JENSEN C-V8

CHRYSLER VEE-8 ENGINE WITH TORQUEFLITE OR MANUAL TRANSMISSION: NEW GLASS FIBRE BODYWORK

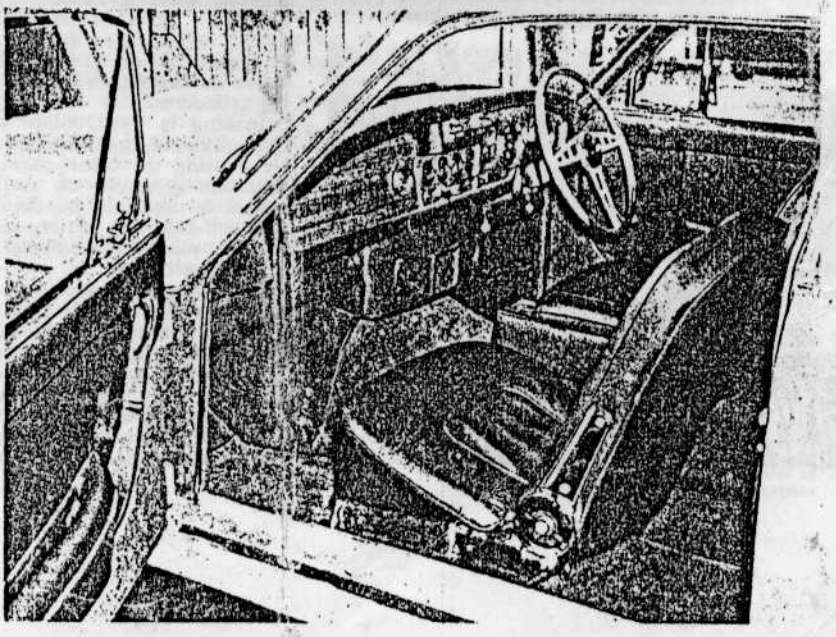
POWER with a capital P, of the variety which is delivered with practically no commotion, is today a commodity readily obtained if one is prepared to go to America for it. Chrysler is as sound a choice as any, since that Corporation has a long reputation for fine engineering; precedents include Facel Vega (6·3 litres) and Bristol (5·1 litres). Now Jensen have taken the plunge and stepped boldly into the realms of really high-speed motoring, by installing a 5,916 c.c. Chrysler engine in a quite new four-seater sporting saloon to be known as the C-V8. Like the 541S, which continues unchanged, its body is moulded in reinforced glass fibre.

This engine—Chrysler call it the Golden Commando—is a conventional 90 deg vee-8 with five main bearings and hydraulic tappets. It has, however, a high performance camshaft, two-spark "phased" ignition through twin contact breakers and a Carter four-barrel carburettor. Its gross output is 305 b.h.p. at 4,800, and the torque figures are 395lb. ft. at 3,000 r.p.m., top revs being 5,100.

Alternative transmissions for the Jensen installation are the excellent Torqueflite three-speed automatic with a hydraulic torque converter or, to special order, a Chrysler-Borg Warner three-speed manual change (synchromesh on 2nd and top only) in conjunction with Laycock-de Normanville overdrive. Of the two, Jensen clearly favour the automatic as best suited to the design concept of the C-V8. For this car it is set up for high performance, with lifted-up change points and no governed restriction for the manual "holds." With Drive selected for fully automatic operation, upward changes cannot be delayed beyond 48 m.p.h. in first and about 82 m.p.h. in second.

