

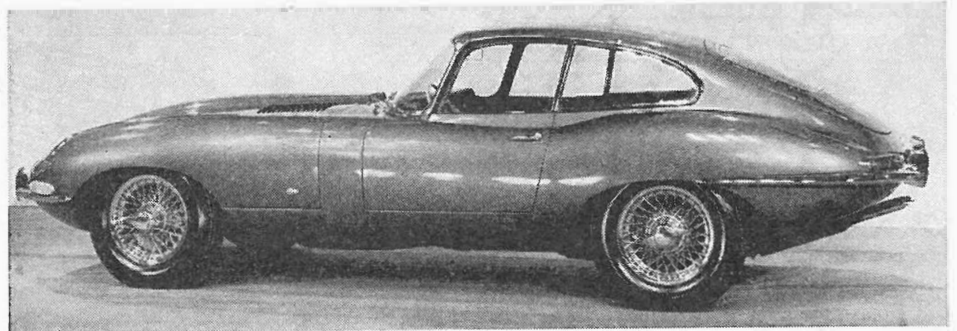
Motor Trader

SERVICE DATA NO. 411

JAGUAR "E"-TYPE

Manufacturers: Jaguar Cars Ltd., Coventry

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DISTINGUISHING FEATURES. Coupé version of the car is shown here. This and the sports models are instantly recognizable from both front and rear. At the front, lamps are faired right into the wing contours. Wire wheels are standard fitment.

ORIGINALLY introduced some two years ago, the "E"-type model was seen to have an entirely new body style and mechanical components which, with one notable exception, were developments of then existing units rather than those of completely new conception.

The body is of monocoque construction, with a front frame, to which the major mechanical components are attached in a conventional manner. As with previous models in this range, seating is provided for two people, with the option for hard- or soft-top roof, in addition to the availability of a coupé model.

At this stage, it should be mentioned that there have been a number of modifications to original specifications, and many of these will be found to have important bearing upon service procedure. Where possible and practicable, these changes are listed in the data tables throughout this article as well as in the Engineering Changes table, which should be studied first. Where the changes affect service procedure, they are mentioned in the text matter and the engine/chassis number at which the changes are recorded as having taken place should be noted carefully.

Power is provided by the well-known six-cylindrical overhead camshaft engine. In this application, it is available in one of two compression ratio states, either 8:1 or 9:1 and in the higher state, maximum power output is 265 b.h.p. at 5,500 r.p.m. Maximum torque of 260 lb. ft. occurs at an engine speed of 4,000 r.p.m.

Power is transmitted to the rear road wheels in orthodox fashion, through a single dry plate clutch and four-speed synchromesh gearbox via a short propeller shaft. The rear axle is of a new pattern, the Salisbury 4HU, and it incorporates a Thornton Powr-Lok differential. Additionally, since the car is fitted with independent rear suspension, drive to the road wheels is taken by short universally jointed drive shafts from either side of truncated axle shafts to each wheel assembly. Each of these axle output shafts provides a mounting for the discs of the inboard rear brakes. Front suspension is also independent, of the torsion bar type and is damped by telescopic hydraulic shock absorbers, as is the rear suspension.

Identification of vehicles is by engine and chassis serials. The chassis or car serial together with any prefix and/or suffix letters is to be found stamped on the right-hand frame cross-member above the hydraulic damper mounting. The engine number, to-

gether with the suffix /8 or /9 which denotes the compression ratio is found stamped on the right-hand side of the cylinder block above the oil filter and at the front of the cylinder head casting. The gearbox number is to be found stamped on a shoulder at the left-hand rear corner of the gearbox and on the top cover.

All these numbers and letters are to be found collectively on a plate in the engine compartment, below the petrol sediment bowl. It is essential that all these numbers and letters which are relevant to the engine, chassis and to any other particular component in question should be quoted when referring to the manufacturers, or when ordering spare parts.

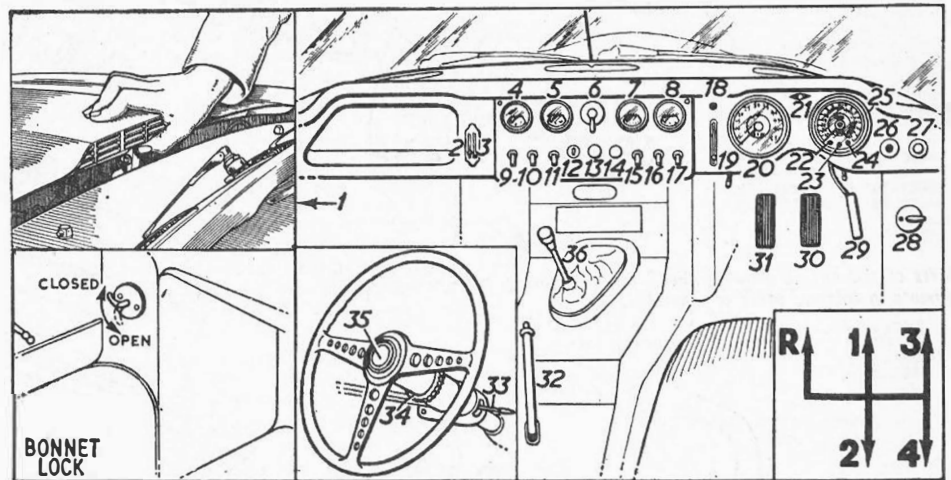
Few special tools are required, but those listed on p. iii of this article will be found to be the more essential and their use in repair and overhaul work will result in the saving of considerable time where such work is involved.

Threads and hexagons are, in the main, of the S.A.E. pattern and form, but certain threaded parts of proprietary components may be found to be B.S.F.

