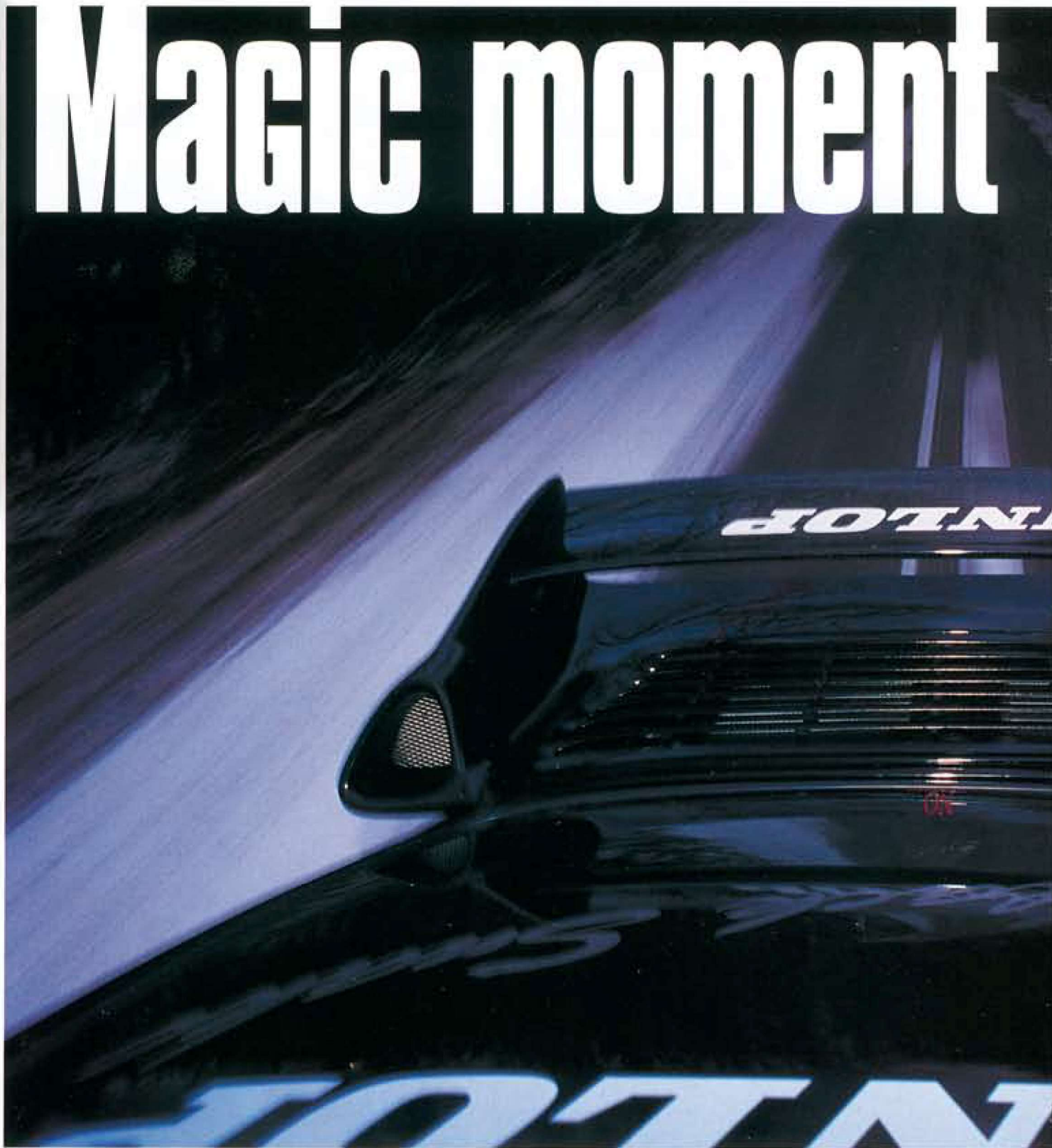


Magic moment



If you're to stand a chance of beating the road-car lap record at the legendary Nürburgring then you need something pretty darned quick – and agile, too. Russ Tyler reports from the driving seat of the 652bhp 911 that consigned the previous record-holders' efforts to history. Photos by Peter Robain

It's a question of mind over matter. On a limit-free *autobahn* this car is quite capable of reaching the magic figure of 200mph, only the driver's brain holding it back. The trick lies in trusting your own estimation of potential disaster, in anticipating the movements of others, and, at the end of the day, in placing implicit faith in the machine itself.

So here we are, in the outer lane of an unrestricted German motorway, loping along at a remarkably relaxed 120mph. Even at two miles a minute the car feels stable and comfortable, but there is tension in the air. Photographer Robain has told me what drugs he is allergic to should medical attention be required (thanks for the vote of confidence, Pete). There are occasional flakes of snow in the air, and parts of the road surface are already worryingly damp.

