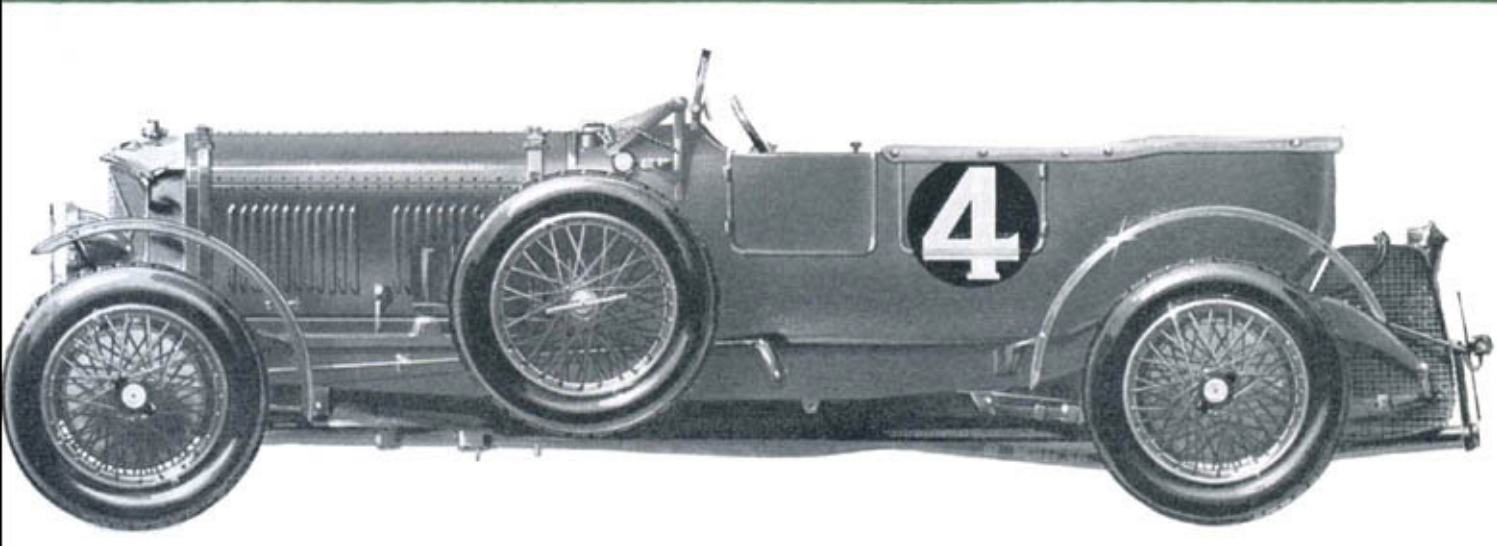
The 6½ Litre Bentley



NUMBER 22

TWO SHILLINGS

PROFILE PUBLICATIONS

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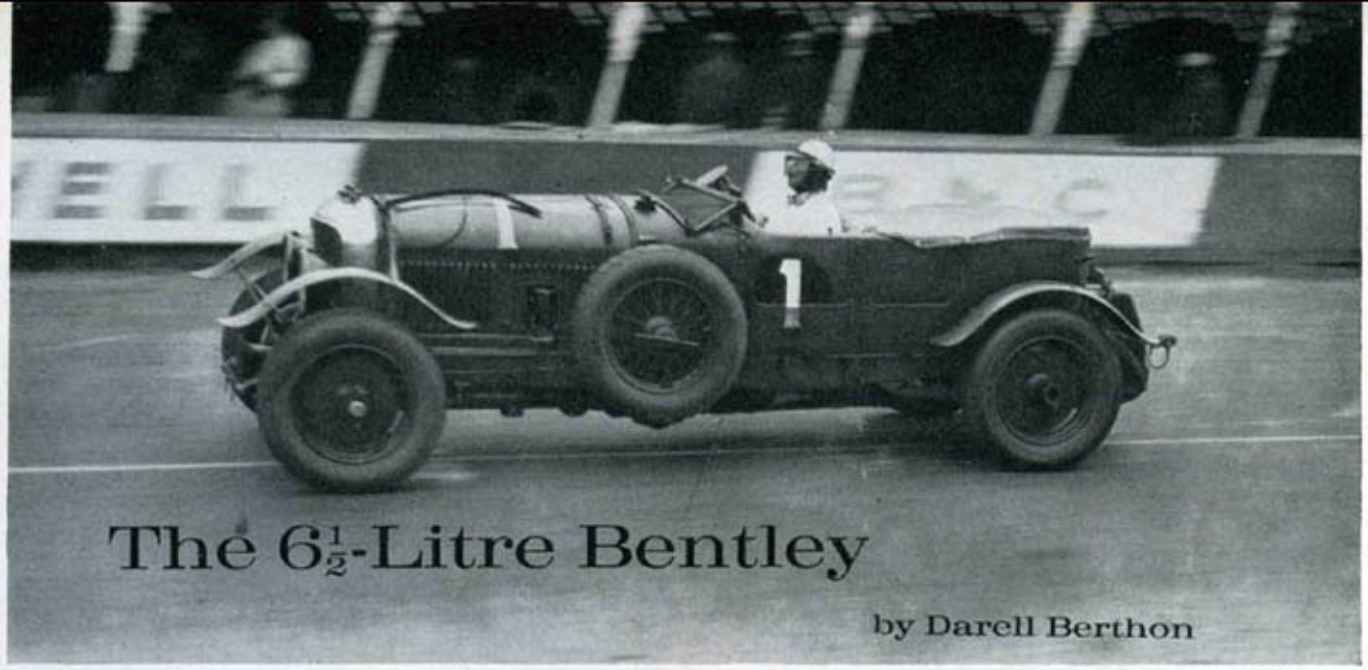
THE SPEED SIX BENTLEY, winner of the 1930 24 Hour Grand Prix d'Endurance at Le Mans. Average speed: 75·88 m.p.h. for 1821·02 miles. Drivers: Capt. Woolf Barnato and Lieut.-Commander Glen Kidston.



The 6½-Litre Bentley

by Darell Berthon

1929 Le Mans Twenty-four Hours Race. Barnato in the Speed Six passing the pits. (Photo: Fox Photos)

In order to understand why the Speed Six came into being it is necessary to know something of the background which brought it about and to trace its development from the first six cylinder car which Bentley Motors made. The Standard Model 6½ Litre, or Big Six Bentley, as it was sometimes called, was in production long before the 4½ Litre appeared on the scenes and when the Three Litre was still only four years old. The smaller car, designed as an open rugged sports car for the enthusiast then looking for something to replace the excitements of the first World War, was rapidly becoming known to the public following its successes in sprints, hill-climbs, the Tourist Trophy of 1922 and Le Mans 24 hours races of 1923 and 1924. It was almost inevitable that all kinds of people with money and a taste for the latest novelty wanted a Bentley—but one with bodywork a little more civilised than the open sports car. This led to totally unsuitable and heavy closed coachwork being fitted to the chassis in an endeavour to turn the car into a town carriage. To try to cope with this situation the firm introduced a long chassis version, the Standard or Long Wheelbase model Three Litre. History merely repeated itself, and the size and weight of coachwork was increased accordingly, killing all semblance of performance.

