



**SMART
SOLUTIONS**
for a
**MODERN &
ECO-FRIENDLY
FARMING**

*Low Volume - Electrostatic
Mist-Blowers*

WHIRLWIND

*The technology that guarantees up
to 65% savings on management
costs*



 **ELECTROSTATIC**[®]
AGRO SPRAY SYSTEM

...since 1981

MUCH MORE THAN AN AIR BLAST SPRAYER

- The most suitable and effective method to treat fruit trees, vines and field crops.
- The Whirlwind mist blowers spray a fine mist that penetrates dense foliage, covering leaves, fruit and twigs with a fine and uniform coating of chemical. No bare areas and no wasteful chemical run-off.



Since 1946

Leader in
mist-blowing
and low volume
technique



MARTIGNANI

The Martignani 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 from the water flow rate
- uniform coverage and distribution of chemicals
- exceptional working range and penetration through every kind of crops, 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	over 90%
CHEMICALS	over 30%
LABOUR/TIME	over 60%
FUEL	over 40%

With no plants damage (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 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.

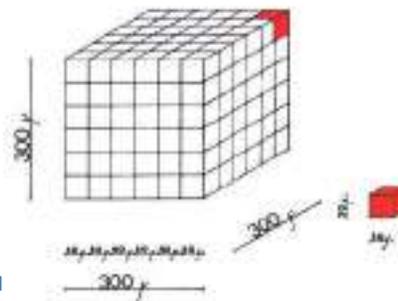


Fig. 1



Dilute spraying

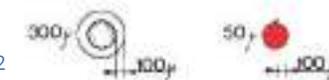
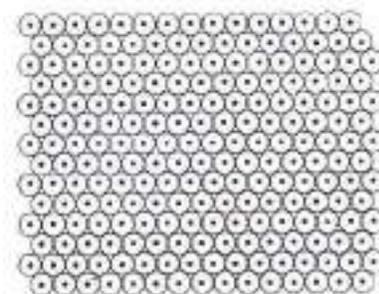


Fig. 2



Concentrate
Martignani
mist spraying

Fig. 3



ELECTROSTATIC[®]
AGRO SPRAY SYSTEM

Since 1981

*first to be introduced
in Europe and the only
one experimented
with excellent results*

TECHNICAL PRINCIPLE

Thanks to the electrostatic fields formed between plants, which are good conductors (sap, mineral salts, moisture, etc.) and the chemical mist sprayed from the 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 conditions. Years of research and practical experiments already conducted 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, allowing researchers to affirm that the electrostatic mist-blowing improves the many advantages acknowledged by everyone when it comes to low-volume plant-protection treatments.

THE MAIN ADVANTAGES:

- The plant protection products are evenly distributed and perfectly adhere to even the leaves undersides.
- Less loss thru' drifting.
- Total use of the pesticides, thus even less product required per hectare/acre.
- Total coverage even in 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.
- Treatments are completed faster (up to 12 KPH or 7.5 mPH).
- More time saved.
- Healthier plants and better production quality.
- A notable reduction in environmental pollution.
- The risk of the operator being contaminated by pesticides (both by inhalation and contact) is reduced by 70%.
- Fruit and wine with no residues.



MARTIGNANI ELECTROSTATIC SPRAY DEVICE.

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.



*The results of a treatment
with a fluorescent dye, using an
electrostatic sprayer Martignani,
show an impressive coverage*



