



TECHNICAL DESCRIPTION 'TRAMONTANA'

1. Chassis, 100% carbon fibre
2. Engine, from the competition to the asphalt
3. Car body, beauty and functionality
4. Suspensions, balance between sportsmanship and comfort
5. Tyres and Rims
6. Steering, very sports sensations
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1. Chassis, 100% carbon fibre

It has never been seen in the automotive history a street sports car which resembles so much a Formula 1 like the Tramontana does. It is the first time in the sports car market that it has been incorporated a 100 % carbon fibre monocoque chassis inspired in the design of a Formula 1 and manufactured with the same criteria, guaranteeing a high protection for its passengers. Moreover, it introduces a new structural system that combines an indeformable central zone (cockpit) with a weight of 167kg with other 8 deformable zones calculated for the absorption of the impact energy. In fact, the results extracted of the Crash Test (according to the FIA regulation) confirm that the structural calculation guarantees the integrity of its passengers displacing the lateral components toward the outside. This shows the high impact resistance of the carbon fibre used in the vehicle.

On the other hand, the monocoque, especially developed for the Tramontana, contributes a lightness and maximum rigidity to the whole, factor that together with its suspension system, unique on its market of double wishbones with pushrod and a great length of arms, improving the dynamical aptitudes of the vehicle. All this elaborated with last generation materials of aerospace technology like the steel, the cromolibdenium, magnesium and duralumin. Without doubt in the Tramontana the efficiency of the geometry and the weight has been tested, obtaining as result an unequalled performance.



The structure of the monocoque carried out in carbon fibre offers a high torsion resistance, which makes the driver feel like going on a rail.

In the assembly process have been adopted handcraft techniques like the obsession by pre-impregnate and cured in autoclave to 120 °C, that provides an exceptional finish level and makes the construction of light and strong pieces easier.

2. Engine, from the competition to the asphalt

Engine	12 cylinders in V 60° biturbo with intercooler
Power Selector	550 Hp - 404 kW at 5.000 rpm 720 Hp - 529 kW at 5.750 rpm
Max. Torque	900Nm at 3.500 rpm 920Nm at 4.000 rpm
Weight / power	1,8 kg / Hp
Diameter of cylinder	Ø82 mm
Displacement	5.513 cm ³
Compression	9:1
Turbo pressure	1.3 bar
Lubrication system	Dry sump
Fuel	Unleaded 98 Octane



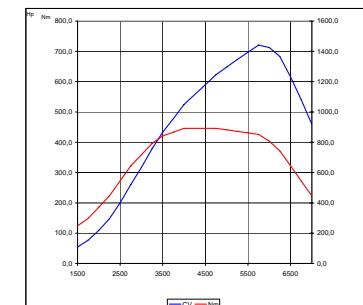
Among the final solutions of the Tramontana, we find a new electronic system and a central gasoline engine V12 Biturbo capable to offer a power from 550 Hp to 720 Hp, selectable through a switch situated in the dashboard.

Associated to a 6-speed gearbox, specially developed for the Tramontana, this 12 cylinders propeller in V reaches the 720 Hp at 5.750 rpm with a maximum pair torque of 920Nm at 4.000 rpm. The result, over 300 km/h top speed and 3,6 seconds to reach the 100 km/h from stopped departure.

The weight-power relation is elevated to the 1,8 Kg/HP, significant data that allow us to discover the kind of sensations that this fantastic assembly of chassis and engine can offer us.

The development of the electronic switchboard is made to measure, in a craft process of more than 2000 hours, which includes full silver wiring and a power map capable to obtain the maximum performance of the engine. Moreover, for the first time in a street car, lifelong relays, fuses and protections have been replaced by a module with just one connector that has only one terminal that brings together all the functions of a conventional device. This innovative system has reduced the wiring, the complexities of the consoles of relays and the fuses, avoiding any electromechanical deterioration.

Power and Torque relation.





3. Car body, beauty and functionality

Without doubt, the design of the Tramontana combines the curves of a fighter with a narrow front and a wider rear of big dimensions and finished in first quality leather and wood imported of the classics of the Spanish automotive industry. This aesthetics remains totally clear thanks to the design of the hardtop, which covers and protects the passengers, and to the rear and front spoilers, in the form of an airplane wing, assuring a great beauty and an excellent support at the same time. In short, a perfect harmony between sensuality, fine materials and elegant lines, an authentic jewel for the collectors.



All the pieces of the Tramontana car body are also elaborated in carbon fibre, assuring the maximum lightness of the vehicle with a total weight of 1.364 kg.

Thanks to the dynamic study carried out by a.d.Tramontana, the pieces that form part of the car body have been created by considering its functionality and the important vehicle performance.