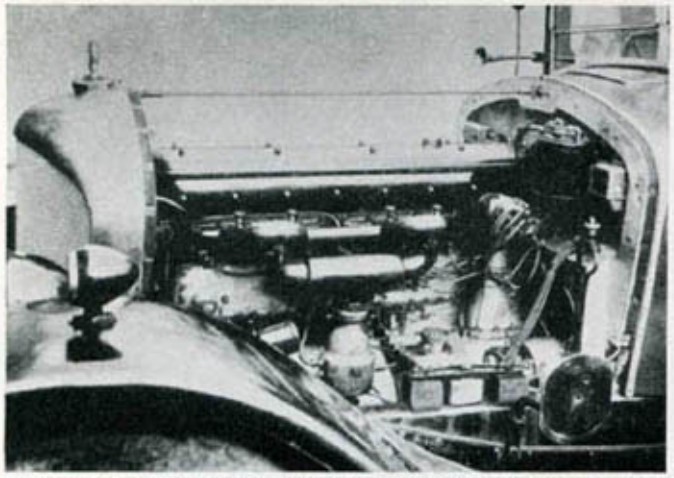
The time had come for a much more powerful engine and a stronger chassis, specially designed to carry spacious bodies under town and country conditions. It was in 1924 that W. O. Bentley started work on a chassis which was to produce high speed touring in comfort with all types of closed coachwork. A six cylinder engine was an obvious starting point. Although there were several big engined cars on the market, they tended to be huge, unwieldy machines, comfortable enough, but their performance and road holding left much to be desired.

THE PROTOTYPE

The new engine followed closely the design of the Three Litre and was in fact much the same engine with two more cylinders added and the stroke shortened by 9 mm. Thus the engine had six cylinders of 80 mm. × 40 mm. with a capacity of 4,224 c.c. or 4½-litres. The camshaft was driven by coupling rods from the rear instead of by a vertical shaft from the front as in the Three Litre. The steering, gear box, rear axle and frame were redesigned to give additional strength. Unfortunately figures for the b.h.p. of the engine are not known but they must have been around the hundred mark. The new car, disguised under the name of the 'Sun', an ugly angular radiator and an equally ugly Weymann saloon body with a huge trunk overhanging the rear, was taken over to France and driven by 'W. O.' for long distance testing which included a visit to the 1924 French G.P. It was on this trip that there occurred a chance encounter with the new prototype Rolls-Royce Phantom I which had a momentous influence on the future design and career of the Big Bentley.

'W. O.', who was driving at the time, gives a dramatic description in his Autobiography of seeing a long trail of dust raised by a car travelling very fast towards a Y junction for which he himself was making. Neither car gave way and they arrived together at the junction and continued, side by side, along the Route Nationale. 'W. O.' recognised his 'opponent' as the new Rolls-Royce Phantom I prototype, of which there had been rumours, and he in turn was recognised by the driver of the Rolls-Royce. As this was an opportunity not to be missed, both cars, still side by side, travelled flat out for mile after mile along the straight, deserted French road. The encounter ended abruptly when the Rolls-Royce driver's hat blew off

The prototype six cylinder engine (80 × 140 mm. 4½ litres) disguised under the name of the 'Sun'. W. O. Bentley stands besides his latest creation in 1924.



The prototype 6½ litre Bentley engine (100 × 140 mm.), 1925. Note the rubber pads under the engine bearer arm. Believed to be the first time an engine was rubber mounted.

and he stopped to retrieve it, much to 'W. O.'s' relief as he was on his last set of tyres.

As the engine had proved deficient of power low down, and would probably not, even when developed, have a sufficient margin of speed over the Phantom I, 'W. O.' decided to increase the cylinder bore from 80 mm. to 100 mm. and the cubic capacity to 6½-litres. The new engine produced 140 b.h.p. on the bench and in practice gave greatly increased acceleration over all ranges and a higher maximum speed.

After months of experimental work and road testing, a polished Standard 6½ Litre engine and chassis were exhibited at the 1925 Motor Show where it attracted a great deal of interest.

THE CHASSIS AND ENGINE

All models of the 6½ Litre chassis and engine followed the same general design and differed only in modifications to strengthen components by use of newer materials or by increases in the section of certain parts; in the development of power and reliability and in variations of wheelbase, gear box and rear axle ratios to suit particular types of coachwork. The descriptions which follow, therefore, cover the Standard, Speed and 'Le Mans' models. More detailed variations will be found in the tables of specifications (see pages 10 and 12).

The frame is made of high grade steel and the side members are of exceptionally deep section. The four press steel and three tubular cross members make the bracing of the frame complete in itself.

Front axle is of 'H' section 40-ton tensile steel which was progressively thickened as more powerful braking was evolved.

Rear axle is of semi-floating type with a four bevel pinion differential and spiral bevel final drive.

Gear box (all types) is mounted by three-point suspension and has four forward and reverse gears operated by a right-hand change.

Universal joints are of the internal ring type enclosed in oil-tight casings filled with oil. The fore-and-aft movement of the propeller shaft is taken on a splined coupling on the front joint.

Brakes are of the internal expanding type operating on four large steel drums. The braking on all four wheels is compensated by means of a balance beam differential. The operation of the front brakes is of a Bentley-Perrot design. The foot brakes are assisted by a Dewandre vacuum servo motor. The hand brake operates on the rear wheels only through a separate set of shoes.

Steering is by worm and sector adjustable for wear, the thrust being taken by ball bearings.

Lubrication, except for one grease cup on the water pump, is provided by Tecalemit connections which can be loaded with oil from a gun.

The engine. The six cylinders are cast in one block with non-detachable head. Each cylinder has two inlet and two exhaust valves operated by a totally enclosed overhead camshaft and valve rockers. The camshaft is carried in seven bearings and is driven from the rear end of the crankshaft, which ran in eight bearings.

