



ment. The result is so neat that you'd think the car was designed for it from the ground up. Apart from the fitting of the compressor, the only other change to the engine is that the compression ratio is lowered from 9.75 to 8.8:1.

The Sprintex conversion takes the 350i's power output from 197bhp/5,280rpm to 260/5,100, while torque rises from 220lb ft/4,000rpm to 294lb ft virtually constant between 3,000 and 4,000rpm. This compares with the 275bhp/5,500rpm and 270lb ft/3,500rpm of the 390SE.

The cost of the conversion to the engine is £3,967.50 (inc VAT), which takes the price of the car up from £18,015 to £21,982.50. The 390SE costs £22,995.

However, the full SX pack, as tested, costs £6,253.13, whacking the full price of the car well beyond £24,000. This kit includes modified suspension, with stiffer (gas-filled) dampers from Spax and uprated springs. In fact, this is virtually a conversion to 390 specification, and included in the package are the 390's uprated brake calipers with larger pistons, and also Aeroquip hoses for the brakes and clutch. An uprated clutch is available as an extra-cost option.

The engines of the 350SX and the 390SE originate from the same source, and the two cars have similar maximum speeds (both around 140mph, but see below).

The 390 has an undeniable edge in outright acceleration. An error at the proof-reading stage of our June issue led to obsolete figures for the 390 appearing in print, for which I apologise (as it was partly my fault). The true figures are those published in our September 1987 issue, with 0-60mph in only 4.9sec, and 0-100 in 12.7.

We have reason to believe that the SX was not performing at its best on the day of our test, limiting its top speed at Millbrook's bowl to 135mph (the 390's figure there was 144.5), and the 0-60mph sprint to 5.9sec, with 0-100 in 15.4.

However, in mid-range acceleration, the tables are definitely turned, the SX 350 covering 40-60mph in 4th gear in 4.6sec (5.3 for the 390) and 70-90mph in 4.9 (5.7). In top gear, the figures are respectively 7.4 and 7.4 for the SX and 7.4 and 9.5 for the 390.

Why should you, the committed TVR purchaser, choose a Sprintex-converted car instead of the factory's bored-out, normally-aspirated alternative? Perhaps you prefer the high-pitched scream of a supercharger to the deep growl of the 390. In fact, this turbine whine is caused by the drive belt, and can be virtually eliminated; some customers *do* like it.

More seriously, though, Haughin's believe there are two important factors in the modified car's favour. One is the SX's different torque characteristics, which *are* detectable on the road and very useful for quick bursts of acceleration to get past other traffic. The supercharged engine is noticeably smoother, picking up cleanly from low revs and pulling away with no sign of distress in circumstances which would have the normally-aspirated car wheezing uncomfortably unless a lower gear were selected. There may be no great difference in actual performance, but the 350 SX achieves its results with a lot less effort required of its driver.

The other reason is perhaps less convincing: suppose you want to sell your TVR but keep your supercharger, removing it is a relatively easy

operation.

Theoretically, the SX should handle and ride in a virtually identical manner to the 390, and we shall have to rely on theory for the time being. Our test car had had its dampers wound up almost off the scale as a precautionary measure for Millbrook. We did not know this at the time, neither did we know that the settings were not returned to normal thereafter.

What happened subsequently was that Hales and I both drove the car, and independently reached the same conclusions: superb, flawless behaviour on smooth surfaces, but coupled to an unacceptably harsh low-speed ride. Worse than that, at speed over B-roads, the reaction of the chassis to bumps, hollows and pronounced cambers was simply to jolt upwards and/or sideways, with vicious kickback

through the steering completing the range of unmanageable behaviour.

If these, we asked, are supposed to be standard 390 settings, who is kidding whom? True, the 390 will hop and skip a bit on bumpy roads, but to a much lesser extent than this car, and its overall dynamics are highly impressive. Then the full story emerged.

Since we have not yet driven the SX 350 in its definitive form, we don't feel fully able to pass judgment on it. Clearly, there is plenty of potential, and the theory behind it seems sound enough. If it can *match* the 390, a very quick car, in outright performance, rather than merely get close, then its advantage of greater tractability does make it a viable alternative, especially for the driver who spends more than a small proportion of his driving time in slow-moving traffic.

