Workshop Manual

Rolls-Royce Silver Cloud
Rolls-Royce Silver Cloud II
Phantom V

Bentley S
Bentley S2
Bentley Continental S
Bentley Continental S2

Including:

Supplements for the Series III and 3 cars
PREFACE

This Workshop Manual has been compiled in an endeavour to assist service personnel responsible for maintenance and overhaul, in properly maintaining the high standard of engineering achieved in the production of Rolls-Royce and Bentley motor cars.

The book is copiously illustrated with photographs and orthographic reproductions which are suitably annotated in order to provide quick reference with minimum searching.

Although all information contained in the Manual was correct when going to print, modifications which may subsequently develop will be kept up to date by means of Service Bulletins.

Information given in the latest Bulletin will supersede that given in the Section of the Manual to which it refers, until such times as the Manual is re-issued with the necessary amendments.

Instructions for the maintenance and overhaul of the S2 engine and the Refrigeration Systems fitted to the Rolls-Royce and Bentley cars are contained in individual volumes. Special Workshop Tools referred to in these publications and the Workshop Manual are listed and illustrated in a further publication.

Personnel of Rolls-Royce Service Departments at Hythe Road, Willesden, London N.W.10, and at Pym's Lane, Crewe, are always prepared to answer queries or give advice on individual servicing problems, but it will assist them if queries are accompanied by the chassis number of the car.

Information contained herein applies to the following cars:

<table>
<thead>
<tr>
<th>Rolls-Royce</th>
<th>Bentley</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silver Cloud</td>
<td>S1</td>
</tr>
<tr>
<td>Silver Cloud Long Wheelbase</td>
<td>S1 Long Wheelbase</td>
</tr>
<tr>
<td>Silver Cloud II</td>
<td>S2</td>
</tr>
<tr>
<td>Silver Cloud II Long Wheelbase</td>
<td>S2 Long Wheelbase</td>
</tr>
<tr>
<td>Phantom V</td>
<td>Continental S1</td>
</tr>
<tr>
<td></td>
<td>Continental S2</td>
</tr>
</tbody>
</table>

The following publications are available for reference in conjunction with this Manual:

<p>| TSD 471  | Automatic Gearbox Service Manual |
| TSD 720  | Car Interior Cooling System. Boot Unit |
| TSD 753  | Rolls-Royce Silver Cloud II and Bentley S2 Engine Manual |
| TSD 723  | Air Conditioning System. Underwing Unit |
| TSD 727  | Workshop Tools |
| TSD 744  | Air Conditioning System. O.M.C. Refrigeration Unit |</p>
<table>
<thead>
<tr>
<th>CONTENTS</th>
<th>Chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENERAL INFORMATION</td>
<td>A</td>
</tr>
<tr>
<td>SPECIAL PROCESSES</td>
<td>B</td>
</tr>
<tr>
<td>AIR CONDITIONING</td>
<td>C</td>
</tr>
<tr>
<td>LUBRICATION AND MAINTENANCE</td>
<td>D</td>
</tr>
<tr>
<td>ENGINE</td>
<td>E</td>
</tr>
<tr>
<td>PROPELLER SHAFT AND UNIVERSAL JOINTS</td>
<td>F</td>
</tr>
<tr>
<td>BRAKES</td>
<td>G</td>
</tr>
<tr>
<td>SUSPENSION, SHOCK DAMPERS, PIVOT PINS AND STUB AXLES</td>
<td>H</td>
</tr>
<tr>
<td>REAR AXLE</td>
<td>J</td>
</tr>
<tr>
<td>FUEL SYSTEM AND CARBURETTERS</td>
<td>K</td>
</tr>
<tr>
<td>ENGINE COOLING SYSTEM</td>
<td>L</td>
</tr>
<tr>
<td>ELECTRICAL, IGNITION AND RADIO</td>
<td>M</td>
</tr>
<tr>
<td>STEERING</td>
<td>N</td>
</tr>
<tr>
<td>CHASSIS FRAME</td>
<td>P</td>
</tr>
<tr>
<td>EXHAUST SYSTEM</td>
<td>Q</td>
</tr>
<tr>
<td>WHEELS AND TYRES</td>
<td>R</td>
</tr>
<tr>
<td>BODY</td>
<td>S</td>
</tr>
</tbody>
</table>
# Chapter A

## General Information

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A 1</td>
<td>Specification — S1 Cars</td>
<td>A 1</td>
</tr>
<tr>
<td>A 2</td>
<td>Specification — S2 Cars</td>
<td>A 8</td>
</tr>
<tr>
<td>A 3</td>
<td>Unified Screw Threads</td>
<td>A 13</td>
</tr>
</tbody>
</table>
CHAPTER A

GENERAL INFORMATION

SECTION A1 SPECIFICATION—SI CARS

**Engine**

- **Type**: Six cylinders, in line, with overhead inlet and side exhaust valves.
- **Bore**: 3.750 in. (95.3 mm.)
- **Stroke**: 4.500 in. (114.3 mm.)
- **Cubic capacity (piston displacement)**: 298 cu. in. (4887 c.c.)
- **Compression ratio**:
  - Bentley Continental SI cars: 7:25 : 1 (early)
  - Standard SI and Long Wheelbase SI cars: 8:0 : 1 (late)
  - Bentley Continental SI cars: 8:00 : 1 (late)

**Suspension of the engine and gearbox**

The engine and gearbox are of unit construction. The unit is flexibly mounted on rubber at three points.

**Cylinder Block**

- **Type**: Monobloc casting, integral with crankcase.
- **Material**: Cast iron with full length, high phosphorus iron cylinder liners. Phosphor-bronze exhaust valve guides.

**Cylinder Head**

- **Type**: Detachable, 6-port type
- **Material**: Aluminium alloy, with nickel chrome steel inlet valve seat inserts and cast iron inlet valve guides.

**Crankshaft**

- **Material**: Nitride hardened chrome Molybdenum steel. Dynamically balanced.
- **Number of Journals**: Seven
- **Balance weights**: Integral with shaft
- **Crankshaft vibration damper**: Internal. Combined spring-drive and friction-type damper.
Main Bearings
Number off: Seven
Type: Copper, lead-indium lined thin steel shells with ‘pre-sized’ bores to suit diameter of crankshaft journals.

Pistons
Material: Aluminium alloy, split skirt.
Number of rings: Three compression and one Duaflex oil scraper. Top compression ring chromium plated.

Connecting Rods
Type: ‘H’ section. Fully machined and balanced.
Material: Chrome Molybdenum steel.
Big-end bearings: Copper, lead-indium lined thin steel shells with ‘pre-sized’ bores to suit diameter of crankpins.

Camshaft
Material: Case hardened nickel steel
Number of journals: Four
Bearings: Four Babbitt lined steel shells
Thrust taken: Front
Drive: Helical tooth gears

Valve Gear
Inlet valves: Overhead push rod operated. Dual springs. Gland packing to control lubrication.
Valve tappets: Barrel type, flat face.

