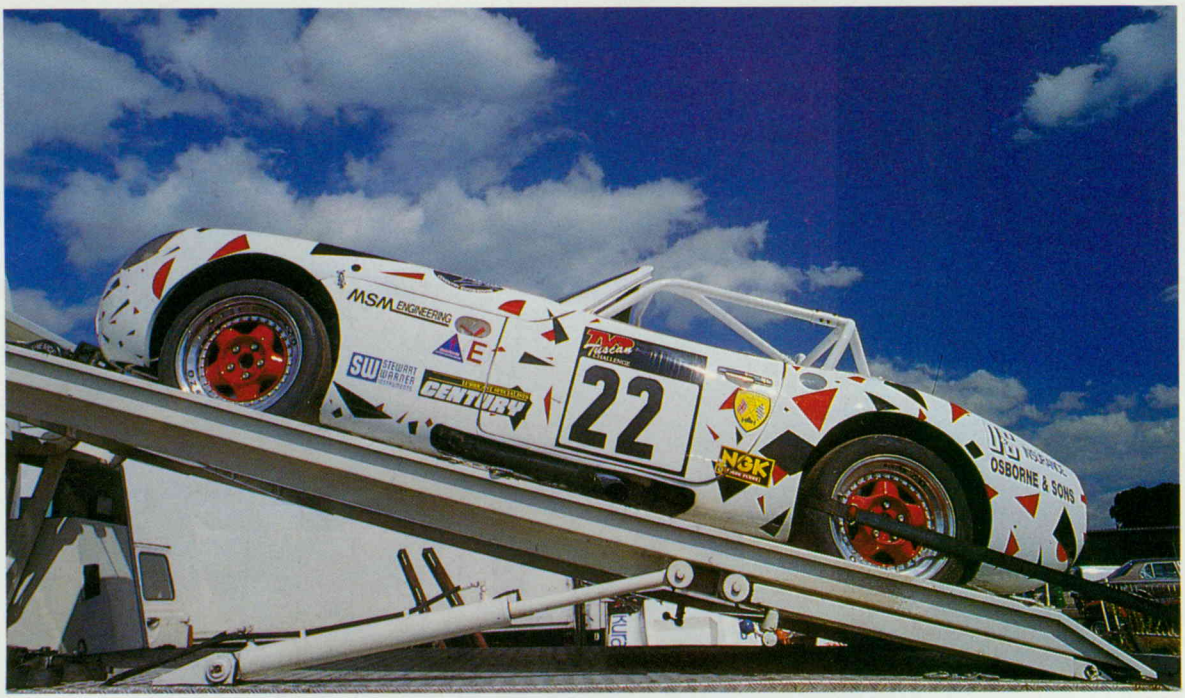
Take 27 of TVR's awesome 350bhp Tuscan race cars, put them on the bumpy Oulton Park circuit in the hands of totally committed pilots and you have the ingredients for an interesting drive. Howard Lees took up the challenge and returned wondering who took who for a ride

# TAMING THE TITAN

JERRY YOUNG




**Less than 24 hours to go before the start and car 22 arrives at Oulton Park mid-way through practice. Owners Northern TVR had worked flat-out to rebuild the Tuscan after a massive shunt at Silverstone on its previous outing . . .**

