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420SEAC
SPAX
DRIVER
STEVE COLE
35
TVR
Autocolor

UPHOLDING TRADITION

TVRs have always been quick both on and off the track, and the latest in the illustrious line, the 420 SEAC, is no exception — in fact, it's the quickest yet. Graham Jones and Andrew Kirk went behind the wheel of the yellow racer

The 40-year history of TVR is inextricably linked with motor sport. Not surprising, really, when one considers that handling and performance have always been hallmarks of these Blackpool-built machines. The eyeball-grabbing yellow flying machine seen on these pages is the quickest, most powerful TVR to hit the race tracks of this country. More significant, though, is the fact that this is not some thinly disguised sports racer, but a genuine, production road-car based machine. Granted, it may not look like too many road-going TVRs you have seen, but it is in fact based closely on the King Kong of the TVR range, the 420 SEAC. The numbers and letters give the clue to this model's evolution. The '420' denotes the approximate engine displacement while the initials 'SEAC' stand for Special Equipment Aramid Composite.

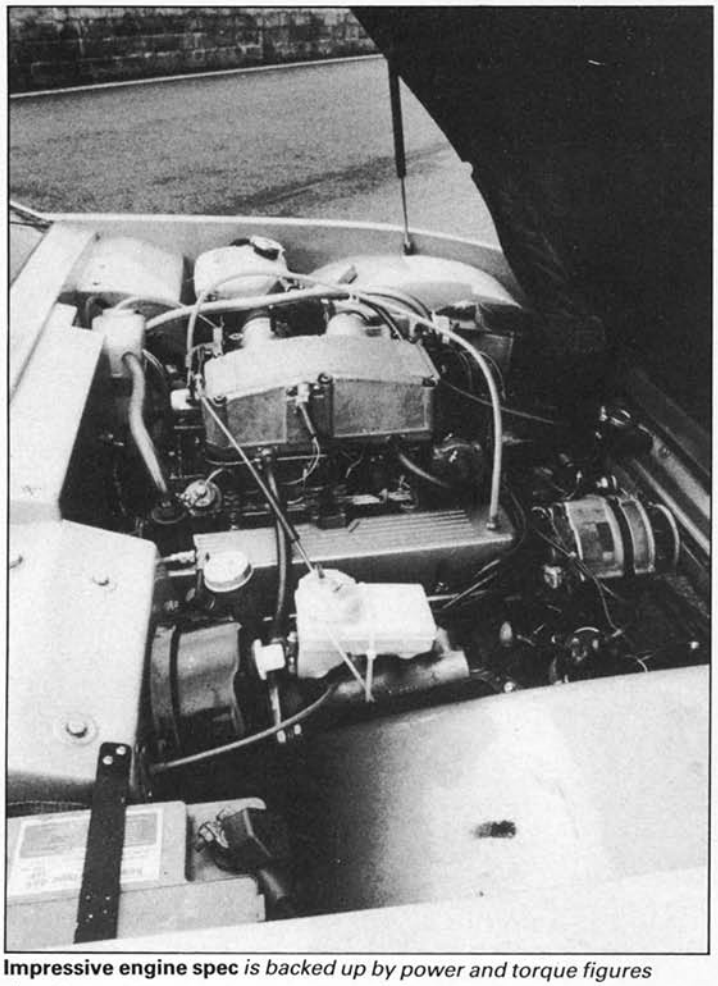
As far as the engine is concerned, it is a bored and stroked version of the 3528cc Rover V8 which provides the prime motive force for TVR's present range of cars. Specifically, the bore is increased from 88.9mm to 93.5mm and the stroke, by the expedient of fitting a new crankshaft, goes from 71.12mm to 77.0mm. The result is a displacement of 4228cc. Other modifications to the engine included further gasflowing of the V8's rather restrictive cylinder heads plus the incorporation of larger valves and stronger springs, a larger capacity sump and uprated lubrication system with thermostatically controlled oil cooler. All TVR engines are painstakingly built by hand and then run on the dynomometer, the average 420 unit producing 300bhp at 5500rpm and 290lb ft at 4500rpm.

With such a powerhouse under the bonnet — maximum speed in road-going trim is said to be in excess of 165mph with a 0-60mph time below 6secs — clearly aerodynamics are of considerable importance. For this reason, a massive bootlid-mounted spoiler (adjustable on the race car) was fitted and the TVR's overall body shape smoothed out by shortening the nose and flaring the wheelarches to accept wider alloy wheels and Bridgestone RE71 uni-directional radials.

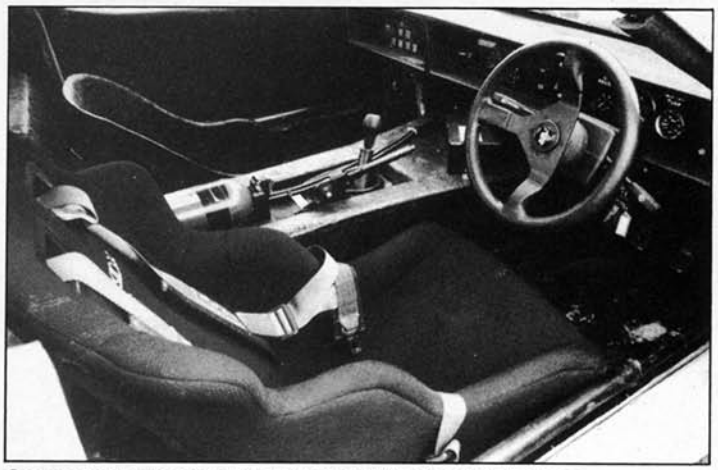
TVR body shells have traditionally been made of glass-reinforced polyester, hand-laid into the moulds. And it is here where the 'SEAC' part of the nomenclature comes in, for having developed an advanced technical specification for the new model, the next area of development had to be the very material from which the car would be formed. Slowly an aramid composite construction was evolved which used, among other thngs, Kevlar, the result being a body shell which was significantly lighter than its glass-fibre counterpart but equally strong.

