SUPPLEMENTARY

# Autotest

## ELSE LOTUS EUROPA (1,470 c.c.)

**AT-A-GLANCE: Even more eye-catching appearance and sportier performance add to appeal of Lotus Europa. Superlative handling still further improved. Noisy when driven hard and less economical than expected. Basic shortcomings of rather cramped accommodation and very poor three-quarter rear vision unchanged.**

**MANUFACTURER**
Basic car: Lotus Cars Ltd., Norwich (NOR 92W), Norfolk, England.
Modified and distributed by: J. A. Else & Son, Codnor, Derbys. DE5 4QB.

**PRICES**

| | | | |
|---|---|---|---|
| Basic Europa S2 | £1,275 | 0s | 0d |
| Purchase Tax | £391 | 19s | 3d |
| Seat belts | fitted as standard | | |
| Else Stage IV conversion | £280 | 0s | 0d |
| Total (in G.B.) | £1,946 | 19s | 3d |

**EXTRAS (inc. P.T.)**

| | | | |
|---|---|---|---|
| *Servo (incl. harder pads) | £19 | 11s | 10d |
| Tinted window (front) | £19 | 11s | 10d |
| Tinted windows (full set) | £26 | 2s | 5d |

*Fitted to test car

**PRICE AS TESTED** £1,966 11s 1d

**PERFORMANCE SUMMARY**

| | |
|---|---|
| Mean maximum speed | 100 mph plus (see text) |
| Standing start ¼-mile | 16.9 sec |
| 0–60 mph | 9.4 sec |
| 30–70 mph through gears | 9.7 sec |
| Typical fuel consumption | 25 mpg |
| Miles per tankful | 170 (340 with optional second tank) |

THE Europa, in its original form (Mark 46, in Lotus language), first went into production as long ago as March 1967. The whole of production was initially earmarked for export and not until July of this year was the sleek, mid-engined coupé made available to British buyers. Even now, it is a rare sight on British roads and its unusual and racy appearance attracts a great deal of attention.

In May 1968, the much improved S2 version (designated the Mark 54) made its debut. Although unchanged mechanically, it is equipped and finished to a much higher standard than the original version.

Basically, the Europa's power train is Renault 16. Changes to valve size, cam profile, compression ratio and carburation have resulted in a useful increase in power. The peak output in Europa form is claimed to be 78 bhp (net) at 6,500 rpm, compared with the standard unit's 58 bhp at 5,000 rpm.

As installed in the rear of the Europa, the Renault engine/transmission assembly is about-face (i.e. with the transmission behind, instead of ahead of the engine). Specially made final drive gears have therefore to be used to restore correct drive-shaft rotation. Because of this, Lotus have taken the opportunity to raise the overall gearing, a final drive ratio of 3.56 to 1 being chosen to replace the standard Renault 16's 3.77 to 1. In practice, this does little more than compensate for the Europa's smaller diameter wheels (in standard form, it is shod with 155-13 in. radials, whilst the Renault 16 runs on 145-14 in. radials).

Although we have not, as yet, had an opportunity to check the performance of a production Europa, our testers have driven several examples since the model's inception in 1967. On each occasion, those concerned have felt that the Europa's brilliant chassis is worthy of a more sporting power train. Prominent among the features criticized have been the mediocre performance, the widely-spaced gearbox ratios and the poor gear change. Almost inevitably, the much more exciting Mark 47 comes to mind. This is a highly successful competition version of the Europa, powered by the Lotus-Ford twin cam engine, driving through a Hewland gearbox. How much nicer a detuned, touring version of this would be, one thinks. This is undoubtedly so, but a specification of this kind would push the price sky-high, especially in the vital European export markets. Perhaps a more logical choice would be the 1,565 c.c. Renault 16TS unit, with its Gordini-inspired hemispherical combustion chamber layout. It may well be, however, that commercial considerations also prohibit the use of this engine. Whatever the reason, the shortcomings of the standard product undoubtedly make the Europa an obvious and potentially rewarding candidate for specialist attention.