That earlier resonance subsides – I know how the first pilots to break the sound barrier must have felt – and the flashgun starts popping; clearly Robain reckons the speedometer is at last showing the magic numbers

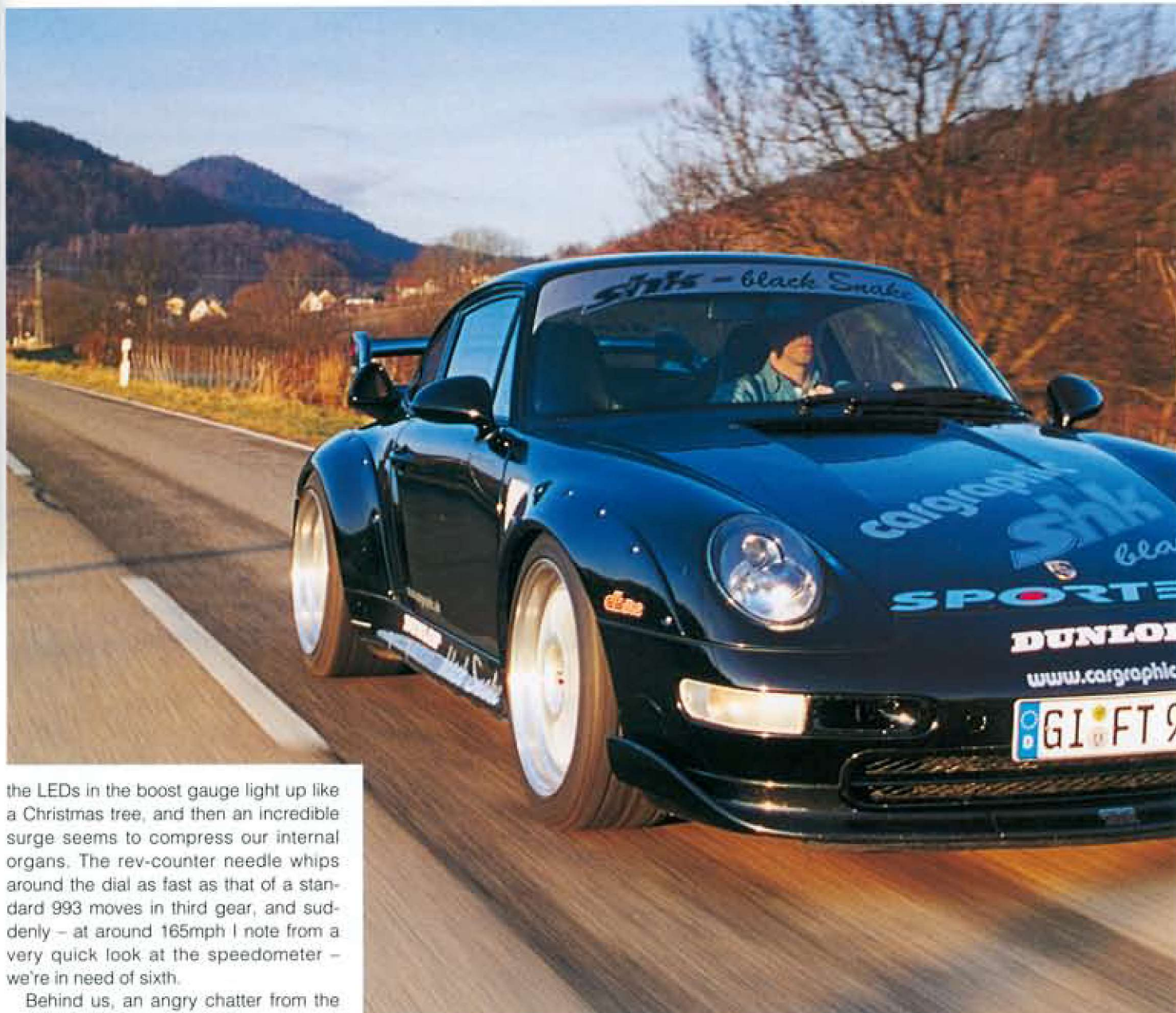
What's more, heavy snow is forecast within the next few hours, so our window of opportunity is closing. I search through my mind for a time when I was last under such pressure, but I can't recall one. The need for windscreen wipers isn't helping my demeanour (our speed makes the modest sleet assume near-blizzard proportions). I switch on the headlights, and our left-hand indicator is winking an additional warning to traffic in the far distance.

I'm waiting for one of those all too rare moments when the only vehicles ahead in the next mile or so are well spaced, and thus unlikely to overtake each other. German drivers are remarkably obedient when it comes to lane discipline, and I have confidence in them, but at this speed you can't be too careful. By now we have emerged from beneath the snow clouds, and as I switch off the wipers my spirits rise. We round a slight kink in the road and have a clear view at last.