Lubrication System
General: High pressure feed to crankshaft, connecting rod and camshaft bearings and to the distributor drive skew gearing. Dual oil relief valve providing a positive low pressure oil supply to the engine gears and to the hollow valve rocker shaft from which valve rockers, push rods, tappets and cams are lubricated.
Type: Pressure throughout
High pressure supply: 25 lb/sq.in. (approximate)
Low pressure supply: 5 lb/sq.in. (approximate)
Sump capacity: 2 galls. (Imperial), 2-4 galls. (U.S.A.), 9-1 litres.
Oil pump: Spur gear type with floating intake strainer.
Oil pressure relief valve unit: Dual type, controlling both high and low pressure feeds.
Oil filter: ‘British’ Full-Flow type
**Fuel System**

**Carburetters**
- Early S1 cars: Two S.U. HD 6 diaphragm type. Automatic choke for cold starting.
- Late S1 and Bentley Continental S1 cars: Two S.U. HD 8 diaphragm type. Automatic choke for cold starting.

**Air cleaner**
- Mesh or oil bath

**Fuel pumps**
- S.U. twin electric type ‘L’

**Fuel tank capacity**
- 18 gallons. (Imperial), 21.6 gallons. (U.S.A.), 81.8 litres.

**Fuel strainers**
- Main fuel strainer mounted on the side frame member in front of the fuel tank. Small gauze strainer at the carburettor inlets and in the fuel pumps.

**Fuel gauge**
- Electric. Registers when the ignition switch is ‘ON’.

**Cooling System**

**Coolant capacity**
- 28 pints (Imperial), 33.61 pints (U.S.A.), 15.91 litres.

**Pump**
- Centrifugal

**Fan**
- Five blades

**Fan diameter**
- 17¼ in.

**Pump and fan drive**
- ‘Vee’-belt

**Radiator matrix**
- Film type

**Radiator shutters**
- Fixed

**Coolant temperature control**
- The pressurised system operated at 7 lb/sq.in. applies to S1 refrigerated cars only. The coolant on all S1 cars is circulated by a centrifugal pump. A thermostat valve is fitted to a by-pass flow pipe to direct coolant from the pump back to the engine, by-passing the radiator matrix when the engine is cold.

**Temperature indicator**
- This instrument is mounted on the facia and operates when the ignition is ‘ON’.

**Coolant**
- An inhibited solution of Ethylene Glycol (BSS 3150).

**Propeller Shaft**

**Divided type**, having a ball and trunnion universal joint. The shaft is supported in the centre by a flexibly mounted ball race.

**Rear Axle**

**Type**
- Hypoid bevel gears with semi-floating half-shafts.

**Final drive**
- Through a hypoid crown wheel and pinion.

**Pinion teeth**
- Twelve

**Crown wheel teeth**
- Forty-one

**Ratio**
- Standard S1 cars: 3.42 : 1
- Bentley Continental S1 cars: 2.92 : 1

**Oil capacity of casing**
- 1½ pints
Brakes
Footbrake
Servo-assisted hydrostatic brakes, hydraulic operation on the front wheels, hydraulic and mechanical on the rear wheels. Operates through a mechanical linkage to the rear wheels.

Handbrake
Operates through a mechanical linkage to the rear wheels.

Brake shoe linings
Mintex M 14 or Ferodo DS2

Friction lining area (4 brakes)
240 sq.in. (1548 sq.cm.)

Handbrake lever
Twist grip barrel type

Servo Motor
The servo motor operates on the principle of the dry disc clutch. The lined friction plate is driven from the gearbox output shaft at approximately one fifth of the propeller shaft speed.

Lining
Ferodo DM8

Cam angle
S1 cars (early) 52 deg. — single master cylinder.
S1 cars (late) 47 deg. — twin master cylinders.

Front Hubs
Two taper roller bearings

Wheels and Tyres
Bolted on pressed steel wheels with covering discs.

Wheels
Well-base rims, 15-000 in. × 6-000 in.

Rim-wheel

Tyres
Standard S1 cars
7-60 in. × 15 in.
8-00 in. × 15 in.

Bentley Continental S1 cars (early)
Bentley Continental S1 cars (late)

Steering
Power assisted or manual

Type
Cam and roller

Steering unit
Right-hand or left-hand

Drive
18 in.

Steering wheel diameter

Steering box gear ratio
20:6 : 1
18:7 : 1

Standard S1 cars
Bentley Continental S1 cars

Power assisted S1 cars

Suspension
Independent, incorporating coil springs, hydraulic shock dampers and torsion rod stabiliser.

Front
Semi-elliptic leaf springs in combination with controllable hydraulic shock dampers. An axle control rod is fitted which, together with the road springs, takes the torque and brake reaction.

Rear
Rolls-Royce hydraulic double acting.

Front shock dampers
Rolls-Royce hydraulic double acting. Controllable through a switch on the steering column.

Rear shock dampers
Chassis Frame
Type
Box section throughout, with all welded joints.

Jacking System
Type
Smith Bevelift jacks

Battery
Make and type
Either P & R Dagenite — 6HZP 9/GZ or Exide 6XCV 9/L.
Voltage
12 volts
Capacity
57 ampere-hours
Earth
Negative to chassis frame

Ignition Distributor
Make and type
Delco-Remy, Twin contact breaker with synchronised contact breaker arms
Rotation
Clockwise
Advance mechanism
Automatic (centrifugal governor)
Firing order
1, 4, 2, 6, 3, 5

Ignition Coil
Make
Lucas or Delco-Remy
Sparking plugs
Standard S1 cars (early) Lodge CLNP or Champion RN 8
Bentley Continental S1 and later S1 cars Lodge CLNP or Champion N 5

Generator
Make
Lucas
Type
Early cars C47PV
Late cars C48
Maximum output
Early cars 30 amperes 13.5 volts
Late cars 35 amperes 13.5 volts.
Drive
Adjustable 'Vee'-belt
Voltage regulator and cut-out
Lucas RB 310, current voltage type

Starter Motor
Make and type
Cranking speed
80-160 engine r.p.m. (under normal temperature climate conditions).
Rotation
Clockwise
Pinion flywheel ratio
14/115
Horns
Make and type
Lucas WT 618. Twin Wind-tone

Direction Indicators
Make and type
Lucas FL 5. Flashing type indicators

Headlamps
Make and type
Lucas RL 700
The headlamps are controlled by two switches, the master switch on the switchbox and a foot-switch for 'beam' selection. A small red warning lamp, mounted in the speedometer, is illuminated whenever the headlamps are on the DRIVING BEAM (full on).

General

Fog Lamps
General
Twin fog lamps are fitted which incorporate the front FLASHER element. These are double filament pre-focus type bulbs.

Fuse Box
General
The large fuse box carries eight fuses. Each circuit fuse is one strand of No. 28 S.W.G. tinned copper wire. The small fuse box carries the horn fuse. This is a cartridge type fuse of 25 amp. rating.