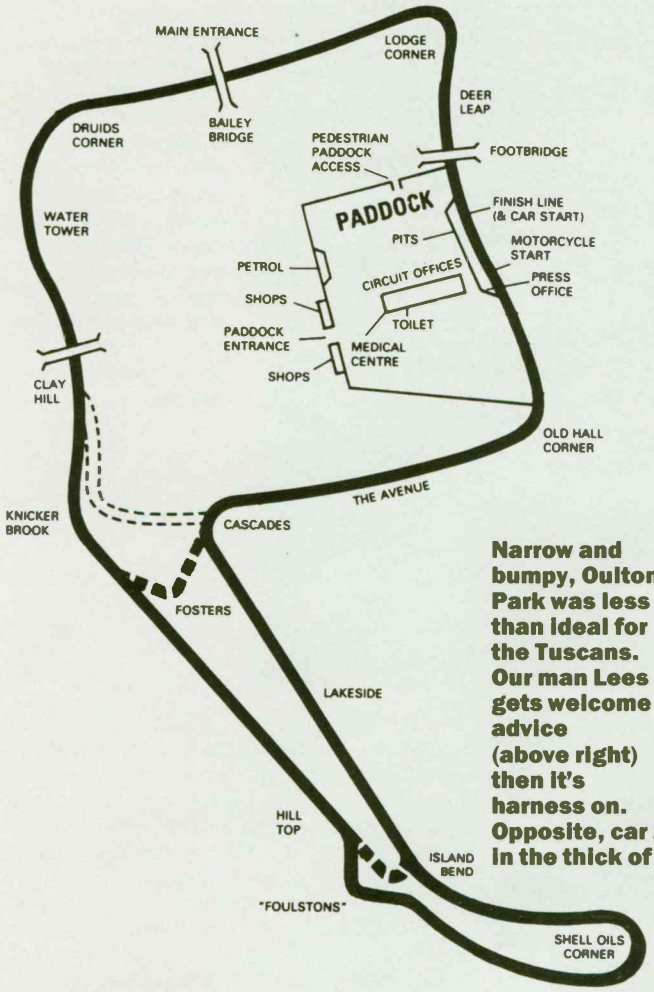

"THEY'RE ABSOLUTE MONSTERS. ALL the cars are unstable under braking and it's so easy to swap ends." As I looked at the stoved-in front and rear of the TVR Tuscan slung from the front of the Oulton Park recovery truck, I couldn't shake Chris Schirle's words from my mind. The ex-TVR development engineer, now preparing the Tuscan campaigned by veteran saloon car ace Gerry Marshall, had summed up TVR's muscle-bound race cars earlier in the day in a way that made me wonder what I was doing there.

Just after 10am on a normal Oulton Park practice day, the paddock was full of a selection of Tuscan Challenge, Fiesta Challenge and Formula Ford teams eager to hone their skills before the BRSCC race meeting the next day. I had originally arranged simply to drive and performance test one of the 350bhp TVRs. But somehow the project had grown to include a track test and an actual race. And tomorrow was *the* day . . .

Schirle wandered over to view the stricken TVR. Driver Mick Hyde was unscathed, but the car looked like it wouldn't make the grid tomorrow. "That was the classic case — too much, too soon," Schirle opined. I was secretly relieved that my car, owned and entered by Dave Haughin's Barrow-in-Furness-based Northern TVR centre, hadn't appeared yet. I was also beginning to wish I was making my car racing debut in a Fiesta.

The delayed arrival of Tuscan number 22 was understandable. Haughin's car was at the centre of a massive first corner accident involving at least eight other TVRs at the Silverstone round three weeks before. The picture we published (*Autocar & Motor*, 9 August) shows the air full of shattered glass fibre. The bonnet of car number 22 must have set a high-jump record that day competing with panels from various other cars.

In between running a business that sells 110 TVRs a year, Haughin and Northern TVR workshop manager David McLennan worked flat-out to rebuild and re-body the car. With a second Tuscan to prepare as well for customer Bob Hollick, the pair worked through the previous night and well into the morning to finish the car. After a three hour journey to▶




**Narrow and bumpy, Oulton Park was less than ideal for the Tuscans. Our man Lees gets welcome advice (above right) then it's harness on. Opposite, car 22 in the thick of it**

◀ Oulton, the transporter finally rumbled into the paddock at 2.30pm.

Within minutes the car was unloaded and warmed-up, but a mere 15 minutes of the penultimate 30-minute practice session remained. No time for a briefing now. Donning fireproof overalls and clambering beneath the reassuringly solid-looking roll bar and into the open cockpit, I pulled the six-point harness as tight as it would go. Helmet on, I was about to make for the track when I noticed the temperature gauge wedged hard against its stop and a wisp of steam escaping from under the bonnet. The top radiator hose had cried enough.

The nose was removed and the offending hose replaced in lightning quick time, but the end result was just two very tentative laps before the session ended. In the dim and distant past I had once raced a motorcycle at Oulton Park, but the circuit had changed since then. All I could remember was that it seemed narrow and very bumpy. Despite having to learn both car and circuit very quickly, two laps was enough to prove that if it was narrow and bumpy on a bike, then in a stiffly-sprung 350bhp race car the track was 100 times worse.

I was completely lost for those first few laps, but the initial impressions weren't as daunting as I had feared. At least the 4.5 litre V8 was tractable enough to drive around slowly while trying to remember what the next corner looked like. Thankfully the car was ready in plenty of time for the next session, which yielded 12 very informative laps. The circuit was now more familiar, as was the car's shatteringly quick nature. Gearchange and braking points were gradually being etched

**'I drop the clutch at 3500rpm. The rear tyres spin furiously and the car doesn't move'**

onto the memory. But I knew I wasn't using anything like the car's potential. The 12th — and quickest — lap was a modest 1 min 52 secs. When Haughin asked whether I wanted any changes made to the suspension set-up, I could only grin helplessly.

That was enough to sleep on. Tomorrow morning there was a 30 minute timed practice session to establish grid positions. A final chance to shave some tenths before the 10-lap race. It was also more than enough for Dave Haughin to take home with him. A slight communication breakdown meant he learned over dinner that night that I had never raced a car before! He took it well, but you could see memories of that Silverstone accident in his eyes . . .

The TVRs are second on the track at 9.15 on a crystal clear morning. Conditions are ideal. With the Tuscan checked over and warmed-up, it is time to perform under the watchful eyes of the official timekeepers. Two laps spent running the Dunlop slicks up to temperature and getting into the groove while following another Tuscan shows how limited the passing opportunities are. The only place wide enough to outbrake a car up the inside and still have room to get around the corner is Old Hall, a quick right hander immediately after the start/finish straight. With the new carbon-based front brake pads now bedded in and working a good deal better than the day before, I put them to the test and ease ahead of the other car at the end of lap three.

