

Audi DRIVER

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**RS4
SPECIAL**



e-tron 2 = R4?



- Tests: A5 Sportback 2.0 TDI S line and RS4 ■ RS4 buying guide
- Ur quattro rally replica ■ Abt Q5

**RS4
SPECIAL**

Biturbo power

This is the road test which was published in the March 2001 issue of *Audi Driver*, shortly after imports of the RS4s into Britain began.





IT'S THE CAR WHICH every Audi enthusiast has been waiting for, the successor to the highly-prized RS2. But then the RS2, for all its greatness, had its faults. Is the RS4 less open to criticism?

The RS4 Avant quattro is assembled on a special line at Neckarsulm, controlled by the Audi subsidiary quattro GmbH. This organisation has been responsible for much of the development as well as the assembly, but inevitably links with mainstream Audi production are strong. Although many of the panels are changed, the RS4 is based around what is essentially an A4 Avant bodyshell.

The heart of the RS4 is a development of the 2.7-litre biturbo engine which powers the S4. The power output is raised from 265 to 380 PS and maximum torque from 400Nm to 440Nm. The power output peaks between 6100 and 7000 rpm and the maximum torque value is available all the way from 2500 to 6000 rpm.

These are massive outputs, even for a heavy estate car, and the increases have been brought about by working in conjunction with Cosworth Technology in Northampton, now a branch of the Audi empire. Incorporating the special

light alloy casting techniques for which the company has become famous, the cylinder heads have been completely redesigned and incorporate bigger inlet and exhaust ports. Bigger KKK K04 turbochargers, together with 30 per cent larger, more efficient, intercoolers are used, boost pressure is increased, and a new exhaust system with less back pressure has been developed by quattro GmbH.

As well as developing the cylinder heads, which incorporate sodium-filled exhaust valves, Cosworth Technology has also been responsible for strengthening the crankcase and modifying the connecting rods and crankshaft. This engine develops 142 PS per litre, unrivalled by any other production car.

Not only is this engine extremely powerful, but the way in which its power is delivered is unusual. We've become used to turbocharged engines having flat-topped torque curves, but the power curve of the RS4 engine also has a flat section at the upper end. From 6100 rpm to 7000 rpm, the power output stays at a level 380 PS, instead of falling away. In practice, this means that the power holds up at high revs instead of dropping rapidly away, one reason why it can pay

dividends to hang on to high revs in the gears.

Making use of all that torque when getting away from rest is not easy. We were able to achieve 0-50 mph in 3.6 seconds, but you can only do this by the most brutal of methods: taking the engine up to around 6000 rpm and whipping your foot off the clutch pedal so that the full effect of the engine is transmitted almost instantly. It is a harsh business, you can hear and feel the drive-train protesting and we would not suggest that RS4 owners do it very often. Even when your foot comes off the clutch, there is a split second pause before the RS4 unleashes itself towards the horizon. You'll reach 70 mph in only six seconds, more than a second faster than a good S4 Avant. This sort of performance puts the RS4 in the same class as German and Italian supercars, but with none of their impracticality. In theory, maximum speed is governed to 156 mph (250 kph), but we have recorded much higher speeds.

Inevitably, this engine drinks plenty of fuel. Overall, we recorded 21.2 mpg but, if you spend your time driving at well over 100 mph on German autobahns, it would use much more than this. When driving it hard, expect a figure closer to 18 mpg.



On the other hand, driving it more modestly and without using the great reserves of power, we were able to get 26.4 mpg, but why buy an RS4 if you intend to use it like this? You'll need to fill the tank with 98 RON super unleaded, although it will run quite happily on 95 RON fuel if you don't mind the engine performing less effectively. The 62-litre tank will give you a normal range of around 250 miles, rather limited for a car which begs to be allowed to cover long distances. If you do want to stretch each gallon as far as possible, shift into sixth gear at the earliest opportunity: at 25.9 mph per 1000 rpm this certainly helps to give maximum range.

The gear ratios are well chosen and form an almost perfect match for the engine characteristics. Two of the gear ratios, third and fourth, are seven per cent lower than the same gears of the S4. Changing gear, though, is less satisfactory; this six-ratio manual gearbox has never had a very slick change and, although the quattro GmbH engineers did their best to improve it, it remains one of the least satisfying aspects of the car.

Compared to other high-performance Audis, the biggest improvement has

been to the brakes. The original S2 was drastically underbraked and, when the company put together the specification of the RS2, they decided on Porsche brakes manufactured by Brembo in Italy. This time, they have gone down a different route, introducing a sophisticated type of brake disc which is not fixed rigidly to the hub, but mounted on a series of radial pins. This mounting allows the disc to maintain its position relative to the pads more accurately and largely removes the possibility of the disc warping. The front rotors have a diameter of 360 mm, while those at the rear are 312 mm.

Surprisingly, these discs are used in conjunction with fairly standard floating callipers, the fronts having two pistons, the rears one. However hard we drove the RS4, the performance of the brakes was always superb, but we know that some modified RS4s are being fitted with more complex callipers.