Car Heater
Alloy heat exchanger under the right-hand front wing ducted to slots under the scuttle and to an outlet in the floor of the rear compartment at the back of the front seat.
The later SI and Continental cars were fitted with two manually-operated water taps, and two modified vacuum controlled water valves, in order to provide a more efficient means of interior temperature control.

De-mister and De-icer
Alloy heat exchanger under the left-hand front wing delivering hot or cold air to the windscreen. The rear window is electrically heated, controlled by a switch on the parcel shelf.

Windscreen Washer
Make
Lucas Screen-jet
Vacuum operated
Special liquid has a low surface tension and anti-freeze properties.

General

Windscreen Wipers
Make
Lucas DR 1 (early cars)
Lucas DR 3 (later cars)
Electrically operated. Two-speed, self-parking.
### Radio

<table>
<thead>
<tr>
<th>Make and type</th>
<th>Radiomobile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early S1 cars</td>
<td>4300. All wave radio</td>
</tr>
<tr>
<td></td>
<td>200 × B. Medium and long wave radio</td>
</tr>
<tr>
<td></td>
<td>202 × B. Medium wave radio</td>
</tr>
<tr>
<td>Late S1 cars</td>
<td>200 RB. Medium and long wave radio</td>
</tr>
<tr>
<td></td>
<td>202 RB. Medium wave radio</td>
</tr>
<tr>
<td></td>
<td>230 R. Medium and short wave radio</td>
</tr>
</tbody>
</table>

### Body

General

Steel and light alloy stressed skin construction, the floor being an integral part of the body, to ensure optimum strength and rigidity consistent with lightness.

### Dimensions

<table>
<thead>
<tr>
<th>Wheelbase</th>
<th>Standard S1 and Bentley Continental S1 cars</th>
<th>10 ft. 3 in. (312.4 cm.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long Wheelbase S1 cars</td>
<td></td>
<td>10 ft. 7 in. (322.6 cm.)</td>
</tr>
<tr>
<td>Track, front</td>
<td>Standard S1, Bentley Continental S1 and Long Wheelbase S1 cars</td>
<td>4 ft. 10 in. (147.3 cm.)</td>
</tr>
<tr>
<td>Track, rear</td>
<td>Standard S1, Bentley Continental S1 and Long Wheelbase S1 cars</td>
<td>5 ft. 0 in. (152.4 cm.)</td>
</tr>
<tr>
<td>Overall length (including bumpers)</td>
<td>Standard S1 cars</td>
<td>17 ft. 8 in. (539.5 cm.)</td>
</tr>
<tr>
<td></td>
<td>Long Wheelbase S1 cars</td>
<td>17 ft. 11(\frac{1}{2}) in. (548 cm.)</td>
</tr>
<tr>
<td></td>
<td>Bentley Continental S1 cars</td>
<td>17 ft. 2(\frac{1}{2}) in. (524.5 cm.)</td>
</tr>
<tr>
<td>Overall width (over wings)</td>
<td>Standard S1 cars</td>
<td>6 ft. 2(\frac{1}{2}) in. (189.2 cm.)</td>
</tr>
<tr>
<td></td>
<td>Long Wheelbase S1 cars</td>
<td>6 ft. 2(\frac{3}{4}) in. (189.8 cm.)</td>
</tr>
<tr>
<td></td>
<td>Bentley Continental S1 cars</td>
<td>5 ft. 1(\frac{1}{2}) in. (181.6 cm.)</td>
</tr>
<tr>
<td>Overall height (unladen)</td>
<td>Standard S1 and Long Wheelbase S1 cars</td>
<td>5 ft. 4(\frac{1}{2}) in. (163 cm.)</td>
</tr>
<tr>
<td></td>
<td>Bentley Continental S1 cars</td>
<td>5 ft. 4 in. (162.6 cm.)</td>
</tr>
<tr>
<td>Turning circle diameter</td>
<td>Standard S1 cars</td>
<td>41 ft. 8 in. (12.7 m.)</td>
</tr>
<tr>
<td></td>
<td>Long Wheelbase S1 and Bentley Continental S1 cars</td>
<td>43 ft. 0 in. (13.1 m.)</td>
</tr>
<tr>
<td>Weight, kerbside</td>
<td>Standard S1 cars</td>
<td>40 cwt. (approximate) (2032 kgs.)</td>
</tr>
<tr>
<td></td>
<td>Long Wheelbase S1 cars</td>
<td>41(\frac{1}{2}) cwt. (approximate) (2108 kgs.)</td>
</tr>
<tr>
<td></td>
<td>Bentley Continental S1 cars</td>
<td>38 cwt. (This value is approximate to the mean weights of various bodies).</td>
</tr>
</tbody>
</table>
SECTION A2 SPECIFICATION — S2 CARS

Engine

Engine data appears in TSD 721

Cooling System

Coolant capacity 21 pints (Imperial), 25.21 pints (U.S.A.), 11.93 litres.

Pump Centrifugal

Fan Five blade

Pump and fan drive Twin adjustable 'Vee'-belts

Radiator matrix Film type

Radiator shutters Fixed

Coolant temperature control Pressurised system working at 7 lb/sq.in. Coolant circulation by centrifugal pump thermostatically controlled by a by-pass thermostat valve.

Temperature indicator On instrument panel. Electric, registers when ignition switch is 'ON'.

Coolant An inhibited solution of Ethylene Glycol (BSS 3150).

Propeller Shaft

Divided type, having a ball and trunnion universal joint and two needle roller universal joints. The shaft is supported in the centre by a flexibly mounted ball race.

Rear Axle

Type Semi-floating

Final drive Through a hypoid crown wheel and pinion

Pinion teeth

<table>
<thead>
<tr>
<th>Type</th>
<th>Teeth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard S2 cars</td>
<td>13</td>
</tr>
<tr>
<td>Bentley Continental S2 cars</td>
<td>13</td>
</tr>
<tr>
<td>Phantom V cars</td>
<td>9</td>
</tr>
</tbody>
</table>

Crown wheel teeth

<table>
<thead>
<tr>
<th>Type</th>
<th>Teeth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard S2 cars</td>
<td>40</td>
</tr>
<tr>
<td>Bentley Continental S2 cars</td>
<td>38</td>
</tr>
<tr>
<td>Phantom V cars</td>
<td>35</td>
</tr>
</tbody>
</table>

Ratio

<table>
<thead>
<tr>
<th>Type</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard S2 cars</td>
<td>3.08 : 1</td>
</tr>
<tr>
<td>Bentley Continental S2 cars</td>
<td>2.92 : 1</td>
</tr>
<tr>
<td>Phantom V cars</td>
<td>3.89 : 1</td>
</tr>
</tbody>
</table>

Oil capacity of casing

<table>
<thead>
<tr>
<th>Type</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard S2 cars</td>
<td>1 3/5 pints</td>
</tr>
<tr>
<td>Bentley Continental S2 cars</td>
<td>1 3/5 pints</td>
</tr>
<tr>
<td>Phantom V cars</td>
<td>1 3/5 pints</td>
</tr>
</tbody>
</table>
Brakes