This is going to be the lap. With the rev counter approaching 7000 in fourth (about 130mph) over the start/finish line, there's just time to notch fifth before easing over to the left for Old Hall. Hard on the brakes for an instant, down into fourth and again I curse the height of the brake pedal. It's too high for heel and toeing, so each downchange is accomplished on a trailing throttle with an inevitable shriek from the rear tyres and a wiggle of the tail.

Twist the tiny leather-rimmed wheel and the nose of the Tuscan obeys; instantly, faithfully and unlike any road car I've ever driven. The steering is unassisted and very high geared at 1.8 turns lock to lock. You don't notice the effort required until afterwards, when your muscles start to ache.

Old Hall is one of the few corners where you don't drive in deep before turning, but I am off the brakes too late and miss the apex by a couple of feet. Down the hill towards Cascades the Tuscan drifts to the red and white-painted rumble strip, but I'm sure it could have gone quicker through there.

Time for only a brief squeeze of the throttle as you steer across to the right hand side of the


track in readiness for the long, off camber downhill sweep that is Cascades. Turn in as late as I dare and, postponing the apex to the last third of the corner, the camber still starts to bring the tail round. Don't panic, just keep the throttle where it is and sort the rest out with the steering wheel . . . By the time the car is back under control we're on the concrete run-off strip, so I'm late back on the throttle for the straight line sprint to Island.

Cascades is taken in fourth, the engine pulling strongly from 3500rpm on the exit to close to 7000 again, before dabbing the brakes and peeling into the long left Island bend. It opens out to the exit, which is just as well because here you have to brake hard and change down to third for the Shell hairpin. The rear starts snaking as I carve off speed for the tight 180 degree right.

There's a helpful camber here — in fact the corner is almost banked — but the apex is covered with a line of cement dust from a previous oil spillage, so I stay off the racing line by a couple of feet.

On the exit you make a beeline for the far right to enter the left/right flick through the chicane. There's barely time to catch fourth gear before braking hard and changing down to third. You know it's bumpy on the way in because the steering wheel tries to fight free of your grip. The chicane is so tight that you have to run across the kerbs, but I notice that everyone else is doing the same.

Once at the chicane's second apex, the Tuscan will gladly accept a bootful of throttle, the only place where I feel totally confident of controlling the tail in a slide. But drifting to the track's outer edge takes the car over the ▶

# TVR TUSCAN

## SPECIFICATION

### ENGINE

Longitudinal, front, rear-wheel drive.
**Capacity** 3441cc, eight cylinders in 90deg vee.
**Bore** 94mm, **stroke** 80mm
**Compression ratio** 12.0:1.
**Heads/block** Al alloy/al alloy
**Valve gear** ohv, 2 valves per cylinder.
**Ignition and fuel** 4 twin-choke Weber 48 DRLE carburettors.
**Max Power** 348bhp (PS-DIN) (260 kW ISO) at 6750rpm.
**Max torque** 297lb ft (403 Nm) at 5500rpm.

### TRANSMISSION

5-speed manual.

| Gear | Ratio | mph/1000rpm |
|---|---|---|
| Top | 0.80 | 23.6 |
| 4th | 1.00 | 18.9 |
| 3rd | 1.34 | 14.1 |
| 2nd | 1.94 | 9.7 |
| 1st | 2.95 | 6.4 |

**Final drive ratio** 3.72:1. Limited slip differential.

### SUSPENSION

**Front,** independent, double wishbone, Koni adjustable telescopic dampers, anti-roll bar.
**Rear,** double wishbone, Koni adjustable telescopic dampers, anti-roll bar.

### STEERING

Rack and pinion, 1.8 turns lock to lock.

### BRAKES

**Front,** 11.8ins (300mm) dia ventilated discs, 4 piston calipers.
**Rear,** 11.6ins (295mm) dia ventilated discs, 4 piston calipers.

### WHEELS/TYRES

Split rim alloy, 210/60×16 Dunlop D98A slick tyres.

## PERFORMANCE

### MAXIMUM SPEEDS

| Gear | mph | km/h | rpm |
|---|---|---|---|
| Top (mean) | 157 | 253 | 6650 |
| (best) | 159 | 256 | 6750 |
| 4th | 132 | 213 | 7000 |
| 3rd | 99 | 159 | 7000 |
| 2nd | 68 | 109 | 7000 |
| 1st | 45 | 72 | 7000 |

### ACCELERATION FROM REST

| True mph | Time (secs) |
|---|---|
| 30 | 1.9 |
| 40 | 2.7 |
| 50 | 3.4 |
| 60 | 4.0 |
| 70 | 5.3 |
| 80 | 6.2 |
| 90 | 7.3 |
| 100 | 8.9 |
| 110 | 10.6 |
| 120 | 12.6 |
| 130 | 15.5 |
| 140 | 20.6 |