The RS4 looks wide and low compared with any other A4 Avant, and so it is. The ride height is lowered by 20 mm, the front track is increased by 51mm, the rear by 40 mm. The wheel arches are flared out to accommodate the wider track and

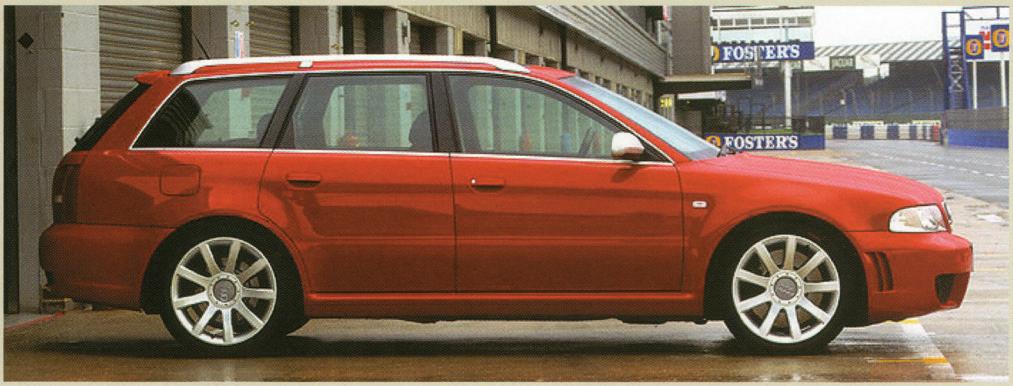
'This sort of performance puts the RS4 in the same class as German and Italian supercars, but with none of their impracticality'

8.5 x 18-inch wheels with their 255/35 tyres increase the RS4's overall width by 66 mm. Pirelli P-Zero tyres are standard for the RS4; with that much rubber, it is able to generate enormous cornering power and, on a dry road speeds have to be high for one to sense the inherent understeer characteristics.

Things are not quite the same in the wet. If you go into a roundabout too quickly and tightly on a slippery road, the back end can slide out rather more quickly than you might expect. Normally, it would simply be a case of steering into the slide but, like all Audis, the RS4 is fitted with ESP and, in a situation such as this, it will make its presence known. The result can be sudden and disconcerting as the back end is kicked back by the differential braking.

Just because the RS4 has high reserves of handling and braking, one mustn't assume that it is not subject to the laws of physics and, with a car which can be as fast as this, there is even more reason to take care when driving on wet or icy roads. Your speed is likely to be higher than with less powerful cars and, when break-away does occur, it can be more dramatic.

Figures: RS4



Test car had black leather and navigation/TV screen.



Fabric with aluminium thread is an option.



Engine has 43 per cent more power than the S4.



8.5 x 18 in. wheels carry 255/35 tyres.

ENGINE

Displacement	2671 cc
Configuration	V
Cylinders	6
Bore and stroke	81.0 x 86.4 mm
Power output	380 bhp (280 kW) @ 6100-7000 rpm
Maximum torque	325 lb.ft. (440 Nm) @ 2500-6000 rpm
Compression ratio	9.0:1

DIMENSIONS AND WEIGHTS

Length/width/height	178.2/70.8/54.6 in., 4525/1799/1386 mm
Wheelbase	102.6 in., 2607 mm
Track (front/rear)	61.0/60.2 in., 1549/1530 mm
Turning circle	37.4 ft, 11.4 m
Unladen weight	3572 lb, 1620 kg
Total permitted weight	4785 lb, 2170 kg
Wheel and tyre size, front and rear	8.5 x 18 255/35/ZR18

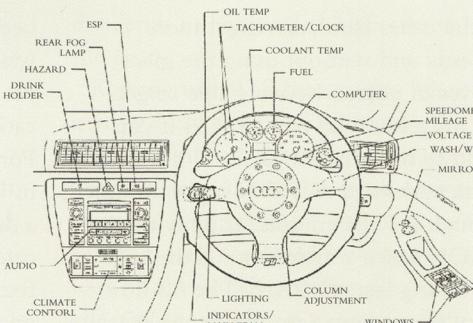
PERFORMANCE

Maximum speed	156* mph, 250* kph
0-50 mph	3.6 sec
0-60 mph	4.8 sec
0-70 mph	6.0 sec
0-80 mph	7.9 sec
30-50 mph (3rd gear)	3.5 sec
30-50 mph (4th gear)	5.0 sec
50-70 mph (3rd gear)	3.1 sec
50-70 mph (4th gear)	3.8 sec
50-70 mph (5th gear)	5.1 sec
50-70 mph (6th gear)	7.5 sec
Road speed per 1000 rpm in top gear	25.9 mph, 41.4 kph

FUEL CONSUMPTION

Overall test value	21.2 mpg, 13.3 l/100km
Economical driving	26.4 mpg, 10.7 l/100km
Urban cycle	16.6 mpg, 17.0 l/100km
Extra urban cycle	31.4 mpg, 9.0 l/100km
Total	23.5 mpg, 12.0 l/100km
Fuel required	98 RON unleaded **
Fuel tank capacity	13.6 gallons, 62 litres
Test publication date	March 2001

