

aprilia

RSV4 R APRC



Aprilia RSV4 R APRC represents the beginning of a new generation of hypersports motorcycles: with its essential concept and pure design, it eschews an overfaired look in favour of body elements pared down to the bare minimum necessary for aerodynamic efficiency. The breathtaking beauty of the mechanicals reveals a bike that achieves levels of compactness which, until now, had only been possible in much smaller engined machines and GP prototypes. State of the art technology for the engine and chassis, coupled with extraordinary usability, make this the perfect companion for the rider who wants to reach and redefine his limits with unparalleled feeling and ease.

These aspects of the project not only give the bike such incredible performance but are also what make it so easy to put every last horsepower to good use. Nothing about this bike is commonplace, and this is even true about the technical solutions adopted - this is the world's first full scale production motorcycle with a high performance narrow V4 engine, the most revolutionary and powerful engine ever built by Aprilia. Together with the fully integrated electronics, record breaking lightness and extreme compactness, this engine gives the bike its unique, unmistakable character.

World class components: the fully adjustable upside down front fork and Sachs rear shock, manufactured to Aprilia specifications, ensure superlative performance and offer the rider incredible feedback for absolute control in any situation. The Brembo brakes with radial monobloc callipers, ultralight alloy wheel rims featuring a new design and the steering damper ensure the utmost in safety in all riding conditions.

With these attributes, it is clear that the RSV4 R APRC is the new benchmark for the full scale production superbike segment. The unique characteristics of the bike are listed as follows:

- RSV4 R APRC highlights:
- APRC fitted as standard

- Advanced exhaust butterfly valve management
- Fully adjustable Sachs upside down front fork
- Fully adjustable Sachs shock absorber
- Sachs steering damper
- Lighter new wheels cast in lightweight alloy with three double-spokes

Created with the single-minded goal of being simply the best on the track and on the road, since its inception the Aprilia RSV4 has astonished the world with its looks, technology and performance. The first 65° V-4 engine ever in a sports production bike, a chassis worthy of a 250 GP, Ride By Wire & multimap engine management are a signature of Aprilia's excellent rideability brought to the next level.

A project conceived not just to create a motorcycle that delivers the utmost in performance, but one that also allows the rider to make full use of every last iota of its competitive potential. The excellent results obtained by all of the champions who have ridden it in races are not by chance. Nonetheless, the true revolution of the new Aprilia RSV4 R APRC is that, to explore its potential and have fun, you don't have to be a world champion thanks to the exemplary balance obtained with the APRC (Aprilia Performance Ride Control) system, the exclusive traction control which can be adjusted at eight levels and is capable of self-calibrating based on the different type of tyres, wheelie control, starting assistance and the electronic gearbox.

Concrete assistance for the bike's rideability which gives the rider more confidence and control in conditions at the limit, helping to identify the most efficient trajectories and making the ride less taxing from the psycho-physical point of view. This introduction of such advanced technology in mass production is the demonstration of Aprilia's enormous design capacity which has developed all of the RSV4 Factory SBK electronics "in house" which were ridden to the world championship by Max Biaggi and from which the dynamic controls platform applied to the new RSV4 R APRC were derived.

With this new version the Aprilia staff has made it possible to build a bike which is faster on the track but at the same time more "communicative" for the widest range of riding experience and capability, fine tuning what can be considered the patriarch of a new generation of supersport bikes.

State of art technology - APRC

This new technology is brought together in the APRC (Aprilia Performance Ride Control) package, basically the state of the art in dynamic performance control, a multi-patented system that makes Superbike winning technology available to professional racing riders and hobby riders alike. All this comes in an easy to use, intuitive package.

Aprilia RSV4 R APRC's improvements are not limited to the electronic management system. The 65° V4 engine offers improved lubrication and closer spaced gears for better acceleration. The new, lighter exhaust features an advanced butterfly valve management system to suit the Ride By Wire mapping for improved breathing and efficiency throughout the RPM range.

The new features introduced in the Aprilia RSV4 R APRC in detail:

- **APRC Aprilia Performance Ride Control**, the electronic management package including:
 - **ATC: Aprilia Traction Control** automatically adjusts to different types of tyres, with 8 settings conveniently selectable while racing from a joystick on the left handlebar without turning down the throttle;
 - **AWC: Aprilia Wheelie Control** with three settings;
 - **ALC: Aprilia Launch Control**, for use on the track only, with 3 settings;
 - **AQS: Aprilia Quick Shift**, for ultra-fast shifting without closing the throttle or using the clutch.
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- **Dual display mode** for instrument panel display: **ROAD and RACE**;
 - **New exhaust** is lighter and offers improved performance;
 - **Optimised gear ratios** for the utmost track performance;
 - Improved engine **lubrication**;
 - **Lighter** three double-spoke **wheels**.