Footbrake

Handbrake

Brake shoe linings
Friction lining area (4 brakes)
S2 cars
Bentley Continental S2 cars
Handbrake lever

Power assistance provided by a servo motor.
Independent twin hydraulic system with additional mechanical linkage to rear shoes.
Mechanical to rear wheels
Ferodo DS2 or Mintex M 14

Friction lining area (4 brakes)
S2 cars
Bentley Continental S2 cars

240 sq.in. (1548 sq.cm.)
304 sq.in. (1960 sq.cm.)
Twist grip barrel type

Servo Motor

General

Servo motor lining
Cam angle
S2 cars
Bentley Continental S2 cars

The servo motor operates on the principle of the dry disc clutch.
The lined friction plate is driven from the gearbox final shaft at approximately one-fifth of the propeller shaft speed.
Ferodo DM8

Cam angle
S2 cars
Bentley Continental S2 cars

37.5 deg. — twin master cylinders
47 deg. — twin master cylinders

Front Hubs

General

Wheels and Tyres

Wheels
Rim wheels
Tyres
Standard S2 cars
Bentley Continental S2 cars
Phantom V cars

Bolted-on pressed steel wheels with covering discs.
Well base rims, 6L x 15'-00 in.

8'-20 in. x 15'-00 in.
8'-00 in. x 15'-00 in.
8'-90 in. x 15'-00 in.

Steering

Type
Steering unit
Drive
Steering wheel diameter

Power assisted
Cam and roller
Right-hand or left-hand
17 in.

Suspension

Front
Rear (except Phantom V)
Phantom V

Independent coil spring suspension, hydraulic shock dampers and anti-roll stabiliser.
A special form of axle control rod is fitted which, together with the road springs, takes the torque and brake reaction.
The Phantom V is as specified above with the exception of the rear axle control rod which is not fitted to the Phantom V chassis.
Chapter A

Front Shock Dampers
Type and make
Rolls-Royce hydraulic double-acting.

Rear Shock Dampers
Type and make
General
Rolls-Royce hydraulic double-acting.
Controllable through a switch on the steering column.

Chassis Frame
Type
Box section throughout, with all welded joints.

Jacking System
Type
Smith Bevelift jacks

Battery
Make and type
Either P & R Dagenite — 6 HZP 11/9 GZF or Exide — 6 XTHZ 11/L.
12 volts
67 ampere-hours
Negative to chassis frame

Ignition Distributor
Make and type
Delco-Remy. Twin contact breakers with synchronised contact breaker arms.
Rotation
Anti-clockwise
Advance mechanism
Automatic (centrifugal governor)
Firing order
A1, B1, A4, B4, B2, A3, B3, A2
1, 5, 4, 8, 6, 3, 7, 2

Ignition Coil
Make
Delco-Remy or Lucas

Sparking Plugs
Make and type
Champion RN 8, Champion RN 13P or Lodge CLNP.

Generator
Make
Lucas
Type
C 48
Maximum output
35 amperes, 13.5 volts
Drive
Twin 'Vee'-belts
Voltage regulator and cut-out
Lucas RB 310, current voltage type

Starter Motor
Make and type
Lucas M-45G. 12 volts
Rotation
Anti-clockwise (from front of the engine)
Flywheel to pinion ratio
18 : 1
Horns
Make and type
Lucas WT 618. Twin Wind-tone

Direction Indicators
Make and type
Lucas FL 5. Flashing type indicators

Windscreen Wipers
Make and type
Lucas DR 3. Two-speed self-parking

Headlamps
Make and type
Lucas RL 700
General
A small red warning light, mounted in the speedometer, is illuminated whenever the headlamps are on MAIN BEAM.

Fog Lamps
General
Twin fog lamps are fitted which incorporate the front FLASHER element. These are double filament pre-focus type bulbs.

Fuse Box
General
Large box contains eight circuit fuses. Each circuit fuse is one strand of No. 28 S.W.G. tinned copper wire. Spare fuse wire is provided on a special holder within large fuse box.
A small fuse box carries the horn fuse. This is a cartridge type fuse of 25 amp. rating.

Heating, De-misting, De-icing and Ventilation
General
Alloy heat exchanger under right-hand front wing, delivering fresh air, heated or at ambient temperature.
Independently operated recirculatory system utilising lower half of heater matrix. Rear window electrically heated.

Windscreen Washer
Make
Lucas S2J 026
General
Electrically operated. Special liquid has a low surface tension and anti-freeze properties.

Radio
Make
Radiomobile
Type
501 TA/VT series for use in Belgium, Denmark, Eire, France, Germany, Holland, Norway, Sweden and Switzerland.
The 501 TA/VT series radio has both medium and long wave reception.
The 502 TA/VT has medium wave reception only.
230 R. radio for use in Africa, Asia, South America, West Indies, Italy and Portugal.
The 230 R. radio has medium and short wave reception.
Body

General

Steel and light alloy stressed skin construction has been employed, the floor being an integral part of the body, to ensure optimum strength and rigidity consistent with lightness.

Dimensions

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Standard S2 and Bentley Continental S2 cars</th>
<th>Long Wheelbase S2 cars</th>
<th>Phantom V cars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheelbase</td>
<td>10 ft. 3 in. (312.4 cm.)</td>
<td>10 ft. 7 in. (322.6 cm.)</td>
<td>12 ft. 1 in. (368.3 cm.)</td>
</tr>
<tr>
<td>Track, front</td>
<td>4 ft. 10 3/8 in. (148.6 cm.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Track, rear</td>
<td>5 ft. 0 3/8 in. (154.6 cm.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall length (including bumpers)</td>
<td>17 ft. 7 1/2 in. (537.8 cm.)</td>
<td>17 ft. 11 1/2 in. (548 cm.)</td>
<td>19 ft. 10 in. (624 cm.)</td>
</tr>
<tr>
<td>Overall width (over wings)</td>
<td>6 ft. 2 3/8 in. (189.8 cm.)</td>
<td>6 ft. 1 in. (185.4 cm.)</td>
<td></td>
</tr>
<tr>
<td>Overall height (unladen)</td>
<td>5 ft. 4 in. (162.6 cm.)</td>
<td>5 ft. 9 in. (175.3 cm.)</td>
<td></td>
</tr>
<tr>
<td>Turning circle diameter</td>
<td>41 ft. 8 in. (12.70 m.)</td>
<td>43 ft. 0 in. (13.1 m.)</td>
<td>48 ft. 9 in. (14.86 m.)</td>
</tr>
<tr>
<td>Weight, kerbside</td>
<td>41.5 cwt. (2108 kgs.)</td>
<td>38 cwt. (1930.5 kgs.)</td>
<td>43 cwt. (2184 kgs.)</td>
</tr>
<tr>
<td></td>
<td>50 cwt. (2540 kgs.)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
SECTION A3

UNIFIED SCREW THREADS

The need for a common standard of screw threads in the United Kingdom, Canada and the United States of America has led to an agreement between the countries concerned to use UNIFIED THREADS of mutually acceptable form, pitch and diameter.