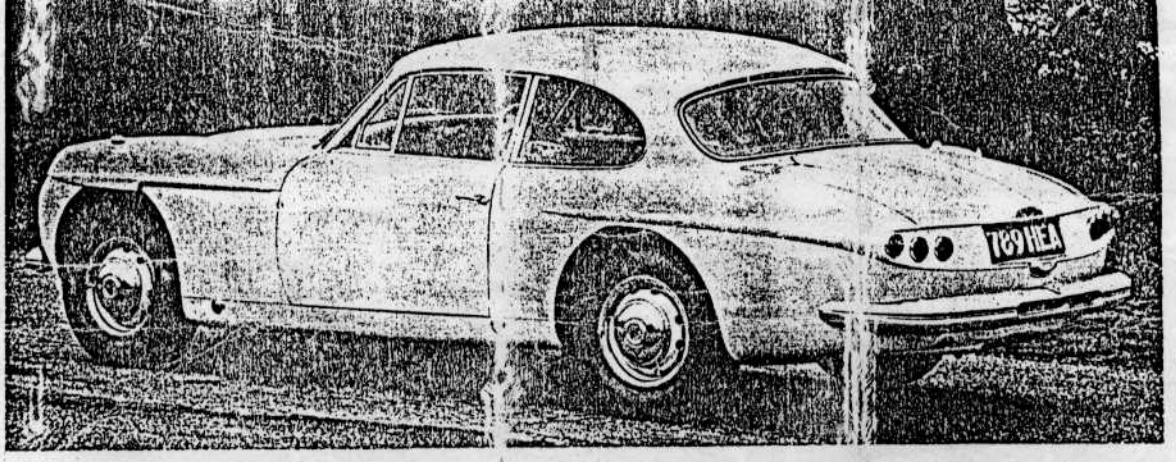
Using the manual holds and running up to 5,100 r.p.m. one can reach 58 m.p.h. in first and practically 100 m.p.h. in second; minimum upshift speeds are 11 and 15 m.p.h. respectively. The transmission and torque converter share a common lightweight casing cast in aluminium, and the transmission's oil supply is circulated through a heat exchanger, in the form of a two-skin tube of crimped metal incorporated in the base tank of the engine's radiator. Final drive ratio with Torqueflite is 3·07 to 1, giving 143 m.p.h. at 5,100 r.p.m. on 6·70-15in. Dunlop RS5 tyres. Normal pressure for these a:

Front seats with adjustable backrests are by Hallam, Sleigh and Cheston Ltd. The instrument board is panelled in a Formica veneer and the 18in. steering wheel has a light alloy frame by Jensen, with hub and walnut rim by Bluemel



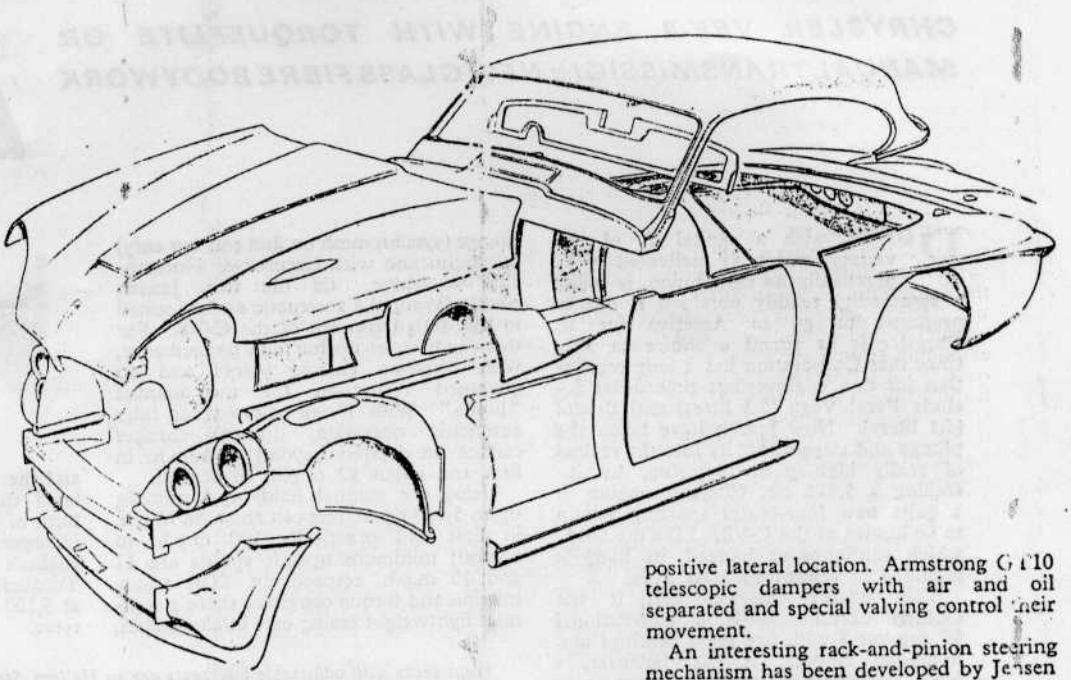
Prices

	Basic £	U.K. List £ s d
Jensen C-V8	2,807	3,860 12 9



Capacity of the luggage boot is over 19 cu. ft., and the spare wheel is carried in a retractable tray beneath it. The fuel filler flap is remotely controlled by a solenoid switch

JENSEN C-V8 . . .



maintained speeds up to 110 m.p.h. is 24 p.s.i., front and rear. At 30 p.s.i. they are "cleared" for up to 150 m.p.h. With manual gearbox a 3·54 final drive is fitted, when the theoretical maximum in overdrive top becomes 148 m.p.h. at 5,000 r.p.m.

