

October 1991

Audi 100 2.3E and 2.8E Automatics



THE POSH END OF THE VW RANGE IS devoted to the Audi brand name – we were testing a Seat at the same time as this pair and realised how diverse the group's products are. It's a concern that seems to permit true autonomy of its members, however, and the Audi 100 that's been launched this year has its own character and feel – even though some of its components are shared with VWs.

The V6 engine, for example, is totally new and, incredibly, totally distinct from the one that will sit transversely under Golf and Passat bonnets. Being an Audi, it's mounted longitudinally, just like the five-cylinder 2.3 carried over from the previous 100. There's also a 2.0 litre 'four' and an interesting new turbo-diesel with direct injection and a six-speed gearbox. Just about everything is also available as an estate car (Avant as was) and with four-wheel drive (quattro) – so it's a formidable catch-all line-up for executive buyers.

After three weeks of testing the 2.3 and 2.8E saloons, we found that the biggest favourable impression these cars left with us was one of reassurance. Audi is astutely responding to the twin

concerns of the environmentalists and the safety lobby. This new model offers fundamental standard features such as twin catalysers, Bosch ABS and Procon-ten, 100 per cent galvanised structures and a ten-year anti-rust cover, which graphically emphasise that the company doesn't indulge in mere sales talk. The test-track results in braking are outstanding, while our workshop inspection of the Audi's build quality and secondary safety features also created a very favourable response.

In contrast, the new 100's performance, mechanical refinement and fuel efficiency hardly outstrip the opposition's, except that the now pleasantly smooth 2.3E can be bought at a price that some rivals can only match with four-cylinder alternatives. Both automatic and manual transmissions work smoothly and the cabin is well-planned and attractive. Heating and ventilating work better than before, but a sunroof is still needed in warm weather.

This new Audi's ride and handling remain its most disappointing aspects – too much stiff-limbed disturbance over bumps and steering vagueness detract from the enthusiast's driving pleasure. It

Living with the Audis . . .

doesn't do much for passenger comfort either, but at least the seating and detailed consideration for the occupants' well-being are thoughtfully planned. There's still more space for people and luggage in a Passat, though.

Although the list price is right, it pays to see what you get (and don't get) by way of standard equipment. Resorting to the options list proves very expensive and isn't good for a car's depreciation, either – a factor that has been a deterrent to Audi 100 ownership in the past.

If the company car perk were to disappear and the drivers were also owners who had to pay the upkeep of their choice, a lot of executive car sales would evaporate. Those that remained would surely veer towards cars like this new Audi 100, which exudes safety, solidity, excellent build quality and impressive 'green' credentials. It looks like an excellent long-term investment.

At the Wheel

Driving position

The Procon-ten safety steering wheel system precludes any rake or reach adjustment at present – a pity, because shorter driver may have to raise the back of the cushion too much and finish up with excessive thigh support. Neat lumbar adjusters within the backrest wheels, on both sides, produce sufficient spinal support, but only when set at their firmest. There's a lot of legroom for the lanky, however.

Controls and displays

The indicators are too quiet and why is the dial lighting so dim on its rheostat's brightest setting? The systems check is a neat and unfussy arrangement, but no separate trip computer is standard. We like the feel and disposition of the pedals – the

five-speed manual shift works smoothly and is well worth considering with the 2.3-litre engine. The automatic's shift quadrant is fussily protected by safety latching that demands pressure on the brake and its knob at various times, to keep it moving to and fro unimpeded; you can't remove the ignition key unless the selector is in Park, either. Despite this 'fussy nanny' mentality, it's quite nice to manually override on the move, and there are times when the downshift is a bit slow off the mark unless you do so.

Vision

Rear quarter vision is fine, but you have to guess where the boot extremities are when reversing. The door mirrors fold readily to reduce width and have an electric adjuster that's a pleasure to use, while the door window buttons (with a one-shot driver facility) also have a feeling of German quality to them. There's a sensible sweep to the wipers, but the intermittent wipe is only one speed and the powerful headlamp washing system is on the options list.

Driver satisfaction

Despite being a bit slow on the uptake at times, the automatic 'box responds intelligently to an urgent right foot and its acceleration in kickdown mode can't be bettered by manual override on either car.

