50 years of the Audi five-cylinder

- **The five-cylinder engine debuted in 1976 in the Audi 100 with 136 PS**
- **Successful engine concept for production models and rally sport**
- **Signature sound from its unique 1-2-4-5-3 firing order**
- **Audi RS 3 2.5 TFSI with 400 PS and 500 Nm torque**
- **Hand-assembled at the Bock plant in Győr, Hungary**

Ingolstadt, December 3, 2025 – Audi will celebrate a very special anniversary in 2026: 50 years of the five-cylinder engine. The brand with the four rings first introduced this engine in 1976 in the second-generation Audi 100. This was followed by upgrades and new developments with turbocharging, exhaust gas purification, and four-valve technology, rally engines, and five-cylinder diesel engines. Currently, the 2.5 TFSI in the Audi RS 3* continues the great tradition of five-cylinder engines

Audi's five-cylinder engines have cult status and are deeply rooted in the Audi DNA. They have played a decisive role in shaping "Vorsprung durch Technik" – on the one hand with numerous successes in motorsport, and on the other, by virtue of their outstanding performance in series production. To this day, the 2.5 TFSI provides a highly evocative driving experience, not least because of its characteristic sound.

The HISTORY: 50 years of success in series production and motorsport

The first five-cylinder engine powered the Audi 100 (C2) in 1976. Known internally as Type 43, the model was intended to be positioned higher in the market than its predecessor. The four-cylinder engines of the time were not sufficient for the developers' plans. Audi engineers therefore discussed using inline five-cylinder and six-cylinder engines in the early 1970s. The latter were ruled out due to space constraints and the unfavorable weight distribution. As a result, those responsible opted for the inline five-cylinder engine, which was based on the EA 827 engine concept, still in its infancy at the time. This inline four-cylinder engine was used throughout the Volkswagen Group in the 1970s, including in the Audi 80 and Audi 100. The five-cylinder engine derived from it, with a displacement of 2,144 cc, delivered 100 kW (136 PS). A modern fuel injection system increased efficiency and power delivery. Deliveries of the Audi 100 5E began in March 1977.

**The collective fuel/electric power consumption and emissions values of all models named and available on the German market can be found in the list provided at the end of this text.*

From the original quattro to the Sport quattro

Audi launched its first diesel version back in 1978: a naturally aspirated diesel with a displacement of two liters and 51 kW (70 PS). One year later, the first five-cylinder gasoline engine with turbocharging made its debut – another pioneering achievement by Audi. With 125 kW (170 PS) and 265 Nm of torque, it powered the new top model, the Audi 200 5T. The five-cylinder gasoline engine in the original 1980 **Audi quattro** reached even greater heights. Featuring turbocharging, intercooling, and permanent all-wheel drive, it formed a powerful technology package for both racing and the road. At the start of sales, it had a power output of 147 kW (200 PS). After Audi secured the World Rally Championship title in 1982 with this car, Finnish driver Hannu Mikkola won the drivers' title in the World Rally Championship a year later. Also in 1983, Audi introduced the **Sport quattro**, which was 24 centimeters shorter and had a wider track. It was powered by a newly developed four-valve, five-cylinder light-alloy engine with 225 kW (306 PS). This made the Sport quattro the most powerful car ever offered by a German company for use on public roads up to that time. The model formed the basis for a new Group B rally car, in which the four-valve engine delivered 450 PS right from the start (331 kW). It was used for the first time in the penultimate race of 1984, the Ivory Coast Rally. The remaining eleven races of the season were contested by Sweden's Stig Blomqvist in the 265 kW (360 PS) **Audi quattro A2, Group B**. In the end, he won the drivers' title and Audi won the manufacturers' world championship.

Walter Röhrl on Pikes Peak

Even after Audi withdrew from Group B rallying in 1986, there were further highlights on the racetrack: Walter Röhrl won the 1987 hill climb on Pikes Peak (USA) in the Audi Sport quattro S1 (E2). The racing car delivered 440 kW (598 PS) of power. Unlike the Audi Sport quattro S1 with its four-valve technology, Audi used the inline five-cylinder engine with the old two-valve cylinder head in the 200 quattro Trans-Am. The turbocharged engine with a displacement of 2.1 liters delivered 375 kW (510 PS). Hurley Haywood won the American Trans-Am series in 1988 with it in impressive style. And in 1989, the IMSA GTO captivated the US touring car scene with 530 kW (720 PS) – still from just over two liters of displacement.

Audi unveiled another milestone in automotive history at the 1989 International Motor Show in Frankfurt am Main: the Audi 100 TDI. The direct-injection five-cylinder turbo diesel with a fully electronic engine management system produced 88 kW (120 PS) from a displacement of 2.5 liters. Audi continued to refine its range of five-cylinder gasoline engines. In 1994, the **Avant RS2** with 232 kW (315 PS) was brought onto the market. As an Avant with sports car power, it became the founding model of a new automotive class.

