

# FIRE IN ITS BELLY

We all know the standard E-type is a bit of a duffer dynamically. But this one not only goes like a rocket - it really handles, discovers Mark Hughes

**T**his is an E-type with a difference. Looking at it, you notice only low-profile rubber and a modified appearance to its mouth for improved cooling, but under the surface it has enough performance to equal almost any modern supercar. The engine is the key. Flexibility and power reach levels almost unimaginable for a roadgoing six-cylinder E-type that's more than 25 years old, and its performance is strong enough to blow off Porsche Turbos on the race track.

Owned by Roger Seymour, this largely unrestored 1969 4.2 Series II fixed-head is a showcase for the magic that Bridgnorth-based Classic Motor Cars Ltd can weave into an E-type. While this company's mainstream business is the total restoration of Jaguar XKs, Mark IIs and E-types to no-expense-spared standards, it is developing a speciality for sophisticated tuning of E-types, particularly in their engines and suspension.

Thanks to Roger's friendship with the company, and especially with chief engineer Andrew Tart, his E-type - a car that he races regularly but also uses on the road - has become a test bed for tuning ideas. Roger's growing ability as a racing driver, first in the HSCC's Post-Historic Road Sports Championship and latterly in the Jaguar Car Club's E-type Challenge, has been accompanied by ever quickening pace from the E-type, to the point where he has progressed from contentment with back-of-the-grid positions to disappointment when he's not in the top three at the start.

Most of the development effort on this car has gone

into the engine, whose performance and durability have been emphatically proven on the track since it was fitted three years ago. Raced by both Roger and Andrew, the car has won its class every time out since this engine was installed, and has frequently scored outright victories against more modified, lighter rivals. At Donington the car once outdragged two historic lightweight E-types off the line despite its standard 1270kg weight, nearly 300kg more than these adversaries.

This E-type produces 306bhp at 5460rpm at the flywheel compared with a standard Series II 4.2's 190-200bhp, but the real sorcery has been worked on the torque characteristics to give outstanding tractability. The general flatness of the curve isn't dramatically different from a standard E-type's, but it has been widened and pushed into a much more muscular league. While the peak is 312lb ft at 4500rpm, the most impressive figure is 260lb ft at just 1800rpm. The single most important factor in achieving this is the camshafts that Andrew developed specially for this car.

"Some engine builders offer as many as nine choices of camshaft," says Andrew, "but nothing on the market seemed to be quite what I wanted. I was looking for standard, relatively short duration so I didn't lose bottom-end power, but loads of lift to gain on top-end power - simple as that. People said I couldn't achieve what I wanted, so it was obvious I'd have to develop my own."

"I reckon that as an engineer you could quite easily devote your life to camshafts. I borrowed a little cam grinder that a friend uses to make cams for single-cylinder motorcycle engines. I modified the grinder so it

**Left: this is one discreet road-racer - if it had a grille bar you'd hardly notice the changes to the air intake; only other external difference is low-profile tyres. Right: "I hadn't expected the E-type to light up so vividly" reports Hughes from the wheel**

would take just the back off one lobe, and finished it all off by hand with a file - all this just so I could assemble it into a head, measure my valve lift and then obtain a displacement curve. I went to a specialist and persuaded them they could definitely make camshafts to my specification. Sure enough they came up with 460 thou lift and 270-degree duration."

The rest of the engine is largely standard, but Andrew assembled it with careful attention to tolerances ("they're straight out of the Jaguar book but very few people adhere to them") and balancing ("the weight of each piston/rod assembly is within a gram"). The flywheel is as light as possible, made of aluminium instead of steel. To avoid the XK engine's tendency to run high oil temperatures when used hard, there's a very large pump to push oil quickly past the bearings and back to the cooler. A Holley 14psi fuel pump supplemented by a 3psi regulator just before the three SU HD8 carburetors maintains strong fuel pressure.

I took this E-type west of Bridgnorth through some of England's finest landscapes, past Wenlock Edge and over the Long Mynd. There was one moment where the E-

60 YEARS OF  
JAGUAR  
E-TYPE



type's performance was a revelation. Much of the way I was sixth in a queue of cars behind a lorry, but then the road straightened out and there was a chance to overtake. It seemed safe to pick off two or three cars, but I hadn't expected the E-type to light up so vividly. With a surge of torque and an almost uncanny willingness to rev, the car soared safely past the whole lot and away to freedom.