At the other extreme, gentle driving provides unobtrusive changes, with the solid 'locked-up' top gear taking over at about 35mph in the 2.8 – lower in the 2.3, with its shorter gearing. This is the way to optimise fuel economy, of course, but a quick flick of the unimpeded lever into 3, isolates what is essentially a top ratio that's ideal for cruising, although unhelpful for overtaking on the right side of the legal limit.

The 2.3 feels very refined for a five-cylinder engine these days – if there weren't a V6 on offer as well, it could feel more than acceptable

to many drivers used to 'fours'. Our V6 displayed slight tremors when lugging at low revs, but it yowls pleasurably when extended and clinches the objective of unobtrusive mid-range cruising. Ultimate performance and economy figures turns out to be par for the class, but neither sets any new standards.

Least impressive of the new model's attributes are its ride and steering feel. We've never been convinced by the Audi 100's suspension and the peculiar, elasticated feel of the lifeless steering – it even betrays lost motion when you're halfway round a bend and put a bit more on. Of course, it's effortless and the 100 shows exemplary stability and progressiveness as it's pushed towards its roadholding limits. Nevertheless, the way the car talks to the driver about what's going on outside is muffled, compared with a BMW or a Rover 800.

Space & Comfort

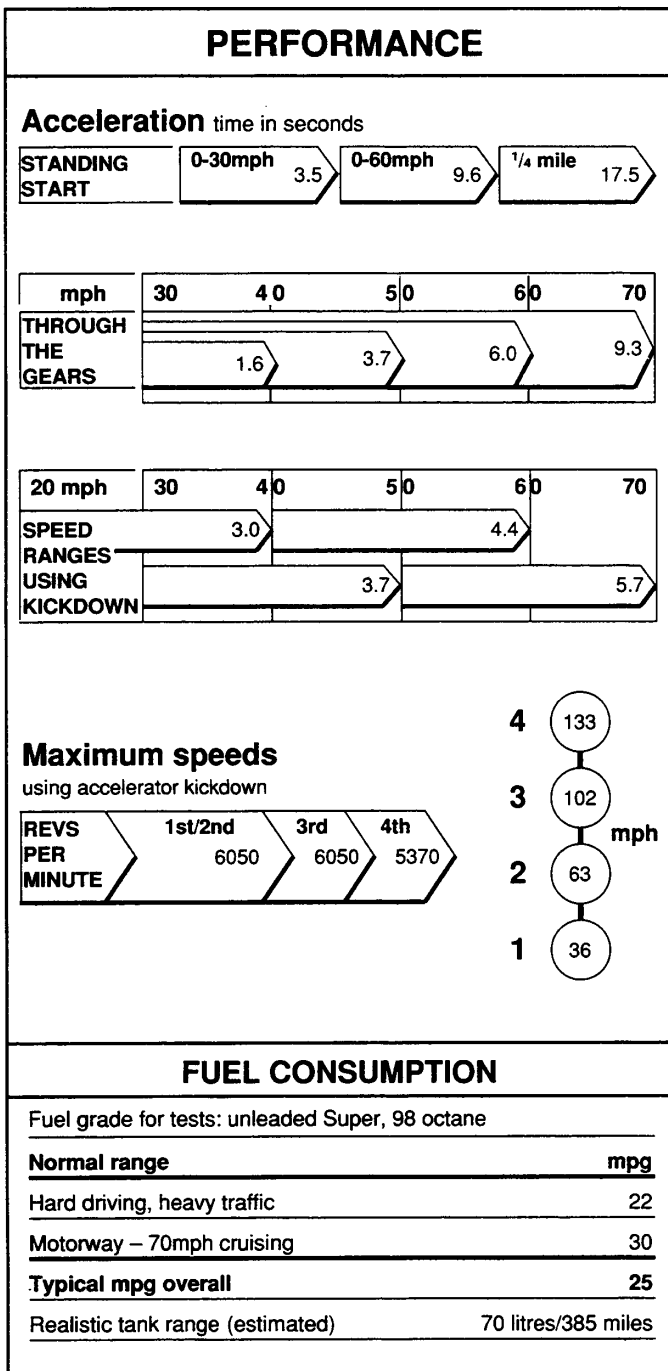
Seating and ride comfort

It's not as if the Audi, like the Granada, has given away some cornering prowess in the pursuit of a special quality of ride comfort. The thumping and jostling that develop down country lanes or even around suburban roads favoured by men with temporary traffic lights and drills, prove a real disappointment. Perhaps this is worse on the V6 with its V-rated tyres. Previous experience suggests that quattro versions, with their truly independent rear suspension, can turn in a better showing over the bumps – we look forward to trying one.