TVR S TURBO



LIKE A lot of things in life, these two opportunities happened the wrong way round. If I'd tested the TVR S turbo racer at Millbrook first, I'd have made a better start at Prescott hillclimb. Talk about in at the deep end. Now I know how just Chris Searle feels.

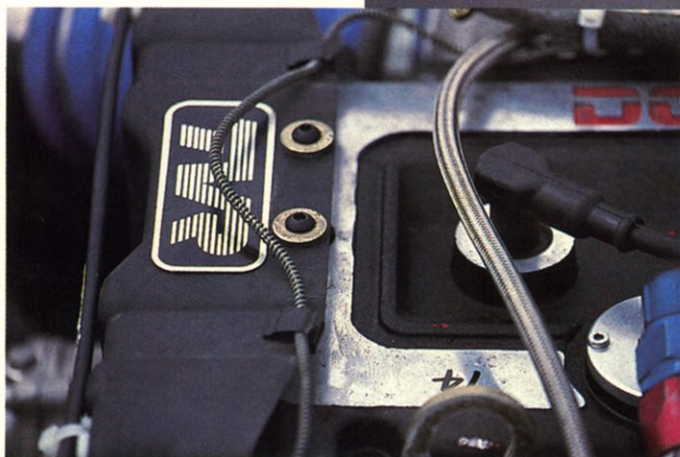
Relating them in reverse order, performance testing the device was actually quite easy once you became used to the sheer assault on the senses that 500bhp in about 800kg can bring about. With fifth wheel strapped to the thin fibreglass door, and Production Ed Simon Arron wedged in the passenger space clutching the test equipment, simply bring the Cosworth turbo engine up to 7,000rpm and sidestep the clutch. The result is explosive. The wheels spin for what seems like a fraction of a second, the engine note dips, then surges with a hard flat bark from the exhaust belching a foot beneath the right elbow. The boost gauge flicks round to 1.9bar, tacho ahead sags

from six five to five, then climbs instantly to seven, stays there as wheelspin becomes a clutch. In less than a second, the tyres gain a hold on the tarmac, stop spinning. You can feel them bite, and the tail squats as the revs start to climb again. Seven thousand five. Punch away the stubby lever that controls the Formula One Hewland. The spring bias guides it right and two inches forward into second. Sixty has gone now, annihilated in three seconds. Second gear – and two – and, convulse the shoulder and wrist-flick the gear-lever back to third. As fast as you can possibly move the hand. Boost needle flies back round the scale, tacho soars to 7,700rpm, fourth gear for a couple of seconds – 100mph comes and goes in seven and a bit, and into top.

Just over 12 seconds after I drop the clutch the car is hitting the rev limiter in fifth gear – a maximum with these ratios – of 133mph. It takes more time to read than it did to do it.

The car is a cunning clone. Underneath the lightweight fibreglass body lies a standard S chassis, true. Up in the snout lies a Sierra Cosworth RS500 engine which had been tried, then rejected as too expensive and heat generating, for the forthcoming ES production model. From the outside, if

you ignore the carbon fibre rear wing sprouting like a bird table from the boot, the car looks harmless enough. There aren't any huge wheel arches or the like to give the game away, but there's no denying that to reach 100mph in just over seven seconds and to win races as it has this season, the car is obviously something special. On the acceleration contest, it's the fastest two-wheel-drive car we've ever tested, certainly up to 60mph. Mark Rennison's championship win-



ning rallycross RS200 Ford was a second quicker to 100mph, with a more sophisticated, pure race 2.1-litre engine and of course four-wheel-drive. Our colleagues at *Motor* once tested a 700bhp Allard which reached 100mph in 5.8sec, but it took 3.4sec to reach 60. Such comparisons are perhaps academic. The TVR is mind-warping, shoulder-bruising quick.

For TVR it carries on the racing tradition which has been an essential part of the company since 1947, but it looks almost standard, which is always better for business.

The most cunning bit is the presence of the aforementioned Hewland FGB Formula One gearbox, which helps more than a little with the shattering, electric switch gearshifts. A remarkable piece of engineering this, available to anyone over the counter at Hewland Engineering of Maidenhead; you simply hand over a cheque for £3,933 plus VAT and walk out (one man can just about carry it) with a piece of reliable Grand Prix technology for a fraction of the

total of a Grand Prix car. The magnesium case also contains the final drive, limited slip differential, and a set of five gear ratios which can be changed to suit a particular circuit just by undoing the end cover.

