

APRILIA RS 660

THE SPORTS MOTORCYCLE FACTORY PAR EXCELLENCE PRESENTS THE RS 660

A BRAND NEW CONCEPT IN SPORTINESS BASED ON AN OPTIMUM POWER-TO-WEIGHT RATIO, WITH THRILLS ACCESSIBLE TO ALL

A SLEEK CHASSIS, TRIMMED WEIGHT, NEW 100 HP TWIN ENGINE, PREMIUM ELECTRONICS AND A BREATHTAKING NEW COLOUR THAT SETS A NEW BENCHMARK IN BOTH STYLE AND SLEEKNESS: THE RS 660 IS THE ESSENCE OF THE APRILIA BRAND, A PERFECT AMALGAMATION OF TECHNOLOGY, INNOVATION AND DESIGN

A new era beckons for Aprilia. Resting on an all-new technical basis and defined by the brand-new 100-bhp 660cc parallel-twin engine, a new generation of lightweight yet high-performance bikes is born, featuring sophisticated design and cutting edge technology. This marks a re-emergence of mid-displacement engine sizes, allowing you to rediscover the pleasure and joy of everyday riding.

The Aprilia RS 660 is the first of a brand-new range of motorcycles in response to the demand from new generations for fun, easy and satisfying bikes, just as apt for thrilling road riding as they are for occasional outings on the race track.

The RS 660 **raises the concept of sportiness to a new level**, focusing on an excellent **power-to-weight ratio** that is likely to really excite but that is also easy to handle, making it an accessible ride for anyone. A unique bike stylistically, from the ground up, maintaining the Aprilia values of **state-of-the-art technology and style** that you see even in its colours.

The first manufacturer to break the black and red monopoly with its **spectacular coloration** in the 1990s, Aprilia now returns to its role as stylistic ground-breaker, debuting the RS 660's new **Acid Gold** – a colour yet to be seen in the motorcycle world – adding a new perspective to the most up-to-the-minute sportiness and **setting a new benchmark for high-performance motorcycle sports styling**.

The RS 660 thus rekindles the pleasures and everyday enjoyment of the sports bike experience. A **new concept in sportiness** and an excellent all-round bike – whether it be for commuting or the most full-throttle riding – the same sense of exhilaration can be expected. The RS 660 offers, for the first time in its class, **first-rate technical content, honed from Aprilia's competition racing experience, made available for street-riding fun**. A perfect formula for maximum enjoyment, at a slender wet weight of 183 kilos, featuring a package of APRC electronic rider aids that would be at home even in superior classes.

Style: the new generation of Aprilia

The **Aprilia RS 660** also clearly stands out in terms of style and dictates the shape of the Aprilia sports bikes to come. The design is innovative, sophisticated and genuinely sporty. The main objective of the Aprilia Style Centre was to create **dynamic, modern shapes with low surface area**, although without taking the concept to extremes, to offer a sense of space and comfort to both rider and passenger, even aboard a sports bike, while at the same time, enhancing both its lightness and slenderness.

The main features of the fairings speak typical Aprilia sporting parlance, and are characterized by a **triple LED headlight assembly**, equipped with perimeter Daytime Running Lights positioned

around the two main headlights, making the RS 660 immediately distinguishable in any lighting conditions.

Direction indicators are integrated into the DRL profiles making the front end even more compact. The lighting system is equipped with several features to make riding even safer: thanks to the presence of a twilight sensor, **the dipped beams are switched on automatically**, while the self-cancelling turn indicators flash in the event of emergency braking. Finally, thanks to the **cornering lights** function, a pair of additional headlights in the parabolas illuminate the inside of the curve, increasing visibility when taking bends.

The Aprilia RS 660 boasts a **double fairing with integrated aerodynamic features**, an extremely cutting-edge solution that reaffirms Aprilia's commitment to aerodynamic research.

The analysis of these two-dimensional surfaces in order to achieve the twin objective of combined design and functionality, proved a particularly taxing one. Efficiency was first analysed with the help of CFD (Computational Fluid Dynamics) calculation software, followed by wind tunnel analysis, then further evaluation on both road and track. The inspiration clearly derives from the world of racing: one of the functions of the double-walled fairing is, indeed, to optimize stability at high speeds, while increasing rider comfort by protection from air pressure and the dispersion of hot air flows emanating from the engine and radiator.

