

# lowflying

the magazine for **lotus** and **caterham seven** enthusiasts

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**SPECIAL FEATURE:**

## **Full R500** **road test**

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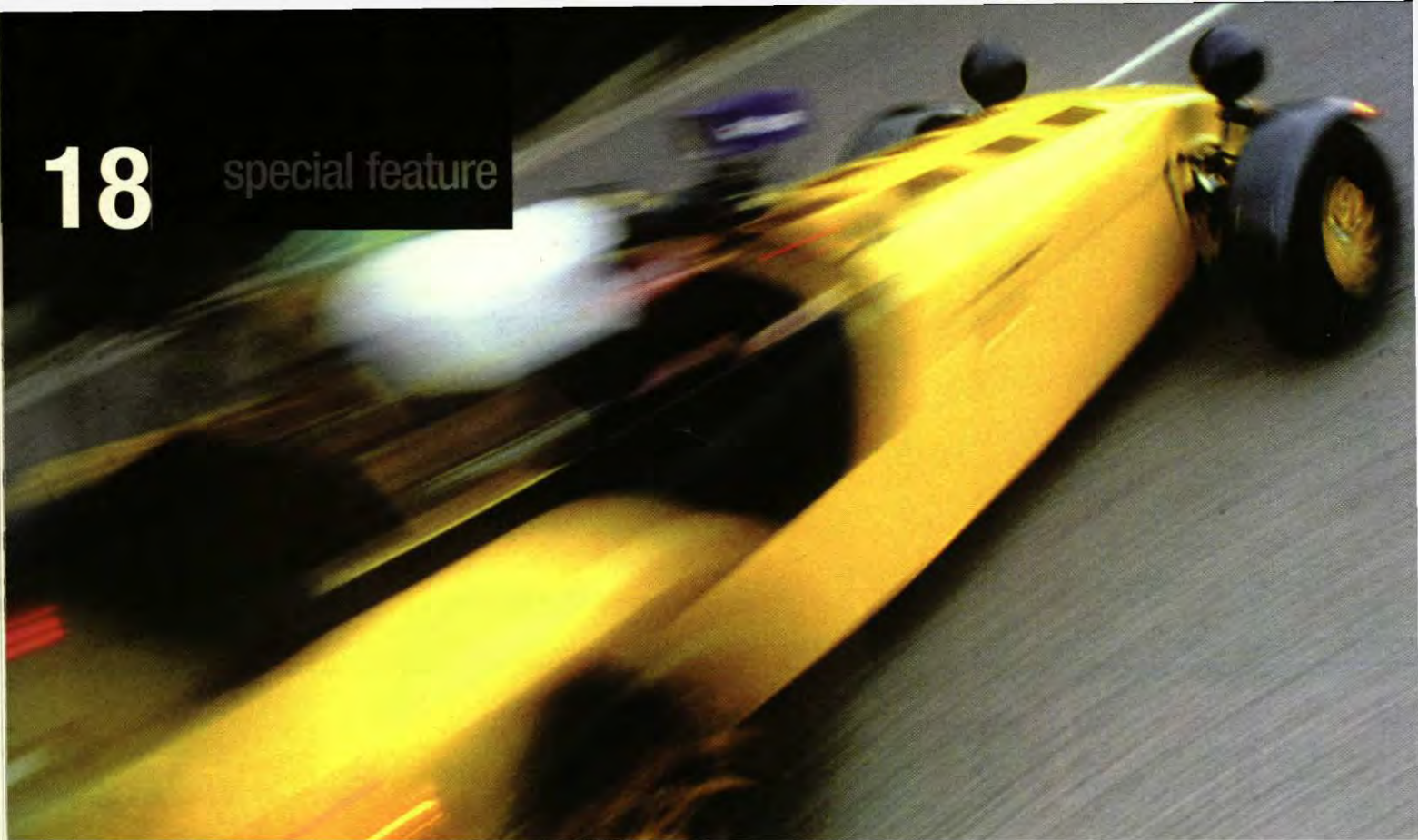


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# the R500...

