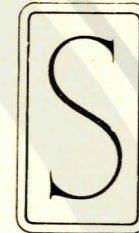




SUNBEAM

INSTITUTE





THE
SUNBEAM
CHASSIS AND ENGINE

INSTITUTE



SUNBEAM MOTORS LIMITED, BARLBY ROAD, LADBROKE GROVE, LONDON, W.10

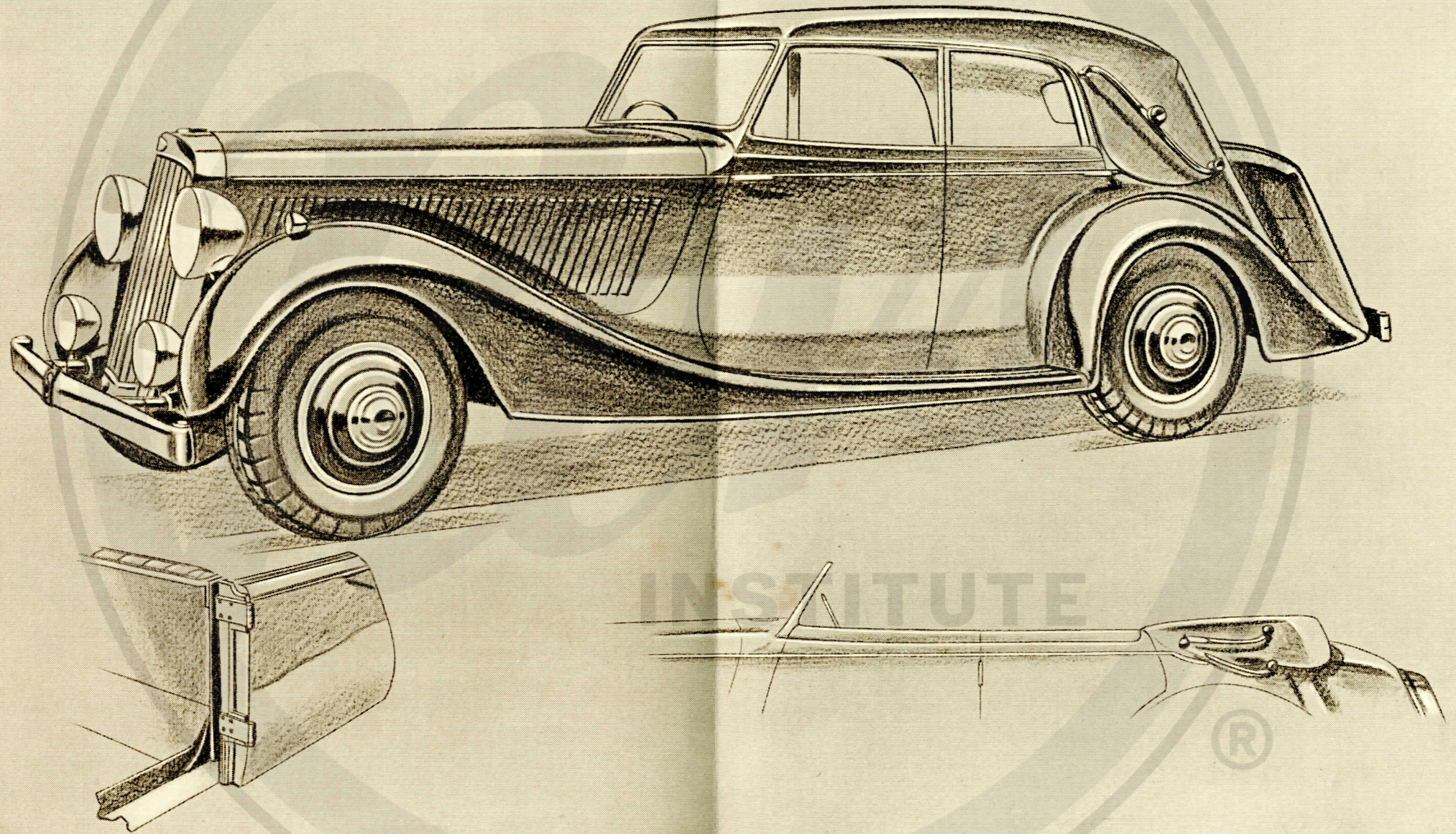
Telephones: Park 5000

Telegrams: "Sunoserv, Nottarch, London"

