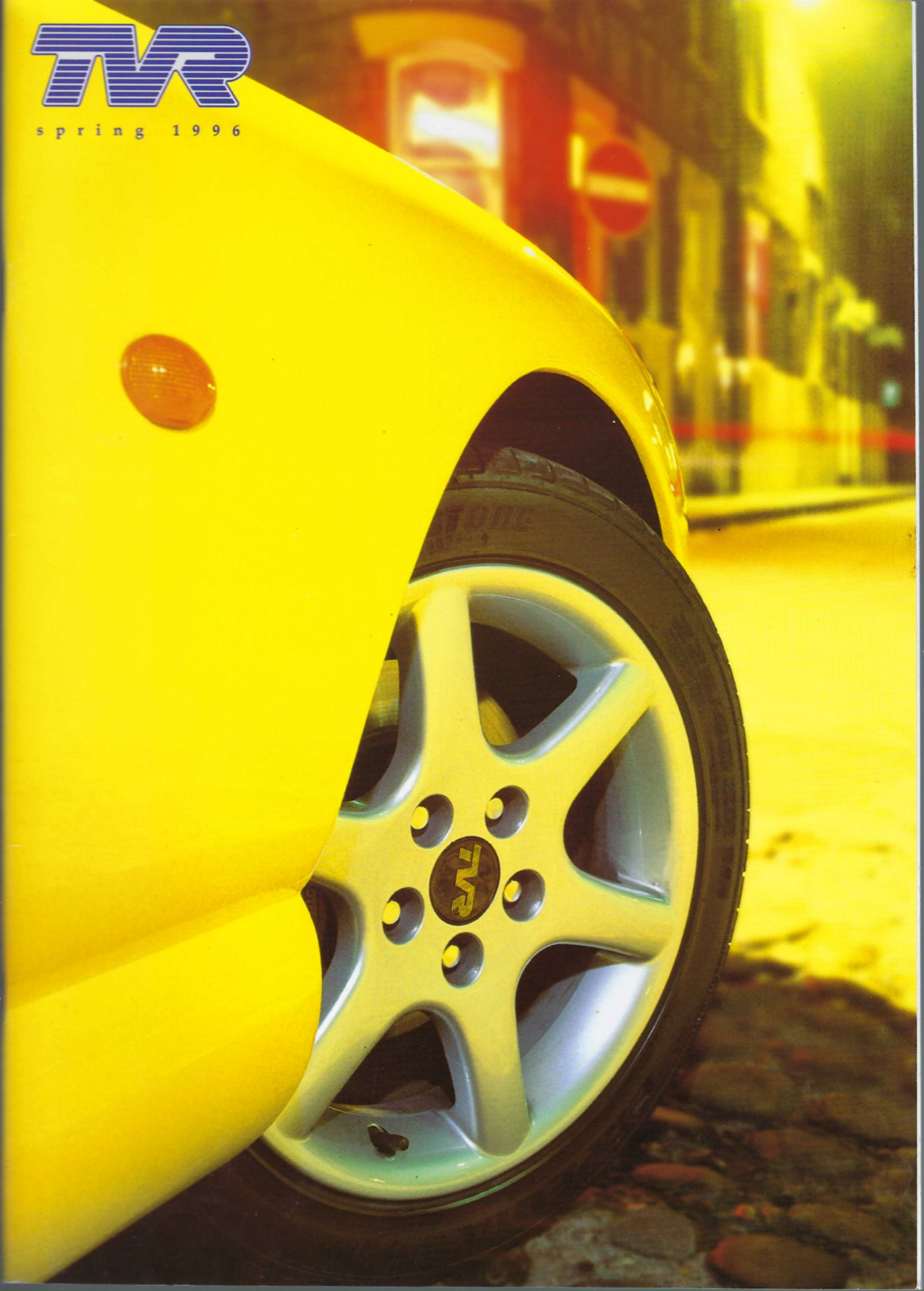
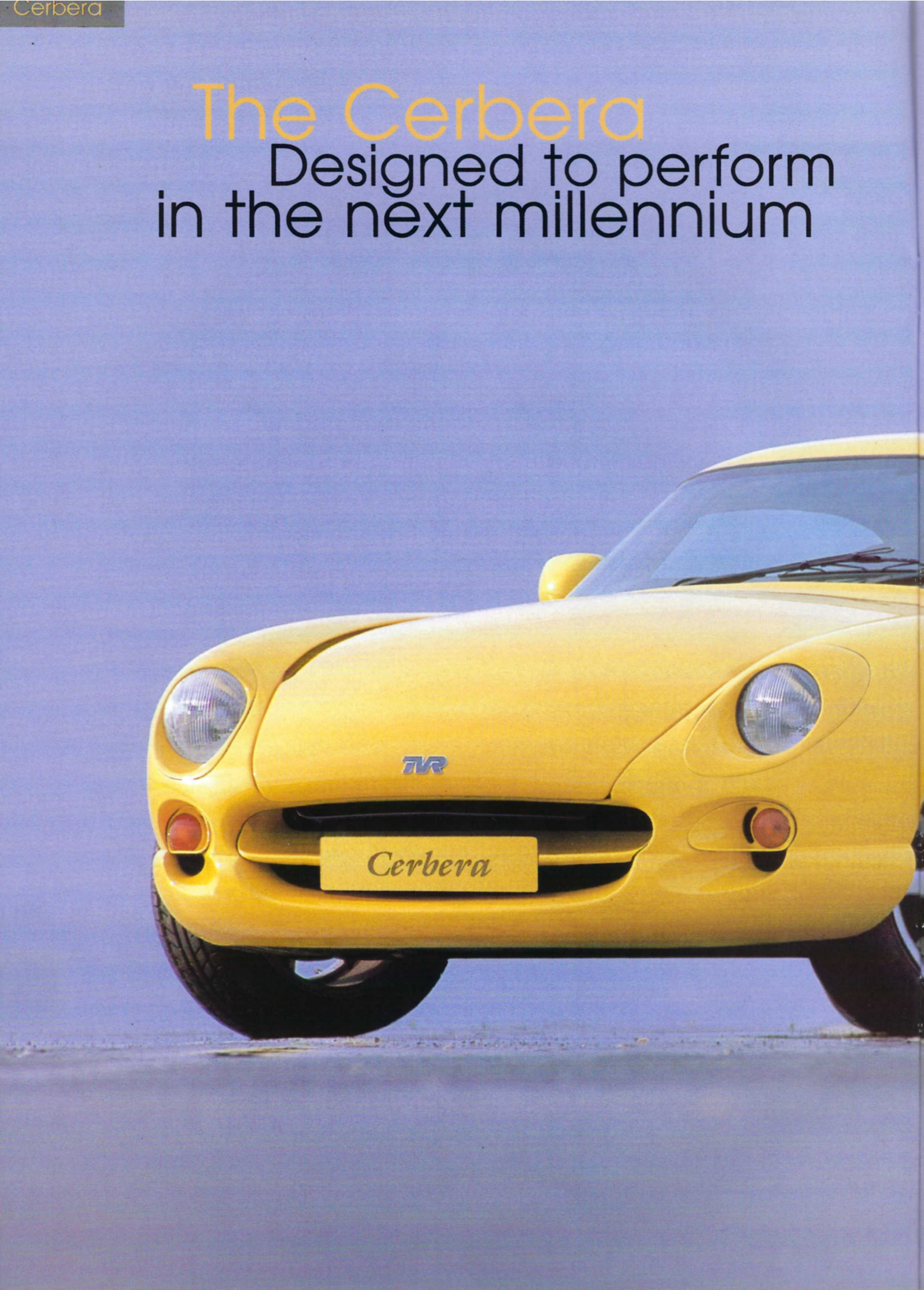

TVR
spring 1996


Cerbera
Cerbera

contents

The Cerbera

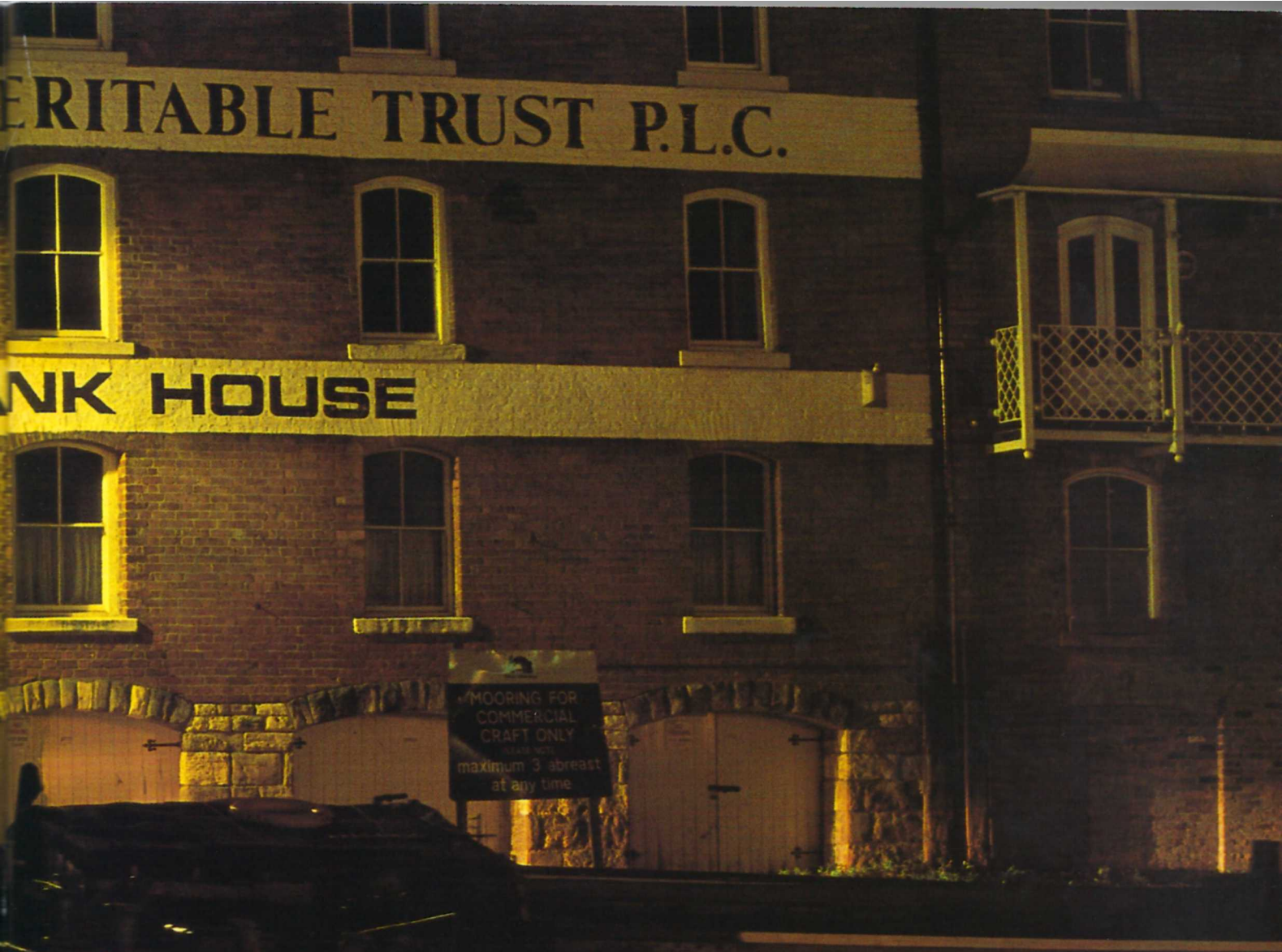
Designed to perform in the next millennium



Cerbera

It is typical of TVR's confidence that nearly two years could elapse between a new model's first motor show appearance, and the sight of cars emerging from the factory en route to delighted new owners. The Griffith which ushered in a new dawn at the Blackpool company took a year to refine and develop, and the new four seat Cerbera has continued the tradition by taking nearly double that. Meanwhile, the orders have continued to flood in, but the chairman and his engineers have only recently been satisfied that the car meets a unique and exacting set of requirements. The patience of those many customers will soon be rewarded in the best possible way.But while 12 months may seem like an age to a customer awaiting the excitement of that first Cerbera drive, it is a very short time in motor industry development terms. Such swift success can only be achieved within a small, dynamic company, with an autocratic hands-on management and a band of dedicated and enthusiastic engineers close enough to their handiwork to take pride in its performance.

The basic specification of the Cerbera has hardly altered in the months since that first show. The time has been used to refine and develop the car, and to ensure it meets safety and environmental legislation. Of course it still has the engine in the front - any other layout would be inconceivable in a car from Blackpool. It is still rear driven - again, nothing else could possibly be the case. It still has the preferred number of cylinders under the bonnet, and they still



propel the car fast enough to thrill. The chassis too, can still cope with the performance and still responds like a thoroughbred. It stops and goes as a TVR should. The engineers' work has made the car conform without sacrificing the quality and extent of performance that make it special.

The steel tube chassis has been designed to retain its strength and stiffness using all the lessons learnt from the racing Tuscans. No Tuscan chassis has ever failed in any way, even in the severest of accidents. Development of springs and shock absorbers has focussed on improving ride quality while maintaining control of the body. The car's longer wheelbase demanded a Grand Tourer's comfort, but it was absolutely essential that the race bred agility and handling should not be compromised. Careful development has allowed much softer springs all round with no penalty in handling precision. And then of course, there is the engine.

Designed and developed entirely within TVR, the new AJP V8 engine is the most exciting chapter in the company's history. It owes nothing to any other motor manufacturer, and yet it has to be capable of meeting the same emission legislation faced by Ford or General Motors. These rules grow ever stricter as we approach the next millennium, but the need for a clean exhaust and good fuel consumption could not be allowed to compromise the AJP's unique racetrack ambiance. After all, the new engine was designed for the circuit and then refined for the road, not the more usual opposite. Only recently have all these unique requirements been met. The style is safe and the car is ready.

The Cerbera on the road - a unique driving experience

We will look at some of the AJP's development in detail in just a moment, but before we do, let us see why the Cerbera driving experience is like no other available today. Stand back and look at the car's long, low profile. It is only 15 inches longer than the curvaceous Griffith and yet there is room for two adults in the rear. Just like its smaller sister, there are no doorhandles or external locks to open the Cerbera's long doors - a squeeze of a button on the keyfob-sized control box turns off the alarm and activates a small push button on the underside of the wing mirror. A touch lets the Cerbera's door spring open and reveals the car's distinctively styled seating. The driver's seat is firm yet deliciously supportive - the squab extends far enough forward to support the thighs properly - while the back curves round under the arms to hold torso in place. Naturally it has adjustment enough to accommodate TVR's six foot six inch chairman, or the five foot three inch company secretary, and it tilts easily forward to allow access to those two rear seats.

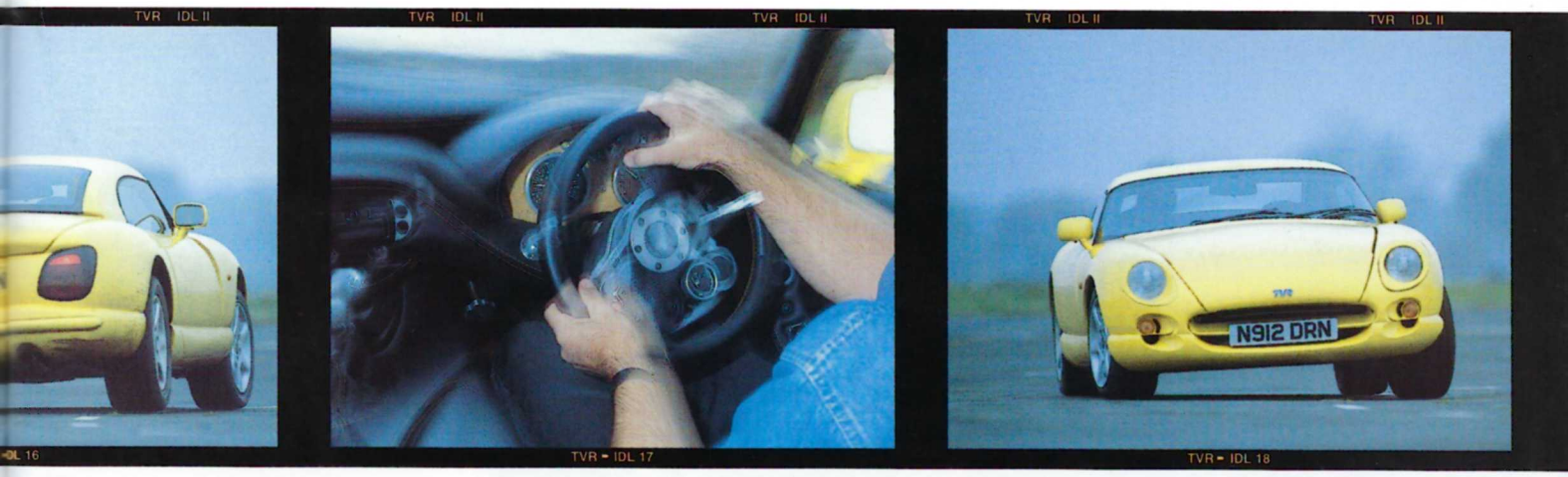
Reach for the steering wheel. Chunky and purposeful, its twin spokes reveal an instrument pod below the dash while your thumbs will easily find the four buttons which control wipe and wash, horn and headlight dip. Look forward to the binnacle ahead of you. The large aluminium rims of speedometer and rev counter are right where you can see them. Already you feel in control. You are not merely sitting in the Cerbera, you are part of a powerful, complex machine.

There's no door key to a Cerbera, and there's no ignition key either. Check that the sophisticated alarm system has cleared the engine for start and push the black button just below the fuel gauge. Hold it down for a few seconds. The engine's electronic management will switch on and cycle through its internal checks, then without any further command from you, the starter kicks in and the compact 4.2 litre V8 in front of you springs eagerly to life.

One of the first things you will notice about the AJP, is how quickly it responds to the accelerator. A touch sends the revs spinning up - relax the foot and they die away just as quickly. It's urgent and exciting, like a high performance motorcycle, and maintaining this kind of response while meeting emissions was one of the areas which took so much of the engineers' time. Push the clutch. It's firm. It has to be in order to handle the power. Snick the short gearlever with its polished aluminium knob into first. There's no compromise here either. Tough yet precise, the gearshift clunks into the gate with meaty intent. Now, ease the clutch up while taking care not to rev the engine too much. The AJP's eagerness will take a little getting used to after the last car you drove.

Ease out on to the open road. The power steering is a little firmer than you were expecting and it comes as a pleasant surprise. Gently now through first and second gears. Into third, and look for somewhere to begin research of the AJP's power. At first it won't feel as huge as some have reported. There are no sudden surges, no turbo like ramp as the engine suddenly reaches its operating range. Instead, there is just a wall of torque which seems to grow ever stronger as the revs climb round the tachometer. You can spin the AJP to 7,500rpm if you like - although there's no need - the narrow angle vee and flat plane crankshaft are designed to make the engine grow smoother the faster it turns. The complete opposite of more conventional V8 engines.

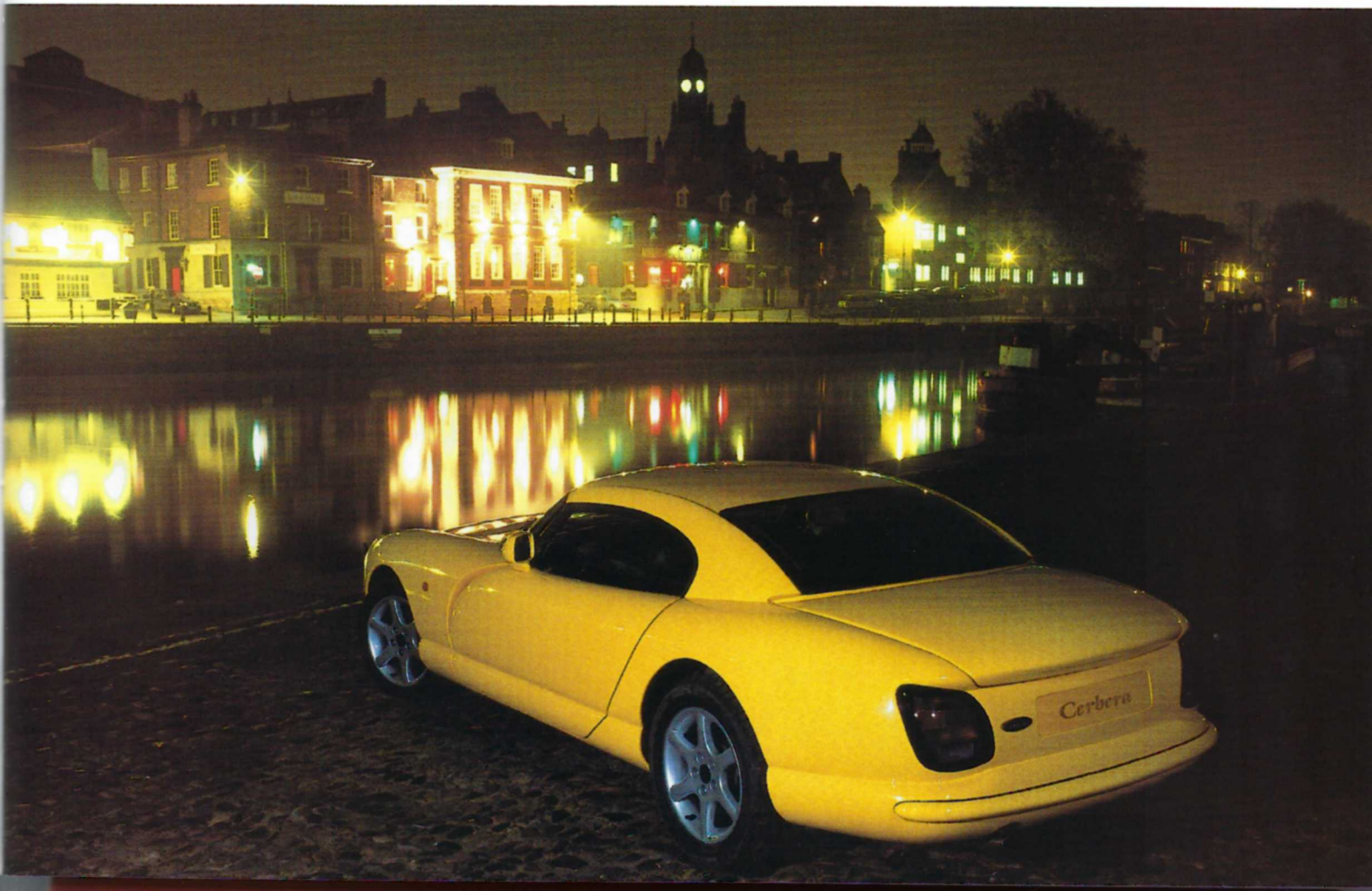
The sound from the engine is not perhaps what you were expecting. There's no offbeat rumble of a conventional V8. Instead there's a subdued bark. A purposeful hum. Enough aural tingle to excite, but not too much that it tires



on a long journey. Shift into fourth. Try and snick the gearlever through the precise, closely spaced gate just in time to catch the engine's revs as they tumble down the scale. There's an unfamiliar feel about the gearshifting procedure. The firm clutch, chunky gearshift and willing engine is not a combination you are used to, and yet each gearchange seems like an operation to be savoured, although there's not much time for that. And each time you change up, the engine's legs seem to grow longer, the rate at which the road is devoured grows ever more relentless.

It is here the Cerbera's style of performance differs from that of the Griffith or Chimaera. The TVR developed V8 in these two is equally powerful - the five litre engine in the Griffith 500 more so - but it is more weightlifter's brawn than athlete's sinew. The 500 will tear the tarmac from tickover where the AJP makes the Cerbera gather speed and momentum with seamless, unobtrusive ease.

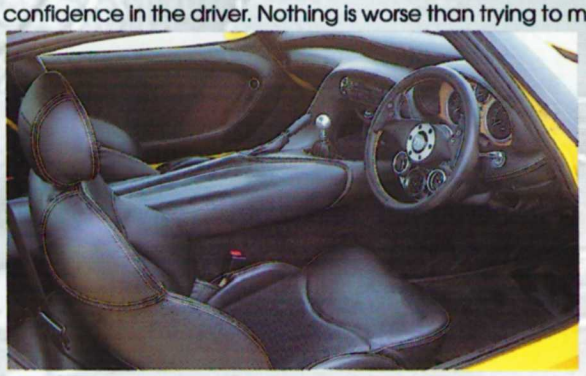
Performance like this would be irresponsible indeed if the chassis were not a match for the engine's performance, and once again we are about to savour a style of movement which is almost unique in today's market place. Just as compliance with emission regulations has stifled the response of many an engine, a desire to make their cars suit all tastes and abilities has led many manufacturers to blunt the steering and build in relentless understeer. The Cerbera's style is for steering that is as sharp as possible but without making the car feel nervous or unstable. The driver should always have confidence that the car will answer his or her command, and to trust that the car's tail will remain firmly in its place.

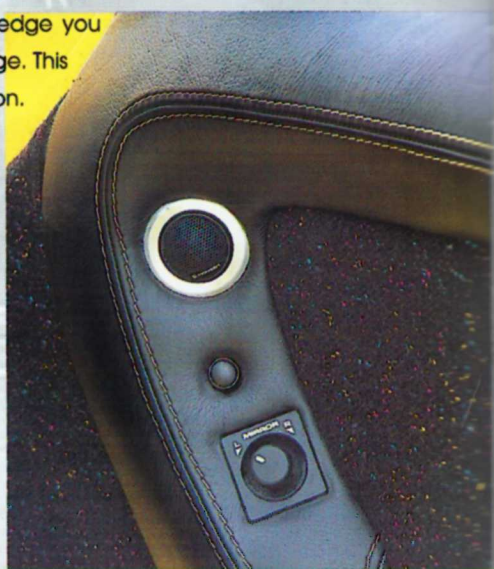


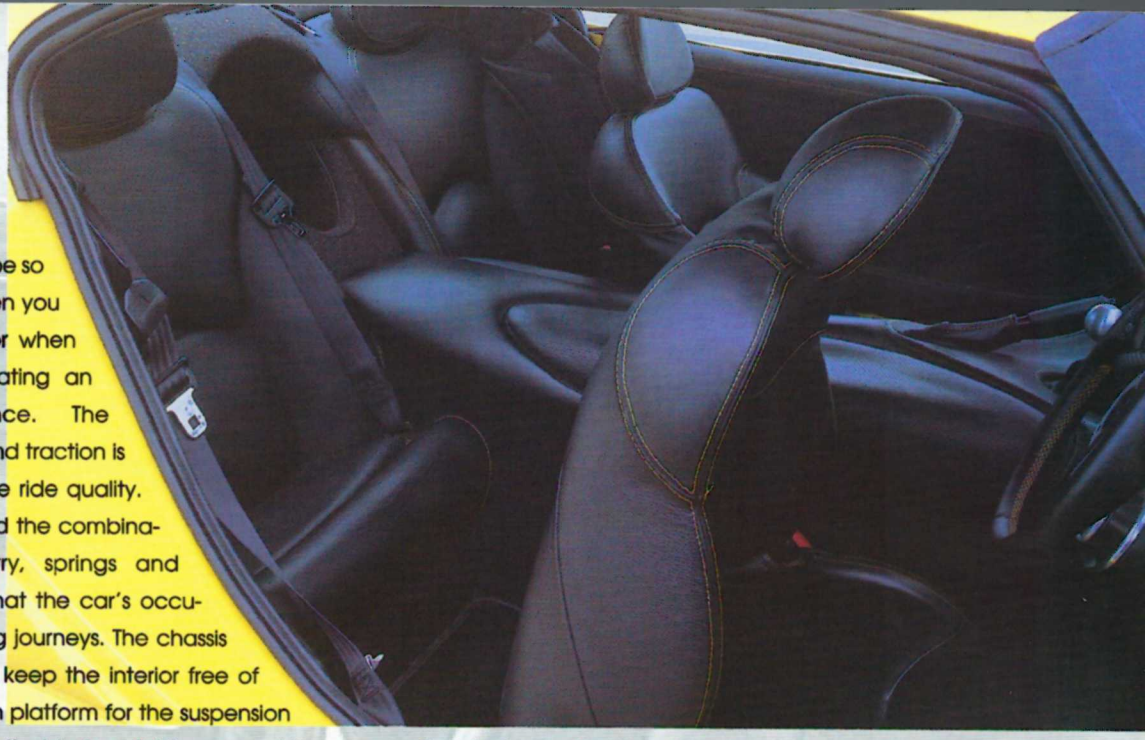
Find a wide open piece of road with a series of bends. Perhaps a place you go to drive just for the sheer pleasure of the process, rather than a component in the need to get from one place to another. A road you know well. Feel how the Cerbera's thick wheelrim moves just enough in your grip to let you know what is passing beneath the fat, low profile Bridgestone tyres. And yet it's relaxed, requires no correction or input to keep the car tracking straight and true. Ease into the first bend. There's just enough movement of the wheel before the car responds, and just the tiniest bit of initial reassuring push from the front. Both make sure that the car's composure will not be upset by sudden steering input, that the bite available from the front tyres will not take you by surprise.

