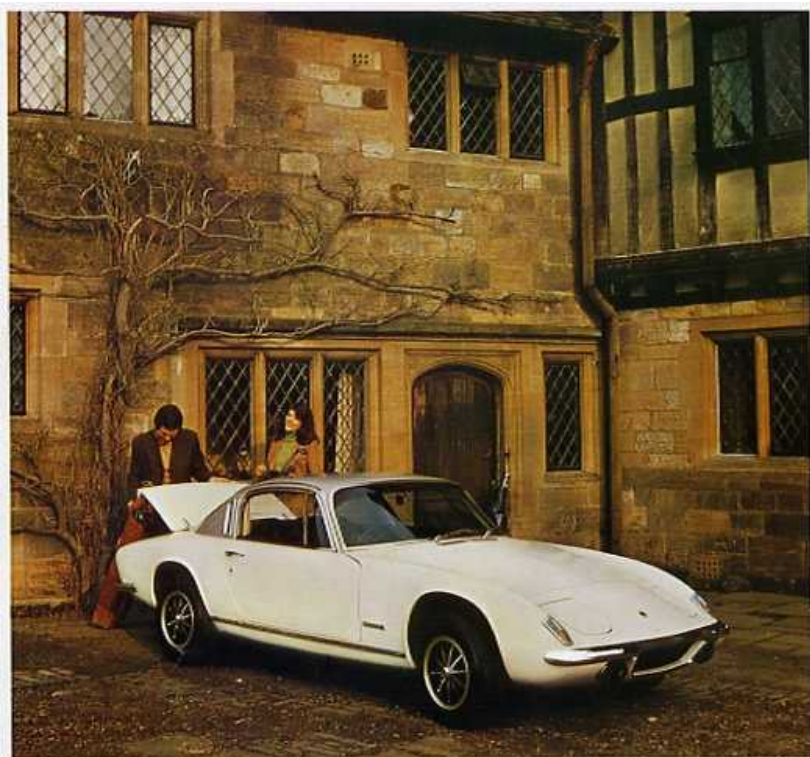


The Lotus + 2S 130





The Lotus +2S 130

a relaxed High Speed Cruiser with the race-bred driver's car only a gearchange away.

With the growth of Britain's motorway system, and the ever-increasing tendency to take motoring holidays or business trips in Europe, the need for restful high-speed cruising has become more apparent. This is particularly so in the case of smaller, higher-powered cars, of which the Lotus +2S 130/5 is the prime example.

The five-speed gearbox fits the fifth gear, as overdrive, having a ratio of 0.8. Fourth gear is direct, corresponding to top gear in the four-speed box. Second and third gears in the five-speed box are marginally closer than their four-speed equivalents, but first is markedly lower.

Performance and economy

Since the lower gears in the five-speed box are similar to those in the standard-equipment four-speed box, it is to be expected that acceleration times will be about the same, and they are. The lower first gear time to 30 mph comes down to 2.7 sec. compared with 2.9 sec. The ignition governor permits 35 mph in first gear (compared with 41 mph in the four-speed car), 60 mph in second and 88 mph in third with a maximum speed of 22.3 mph per 1,000 revs.

Surprisingly for an engine producing 81 bhp (net) per litre, the Lotus power unit is completely untemperamental. It is entirely possible to start from rest in second gear, while third pulls smoothly from 10 mph and fourth from 20. Fifth gear is not really happy below 30 mph, but the car holds this speed without complaint.

Fifth gear should be treated as a genuine overdrive, and undoubtedly serves its purpose in reducing the noise and strain of high-speed cruising. It brings about a reduction of 1,100 rpm when the car is cruising at continental autoway speeds of 100 mph, and this is reflected in the steady-speed fuel consumptions above all. When compared with the four-speed car, there are substantial improvements at every speed, though the gap narrows as the speed rises. In absolute terms, the figures are outstandingly good. To better 30 mpg at 80 mph, and achieve all but 24 mpg at 100 mph, is a remarkable achievement



which underlines both the efficiency of the engine and the aerodynamic cleanness of the body.

The overall consumption is an outstanding 25 mpg, a lot better than any other car in the class. Naturally, the gains are greatest when the Plus 2 is cruised on a motorway; its natural, entirely unstrained cruising speed is around 100 mph.

Handling and brakes

Almost the first thing one notices about the Plus 2 is the lightness of the steering, by comparison with almost any other car of similar size. Despite the lightness, the steering is high-g geared with only 2.6 turns from lock to lock, for a moderate 34 ft turning circle.