Derbyshire Lotus distributors J. A. Else and Son have wasted no time in exploiting this untapped potential and are now able to supply a tuned and customized version known as the Else-Europa. It is, in fact, available in four forms.

In **Stage 1**, which costs an additional £95 fitted, the modifications are confined to the engine. A Weber 45 DCOE carburettor, mounted on a special cast-alloy manifold, is used. Breathing is further improved by a four-branch exhaust manifold and a free-flow silencer system. A pancake air-cleaner is used and a cast-alloy rocker cover, finished in red crackle enamel, is fitted.

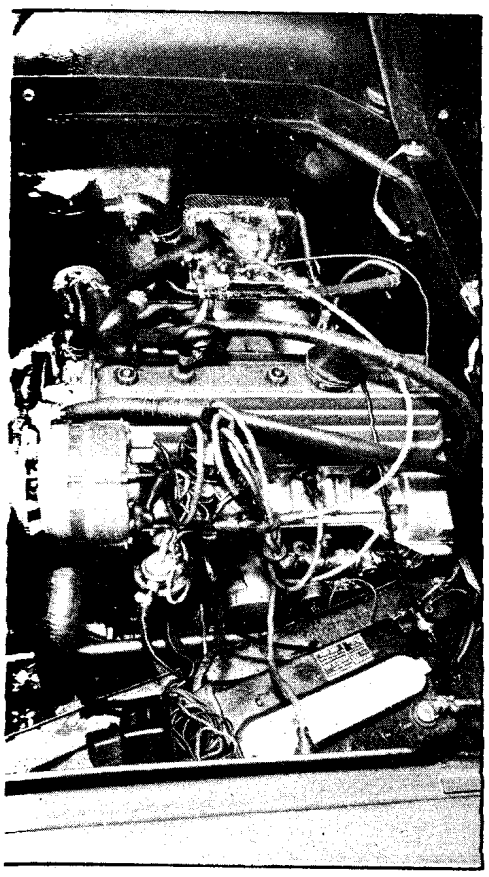
**Stage 2** includes all the Stage 1 modifications, to which is added a special camshaft. Fitted, the complete kit adds £145 to the price of the Europa.

**Stage 3** includes the Stage 2 engine modifications, plus a set of cast-alloy 5½J wheels. These are shod with radial-ply tyres, 155-13 in. at the front (standard Europa size) and 175-13 in. at the rear. Alternatively, Avon "Wide Safety" low-profile cross-ply tyres can be specified, 6.2-13 in. at the front and 6.9-13 in. at the rear. Total additional cost, inclusive of fitting, is £225.

**Stage 4** is the most advanced. Added to the Stage 3 specification are a very attractive custom paint scheme, an additional petrol tank, air horns, wing mirrors, "bonnet" safety catches and an improved gear change linkage. Cost, again inclusive of fitting, adds a total of £280.

Existing cars can also be modified, prices in this case being dependent on the condition of the particular car.

Apart from the absence of an additional tank, our test car was to Stage 4 specification. It was most attractively finished in yellow, with matt-black roof and rear "deck". Side-winders—so often a cheap and vulgar feature—helped to relieve the Europa's somewhat plain hind quarters and to emphasise



its low build. This particular example was fitted with Avon low-profile cross-ply tyres. It was also equipped with the optional brake servo and harder pads—Else always specify this on the cars they sell.

We find that drivers' reactions to the Europa—standard or modified—vary enormously. Most people—experienced drivers included—feel ill at ease when they drive it for the first time, especially if this happens to take place in congested traffic conditions. The exaggerated rake of the seats and the almost complete absence of rear quarter vision are largely responsible for this. Most keen drivers come to terms with these features quite rapidly but there are some who never do. Some, on the other hand, grow to really like the car, their enthusiasm for its superlative handling enabling them to overlook its less desirable features.