The R500 is not a fast car. It goes way beyond that. To drive one requires a complete revision of any concepts you may have previously held as to what constitutes a rapid machine, even for Seven owners. The fact that it feels considerably quicker than a Superlight R says just about all you need to know about its potential. This is one serious Seven, for serious and experienced drivers only.

Autocar magazine recently recorded 3.4 seconds for the standard 0-60mph dash and hit the ton in only 8.1 secs and those road testers were equally blown away by the performance. The Minster built engine is a masterpiece of engine development, for not only does it produce 230bhp, equating to an extraordinary 128bhp/litre, it's still driveable right across the rev band. When the JPE was launched back in 1992 it may have had 250bhp from the 2 litre Vauxhall unit, but it only delivered in a small power band (the green zone) right at the top of its range, and consequently it was lumpy and unco-operative when off cam. The R500 however can be driven through town without fear of it bogging down, exhaust popping and banging away as you burble past amused and often bemused onlookers.

But this is no town car and even though the JPE had more power it weighed more, the R500 amazingly weighs a full 25 kilos less than a fully stripped Superlight R. Be in no doubt, Caterham have put a lot of work into this car. Carbon fibre has been used

wherever possible (nose, wings, seats, silencer, dash, aeroscreen and mirrors) and the sump, bellhousing and wheel centres are now magnesium rather than aluminium. They've even fitted Formula One style aerofoil tube wishbones on the front suspension. But it is still that engine that steals the show, with a higher specific output than any other production car and flexibility to be able to use it. Push the ball of your right foot forward and as the rev needle arcs around the Stack dial as it surges forwards. At 5,000 rpm the game becomes intense, the engine note hardens taking on an aggressive, pure superbike howl. You're squashed into the specially designed carbon/kevlar race seats and the thrust is so extraordinary the first time you try it you'll forget to breathe. It's so ferocious that on anything other than bone dry tarmac the bespoke Avon radial tyres will spin even in fourth gear. It'll probably do it in fifth and sixth too, but I didn't have the nerve to try.

So how exactly have they achieved this? It involved co-operation between Rover engineers, the Minster



# is not a fast car

specialists and Titan Motorsport, and originally they had only planned on 220bhp, believing that would be the absolute limit for an engine that would still have the required level of reliability. They began with a bespoke forged steel crankshaft to get around the problem of the performance limiting narrow big-end journals of the K-series unit. This allowed them to fit wider big ends, forged conrods and pistons and increase the rev limit to over 9,000rpm.

Then in another first for a production engine the standard throttle butterflies were replaced by a single roller barrel, that when fully open leaves a fully open bore all the way to the valves. This in it's self produces an extra 2bhp, but when fully integrated with smaller injectors, a more direct intake route, and a re-worked tract it creates the extra 10bhp.

A new MBE management system and strengthened internals. As well as the power and flexibility of the engine, it's responsiveness is equally impressive, throttle response is razor sharp and it feels especially satisfying on the racetrack where you are constantly in the higher echelons of the rev range. It makes



# the **R500...** is not a fast car

handling all that force easier than you have every right to expect allowing instant corrections through the turns. The only time it stuttered was on a trickle of throttle in town and occasionally when it was snapped hard open after having running at a constant speed, but in both cases the pause before the surge is minimal.

To harness the power, Avon have designed a completely new tyre, rather than using the Superlight cross-ply ACB10s, which although road legal lacked decent wet weather grip. The new CR500 rubber is radial and considering the task it has to endure does a fine job transmitting that go to the tarmac. Of course you can light them up when ever you desire, but they will grip the road hard in the turns especially when warm.

