No. 2. 18th October 1962 NEWS LETTER

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.)

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.

Carburetters

The carburetters 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.

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^{o} B.T.D.C.
Contact Breaker Gap	.014 in. - .016 in.
Dwell Angle	31^{o} - 37^{o}
Mark Location	Flywheel
Cent. Starts. R.P.M.	200-270
Cent. Ends R.P.M.	1,500
Max. Cent. Advance	17^{o} - 19^{o}
Vac. Starts Hg.	5.1/2
Vac. Ends Hg.	8
Max. Vac. Advance	7^{o} - 9^{o}
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

Sparking Plugs

Make & Type	Champion RN.8

Cooling System

A new thermostat has been introduced to provide a more accurate temperature control. The new thermostat which is rated at 82^{o}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 1lb. to 1/2 lb.,

(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

Location	Rating	Colour	Fitting
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) Canada & S. America, U.S.A.)	1A 12V 37.1/2w 2 or 2A 12V 37.1/2/50w	Clear	Push-in two blade
		Clear	Push-in three blade

No. S2/A1

This Bulletin cancels all previous Bulletins numbered S2/A1 and S2/A3.

FOR INFORMATION (Strictly Confidential)

CHASSIS SERIES AND ENGINE NUMBERS

FOR S2 CARS

The following is a complete list of engine and chassis numbers which were issued for S2 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.

SERIES	CHASSIS NUMBER	ENGINE NUMBERS
SILVER CLOUD II		
Chassis built August 1959.		
A. SPA.2. to SPA.326	Even Numbers Only	1.AS. to 163.AS.
Chassis built November/December 1959.		
SRA.1. to SRA.325.	Odd Numbers Only	164.AS. to 325.AS.
Chassis built February 1960.		
B. STB.2. to STB.500.	Even Numbers Only	1.BS. to 250.BS.
Chassis built April 1960.		
SVB.1. to SVB.501	Odd Numbers Only	251.BS. to 500.BS.

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SERIES	CHASSIS NUMBER	ENGINE NUMBERS
Chassis built June 1960.		
C. SWC.2. to SWC.700.	)	1.CS. to 350.CS.
SWC.702.	)Even Numbers Only	366.CS.
SWC.704. to SWC.730	)	352.CS. to 365.CS.
Chassis built November 1960.		
SXC.1.	)	351.CS.
SXC.3. to SXC 671.	)Odd Numbers Only)	367.CS. to 700.CS.
Chassis built February 1961.		
D. SYD.2. to SYD.550.	Even Numbers Only	1.DS. to 275.DS.
Chassis built June 1961.		
SZD.1. to SZD.551.	Odd Numbers Only	276.DS. to 550.DS.
Chassis built December 1961.		
E. SAE.1. to SAE.685.	Odd Numbers Only	1.ES. to 342.ES.
BENTLEY S2		
Chassis built August 1959.		
A. B.1.AA to B.325.AA.	Odd Numbers Only	1.AB. to 162.AB.
Chassis built November/December 1959.		
B.2.AM. to B.326.AM.	Even Numbers Only	163.AB. to 325.AB.

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SERIES	CHASSIS NUMBER	ENGINE NUMBERS
Chassis built February 1960.		
B.	B.1.BR. to B.501.BR. Odd Numbers Only	1.BB. to 250.BB.
Chassis built June 1960.		
	B.2.BS. to B 500 BS. Even Numbers Only	251.BB. to 500.BB.
Chassis built September 1960.		
c.	B.1.CT. to B.445.CT. Odd Numbers Only	1.CB. to 222.CB.
Chassis built November 1960.		
	B.2.CU. to B.756.CU. Even Numbers Only	223.CB. to 600.CB.
Chassis built April 1961.		
D.	B.1.DV. to B.501.DV. Odd Numbers Only	1.DB. to 250.DB.
Chassis built December 1961.		
	B.2.DW. to B.376.DW. Even Numbers Only	251.DB to 438.DB.
SILVER CLOUD II LONG WHEELBASE		
Chassis built September 1959.		
A.	LCA.1. to LCA.76. Consecutive Numbers	LC.1.A. to LC.75.A.
Chassis built August 1960.		
B.	LCB.1. to LCB.101 Consecutive Numbers	LC.1.B. to LC.100.B.

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SERIES		CHASSIS NUMBER	ENGINE NUMBERS
Chassis built May 19 1.			
C.	LCC.1. to LCC.101.	Consecutive Numbers	LC.1.C. to LC.100.C.
Chassis built February 1962.			
D.	LCD.1. to LCD.25.	Consecutive Numbers	LC.1.D. to LC.24.D.
BENTLEY S2 LONG WHEELBASE			
Chassis built January 1960.			
A.	LBA.1. to LBA.26.	Consecutive Numbers	LB.1.A. to LB.25.A.
Chassis built February 1961.			
B.	LBB.1. to LBB.33.	Consecutive Numbers	LB.1.B. to LB.32.B.

