

LAND-ROVER 1961 PETROL MODELS

Manufacturers : Rover Co., Ltd., Solihull, Warwickshire

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THESE vehicles have been in production for a number of years, and have been the subject of previous articles in this series. Design developments have taken place in a progressive fashion and so it will be apparent that while, outwardly, the vehicles have changed but slightly during their 12-year production period, inwardly and mechanically there has been considerable change.

Present series vehicles were first marketed in 1958. They were offered in either 88in or 109in length wheelbase versions, and with the option of either 2½-litre petrol engines or 2-litre diesel engines. Our last article on Land-Rover vehicles featured the diesel-powered version and to complete servicing information available to readers, we are presenting this data sheet which not only deals with the petrol-engined vehicle but details changes of service procedure which are common to both versions.

Apart from the engine options, much of the original basic mechanical layout of the earlier series is retained, with the exception of the front wheel drive shafts and some component parts of the front suspension; Hardy Spicer joints replace the Tracta type universal joints and king pins have a revised mounting. Gearbox and transfer box are much the same as the earlier series, and differential units are closely comparable with those used in current production Rover cars.

Vehicles are identified by nine figure serials. First three digits represent vehicle engine and specification type, fourth digit the year or sanction period, i.e., 8=1958, and the last five digits denote actual serial number of the vehicle. This serial number will be found stamped on the transfer box instruction plate on the dash panel over the gearbox cover and is the same as the chassis number stamped on the right-hand front spring shackle bracket. Engine serials are to be found on a boss on the left-hand side of the cylinder block at the front. The vehicle serial number should always be quoted when referring to the makers or when ordering spare parts.

The few special tools required for service are available from the Rover Co., Ltd., and are listed in these pages.

Threads and hexagons are in the main of the Unified series.

ENGINE

Mounting

At front, angle brackets are bolted up to bosses either side of engine unit and to chassis frame by two ½in UNF bolts and lockplates each. At rear, gearbox



DISTINGUISHING FEATURES. Similar in general appearance to its predecessors, this model has side lamps recessed into front wings and flush-fitting exterior door handles

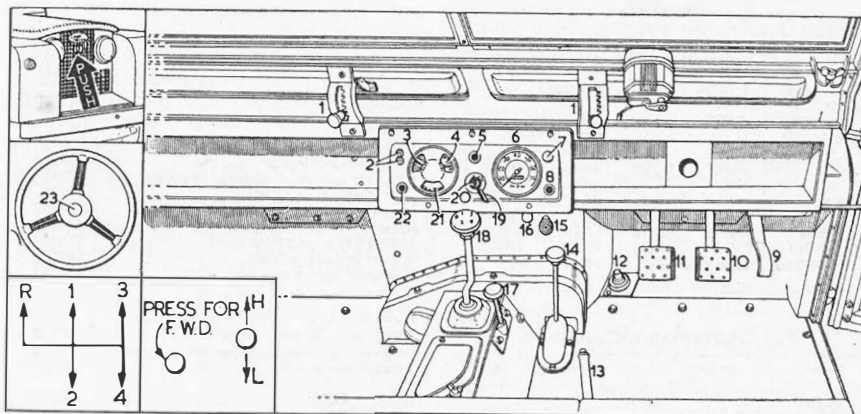
transfer casing unit rests on brackets attached to either side of casing by four studs and nuts each and to frame by retaining bolt and nut together with adjuster plate and locknuts. Tighten all bolts fully.

Removal

Remove engine without gearbox. Disconnect and take off bonnet, drain coolant, remove water hoses, disconnect leads to lamps either side of grille panel and right-hand junction box. Remove fan blades,

also bolts securing front apron and grille to cross-member and front wings. Take out radiator matrix and grille assembly. Disconnect and remove all pipes, wires and controls to engine unit.

Fit engine sling to cylinder head front and rear support brackets, and support gearbox with jack after removal of front floor and gearbox cover. Remove slave cylinder bracket from flywheel housing, take out bell housing nuts and washers, also mounting bolts. Manoeuvre engine forward, up and clear of vehicle.



INSTRUMENTS, CONTROLS, GEAR POSITIONS AND BONNET LOCK

- | | | |
|-------------------------------|----------------------------|-------------------------------|
| 1. Windscreen ventilators | 9. Accelerator | 16. Cold start control |
| 2. Lead lamp sockets | 10. Brake pedal | 17. Front wheel drive control |
| 3. Ammeter | 11. Clutch pedal | 18. Gear lever |
| 4. Fuel gauge | 12. Headlamp dipper switch | 19. Main lighting switch |
| 5. Oil pressure warning light | 13. Handbrake | 20. Ignition switch |
| 6. Speedometer | 14. Transfer box lever | 21. Main beam warning lamp |
| 7. Panel light switch | 15. Starter switch | 22. Ignition warning light |
| 8. Cold start warning light | | 23. Horn push |

Inserts show, top left: bonnet release details, below: sitting of steering column mounted control, and bottom left, operative positions of gear lever and transfer box lever.

