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RENAULT SPORT R.S. 01

A RACING CAR OF SPECTACULAR DESIGN BUILT FOR PERFORMANCE



Renault is restating its passion for motor sports with the Renault Sport R.S. 01, a racing car of spectacular styling and exceptional performance. With a design inspired by the world of concept cars and governed by an absolute pursuit of aerodynamic downforce, Renault Sport

R.S. 01 is a radical expression of the brand's sporting DNA. Its technical specifications reflect the best of Renault Sport expertise. With a carbon monocoque chassis for a weight of less than 1,100 kg and an engine developing over 500 hp, it is able to reach a top speed of over 300 kph. From 2015, Renault Sport R.S. 01 will be one of the stars of World Series by Renault in a new championship, the Renault Sport Trophy, a springboard for the professional GT and Endurance championships.

“Renault Sport R.S. 01 is a racing car of extraordinary design, symbolizing Renault’s passion for motor sports. The spectacular design lines reflect in themselves the ambitions of this exceptional car, thanks to the efforts and enthusiasm of Laurens van den Acker and his team. Under the bodywork, it is packed with cutting-edge systems from Renault Sport Technologies. The aim is to achieve an advanced level of performance, delivering thrills for both the driver and the public. If we had to sum up Renault Sport R.S. 01 in a few words, we could describe it as a marriage between the beauty of Renault DeZir and the performance of Formula Renault 3.5!”

Patrice Ratti, CEO of Renault Sport Technologies



“Renault Sport R.S. 01 is a spectacular racing car, in the purest tradition of GT. With its high-level sporting capacities, Renault Sport R.S. 01 illustrates the rich expertise of Renault Sport, and its ability to develop the racing cars that will reveal future GT or Endurance champions.”

Alain Prost, Renault Ambassador for motorsport

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01

SPECTACULAR DESIGN, INSPIRED BY THE WORLD OF CONCEPT CARS!

A car to thrill at first glance, Renault Sport R.S. 01 sets out to be one of the world's most efficient GT racers. With every stroke of the design pen, in the body lines and in the detail, the aim was twofold: to make Renault Sport R.S. 01 an iconic Renault vehicle, and to contribute to track performance through a constant quest for aerodynamic efficiency.



« The spectacular look of Renault Sport R.S. 01 is born out of the world of concept cars and the result is a genuine racer which boasts extraordinary performance backed up by the Renault Sport signature.»

Laurens van den Acker, Renault Senior Vice President, Corporate Design

AN EMBLEMATIC FRONT END, REFLECTING RENAULT'S SPORTING GENES



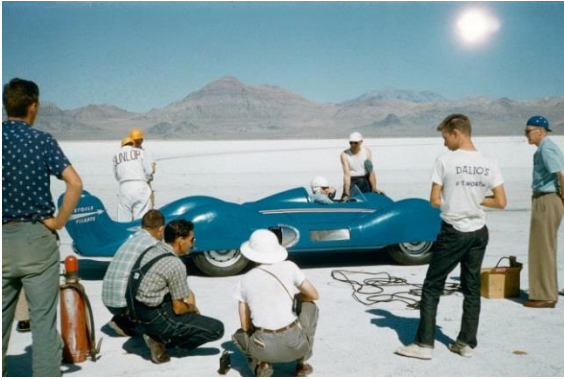
Like all the Renault vehicles designed under the management of Laurens van den Acker, Renault Sport R.S. 01 displays a prominent logo, the key feature on the front end. The vehicle's impressive width of 2,000 mm – for a height of 1,116 mm – is reinforced by the signature of the LED daytime-running lights positioned along the brake cooling scoops. At the centre of the grille, the air is “sucked in” and channeled by the stem of the chassis towards the two water coolers. It is then expelled through the extractors positioned on the hood. The negative pressure thereby created increases downforce at the front of the car. The large blade of the lower splitter and the stepped flat bottom also contribute to aerodynamics at the front. The two fins on the side of the bumper generate vortices that limit the turbulence of the rotating wheels.

A LOW-SLUNG, SCULPTED PROFILE

Underlined by the graphic pattern running from the headlights to the side air intakes, the low-slung profile is characteristic of a GT with a central rear engine. The imbalance in the overhangs is dictated by vehicle architecture and also by efforts to optimize weight distribution. The windows extending back to the airfoil and the curved shape of the rear bonnet further underline the choices made in design.



The sculpted lines of Renault Sport R.S. 01 bring to mind the concept car DeZir, presented in 2010.