As well as the road, I drove the car on the tight Silverstone International circuit and was surprised by the amount of traction available and the overall speed at which I could lap. I was expecting it to be more of a handful and for it to punish mistakes, but it was almost as user friendly as my Supersport. On the same day I was fortunate enough to also lap in a Ferrari F50 and although there was now timing available, I'm convinced it was no faster. The adjustable suspension was set up for the road, which meant it was a little soft for track work, resulting in turn-in understeer, but if tied down a little more the problem would have been resolved.

On the road it's rare that you're in a position to fully extend the R500 for more than a few corners at a time. The fact that in this ultimate spec you are required to don a helmet to prevent a painful stoning means that it is a car more at home annoying more expensive machinery on track days and sprints than on the road. But if you want a car that you can drive to the circuit and spend a full day with a massive dose of adrenaline surging through your veins, then this is the Seven for you.

## I've got one!

**Paul Freeman**

'Why have I done it? Well, I'm now 29 and I've promised myself a Ferrari before I'm 30. But before old age leads me into buying a comfortable sports car (one with a heater, windscreen, leather and a roof!) I want to own what I consider to be the ultimate road going racer available. I previously owned a Porsche 911 Convertible and a Lotus Elise (modified to 160 BHP), so I'm not new to sport's cars per say, but this thing is going to be a real handful in comparison.

"I've yet to pick my car up as the delivery date was put back a few weeks as Caterham were still waiting for the engine. The car is number 18, registration R500 SPL (It was originally going to be Car no. 13 but I said no way to that!). It's in the same shade of Mango Yellow as the show car, with the aeroscreen, no heater, carbon kevlar seats, the FIA rollbar, FIA tank bag and larger brake cylinder. The first thing I intend to do in it is run it in - I have a driver training day with Hugh Noblett of Cadence a few days after delivery so I want everything running freely by then, which means that I'll probably have a few aches by then!

"Myself and a few other car nuts are putting our cars on transporters and having them shipped to Monaco for an epic trip from Monaco to London, via all the mountain roads we can find. It should take us around 4 days, averaging 350miles a day and should be excellent. It's going to be a bit of a 'David vs Goliath' as the other cars include a Lamborghini Diablo, 3 Ferrari 355 Spiders and a fully gizmo-ed Mitsubishi Evo VI. We will be taking pictures along the route as well as at a couple of track days before then- I'll let you know how I get on."

**Ian Noble**

"My first Caterham 7 was a factory built 1.4 Supersport in 'Prisoner' livery, bought in 1995 to entertain my clients at track days. Two years, over 20 track days and a few sprints and hill climbs later I was hankering for more performance.

"Enter the new Superlight. Mine was No.7 in aluminum and bare carbon. However, I specified leather seats and weather gear as I traveled around to various circuits for track days and sprint events. I subsequently had Minister Racing liberate more power and torque from the 1.6 engine and was reasonably successful in my sprint class with a smattering of 3rd, 2nd places and a 1st.

"After three years I had explored the potential of the Superlight and needed more power. So do I go for more modifications or a shiny new R500. Mmmmm... let me see... I'm only on this planet once so hang the expense!

"My intentions? To look at it, polish it, marvell at the roller barrel throttle bodies, keep pressing the array of black buttons that drive the Stack display until I work out what they do, and generally sit in it with an overwhelming attitude of smugness and disbelief. Apart from that I intend to continue attending as many track days as possible and compete in the occasional sprint or hill climb. I did the first in March and took 3rd in class running it in!

"The car looks absolutely fantastic and Caterham has excelled itself in the build of it. The engine had a faulty water temperature sender, but this was quickly addressed by Jez Coates and his team. Despite this, the cars performance is absolutely breathtaking. The power delivery below 5000 rpm is staggering and just



when you expect it to continue in that vane its as though someone has pressed the nitrous oxide button (perhaps its one of the black buttons for the Stack display!). I have yet to sort the handling out as the track suspension I specified has turned out to be too hard for sprints and road use. These are being changed to road dampers and linear rate springs and then itill be absolutely awesome."