ENGINE DATA

General		
Type	...	o.h.v.
No. of cylinders	...	4
Bore x stroke: mm	...	90.49 × 88.9
in	...	3.562 × 3.50
Capacity: c.c.	...	2286
cu in	...	139.5
R.A.C. rated h.p.	...	20.4
Max. b.h.p. at r.p.m.	...	77 @ 4250
Max. torque at r.p.m.	...	124 lb ft @
Compression ratio	...	2500
		7.0 : 1

CRANKSHAFT AND CON. RODS

	Main Bearings	Crankpins
Diameter	2.50in	2.126in
Length	1.057-1.067in	—
Running clearance:		
main bearings	...	.001-.0025in
big ends	...	.0007-.0025in
End float: main bearings	...	.002-.006in
big ends	...	.007-.011in
Undersizes	...	.010, .020, .030
		.040in
Con. rod centres	...	6.904-6.908in
No. of teeth on starter ring gear	...	97/11
pinion	...	

PISTON AND RINGS

Clearance (skirt)	...	.0023-.0028in
Oversizes	...	.010, .020,
		.030, .040in
Weight without rings or pin	...	20½ ozs
Gudgeon pin:		
diameter	...	.9998+.002in
fit in piston	...	Nil to .0002in
fit in con. rod	...	interf.
		.0003-.0005in
	Com-pression	Oil Control
No. of rings	2	1
Gap	.015-.020in	.015-.020in
Side clearance in grooves	.0005-.002in	.0005-.002in
Width of rings	.069-.070in	.185-.186in

CAMSHAFT

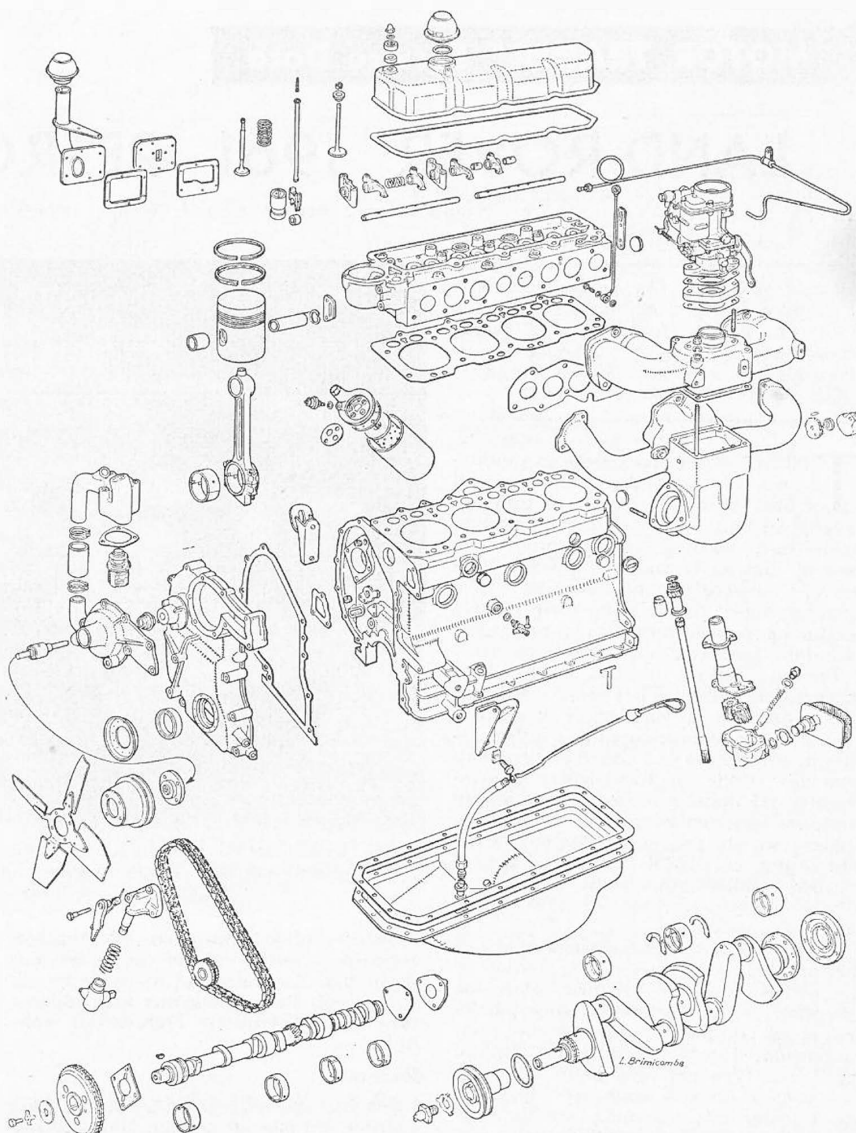
Bearing journal: diameter	...	1.842-1.843in
Bearing clearance	...	.001-.002in
End float	...	.0025-.0055in
Timing chain: pitch	...	1in
No. of links	...	78

VALVES

	Inlet		Exhaust	
Head diameter	1.755in		1.380in	
Stem diameter	.312in		.343in	
Face-angle	30°		45°	
	Inner	Outer	Inner	Outer
Spring length:				
free	1.61in	1.76in	1.61in	1.76in
fitted	1.38in	1.50in	1.37in	1.49in
at load	17.5lb	46lb	18.5lb	48lb

NUT TIGHTENING TORQUE DATA

	Bolt Size	lb/ft
ENGINE		
Connecting rod bolts	...	35
Cylinder head nuts	½in UNF	75
Main bearing bolts	7/8 UNF	85
Rocket shaft support bracket bolts	...	12-13
Flywheel securing bolts	...	50
REAR AXLE		
Pinion flange nut	...	85
Crownwheel retaining bolts (std. .375in)	...	35
(special .390in)	...	45