The results are some compacted forms, an expressive front and a suggestive aerodynamic outline with a marked silhouette. Everything in the Tramontana transmits force, character, personality and, above all, sportsmanship, nevertheless the new model is a worthy heir of the Formula 1 sports tradition.

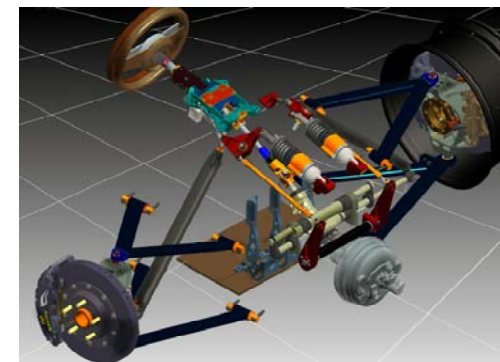
4. Suspensions, balance between sportsmanship and comfort

One of the key items of the Tramontana is its suspensions system of double wishbones with push-rod and its great length of arms, elaborated with a sort of steel of the latest generation aeronautical and competition specifications.

Two special programs have been used for the development, which have permitted the static and dynamic simulation of the whole vehicle. Different defined adjustments in theoretical calculations have been projected and experienced on it in order to analyze the performance before proceeding to the validation and arriving in this way to the definition of the suspensions rates. Finally, a.d.Tramontana has bet on a suspension system that provides a better control, driving comfort, smaller oscillation and better speed cornering, due to the distance between axes, identical to that of a Formula 1.



In the same way, the Tramontana has a system of double electronic height regulation especially developed for the Tramontana, which allows the driver to raise or to lower the height of the vehicle according to the driving needs. It has been looked for a balance between the performance of a street car (at 135 mm) and a sports car (at 85 mm) considering the different driving styles.





5. Tyres and Rims

Rear: 335/30 R20" (Y)
Front: 245/40 R20" (Y)

To put "shoes" to the Tramontana it has been determined an intermediate solution of standard tyres with asymmetric design with wide longitudinal channels and very hard radial silent block. Together with a low tread pattern, allows the Tramontana to avoid the drift of the tyre and facilitates a perfect performance in the cornering. The running band is side divided in three distinctive elements to satisfy the most demanding performance that the Tramontana requires.



The Tramontana rims, following the maximum requirements and the ultimate materials for the automobile industry, are manufactured by carbon fibre ring and magnesium core, bringing the higher rigidity and lighter possible weight.



6. Steering, very sport sensations

Rack and pinion steering system: 2.75 turn lock to lock.
Turning cycle: 11 metres.

Several steering configurations available for different driving preferences.

The steering column with double cardan system is adjustable in reach and lift, permitting the drivers to adapt the driving position according to their preferences. Also the a.d.Tramontana engineers have modified the parameters of steering assistance to increase the sport feeling, fact that added to the easy access to the cams on the gear change, situated behind the steering wheel, facilitates the driver the execution of layout you need in any situation. All this contributes to a better driving precision and permits to enjoy all the sports qualities of the model.

7. Brakes, highest requirements

4 carbon-ceramic ventilated discs.
Front: 380x34 mm 6 piston callipers
Rear: 380x34 mm 6 piston callipers

a.d.Tramontana has developed an ABS system that allows, by means of braking distributor, to distribute between the front and the rear train the braking power obtained by the discs of carbon-ceramic.



Likewise, the rear and front brake discs are elaborated with carbon-ceramic that do not need of high temperatures for their maximum braking efficacy. It is referred to a material that combines the most innovative aerospace technology with the know-how of the Formula 1, providing thus a purely sports performance and a high durability of the brakes. To the advantages of the carbon-ceramic it is important to add other benefits of great benefit for the performance of the Tramontana, like the weight reduction up to a 70%, the improvement of the friction coefficient or the high energy absorption capacity and the scarce possibility to suffer fatigue in the braking system.