A particularly interesting feature of this arrangement is that clutch operation is assisted by a 5in. Kelsey-Hayes vacuum booster, using one of the main, sealed chassis tubes as a reservoir. Without this one would have to suffer either a long pedal movement or an excessive pedal load. At the gearbox end of the single propeller shaft is a Chrysler pot-joint universal, which can still telescope freely while transmitting full engine torque, so that suspension and ride comfort are not affected. The rear universal is a conventional mechanic's joint. A Powr-Lok limited slip differential is standardized in the Jensen's Salisbury hypoid 4HV axle. Stiffer half-shafts are fitted, however, to cope with the high engine torque and to reduced what is called "brake knock-back"—a phenomenon resulting from flexing of the shafts and consequent displacement of the discs, which in turn knock the brake pads back in their operating cylinders.

Braking is by Dunlop with 11·25in. discs all round, supplemented by a vacuum servo using the other chassis tube as a capacious reservoir. A single hydraulic system is used; the handbrake is of the new self-adjusting variety and its cables run in plastic-covered sealed conduits, greased for life.

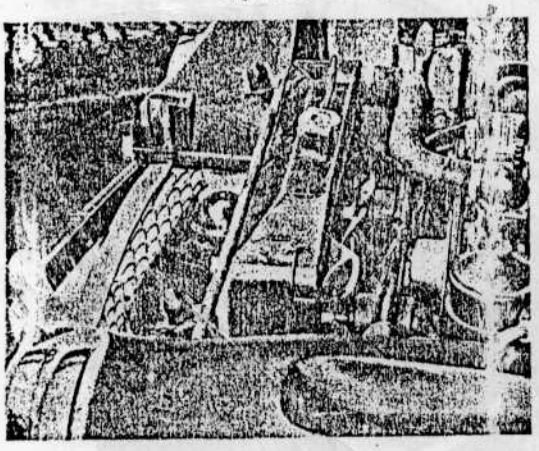
The front suspension is quite conventional, having unequal length wishbones of which the upper one is splined to the cross-shaft of the Armstrong damper; coil springs are used and an anti-roll bar is ball-jointed via a short link to an attachment on the lower wishbone. The steering swivels have P.T.F.E. thrust washers to reduce friction and provide "feel."