ENGINE

Mounting

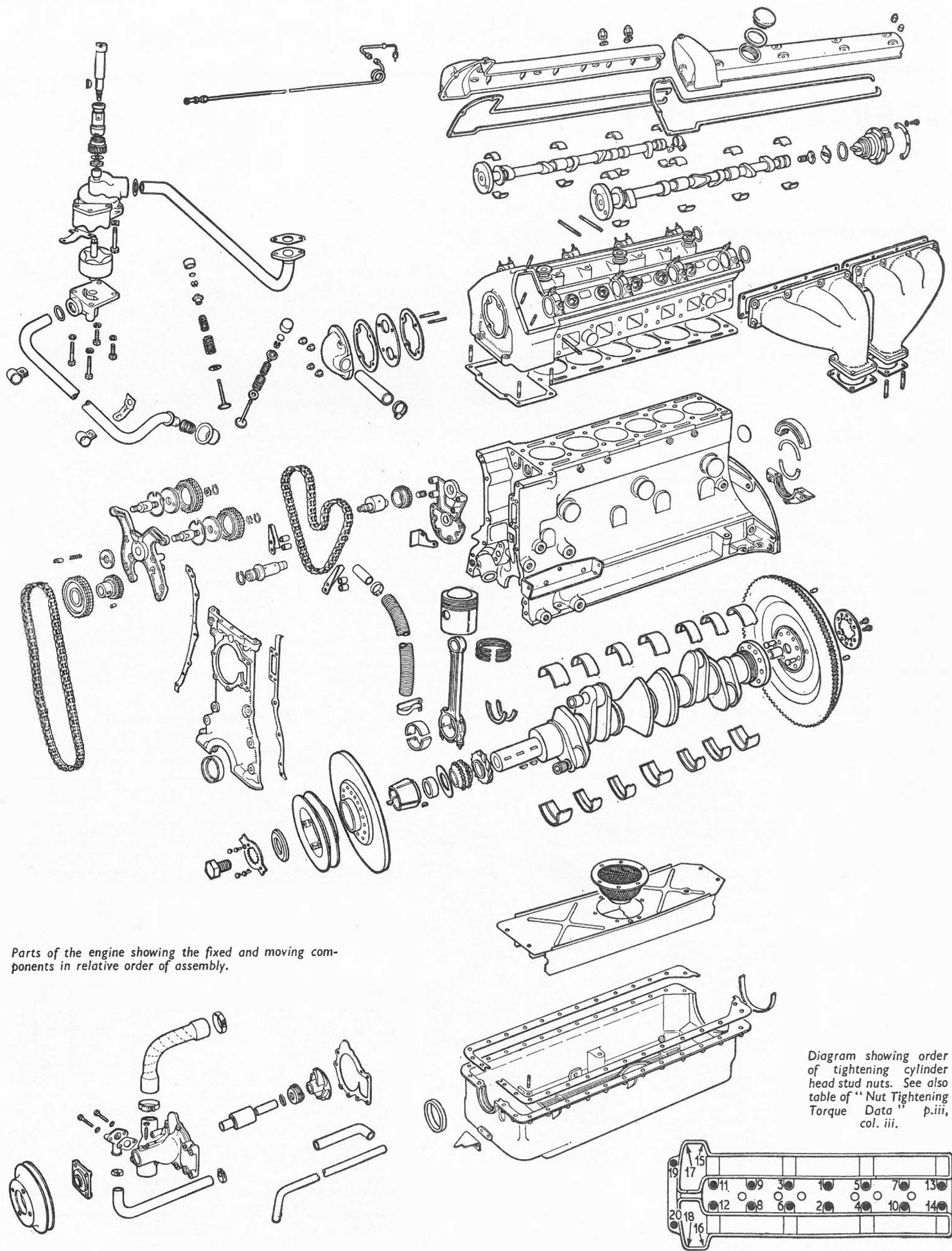
Rubber blocks with moulded-in nuts are bonded to plates which are, in turn, bolted



INSTRUMENTS, CONTROLS, GEAR POSITIONS AND BONNET LOCK

- | | | |
|----------------------------|---------------------------------------|---|
| 1. Bonnet lock lever (l/h) | 13. Cigar lighter | 25. Speedometer |
| 2. Heater air control | 14. Starter switch | 26. Brake fluid warning light |
| 3. Heater temp. control | 15. Map light switch | 27. Headlamp dip switch |
| 4. Ammeter | 16. Screenwiper switch | 28. Bonnet lock lever (r/h) |
| 5. Fuel gauge | 17. Screenwiper switch | 29. Accelerator |
| 6. Lighting switch | 18. Choke warning light | 30. Brake pedal |
| 7. Oil pressure gauge | 19. Choke control | 31. Clutch pedal |
| 8. Water temp. gauge | 20. Engine r.p.m. indicator | 32. Handbrake lever |
| 9. Interior lights switch | 21. Direction indicator warning light | 33. Direction indicator switch (h/lamp flasher) |
| 10. Panel lights switch | 22. Ignition warning light | 34. Steering wheel adjustment |
| 11. Heater fan switch | 23. Fuel warning light | 35. Horn button |
| 12. Ignition switch | 24. Headlamps warning light | 36. Gearlever |

Inset upper left shows method of releasing bonnet catch, and lower left the operating positions of the catch. Inset inner left shows the siting of the steering wheel mounted controls and right: the operative positions of the centre mounted gearlever.



ENGINEERING CHANGES		
Chassis	Chassis No.	
	RHD	LHD
Internal nylon petrol pipe: (fixed head)	860584	886095
(open 2-str.)	850527	877355
Fuel tank filter: (fixed head)	860005	885021
(open 2-str.)	850092	875386
Modified master cylinder (clutch): (fixed head)	860647	886219
(open 2-str.)	850548	877489
Larger prop-shaft joints: (fixed head)	860006	885026
(open 2-str.)	850104	875496
Larger rear hub outer bearings: (fixed head)	860005	885021
(open 2-str.)	850092	875386
Modified upper steering col.: (fixed head)	860863	886754
(open 2-str.)	850588	878037
Modified road springs: (fixed head)	860008	885039
(open 2-str.)	850137	875542
Modified rear brake caliper: (fixed head)	880741	886456
(open 2-str.)	850578	877736
Modified brake power lever and pedals: (fixed head)	860735	885871
(open 2-str.)	850475	876999
Change of brake friction pad material: (fixed head)	860033	885210
(open 2-str.)	850291	876130
Modified brake master cylinders	850255	876015
Self-adjusting handbrakes (fixed head)	860004	885015
(open 2-str.)	850090	875332
Modified bonnet lock: (fixed head)	860005	885021
(open 2-str.)	850092	875386
C.42 dynamo and RB340 regulator (fixed head)		
(open 2-str.)		
Engine	Engine No.	
Larger main bearing cap dowels	R7195	
Modified piston rings and con. rod with additional big-end lug-drilling	R7104	
Longer inlet valve guide	R6724	
Duplex water pump belt	R5250	
Modified sump filter basket	R5400	
Drilled inlet camshaft	R5001	
Modified cyl. head gasket	R3691	
Reduced big end clearances	R3162	
New c/shaft rear oil seal (asbestos rope)	R2564	
Cast iron crankshaft pulley	R1459	
Automatic fan belt tensioner	R1845	
Larger oil pump	R1009	
Quick lift thermostat	R8300	

to chassis frame brackets. Setscrews through brackets are bolted to either side of crankcase at front and to flywheel housing at rear. Tighten all bolts and nuts fully.

At rear, engine/gearbox unit is supported by spring loaded pin screwed into gearbox extension casing, shank of pin passes through coil spring and is located and cushioned in rubber bush pressed into channel section support bolted to body floor.

Removal

Engine and gearbox are best removed as assembly, from below. Engine/gearbox may also be removed from above, but first method is preferred.

Disconnect battery, drain coolant from radiator. Disconnect all pipes, wires and controls from engine and gearbox to external sources. Remove carburettors and inlet manifolds. Slacken clips at either end and remove water hose from inlet manifold water jacket and header tank. Similarly remove hose, water pump to bottom of radiator. Remove eight nuts and spring washers at exhaust manifold flanges, remove bolts from five body mountings and withdraw exhaust system from below, discarding manifold sealing rings. Take off sixteen brass nuts and spring washers securing exhaust manifolds and withdraw manifolds. Unclip speedo drive cable from engine stabilizer bracket (early models speedo drive cable is clipped to bellhousing).