Selecting fifth gear I plant my foot hard on the throttle. There's a pause while all

Get a grown-up to help you with this... Speedo (left) runs out of steam at about 330km/h (that's about 205mph in old money), but car itself will push on to over 210mph. Who was the braver? Russ 'Biggles' Tyler, or photographer Peter Robain?





the LEDs in the boost gauge light up like a Christmas tree, and then an incredible surge seems to compress our internal organs. The rev-counter needle whips around the dial as fast as that of a standard 993 moves in third gear, and suddenly – at around 165mph I note from a very quick look at the speedometer – we're in need of sixth.

Behind us, an angry chatter from the wastegates punctuates the gear change, after which – almost unbelievably – the surge continues unabated. My eyes are now riveted to the road ahead. Whatever is in the far distance we will reach in around 10 seconds. But it's still clear – and my foot is still hard down.

We hit 180mph, and wind buffeting viciously around the rear window sets up a vibration through the entire car, but my foot is still pressed to the floor. We decide to go for just a little more speed. That earlier resonance subsides – I know how the first pilots to break the sound barrier must have felt – and the flashgun starts popping; clearly Robain reckons that the speedometer is at last showing the magic numbers.

Traffic – including the inevitable heavy truck – appears on the horizon. Lift or push? Fish or cut bait? We have but a few seconds. This is the final test of nerve. For an instant my eye is drawn to the dials. The speedometer needle has re-

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The SHK/Cargraphic-converted 993 can be as docile as the proverbial kitten (above), even though its 911 GT2-derived engine is putting out over 650bhp, and 600lb/ft of torque. Last October this very car lapped the Nordschleife in just 1m 46.17 seconds – a new road-car record. Interior (right) looks surprisingly ordinary; note the absence of a roll-cage. There's little to see of the 3.6-litre twin-turbocharged engine (far right, middle); GT2 rear wing looks the part, though. Rear wheels are covered by bolt-on arch extensions (far right); mesh-covered grilles conceal additional oil-coolers, one per side. The only other mods deemed necessary for the record-breaking run were a solid flywheel (see text) and the removal of the right-hand door mirror



Lord of the 'Ring

It was Harry Wieshaupt, head of the German engineering company, SHK, who came up with the idea of building a car to wrest the Nordschleife lap record from the Japanese Blitz team, which in 1997 had set a time of seven minutes and 49 seconds in a highly modified twin-turbocharged Toyota Celica Supra.

SHK subsequently teamed up with another three companies – Cargraphic (see also pages 30–35 of this issue), Sportec and Dunlop – to develop a suitable car based on a 1996-model 911 Carrera RS. The driver was to be Ringmeister Horst von Saurma, who also happens to be the editor of the highly respected German magazine *Sport Auto*.

It was estimated that in excess of 650bhp would be required to give the 911 (with a target weight of 1200kg) the necessary power-to-weight ratio to smash the existing time. This meant turbocharging, of course, so a 430bhp, twin-turbo, 3.6-litre M64 engine from a 993-model 911 GT2 was acquired. After much work the car was put on a rolling-road and the much-modified engine was found to produce no less than 652bhp at 7050rpm, with a truly gargantuan 601lb/ft of torque at 4950rpm.

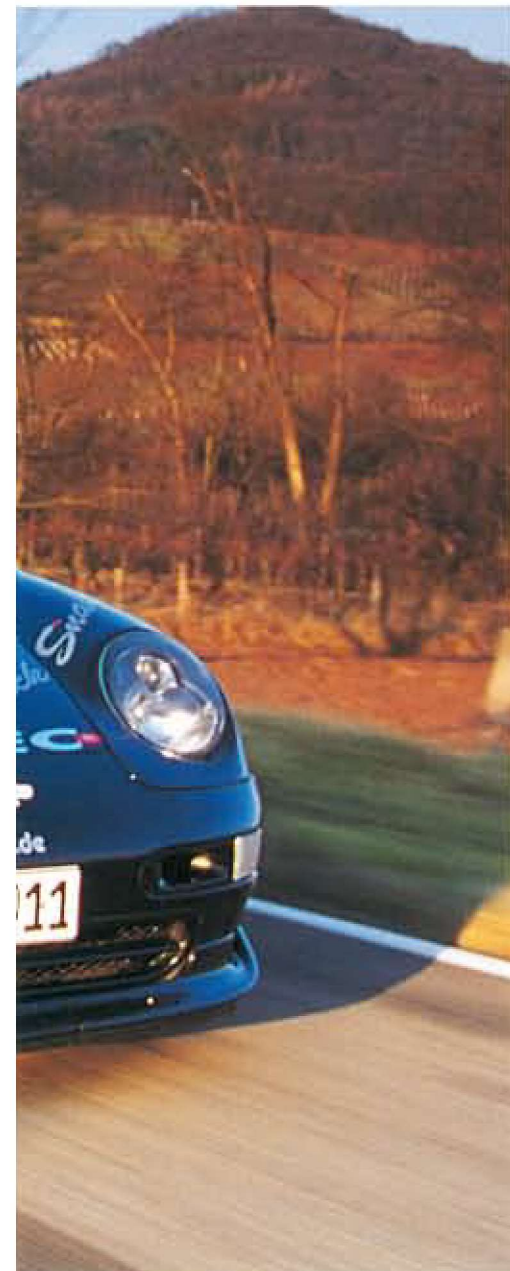
The next dilemma was the drivetrain. The Nürburgring nestles among the Eifel mountains, and its 179 corners are prone to unpredictable dampness, even on sunny days. A four-wheel-drive system would add around 50kg to the car's weight, but its benefits would far outweigh any such penalty. Besides, carbon-fibre body panels would help to redress the balance, and the RS shell is no heavyweight to begin with.