There are three types of unified thread:

1. Unified Coarse.
2. Unified Fine.
3. Unified Special.

These unified threads are clearly identified by the standard system of markings, as illustrated in Figure A1.

There is little difference between the form of the American national thread and the unified thread; therefore the new threads are largely interchangeable with S.A.E. standards. They are not, however, interchangeable with BSF, and although BSW have the same number of threads per inch as the Unified National Coarse series, interchanging is not recommended due to a difference in the thread form.

The following types of thread are used on nuts, bolts and castings fitted to Rolls-Royce and Bentley cars.

For all sizes below ¼ in. diameter, BA threads are used.

For all sizes between ¼ in. and ½ in. diameter inclusive, the Unified Fine thread is used.

All sizes above ½ in. diameter have been classified by Rolls-Royce and Bentley Motors as Unified Special and have 16 threads per inch.

The Unified Coarse Thread is not used.
CHAPTER A

GENERAL INFORMATION

SECTION A1 SPECIFICATION  S3 CARS


Engine

Fuel system
Carburetters
Automatic choke for cold starting.
Two S.U. H.D.8, diaphragm type 2-00 in. choke bore.
Either a Purolator paper type element or an oil wetted wire
mesh filter element depending upon which country the engine
will be operating in. For details see latest Service Bulletin
Section D, dealing with this subject.

Air cleaner
Either a Purolator paper type element or an oil wetted wire
mesh filter element depending upon which country the engine
will be operating in. For details see latest Service Bulletin
Section D, dealing with this subject.

Fuel pumps
Twin S.U. electric.

Fuel tank capacity
18 gallons. (Imp.) 21-6 gallons. (U.S.) 81-8 litres.

Fuel strainers
Main fuel strainer mounted on the frame member in front of the
fuel tank. Small gauze strainer at the carburetter inlets and in
the fuel pumps.

Fuel gauge
Electric --- registers when the ignition is switched on.

Cooling system

Coolant capacity
21 pints (Imp.) 25-21 pints (U.S.) 11-93 litres.

Pump
Centrifugal

Fan
5-blade

Fan diameter
18 in.

Pump and fan drive
12 in. adjustable ‘Vee’ belts

Radiator matrix
Fixed

Radiator shutters
82 C. 86 C.

Coolant temperature control
On instrument panel. Electric, registers when the ignition switch
is on.

Temperature indicator
An inhibited solution of ethylene glycol (B.S.S. 3150).

Coolant

Propeller shaft

Divided type, having a ball and trunnion universal joint and
two needle roller universal joints. The shaft is supported in
the centre by a flexibly mounted ball race.
Rear axle

Type
Final drive
Pinion teeth
  Standard S3 cars
  Long Wheelbase S3 cars
  Bentley Continental S3 cars
  Phantom V cars
  13
  13
  13
  9
Crown wheel teeth
  Standard S3 cars
  Long Wheelbase S3 cars
  Bentley Continental S3 cars
  Phantom V cars
  40
  40
  40
  35
Ratio
  Standard S3 cars
  Long Wheelbase S3 cars
  Bentley Continental S3 cars
  Phantom V cars
  3.08 : 1
  3.08 : 1
  3.08 : 1
  3.89 : 1
Oil capacity of casing
  Standard S3 cars
  Long Wheelbase S3 cars
  Bentley Continental S3 cars
  Phantom V cars
  1 l/2 pints
  1 l/2 pints
  1 1/2 pints
  1 1/2 pints

Brakes

Foot brake

Hand brake

Brake shoe linings
Friction lining area (4 brakes)
  S3 cars
  Early Bentley Continental S3 cars
  Late Bentley Continental S3 cars
  Phantom V cars
  240 sq.in. (1548 sq.cm.)
  304 sq.in. (1960 sq.cm.)
  240 sq.in. (1548 sq.cm.)
  240 sq.in. (1548 sq.cm.)
Hand brake lever

Servo motor

General

Servo motor lining
Cam angle
  S3 cars
  Early Bentley Continental S3 cars
  Late Bentley Continental S3 cars
  Phantom V cars
  37.5° — twin master cylinders
  47° — twin master cylinders
  37.5° — twin master cylinders
  37.5° — twin master cylinders
Front hubs
General

Wheels and tyres
Wheels
Rim wheels
Tyres
  Standard S3 cars
  Long Wheelbase S3 cars
  Bentley Continental S3 cars
  Phantom V cars
  Two taper roller races
  Bolted-on pressed steel wheels with covering discs.
  Well base rims, 6L × 15:00 in.

Steering
Type
Steering unit
Drive
Steering wheel diameter
Power assisted
Cam and roller
Right or left-hand
17 in.

Suspension
Front
Rear (except Phantom V)
Phantom V

Front shock dampers
Make and type
Rolls-Royce hydraulic double-acting.

Rear shock dampers
Make and type
Rolls-Royce hydraulic double-acting.
General
Controllable through a switch on the steering column.

Chassis frame
Type
Box section throughout, with all welded joints.

Jacking system
Type
Smith Bevelift jacks.

Battery
Make and type
Either P & R Dagenite — 6 HZP 11/9 GZF
  or Exide — 6 XTHZ 11/L.
Voltage
Capacity
12 v.
67 ampere-hours
Earth
Negative to chassis frame
**Ignition distributor**

Standard S3 cars and Continental S3 cars

Make and type
Rotation
Advance mechanism

Ignition timing
Firing order

Contact gap
Drive

Phantom V
Make and type
Rotation
Advance mechanism
Ignition timing
Firing order

Contact gap
Drive

**Ignition coil**

Make

**Sparking plugs**

Make and type
9 : 1 compression ratio
8 : 1 compression ratio
Cars destined for Australia
Gap

**Generator**

Make
Type
Maximum output
Drive
Voltage regulator and cut-out

**Starter motor**

Make and type
Rotation
Flywheel to pinion ratio

**Horns**

Make and type

**Direction indicators**

Make and type
Windscreen wipers
Make and type

Headlamps
Make and type
Lucas 5½ in. twin sealed beam headlamps mounted horizontally in each front wing.

General
A small red warning lamp, mounted in the speedometer, is illuminated whenever the headlamps are switched to main beam. A switch for flashing the headlamp main beams is incorporated in the direction indicator switch.

Fog lamps
General
Twin fog lamps with single filament bulbs are fitted.

Fuse box
General
Large box contains eight circuit fuses. Each circuit fuse is one strand of No. 28 S.W.G. tinned copper wire. Spare fuse wire is provided on a special holder within large fuse.

A small fuse box carries the horn fuse and headlamp flasher relay fuse. These are cartridge type fuses of 25 amp. rating.

Heating, de-misting, de-icing and ventilation
Standard S3 and Long Wheelbase cars
The 'Upper' heat exchanger under the right-hand front wing delivers fresh air which may be heated or at ambient temperature. Additional fresh air at ambient temperature can be obtained from a duct in the left-hand front wing.