Remove securing nuts and take out seats and slides. Undo securing screws of radio control panel, withdraw this part and subsequently undo three setscrews securing propeller shaft tunnel cover to body. Push gear-lever as far forward as possible, pull hand-brake lever "on." Unscrew gearlever knob and locknut; withdraw prop. shaft tunnel cover over gear and handbrake levers. Remove felt surround, and remove 12 screws and take out plastic gearbox cowl. Remove four bolts and self-locking nuts securing propshaft U.J. to gearbox drive flange. Remove two cables from reverse light switch on gearbox top cover. (Refit to either terminal.) Remove torsion bar reaction plate from beneath. To do this, insert block of hard wood, $16 \times 1\frac{1}{2} \times 1$ in under sub-frame lower cross-tube, jack up car until wheels are clear of ground. Remove lower bolt and self-locking nut from torsion bar reaction bracket and drive locating bar through bracket from front, in place of bolt so that approx. $\frac{1}{2}$ in protrudes. Repeat for lower bolt on other side and drive second locating bar into position. Remove self-locking nuts from both top bolts and tap bolts back until flush with tie-plate. Remove bolt and self-locking nuts securing tie-plate to body under-frame on each side, take out tie-plate over bolts and locating bars and remove from below preserving locating bars *in situ*. Locating bar dimensions: $10 \times \frac{1}{2}$ in, chamfered $\frac{1}{4}$ in at one end.

Lower car into normal position, sling engine (Churchill tool No. J8). Remove self-locking nut and stepped washer from engine stabilizer between rear of cylinder head and bulkhead.

Take out two bolts and spring washers from front engine mountings. From underneath remove engine earth strap from bolt securing sub-frame to body. Remove small heat shield attached to rear engine/gearbox mounting plate. Take out five bolts securing mounting plate to body. Raise engine 6 in and remove front mounting brackets from either side of cylinder block. Lower engine so that gearbox is clear of body and unscrew speedo cable from right-angle gearbox. Lower engine to floor, ensuring that clutch slave cylinder fluid pipe does not foul right-hand side torsion bar anchor bracket.

NUT TIGHTENING TORQUE DATA	
	lb. ft
ENGINE	
Camshaft bearing cap nuts	15
Con-rod bolts	37
Main bearing bolts	83
Cylinder head nuts	54
REAR AXLE	
Drive gear bolts	70-80
Diff. bearing cap bolts	60-65
Pinion nut	120-130
Thornton Powr-lok diff. bolts	35-40
Pinion nut	120-130
Drive shaft nuts	140

ENGINE DATA	
General	
Type	o.h.c.
No. of cylinders	6
Bore x stroke: mm	87 x 106
in	3.425 x 4.1732
Capacity: c.c.	3781
cu in	230.6
R.A.C. rated h.p.	28.15
Max. b.h.p. at r.p.m.	265-5500
Max. torque at r.p.m.	260lb ft-4000
Compression ratio	8 : 1 or 9 : 1

CRANKSHAFT AND CON. RODS				
Main bearings				
	No. 1	Nos. 2, 3, 5, 6	No. 4	No. 7
Diameter (in)	2.750 2.7505	2.750-2.7505	2.750- 2.7505	
Length (in)	1 $\frac{1}{16}$	1 $\frac{3}{32}$	1 $\frac{1}{4}$	1 $\frac{1}{8}$
Crankpins: Diameter 2.086in. Length 1 $\frac{1}{16}$ in.				
Running clearance: main bearings	.0025-.0042in			
big ends	.0015-.0033in			
End float: main bearings	.004-.006in			
big ends	.0058-.0087in			
Undersizes	.010, .020, .030, .040in			
Con. rod centres	7 $\frac{1}{2}$ in			
No. of teeth on starter ring gear	104/10			
pinion				

PISTONS AND RINGS		
Clearance (skirt)	.0011-.0017in	
Max. oversize	+.030in	
Weight without rings or pin	not quoted	
Gudgeon pin: diameter	.8750-.8752in	
fit in piston	finger push fit	
fit in con. rod	fully floating	
Compression height { 8 : 1 CR	2.069-2.064in	
9 : 1 CR	2.247-2.242in	
	Compression	Oil control
No. of rings	2	1
Gap (fitted)	.015-.020in	.011-.016in
Side clearance in grooves	.001-.003in	.001-.003in
Width of rings	.0777-.0787in	.155-.156in

CAMSHAFT	
No. of bearings	4 per shaft
Bearing journal: diameter	1.000in
	(-.0005in)
Bearing clearance	.0005-.002in
End float	.0045-.005in
Timing chain: pitch	
No. of links: upper	100
lower	82

VALVES			
	Inlet	Exhaust	
Head diameter	1 $\frac{1}{2}$ in ± .002in	1 $\frac{1}{2}$ in ± .002in	
Stem diameter	$\frac{5}{16}$ in ± .0025in	$\frac{5}{16}$ in ± .0025in	
Face-angle	45°	45°	
	Inner	Outer	
Spring length: free	1 $\frac{3}{4}$ in	1 $\frac{1}{2}$ in	
fitted	1 $\frac{1}{2}$ in	1 $\frac{1}{2}$ in	
at load	33.33lb	48.375lb	

GENERAL DATA	
Wheelbase	8ft 0in
Track: front	4ft 2in
rear	4ft 2in
Turning circle	37ft 0in
Ground clearance	5 $\frac{1}{2}$ in
Tyre size: front }	6.40-15
rear }	
Overall length	14ft 7 $\frac{1}{2}$ in
Overall width	5ft 5 $\frac{1}{2}$ in
Overall height*	3ft 10 $\frac{1}{2}$ in
Weight (dry)*†	22 cwt
*Fixed-head coupe:— 4ft 0 $\frac{1}{2}$ in	
†Fixed-head coupe:— 22 $\frac{1}{2}$ cwt.	

SPECIAL TOOLS	
	Part No.
Hub puller (5-stud)	J1C
Hydraulic damper/rear spring dismounting adaptor	J11A (use with SL14)
	J12
Servo vacuum gauge	J12-1 (early cars)
Servo vacuum gauge adaptor	J12-3 (later cars)
	J13
Rear hub end-float	J14
Rear wishbone pivot dummy shafts (2-off per set)	J15
Rear hub master spacer and bearing replacer	
Rear hub outer bearing cone remover and replacer	J16A (use with SL14)
Crankshaft rear oil seal sizing tool	J17
Valve guide reamer	J18
Rear hub inner and outer bearing cup remover and replacer	J20 (use with SL12)
Valve spring compressor	J6118
Top timing chain adjusting tool	J2
Engine lifting plate	J8

Crankshaft

Seven main bearings. Thin wall, steel-backed, lead indium-lined shells located by tabs. End float controlled by half thrust washers located in either side of centre bearing cap. No hand fitting permissible. Bearing shells Nos. 1, 4 and 7 are interchangeable, as are Nos. 2, 3, 5 and 6. It is possible to change all main bearing shells without removal of crankshaft, but this should be done only in direst emergency. Thrust half-washers can be changed by removal of centre-cap.

Flywheel, with integral starter ring gear, spigoted on rear flange of crankshaft, retained by ten setscrews and located by two dowels. Flywheel can be refitted 180 deg. from original setting, but should be fitted with T.D.C. mark set correctly to preserve balance of assembly. Oil impregnated bronze spigot bearing bush pressed into end of crankshaft.

Oil pump and distributor drive gear (longer boss to rear), timing sprocket (either way), oil thrower, distance-piece and split tapered collet carrying pulley hub are keyed on front end of crankshaft with three Woodruff keys, and retained by setscrew and large washer which bears on pulley hub, to which bonded rubber torsional vibration damper is riveted. Hub is keyed on tapered collet with Woodruff key. Pulley spigoted and bolted to hub.