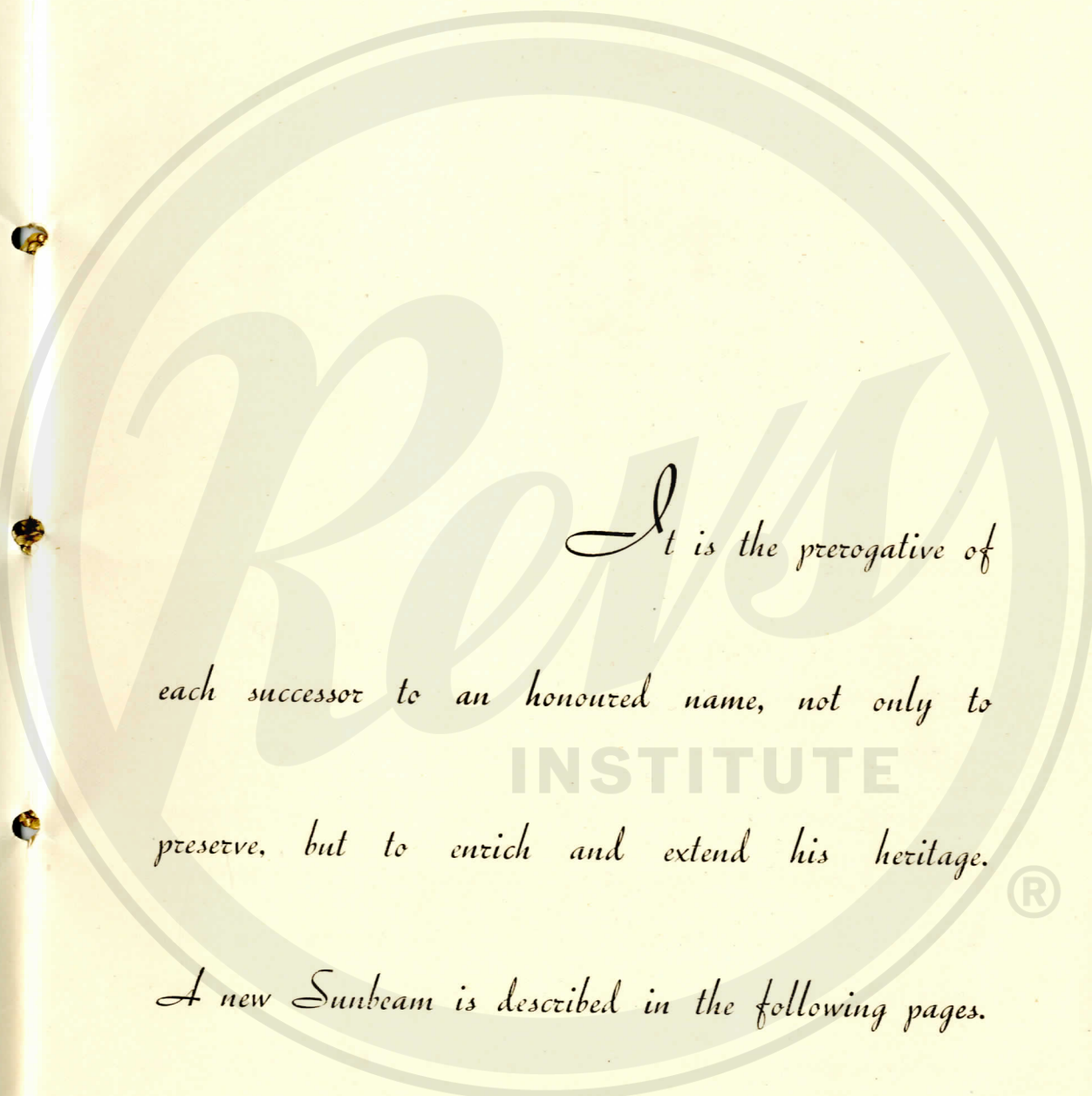
World Exporters: Rootes Limited, Devonshire House, Piccadilly, London, W.1

