

FAST car MAGAZINE

INSIDE
**FREE
STICKER**

CAPRI CRAZY!
140mph - 4.3 Sec Performance Test



K POWER-16v MINI

30 ENGINE BUILDING TIPS

4 Mk1 16v GOLFS
WIDE ARCH MGB



STREET

READERS' CARS

Sleeper

16V VAUXHALL CHEVETTE	
0-10	0.87
0-30	2.54
0-50	4.53
0-60	5.61
0-70	7.44
0-80	9.14
0-90	11.76
0-100	15.05
¼ mile at mph	14.38 98.20
Vmax	108.40



SLIPPERY

Club level rallying generally exposes some outrageous machinery and this 16 valve Chevette is no exception. Jim Blackstock plots the course.

CHEVETTE

STREET *Sleeper*

Visit any club rally event and in addition to the traditional tuned Escorts, Sunbeams and Mantas you'll also find one-off creations purely for the closed tarmac or loose stages. Included in this category are Vauxhall Chevettes powered by the Astra 16v twin cam motor.

One such machine is owned by Steve Broughton. Originally fitted with a two litre 8v motor, this car proved quick but kept breaking rocker fingers, so 16v power was decided upon.

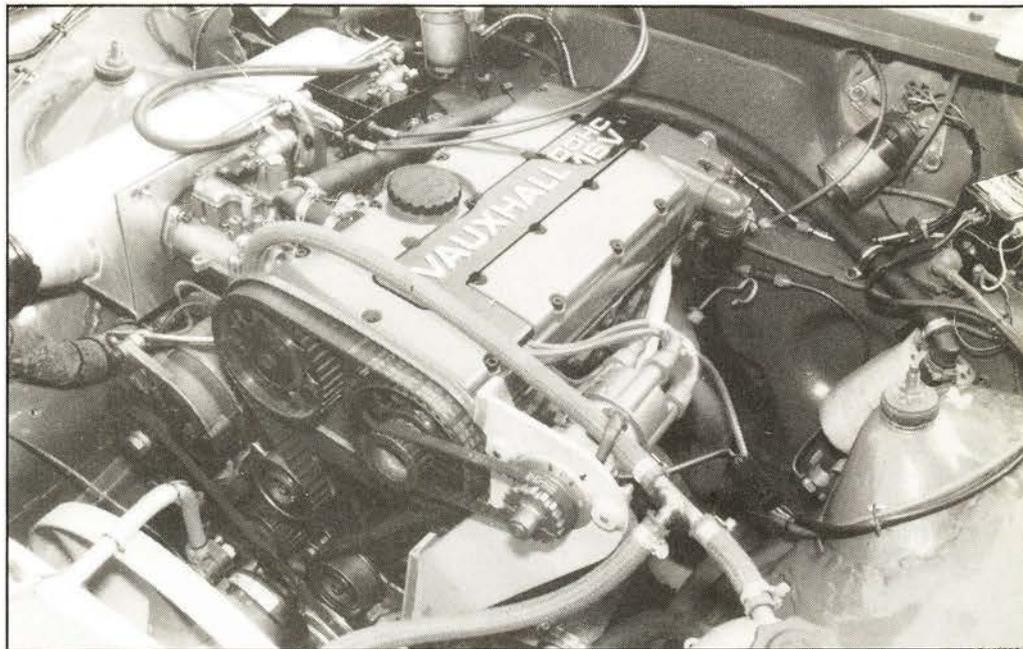
The car was built by Steve and co-owner and regular navigator Martin Bailey — the unsung hero of the project! So far this combination has won six trophies, including first in class. And when the Chevette finishes, it's generally in the top seven.

The underlying theme throughout the project was not to 'bodge' anything. As Martin is a skilled sheet metal worker by trade and Steve runs Vauxhall tuners SB Developments (0372 278958), the build was approached with a professional attitude. This started with a solid shell instead of a rusty carcass.

All the components were chosen to support a 200bhp motor, Steve wanting to show what was possible with an essentially standard engine. However, the output was increased to 220bhp to make the car more competitive, so some of the components are approaching the limit of their performance.