**Standing ¼ mile:** 12.2secs, 118mph
**Standing km:** 22.3secs, 142mph
**30-70mph thro' gears:** 3.4secs

### ACCELERATION IN EACH GEAR

| mph | Top | 4th | 3rd | 2nd |
|---|---|---|---|---|
| 10-30 | — | — | — | 2.3 |
| 20-40 | 6.6 | 4.1 | 2.9 | 1.8 |
| 30-50 | 5.2 | 3.5 | 2.6 | 1.5 |
| 40-60 | 4.5 | 3.4 | 2.4 | 1.4 |
| 50-70 | 4.9 | 3.6 | 2.0 | — |
| 60-80 | 4.9 | 3.2 | 1.9 | — |
| 70-90 | 5.1 | 2.9 | 2.0 | — |
| 80-100 | 5.0 | 2.9 | — | — |
| 90-110 | 5.0 | 3.2 | — | — |
| 100-120 | 5.5 | 3.8 | — | — |
| 110-130 | 6.3 | 4.7 | — | — |

# THE PERFORMANCE STORY

TVR'S TUSCAN FIRST SAW THE light of day at last year's Birmingham Motor Show. The successor to the stillborn ES — a 3.8-litre Holden V6-powered high performance version of the classically-styled S — the Tuscan was based around a heavily modified S chassis and used the same 3.5 litre Rover V8 seen in the well-established 350i.

The new engine bay was wide enough to accept the V8 in catalyst-equipped form, giving an increase in track of four inches. The wheelbase grew by two inches to match, giving legroom a welcome boost. The original semi-trailing arm rear suspension was ditched in favour of a double wishbone set-up. Outboard disc brakes replaced the drums fitted to the standard S. Clothing the whole package was a new group body, looking something like an S on steroids.

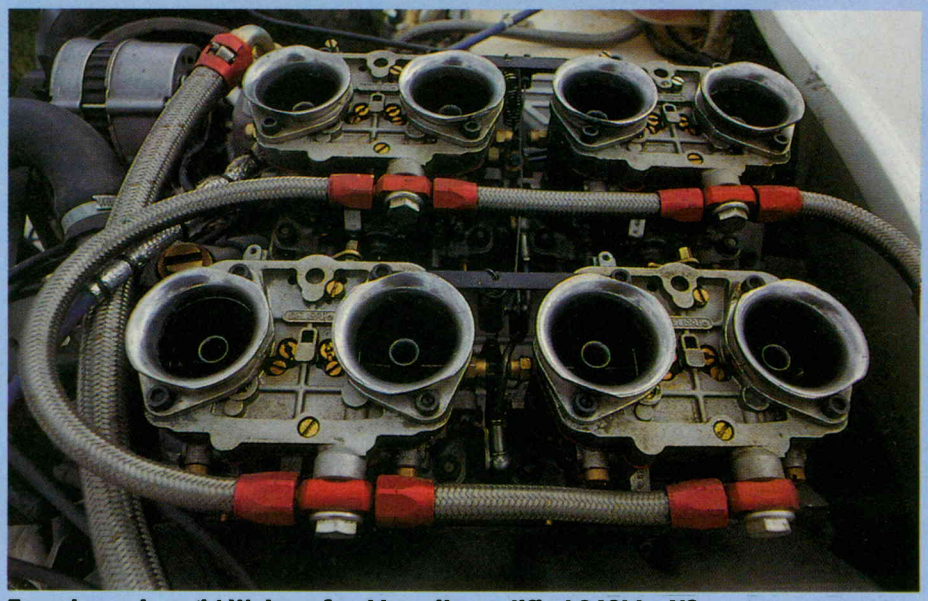
By the time the Tuscan was launched, TVR MD Peter Wheeler was already working on an exclusive race series for the new car. At first the plan was to produce both road and race cars concurrently. The racer was to run a 250bhp 3.9 litre version of the V8 and a mildly-modified chassis. TVR would put up a generous prize fund to attract top-flight drivers, and the ensuing publicity would be used to promote the road car.

But it didn't quite work out that way. Road car production was delayed while the body was re-styled, but race car assembly had to start by January this year for the series to stand any chance of getting off the ground in 1989. By now, though, the racing specification had changed. When the 36 bodyshells were completed in February, they were destined to become full-house single seaters — with a claimed 375bhp on tap.

TVR offered these 36 cars for sale at a heavily subsidised £16,000 plus VAT. To ensure they all competed in the 12-round Tuscan Challenge, any owner whose car didn't run in the first six races was to be invoiced for a further £16,000. Not surprisingly, this policy worked.

The focal point of a Tuscan challenge racer is its engine. Developing Testarossa-style punch is a heavily re-worked, all-aluminium alloy Rover V8. A new steel crankshaft, aluminium alloy con rods and forged pistons up the bore and stroke to 94mm x 80mm, for a capacity of 4441cc. The compression ratio is 12:1. The two valves-per-cylinder heads get larger valves, while the standard pushrod operation benefits from a new camshaft, solid valve lifters and roller rocker arms. The engine is dry-sumped, with a separate oil tank mounted in front of the firewall. Keeping things cool is a massive radiator and oil cooler matrix in the nose.