A SUNBEAM PHAETON

(THIRTY CONTINENTAL CHASSIS)



£1,295

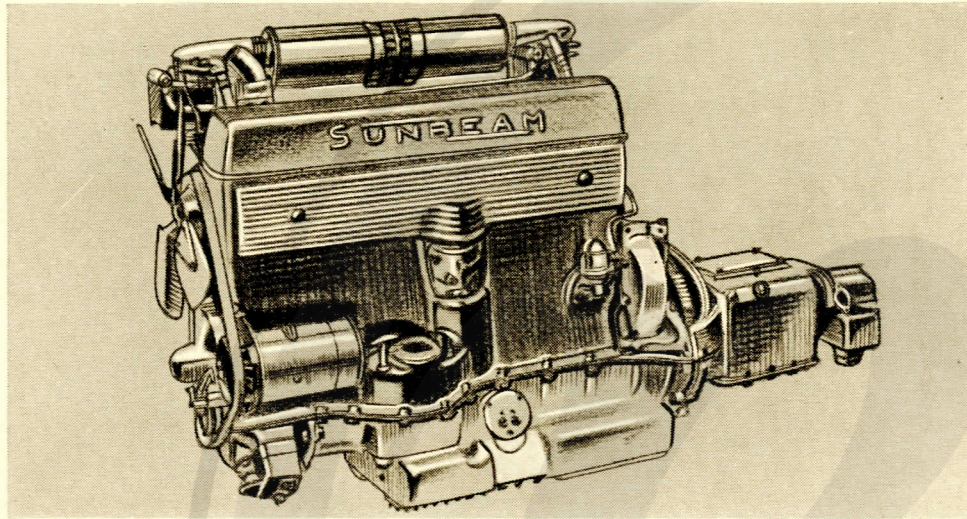


*It is the prerogative of
each successor to an honored name, not only to
preserve, but to enrich and extend his heritage.*

A new Sunbeam is described in the following pages.

THE ENGINE

by GEORGES ROESCH,
Chief Engineer, Sunbeam Motors Ltd.



Nearside view of the Engine—showing the exceptionally "clean design."

Sunbeam character and charm have always been founded on the efficiency and lasting qualities of the power units. But, for the new unit, it was considered essential to widen this foundation by including smooth and silent propulsion at all speeds and rates of acceleration, and simplicity of design. To what extent success in these directions has been achieved will, we hope, be appreciated by the following

description of the applied effort to eliminate all possible sources of noise, whilst the illustration above gives some idea of the compactness of the unit.

The power plant which would best fulfil these requirements was naturally the subject of lengthy study. Firstly, the engine had to be capable of developing adequate power in relation to the weight of the car, to give the latter

THE SUNBEAM ENGINE

the highest rate of acceleration consistent with comfort for the passengers. For its size and wearing qualities, it had to have the largest bearing surfaces as lightly loaded as possible, whilst the unit as a whole had to be very short and light.


With a large car it is advantageous to keep the wheelbase as short as possible, and it will be appreciated, therefore, that the more compact the engine design, the easier it will be to attain this object. In this connection

it is interesting to note that the new engine, for a capacity of 4.5 litres, is actually shorter than our previous six cylinder $3\frac{1}{2}$ Litre engine.