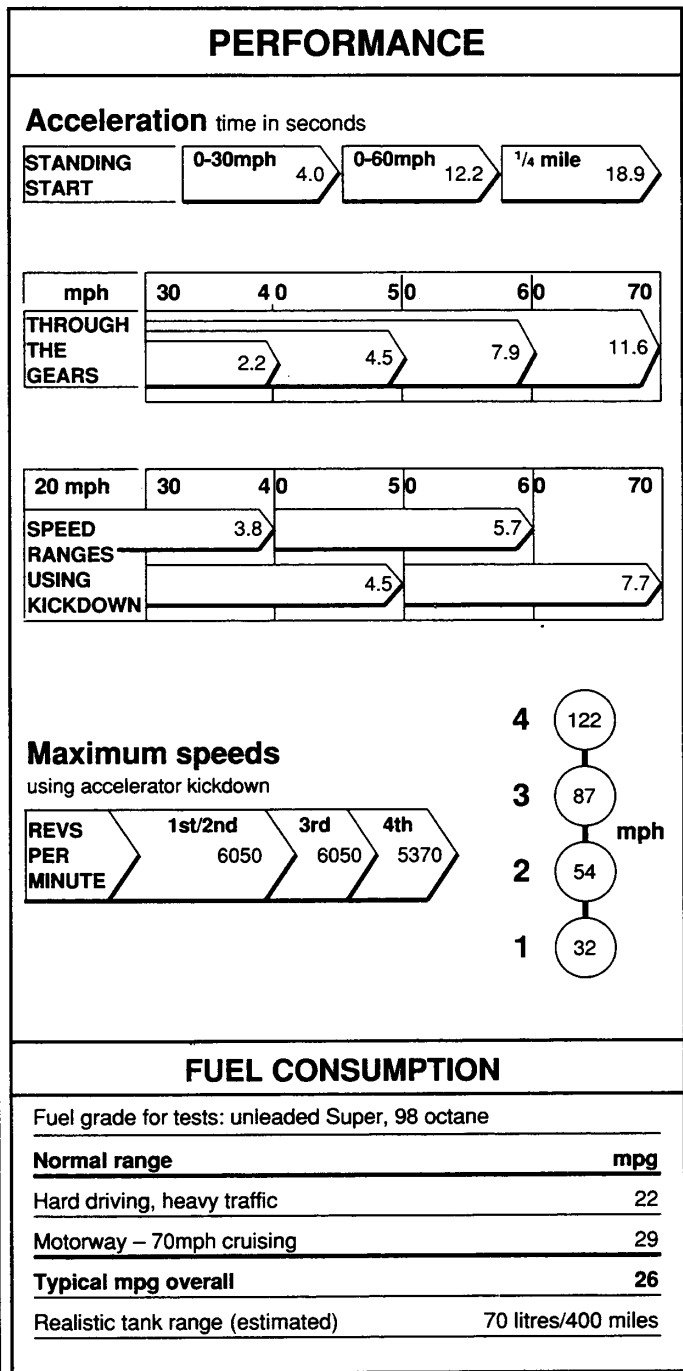
Out on a dual carriageway the 100 is a changed character, bowling along quietly in a composed manner and providing all occupants with very good seating support.