Most of the development work ▶

TVR's *Special Equipment Aramid Composite car features latest materials in its bodyshell*
Engine *is 4228cc a Rover V8*



Impressive engine spec *is backed up by power and torque figures*



Seats and harnesses *are just some of the interior changes*

Road and race 420SEACs *have shortened noses and flared arches*

◀ on the evolving SEAC model was carried out using the racer as a mobile test bed. Ironically, though, the prototype shell was produced by the simple expedient of modifying an existing 350 body, and grafting on the new nose and rear spoiler.

We use the term 'ironically', because the racer ended up tipping the scales at over 1 ton. Even so, this handicap didn't prevent driver Steve Cole from gunning the SEAC to 19 wins in 24 races in 1986.

The brake system on road car and racer incorporates ventilated front discs and larger AP four-pot calipers. Rear calipers on the racer are more specialised, being of lightweight magnesium, while uprated pads are included front and rear. TVR's own fabricated trailing-arm rear suspension was discarded in favour of a four-point-mounted lower wishbone arrangement running from the fabricated differential carrier to the hubs. This same system has now been productionised.

The suspension geometry and angles are all identical to the road car but the racer runs increased castor for better grip. There are several Rose jointed suspension members instead of normal rubber bushes and different rate springs, uprated dampers and thicker anti-roll bars but the pick-up points are all similar.

The 420SEAC racer was built in February 1986 with the intention of running it in the Production Sports Car Championship in the BARC Northern section. After several races TVR fell foul of the regulations regarding producing sufficient numbers. Consequently the car was run in the Modified Production Sports Car category, but mid-season TVR switched to the BARC Saloon and Sports Car Challenge where the car won its class despite missing a number of races.

Much of the track success can be attributed to good preparation and a key figure in this area is development engineer Chris Serle, who ensured that the car was properly sorted in the first place. The tyres, for instance, are fully matched to the suspension geometry by carefully studying the tyre characteristics beforehand.

The engine has a special strengthened block fitted with a Crane camshaft, it has the largest valves that can be machined into the heads and runs a compression ratio of 11.2-to-1. Cosworth pistons, a stock TVR 4.2-litre crankshaft tuftrided and crossdrilled, a lightened flywheel (it weighs only 24lb compared with the standard 37lb) and a competition clutch. It's also fitted with twin plenum chambers with large airflow meter and specially developed injectors from Bosch. The engine is dry sumped with an external oil pump. There is a triple fuel pump system in the boot which is necessarily quite complex. One of the problems with the Rover engine is that the fuel rail that feeds the injectors is inside the vee of the engine, very close to the plenum chamber, and hence the fuel is continually being heated and is therefore on the point of vaporising. This problem was cured by the fitment of a fuel cooler.

The impressive engine specification is backed up by an equally healthy set of power and torque figures. The 4.2-litre Rover V8 in full race trim develops 365bhp at 6800rpm and 305lb ft torque at 4800rpm. Torque remains at 290lb ft virtually throughout the power range. There is only a very small tail-off in torque towards the top according to Serle, due to the characteristics of this particular engine.

TVR builds its race engines on the Blackpool premises. They are taken apart, balanced, fitted with Cosworth pistons and then painstakingly reassembled and dyno tested.

The gearbox in the racer is fitted with a straight-cut gear cluster in the normal Rover casting and is meticulously assembled. TVR also fits strengthened selectors but basically it's standard configuration with strengthened internals. The ratios are slightly closer, but they are not interchangeable ratios in this gearbox.

The on-paper specification of the racer suggests highly competitive performance and *Autocar* recently sampled TVR's full-blooded production racer at the MIRA test facility to put its straightline sprinting ability into perspective.

On slicks, acceleration is especially vivid, though trying to transmit 365bhp through to the rear wheels, even in the dry, results in considerable wheelspin when accelerating hard from rest. Even so, 30mph appears in only 1.9secs and 60mph in a very rapid 4.6secs. The engine is only just getting into its stride at this point and goes on to 100mph in a mere 10.7secs. Top speed depends entirely on the chosen gearing but the test vehicle managed a mean of 147mph at 6500rpm on the day. That could very easily be improved upon. ■

PERFORMANCE

TVR 420 SEAC RACER

MAXIMUM SPEEDS

Gear	mph	rpm
Top	147	6500
4th	125	6800
3rd	100	6800
2nd	80	6800
1st	43	6800

Acceleration from rest

True mph	Time (sec)
30	1.9
40	2.6
50	3.4
60	4.6
70	5.7
80	7.4
90	9.0
100	10.7
110	13.2
120	15.7
130	20.8

Standing ¼ mile: 13.5sec, 105mph
Standing km: 25.6sec, 130mph

Acceleration in each gear

mph	Top	4th	3rd	2nd
10-30	—	—	—	4.1
20-40	—	—	4.6	3.1
30-50	—	5.2	4.5	2.8
40-60	7.5	6.2	4.7	2.7
50-70	8.7	6.4	4.5	2.6
60-80	7.8	4.3	3.4	2.2
70-90	7.1	3.4	2.2	—
80-100	7.6	4.6	3.0	—
90-110	7.4	4.7	—	—
100-120	7.8	—	—	—