Breathing through four twin-choke down-draught Weber carbs, the engine exhausts into a large bore 4-2-1 system, exiting beneath the left side of the car. Ignition is a standard Lucas electronic system, but with a radically revised advance curve. Before the first car had turned a wheel, TVR was already claiming 375bhp at 6500rpm and 362lb ft of torque at 5000rpm. Along with several other competitors — including runaway Challenge leader Jeff Allam — Dave Haughin's engine



**Four down-draught Webers feed heavily modified 348bhp V8**

(as tested here) was built by Coventry-based John Eales. On the JE Motors dyno it makes a more realistic 348bhp at 6750rpm, with 297lb ft of torque at 5500rpm.

A Borg Warner T5 five-speed gearbox, to the same spec and with the same internal ratios as a Cosworth Sierra, feeds that torque to a limited slip rear diff. The final drive ratio is fixed by the series regulations at 3.72:1. On the obligatory OZ split rim alloy wheels and 210/60 x 16 Dunlop D98A slicks, the Tuscan hit 45, 68, 99 and 132mph through the gears at a safe 7000rpm limit.

Controlling that sort of horsepower meant making quite a few changes to the tubular steel spaceframe chassis. The double wishbone suspension already boasted front and rear anti-roll bars, but all pivot bushes were replaced with rose joints. The choice of springs and dampers was left to competitors — Haughin's car is equipped with race-spec alloy Koni units adjustable for both compression and rebound damping. And to cope with the need to stop the 2000lb beast under race conditions, huge AP ventilated discs and four-piston calipers are fitted all round.

The lightweight grp body keeps its standard windscreen and doors, but the passenger compartment is sealed off with a rigid tonneau cover to provide space for the battery, foam-filled alloy fuel tank and plumbed-in fire extinguisher system. Instrumentation is limited to a large rev counter, backed up by coolant, oil temperature and oil pressure dials. In line with RAC regulations, the Tuscans use full steel roll cages, Kevlar race seats with full six-point harnesses and external electrical master and extinguisher switches.

With a true 350bhp powering a car weighing about the same as a Ford Fiesta, the Tuscan just had to be fast. But quite *how* fast wasn't clear until we took it to the Milbrook test track. Drop the clutch with a shade under 3000rpm on the clock and the car takes off, with the rear slicks breaking traction without wasting time. Snatch second with the sweet, positive gearshift less than three seconds later and the rear tyres light up again, before launching man and machine towards the far end of the straight.

We only did three standing start runs in the interests of preserving the transmission, because engine and gearbox were the only parts of the car we hadn't managed to insure. Even so, a best 0-60mph time of 3.7 seconds is staggering for a two-wheel drive car and right up there in F40 territory. A mean in both directions gave us 0-60 in 4.0 seconds, a standing quarter mile in 12.2 seconds at 118mph and the kilometre from rest in 22.3 seconds at 142mph. That is quicker than any road car we have ever tested — even tuned and turbocharged exotica.

This blistering performance isn't at the expense of driveability, either. With cubic capacity rather than turbocharging used to develop all that torque, throttle response is instantaneous and precisely controllable. The tremendous torque spread is reflected in the in-gear acceleration figures. As an example, 40-60mph takes just 1.4 secs in second gear, 2.4 secs in third, 3.4 secs in fourth and 4.5 secs in top.

An open-topped car with a full roll cage sticking into the breeze is hardly going to cleave the air like the latest generation of slippery saloons. And certainly no Tuscan has ever been near a wind tunnel. So we were mightily impressed when Haughin's TVR recorded a mean average top speed of 157mph around Milbrook's two mile bowl, its engine spinning over just 100rpm below peak power revs of 6750. The Tuscan hit 159mph on the downwind leg and is certainly capable of more than 160mph, free from the bowl's speed-sapping tyre scrub.

This is very serious performance indeed, but with none of the fussiness and razor sharp power delivery that goes with it in some cars. That the Tuscan racers remain driveable in the heat of competition is as much a tribute to the superb flexibility of its 4.5 litre engine as to the competence of the chassis.


**Lees powers his ways to 12th place, unscathed. Seven Tuscans crashed out of the race**

◀ worst bumps on the circuit and you have to grab fourth in mid air to avoid over-revving. Over the hill and on to the fastest part of the course, the needle on the big, centrally-mounted rev counter creeps toward 6000rpm — 145mph in fifth gear.

It's quite wide here, because the short circuit sweeps in from the right at the bottom of the hill. This provides a convenient braking marker for Knicker Brook, another in-late, slightly off-camber but very quick right hander taken in fourth. There's a slim overtaking opportunity here, provided you get a clean exit from the chicane and creep out of the other car's slipstream at the right moment. But there's no-one within reach, and I'm not sure I'd be brave enough even if there were.

