



**SMART
SOLUTIONS**
for the
**MODERN
FARMING**

*The Proven Low Volume -
Electrostatic Mist Blower*

WHIRLWIND

Series

Cuts Spray Costs up to 65%



...since 1981

MUCH MORE THAN AN AIR BLAST-SPRAYER

- The most suitable and effective method of applying chemicals to fruit trees, vines and field crops.
- The Whirlwind delivers its spray in a fine mist that penetrates dense foliage, covering leaves, fruit and twigs alike with a fine coating of chemical on all sides. No bare areas and no wasteful chemical run-off.



Since 1946
*Leaders in
 mist-blowing
 and low volume
 technique*



MARTIGNANI

The "MARTIGNANI" concept mist blowers employ a pneumatic mist spraying, which has been successfully in use all over the world since the introduction of the first KIEKENS-DEKKER patents in 1946 than completed in 1981 by the micro-droplets electrostatic charge device. It assures:

- high speed operation
- very fine and constant mist independently on the water flow rate
- uniform coverage and distribution of chemicals
- exceptional working range and penetration in any crop, of whatever shape - and even in difficult weather conditions
- superior efficiency in fungicide and insecticide spraying and in particular in the fight against weevil, cochineal insects, mites, aphides, etc.

savings:

WATER	+ 90%
CHEMICALS	+ 30%
LABOUR/TIME	+ 60%
FUEL	+ 40%

with no damage to plants (liquid at low pressure) and no soil pollution (no run-off from leaves).

The MARTIGNANI mist-blowers can spray:

- HIGH VOLUME (over 1000 lt/ha or 100 gal/acre)
- MEDIUM VOLUME (500-1000 lt/ha or 50-100 gal/acre)
- LOW VOLUME (200-500 lt/ha or 20-50 gal/acre)
- VERY LOW VOLUME (50-200 lt/ha or 5-20 gal/acre)
- ULTRA-LOW VOLUME (less than 50 lt/ha or 5 gal/acre)

of chemicals dissolved in water or oil without replacing nozzles or discs, and with uniform coverage (mist droplets of 130 microns avg. diameter) at unchanged pressure (1.5 bar - 22 psi).

This top performance and versatility can only be achieved by the MARTIGNANI system - though it was widely imitated. Its special design is based on the technical know-how gained in over 60 years practical experience and research carried out in cooperation with the best ranking Agricultural Institutes in EUROPE - NORTH and SOUTH AMERICA - SOUTH AFRICA and AUSTRALIA.

TECHNICAL PRINCIPLE

Fig. 1 represents a cube 300 μ long, wide and height (1 μ = 0.001 mm) and other of 50 μ . If the big cube is divided along its length, width and height into six equal pieces, then $6 \times 6 \times 6 = 216$ cubes of 50 μ are produced. The ratio applies not only to the division of cubes, but also the spheres, i.e. droplets. The big cube is comparable with the average size of the droplets formed by a high pressure spraying machine, and the small cube with those of the mistblower. From one drop of 300 μ , which is the average size droplet produced by a high volume machine, 216 droplets of 50 μ are produced by the mist blower and millions of such droplets are produced from a pint of water. Around each droplet a zone of 100 μ width has been drawn within which the spray chemical is active, see Fig. 2. If we compare the area covered, we see that the 216 droplets of the mist blower protect a much larger area than the one 300 μ drop of the high pressure sprayer, see Fig. 3. This is the main reason why a mist blower can give an adequate cover with spray chemicals and yet use only a small quantity of water. This makes it possible to obtain a spray chemical economy of 30 to 50% compared with dilute spraying, while only 10 to 20% of the quantity of water is required.