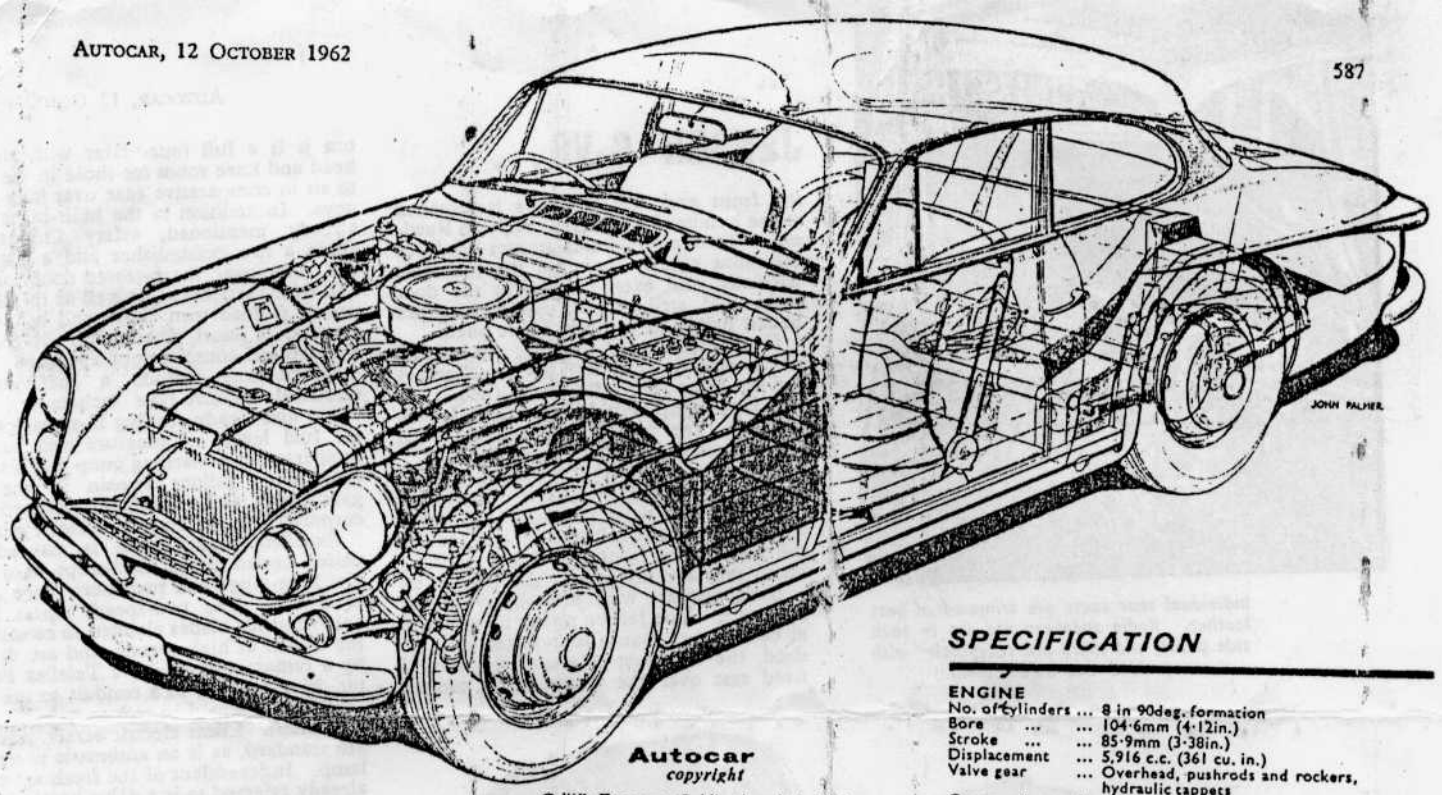
At the back the live axle is carried asymmetrically on nine-leaf springs, 4ft long and mounted on Harrisflex rubber bushes in the shackles; each is supplemented by an additional leaf underneath, which comes into operation when the car is loaded in the static position with four people, giving increased stiffness and a variable rate. The springs are canted downwards towards the front at 2 deg.—the equivalent angle is 8 deg on the 5-leaf, incidentally—and a Panhard rod provides positive lateral location. Armstrong G 710 telescopic dampers with air and oil separated and special valving control their movement.

An interesting rack-and-pinion steering mechanism has been developed by Jensen in conjunction with Engineering Products (Clevedon) Ltd. As the rack is placed forward of the front wheel axes, and has to be somewhat long in view of the width of the engine and the difficulty of bringing the steering column round it, hydraulic dashpot dampers have been built into each end. These are so valved as to deal only with high-rate shocks, and light, built-in coil springs cope with lesser loads; thus the unit remains light and free from excess friction. The pinion is supported by ball races top and bottom, and the steering column has two universal joints as well as a flexible coupling, this last to remove any axial stiffness and reduce suspension and tyre noise passing up the column. No other rubber is used in the steering.

At the top of the column is a particularly handsome and beautifully finished steering wheel with a walnut rim, assembled by Bluemel around a light alloy frame made in the Jensen factory. No power-assisted installation is offered as an alternative, but powerful leverage is pro-

Twin Lucas electric fans behind the radiator, controlled by thermo-switch, govern engine coolant temperature





vided by a steering wheel with a rim diameter of no less than 18½in. The mechanism is geared at 3·3 turns of the wheel from lock to lock as compared with the 541S at 2·75 turns.

Rubber-in-shear cushions (which come over from the U.S.A. with it) support the engine; and the installation is standard except for one or two minor details. A particularly interesting innovation is that the carburettor air cleaner has been fitted with a special glass fibre casing with marked sound-deadening properties, and extending from it are tubes which have been "tuned" in length and diameter to further silence the ingoing air.