Parts of the engine showing the fixed and moving components. Note assembly of the water pump parts, arrowed on the left of the illustration

SPECIAL TOOLS

ENGINE:

	Part No.
Chain wheel extractor	507231
Guide for rear main bearing cap seals	270304
Valve guide fitting tool	274406
Tappet guide extractor and fitting tool	274397
Camshaft bearing extractor	274388
Camshaft bearing fitting tool	274381
Starter dog nut spanner	507234
Camshaft bearing reamer	274389

CLUTCH & GEARBOX

Gauge plate (release levers)	277984
Transfer box intermediate shaft extractor	262772
Gearbox mainshaft nut spanner	263056

REAR AXLE

Diff. pinion rear bearing extractor	262757
Axle shaft retaining collar, removal and replacement tools	275870
Diff. pinion setting gauge	262761
Crown wheel locking nut "C" spanner	262759

FRONT AXLE

Indicator bracket for hub adjustment	272956
Steel pin for steering relay assembly	510309
Drop arm extractor	262776

GENERAL DATA

Basic vehicles:		
Wheelbase	88	7ft. 4in
Track: front	109	9ft 1in
rear	...	4ft 3½in
Turning circle	...	4ft 3½in
Turning circle 109	...	38ft
Ground clearance:		45ft
88 (6.00-16in tyres)	...	8in
88 (7.00-16in tyres)	...	8½in
109 (7.50-16in tyres)	...	9½in
Tyre size: front and rear	88	6.00-16
	88	7.00-16
	109	7.50-16
Overall length	88	11ft 10½in
Overall length	109	14ft 7½in
Overall width	...	5ft 4in
Overall height	88 (hood up)	6ft 5½in
	109 (top of cab)	6ft 9in
Weight (dry)	88	2840lb
	109	3234lb

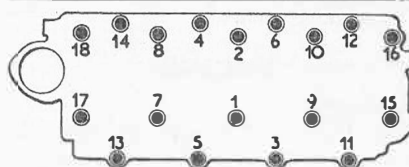


Diagram showing order of tightening cylinder head stud nuts

Crankshaft

Three main bearings. Steel backed copper-lead-lined shell located in crankcase and caps. Endfloat controlled by split thrust washers recessed in block either side of centre main bearing. Fit with oil grooves towards housing. No hand fitting permissible, bearings may be changed without removal of shaft. Flywheel, with detachable starter ring gear spigoted on rear flange of crankshaft, dowel located and secured by setscrews. Self-lubricating spigot bush pressed into flywheel.

Timings sprocket keyed on front end of shaft, boss of sprocket outwards, with Woodruff key. Oil thrower disc trapped between sprocket and pulley hub. Assembly retained by started dog setscrew. Pulley hub passes through lipped oil seal (lip inwards) in timing cover.

Rear main bearing cap fits in square recess in crankcase with "T" shaped composition seals which fit between bearing cap and crankcase. Imperative to use oil seal guide tool No. 270304 secured to sump studs either side of rear drain bearing cap.

Split rubber moulding forming oil collector ring, dowel located on rear main bearing cap and block, and may be removed with the crankshaft *in situ*.

Connecting Rods

"H"-section rod, big end split horizontally and small end bushed for fully floating gudgeon pin. Thin wall, steel-backed copper-lead-lined big end bearing shells located by tabs in rods and caps. No hand fitting permissible. Big end bolts located in con. rod shoulders and locked with self-locking nuts. Fit piston and rod assembly with bleed hole in rod away from camshaft.

Pistons

Aluminium alloy. Fully floating gudgeon pins located by circlips. Fit of pin in piston is critical. Pin must not fall through by its own weight and must be fitted with hand pressure only.

Top compression ring chromium plated and of square section as is oil scraper ring, which latter is fitted above gudgeon pin lowest groove for use in service only. Second and third compression rings bevel edged and must be fitted with side marked "T" uppermost.

Big ends will pass through bores, remove and reassemble from top. Check ring gaps and side clearance together with

piston fits in bores to dimensions in data tables.

Camshaft

Duplex roller endless chain drive, with hydraulic tensioner.

Camshaft sprocket keyed on shaft with Woodruff key and retained by setscrew and lockwasher. Shaft runs in four split white metal-lined steel-backed bearings, notched for location in cylinder block. End float controlled by thrust plate trapped between sprocket and shoulder on shaft, bolted to crankcase.

Tensioner consists of an idler sprocket mounted on extension shaft of hydraulic cylinder; valve is contained within, and assembly is secured to crankcase casting by three setbolts and lockwashers. Locking pawl to secure lateral movement of tensioner is pivoted on piston securing bolt. Oil pressure from lubrication system augments spring, and oil is trapped by non-return valve in base of cylinder to give hydraulic lock.

To retime valves with timing chain and tensioner off, set exhaust tappets to running clearance, slacken inlet tappet screws right off and turn camshaft in running direction until No. 1 exhaust valve is fully open (use dial indicator if possible). Turn crankshaft in running direction until EP mark on flywheel is opposite pointer (visible under trap on off side of flywheel housing). Assemble timing chain so that there is no slack on driving side, and fit idler sprocket assembly. Check timing. Camshaft sprocket has three keyways for fine adjustment.