There is undoubtedly a tendency to compare the Europa, even in its standard form, with the more expensive Elan. In the case of the Else-Europa, this becomes a very valid comparison. In Stage 1 form, it costs a minimum of £1,762—just £7 less than an S4 Elan. The Stage 4 version sells for a minimum of £1,947 (more when a brake servo is fitted)—£5 more than the Special Equipment S4 Elan.

**Performance**

In deplorable weather, the Else-Europa returned a 0-60 mph time of 9.4 sec. Although this does not compare with the SE Elan's time of 7.8 sec (*Autocar*, 9 October 1969)—achieved, incidentally, in ideal conditions—it is 0.5 sec better than the Lancia Fulvia Coupé 1.6 HF achieved (no mean performer for its size) and no fewer than 3.5 sec better than the MGB. An excellent 16.9 sec was recorded for the standing ¼-mile—just 1 sec slower than the SE Elan.

Adverse weather conditions prevented us from establishing the absolute maximum speed, but we had no difficulty in lapping MIRA's banked high-speed circuit at 110 mph. In normal circumstances, there is undoubtedly more to come. Of greater importance, however, is its high-speed cruising potential. The excellent shape (with a reputed drag coefficient of only 0.29) means that only a whiff of throttle is needed to maintain 90 mph on the remarkably accurate speedometer. This represents an engine speed of just under 5,000 rpm—about 4,700 rpm on the car's under-reading tachometer—and the noise level is completely acceptable. Even 100 mph can be considered a realistic cruising speed on level, straight roads. With a wide-open throttle, however, induction roar is most obtrusive. Engine noise insulation generally, in fact, leaves a lot to be desired. At idling speeds, for instance, the valve gear seems unusually noisy.

Despite its large inlet tracts, the engine remains remarkably flexible. Top gear acceleration from as little as 20 mph presents no problems. At the other end of the scale, however, it seems less happy. Anything over 6,000 rpm on the tachometer (a true 6,400 rpm) sounds very busy and there is considerable vibration. In fairness, it must be pointed out that we occasionally revved it to the 6,500 rpm red line—over 6,900 rpm true—without any additional signs of distress.

In view of the Europa's light weight and excellent shape, the overall petrol consumption of 23.1 mpg is a trifle disappointing. Careful checks suggest that few owners are likely to better 25 mpg.

Considerable trouble was experienced with the special cast-alloy rocker cover. It stemmed from the fact that no positive location had been provided for the rather narrow and thick neoprene gasket, causing it to work its way out. The introduction of locating dowels is claimed to have solved this problem.

The leaks caused by this gasket problem made accurate oil consumption checks a difficult taks, but it is certainly better than 300 miles per pint.

Else also claim to have soived the heavy throttle problem experienced on the test car. An effort of 25lb was required to actuate it.

**Transmission**

Although the gear-change of the Else car is the best we have experienced on an Europa to date, it still leaves much to be desired. It feels rather vague, especially when selecting reverse. Lever efforts can also be unpleasantly high. On the other hand, the synchromesh is really effective and the gears are quiet in operation.

Standard Renault 16 gearbox ratios are used. These are quite widely spaced, the gap between third and top being abnormally large by sports car standards.

Although the clutch pedal effort, at 55 lb, is much too high for comfort, the clutch itself is unusually smooth and easily copes with MIRA's 1 in 3 gradient from a standstill. The pedal, however, is ridiculously close to the steering column and no convenient resting place is provided for the driver's foot.

**Ride and handling**

Many consider the Europa to be in a class of its own so far as ride and handling are concerned. The consensus of opinion among our test staff suggests that the low-speed ride of this particular example is marginally better than that of the SE Elan tested last October—possibly because cross-ply tyres are fitted. At speeds above 60 mph or so, the Elan has the advantage. In fact, this particular Europa suffered from a vertical shake in the 80-98 mph range. Else inform us that unbalanced wheels were responsible for this.

