

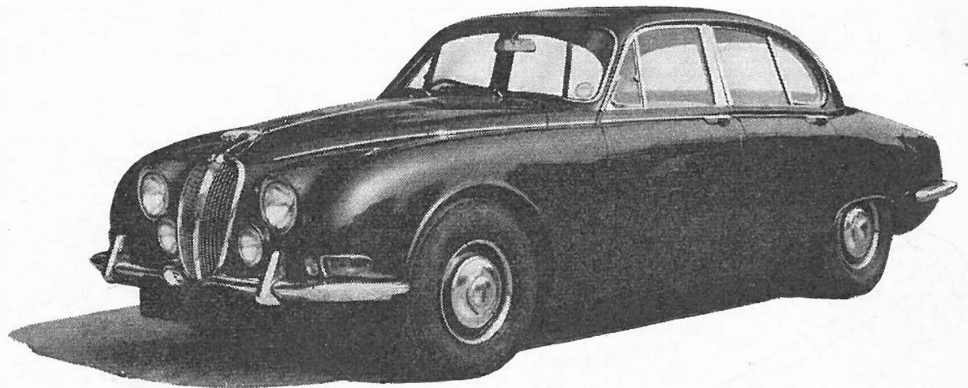
# Motor Trader

SERVICE DATA NO. 422

## JAGUAR 3-4'S' and 3-8'S'

Manufacturers: Jaguar Cars, Ltd., Coventry

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**DISTINGUISHING FEATURES** Frontal styling is somewhat similar to the Mk. 2 cars, but headlamps are recessed and faired into wings. Direction flashers are at lower wing extremities. Wrap around bumpers are fitted front and rear

ing serials are IB1001 for 3.4-litre cars and IB50001 for the 3.8-litre models, both r.h.d. The chassis number is to be found stamped in the bonnet catch channel forward of the radiator header tank, a suffix "DN" indicated that an overdrive unit is fitted. The engine number is stamped on the right hand side of the cylinder block, above the oil filter and to the front of the cylinder head casting, /7, /8, or /9 following the number denotes the compression ratio. All these numbers, together with other numerical identification of the car, are to be found stamped on a plate

which is attached to the left-hand front wing valance. On power-assisted steering models, this plate is found at the centre of the bulkhead. It is essential that all these numbers and letters are quoted when referring to the manufacturers, or when ordering spare parts.

Some special tools are required for service work, and those considered essential are listed in the tabular data in this article.

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

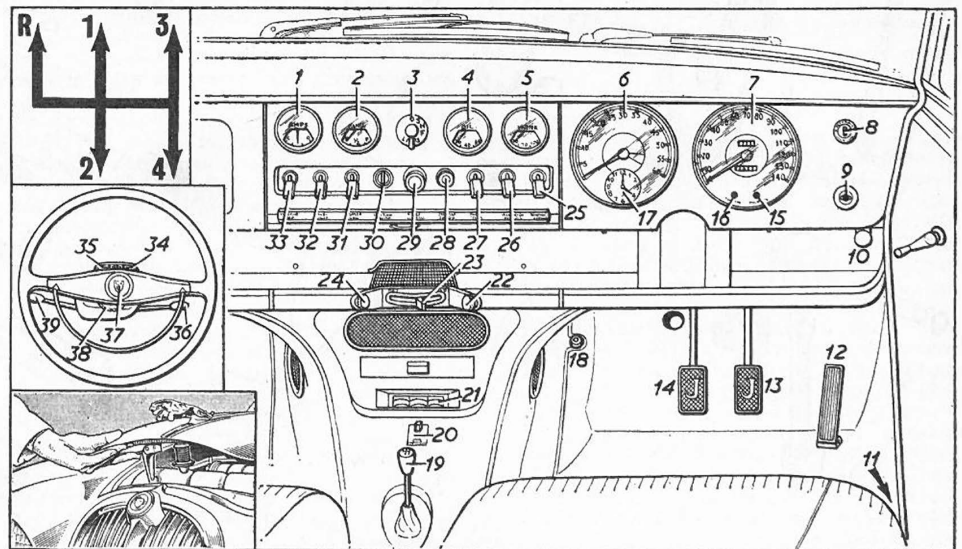
**L**ATEST in the range, the "S"-type car was introduced at the time of the Earls Court Motor Show last year. This model is an addition to the range, and in size rating comes between the Mk. 2 and the Mk. X. It is conceived as a four-door, four/five seater, and the body is designed on the integral principle. Certain of the mechanical components will be seen to have similarity to those used on other cars in the range, but as might be expected, differ in the specific application to this car.

Motive power is provided by the well-known six-cylinder overhead camshaft engine. In the case of this car, it is available in either 3.4- or 3.8-litre capacity, and there is a choice of compression ratios, with 8:1 quoted as standard for each engine size. In this state, the power output from the 3.4-litre engine is 210 b.h.p. at 5,500 r.p.m., and from the 3.8-litre, 220 b.h.p. at the same engine speed. Alternative compression ratios are available for use in countries where fuel requirements make this necessary.

On the transmission side, both manual and fully automatic transmissions are available. When manual transmission is specified, overdrive is optional and when fitted operates on top gear only; synchromesh within the gearbox is fitted to the upper three ratios. The automatic transmission is similar to that which has been described in previous Service Supplement sheets, featuring this Borg-Warner unit. The Supplement numbers are as follows: 260/C19, 272/C25, 344/C59, 352/C63, 354/C63 and 356/C65 and readers are referred to these publications for full constructional details and repair procedures. The rear axle is the Salisbury 4HU unit and when fitted to the 3.4-litre car may be fitted with the Thornton Powr-Lok differential. This option for the 3.4-litre car is standard on the larger engined (3.8-litre) car.

Suspension is independent front and rear, and drive to the rear road wheels is taken through short universally jointed shafts from either side of the truncated axle shafts to each wheel assembly. Each of these axle output shafts provides the mounting for the discs of inboard rear brakes. The front suspension, of the coil spring and wishbone link pattern, incorporates telescopic hydraulic shock absorbers, as does the rear suspension.