With the introduction of the Audi A4 (B5) in 1994, five-cylinder engines made their exit from the B segment. The new V6 engines gradually replaced them in the mid-1990s. The last five-cylinder engines – the 2.5 TDI in the Audi A6 and the 20V turbo with a displacement of 2.2 liters in the Audi S6 – were phased out in 1997.

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Turbo and direct injection in the Audi TT RS

In 2009 – 30 years after the debut of the first five-cylinder turbocharged gasoline engine – the big comeback arrived in the **Audi TT RS**: from 2.5 liters of displacement, quattro GmbH generated 250 kW (340 PS) from the transversely mounted engine featuring turbocharging and gasoline direct injection. It also delivered outstanding performance in the RS 3 Sportback. The TT RS plus, which Audi introduced in 2012, even achieved 265 kW (360 PS). In 2013, the RS Q3 became the first compact SUV to open up a new market segment. As in the TT RS and RS 3, it was the 2.5-liter five-cylinder engine that served as the power unit. A new version of the engine followed in 2016. Thanks to lightweight construction measures, reduced internal friction, and increased power delivery, the engineers achieved a good 17 percent more power with the same 2,480 cc displacement: 294 kW (400 PS) and 480 Nm of maximum torque.

400 PS and 500 Nm in the Audi RS 3*

Since 2021, the Audi RS 3* has been equipped with a modified version of the 2.5 TFSI, which is more powerful than ever before. It enables the compact sports car to sprint from 0 to 100 km/h in 3.8 seconds. The top speed is limited to 250 km/h, with an optional 280 km/h available. With the RS dynamic package and ceramic brakes, the top speed is as high as 290 km/h. The decisive factor behind these performance figures is the torque, which has increased to 500 Nm and is available between 2,250 and 5,600 rpm. That is 20 Nm more than in the predecessor model. This allows the Audi RS 3* to accelerate even faster from mid-range engine speeds. Its maximum output of 294 kW (400 PS) (combined fuel consumption in l/100 km: 9.6–9.1; combined CO_2 emissions in g/km: 217–207; CO_2 class: G) is available earlier than before at 5,600 rpm and extends over a wide range up to 7,000 rpm. A new engine control unit also ensures faster networking of all drive components, taking driving dynamics to a new level.

The SOUND: evocative and unmistakable

The five-cylinder's throaty sound makes for a highly evocative driving experience. Its signature sound is created by the odd number of cylinders and the unique firing sequence 1-2-4-5-3, which alternates between cylinder pairs adjacent to each other and further away at an interval of 144 degrees of crankshaft rotation. This gives the 2.5 TFSI a very special rhythm and sound character. The geometry of the exhaust manifold contributes to this unique sound as well with different exhaust gas flow times between the exhaust valves and the turbocharger.

The fully variable exhaust flap control introduced in the third-generation RS 3 Sportback* and second-generation RS 3 Sedan* in 2021 increases the sound spectrum and makes it even more tangible. The flaps assume various intermediate positions depending on the Audi drive select mode chosen: in dynamic, RS Performance, and RS Torque Rear modes, they open significantly earlier than in other driving modes – the evocative sound characteristics become even more prominent. The characteristic sound of the five-cylinder engine is enhanced by the optional RS sports exhaust system, which produces an even sportier sound.

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The TECHNOLOGY: 2.5 TFSI with turbocharging

When developing the current generation of the five-cylinder engine, which made its debut in 2016, the focus was on high performance and lightweight construction. In the Audi RS 3 (combined fuel consumption in l/100 km: 9.6–9.1; combined CO2 emissions in g/km: 217–207; CO2 class: G), the engine, known internally as the EA855 Evo Sport, delivers 400 PS and 500 Nm of torque. The 2.5 TFSI thus offers excellent mid-range acceleration and outstanding power: the compact sports car can sprint from 0 to 100 km/h in 3.8 seconds and reaches a top speed of up to 290 km/h.

The abbreviation TFSI stands for turbocharging and direct injection. The 2.5 TFSI uses dual injection – into the intake manifold and into the combustion chambers – as well as the Audi valvelift system for variable control of the exhaust valves. This enables more precise regulation of the fuel/air mixture, resulting in optimal power delivery with reduced fuel consumption. In the five-cylinder engine, fuel is injected at 250 bar; the large turbocharger generates a maximum boost pressure of 1.5 bar (relative)/2.5 bar (absolute).

The cylinder head, bearings, pistons, and crankshaft are highly durable. Lightweight materials are used for many engine components, benefiting the responsiveness and eagerness to rev. In total, the five-cylinder engine weighs around 160 kilograms and, at less than 50 centimeters long, is extremely compact. This makes the long-stroke engine (bore 82.5 mm x stroke 92.8 mm) perfect for transverse installation.

The 2.5 TFSI's crankcase is made of aluminum, which dramatically reduces its weight compared to the previous gray-cast-iron components. The crankshaft is hollow-bored, which also contributes to the five-cylinder's low weight. Compared to a solid crankshaft, less mass needs to be set in rotation, which in turn improves the engine's responsiveness. Audi also uses other lightweight materials, such as a magnesium oil pan top and aluminum belt pulleys.