The 'Lower' heat exchanger under the right-hand front wing delivers recirculated air to the car interior; this air may be heated or at ambient temperature.

The rear window is electrically heated.

Windscreen washer
Make
Lucas S2J 026
General
Electrically operated. Special liquid has a low surface tension and anti-freeze properties.

Radio
Make
Radiomobile
Type
6201 Medium and long wave radio suitable for the whole of Europe with the exception of Spain, Portugal and Italy.

622T Medium wave radio suitable for the U.S.A., Canada and Japan.

230R Medium and short wave radio suitable for Africa, Asia, South America, West Indies, Italy, Spain and Portugal.

Pye
Type
TCR 2000/E medium wave radio suitable for Australia and New Zealand.
Chapter A

Workshop Manual Supplement

Rolls-Royce Silver Cloud III, and Phantom V

Bentley S3 and Bentley Continental S3

Body

General

Steel and light alloy stressed skin construction has been employed, the floor being an integral part of the body, to ensure optimum strength and rigidity consistent with lightness.

Dimensions

Wheelbase

<table>
<thead>
<tr>
<th>Category</th>
<th>Standard S3 and Bentley Continental S3 cars</th>
<th>Long Wheelbase S3 cars</th>
<th>Phantom V cars</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10 ft. 3 in. (312.4 cm.)</td>
<td>10 ft. 7 in. (322.6 cm.)</td>
<td>12 ft. 1 in. (368.3 cm.)</td>
</tr>
</tbody>
</table>

Track, front

<table>
<thead>
<tr>
<th>Category</th>
<th>Standard S3, Bentley Continental S3 and Long Wheelbase S3 cars</th>
<th>Phantom V cars</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4 ft. 10(\frac{1}{2}) in. (148.6 cm.)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 ft. 0(\frac{1}{4}) in. (154.6 cm.)</td>
<td></td>
</tr>
</tbody>
</table>

Track, rear

<table>
<thead>
<tr>
<th>Category</th>
<th>Standard S3, Bentley Continental S3 and Long Wheelbase S3 cars</th>
<th>Phantom V cars</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5 ft. 0 in. (152.4 cm.)</td>
<td>5 ft. 4 in. (162.6 cm.)</td>
</tr>
</tbody>
</table>

Overall length* (including bumpers)

<table>
<thead>
<tr>
<th>Category</th>
<th>Standard S3 and Bentley Continental S3 cars</th>
<th>Long Wheelbase S3 cars</th>
<th>Phantom V cars</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>17 ft. 6(\frac{1}{2}) in. (534.0 cm.)</td>
<td>17 ft. 10(\frac{1}{2}) in. (544.2 cm.)</td>
<td>19 ft. 8(\frac{1}{2}) in. (620.2 cm.)</td>
</tr>
</tbody>
</table>

*Cars destined for America will be approximately 1\(\frac{1}{2}\) in. longer

Overall width (over wings)

<table>
<thead>
<tr>
<th>Category</th>
<th>Standard S3 and Long Wheelbase S3 cars</th>
<th>Bentley Continental S3 cars</th>
<th>Phantom V cars</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6 ft. 2(\frac{1}{2}) in. (189.8 cm.)</td>
<td>6 ft. 1 in. (185.4 cm.)</td>
<td>6 ft. 7 in. (200.6 cm.)</td>
</tr>
</tbody>
</table>

Overall height (unladen)

<table>
<thead>
<tr>
<th>Category</th>
<th>Standard S3, Bentley Continental S3 and Long Wheelbase S3 cars</th>
<th>Phantom V cars</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5 ft. 4 in. (162.6 cm.)</td>
<td>5 ft. 9 in. (175.3 cm.)</td>
</tr>
</tbody>
</table>

Turning circle diameter

<table>
<thead>
<tr>
<th>Category</th>
<th>Standard S3 and Bentley Continental S3 cars</th>
<th>Long Wheelbase S3 cars</th>
<th>Phantom V cars</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>41 ft. 8 in. (1270 m.)</td>
<td>43 ft. 0 in. (1310 m.)</td>
<td>48 ft. 9 in. (1486 m.)</td>
</tr>
</tbody>
</table>

Weight, kerbside

<table>
<thead>
<tr>
<th>Category</th>
<th>Standard S3 cars</th>
<th>Bentley Continental S3 cars</th>
<th>Long Wheelbase S3 cars</th>
<th>Phantom V cars</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>415 cwt. (2108 kgs.)</td>
<td>38 cwt. (1930.5 kgs.)</td>
<td>43 cwt. (2184 kgs.)</td>
<td>50 cwt. (2540 kgs.)</td>
</tr>
</tbody>
</table>
## SECTION A2 — CHASSIS TORQUE TIGHTENING CHART

### TORQUE FIGURES — CADMIUM PLATED STANDARD PARTS

<table>
<thead>
<tr>
<th>Size</th>
<th>Full Nut Torque</th>
<th>Half Nut Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 B.A.</td>
<td>48 lb. in.</td>
<td>30 lb. in.</td>
</tr>
<tr>
<td>(\frac{1}{8}) in. UNF (\frac{1}{8}) in. A.F.</td>
<td>8 lb. ft. (0.97 kg.m.) to 10 lb. ft. (1.39 kg.m.)</td>
<td>5 lb. ft. (0.69 kg.m.) to 10 lb. ft. (1.39 kg.m.)</td>
</tr>
<tr>
<td>(\frac{3}{8}) in. UNF (\frac{3}{8}) in. A.F.</td>
<td>16 lb. ft. (2.21 kg.m.) to 18 lb. ft. (2.49 kg.m.)</td>
<td>13 lb. ft. (1.80 kg.m.) to 15 lb. ft. (2.07 kg.m.)</td>
</tr>
<tr>
<td>(\frac{1}{2}) in. UNF (\frac{1}{2}) in. A.F.</td>
<td>29 lb. ft. (4.01 kg.m.) to 32 lb. ft. (4.42 kg.m.)</td>
<td>22 lb. ft. (3.04 kg.m.) to 25 lb. ft. (3.46 kg.m.)</td>
</tr>
<tr>
<td>(\frac{5}{8}) in. UNF (\frac{5}{8}) in. A.F.</td>
<td>42 lb. ft. (5.80 kg.m.) to 45 lb. ft. (6.22 kg.m.)</td>
<td>33 lb. ft. (4.56 kg.m.) to 36 lb. ft. (4.98 kg.m.)</td>
</tr>
<tr>
<td>(\frac{3}{4}) in. UNF (\frac{3}{4}) in. A.F.</td>
<td>60 lb. ft. (8.30 kg.m.) to 65 lb. ft. (9.00 kg.m.)</td>
<td>48 lb. ft. (6.63 kg.m.) to 52 lb. ft. (7.19 kg.m.)</td>
</tr>
<tr>
<td>(\frac{7}{8}) in. UNF</td>
<td>85 lb. ft. (11.75 kg.m.) to 90 lb. ft. (12.44 kg.m.)</td>
<td>73 lb. ft. (10.10 kg.m.) to 78 lb. ft. (10.90 kg.m.)</td>
</tr>
</tbody>
</table>

### Setscrews

All setscrews are to be torque tightened to the appropriate figures quoted in the above table for full nuts, unless otherwise specified.