The bite is there though. And this tremendous grip at the front wheels is one of the Cerbera's greatest attributes. Super responsive and accurate steering combined with class and composure add up to a confident chassis that breeds confidence in the driver. Nothing is worse than trying to make progress along a wet and winding road constantly wondering whether the car will do the same thing on two successive corners.

The front end is only half the story of course. The back must have grip to match, and to maintain it while transmitting all that power to the road, but just a word of warning here. The tyre and suspension combination that can deal with a full 350bhp under all road conditions, wet or dry, has yet to be invented. You can make a Cerbera's tail slide on a wet road if you try hard enough, and the facility to do this in a powerful car is part of the joy of ownership. The important thing is that it should only be when the driver commands. Back to that favourite corner. Savour the precision of the steering which lets you place the car's nose perfectly at the apex then squeeze the accelerator all the way to the floor as you exit. Feel the grip, indulge the shove in the back, wait for the tiniest yaw to edge you towards the road's edge. This is Cerbera style in action.







Not all your driving will be so indulgent. There are times when you need to travel for business, or when you don't feel like co-ordinating an exciting driving experience. The Cerbera's steering response and traction is at your command, but not the ride quality. This is inbuilt at the factory and the combination of suspension geometry, springs and dampers needs to be such that the car's occupants are comfortable for long journeys. The chassis too should be stiff enough to keep the interior free of shudders while providing a firm platform for the suspension geometry to operate. A smooth ride is a fluid one, and it should complement an elegant handling chassis. The Cerbera meets these exacting criteria. Its ride is surprisingly supple for a sporting Grand Tourer, and yet the body's movement stays relaxed and composed at all times.

So much for going. The Cerbera must also be able to stop. Massive aluminium four pot AP racing callipers and ventilated discs handle the job, and they do so exactly in keeping with the car's style. They have lots of bite and yet the pedal is not over sensitive. It's firm underfoot and barely moves before massive pad begins to squeeze massive disc. Like the steering, the bite inspires confidence in the mechanism behind the control.

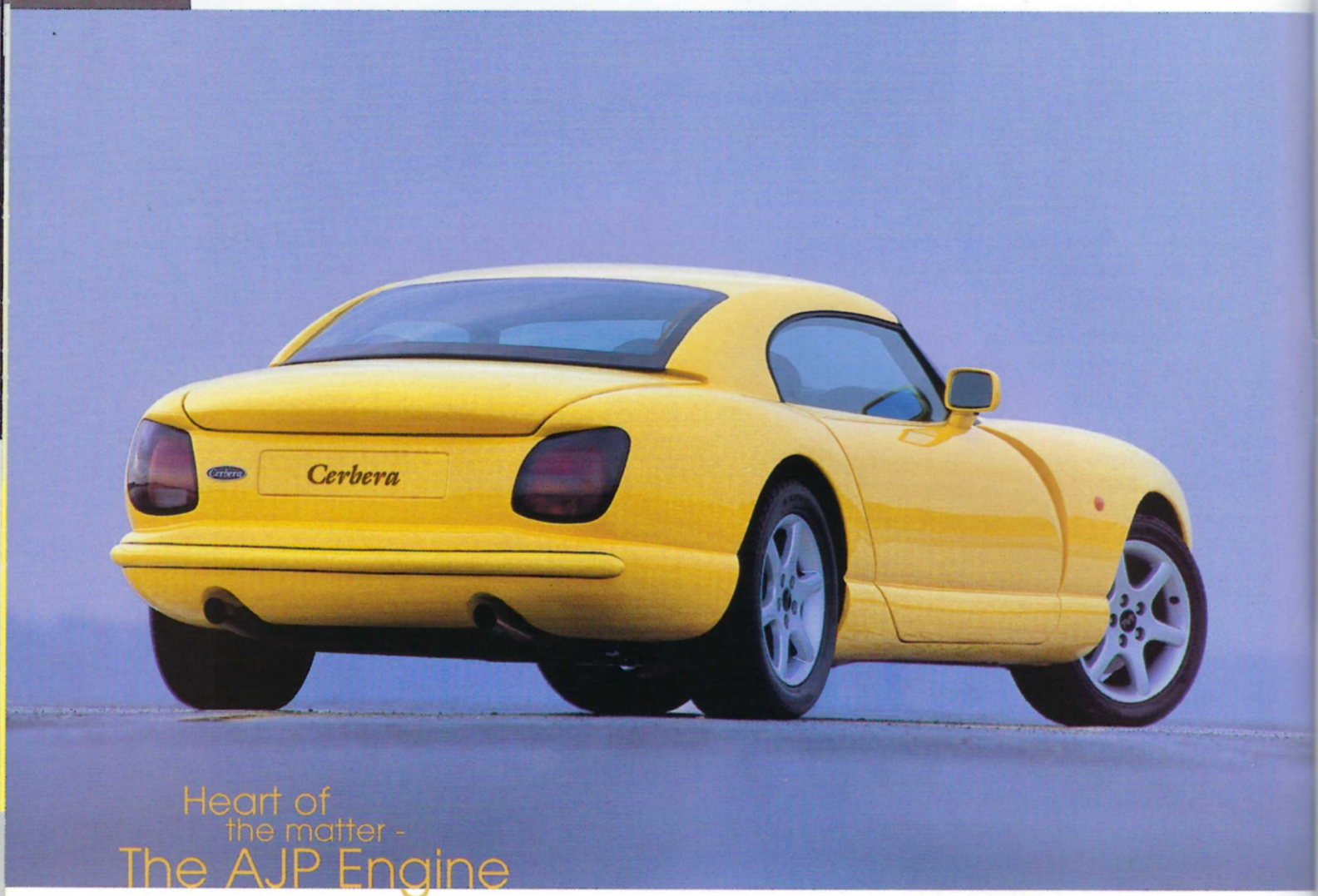
You have now driven the car. You have been thrilled by its performance and admired its composure. Now you must live with it. Press the red button beneath the steering wheel and to the left of the clock. The ignition cuts, but the engine stops turning so quickly, it almost startles you. The sequence of push buttons has started to become completely natural. Why should there be a crude mechanical key to start an engine in this electronic age. The buttons on the steering wheel too seem so logical. You don't need to take hand from wheel or even relax your fingers' gentle grip in order to flash lights, sound the horn or cycle the washers and wipers. You can do any of these while turning the rim. It all seems so clear and uncluttered round the steering wheel. There is only one thin elegant stalk for the indicators, and even this has a logical yet stylish touch. Flick once to turn on the indicators. Hold it on and they flash just once - when you want to remind those behind of your intention to change lanes on the motorway.

Push in the end of the stalk and on go the hazard flashers. You already know that you should never have to take your eyes from road to find a switch, but you are surprised how soon these minor controls feel familiar and logical - even without labels or signs to help you.

Look ahead to the facia. There's more stowage space for sunglasses, gloves and maps than you thought. A handy spot in front of the gearlever complements the recess along the dash top. And the big loudspeaker right in front of you neatly gets round the problem of stereo sound distribution in a sports car. You might by now be looking for the door handle. Where is the little lever on the transmission tunnel maybe borrowed from the Griffith. Or possibly the Chimaera's tunnel - mounted twisting knob behind the gearlever. But there is neither. There is a push button down on the door's side pocket. A touch and the door gently springs open.

This lack of doorhandles and the need for electric doorlocks are not just a stylist's wish. The smooth unbroken exterior looks good certainly, but moving the doorlocking mechanism away from the outer skin makes the thief's job that much harder. Once the engineers had done that, they also discovered that electric locks were far more reliable than a system of cables operating the mechanical variety. Both security and style were thus neatly served.

TVR are extremely proud of the new Cerbera's blend of ability, class and composure. The engine is responsive, sounds completely different, is massively powerful, yet it complies with strict legislation. The handling is sharp without being nervous. The body control is excellent without a stiff jiggly ride. It is tough, powerful, yet accommodating and stylish in a clean uncluttered fashion. It is a combination of the futuristic and the traditional which TVR is confident you will not find anywhere else.



Heart of the matter - The AJP Engine

For a company the size of TVR, building its own engine was a brave and exciting step, but having made the decision, it is typical of the company's style that this engine should be something completely different. TVR has never been one to follow fashion. The TVR AJP is a 4.2 litre V8, but the Vee is arranged at 75 degrees instead of the more usual 90. This makes the engine much more compact and allows it to be mounted further back in the chassis. This in turn contributes towards the car's fine handling balance. The crankshaft inside the AJP's light alloy block has all its big end journals arranged at 180 degrees to each other - known as a flat-plane crank. This dictates an unusual firing order - the sparks to fire the mixture take place at 75 and 105 degrees in the crankshaft's rotation and this is why the engine sounds different - more like a modern high performance high revving four cylinder motorcycle than a traditional American V8. The AJP's flat plane crank is stronger, the 75 degree Vee angle and unusual firing order helps it to be smoother at high rpm. But this is not all that makes the engine different.

The cylinder heads have only two valves in each of the eight cylinders instead of the more fashionable four. Two valves gives more torque at low rpm, and clever combustion chamber design ensures that emission legislation is met - the most oft quoted reason for the four valve layout. The AJP is extremely compact and very light, but from the driving seat, the most startling thing about the new engine is its response to the accelerator. This alone is what endows the Cerbera with its eager, urgent feel. Since emission laws have become ever stricter, fewer and fewer cars can demonstrate this kind of response - to the point where the AJP is probably unique in this respect. How has this been achieved when everybody has to meet the same legislation.

Peter Wheeler, TVR's chairman, insisted that the engine respond like a racer, and he steadfastly refused to sacrifice either power, or response. That left John Ravenscroft, Chief Design Engineer at TVR, with the job of making the AJP comply with emission laws. Most of us are now familiar with the response available from a modern engine. Thump the accelerator to the floor, and you almost have to wait for the engine to spin up. Lift off and it takes even longer to wind down. This was never the case when catalysts were a rarity, when a carburettor would give a great squirt of fuel as you pressed the pedal and the tachometer needle would rip round the scale. The squirt of fuel though is the problem. It will readily poison a catalyst in addition to making clouds of poisonous fumes. Ravenscroft takes up the AJP's story.

"If you cut the amount of fuel when the throttle is snapped open, you have to back off the ignition timing as well, and both will kill the engine's response. If you're not careful, you can end up tuning the engine just for the emission test, and that's where you get this horrible dead throttle response. That might be OK with a small family saloon, but it wouldn't do for a TVR, and Peter (Wheeler) was absolutely firm on that point. So we've concentrated on keeping the ignition advanced but reducing the big spike of fuel. It wasn't easy. The problem is that even sophisticated modern electronics can only respond to something that has already happened within the engine. If that is a big dose of fuel, it's already too late, so we had to do it a different way."

Ravenscroft also explains that the critical phase is during the initial warmup, the time when the engine is effectively on choke and fuel mixture is rich. "The test lasts about 20 minutes, but the first 60 seconds is the most critical. If you took off the catalysts, most cars would fail in that first 60 seconds, which should give you some idea of the problem - and it gets harder every year.

The 1995 EEC levels were 50% of 1993's. This is why we have to get the engine warm as quickly as possible, but we managed to get the Rover based engine in the Griffith and Chimaera past the 1992 Swiss test first time of trying." The Swiss and US tests, says Ravenscroft, are the hardest of them all.

But why, if a small company like TVR can find a solution, can the majors not do likewise. Ravenscroft again. "We have probably tried harder in that specific area, and we use small companies to help us with electronics. They are hungrier and can respond more quickly, plus we don't have big company politics or accounting procedures to go through. Things like engine response are probably more important in a TVR than they are in a Ford. Even so, I think Ford would probably be interested in how we have done it, so I had better not tell you exactly... ❑

Cerbera Specifications

Dimensions

Overall Length	4280 mm
Overall Width	1865 mm
Overall Height	1220 mm
Wheelbase	2566 mm
Front Track	1464 mm
Rear Track	1470 mm
Ground Clearance	130 mm
Fuel Capacity	65 litres
Weight	1100 kg

Engine 4.2 litre

Configuration	75 degree V8 with aluminium block and wet cylinder liners
Capacity	4185 cc
Max rpm	7000
Max power	350 bhp (DIN) at 6500 rpm
Max torque	320 ft/lbs at 4500 rpm
Exhaust	Catalytic Convertors

Fuel and ignition system. Fully mapped electronic engine management with twin three way catalytic convertors and closed loop control strategy

Transmission

5 speed manual gearbox with hydraulically operated clutch.
Gear ratios - 1st 2.95:1, 2nd 1.95:1, 3rd 1.34:1, 4th 1.00:1, 5th 0.73:1
Final drive ratio 3.45:1
Limited slip differential, Hydratrak optional

Suspension

Front - Independent with unequal length fabricated wishbones, coil springs over gas filled telescopic shock absorbers with anti roll bar.
rear - Independent with unequal length fabricated wishbones, coil springs over gas filled telescopic shock absorbers with anti roll bar.
Constant velocity sliding driveshafts.

Braking

Front	294 mm ventilated discs
Rear	294 mm ventilated discs

four piston aluminium callipers on front, two piston callipers on rear. Servo assistance with separate front and rear circuits. Cable operated drum handbrake operating on rear wheels.

Steering

Rack and pinion with adjustable steering column and optional power assistance.

Wheels

Size	7.5x16in
Construction	six spoke aluminium alloy

Tyres

Type	Bridgestone
Size	225/45 ZRx16in (front)
	235/50 ZRx16in (rear)

Body

2 door, 4 seat coupe laid up by hand in glass reinforced polyester resin. Integral roll cage. Four priming coats and a minimum of five top coats of two pack paint. Laminated front windscreen with semi-frameless door windows. Fixed roof.

Chassis

Jig formed, multi-tubular steel frame backbone chassis with outriggers and roll over protection front and rear. etch primed and powder coated for corrosion resistance.

Performance

0-60mph	4.2 seconds
0-100mph	9.9 seconds
Maximum speed	in excess of 160 mph

Equipment

Electric boot release
Electric mirrors
Electric windows
Electrically heated rear screen
Electronic alarm and engine immobiliser
Hydratrak limited slip differential
Individual tailoring of seats, instruments, dashboard and interior
Optional power steering
Reclining seats with adjustable head restraints trimmed in half hide (optional full hide)
Remote central locking
stereo radio cassette with twin door speakers and integral aerial is fitted as standard, uprated systems are available on request
TVR keyless electronic ignition with engine start buttons beneath the steering wheel
walnut veneer dashboard


MR
Welcomes
GOLDEN MI


B's
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LE CENTRE
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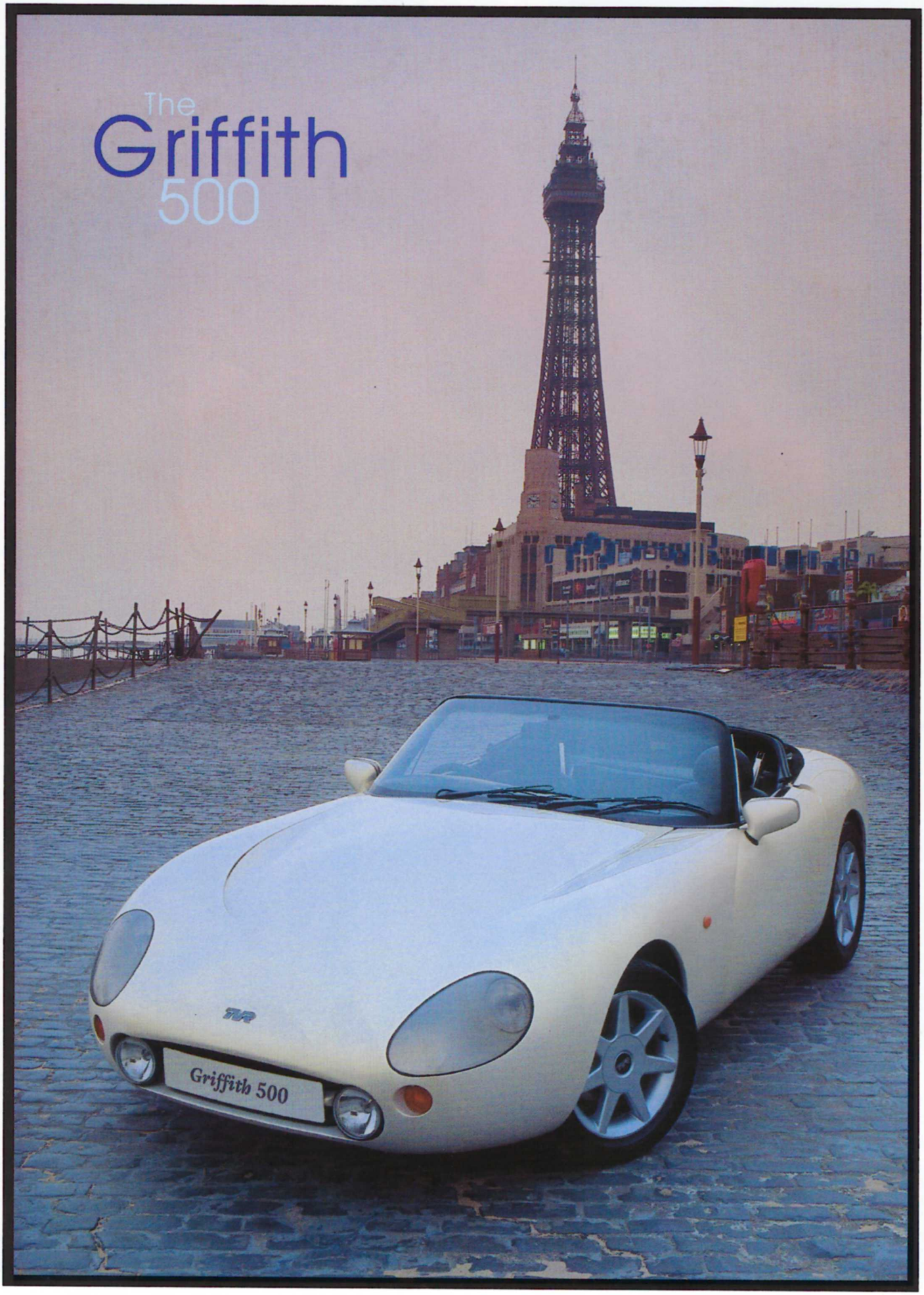
THE B's KNEES


The
Griffith
500
Griffith 500

The Griffith that first stunned visitors to the 1990 Birmingham Motor Show with its simple elegant curves and promise of storming performance, has now been in production four years, but its popularity shows no sign of waning. It is *the* performance TVR. Nimble, compact and agile, the five litre 500 boasts the most powerful of the TVR developed V8 engine family, and this endows its race bred chassis and swooping body with uncompromising, crushing performance. Constant development and improvement over those years has also ensured that this kind of performance is delivered in even greater safety and with ever greater refinement.

Much has been written about how this car goes, and this is one aspect about which both press and public have no doubts. It is now so much a part of the car's character that anything else might have been conceived by accident. This is not the case at all. There are many very special features on the car - both in function and styling - all of them carefully and thoughtfully designed.

Before we examine some of these features in detail, let us take a brief look at the Griffith concept, and at the rationale behind TVR's insistence on a front engined layout. The first part is simpler to explain. The Griffith was TVR's new beginning. It had to look like nothing else on the market, and it had to perform like nothing else which was available for the same amount of money. The simple elegant curves, the clever covering of shut lines for doors, boot and bonnet, the absence of doorhandles and the award-winning stowable hardtop all went to make up a simple yet immensely stylish body. Beneath this fine set of clothes, modern engineering and technology was combined with old fashioned tradition to ensure that the Griffith's performance matched its looks.

TVR wanted something special, but the company also took care not to try and re-invent the simple, muscular sports car. A big engine turning comparatively slowly and powering a light compact car is the best possible recipe for high performance, and TVR made no attempt to modify the formula. The TVR-developed, aluminium V8 engine was already at a fairly advanced stage of development before the Griffith ever took shape on the drawing board, and in its latest electronically injected and managed form, it is still the powerplant for the Griffith, and its sister the Chimaera. In part thanks to a pair of very large and very advanced catalysts, the power unit passes the most stringent EC emissions tests. The Griffith's 5 litre engine will take the car to a maximum speed of more than 150mph and to 60mph from rest in less than five seconds, but the prime advantage of the 5 litre engine is its extra midrange punch and low rpm lugging ability. You don't always need to shift down to seize an overtaking opportunity.

The ultimate evolution of the Griffith range is the current 500. This car's five litre engine will propel it to a maximum speed of nearly 170mph, and will enable it to reach 60mph from rest in a little over four seconds. The Griffith 500 is also naturally, the best overtaker of all the Griffith models. It will devour almost any everyday passing opportunity in four or five seconds without the need to shift out of fifth gear. These are muscles of the hardest kind, and yet they can be flexed without screaming revs or the need to pump gears. Perfect proof of TVR's big-engine formula.

There are still those who insist that a car whose performance is without compromise must have its engine mounted in the middle. TVR disagrees. The company believes that an engine in the front adds that little extra touch of safety and a fine degree of extra balance to the handling. A Griffith's engine is nevertheless mounted a very long way back in the chassis, such that nearly half the aluminium V8 engine's cylinders are behind the base of the windscreen. The slight forward weight bias adds a little weight to the front wheels when the car first starts to turn. This adds some bite to the cornering process. Then, as the process continues, that weight leads the car by the nose, keeping it stable. In a mid engined car, the mass behind you can try and overtake the front, leading to instability. There's no doubt that for public road use a front engined car is a sharper turning, yet friendlier and more accommodating companion.

There are also everyday practical benefits to an engine up front. It is much easier to see behind you, because the bootspace is not filled by machinery - which also means that the same space is available for luggage. Lastly, a mass of engine acts as protection for the occupants in the unfortunate event of a frontal impact.

So much for the front engined rationale, what of the car that proves the concept. The TVR modified aluminium V8 is the heart of the Griffith but the bones are its tubular space frame chassis. This - like all the current TVR family - was developed from the racing Tuscan - a design which has been tested under the very severest of circumstances (see Tuscan review on page 38). Crash resistance is one highly desirable thing. The provision of a stiff, shake free platform on which to mount the suspension and from which to hang the body is another. TVR's engineers were obsessive about the gusseting of vital structural areas, and of careful triangulation within the chassis frame - both of these in an attempt to attain maximum stiffness in the structure.

The suspension at both ends of the car is TVR's well proven double wishbone layout - for decades unsurpassed as a geometric ideal. Gas filled Bilstein shock absorbers have been carefully developed in conjunction with the manufacturers and when combined with dual rate springs they provide an exacting blend of ride comfort together with the sharp handling and immense grip for which the car has become justly renowned. TVR has taken a long time to develop its own power - assisted steering system - now an optional extra across the range - and this has only recently undergone further revision. Giant ventilated brake discs and four pot aluminium AP racing callipers that were originally developed for the most powerful Griffith are also now standard across the TVR range, and these supply simply massive braking capability. Last but not least, Bridgestone of Japan supplies a set of their high tech Expedia SO-1 tyres to complement the performance of the chassis.