The steering is easily the best we have experienced on a production car. Even so, it is not entirely devoid of faults. It is high geared (only 2.2 turns from lock to lock, for a mean turning circle diameter of just over 35ft) and it is very light and accurate. Kick-back is virtually non existent but longitudinal disturbances do cause some "nibbling." Surprisingly, there is virtually no castor action around straight-ahead.

The handling is a sheer joy. Response to steering movements is instantaneous and the car's cornering powers are almost uncanny. It behaves in a substantially neutral fashion in most circumstances. Lifting-off in mid-corner causes it to tighten its line slightly. In greasy conditions, of course, a heavy foot will unstick the rear end, but a remarkable amount of power can be used before this occurs. Even when it does, the car remains under complete control and is eminently "catchable". Through roundabouts, in wet conditions, it is easily the fastest car we have driven. These are the circumstances where it beats the Elan. There is, however, a snag. On bumpy surfaces, its straight-line stability at speed is poor. At first we thought the yawing might have been unwittingly induced by the driver but further experience ruled this out.

**Brakes**

As the test car was fitted with the optional servo and hard pads, we carried out a response check. Despite abominably wet conditions, it achieved a remarkable 0.97 g, with the rear wheels just on the point of locking. The pedal effort was 90 lb—a sensible figure for a car of this type.

The handbrake could not cope with the car facing up the 1-in-3 gradient but managed easily enough when facing down. It proved capable of producing a 0.33 g deceleration when applied to the fullest extent of its travel.

***Comfort and convenience***

The Europa is not an easy car to get into and out of. In wet conditions, a great deal of road filth finds its way on to the door sills, making it all too easy to stain one's clothes.

Once in, the seats are very comfortable and afford superb location. Apart from the crowded pedal layout, the driving position is good and all the controls easily reached.

Despite the proximity of the steeply-raked screen-pillar to the driver's eyes, forward vision is good. One large wiper blade is used—a feature which results in appreciable blind spots in dirty conditions. The two-speed motor is unusually energetic, which helps immensely in really heavy rain.

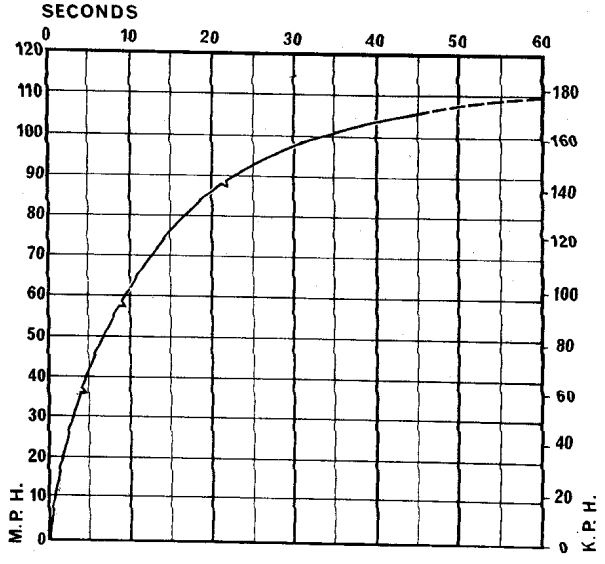
The view directly behind is good, but it is virtually non-existent to the rear quarters. The door drop-windows are electrically actuated and are rapid and silent in action.

The heating and ventilating system works quite well, although the driver's left foot tends to be left out in the cold. The front luggage compartment serves as a plenum chamber but this did not prevent road dirt finding its way through the system in really bad conditions. The motors for the heater boost and cooling system fans are controlled by the same three-position switch. Neither is unduly noisy. Effective cold-air eyeballs are fitted.

Although accommodation for bits and pieces inside the car is restricted to a small, open glove box and a pocket in each door, the two luggage compartments provide a surprising amount of room. The rear one—a moulded glass-fibre box—is easily removed, which greatly improves access to the transmission and drive-shafts. Engine accessibility is also good.