Mind you, the saloon is just that – there's not even a ski-hole

Audi 100 2.8E Automatic



Audi 2.3E Automatic



HOW IT COMPARES

	Engine cap/power (cc/bhp)	Max speed (mph)	30-70mph through gears (sec)	Fuel economy (mpg)	Brakes* best stop (%g/lb)	Maximum legroom – front (in)	Typical leg/ knee room – rear (in)	Steering † turns/ circle (ft)	Overall length (in)
Audi 100 2.8E Automatic	2771/174	133	9.3	25	114/60	43 ¹ / ₄	40/30 ¹ / ₂	3.5/35 ¹ / ₄	186 ³ / ₄
Citroën XM 3.0 SEi Automatic	2975/170	134	9.1	25	96/33	44	40 ³ / ₄ /32 ¹ / ₄	3.0/35 ¹ / ₄	185 ¹ / ₂
Alfa Romeo 164 3.0 V6 Manual	2959/192	141	7.2	28	92/60	43	39 ³ / ₄ /32	3.3/34 ³ / ₄	179 ¹ / ₄
Vauxhall Senator 3.0i Manual	2969/175	136	8.9	28 ¹ / ₂	101/50	42	43/32	3.2/34 ³ / ₄	190 ³ / ₄
Ford Granada 2.9 EFi Automatic	2933/150	126	9.4	26	107/60	43	44/34	2.9/34 ¹ / ₂	183 ³ / ₄

* all with ABS

† all with power steering

connection with the boot. Adaptable load carrying is the prerogative of the Estate. Total rear passenger room is not as generous as the Passats', but the seating position is really comfortable for two.

Getting in and out

A prominent centre tunnel and an obtrusive centre console impede any sort of civilised leg space for a third back seat passenger, and sliding across isn't easy, either. Otherwise, the 100 shows careful attention to details, with proper scuffproof and mudproof door sills and courtesy lamps that work just when you want them to. For example, as you remove the ignition key the interior lamps come on before the door is opened. The same thing happens outside when either front door or the boot lid keyhole de-activates the central locking system.

Heating and ventilation

This new 100 now offers the kind of heat and fresh air simultaneously that other previous VW-Audis have been poor at providing. The six facia vents don't quite live up to their promise in mid-summer – total throughput is inadequate and the optional extra sunroof is highly desirable. It's a relatively quiet installation in the fully-open position, too.

In cooler weather everything works fine, with excellent rear outlets and independent temperature control that takes the chill off the front facia vents, if required.

Interior trim and equipment

Although far from lavish, the Audi boasts an impressive finish and is tastefully trimmed – especially in 2.8E guise, where the subtle use of German wood veneer and velour upholstery, with a complementary two-tone facia treatment, enhances its appearance significantly over the plainer 2.3.

The details of interior fittings, such as the door sealing and roof lamp and grab handle units, exude painstaking attention to detail. Audi 100 quality shows in these respects, rather than in its standard

equipment inventory, where even the radio is extra. The car does come wired for sound, complete with speakers, however.

Luggage and oddments space

Every oddments receptacle (and there are several) is lined to stop things rattling about, and those in the rear doors include ashtrays that can be removed to increase space for non-smokers. The boot is roomy enough, but despite a wide-opening lid, its aperture and sill can be restrictive and there's a prominent hump inside that undermines easy loading.

Money Matters

Value for money

Unlike past Audi pricing, the 100 is keenly pitched against the competition – so long as you don't start adding from the high-priced options menu. Depreciation has been a problem in the past – the older 100 lost value faster than German counterparts. Surely the time must be fast approaching when the obvious care and quality of construction of the current version must be reflected in residual values. Time will tell.

Costs in service

Audi spares' prices are quite high – on a par with a Jaguar's – but servicing intervals are normally 10,000 miles or annually, with the major service on every other visit for higher-mileage users.

Fuel economy

These two cars show little difference in mpg terms, so the new, more-powerful V6 must emerge as favourite. In automatic form, it's steady motorway driving in that long-striding top ratio that produces best economy – slower touring around the lanes means more churning in the torque converter, but 27mpg is not too difficult to attain on any longer trip. Excellent early warning of the need to turn into a filling station is provided by a fuel

dispenser appearing in the systems-check window.

Safety

Accident avoidance

Who said all brakes work the same nowadays? Like previous 80 and quattro test cars, this 2.8E (shod on Continental Contact tyres), again produced outstanding test-track stopping distances, fade-free consistency and ideal pedal effort. With a car like this, you don't only get special protection in a crash – you also get a winning margin to help avoid the crash entirely. Notice how much the anti-lock system outstripped our test driver's ability to stop the car in an emergency. In an Audi, you can switch the ABS off – in loose sand or snow it can pay to do so.