Performance then, is a very substantial part of Griffith ownership, but there is another side to the car. There are the

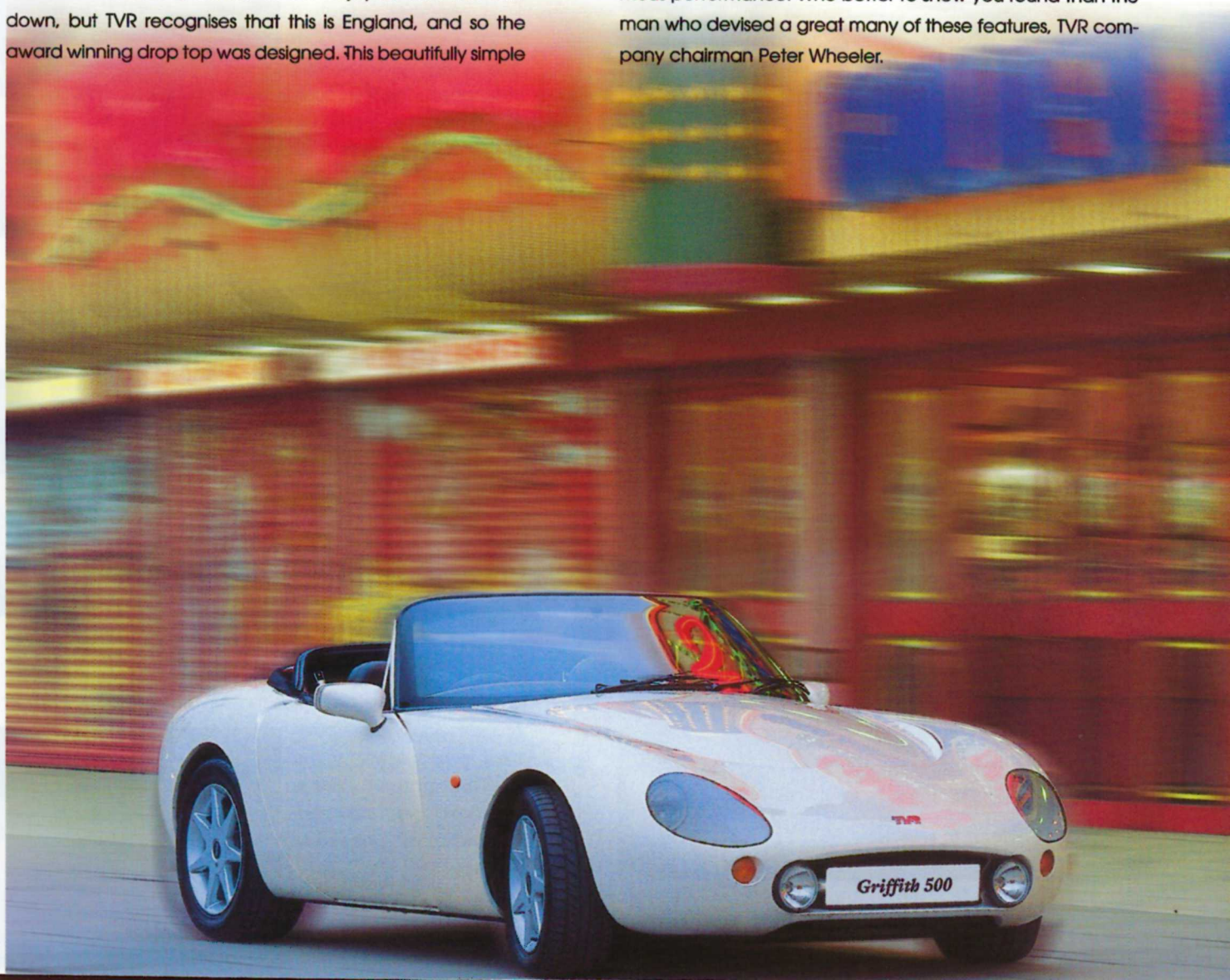
little stylistic touches that have now become a TVR trademark, and there is comfort too. If you are going to travel fast, you must be able to travel far. Inside the Griffith's cockpit you will find space to stretch your legs - all TVRs have to accommodate the company's six foot six chairman - and you will find a sumptuous amount of leather covering stretched smoothly over the swoops and curves that define the cockpit. Seats are supportive, comfortable, and yet the padded transmission tunnel and door will hold you firm like a racer when you exploit the car's grip. Ahead of you, there's a set of bold, clear instruments, distinctively liveried and surrounded by a neat aluminium rim. More aluminium forms the brightly polished gearknob, and the little rotary switches that control heating, ventilation, and from the start of this year, air conditioning. Simple black push buttons activate the lights and boot release, but you won't find any placards, or legends to mark one from another. Wheeler is convinced that anyone who is capable of handling a thoroughbred like the Griffith, is capable of learning its controls. Besides, legends and signs he feels, compromise the interior's confident style.

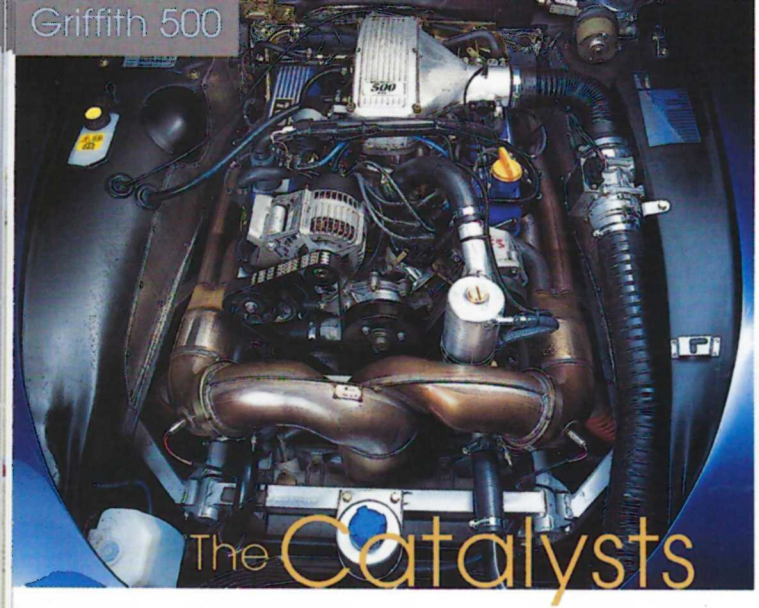
The Griffith is meant to be enjoyed with the roof down, but TVR recognises that this is England, and so the award winning drop top was designed. This beautifully simple arrangement combines the best advantages of the hard top with the wind in the hair facility of an open car, and transforms from one state to the other in fractions of a minute. There is also a deep boot and some stowage space for coats and bags behind the seats.

The Griffith may be a simple formula, but it is a successful one. It also manages to hide that muscular power within its discreet and stylish set of clothes. There are no wings, spoilers or wheelarch extensions on the Griffith. When you have ultimate strength, there is no need to boast about it.

The TVR Touch

The TVR formula for performance is well known and well respected. It is also obvious to anyone who has seen the statistics on page 25. But what of those touches of engineering style that complement such enormous performance. Who better to show you round than the man who devised a great many of these features, TVR company chairman Peter Wheeler.





The Catalysts

Many people have expressed surprise - even scepticism - about TVR's claims that stringent EC emission regulations could be met by a powerful two valve per cylinder engine like the Griffith's. The reality is extremely easy to explain, and there's more to it than just cleaning the exhaust. "After the "S" and the 420, we were determined never again to suffer from any part of the exhaust hitting the ground..." explains Wheeler, "but it was obvious that you couldn't get a pair of catalysts the necessary size under the floor. Because the engine in the Griffith is so far back in the chassis, we were able to put the cats in front. You can see how big they are - bigger and more advanced probably than almost anything else around at the moment, simply because the car has room to take them. There are some other benefits as well, as you will see in the feature about the Chimaera."

The Gearbox and lever position

Both Griffith and Chimaera feature their engines mounted way back in the tubular chassis, and this is one of the major factors in the fine handling balance of both cars. When you mount an engine that far aft however, the gearlever moves back by the same amount. "This," says Wheeler, "is probably the longest running single engineering problem we have had to deal with during the development of both cars. It defines so much about the design whether you like it or not."

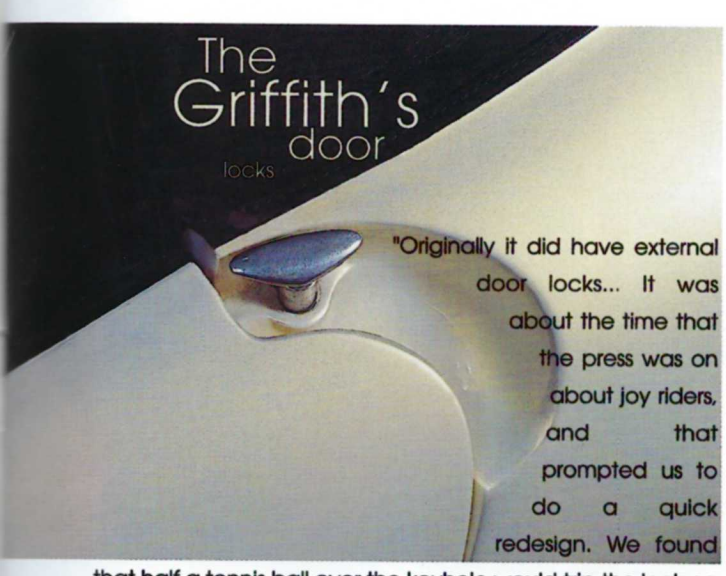
A look at the engine and transmission unit before it goes in the car shows the latest Borg Warner five speed gearbox, but even when this is equipped with the shortest tailpiece available, there is still need for a mechanical linkage to bring the gearlever forward to a comfortable siting. This gives you some idea how far back the engine is mounted in the chassis, and the extent to which the handling balance of a Griffith - or a Chimaera - benefits from such even front to rear weight distribution.

TVR's engineers are proud of the mechanical simplicity of the latest linkage, and it is certainly true that if you hadn't seen the pictures, you probably wouldn't know that the linkage was there.

The Roof mechanism

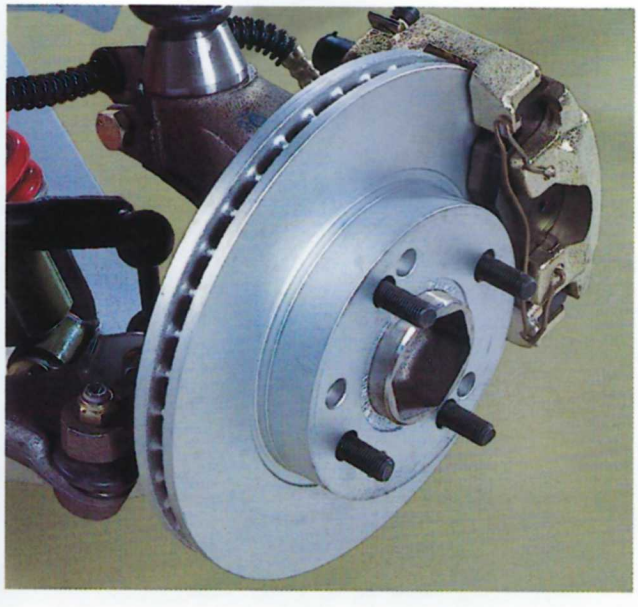
Another feature which is common to both cars is the roof lowering mechanism. This is wonderfully simple, yet supremely effective. "We spent a lot of time on this," says Wheeler, "and we could never go back to a traditional soft top after this. The hard centre section means there's no ballooning of the roof, which keeps the car's lines and reduces wind noise. It isn't only a clever means of putting a roof up and down. It was also designed to maximise rear view. Look how the two over centre struts are well away from the rear window. Normally there's a load of mechanism in this area which needs to be hidden from outside, and this makes the rear window smaller. We've managed to keep ours normal sized." If you look at the view available in the interior mirror, it's about what you'd expect in a car with a fixed top. Wheeler also adds that several companies - most of them Japanese - have tried to find a way round the TVR patents. "Some have tried to get close, but no one has yet succeeded properly..."

The Griffith's door locks



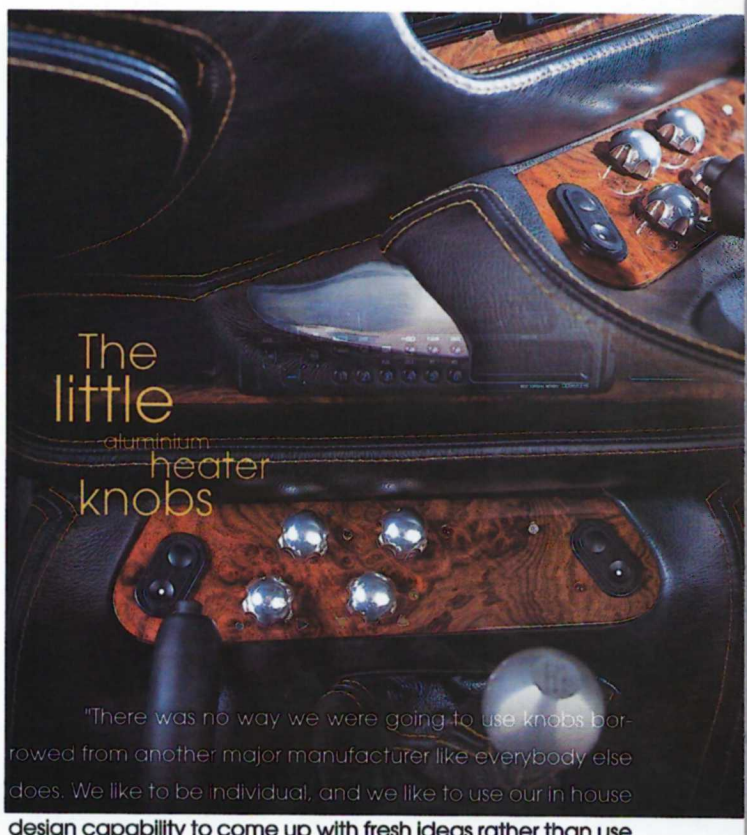
"Originally it did have external door locks... It was about the time that the press was on about joy riders, and that prompted us to do a quick redesign. We found that half a tennis ball over the keyhole would trip the lock on some cars so we simply moved the door opening mechanism away from the door. Then no clever sod with a ruler or a coathanger or rubber ball can trip the mechanism. Then we put the interior door handles on the transmission tunnel so that even if you broke a window you couldn't just reach down and open the door. We did change the original door handle to the 'T' handle and it turned out to be a nice styling touch, but it was actually all a serious effort to make the car more secure."

The Griffith 500 brakes



"... are now standard across the board. We've increased all of them in size to match the Griffith 500's..."

The little aluminium heater knobs



"There was no way we were going to use knobs borrowed from another major manufacturer like everybody else does. We like to be individual, and we like to use our in house design capability to come up with fresh ideas rather than use somebody else's. In fact the Griffith heater control system is more expensive than the Chimaera's although it looks simpler, because the knobs control electric motors and these move the flaps and valves in the heater ducts.

The little black buttons

"Yes they are all the same... We expect a customer will take the trouble to find out which is which. It's not like the people from the press who drive a car for five minutes and expect to know everything about it. If you've got the brains to drive a car like this, you should find the layout entirely logical..."

The Griffith instruments

... have apparently been another long running technical battle, although they are now at last right, and perhaps unsurprisingly, form another stylistic focal point in the TVR cockpit. Wheeler shakes his head. ""It's amazing how many different sorts you need. Right hand drive, left hand drive. Different tyre size option, different final drive ratio. You need about 10 different sorts and they all have to be calibrated by hand and matched to their individual sender units. We did try making them ourselves at one time - in desperation - but we've found someone to do it for us now."

The Paint finish

Health and safety legislation has reduced the pressure allowed in sprayguns. This is why most modern car paint finishes now suffer from a touch of orange peel in their finish - even the really expensive ones... "ICI has helped us with the type of lacquer," explains Wheeler. "I don't think they do it for anybody else because nobody bothered to ask. We have to use the low pressure guns like everybody else, but as you can see, the finish is now a whole lot better..." ❑

TVR

Griffith 500
Specifications

Dimensions

Overall Length	3892 mm
Overall Width	1943 mm
Overall Height	1205 mm
Wheelbase	2282 mm
Front Track	1460 mm
Rear Track	1470 mm
Ground Clearance	146 mm
Fuel Capacity	57 litres (12.7 gallons)
Weight	1060 kg

Engine **5.0 litre**

Configuration	90° alloy V8
Capacity	4988 cc
Bore/Stroke	94 x 90 mm
Compression Ratio	10:1
Max rpm	6000
Max power	340 bhp (DIN) @ 5500 rpm
Max torque	350 ft/lbs @ 4000 rpm
Exhaust	Catalytic Convertors
Fuel System	Electronic fuel injection

Transmission

5-speed manual gearbox with hydraulically operated clutch.
Gear ratios - 1st 2.95:1, 2nd 1.94:1, 3rd 1.34:1, 4th 1.00:1, 5th 0.73:1, reverse 2.76:1
Final drive ratio 3.31:1.
Limited slip differential.

Suspension

Front-Independent, unequal length fabricated wishbones, coil springs over gas filled telescopic shock absorbers, anti-roll bar.
Rear-Independent, unequal length fabricated wishbones, coil springs over gas filled telescopic shock absorbers, anti roll bar, Constant velocity sliding driveshafts.

Braking

Front	260 mm ventilated discs
Rear	273 mm ventilated discs

Servo assisted with front/rear dual circuits
Cable operated handbrake operating on the rear

Steering

AJP rack and pinion, optional power assisted, with adjustable steering column.

Wheels

Size	7x15 in (front) 7.5x16 in (rear)
Construction	seven spoke aluminium alloy

Tyres

Type	Bridgestone Expedia S-01
Size	front 205/55 ZR15in -(215/50 ZR with P.A.S.) rear 235/50 ZR16in

Body

Glass reinforced polyester resin, laid up by hand. Four priming coats and a minimum of five top coats of two pack paint. Laminated front windscreen with semi-frameless door windows. Single piece carbon fibre roof panel with fold down rear header, hand trimmed in Mohair fabric.

Chassis

Jig formed multi-tubular steel frame backbone chassis, etch primed and powder coated for corrosion resistance.

Performance

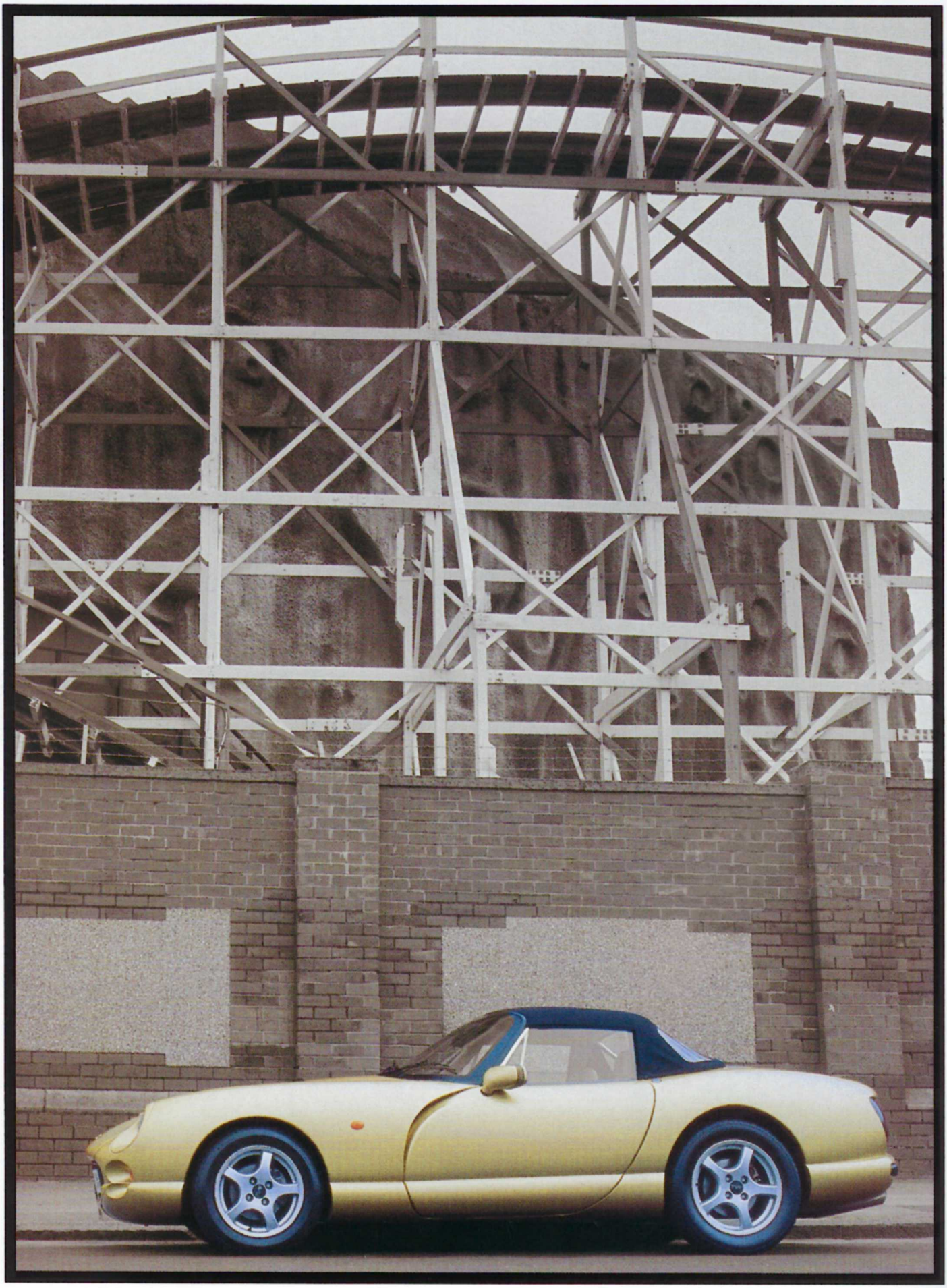
0-60mph	4.1 seconds
0-100mph	10.5 seconds
Maximum speed	167 mph

Equipment

Electric boot release
Electric mirrors
Electric windows
Electronic alarm and engine immobiliser
Individual tailoring of seats, instruments, dashboard and interior
Reclining seats with adjustable head restraints trimmed in half hide (optional full hide)
Remote central locking
Stereo radio cassette with twin door speakers and integral aerial is fitted as standard, uprated systems are available on request
Walnut veneered dashboard

The Chimaera range


COASTERS
THE
LATE
LIVE MUS



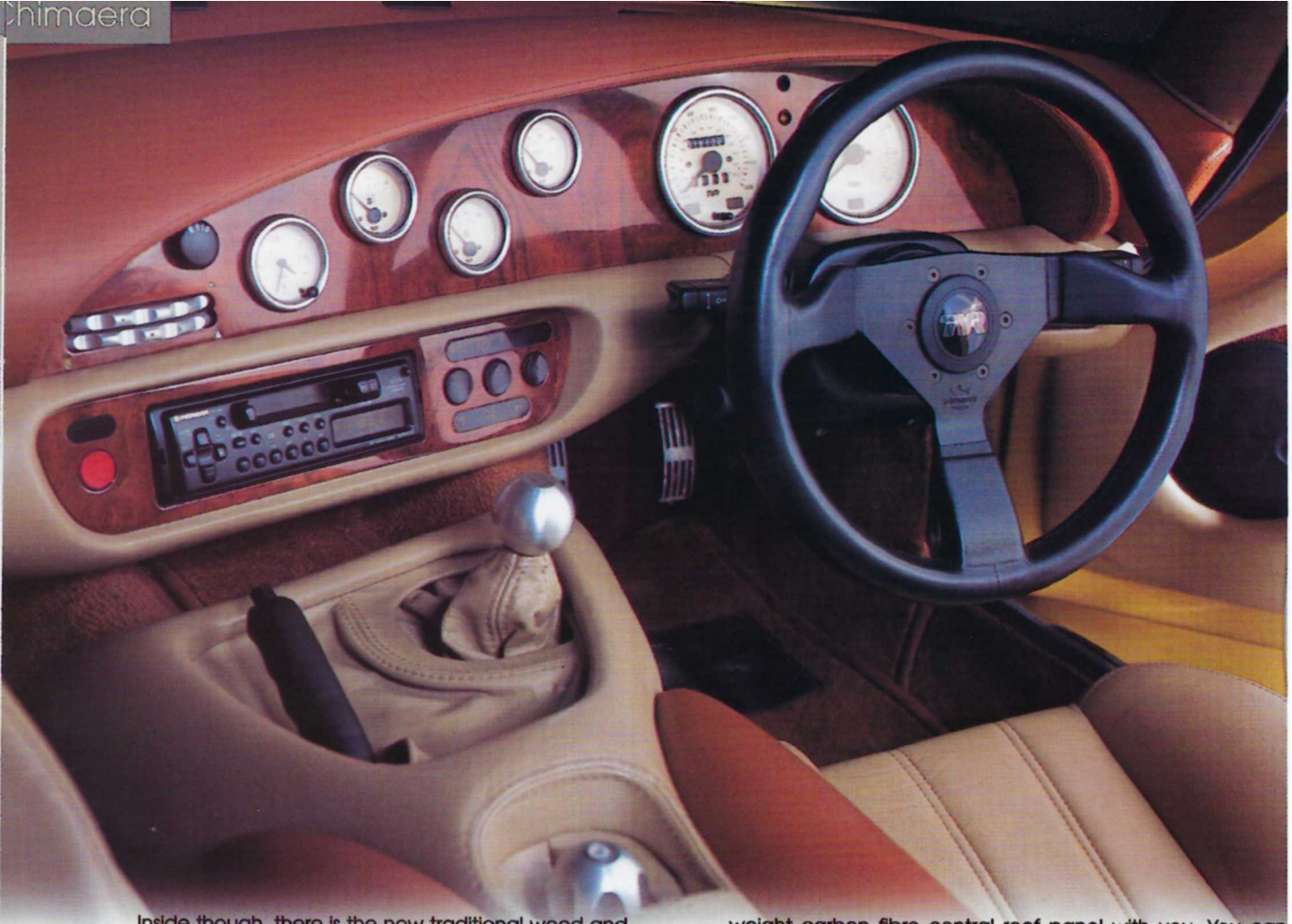
At first sight, the Chimaera might not appear a logical addition to the TVR model range. Underneath a body which is only slightly larger and more aggressively styled than the Griffith's there is a similar basic tubular steel chassis which was developed from the Tuscan racers. The Chimaera is powered by a similar range of TVR developed aluminium V8 engines, starting at four litres and moving up to the mighty 5-litre which is now available to special order. The car weighs a similar 1060 kilogrammes, so any of the engines will sweep the Chimaera to 60mph in a similar four and a half seconds or thereabouts, and where the laws allow, on to a top speed of 150mph or more. The lightweight V8 engines drive through the same type of Borg Warner five speed all-synchromesh gearbox and will be mounted, together with whichever engine you choose, a long way back in the spaceframe chassis. A chassis which is suspended by similar twin wishbone suspension and gas filled Bilstein shock absorbers. The layout guarantees the same fine handling balance you would expect from any TVR.

So there has to be a reason why three buyers out of four choose a Chimaera instead of the Griffith. The answer is actually simpler than the facts suggest. The Chimaera is a little longer and wider and has a bigger boot. It offers a little more room, both for occupants and for luggage. It also features a subtle difference in wheel and tyre size which softens the car's character just enough to complement its more ample dimensions. These dimensions are obviously from the same styling stable that drew the curvaceous Griffith, but they are a little less organic and slightly more purposeful.

The Griffith is unashamedly the ultimate performance model of the TVR range. It has pin sharp handling to complement its race-bred acceleration and top speed, and part of this enormous grip and precision turn - in comes from extremely low profile high - tech tyres. The Chimaera wears slightly taller ones all round - although the diameter of the aluminium wheel rims remains the same at 15 inches front and 16 inches rear - but the difference in feel is much more than the statistics might suggest.

It should not be supposed that such a simple change turns the Chimaera into a mild mannered saloon with wishy washy steering response. This is still a TVR and by any standards has superb balance and excellent grip. The main thing that the keen driver will immediately identify is a slightly softer steering response, and maybe just a touch more reassuring push from the front end as you press on through a corner. You can - if you are really determined - make the Chimaera's tail slide wide on the exit of a greasy corner, but then this is a TVR and it does send its V8 power to the road via the rear wheels...

The other main change is visual. The Chimaera's hand laid glass fibre body is rather less swoopy and curvaceous than its smaller sister's. Instead of that car's sweeping radiator vent which curves from the top of the front wings and dips behind and between the headlights, there are carefully faired cooling outlets that toughen the bonnet's appearance and run along the gap to the front wings. In keeping with this particular styling detail, there's a little more of a hard edge to the car's flanks. The tops of the rear wings are a little taller, creating more space in the boot top, and the headlamps are larger, shining directly forward rather than through a perspex fairing. There's a little less of the Griffith's soft organic look, and overall, a little more angular purpose.