To the exhaust system of each bank is fitted a new type of Servais straight-through silencer, having a double-wrapped skin containing an interlayer of asbestos. This not only kills resonant "boom," but has the valuable extra quality of retaining the silencer's warmth after the engine has stopped; slow cooling obviates the condensation problems familiar with large American vee-8s and thereby adds greatly to the silencer's life. The silencers are hung on Silentbloc rubber mountings, and a rubberized canvas strap at the tail pipe provides lateral stiffness.

Special Cooling

The Chrysler engine has a very small sump capacity, but this is supplemented by a large, full-flow filter of two pints capacity, mounted very accessibly just forward of the left exhaust manifold. A high pressure (14 p.s.i.) cooling system incorporates a Bowman radiator cooled by two Smiths electric fans, governed by a Jaeger thermo-switch embedded in the bottom tank of the radiator and set to cut in at approximately 90 deg. C., out at 80 deg. C.

As with the 541S, the new Jensen has body panels moulded of reinforced glass fibre—with the exception of the doors, which are aluminium—and the body as a whole can be detached from the frame structure. This is a robust and fairly complex affair fabricated with obvious care and precision. Its primary members are two longitudinal and parallel tubes of 4in. dia. 10 s.w.g. solid-drawn and annealed mild steel. At their forward ends these are joined by a substantial box-section cross-member to carry the wheel and suspension assemblies, with outriggers forward for the radiator and to support a tubular framework for the body pick-up points.

The bulkhead, incorporating deepside "boxes" for the front occupants' feet, is braced by tubular struts to the suspension cross-member. This structure also collects and distributes fresh air, which has entered the body via slots below the four headlamps and beside the front signal flashers, and flowed back through hollow ducts in the moulded wheel arches.

The stressed floor, rear seat pan and squab, and boot floor are of 20 s.w.g. sheet metal, and the floor is flanked by boxed sills supported by outriggers from the main frame tubes. These tubes terminate just forward of the rear axle, where they are "tied" by rectangular fabrications running diagonally up the back of the seat squab panel. Beneath the rear passengers' knees is a tubular cross-member welded to the top of another boxed structure, from which deep, fabricated side-members of 18 s.w.g. extend back to form arches over the rear axle. They are supplemented by the triangular box which divides the rear seat pan to provide clearance for the final drive.

Joining the tops of the wheel arches is another cross-tube, from which extend the upper mountings for the dampers. Pick-up points for the rearmost spring anchorages are at each end of a 2½in. dia. transverse tube joining the extremities of the side members.

The drawing opposite shows the various mouldings of which the body is composed, the roof and rear quarters being bonded to the tail unit before assembly. At the front, the complex hollow wheel arches are moulded together with the front apron and extend back to the bulkhead to which they are bolted. The side panels behind the wheel arches are also bolted in place and are easily detachable for repair, as are the sills running fore-and-aft below the doors. The top moulding incorporating the roof and fram-

SPECIFICATION

ENGINE

No. of cylinders ...	8 in 90deg. formation
Bore	104·6mm (4·12in.)
Stroke	85·9mm (3·38in.)
Displacement ...	5,916 c.c. (361 cu. in.)
Valve gear ...	Overhead, pushrods and rockers, hydraulic tappets
Compression ratio	9·0 to 1
Max. b.h.p. (gross)	305 at 4,800 r.p.m.
Max b.m.e.p. (gross)	164·8
Max. torque (gross)	395 lb. ft. at 3,000 r.p.m.
Carburettor ...	Single four-barrel Carter down-draught
Fuel pump ...	Mechanical
Tank capacity ...	16 Imp. gallons (73 litres)
Sump capacity ...	7 pints inc. filter
Oil filter	Chrysler full-flow, renewable element
Cooling system ...	Pump and thermostat system pressurized to 14 p.s.i., two Smiths electrically-driven fans with Jaeger thermo-switch
Battery	12 volt 64 amp. hr. with alternator

TRANSMISSION

Clutch	10in. dia. single plate, diaphragm spring type, hydraulic operation with Kelsey-Hayes 5in. dia. vacuum servo
Gearbox (manual)	Three-speed with synchromesh on second and top, Laycock de-Normanville overdrive on second and top
Overall gear ratios	Top 3·54 (O/D 2·75), 2nd 5·27 (O/D 4·10); 1st 9·03; reverse 11·82
Automatic transmission	Chrysler Torqueflite three-speed with torque converter
Overall gear ratios	Top 6·75-3·07; 2nd 9·79-4·45; 1st 16·54-7·52; reverse 15·05-6·75
Final drive ...	Salisbury hypoid with Powr-Lok limited slip differential, ratio 3·07 to 1 (automatic); 3·54 to 1 (manual)