Tyres were to be Dunlop's brand-new SP Sport 9000 covers, and the company was naturally keen to make the most of the publicity opportunities this extraordinary record-breaking run would offer. Indeed, it even went to the trouble and considerable expense of hiring a helicopter and film crew to record the event for posterity.

Thus it was that on 28th October 1999 Horst von Saurma attempted to beat the Nürburgring into submission. And it soon seemed that he was in with a chance. On his first runs he set a time of seven minutes and 50 seconds – just a second slower than the Blitz team – before the Porsche's gearbox failed.

Undeterred, the team worked through the night to solve the problem, and the next day von Saurma was ready to try again. On this occasion he went out and quickly recorded a time of seven minutes and 48 seconds – now a clear second faster than the Supra – but within hours had reduced this still further, to an almost incredible seven minutes and 46.17 seconds. A new world record had been set.

Perhaps not surprisingly, the Blitz team has sworn vengeance, and plans to return to the 'Ring with a blisteringly quick Nissan Skyline to snatch the record back. We can reveal, however, that both SHK and Cargraphic have something rather special in the pipeline that might make the Blitz boys sleep less easily at night. Watch this space... ■



Inside story

It might look like a GT2, but the record-breaking 911 shown here began life as a 1996 911 Carrera RS. Using this as a basis, SHK and Cargraphic set out to construct the most powerful road-legal, twin-turbo Porsche 911 ever built.

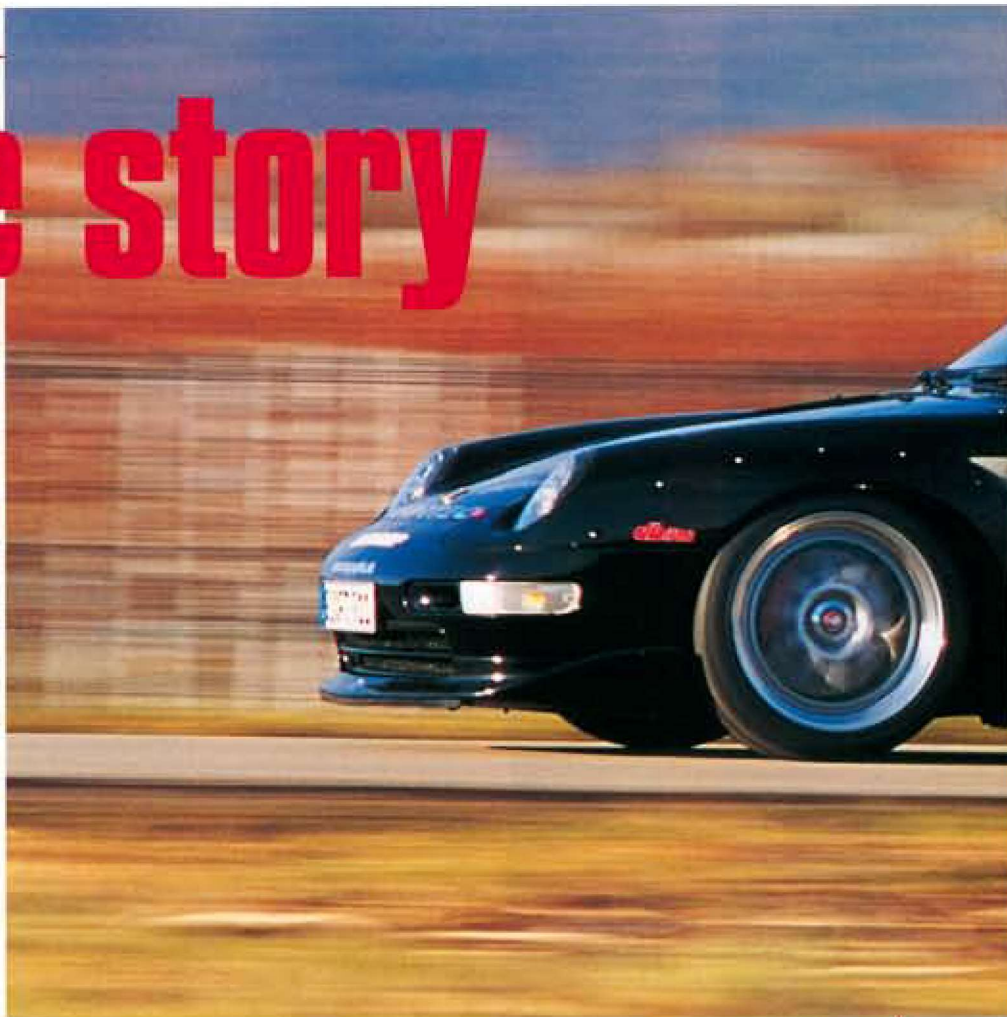
Four-wheel-drive was deemed essential, as was everyday usability. This meant a smooth and reliable tickover, no driveline shunt, and a wide power band. Not to mention air-conditioning and in-car stereo... Indeed, SHK wanted to prove a new concept in turbocharging for the road – that a turbo engine can be made to rev as freely as a normally aspirated one, and without a drop-off in power.