Anyone who likes performance knows the feeling of always wanting a little more once you get used to a car, but it's hard to imagine ever finding this E-type's power inadequate. More than its sheer muscle, however, is the effortless way it performs. Once the low-speed driveline shunt created by the light flywheel has smoothed out, by 1400rpm, the car will pull cleanly. The flow of torque through the 2000-3500rpm range is extraordinary, but there's no penalty higher up the scale. The engine keeps on pulling hard, a little more strongly beyond 3500rpm, all the way until you bang into the rev limiter at 7000rpm - for such a long-stroke engine to spin this fast and this sweetly is very special. And all the time there's a satisfyingly crisp beat from the straight-through exhaust.

Andrew estimates the 0-60mph time to be under 5 secs, and 0-100mph has been measured at 12 secs. These times are brilliant by any standards, and really impressive when you consider that traction from standstill isn't terribly good. Racing experience shows that the quickest starts are made without wheelspin, by dropping the sharp-acting clutch - it differs from standard in using a sintered clutch plate - with only 2000rpm on the dial and then

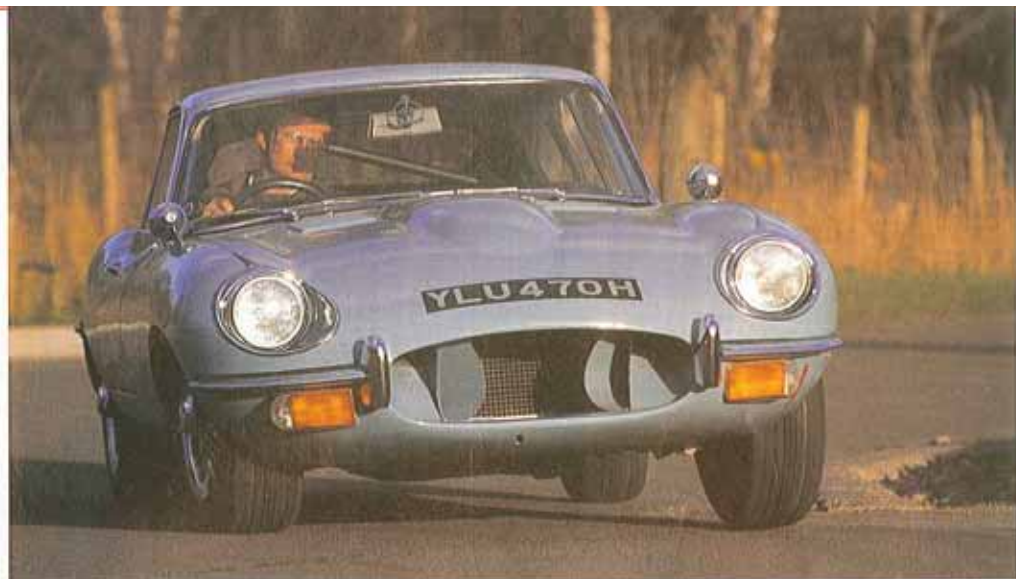
letting the low-down torque do the work. Having all this torque also means you hardly notice that the standard four-speed gearbox has been retained, although Classic Motor Cars Ltd does offer a five-speed Getrag.

This E-type also has reworked suspension, steering and braking to suit its extra potency. Most of the work has gone into the suspension, and differs from the normal race-tuning ethos of maximising stiffness - the gains in handling precision and response have not created a spine-jarring ride. The general flavour is firmness, but not to the point where the car is uncomfortable on public roads.

"Many people who modify E-types get the suspension all wrong," says Andrew. "They seem to forget that all the variables link together, so improving one aspect can ruin another. A classic example with E-types is to increase the castor to add self-centring to the steering and sharpen turn-in, but people often won't think to alter the steering rack or the steering arms to minimise the extra bump-steer this creates. A lot of E-types don't steer as well as they should, feeling very nervous."

Roger's E has an unusual mix of stiffness at the front (to suit nose-heavy weight distribution) and relative softness at the rear (to keep the driving wheels on the ground). Front torsion bars are the stiffest that can physically fit on the car, and the front dampers are firm as well. Stronger XJ front uprights with bigger stub axles add rigidity, and address the tendency of E-type uprights to knock back the brake pads when they flex with hard cornering. The top wishbone position is relocated to give more negative

**"MANY PEOPLE WHO MODIFY E-TYPES GET THE SUSPENSION ALL WRONG. ALL THE VARIABLES LINK TOGETHER"**



### QUALITY RULES AT CLASSIC MOTOR CARS

The Jaguar restorations turned out by Classic Motor Cars Ltd are in the premier league in terms of cost, but when you study the quality of workmanship - and the staff's track record as the backbone of the old Vicarage Motor Cars company - you begin to see where the money goes.

As far as I'm aware, the comprehensive warranty offered by this company, run by Vicarage founder Nick Goldthorp and Andrew Tart, is unique in car restoration - all restored cars are guaranteed for five years against corrosion and one year against mechanical failure.