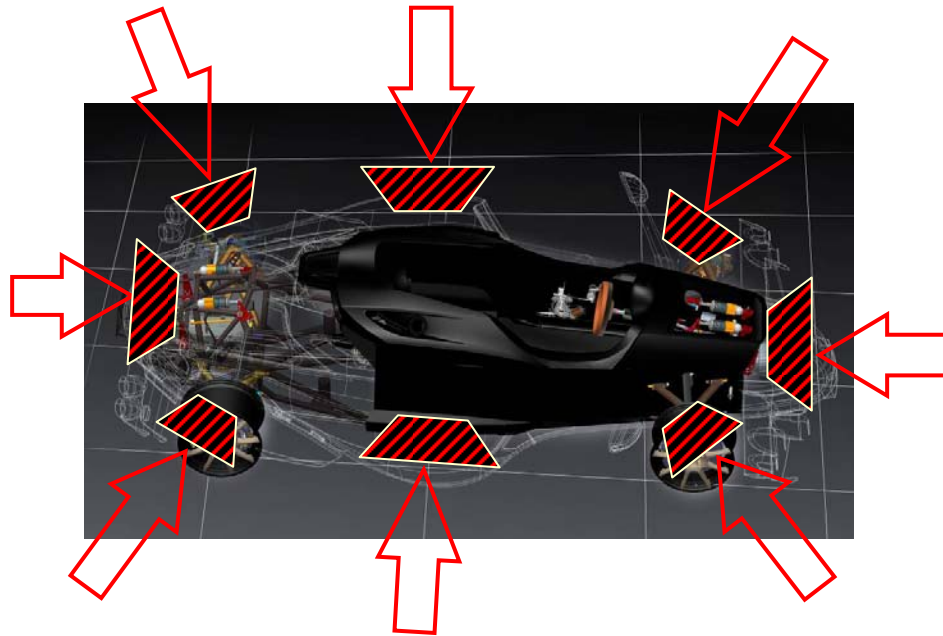


The effectiveness is spectacular. Combining the lightness of the monocoque with the power of the six pistons per disc on the 4 wheels it permits to minimize the braking distance to beyond incredible limits.



8. Ensured safety

To get the best mark in the subject of security, the Tramontana has been submitted to a Crash Test whose demands have followed the dictations of the official regulation of the FIA. The car, built with a carbon fibre monocoque, has needed a software developed especially to be adapted to the characteristics of the Tramontana. In this study all the pieces passed through a side, front and rear crash test.



The Tramontana emphasizes for offering a double security. First, all the exterior pieces are designed and distributed so that in case of impact they never get inside. On the other hand, the chassis has been strength with a security arch that protects the passengers. Moreover, the security of the Tramontana is guaranteed thanks to its private structure that combines an undeformable central zone (cockpit) with other eight collision absorption zones.

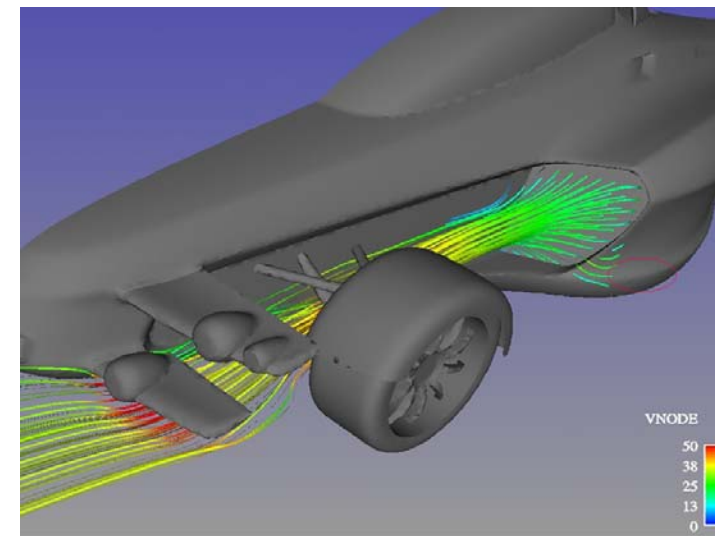
9. Aerodynamics, the exigency of the geometry

The a.d.Tramontana engineers team has worked very hard to find the maximal exigency and perfection regarding the aerodynamic performance of the Tramontana, an aesthetical reasoning as similar as possible to a Formula 1.

The aerodynamic performance is though to grant great speed cornering and, at the same time, get a minimum air penetration coefficient $C_d=0,4$.

The air intakes and cooling of the motor have been designed with the objective to minimize the friction of the air and to optimize the performance of the motor. Moreover, the vehicle has a laminated sheet situated under the vehicle, which eliminates turbulences and improves the drag.

In the same way, the wishbones, designed in the form of a water drop, they help to minimize this coefficient. In fact, all the external elements that stand out from the vehicle are thought to obtain the minimum air resistance. This is the reason of the airplane wing profile of the wishbones.



The front spoilers offer a higher lift compared with the rear ones to avoid loss direction sensations. In this sense, there is an important work to obtain a ground effect thanks to the air flow that penetrates in the lower part of the vehicle. This generates a negative lift toward the ground, making driving to high speeds easier.

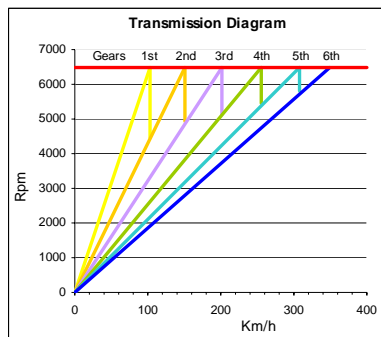
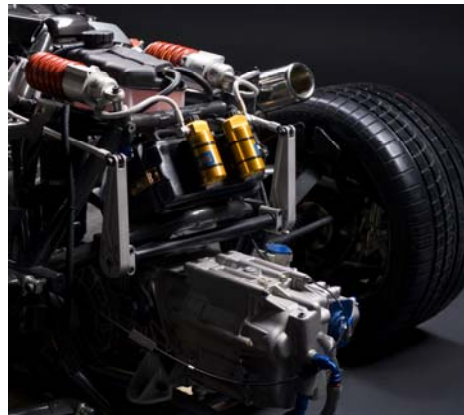
Finally, another remarkable factor, has been the study to situate the centre of gravity of the Tramontana as low as possible to increase the cornering speed.