Inside though, there is the now traditional wood and leather TVR ambiance. Generous but supportive padding swells the leather covering along the transmission tunnel while another leather pad lines the bottom of the door. Together with the wrap-around wings on the sumptuous leather covered seat, the three supports subtly hold your upper body in place and allow you to settle back and enjoy the Chimaera driving experience. Everywhere you look within the light and airy interior there are familiar TVR curves and sweeps - above the instrument site on the dash, round the gearlever and handbrake recess, and on the inside of the doors. These also use their slight extra outward curvature to provide the occupants with a little more elbow room.

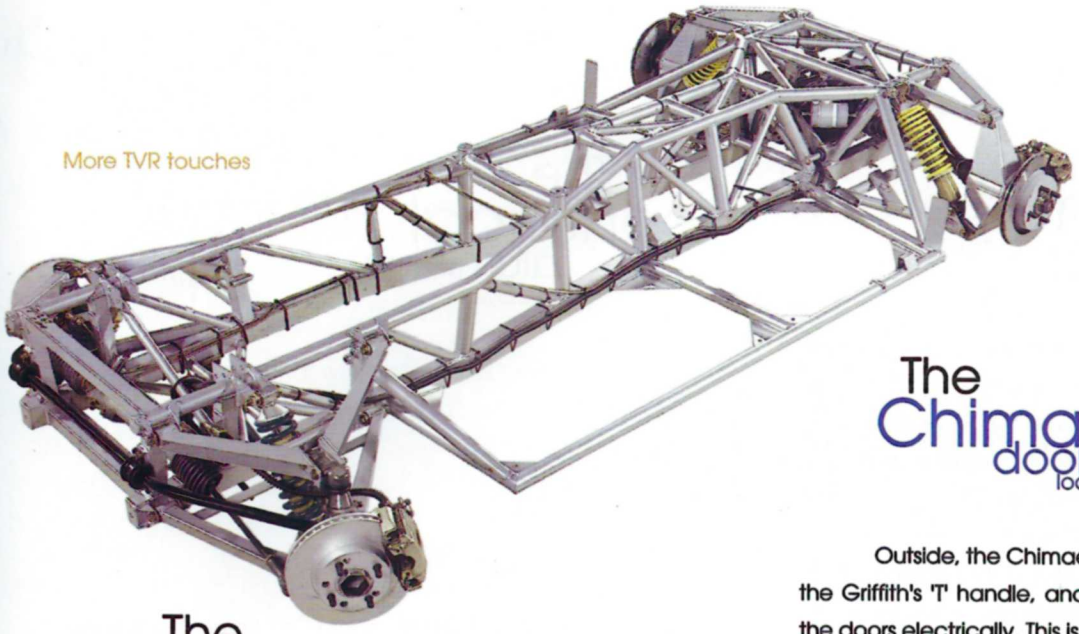
Ahead of you, there is a set of aluminium rimmed TVR styled dials, the large ones visible through a steering column which tilts up and down to adjust for rake, while further along the walnut covered dash, there are two knurled wheels for the heater controls and... a rotary switch for the heater. The company chairman will explain the presence of this as well as the rationale behind the second round knob which you will find a few inches behind the gearlever, later in these pages...

There is the award winning and super simple top dropping mechanism to open up the car for sunny days - or whenever you wish. The angle of the screen guarantees a minimum of buffeting from wind and ensures that rain will not enter the open cockpit while you are moving. If you have to stop, erecting the top is a few seconds work, added to which, the extra boot space allows you to carry the lightweight carbon fibre central roof panel with you. You can even create your own targa top by leaving out the central roof section and pulling up the rear screen and rearmost roof section. Just a tug on the two aluminium struts will click them rigid - the rear screen is pulled tight as a drum and the roof is firm enough to sit on - although of course that is not recommended.

The doors feature more elbow room, but there are electric windows as well, while outside, the Chimaera differs from the Griffith in that there is no 'T' handle to open the door. Instead there is a plunger with a key lock in it. This is purely an electric switch - the actual locking mechanism is remote, just as it is in the Griffith - and is similarly proof against would - be thieves.

Inside, there are no transmission tunnel levers to open the doors, and now we find the reason for the fluted aluminium knob behind the gearlever. On top you will also discover a small illuminated green button. A touch of this locks the doors from the outside and keeps the car secure at traffic lights or when moving slowly in urban traffic.

The Chimaera has all the styling and engineering touches that you expect in a TVR while providing perfect proof that a little extra room and a little extra comfort doesn't mean you have to miss out on TVR performance and TVR handling.



The Catalysts

The Chimaera shares the Griffith's basic tube frame chassis and far back engine location, and this makes the space for a similarly giant pair of catalysts. Not only do these high tech jumbo sized stainless steel cylinders clean the engine's exhaust sufficient to pass the Swiss emission tests, they also provide a handy and highly effective deformable structure in the event of a frontal impact. Yet another benefit of the front engine location.

The Gearbox and lever position

The Chimaera shares the Griffith's Borg Warner five speed all synchromesh gearbox, fitted with TVR's clever gear linkage which brings the lever forward to a convenient position. The linkage can also be mounted on either side of the gearbox, and this sites the gearlever closer to whichever seat the driver is sitting. In addition, the central tunnel - which divides the seats while providing extra lateral support for the occupants - is handed to suit left or right hand drive cars.

The shift on both Chimaera and Griffith is positive and accurate, but it is interesting to note here that the Cerbera - which uses the same type of Borg Warner gearbox - manages to do without the linkage. The new AJP's more compact dimensions allow the engine to be mounted just as far back, but the shorter block also brings the transmission forward. This means that the gearlever operates directly on the gearbox extension.

The Chimaera's door locks

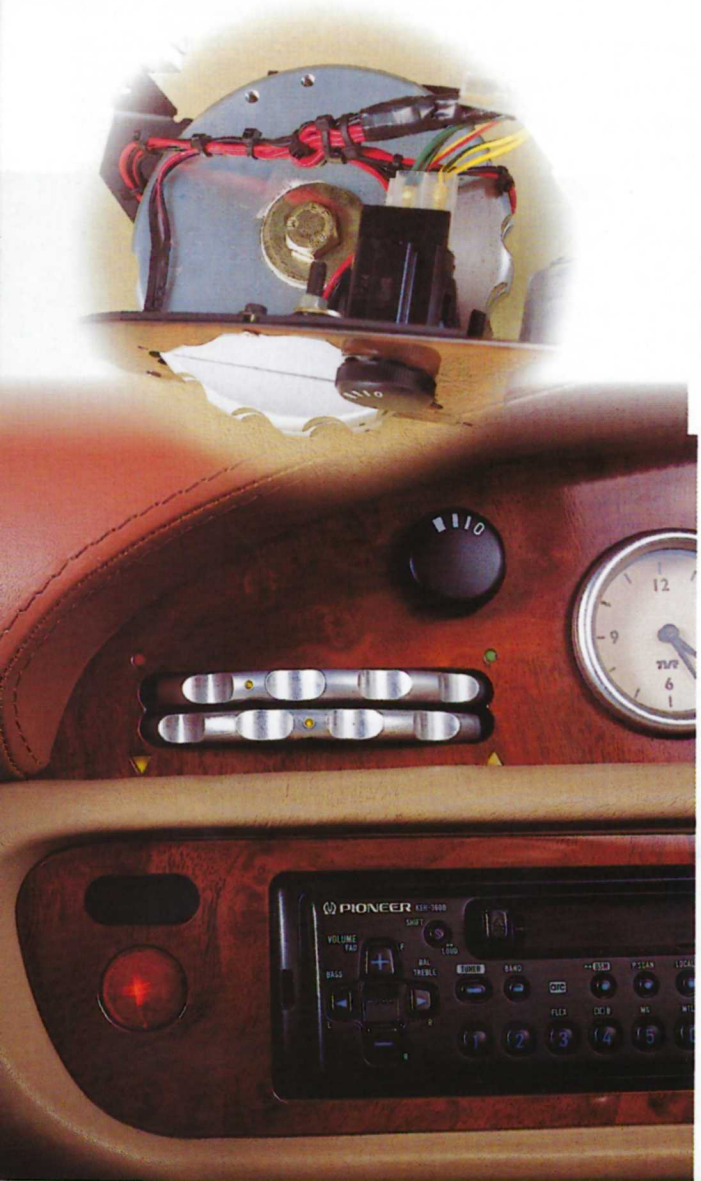
Outside, the Chimaera has a plunger lock in place of the Griffith's 'T' handle, and this activates a switch to open the doors electrically. This is extra proof against the would be thief because no amount of violence or application of tennis balls or coathangers will trip the mechanism. Inside, there is a fluted aluminium knob, sited a little way behind the gearlever. You twist to the right to open the driver's door, and to the left to open the passenger's. Press the little green button on top of the knob and the outside door plungers are deactivated and proof against traffic light intruders.

One knob thus replaces the two handles on the Griffith's transmission tunnel. Wheeler's reason for the change - a touch of extra style, and a simple piece of production engineering. One knob is simpler and cheaper to produce than two.

The aluminium heater wheels

The Griffith has little polished aluminium knobs which you twirl to control the heating and ventilating. The Chimaera has a different and slightly more conventional system while maintaining the TVR style. A pair of aluminium wheels with fluted edges - like the trim on an aircraft - are mounted so that just the edge protrudes through the walnut facia. They are machined from solid aluminium bar stock, starting off at around eight inches diameter and they are cycled with a finger or a thumb. The wheel then operates a cable to the heating and ventilation air mixers and water valves.

And the rotary heater blower switch that lies above the heater wheels and - contrary to current TVR folk lore - is borrowed from someone else. Wheeler again... "Oh, that... it's a switch we've used for ages. We've just never got round to changing it..."



The spherical aluminium gearlever

"Because I like it... Anyway, it's the easiest shape to hold, whatever anybody says. Just think of throwing stones, and decide what shape you'd rather grasp...

A further word from the Chairman about Chimaera handling...

"A front engined car on the road is just a nicer handling car... I have always said that and nothing I have ever seen makes me think any different. Do you know that Ferrari's Testarossa replacement has a tube chassis with the engine mounted in the front ? It's against everything they have been working on for years. I can understand them using a front engine when there's a packaging requirement - like the four seaters - but not when they have gone the mid engined route for all those years with their two seat cars.

An interim two seat Ferrari with a front engine. It's an interesting comment on our front engined policy, isn't it... So the only difference I can see between one of theirs and one of ours will be the matter of 150 grand..." ❑

Chimaera
Specifications

Dimensions

Overall Length	4015 mm
Overall Width	1865 mm
Overall Height	1215 mm
Wheelbase	2282 mm
Front Track	1460 mm
Rear Track	1460 mm
Ground Clearance	132 mm
Fuel Capacity	57 litres (12.7 gallons)
Weight	1060 kg

Engine

	4.0 litre	4.0litre HC	5.0 litre HC
Configuration		90° alloy V8	
Capacity	3950 cc	3950 cc	4988 cc
Bore/Stroke	94x71mm	94x71mm	94x90mm
Compression Ratio	9.8:1	9.8:1	10:1
Max rpm	6250	6250	6000
Max power (DIN)	240bhp	275bhp	340bhp
Max torque	270 ft.lbs	305 ft.lbs	350 ft.lbs
Exhaust	Catalytic convertors		

Fuel System Electronic fuel injection

Transmission

5-speed manual gearbox with hydraulically operated clutch
Gear ratios - 1st 2.95:1, 2nd 1.94:1, 3rd 1.34:1, 4th 1.00:1, 5th 0.73:1, reverse 2.76:1
Final drive ratio 3.31:1
Limited slip differential

Suspension

Front-Independent, unequal length fabricated wishbones, coil springs over gas filled telescopic shock absorbers, anti-roll bar.
Rear-Independent, unequal length fabricated wishbones, coil springs over gas filled telescopic shock absorbers, anti roll bar, Constant velocity driveshafts.

Braking

Front 240 mm ventilated discs
Rear 250 mm discs.

5.0 litre
Front 260 mm ventilated discs
Rear 273 mm ventilated discs
Servo assisted with front/rear dual circuits.
Cable operated handbrake operating on the rear.

Steering

AJP rack and pinion, optional power assisted, adjustable steering column.

Wheels

Size 7x15 in (front)
7.5x16 in (rear)
Construction five spoke aluminium alloy

Tyres

Type		Bridgestone RE71
Size	front	205/60 ZRx15
		(215/50 ZR with P.A.S.)
	rear	225/55 ZRx16

Body

Glass reinforced polyester resin, laid up by hand. four priming coats and a minimum of five top coats of two pack paint. Laminated front windscreen with semi-frameless door windows. Single piece carbon fibre roof panel with fold down rear header, hand trimmed in Mohair fabric.

Chassis

Jig formed multi-tubular steel frame backbone chassis, etch primed and powder coated for corrosion resistance.

Performance

	4.0 litre	4.0litre HC	5.0 litre HC
0-60mph (secs)	4.8	4.6	4.1
0-100mph (secs)	12.2	11.3	10.5
Maximum speed	152 mph	158 mph	167 mph

Equipment

Electric boot release
Electric mirrors
Electric windows
Electronic alarm and engine immobiliser
Individual tailoring of seats, instruments, dashboard and interior
Reclining seats with adjustable head restraints trimmed in half hide (optional full hide)
Remote central locking
stereo radio cassette with twin door speakers and integral aerial is fitted as standard, uprated systems are available on request
walnut veneered dashboard

TVR in 1995

1995 was a pretty good year for TVR...

The most significant event of 1995 has been the Cerbera, singularly the most important new model in TVR's history, and it has now seen the light of day. At the time of writing, more than a dozen Cerberas are on the road in the final stages of a gruelling development programme which has seen the cars racking up huge mileages in all weather conditions. Test circuits up and down the country have reverberated to the wail of AJP8 engines (and tired TVR engineers) as all features of the car have been subjected to an unprecedented, exhaustive series of tests.

During its two year gestation period, TVR has taken a little over 500 orders for the Cerbera which will equate to a year's production at current rates. In fact, 1995 has proved to be extremely successful in terms of sales for all of TVR's current models. The Griffith and Chimaera have reached new record levels, on a weekly basis, resulting in a 30% overall increase in production of Griffith and Chimaera over the 12 month period As we enter 1996, this trend shows no signs of diminishing.

The introduction of the Cerbera and the substantial increase in overall production requirements have been part of the reason for TVR doubling the size of the factory through the acquisition of the adjacent site. This has radically changed the size of the factory and all departments have enjoyed a substantial increase in the space available to them. However, true to form, such is the rate of expansion that the new site has filled up fairly comprehensively. There may be a requirement for yet another expansion programme at TVR in the not too distant future.

1995 has also seen the fruition of a partnership between TVR Engineering Ltd. and a group of much esteemed Malaysian businessmen, in order to establish a manufacturing facility to cater for the rapidly developing countries in the Pacific Rim.

Project plans have been strategically formulated between the two interested parties over the last 18 months, - over which period TVR have found their new Malaysian associates to be extremely professional and co-operative in all matters.

An extensive training programme has been employed over the last half of 1995 between Malaysia and TVR in order to ensure that the assembly of cars in Kuala Lumpa meets the required standards set out by TVR throughout their production process.

All tooling and manufacturing of components for the Malaysian TVRs will be carried out in Blackpool, and then shipped over to Kuala Lumpur for assembly.

This new project will result in a 20% increase in tooling and component manufacturing for TVR, over the 1996 period.

TVR Sports Cars (Malaysia) Ltd. will be conducting their official launch in February of this year, when the first of their Chimaera's roll off the production line in Kuala Lumpur We would like to wish them every success for this new and exciting project.

Here in the U.K., Britain's race circuits have been the locations for the most stringent tests of all for the AJP8 engine. Though the 1994 TVR Tuscan Challenge, Peter Wheeler and TVR's development engineers campaigned two AJP8 engined Tuscans as development cars. At the start of the 1995 season, the engines were made available to the rest of the field. Such were the power and reliability advantages of the new power plants that by the end of the season only two regular competitors had not transferred to AJP8s.

It might have something to do with the new engines or it might be that the Tuscans are lapping quicker than the mega-budget Touring Cars or again it might be that Tuscans are seen as the most entertaining race series to drive in, and to watch. Whatever the reason, the TVR Tuscan Challenge has been hugely successful over the last couple of years with the number of cars registered for the championship doubling to 48 for 1996. It would be very difficult to dispute that the TVR Tuscan Challenge is now the UK's premier one-make race series.

However, the Tuscans have not been TVR's only foray into the sphere of competitive motor sport as two Griffiths and two Cerberas have also been competing in 1995. Less known but every bit as successful were the TVR entries into the Goodwood Festival of Speed. First was the Cerbera which was entered in the Supercar run, what has always been a race against the clock up the driveway of Goodwood House for the current crop of supercars. TVR fielded a Cerbera prototype driven by TVR's Chassis engineer Neill Anderson.

The competition in this event was stiff, with everything for Lamborghini Diablos to McLaren F1s and Jaguar XJ220s lining up against the Cerbera.Although the event was not timed officially, unofficial times suggest that the Cerbera was quicker than everyone else. The McLaren was second.

Meanwhile, taking place down at the historic Goodwood circuit just across the road from the hillclimb route, was the Mulberry Challenge, a series of events between classes of cars from all ages in which TVR had entered one of the factory demonstrator Griffith 500s driven by 1995 Tuscan Challenge Champion John Kent - with John Ravenscroft, the man who, more than anyone else is responsible for the way the Griffith looks and drives - as his co-pilot.

The event included a pursuit race around Goodwood Circuit, timed runs up the Hillclimb route, an Autotest and manoeverability trials. Although the overall winner was a beautiful, superbly driven Talbot Lago which decimated the competition in the pre-war class, the TVR team won the modern-day class and only narrowly missed taking overall honours.

The most notable success in a Griffith was the work of the same man who drove the Cerbera at Goodwood, Neill Anderson. He won the prestigious RACMSA Sprint Leaders Championship, leading from the beginning of the season to the end. Neill raced the old-fashioned way, driving his everyday company car to the meetings, putting numbers on the side of it, winning the event, collecting his trophies and driving it home again.

TVR's final involvement in motor sport was with a semi-works Cerbera which competed in the National GT Challenge and in the Silverstone round of the International GT Series. In what was essentially a development season, the Cerbera proved that the car has a lot of potential and was regularly running at the front of its class.

Such has been the past year for TVR. Only one thing worries us - how on earth do we top that this year..... ❑

The TVR Design Team

TVR has a unique and effective styling and design process, highlighted by the great acclaim that the Griffith, Chimaera and Cerbera models have received. Peter Wheeler, Chairman of TVR, plays a major role within the design process, as he does in all areas of TVR. Damian McTaggart and Nick Coughlan are the stylists who have been working with Mr Wheeler for the last few models. They are currently absorbed in future styling concepts.

The job of a car stylist is a very desirable occupation. TVR receives an overwhelming number of applications enquiring about the possibility of employment within this area. The TVR design process is also of great interest to customers. I asked Damian and Nick to give us an insight into their roles.....

"Many people believe that working as a designer in the car industry is an extremely glamourous job. When you see your design unveiled for the first time on a motor show stand, this is definitely the case. However, before a model reaches this stage, an awful lot of hard work has taken place.

Your first post as a designer is usually during college placements or vacations. When you're encouraged to develop your creativity; sometimes with outrageous concepts. You are not usually asked to consider the level of technology required to turn your ideas into reality.

On leaving further education and starting your first real design role, you will soon be faced with the reality of design in industry. You have to adapt to the real world and its financial constraints. It can be fairly disheartening initially to see a design diluted for production.

Thankfully, the design mechanism at TVR does not suffer from bureaucratic restrictions. There's just a handful of us and Peter Wheeler. Although financial viability is a vital factor in considering production of a new model, we are able to make styling decisions efficiently and effectively.

There are other differences too. Typically, at a larger organisation, there would be more manpower. For each stage in a new products development within TVR each engineer/designer, has to be responsible for a large section of a new product design. This definitely keeps you on your toes and at the same time, is extremely enjoyable. At the end of any TVR project you know your ideas will see production.

In terms of overall styling and design, TVR models need to be charismatic, with a certain retro aspect. They enthuse a combination of British quality and serious performance capabilities. They must also be simple and practical enough to produce in relatively small volumes."

The TVR Design Process

"TVR does not have an advanced concept department. By comparison with larger manufacturers, our operations are simple and straightforward, allowing a large degree of flexibility within the design process.

Plenty of drawings are used to speed up the communication of ideas. Although they tend to be done on the nearest flat surface - a scrap of paper, a modified photocopy with the correct wheel base.

From this point on, the task becomes sculptural. Sketches are carried out in three dimensions using polyurethane foam. Unlike two dimensional sketching, in three dimensions your ideas can be looked at from any angle, close up and from a distance. Working in polyurethane foam can be very fast too. A whole section can be developed and changed a number of times in a single day, until you arrive at a mutually pleasing solution. You don't have to run the risk of any two dimensional under sights. You can also accurately build up the volumes required to cover hard points, for example, the engine, or driver and passenger headroom, dictated by the package.

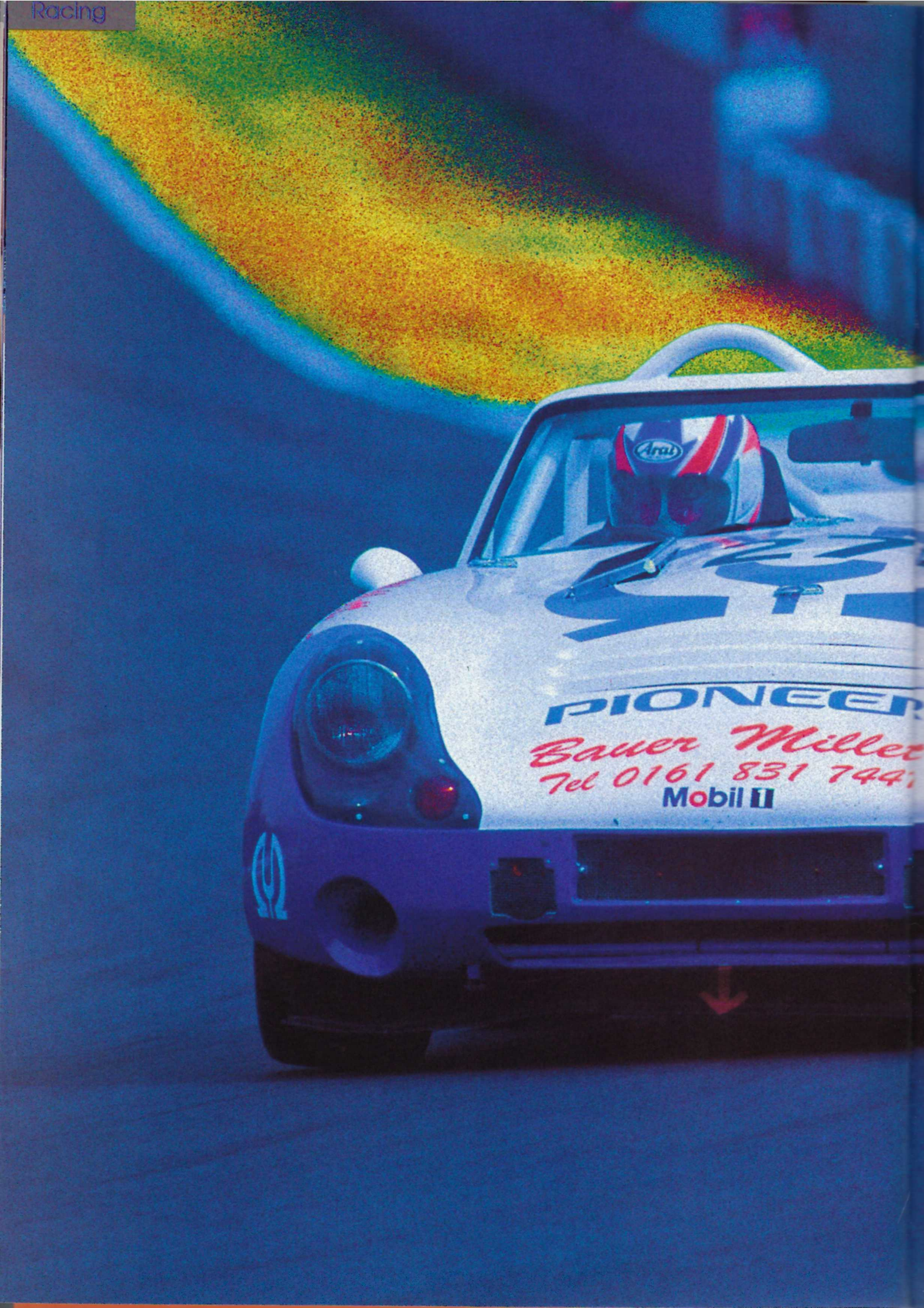
During the process, literally anything can happen, which may result in a change of plan. For example, a new theme may be discovered whilst experimenting with styling concepts.

Motor shows are an important part of our design process. Other companies have large marketing departments. They stage customer clinics to assess a new car's appearance and market appeal. TVR takes a slightly different option. We show possible forthcoming designs at Motor Shows to gauge the reaction of our customers and press.

Customer reception for the Cerbera, for example, was favourable and orders were placed. Their input also led to several design modifications, making them part of the overall design process. If a design receives a negative response, all resources are diverted to a new project straight away.

This process was highlighted with the release of the Speed 8 and Griffith in the 1991 Birmingham Motor Show. The former model was never developed but the Griffith was successfully received and within 18 months it was in production with a new floor pan, chassis and interior.