Valves

Overhead, non-interchangeable, inlet larger than exhaust and thinner stem diameter. Split cone cotter fixing, double springs. Inner springs fit tightly in outer springs by selective assembly and should only be replaced as mated pairs. Sealing rings fitted on top of inlet valve guides.

Valve guides shouldered, not interchangeable, exhaust larger than inlet and of different bore diameter.

Press in guides from top of head, or use tool No. 274406 to pull guides into position with shoulders against machined bosses.

Tappets and Rockers

Tappets and rockers are sliding fit in guides pressed into crankcase, retained and located by special hexagon-headed dowel bolts. Valves operated by push-

rods, and rockers work on tubular steel two-stage shaft supported in five brackets mounted on cylinder head. Rockers are bushed and drilled for lubrication; oil is supplied to centre bracket from lead on gallery. Springs separate rockers for each cylinder and thrust washers are fitted between rockers and mounting brackets. When refitting ensure that 3/4in UNF bolts which also secure cylinder head are tightened to 65lb/ft but 5/8UNF bolts only to 12lb/ft.

Lubrication

Gear pump in sump, spigoted in crankcase by integral drive housing and retained by two 7/8in UNF setbolts and lockplates. Lower half of pump unit containing gears is bolted to upper casing by four 7/8in UNF setbolts and dowelled for location. Gauze strainer screwed up to lower half of pump body, retained by large nut and lockwasher. Drive shaft, splined at lower end for engagement with pump driving gear and splines at top end engage internal splines of vertical drive shaft assembly which is bushed and unit is located by long grub screw; circlip positioning drive shaft below lip of drive housing. Non-adjustable ball relief valve in lower half of pump housing, with spring and plunger inserted from outside and located by hexagon headed plug. Normal oil pressure is 50-60lb/sq in at 30 m.p.h. in top gear, engine hot.

Cooling System

Pump, fan and non-adjustable thermostat in housing bolted to cylinder head above pump. Pump has spring-loaded carbon and rubber seal. Adjust fan belt by swinging dynamo until there is about 3/8-1/2in movement either way on longest run of belt.

TRANSMISSION

Clutch

Borg & Beck single dry plate. Journal ball release bearing enclosed in separate housing bolted to gear box, from which it is lubricated, and operating clutch fingers through sliding sleeve.

Only adjustment is by rotation of slave cylinder rod to give 1/2in free movement at pedal pad.

Gearbox can be removed for service to clutch without disturbing engine.

Gearbox

Four-speed, synchromesh on top and 3rd gears, single helical constant mesh gears except for 1st and reverse. Two-speed transfer box bolted to rear.

To remove gearbox and transfer box, disconnect battery, remove hood (if fitted), detach centre panel from seat box, disconnect handbrake rod from bell-crank and remove lever assembly complete, drawing end of lever back through draft excluder. Unscrew knobs from gear lever, and transfer lever. Take up floor plates and remove gearbox cover. Remove seat box. Disconnect handbrake.

Remove rear propeller shaft complete, and disconnect front shaft and p.t.o. shaft (if fitted) at gearbox end. Remove clutch slave cylinder and lift off linkage, unhooking return spring; cross-shaft is jointed to extension shaft, supported in spherical bush on bracket. Extract either joint pin (split pinned) and remove bracket with extension shaft. Disconnect speedo drive and remove rear mounting bolts. Jack up rear of engine about 1/2in, and take weight of gearbox on slings. Take off nuts and plain washers round bell-housing flange, draw gearbox back and lift out. Offside mounting bracket may have to be detached to clear.

To remove transfer box detach main gear lever assembly and reverse stop from gearbox and bell-housing. Take off transfer cover plate (with plug) on top of transfer box. Detach transfer gear lever with link from selector rod and bracket. Remove lever and detach

BALL AND ROLLER BEARING DATA				
	Part No.	Int. dia., Ext. dia., Width (in or mm)	Type	
FRONT AXLE				
Swivel pin bottom	217268	.750 × 2.125 × .875in	TR	
Hub: inner	217269	1.8125 × 3.3465 × .8125in	TR	
outer	217270	1.625 × 3.00 × .709in	TR	
Differential as rear axle				
GEARBOX				
Primary shaft pinion	55714	1.500 × 3.250 × .750in	B	
Mainshaft: front	06397	1.00 × 1.50 × 1.00in	B	
rear	1645	.750 × 1.125 × 1.00in	B	
Layshaft: front	09962	¾ × 2 × 1 ¼in	B	
rear	55715	.874 × 2.00 × .565in	B	
Clutch withdrawal	214797	35 × 72 × 17 mm	B	
REAR AXLE				
Crownwheel diff. bearing ...	41045	1.500 × 3.00 × .9375in	TR	
Bevel pinion (outer)	219559	1.25 × 2.8593 × 1.1875in	TR	
Bevel pinion (inner)	219544	1.500 × 3.125 × 1.1563in	TR	
Hub bearings (inner)	217269	1.8125 × 3.3465 × .8125in	TR	
Hub bearings (outer)	217270	1.625 × 3.00 × .709in	TR	

bracket from bell-housing. Remove transmission brake drum and draw off rear driving flange. Detach brake back-plate assembly and bottom cover. Remove idler spindle locking plate and extract spindle out to rear with Special Tool No. 262772 catching idler gear. This gives access to three nuts inside, which, with six outside, hold transfer box to gearbox. Power take-off drive housing or blanking housing, with roller spigot bearing, should first be removed from back of transfer box.