What is APRC?

In the wake of the success achieved by the RSV4 Factory SE, the Aprilia Performance Ride Control system now comes to the R version. The package uses an automotive inertial sensor platform with two gyrometers and two accelerometers allowing the ECU to recognise the dynamic conditions of the bike and adapt the engine management parameters accordingly. The rider can adjust any component of the APRC system independently at will.

ATC: the traction control system of the future

The ATC- Aprilia Traction Control undoubtedly is one of the greatest strengths of the APRC package. This is a fully innovative traction control system developed from an Aprilia patent, mainly focussed on helping the rider improve his lap times. Thanks to the inertial platform and the Ride By Wire pioneered by Aprilia, the ATC not only reduces torque when the rear wheel slips but lets the rider control tail sliding when exiting a bend, giving him a better feel for throttle control, depending on lean angle. Aprilia ATC is quickly, easily activated from the instrument panel menu and offers 8 settings. When the ATC is enabled, the rider can change setting in an instant at any time using a joystick on the left handlebar to suit track, pavement or tyre conditions, without closing the throttle and keeping his hands on the handlebar, as in professional motorcycle racing. This way, the system can adjust to every single bend of any track so as to meet the specific requirements of any rider, including the most expert ones. The other incredible achievement of Aprilia technology is the system's "learning capacity". Current traction control systems are designed and optimised for a single size and type of tyre. This limit frequently cancels the benefits of traction control. Aprilia Traction Control (ATC) has overcome this limit: a procedure activated by the rider enables the system to learn the tyre radius and final ratio adopted on the bike to obtain fine-tuned traction control.

AWC: stability at top acceleration

Exploiting the full power of modern superbikes down to the very last HP is every rider's dream. Aprilia's AWC (Aprilia Wheelie Control) has achieved extraordinary results. Thanks to the exclusive Aprilia patented Wheelie Detection System, the AWC is able to "tell" when a wheelie begins and ends and kicks

in to smoothen wheel contact with the road. Smooth, soft wheelie management avoids harsh power cuts or pick-up, providing perfect acceleration control. The AWC system is activated from the instrument panel and can be adjusted independently from other control systems choosing from three settings to better meet rider requirements.

ALC: Get off the line

The perfect start is yet another racer's dream, because a good start frequently means you're half way towards a victory. When the lights go out, handling the huge power of modern superbikes is no easy task. Unless the bike handles it itself to offer its best starting performance. The ALC (Aprilia Launch Control) system ensures an instant start as the lights go out, applying full power to the road to assist the rider in this critical moment of the race. All the rider needs to do is give full throttle and release the clutch as he normally would and shift gears. The ALC has three settings that can be selected from the instrument panel menu, then it must be "armed" at standstill, by squeezing both traction control buttons on the left handlebar joystick at the same time.

AQS: record-breaking shifting

When you're after the utmost lap performance, you can't afford to waste even one thousandth of a second in an apparently simple operation like shifting. RSV4 R APRC comes with the Aprilia Quick Shift as standard. Basically, the quick shift shortens spark advance for an instant and then gradually restores it, making for super-fast shifting with no need to close the throttle or use the clutch. The system works hand in hand with the new closer spaced gearbox to limit RPM drop during shifting for faster lap times. To optimise AQS performance, Aprilia engineers have fine-tuned power cut timing based on shifting RPM.

Suspensions

Completing the chassis is a superlative suspension layout - the upside down Sachs fork has 43 mm diameter stanchions and features adjustable spring preload and hydraulic compression and rebound damping.

The Sachs rear shock was developed from experience learned directly on the track. This shock absorber boasts a piggy back nitrogen canister (separate and mounted on the body of the unit) and adjustable spring preload, compression and rebound damping and length, allowing the height of the rear end of the bike to be altered to modify the set-up to suit different riding styles and tracks.

Completing the package is a steering damper, also by Sachs, which ensures impeccable high speed stability and millimetre precision in setting the bike up for turns.

Componentry

A real Superbike is special not only as far as performance is concerned but also for the care it is built with. The details on the RSV4 R speak volumes of a bike built with an obsessive attention to every single aspect, both technical and otherwise.