The new engine has been designed to give exceptional sturdiness in proportion to its

high power to weight ratio. The reduction of weight has not been attained by sacrificing the rigidity and hard wearing qualities of the engine structure by the indiscriminate use of light but softer and less stable materials. It has been accomplished by the avoidance of every unnecessary complication in a close study of the combination of essentials in its conception.

CYLINDER BLOCK AND CRANKCASE.

The engine has a bore of 80 mm. and a stroke of 112 mm., giving a cubic capacity of 4,503 c.c. The treasury rating is 31.7 h.p., the annual tax in the United Kingdom being £24. 

The base of the engine is formed by the cylinder block and crankcase which are cast in one, the metal used being a special cast-iron alloy ensuring the longest life for its bearings. No separate liners are used, each cylinder bore being adequately cooled by direct contact with the water.

The bottom half of the crankcase, which is detachable from the top half, is made of aluminium and is designed to act as an oil radiator.

CYLINDER HEAD AND VALVE GEAR.

A detachable head, having two valves per cylinder, is fitted on top of the cylinder block. The valves are of austenitic nickel chrome steel and are actuated by extremely light push rods

and rockers. This valve gear has been designed to ensure freedom from adjustment and absence of noise in operation.

INLET AND EXHAUST MANIFOLDS.

To the cylinder head is fitted a uniflow exhaust pipe which ensures the easy evacuation of the burnt gases. The inlet pipe is fitted with two carburettors, one at each end of the engine. This system gives, by reason of a continuous direction of gases, a distribution which enables the engine to pick up smoothly and rapidly from the lowest road speeds.

An air cleaner and silencer of large capacity ensures absence of noise and filtration of the air absorbed by the engine.

CRANKSHAFT.

The hardened crankshaft is supported by ten main bearings. It has been designed and balanced to reduce to a minimum the load on these bearings and to give, therefore, the largest area available to the connecting rod big ends.

It is fitted with a vibration eliminator.

CAMSHAFT AND DRIVE.

The suppression of noise and reduction of wear have been dealt with by eliminating all but the gears essential for transmitting a necessary motion.

The main timing gear is fitted at the back of the crankshaft between two main bearings. It is of the helical type, very wide with close

pitched teeth. Both the oil pump and distributor are driven off the camshaft by the same helical gear. A small gear of similar type is fitted at the end of the camshaft for the purpose of obtaining the drive for a revolution counter or other accessory.

COOLING SYSTEM.

The cooling system is governed by an internal thermostat which ensures the cylinders working at adequate temperatures, the correct temperature being attained almost immediately after starting. This provides the minimum of corrosion in the cylinder bores when starting up. All water passages are internal, reducing the number of joints and their attendant complications.

The water pump is of the centrifugal type, the

impellor being driven direct from the end of the camshaft, an arrangement typical of the simplicity with which the engine has been conceived. The pump is leak-proof by means of a special design of gland. An adjacent tap provides for the complete and instant drainage of the whole cooling system. The fan is of the four blade large diameter type, running in ball bearings housed in the cylinder itself and is automatically lubricated by the engine oil circulation.

LUBRICATION SYSTEM.

A special point of interest is the lubrication of the engine unit. When starting from cold the oil is rapidly heated by the temperature of the water in the cylinder block which, as previously

stated, is thermostatically regulated. When the oil has a tendency to rise above a certain temperature it is again cooled by the circulating water of the engine. This regulation ensures the maintenance of the lubricating oil in good condition, and the most rapid attainment of the correct working temperature. This makes for long life and maximum efficiency.

Not only is the temperature of the oil thus governed within close limits but so also are its lubricating qualities by the following means:— A large filter, readily accessible, is fitted below the oil filler cap. This filter separates all foreign matter detrimental to the lubrication of the bearings. Furthermore only the oil to be consumed by the bearings passes through the filter,

any overflow from the pump being by-passed before reaching it. The oil is then further cleaned by centrifugal action of the crankshaft which has been specially designed for this purpose.