Circular oil seal bears on distance-piece behind pulley. Split oil seal housing contains asbestos rope seal and fits round oil return thread on rear end of crankshaft. Lower half, on which cork strip sealing rear of sump fits, bolted to upper half by two Allen head setscrews, with hollow dowels. Upper half dowelled and bolted to crankcase.

Connecting Rods

"H"-section stampings, horizontally split big-end bearings, thin-wall steel-backed, lead

indium-lined shells located by tabs in caps; no hand fitting permissible.

Small ends bronze bushed for fully floating gudgeon pins.

Pistons

Brico semi-split skirt aluminium alloy. Gudgeon pins located by spring rings. Top compression ring is chromium plated. Pistons should be fitted with cylinder bore number stamped on crown to rear, with split to non-thrust (near side). *Note: that Jaguar practice is to number cylinders from rear to front. Where reference is made in this article to cylinder numbers, our usual practice of numbering from front to rear is maintained.*

On later cars (Chassis R7104 and onwards) pistons are fitted with Maxiflex scraper rings, each of these consists of two steel rails with space between. These are held together by special adhesive inserted at initial assembly. When reassembling, ensure that ring ends do not overlap.

Connecting rods will pass through bores, but bolts may have to be extracted. Remove and assemble through top.

Camshafts

Duplex endless roller chain drive in two stages. First stage drives double idler sprocket and has Renold hydraulic tensioner on offside, rubber rubbing blocks fitted. Second stage passes round idler sprocket, both camshaft sprockets and below small tensioner sprocket on eccentric hub.

Complete assembly of timing chain sprockets and brackets can be removed after removal of cylinder head, sump and timing cover.

Each camshaft runs in four split steel-backed white metal-lined shells, located by dowels. Oil fed through drillings in head to rear bearings, and through hollow shafts to other bearings. End float of camshaft con-

trolled by front bearing between sprocket and flange on shaft.

When removing head for top overhaul, first slacken chain tensioner, then detach each sprocket and slide it inwards along slot.

Before refitting cylinder head, it is important to observe procedure as follows to avoid fouling of inlet and exhaust valves or valves with pistons, in addition to noting that the engine should not be rotated with camshaft sprockets removed.

Position camshafts, using valve timing gauge provided in tool kit. Key of gauge locates in keyways of camshaft and bottom face of gauge with camshaft cover face on cylinder head. Turn crankshaft to T.D.C. No. 1 firing (mark on crankshaft damper). Check rotor arm position in distributor, refit cylinder head and connect timing chains.

Valves and Tappets

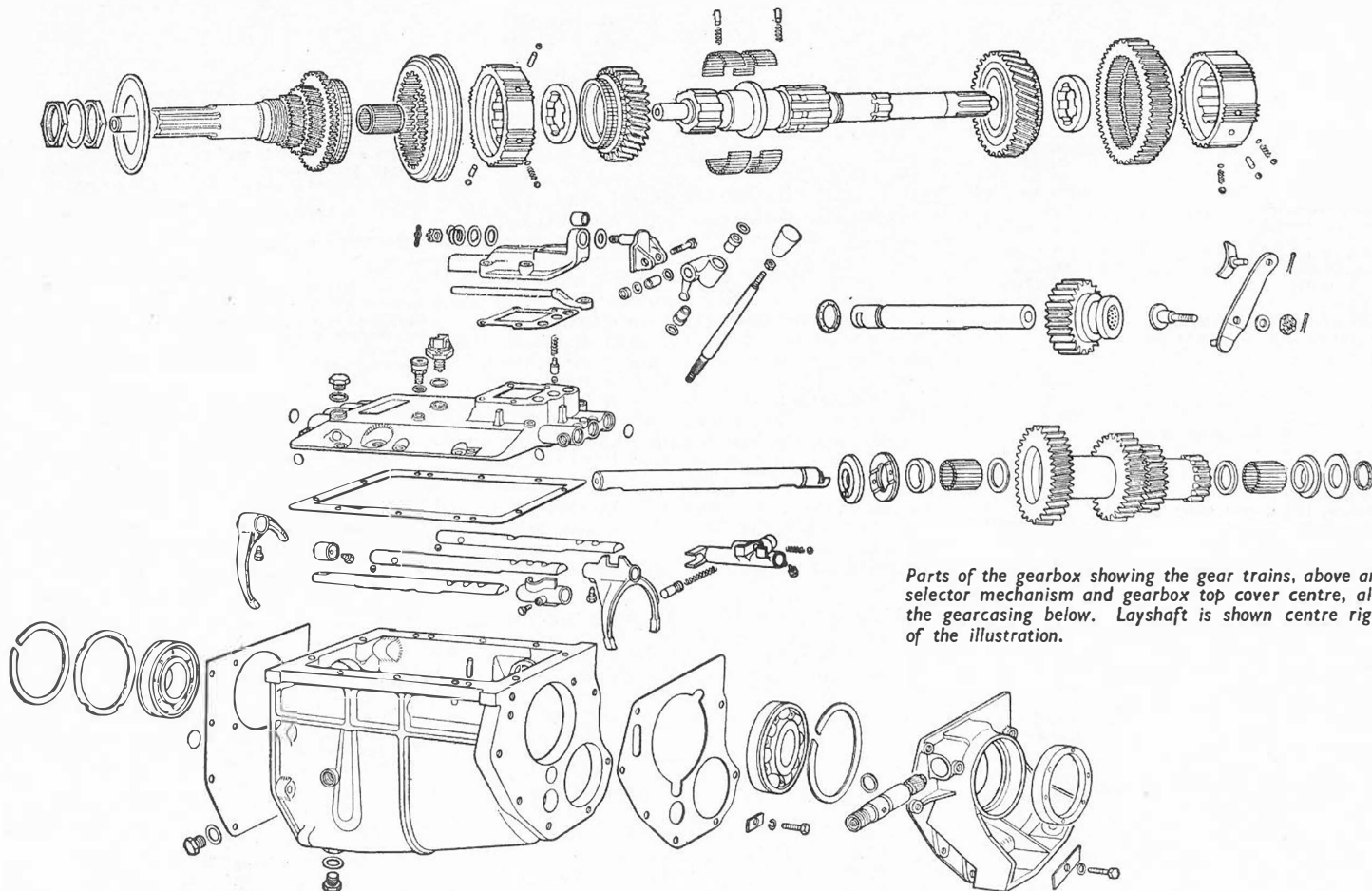
Overhead, set at 70 deg, included angle. Not interchangeable, inlet larger than exhaust. Split cone cotter fixing, double springs with seats between springs and head.

Valve guides plain, no shoulder, non-interchangeable. Press in until outer end of guide projects $\frac{1}{8}$ in from spring seat, after total immersion of cylinder head in boiling water for 30 mins.

Valve seat inserts for inlet and exhaust shrunk into light alloy head.

Plain cylindrical tappets fit over valves and slide in guides shrunk into head. Adjust clearance between cam and valve by pad on top of valve stem. Pads are available in thicknesses ranging from .085in to .110in in .001in steps. Pads are identified by etched letters A to Z, A being thinnest. Camshafts must be removed for tappet adjustment.