10 Gear box and Transmission / Clutch

The Tramontana has a sequential six-speed gear box of high competition, developed exclusively for this model, with twin plate clutch in light aluminium.

Triple cone synchronisation for the 1st and 2nd gear
 Double cone synchronisation for the 3rd, 4th, 5th and 6th gear.
 Synchronized reverse gear.
 Differential auto-lock.



Twin plate clutch configuration Ø 240 mm
 Gear ratios:
 1st gear: 3.364
 2nd gear: 2.875
 3rd gear: 1.773
 4th gear: 1.267
 5th gear: 1.000
 6th gear: 0.833
 Reverse gear: 0.733

Additionally to the standard above configuration set up, other configurations are available, as of quick launch or maximum speed purposes.

11. Dimensions

Total length	4.900 mm
Total width	2.080 mm
Total height	1.300 mm
Dry weight	1.364 kg
Ground clearance:	The Tramontana has two possible regulations, by selector on the dashboard.: Standard: 85 mm. Obstacle: 135 mm.
Fuel capacity	100 litres
Aerodynamics	Cd=0,4

12. Seats

The Tramontana also surprises for its interior, where the sportsmanship and the comfort breathe in all the details. The first thing that we notice when we get in a Tramontana is, without doubt, the seating position in tandem, the same as in a fighter. In fact, in its development has collaborated, among others, an engineer in the field of aeronautics, member of Euro Fighter design team in Germany.

As opposed to the normal position of the passengers, side by side, the tandem seats position of the Tramontana has permitted to centre the weight in an excellent way. Technically, a 42-58 weight distribution has been designed, obtaining thus a cornering with a stable relation of 50-50. On the other hand, the visibility of the Tramontana is superior to that of a conventional vehicle, due to the privileged position of the driver. The position of the seats can be personalized for each client.



- Option A: Two passengers**
 Comfort: 1+1= 2 seats
 Racing: 1+1= 2 buckets
- Option B: One passenger**
 Racing: 1 bucket

Regarding the seats, the Tramontana disposes of some kind of competition buckets that completely wrap the body of the passenger, assuring a sport sensation in the vehicle. The client will have the possibility to choose among different types of leather to personalize the seats as well as the interior of the vehicle.



13. Standard high level equipments

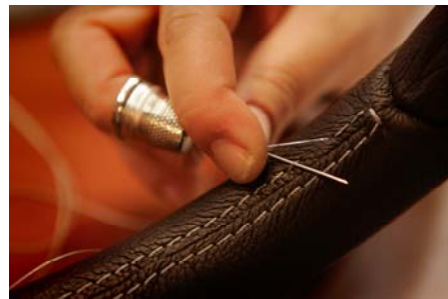
Design, performance and finally equipment. Also in this section the Tramontana stands out by offering a high level for a more safe and comfortable driving.



- Power steering.
- Sequentially operated gearbox.
- Servo assisted brakes.
- ABS.
- 4 levels traction control.
- Hydraulic ride height control: 85-135 mm.
- Carbon/magnesium wheels.
- Carbon-fibre hardtop.
- Air deflector, in cabrio version.
- Climate control.
- Electric rear view mirrors.
- Central locking.
- Rear-view camera.
- Toolkit.
- CD/DVD stereo, all electronic formats.
- Car cover.
- Bluetooth.
- Fitted luggage.

14. Finishes for all preferences

Each Tramontana will be hand-crafted, designed and produced according to the preferences and inclinations of the client, what will convert each unit in a unique model.



Wide range of options and customizations possibilities, open to customer requirements for Tramontana personalization, as far as it doesn't affects to the safety of the passengers and the reliability of the car.

Chassis Number

Each unit of the Tramontana will be differentiated with an engraved verse in the chassis of a poem written by Carme Pagès, Catalan poet, referring to the wind tramontana.

Materials:

Aluminium
Carbon
Wood
Titanium
Cromolibdenium

Cloth material: For those people who don't want leather

Leather: Highest quality automotive leathers available open to customer suggestions or needs.

Details: Lights, logo, steering wheel, handle, pedals...

Ergonomically study of the client

Measurements: height and weight
Steering wheel positioning
Gear shift lever
Pedal positioning
Seat/Backet position adjustment