We place great value on traditional materials such as leather, wood and aluminium, as well as the hand crafted methods of production. The quality and standard of such materials is also a vital factor, as we pride ourselves in being able to offer the customer an extremely well designed sports car incorporating high performance with very high standard of quality for a fair and reasonable price.We do not foresee great policy changes in the future, regarding production methods and materials, as this would obviously affect the end product, running the risk of making it far less seductive. ❑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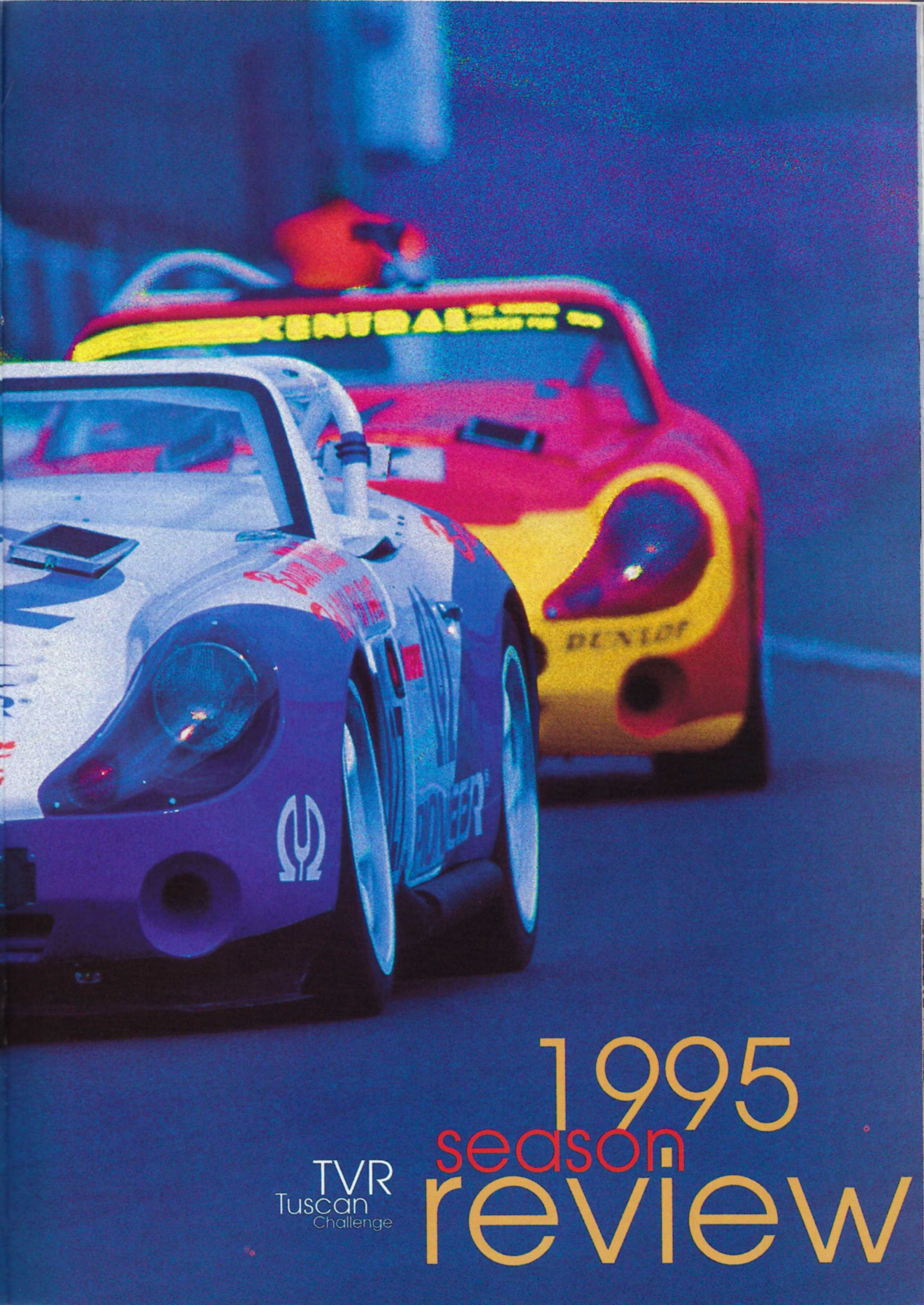


TVR
Tuscan
Challenge

1995 season review

Text - AUTOSPORT

Kent's days of thunder

Simon Strang looks back on the year which saw John Kent finally take the spoils after seven years of trying.

A lusty great engine combined with a feather-weight chassis equals monster fun and some serious powerslides. Now consider that it relates directly to the TVR Tuscan Challenge and it's not difficult to comprehend the appeal of this most competitive of series, and why it is one of the top club racing championships in Britain.

It's not much more of a task to see its potential as the perfect training ground for any worthy GT aspirants. Colin Blower's mid-summer Oulton Park pole time was good enough for fifth on the BRDC National GT grid. And the Tuscans managed to go quicker than the British Touring Car boys at Snetterton and the Donington and Silverstone club circuits. Not bad on a £40,000 budget.

In 1995, the series grew stronger and bolder than ever before, and despite John Kent's dominant title campaign, the racing remained dauntingly fraught. It was a brave observer who predicted a race winner before the final shot had been fired.

As far as the championship was concerned, it was indelibly shaped by the emergence of the 4.5-litre AJP V8 engine. Developed by TVR to replace the ageing Buick-based Rover V8, those who chose to run the AJP from the first round at Silverstone enjoyed a considerable advantage, such as Kent most notably.

The Preston charger made the most of the unit in his works-run TVR, making light work of the Silverstone double-header. He then did the same at Oulton Park and Donington. In fact, it wasn't until the sixth race at Castle Combe that he was beaten. Kent finished fourth and this, astoundingly, was his lowest placing, in a season in which he finished every race: a testament to his engineer Michael Tallentyre as much as his own driving ability.

Further wins came at Brands Hatch, Castle Combe and the final race at Donington Park, building the tally to an incredible nine. But after his win at Castle Combe, there was something of a drought.

Having strangled the very life out of the series in the early rounds, Kent found his opposition had caught up, and although he claims that he was still fighting for wins, it was clear that he was preserving his points lead.

Once the title was won, at his seventh attempt, the Kent of old was back out to play and he finished the season the way he had started it – out in front.

Second place in the title race could have gone any one of three ways. Colin Blower, Martin Short and Ian Flux all had legitimate claims, but eventually it was Short who took the honours.

In his first full year in the series, Short had a lot to come to terms with, but was bang on the pace from the outset, despite having to run with a Rover engine at Silverstone's season-opener.

From then on, he relied heavily on a healthy dose of determination to force his SHG machine to the front in qualifying, only to find himself fall back during the race. A six-year-old car and 100kg extra weight didn't help his quest, but Martin also struggled with damper set-ups for most of the year.

Although he pulled off a fantastic win on a very wet trip to Spa, it was his only one. Short's competitive nature was frustrated with that, but help from set-up wizard Rhoddy Harvey-Bailey pushed him in the right direction at the last couple of rounds. This, along with an excellent finishing record, was enough to ward off Flux, with a race in hand.

Flux was another who was hampered at the start of the year. It wasn't until the fifth round, at Brands Hatch, that he got his hands on an AJP, by which time Kent, Blower and Short had stolen a march not only in the points race, but also in the development stakes.

Once his Streber-run, Nigel Tustain-owned, car was running, he quickly proved he was the fastest man in the series, winning eight races, seven of them consecutively.

Drawing on his vast experience to overcome an over-weight five-year-old car, he proved that you don't need a big budget to win in TVRs, you just need to know how to drive. With a new, lighter car in the season ahead, his rivals agree that Flux will be a formidable force.

In the eyes of most people, the man who should have finished the season second was Colin Blower. But the popular team-owner's season was terminated by a huge accident during qualifying for the final round at Silverstone. The accident shook the TVR community with its sheer severity, the car actually piercing through the barrier at the end of the Club Straight with an impact speed of 140mph. It was a sharp reminder of just how quick these cars are. Thankfully Blower's injuries were comparatively light. The car, however, was destroyed. Up until that point he had led the chase to Kent, but he was elapsed by Short and Flux thereafter.

Blower won four races and was for all intents and purposes Kent's most consistent challenger during the year. Colin, by his own admission, is not the quickest driver in the field, but his intimate technical knowledge of the Tuscan is his strongest asset.

Not surprisingly a new chassis is on the way for 1996, and the wily old fox is set to test later this month for the first time since the accident. He's definitely a favourite for the title.

The four drivers already mentioned were, in truth, on a different plane from the rest. And, although people did break into the top four from time to time, quite often there was as much as a second's gap between them and the rest of the field.

Series stalwart Steve Cole finished the season fifth, but began the year in fine fettle. Armed with an AJP from the start, the works TVR driver followed team mate Kent home second in the opening three races and then consistently finished in the top six until Brands Hatch. Then things started to go wrong for the likeable Liverpudlian.

Cole found himself involved in quite a few paint-exchanging incidents, not all of his making, but enough to irretrievably dent his championship challenge. That, along with a struggle to find a decent set-up on occasion, meant that a driver who is regarded as a regular front-runner – and is as fast and brave as they come – didn't score a single victory this year.

In his third year of Tuscans, Nick Cresswell proved to be one of the most impressive emerging talents. A second place at Donington early in the season was his best result and his only podium. There could have been more. His demonstration of car control at Spa – the venue of TVR's only European adventure – was further proof of his ability.

As the season progressed, however, Cresswell encountered various technical maladies which hindered the development of his car. Towards the end of the year, he made the decision to defect to Caterhams for 1996, along with French driver Jean-Francois Bihl. Had he decided to stay on, his perseverance could well have paid off.

Gavin Cooper was another to move on a stage in his driving. The young Kent pilot was quite a force in the early rounds with his day-glo orange WLA car. But, as the races went by, his classy performances became rather more sporadic. There were times when Gavin looked more ordinary than spectacular, but when the mood took him, a swift and aggressive style bore out great potential. He should win races in 1996.

Another impressive youngster was Jason Yeomans. The Scot took his racing very seriously, treating the category as more of a stepping-stone than most of his rivals.

Second at Castle Combe was his best result and clearly he is a very quick individual. His learning curve was however stunted as early as the third round when a huge shunt at Oulton Park wrecked both his car and confidence. There were other altercations during the year, but when the Blower Motorsport car was running cleanly, he was at the front of the pack which chased the top four. There is no conceivable reason why Yeomans cannot challenge for the 1996 title. He's my rookie of the year.

The fact that Rod Gretton is as far up the table as ninth in his first full year of Tuscans, emphasises his ability. Hampered by a lack of finance and, for most of the season, no AJP engine, he regularly managed to finish in or around the top 10.

Gretton's best results were a couple of fourths at separate Brands meetings, and probably that was about as good as he could expect with the steed he had. Next year, however, he will be run by the factory, and that thought should send shivers down the spines of this year's top four.

Steve Guglielmi finished 10th, but his results were not a true reflection of his ability. Towards the end of the year, Steve was the interloper in the top four and, of all the rookies, he was the one who looked most likely to score his first Tuscan win during the latter part of the season.

But Guglielmi's finishing record let him down, and that win never arrived. Although he may well have found the pace to run with the best, he never really found a way to cope with the pressure, often spinning.

The last races he entered at Silverstone, however, netted him two third places and the indications were that he had overcome that quandary. But in an effort to save both money and his car, he missed the final Donington rounds. So we will have to wait until the coming season to find out whether he has conquered his demons.

For Martin Stewart, 11th in the points was a fine effort. But, as one suspects his school reports said, the results reflect what he could do if he took the subject more seriously.

It was Martin's second year and he treated his racing with a great sense of fun. Nothing wrong with that, but as team boss Blower pointed out, with a bit more commitment there is no reason why he couldn't give Flux a run for his money in the post-race podium speeches.

Works-run Bob Sands had a disappointing season by his standards, and the results reflect an inconsistency that beleaguered him from beginning to end.

Sands enjoyed AJP power from the off, but as the year progressed and others got accustomed to the unit, the game became about set-up. That didn't seem to be Sands' strong point, and for all the bravery, speed and general bloody nice blokeness, he never did quite find that set-up.

TVR boss Peter Wheeler used the experience gained with the AJP in 1994 well and began the season with a string of sixth places. But after a huge multiple-car accident at Oulton Park, which wasn't his fault, he was forced to run a new chassis. He never really managed to rekindle that early-season momentum.

Giles Cooper and Mark Preston take joint top-novice honours. They were the only men to throw themselves into the fire having never raced before and finish a race in the top six.

Matthew Doman was the other notable first-timer. Having begun the season as a tail-ender, his progress was slow but steady and, by season's end, he was an accomplished midfield runner.

There were three spectacular visitors to the series, utilising the TVR guest car to full effect. Previous champion Mark Hales made an abortive attempt to return during the summer, when his gearbox failed at Donington. When he did finally race at the last round at Donington, he proved that he had lost none of his old form and made the top four into a 'top five'.

Ex-Group N saloon car champion Robin Brundle made a similar impact at Snetterton and may well return next year. Former Group C man John Williams enjoyed almost as much success, and had so much fun, that he is bringing his old team, Chamberlain Engineering, along for a proper crack next year.

By mid-season the AJPs' blinding pace had forced those who still were financially restricted to the venerable Rover engine to the back of the field. So TVR decided to create a class for such cars, called the Silicon Graphics Trophy, in which Colin Waterhouse finished the season a comfortable winner.

There were 53 names in the final points table and for this year TVR has received enough orders to boost the field to 45 cars per meeting. This will mean some frantic organising for TVR co-ordinator Ben Samuelson, but also goes to prove that real racing cars are alive and kicking, and living in Blackpool. ❑

the lion tamer

John Kent's championship success for the works TVR squad came after seven years of trying and provided him with the expected relief. 'It's great to finally win the title, because we've been so close in the past,' he says. He finished second in 1993.

But it could have been very different, as he relates: 'I was actually going to start the season with a Rover engine and it wasn't until the Thursday before Silverstone's first round that we decided to use the AJP. As things turned out, it was the best decision we ever made!'

Victory in each of the opening five rounds provided firm foundations from which to build the remainder of his championship campaign.

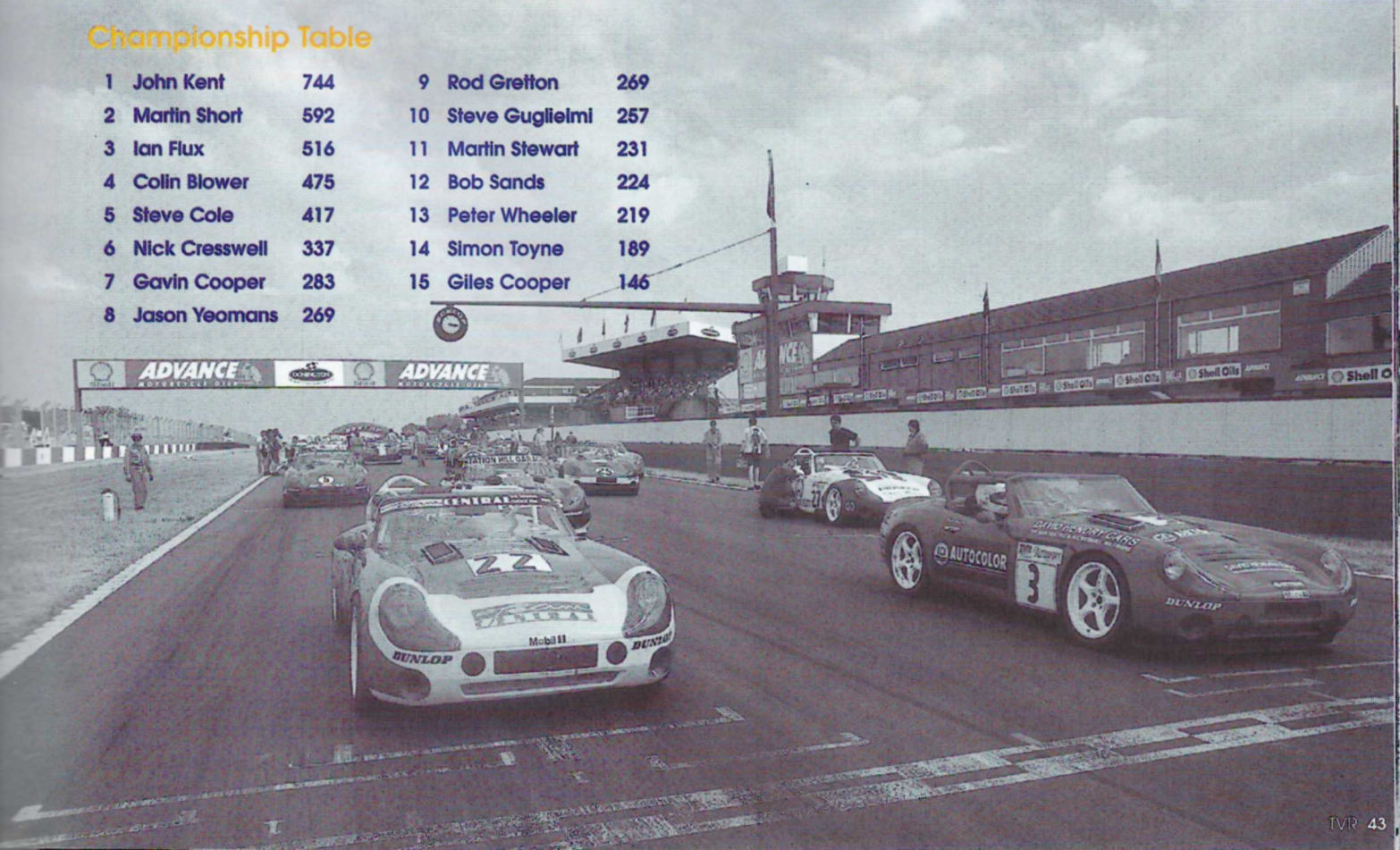
'The team worked really hard and the car never let me down once,' he continues. 'That's a testimony both to the engine and the team. We had a headstart over much of the field because we started the year with the AJP engine while most of the field started with the Rover unit.'

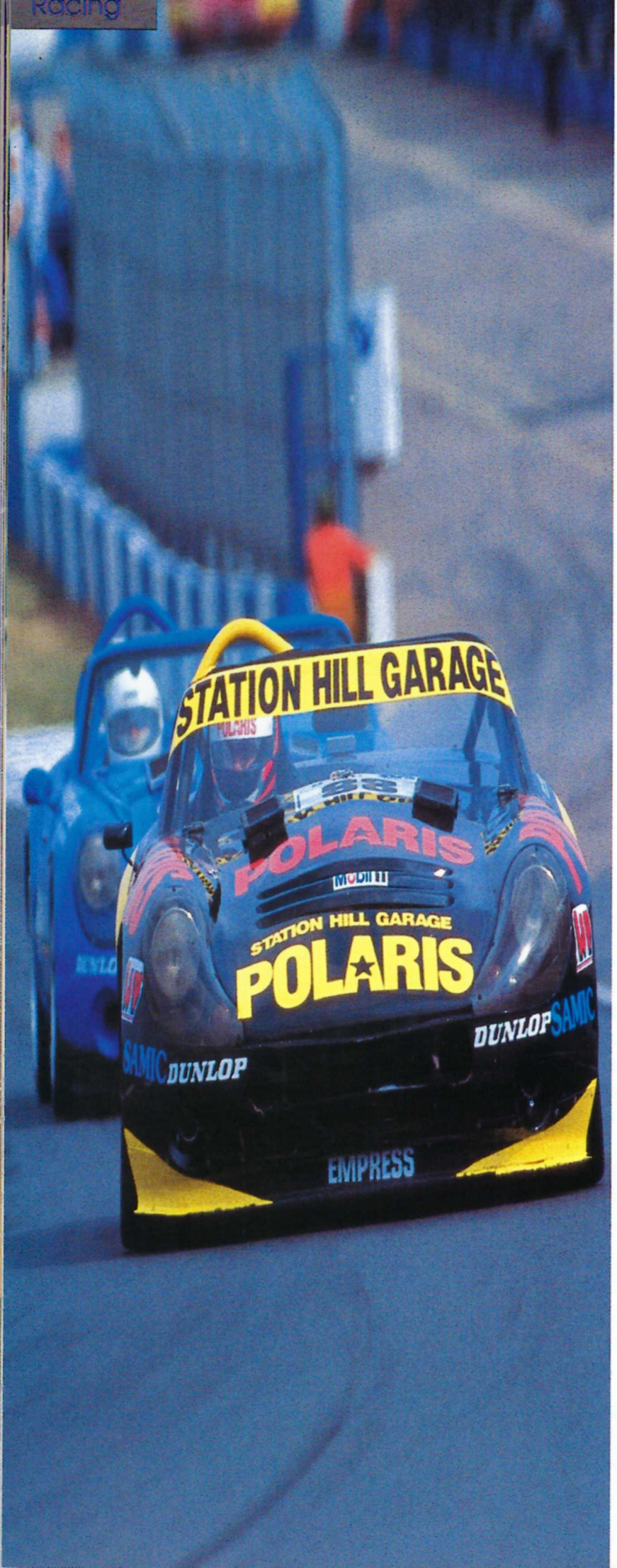
Racing is always fraught in the TVR series, but as he explains, there were two rivals that stood out. 'Colin Blower was always a factor until his accident at Silverstone. He thinks about his driving all the time and is an assiduous collector of championship points.

'Fluxie is a professional driver. He's naturally talented, a good guy and an absolutely clean driver to race with. It gives me a lot of pleasure to have beaten him this year.' ❑

Championship Table

1	John Kent	744	9	Rod Gretton	269
2	Martin Short	592	10	Steve Guglielmi	257
3	Ian Flux	516	11	Martin Stewart	231
4	Colin Blower	475	12	Bob Sands	224
5	Steve Cole	417	13	Peter Wheeler	219
6	Nick Cresswell	337	14	Simon Toyne	189
7	Gavin Cooper	283	15	Giles Cooper	146
8	Jason Yeomans	269			





Simon Strang gives his views on this years stars

top 4

John Kent

Rapid, consistent and polished from the outset, the title was his for the taking, even after the second meeting of the year. After an early winning streak, Kent used his head and settled for points. Perhaps boisterous impatience at Donington's finale was the only scar on an otherwise perfect year.

Ian Flux

Not only the fastest driver in the field, but far more serious about his TVR racing than his jovial paddock stance suggested. Hampered by poor reliability and lack of AJP power early on, he was still right in the thick of it. But, once into the groove, he rolled off a string of seven straight wins.

Colin Blower

Blower would have been second in the series but for his Silverstone crash. Hounded Kent for most of year and used his head well to set up car around AJP unit, and at one stage had a definite technical advantage. Could have won more races under right circumstances.

Martin Short

Extremely determined character who cares deeply about his racing. Possessed an amazing ability to produce blinding laps in practice in a car not always right, and never gave anything but 100% all year long. Deserved more than one race win, but was scuppered by his lack of TVR knowledge and bad set-up.

virgin
drive

Jason Yeomans thought Autosport's Simon Strang needed an insight ito driving a Tuscan. Here's how he fared.

The office has its fair share of active racing writers. Messrs Pye, Clarkson, and a frustrated Franey are all at the wheel of some twin-turbocharged, fully bored and fuel-injected Van Diemen or something during the summer months.

So when I, national bloke with no racing experience, Peugeot 309 driver and all round general novice, agreed terms to test a TVR Tuscan at Bruntingthorpe courtesy of the good Scots lad Jason Yeomans, you can imagine the aggressive nature at which they went to work on my copy whenever subbing was required!

Still, I reckoned I'd probably not get a chance like this again for a long time. So I forced myself to believe that, if I took to this task with the right mental approach, I wouldn't be scared of the 450bhp monster. And more importantly, wouldn't make myself look like a complete berk.

En route to Bruntingthorpe I disregarded my mental approach as a pipe dream and took instead to stopping at every service station to relieve nervous tension. And oh, I forgot to mention, it was raining – hard!

Upon arriving at the aerodrome/testing ground I thought of Colin Blower's final remark 'Don't worry, there is nothing there you can hit.' By the time I reached the Blower Motorsport transporter, I knew he was lying as I had seen at least 50 solid enough objects.

Colin and Jason were most welcoming, explaining every detail of the cockpit and its workings. They even were kind enough to take me around the perimeter track that was to be my very own Mount Everest.

What they didn't realise was that I was having my doubts about making it down the straight in one piece. Still, in I climbed, feeling the part in Franey's soiled overalls, and proceeded to flick switches and press buttons in a vain effort to look like I knew what I was doing.

I pulled away and accelerated down the straight, first gear – easy, second – no problem, third – damn this is fast. By the end of my out lap, I had summoned the courage for fourth.

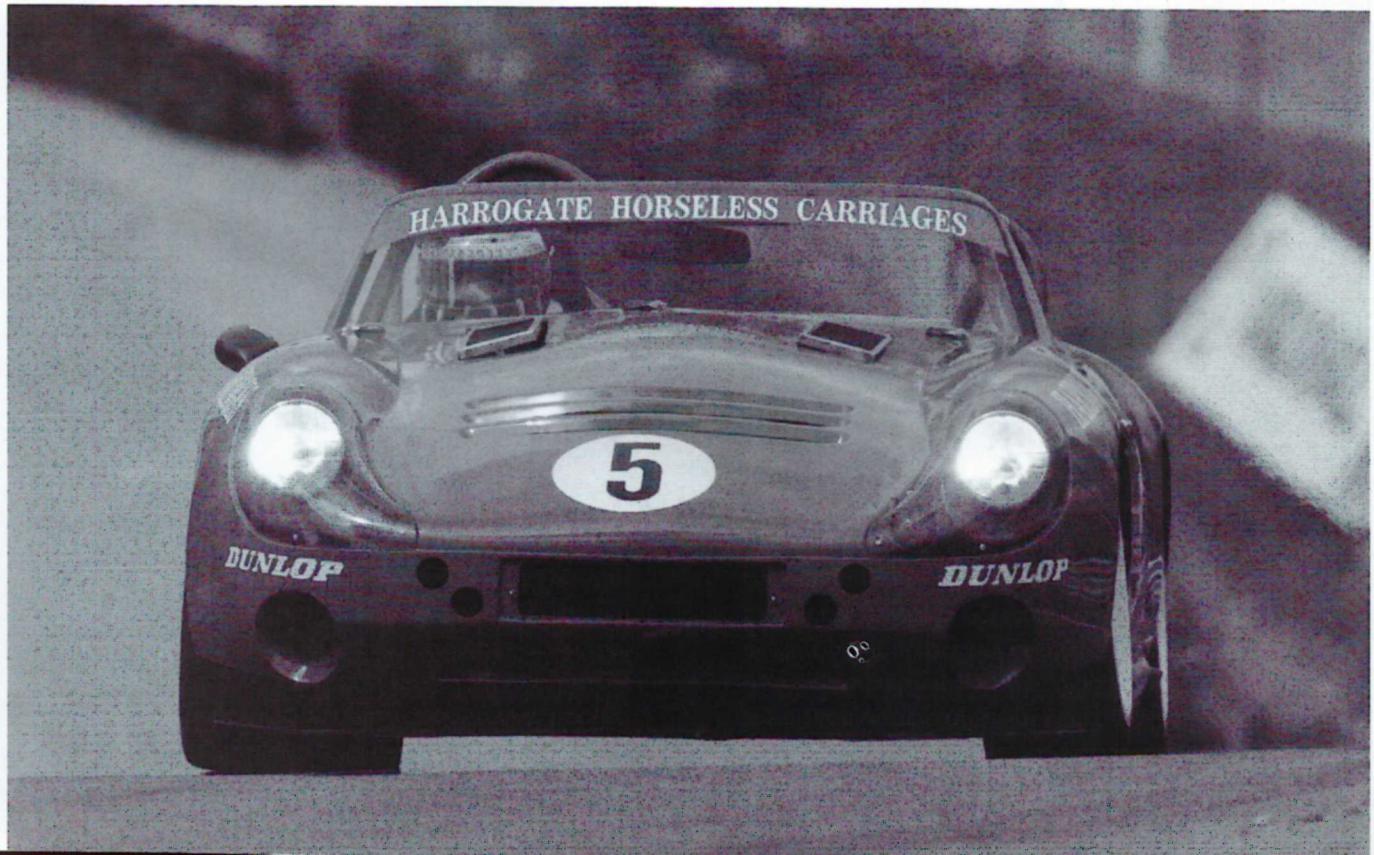
Back in the pits and there was jubilation. I had driven a racing car, and I was good, damn good. I could go round the bottom corner in first at 3000rpm without braking!

Off I went for my full stint, I was on it, 150mph down the straights then braking hard 100m before the corners. Fabulous stuff. And then I spun.

Having spent all my time fending off rain with the tiny wipers, it suddenly dawned on me that it was on the inside of the screen. Having vigilantly braked for everything that looked like a curve, it came as a big shock to discover I was in the middle of a corner at a 100mph!