We invited Steve up to Bruntingthorpe to see what the car was capable of. True to form, as the Correvitt timing equipment was being fitted, the skies opened and it bucketed down for around an hour.

However, time was pressing on so we tested the car anyway. Even with wheel spin all the way through first gear, the car still managed to hit 60mph in 5½ seconds and cover the ¼ mile in 14 seconds.



Engine

- The 1989 2 litre 16 valve twin cam remains in a relatively low state of tune. Therefore the bottom end is untouched, with the exception of Cosworth big end bolts for safety. A 'big wing' sump was modified, to clear the front crossmember, as well as providing extra cooling. The dipstick position was moved and the 16 valve baffle refitted to the new item. The head received minimal work, basically removing any rough edges before a pair of SBD spec cams were added, ground by Kent. These are rally spec, with more than 300° duration and 11mm lift and a power band from 3000rpm up to 7500rpm. While producing good power

and response for tarmac, however, they're mild enough for fast road use.

Control of the standard sized valves is via Kent springs and stock retainers. The motor still runs on hydraulic tappets to keep the cost down, as well as helping to relieve strain on the cam lobes.

Breathing is taken care of by a pair of Dellorto 48mm sidedraught carbs, connected to a remote K&N air filter, mounted ahead of the water radiator, via a fabricated air box. This provides cold, dense air so the choke size can be kept down to increase the air speed. The needle valves have also been modified to prevent the float

Below right: Manta distributor run by step-off drive on SBD brackets eliminates need for heater box modifications.

Below left: Fabricated air box picks up cool air from ahead of radiator.

Vauxhall 16v twin cam mildly tuned to give around 220bhp.

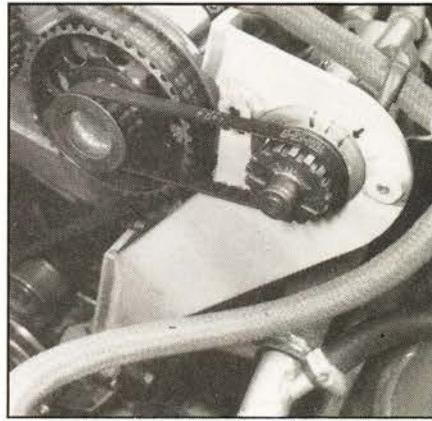
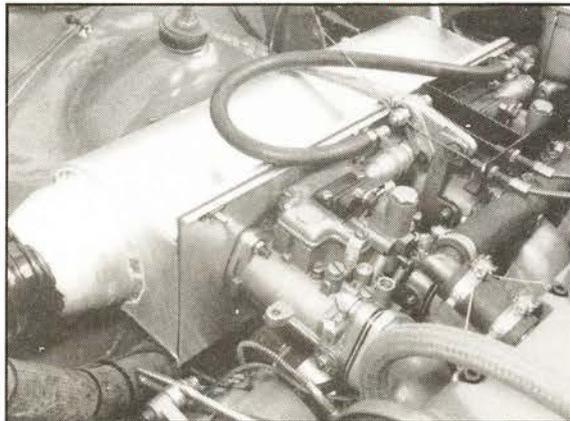
chambers flooding.

The fuel supply is by a Facet Red Top pump and a Filter King with the carbs sitting on an SBD inlet manifold. This has an integral water jacket, allowing water to circulate the head, even when the thermostat is closed.

The ignition uses a Manta 1800 distributor mounted on an SBD fabricated bracket.

The use of a step-off drive means the dizzy doesn't encroach on the heater air box. It also means the engine can be run without extensive re-wiring to accept the 16v brain. A Micro Dynamics ignition package amplifies the Vauxhall Hall effect triggering and incorporates an adjustable rev limiter.

Cooling is taken care of by a late Cavalier radiator with a Kenlowe fan. The lubricant is also chilled by a 19 row cooler mounted up front. The



**STREET SLEEPER
CARS RECEIVE £100
VOUCHER IF SELECTED**



Manta A-Series rear axle mounted using four link bars and a Panhard rod. Turrets hold Bilstein dampers vertical.

systems are so effective that it's almost impossible to get the engine properly warmed up during the winter!