In his preliminary study, designer Akio Shimizu was also inspired by Renault Étoile Filante (shooting star), the record-breaking vehicle that topped 300 kph at Bonneville Salt Flats in 1956!

The air flow is channeled by the lower splitter into extractors positioned behind the front wheels. Running along the doors, these extractors change shape to become intercooler scoops. This provides effective cooling for the turbochargers.

POWER AND STRONG IDENTITY AT THE REAR

As a result of the considerable efforts devoted to aerodynamics, Renault Sport R.S. 01 is able to achieve an exceptional level of performance beyond that of a GT3 and closer to that of a DTM. C_L (lift coefficient) and C_dA (drag coefficient) are similar to those of a Formula Renault 3.5. At the top speed of 300 kph, the downforce of 1.7 metric tons is equivalent to that of a Formula Renault 3.5, the benchmark single-seater in the World Series by Renault.



THE AERODYNAMIC PERFORMANCE OF A SINGLE-SEATER

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THREE QUESTIONS FOR... ÉRIC DIEMERT

DESIGN DIRECTOR, RENAULT SPORT TECHNOLOGIES

What were the requirements concerning the design of Renault Sport R.S. 01?

“Renault Sport Technologies wanted to develop a car exploring a new dimension in performance. So it was important for this impetus to be visible in design. Also, the reach of Renault Sport R.S. 01 had to extend beyond the range to make it an iconic brand model. This is why it looks nothing like a production vehicle. The process was similar to designing a concept car in terms of the freedom enjoyed by the team, so that was really exciting.”

What were the main stages in the process leading up to presentation of the mock-up at the Moscow Motor Show?

“All our projects begin with an in-house competition. From November 22, 2013, as part of this first phase, sixteen designers from our network of Design centers in France and other countries were able to give free rein to their creative drive. At the end of three weeks, we chose the work of Akio Shimizu, a young Japanese designer working at the Guyancourt exterior design studio. His project was a natural choice for its strength of expression and immediate connection with Renault’s identity. We then made a digital mock-up of his drawings. This took us into the technical phase, based on constant small-loop exchanges with Renault Sport Technologies and Dallara. The aim was to establish the best possible balance between our requirements in terms of design and aerodynamics. With each iteration, performance was verified by means of CFD¹ calculations. We then milled a full-size mock-up. This stage was crucial to validating the vehicle’s proportions and attitude. The result showed our decisions to be sound, so subsequent changes primarily concerned fine-tuning of the body lines, air intakes and extractors. The definitive design was frozen on April 25 last.”

How would you assess the result?

“First, we need to emphasize that the entire project was completed in five months. That’s a particularly short time frame compared with the production projects we’re used to.

Renault Sport R.S.01 expresses a successful convergence achieved against challenging constraints relating to the quest for top-level performance. With hindsight, I would say that the aerodynamics issue largely guided but – above all – stimulated our creativity!

The end product is a source of great pride for the entire team. We’re impatient now to see the cars on the starting grid for their first race!”

¹ CFD: Computational Fluid Dynamics

02

A VEHICLE PACKED WITH THE TECHNICAL EXPERTISE OF RENAULT SPORT

The technical characteristics of Renault Sport R.S. 01 are on a par with its spectacular design. Providing effective protection for the driver, the carbon monocoque chassis enables a vehicle weight of just 1,100 kg. Installed in a central rear position, the Nismo V6 3.8L twin-turbo engine developing more than 500 hp is mated to a Sadev seven-speed sequential gearbox. With carbon brakes and special Michelin tires, Renault Sport R.S. 01 embodies the full technical expertise of Renault Sport Technologies.



LMP1 SAFETY STANDARDS FOR THE CARBON BODY SHELL

Supervised by Motorsport technical manager for Renault Sport Technologies Christophe Chapelain, Renault Sport R.S. 01 was designed in cooperation with benchmark technical partners.

The carbon fiber monocoque chassis was a natural choice in order to meet objectives in terms of weight and safety. Italy's Dallara was responsible for designing and building the chassis, in the same way as for Formula Renault 3.5. The tub, which includes the 150 liter fuel tank, features a steel roll cage at the top. At the front, a crash box absorbs energy in the event of frontal impact. Shaped like a boat's stem, the design contributes to aerodynamic efficiency. Another crash box attached to the gearbox, plays the same role at the rear of the car. The entire assembly respects FIA LMP1 2014 standards to ensure safety.

Completing the list of safety features are a collapsible steering column, and a Sabelt bucket seat with a six-point harness, compatible with the HANS® system.