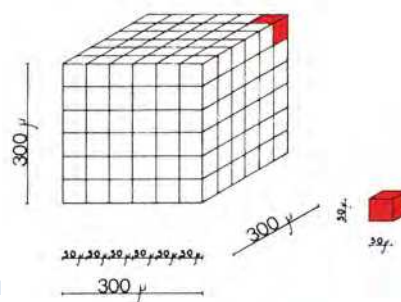


Fig. 1



Dilute spraying

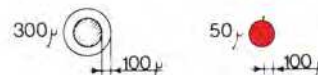


Fig. 2

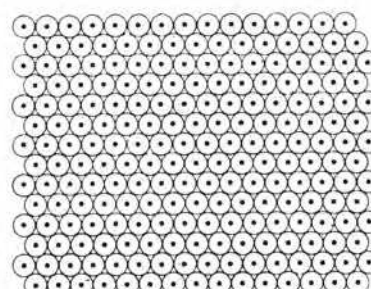


Fig. 3



Concentrate
 MARTIGNANI
 mist spraying



1000 lt. (260 gal.) POLY
1500 lt. (400 gal.) POLY



1000 lt. (260 gal.) FIBREGLASS



2000 lt. (500 gal.) POLY
3000 lt. (660 gal.) POLY



2000 lt. (500 gal.) STAINLESS STEEL - PTO



2000 lt. (500 gal.) STAINLESS STEEL ENGINE DRIVEN

TECHNICAL FEATURES

- **CENTRIFUGAL FANS** of special design and exceptional efficiency, producing large volumes of air and remarkably high air flow rate at very low rev number and absorbed power.
- **SPRAY NOZZLES** (patented - with special profile and large - 4 mm. - diametre), thus no clogging, no jamming, no wear, no deformation. They are situated in the point where the air stream reaches a speed of up to 300 KPH and thus divide the liquid flow into extremely fine and even droplets.
- **STAINLESS STEEL HIGH PRECISION METERING VALVES** (patented): the output of liquid can be easily changed from 50 to 1300 l/h each; depending on the quantity (or volume) of fluid to be sprayed per hectare or acre, according to the desired tractor speed, concentration of chemicals (from normal to 2,3,4. . . 10. . .20 times), soil conditions, density of foliage, etc.
- **LOW PRESSURE, HIGH DELIVERY SELF PRIMING CENTRIFUGAL PUMP** made in stainless steel for nozzle feed - adjustable, continuous agitation of the spray fluid, rapid, non polluting self-filling. It also powers the large capacity:
- **PRE-MIX-ECO ATTACHMENT**, ideal for preparing chemical mixtures in a closed tank, both during self-filling and when the tank is already full, by simply operating a valve.
- **TANK**, made of reinforced polyester resin or POLY for 3P hitch and pull-type models all featuring two built-in tanks for circuit rinsing and hand wash each; made of stainless steel for engine driven models and the 2000 l (500 gal.) PTO one (rinsing and hand wash tanks are on request). The suction sumps are specially designed to assure thorough spraying even when operating on sloping grounds. The level of the liquid is clearly visible in the tank side.
- **THE SUCTION FILTER** is external and it can be easily cleaned even when the tank is full.
- **STURDY, OVERSIZED FRAMES** of hot galvanized steel profile with adjustable drawbar, support feet, adjustable axles. All p.t.o. models are perfectly balanced (center of gravity on the axle) thus very maneuverable when empty; in operation, 50% of the useful load advantageously rests on the tractor's hindwheels.
- **REMOTE CONTROL UNIT** within driver's reach; equipped with glycerine pressure gauge and calibrating valve, delivering the fluid to the spray heads individually.
On request: spray computer.

THE MOST EFFICIENT SYSTEM FOR COMBINING TWO EQUALLY VITAL REQUIREMENTS OF MODERN LIFE:
1_ THE USE OF PESTICIDES FOR SAVING THE FRUITS OF THE EARTH;
2_ THE NEED TO AVOID POLLUTION TO THE ENVIRONMENT AND TO MAN.



600 lt. (160 gal.)



3P 400 lt. (100 gal.)
3P 600 lt. (160 gal.)