In order to achieve this the engine has a higher compression ratio than would be normal for a 600bhp motor, with lower overall turbo boost. The GT2 engine also gains forged pistons, polished ports and reprofiled valves, and new camshafts with increased lift and duration. The modified Bosch Motronic engine management system was supplied by Swiss company Sportec.

The standard intercooler was replaced with one which flows 30 per cent more air and has 20 per cent more surface area. The new exhaust manifolds are flow-optimised, and lead to Cargraphic Hi-Flow 100-cell catalytic converters. The all-important turbochargers are hybrid KKK units, and the free-flow silencers and tailpipes are off-the-shelf Cargraphic items.

All this adds up to a staggering 652bhp at 7050rpm, and 601lb/ft (812Nm) of torque at 4950rpm; the engine is red-lined at 7850rpm. This gives an on-boost power band spanning the best part of 5000rpm. Nominal boost is 'only' 1.2 bar (a 944 Turbo runs to 1.82 bar) but if the throttle is held wide open for more than a predetermined time this increases to 1.5 bar.

The transmission system began life in a 911 Turbo 4, but SHK modified the front differential to give zero locking under load, and 60 per cent under braking. The rear differential gives 40/60 locking under the same circumstances, and the centre viscous coupling is both strengthened and filled with an alternative silicone fluid. Indeed,



this driveline is essentially the same as that developed by SHK for long-distance racing. The six-speed gearbox has ratios specially selected for the ever-demanding Nordschleife.

The three-piece 18-inch Cargraphic racing wheels (nine and 11 inches wide at front and rear, respectively), hide a standard 911 Turbo 4 braking system. Interestingly, no upgrade was deemed necessary because this now has 300kg less to stop than in the standard car.

The fully adjustable suspension is by Bilstein. Each of the four dampers has its own separate fluid reservoir and is surrounded by twin coil springs (of differing rates, either side of an adjustable collar). Overall, the ride height is some 20mm lower than that of a standard RS.

The only other significant changes to the car for its Nürburgring record attempt were the replacement of the standard dual-mass flywheel with a conventional solid item, and the temporary removal of the passenger-door mirror. Both had been replaced by the time we sampled the car in mid-February.