MORE THAN 500 HORSEPOWER

The semi-stressed engine is bolted to the carbon monocoque chassis on the distribution side, and to the roll cage at the top. Prepared by Nismo, the 3.8L V6 twin-turbo engine is derived from the Nissan GT-R. The main change in relation to the production model is the dry sump system intended to prevent oil surges during long corners. The Pectel electronic unit features a traction control function.

Turbo pressure is set to deliver over 500 hp with maximum torque of more than 600 N.m. This positions Renault Sport R.S. 01 between a GT3 and a DTM in terms of performance.

SEVEN-SPEED SEQUENTIAL GEARBOX

The engine is mated to a longitudinal seven-speed gearbox supplied by Sadev. With an eye to budget management, the same gear ratio sets will be used for all tracks. However, it will be possible to adjust the preload setting of the self-locking differential.

Activated by steering-wheel paddles, the sequential control system is managed by an XAP electromagnetic actuator. Developed specially by ZF Race Engineering, the clutch features an anti-stall function and is designed for an extended service life.

RUNNING GEAR CONTRIBUTING TO EFFICIENCY

Grip is provided primarily by aerodynamic downforce and this is reflected in suspension design. In the same way as on sports prototypes, a conventional double wishbone layout has been adopted with pushrods and Öhlins dampers. Adjustable for compression and rebound, the systems are positioned on either side of the body at the front, and longitudinally above the gearbox at the rear.

The braking system combines 380 mm carbon discs from PFC Brakes with six-piston calipers. This choice is an excellent compromise between efficiency and endurance. Renault Sport R.S. 01 is also fitted with Bosch Motorsport ABS.

The partner of Renault Sport Technologies for all its motorsport products, Michelin has developed special 18-inch tires, mounted on wheels of original design with a central nut.



03

RENAULT SPORT R.S. 01, FUTURE STAR OF THE WORLD SERIES BY RENAULT

An organizer of motorsports events for 40 years, Renault Sport is entering a new phase with Renault Sport R.S. 01. The new car will add a fresh dimension to customer sport and to talent-spotting among pilots and amateur drivers. Renault Sport R.S. 01 will compete in the Renault Sport Trophy championship, an event built to measure. This one-design series, which will be part of the World Series by Renault from 2015, will be a new opportunity for “Pro-Am” teams*, and a gateway to the GT, DTM**, ELMS** and WEC**** championships.



* Professional – Amateur.

** DTM : Deutsche Tourenwagen-Masters (DTM) is the german championship for tourism derived cars

*** ELMS : European Le Mans Series

*** WEC : World Endurance Championship

RENAULT SPORT TROPHY, A NEW EVENT FOR THE 2015 SEASON

“Renault Sport R.S. 01 marks the start of a new line. For this reason, it was named in tribute to Renault’s very first Formula 1 vehicle. We wanted to design the best racing car in order to bring to light the best talent and prepare the next generation of drivers. Renault Sport R.S. 01 is a vehicle of exceptional performance and the World Series by Renault will be its showcase. We started from scratch in developing Renault Sport Trophy. It is an attractive event that stands out among existing motorsport events. With “Pro-Am” teams and a sports program combining sprinting and endurance, we will create a gateway to the higher series.” **Patrice Ratti, CEO of Renault Sport Technologies**

After developing the most efficient programs for single-seaters, Renault Sport Technologies aims to roll out a new offering for hatches. Positioned between the Clio Cup events and professional championships, such as the WEC, DTM and Japanese Super GT, the Renault Sport Trophy is a gateway for the best pilots and for gentleman drivers.

The 2015 season will be open to twenty “Pro-Am” teams, classified according to the rules of the FIA World Endurance Championship (WEC). At World Series by Renault meetings, competitors will be able to maximize their time on the track by taking part in a real monotype championship called Renault Sport Trophy.

Track time is currently estimated at more than four hours per car and per driver, over a three-day weekend.

The Renault Sport Trophy championship will reap the benefits of brand expertise in organizing motorsports events. Priority will be given to technical fairness, sporting ethics and cost control. The technical definition of Renault Sport R.S. 01 aims for servicing every other season, thus helping to keep running costs down.

A GATEWAY TO JAPAN AND LE MANS!

Alongside the prize money for the best drivers and teams in each round, Renault Sport Technologies and its partners will be providing particularly attractive end-of-season rewards.

The champion in the “Pro” category will have the chance to follow a complete development program (simulator, physical preparation, media training, etc.) prior to taking a rookie test with the official Nismo team for the Super GT* in Japan. If he has the qualities required, he will be able to pursue his career in this extremely competitive discipline.