CHASSIS

Brakes	Dunlop discs front and rear, with vacuum servo
Disc dia.	11·25in

SUSPENSION

Front	Independent, coil springs and unequal length wishbones, anti-roll bar
Rear	Live axle, half-elliptic leaf springs
Dampers	Front: Armstrong lever-arm type integral with upper wishbones Rear: Armstrong telescopic GT10
Wheels	Bolt-on pierced steel disc, 5 stud attachment and 4·5in. wide rims
Tyre size	6·70—15 Dunlop RS5
Steering wheel ...	18·25in. dia., light alloy frame and wooden rim
Turns lock to lock	3·3

DIMENSIONS (Manufacturer's figures)

Wheelbase ...	8ft. 9in. (267cm)
Track	Front: 4ft 7·8in. (141·7cm) Rear: 4ft 7·1in. (140·9cm)
Overall length ...	15ft 4·5in. (468cm)
Overall width ...	5ft 7·5 in. (171·4)
Overall height (unladen)	4ft 7in. (140cm)
Ground clearance	6in. (15cm)
Turning circle ...	38ft (11·6m)
Kerb weight ...	3,360lb (30cwt)—1,524kg

PERFORMANCE DATA

Top gear m.p.h. per 1,000 r.p.m. ...	Automatic: 26·0 Manual: 22·6 Overdrive: 29·0
Torque (gross) lb. ft. per cu. in. engine capacity	1·94
Brake surface area swept by linings	498 sq. in.
Weight distribution (per cent) ...	F: 53·5 R: 46·5
Steering	Rack and pinion, with hydraulic dashpot dampers at each end of rack, by Engineering Productions (Clevedon) Ltd.

JENSEN C-V8...

Individual rear seats are trimmed in best leather. Radio speakers are set in each side panel, and there are receptacles with padded lids below them

ing front and rear windows is attached to the bulkhead by rubber-insulated Rawlnuts. Strong metal side frames reinforce the front pillars, surround the rear side windows, and extend down to the door locks and strikers. These frames are bolted firmly to the glass fibre shell.

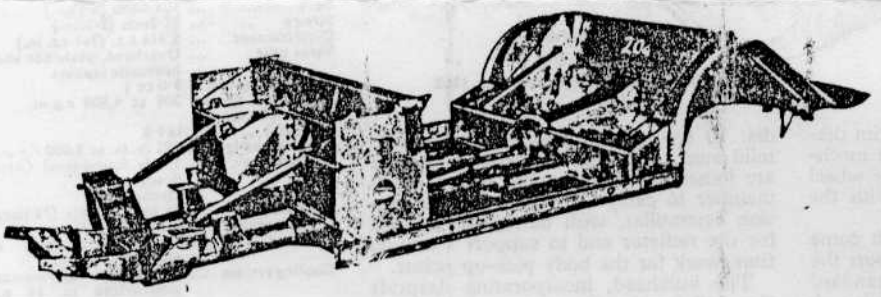
Grab handles for the rear passengers, which also do duty as upper anchorages for the front seat safety belts (which are standard equipment in the usual Jensen fashion), are attached to these metal frames and have been tested to 20g.

As befits a high-speed touring vehicle in this class, the Jensen is luxuriously equipped with seats trimmed in Vaumol hide, and high quality carpeting covers the floor. The front seats have reclining backs and are divided in the middle by a fixed armrest with an ashtray in the front of it. The Jensen makes no pretence at being other than a four-seater and, indeed, the rear seat is also divided by a fixed rest over the transmission tunnel; but it is a full four-seater with enough head and knee room for those in the back to sit in comparative ease over long journeys. In addition to the built-in harness already mentioned, safety fittings include a fire extinguisher and a first aid kit. Moreover, the recessed door handles and window winders, as well as the liberal use of padded trim above and below the instrument panel, give further evidence of the makers' conscientious approach.

Instruments include a speedometer, electrical impulse-type tachometer, ammeter and steady-reading bi-metal gauges for fuel level, oil pressure and coolant temperature. A warning lamp glows when only three gallons remain in the 16-gallon tank, and a headlamp flasher is incorporated in the turn indicator lever.