It was interesting to find that the Smiths Radiomobile behaved faultlessly, despite the absence of any form of HT suppression shield. □

# ACCELERATION




| SPEED MPH TRUE | INDICATED | TIME IN SECS |
|---|---|---|
| **30** | 30 | 3.1 |
| **40** | 40 | 4.9 |
| **50** | 50 | 6.8 |
| **60** | 60 | 9.4 |
| **70** | 70 | 12.8 |
| **80** | 80 | 16.8 |
| **90** | 90 | 22.8 |
| **100** | 101 | 33.9 |

**SPEED RANGE, GEAR RATIOS AND TIME IN SECONDS**

| mph | Top (3.66) | 3rd (5.26) | 2nd (8.00) | 1st (12.83) |
|---|---|---|---|---|
| 10–30 | — | — | 5.1 | 2.7 |
| 20–40 | 15.2 | 7.1 | 3.5 | — |
| 30–50 | 13.4 | 6.2 | 3.7 | — |
| 40–60 | 11.2 | 6.2 | — | — |
| 50–70 | 12.1 | 6.4 | — | — |
| 60–80 | 13.1 | 7.3 | — | — |
| 70–90 | 13.4 | — | — | — |
| 80–100 | 17.9 | — | — | — |

**Standing ¼-mile**
16.9 sec 80 mph
**Standing kilometre**
31.9 sec 99 mph
Test distance
1,098 miles
Mileage recorder
1 per cent
under-reading

# PERFORMANCE

## MAXIMUM SPEEDS

| Gear | mph | kph | rpm |
|---|---|---|---|
| Top (mean) | 110 plus (see text) | 177 | 6,080 |
| 3rd | 88 | 142 | 7,000 |
| 2nd | 58 | 93 | 7,000 |
| 1st | 36 | 58 | 7,000 |

# BRAKES

**Response (from 30mph in neutral)**

| Load | g | Distance |
|---|---|---|
| 20lb | 0.23 | 131ft |
| 40lb | 0.53 | 57ft |
| 60lb | 0.76 | 40ft |
| 80lb | 0.92 | 33ft |
| 90lb | 0.97 | 31.0ft |
| Handbrake | 0.33 | 91ft |