To dismantle gearbox follow procedure in "Trader" Service Data sheet No. 150, covering Rover 60 and 75, which have similar gearbox.

To reassemble gearbox reverse order of dismantling, observing following:—

End float of 2nd and 3rd gears should be .004-.007in. Thrust washers .125, .128, .130 and .135in thick.

Conical distance-piece for front end of layshaft available in .312, .332 and .352in thicknesses to take up end float.

When inserting selector springs, note that 3rd/top (nearside) and 1st/2nd (centre) springs are same, but reverse (off-side) is stronger.

Adjust 2nd speed stop screw so that with 2nd gear engaged there is .002in clearance between screw head and stop on selector rod.

Transfer Box

Idler gear cluster runs on caged roller bearings on spindle, with thrust washers and shims at both ends, tabbed to locate in casing.

Output shaft carries constant mesh high gear (free) and sliding low gear (splined) between taper roller bearings, adjusted by shims (.005, .010, .015in thick) between casing and speedo drive housing.

Rear extension of output shaft carries speedo drive gear, nipped between inner race of rear bearing and driving flange, which also carries brake drum.

Forward extension of output shaft carries sliding dog for engaging four-wheel drive. When refitting output housing, cover end of selector rod with thimble to protect oil seal in housing.

To dismantle transfer box after removal from gearbox, with brake drum, driving flange, four-wheel drive gear off, remove speedo drive housing and shims. Pull off speedo drive gear. Tap output shaft back until outer race of rear bearing is free of casing. Extract spring ring retaining outer race of front bearing and tap output shaft forward as far as possible. Slide shaft back and insert aluminium packing pieces between rollers and outer race. Drive shaft forward again and repeat if necessary with thicker packings until outer race is free. Draw

off inner race. Spring ring retaining high transfer gear on shaft with thrust washer can then be extracted, and shaft pushed out to rear through gears, which will drop out.

To reassemble transfer box reverse order of dismantling, observing following points:—

End float of high transfer gear on shaft should be .004-.008in after adjusting output shaft end float. Grind thrust washer if necessary.

Propeller Shafts

Hardy Spicer needle roller bearing universal joints, series 1300 for both front and rear drive shafts and for p.t.o. shaft if fitted. Nipples for lubrication of all joints.