### Important

In order to ensure correct torque tightness figures are obtained for plated parts, all burrs and foreign matter e.g. grit, grease and paint must be removed from the abutment faces of the nuts, setscrews, washers and components.

### Non-Plated Parts

The following non-plated parts are to be torque tightened to the appropriate figures quoted in the above table for cadmium plated parts.

- Rear spring 'U' bolts.
- Exhaust downtake pipe.

The torque loadings for non-plated nuts and bolts apply when engine oil is smeared on the threads and the bolt or nut faces.

For SPECIAL TORQUE TIGHTNESS FIGURES, see overleaf.
# Special Torque Tightness Figures

## Bumpers — Front and Rear

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 in. dia. UNF nut — Output flange</td>
<td>10 lb. ft. (1.39 kg.m.) to 12 lb. ft. (1.66 kg.m.)</td>
</tr>
</tbody>
</table>

## Dampers — Front

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/8 in. dia. UNF nut — Piston actuating lever</td>
<td>60 lb. ft. (8.30 kg.m.) to 70 lb. ft. (9.68 kg.m.)</td>
</tr>
<tr>
<td>7/8 in. dia. UNF filler plug</td>
<td>12 lb. ft. (1.66 kg.m.) to 15 lb. ft. (2.07 kg.m.)</td>
</tr>
<tr>
<td>7/8 in. dia. UNF solenoid control plug</td>
<td>10 lb. ft. (1.38 kg.m.) to 12 lb. ft. (1.66 kg.m.)</td>
</tr>
<tr>
<td>7/8 in. dia. UNF rear plug</td>
<td>30 lb. ft. (4.15 kg.m.) to 45 lb. ft. (6.22 kg.m.)</td>
</tr>
</tbody>
</table>

## Dampers — Rear

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/8 in. dia. UNF nut — Piston actuating lever</td>
<td>60 lb. ft. (8.30 kg.m.) to 70 lb. ft. (9.68 kg.m.)</td>
</tr>
<tr>
<td>7/8 in. dia. UNF filler plug</td>
<td>12 lb. ft. (1.66 kg.m.) to 15 lb. ft. (2.07 kg.m.)</td>
</tr>
<tr>
<td>7/8 in. dia. UNF solenoid control plug</td>
<td>10 lb. ft. (1.38 kg.m.) to 12 lb. ft. (1.66 kg.m.)</td>
</tr>
<tr>
<td>7/8 in. dia. UNF rear plug</td>
<td>30 lb. ft. (4.15 kg.m.) to 45 lb. ft. (6.22 kg.m.)</td>
</tr>
</tbody>
</table>

## Drag Link and Track Rods

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 in. dia. nut securing ball pins</td>
<td>35 lb. ft. (4.84 kg.m.) to 40 lb. ft. (5.53 kg.m.)</td>
</tr>
<tr>
<td>11/4 in. dia. UNF ball pin socket plug</td>
<td>45 lb. ft. (6.22 kg.m.) to 50 lb. ft. (6.91 kg.m.)</td>
</tr>
</tbody>
</table>

## Frame and Fittings

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 in. dia. nut — Rear spring front anchorage</td>
<td>150 lb. ft. (20-73 kg.m.) to 180 lb. ft. (24-88 kg.m.)</td>
</tr>
</tbody>
</table>

## Front Suspension

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>B 7/8 in. dia. UNF fulcrum pin — Upper</td>
<td>150 lb. ft. (20-73 kg.m.)</td>
</tr>
<tr>
<td>B 11/4 in. dia. UNF threaded bushes — Lower triangle levers</td>
<td>250 lb. ft. (34-57 kg.m.)</td>
</tr>
</tbody>
</table>
### Fuel Pumps

<table>
<thead>
<tr>
<th>Description</th>
<th>Torque (lb.ft)</th>
<th>Torque (kg.m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \frac{3}{8} ) in. dia. cone adaptors (light alloy)</td>
<td>17</td>
<td>2.35</td>
</tr>
<tr>
<td>( \frac{3}{8} ) in. dia. cone adaptors (light alloy)</td>
<td>20</td>
<td>2.77</td>
</tr>
</tbody>
</table>

### Fuel Tank

<table>
<thead>
<tr>
<th>Description</th>
<th>Torque (lb.ft)</th>
<th>Torque (kg.m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \frac{3}{8} ) in. dia. adaptor</td>
<td>17</td>
<td>2.35</td>
</tr>
<tr>
<td>( \frac{3}{8} ) in. dia. adaptor</td>
<td>20</td>
<td>2.77</td>
</tr>
<tr>
<td>1 in. dia. drain plug</td>
<td>15</td>
<td>4.84</td>
</tr>
<tr>
<td>1 in. dia. drain plug</td>
<td>40</td>
<td>5.53</td>
</tr>
</tbody>
</table>

### Generator

<table>
<thead>
<tr>
<th>Description</th>
<th>Torque (lb.ft)</th>
<th>Torque (kg.m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C47 — Nut — Retaining fan and pulley</td>
<td>50</td>
<td>6.91</td>
</tr>
<tr>
<td>C48 — Nut — Retaining fan and pulley</td>
<td>40</td>
<td>5.53</td>
</tr>
</tbody>
</table>

### Hubs — Front

<table>
<thead>
<tr>
<th>Description</th>
<th>Torque (lb.ft)</th>
<th>Torque (kg.m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \frac{3}{8} ) in. dia. UNF screw — Drum</td>
<td>30</td>
<td>4.15</td>
</tr>
<tr>
<td>( \frac{3}{8} ) in. dia. UNF wheel nuts</td>
<td>45</td>
<td>6.22</td>
</tr>
<tr>
<td>( \frac{3}{8} ) in. dia. UNF wheel nuts</td>
<td>50</td>
<td>6.91</td>
</tr>
</tbody>
</table>

### Hubs — Rear

<table>
<thead>
<tr>
<th>Description</th>
<th>Torque (lb.ft)</th>
<th>Torque (kg.m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \frac{3}{8} ) in. dia. UNF wheel nuts</td>
<td>45</td>
<td>6.22</td>
</tr>
<tr>
<td>( \frac{3}{8} ) in. dia. UNF wheel nuts</td>
<td>50</td>
<td>6.91</td>
</tr>
</tbody>
</table>

### Lamps and Body Electrical Fittings

<table>
<thead>
<tr>
<th>Description</th>
<th>Torque (lb.ft)</th>
<th>Torque (kg.m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \frac{3}{8} ) in. dia. nut — Fog lamps</td>
<td>27</td>
<td>3.73</td>
</tr>
<tr>
<td>( \frac{3}{8} ) in. dia. nut — Fog lamps</td>
<td>30</td>
<td>4.15</td>
</tr>
</tbody>
</table>