ALBATROS



180° FIXED



90°+90°



90° + GUN



GIB-DOR



VINEYARDS MULTI-FLOW



TWIN MULTI-FLOW



ORCHARDS MULTI-FLOW



NURSERY

OPTIONAL ATTACHMENTS AND CONFIGURATIONS

- M612 MAJOR FAN** (delivering 25 % more air volume than the « Standard ») for high capacity treatments, suitable for tall trees with high density foliage (walnuts, macadamia nuts, citrus, almonds, avocados, mangos, etc.) – tractors of 90 HP and over, are required.
- 180° FIXED:** featuring 12 nozzles – suitable for overhead/pergola type systems (e.g. table grapes, kiwi, etc.)
- 90°+90°** regular adjustable spray head with 6+6 nozzles to spray whatever crop, the aerodynamic design and the meticulous execution of all the elements make it possible to direct each jet of air towards the target to be treated, without loss of flow and in the most rational way according to the type and form of the trees.
- 90° + GUN** (d. 150 mm./4 nozzles) Interchangeable in a minute with each 90° head, to treat crops in the open field or in greenhouses, nurseries, tall trees, etc. (vertical range 15 m, horizontal 20 m).
- GIB-DOR** in addition to the usual 90°+90° or FIXED 180° outlets, this particular configuration makes it possible to effect targeted Gibberellic/GA3 specific applications on the bunch line in overhead/Y table grapes systems.
- TWIN MULTI-FLOW, VINEYARDS MULTI-FLOW, ORCHARDS MULTI-FLOW** with multiple adjustable spray heads, ideal for high density vineyards and orchards.
- NURSERY** large diameter cannon head adjustable vertically and horizontally by hydraulic jack and motor to spray crops in greenhouses/tunnels and open field (vegetables, nurseries, maize, bananas, etc.) Horizontal spray swath till 40 m.
- NUTS** with 90°+90° bottom head + upper double cannon/fishtail head for tall and dense canopy crops such as walnuts, macadamia, pecan, mango, oil palm, almonds, avocado, papaya trees etc. or when it's not possible to drive through with the tower TURBO 2 version.
- TURBO 2** Double spraying system – one from the top and one from the bottom with fixed tower (extensions of different lengths are available) or telescopic with hydraulic adjustment (H.T.S. version) with 600 mm. stroke – to penetrate the thickest vegetations (suitable in citrus groves, mango, papaya, orchards or also in T or Y trellised vineyards, etc.).
- COGNAC** to spray 2 complete rows of vineyards simultaneously with variable geometry trellis.
- DUO WING JET** to spray 2 vineyards 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 grapes and wine.
- TURBO 3** to spray 2 or 3 complete rows of vineyards simultaneously, the very first multi row designed and introduced in the worldwide market, awarded with the Technical Innovation Award at EIMA 1988 and Fieragricola Verona 2004.
- ALBATROS** the very first pneumatic boom introduced in the worldwide market (1975), available with spray widths ranging from 6 to 12 m (3P mounted versions) and till 18 m (pull-type versions), suitable for all field crops (melons, vegetables, pineapples, nurseries, strawberries, etc.)

Often imitated. Not yet equalled.



EYE TYPE DRAWBAR



FORK TYPE DRAWBAR (OPTION)



STEERING DRAWBAR (OPTION)

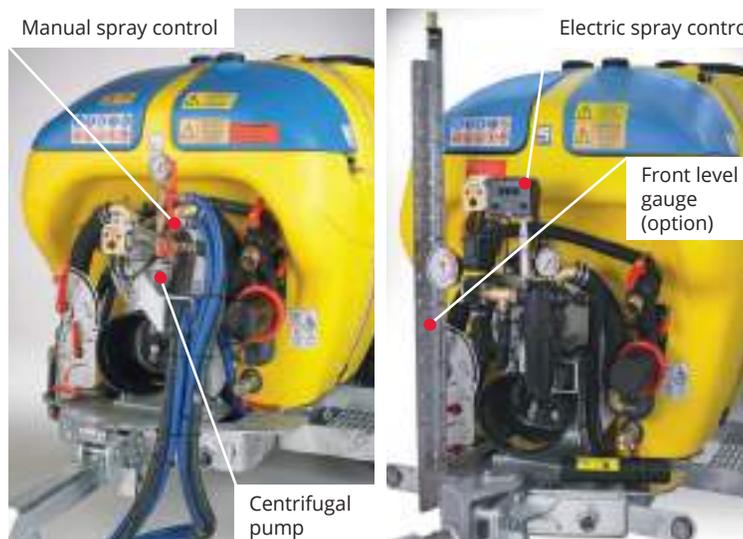
STEERING HYDRAULIC DRAWBAR (OPTION)

TECHNICAL FEATURES

- **CENTRIFUGAL FANS:** special design and exceptional efficiency, producing large volumes of air and remarkably high air flow rate at very low rev number and absorbed power.
- **DRIVELINE** with gears in oil bath and fan engagement/disengagement device.
- **SPRAY NOZZLES** (patented - with special profile and large - 4 mm. - diameter), 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 0 to 550/1300 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 (120 TO 500 L/M) SELF PRIMING CENTRIFUGAL PUMP** with special seals for nozzles feed, adjustable agitation of the spray fluid, rapid, non-polluting tank self-filling and for the PRE-MIX-ECO attachment supply.
- **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.
- **TANKS:** made of polyethylene or stainless steel. Every tank (excepting for the stainless steel version) has two small tanks for rinsing the circuit and hand washing respectively (in compliance with EU standard). The intake wells have been built in such a way as to guarantee the full use of the concentrated mixtures even when working on a slope. The liquid gauge is clearly visible from the driving position.
- **THE SUCTION FILTER** is external and it can be easily cleaned even when the tank is full.
- **FRAMES** made in oversized hot galvanized metal sections with draw bars and axles that can be adjusted for the pull-type models. Fixed (with Eye or Fork) and articulated draw bars are available. The pull-type models are further available with European ROAD HOMOLOGATION (Mother regulation 167/2013).
- **ELECTRIC SPRAY CONTROLS**, within reach of the operator complete with glycerine pressure gauge and solenoid valves with incorporated anti-drip device (patented) in compliance with EU standard with Spray On & Off individually.
On request:
 - **MANUAL SPRAY CONTROLS** (only for export to countries outside the EU).
 - **ARAG BRAVO SPRAY COMPUTER.**