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S.2 MODIFICATIONS

Since the introduction of the S.2 and Phantom V cars, a number of modifications have been introduced and instructed to Service under various Categories. The majority of these modifications, which are listed below, were introduced during the early months of production. It has now been decided that, with the exception of two modifications referred to on page 3, the Category for all S.2 and Phantom V modifications is 3a.

Category 3a Modifications

To be dealt with only on a specific complaint from an owner.

Service Bulletin S2/D6	FUROLATOR AIR FILTER ELEMENT

This bulletin applies to certain countries only - see bulletin S2/D9.

Service Bulletin S2/G2	S.2 BRAKE SERVO
Service Bulletin S2/G4	BRAKE CLEVIS PINS
Service Bulletin S2/K1	MODIFIED THROTTLE CONTROLS LEFT HAND DRIVE S.2 CARS
Service Bulletin S2/K2	MODIFICATIONS TO THE AUTOMATIC CHOKE SYSTEM
Service Bulletin S2/K3	RADIUSED SECTION CHOKE VALVE (UE.8230) - TO FIT
Service Bulletin S2/K4	FUEL VAPORISATION
Service Bulletin S2/K6	AUTOMATIC CHOKE SYSTEM - NEW FAST-IDLE CAM
Service Bulletin S2/K7	FUEL TANK VENTILATION SYSTEM
Service Bulletin S2/K8	AUTOMATIC CHOKE SYSTEM - HEAT SINK MODIFICATION
Service Bulletin S2/L3	COOLING, HEATING AND DE-MISTING SYSTEM S.2 CARS
Service Bulletin S2/L5	RADIATOR FILLER CAP SEAL

Service Bulletin S2/L6	ADDITIONAL CLIP FOR HEATER PIPES
Service Bulletin S2/L9	S.2 COOLING SYSTEM - THERMOSTATS
Service Bulletin S2/L10	S.2 COOLING SYSTEM - PRESSURE RELIEF VALVE - UE.3087
Service Bulletin S2/M1	IMPROVED SEALING OF THE SCINTILLA CHOKE THERMAL DELAY SWITCH
Service Bulletin S2/M4	METHOD OF MODIFYING FUSE HOLDER FOR MAIN FUSE BOARD AND WINDOW-LIFT FUSE BOARD
Service Bulletin S2/M5	STARTER MOTORS
Service Bulletin S2/M6	STARTER MOTOR RELAY
Service Bulletin S2/M7	CHAMPION WATERPROOF SPARKING PLUG ADAPTORS
Service Bulletin S2/Q1	EXHAUST PIPE 'TITTER' ON S.2 CARS
Service Bulletin S2/S2	MODIFIED LOCKING CAM ASSEMBLY FOR THE LUGGAGE BOOT LID
Service Bulletin S2/S4	ELECTRIC WINDOW LIFT SWITCHES - WATER DUCTS
Service Bulletin BC2/G2	BRAKE SERVO OPERATING LEVERS
Service Bulletin BC2/G3	BRAKE CLEVIS PINS - FRONT BRAKES
Service Bulletin PV/K1	FUEL TANK VENTILATION SYSTEM
Service Bulletin PV/M1	STARTER MOTOR ISOLATING RELAY
Service Bulletin S2/E3	BREATHER BAFFLE IN S.2 ENGINE CRANKCASE
Service Bulletin S2/E5	REPOSITIONING THE OCTANE SELECTOR
Service Bulletin S2/C2	INTAKE WHISTLE - UNDERWING A.C.U.
Service Bulletin S2/C3	SUPPORT CLIP FOR COOLANT CONNECTI

The two excepted modifications are as follows :-

Service Bulletin S2/D10 — AUTOMATIC TRANSMISSION FLUID - S.2 CARS - To remain CATEGORY 1

Service Bulletins S2/L11, S2/L12 and BC2/L1 — COOLANT AND HEATER HOSES

This modification will be chargeable to the Owner as outlined in the Service Bulletins.

Except for action taken on Service Bulletins S2/D10, S2/L11, S2/L12 and BC2/L1, all other modifications will be dealt with on a specific complaint from an Owner. No doubt there will be cases where Service personnel may consider that a certain modification is necessary without the Owner having complained. Under these circumstances it is desirable (whenever possible) for the matter to be referred to Rolls-Royce Limited or Bentley Motors (1931) Limited before action is taken.

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