For removal of valve seat inserts or tappet guides, light alloy head must be heated in oven or muffle for one hour from cold at a temperature of 300 deg F, when new parts should press in easily.



Parts of the gearbox showing the gear trains, above and selector mechanism and gearbox top cover centre, also the gearcasing below. Layshaft is shown centre right of the illustration.

Lubrication

Hobourn-Eaton eccentric rotor pump fitted, with pressure relief valve situated in filter head. Skew drive gear retained on shaft (Woodruff key) by nut. Shaft runs in bronze bush pressed into housing on front of crankcase. Upper end of shaft has offset slot for distributor drive.

When refitting skew gear, shaft and bush assembly, turn crankshaft to T.D.C. 1/6, and push in assembly so that, when skew gear meshes with crankshaft gear, slot is parallel to crankshaft centreline, with larger segment towards engine.

Cooling System

Pump and electrically driven fan. Non-adjustable wax type thermostat in front end of inlet manifold water jacket.

Adjust dynamo drive belt by swinging dynamo until there is about $\frac{1}{2}$ in movement either way on vertical run of belt.

TRANSMISSION

Clutch

Borg & Beck single dry plate, graphite thrust release bearing, hydraulic actuation through slave cylinder operated by foot pedal. Only external adjustment is by nut on rear end of pedal pull rod to give $\frac{1}{8}$ in at slave cylinder rod.

Access to clutch for service after removal of gearbox and bell-housing.

Gearbox

Four speed, synchromesh on 2nd, 3rd and top gears. Single helical gear forms.

To Remove Gearbox

Gearbox should be removed with engine unit as detailed in engine section. It is not possible to remove gearbox as a separate unit.

Dismantling and reassembling process is similar to that described on pp. iv and v of Service Data No. 375, to which readers are referred for these details.

Propeller Shaft

Hardy-Spicer needle roller bearing universal joints. Nipples provided for lubrication on early cars.

Rear Axle

Salisbury 4HU, mounted independently from hubs and road wheels and is fitted with Thornton Powr-Lok differential unit. Short drive shafts, with universal joints at each end are coupled to axle output shafts and each shaft provides mounting location for discs of inboard rear brakes. Axle ratio is stamped on tag attached to assembly by one of detachable rear cover securing screws.

To remove axle, first remove rear suspension, proceeding as follows: slacken clamp bolts and nuts and take off exhaust pipes and silencers complete with tail pipes. Take off radius arms after removal of safety straps, and securing bolts, also bolts securing each end of anti-roll bar to radius arm. Place block of hard wood (9×9×1in) between rear suspension and jack. Jack up car, place stands under body, forward of radius arm mounting ports (use wood blocks between chassis stands and body to avoid damage). Take off rear road wheels. With jack in position under diff. tie-plate remove nuts and bolts and take off anti-roll bar links. Undo brake flex hose at body junction. Disconnect rear brake mechanism (caliper levers) on suspension cross beam. Take outer hand brake cable screw out of adjuster block. Remove cross beam mounting rubber attachment nuts at front of beam, noting and preserving shims. Remove rear cross beam mounting nuts, also prop shaft securing nuts at pinion flange. Lower unit on jack and withdraw axle and suspension complete from car.

Access to axle unit after further dismant-

ling of suspension unit to remove tie plate, hydraulic dampers, half-shafts (note camber shims), inner wishbone fulcrum shafts (drift out). Also, remove hub, half-shaft, wishbone and radius arm from other side. Remove handbrake compensator, disconnect hydraulic feed pipes at brake calipers. Turn suspension assembly over, remove locking wire and take out diff. carrier mounting bolts, remove cross beam.

Assembly is reversal of dismantling procedure, noting that inner wishbone fulcrum nut should be tightened to 55lb. ft. and the four diff. carrier mounting bolts on cross-beam tightened to 75lb. ft.

Powr-Lok differential has two pinion shafts with two mates to each shaft. Pinion shafts are mounted at right angles to each other, but do not make contact at their intersection. Double ramps, with flat surfaces at each end of pinion shafts, mate with similar ramps in diff. case. Clearance in diff. case permits peripheral movement at pinion shaft ends. Axles should not be serviced without stock of gauges and distance pieces, also special tools; service replacement axles available. Note: output shaft endfloat: .001-.003in. (shims under outer bearing inner race), pinion head setting: 2.625 in. (adjusting shims .003, .005, .010 in. available), pinion bearing preload: 8-12lb. in; backlash: .004in.

Rear Suspension

Independent coil springs and telescopic dampers. Universally jointed half-shafts form top "links," and lower links are pivoted at wheel carrier and axle cross-member ends respectively.

Suspension medium provided by four coil springs, each containing telescopic dampers, and mounted in pairs each side of the differential casing. Complete assembly is carried in steel cross-beam mounted to the body on four "V"-rubber blocks, located by radius arms, pivots of which are rubber bushed and mounted either side of car, between lower link and body structure. Anti-roll bar fitted between lower wishbones and attached to underframe side members by rubber insulated brackets.

CHASSIS

Brakes

Dunlop disc type on all four wheels, pedal boost vacuum servo-operated from footbrake pedal, handbrake operates mechanical linkage to rear units. Brake units comprise hub mounted disc and braking unit rigidly attached to each suspension member at front. Caliper unit houses a pair of brake pads and pad carriers. At rear, similar brake units are mounted inboard adjacent to differential unit.

Since friction pads are self-adjusting, adjustment and maintenance are confined to examination for wear and replacement of pads when worn to $\frac{1}{4}$ in thick.

On early cars, handbrake should only be adjusted by means of adjuster screws on rear calipers and then only to compensate for pad wear. Insert .004 feeler between pad and disc, screw in bolt until gauge is just nipped, withdraw gauge and check free rotation. If handbrake travel is still excessive, yoke at rear end of main cable may be adjusted and repositioned on its threaded rod by means of nut and securing locknut. Adjust so that there is no slack, but cable should not be in tension. On later cars self-adjusting handbrakes are fitted.

Front Suspension

Independent, torsion bars. Inner ends of upper and lower links pivoted in loose rubber bushes. Ball joints at outer ends. Upper link outer ball socket bolted between arms of link, with shims for castor adjustment. Ball pin tapered and fitted in top of stub

CHASSIS DATA	
Clutch (normal touring use spec.)	
Make	Borg & Beck
Type	sdp
Spring: No.	12
colour	violet
free length	2.68in
Centre spring: No.	6
colour	brown/cream
Driver plate: type	Borglite
facings	wound yarn
Note: Racing clutch differs from above in respect of centre plate, which is Arcuate type having cemented wound-yarn facings and buff coloured springs.	

GEARBOX		
Type	synchromesh	
No. of forward speeds	4	
	U.S.A. Canada	Home
Final ratios: 1st	11.177 : 1	10.367 : 1
2nd	6.156 : 1	5.710 : 1
3rd	4.246 : 1	3.938 : 1
4th	3.31 : 1	3.07 : 1
Rev.	11.177 : 1	10.367 : 1

DRIVE SHAFTS	
Type	Universally jointed
Bearings	Needle roller bearings

FINAL DRIVE	
Type	Salisbury 4HU (hypoid)
Crownwheel/bevel pinion teeth	43/13 or 43/14

BRAKES		
Type	Dunlop disc, front and rear	
	Front	Rear
Disc diameter	11in	10in
Master cyl. bore dia.	$\frac{5}{16}$ in	$\frac{5}{16}$ in
Brake cyl. bore dia.	2 $\frac{1}{2}$ in	1 $\frac{1}{2}$ in
Friction pad material:	Mintex M40	
footbrakes	Mintex M34	
handbrake	Dunlop bellows type	
Servo type		

Note: change of friction material at chassis Nos. 850291 and 860033 RHD and 876130 and 885210 LHD: Mintex M33: see also text.