The filler cap also actuates a chassis lubrication pump. Next to this cap is an oil dip stick with which one may confirm the quantity of oil in the crankcase, the level of which is also shown on the Instrument Panel Level Indicator. This dip stick, when pressed down, opens the drain cock to empty the crankcase instantly.

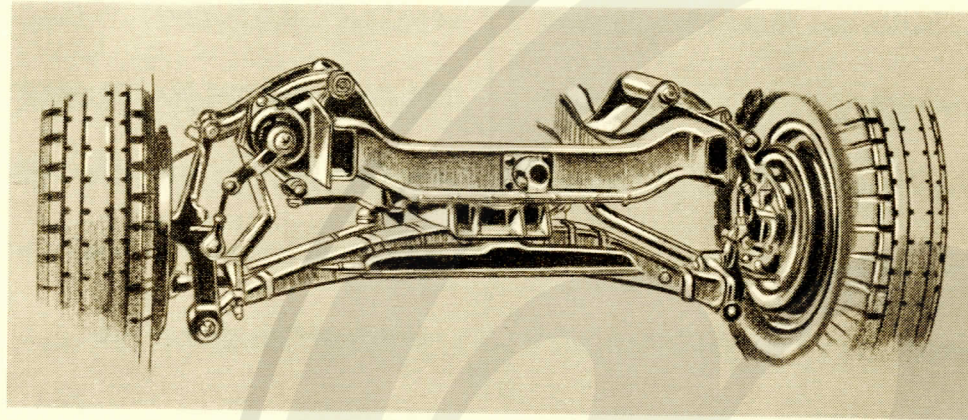
No oil connection of any kind inside the engine is made by separate piping. The oil circulates inside conduits which are integral with the engine structure.

ENGINE MOUNTING.

The engine is supported by rubber mounting and all controls are designed so that no variation takes place in the settings, made by hand or foot operation, when the engine oscillates.

GENERAL.

Great care has been taken to ensure the greatest reliability, and all fittings have been designed into the engine structure rather than on to it. Furthermore it will be noted that with exception of the carburettors and starter, every other accessory on the engine is fitted on the same side, namely:—the oil and water fillers, oil filter, water and oil drain cocks, petrol pump, chassis lubrication pump, and the carefully protected ignition system.



The independent springing of the front wheels.

The Thirty Chassis provides for the largest and most luxurious carriagework.

The Thirty Continental Chassis has the same engine but a slightly shorter wheelbase giving higher performance.

FRAME

The frame is of the "box" girder type, rigidly supported by five "box" section cross members. The side members are exceptionally deep, and additional support is given by two side bearing

members at the front end. This practice gives great strength whilst preserving at the same time the advantage of lightness.

STEERING

The steering is of the worm and nut design and is self-centering. In conjunction with the independent front wheel suspension, remarkable freedom from road reaction is provided. The steering itself is extremely accurate at all speeds.

SUSPENSION

Independent front wheel suspension is employed. It is of the "wishbone" pattern and the transverse springs are fitted with gaiters. There is an automatic lubricating pump for the mechanical parts of this suspension, and it is interesting to note that when replenishment of the engine sump is necessary, the action of lifting the filler cap ensures a supply being delivered to the automatic lubricating pump serving this system. At the rear there are long, semi-elliptic springs. Hydraulic shock absorbers are fitted both front and rear. There is a control immediately below the steering wheel with which the driver can vary the adjustment to suit different road conditions and speeds in order to maintain the maximum comfort for the occupants of the car.

BRAKES

Self-energising four wheel brakes in large drums and operated by cables are employed. The shoes are of fully-floating type. The brakes operate with equal facility when the car is in reverse. The hand-brake lever is placed on the right of the driver.

TRANSMISSION

The gear-box is operated by a centrally-placed gear lever, and is of the silent synchromesh design, possessing four forward speeds and reverse.