Clay Hill is tricky. A sweeping uphill left, the apex is completely blind over the brow so you steer from memory. Even if you get it right, the bumps on the other side are fearsome. A few laps later they claim a fellow competitor. Clay Hill leads into the double left at Druids, so there's not much to be gained by going 10/10ths rather than 9/10ths. I remain cautious through here.

On the brakes, but staying in fourth for Druids. The temptation is to hold the brakes and go in deep, but this time it's in early for the first of two apexes. Drift half way across the track on a steady throttle, then back in to complete the corner. Back hard on the gas, and under the Bailey bridge and on towards Lodge.

There are a couple of dips leading into the tight Lodge right hander, and the whole car gets light over each one. Heroes brake hard on the second hump, but I ease off on the first then brake and change down to third on the next.

**'Bravado evaporated with the sight of two cars embedded in the barrier and on fire'**

Lodge seems to tighten on the exit and is slippery and uneven. Diving in very late then showing caution with the throttle takes some practice.

Down the dip, up the other side and there's only Deer Leap before the start/finish straight. Snatch fourth early and, using all of the track, this left hand sweep is taken flat. The track is smoother a yard out from the apex, so I allow the Tuscan to drift to the edge, next to the pits. As I pull top gear again I can see I'm closing on a couple of cars exiting Old Hall. I reckon then that I won't go any faster and back in the paddock the stop watch confirms my suspicion. At 1:48.8, that single clear lap was 1.5secs quicker than anything else I could muster. At an average speed of 96.1mph around the 2.77 mile lap, I had secured a safe 17th place on the grid.

With such a long wait before the 2.15pm race start, I have plenty of time to question the wisdom of this whole exercise. These hours of mentally toing and froing come to one conclusion: the show must go on. With the cars finally lined up in the assembly area, I begin to yawn, the body's way of saying your nerves are shot to pieces. As we rumble off on the sighting lap I worry about the start, something I haven't practised. Haughin's advice to drop the clutch with 3500rpm on the clock sounds much too staightforward.

After forming up on the grid — tucked hard against the pit wall on the 7th row — we head off for the warm-up lap proper. Ahead, cars are weaving from side to side to warm up tyres, but with us all bunched together it looks too risky. Pulling up in my grid position, thoughts of the car's Silverstone accident drift back. I resolve to blame in advance any lack of race pace on the need to bring the car back in one piece. The truth is, I'm terrified.

The lights flash green and I drop the clutch as instructed. The rear tyres spin furiously and the car doesn't move. Snatch the gearlever back into second, but still they spin. By the time I've backed-off and gained traction two rows have roared past. I slide up the inside at Old Hall — simply because there's nowhere else to go — and am amazed to find I've recovered two places.

As we head down the hill towards Cascades, TVR factory driver Steve Cole has already spun, but rejoins after the pack has gone through. By now the cars have spread out into some semblance of order. I'm just behind car 1, driven by fellow journalist Ryan Baptiste. I follow him round, but going into Old Hall at the end of the lap the tail of Baptiste's car gracefully drifts sideways. I head for the inside and am aware of a plume of dust to my left. ▶

◀ Looking in the mirror on the exit I see the green and yellow car back on the track.

I'm at the back of a group of three now, two of which I don't recognise. There's a yellow flag out through Shell, but I can't see what it's for. Accelerating hard out of the chicane the thought of overtaking into Knicker Brook flashes then disappears as waved yellow flags appear over the brow.

The two cars in front are so close together I can't see my way through. The programme of destruction continues. Barely a lap goes by without a yellow flag and another Tuscan on the grass. It's about now that I realise Oulton Park isn't the ideal place for 350bhp monsters and drivers fighting for precious points.

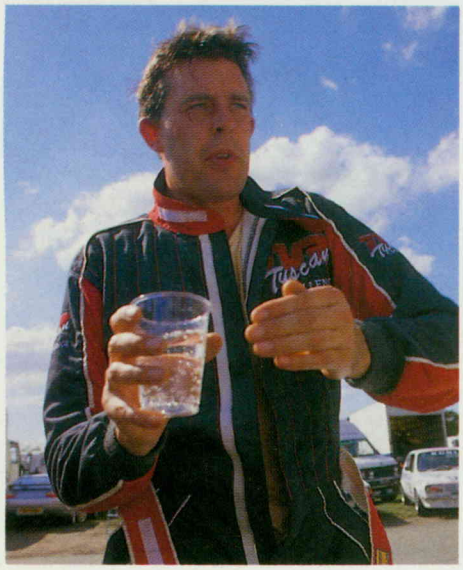
Lap five and I feel a sudden attack of bravery, easing past on the inside going into Lodge. As the back fishtails wildly on the exit I regret it, but the car's antics persuade the other driver to stay behind through Deer Leap. My moment of glory lasts for precisely one more lap before I come across a car rejoining the track in front of me at the exit of Cascades. A momentary lift and the TVR I had overtaken sails past on the inside. So much for my overtaking manoeuvre!

With just two laps to run I couldn't see much chance of regaining that place. Any lingering thoughts of bravado evaporated with the sight of two cars embedded in the barrier and on fire at consecutive corners. I was intensely relieved to see the chequered flag, let me tell you.