Aboard the RS 660, the **ergonomics are perfect**. The riding position is coherently designed with **everyday sportiness** in mind, with Aprilia culture having always designed bikes based on perfect rider integration. The seat-footpeg-handlebar triangulation welcomes riders of all stature, offering comfort and spaciousness, with a posture that is neither heavily-loaded onto the handlebars, nor with legs excessively bent due to highly-placed foot-rests. The rider can, therefore, enjoy a position that guarantees maximum control but without causing long-distance fatigue, making the RS 660 perfect for either full-throttle racing or everyday riding.

The **seat** features very comfortable padding and is tapered at the sides to facilitate the resting of the feet on the ground which allows easy manoeuvres from a stationary position. The generously-sized pillion pad is positioned on the tail, whose design was once again inspired by the V4 family, while a single-seat tail comes as an optional extra.

The choice of placing the **exhaust pipes beneath the engine** brings an added benefit of allowing greater freedom to position the passenger footrests, thus increasing comfort. The 15-litre capacity petrol tank is designed to enhance the **compactness**, letting the rider embrace it comfortably while protectively positioned behind the fairing.

In the traditional vein of Aprilia sports models, the RS 660 has also been designed to facilitate the fast, easy removal of any surplus elements when used on the track, such as mirrors, passenger footrests and license plate holders.

The Aprilia chassis: a benchmark in handling and precision

Aprilia's ability to manufacture first-rate chassis is the stuff of legends: "*It's an Aprilia*" signals a guarantee of design and construction quality, feeling and handling effectiveness.

In keeping with this fine tradition, the RS 660 features a magnificent, **brand new structure focusing on slenderness**, made up of a frame and swingarm both in die-cast aluminium, featuring unique characteristics within their class. The chassis dimensions favour agility: thanks to its 1370 mm wheelbase and the 24.1° inclination of the steering head, the RS 660 boasts **exceptional handling capabilities**, combined with all the precise features and sensations that characterize the front end of classic Noale-produced motorcycles.

The frame is made up of twin lateral beams bolted into the steering head area and, to the rear; the **engine is maximized as a load-bearing element** and contributes to forming a compact, lightweight yet rigid structure. In order to make the frame even lighter and more essential, the swingarm is pivoted directly into the engine: this is a monobloc element characterized by its considerable length, useful for having optimum traction and asymmetrical arms – a typical technical choice in the history of the Aprilia RS. The particular mounting of the adjustable shock absorber allows for excellent progression even without the insertion of any linkage, thus reducing even more precious weight.

In designing **the frame**, Aprilia designers paid particular attention to the area of the steering head to ensure the necessary sturdiness for both road and track use, while keeping the turn radius very low to facilitate everyday riding use.

The chassis is completed by an adjustable Kayaba fork with **41 mm upside-down stems** and a braking system made up of, a pair of 320 mm diameter steel discs, at the front and a pair of **radial mount calipers** and a **radial master cylinder** on the handlebars both manufactured by Brembo. The RS 660 is equipped with high-performance Pirelli Diablo Rosso Corsa II tyres in sizes **120/70 ZR 17** at the front and **180/55 ZR 17** to the rear, guaranteeing safety and enjoyment on the road, as well as plenty of grip for maximum performance on-track. The handling, nimbleness and compactness of the RS 660, combined with its engine performance, invite pleasure and thrills on winding curve-filled routes, requiring a very limited amount of work on the rider's part.

Great performance from Aprilia's new 100 hp twin-cylinder

An **all-new engine** makes its debut in the Aprilia RS 660 which is set to feature subsequently in a full range of new motorcycles.

This is a **660 cc parallel-twin cylinder unit**, a highly compact latest-generation engine derived from the 1100 cc front-banked V4, whose line it follows in both concept and measurements and sports a **Euro 5 homologation**.

This configuration was chosen for its **compactness and lightness**. An engine with reduced horizontal and lateral dimensions allows great design freedom both for the arrangement of fundamental parts such as the intake and exhaust. As far as the chassis is concerned, the engine also features **load-bearing functions**, while housing the swingarm to its rear.