#### Jules Martin

"This is my first Caterham (*are you mad? Ed*) and the build experience was brilliant. What the build manual lacked, the help from Caterham factory made up for. The car was delivered minus engine, gearbox and seats, but nonetheless we started building with alacrity. We completed the car in 42 1/2 hours, with only one major mistake (I put the wrong spacer washers on the differential which meant I experienced a disturbing rear end noise on my trip to the factory for the car's post build inspection).

"I bought the R500 because last year at Spa, I became fed up with 5 or 6 Caterhams passing my Ferrari on the outside of corners, only for me to pass them back on the straights. The exception to this was the Superlight R's where I had difficulty passing them anywhere and was simply annihilated on the bends. On the last day I met a guy with a very 'well worn' in the paddock, trying to load his three wheeled vehicle

onto a trailer. He told me he was worried what his wife would say as he had only had the car for a short time. He told me it was going to cost a fortune to have it repaired and it was only a few weeks old. I asked him how much he thought it was going to cost and he replied, 'at least £850'. I replied that if I had done the same damage to my Ferrari it would cost about £60,000!

"It was at that point I decided to buy a Caterham. "I intend to use it exactly as I use the Ferrari - for fun outings on the roads in the UK and in Europe, and for track days, if I can get it through the noise restrictions on UK tracks that is!

"The R500 is awesome. At the moment I am still running it in, trying not to exceed 5000rpm and not stressing the car. Even with this restriction, and, bearing in mind that the power band only really starts at 5000rpm; the car feels fast, very fast.

"For me it is a learning curve, drifting a Ferrari 512TR on the limit through corners on a race track is one thing - a 450bhp mid-engined Grand Tourer weighing 1600kg is a totally different experience from a 230bhp and 460kg of front engined, virtual singleseater. I have a few track days organised in the coming weeks and I'm looking forward to it enormously.

"For the time being however, I can say that buying the R500 is one of the best things I've ever done!"



## R500 Spec table

### ENGINE

1796cc developed K-series  
**Bore** 80 mm  
**Stroke** 89.3 mm  
**Compression ratio** 11:5:1  
**Max power** 230bhp @ 8,600 rpm  
**Max torque** 155lb ft @ 7,200 rpm  
**Max revs** 9,200 rpm  
**Max speed** 146 mph  
**0-60mph** 3.4 secs

### CYLINDER HEAD

16 valve DOHC Valve actuation mechanical tappets and lightweight flatback valves

### INDUCTION

Magnesium inlet manifold with roller barrel throttle actuation

### OIL SYSTEM

Dry sump with magnesium pan and bell-tank housing

### PISTONS

Cosworth

### CRANKSHAFT/CON RODS

Forged steel

### ENGINE MANAGEMENT

MBE system

### FLYWHEEL

Ultra lightweight, low inertia design

### CLUTCH

AP racing lightweight single plate

### EXHAUST

4 into 1 system with carbon silencer

### TRANSMISSION

Close ratio 6-speed aluminium gearbox

**1st** 2.69:1

**2nd** 2.01:1

**3rd** 1.59:1

**4th** 1.32:1

**5th** 1.13:1

**6th** 1.00:1

### FINAL DRIVE

Limited slip differential 3.92:1

### WHEELS

Magnesium 3-piece hub/spun alloy rim

**Front** 61/2J x 13

**Rear** 81/2J x 13

### TYRES

Bespoke Avon radials

**Front** 185/55 R13

**Rear** 215/50 R13

### STEERING

Rack-and-pinion 2.12 turns lock-to-lock

Quick release Momo steering wheel

### BRAKES

**Front** 254mm lightweight vented discs

AP 4-pot callipers

**Rear** 228mm solid discs

### SUSPENSION

**Front** Widetrack adjustable, aerofoil tube wishbone, Adjustable spring seats,

adjustable anti-roll bar

**Rear** de Dion axle with lower A-frame and

upper Watts link, Adjustable spring seats,

adjustable anti-roll bar, Coil springs and

Bilstein telescopic dampers

**KERB WEIGHT** 460kg