SPRINGS			
	Front	Rear	
		Early	Late
Length (eye centres, laden)	ind. tb.	—	—
Wind dia. of coils (in)	—	.432	.432
No. of leaves or coils	—	9 $\frac{1}{2}$	10
Indentification colour	—	—	red
Free length, coil (in)	—	10.1	10.5

SHOCK ABSORBERS	
Type	Telescopic hydraulic
Service	replacement

STEERING BOX	
Type	Rack and pinion
Adjustments: rack end float	shims
mesh	

FRONT-END SERVICE DATA	
Castor	$1\frac{1}{2} \pm \frac{1}{16}^{\circ}$
Camber	$\frac{1}{8}^{\circ} \pm \frac{1}{16}^{\circ}$
King pin inclination	4°
Toe-in	$\frac{1}{8} - \frac{1}{16}$ in
No. of turns lock to lock	2 $\frac{1}{2}$
Adjustments: castor	shims
camber	
toe-in	screwed tie-rod ends

axle carrier member. Ball joint is sealed and serviced only as assembly.

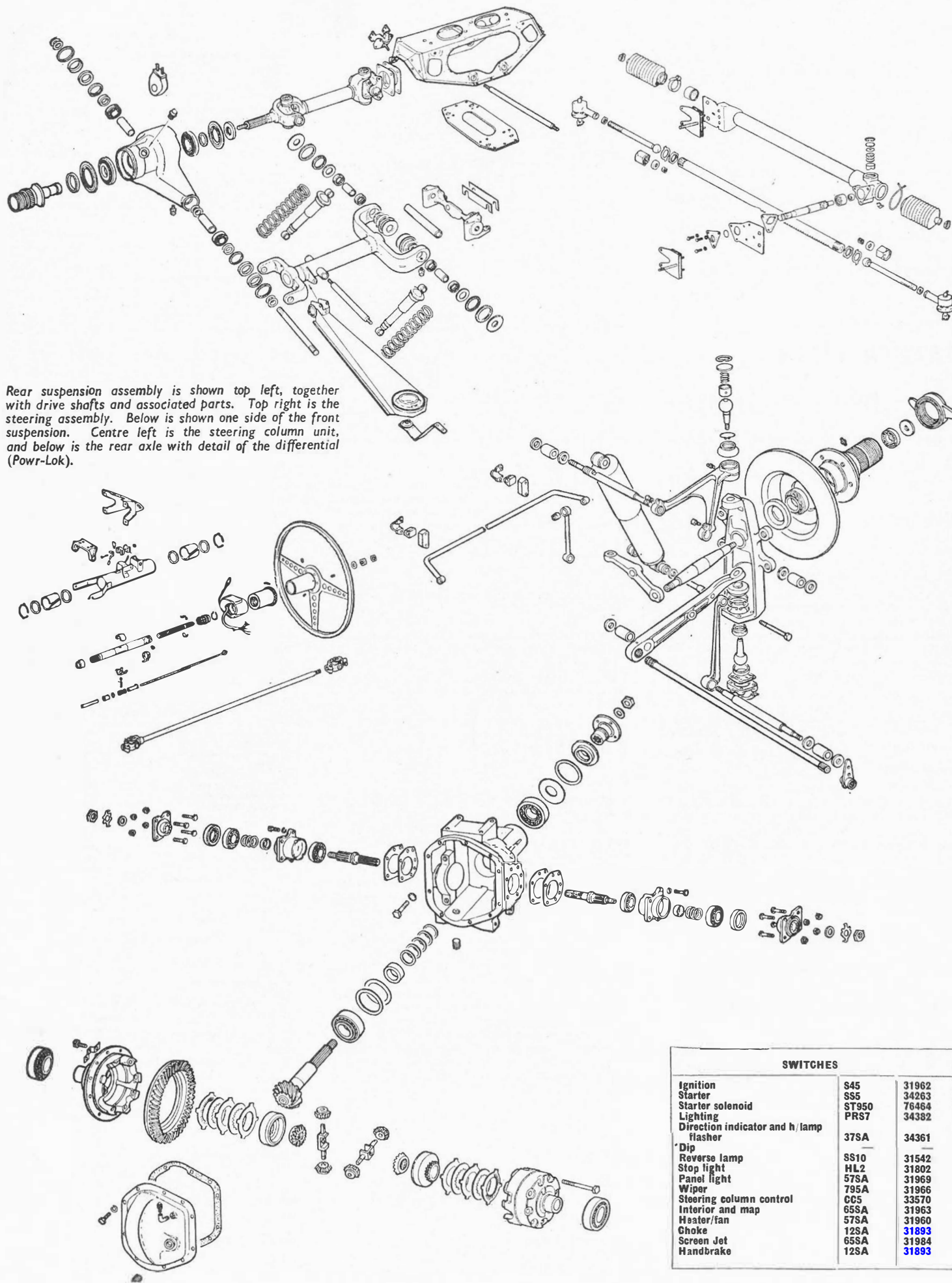
Suspension layout in general, compares with that used on earlier series models. For further details see pp. v and vi Service Data No. 335.

Steering Gear

Rack and pinion. Rack operates short track rods, adjustable for length, through ball joints at either end of rods, lubricated from rack.