OPTIONAL ATTACHMENTS AND CONFIGURATIONS

- **M612 MAJOR fan** (delivering 25 % more of Air Volume than the "Standard") for high capacity treatments, suitable in tall trees with high density foliage (Walnuts, Citrus, Almonds, Avocados, Mangos, etc.) - tractors of 90 HP and up, are required.
- **90°+90° head:** regular adjustable spray head with 6+6 nozzles to spray whatever crop.
- **VINEYARDS head:** with 2+2 adjustable spray heads with 2 nozzles each, suitable only for narrow row crops (vineyards, berries, nursery crops, etc.)
- **180° FIXED head:** featuring 12 nozzles - suitable for roofed crops (ex. table grapes) or whenever reduced dimensions are important (with this head sprayer 30 cm. shorter)
- **GUN + 90° head:** suitable for covering field and row crops, greenhouse crops, tall trees, etc. (Vertical Swath: 15 m - Horizontal Swath: 20 m.)
- **MULTI-FLOW head:** each nozzle can be individually oriented, suitable in narrow row crops (vineyards, berries, nurseries, coffee trees, orchards, etc.)
- **NUTS head:** with 90°+90° bottom head + upper double cannon/fishtail head for high and dense canopy crops such as walnuts, macadamia trees, pecan trees, mango trees, oil palm trees, almonds, avocado trees, papaya trees etc. or when it's not possible to drive through with the tower TURBO 2 version.
- **DUO WING JET head:** to spray 2 vineyard rows, it optimizes spraying with no drift, the product is recovered by combining the action exercised by the electrostatic attraction between vegetation and the polarized mist with that of two special (anti-drift) air cushion shields without the chemicals mixture being re-circulated in any way with also anti-chemical residue action on fruits, grapes, wine, etc.
- **NURSERY head:** large diameter cannon head adjustable vertically and horizontally by hydraulic jack and motor to spray nurseries, protected crops in tunnels and greenhouses, all vegetables in open fields, etc. (Horizontal swath: 25 to 30 m)
- **TURBO 2 head:** Double spraying system - one from the top and one from the bottom - to penetrate the thickest vegetations (suitable in Citrus groves, Mango, Papaya, Orchards etc.).
- **COGNAC head:** to spray 2 complete rows of vineyards.
- **TURBO 3 head:** to spray 2 to 3 complete rows of vineyards (Awarded in various International Shows).
- **ALBATROS boom head:** suitable for field crops (Melons, Vegetables, Pineapple, Nurseries, etc.).

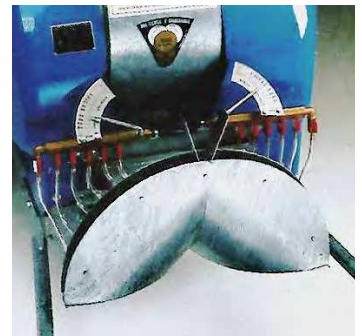
*Often imitated.
Not yet equalled.*



NURSERY



VINEYARDS



180°



90°+ 90°



GUN +90°



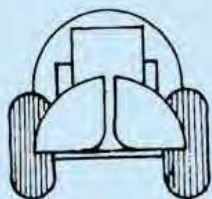
MULTI-FLOW VINEYARDS



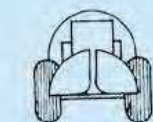
MULTI-FLOW ORCHARDS

10 IMPORTANT ADVANTAGES

1. Low volume from 50 LPH (13 GPH) and high volume up to 3200 LPH (850 GPH).
2. Same range and penetration both at low and high volume.
3. Perfect and uniform mist blowing of any chemicals.
4. Also concentrated mixture can be sprayed: copper oxychloride, white and yellow oils, barium and calcium polysulphide, the latter even pure in the commercial formula (without dilution water).
5. No clogging, no jamming - no wear of nozzles, discs, plates.
6. Instant and accurate adjustment of the liquid flow.
7. No run-off from foliage even at high volume.
8. Each nozzle can be individually closed or calibrated.
9. High versatility in use and wide selection of attachments.
10. Simple and reliable operation with minimum maintenance.



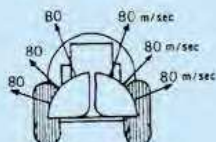
REPLYING TO MANY QUESTIONS, HERE ARE THE MOST IMPORTANT DIFFERENCES CONCERNING HOW AIR IS USED BY THE MARTIGNANI MIST BLOWER AND THE TRADITIONAL AIR BLAST-SPRAYER



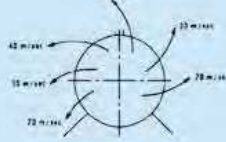
1. All the air sucked in by the dual intake blower is used.



