

SERVICE INFORMATION FOR THE ROLLS-ROYCE SILVER CLOUD III
AND BENTLEY S. 3.

The purpose of this News Letter is to present in a concise a manner as possible the technical difference between S. 3 and S. 2 cars.

The following information, although to some extent descriptive, is intended to cater mainly for servicing checks and is published in an endeavour to help Service Personnel responsible for the maintenance of Rolls-Royce and Bentley cars until such time as more comprehensive service literature for S. 3 is published.

ENGINE

The most significant change in the engine specification is that the compression ratio has been raised to 9:1 on cars operating in countries where premium grade fuel is obtainable. In countries where only low octane rated fuel is obtainable, the 8:1 compression ratio is retained.

The crankshaft is nitride hardened and incorporates sludge traps similar to those fitted to the S. 1. The connecting rods have been strengthened and 1.000 in. diameter gudgeon pins are fitted. The gudgeon pins are off-set .062 in. in the piston towards the thrust side, on both the 8:1 and 9:1 compression ratio engines. In fact it is true to say that the only difference between the two engines is the configuration of the piston crown.

The torque loading for the cylinder head nuts has been increased to 42-45 lbs/ft, the tolerances in the valve gear train have been tightened up and a strengthened camshaft gear is fitted. The timing gears are lubricated by a flow of oil which is directed between the gears at the point of 'mesh'.

An enclosed breather system is fitted between the oil filler and the fresh air side of the butterfly in the induction manifold on all S. 3 engines.

Engine Specification

Type	Over square 90° V formation, liquid cooled.
Number of cylinders -	Eight - in two banks of four
Bore	4.100 in.
Stroke	3.600 in.
Displacement	380.2 cu. in. (6230 c.c.)

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Compression Ratio	9:1 or 8:1
Compression Pressure	9:1 ratio = 145 lbs. sq.in. approx.
Compression Pressure	8:1 ratio = 120 lbs. sq.in. approx.

Carburettors

The carburettors fitted to the S. 3 have been increased in size.

Data :-

Make & Model	Twin SU HD. 8. (side draught)
Choke size	2.000 in.
Jet size	.125 in.
Jet needle	US

Ignition Distributor

The new ignition distributor contains twin contact breakers which are so arranged that their actions overlap. In this way, one set of contacts connect the low tension circuit, while the second set of contacts breaks the circuit to initiate the high tension spark. The contacts are operated by an eight-lobe cam.

The timing of the spark is controlled with centrifugal governors and a vacuum operated diaphragm. The vacuum tapping is taken off 'A' bank carburetter at the throttle edge.

The diaphragm is exposed to the low pressure obtained in the induction manifold and automatically advances and retards the ignition according to engine loading.

An octane selector is fitted to enable one to adjust the ignition timing to suit low octane rated fuels. The octane selector is initially set in the fully advanced ('A' not 'O') position to suit 95 or 100 octane fuels for 8:1 and 9:1 compression ratios respectively. For lower rated fuel the lock-nut should be released and the eccentric pin should be turned anti-clockwise retarding the ignition until a satisfactory performance is obtained.

IMPORTANT

If at any time, the distributor has been disturbed, any checks or adjustments to the ignition timing must be carried out with the octane selector in the fully advanced position.

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All timing operations should be carried out on the contact breaker set furthest from the vacuum advance unit. The ignition timing should be set to the 'A1' timing mark on the flywheel and not to the 'B4' flywheel marking.

Make & Model	Lucas 20.D8
Ignition Timing	2° B.T.D.C.
Contact Breaker Gap	.014 in. - .016 in.
Dwell Angle	31° - 37°
Mark Location	Flywheel
Cent. Starts. R.P.M.	200-270
Cent. Ends R.P.M.	1,500
Max. Cent. Advance	17° - 19°
Vac. Starts Hg.	5.1/2
Vac. Ends Hg.	8
Max. Vac. Advance	7° - 9°
Direction of Rotation	Anti-clockwise
Firing Order	1, 5, 4, 8, 6, 3, 7, 2.
Contact Arm Spring Tension	18-24 oz.
Condenser Capacity	.18 - .25 Mfd.

Ignition Coil

Make & Model	Lucas HA.12
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Sparking Plugs

Make & Type	Champion RN.8
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Cooling System

A new thermostat has been introduced to provide a more accurate temperature control. The new thermostat which is rated at 82°C is wax filled and is not pressure sensitive. This means that this thermostat 'cracks' open at the actual temperature stated thereon. In the case of the gas filled thermostat used formerly, there was some delay in the opening, over the temperatures stated, as with this type the pressure in the cooling system retarded the opening of the thermostat.

POWER ASSISTED STEERING

The S.3 is fitted with a development of the S.2 power-assisted steering system. The power-assistance provided has been increased by (a) reducing the steering wheel rim load after which assistance is received from 11b. to 1/2 lb.,

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(b) reducing the rim load above which very much more steering effort is supplied by the power-assisting system from 8 - 10 lb. to 6 lb. and (c) by increasing the power-assistance received between these two points. These modifications have the effect of increasing the assistance received by the driver especially under parking conditions.