As I spun down the long straight, having Gille'd it for milliseconds, I could see them jumping up and down in the pits, hysterical.

Then another thing happened. I realised that even though I was good (well, I thought I was), I hadn't imagined other drivers around me. And that perhaps, before I criticise a backmarker for spinning, I should remember that I probably wouldn't have even qualified... ❑



The TVR Cerbera GT car

TVR made a return to the national GT race category last year using the brand new four seat Cerbera. Former Tuscan double champion Mark Hales was the man tasked with developing and racing the car, and here he relates a personal account of the ups and downs of development in front of the public.

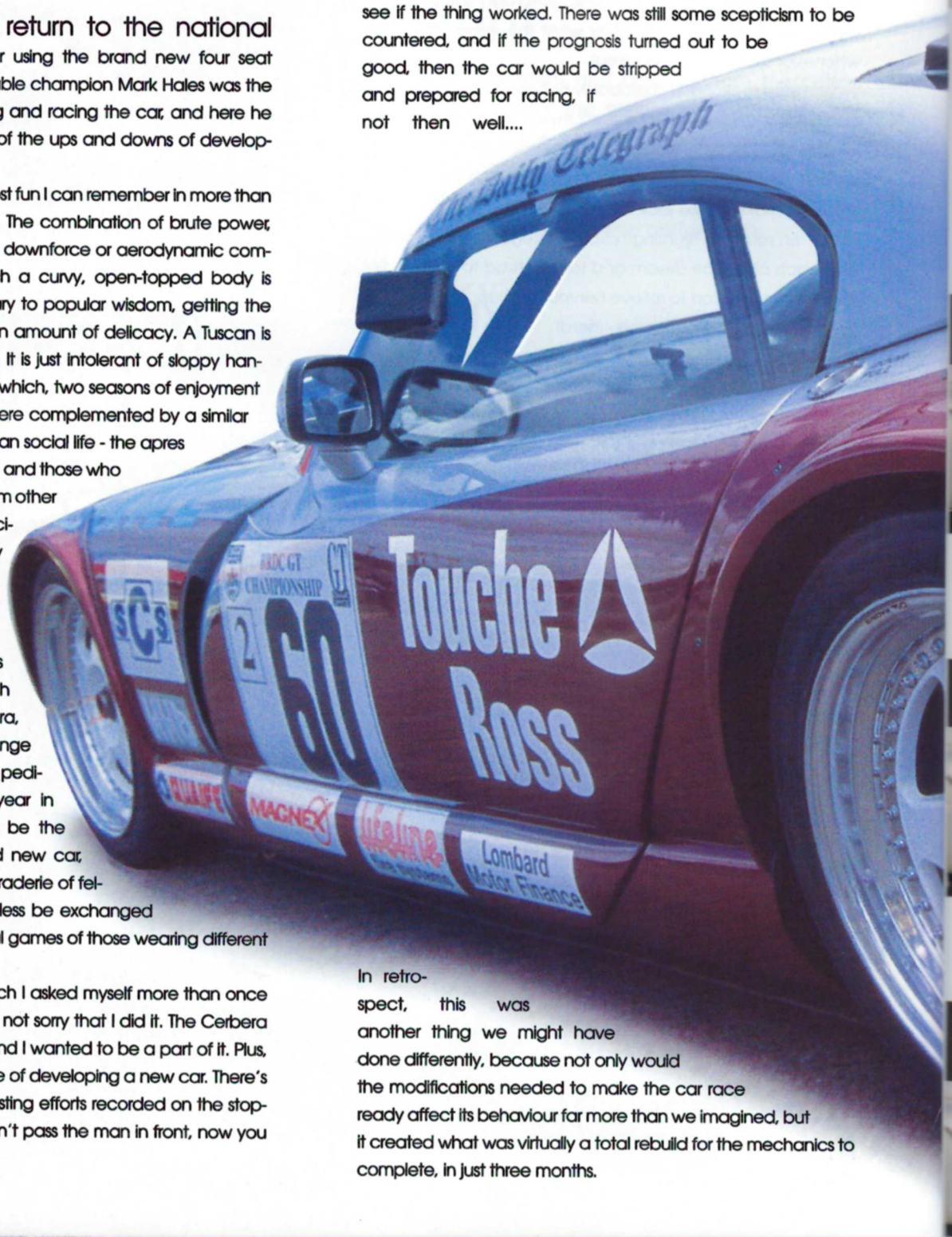
A Tuscan is still the most fun I can remember in more than two decades of motorsport. The combination of brute power, relatively limited grip and no downforce or aerodynamic complications, contained in such a curvy, open-topped body is highly addictive, and contrary to popular wisdom, getting the best from it requires a certain amount of delicacy. A Tuscan is not itself a frightening beast. It is just intolerant of sloppy handling or silly errors. Added to which, two seasons of enjoyment on one side of the armco were complemented by a similar good time on the other. Tuscan social life - the apres race - is civilised and plentiful, and those who have come into the world from other one-make, one-model disciplines have been pleasantly surprised at the lack of rancour - especially after a fraught session on track.

All of this rather begs the question; if it was so much fun, why swop it for a Cerbera, the GT category, and exchange all the proven competitive pedigree of the Tuscan for a year in which there was bound to be the strife of developing a brand new car, and a year where the camaraderie of fellow TVR drivers would doubtless be exchanged for competitive psychological games of those wearing different manufacturer's badges.

It was a question which I asked myself more than once over the season, and yet I'm not sorry that I did it. The Cerbera was the next phase of TVR, and I wanted to be a part of it. Plus, there would be the challenge of developing a new car. There's a great thrill in seeing your testing efforts recorded on the stopwatch. One week you couldn't pass the man in front, now you can. Wonderful.

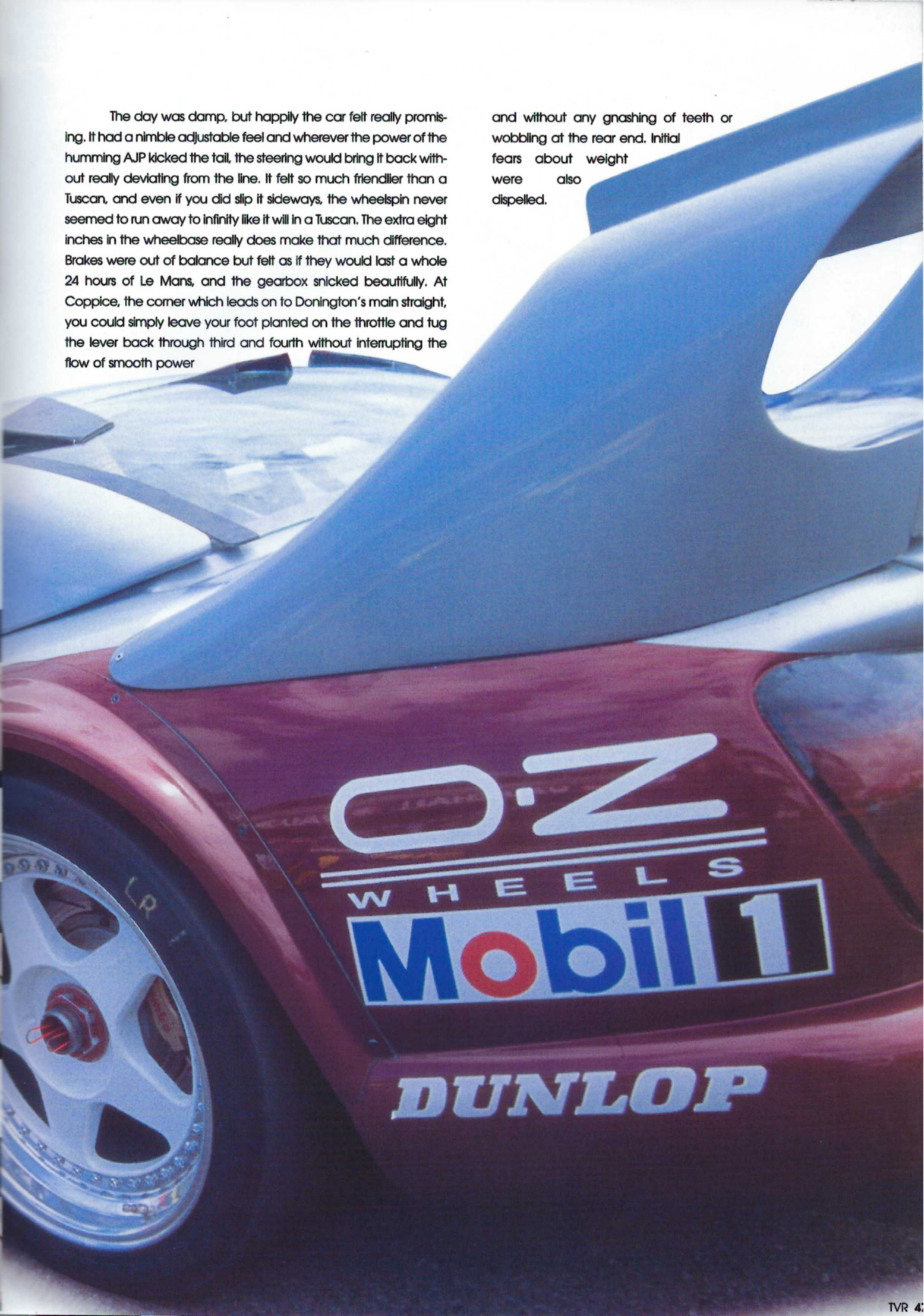
So, the deal was struck. A lighter body was pulled from the prototype Cerbera mould and new pushrod operated suspension was designed to fit the standard chassis by Le Mans winning Jaguar designer Nigel Stroud. This, as it turned out was to be a mixed blessing. The AJP V8 Tuscan engine had to breathe through the mandatory restrictors designed to equalise the performance of competing cars - another feature of the regs which was to cause us grief later - and the struggle for air duly held the compact little engine back to a mere 400 horsepower or so. As compensation, there was a snickety-snick six speed sequential gearbox. You pull the lever back to shift up and push it forward to shift down, just like the Touring Cars do.

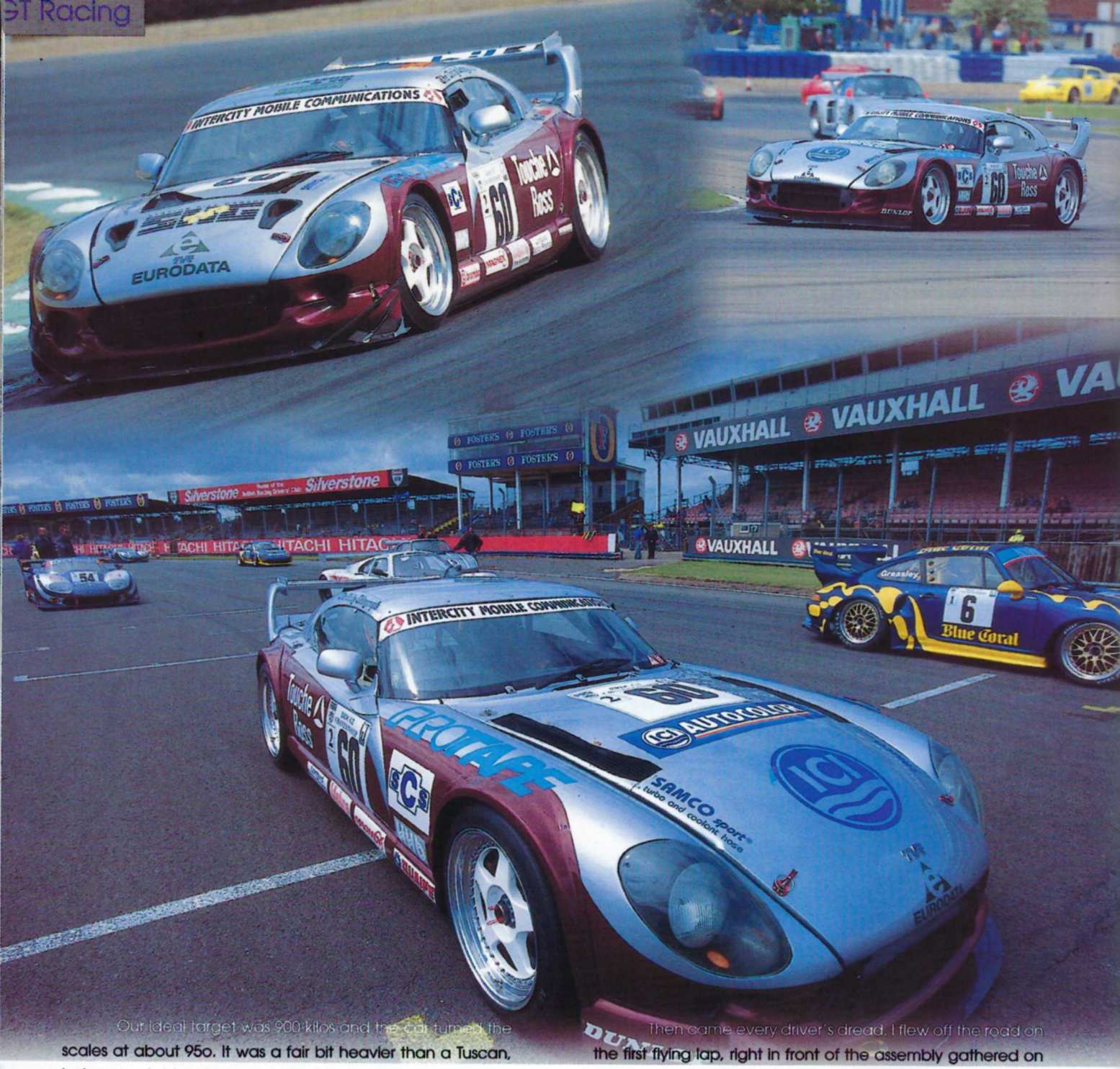
The car was amazingly, ready for a brief shakedown in November, and everybody gathered at a freezing Donington to see if the thing worked. There was still some scepticism to be countered, and if the prognosis turned out to be good, then the car would be stripped and prepared for racing, if not then well....



In retrospect, this was another thing we might have done differently, because not only would the modifications needed to make the car race ready affect its behaviour far more than we imagined, but it created what was virtually a total rebuild for the mechanics to complete, in just three months.

The day was damp, but happily the car felt really promising. It had a nimble adjustable feel and wherever the power of the humming AJP kicked the tail, the steering would bring it back without really deviating from the line. It felt so much friendlier than a Tuscan, and even if you did slip it sideways, the wheelspin never seemed to run away to infinity like it will in a Tuscan. The extra eight inches in the wheelbase really does make that much difference. Brakes were out of balance but felt as if they would last a whole 24 hours of Le Mans, and the gearbox snicked beautifully. At Coppice, the corner which leads on to Donington's main straight, you could simply leave your foot planted on the throttle and tug the lever back through third and fourth without interrupting the flow of smooth power and without any gnashing of teeth or wobbling at the rear end. Initial fears about weight were also dispelled.





Our ideal target was 900 kilos and the car turned the scales at about 950. It was a fair bit heavier than a Tuscan, but acceptable given the extra size of the car. We left Donington frozen but uplifted by prospects for the season.

Silverstone and the first race of the season came as something of a rude awakening. The car looked splendid in its deep metallic paint, the body looked as if it was low enough to kiss the ground, the wheelarches were neat and the rear wing minimal. Compared with the Marcos which seemed encrusted with fairings, and fences like some giant piece of blue automotive coral, we should have them beat purely on aesthetic restraint. The weight though had ballooned by over 100 kilos. Fuel tanks and pumps, oil coolers, air jacks and twin silencers, plumbed in fire extinguishers, batteries, wires pipes and cables had loaded up the car like a family saloon bound for Bognor. The Cerbera hadn't so much as turned a wheel since Donington, but what the hell. The crowds gathered for a wide eyed look at the new TVR which as yet, hadn't made its official debut as a road car

Then came every driver's dread. I flew off the road on the first flying lap, right in front of the assembly gathered on the pit wall. The engine stalled and wouldn't restart and that was that for the session. The effect that this has on people is an interesting piece of psychology. The mechanics and engineers - those whose endless weeks of toil you have just beached are always the most understanding. Those who pay for it can be less so... A tyre had jammed under an arch, or a shock absorber had been mistakenly adjusted to be immovable, so much of the inside arch fell to the grinding wheel while the shocks were changed for a set of softer ones. Come the racer and it looked as if we might have a debut third in the bag when a driveshaft exploded. The new exhaust system had melted a gaiter and the grease had leaked out. That wasn't all. The previously nimble Cerbera felt less adjustable on the track, the tail less willing to return to the call of the wheel. Added to which the nose didn't want to tuck into the corners. It felt like an athlete gone to fat. Worse still, the temperatures were off the clock everywhere; water, oil and for me in the cockpit.

The engine in the front as I have noted many times is great for friendly handling, but it means you have to route the exhaust somewhere - in this case up and along the back of the dash and through a thin aluminium box in the passenger compartment. The heat and the fumes from burning insulation, glass fibre and anything else within smouldering distance of the glowing pipes was asphyxiating. The temperature in the cockpit was way over 40 degrees and I was already working hard to wrestle 18 inch Dunlop slicks through high ratio steering and a wheel small enough to allow sight of the "need-to-know" digital dash that was sending depressing three figure messages about the oil and water states. Only later did I discover that those wimps behind the Marcos' wheel had demanded power steering.

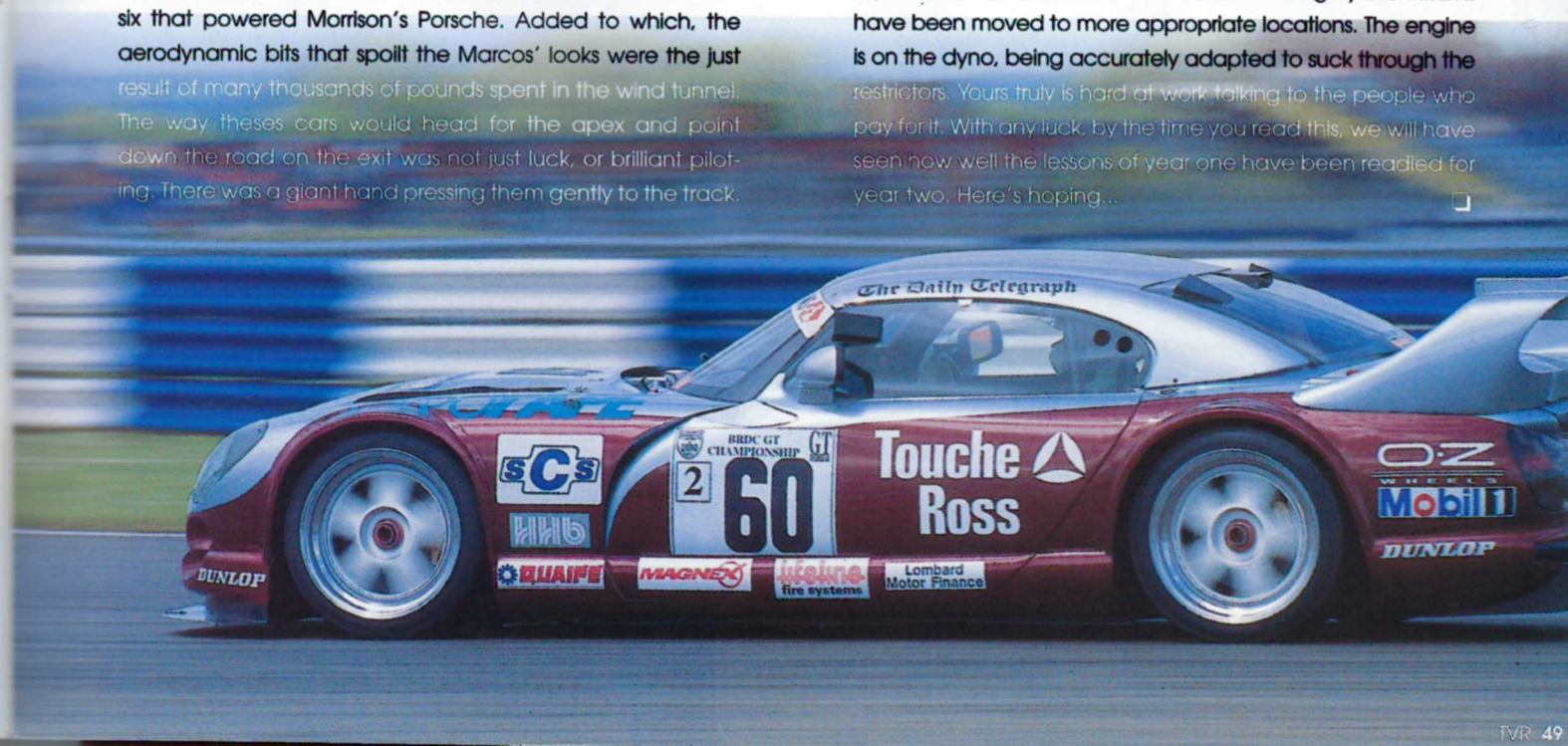
The next race was at Donington, the scene of our first shakedown. The Cerbera's sleek bonnet had meanwhile been shot through with countless cooling vents and slots. Pieces of trunking criss crossed the cockpit to feed cold(ish) air to my fevered brow. Asbestos and kevlar lined the exhaust box through the passenger compartment. Any wires within the exhaust's fiery presence had been moved and sheathed after two had melted together during a test session and set off the fire extinguisher. Practice was reasonable - we were third, and the race was OK - same again, behind the Marcos driven by eventual champion Chris Hodgetts, and the Le Mans factory GT2 Carrera in the hands of "Gentleman John" Morrison. I was second for a while but couldn't push because an increasingly wayward tail was killing off the rear tyres, and because the engine gauges were still sending danger signals.

We were actually doing extremely well with a brand new car and fairly limited resources, but we also began to understand several things... First, the additional weight was something we could not afford to carry, especially as it was all in the wrong places. This was the reason why the car's initial nimble balance had all but disappeared. Secondly; The restrictors which were designed to equalise performance hurt our compact little 4.5 litre AJP far more than the monster six or seven litres of Chevy in the Marcos - or the twin turbo flat six that powered Morrison's Porsche. Added to which, the aerodynamic bits that spoilt the Marcos' looks were the just result of many thousands of pounds spent in the wind tunnel. The way theses cars would head for the apex and point down the road on the exit was not just luck, or brilliant piloting. There was a giant hand pressing them gently to the track. We also realise that when you take something that has been carefully designed by experts and adapt it for another purpose, it takes time to get it right. We needed the factory's help but knew they were flat out getting the road cars ready for the hundreds of people eagerly awaiting delivery.

In the domestic GT season's long break which is designed to allow those that can afford it to go to Le Mans. John and Nigel rebuilt the front of the car, lightened it and made it removable. The air from the radiators was given an easier exit, and the lads would have easier sight of the inboard coil springs and shockers. Thus far, changing a set of springs on the pushrod suspension took nearly two hours instead of the preferred 30 minutes. There was a new rear wing which we hoped would apply downforce in direct relation to the visual aggression it lent to the car, and we had lopped off a little of the splitter at the front as a message to others that we wished to comply with the spirit of the regulations as well as the letter...

Over the fast sweeps of Thruxton and round the tight twists of Brands, we kept the stamina of Morrison's Porsche in check and came closest to beating the Marcoses. There was a pole at Silverstone and a second place to add to the season's tally which was good, but we knew we could do better. In September, we took in the four hour international Global Endurance round at Silverstone, and for a glorious hour or so of pouring rain, the Cerbera powered up through the field of McLarens and Ferraris to be fifth overall. To pass half a million poundsworth of McLaren in front of the pits was a delight that made the season worth everything. Sadly, the starting problem which aflicted the car at the first race at the very same circuit, came back to haunt us, and we slipped back to a still worthy finish.

The season was a great deal more involved than these brief few words allow me to relate, but it was hugely enjoyable as well as inevitably frustrating at times. The lessons learnt though have been taken on board, and thankfully, now the factory has time to help. There's a new lightweight body with super sleek wheelarches, and some of the weighty bits within it have been moved to more appropriate locations. The engine is on the dyno, being accurately adapted to suck through the restrictors. Yours truly is hard at work talking to the people who pay for it. With any luck, by the time you read this, we will have seen how well the lessons of year one have been readied for year two. Here's hoping...



The Original Griffith

Today's TVR range has rightly earned a reputation for high performance. The cars are enormously fast in a straight line, all of them capable of twice the country's legal limit and more, but - as anybody who has taken their pride and joy to a TVR Performance Technique day will readily attest - the cars have chassis ability, grip and stopping power to match their flat out capabilities. Even if you look a little further back in TVR's history, to the pre-Griffith era when the angular 400 series was the company's main product, you will find the same is true. The wedge-cars went fast, but they stopped and gripped well.

And yet, there was a time when the names Griffith and Tuscan were a byword for a kind of speed that was so uncompromising, so difficult to harness that it was perhaps better researched only on the racetrack. The public road was too confined, too compromised by obstacles like hedges, ditches and kerbs, not to mention other users of the road. We are talking now of three decades ago, back in the swinging sixties when the fashion for small manufacturers like TVR was to distinguish the top of their range by replacing the usual MGB or Ford Cortina GT engine with something imported from the States and featuring as many litres and as many cylinders as possible. The Griffith and Tuscan rapidly became the ultimate icons of this particular trend, and few cars before or since have carried such a fearsome reputation.

Like many such reputations though, much of it was probably the stuff of folklore, and while the cars could be tricky if mishandled, they were probably no worse than anything else that went as quickly on the tyres available at the time. TVR had simply made such performance affordable and therefore available to a wider range of customers - just as they have today - but 30 years ago, there was no such thing as a Performance Technique day, and radial tyres of 10 inch width were still science fiction. The availability of such huge performance was thus not such a good thing given road conditions and driver education prevailing at the time...

The subject in the pictures is a beautifully restored 1965 Griffith 400, currently for sale at Birmingham TVR dealers Team Central. JNP 621C looks pretty much as it would have done when new, save for some slightly lower profile 205 section tyres in place of the Avon crossplies or whatever. Inside, some sympathetic licence has been taken with the instrument panel and switchgear, and the seats and belts have been updated to suit the car's dual role as an occasional weekend racer - as have some details of the suspension geometry, and some of the Ford V8 engine's internals. A quarter of a century's knowledge, not to mention access to computerised suspension analysis, does bring certain benefits...

As you walk up to the car, it looks somehow better proportioned in the flesh than you remember from all the photographs. You had read so much about how short and funny-looking TVRs of the 60s were, but on present evidence, it seems less so. Beneath the tiny hinge-forward front end that comprises both bonnet, nose and tops of front wings, is a high performance Ford Mustang V8 coupled to a Borg Warner T10 gearbox. Both are mounted a long way back in the chassis - just like the present car - and there's even an outside linkage on the box to reposition the lever. Yet more similarities with the present range begin to come to light as you look round the car. There's a steel tube backbone chassis with double wishbone suspension and coil springs over telescopic shock absorbers at both ends, and a centrally mounted differential with a pair of short driveshafts to distribute the power. Steering is by fast action rack and pinion, and the wheel is right there in front of you, poking out of a leather covered dash.