Max. Gradient 1 in 4

**GEARING (with 6.9–13 in. tyres)**

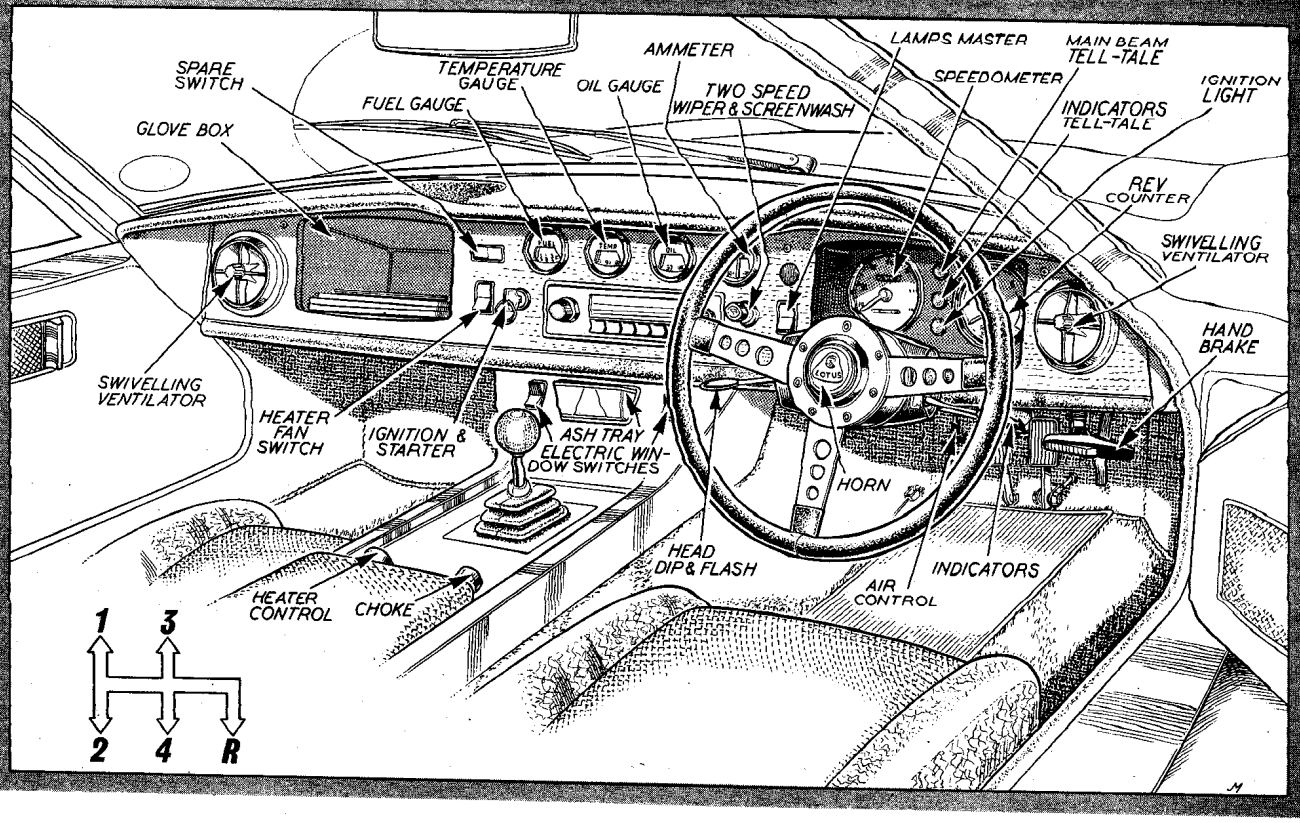
Top . . . . . 18.1 mph per 1,000 rpm
3rd . . . . . 12.6 mph per 1,000 rpm
2nd . . . . . 8.3 mph per 1,000 rpm
1st . . . . . 5.2 mph per 1,000 rpm

# CLUTCH

Pedal 55lb and 4in.

**MOTORWAY CRUISING**

Indicated speed at 70 mph . . . . . 70 mph
Engine (rpm at 70 mph) . . . . . 3,870 rpm
(mean piston speed) . . . . 2,056 ft/min.
Passing (50–70 mph) . . . . . 12.1 sec



# ELSE LOTUS EUROPA (1,470 c.c.)

## CONSUMPTION

### FUEL

**Typical mpg** . . . . 25 (11.3 litres/100km)
Overall mpg . . . . 23.1 (12.2 litres/100km)
Grade of fuel: Super Premium, 5-star (min. 100 RM)

### OIL

Miles per pint (SAE 20W/50)300

### TEST CONDITIONS:

Weather: Raining. Wind: 7–10 mph. Temperature: 6 deg. C. (44 deg.F). Barometer 29.25 in. hg. Humidity: 86 per cent. Surfaces: Wet concrete and asphalt.

### WEIGHT:

Kerb weight 13.1 cwt (1,465lb–664kg) (with oil, water and half full fuel tank.) Distribution, per cent F, 45.4; R. 54.6. Laden as tested: 16.7 cwt (1,868lb–846kg).

### TURNING CIRCLES:

Between kerbs L. 33ft 8in.; R. 36ft 6in. Between Walls L. 36ft 4in.; R. 39ft 2in. steering wheel turns, lock to lock 2.2.
Figures taken at 5,100 miles by our own staff at the Motor Industry Research Association proving ground at Nuneaton and on the Continent.