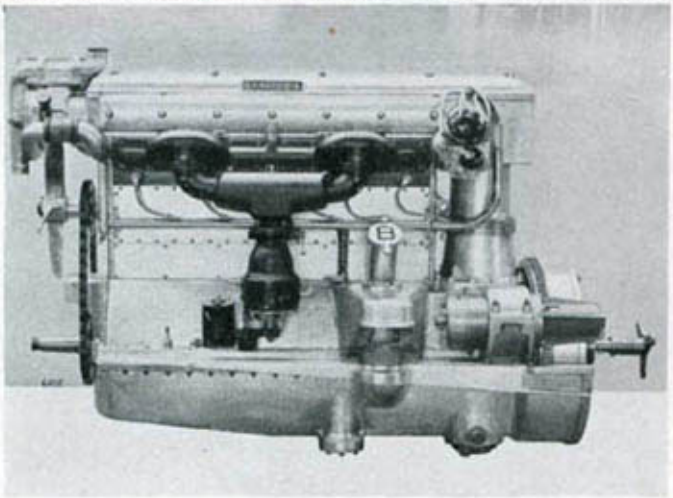
Ignition is by twin synchronised magnetos (later one magneto and one coil unit were fitted) firing twelve plugs. The firing order is 1 4 2 6 3 5.

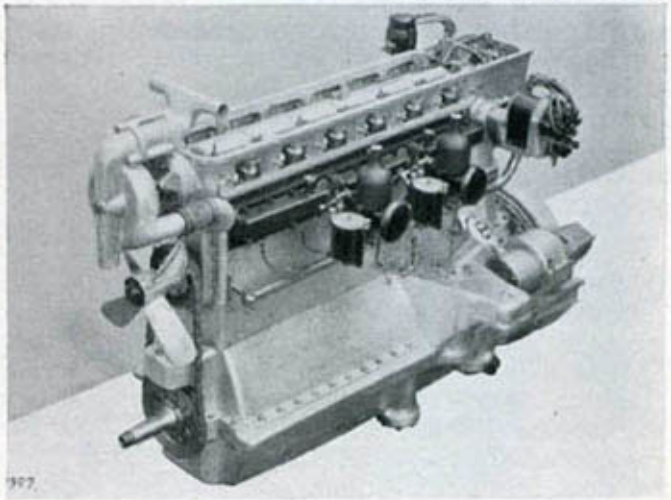
Lubrication is by pressure to the mains and big ends and through the hollow camshaft to the cams and rockers.

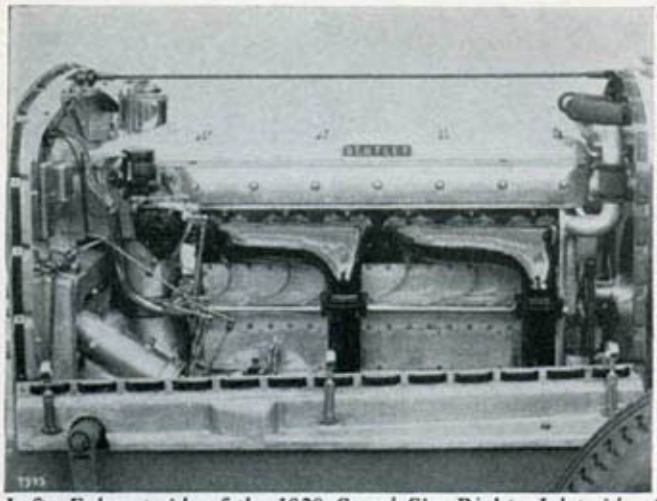
Overhead valve gear. The valves, each with two concentric coil springs, are grouped in sets of four, two inlet and two exhaust per cylinder. The inlet valves are operated by one forked duralumin rocker arm and the exhaust valves by two single rockers each having a steel roller at one end and an adjustable ball-ended tappet screw at the other. The set for each cylinder is contained in its own aluminium box.

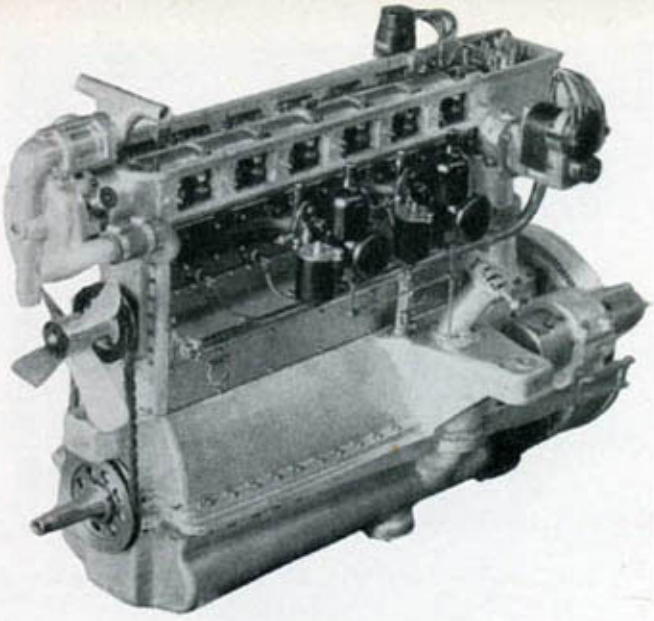
Camshaft drive consists of a helical gear-driven three-throw crankshaft at the rear end of the engine

Left: *The production Standard 6½ litre engine with the Smith-Bentley 5-Jet carburettor.* Right: *The 1929 two-port block Speed Six engine with box form inlet manifold and twin S.U. carburettors.* (Photos: Chas. K. Bowers)









Left: *Exhaust side of the 1929 Speed Six.* Right: *Inlet side of 1929 and 1930 single port block Speed Six. Note the flat induction manifold and five gallon Elektron sump.*
(Photos: Chas. K. Bowers)

crankshaft to which are coupled three connecting rods which in turn are connected to a similar crankshaft direct driven by the camshaft. The upper big end bearings of these rods are fitted with an expansion device to compensate for changes in crankshaft centres due to temperature variations.

Dynamo and water pump are driven off the rear and front ends respectively of the camshaft and the two together damp out any irregularities set up by the action of the valves.

Cooling system. This is unusual in that it has two distinct water circuits controlled by a thermostat whereby the radiator is by-passed in a cold engine. As the engine warms up the circuit to the radiator is opened.

PRODUCTION MODIFICATIONS, 1926–1928

By March 1926, production models were in the hands of the public and by the end of the year 58 cars were on the roads. In the interval long range M.L. Type ER 6 magnetos were fitted to give increased flexibility; a spring loaded clutch pressure plate replaced the cork insert plate to prevent clutch judder; and to save the batteries and make starting easier Ki-Gass injectors were fitted to the engine. All these modifications made the car much more pleasant to drive under town running conditions.