In the turbo S, the FGB is mounted at the rear in Porsche 928/Alfetta style, driving the wheels through double jointed halfshafts. Formula One uprights, stub axles and brakes are suspended on twin wishbones and forward-facing links in true, time-honoured, single seater racing car fashion. Drive from the engine is via a short propeller shaft which turns at engine speed – I thought about that as I sat next to the transmission tunnel. Completing the drivetrain, there's a Formula One triple-plate clutch which lives in the bellhousing on the back of the engine.

The motive power is a Ford FS500 Evolution Cosworth saloon car engine tweaked by Terry Hoyle to full Group A race specification, in which form it develops between 470-500bhp at around 6,800rpm. A dry sump system is fitted,

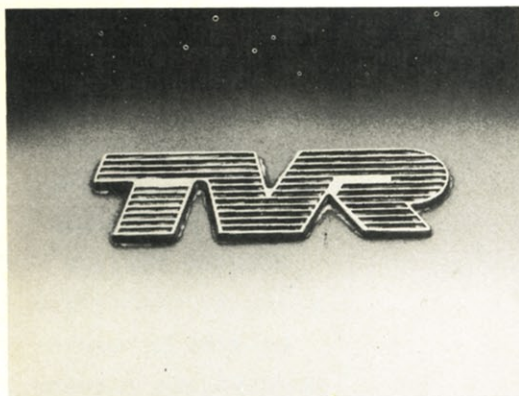
which helps keep the turbo supplied with oil at 80psi, rather than the more normal 50, and in addition, the slimmer sump allows the engine to sit lower in the chassis. The Ford engine in wet sump form is rather tall, and would not fit easily under the TVR's low bonnet. Neither, incidentally, would the M16 Rover two-litre twin cam that is now powering Morgan's Plus Four.

And so to Prescott. Yours truly was to do a 'demonstration run' in between the real action, along with *Top Gear*'s William Woollard, who was making a programme to celebrate Prescott's 50th anniversary. Demonstration sounds rather more important than it really was. In fact TVR had made an entry proper, but the organisers asked them to withdraw because such a one-off appearance might mess up the regular competitors' season-long points gathering aspirations. I suppose that should be taken as a compliment. Perhaps they didn't know I had never attempted a hillclimb before . . .

Trying it was a real eye

opener, although experience should have told me that *any* sport at top level is so very specialised. Standing down at the start, I watched British champion Martyn Griffiths warming up his specially-built Pilbeam single seater. Looking outwardly similar to a Formula One car, and powered by an alcohol-burning Hart turbo Formula One engine, it is reputed to have cost over £150,000. Griffiths winds up the engine and drops the clutch. Wheelspin. Then he stamps the brakes and slithers to a halt, front wheels locked. More revs, more wheelspin, brakes, slithers to a halt. The process is repeated at least three or four times.

"When the tyres start to squeal," said a spectating expert, "then they're getting sticky." Griffiths' tyres began to squeal, and his last effort lifted the front wheels of his car a good six inches off the ground. Then he was gone. No wheelspin or slithering about, one moment he was there, next he wasn't. It's worth going just to see the top 10 hillclimb professionals in action.



They are usually all separated at the end of the day by about three tenths of a second. Not only that but the civilised, helpful atmosphere that prevails amongst competitor and official alike was a breath of fresh air after the jobsworth mentality at certain circuits.

So now I knew how to do it. I had walked the course earlier in the day, naturally, along with a throng of other competitors, and I began to wonder privately at the sense of all this. The road is barely 10 feet wide in places and there are trees everywhere. And the three hairpins looked as if they would need three point turning. "Lots of people went off here yesterday," said one. As we walked the final, climbing right hander that led to the finish line, I couldn't see why. Perhaps it was the camber.

My turn. Not enough revs – a wimpy 4,000 and the engine went contemptuously to sleep.

First hairpin and the brakes felt dead and useless. Hillclimbers fit soft pads that don't need warming. First hairpin and massive understeer restricts progress. Hillclimbers have special wide track front suspension. Second hairpin climbs steeply; one rear wheel spins away Cosworth power in a haze of tyre smoke as the wheel dangles in the air, jacked up by an opposite corner that is two feet higher on the track. Hillclimbers fit a different sort of limited-slip differential. Blast up through the trees, trying desperately to remember which corner came next. Is this the third hairpin? No it's not. Dammit, I needn't have lifted. Up the hill beyond H3 and take it easy, remember they were falling off yesterday. Turn smoothly and tread the throttle early to gain a good exit. The car refuses to obey and goes straight off onto the grass. Hillclimbers fit super

soft tyres that warm up during the start line bunny hop procedure. Hmm. Return, red-faced but without any serious harm, to the paddock.