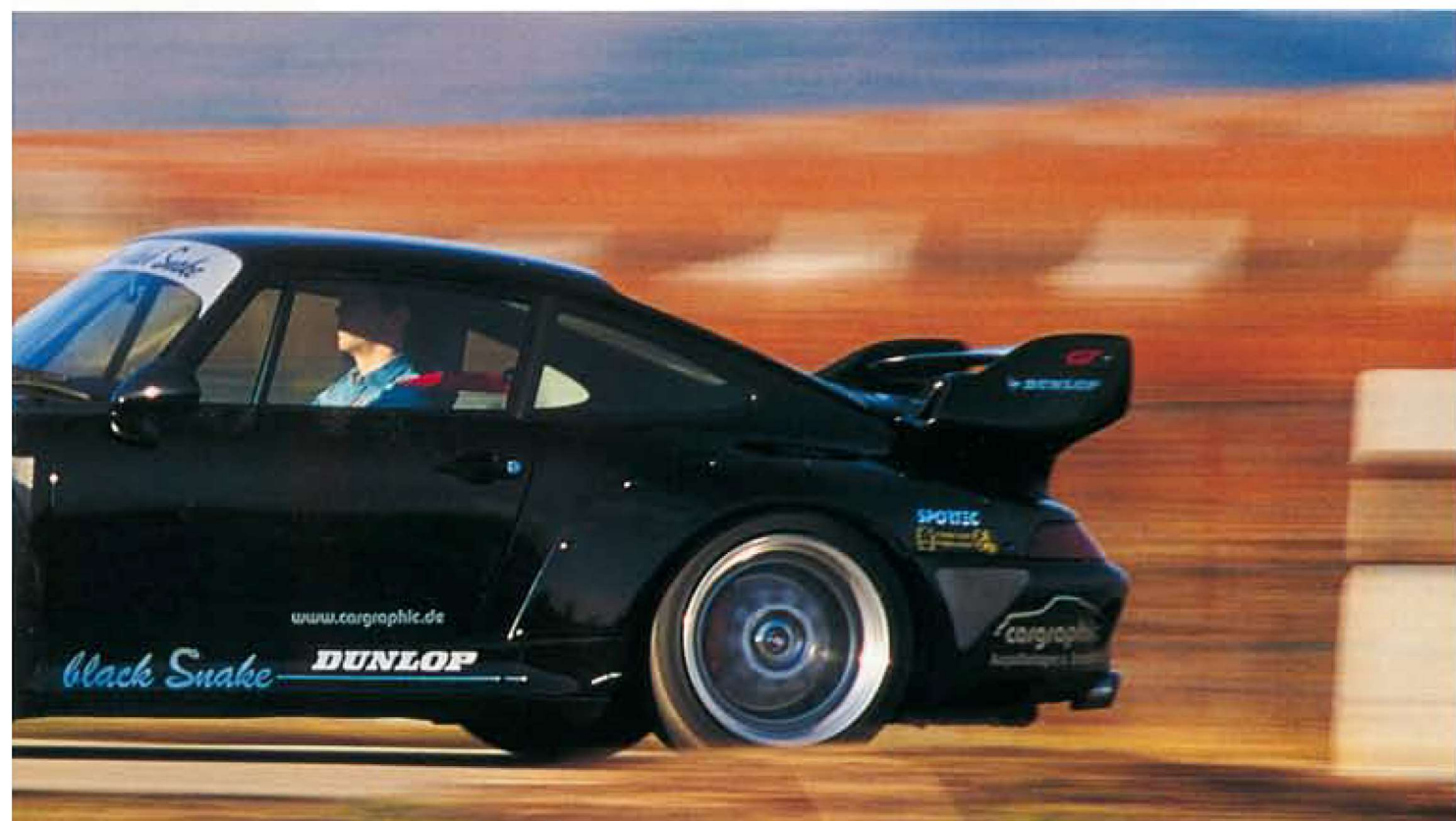
Contributing to the car's substantial weight loss are numerous carbon-fibre panels, including the bonnet and front wings (the latter with mesh-covered cut-outs for the extra oil-coolers), the bumpers, the bolt-on wheelarch exten-

sions, as well as the front and rear GT2-style spoilers. The aluminium doors of the RS are retained, as is its interior.

Just as surprising as the car's relatively modest braking system is the absence of any form of roll-cage. In fact, the only items which hint at this car's extreme potential are the small suede-covered steering wheel, and a couple of extra dials.

The SHK boost gauge (which replaces the time clock in the dashboard) has a ring of LEDs which turn from green to red at 1.0 bar – basically, when they're all aight you have maximum boost. Another bespoke gauge is the tachometer, rotated so that at 7000rpm the needle is vertical (although the figures themselves remain in the correct orientation). As we discovered, however, the standard 320km/h (199mph) speedometer could usefully be replaced with one that reads to at least 360km/h!

The car's average fuel consumption, according to the German TÜV organisation, is 14mpg. At 200mph this rises to 9.4mpg, and under maximum acceleration in the lower gears you can expect a wallet-draining 3.0mpg. Each of our high-speed attempts over about 10 miles drank a quarter of a tank of fuel, then. But it was worth every *pfennig!* ■



emerged from behind the rim of the thick suede-covered steering wheel – which means we're doing at least 193mph. 'Faster, faster,' the car seems to say, and my instinct agrees.

We push further into this rarefied zone, and the feeling is almost surreal. Indeed, most of the vibration and noise seem to drift away behind us, and the car feels less perturbed at this speed than it did at a leisurely 160mph. The steering still has useful weight, the nose isn't wandering, and so I keep my foot firmly planted.

'OK!' yells Robain. I flick my eyes away from the road just in time to see the speedo needle literally off the clock. Then I'm on the brakes, gradually squeezing

harder and harder until my calf muscles protest. Faced with a task of this magnitude most normal cars' discs and pads would just burn up. But suddenly we're out of warp drive, and the scenery through the side windows is no longer a near-blur. We are back to what most people would term normal speed, with a good hundred yards to spare.