For the 1927 Motor Show big changes took place which were to be incorporated in the 1928 models. The more important of these changes were:—the half-engine speed dynamo driven by the camshaft was replaced by a new 5-brush dynamo placed between the dumb irons in front of the radiator and driven from the front end of the crankshaft through a flexible coupling, the dynamo casing being bolted to to the front cross member; the radiator tapered inwards towards the bottom and was redesigned to fit the dynamo and at the same time was given a fuller profile and a deeper, 100 mm. matrix which improved the frontal aspect of the car and made it even more imposing looking. For a time the camshaft had no

The Road Test Shop. 6½ Litre chassis being checked after their first road test. (Photo: Chas. K. Bowers)

1929 Double Twelve Hour Race. No. 2 is the first racing Speed Six known as 'Old No. 1'. (Photo: Montagu Motor Museum)

damping at the rear but after four months a torsional damper was fitted to a taper on the end of the camshaft to restore the damping effect exerted by the dynamo before its removal.

A Delco Remy coil ignition set replaced the off-side magneto and a Hardy Spicer propeller shaft took the place of the plunging (pot) joint type which needed frequent replacement of the blocks and slippers. To make braking lighter, a Dewandre Servo motor was coupled to the braking system. A third wheelbase chassis length, 12 ft. 7¼ in., was added to the range. By the end of 1927 the total of six cylinder chassis made had risen to 185.

In mid-1928 two further modifications were introduced. One was the change over to single pole wiring and the other the provision of an 'oil bath' in the base of the cam case. By this means the rocker rollers were sufficiently lubricated to prevent pick up and the additional lubrication helped to minimise the occasional squeak from the tappet ball-ends.

Towards the end of 1928 there were persistent rumours of the possibility of a 'Speed Model' version of the 6½ Litre. In fact a great deal of testing had been going on, in secret, in the Firm's Experimental Department for some months, and at the end of October the first Speed Six was available for demonstrations.

The total number of Standard 6½ Litres made by the end of 1928 was 284.

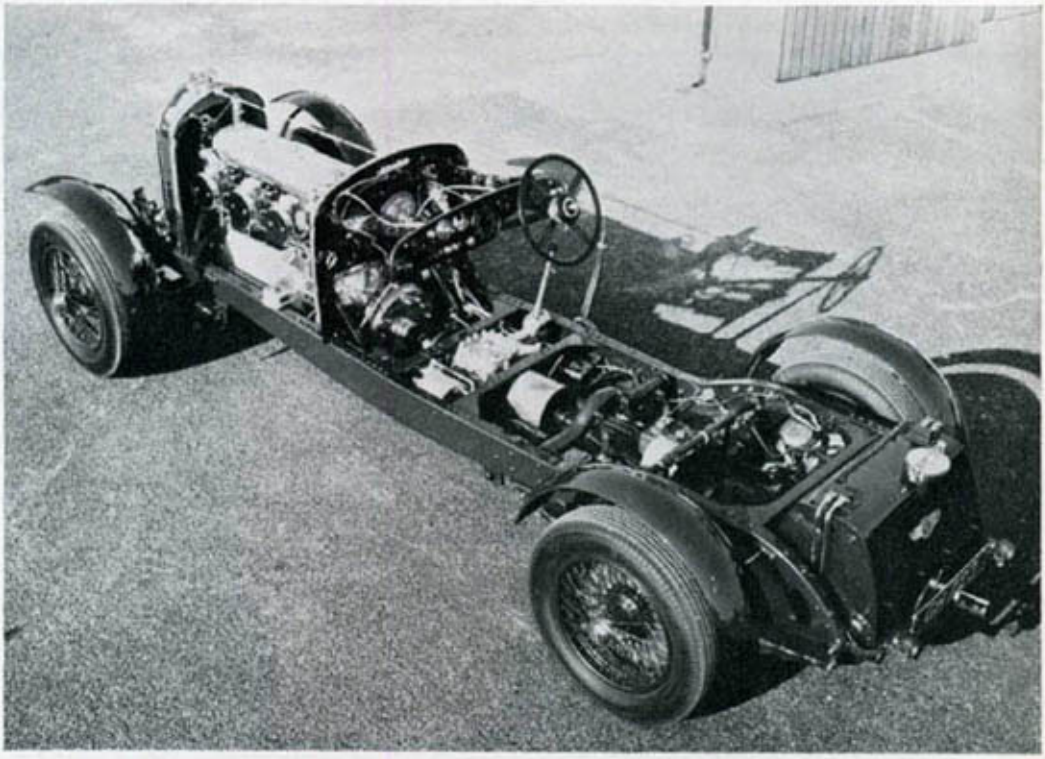
1929 Le Mans. Tim Birkin in 'Old No. 1' finishing 1st and Glen Kidston second in No. 9, the first of the racing 4½ Litres. (Photo: *Autocar*)

THE SPEED SIX

1929. The Speed Model 6½ Litre was conceived as a stage in the 'improvement of the breed' with an eye to long distance touring, and the design of the new car followed generally that of the Standard model but with certain important differences. The immediate outward differences between the two models were the new shape of the radiator, which had parallel sides, and the green background to the radiator and fuel tank badges to distinguish it from the Standard model which had a blue background.

Throughout all his designs W. O. Bentley insisted on reliability as the first consideration. When he wanted more power he built a bigger engine ('There is no substitute for horsepower'). When it became apparent that a larger car was needed to back up the hard-pressed 4½ Litre, it was natural that a Works' racing version of the new Speed Six should be developed.

Early in 1929 Speed Six chassis were being delivered to the public, though very slowly. On the 10th of May 1929 Woolf Barnato took delivery of the first of the 'Le Mans' racing models, destined to be known as 'Old No. 1'.



A 1965 rebuild of Douglas Simmond's modified Standard 6½ Litre. (Photo: Red Daniells)

The standard model continued in production and by the end of the year 66 of them had been made, while 69 Speed Models had been completed. The total for the Standard model had risen to 350.

1930. The Speed Six for 1930 incorporated many of the items tried out in the 1929 'Le Mans' car, such as the single port block and induction manifold; the strengthened connecting rods; the 5 gallon Elektron sump; racing type rockers without the third rivet hole; Bosch magneto and a compression ratio of 5·3 : 1 giving 180 b.h.p.

Two new 'Le Mans' Speed Sixes were built for the 1930 season and 'Old No. 1' was brought up to date. The only major change was the introduction of the heavier front axle with integral jacking pads which were incorporated in the late 1930 models.

Production of the Standard model had almost ceased except for special orders and only 18 more were made, making the total up to 368. 108 Speed Sixes were made during the year bringing their total to 177, after which no more were made.

THE SPEED SIX IN COMPETITION

1929 DOUBLE TWELVE, BROOKLANDS

This was the Speed Six's first race and was driven by Barnato and Benjafield. The car was far and away the fastest on the circuit and led for the first four hours at a speed of 92 m.p.h. Just after its first pit stop it came in again with a broken dynamo drive. Driver and mechanic removed the radiator and dynamo but as it was impossible to repair the coupling on the spot, the car was forced to retire.

This was the only occasion on which a Speed Six retired from a race because of mechanical failure.