Dead gases exit via a custom made manifold, joined to a Chevette HSR system. The manifold is currently a 4 into 1 design for maximum top end power but will soon be replaced with a 4-2-1 item for a better mid-range spread.

Drive Train

• Since the original clutch was destroyed by the 8v, serious friction was called for. A twin paddle Sachs kit was fitted, weighing less than the standard components and needing a special bearing.

The gearbox is a Ford four speed TranX RS2000 unit, with TranX gear sets and roller bearings. The standard mainshaft is retained, rated at only 190bhp so this will be uprated with a Quaife (0732

353747) shaft soon, rated at 300bhp. They also supplied the rose jointed quickshift.

The rear axle was taken from an A-Series Manta and the torque tube removed, the whole unit to be located by five links. Steve feels its capability to deal with the engine's power is also marginal. The diff is a 70% ZF slip unit with stock halfshafts modified to accept the disc conversion.

Chassis

• Fitting the 16v unit didn't pose any major problems, since the vehicle had originally been configured for the 8v, 2 litre motor. A pair of Manta 1800 engine mounts were used, incorporating uprated material, positioning the motor as far back as possible for the best weight distribution. The gearbox crossmember had to be fabricated by SBD while a special oil filter was required to clear the front anti-roll bar.

The motor was also canted over towards the exhaust side by 7°, as per the fwd Astra, providing the correct oil level in the rocker boxes to prevent the exhaust side becoming too warm. The gear lever position also changed, so the original aperture was welded up and a new one cut.

To improve stability, the wheelbase was increased by moving the front suspension forward by 2", cutting the inner wing mounts out and re-siting them. The bottom arms were fitted using new mounts welded into place.

Since the car competes mainly in tarmac rallies, its suspension is fully rose-jointed with a modified front crossmember to provide extra negative camber. A 2.3 turn lock to lock quick rack gives driver input while the strengthened wishbones support 700lb SBD springs and Bilstein dampers.

Anti-roll bar specification is similar front and rear, with a range of bars available, depending on the application. At the rear, 230lb springs sit around more Bilsteins, in a fully turretted rear end. These support the



Front suspension fully rose-jointed with AP four pot braking, for tarmac stages



. It's also moved forward by 2" for improved stability.

Manta axle, converted from three to five link location. A transmission tunnel also had to be formed, to provide clearance for the propshaft.

Braking calls upon four pot AP racing calipers at the front, acting on 11.6" vented discs. Mintex M171 pads



Works pedal box allows front to rear balancing.

are used as they need to warm up quickly on tarmac stages. The rear uses Sierra calipers and modified Mk3 Escort discs, sitting on SBD mounts.

All hoses are Aeroquipped and the handbrake converted to hydraulic operation. Front to rear balance is achieved using a works pedal box with a manually adjusted bias bar. Steve also fitted a Tilton pressure reduction valve to stop the rears locking in the wet.

Support comes from 7x15" Revolution RFX rims front and rear, wearing 180/58 and 200/58 rubber respectively. These are slicks for tarmac and treaded for the road.

Interior

• To save weight, the interior was gutted of all redundant fittings, including rear seats, carpet and trim. Unknown make seats were



Interior gutted for lowest possible weight — typical of club rally car.

obtained from Datum Carburettors (0932 221955) and are complimented by a pair of Willans harnesses. Input is through a suede Momo steering wheel.

The battery was mounted inside the car, alongside the Angus plumbed-in and hand held fire extinguishers. A Safety Devices (0638 661421) six point roll cage protects the occupants while a Sonic intercom allows them to communicate. All the gauges are from Smiths but the rev counter is a little inaccurate, so Steve may fit a Stack unit instead. A gear change light is set to indicate 7500rpm, the end of the cam's powerband.

Exterior



• To further reduce the vehicle's weight, perspex windows were added, along with glass fibre wings, bonnet and tailgate. The front spoiler is a replica HS unit, modified to match the increased wheelbase, while the HSR tailgate spoiler came ready mounted to the panel. The car was then shipped to Bodycraft in Horsham for painting in Vauxhall Carmine red before the graphics were added by Look 2 (0483 450324) of Guildford.