## SPECIFICATION

### MID ENGINE, REAR-WHEEL DRIVE

**ENGINE**

| | |
|---|---|
| Cylinders | 4, in line |
| Main bearings | 5 |
| Cooling system | Water: pump, electric fan and thermostat |
| Bore | 76.0mm (2.04in.) |
| Stroke | 81.0mm (3.25in.) |
| Displacement | 1,470 c.c. (89.7 cu.in.) |
| Valve gear | Overhead: pushrods and rockers |
| Compression ratio | 10.25-to-1 Min. octane rating: 100 RM |
| Carburettor | Weber 45DCOE |
| Fuel pump | Mechanical |
| Oil filter | Full-flow, replaceable element |
| Max. power | 100 bhp (net) at 4,800 rpm |

**TRANSMISSION**

| | |
|---|---|
| Clutch | Ferodo single dry plate diaphragm spring |
| Gearbox | 4-speed, all-synchromesh |
| Gear ratios | Top 1.03<br>Third 1.48<br>Second 2.25<br>First 3.61<br>Reverse 3.25 |
| Final drive | Hypoid bevel, 3.56-to-1 |

**CHASSIS and BODY**

| | |
|---|---|
| Construction | Separate GRP body on steel backbone frame |

**SUSPENSION**

| | |
|---|---|
| Front | Independent, double wishbones, coil springs, telescopic dampers |
| Rear | Independent, leading arms, lower links, fixed-length drive shafts, coil springs, telescopic dampers |

**STEERING**

| | |
|---|---|
| Type | Rack and pinion |
| Wheel dia. | 14.0in. |

**BRAKES**

| | |
|---|---|
| Make and type | Girling disc front, drum rear |
| Servo | Girling vacuum, optional |
| Dimensions | F 9.25in. dia. R 8.0in. dia. 1.25in. wide shoes |
| Swept area | F 158 sq.in., R 64 sq.in. Total 222 sq.in. (238 sq.in./ton laden) |

**WHEELS**

| | |
|---|---|
| Type | Cosmic, cast aluminium alloy, 5.5in. wide rim. |
| Tyres—make | Avon |
| —type | Wide Safety cross-ply tubeless |
| —size | 6.2-13in (front) 6.9-13in. (rear) |

**EQUIPMENT**

| | |
|---|---|
| Battery | 12 Volt 36 Ah |
| Alternator | S.E.V. 30 amp a.c. |
| Headlamps | Lucas sealed beam, 120/90 watt (total) |
| Reversing lamp | Standard |
| Electric fuses | 2 |
| Screen wipers | 2-speed, self-parking |
| Screen washer | Standard, manual plunger |
| Interior heater | Standard, water valve type |
| Heated backlight | Not available |
| Safety belts | Extra, anchorages built in |
| Interior trim | Pvc seats and headlining |
| Floor covering | Carpet |
| Jack | Screw pillar |
| Jacking points | One each side |
| Windscreen | Laminated |
| Underbody protection | Non-corroding GRP body |

**MAINTENANCE**

| | |
|---|---|
| Fuel tank | 7 Imp. gallons (32 litres) |
| Cooling system | 10 pints (including heater) |
| Engine sump | 7 pints (4 litres) SAE 20W/50. Change oil every 3,000 miles. Change filter element every 6,000 miles. |
| Gearbox and final drive | 3.5 pints SAE 80EP. Change oil every 6,000 miles. |
| Grease | No points |
| Tyre pressures | F 16: R 26 psi |