1929 LE MANS

Five Bentleys, including the Speed Six, were entered by the Works in opposition to three Stutz, two Chryslers, a du Pont and fourteen smaller cars. Birkin took the first spell and completed his first lap with not another car in sight. Then three Bentley's two Stutz and the fifth Bentley came round in a bunch. The last Bentley, which the week before had taken the Class 'C' Twenty-Four Hours record driven by the Hon. Mrs. Victor Bruce, retired early. Birkin set the lap record for the year on the slightly shortened circuit at 82·98 m.p.h. During the night the four Bentleys increased their lead in spite of faulty headlamps which flickered on and off. In the early hours of the morning two Stutz and the du Pont dropped out. The ballast of Clement's car shifted and broke a brake rod which was repaired and by 10 a.m. the Bentleys were back in their places again. So great was their lead, the Speed Six was slowed down to a fast tour for the last twelve hours of the race and the 4½-litres were likewise slowed down for the last two hours.

At the finish four Bentleys crossed in line ahead, led by the Speed Six, to take the first four places. The winner's speed was 73·62 m.p.h. This was Bentley's third successive win at Le Mans and in addition they were first and second in the Index of Performance, the first time any car had won both awards.

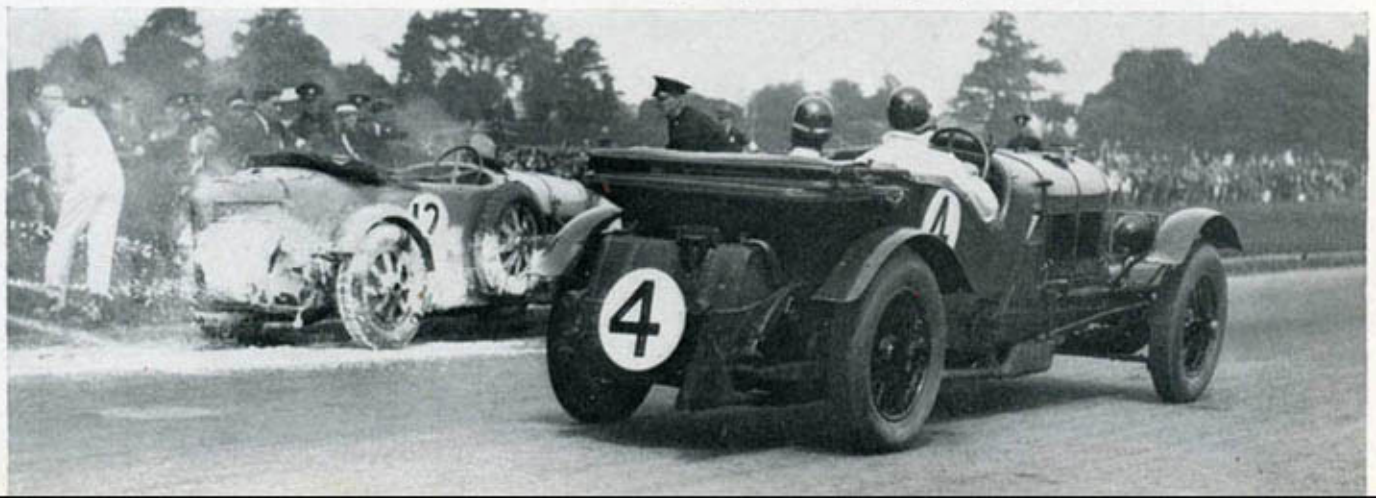
1929 SIX HOURS, BROOKLANDS

Five Bentleys were entered, the Speed Six (Barnato

1929 Six Hours Race, Brooklands. Barnato driving 'Old No. 1' through the chicane followed by a 7-litre supercharged Mercedes. (Photo: Montagu Motor Museum)

1929 Six Hours Race. Jack Dunfee and Wally Hassan (later of Jaguars and Coventry Climax) win in 'Old No. 1' applauded by co-driver Barnato while Stan Ivermee (later of Lagondas) looks on. (Photo: Fox Photos)

1929 Irish Grand Prix, Dublin. Glen Kidston, passing Field's burning Bugatti, in 'Old No. 1'.



1929 Tourist Trophy Race, Ards. Glen Kidston's crashed 'Old No. 1'. The trouble originated in a slide at the far corner.
(Photo: *Autocar*)

1930 Double Twelve Hour Race, Brooklands. Barnato and Wally Hassan take over 'Old No. 1' in the wet. Note the front apron scarred by heavy rain. The car won at 86.68 m.p.h.
(Photo: Fox Photos)

and C. Dunfee), a Le Mans 4½ (Cook and Callingham) by the Works, two 4½s entered privately and Birkin's prototype supercharged 4½ Litre.

The supercharged car was fast but it soon had engine trouble and retired. The Speed Six, lapping at 74 m.p.h., was leading on distance but was way back on handicap. After four hours' running it was in third place and had increased its lap speed to 75 m.p.h. One of the privately entered 4½s dropped out as did two Mercedes. At the fifth hour, having made up its handicap, the Speed Six took the lead and an hour later won the race at 75·88 m.p.h. An Alfa was second and the remaining two Bentleys third and eighth respectively.

Mercedes put in the fastest lap of the race with 81·19 m.p.h. but failed to finish.

1929 IRISH GRAND PRIX, DUBLIN

This was a two-day event, the winner being the car with the best performance on handicap on either day. Ivanovski's Alfa won the first day's race for cars under 1,500 c.c. at 75·02 m.p.h. The second day, for cars over 1,500 c.c., attracted Kidston's Speed Six, three 4½ Litres, two of the Birkin supercharged cars, a 7-litre supercharged Mercedes, three 1750 Alfas and eight other cars.

For 27 laps the Mercedes led Birkin, the two cars never far apart. Then the inevitable happened and the the Mercedes blew a gasket and retired. Meanwhile the three Alfas retained their lead on handicap but after two and a half hours one of them ran out of road and retired. Birkin's car was overheating and Kidston's Speed Six passed him to take fourth place on handicap.