Injury prevention

A German independent testing body recently declared this new Audi to be the tops for occupant surviveability in a front smash. Procon-ten is now standard, together with ABS. It detects the start of any rearward movement of the engine in an impact and, with disarmingly simple mechanical logic, uses pulleys and a wire cable to pull the steering wheel the other way – and tug on the seatbelts at the same time. All this – and not a microchip involved!

Audi has not sullied this fastidious occupant protection by overlooking the details, either – everywhere you look inside, the padding and head restraints are all fit for a proper job if the worst comes to the worst.

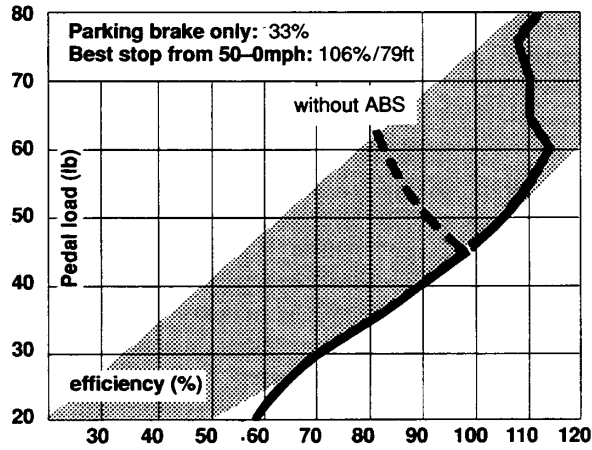
Security

The petrol flap is locked with the doors and the boot is secure from the interior. That said, it offers no more than token security. The central locking is more thief-resistant, however. A buzzer sounds if you try to leave the car with the radio on, and if a window or the sunroof is open when you lock the car, they will shut in

SAFETY

Brakes

How pedal loads affect braking



Braking efficiency shown as a percentage of gravity (ie 100% = 1.0g)

Ideally the braking curve should fall within the shaded zone of this graph. If it's above, the brakes are too heavy; if it's below, they are too light - particularly on cars without ABS. When the curve becomes broken, the wheels are skidding.

Fade test

How hard use or water affects braking. (Ideal brakes show no change.)

Pedal load needed for 75% stop (lb)

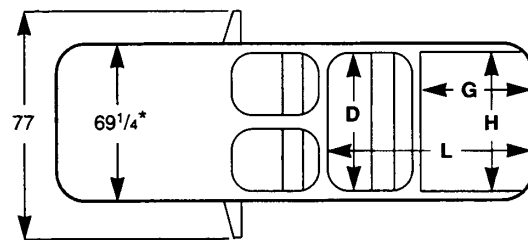
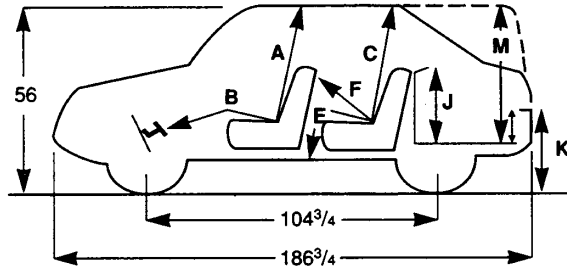
32	At start of test
33	After constant use
34	After severe use
NA	After watersplash
NA	Number of stops to recover

Safety check list

Steering	true 'feel' of the road?	<input checked="" type="checkbox"/>
Brakes	powerful?	<input checked="" type="checkbox"/>
	sensible effort?	<input checked="" type="checkbox"/>
	fade resistant?	<input checked="" type="checkbox"/>
Seatbelts	front - effective?	<input checked="" type="checkbox"/>
	convenient?	<input checked="" type="checkbox"/>
	rears - effective?	<input checked="" type="checkbox"/>
	convenient?	<input checked="" type="checkbox"/>
Head restraints	front - effective?	<input checked="" type="checkbox"/>
	rear - effective?	<input checked="" type="checkbox"/>
Interior	thoroughly padded?	<input checked="" type="checkbox"/>
Fuel	shielded filler?	<input checked="" type="checkbox"/>
	protected tank?	<input checked="" type="checkbox"/>