Even when the adrenalin drains from my stomach, though, I'm almost high. That was, surely, a once-in-a-lifetime experience, and I've never known concentration quite like it. It could be dangerously addictive – rather like bungee-jumping. We discover later that while the speedometer needle hits an end stop at



Car was dreamed up by SHK boss Harry Wieshaupt; his company did the bulk of the power-tuning work on the engine. Wheels and exhaust system supplied by Cargraphic (see pages 30–35), tyres by Dunlop; see panel on next spread. Result is one of the most impressive cars author Russ Tyler (right) has ever driven





Record-breaking car began life as a relatively ordinary 1996 911 Carrera RS, although front and rear body mods (above and left) make it look more like a 911 GT. The all-wheel-drive transmission system was taken from a 911 Turbo 4. Wheels (left) are three-piece Cargraphic Racing items; see text for details

Facts & figures

Nordschleife record-breaking 911 Turbo 4

BODY	Two-door coupé; galvanised-steel monocoque with carbon-fibre bonnet, front wings, front and rear bumpers and 911 GT2-style rear wing. Aluminium door skins
ENGINE	All-aluminium, air-cooled flat-six; rear-mounted. Two valves per cylinder operated by chain-driven single overhead camshaft per cylinder bank. Dry-sump lubrication with separate oil tank. Twin turbochargers with integrated wastegates, intercoolers. Three-way 100-cell racing catalytic converters with separate oxygen sensors for each cylinder bank. Bosch Motronic fuel injection and ignition control
Capacity	3600cc
Maximum power	652bhp at 7050rpm
Maximum torque	601lb/ft at 4950rpm
Specific power output	181bhp/litre
Power-to-weight ratio	513bhp/tonne
TRANSMISSION	Six-speed manual gearbox; hydraulically operated single-plate clutch. Four-wheel-drive, with variable power distribution by modified viscous coupling. Rear differential has limited-slip facility, with 40 per cent locking under load and 60 per cent under braking
SUSPENSION	<i>Front:</i> Macpherson strut and control arm. Dual coil springs, Bilstein dampers with separate fluid reservoirs, anti-roll bar <i>Rear:</i> Porsche double-control-arm axle, dual coil springs, Bilstein dampers with separate fluid reservoirs, anti-roll bar Car lowered by 20mm (compared to standard 993-model 911RS) front and rear
BRAKES	355mm and 322mm discs at front and rear, respectively. Discs cross-drilled and inner ventilated. Four-piston light-alloy calipers; ABS
WHEELS & TYRES	Three-piece Cargraphic Racing light-alloy wheels: 9.0J x 18-inch with 245/40ZR18 Dunlop SP 9000 tyres at front, and 11.0J x 18-inch with 285/35ZR18 tyres at rear
WEIGHT	1270kg (2794lb)
PERFORMANCE	
0-62mph	3.5 seconds
0-125mph	9.0 seconds
Maximum speed	212.5mph (342km/h)

about 330km/h (205mph), the car's acceleration continues. Indeed, it has been accurately clocked at 342km/h (that's 212.5mph). Even allowing for error this is by some margin the fastest I've travelled without becoming airborne.

But what makes this the most impressive 911 I've driven is not just its ability to reach such high speeds, but also its acceleration at these enormous velocities. With 200 more horsepower to propel around 300 fewer kilograms it rockets forward at 150mph the way a 959 or 911 Turbo 4 does at 100. The force channelled into making it perform in this manner is off the scale by any normal yardstick. Indeed, find the point where the twin turbos start delivering positive boost and it will spin its wheels on dry Tarmac in each of the first three gears.

Still more impressive is the fact that it remains as docile as a kitten if you want it to be. Keep the revs below 2500 and the engine idles normally. What's more, it has at least as much low-down torque as a normal 911 Carrera, and the controls won't tax your muscles.

The ride is firm, yes, but more compliant than you'd expect, particularly given the so-called Rose-jointed suspension. The Dunlop SP 9000 tyres win high praise



here, as well as for their high-speed stability (see sidebar, right). Good as they are, though, they lose the unequal struggle when the engine enters the catapult zone at around 3000rpm.

On fast roads you have to be aware that this can still destabilise the car. The normal method of cornering a 911, squeezing the throttle progressively through the turn, will have you dangerously sideways if you're not careful. Instead you find yourself accelerating until you just sense the arrival of positive boost, and then progressively feathering the throttle until you're nearly straight, when more throttle can be applied. In this way you maintain steady progress, but your right foot has to work a lot harder.

As the light begins to fade, photographer Robain quietly informs me that there might be a problem with the film he used for the high-speed run, and, er, could we do another one? A momentary image flits through my mind of the grim reaper rubbing his bony hands together and cackling with glee, but I soon put the thought from my mind. Soon we're out on the *autobahn* again, with clear air between the speedometer needle and the last marking on the scale. I really could get used to this. ■