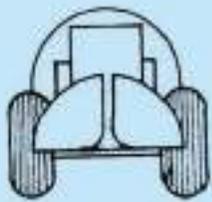
THE MOST EFFICIENT SYSTEM, ABLE TO COMBINE TWO EQUALLY VITAL REQUIREMENTS OF MODERN LIFE:

1. THE USE OF PESTICIDES TO SAVE THE FRUITS OF THE EARTH;
2. THE NEED TO AVOID POLLUTION AND PRESERVE MAN AND HIS HABITAT.



10 IMPORTANT ADVANTAGES

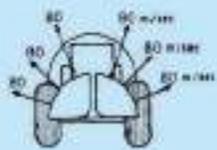
1. Low volume from 50 LPH (13 GPH) and high volume up to 3200 LPH (850 GPH).
2. Same range and penetration both at low and high volume.
3. Perfect and uniform mist blowing of any chemicals.
4. Also concentrated mixture can be sprayed: copper oxychloride, white and yellow oils, barium and calcium polysulphide, 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.



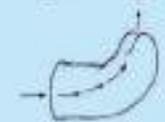
REPLYING TO MANY QUESTIONS, HERE ARE THE MOST IMPORTANT DIFFERENCES CONCERNING HOW AIR IS USED BY THE MARTIGNANI MIST BLOWER AND THE TRADITIONAL AIR BLAST-SPRAYER



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



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



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



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



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.



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



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.

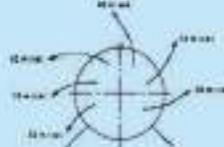
100%



8. Double air action: uniform droplet production and transport of liquid. (pneumatic system).



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



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



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



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



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.



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.

100
- 50
50%



8. Single air action: only transport of the liquid divided into droplets of different size by the pressure nozzles (air conveyance).

MODELS AND TECHNICAL DATA



PTO DRIVEN 3P MOUNTED MODELS



PTO DRIVEN PULL-TYPE MODELS



SS TANK PULL-TYPE MODELS
(PTO & engine driven)

PTO MODELS	TANK	A*	B*	C*	WEIGHT KG.*	STANDARD TYRES
400 l (100 gal) 3P	Fibreglass	192	92	150	670	/
600 l (160 gal) 3P	Fibreglass	192	92	165	690	/
600 l (160 gal) Pull-Type Shuttle	Fibreglass	294	114/124	137/147	820	225/70-15.0
1000 l (260 gal) Pull-Type Compact	Fibreglass	352	138/148	132/142	805	260/70-15.3
1000 l (260 gal) Pull-Type Shuttle	Poly	352	132/142	150/160	895	260/70-15.3
1500 l (400 gal) Pull-Type Shuttle	Poly	380	135/145	170/180	1160	300/80-15.3
2000 l (500 gal) Pull-Type Shuttle	Poly	455	165/175	185	1250	300/80-15.3
2000 l (500 gal) Pull-Type	Stainless Steel	460	170/180	175/185	1200	300/80-15.3
3000 l (660 gal) Pull-Type	Poly	520	197/207	200	1520	500/50-17.0

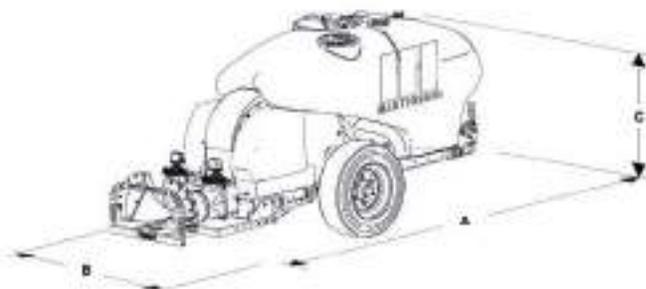
ENGINE DRIVEN MODELS	TANK	A*	B*	C*	WEIGHT KG.*	STANDARD TYRES
2000 l (500 gal) Pull-Type	Stainless Steel	520	228	208	2370	400/60-15.5 HF

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

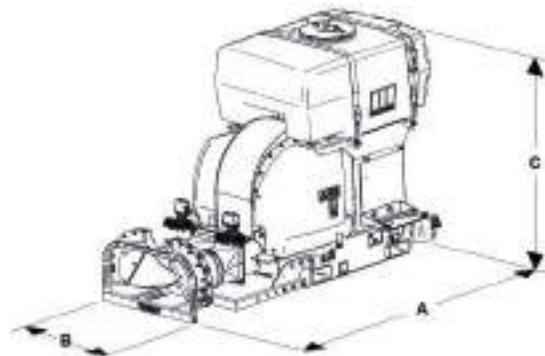
*B = Widths (Pull-Type models) are intended with standard tyres.