"It was only supposed to be a demonstration," said TVR's Engineer Schirle, with only a hint of a failed sense of humour. "Changing it all to suit a hill would have involved a virtual rebuild, and then all back to race spec a week later."

Nevertheless, he did go and buy some of the gumball Avons that the other guys were using. A more serious problem, however, was a lack of boost from the Ford's turbo. The car was still quick, frighteningly so between the flashing tree trunks, but pressure was down to half the 2.0bar which we could use for a short 1,127yd distance up Prescott. It's a familiar problem, and Schirle and his assistant John Swinscoe changed the capsule which controls the wastegate. Only trouble was, we couldn't try it anywhere to find out if the problem was gone.

Another go. More revs, wheelspin, stamp the brakes to warm them. And again. I was beginning to feel like a professional, but I couldn't hear any squealing. Up to the lights, six thousand revs and go. Not quite enough, but better. Through second, and third, round the long left hander between the sleeper-lined banks not three feet away on either side, slide, correct, then hard on the brakes ready for hairpin one. Still understeer, but the

tyres certainly do work straightaway. Up to fourth before the second hairpin. Still plenty of wheelspin, but faster out in first gear. Through the trees, hairpin three, and comfortably faster than before through the right hander, but stay on the track this time, and across the finish line 49 seconds later.

Still no boost, so whatever small gremlin had entered the system had *not* been banished by the new wastegate capsule. The time was better too. Had we been competing properly I'd have been about fourth in the modified sports car class, behind the Ford BDA-powered Lotus Sevens.

I had enjoyed it too, but all too apparent was the very specialised setup that you need in order to be competitive; both that, and knowing where the hill goes and the lines to take to get the best traction – more important than classic apices, so I'm told.

I think I'll stick to circuits though, and so too will the TVR. It did seem to be an awful long time to spend just for three minutes and 20 seconds of motor sport, but that doesn't make it easy though, no sir. If anything, it makes it harder, because we are talking in hundredths here, and one tiny mistake will spoil the whole run. They found the boost in time for John Kent to take the car to a win a week later, minus the sticky tyres. They would have melted before the end of lap one . . .

PERFORMANCE

TVR 420 SEAC

Maximum speed, 150mph

Acceleration through gears, sec

0-30mph	0-40mph	0-50mph	0-60mph	0-70mph	0-80mph	0-90mph	0-100mph	0-110mph	0-120mph
1.9	2.8	3.8	4.7	6.3	8.0	10.0	12.3	15.2	18.7

Acceleration in fourth, sec

40-60mph	50-70mph	60-80mph	70-90mph	80-100mph	90-110mph	100-120mph
5.2	5.3	5.6	5.6	5.4	5.8	6.8

Acceleration in fifth, sec

40-60mph	50-70mph	60-80mph	70-90mph	80-100mph	90-110mph
7.0	7.8	8.3	9.2	10.5	11.7

TVR S TURBO RACER

Maximum speed, mph. Limited by gearing to 133mph at Millbrook. Theoretical maximum 180+mph

Acceleration through gears, sec

0-30mph	0-40mph	0-50mph	0-60mph	0-70mph	0-80mph	0-90mph	0-100mph	0-110mph	0-120mph	0-130mph
1.8	2.3	2.9	3.5	4.2	5.2	6.1	7.2	8.5	10.2	11.9

TVR 350SX

Maximum speed, 135mph

Acceleration through gears, sec

0-30mph	0-40mph	0-50mph	0-60mph	0-70mph	0-80mph	0-90mph	0-100mph	0-110mph
2.2	3.3	4.4	5.9	7.7	9.6	12.2	15.4	19.5

Acceleration in fourth, sec

40-60mph	50-70mph	60-80mph	70-90mph	80-100mph	90-110mph
4.6	4.7	4.7	4.9	5.5	6.6

Acceleration in fifth, sec

40-60mph	50-70mph	60-80mph	70-90mph	80-100mph	90-110mph
7.4	7.1	6.2	7.4	7.7	8.6