The following are just some of the most significant class leading components used:

- **Instrument panel:** the mixed type (digital-analogue), it receives all the information from the CAN line and becomes an integral and crucial part of the self-diagnosis system as it is fitted with memory. This is a

fully fledged on-board computer, with a dot matrix display set against a minimalist, ultramodern and compact design. Its functions have been improved and are all accessible from three easy to use buttons.

- **Headlight:** the triple headlamp layout is not just a reference to the legendary original RSV Mille, but designed to offer total night time visibility.

- **Electrical system:** designed from the outset to offer maximum functionality and rationality with minimum weight. The result is an extremely clean and compact layout that makes for easier maintenance and is ready for track use, as all components relative to the lights and turn indicators are easily removable.

The RSV4R can dress in two different liveries: The aggressive and vibrant "competition black" with metallic brilliance which is similar to the Factory version, or in the bright "Glam White" tone, the current trendy colour in the supersport sector.

For full technical specifications on the Aprilia RSV4 R please refer to the technical specifications document below.





RSV4 R – APRC Full Technical Specifications



Engine type	Aprilia longitudinal 65° V-4 cylinder, 4-stroke, liquid cooling system, double overhead camshafts (DOHC), four valves per cylinder
Fuel	Unleaded petrol
Bore and stroke	78 x 52.3 mm
Total engine capacity	999.6 cc
Compression ratio	13:1
Maximum power at crankshaft	180 HP (132.4 kW) at 12,250 rpm
Maximum torque at crankshaft	115 Nm at 10,000 rpm
Fuel system	Electronic injection with 2 injectors per cylinder and integrated independent Ride by Wire system for each bank. Three mappings selectable from handlebar. Ride-by-Wire engine management.
Ignition	Magneti Marelli digital electronic ignition system integrated in engine control system, with one spark plug per cylinder and “stick-coil” type coils
Starter	Electric
Exhaust system	4 into 2 into 1 layout, single oxygen sensor, lateral single silencer with engine management system controlled butterfly valve and integrated trivalent catalytic converter (already meets future Euro4 regulations)
Alternator	Flywheel mounted 420W alternator with rare earth magnets
Lubrication	Wet sump lubrication system with oil radiator and two oil pumps (lubrication and cooling)
Gearbox	6-speed cassette type gearbox 1st: 39/15 (2.600) 2nd: 33/16 (2.063) 3rd: 34/20 (1.700) 4th: 32/22 (1,455)

	5th: 34/26 (1,308) 6th: 33/27 (1,222) Gear lever with Aprilia Quick Shift electronic system (AQS)
Clutch	Multiplate wet clutch with mechanical slipper system
Primary drive	Straight cut gears and integrated flexible coupling, drive ratio: 73/44 (1,659)
Secondary Drive	Chain: Drive ratio: 42/16 (2.625)
Traction Management	APRC System (Aprilia Performance Ride Control), which includes Traction Control (ATC), Wheelie Control (AWC), Launch Control (ALC), all of which can be configured and deactivated independently.
Frame	Aluminium dual beam chassis with pressed and cast sheet elements. Sachs steering damper.
Front Suspension	Sachs upside down front fork with \varnothing 43 mm stanchions. Low profile forged aluminium calliper mountings for radial callipers. Completely adjustable spring preload and hydraulic compression and rebound damping. Wheel travel: 120 mm
Rear Suspension	Double braced aluminium swingarm; mixed low thickness and sheet casting technology. Sachs piggy back monoshock with completely adjustable: spring preload and hydraulic compression and rebound damping. APS progressive linkage. Wheel travel: 130 mm
Brakes	FRONT: Dual 320 mm floating stainless steel discs with lightweight stainless steel rotor with 6 studs. Brembo radial callipers with 4 \varnothing horizontally opposed 32 mm pistons. Sintered pads. Axial pump master cylinder and metal braided brake hoses.
Wheel Rims	Rear: 220-mm diameter disc; Brembo floating calliper with two \varnothing 32 mm isolated pistons. Pump with integrated tank and metal braided hose
Tyres	Radial tubeless. Front: 120/70 ZR 17 Rear: 190/55 ZR 17 (alternative: 190/50 ZR 17; 200/55 ZR 17)
Dimensions	Max. length: 2040 mm Max. width: 735 mm (at the handlebar) Max. height: 1120 mm Min. height from the ground: 130 mm Saddle height: 845 mm Centre to centre distance: 1420 mm Trail: 105 mm Steering angle: 24.5°
Kerb Weight	179 kg
Tank Capacity	17 litres (4-litre reserve included)