* Manufacturer's claimed maximum - see text ** 95 RON with reduced performance



PRICES

Audi RS4 Avant quattro	£46,500
Jaguar XJR 4.0 Supercharged	£54,405
BMW M5	£59,995
Mercedes-Benz E-Class 5.5 AMG Estate	£62,840

PERFORMANCE COMPARISONS

	RS4 Avant quattro	Avant RS2	S4 Avant quattro	Nothelle N300 S2 Estate
Displacement, cc	2671	2226	2671	2226
Power output, PS/kW	380/280	315/232	265/195	306/226
@ rpm	6100-7000	6500	5800	5800
Maximum torque, lb.ft./Nm	325/440	302/410	296/400	292/395
@ rpm	2500-6000	3000	1850-3600	2300
Maximum speed, mph	156	163	155	165
0-50mph, sec	3.6	3.9	4.0	3.9
0-60mph, sec	4.8	5.1	5.3	5.3
0-70mph, sec	6.0	6.5	7.2	6.5
0-80mph, sec	7.9	-	9.3	-
30-50mph (third gear), sec	3.5	4.0	3.2	3.3
30-50mph (fourth gear), sec	5.0	5.8	4.3	5.2
50-70mph (third gear), sec	3.1	2.8	3.4	2.9
50-70 mph (fourth gear) sec	3.8	3.9	3.9	4.2
50-70mph (fifth gear), sec	5.1	5.3	4.7	5.4
Overall fuel consumption, mpg / l/100km	21.2/13.3	22.5/12.6	22.0/12.8	21.7/13.0
Unladen weight, lb/kg	3572	3521	3396	3440
Power/weight ratio, PS/ton, PS/tonne	238	200	175	199
Test publication date	Mar '01	July '95*	July/Aug '99	Mar '94*

* Figures from Volkswagen Audi Car



'No-one can mistake an RS4 from outside. The deep front apron with its three eager mouths is very reminiscent of the RS2'

Many critics have commented on the steering of the RS4, despite the fact that it is sharper and more responsive than any other big, high-performance Audi. There is a slight vagueness at the straight ahead position, but don't forget that the primary purpose of this car is to allow one to travel very rapidly on Germany's autobahns. Despite the current level of traffic which often reduces speeds to a crawl, there are occasions when one can cruise at very high speeds over long distances and, at such times, one does not want the steering to be too twitchy or over-responsive.

As with many high-performance cars developed in Germany, the suspension is biased towards high standards of handling, although the level of comfort is not at all bad on smooth German roads. On the country roads of England and France, it's a different matter, thundering around minor roads in northern France had our passengers feeling decidedly unhappy, particularly those in the back who also have limited leg room.

The RS4 is fitted with Recaro front seats which offer plenty of support, especially during fast cornering. There is a choice of upholstery: regular or the softer Nappa leather, or a combination of leather bolsters and a fabric which has aluminium thread woven into it. The doors and facia are trimmed with panels which can either be carbon fibre or have the high-gloss, dark, piano-varnished finish which is used for the S3. Interior door releases and the ring around the gearlever gaiter are dark anodised rather than polished.

No-one can mistake an RS4 from outside. The deep front apron with its three eager mouths is very reminiscent of the RS2. The central grille carries air to the water and oil radiators while the outer ones feed air to the intercoolers. This escapes via the slots ahead of the

front wheels. There are also grilles in the rear apron, but these are purely decorative and perhaps out of place on such a no-nonsense car. The doors have lost their protective strakes, but the sills are widened to link the flared wheel arches.

Many of the British market RS4s will be equipped with the full navigation and television system, but the standard fitting is the Concert radio/cassette unit, linked to Bose amplifiers and speakers. The electric sunroof is an extra-cost option at just over £800. Sideguard, which will protect heads in the case of an impact and which is a major safety feature, is offered for an additional £470.

So, does the RS4 avoid some of the criticisms which were levelled at the RS2? Despite the harshness over poorly-made roads, the ride quality is much better than the earlier car and the brakes are far superior. Although, on paper, the performance of the two cars is not a million miles apart, the engine of the RS4 has characteristics which make the achievement of rapid acceleration far more civilised.

There are areas to criticise. The gear-change is still not the best, and the

steering could do with being more responsive. We are not too sure whether ESP is always ideal for a car of this potential. It is linked to the ASR traction control which reduces engine output if wheel-slip is detected and we found that we could achieve marginally faster acceleration times with the ESP switched off. We think that all RS4 owners should try driving the car with and without the ESP in operation, but it won't be easy to find an area where this can be done safely and at high enough speeds to detect the differences. We'd like to hear more from readers about the handling of the RS4.

These points apart, the RS4 Avant quattro merits a place amongst the greatest of cars. Following on from the heritage of the RS2, Audi has built a car which is faster, better handling, with more acceptable ride quality and with impressively powerful brakes. It offers all the practicality of an estate car, with performance which is normally only achieved by cars with far less accommodation for people and luggage. Little wonder that all the allocation for Britain was quickly snapped up; even if you want to buy a used example, you'll end up paying a substantial price. 