The gear ratios are as follows:

Thirty Chassis	Thirty Continental Chassis
Top 4.27-1	Top 4.09-1
3rd 6.26-1	3rd 6.00-1
2nd 10.55-1	2nd 10.10-1
1st 15.80-1	1st 15.13-1
Reverse 15.80-1	Reverse 15.13-1

The gear-box is supported at the rear end by a rubber mounting.

The rear axle is semi-floating with spiral bevel drive. Ball and roller bearings are fitted to ensure silence and long life.

WHEELS

Wire wheels of bolt-on type are employed, the rim size being 4 ins. by 17 ins.

TYRES

Pattern 90 Dunlop Fort tyres 7 ins. by 17 ins. are supplied.

JACKING SYSTEM

The chassis is equipped with permanent wheel jacks both at the front and rear.

CHASSIS LUBRICATION

As detailed above under "Suspension" the front wheel independent springing mechanism is catered for by an automatic central lubricating

pump. High pressure grease gun lubrication serves other points of the chassis.

PETROL TANK

The capacity of the tank is 20 gallons (90.8 litres).

ELECTRICAL EQUIPMENT

This is a 12-volt system, the dynamo being of the ventilated type with constant voltage control output. The battery is 63 ampere hour capacity.

The starter is operated by a solenoid switch, the control of which is on the instrument board.

The headlamps are of the largest size obtainable, namely P.100. There are side lamps to match, and in addition, two fog lamps and an instrument panel lamp are supplied.

Ignition and oil pressure warning lights are part of the equipment.

There are two wind horns which provide both loud and soft tones at the option of the driver.

The system is controlled by the following: Headlamps switch, dipper and button for loud and soft horns, and the control for the direction indicators are on the steering head turret.

Switches for the ignition, side lamps and fog lamps are placed on the instrument board.

There is a master ignition and lighting switch lock on the instrument board.

DRIVING CONTROLS

The controls for the throttle and for starting are centred on the steering head turret. The control for the shock absorbers is immediately below the steering wheel.

INSTRUMENTS

These comprise the following:

Ignition and oil-warning lights; petrol, oil and

heat gauges; cigar lighter; 5 in. speedometer marked in m.p.h. and k.p.h.; ammeter; point for inspection lamp plug; Thirty Chassis, 5 in. clock; Thirty Continental Chassis, 5 in. combined revolution counter and clock.

CHASSIS DIMENSIONS

Wheel base, Thirty Chassis, 11 ft. 4 $\frac{1}{4}$ ins.

Wheel base, Thirty Continental Chassis,
10 ft. 4 ins.

Track, 5 ft. 0 $\frac{1}{4}$ ins.

Overall length with bumpers, Thirty Chassis,
17 ft. 4 ins.

Overall length with bumpers,
Thirty Continental Chassis, 16 ft. 4 ins.

Ground clearance, 8 ins.

Note: The entire equipment supplied with the Chassis is listed on the following page.

THE SUNBEAM EQUIPMENT

The Standard Equipment supplied with the Chassis is as follows: Front Wing Brackets, Running Board Brackets, Bonnet, Bumpers Front and Rear, the Front being of the stabiliser type. Four Wheel Discs on Road Wheels secured by large diameter octagonal hub caps, Spare Wheel and Tyre, Gaiters on Front and Rear Springs, Permanent Wheel Jacks Front and Rear, Two P.100 Headlamps, Two Side Lamps to match, Two Fog Lamps, Stop, Tail and Reversing Lights, Instrument Panel Lamp, Two Lamps for illuminating Engine. Direction Indicators, Ignition and Oil Pressure Warning Lights, Two Wind Horns with loud and soft Tone Control, Petrol, Oil and Heat Gauges, Cigar Lighter, Five-inch Speedometer marked in M.P.H. and K.P.H., Ammeter, Point for Inspection Lamp Plug. On Thirty Chassis, 5-inch Clock. On Thirty Continental Chassis, 5-inch combined Revolution Counter and Clock. Full set of Tools, including Tyre Pump.