The reason for this combination of characteristics is partly that less than half the car's kerb weight is on the front wheels; the occupants sit nearly enough at the centre of gravity, hardly upsetting the balance at all. For the rest, the front suspension geometry set-up – with Lotus' tremendous racing background playing a part – ensures that the response to any steering wheel movement is quick and positive even by the standards of rack and pinion systems. If left to itself and guided with the fingertips the car steers a remarkably straight mean course in these circumstances.

Despite the rearward weight bias, the Plus 2 has good natural straight-line stability.

When stopping hard, the four big discs

play their part as usual, giving over 1g on the decelerometer for a pedal effort of 70 lb. At this top end of the range the brakes are more progressive, and it is easy to maintain the wheels just on the point of locking. Handbrake performance holds the car either way on a 1-in-3 test slope.

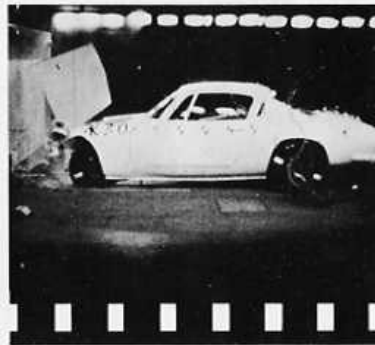
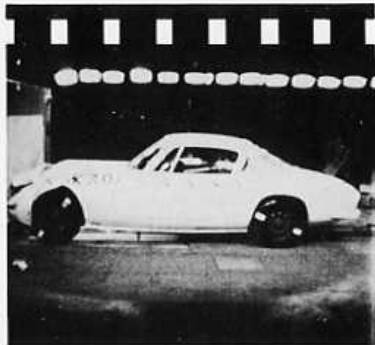
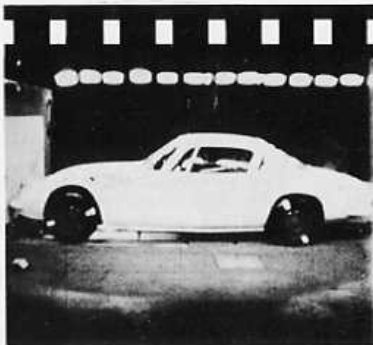
Comfort and convenience

The Plus 2 can be considered either as a very comfortable two-seater or a short distance four-seater. The back seat is suitable for children up to their early teens and there is sufficient room for adults on short trips. With only two occupants, advantage can be taken of the wide range of fore and after seat movement. The seats themselves are well-shaped to give support under the thighs, in the small of the back and under the shoulders.

On a motorway the Plus 2 rides better than many saloon cars. This, plus the small roll angles when cornering, makes it reassuring for front seat passengers, who usually comment that the car does not seem to be going as fast as it really is.

Steering wheel and pedals are well angled and spaced, presenting the driver with no problems, while the gear lever has short, direct movements. The handbrake is tucked away out of sight under the fascia on the right hand side.

The instruments tell the driver everything he needs to know – there is even an ambient temperature gauge.



Heating and ventilation are well taken care of. The heater has a good output, and it is possible to balance the water-valve control so that the interior is kept warm rather than boiling hot. Mass flow through the face-level ventilation is good, helping to keep the interior of the car free from condensation; with the heated rear window a very desirable option.

The fifth gear, together with some detail work on noise suppression, has resulted in a dramatic reduction in cruising noise level. At 100 mph conversation needs only slightly raised voices.

If you appreciate precision instruments; if you want to drive the most advanced, responsive and excitingly conceived road car ever made; if you know the concepts, names and marques that established British track supremacy (and revolutionised racing cars).

You will need merely to test drive a Lotus. It will spoil you for life.

Because, while there are many delightful and attractive "GT", "Sports" and other descriptions of fast cars available to you, far too many seem merely saloons with seats missing.

When you settle yourself behind the Lotus wheel you will realise that here is a machine designed for a very definite purpose - the driver's pleasure.

And however you describe the qualities needed to give that pleasure - Lotus has them all.

To the ultimate degree. And that is what the Legend of the Lotus is all about.