1. Only 2/3rds of the axial fan produces air: 1/3rd of the fan is not used although it requires power.



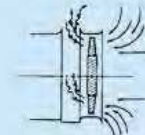
2. Uniform air flow on all of the outlet section and perfectly directed airstream.



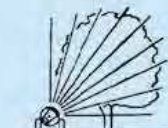
2. The air turns round the impeller shaft, causing turbulence and non-uniform airstream at the outlet (the stream is mainly upwards on one side and downwards on the other).



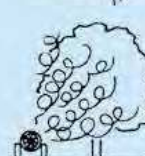
3. The special streamlined design of the spray-heads directs the air almost with no loss of power.



3. The air must suddenly turn through 90° causing a loss of speed and power of 20%.



4. Continuous air stream of high speed and penetrative power, but without violence and turbulence.



4. Heavy turbulence in the air stream causing great loss of speed and power.



5. The two outlets can be turned through 90°, thus for every shape of tree the air stream can be directed individually to the most important parts of the tree.



5. No adjustment or adaptation to the tree shape possible.



6. Both heads can be directed in one direction: this doubles penetration so that perfect coverage is possible also under windy conditions.



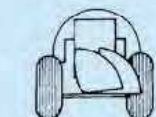
6. When working one sided, the liquid output on one side must be closed, the air capacity of this side will remain unused through power is absorbed.

100%

7. Straight flow air stream and the absence of turbulence gives a high output. Add to this the advantages of the many adjustments possible for single and double sided spraying - the Martignani Mist Blower can be considered as using 100% of the power required.

100
- 50
50%

7. It has a loss of power of 20% and 33% (see points 1, 2, 3) leaving only less than 50% which on the other hand is used inefficiently.



8. DOUBLE AIR ACTION: uniform droplet production and transport of liquid. (PNEUMATIC SYSTEM)



8. SINGLE AIR ACTION: only transport of the liquid divided into droplets of different size by the pressure nozzles (AIR CONVEYANCE).

PTO MODELS	TANK	A*	B*	C	WEIGHT KG.*	STANDARD TYRES
400 l (100 gal) 3P	Fibreglass	192	92	150	420	/
600 l (160 gal) 3P	Fibreglass	192	92	165	435	/
600 l (160 gal) Pull-Type	Fibreglass	294	114/124	137/147	525	225/70-15.0
1000 l (260 gal) Pull-Type	Fibreglass	352	138/148	132/142	590	260/70-15.3
1000 l (260 gal) Pull-Type	Poly	352	132/142	150/160	625	260/70-15.3
1500 l (400 gal) Pull-Type	Poly	380	135/145	170/180	750	300/80-15.3
2000 l (500 gal) Pull-Type	Poly	455	170	165/175	980	300/80-15.3
2000 l (500 gal) Pull-Type	Stainless Steel	460	155/165	175/185	1200	300/80-15.3
3000 l (660 gal) Pull-Type	Poly	520	197	200	1520	500/50-17.0 HF