*C = Tank height.

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



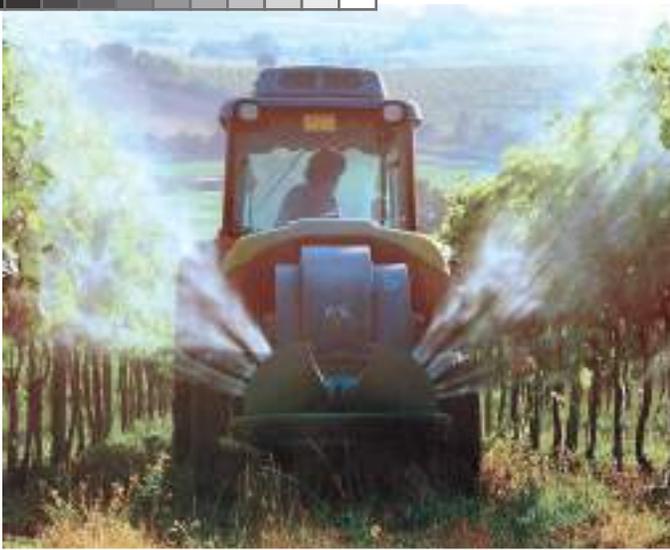
PULL-TYPE



3P

TECHNICAL DATA	FAN M612	
	Standard	Major
Needed tractor (HP)	65 HP and up	90 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°



GIB-DOR



COGNAC



TURBO 3/2



DUO WING JET



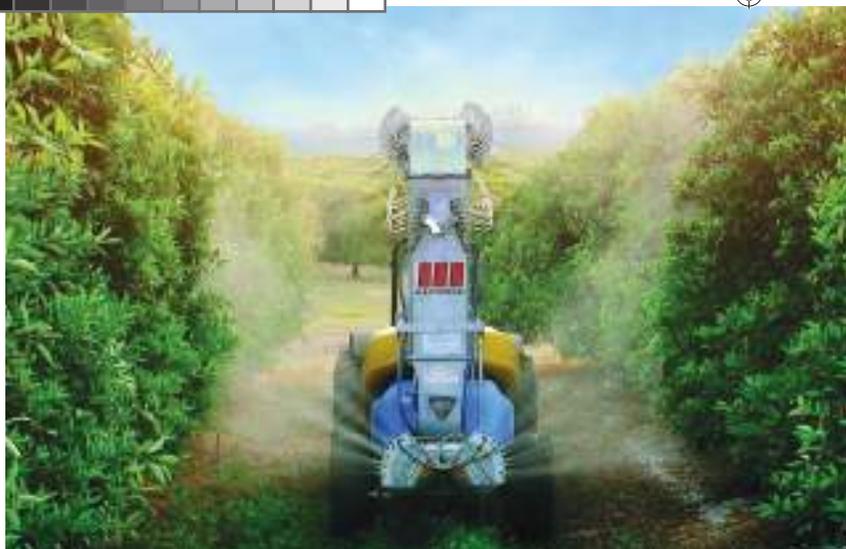
DUO WING JET



TURBO 3



TURBO 3



TURBO 2



NUTS WITH TOP CANNON HEADS



NUTS WITH TOP FISHTAIL HEADS



NURSERY (ORNAMENTAL PLANTS)



NURSERY (BANANAS)

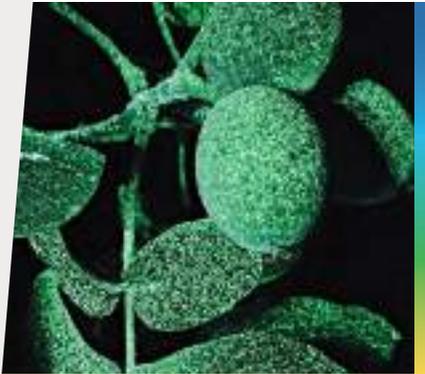


3P MOUNTED ALBATROS



PULL-TYPE ALBATROS





NUMBER 1 IN LOW VOLUME SPRAYING

- The only one with over 60 years worldwide experience in low volume spraying and with over 30 years with the electrostatic spraying system.
- The only one that has been 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.



MARTIGNANI
1958 - 2018

www.martignani.com



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DEALER

20/09/2019