Identification of vehicles varies from previous Jaguar practice. Cars are identified by chassis and engine numbers and the major components have their own numbers. Start-

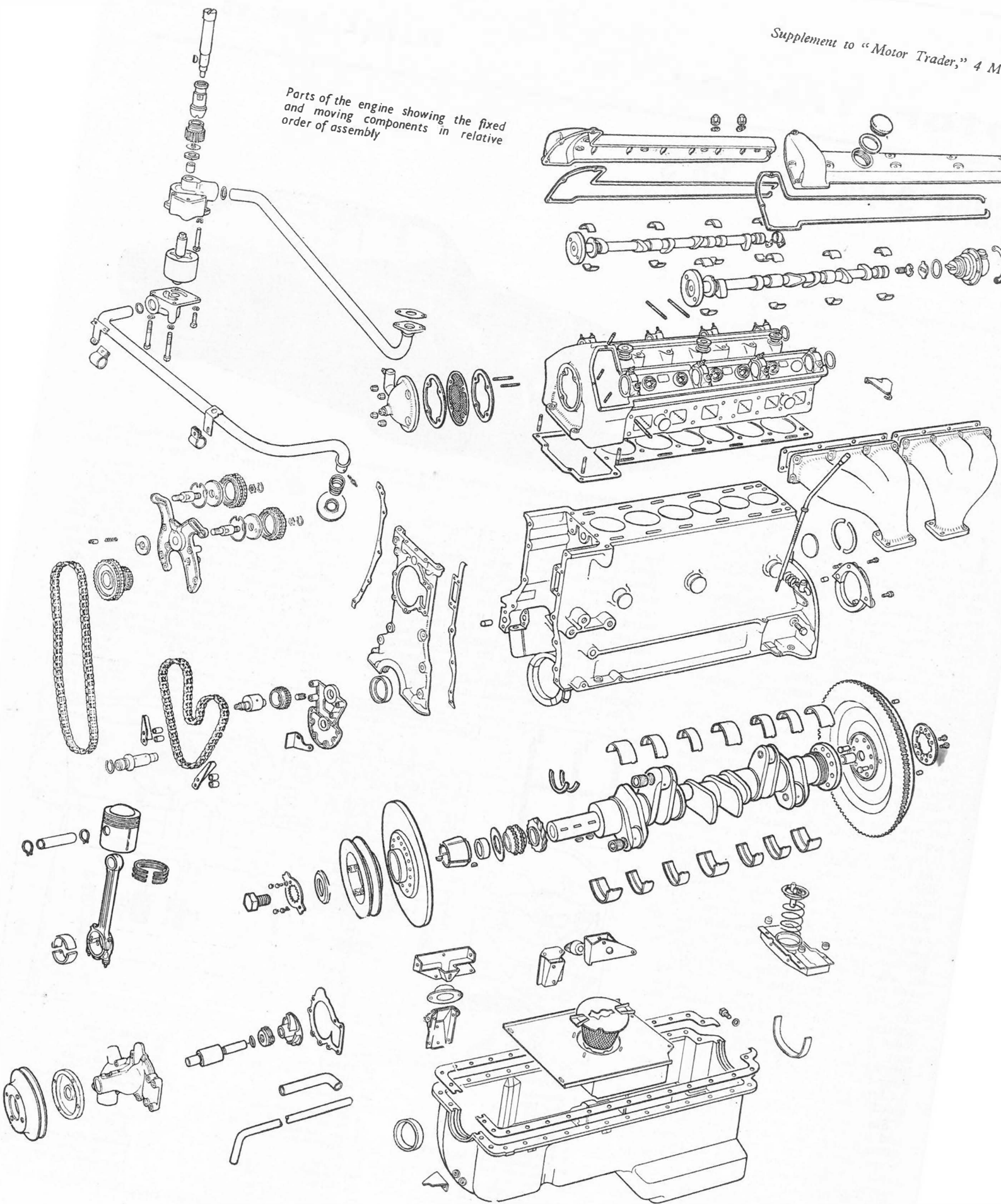


### INSTRUMENTS, CONTROLS, GEAR POSITIONS AND BONNET LOCK

- |   |                                      |   |
|---|--------------------------------------|---|
| 1. Ammeter  | 14. Clutch pedal                     | 28. Starter switch                                      |
| 2. Fuel gauge   | 15. Headlamp main beam warning light | 29. Cigar lighter                                       |
| 3. Lighting switch  | 16. Ignition warning light           | 30. Ignition switch                                     |
| 4. Oil pressure gauge                                     | 17. Clock                            | 31. Heater fan switch                                   |
| 5. Water temperature gauge                                | 18. Headlamp dipper switch           | 32. Panel lights switch                                 |
| 6. Engine r.p.m. indicator                                | 19. Gearlever (manual trans.)        | 33. Interior map light switch                           |
| 7. Speedometer  | 20. Rear outlet control switch       | 34. R/h flasher warning light                           |
| 8. Intermediate gear hold switch (if auto. trans. fitted) | 21. Heater control switch            | 35. L/h flasher warning light                           |
| 9. Brake fluid level (handbrake warning light)            | 22. R/h control for front outlets    | 36. Auto. trans. selector, or o'drv. switch lever       |
| 10. Bonnet lock control                                   | 23. Heater temp. control lever       | 37. Horn  |
| 11. Handbrake lever                                       | 24. L/h control for front outlets    | 38. Steering wheel adjustment ring                      |
| 12. Accelerator   | 25. Screenwiper switch               | 39. Direction indicator switch/headlamps flasher switch |
| 13. Brake pedal   | 26. Screenwiper switch               |   |
|   | 27. Fuel tank changeover switch      |   |

Insets left, from top to bottom: operative positions of centre mounted manual gearlever control, siting of steering column mounted controls, method of releasing bonnet safety catch

Parts of the engine showing the fixed and moving components in relative order of assembly



GENERAL DATA	
Wheelbase	8ft 11 $\frac{1}{2}$ in
Track: front*	4ft 7 $\frac{1}{2}$ in
rear	4ft 6 $\frac{1}{2}$ in
Turning circle	33ft 6in
Ground clearance	7in
Tyre size: front	6.00/6.40 — 15
rear	(Road Speed)
Overall length	15ft 7 $\frac{1}{2}$ in
Overall width	5ft 6 $\frac{1}{2}$ in
Overall height	4ft 6 $\frac{1}{2}$ in
Weight (dry)	30.7 cwt

\* 4ft 4 $\frac{1}{2}$ in, wire wheels

SERVICE TOOLS	
	Tool No.
<b>ENGINE</b>	
Upper timing chain adjuster	J.2
Engine lifting plate	J.8
Crankshaft rear oil seal sizing tool	J.17
Valve guide bore reamer	J.18
Valve spring compressor	J.6118
Valve timing gauge (supplied in tool kit)	C.4015
Piston ring compressor	38.U.3
<b>CLUTCH</b>	
Universal checking fixture	99
<b>REAR AXLE</b>	
Pinion bearing cone removal/replacing adaptor	SL.14-1*
Pinion bearing outer bearing cup replacing adaptor	SL.550-4†
Pinion bearing inner bearing cup replacing adaptor	SL.550-5†
Differential bearing cone removal adaptor	SL.14-3*
Differential bearing cone replacing adaptor	SL.550-1†
Pinion cone setting gauge	SL.3
Hub end-float master spacer	J.15
Hub end float dial gauge	J.13
Hub extractor (disc wheel hubs)	J.1.C
Hub extractor (wire wheel hubs)	J.7
Hub outer bearing cup removal adaptor	J.16A*
Hub bearing cup replacing adaptor	J.20A-1†
<b>FRONT SUSPENSION</b>	
Front coil spring compressor	J.6
<b>REAR SUSPENSION</b>	
Rear coil spring compressor	J.11A
Rear wishbone dummy shaft	J.14 (2 off)
*Use with main tool SL.14—Multi-purpose hand press	
†Use with main tool 550—Multi-purpose handle.	
‡Use with main tool J.20A—Bearing remover	