Lotus and your safety

In recent years there has been a growing concern about the safety aspect of motor vehicles. Although for a long time standards were operated with which manufacturers complied, there was growing feeling about the environmental problems that cars caused and also the protection that passengers had in crashes. The whole issue was brought to a head when the American government introduced the National Traffic and Motor Vehicle Safety Act in 1966. Since then regular revisions have been made and new regulations added. The gospel has spread and now Europe is applying new safety standards.

Lotus has met the challenge of all these legal requirements by devoting a considerable amount of its engineering and research efforts to developing cars which,



whilst retaining the Lotus traditions of performance and handling, meet the multitude of regulations in force. The most exacting and costly tests are the destructive crash ones in which a fully built car is impacted at speed into an immovable barrier. We have conducted many such tests, the most recent being carried out at the Motor Industry Research Association's superb indoor facility, under closely controlled laboratory conditions. In some instances, dummies which represent the weight and dimensions of human occupants are belted into the vehicle to study the behaviour of the cars' restraint systems. In other tests high speed cameras, electrical and electronic instruments, are installed in the car to record various crash performance aspects. Many of the frontal impacts are carried out at 30 miles per hour.

You may feel that a 30 mph impact is not too severe, until you realise that the car is impacted into a solid barrier that is far more rigid than any brick wall. Another factor to be taken into account is that impact energy increases as the square of the speed increases. Thus a 30 mph impact has more than twice the severity of a 20 mph impact.

You will see that the pictures opposite give a first-class visual impression of the damage caused to motor cars on being driven into solid barriers during the research process. You will see, that without exception, the passenger compartment remains intact providing the occupant with the maximum possible protection and security.

The Progress of Glass Fibre in the Motor Industry

Glass Fibre Reinforced Plastic has been used for over 20 years as a body-material for passenger cars and a vast number of other uses, the best known of which are boats, truck cabs and smaller portable buildings.

Most people are aware of its virtual indestructibility and freedom from corrosion. In the early days of GFRP car bodies, an impression grew that the integrity and quality of GFRP structure was not as great as the traditional metal body. In most cases this was completely unjustified. This impression grew as GFRP lends itself to small volume production because high capital investment in tooling is not required which gave an impression of cheapness and further quality was dependent to a high degree of operator involvement, since once the laminate cured it was virtually impossible to inspect the structure for integrity.

Lotus have always been in the forefront of GFRP development for passenger cars in this country and by adapting processes and techniques from the aircraft industry as well as developing many of their own, GFRP has been brought to the stage where it is no longer an alternative material to metal for passenger car bodies, but is in fact, considerably superior in all respects.

There has been continuous process development involving resin and gel spray

together with injection moulding techniques, artificial ageing, using special ovens and various non-destructive inspection techniques. The result is a body that is lighter and stronger than a comparable metal structure with complete freedom from corrosion, an un-definite life and far superior surface finish.

This is however, less than half of the virtues of GFRP. Most sportsmen are well aware of the strength and resilience of properly processed GFRP for fishing rods, pole-vaulting etc. The same qualities properly applied will give far greater protection to occupants of the motor car if involved in a crash.

This resilience or ability to deform and absorb energy means that much of the harmful effects of impact are absorbed in distorting the GFRP body without subjecting the occupants of the vehicle to fatal or near fatal forces. If this quality is used in a design where the structure is deliberately designed to deform and absorb energy, it is possible to crash your car at quite high speeds without subjecting the occupants to fatal decelerations. It is one of the simple laws of mechanics as well as common sense that if a moving vehicle has a greater distance in which to slow down, the deceleration forces will be less.

In the course of the various tests now required by law, in various countries throughout the world, Lotus have recorded either the best or near the best of the results of the various tests for occupant protection.

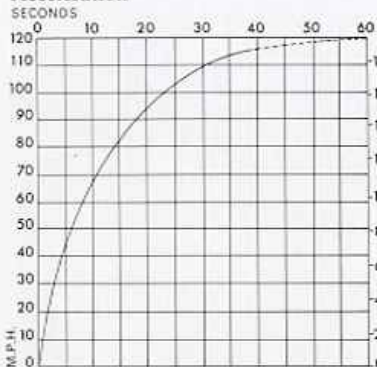
Therefore, although a Lotus by virtue of its superb steering responses, road holding and braking is less likely to be involved in an accident than most cars, if it does become involved in someone else's accident, the occupants stand a far better chance of survival within its GFRP body than in a more conventional metal structure. This structure integrity has to be designed into the car, as has been described, using great resilience of GFRP. In the event of the car being involved in an accident of major proportions, then the GFRP structure is deformed beyond its elastic limit, the structure will begin to break up, still absorbing energy at a high rate. It is then possible to cut away the damaged area and bond in a new section using factory techniques completely restoring the body to its original integrity and durability.