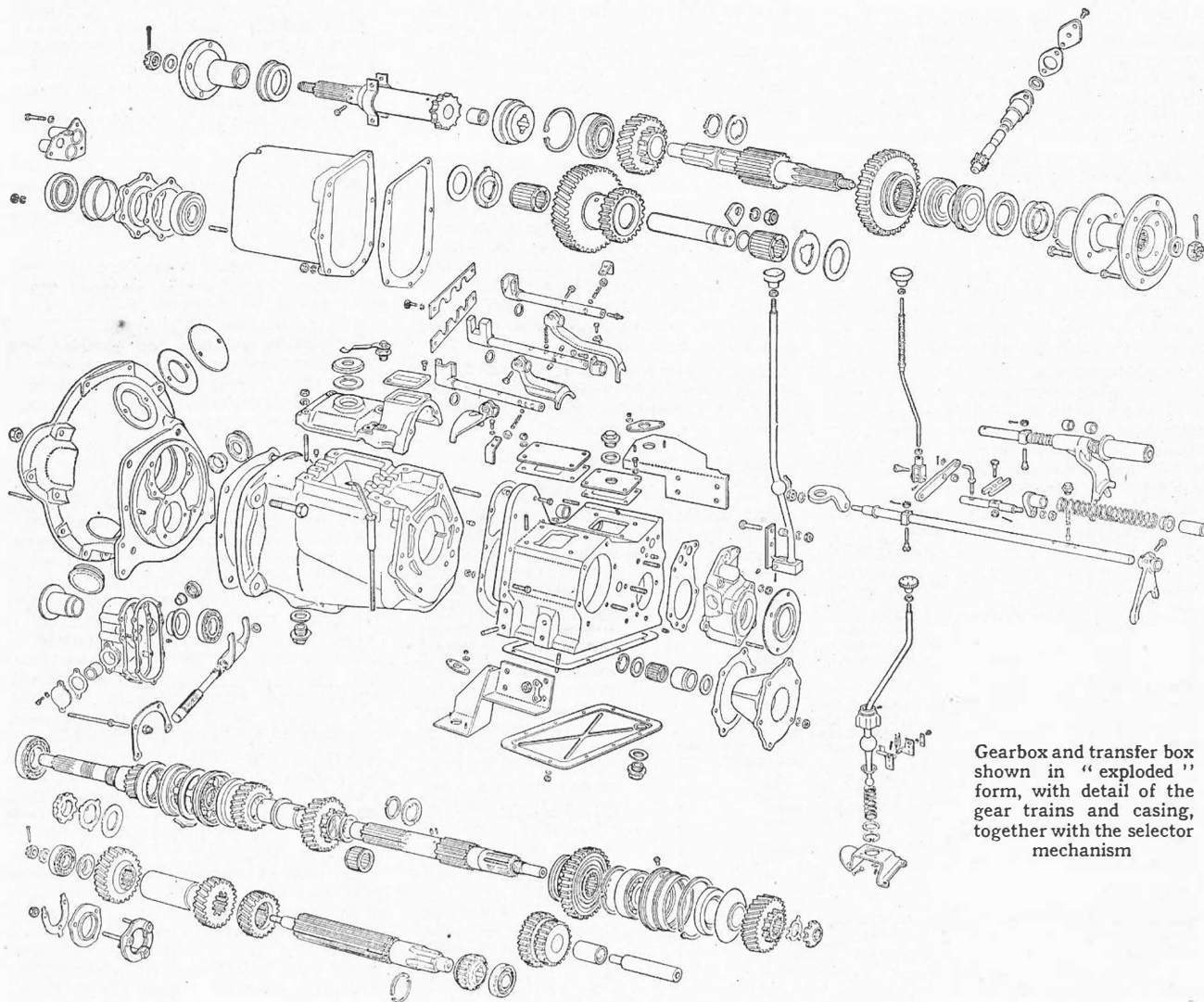
Rear Axle

Fully floating spiral bevel drive. Rear cover welded to banjo casing.

To remove axle from car either drop rear ends of springs and roll axle back, or remove half shaft and brake assemblies and final drive and pass unit out sideways through road springs.

Differential unit details are similar to those of the current production cars. See Trader Service Data Nos. 227 and 297.

Bevel pinion shaft is carried in taper roller bearings, adjusted by shims.



Gearbox and transfer box shown in "exploded" form, with detail of the gear trains and casing, together with the selector mechanism

CHASSIS

Brakes

Girling hydraulic 10in drums on 88in w.b. models with one snail cam adjuster on front and rear drums; 11in drums on 109in w.b. model; two snail cam adjusters on front drums and one square-ended adjuster on each rear drum. Handbrake operates Girling mechanical brake at rear of transfer box.

To adjust wheel brakes jack up wheel, turn snail cam adjuster until shoe binds, and back off until free.

To adjust handbrake and rear brakes of 109in model turn square-ended adjuster until shoes make contact with drum, and back off two clicks. Apply brake firmly to centralize shoes. To reset linkage after overhaul adjust hand lever end of pull rod *after adjusting shoes* so that lever pulls up two notches on ratchet before applying brake.

Springs

Semi-elliptic front and rear. Bonded rubber shackle and anchorage bushes. Plain bolts, tighten fully against inner member of rubber bush. Front springs are shackled at front, rear springs at rear. Front and rear bushes interchangeable, bushes in frame non-interchangeable.

Front Axle

Final drive assembly interchangeable with rear axle. Inner swivel housings flange-bolted to ends of axle casing enclose Hardy Spicer universal joints. Driving members integral with half-shafts. Driven members integral with stub axle shafts, which are fully floating in hubs. Wheels run on taper roller bearings on stub axle tubes, which are flange-bolted to outer swivel housings.

Each inner swivel housing carries taper roller king pin bearings at lower end and spring-loaded cup and cone at upper end. Correct fit established when steering lever eye requires pull of 14-16lb to move it. Each half of two-piece king pin spigoted in outer swivel housing and registering in inner race of bearing. Shims (.003, .005, .010, .020in thick) under shoulder or each swivel pin for bearing adjustment to poundage figure given.

When assembling hub, adjust bearings to give .003-.004in end float.

Steering ball joints sealed side-plug type, pre-lubricated. Renew as assembly. Shanks threaded left- and right-hand, screwed into tubes and clamped. All six joints are identical except for thread of shank.

Adjustable lock stops have different settings for different tyres. Dimension from face of oil seal retainer to top of bolt head is $\frac{7}{16}$ in for 6.00-16 tyres, $\frac{33}{32}$ in for 7.00-16 tyres.

Steering relay lever and shaft assembly consists of tubular housing bolted vertically to cross-member, and carrying shaft in two split Tufnol conical bearings, which are heavily spring-loaded to damp steering.

To remove relay assembly detach grille, take out bolts holding grille panel to wings and chassis frame, and extract rubber washers under panel. Disconnect fore-and-aft drag link from upper lever, and draw off lower lever (cotter-clamped). Assembly can then be pushed out upwards after removal of two bolts.

To dismantle relay assembly detach upper lever, both end caps with oil seals, and brass thrust washers. Cover one end

of shaft with heavy rag and tap shaft out, taking care as first split Tufnol bush is exposed, as spring is compressed to over 100lb. Release gently and tap shaft out with second bush. Keep pairs of bushes together. Spring data:—

No. of working coils 10
Free length $7\frac{1}{4}$ in
Fitted length 3in
At load $104\frac{1}{2}$ lb

To reassemble relay fit top end plate and joint washer to housing. Fit one split bush to taper on bottom end of shaft, secure with 2in hose clip. Place steel washer on shaft, followed by spring. Insert prong of Tool No. 50323 through spring coils and through cross drilling in shaft and wind spring down tool until steel washer and Tufnol bush can be secured on taper at other end of shaft with hose clip. Place brass thrust washer on top end of shaft and insert into housing. Tap shaft home with plastic hammer until clips are freed, withdrawing tool as necessary. When assembly is complete and filled with oil, it should need at least 12lb on lever to turn shaft.

Steering

Burman recirculating ball, cam supported at either end of box in cup and cone ball bearings. Shims for column end float adjustment provided under end plate; mesh adjustment by grubscrow and lock-nut in side cover. Adjust so that there is neither column end float nor rocker shaft end float.