In addition to the details of the chassis equipment, the following items are common to the carriagework of all complete cars illustrated in the Company's Catalogue.

Armrests on front doors; folding centre armrest in rear cushion, concealed when not in use; Triplex glass throughout; hand controlled ventilator at top of scuttle; driving mirror; interior lights over rear seat; interior locking catches and private locks to doors; dual windscreen wipers; illuminated rear number plate incorporated in bumper; accommodation for luggage.

Colours and upholstery to individual taste.

Estimates for carriagework will be submitted incorporating special suggestions, or for customers' own designs.

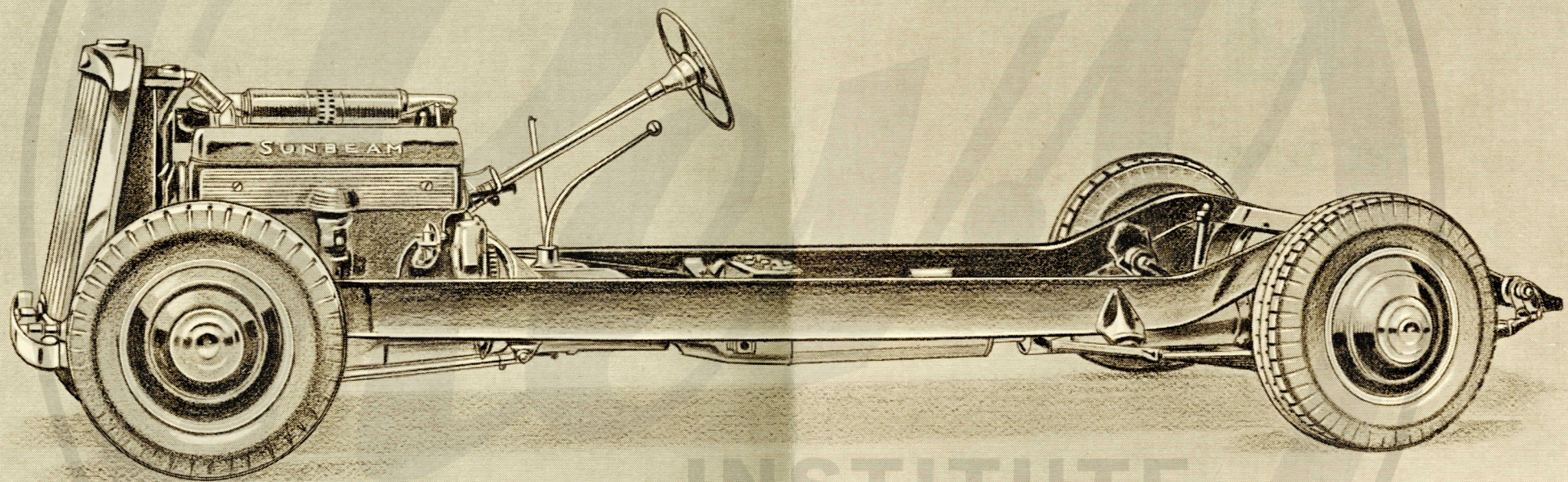


THE SUNBEAM CHASSIS

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THE THIRTY CHASSIS £800

THE THIRTY CONTINENTAL CHASSIS £750

SUNBEAM

Prices

SUNBEAM THIRTY CHASSIS	£800
SUNBEAM THIRTY CONTINENTAL CHASSIS .	£750
SUNBEAM SEDANCA-de-VILLE (Thirty Chassis) .	£1,475
SUNBEAM ENCLOSED DRIVE LIMOUSINE (Thirty Chassis)	£1,325
SUNBEAM PHAETON (Thirty Continental Chassis) .	£1,295
SUNBEAM TOURING SALOON (Thirty Continental Chassis)	£1,240
SUNBEAM SALOON (Thirty Continental Chassis) .	£1,195