NUT TIGHTENING TORQUE DATA	
ENGINE:	lb. ft.
Flywheel	67
Connecting Rod	37
Main bearings	83
Cylinder head	54
Camshaft bearings	15

BALL AND ROLLER BEARING DATA				
	Part No.	Int. dia., Width (in or mm)	Ext. dia., (in or mm)	Type
<b>ENGINE</b>				
Water Pump	C8167	—	—	Hoffman No.4083F
<b>GEARBOX</b>				
Constant Mesh	C1838	40 mm	90 mm	B
Pinion	C1345	1 $\frac{3}{4}$ in	3 $\frac{1}{2}$ in	B
Mainshaft	C15351 (L.M. 67000/1)	—	—	TR
<b>FRONT AXLE</b>				
Front hub (inner)	C.15352 (L.M. 11900/1)	—	—	TR
Timken				
Outer				
Timken				

CAMSHAFT	
Bearing journal: diameter	1.000in ± .0005in
Bearing clearance	.0005-.002in
End float	.0045-.006in
Timing chain: pitch	$\frac{1}{2}$ in
No. of links (upper)	100
(lower)	82
VALVES	
	Inlet Exhaust
Head diameter (in)	1 $\frac{1}{2}$ ± .002 1 $\frac{1}{2}$ ± .002
Stem diameter (in)	$\frac{7}{16}$ ± .0025 $\frac{7}{16}$ ± .0025
Face-angle	45° 45°
	Inner Outer
Spring length: free	1.656in 1.935in
fitted	1.218in 1.3125in
fitted at load	30.33 lb ± 3 lb 48.375 lb ± 4.8lb
	0 lb 0 lb

## ENGINE

### Mounting

At front, cylindrical rubber blocks are bonded to studded plates at each end, bolted to brackets on either side of the crankcase and to chassis brackets.

At rear, engine/gearbox unit is supported by spring loaded "T"-piece bolted up to lugs on gearbox extension casing, shank of "T"-piece passes through coil spring and is located and cushioned in rubber bush pressed into channel section support bolted to body floor. Packing blocks fit between flange of channel support and stiffening plates are inserted under heads of mounting bolts.

### Removal

Engine should be removed from above, using overhead lifting tackle and trolley jack. If two sets of lifting tackle are available, together with engine lifting plates, trolley jack is not required.

Raise bonnet, mark hinge positions and remove bonnet. Take off air cleaner, disconnect and remove battery, drain sump and remove dip stick. Drain coolant from engine/radiator system, and remove breather pipe (securing clip, flex, pipe/breather housing). Take off screenwasher bottle, disconnect and remove top and bottom water hoses. Disconnect dynamo connections, noting positions for correct replacement of wires; disengage fan belt and remove dynamo unit. Take out radiator matrix, setscrews at sides, and nuts beneath unit. N.B. Unscrew four nuts securing cowl and allow it to rest on water pump housing until matrix is removed.

Disconnect: exhaust system at manifold flanges and heater pipes at rear of engine (clips), remove pipes. Disconnect and/or remove all pipes, wires and controls to and from engine unit and ancillary components.

Remove locknuts and washers from engine stabilisers at front and rear of cylinder head. Take out two setscrews from front mounting rubbers. Detach S.U. carburettors from inlet manifold. Remove gearlever knob, air distribution pipe cover and rubber grommet. Remove cylinder head securing nuts numbers 3, 6, 8 and 9 and fit lifting plate. Support engine/gearbox on lifting tackle and remove eight setscrews from rear mounting member at rear of gearbox or overdrive. Take off propeller shaft. N.B. If vehicle is fitted with auto. transmission observe following: Remove six setscrews securing rear mounting to body floor. Remove two nuts and spring washers securing mounting plate to two rubber mountings attached to rear of transmission. Take off mounting plate, disconnect propeller shaft from gearbox flange, and remove two setscrews securing centre bearing. Disconnect propeller shaft from rear axle flange, and remove propeller shaft. Disconnect control rod from selector lever on nearside of transmission. Remove selector cable clamp from reverse servo cylinder on near front side of transmission, and disconnect governor control rod from governor lever at rear of transmission. Remove leads from "anti-creep" pressure switch and disconnect intermediate speed hold solenoid feed wire at snap connector.

Engine/gearbox unit may now be removed from the car. Refitting is a reversal of above procedure.

### Crankshaft

Seven main bearings. Thin wall, steel-backed, white metal-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-

ENGINE DATA	
General Type	o.h.c.
No. of cylinders	6
Bore: mm	83 (3.4 litre)
in	87 (3.8 litre)
Stroke	3.2677 (3.4 litre)
Capacity: c.c.	3.425 (3.8 litre)
cu in	106 mm (4.1732in)
R.A.C. rated h.p.	3,442 (3.4 litre)
Max. b.h.p. at r.p.m.	3,781 (3.8 litre)
Max. torque lb. ft at r.p.m.	210.6 (3.4 litre)
Compression ratio	230.6 (3.8 litre)
	25.6 (3.4 litre)
	28.15 (3.8 litre)
	210 @ 5,500 (3.4 litre)
	220 @ 5,500 (3.8 litre)
	215 @ 3,000 (3.4 litre)
	240 @ 3,000 (3.8 litre)
	7 : 1, 8 : 1 or 9 : 1

CRANKSHAFT AND CON. RODS					
Diameter	Main Bearings				Crankpins
	2.75in				2.086in
	No. 1	Nos. 2, 3, 5, 6	No. 4	No. 7	
Length (in)	1 $\frac{1}{16}$	1 $\frac{3}{16}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{3}{4}$
Running clearance: main bearings big ends					.0015-.003in
End float: main bearings big ends					.0015-.0033in
Undersizes					.004-.006in
Con. rod centres					.001-.0025in
No. of teeth on starter ring gear/pinion					.020, .030, .040in
					7 $\frac{1}{2}$ in
					104/10

PISTONS AND RINGS			
Clearance (skirt) Oversizes	.0011-.0017in	.020	.030in
	.010	8 : 1	9 : 1
Weight without rings or pin	3.4 litre 1 lb 2 $\frac{1}{2}$ oz	3.8 litre 1 lb 3 oz	1 lb 4 oz
Gudgeon pin: diameter	.8749-.8751in	1 lb 14 oz.	13 dr.
Finger push fit in piston			
Double thumb push fit in con rod	@ 68° F		
	Compression	Oil Control	
No. of rings	2	1	
Gap	.015-.020in	.015-.033in	
S'de clearance in grooves	.001-.003in	Not applicable	
Width of rings	.0777-.0787in	Not applicable	

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.*

Maxiflex scraper rings are fitted, and 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 controlled by shims on 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. When renewing, valve guide bores should be reamed to .505in and each guide should be pressed in until outer end projects  $\frac{5}{16}$ 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 0.85in to .110in in .001 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.