Shock Absorbers

Woodhead-Monroe telescopic. No attention needed.

Power Take-off and Pulley

P.T.O. shaft at rear driven by propeller shaft from rear of gearbox through spur reduction gear in housing bolted to rear cross-member. Gears, 20 and 24 teeth, can be interchanged to give alternative ratios.

Pulley driven through spiral bevel gears in separate housing bolted to p.t.o. housing, and fitting over shaft splines.

To dismantle p.t.o. detach bearing caps and oil seal housings. Undo shaft nuts and tap shafts out of bearings and gears. Detach large bearing housings and remove gears. Both shafts run on taper roller bearings (all interchangeable). Outer races located in housing by spring rings. Inner races pulled up against gears by shaft nuts, with shims (.005, .010, .020in thick) for bearing adjustment so that they are free without play. Note that bolts on propeller shaft flange are retained by spring ring.

To dismantle pulley assembly draw off pulley with flange, and separate pulley shaft and bearing assembly from driving shaft housing (flange-bolted with shims for mesh). Tap shaft out of taper roller bearings.

Inner races of bearings separated by distance-piece with shims (.005, .010, .020in thick) for bearing adjustment.

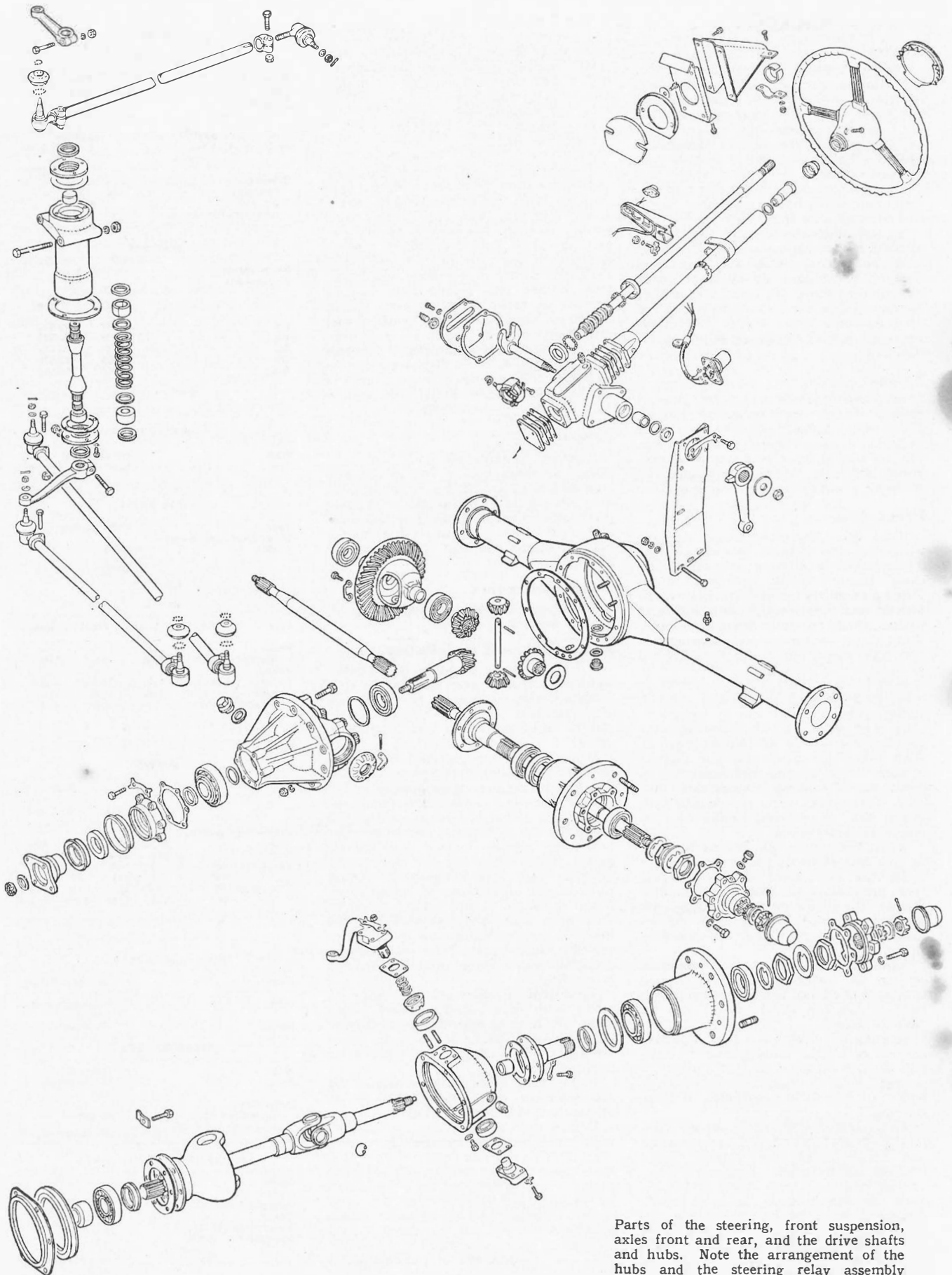
Detach driving shaft end cap (flange-bolted with shims for bearing adjustment) with outer race of rear taper roller bearing. Inner race pressed on to hub of bevel pinion, which is retained on splined shaft by setscrew and large washer with cork washer behind. Shims between pinion and shoulder on shaft for mesh. Adjust all bearings to be free without play. Note that seal at outer end of pulley shaft is fitted with lip outwards to exclude dirt.