Excellent night vision is assured by paired sealed beam headlamps, two 7in. dia. long-range and two short-range units of 5·75in. The two-speed wipers have anti-wind-lift blades claimed to remain on the screen at high speeds, and are driven by a remote motor with a Teleflex Flexitor drive running in a conduit to the first wheelbox, claimed to reduce noise as well as friction. Lucas electric screen washers are standard, as is an automatic reversing lamp. Independent of the fresh air vents already referred to is a 4½kw heater which draws in air just forward of the screen, and is regulated by simple controls in vertical slides. A proportion of the output can be directed into the rear compartment.

This exciting new car is certain to attract a lot of attention when it makes its first appearance at Earls Court next week, for it is now among the world's fastest cars and one of the very few that will carry four people at expected speeds in the region of 140 m.p.h. Production is planned to start next month, and the weekly output in mind at present is eight or 10 cars.



Basis of the new C-V8 is this tough, fabricated structure with two 4in. dia. 13 s.w.g. tubes as primary members. They are sealed to form vacuum reservoirs for the brake and clutch servos

Lotus Elan 1500 . . . CONCLUDED FROM PAGE 584

close ratio gear sets are available as optional extras.

The twin overhead camshaft engine is based on the Ford 116E 1,499 c.c. five-main bearing unit as introduced recently for the Classic. The standard cylinder head assembly, push rods, timing cover and water pump are discarded and replaced with new items designed and manufactured by Lotus. As mentioned earlier, it is based on the engine raced successfully in this year's Lotus 7's and it can now be revealed that these were raced with five main-bearing crankshafts long before their existence was made known with the latest Classic.

For such a conversion to be economical, it is essential that as many standard Ford units as possible be retained. Thus, because graded pistons are used by Ford, it was undesirable to replace them with new ones to raise the compression ratio. Flat top pistons in an engine of considerably oversquare proportions, when used in conjunction with a segmental spherical head and opposed valves, present problems in attaining a high compression ratio. In the Lotus design this difficulty has been overcome by using a fairly narrow included valve angle of 54 deg and allowing the circular form of the combustion chamber on the joint face to overlap the bore by 0·34in. This does not restrict the optimum valve size and, furthermore promotes desirable squish which, in conjunction with tangential entry inlet ports promotes combustion turbulence. This is evident from the power curves from which it will be observed that a peak b.m.e.p. of 168 p.s.i. at 4,500 r.p.m. is achieved. Of equal importance, it does not fall below 134 p.s.i. between 2,000 and 6,000 r.p.m. The peak power of 100 b.h.p. (net) is recorded at 5,700 r.p.m.

Valve operation is by inverted bucket type tappets operating directly in the aluminium head. They enclose duplex valve springs, and working clearance is obtained with varying thickness hardened steel buttons. Each camshaft is drilled from end to end, a pressure feed for the four bearings being taken from the main oil system.

Many Standard Ford Parts

The standard Ford camshaft is retained to drive the oil pump, distributor and fuel feed pump, but, naturally, the tappets are removed. Two more standard Ford sprockets are used for each of the Lotus camshafts. The drive is a one-stage single roller chain with a spring loaded jockey sprocket on the slack side and provided with an external spring loaded screw adjustment; a rubber-faced block on the tight side prevents chain thrash. To enclose this extended chain drive and match up with the front tunnel in the cylinder head, a new two-piece die-cast aluminium timing cover is used on the cylinder block. The front portion of this incorporates the fan and water pump bearing, and coolant inlet passages. The pump rotor seal and pulleys including the fan, are standard Ford units.

The cylinder head is an aluminium casting with shrunk-in austenitic iron seats. Mixture is supplied by two twin choke 40 DCOE Weber carburettors mounted directly on the extended inlet ports formed integrally in the head. Moderate valve opening periods and a compression ratio of 9.5 to 1 result in a very flexible power unit; more highly tuned versions are under development for competition purposes.

In utilizing many components from a major manufacturer Lotus have the facilities of a world-wide first-class spares and service organization, in addition to the obvious economic advantages. To augment this, the firm's competition successes and the specialist items incorporated in the car, offer that elusive degree of individuality sought by selective buyers. For these the price cannot be related to other large-scale production sports cars, but the performance which it buys will be considerably better than most. In component form, for which undoubtedly the majority of purchasers will opt, the Elan is particularly good value for money.