### Pipes and Fittings

<table>
<thead>
<tr>
<th>Description</th>
<th>Torque (lb.ft)</th>
<th>Torque (kg.m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \frac{3}{8} ) in. British standard pipe fitting — fuel filter drum plug</td>
<td>7</td>
<td>0.97</td>
</tr>
<tr>
<td>( \frac{3}{8} ) in. British standard pipe fitting — fuel filter drum plug</td>
<td>9</td>
<td>1.24</td>
</tr>
<tr>
<td>( \frac{3}{8} ) in. British standard pipe fitting — fuel filter drum plug</td>
<td>10</td>
<td>1.39</td>
</tr>
<tr>
<td>( \frac{3}{8} ) in. British standard pipe fitting — fuel filter drum plug</td>
<td>12</td>
<td>1.66</td>
</tr>
<tr>
<td>( \frac{3}{8} ) in. British standard pipe fitting — fuel filter drum plug</td>
<td>12</td>
<td>1.66</td>
</tr>
<tr>
<td>( \frac{3}{8} ) in. British standard pipe fitting — fuel filter drum plug</td>
<td>5</td>
<td>0.69</td>
</tr>
<tr>
<td>( \frac{3}{8} ) in. British standard pipe fitting — fuel filter drum plug</td>
<td>5</td>
<td>0.69</td>
</tr>
<tr>
<td>( \frac{3}{8} ) in. British standard pipe fitting — fuel filter drum plug</td>
<td>8</td>
<td>1.11</td>
</tr>
<tr>
<td>( \frac{3}{8} ) in. British standard pipe fitting — fuel filter drum plug</td>
<td>17</td>
<td>2.35</td>
</tr>
<tr>
<td>( \frac{3}{8} ) in. British standard pipe fitting — fuel filter drum plug</td>
<td>20</td>
<td>2.77</td>
</tr>
<tr>
<td>( \frac{3}{8} ) in. British standard pipe fitting — fuel filter drum plug</td>
<td>12</td>
<td>1.66</td>
</tr>
<tr>
<td>( \frac{3}{8} ) in. British standard pipe fitting — fuel filter drum plug</td>
<td>14</td>
<td>1.94</td>
</tr>
</tbody>
</table>

### Propeller Shaft

<table>
<thead>
<tr>
<th>Description</th>
<th>Torque (lb.ft)</th>
<th>Torque (kg.m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \frac{3}{8} ) in. dia. UNF nut propeller shaft flange</td>
<td>150</td>
<td>20.73</td>
</tr>
<tr>
<td>( \frac{3}{8} ) in. dia. UNF nut propeller shaft flange</td>
<td>180</td>
<td>24.88</td>
</tr>
<tr>
<td>( \frac{3}{8} ) in. dia. UNF nut — Detroit joint to flange</td>
<td>45</td>
<td>6.22</td>
</tr>
<tr>
<td>( \frac{3}{8} ) in. dia. UNF nut — Detroit joint to flange</td>
<td>50</td>
<td>6.91</td>
</tr>
<tr>
<td>( \frac{3}{8} ) in. dia. UNF nut — Detroit joint to flange</td>
<td>70</td>
<td>9.68</td>
</tr>
<tr>
<td>( \frac{3}{8} ) in. dia. UNF nut — Detroit joint to flange</td>
<td>75</td>
<td>10.37</td>
</tr>
</tbody>
</table>
Chapter A

Workshop Manual Supplement

Rolls-Royce Silver Cloud III, and Phantom V

Bentley S3 and Bentley Continental S3

Rear Axle

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Torque (lb ft / kg m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 in. dia. UNF ventilator plug</td>
<td>30 lb. ft (4.15 kg.m)</td>
</tr>
<tr>
<td>1 in. dia. UNF filler and drain plug</td>
<td>35 lb. ft (4.84 kg.m)</td>
</tr>
<tr>
<td>1 in. dia. UNF nut — Pinion flange</td>
<td>45 lb. ft (6.22 kg.m)</td>
</tr>
<tr>
<td>1½ in. dia. UNF nut — Pinion bearing</td>
<td>50 lb. ft (6.91 kg.m)</td>
</tr>
<tr>
<td>⅛ in. dia. UNF setscrews — Axle tube to end plate</td>
<td>195 lb. ft (27.00 kg.m)</td>
</tr>
<tr>
<td>⅛ in. dia. UNF setscrews — Axle tube to wheel bearing housing</td>
<td>215 lb. ft (30.43 kg.m)</td>
</tr>
<tr>
<td>⅛ in. dia. UNF nuts — Securing end plate to centre casing</td>
<td>150 lb. ft (20.73 kg.m)</td>
</tr>
<tr>
<td>⅛ in. dia. UNF nuts — Crown wheel to differential casing</td>
<td>180 lb. ft (24.88 kg.m)</td>
</tr>
</tbody>
</table>

Side Steering Lever

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Torque (lb ft / kg m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>⅛ in. dia. UNF setscrew (non waisted and no identification mark)</td>
<td>22 lb. ft (3.04 kg.m)</td>
</tr>
<tr>
<td>⅛ in. dia. UNF setscrew (non waisted and no identification mark)</td>
<td>24 lb. ft (3.32 kg.m)</td>
</tr>
<tr>
<td>⅛ in. dia. UNF setscrew (waisted and vee cuts on corners of hexagon for identification)</td>
<td>38 lb. ft (5.26 kg.m)</td>
</tr>
<tr>
<td>⅛ in. dia. UNF setscrew (waisted and vee cuts on corners of hexagon for identification)</td>
<td>45 lb. ft (6.22 kg.m)</td>
</tr>
</tbody>
</table>

Wiring and Fittings

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Torque (lb ft / kg m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 B.A. nut — Starter motor solenoid, tighten lightly (because of pulling on to rubber)</td>
<td>24 lb. in.</td>
</tr>
</tbody>
</table>

Miscellaneous

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Torque (lb ft / kg m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All cheesehead screws including those of worm-drive clips</td>
<td>20 lb. in.</td>
</tr>
</tbody>
</table>

Yoke and Cross Steering Pivots

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Torque (lb ft / kg m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>½ in. UNF adaptor with ⅛ in. reducing adaptor for yoke lubrication</td>
<td>35 lb. ft (4.84 kg.m)</td>
</tr>
</tbody>
</table>

ITEMS WHICH ARE NOT TORQUE TIGHTENED

1. Nuts which are locked by riveting
2. 3 ⅛ in. dia. UNF nut — Oil seal housing retaining — Rear axle
3. Woodscrews
4. Bearing end float adjustment nuts — Front stub axles
5. The ⅛ in. dia. screws in door striker plates
6. All threads less than 2 B.A.
7. Front door private locks ⅛ in. dia. nuts

A S1 Series
B S2 Series onwards

Torque tightening figures for the threads of the engine and gearbox interior components are not included