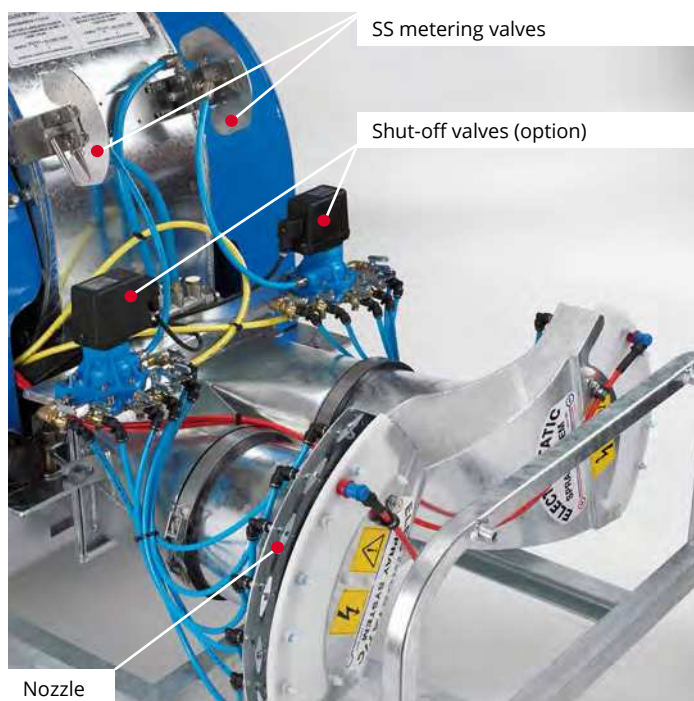
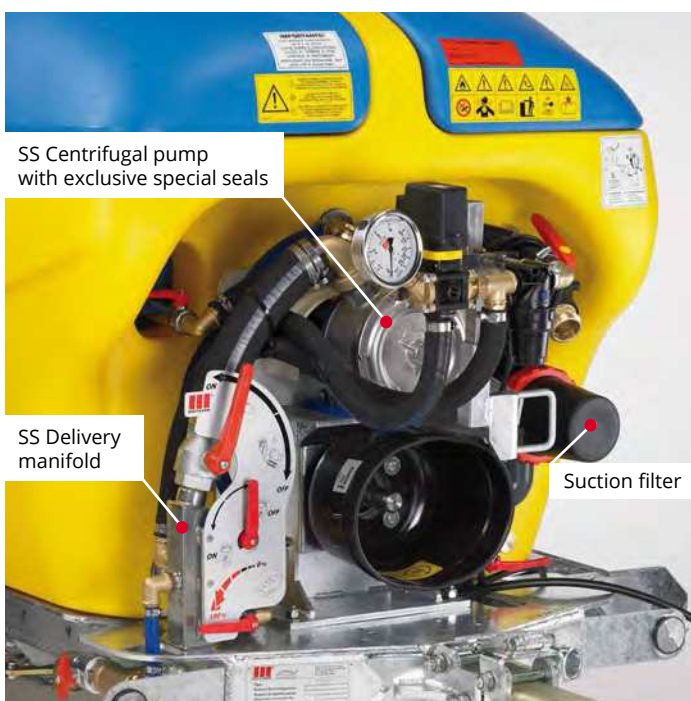
ENGINE DRIVEN MODELS	TANK	A*	B*	C	WEIGHT KG.*	STANDARD TYRES
2000 l (500 gal) Pull-Type	Stainless Steel	520	228	208	2370	400/60-15.5 HF

A = Length
B = Width
C = Height

*Lengths are intended with 90°+90° head with 180° fixed spray head: 30 cm. shorter.

*Widths (Pull-Type models) are intended with standard tyres.

*Weights are intended with 90°+90° head only (Standard configuration).



EYE TYPE ARTICULATED DRAWBAR

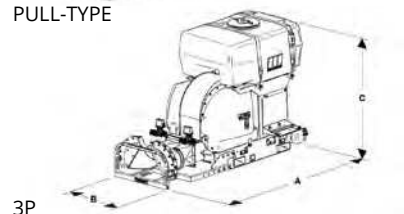
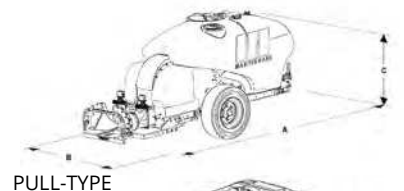


ARTICULATED DRAWBAR



EYE TYPE DRAWBAR

TECHNICAL DATA	FAN M612 Standard	Major
	Needed tractor (HP)	65 HP and up
Fan efficiency	up to 20000 m3/h.	up to 26000 m3/h.
Air speed	80 m/s	80 m/s
Pump delivery	120 to 500 l/m	120 to 500 l/m
Operating pressure	1,5 bar / 22 psi	1,5 bar / 22 psi
Liquid flow from metering valves	0 to 550/1300 l/h each	0 to 550/1300 l/h each
Wing nozzles	d. 4 mm.	d. 4 mm.
Adjustable agitation	hydraulic	hydraulic



We reserve the right to change configurations and technical data without prior notice.