Seven Tuscans crashed, one of them on the slowing down lap. Another had broken down on the warm-up lap. No-one was seriously hurt, but that left just 16 finishers from the 27-strong grid. That was almost a repeat of the Silverstone casualty rate — but not all in the one incident. I finished unscathed in 12th place with a best lap of 1:49.6, almost a second slower than my qualifying time.

Dave Haughin was clearly relieved to see the car back in one piece, since the next race was in seven days' time at Castle Coombe. I was glad it was over, but those post race thoughts (familiar from my bike racing days) started running through my mind. What if I hadn't messed up the start? What if I'd only made more of an effort to pass in the first few laps?

It was a couple of days later that the 'what ifs' extended further. What if I was asked to do another race? And that's precisely the problem with motor sport. The only way to resolve all the questions raised during one race is to do the next one . . .



With a Sprintex supercharger, the TVR 350SX develops 42 per cent more power than the standard 350i. You can even have the engine slotted into a 400 bodyshell. Howard Lees reports

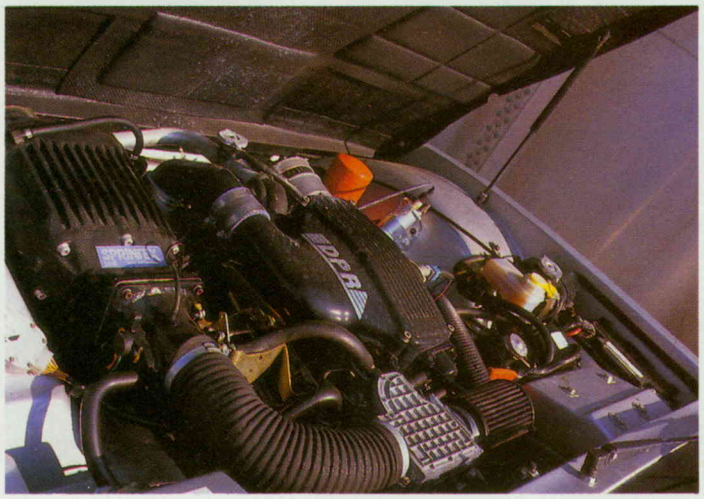

STAN PAPIOR

# LEVEL 42

AS IF RUNNING A DEALERSHIP AND two Tuscan challenge cars wasn't enough, Dave Haughin's Northern TVR centre has developed a supercharged TVR 350i. Designed to offer 400SE performance for less money, the conversion centres on a Sprintex screw-type supercharger.

We've tried one of Haughin's Sprintex cars before (*Autocar & Motor*, 30 March 1989), and were tremendously impressed by the spread of power and engine response. But further work has increased power output to 270bhp at 5500rpm (the same as the 400's predecessor, the 390SE) and a full 42 per cent more than a standard 350i. More impressive is the 290lb ft at 3500rpm peak torque.

The Sprintex twin screw supercharger consists basically of a pair of helical screw gears which, while geared together externally, do not make contact with each other. The space between the rotors contracts between inlet and outlet — at opposite ends of the casing —



**TVR chassis is well-blanced and agile (opposite) while interior evokes traditional values with leather and wood (above). Sprintex screw-type supercharger boosts 3.5-litre V8's output to 270bhp at 5500rpm. Peak torque of 390lb ft arrives at 3500rpm**

compressing the intake charge. Driven by a toothed belt from the crankshaft nose, in 350SX guise it develops a little more than 6psi.

Haughin lowers the 350i engine's compression ratio to 9.5:1 with a pair of special head gaskets, then flows the ports and fits a specially-cast manifold to the intake side. With a reprogrammed ECU to look after the modified fuel injection and ignition curves, the only other mod required is the relocation of the power steering pump. To date Haughin has sold 13 Sprintex conversions, including his latest project — an even more powerful 3.9-litre version.

This particular 350 demonstrator has done some hard miles, demonstrated by the creaks and groans from the shell over bumpy roads and a set of fat Bridgestone RE71s that had earned their living. The suspension, too, while delivering the goods on smooth roads, was not at its best when the going got rough. But the whole drivetrain was still able to shine through.

What impresses most is the tremendous low-down punch of the 3.5-litre V8. Floor the throttle with 1500rpm on the clock and the car just squats down at the rear and goes — the marvellous V8 sound gradually giving way to the supercharger whine as the revs rise through the 3500 peak torque mark and rapidly round to the 6400rpm safe limit. In fourth the car will pull smoothly and strongly from 10mph right round to 120, with every 20mph increment from 30mph to 90mph taking under five seconds. The performance through the other gears is similarly impressive; for example, a 50-70mph time of 3.4 secs in third.

From a standing start, the 350SX is all too eager to spin its rear wheels. Haughin was experimenting with a 3.54 ratio rear diff in place of the standard 3.31 unit and this meant that 60mph couldn't quite be reached in second gear. That's why we recorded a time of 6.3 secs — the same as the standard 350i — but the 30-70 time through the gears of 5.7 secs exactly matches the 390SE.