## 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 fan. Non-adjustable wax type thermostat in front end of inlet manifold water jacket.

# TRANSMISSION

## Clutch

Borg & Beck single dry plate, graphite thrust release bearing, hydraulic actuation through slave cylinder operated by pedal. Only external adjustment is by nut on slave cylinder push rod to give  $\frac{1}{8}$ in free travel at withdrawal lever.

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

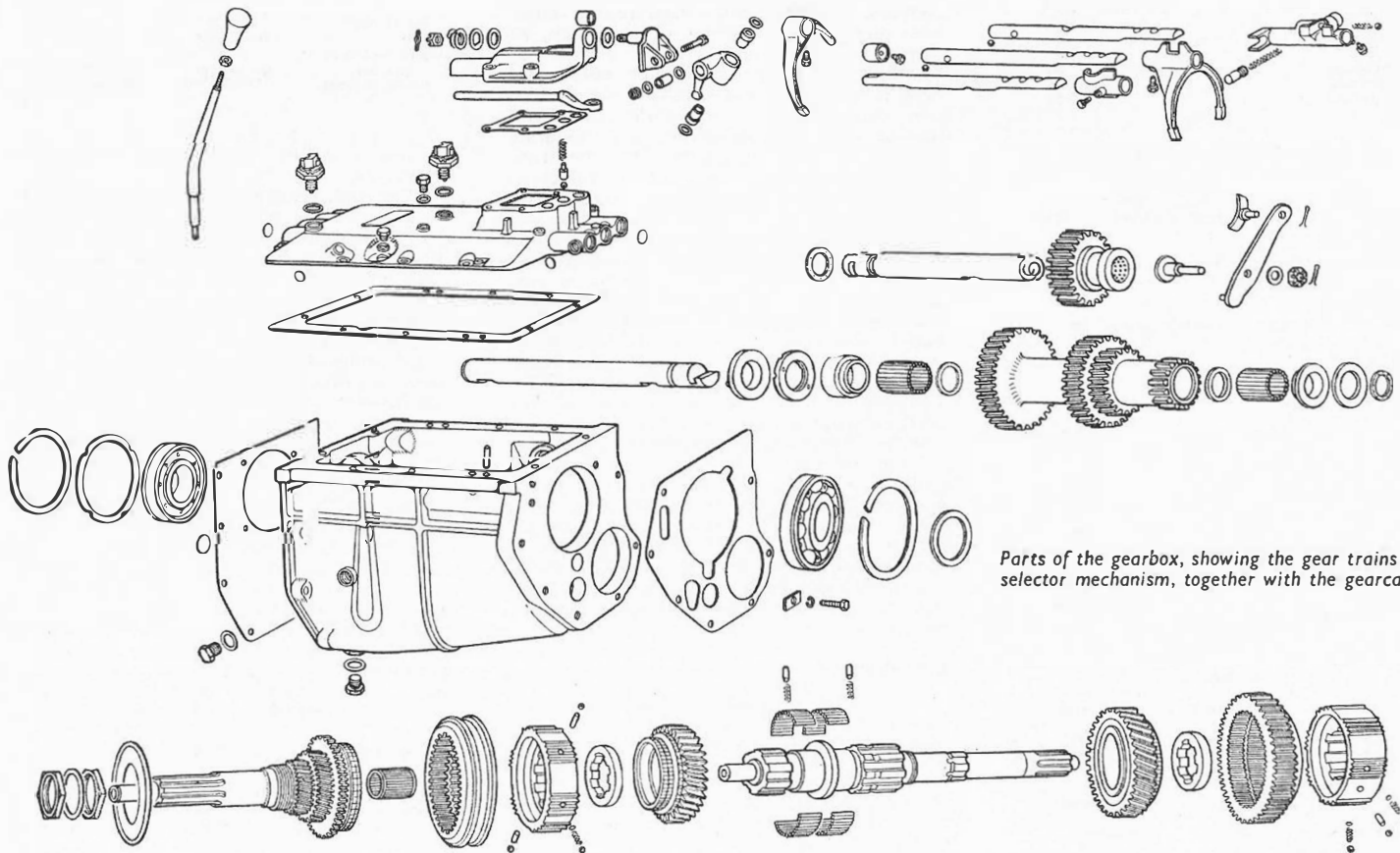
## Gearbox

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.

To dismantle gearbox, remove top cover with remote control assembly, selector rods and forks. Engage top and 1st gears to lock box, and undo driving flange nut. Draw off flange, extract speedo drive pinion and detach rear cover with lipped oil seal complete with layshaft and reverse spindles.



Parts of the gearbox, showing the gear trains and selector mechanism, together with the gearcasing

Draw off speedo drive gear and thick washer.

Using suitable extractor withdraw rear ball bearing from mainshaft. Remove bell-housing and front bearing cover with lipped oil seal (note copper washers under setscrew heads). Turn primary shaft so that cut-away on top gear dogs clears layshaft constant mesh gear. Tap mainshaft forward to drive out primary shaft and ball bearing with caged roller spigot bearing. Mainshaft assembly can then be lifted out through top. Lift out layshaft cluster with needle roller bearings and thrust washers, and bushed reverse idler.

Primary shaft ball bearing retained on shaft with chip shield by nut and locknut.

To dismantle mainshaft assembly slide off top/3rd synchro assembly, noting interlocking plunger and ball in drilling through synchro hub. Press down plunger in shaft, locking 3rd gear splined thrust washer, releasing washer. Slide off 3rd gear with 41 needle rollers. Remove 1st gear and synchro assembly (same as top/3rd gear, with interlocking plunger and ball). Remove 2nd gear (same as 3rd gear). When reassembling note that interlocking plunger and ball in top/3rd and 2nd synchro hubs must be opposite cutaway splines on mainshaft and in synchro sleeves.

Reverse idler spindle should not be separated from rear extension housing as rubber sealing ring recessed in spindle cannot be replaced without special thimble.

When reassembling box insert small retaining rings in layshaft needle roller recesses, and insert 29 needle rollers in each end, sticking them in with thick grease. Insert outer retaining ring in front end of shaft with large bronze thrust washer. Stick on steel thrust washer (pegged to box). Insert stepped steel washer at rear (pegged to shaft) and small bronze thrust washer. Insert reverse gear into casing. Lower cluster into box and insert thin rod to support it.

Move reverse gear and lever forward in casing. Feed in mainshaft and primary shaft assemblies, and drive in ball bearing. Lift layshaft cluster with rod and insert dummy spindle .980in in diameter, with generous chamfer on end, into layshaft so as not to disturb needle rollers. Assemble distance-piece and speedo gear on mainshaft, and offer up rear extension housing with layshaft spindle, and reverse spindle. Insert layshaft spindle, pushing out dummy spindle to front, picking up reverse gear on spindle as rear extension is pushed home. Complete assembly of box.