Write or call our Marketing Department, Lotus Cars, Norfolk NOR 92W, Wymondham 3411.

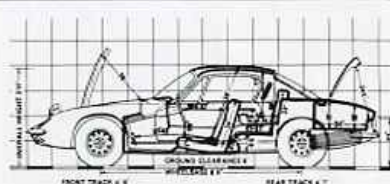
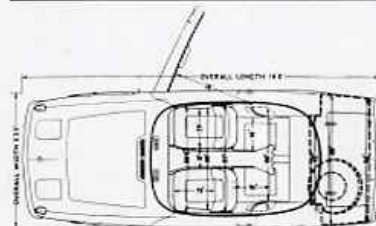


Acceleration



Specifications

SPEED INDICATED	TIME IN SECS	GEAR RATIOS AND TIME IN SECS.			
		mph	Top (3.02)	4th (3.77)	3rd (6.16)
30	2.7	10-30	—	—	7.4
31	—	20-40	—	10.2	6.1
40	3.8	30-50	15.1	9.0	5.6
41	—	40-60	13.8	8.4	5.2
50	5.7	50-70	13.9	8.6	5.5
51	—	60-80	14.8	8.9	5.7
60	7.5	70-90	16.6	9.5	7.4
61	—	80-100	21.4	10.8	—
70	10.1	90-110	30.9	13.1	—
72	—	Standing 1/4-mile			
80	13.9	16.0 sec 85 mph			
82	—	Standing Kilometre			
90	17.9	29.3 sec 108 mph			
93	—	Test distance			
100	23.5	746 miles			
103	—	Mileage recorder			
110	30.3	4 per cent over-reading			
113	—				
120	—				
123	—				



Performance

MAXIMUM SPEEDS

Gear	mph	kph	rpm
Top	120	193	5,380
4th (mean)	121	195	6,800
(best)	121	195	6,800
3rd	88	142	6,800
2nd	60	97	6,800
1st	35	56	6,800

Whilst the Lotus +2S 130 is available in both 4 & 5 speed versions the performance figures chosen here are 5 speed Autocar Road Test figures and are chosen for their particular interest to the continental high speed tourer.

Brakes

FADE

(from 70 mph in neutral)

Pedal load for 0.5 g stops in lb	
1	28
2	30
3	30
4	32
5	35

RESPONSE

(from 30 mph in neutral)

Load	g	Distance
20 lb	0.40	75 ft
40 lb	0.68	44 ft
60 lb	0.92	33 ft
70 lb	1.04	28.9 ft
Handbrake	0.28	107 ft
Max. Gradient	1 in 3	

Performance

	Max mph.
Jaguar E-type V12 2 + 2	142
Porsche 911E 2.4	139
Lotus Plus 2S 130/5	121
Alfa Romeo 2000 GTV	120
Lancia Fulvia Coupe 1.6HF	104

0-60 MPH, SEC

Porsche 911E 2.4	6.4
Jaguar E-type V12 2 + 2	6.8
Lotus Plus 2S 130/5	7.5
Lancia Fulvia Coupe 1.6HF	8.9
Alfa Romeo 2000 GTV	9.2

STANDING ¼-MILE, SEC

Porsche 911E 2.4	14.4
Jaguar E-type V12 2 + 2	14.6
Lotus Plus 2S 130/5	16.0
Alfa Romeo 2000 GTV	16.4
Lancia Fulvia Coupe 1.6HF	17.2

OVERALL MPG

Lotus Plus 2S 130/5	25.6
Alfa Romeo 2000 GTV	21.1
Lancia Fulvia Coupe 1.6HF	19.5
Porsche 911E 2.4	15.7
Jaguar E-type V12	15.2

Gearing

(with 165-13 in. tyres)

Top	22.3 mph per 1,000 rpm
4th	17.85 mph per 1,000 rpm
3rd	13.0 mph per 1,000 rpm
2nd	8.9 mph per 1,000 rpm
1st	5.6 mph per 1,000 rpm

Consumption

FUEL

(At constant speed—mpg)

30 mph	50.6
40 mph	43.5
50 mph	40.4
60 mph	38.1
70 mph	34.8
80 mph	32.0
90 mph	28.4
100 mph	23.8

Typical mpg	28 (10.1 litres/100 km)
Calculated (DIN) mpg	31.7 (8.9 litres/100 km)
Overall mpg	25.6 (11.0 litres/100 km)
Grade of fuel	Premium 4-star (min. 97 RM)

OIL

Consumption (SAE 20W/50)	1,000 miles/pint
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TEST CONDITIONS

Weather: Fine. Wind: 0 mph.
 Temperature: 12 deg. C. (57 deg. F.)
 Barometer: 29.95 in. hg. Humidity: 46 per cent.
 Surfaces: Dry concrete and asphalt.