The front-leaning configuration affords the rider more comfort, thanks to the greater heat dissipation and leaves the designers plenty of freedom to exploit the space. Furthermore, the engineering lends itself to superior cooling, helped also by the ingenious double-walled fairing system which aims at accelerating the air flows passing through it. With the same objective in mind, **long exhaust manifolds** were engineered to funnel flows into a single-piece tailpipe with a asymmetrical split outlet, all fully positioned beneath the engine, with the added advantage of superior weight distribution and a **lower centre of gravity**.

The new Aprilia twin-cylinder is the result of experience gained developing the extremely powerful engine that equips the RSV4 and is therefore based on a background of highly efficient and technical trials: the cylinder head, combustion chambers, ducts, cylinders and pistons all derive from the V4. Likewise, it features an **81 mm bore** – as in the 1078 cc V4 – with a 63.9 mm stroke. The decision to take advantage of the V4 technology guarantees top-class performance, while taking into consideration the high piston stroke speeds relative to its displacement size. Naturally, all engine components, including castings and molds, have all been designed and developed from the ground up.

The new engine has the crankcase split horizontally into two pieces with the cylinders integrated into the upper crankcase to **reduce overall dimensions** to render the structure more robust. The cylinders are offset from the crankshaft to minimize internal friction during piston thrusts.

The hollowed camshafts of the **4-valve-per-cylinder twin-shaft** are side chain driven. The mechanically operated **oil bath multi disc clutch** has a built-in **assist and slipper system**. Wet sump lubrication involves an oil sump protruding downwards and crafted around the intake port, in order to best gather the lubricant in every type of riding phase, even when the bike is at its maximum inclination or during periods of braking and acceleration.

For a **parallel-twin of this displacement, the performance obtained is ground-breaking** and comparable to that of a much higher cubic capacity two-cylinder: 100 hp at 10,500 rpm, with an extension capacity that allows the limiter to be moved up to its 11,500 rpm threshold. The maximum **67 Nm** torque is offered at 8,500 rpm, with 80% of the torque available from 4,000 rpm, which becomes 90% when 6,250 rpm are reached. The RS 660 is also available in the 95 hp version which can be disabled, ideal for beginners or less experienced riders.

In addition to performance and lightness, another aim of the project was to obtain from the engine the same character and grit typical of V-twin cylinders. To this end, valve timing with connecting rod pins arranged at 270° were chosen. Combustion is thus asymmetrical and offset by 270° to obtain **irregular bursts** which perform and sound similar to a V-twin. Furthermore, this type of configuration allows, by means of a single countershaft, easy balancing of the alternating forces of first and second order.

The **injection** system includes a duo of 48 mm-diameter throttle bodies, with intake ducts of varying lengths to optimize delivery at high and medium speeds.

The performance of the new engine is guaranteed by electronics directly loaned from the Aprilia V4, including **Ride-by-Wire with multi-mapping**, an electronic accelerator, for the subtle management of subtle, yet progressive acceleration, even at low revs and optimal consumption.

First-class electronics: performance and security

Another of the unique features of the Aprilia RS 660 is its **provision for electronic systems aimed at performance and safety** – the most complete currently available in the category – and even higher than those offered by certain super sports bikes in the superbike class.

Aprilia has always been at the forefront in the field of electronics (it was the first to introduce the Ride-by-Wire throttle control in 2007) and currently boasts the complete APRC (Aprilia Performance Ride Control) electronic command package honed in top-level competitions and praised as among the most advanced on the market by both public and critics alike.

The RS 660 is equipped with a **six-axis inertial platform** which, thanks to the built-in accelerometers and gyroscopes, is able to recognize the condition of the bike with respect to the road; it records and processes inputs deriving from the rider and sends the data to the control unit which intervenes seamlessly in the control parameters.

The RS 660 APRC, developed to support performance and make riding on the road safe and exhilarating, includes:

- **ATC: Aprilia Traction Control**, adjustable traction control characterized by fine and high-performance intervention logics
- **AWC: Aprilia Wheelie Control**, adjustable wheelie control system.
- **ACC: Aprilia Cruise Control**, maintains the set speed without using the throttle control.
- **AQS: Aprilia Quick Shift**, the electronic gearbox, for high-speed changes without easing off the throttle or without using the clutch, also equipped with a **downshift** function which allows downshifting without touching the clutch. Thanks to the software offered among the original

accessories it is possible to reverse the gearbox for track use without the need to replace components.