MEASUREMENTS

Dimensions (inches)



* with mirrors folded

Kerb weight in lb (full of fuel)

2.3E	3065
2.8E	3165

Inside (inches)

A Front headroom	35-37	G Load length	43
B Front legroom (min - max)	35-43 ¹ / ₄	H Load floor width (min - max)	43-62
C Rear headroom	36 ¹ / ₂	J Load height	14-19
D Back seat width (between armrests)	52	K Sill height (inner/outer)	7/25
E Typical rear * legroom	40	L Load length	NA
F Typical rear * kneeroom	30 ¹ / ₂	M Load height (to tailgate hinge)	NA

* 'Typical' represents the mean measurement behind the driver's seat set at 39in legroom and the passenger's seat set at 41in

response to a sustained twist of the key in the door lock.

Durability

Build quality

This generally inspires great confidence and satisfaction - the fastidious attention to detailed good finish where, strictly speaking, it doesn't normally

show and doesn't really matter, nevertheless leaves a smug feeling and contrasts with French rivals, for example. Gas-strut assistance for the boot and bonnet goes without saying, and door shutlines are faultless.

Rust prevention

The 100's biggest asset here must be its 100 per cent galvanised steel bodywork - with a no-quibble,

no-expense, ten-year anti-perforation warranty to back Audi's confidence. Even so, conventional rustproofing measures are also added on a belt-and-braces principle, mainly to ward off stone chipping. The lower door sills are impeccably protected, for example. The bumper shields are more glamorous and less sensible, however.

TECHNICAL SPECIFICATION

ENGINE	Audi 2.3E	Audi 2.8E differences
Type and size	front-mounted, longitudinal 5 in line; water-cooled. 82.5mm bore x 86.4mm stroke = 2309cc. Iron block and alloy head; 6 main bearings	90° V6. 82.5mm bore x 86.4mm stroke = 2771cc. Iron block and alloy heads; 4 main bearings
Compression ratio	10.0:1	
Valve gear	belt-driven overhead camshaft actuating two valves per cylinder via hydraulic tappets	twin overhead camshafts
Fuel system	multi-point electronic fuel injection, with three-way, closed-loop catalyser and Lambda sensor. 80-litre (17½-gallon) tank with low-level display on systems check. Fuel required: unleaded only, 91 octane minimum (with slight torque loss)	twin catalysers and Lambda sensors 95 octane minimum (with slight torque loss)
Ignition system	fully programmed electronic with knock sensor, integrated with fuel injection	
Maximum power (DIN-net)	133bhp at 5500rpm	174bhp at 5500rpm
Maximum torque (DIN-net)	137 lb ft at 4000rpm	184 lb ft at 3000rpm
TRANSMISSION		
Type	5 speed and reverse (all synchromesh) standard. 4 speed automatic (optional extra) fitted to test cars. Epicyclic 4 speed and reverse with hydrokinetic torque converter. Automatic lock-up facility in top gear and shift sensitivity button beside lever. Ratios: first 2.71, second 1.55, third 1.0, top 0.68 and reverse 2.11:1	
Final drive	4.93:1, to front wheels	4.29:1
Mph per 1000rpm	21.55 in top, 14.63 in 3rd	24.78 in top, 16.82 in 3rd
Rpm at 70mph	3250 in top gear	2825 in top gear
CHASSIS		
Suspension	front: independent by MacPherson damper/struts with integral coil springs and an anti-roll bar. Rear: torsion beam (dead) axle with coil springs, located by twin trailing arms, a Panhard rod and an anti-roll bar. Dampers: telescopic all round	
Steering	power-assisted rack and pinion with 3.5 turns between full locks. Turning circles average 35¼ft between kerbs, with 59½ft for one turn of the wheel	
Wheels	6J steel with 195/65R15 91H tyres (Dunlop SP Sport D8 M2 on test car). Conventional spare	V-rated tyres (Continental Super Contact CV90 on test car)
Brakes	11.3in solid discs at front and rear with vacuum servo and Bosch ABS electronic anti-lock control	ventilated discs at front