In practice, this has been achieved by omitting two of the four reaction plunger pairs, along with their associated springs and spacing pins and reducing the number of springs in each secondary spring pack from twelve to six. Two anti-judder modifications have been introduced (a) providing a spool valve with swashed lands and (b) fitting restricted banjo-bolts in the steering-box to ram feed lines.

The spool valve housing was produced initially with four bores for the reaction plungers, as on S. 2, but two of these bores were blanked off with aluminium pins. At a later stage the housing was produced with the two redundant bores omitted.

The front end geometry remains the same as for the S. 2.

HEADLAMPS

The S. 3 is fitted with a four headlamp system to provide more effective lighting which inevitably reduces the strain on the driver.

The four headlamps are sealed beam units. The two inner lamps which are single filament light units are focused as 'main beam' for fast night driving and extinguish when the dip switch is operated. The two outer lamps are double filament light units with one filament set slightly out of focus to act as a supplementary main beam which also extinguishes on dip; while the other filament is focused for driving on dip and extinguishes when driving on main beam.

On all cars except those destined for the U.S.A. the direction indicator switch is wired so that it acts as a combined direction indicator and headlamp flasher switch. With the main lamp switch in the 'OFF' or 'S & T' position or driving with dipped headlights the flasher switch operates the main beam in each headlamp.

Note:- 1A lamp units are fitted to the inner headlamps; 2, 2A or EUROPEAN lamp units are fitted to the outer headlamps

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<u>Location</u>	<u>Rating</u>	<u>Colour</u>	<u>Fitting</u>
United Kingdom	1A 12V 37.1/2w	Clear	Push-in two blade
	2A 12V 37.1/2/50w	Clear	Push-in three blade
Europe except			
France	1A 12V 37.1/2w	Clear	Push-in two blade
	EUROPEAN 12V 45/40W	Clear	Push-in three blade
France	1A 12V 37.1/2w	Yellow	Push-in two blade
	2A 12V 45/40w	Yellow	Push-in three blade
Middle & Far East)	1A 12V 37.1/2w	Clear	Push-in two blade
Canada & S.) 2 or 2A		
America, U.S.A.)	12V 37.1/2/50w	Clear	Push-in three blade

This Bulletin cancels all previous Service Bulletins numbered S3/A1

FOR INFORMATION (Strictly Confidential)

CHASSIS SERIES AND ENGINE NUMBERS

FOR S3 CARS

The following is a list of chassis and engine numbers which have up to the present time been issued for S3 Series cars. It is intended to facilitate the identification of chassis numbers in relation to modifications.

The letter 'L' preceding the chassis series letter indicates a left-hand drive chassis.

Number 13 is omitted from all chassis numbers.

<u>SERIES</u>	<u>CHASSIS NUMBER</u>	<u>ENGINE NUMBER</u>
<u>SILVER CLOUD III</u>		
A. SAZ.1 to SAZ.62	Odd numbers only.	SZ.1.A to SZ.30.A
B. Series not issued.		
C. SCX.1 to SCX.877	Odd numbers only.	SX.1.C to SX.438.C
D. SDW.1 to SDW.601	Odd numbers only.	SW.1.D to SW.300.D
E. SEV.1 to SEV.449	Odd numbers only.	SV.1.E to SV.224.E
F. SFU.1 to SFU.803	Odd numbers only.	SU.1.F to SU.401.F
G. SGT.1 to SGT.659	Odd numbers only.	ST.1.G to ST.329.G
H. SHS.1 to SHS.357	Odd numbers only.	SS.1.H to SS.178.H
J. SJR.1 onwards	Odd numbers only.	SR.1.J onwards

The letter 'C' following a chassis number indicates a coachbuilt Silver Cloud III.

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<u>SERIES</u>	<u>CHASSIS NUMBER</u>	<u>ENGINE NUMBER</u>
<u>BENTLEY S3</u>		
A. B.2.AV to B.26.AV	Even numbers only.	BAV.1 to BAV.13
B. Series not issued.		
C. B.2.CN to B.828.CN	Even numbers only.	BCN.1 to BCN.414
D. B.2.DF to B.198.DF	Even numbers only.	BDF.1 to BDF.99
E. B.2.EC to B.530.EC	Even numbers only.	BEC.1 to BEC.265
F. B.2.FG to B.350.FG	Even numbers only.	BFG.1 to BFG.175
G. B.2.GJ to B.200.GJ	Even numbers only.	BGJ.1 to BGJ.100
<u>SILVER CLOUD III LONG WHEELBASE</u>		
A. CAL.1 to CAL.83	Odd numbers only.	CL.1.A to CL.41.A
B. CBL.1 to CBL.61	Odd numbers only.	CL.1.B to CL.30.B
C. CCL.1 to CCL.101	Odd numbers only.	CL.1.C to CL.50.C
D. CDL.1 to CDL.95	Odd numbers only.	CL.1.D to CL.47.D
E. CEL.1 to CEL.105	Odd numbers only.	CL.1.E to CL.52.E
<u>BENTLEY S3 LONG WHEELBASE</u>		
A. BAL.2 to BAL.30	Even numbers only.	BL.1.A to BL.15.A
B. BBL.2 to BBL.12	Even numbers only.	BL.1.B to BL.6.B