The recorded speed was 142mph, only 1mph down on the 390SE with the engine spinning over well beyond peak power rpm. Fitting the taller differential would certainly help both traction off the line and the maximum speed.

Coupled to a slick five-speed gearbox and light, progressive clutch the SX is a joy to drive. There's as much or as little power as you need, in any gear and at just about any speed. The throttle response is instant yet progressive, and the SX is one of the few cars that can be driven into oversteer and controlled on the throttle alone. And for the sort of performance it offers it's not thirsty. Including our speed testing we averaged 21mpg, better than both the road-tested 350i and 390SE.

The conversion costs £4312 fitted, although Haughin recommends a £1380 package of suspension and brake mods to cope with the extra power on the base 350. Alternatively the 350SX engine can be slotted into a new 400 bodyshell (like our demonstrator) for £5118, in which case the brakes and suspension are already up to the job. We know how well balanced and agile the TVR chassis is when it's at its best, so it's clear Haughin's car has suffered at the hands of others. But despite the well-used chassis, the 350SX stacks up as a very impressive package with a truly magnificent engine.■

## TVR 350 SX

**ENGINE**
Longitudinal, front, rear-wheel drive.
**Capacity** 3528cc, eight cylinders in 90deg vee.
**Bore** 88.9mm, **stroke** 77.1mm
**Compression ratio** 9.5:1.
**Heads/block** Al alloy/al alloy
**Valve gear** ohv, 2 valves per cylinder.
**Ignition and fuel** Breakerless Electronic ignition, Lucas L electronic fuel injection, Sprintex S102 supercharger.
**Max Power** 270bhp (PS-DIN) (199 kW ISO) at 5500rpm.
**Max torque** 290lb ft (393 Nm) at 3500rpm.

**TRANSMISSION**
5-speed manual.

| Gear | Ratio | mph/1000rpm |
|---|---|---|
| Top | 0.79 | 24.3 |
| 4th | 1.00 | 19.2 |
| 3rd | 1.39 | 13.8 |
| 2nd | 2.09 | 9.2 |
| 1st | 3.32 | 5.6 |

**Final drive ratio** 3.54:1. Limited slip differential.

**SUSPENSION**
**Front,** independent, double wishbone, coil springs, telescopic dampers, anti-roll bar.
**Rear,** independent double wishbones, telescopic dampers, anti-roll bar.

**STEERING**
Rack and pinion, power assisted, 3.5 turns lock to lock.

**BRAKES**
**Front,** 10.6ins (269mm) dia ventilated discs.
**Rear,** 10.9ins (277mm) dia ventilated discs.

**WHEELS/TYRES**
Oz split rim aluminium 8ins rims, 225/50VR15 Bridgestone RE 71 tyres.

**SOLD BY**
Northern TVR Centre, 2 Holker Street
Barrow-in-Furness
Tel: (0229) 22385.

## PERFORMANCE

**MAXIMUM SPEEDS**

| Gear | mph | km/h | rpm |
|---|---|---|---|
| Top (mean) | 142 | 228 | 5850 |
| (best) | 143 | 230 | 5900 |
| 4th | 123 | 198 | 6400 |
| 3rd | 88 | 142 | 6400 |
| 2nd | 59 | 95 | 6400 |
| 1st | 36 | 58 | 6400 |

**ACCELERATION FROM REST**

| True mph | Time (secs) | Speedo mph |
|---|---|---|
| 30 | 2.4 | 32 |
| 40 | 3.7 | 42 |
| 50 | 4.8 | 53 |
| 60 | 6.3 | 64 |
| 70 | 8.1 | 75 |
| 80 | 10.0 | 86 |
| 90 | 12.7 | 97 |
| 100 | 15.8 | 108 |
| 110 | 19.7 | 120 |
| 120 | 25.4 | 130 |

**Standing ¼ mile:** 14.7secs, 97mph
**Standing km:** 26.6secs, 122mph
**30-70mph thro' gears:** 5.7secs

**ACCELERATION IN EACH GEAR**

| mph | Top | 4th | 3rd | 2nd |
|---|---|---|---|---|
| 10-30 | — | 6.4 | 4.2 | 2.6 |
| 20-40 | 8.6 | 5.3 | 3.5 | 2.3 |
| 30-50 | 7.7 | 5.0 | 3.3 | 2.3 |
| 40-60 | 7.2 | 4.9 | 3.3 | 2.7 |
| 50-70 | 7.1 | 4.6 | 3.4 | — |
| 60-80 | 7.0 | 4.6 | 3.8 | — |
| 70-90 | 7.3 | 4.9 | 4.7 | — |
| 80-100 | 8.1 | 5.9 | — | — |
| 90-110 | 9.4 | 6.9 | — | — |
| 100-120 | 11.6 | 9.3 | — | — |

**FUEL CONSUMPTION**
**Overall mpg:** 21.0 (13.4 litres/100km)