- **AEB: Aprilia Engine Brake**, the adjustable engine brake control system for the deceleration phase.

- **AEM: Aprilia Engine Map**, various forms of mappings available to change the character and the way engine power is delivered.

The Aprilia RS 660 adopts the advanced **multi-map Cornering ABS**, to ensure maximum safety on the road, without detracting from its sporting performance. The system, with extremely low weight and dimensions, is able to optimize braking and ABS intervention when cornering, thanks to a special algorithm which constantly monitors various parameters such as lateral acceleration, the pressure exerted on the front brake lever, the angles of lean, pitch and yaw, modulating the action of the brakes for an optimized combination of deceleration and stability.

Aprilia has developed **five Riding Modes**, not merely to maximize the riding experience in different riding conditions, but also to simplify life on board. Riders are only required to choose which Riding Mode best suits their needs to automatically obtain the best set-up regarding traction control, wheelie control, engine braking, ABS and the other tweakable parameters.

There are **three Riding Modes for road use**:

Commuter, for everyday riding;

Dynamic, for sports riding on the road

Individual, which allows for complete customization of electronic controls.

There are **two Riding Modes designed for on-track use**:

Challenge, suitable for on-track racing sessions capitalizing on the full potential of the RS 660

Time Attack, a system that allows more adept riders to fully tweak the electronic setup.

Electronic settings are easily managed by a user-friendly four-button control on the left-side electric switch block with quick commands for managing cruise control and traction control.

In order to minimize weight, the RS 660 is equipped with a lightweight **lithium battery**.

The **full-colour TFT dash** boasts exceptional display capabilities for its various parameters. The two selectable **Road** or **Track** screens (both with automatic night or day backlighting thanks to the twilight sensor) correspond to the same number of indices represented. A further option is the **Aprilia MIA**, Aprilia's multimedia platform that allows you to connect your smartphone to the bike extending yet more the range of instrumentation functions. The Aprilia MIA system offers a connection protocol that minimizes smartphone battery consumption and includes both the **infotainment system** for managing voice commands, calls and music via intuitive controls located on the handlebars and the navigation function. It is thus possible – once the destination has been entered into the smartphone – to view the directions directly on the dashboard. The Aprilia MIA app also allows any routes travelled to be recorded and the data, which is gathered by means of the geo-referenced telemetry function, can subsequently be analysed directly in the app.

Versions and colours

Aprilia boasts a unique history of graphics and liveries, having always been a stylistic pacesetter. Aiming to both respect this heritage, while doing the utmost to stand out graphically, the Aprilia RS 660 colour range features the funky new **Acid Gold**, which most suitably reflects the dynamic, young character of the RS 660, enhancing even more the design features of the new Aprilia.

The Aprilia RS 660 is available in **two other graphic variations**: **Lava Red** is clearly dominated by colours that hark back to Aprilia's great sporting heritage. The combination of purple and red is a tribute to the RS 250 in the 1994 Reggiani Replica version, the last true sports bike of the two-stroke engine era, still cherished by motorcyclists and highly sought after by collectors. The second, an **Apex Black** graphic is characterized by a total black look, which has also long since become part of Aprilia's sporting history, which help the multiple bright red references to stand out considerably.

The Aprilia RS 660 is also **available with a low-power 95 hp engine option**, ideal for beginner riders, although all other technical features remain unchanged.

A wide range of original accessories

During the evolution of the RS 660 Aprilia a range of accessories that emphasize its various incarnations have been developed, enhancing performance and improving comfort and functionality.

