHIARA  
 SOTTO LA PROPRIA  
 RESPONSABILITÀ  
 CHE LA MACCHINA:

HEREWITH DECLARES,  
 UNDER THEIR PERSONAL  
 RESPONSIBILITY,  
 THAT THE FOLLOWING  
 MACHINE:

DECLARONS SOUS  
 NOTRE RESPONSABILITÉ  
 QUE LA MACHINE  
 DÉCRITE CI-APRÈS:

BESTÄTIGT  
 HIERMIT UNTER  
 IHRER PERSÖNLICHEN  
 VERBANTWORTUNG,  
 DASS DIE MASCHINE:

DECLARA  
 BAJO LA PROPIA  
 RESPONSABILIDA  
 QUE LA MAQUINA:

SERIE, TIPO - MODEL, TYPE - SERIE, TYPE - MODEL, TYP - SERIE, TIPO:

MATRICOLA - SERIAL - MATRICULE - SERIAL - MATRICULA NR.:

E' conforme ai Requisiti essenziali di Sicurezza e di Tutela della Salute di cui alla Direttiva 98/37/CE del 22/06/98 e sue successive modificazioni.  
 Per la verifica della Conformità di cui alle Direttive sopra menzionate, sono state consultate le seguenti:  
 Norme armonizzate: *EN 294 EN 349 EN 907.*

Conforms to the essential Safety regulation as well as the Health requirements as per European Economic Community Directive: 98/37/CE - 22/06/98 and subsequent modifications. For the verification of conformity as per above mentioned directives the following official EN norms have been consulted: Harmonized norms: *EN 294 EN 349 EN 907.*

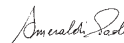
Est conforme aux exigences de Sécurité et de Sauvegarde de la Santé dont à la Directive 98/37/CE - 22/06/98 et modification ultérieures.  
 Pour vérifier la conformité aux directives susmentionnées, ont été prises en compte les normes suivantes:  
 Normes harmonisées: *EN 294 EN 349 EN 907.*

Stimmt mit den wesentlichen Requisiten der Sicherheitsvorschriften und der Gesundheitsvorsorge lt. EWG Direktive Nr. 98/37/CE - 22/06/98 und nachfolgenden Änderungen überein. Für die Überprüfung dieser Übereinstimmungs-Erklärung lt. obigen Direktiven sind folgende Normen konsultiert worden:  
 Normen: *EN 294 EN 349 EN 907.*

Cumple con los requisitos esenciales de Seguridad y de Preservación de la Salud contenidos en la Directiva 98/37/CE - 22/06/98 y modificaciones siguientes. Para comprobar la conformidad a la que se refieren las Directivas anteriormente citadas, se han consultado las siguientes:  
 Normas Armonizadas: *EN 294 EN 349 EN 907.*

Responsabile della Sicurezza - The Security Official - Responsable Sécurité et Homologations - Der Sicherheits-Beamter - Responsable de la Seguridad

Montù Beccaria (PV)  
 Data, Date, Date, Datum, Fecha, \_\_\_\_\_

Smeraldi Paolo  






# Where we are



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