Access to the cockpit is surprisingly easy via a door which is probably taller than it is long, and once installed in the modern deep bucket kevlar seat, the view is light, airy and spacious. You sit extremely close to the screen which gives you an excellent view over the front wings, while the wrap around back window and sawn off back end let you see so much behind and to the rear threequarters, the small side windows hardly matter at all. You now begin to get some sense of a clever use of space, and you begin to realise the car's shortened appearance is entirely due to a lack of a conventional boot. The transmission tunnel though

is simply vast and there seems like a huge acreage of red carpet between you and your passenger. The pedals are definitely offset to the right, but there is plenty of space - both to spread out and to stretch the legs. Luggage space turns out to be surprisingly generous but everything has to be inserted through those narrow doors where it remains worryingly visible through that big back window.

The Griffith looks and feels much like the MGB engined Grantura from which it was derived. No sense of that awesome reputation so far... Flick on the switch for the fuel pumps and listen to the metronomic click, then fire up the big iron V8 and that fearsome reputation begins to nag at the senses. The whole car shudders and rocks as you prod the throttle pedal and the raucous and uneven beat of the twin exhaust pipes reverberates and bounces back from buildings and shopfronts. Nobody could produce anything this loud nowadays and get away with. Then you think that this car's iron engine is actually smaller than the five litre aluminium one fitted to today's Griffith. And the modern version not only passes the emission tests, but it's socially acceptable to the neighbours.

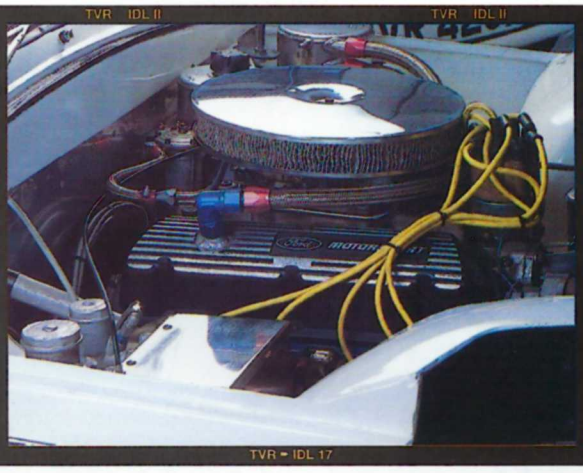
As you ease off down the road, JNP's bark at first turns out to be more than its bite. The engine is actually docile - a bit rich and lumpy at low rpm - but not really temperamental in the first few degrees of the tachometer's travel, and the Borg Warner gearbox is direct and crisp. There's a jingly rattle from the linkage as you move the lever, but the synchromesh is light, swift and easy and the four ratios are closely stacked. Not a bit like some of the brutal, obstructive affairs fitted to exotic Italian cars, or the sticky ZF you'll find in an Aston which won't let you select second at all until the box is good and hot.

So far so good. The exhaust has scraped a couple of speed humps, and the steering lock was barely enough to get us round a ninety right, but the ride is not the bone jarring affair we were expecting. This is just as well maybe, because a look up at the door gaps shows a fair degree of movement. Ease out of the limit and find a couple of bends. Funny how you are still trying to convince yourself that this car isn't a monster, when so far it hasn't proved to be. Thread it through a gentle curve and the wheel seems to turn a lot further than you expect for the radius of bend. Maybe that much is deliberate, intended to keep the helm docile so that you can't provoke the chassis... but then maybe not. Maybe modern tyres are helping here. All right then, snick it down a gear and clear the engine's throat, blow all that richness out the tailpipes. The noise reaches arrestable proportions. The number of gears left disappears in an instant. You seem to have used up most of everything the car has to offer in a blare of noise and a shimmy of action...

It doesn't feel frightening though. Just a little vintage. The Ford V8 will make the rear tyres slip all too easily, but when it does, just a little unravelling of the wheel and a little slackening of the foot stops it all. There's plenty of warning and plenty of clues to stop you getting yourself in trouble which again is just as well; You wouldn't want to get the car too far sideways, because the slow-ish steering and limited lock would hamper any efforts to get it back in a hurry.

As I trickled back to Team Central, trying not to make too much noise, I couldn't help thinking about the comparison with the Griffith of today. The straight line performance is probably not that much different, but the modern car is so much more relaxed, and has so much longer legs - you seem to hang on to the gears for that much longer. The other major difference is grip. The tyres on both cars are similar in size - a little narrower on the older model - but the newer car seems so much sharper, so much quicker to respond to the wheel, and so much more accurate and consistent once into the corner.

But then, there would be something wrong if 30 years had not brought about this kind of progress and the original Griffith must have seemed utterly outrageous when an Austin Cambridge took half a minute to reach 60mph. It is a good deal less frightening than you were expecting but driving it makes the modern one look even more impressive. There's still just enough of a hint of the original though, to remind you that there never will be any substitute for a big engine in a small car. ❑



Power and Performance

performance TECHNIQUE

Performance Technique days provide a perfect opportunity for the TVR driver to exercise TVR performance in safety, and under the watchful eye of a professional instructor.Victoria Swift, The Performance Technique Co-Ordinator, gives an insight into the day...

If you are already familiar with the TVR model range, or have read the impressions of our test driver, Mark Hales, you will be aware that the TVR sports car is truly a thoroughbred amongst cars.

TVRs are all about power to weight ratio. A light weight body houses an engine of remarkable performance. 0 - 60 mph is reached in 4.1 seconds in a 5 litre Griffith or Chimaera, with 0 - 100 mph in 10.5 seconds. Top speed, 167 mph. These two models are powered by the Rover based engine unit. One test-drive and you'll be hooked on TVRs for life.

You will see a Cerbera, cruising down a street near you in the near future. It is the next chapter in the life story of TVR engineering and design. The people at TVR are extremely proud of their latest creation and with very good reason.

The Cerbera is the first hard top to be launched by TVR since 1987. It is also a two plus two or perhaps more accurately, a three plus one. (The rear seat behind the driver is for little people only!) It is powered by our own engine, the AJP8. Not only are the performance figures fabulous but even better.....it's all our own from top to bottom.

The technical specifications will give you some idea of the capabilities of the Cerbera. Sitting in the driver's seat with your finger poised over the automatic ignition button will bring you a little step closer. Drive it and you may start to believe that there is a heaven on earth.

the Safety factor

So, we've made some pretty powerful cars. You know that. You have one already but just how do you gauge how much power is up ahead of you as you sit behind the wheel? For instance, would you know how to control the car if the back stepped out around that hidden country bend?

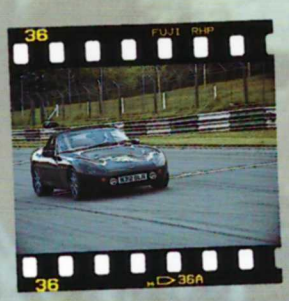
In terms of construction TVR models are currently one of the safest designs on the road. Safety legislation and standards are adhered to without question but the design process at TVR transcends these rules and regulations.

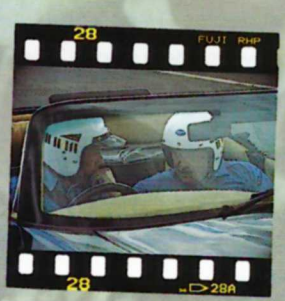
From the birth of each TVR on the production line, safety is a major aspect in each model's assembly. The multi-tubular steel frame backbone chassis - fitted in all models is testimony in its own right as a safety feature.

All road car modifications are derived from the racing Tuscans, an excellent test-bed for all safety aspects of the cars. Colin Blower, one of our most well respected, experienced Tuscan drivers is living testimony to their strength.

Picture the scene. Silverstone. A damp dismal day-round 12 of the TVR Tuscan Challenge. The Tuscans line up on the starting grid ready to qualify. Colin is lying second in the series. He needs a good qualifying time to to knock John Kent off pole. The green light appears. Off they go. All is going well until suddenly, Blower finds his throttle cable is jammed open on the Club Straight. He is unable to make the corner at Brooklands. He ploughs straight through a wall-three tyres thick, carrying on through the steel crash barriers at a speed in excess of 120 mph. Every one present, thought that he had gone to that big old racing series in the sky but miraculously he is cut out of the car with only a few cracked ribs and bruises. It was only the pure strength of the chassis that saved him. Any other car and he might not have been so fortunate.

From a build point of view you can feel extremely safe in a TVR. However, there is a second factor which must be considered with regard to safety. Although the whole purpose of TVR is to create and build High Performance cars, we haven't lost sight of this other very important aspect, that is, the ability of the customer to control and drive a machine with such power capabilities. Hence our Performance Technique days.





talking Performance Technique

1996 will be the third year of our Performance Technique days., which in the main are aimed at our existing customers, in the main. Realising that TVR owners now cover the length and breadth of the U.K. as well as abroad, we have endeavoured to vary the locations of the days to make them easily accessible.

TVR believe these days are extremely important from a safety point of view but between you and me I'll let you into a secret - they're tremendous fun too!

PREPARATION

So, O.K. you have just purchased a 4 litre Chimaera from your nearest dealer. (I won't name one in particular as they are all equally wonderful and I'll never hear the last of it!) Perhaps it is your first TVR and perhaps you are just a little bit wary of how it will respond, or maybe this is your second, or third,but in today's road environment you are unable to explore the limits of your car fully. What do you do?

Your first point of call is your dealer. They will be able to supply you with a brochure and also book you onto a Performance Technique day. There are several to choose from so there is a high probability that at least one of the circuits will be relatively near to you - although, if you talk to some of our existing customers who have already attended one or more of the days, they will tell you that the distance to travel is not much of an issue. How often do you get the chance to drive round Silverstone G.P. circuit in your own car?

One word of warning at this stage. Performance Technique days are rather addictive. Once you have been on a driving day you are very likely to want to attend another.

Two to three weeks before your big day, you will be sent a briefing pack directly from the factory which is full of handy information, for example, how to get to the circuit (always useful!) a detailed map of the circuit as well as a driver's description of the corner approaches (in order to help you prepare) There will also be the necessary safety procedures and rules for the circuit as well as a check list to help you prepare your TVR for the driving day. If you have any questions or queries your dealer will be glad to assist. ❑

the Performance Technique day

09.30 You arrive at the circuit. Hopefully the map and signs got you to the registration room quite easily. So far so good. The TVR crew are all coffee and biscuit addicts, so there is always a plentiful supply to help you prepare for the day ahead.

10.00 Registration forms signed, wrist bands donned, you will now receive a briefing with one of our chief instructors. All the instructors used by TVR have professional driving qualifications with a great deal of racing experience. In fact, quite a few of the TVR Tuscan drivers help out on these driving days, including Peter Wheeler, the Chairman of TVR. You will find all of them very helpful and also quite entertaining. (I guess a sense of humour comes in handy when you're jumping into a car with a total stranger to be driven round a circuit!)

11.00

O.K. So you're nervous. You've prepared your car for the day. You've read through the instructions line by line whilst Malcolm Hamilton, one of our chief instructors has talked you through the whole process. You have sat there patiently in the minibus, mentally going through the lines you're going to take around the track. Now it's time to put the theory into practice as the instructor jumps into the passenger seat. You don your crash helmet in preparation.....

12.30 Lunch time. So you've decided not to apply for the TVR Tuscan Challenge just yet. No-one said it was going to be easy. In fact, the instructors will actively dissuade you from attempting to be the next John Kent, (he's the reigning Tuscan Challenge Champion.) One of the golden rules of Performance Technique is, "technique before speed." You may find this fairly frustrating at first, as you realise that car control and high speeds are more difficult than first appears.

You will probably be fairly "revved up" - no pun intended - or alternatively rather shattered by lunch time. Following instruction around a circuit can be quite demanding both physically and psychologically.

Lunch time is always a good time to reflect on your progress so far. Don't worry if there doesn't seem to have been much - in all honesty it takes more than one Performance Technique day to develop your awareness of a TVR and its accompanying performance/handling.

Lunch is a rather grand affair so it is quite nice to have some time out afterwards to observe and learn by watching the TVR Tuscans. These test at many of the Performance Technique days- just how do they manage to get around that hairpin bend at an approach speed of over 70 mph and still remain in the same direction?

14.00 Grab an instructor and its back on the track. You will have had an assessment sheet in you original briefing pack. Perhaps assessment conjures up too much of a "test" environment - not so. In reality, the instructors will give you marks out of 10 for various techniques such as, gear change, corner approach, cornering and braking, as well as some useful comments. Each instructor will add to the assessment sheet.The afternoon is the time to really concentrate on your skills. There's plenty of time and plenty of space to allow you to do this.

17.00 Just time to squeeze in one last lap. By now you may well be tackling the circuit on your own.

The day is designed to suit your individual needs and requirements. There will be plenty of instructors available all day but if you want to tackle the track yourself you are more than welcome to do so - as long as you don't attempt to do a quick qualifying lap for the next meeting of the Tuscan Challenge , which is likely, by the way, to be at the same circuit.

New model... new factory

Forward planning leads to change and that allows for a fresh look at the company - its products and its markets. The TVR factory, still located on Bristol Avenue, Blackpool, now occupies over eight acres of land. This is a major transition from its original site of only 80,000 sq. ft. Space was then sorely at a premium. Chairman, Peter Wheeler, had vowed never to move the factory from the site at Blackpool and in 1995 the adjacent factory became available, which was rather fortuitous.

The benefits are highlighted by Mike Penny, TVR's Production Director," It has allowed an increase in production capacity at the same time as promoting greater flexibility for sub assemblies. Production has been increased by approximately 30% which in turn has resulted in an expansion of the labour force. 130 new employees over the last twelve months. We now have 430 people working full time at TVR."

This was a priority area for expansion. Fibre glass laminating and fibre glass finishing were being undertaken in the same shop. Dust was a problem. Separating them was a priority. As soon as the adjacent site had been purchased- all of 100,000 sq.ft. - we made the obvious first step and immediately began .....building an extension within the existing site! A high volume extraction unit was installed. Fibre glass finishing moved into the service department, the latter being re-located to the new building.

An increase in capacity was needed here too. As Penny comments, " We couldn't sustain what had grown to 30 cars per week because we didn't have enough spray booths. Now we've got a brand new double one which will cure the problem."

The transfer of the production line began at the end of August 1995. New equipment was installed. The line now benefits from the location of new air lines, providing coupling links where they are required - not having to stretch lines across the shop as previously.

The old production line now provides improved facilities for two departments. The metal work and machine shop are housed in half of the area, with a specially designed area for the AJP8 work shop. Dave Bentley, one of the AJP8 team remarks, "The old place had become too small and cramped. It housed development as well as AJP and there was a lot of dust. We were near the paint shop which didn't give us the ideal conditions to build a race engine. The new building is a lot better."

All interior trim is carried out in-house. It has now been re-located to the new building. Cath Donnelly, who works on the trim for the new Cerbera, remarks on the changes, "There's a lot more room in here. We've got quite a few new machines and other equipment which makes it much easier to cope with all the Cerbera work coming in."

The old trim shop has been re-designed to cater for accident repairs.

Final inspection used to be combined with the service department. The move provided an opportunity to separate the two functions, in order to provide them with more space and more specialised facilities in each area.

Prior to the expansion programme, several store rooms were needed to cater for specific department needs. We now have a central point to facilitate the ease of distribution throughout the factory. This will also help us to monitor the movement of goods received and distributed.

In mid August of 1995, at the same time as stores were relocating, preparation was being made next door to house our reception area. Dorothy Cureton, the Company Secretary, has been the driving force behind the new image. Custom made furniture has been fitted into the much larger, brighter reception, incorporating the company colours, of white and pantone violet, as a theme throughout. Two TVR AJP8 engines will be displayed in the new reception and discussions are currently under way with the local technical college to produce a sectionalised, electrically powered cut away model using one of the two engines. This will be used as a teaching aid and permanent display model.

Upstairs are the new offices for sales, marketing, accounts and illustration. The original pine ceiling was discovered during refurbishment work and has now been renovated to all its former glory. The new offices are open plan which involves all staff in the day to day running of the company. They are all truly part of the team.

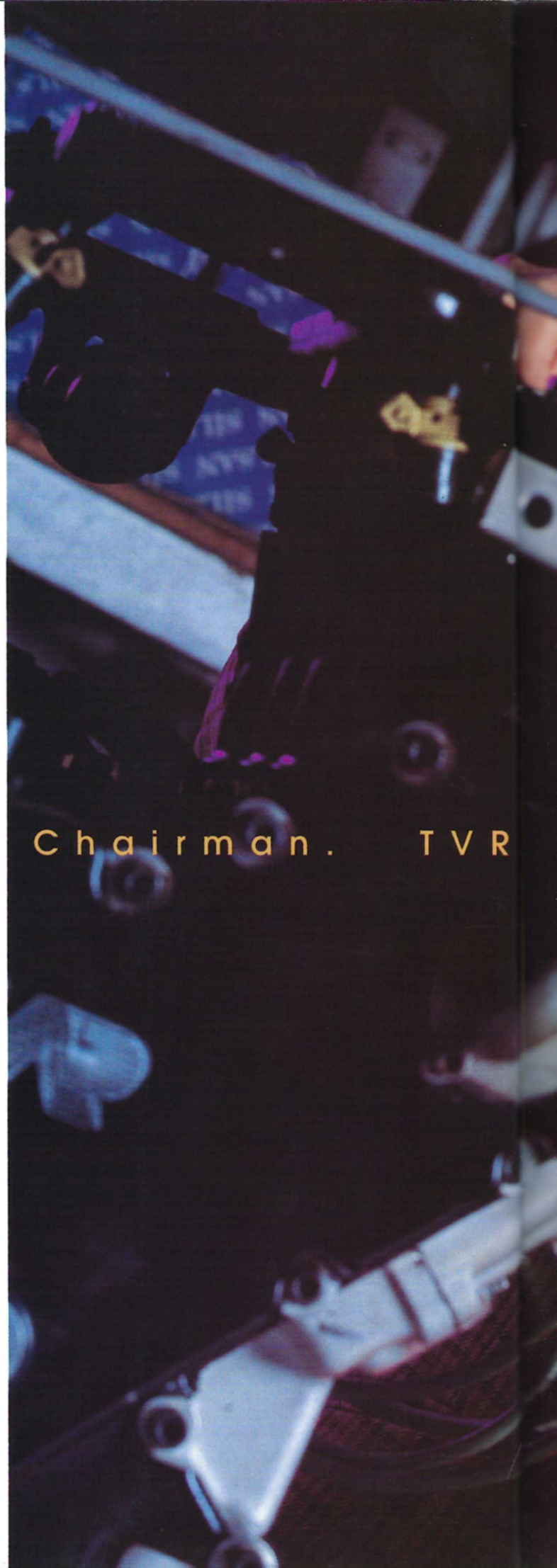
Work is currently under way to revamp offices in the old site for the purchasing department, which will take residence in the old sales and accounts area. Offices and workshops are also being built for development. This will result in more room for every one.

The TVR Tuscan Challenge is becoming increasingly popular, with 1995 being no exception. The order book for new Tuscans continues to increase, with more drivers than ever before wishing to compete in the series. The increase in orders meant that conditions were becoming a little cramped. When the stores were moved over to the new building, racing immediately took residence in their old building. The benefits for the racing team are highlighted by John Reid, TVR's racing manager, "The advantage of this place, is that you have got three times the area we had before. Also, we have more ramps, which means that we can work on three or four cars at a time. In the old building, we had one, so to rotate the vehicles, you had to keep pushing them outside. You had down time in that you had to go and get the car back in, in order to work on it. In here, we can leave the car where it is in the evening, come back into work in the morning and carry on from where you left off, which in effect, probably saves us an hour and a half per day."

Moving racing created more room for development, who had a priority requirement for increased space due to the demands of the Cerbera and on going development work on the Griffith and Chimaera.

Many changes have taken place within TVR in the last 18 months. Production capacity is set to increase, with engine production now being able to match vehicle demand. The expansion process had benefited production factory - wide. However, even though TVR has developed some what in size and capacity, there is one factor that has not. The company is still run on a relatively informal basis. There is no hierarchy, no bureaucratic red tape. These are factors which have been avoided at all costs in the past. There is no intention to grow towards them in the future. Informality and straight forward talking will always be a key aspect of TVR's business. ❑

The History of the AJP8



The three men behind the design and development of TVR's own engine, the AJP8, give us an insight into how it all began and how the project has since developed...

Peter Wheeler - Chairman. TVR

"We have been extensively modifying Rover engines since the early '80s. We started with the 3.5 litre which was initially enlarged to a 3.9, followed by a 4.2, 4.5 and the current Griffith 5 litre engine. An interesting observation is that Rover themselves followed these sizes albeit three or four years later. Apart from modifying the bore and stroke of the engines, we extensively modified the cylinder heads, the amount of tuning being restricted by the limitations of the original castings. In 1991 we decided to investigate removing these restrictions and redesigning the cylinder head. We discussed this with several people, the last one being Al Melling of MCD.

After preliminary design work had been carried out by Al, it was realised that any major improvement of cylinder head design would involve redesigning the block. It was decided to abandon this approach and design a completely new engine.

The basic requirements of an engine were discussed at length. The final brief to Al was a V8 engine with very compact dimensions and bucking the modern trend - a two valve head design. This was chosen for two reasons; one, to make the engine as compact as possible and two, to produce lots of traditional TVR torque.


R Engineering

To make the project viable it was decided that the engine would be designed in such a way, as to be suitable as a race engine, that is, stiff enough to be used as a stressed member to enable the suspension loads etc. to be carried in single seater racing cars. It was considered at the time that the normal road car requirements of a super smooth engine was not a major priority for TVRs.

Armed with this brief, Al Melling designed the engine with an unusual configuration for a road car engine - a V angle of 75 degrees and a flat plane crankshaft, with a single over head camshaft and two valves per cylinder. The engine components are of original design and do not exist in another engine.

When the engine was first publicly shown at the 1992 Birmingham Motor Show, with a design period of only 6 months, the engine design establishment were very sceptical about the suitability of the engine for road car use, mainly because of the perceived problem of balance.

After quite a lot of development work, a great part of which was due to difficulties getting the components manufactured, the engine is now about to go into production, basically as it was originally designed. The unit is very compact with all its ancillary pumps, alternator and management system etc. contained within the overall dimensions of the blocks and the heads. For a road car, it also has, a very small diameter twin plate clutch. The latter, together with an extremely sophisticated engine management system developed by TVR and MBE systems contributes to one of the most notable characteristics of the engine, that is, for its capacity of 4.2 litres it is extremely responsive. The other interesting point about the engine in its Tuscan form, is that it has the highest specific torque of any production normally aspirated engine designed so far, ie. 90 ft/lbs/litre. The AJP8 is the most compact engine of its size ever produced and also for a 4.5 litre, it is the lightest."

Al Melling - MCD

The Engine Characteristics

"The engine is more compact than any other of its capacity. The 75 degree angle and the flat plane crank gives an unequal firing order, that is to 85 degrees to 75 degrees.

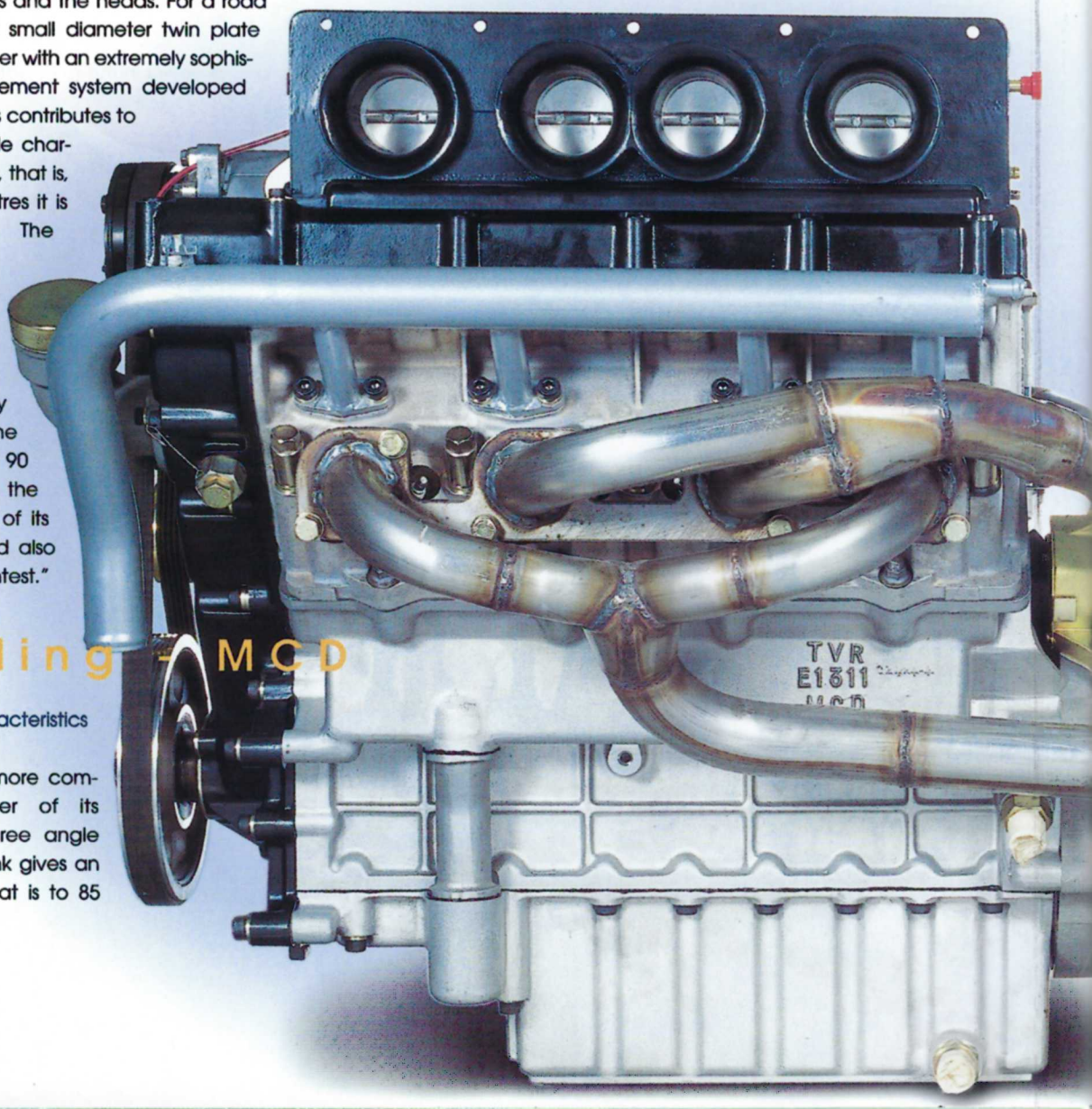
The unequal firing order gives the effect of a big bang engine because the firing impulses are at very wide intervals which allows a spring tyre time to recover, therefore, for example, on high speed acceleration a similar engined car without this feature would spin its wheels much easier than with the AJP8 - just like the 916 Ducatti Superbike twin's advantage over the 4 cylinder bikes.