- **Complete "For Race Use Only" Aprilia exhaust by Akrapovic**: complete exhaust system with collectors and carbon terminal for use on the circuit, not homologated for road use. This reduces weight and enhances both the sound and performance of the twin cylinders. The specialized ECU mapping is included in the kit, with the software for using the quickshift with the gearbox in reverse configuration. The software (also available as a separate accessory) enables the pit-limiter function.
- **Complete homologated Aprilia exhaust by Akrapovic**: complete exhaust system with manifolds homologated for road use. Enhances the performance, sound and look of the RS 660.
- **Software for inverted gearbox**: to use the quickshift with the gearbox in inverted configuration it is enough to load the accessory software into the control unit, without the need to replace any bike parts. The software enables the pit-limiter function.
- **Brake and clutch lever**: in billet aluminium, these are adjustable and complete the sporty look of the vehicle.
- **Wheel stickers**: adhesives to be applied to the rim channels to give the RS 660 a more aggressive look.
- **Swingarm paddock stands**: rear wheel stationary stand, indispensable on the track as well as for motorcycle maintenance.
- **Tank guards**: in adhesive 3D material, these protect the tank and limit the rider from sliding. Also available for the rear of the tank.
- **Carbon license plate holder**: very light, these enhance the RS 660's aesthetics.
- **Comfort seat**: made with gel inserts, these increase riding comfort.
- **Larger fairing**: offers better protection to the rider from air currents, both on the road and on-track.
- **Saddle bag**: indispensable for tourism, these are designed to be positioned on the passenger seat, without compromising the rider's riding comfort.
- **Tank bag**: designed to be placed safely and comfortably on the tank.
- **Electronic anti-theft**: made up of a compact and technologically advanced control unit, easy to install. Comes equipped with a remote control. The system is self-powered and has minimal energy absorption.
- **USB socket**: essential for charging external devices such as mobile phones. It is applied to the side the dashboard.
- **Aprilia MIA**: a new device that allows you to connect your smartphone to the bike via bluetooth, transforming it into a true multimedia platform.
- **Indoor vehicle cover**: protects the motorcycle from dirt and dust during long stops.
- **Single seat tail cover**: completes the sporting image of the vehicle by eliminating the passenger seat and enhancing the design of the RS 660.

Aprilia RS 660 - Technical sheet

Engine type

Aprilia forward-facing parallel twin, 4-stroke, liquid-cooled with radiator and water-oil heat exchanger, double overhead camshaft (DOHC) with silent chain drive on the right side, four valves per cylinder.

Bore and stroke

81 x 63.93 mm

Displacement

659 cc

Compression ratio

13.5: 1

Max power at crankshaft

100 hp (73.5 kW) at 10,500 rpm

Max torque at crankshaft

67.0 Nm (6.83 kgm) at 8,500 rpm

Fuel system

Airbox with front air intake. 2 \varnothing 48 mm throttle bodies, Ride-By-Wire management

Ignition

Electric

Lubrication

Wet sump

Gears

6 gears with Aprilia Quick Shift (AQS) up-and-down system

Clutch

Oil bath multi-disc with anti-hopping system

Final drive

Chain, 17/43 transmission ratio

Electronic management

6-axis inertial platform, APRC suite which includes ATC (traction control, AWC (wheelie control), AEB (engine brake), AEM (engine map), ACC (cruise control)
5 Riding modes (Road and Track, 3 fixed and 2 customizable)

Frame

Double beam aluminium frame with detachable rear seat

Front suspension

Kayaba upside down fork \varnothing 41 mm with counter spring, aluminium feet for fixing radial calipers. Adjustable for rebound, compression and spring preload. Wheel travel 120mm

Rear suspension

Aluminium swingarm with asymmetrical trusses. Monoshock with adjustable counter spring: rebound and spring preload. Wheel travel: 130mm

Front brake

Double disc diameter 320mm
Brembo radial calipers with 4 \emptyset 32mm opposing pistons.
Radial pump and metal braided brake hose

Rear brake

220mm diameter disc; Brembo calliper with 2 isolated \emptyset 34mm pistons. Pump with integrated tank and metal braided hose

ABS

ABS Cornering multimap

Wheels

In aluminium alloy Front: 3.5 "X17" Rear: 5.5 "X17"

Tyres

Tubeless radials, front: 120/70 ZR 17 rear: 180/55 ZR 17 (alternatively 180/60 ZR17)

Dimensions

Wheelbase: 1370 mm
Length: 1995 mm
Width: 745 mm
Saddle height: 820 mm
Rake: 24.1°
Trail: 104.6 mm

Weight

183 kg kerb weight (169 kg dry)

Homologation

Euro 5

Consumption

4.9 litres / 100km

CO2 emissions

116 g /km

Tank capacity

15 litres (including 4 lt. fuel reserve)

Colour range

Apex Black, Lava Red, Acid Gold