The confidence behind this approach comes from scrupulous attention to detail throughout a rebuild. With the bodyshell, for example, all appropriate panels are removed before shotblasting, the shell is etch-primed immediately to prevent even the mildest surface corrosion

setting in, box sections are treated internally with a cavity wax, lead-loading is used for panel repairs, and paint processes result from detailed consultation with paint manufacturer Glasurit.

The liaison with Glasurit is typical of the company's perfectionism. Although painting in two-pack acrylic is sub-contracted, it's carried out to a precise specification that anchors all the variables in the process, such as drying times between coats and body temperatures. The result is an unusually hard paint surface that suffers no shrinkage.



Classic Motors staff; backbone of former Jaguar specialist Vicarage



Cars are completely rebuilt; Andrew Tart shows meticulous standards

Honesty about costs is another distinctive feature of the company's approach. Car restoration costs are notoriously difficult to estimate because it's virtually impossible to assess the work needed until a car has been dismantled, but a company geared to do a total job can have a better stab than most. This firm's restoration work, of course, suits a fairly well-heeled, demanding type of customer, but at least the client knows where he stands before the project starts.

It's all spelled out in the company's brochure under the heading 'How much is it going to cost?'

Ex-VAT examples are an XK drophead coupé at £55,000-£65,000 (plus £10,000-£15,000 for the donor car), £55,000 for a 3.8 MkII saloon (plus £3000-£5000 for the donor), or £45,000-£55,000 for an E-type fixed-head (plus £5000-£8000 for the donor). On top of this is a range of modernising options - a speciality carried over from Vicarage days - which include air conditioning, central locking, power steering, electric sunroof, Getrag five-speed gearbox, Borg Warner type 66 auto, audio equipment and tinted glass.

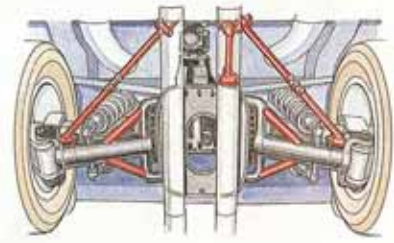
With all these features, the gizmos that people take for granted in modern executive cars, you begin to understand the potential for turning a classic Jaguar into a highly practical proposition for everyday road use. This is a strong part of the company's

philosophy: appealing to the sort of customer who might choose a fully-rejuvenated E-type, a classic containing so many new parts that it could almost be judged a new car, in preference to a faster-depreciating, less individualistic alternative like a new Mercedes 600SL.

Classic Motor Cars Ltd is at Building 6, Stanmore Industrial Estate, Bridgnorth, Shropshire WV15 5HR; tel 01746 765804; fax 01746 768404.



Above: modified E turns in eagerly, then progresses controllably to oversteer. Left: special cams and careful assembly give 4.2-litre straight six 306bhp. Right: racing equipment - bucket seat, kill switch, large oil pressure light - is discreetly blended into original interior



Key to E-type's consistent handling is stiffened-up front end and, here, new diagonal radius links to rear lower arms, and locating link holding the subframe, which also has stiffer bushes. Extra parts are shown in red

camber as the wheels deflect - a desirable trait for consistent grip. Stronger steering arms, machined from solid steel billets, are set at a height that eliminates bump-steer.

Rear suspension has also been comprehensively reworked. The ideal tweak for good suspension location would be to bolt the subframe solidly to the car, but this would add unacceptable harshness for a road car. A suitable compromise, however, has been to use stronger bushes with special locating links to reduce the tendency for the subframe to twist with acceleration and braking. Again in the interests of good axle location, the standard lower arms have been supplemented by diagonal radius links, effectively creating A-frames. There's a limited slip diff but the axle ratio of 3.31:1 is unchanged.

The result of all this work is a pleasing wholeness in the way the car handles, all the controls and responses nicely knitting together. It's very civilised to drive, with a good blend of lightness and response through the Moto-



Lita steering wheel, plenty of eagerness to turn in, and a rewarding neutral-to-oversteer handling progression. A standard E-type, which I tried immediately afterwards, feels almost mushy and sluggish by comparison.

Grip is dramatically improved by the use of modern Pirelli P700-Z 205/65 ZR 15 tyres on 6J wire wheels, although the breakaway is swifter than on period rubber. The braking system - ventilated discs at the front, solid ones at the rear - is extremely effective, with notably light pedal pressure. The only clue to the car's race-bred nature is a slightly vicious clutch.

E-types I've driven before have never left me feeling wildly enthusiastic. Maybe I'm prejudiced, but I've always considered that these Jaguars feel their age, giving pleasure more from their looks than from their dynamics. But this one is entirely another matter; it will outgun virtually anything despite having the most beautiful manners.