## Rear Axle

Salisbury 4HU, mounted independently from hubs and road wheels, Thornton Powr-Lok differential unit as standard on 3.8-litre models and is optional on 3.4-litre cars. 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.

## 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.

CHASSIS DATA		
<b>CLUTCH</b>		
Make	{ (3.4 litre)	Borg & Beck
Type	{ (3.8 litre)	sdp 10A6/G
Springs: no.		sdp 10 A6/G
colour	{ (3.4 litre)	12
free length	{ (3.8 litre)	yellow/Lt. green
Centre springs: no.	{ (3.4 litre)	black
colour	{ (3.8 litre)	2.68in
Linings: thickness	{ (3.4 litre)	6
dia. ext.	{ (3.8 litre)	red/cream
dia. int.		brown/cream
		not quoted

GEARBOX		
<b>Type</b>	synchromesh on 2nd, 3rd and top gears	
<b>No. of speeds (fwd.)</b>	4	
	Std.	O'drive
<b>Final ratios: 1st</b>	11.954 : 1	12.731 : 1
<b>2nd</b>	6.584 : 1	7.012 : 1
<b>3rd</b>	4.541 : 1	4.836 : 1
<b>4th</b>	3.54 : 1	3.77 : 1
<b>o'drive 4th</b>	—	2.933 : 1
<b>Rev.</b>	11.954 : 1	12.731 : 1

FRONT-END SERVICE DATA	
Castor	0° ± 1°
Camber	2° ± 1° pos.
King pin inclination	33°
Toe-in	1/8-1/4 in
No. of turns lock to lock	4.7 (standard steering)
	3.0 (P.A. steering)
<b>Adjustments: castor</b>	shims
<b>camber</b>	screwed tie rod ends
<b>toe-in</b>	

# CHASSIS

## Brakes

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

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

Self-adjusting handbrake fitted, consequently no attention is required, apart from renewal of pads when worn to dimension stated above.

## Front Suspension

Independent, coil springs with double wishbone links. Fulcrum shafts and blocks mounted and rubber bushed in inner ends of upper links; sealed ball joints with castor adjusting shims, packing piece and rebound rubber mounting block bolted up in outer ends of upper links. Camber adjusting shims are provided on machine face of fulcrum shaft blocks and shafts are retained in links by slotted nuts and split pins. Non-adjustable grease sealed ball joints, bolted up between outer ends of upper links on transverse mounting link and shank is taper fit in upper end of stub axle carrier.

Lower links are one-piece forgings; fulcrum shafts which swivel in inner ends of links and attach lower part of suspension units to front suspension cross member are rubber bushed and bolted up each end with flat washers and slotted nuts. Outer ends of lower links attached to wheel carrier arms on

BRAKES		
<b>Type</b>	Dunlop disc	
	Front	Rear
<b>Disc diameter</b>	11.00in	11 1/2 in
<b>Pad dimensions</b>	2.125 x 1.870in	2.125 x 1.870in
<b>Thickness</b>	.656in	.656in
<b>Area per pad</b>	3.975in <sup>2</sup>	3.975in <sup>2</sup>
<b>Material</b>	Mintex M33	
<b>Operating cyl. dia</b>	2 1/4 in	1 1/2 in
SPRINGS		
<b>Type</b>	Front	Rear
	ind. coil	ind. coil
<b>Wire dia. of coils</b>	4.75in	3.386in
<b>No. of coils (approx.)</b>	6.63	8 1/2
<b>Free length</b>	15.75in	11.395in
<b>Identification colour</b>	—	red/yellow

SHOCK ABSORBERS	
<b>Make</b>	Girling
<b>Type</b>	telescopic
<b>Service</b>	replacement
STEERING BOX	
<b>Make</b>	Burman
<b>Type</b>	worm and recirculatory ball
	(Power assisted optional)
<b>Adjustments:</b>	shims
column end float	grub screw and nut
cross shaft end float	
mesh	

PROPELLER SHAFT	
<b>Type</b>	needle roller bearing U.J.
FINAL DRIVE	
<b>Type</b>	semi-floating hypoid
<b>Crownwheel/bevel pinion teeth</b>	3.54 : 1 std 46/13
	3.77 : 1 o/d 49/13

taper of adjustment and built-up ball joints working in steel spigots and Railko sockets. Shims (.002-.004in) provide for adjustment on initial assembly beneath base plate which is bolted up to carrier arm by four hexagon-headed setbolts and locked with tabs. Ball joints fitted to each end of tie rods and track rod is left-and right-hand threaded to provide track adjustments.

## Steering Gear

Burman recirculating ball type; column connected to box by universal joint. Inner column splined for steering wheel adjustment. Worm gear carried in casing in loose cup and cone ball bearings, shims provided beneath both end plates for adjustment of column end float; rocker shaft movement is adjusted by grub screw and locknut in steering box top cover.

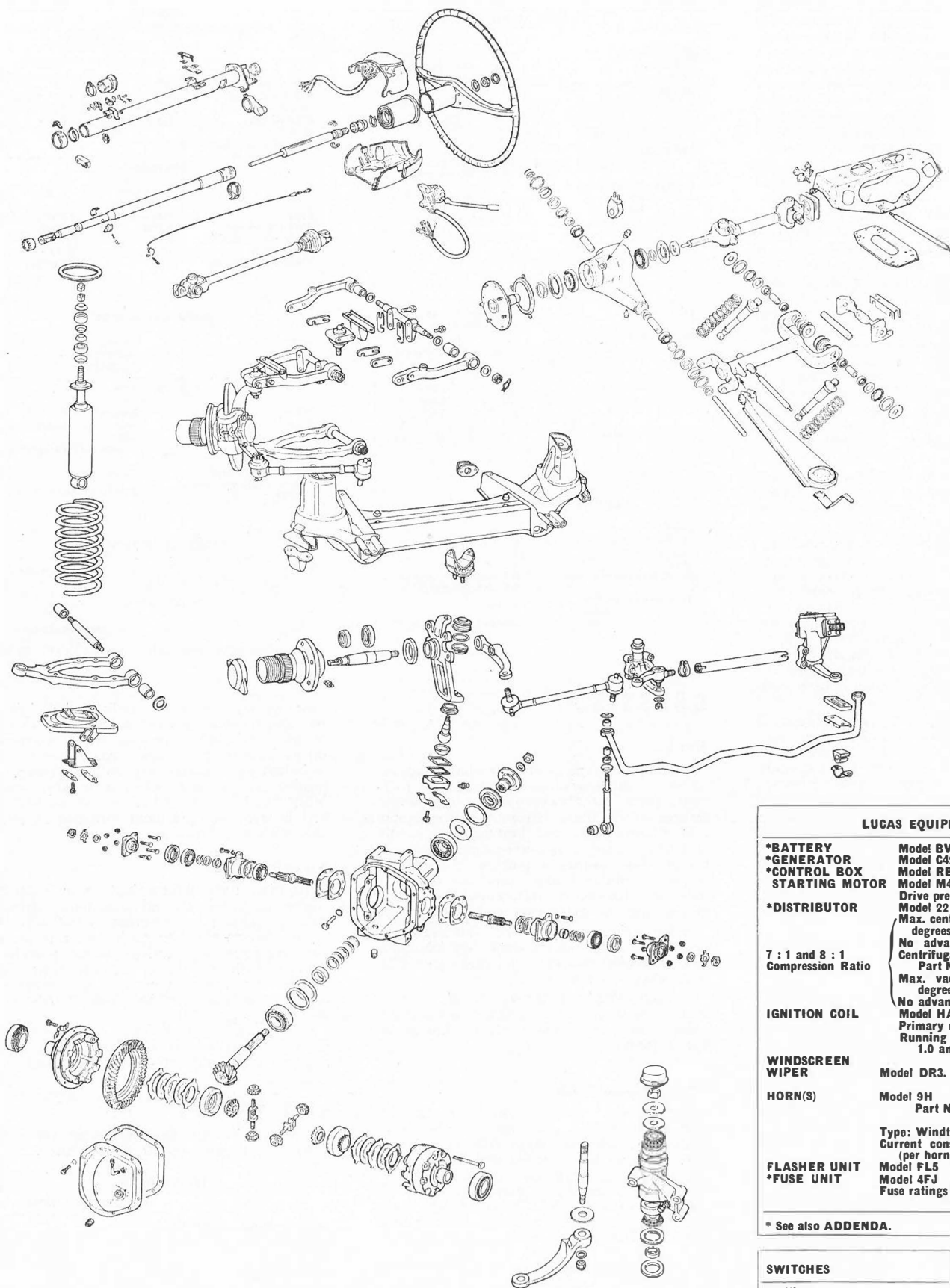
Movement of rocker shaft is transmitted to front road wheels via centre track rod, steering idler and left- and right-hand tie rods.