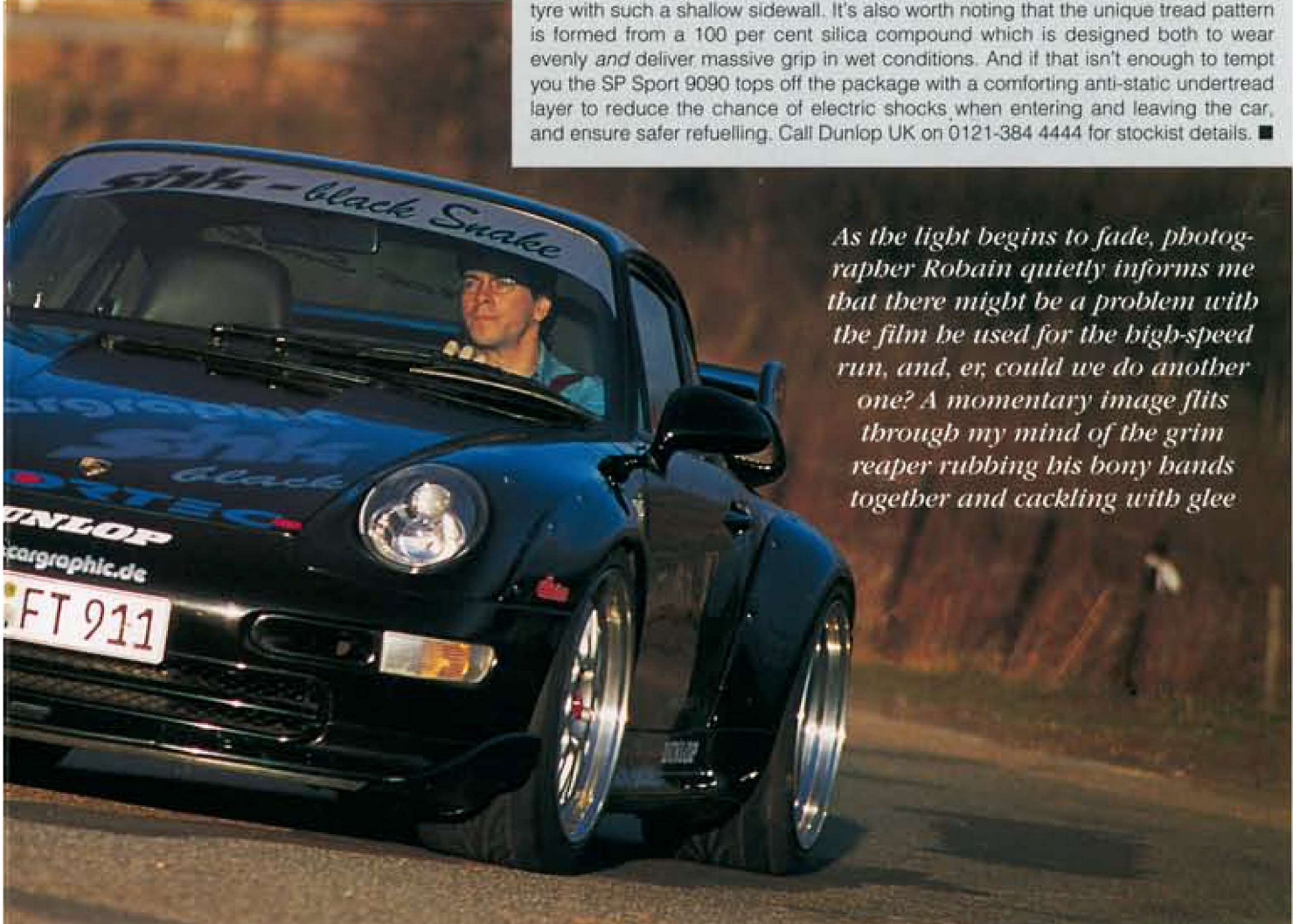
The ultimate tyre test

Few road surfaces on earth are as tough on tyres as the Nordschleife - and not just because each lap is 12.9 miles long and encompasses no fewer than 179 corners. No wonder this long-established circuit remains the favoured unofficial test venue of most of the big European tyre manufacturers.

Amazingly, the tyres selected for the 911's record-breaking run were not trick race covers, but Dunlop SP Sport 9000s to standard road specification (right) - 225/40ZR18 at the front, and 265/35ZR18 at the rear. These two sizes have since been further tuned precisely to match Porsche's exacting specifications for homologation as an original-equipment fitment. In this form they carry the designation Dunlop SP Sport 9090 N0, the 'N0' (that's N-zero) suffix signifying Stuttgart's approval.

Indeed, from April this year many Boxsters, 911 Carreras (2 and 4) and not least the new 911 Turbo will be leaving the factory wearing SP Sport 9090s, and Dunlop is naturally proud of this accolade. 'It's a big thing within the tyre industry to gain homologation for fitment to Porsche cars,' says Stuart Wyss, a Dunlop UK spokesman. 'It's a very prestigious achievement.'

One factor which may influence the SP Sport 9090's popularity is the high level of ride comfort it offers relative to its performance, which is quite some feat for a tyre with such a shallow sidewall. It's also worth noting that the unique tread pattern is formed from a 100 per cent silica compound which is designed both to wear evenly and deliver massive grip in wet conditions. And if that isn't enough to tempt you the SP Sport 9090 tops off the package with a comforting anti-static undertread layer to reduce the chance of electric shocks when entering and leaving the car, and ensure safer refuelling. Call Dunlop UK on 0121-384 4444 for stockist details. ■



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