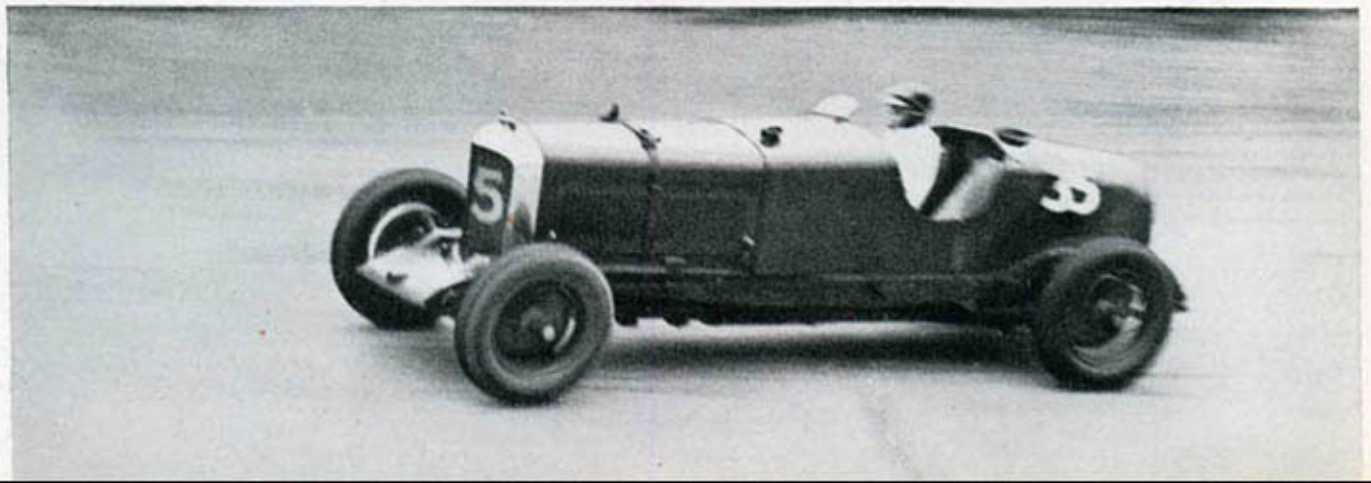
Kidston again increased speed in an effort to catch the Alfas but slid on the melting tarmac and buckled a wheel. The wheel was changed at the pits in record time but it cost them the race nevertheless. In a most exciting finish Ivanovski's Alfa won by a bare fourteen seconds at 76·4 m.p.h.; the Speed Six was second at 79·8 and Birkin third at 79·0. All six Bentleys finished. Mercedes again made fastest lap (83·8 m.p.h.) but failed to stay the course.

1929 TOURIST TROPHY, BELFAST

This was again a handicap race over 30 laps of the 13·66 mile tortuous circuit with 65 starters taking part. Bentleys entered Kidston in the Speed Six; Birkin his 3 Blower cars ('W. O.' rode as Birkin's mechanic); and Hayes his private 4½. On scratch with the Bentleys were 2 official Mercedes and 2 private ones; 3 official and 4 private Alfas which received two credit laps. There were 49 other cars of various sizes including Austin Sevens with up to five credit laps handicaps.

The small cars held the lead for most of the race because of their handicaps. Rubin overturned his car. Then it rained, slowing all cars except Caracciola's Mercedes. At half distance Kidston got into a series of slides lasting about a quarter of a mile and crashed. Caracciola was steadily passing car after car but with half an hour to go the Austins were leading with the Alfas close behind. First Campari's Alfa, then Caracciola, passed the Austins. Heavy rain fell again but Caracciola, undeterred, went on to win at 72·82 m.p.h. The Alfa came in second at 67·54 m.p.h. and Birkin, with 'W. O.', finished 11th, having averaged

1929 500 Mile Race, Brooklands. Clive Dunfee finished 2nd with co-driver Sammy Davis at 109.4 m.p.h. in 'Old No. 1' with the long tailed body.
(Photo: Fox Photos)



69·01 m.p.h. Harcourt-Wood's supercharged car had retired and Hayes, still running, was flagged off at the end of the race.

Caracciola's Mercedes made fastest lap at 77·81 m.p.h. *in the wet.*

1929 500 MILES, BROOKLANDS

The Firm entered the Speed Six (Davis and C. Dunfee), fitted with a stubby two-seater body, one of the Le Mans 4½ Litres (Clement and Barclay), now with a long tailed body, and two other 4½ Litres. Birkin entered his prototype single-seater supercharged Bentley and Kaye Don two 4-litre and one 2-litre Sunbeams. There were five classes each with a time handicap, and all cars ran in stripped form.

Birkin lapping at 121 m.p.h. developed an oil leak and dropped back; Jack Barclay had two narrow escapes with monumental slides, but in turn with Clement continued to lap at around 110 m.p.h. The Speed Six lapped at 125 but had continual tyre trouble. Birkin's car caught fire and retired at the same time as one of the 4-litre Sunbeams and the 2-litre. Clement and Barclay went on to win at 107·32 m.p.h.

The Speed Six, having made the fastest lap of the day at 126·09 m.p.h., and being ordered to slow down, finished second at 109·4 m.p.h. Third place went to the remaining Sunbeam which had broken its frame.

1930 DOUBLE TWELVE HOUR, BROOKLANDS

The Works entered two brand new Speed Sixes, Dorothy Paget three Birkin supercharged 4½ Litres and Durand a privately owned 4½. 59 cars started including teams of Talbots and M.G.s in their first race.

On the first day, Kidston, in one of the supercharged Bentleys, led the two Speed Sixes for a time, then slowed and later retired with a broken valve. Birkin retired with a broken frame and Durand's 4½ caught fire and later retired with a broken back axle. The third supercharged 4½ caught fire at the pits but continued. Clement led in the Speed Six with Davis in the other Speed Six in second place. The latter broke a valve spring which was replaced without the car losing its place. Two of the Talbots were involved in a serious accident and the third car of the team was withdrawn.

On the second day the Speed Sixes led comfortably. Marinoni's Alfa, well ahead of its handicap, retired and Benjafield refitted a new back axle to the remaining supercharged Bentley but retired shortly afterwards. Davis' Speed Six broke another valve spring and later an oil pipe, both of which were remedied without losing second place.

In the afternoon it rained heavily but at last the race was over and the two Speed Sixes finished 1st and 2nd at 86·68 and 85·68 m.p.h. respectively. M.G.s won the team prize.

The dress rehearsal for Le Mans had proved very successful.

1930 LE MANS

Seventeen starters came to the line, among which were three Works' Speed Sixes, two of Dorothy Paget's supercharged 4½ Litres and Caracciola's 7-litre Mercedes.

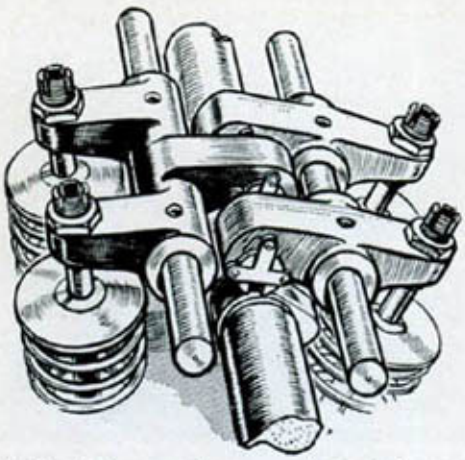
Caracciola led off, pursued by Birkin, who had passed Kidston in 'Old No. 1'. Birkin passed the Mercedes, lost a rear tread, broke the lap record at 89·69 m.p.h. and continued for another lap before coming slowly into the pits. Davis in No. 3 Speed Six increased speed, on orders, to make the Mercedes keep using its supercharger. Dunfee took over Davis' car and crashed it. Barnato and Kidston in turns began to reduce the Mercedes' lead and finally passed it. On the next lap the Mercedes, using its supercharger continuously, passed the Bentley only to be re-passed again. Thereafter the Speed Six gradually drew away until on the 83rd lap the Mercedes retired, defeated by the 'World's Finest Sporting Car'.