## Shock Absorbers

Girling telescopic front and rear, no provision for topping-up or maintenance.

FILL-UP DATA		
	Imp. Pts.	Litres
<b>Engine sump (including filter)</b>	12	6.75
<b>Gearbox*</b>	2 1/2	1.5
<b>Rear axle</b>	2 1/2	1.5
<b>Cooling system</b>	22	12.5
<b>Fuel tank</b>	7 galls	31.75
	7 galls	31.75
<b>Tyre pressures: front</b>		
Normal driving	28 lb/sq in	1.97 kg/cm <sup>2</sup>
Sustained high speed	33 lb/sq in	2.32 kg/cm <sup>2</sup>
Town use	25 lb/sq in	1.76 kg/cm <sup>2</sup>
<b>Tyre pressures: rear</b>		
Normal driving	25 lb/sq in	1.76 kg/cm <sup>2</sup>
Sustained high speed	30 lb/sq in	2.11 kg/cm <sup>2</sup>
Town use	22 lb/sq in	1.55 kg/cm <sup>2</sup>

\* Plus 1 1/2 pints if overdrive fitted.



Parts of the front suspension, rear axle and the steering assemblies. Note that the Thornton Powr-Lock differential shown in lower portion of drawing is standard fitment to 3.8-litre cars, and optional on other model