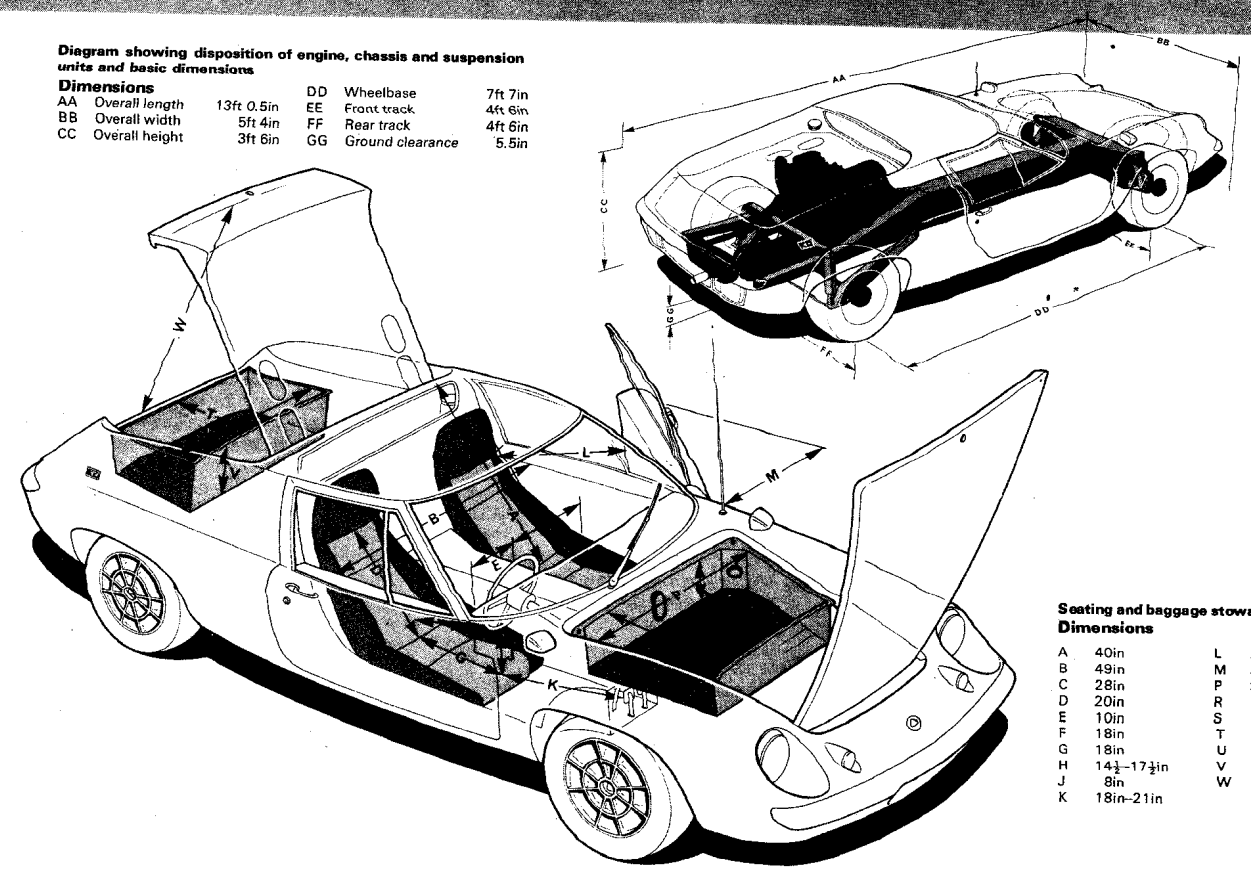
**PERFORMANCE DATA**

| | |
|---|---|
| Top gear mph per 1,000 rpm | 18.1 |
| Mean piston speed at max. power | 2,550 ft/min |
| Bhp per ton laden | 120 |

**Diagram showing disposition of engine, chassis and suspension units and basic dimensions**

**Dimensions**

| | | | | | |
|---|---|---|---|---|---|
| AA | Overall length | 13ft 0.5in | DD | Wheelbase | 7ft 7in |
| BB | Overall width | 5ft 4in | EE | Front track | 4ft 6in |
| CC | Overall height | 3ft 6in | FF | Rear track | 4ft 6in |
| | | | GG | Ground clearance | 5.5in |




**Seating and baggage stowage Dimensions**

| | | | |
|---|---|---|---|
| A | 40in | L | 28in |
| B | 49in | M | 34in |
| C | 28in | P | 37in |
| D | 20in | R | 17in |
| E | 10in | S | 17in |
| F | 18in | T | 22in |
| G | 18in | U | 33in |
| H | 14½–17½in | V | 12in |
| J | 8in | W | 53½in |
| K | 18in–21in | | |