One of the other advantages of this engine design, is that in the race AJP8 engines, there are never signs of any oil leaks from any of the joint lines. Also it will be noticed that there are no breathers, the reason being that the AJP8 runs on negative pressure,that is, the inside is a vacuum.

Many of the parts inside the production engine are of highest quality. The pistons are forged aluminium, just like F1. The connecting rods are forged and were tested in the Griffith 500 Rover engine, proving to be very satisfactory. The cams are made of solid billet steel, rifle bored and heat treated in accordance with F1 engine practice."

Problems Encountered

"There were certain problems with the development of the engine. The cylinder block pattern work which obviously has a long lead time, - about 14 to 16 weeks, was manufactured incorrectly. We changed the foundry used for producing the cylinder block and the new supplier was able to correct the problems.



One of the main problems, was trying to get parts manufactured the way we wanted them. As many companies have found, it is very difficult to get high quality parts manufactured, which in the case of the AJP8 resulted in a four month delay between the finished design of the engine to actually producing the first unit. However, even at this early stage, the engine was very close to the original design objectives. When the first engine was tested, it produced 345 bhp - the design specification being 350 bhp which compares with 360 bhp produced by the Rover Tuscan engine, not a bad initial result when taking into account that the latter spec. is a 4.5 litre compared to the 4.2 litre AJP8. Incidentally, the final Tuscan specification is 385 lb/ft and 450 bhp for a 4.5 litre engine."

With the AJP engine the policy has been to extend the speed range of the engine to 7500 rpm, thus giving the potential for high power outputs and to maximise the torque over the whole speed range to give a good "shape" to the power curve.

This is easier said than done and many hours were spent testing design modifications in order to enhance the original engine power of 345 bhp and torque of 320 ft lbs to the 450 bhp and 385 ft lbs. of torque. For the current Tuscan race engine most of these modifications were quite subtle and often involved the matching of components so that they all worked in harmony. This is particularly true of the intake system, camshaft profile and exhaust system.

John Ravenscroft - Chief Design Engineer. TVR

Development of the AJP8 Engine

One may wonder why any development was required at all on the AJP8 since it almost produced its target of 350 bhp the first time it was run on the bench (?) dyno. However, full load power curves obtained on a dynometer only show a small part of the overall performance picture. It gives a good indication of potential full throttle performance but unfortunately gives limited vision of potential idle quality, part throttle performance, transient response, noise vibration and harshness.

Dynamometer testing is extensively used to verify the performance of an engine design. It can also be used to measure the success or otherwise of a design modification. It does this by measuring the torque or 'turning force" of the engine at every engine speed. The power output for each engine speed is deduced by multiplying engine speed by the torque produced at this speed.

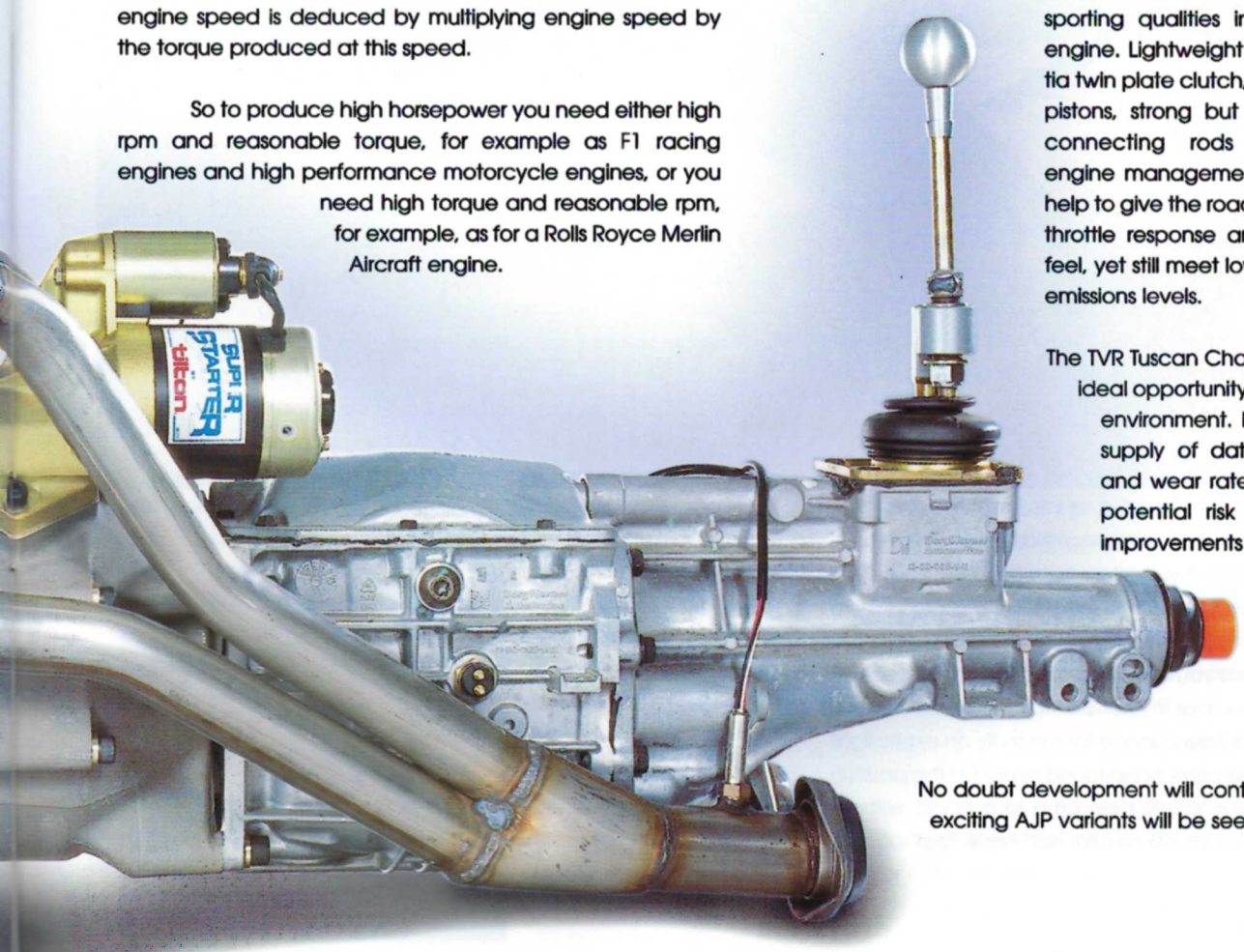
So to produce high horsepower you need either high rpm and reasonable torque, for example as F1 racing engines and high performance motorcycle engines, or you need high torque and reasonable rpm, for example, as for a Rolls Royce Merlin Aircraft engine.

Producing big numbers on the dyno is one thing, but the shape of the torque curve is just as important. Good torque is needed at all speeds, especially on a road car. This is particularly difficult to achieve without compromising some where, especially when coupled with the requirements of noise and emissions limitations on road engines.

Another important factor that determines to a large extent the character of an engine is its transient response or liveliness. Many modern engines have become lethargic and lazy because of their heavy flywheels in an effort to become smooth and refined. They are also stifled by misguided engine management systems which can curb response and power in the quest for cleanliness.

Every effort has been made to retain the AJP Tuscan engine's endearing sporting qualities in the road going engine. Lightweight flywheel, low inertia twin plate clutch, lightweight slipper pistons, strong but light forged steel connecting rods and innovative engine management techniques - all help to give the road engine - race car throttle response and a race engine feel, yet still meet low exhaust and gas emissions levels.

The TVR Tuscan Challenge provides an ideal opportunity for testing in a real environment. It gives a constant supply of data component life and wear rates. It also highlights potential risk components and improvements of the engine.



No doubt development will continue and new and exciting AJP variants will be seen in the future. ❑

Steve Noujaim and Andy Gent, the pilots of our Aerobatic Display Team, talk us through their first year of flying as TVR Team 50.

The name, "TVR Team 50," may be one, as yet unfamiliar to many air show-goers and motor racing fans. However the TVR sponsored Yak- 50 duo are destined to make quite an impact on the 1996 air show season, building on the experiences and hard work of 1995, their first taste of "the circuit." Team 50's Yak's are flown as an all - consuming spare time passion by two fast jet instructors from RAF Valley, Andy Gent and Steve Noujaim (leader), - a pair as much at home hurtling between hills at high speeds in their Hawk trainers as they are flinging their Russian built steeds around the skies. Andy, the wingman, takes up the story.

"Steve and I met whilst we were both serving at RAF Chivenor during 1992/3. We had similar but different aviation backgrounds - both of which included 400 hours of light piston engined flying, prior to joining the Queen's Flying Club. Steve had, amongst other things spent a year or so as a C421 pilot in Africa. I had taken the more usual route to my Private Pilots License, dabbling in a little sport flying on the way."

"Our service careers in the RAF saw Steve flying the Phantom at Wattisham, moving on to instructing on the Tuscano at Cranwell before being posted to the Hawk; whereas I had spent three years with the Tornado GR.1 "mud-movers" at Bruggen in Germany before my posting into the training role. Private/sport flying was rare whilst we were in Devon (unless you could afford to buy an aeroplane) and apart from a few trips in Alan Cassidy's Pitts stunt bipane - G - STUA, there was little chance for me to fly an exotic light aircraft. Steve on the other hand found himself in the position of being able to fly a Yak-50 belonging to a friend, without whose help, TVR Team 50 would not have got off the ground!"

How did the Team get off the ground? Steve tells us.

"Having shown a considerable interest in flying a Yak, I was asked to help with instructing some private pilots in close formation flying during a week long course held at Little Gransden, in Bedfordshire - the place where the Yaks are imported from Eastern Europe." Whilst down at Gransden, Andy had the chance to fly a Yak 50 for the first time. His opinion after the event being," My favourite aircraft is still the RAF's Hawk jet trainer but as regards light aeroplanes, the Yak-50 is a beauty, with the sweetest sounding engine this side of a Merlin!"

" Andy enjoyed the Yak as much as I did. I had already flown in the National Aerobatics Competition and it had cost a fortune, so the guess was, " How to off-set some of the running costs and keep the bank manager happy!" The Yak 50 is a graceful, smooth and very powerful aircraft.It was paid for by the Russian government to compete in International aerobatics a few years ago, and I felt that a pair flying close formation aerobatics would prove very popular with airshow goers and provide superb billboard for a sponsor. I had now upgraded to my third TVR, a Griffith 500 which I adore and felt that flying for TVR would be an ideal solution. I then contacted Nigel Kemp, from whom I bought the car, at "Harrogate Horseless Carriages" and he put me in touch with Peter Wheeler, Chairman of TVR Engineering Ltd.

" Meanwhile, Andy, with the help of the Old Flying Machine Company at Duxford and Yak U.K. Ltd at Gransden, found another Yak 50. We were now sponsored so we set about putting our dreams into action. I had very little display experience and Andy had about 3 hours in the aeroplane. Fortunately, help came from TVR Engineering who gave us some money to practice. We were on our way."

"Having taken the odd booking, by early March we had still to turn a wheel in practice and by the end of the month we collected the two Yaks and positioned them at RAF Valley in Anglesey to begin practice.

We decided that we should concentrate on flying a simple routine and fly it well rather than go for some thing more esoteric. We soon discovered that ideas that looked fine in the 'bar' were decidedly 'iffy' from the cockpit of an aeroplane that you have only really flown for about six hours. Hence after a few exploratory sorties, 'Sequence 1.' was born and although not set in stone, gave us a base to work from whilst continuing to gain experience."

"Like much in this world, there were things we were happy with and things that we were not. Whilst at Valley we put in about five hours practice over a three week period, we had hoped to do more but were thwarted by bad weather and an intense Hawk flying programme; but we felt we had a good basis for the display, to which more could be added at a later stage. Andy and I were again fortunate to be involved in instructing another Formation school (North Weald) and took the opportunity during the course to polish up our act and by the end of the week we thought that with three days intensive flying immediately prior to our first show (The Fighter Meet at North Weald) we would be in good shape. It was April 14th, after a three week lay off, we arrived in Bedfordshire for our practice sessions only to find one aircraft unavailable and what's more it had had its radio removed! Consequently, we didn't manage the much needed training and arrived at North Weald Show very nervous and more than a little concerned, also Andy, as no.2 would be operating with a hand held radio secured inside my flying jacket!"

"Never mind, we thought, a nice cup of air show tea will do the trick...No, too nervous to drink it, and any way there's only an hour to go! Fortunately, we were one of the first 'acts' and the prospects of getting it over with quickly was at least some thing to look forward to. The nerves, we believed would go on start up, but they didn't. Our slot time came and we got under way. As we made our dive to 400 kph to begin our first manoeuvre I felt decidedly dicky but on Steve's call of "pulling-up" concentration took over and we began attempting to salvage ourselves from possibly an uncomfortable situation; flying our aircraft in front of a critical pilots tent without the confidence which might have been provided by the requisite amount of practice. It could have been worse but as we lined up for our final approaches to land at least we felt we had not embarrassed ourselves. As we unstrapped a bevy of real experts like Vic Norman, Brian Lecomber, (the Crunchie Team and Rover Flight) were on hand with a few kind words and a hearty "Welcome to the Club" handshake, for which we were extremely grateful. Andy held up a few wires; his radio had come out of his flying jacket!"

"From small beginnings, the 'acorn' had grown and continues its development. We now have both Yaks painted and decalled in TVR colours, white and pantone violet, two smoke systems and fabulous nomex flying suits all due in no small way to the help of the long suffering Victoria Swift. By the end of the 1995 season, we had flown 15 displays (three of which were for the TVR Tuscan Challenge.) The nerves still jangle and the routine is under constant development. We like to think that we have now established ourselves as a credible act and are looking forward to launching into the 1996 season. We can look back with some satisfaction, not only at the flying aspect but also at the logistical side, getting the aircraft painted, serviceable, documented and onto the circuit. In this respect we owe no small debt to Wim and Helen Kamper, Mark Hanna of the OFMC and of course TVR without whose help and advice TVR Team-50's display would have remained only a dream." ❑

For further information about TVR Team 50, please contact Steve Noujaim or Andy Gent. Tel:- (0585) 041946.

news

The TVR Personal Possessions Collection.

Following overwhelming demand, TVR has officially appointed a St.Annes based company to look after all merchandising. Avondale International will stock a selective range of quality goods all of which have been approved by the factory. For further details, please contact Mr. Christopher Swift on (01253) 727211.

The GT Cerbera - on the road.

September 1995 marked the close of the BRDC National GT Series and the successful first year of racing for the Cerbera. Alongside the development of the racing car, work has also been progressing on a road going version of this super car model and this was officially unveiled at the Motor Show in October of '95.

A 4500cc version of TVR's AJP8 dry sump engine is the power house - which is very similar to that found in the formidable TVR Tuscans,producing 440 brake horse power and 380 foot pounds of torque. The specification of the GT Cerbera incorporates 6 pot calipers with 14.25" ventilated discs at the front and four pot callipers with 11.8" ventilated discs at the rear. Light weight 9 by 18" magnesium alloy wheels with Bridgestone Expedia SO1 245/40 tyres are also incorporated into the specification for this Cerbera variant. great importance is placed on the power to weight ratio in any TVR model - the GT Cerbera is no different. Hi-tech carbon fibre is used for the interior trim - resulting in a lighter body to house an increase of 80 bhp and a boost in available torque of 60ft/lbs.

With less weight, more power and more grip, the performance capabilities of the GT Cerbera will be very special indeed.

Winning News.

TVR would like to extend their congratulations to the "Independent" competition winners. Over the last year, the Independent newspaper has run a series of competitions - the grand prizes being a Cerbera, Chimaera 4 litre and Griffith 500 successively.

Each competition was run over a two week period, with entrants having to collect tokens each day, in order to be included in a grand draw.

Initially, the Cerbera competition was to be a "one off" feature but so great was the response from "Independent" readers that the newspaper carried on to run competitions with the other two current TVR models, both of which have generated just as much interest.

Mr White, a school teacher from Surrey was presented with his Chimaera at the London Motor Show and looked absolutely delighted with his prize. He was astounded when he heard of his good fortune and said it was good to know that there is a winner in these types of competitions, that is, the ones that sound too good to be true.

The Cerbera winner, Ms Hopkinson, from Somerset is set to receive one of the first Cerberas to roll off the TVR production line. She will be presented with the car by her local dealer Mr Samuel Simmons of Brooklands Exeter.

All the winners have been invited up to the factory to spec. up their car and be given a guided tour of TVR. They have also been invited to attend a Tuscan Challenge race of their choice, as well as receiving expert tuition on our Performance Technique days, in order that they fully appreciate the power and performance of their new TVR.

Overseas News

- TVR Engineering has officially taken over the co-ordination of all overseas sales to Germany. Mr Wolfgang Becker will be officially acting on our behalf. There will be appointed dealers covering the areas of Badoldesloe, Monchweiler, Starnberg, and Hagen.

- TVR has been exhibiting at motor shows worldwide in 1995, including Japan which was organised by the "H+K Corporation Ltd", at Brussels which was hosted by" MF Cars PVBA" and also in Germany at the Essen motor show. The Cerbera was displayed at the Japanese and Brussels venues receiving an overwhelming response from the public.

- TVR would like to take this opportunity to wish every success to " Cric Motor Works Ltd," who have recently been appointed as the official TVR dealership in Hong Kong. Over the last few months they have undertaken a major launch of TVR, as they write themselves - " with exposures from magazines, TV, newspapers, radio commercials, private club car exhibitions, public car shows, test drive reports, performance seminars by famous race competitors, and joint promotions with other organisations of interest."

- We are also proud to announce the appointment of "Auto Espert Di Gemmi G. + C. SNC" based in Cremona as the new officially appointed dealer for Italy. TVR Engineering would like to wish them the very best and every success for the future.

- TVR Engineering are involved in a new venture in Malaysia which will be catering for the Pacific Rim. Production is due to commence in 1996 with an official launch taking place in March of this year.

1996 TVR Calendar of events

TVR Tuscan Challenge

Date	Venue
March 30th/31st	Silverstone - Towcester, Northants
April 27th	Oulton park - Tarporley, Cheshire
May 4th/5th	Knockhill - Fife, Scotland
May 27th	Mallory Park - Mallory, Leics. *TVR Team 50*
June 8th	Oulton Park - Tarporley, Cheshire
June 22/23	Donington - Castle Donington, Near Derby *TVR Team 50*
July 6th/7th	Castle Combe - Chippenham, Wiltshire *TVR Team 50*
August 3rd/4th	Croft - Croft On Tees, North Yorkshire
August 18th	Cadwell Park - Louth, Lincs *TVR Team 50*
August 26th	Castle Combe - Chippenham, Wilts
September 7th/8th	Brands Hatch GP - Longfield, Kent
September 29th	Snetterton - Near Norwich, Norfolk *TVR Team 50*
October 12th/13th	Silverstone - Towcester, Northants
November 2nd/3rd	Donington - Castle Donington, Near Derby

*TVR Team 50 Pilots will be attending at these race meetings

Contact Address for TVR Team 50:-

Mr S Noujaim and Mr A Gent
31, Tudor Court
Caergeiliog
Gwynedd
LL65 3LL
Tel:- (0585) 041946

TVR Performance Technique Days

Date	Venue
April 25th	Oulton Park - Tarporely, Cheshire
May 2nd	Knockhill - Fife, Scotland
June 18th	Donington GP - castle Donington, Near Derby
August 2nd	Croft - Croft on Tees, North Yorkshire
August 30th	Brands Hatch Indy - Longfield, Kent
September 23rd	Snetterton - Near Norwich, Norfolk
October 6th	Silverstone International - Towcester, Northants

The 1996 Midland Speed Championship

Date	Venue
April 6th	Harewood - Yorkshire
May 5th	Curborough - Near Lichfield
May 12th	Loton Park - Hagley
May 19th	Curborough - Near Lichfield
June 8th	New Brighton - Wallasey
June 23rd	Kames - East Ayrshire
June 30th	Three Sisters - Longton
July 21st	Curborough - Near Lichfield
July 26th	Kirkistown - Ulster
July 27th	Craigantlet Hillclimb - Ulster
August 4th	Harewood - Yorkshire
August 18th	Three Sisters - Longton
September 8th	Scammonden - Lancashire
September 15th	Curborough - Near Lichfield
September 21st	Longleat - Woolbridge
October 6th	Three Sisters - Longton

October 13th Curborough - Near Lichfield

Contact Addresses

Hillclimb and Sprint Association
Chris Lloyd
13, St.Nicholas Close
Austrey
Atherstone
Warwickshire
CV9 3EQ
Tel:- (01827) 830253

Neill Anderson
TVR Engineering Ltd
Bristol Avenue
Blackpool
FY2 0JF
Tel:- (01253) 509000
Fax:- (01253) 357105

Stewart McQuillian
Competition Secretary TVR Car Club
27, Bohun Court
Wallace Park
Stirling
FK7 7DT
Tel:- (01786) 817820

Robin Boucher
Avondale International - TVR Merchnadise
451, Clifton Drive North
St.Annes
Lancs
FY8 2PS
Tel:- (01253) 727211

united kingdom

Edinburgh	**The Brandon Motor Company** 34 Buckstone Terrace•Edinburgh•Scotland•EH10 6QE	**0131 445 4711**
Yorkshire	**Harrogate Horseless Carriages** 284-286 Skipton Road•Harrogate•Nth Yorks•HG1 3HE	**01423 521074**
Manchester	**Bauer Millett** 5 Peter Street•Manchester•M2 5QR	**0161 831 7447**
Cheshire	**Christopher Neil** Middlewich Road•Northwich•Cheshire•CW9 7BP	**01606 41481**
Leicestershire	**TMS Performance Vehicles Ltd** Scalford Road•Melton Mowbray•Leicestershire•LE13 1LD	**01664 481065**
Birmingham	**Team Central** College Auto Centre•Kingstanding Road•Perry Barr•Birmingham•B44 8AA	**0121 344 3400**
Norfolk	**Brundle** Brundle House•Tottenhill•King's Lynn•Norfolk•PE33 0SR	**01553 811881**
Suffolk	**Kerridges** The Hall Garage•Needham Market•Ipswich•Suffolk•IP6 8EG	**01449 720222**
Wiltshire	**David Hendry Cars** Kingfisher Mill•Park Road•Malmesbury•Wiltshire•SN16 0BX	**01666 824369**
Gloucestershire	**Broughtons** Rutherford Way•Cheltenham•Gloucestershire•GL51 9SQ	**01242 515374**
Oxfordshire	**Henley Heritage Ltd** 18-20 Reading Road•Henley-on-Thames•Oxfordshire•RG9 1AG	**01491 411177**
London	**The TVR Centre** Barnet Road•Arkley•Barnet•Hertfordshire•EN5 3LJ	**0181 440 6666**
	H R Owen 49-51 Cheval Place•Knightsbridge•London•SW7 1EW	**0171 225 2007**
Surrey	**Mole Valley Motor Group** Zoo Garage•360-366 Leatherhead Rd•Chessington•Surrey•KT9 2NN	**0181 394 1114**
	Station Hill Garage (Farnham) Ltd Station Hill•Farnham•Surrey•GU9 8AA	**01252 733377**
	Fernhurst Motor Company Midhurst Road•Fernhurst•Haslemere•Surrey•GU27 3EE	**01428 653924**
	The TVR Centre (Redhill) Orchard Business Park•Bonehurst Road•Salfords•Redhill•Surrey•RH1 5EL	**01293 822911**
Kent	**W.L.A. Specialist Cars** 736 London Road•Larkfield•Kent•ME20 6BG	**01732 870386**
Dorset	**Nigel Mansell Sports Cars Limited** Salisbury Road•Blandford•Dorset•DT11 8UB	**01258 451211**
West Sussex	**Portfield Sports & Classic Cars** City Garage (Chichester) Ltd•Quarry Lane•Chichester•West Sussex•PO19 2NX	**01243 528500**
Devon	**Brooklands (Exeter) Limited** Hennock Road•Marsh Barton•Exeter•Devon•EX2 8RU	**01392 823823**
South Wales	**Newtown Motors Cwmbran** 12 Somerset Road•Cwmbran•Gwent•NP44 1QX	**01633 485251**
N. Ireland	**Prentice Limited** Armagh Road•Portadown•County Armagh•BT62 3DS	**01762 333377**
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Sevice Dealers		
Scotland	**Dreadnought Garage** Leny Walk•Calender•Stirling	**01877 31099**
Jersey	**Hudson Motor Company** Hastings Road•St.Helier•Jersey•Channel Islands	**01534 878847**

dealer network

Australia	**Monarch Motors Imports PTY Ltd** Unit 4•346-400 Macaulay Road•Kensington•Vic 3031•Australia	**00 61 3 9376 2555**
Belgium	**MF Cars PVBA** Kortrijksesteen Weg 12•B9830 Sint Martens Latem•Belgium	**00 32 9282 3136**
Czech Republic	**Lenia Co Ltd** Sokolska 32•120 00 Prague 2•Czech Republic	**00 42 2 290787**
France	**TVR France** 7 Esplanade Auguste Perret•94320 Thiais•France	**00 33 1 4686 1330**
Germany	**TVR Engineering (Germany) Ltd** Moerser Str. 28• 47228 Duisburg• Germany	**00 49 2065 63310**
	Auto-Sautter Münchenerstr. 29•82319 Starnberg•Germany	**00 49 8151 15805**
	British Sports Cars Buschmühlenstr. 60•D-58093 Hagen•Germany	**00 49 2331 586633**
	Lutz R. Leberfinger Kiebitzhörn 31•22885 Hamburg- Barsbüttel•Germany	**00 49 4067 03020**
	Sigi Kieninger Vehicle Engineering Ginsterweg 2•78087 Mönchweiler•Germany	**00 49 7721 70033**
	Sport Auto GMBH Rögen 7•23843 ʃad Oldesloe•Germany	**00 49 4531 86665**
Switzerland	**TGE Automobile Automobili** Dorfstrasse 147•8424 Embrach•Switzerland	**00 411 865 0465**
Holland	**BV Nimag** Reedijk 9• 3274 KE Heinenoord•Holland	**00 31 1866 607911**
Hong Kong	**Cric Motor Work Company** Room 1701•17/F•Eastern Habour Centre•28 Hoi Chak Street•QuarryBay•Hong Kong	**00 852 2856 9299**
Italy	**TVR Italia Racing S.R.L.** c/o Pisoni Flaviano•Via Betulle 26•20040 Busnago•Milan•Italy	**00 39 39 69 56107**
	AUTO ESPERT DI GEMMI G.+C. SNC Via Castelleone 61•26100 Cremona• Italy	**00 39 372 37324**
Japan	**H & K Corporation Ltd** 12-11-1 Chome Shojida•Okazaki City•Aichi Pref•Japan	**00 81 564 531775**
New Zealand	**Payco Motor Sport Ltd** PO Box 983•Christchurch•New Zealand	**00 64 3379 1876**

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All enquiries 01253 509000 fax 01253 356097
Printed in England
Editor...Victoria Swift TVR · Design...Ian Law.TVR
Authors - Cerbera, Griffith, Chimaera, Retro, Cerbera GT: Mark Hales · Tuscan Racer: Autosport · all others...Victoria Swift TVR


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