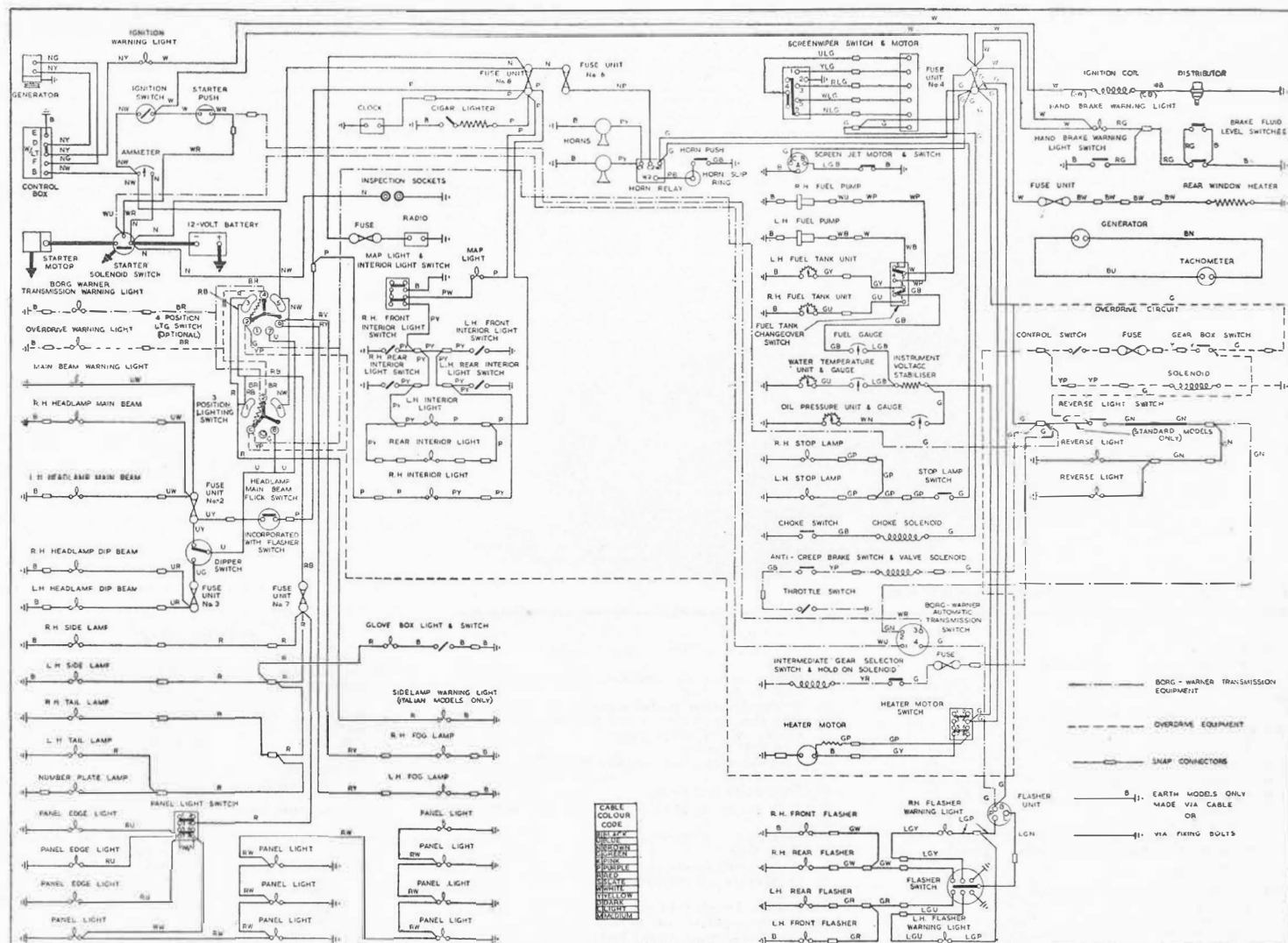
#### LUCAS EQUIPMENT

*BATTERY	Model BV11A	
*GENERATOR	Model C42	Part No. 22902
*CONTROL BOX	Model RB340	Part No. 37331
STARTING MOTOR	Model M45G	Part No. 26140
*DISTRIBUTOR	Model 22D6	Part No. 40885
	Drive pre-engaged	
	Max. centrifugal advance (crank degrees) 19° at 3400 rev./min.	
	No advance below 200 r.p.m.	
	Centrifugal advance springs.	
	Part No. 54415559	
7 : 1 and 8 : 1		
Compression Ratio		
	Max. vacuum advance (crank degrees) 6°-8° at 25 in. Hg.	
	No advance below 5 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 DR3.	Part No. 75361 RHD 75374 LHD
HORN(S)	Model 9H	
	Part No(s) 54068078 low note 54068079 high note	
	Type: Windtone	
	Current consumption 3.0-3½ amp. (per horn)	
FLASHER UNIT	Model FL5	Part No. 35020
*FUSE UNIT	Model 4FJ	Part No. 54038032
	Fuse ratings 35 amp. 35 amp.	

\* See also ADDENDA.

SWITCHES	Model	Part No.
Ignition	545	31962
Starter	855	34263
Starter solenoid	28T	76464
*Lighting	PRS7	34382
Direction indicator and H/lamp flash	85SA	34803
Dip	103SA	34536
Stop light	HLZ	31802
Wiper	79SA	31966
Steering column control	CCZ	33585
Cubby boxlight	54SA	34379

\*See also ADDENDA.



Wiring diagram by permission of Joseph Lucas Ltd.

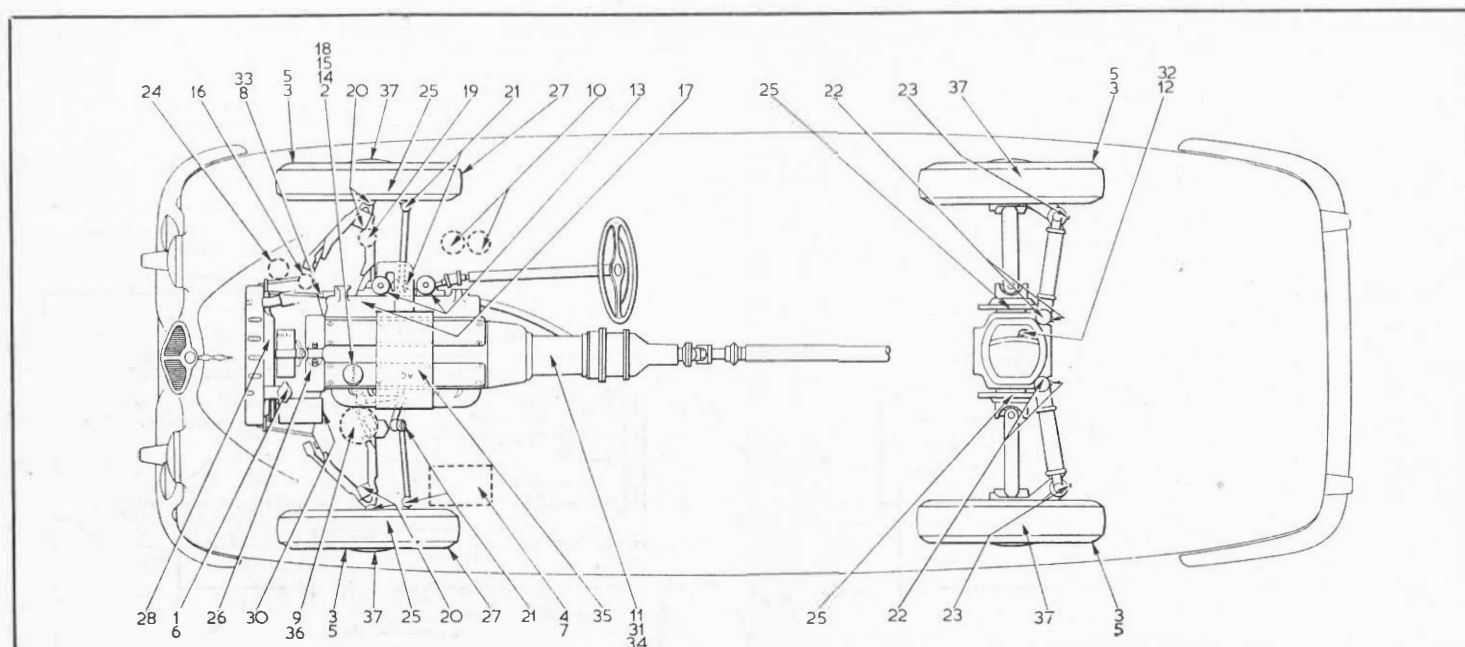
SWITCHES (Contd)		
Interior and maplight	Model 57SA	Part No. 31960
Heater/fan	Model 57SA	Part No. 31960
Petrol changeover	Model 45SA	Part No. 34425
Screen jet	Model 65SA	Part No. 31984
	Model 12SA	Part No. 31504
	Model SS10/1	Part No. 31077
TRANSMISSION UNITS		
LAYCOCK		
Control switch	Model 90SA	Part No. 34804
Transmission gear solenoid	Model 11S	Part No. 76515
Interruption switch	Model SS10/1	Part No. 31077
BORG-WARNER		
Gear holding solenoid	Model 11S	Part No. 76533
Kickdown switch	Model T10S1	Part No. 31931
Starting motor	Model M45G	Part No. 26097
Inhibitor switch	Model 55SA	Part No. 34774
Brake line valve solenoid	Model BVS1	Part No. 76502
Hydraulic pressure switch	Model HPS1	Part No. 31393

ADDENDA		
COMPONENT	Model	Part No.
Battery (drycharged—export)	Model BVZ11A	
Generator (power steering)	Model C42	Part No. 22906
Generator (special orders)	Model C48	Part No. 22804
Control Box (special orders—used with C48 generator)	Model RB340	Part No. 37354
Fuse Unit (having 35 and 50 amp. fuses)	Model 4FJ	Part No. 54038007
Ammeter (for use with C48 generator)	Model CZU60	Part No. 36293
Lighting Switch (export U.S.A.)	Model PRS7	Part No. 34382
Distributor (9:1 compression ratio)	Model 22D6	Part No. 40886
Maximum centrifugal advance (crank degrees), 13° at 2000 rev./min.		
No advance below 225 rev./min.		
Centrifugal advance springs. Part No. 54415560.		
Maximum vacuum advance (crank degrees), 7°-9° at 15 in. Hg.		
No advance below 2½ in. Hg.		