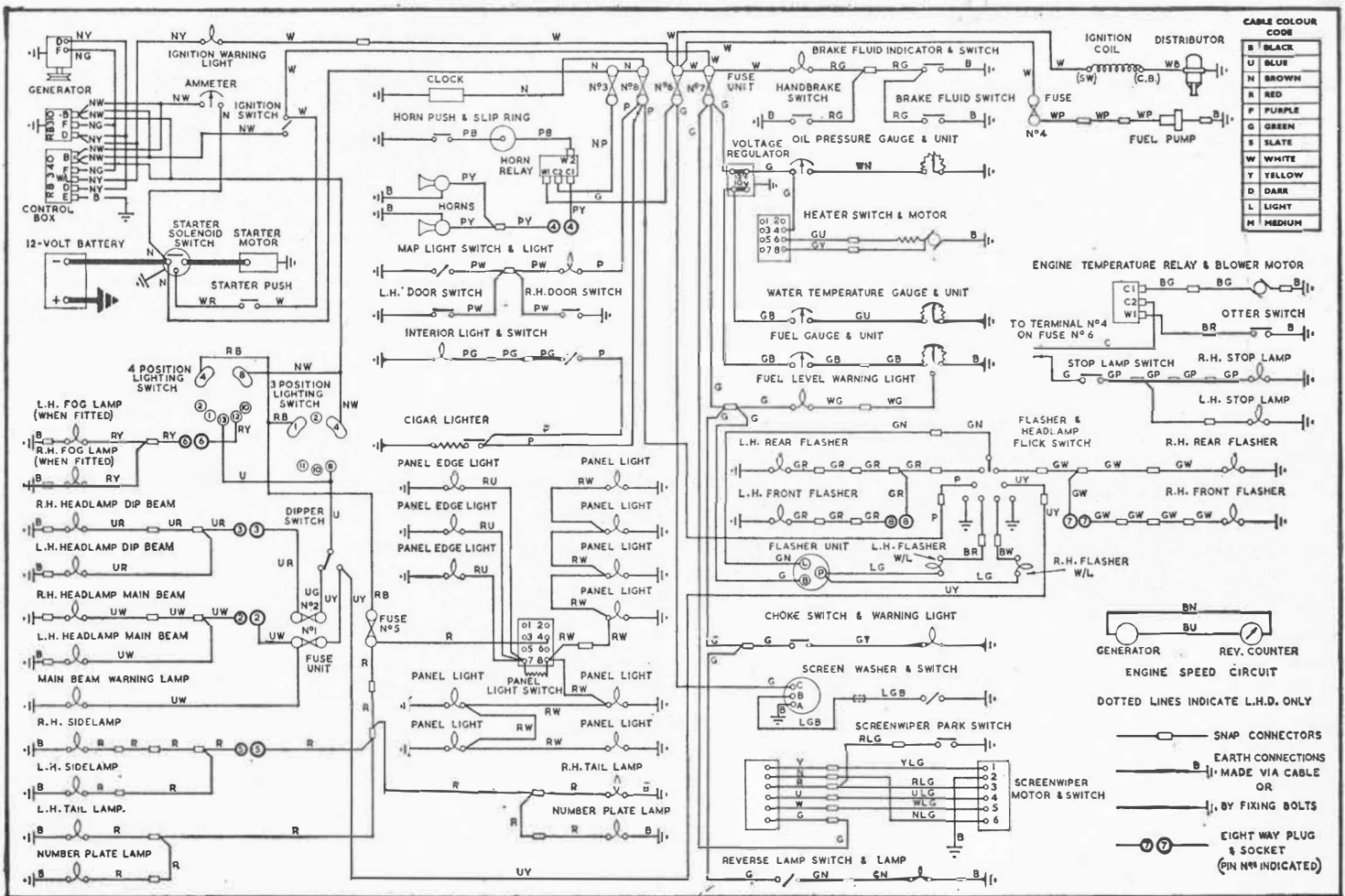
Shock Absorbers

Front and rear, Girling telescopic hydraulic, no provision for topping up.



SWITCHES

Ignition	S45	31962
Starter	SS5	34263
Starter solenoid	ST950	76464
Lighting	PRS7	34382
Direction indicator and h/lamp flasher	37SA	34361
Dip		
Reverse lamp	SS10	31542
Stop light	HL2	31802
Panel light	57SA	31969
Wiper	79SA	31966
Steering column control	CC5	33570
Interior and map	65SA	31963
Heater/fan	57SA	31960
Choke	12SA	31893
Screen Jet	65SA	31984
Handbrake	12SA	31893



Wiring diagram by permission of Joseph Lucas Ltd.

LUCAS EQUIPMENT

BATTERY		
Model FRV11/7A.	GENERATOR	Part No. 22902
Model C42	CONTROL BOX	Part No. 33731
Model RB340	STARTING MOTOR	Part No. 26140
Model M45G	DRIVE "S" type, inboard.	
DISTRIBUTOR		
Model DMBZ6A	Part No. 40617.	
Max. centrifugal advance (crank degrees) 24° at 4,000 r.p.m.		
Centrifugal advance springs. Part No. 54410416.		
Max. vacuum advance (crank degrees) 14°-18° with 20in. Hg.		
No advance below 4 1/2 in. Hg.		
IGNITION COIL		
Model HA12	Part No. 45104	
Primary resistance 3.0-3.5 ohms.		
Running current at 1,000 r.p.m. 1.0 amp.		
WINDSCREEN WIPER		
Model DL3	Part No. 75403 (R.H.D.) 75404 (L.H.D.)	
HORN(S)		
Model WT618	Part No(s) 69127 (L.N.) 69128 (H.N.)	
Type: Windtone.		
Current consumption 13-15 amp. (per horn).		
FLASHER UNIT		
Model FL5	Part No. 35011	
FUSE UNIT (1)		
Model 4FJ (033282).		
Fuse ratings 35 amp./35 amp.		
FUSE UNIT (2)		
Model 4FJ (54038010).		
Fuse ratings: 5 amp./50 amp.		

SUNDRY EQUIPMENT

Model	Part No.
Fuel pump	2FP 78387
Terminal block	TB8 37082
Mirror (Hard Top)	608 62572
Ammeter	CZU60 36262
Horn relay	6RA 33209
Screen Jet	28J 077026
Radiator Fan Motor	3GM 78378
Radiator Fan Motor Relay	6RA 33232

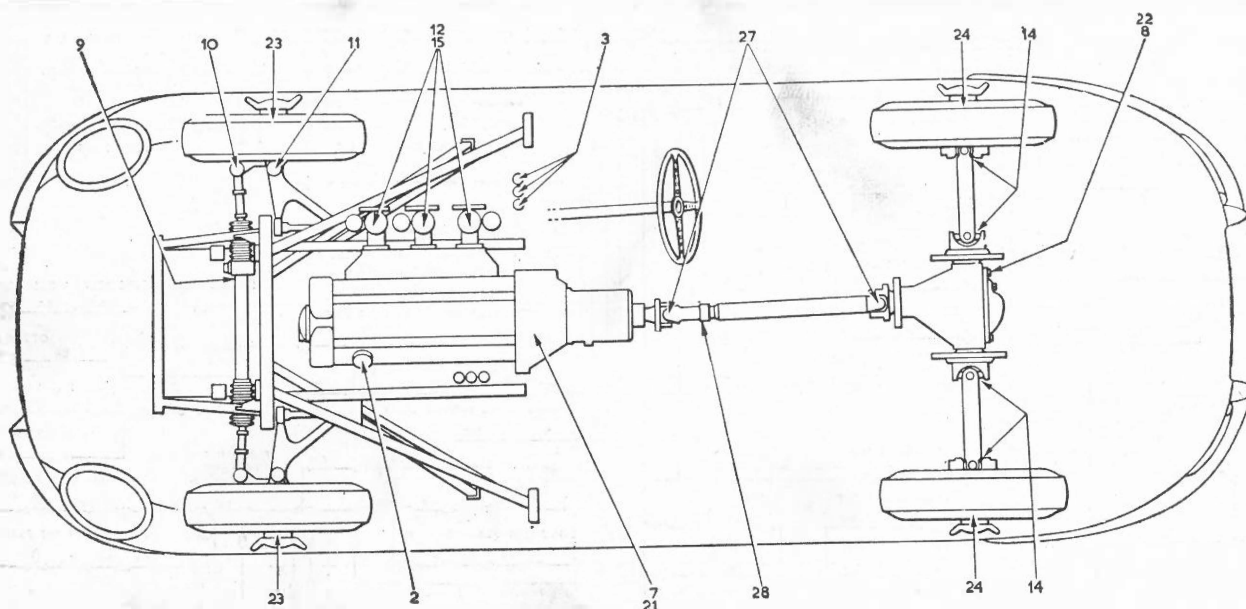
TUNE-UP DATA

Firing order (No. 1 at rear of engine)	1-5-3-6-2-4
Tapet clearance* (cold): inlet	.004in
exhaust	.006in
Valve timing†: inlet opens	15° BTDC
inlet closes	57° ABDC
exhaust opens	57° BBDC
exhaust closes	15° ATDC
Standard ignition timing	57° BBDC
Location of timing mark	9° BTDC (8:1 CR) 10° BTDC (9:1 CR) Scale on c/shaft damper, pointer on sump.