90 + 90



COGNAC



TURBO 2



DUO WING JET



TURBO 3



NUTS WITH TOP CANNON HEADS



NUTS WITH TOP FISHTAIL HEADS



ALBATROS

...since 1981

MARTIGNANI
fluorescent dye
electrostatic mist
blowing show
impressive (even)
coverage



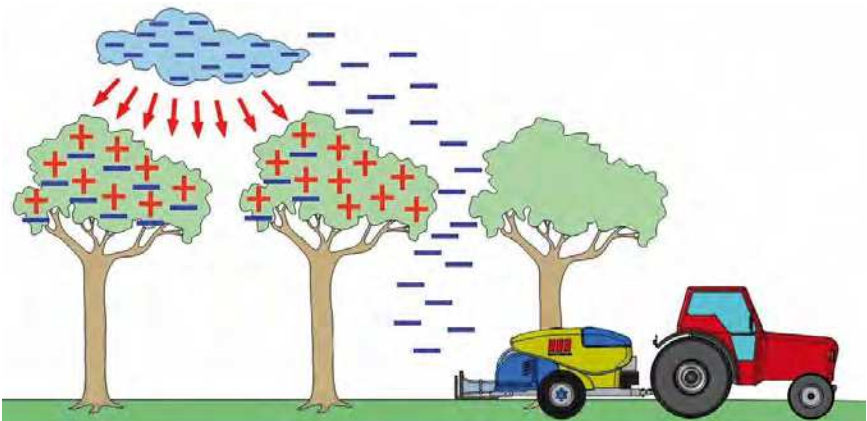
The FIRST to be produced in EUROPE (1981) PRIZE-WINNER in numerous international competitions. The ONLY ONE to be experimented by eminent Institutes Worldwide with excellent results. Already established in farming practice with thousands of vine and fruitgrowers throughout the world, this device represents one of the most important contributions towards progress in research into new solutions able to optimize application techniques. Numerous tests have shown that it can REDUCE LOSSES THROUGH DRIFTING by 85%. On request, it can be applied to the entire Whirlwind range.

TECHNICAL PRINCIPLE

Thanks to the ELECTROSTATIC FIELDS formed between the plants, which are good conductors (sap, mineral salts, moisture, etc.) and the CHEMICAL MIST sprayed from MARTIGNANI BLOWERS with their SPECIAL ELECTROSTATIC CHARGE, droplets saturated with active principle are attracted by the vegetation (branches, leaves, etc.). This reduces losses through drifting even in windy weather.

Years of research and practical experiments already conducted to date in this particular field by eminent institutes in NORTH AMERICA (CALIFORNIA), SOUTH AMERICA (ARGENTINA - URUGUAY), ASIA (PHILIPPINES), AFRICA (TUNISIA) AND EUROPE (HOLLAND, FRANCE, GERMANY, HUNGARY, ITALY) have given surprising results.

All this has allowed researchers to affirm that electrostatic mist-blowing sensibly improves the many advantages acknowledged by everyone when it comes to low-volume plant-protection treatments while eliminating those few aspects that certain people still question once for all.



THESE ARE THE MAIN ADVANTAGES:

- The plant protection products are evenly distributed and adhere perfectly to even the undersides of the leaves.
- Less loss thru' drifting.
- Total use of the pesticides, thus even less product required per hectare/acre.
- Total coverage of even the tallest parts of the trees (where conventional mist blowers are unable to reach) since the chemical mist that forms above the plants is attracted by these latter.
- Job are done faster (up to 12 KPH or 7.5 MPH).
- More time saved.
- Healthier plants and better quality produce.
- A notable reduction in environmental pollution.
- The risk of the operator being contaminated by pesticides (both by inhalation and contact) is reduced by 70%.



NUMBER 1 *for* LOW VOLUME

- The only one with over 60 years worldwide experience.
- The only one that was tested for treatment efficiency by eminent Agricultural Research Institutes Worldwide.
- The only one used with no problems at high concentration by thousands of top wine and fruit growers worldwide, from California to Australia.
- Multi-Awarded in the Most Important Agricultural International Contests.



www.martignani.com



MARTIGNANI SRL

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