LAMPS		BULB OR SEALED BEAM UNIT			
	Model	Part No.	Lucas No.	Wattage	Cap
Head RHD Dip left	F700	58962	54521872	60/45	SBU
" LHD Dip right	F700	3	54520481	60/45	SBU
" Export Europe	F700	4	410	45/40	Unified (clear)
" Sweden	F700	5	410	45/40	"
" Austria	F700	6	410	45/40	"
" France	F700	7	411	45/40	Unified (yellow)
" NADA	F700	59175			
Fog Side	WTF6	55285	54522163	60/45	SBU
*Front Flasher, amber lens	461/1	52636	989	6	MCC
	690	52637 R.H.	382	21	SCC
		52638 L.H.	3		
*Stop tail and rear flasher	687	53935 R.H.	380 stop tail	6.21	SBC
		53934 L.H.	382 reverse	21	SCC
*Number plate and reverse	689	53943	989 No. plate	6	MCC
			382 reverse	21	MCC
Map	689	52477	989	6	MCC
Boot	519	54121	989	6	MCC
Cubby box	681	56078			
Ignition warning, bulb holder only			987	2.2	MES
Main beam warning, bulb holder only			987	2.2	MES
Brake warning			987	2.2	MES
Sidelamp warning, bulb holder only (Export Italy)	WL3/1	38220	987	2.2	MES

\*See also ADDENDA.

ADDENDA		BULB			
	Model	Part No.	Lucas No.	Wattage	Cap
Front flasher lamp (clear lens)	690	52639 RH	382	21	SCC
		52640 LH			
Stop/tail and flasher	687	53937 RH	380 stop/tail	6/21	SBC
		53934 LH	382 flasher	21	SCC
(Export U.S.A.)					
No. Plate and Reverse lamp (Export France)	689	53944	989 no. Plate	6	MCC
			382 reverse	21	SCC



## KEY TO MAINTENANCE DIAGRAM

## DAILY

1. Radiator
2. Engine sump

} check and top up

## WEEKLY

3. Tyre pressures—check

## MONTHLY

4. Battery—check and top up

## EVERY 3,000 MILES

5. Tyre pressures check
6. Radiator
7. Battery
8. Auto. trans. (if fitted)
9. Power assisted steering (if fitted)
10. Clutch and brake master cyls.
11. Gearbox
12. Rear axle
13. Carburettor piston dampers
14. Engine sump—drain and refill
15. Engine oil filter element—clean
16. Distributor—oil shaft bearing, auto. advance mechanism, and contact breaker pivot, smear cam with grease

} check and top up

## EVERY 6,000 MILES (as for 3,000 Miles plus following)

17. Steering unit (std. type)—check and top up
18. Engine oil filter element—renew
- \*19. Fuel feed lines and carburettor filters—clean
20. Wheel swivels
21. Steering tie rod ends
22. Wishbone pivots (rear) inner

} grease gun ends

23. Wishbone pivots (rear) outer
24. Brake servo air cleaner—clean and lubricate with brake fluid
25. Brake friction pads—examine for wear
26. Top timing chain—adjust for wear, if necessary
27. Front wheel alignment
28. Fan belt tension
- \*29. Seat runners, door catches, locks, hinges, etc.
30. Generator end bush

} check

} oil can

## EVERY 12,000 MILES (as for 6,000 Miles plus following)

31. Gearbox (and o'drive, if fitted)
32. Rear axle
33. Auto. transmission (if fitted)
34. Overdrive oil pump filter (if o'drive fitted)—clean
35. Engine air cleaner element—renew
36. Power steering oil reservoir filter—renew
37. Front and rear wheel hubs—grease, check end float of bearings

} drain and refill

\*Not shown on diagram.

## DRAINING POINTS

Radiator matrix drain tap control is adjacent to nearside top of radiator, visible and accessible from beneath bonnet. Cylinder block drain tap is on block casting, adjacent to and above dip stick, on nearside of engine unit

See col. 3 p. v for FILL-UP DATA

## TUNE-UP DATA

Firing order	1, 5, 3, 6, 2, 4
Tappet 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	7 to 1 comp. ratio—TDC
	8 to 1 comp. ratio—7° BTDC
	9 to 1 comp. ratio—5° BTDC
Location of timing mark	Timing marks on engine damper. Pointer on sump.
Plugs: make	Champion
type	UN12V
size	14mm
gap	.025in
Carburettor: make	S.U.
type	H.D.6 (twin)
Settings: choke	
main jet	.100in
needle	T.L.
fuel level	$\frac{7}{8}$ in
Air cleaner: make	AC
type	paper element
Fuel pump: make	S.U.
type	AUF300 series

## RECOMMENDED LUBRICANTS

		MOBIL	CASTROL	SHELL	ESSO	B.P.	DUCKHAM'S	REGENT
	Above 90° F	Mobiloil AF	XXL	X-100 40	Extra Motor Oil 40	Energol SAE 40	NOL 40	Advanced Havoline 40
Engine	32° to 90° F	Mobiloil A	XL	X-100 30	Extra Motor Oil 20W/30	Energol SAE 30	NOL 30	Advanced Havoline 30
	Below 32° F	Mobiloil Arctic	Castrolite	X-100 20W		Energol SAE 20	NOL 20	Advanced Havoline 20/20W
Engine oils *Multigrade		Mobiloil Special	Castrolite or XL	X-100 Multigrade 10W/30 or 20W/40	Extra Motor Oil 10W/30	Energol Vi sco-static	Q20-50 or Q5500	Advanced Havoline Special 20W/40 or 10W/30
Gearbox, Distributor, Oil can		Mobiloil A	XL	X-100 30		Energol SAE 30	NOL 30	Advanced Havoline 30
Rear axle		Mobilube GX 90	Hypoy	Spirax 90 EP	Gear Oil GP 90	Energol SAE 90 EP	Hypoid 90	Universal Thuban 90
Steering box (std. steering)		Mobilube GX 140	Hi-Press	Spirax 140 EP	Gear Oil ST 140	Energol SAE 140 EP	NOL EP 140	Universal 140 Thuban
Wheel hubs and distributor cam, steering idler, tie rods, wheel swivels and door hinges		Mobilgrease MP	Castrollease LM	Retinax A	Multipurpose Grease H	Energol L2	LB 10	Marfak Multipurpose 2
Automatic transmission Power steering system		Mobilfluid 200	T.Q.	Donax T.6	Automatic Transmission Fluid	Energol ATF Type A	Nolmatic	Texamatic Fluid
Upper cylinder lubricant		Upperlube	Castrollo	Donax U or UCL	UCL	Energol U.C.L.	Adcoid Liquid	U.C.L.
Brake and clutch fluid reservoirs					Dunlop Disc Brake Fluid (S.A.E. 70 R.3) or other brands of S.A.E. Spec. 70 R.3			

\*These oils should NOT be used in worn engines, whose general condition indicates that overhaul is required.