A similarly attractive reward will be provided for the “Am” champion, who will have the chance to take part in the 2016 Le Mans 24-Hour event driving an LMP2 prototype.

WORLD SERIES BY RENAULT: A CELEBRATION OF MOTORSPORTS!

Renault has been competing in motorsports for 115 years. Over this time, it has claimed victory in the most prestigious sporting events and disciplines, from the Monte-Carlo Rally to the Le Mans 24-Hour event via Formula 1, where it has notched up twelve world titles! A forerunner in track-based one-design racing formulas more than 40 years ago, Renault Sport is still the reference in the field.



Set up in 2005, the World Series by Renault reinvented this type of event. They have been rightly acclaimed by the public, with 5.5 million spectators accepting the brand's invitation. These "free, fast and fun" events are built on a strong base:

- top-level international championships: Formula Renault 3.5 Series, Eurocup Formula Renault 2.0 and Eurocup Clio,
- track demonstrations such as the Infiniti Red Bull Racing F1 Show and Renault Classic Show,
- family events (pit-stop challenge, driving simulators, exhibitions, kids' village, etc.),
- free entrance for members of the public, who are able to access all the stands and paddock,
- significant media exposure, with live TV coverage on Eurosport and a number of other channels worldwide.



RENAULT IS CONTRIBUTING TO THE DEVELOPMENT OF MOTORSPORT IN RUSSIA

The unveiling of Renault Sport R.S. 01 at the Moscow Motor Show is highly symbolic for Renault. Motorsports have a special place in the minds of the Russian public, and are an excellent way to build Renault's image on this market. Renault Sport has been highly active in this area in recent years, playing a pioneering role in organization or taking part in a variety of motorsports events in Russia.

In 2012, the World Series by Renault was the first international track series event to take place in Russia, at the Moscow Raceway. On June 28 and 29, more than 78,000 spectators gathered around the track to celebrate the victory of Sergey Sirotkin in Formula Renault 3.5 Series. In the not too distant future, maybe this young hope could join his countryman Daniil Kvyat, second in Eurocup Formula Renault 2.0 in 2012 and now a driver with Scuderia Toro Rosso-Renault in Formula 1.



"In 2012, the World Series by Renault marked the opening of Moscow Raceway. Over the past three years, we have promoted the development of motorsports around Russia. A few weeks ago, the Russian stage was a real celebration for spectators of all ages. The entertainment program on the track and in the Renault Village attracts both sports enthusiasts and families, who were able to take advantage of everything happening on and off the track, free of charge."

Fabrice Cambolive, Vice-President, Sales and Marketing, Renault in Russia



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04

TECHNICAL DATA RENAULT SPORT R.S. 01

CHASSIS	
Type	Dallara carbon monocoque chassis and steel roll cage
Safety	Monocoque chassis, roll cage and crashboxes compliant with FIA LMP1 2014 standards, collapsible steering column, Sabelt seat FIA 8862/2009 standard
Bodywork	Composites
Aerodynamic features	Front blade and splitter, stepped flat bottom, rear diffuser and rear wing
ENGINE	
Type	Nismo V6 - 24 valves – 3,799 cm3
Layout	Longitudinal central rear
Feed	Injection – 2 turbochargers
Max power	> 500 hp
Max torque	> 600 N.m
Max engine speed	6,800 rpm
Electronic management	Pectel SQ6M with traction control
Data acquisition	Cosworth ICD Pro
TRANSMISSION	
Type	Rear wheel drive
Gearbox	Sadev sequential, 7 speed+ reverse
Control	XAP semi-automatic with steering-wheel paddles
Differential	Limited slip
Clutch	ZF Race Engineering, long service life with anti-stall function
RUNNING GEAR AND SUSPENSION	
Suspension	Double wishbone + pushrods
Dampers	Öhlins 2-way adjustable
Brakes	PFC Brakes 380 mm carbon discs, 6-piston calipers, Bosch ABS system
Steering	Hydraulic power steering
WHEELS	
Wheels	Braid wheels, central mounting
Tires	Michelin 30/68 R18 (front) and 31/71 R18 (rear)
DIMENSIONS, WEIGHT AND CAPACITIES	
Length	4,710 mm
Width	2,000 mm
Height	1,116 mm
Wheelbase	2,744 mm
Front/rear track	1,675 / 1,624 mm
Fuel tank	150 liters
Weight	< 1,100 kg

* Pending approval in ongoing tests.