WEIGHT

Kerb Weight: 17.6 cwt (1,960 lb—888 kg) (with oil, water and half full fuel tank).
 Distribution, per cent: F, 46.9; R, 53.1.
 Laden as tested: 21.6 cwt (2,414 lb—1,094 kg).

TURNING CIRCLES

Between kerbs: L, 34 ft 6 in.; R, 35 ft 10 in.
 Between walls: L, 35 ft 0 in.; R, 37 ft 4 in.
 Steering wheel turns, lock to lock: 2.6.

FRONT ENGINE, REAR-WHEEL DRIVE

ENGINE

Cylinders	4, in line
Main bearings	5
Cooling system	Water; pump, electric fan and thermostat
Bore	86.2mm (3.25in.)
Stroke	72.8mm (2.86in.)
Displacement	1,558c.c. (95.2cu. in.)
Valve gear	Twin overhead camshafts, chain driven direct-acting
Compression ratio	10.3-to-1 Min. octane rating 97 RM
Carburettors	2 Delorto D-HLA 40
Fuel pump	AC mechanical
Oil filter	Full flow, replaceable cartridge
Max. power	126 bhp (net) at 6,500 rpm
Max. torque	113 lb. ft. (net) at 5,500 rpm

TRANSMISSION

Clutch	Borg & Beck, diaphragm-spring, 8.0 in. dia
Gearbox	5-speed, all-synchromesh
Gear ratios	0/D (5th) 0.8 Fourth 1.0 Third 1.37 Second 2.0 First 3.2 Reverse 3.47
Final drive	Hypoid bevel, ratio 3.77-to-1

CHASSIS and BODY

Construction	Welded steel backbone chassis with glassfibre reinforced plastic body
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SUSPENSION

Front	Independent: double wishbones, coil springs, telescopic dampers, anti-roll bar
Rear	Independent: Chapman struts, coil springs, telescopic dampers

STEERING

Type	Rack and pinion
Wheel dia.	14.0 in.

BRAKES

Make and type	Girling, disc front and rear
Servo	Girling vacuum

Dimensions

F 10.0 in. dia.
R 10.0 in. dia.
F 167 sq. in. R 167 sq. in.
Total 334 sq. in. (309 sq. in. ton/laden)

WHEELS

Type	Pressed steel ventilated disc, 5.5 in. wide rim
Tyres—make	Dunlop
type	SP Sport radial ply tubed
size	165-13 in.

EQUIPMENT

Battery	12 volt 57 Ah.
Alternator	Lucas 17ACR, 35 amp a.c.
Headlamps	Lucas sealed beam, 160/100 watt (total)
Reversing lamp	Standard
Electric fuses	4
Screen wipers	2-speed
Screen washer	Standard, electric
Interior heater	Standard, water-valve type
Heated backlight	Extra
Safety belts	Standard, inertia-reel type
Interior trim	PVC seats and headlining
Floor covering	Carpet
Jack	Screw scissor type
Jacking points	Two each side under sills
Windscreen	Laminated
Underbody protection	Paint overall (GFRP body)

MAINTENANCE

Fuel tank	13 Imp. gallons (58 litres)
Cooling system	14 pints (including heater)
Engine sump	7.5 pints (4 litres) SAE 20W/50 Change oil every 5,000 miles. Change filter every 5,000 miles.
Gearbox	2 pints SAE 80EP. Change oil every 5,000 miles.
Final drive	2 pints SAE 90EP.
Grease	2 pints every 5,000 miles.
Tyre pressures	F 20; R 24 psi (normal driving) F 26; R 30 psi (fast driving)
Max. payload	746 lb. (338 kg)

PERFORMANCE DATA

Top gear mph per 1,000 rpm	22.3
Mean piston speed at max. power	3,110 ft/min.
Bhp per ton laden	117 (net)