Plugs: make	Champion
type** (after eng. No. R9528)	UN 12 Y
size	14 mm
gap	.025in
Carburettor: make	S.U.
type	HD8 (triple)
Settings: choke	2in
main jet	.125in
std. needle size	UM
Air cleaner: make	AC
type	paper element
Fuel pump: make	Lucas
type	2FP electric
pressure	2lb/sq in

*Racing: .006in inlet; .010in exhaust.
†Valve clearances set to .010in. **Previously type N5.

Lamps	Model	Part No.	BULB		
			Lucas No.	Wattage	Cap
Head Home and Export R.H.D. Dip Left	PL700	58662	416	60/40	Unified European Cap
Head L.H.D. Dip Right	PL700	58663	417	60/40	Unified European Cap
Head Export Austria	F700	58667	410	45/40	Unified European Cap
Head Export Europe (except countries stated)	F700	58664	410	45/40	Unified European Cap
Head Export France	F700	58665	411	45/40	Unified European Cap
Head Export Sweden	F700	58666	410	45/40	Unified European Cap
Head Export U.S.A.	F700	58439	—	—	—
Side/flasher L.H.	652	52465	{ 989 (S) 382 (F) 380(S.T.) 382 (F.)	{ 6 21 6/21 21	{ M.C.C. S.C.C. S.B.C. S.C.C.
Stop tail and Rear flasher (open top) L.H.	651	53820	{ 382 382	{ 21 21	{ S.C.C. S.C.C.
Number plate	705	53993	{ 207	{ 6	{ S.C.C.
Reverse	595	52567	{ 382	{ 21	{ S.C.C.
Reverse (Export France)	595	52570	{ 382	{ 21	{ S.C.C.
Interior	674	56075	{ 382	{ 21	{ S.C.C.
Map	481	52477	{ 989	{ 6	{ M.C.C.
Ignition warning bulb holder	—	863511	987	2.2	M.E.S.
Main beam warning bulb holder	—	554734			
Flasher warning	5WL	38221			
Choke warning	WL13	38147			
Petrol warning bulb holder	—	863511			
Sidelamp warning light (Italy)	WL13	38232	38220		
Brake fluid level warning light	WL3-1	38220			



KEY TO MAINTENANCE DIAGRAM

DAILY

1. Radiator } check levels
2. Engine sump }

WEEKLY

3. Brake and clutch supply tanks—check levels

MONTHLY

4. Battery—check level

EVERY 2,500 MILES

5. Engine sump—drain and refill
6. Engine oil filter element—clean
7. Gearbox
8. Rear axle } check and top up
9. Steering housing
10. Steering tie rod ball joints
11. Wheel swivels } lubricate
12. Carburettor piston dampers
*13. Distributor—oil shaft bearing, auto advance mechanism, contact breaker pivot, smear cam with grease, clean contact points
14. Axle half-shafts—lubricate (early cars only)

EVERY 5,000 MILES (as for 2,500 Miles service plus following)

15. Carburettor filters } clean
*16. Fuel line filter
*17. Engine oil filter element—renew
*18. Rear suspension wishbone pivot bearings—lubricate

- *19. Door hinges, locks catches, seat runners and adjusting mechanism, ratchets and all linkages etc.—oil can
*20. Generator end bush—oil can

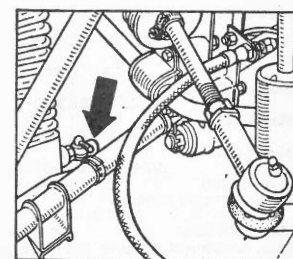
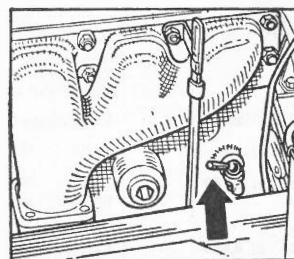
EVERY 10,000 MILES (as for 2,500 and 5,000 miles plus following)

21. Gearbox } drain and refill
22. Rear axle }
23. Front wheel bearings } lubricate
24. Rear wheel bearings }
*25. Air cleaner—renew
*26. Fuel tank filter—clean (early cars only)
27. Prop. shaft universal joints } on early cars
28. Propeller shaft splines } only—grease

*Not shown on diagram.

DRAINING POINTS

Left: The cylinder block drain tap, access from above, is adjacent to the sump dip stick.
Right: The radiator matrix drain tap, access from above or below.



FILL-UP DATA

	Pints	Litres
Engine sump (refill)	15	8.5
Gearbox	2 1/2	1.42
Rear axle	2 1/2	1.54
Cooling system (including heater)	32	18.18
*Tyre pressures: front	23 lb/sq in	1.62 kg/cm ²
rear	25 lb/sq in	1.76 kg/cm ²
(Normal use, up to 130 m.p.h. Max)		

*For sustained high speeds and maximum performance Front 30 lb/sq in (2.11 kg/cm²); rear 35 lb/sq in (2.46 kg/cm²).

APPROVED LUBRICANTS (Used in initial manufacture)

	MOBIL	CASTROL	SHELL	ESSO	B. P.	DUCKHAM'S	REGENT
Above 90° F	Mobiloil AF	Castrol XXL	X-100 40	Extra Motor Oil 40	Energol 40	NOL 40	Advanced Havoline 40
Engine ... 32° to 90° F	Mobiloil A	Castrol XL	X-100 30		Energol 30	NOL 30	Advanced Havoline 30
Below 32° F	Mobiloil Arctic	Castrolite	X-100 20W	Extra Motor Oil 20W/30	Energol 20	NOL 20	Advanced Havoline 20/20W
Gearbox, Distributor, Oil can	Mobiloil A	Castrol XL	X-100 30		Energol 30	NOL 30	Advanced Havoline 30
Rear Axle	Mobilube GX 90	Castrol Hypoy	Spirax 90 EP	Expee Compound 90	Energol EP 90	Hypoid 90	Universal Thuban 90
Propeller shaft U.J.s (early cars)	Mobilube C 140	Castrol D	Spirax 140 EP	Gear Oil 140	Energol 140	NOL EP 140	
Chassis nipples (except propeller shaft needle roller bearing) steering housing	Mobilgrease MP	Castrolase Medium or WB	Retinax A	Multipurpose Grease H	Energol L2	LB 10 Grease	Marfak Multipurpose Grease 2
Wheel hubs and distributor cam and drive shafts	Mobilgrease MP	Castrolase LM	Retinax A	Multipurpose Grease H	Energol L2	LB 10 Grease	Marfak Multipurpose Grease 2
Upper cylinder lubricant	Upperlube	Castrollo	Donax U or Shell UCL	Upper Cylinder Lubricant	Energol U.C.L.	Adcold Liquid	U.C.L.
Brake and clutch fluid reservoirs	Dunlop Disc Brake Fluid						