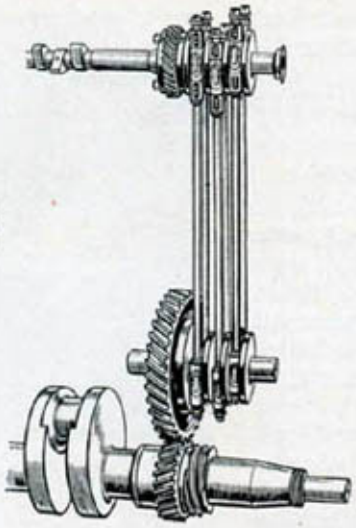
Le Mans 1930: Frank Clement in No. 2 Speed Six about to rejoin the race after a pit stop, closely watched by Stan Ivermee on the pit counter. Dick Watney carries the oil drip tray.
(Photo: Fox Photos Ltd)

Le Mans 1930: Woolf Barnato driving the winning car ('Old No. 1') past the pits in the closing stages of the race.
(Photo: Fox Photos Ltd)

Le Mans 1930. Dick Watney in one of the new 1930 'Le Mans' Speed Sixes at Mulsanne corner. (Photo: *Motor*)

Le Mans 1930: Bentleys first and second. Frank Clement and Dick Watney stand talking between the two cars while Barnato sits in his car. (Photo: Fox Photos Ltd)





Left: *Valve gear for one cylinder. The inlet rocker is on the left.*
Right: *The Three-throw camshaft drive.*

Both Speed Sixes were ordered to reduce speed to a fast tour and hold first and second places. Both the Birkin cars continued during the night in third and fourth places. Four hours before the end, Birkin's car broke a connecting rod and an hour later Benjafield's similar car retired with a broken piston. At 4 p.m. the Barnato/Kidston Speed Six crossed the line to win Le Mans for the fourth successive time at a speed of 75·88 m.p.h. Close behind, Clement and Watney brought their Speed Six into second place at 73·73 m.p.h. These two cars also finished first and second in the Index of Performance.

* * *

An interesting sidelight on Bentley's racing is that 'W. O.' never allowed his cars to show more speed than was necessary to win; in consequence no one knew what their potential really was. Daimler-Benz completely underestimated the Speed Six. How much faster the Speed Six could have gone has never been disclosed but from strip reports after the race, it was stated both cars could have continued for another eighteen hours untouched.

Shortly after Le Mans, Bentley Motors announced their retirement from racing for the time being, so as to incorporate the lessons they had learned in their production models.

At the Motor Show of 1930 the magnificent 8 Litre made its appearance but the clouds of the 'great depression', spreading from the West, were already looming up on the horizon.

© *Darell Berthon, 1966.*

RECORD OF SPEED SIXES IN RACES

EVENT	RACE NO.	DRIVERS	RESULTS
1929			
Double Twelve Hour, Brooklands	2	Barnato and Benjafield	Retired
Le Mans	1	Barnato and Birkin	1st 73·62 m.p.h.
Six Hours, Brooklands	3	Barnato and J. Dunfee	1st 75·88 m.p.h.
Irish G.P. Dublin	4	Kidston	2nd 79·8 m.p.h.
Tourist Trophy, Ards	73	Kidston	Crashed
500 Mile, Brooklands	35	Davis and C. Dunfee	2nd 109·4 m.p.h.
1930			
Double Twelve Hour, Brooklands	2	Barnato and Clement	1st 86·88 m.p.h.
	3	Davis and C. Dunfee	2nd 85·68 m.p.h.
Le Mans	4	Barnato and Kidston	1st 75·88 m.p.h.
	2	Clement and Watney	2nd 73·33 m.p.h.
	3	Davis and C. Dunfee	Crashed
1931 (after the liquidation of the Old Company			
500 Mile Race, Brooklands (A private entry by Barnato)	46	J. Dunfee and C. Paul	1st 118·39 m.p.h.

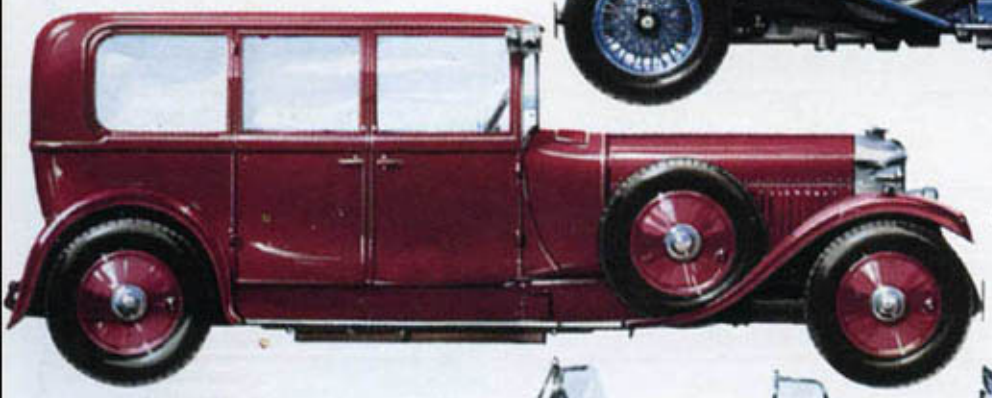
* * *

Acknowledgement is made for the assistance received from:—*The Autobiography of W. O. Bentley*, the records of the Bentley Drivers Club, The *Autocar* race reports, *Motor Sport* and W. Boddy's *History of Brooklands Motor Course.*

SPECIFICATIONS OF 6½ LITRE BENTLEYS

	All Types	6½ Litre Standard	Speed Six	'Le Mans' Speed Six
ENGINE Cylinder bore & stroke	100 mm. × 140 mm.			
Cylinder block		Two port	Two port (1930 some single port)	Single port
Cubic capacity	6,597 c.c.			
Valves (valve springs)	24 (48)	Tulip	Tulip	Flat head
Camshaft	Overhead, seven bearings. Three-throw coupling rod drive	BM. 5091 BM. 6159	BM. 7032 BM 6159 BM. 7055	BM. 7032
Tappet clearances: Inlet		·004" ·004"	·019" ·004" ·006"	·019"
Exhaust		·006" ·006"	·019" ·006" ·006"	·019"