Extensive measures reduce internal friction, wear, and fuel consumption, thereby optimizing power output. These include plasma-coated cylinder liners and special oil channels in the base of the aluminum pistons to improve cooling.

The innovative thermal management system with a switchable coolant pump also reduces friction and increases fuel economy: during the short warm-up phase after a cold start, the switchable water pump does not circulate the coolant in the cylinder head, allowing the 2.5 TFSI engine to reach its operating temperature more quickly. The demand-controlled aluminum oil pump – in conjunction with the Audi valvelift control system – also contributes to increased efficiency.

The oil pump adjusts the oil pressure to the prevailing requirements, while the Audi valvelift system on the exhaust side varies the duration of valve opening in two stages depending on load and speed – for moderate consumption at low and partial load, and for direct responsiveness and excellent mid-range acceleration at full load.

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As part of the vehicle testing, engine tests are carried out in different regions and in all European climate zones from northern to southern Europe. In addition to cold- and hot-weather driving, the program includes assessments at various altitudes and the endurance test on the Nürburgring north loop. Thousands of test kilometers with one goal: to ensure maximum performance under all conditions.

The PRODUCTION: manual assembly in the Bock factory

The five-cylinder engine is built at the Győr plant in Hungary, in the so-called Bock assembly, which spans more than 1,000 square meters. The engine is put together by hand, without the use of robots. The 2.5 TFSI is assembled by highly qualified specialists at 21 stations before it leaves the factory. Key components such as the connecting rods and cylinder crankcase, including the plasma coating of the cylinder liners, are manufactured separately in a specialized production area, also at the Győr plant.

Assembly of the five-cylinder begins with placing the aluminum crankcase and securing it on the assembly stand. Once the engine has been embossed with its number, the bearing shells are oiled and the crankshaft is inserted. The pistons can then be assembled with the connecting rods and placed in the cylinder crankcase. A torque check is carried out to ensure that the crankshaft rotates smoothly and that all components are properly bolted together. Next, the sealing flange is installed and the oil pan is fixed in place. Its upper section is made of magnesium, making it significantly lighter than the lower aluminum part. The process continues with the installation of the injectors, speed sensor, and timing chain. The timing chain connects the crankshaft to the camshaft and ensures that the valves open and close at the right instant.

This is followed by one of the most important steps: bolting on the cylinder head and installing the spark plugs. The spark ignites the fuel/air mixture, setting the pistons in motion and creating the characteristic sound of the five-cylinder engine. The central element for the air supply is the intake manifold, which is then bolted on, along with the large turbocharger, which compresses the intake air, delivering more oxygen to the combustion chamber. This enables better combustion and thus contributes to optimized performance and efficiency. Finally, the engine wiring is attached and the dual-mass flywheel is mounted. Positioned between the engine and the seven-speed S tronic transmission, it reduces vibrations and oscillations in the powertrain. This increases driving comfort and the service life of the components.

The final step involves mechanical and electronic tests to ensure that all functions work properly. This includes the cold test, in which the engine is filled with operating fluids and checked. The so-called hot test is also part of the procedure: here, the engine is started for the first time and tested under load. Once all guidelines have been met and every test gives the green light, the five-cylinder engine is loaded by crane onto a pallet and transported by train from the Győr plant to Ingolstadt. That's where the Audi RS 3* rolls off the production line and the so-called "marriage" takes place – when the 2.5 TFSI is finally installed in the top-of-the-line A3 model.

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The Audi Group is one of the most successful manufacturers of automobiles and motorcycles in the premium and luxury segment. The brands Audi, Bentley, Lamborghini, and Ducati produce at 22 locations in 13 countries. Audi and its partners are present in more than 100 markets worldwide.

In 2024, the Audi Group delivered 1.7 million Audi vehicles, 10,643 Bentley vehicles, 10,687 Lamborghini vehicles, and 54,495 Ducati motorcycles to customers. In the 2024 fiscal year, Audi Group achieved a total revenue of €64.5 billion and an operating profit of €3.9 billion. As of December 31, more than 88,000 people worked for the Audi Group, more than 55,000 of them at AUDI AG in Germany. With its attractive brands and numerous new models, the group is systematically pursuing its path toward becoming a provider of sustainable, fully networked premium mobility.

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Fuel/electric power consumption and emissions values of the models named above:

Audi RS 3
Combined fuel consumption in l/100 km: 9.6–9.1 *(24.5-25.8 US mpg)*;
combined CO_2 emissions in g/km: 217–207 *(349.2-333.1 g/mi)*; CO_2 class: G

Audi RS 3 Sportback
Combined fuel consumption in l/100 km: 9.6–9.3 *(24.5-25.3 US mpg)*;
combined CO_2 emissions in g/km: 217–211 *(349.2-339.6 g/mi)*; CO_2 class: G

Audi RS 3 Limousine
Combined fuel consumption in l/100 km: 9.4–9.1 *(25.0-25.8 US mpg)*;
combined CO_2 emissions in g/km: 213–207 *(342.8-333.1 g/mi)*; CO_2 class: G