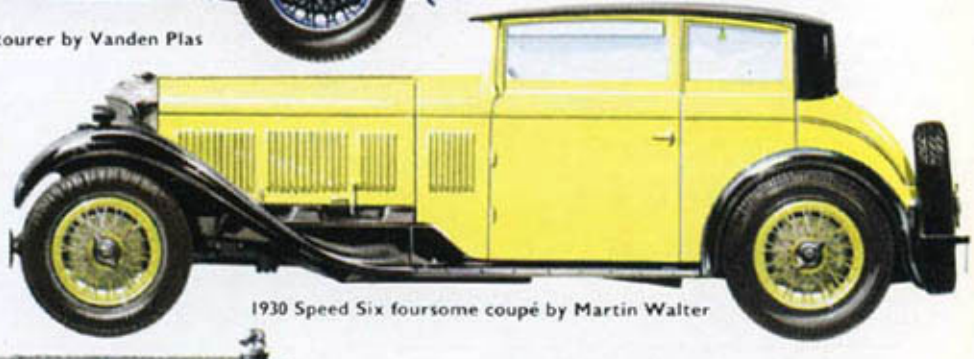
1927 6½ Litre 4-seater tourer by H. J. Mulliner



1927 6½ Litre saloon by Hooper

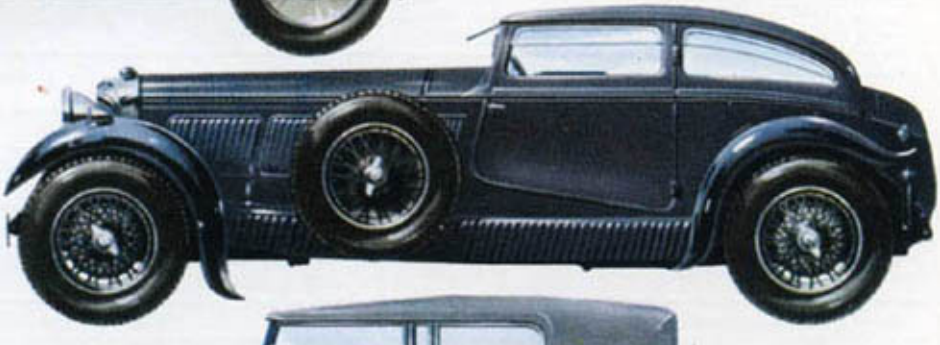
Optional radiator cap emblem

1929 Speed Six 4-seater sports tourer by Vanden Plas



1930 Speed Six foursome coupé by Martin Walter

1930 Speed Six fixed head coupé by H. J. Mulliner



1930 Speed Six coupé by Gurney Nutting specially built for Capt. Woolf Barnato

1930 Speed Six 4-seater tourer by R. Harrison

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	All Types	6½-Litre Standard	Speed Six	'Le Mans' Speed Six
Pistons		B.H.B. split skirt	B.H.B. split skirt	Hour-glass racing type
Compression ratio		4·4 : 1	5·1 : 1 and 5·3 : 1	6·1 : 1
B.H.P.		147	160 180 with single port block	200
R.P.M.		3,500	3,500	3,500 normal; 3,750 emergency
Connecting rods		Two bolt direct metal. BM. 5208. BM. 5262	Two bolt direct metal. $\frac{3}{16}$" increase in radius. BM. 6589	Two bolt Shell type. BM. 6821
Ignition		Two magnetos. ML.GR6. or ER6; or one magneto, one Delco-Remy coil	One magneto ML.ER6 and coil; 1930 Bosch magneto FU6B and Delco coil	One Bosch magneto FU6B and Delco coil
Firing order	1 4 2 6 3 5			
Plugs		K.L.G., K1 or J1	Champion	Champion
Carburettor(s)		Smith Bentley 5-jet BVS 50	Two vertical S.U. Type HVG 5	Two vertical S.U. Type HVG 5
Fuel feed		Autovac	Autovac	Pressurised
Fuel tank capacity		19 gallons. Later 25 gallons	25 gallons	39 gallons road racing 43 gallons track racing
Sump capacity		3 gallons	3 gallons. 1930: 5 gallons	5 gallons filled to 5½ gallons
Starter motor		Smith Type 4LSA	Smith Type 4LSA. 1930: some Bosch BNE 2/12 RS2	Smith Type 4LSA
Dynamo	Smith 5 brush Type 2 DAC 5			
Batteries	Two 6V	Peto & Radford. Young	Young	Young
CHASSIS				
Wheelbase		11′ 12′ 1¼″ 12′ 7¼″	11′ 8½″ 12′ 8½″	11′
Length overall		15′ 1″ 16′ 1″ 16′ 7″	15′ 7″ 16′ 7″	15′ 1″ approx.
Width overall	5′ 8½″			
Track	4′ 8″			
Frame	Deep section high grade steel. Thickness increased to 4·5 mm. after 1928			
Brakes	Foot: F.W.B. Hand: rear only. Front brake operation of Bentley-Perrot design	1930: self-wrapping type	Self-wrapping type	Self-wrapping. Linings $\frac{3}{16}$" Ferodo
Front axle	"H"-section 40-ton tensile steel	1930: heavy-type axle bed	Heavy-type axle bed. Late 1930: with jacking lugs	Heavy-type axle bed with jacking lugs
Rear axle	Underslung—semi floating. 4-bevel pinion differential	Ratios, spiral bevel 12/50, 13/50	Ratios, spiral bevel 13/46, 13/50	Straight cut 15/50, 15/47, 15/42 (for track racing), all with special differential plate
Springs	Semi-elliptic. Types according to body			
Gearbox	Right-hand change. Three point suspension	'B.S.' (high 3rd gear) 'C'-Type	'C' Type. Some with 'D' Type	'D' Type straight tooth. 5 or 7 D.P.
Propeller shaft		Plunging joint, later Hardy Spicer	Hardy Spicer	Hardy Spicer
Clutch	Single dry plate			
Wheels	Rudge Whitworth centre lock			Dual spoke
Tyres	Dunlop	33″ × 6·75″ 21″ × 6·75″	21″ × 6·00″ 21″ × 6·75″	21″ × 6·75″ racing
Instruments	White figures on black face	Smith and Jaeger. Some early models had 'A.T.'	Smith and Jaeger	Smith and Jaeger
Electrical equipment	Smith's		Lucas P100DB lamps	Lucas P100DB lamps
Weight, complete car: open closed		42 to 45 cwt. 45 to 48 cwt.	42 cwt. 45 cwt.	Not known
Guarantee	5 years			
Speeds (approx.)		85 m.p.h. with 12/50 axle ratio	92 m.p.h. with 13/46 axle ratio	106 m.p.h. with 15/50. 112-120 m.p.h. with 15/47. 134 m.p.h. with 15/42. (track)
Prices		£1,975 to £2,780	£2,230 to £2,500	

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