CHASSIS DATA			
CLUTCH			
Make	...	Borg & Beck	s.d.p.
Type	...	9	
Springs: No.	...	yellow/	lt. green
colour	...	2.680in	3-buff/lt. green
free length	...	3-white/	lt. green
Centre springs: no.	...	.330in	
colour	...	9in	
Driven plate:	...	.120in	
thickness	...		
dia. exit	...		
max. permissible wear	...		
GEARBOX			
No. of speeds	...	4	
Transfer box	...	2	
		High	Low
1st	...	16.171	40.688
2nd	...	11.026	27.742
3rd	...	7.435	18.707
4th	...	5.396	13.578
Rev.	...	13.745	34.585

PROPELLER SHAFT					
Make	...	...	...	Hardy Spicer Needle roller bearing u.j.
Type	...	...	...
FINAL DRIVE					
Type	...	...	...	Fully floating s.b.
Crownwheel/bevel pinion	...	...	...	47/10
teeth	...	...	...
BRAKES					
Type	88		109		
	Front	Rear	Front	Rear	
	Drum diameter	10in	10in	11in	11in
	Lining:				
	length ...	8½in	8½in	10.45in	8.6in
	width ...	1½in	1½in	2½in	2½in
thickness	⅞in	⅞in	⅞in	⅞in	

SPRINGS				
	Front		Rear	
	N/S	O/S	N/S	O/S
Length (eye centres, flat)	36 $\frac{1}{2}$ in	36 $\frac{1}{2}$ in	48in	48in
Width	2 $\frac{1}{2}$ in	2 $\frac{1}{2}$ in	2 $\frac{1}{2}$ in	2 $\frac{1}{2}$ in
No. of leaves 88	9	9	11	11
109	11	11	10	10
Free camber 88	5 $\frac{7}{16}$ in	6in	6 $\frac{1}{2}$ in	7.42in
109	5 $\frac{1}{2}$ in	5 $\frac{1}{2}$ in	8.2in	9 $\frac{1}{2}$ in

SHOCK ABSORBERS			
Make	...	Woodhead-Monroe	
Type	...	Telescopic double acting	
Service	...	Replacement	
STEERING BOX			
Make	...	Burman	
Type	...	Recirculating ball	
Adjustments:		shims	
column end float	...	grubscrow & nut	
cross shaft end float	...		
mesh	...		
FRONT-END SERVICE DATA			
Castor	...	3°	
Camber	...	1 $\frac{1}{2}$	
King pin inclination	...	7°	
Toe-in	...	$\frac{3}{32}$ in	
No. of turns lock to lock	...	3 $\frac{1}{2}$	
Adjustments: castor	...	nil	
camber	...		
toe-in	...	screwed track rod ends	



Parts of the steering, front suspension, axles front and rear, and the drive shafts and hubs. Note the arrangement of the hubs and the steering relay assembly

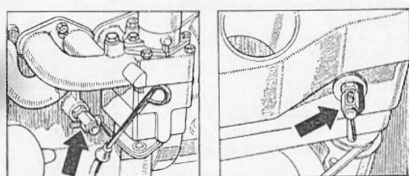
TUNE-UP DATA

Firing order	1-3-4-2	Carburettor: make	Solex d.d.
Tappet clearance (hot or cold):		type	40PA10-5A
inlet	.010in	Settings: Choke	28mm
exhaust	.010in	Main jet	125
Valve timing:		Correction jet	185
inlet opens	6° BTDC	Pilot jet	50
inlet closes	52° ABDC	Pump jet	65
exhaust opens	34° BBDC	Economy jet	Blank
exhaust closes	24° ATDC	Air bleed jet	1.5
Standard ignition timing	6° BTDC	Starter petrol jet	145
	(premium grade fuel)	Economy system petrol jet	100
		Petrol level	3in + 1in below float chamber joint face
Location of timing mark	Pointer on fly-wheel housing	Air cleaner: make	AC
		type	Centrifugal, oil bath
Plugs: make*	Lodge	Fuel pump: make	AC
type	CLNH	type	Mech.
size	14mm	pressure	1½-2½ lb/sq in
gap	.029-.032in		

* also Champion NS

Lamps	Model	Part No.	Bulb No.	Wattage	Cap
Head: R.H.D.	F700	51780	414	50/40	B.P.F.
L.H.D.	F700	51533	355	42/36	B.P.F.
N.A.D.A.	F700	51467	—	—	—
(later)	—	58563	—	—	—
EUROPE (except France and Sweden)	F700	58286	410	45/40	" Unified "
FRANCE	F700EF	58287	411	45/40	" Unified "
SWEDEN	F700	58459	410	45/40	" Unified "

DRAINING POINTS



Left: shows the cylinder block draining point adjacent to the dipstick, beneath the manifolds. Right: the radiator matrix drain point, access from beneath

LUCAS SWITCHES

	Model	Part No.
Starter	8T18	076033
Lighting and ignition	PRS3	31270 or 031421 (N.A.D.A.)
Direction indicator	PRS7	31509 (knob 312619)
Dip	FS22 or 21SA (L.H.D.)	31372 31800A
Stop light	HL2	31082
Horn push	HP19	76205
Heater	3R	78356 (knob 54332086)
Choke	54C	31540A

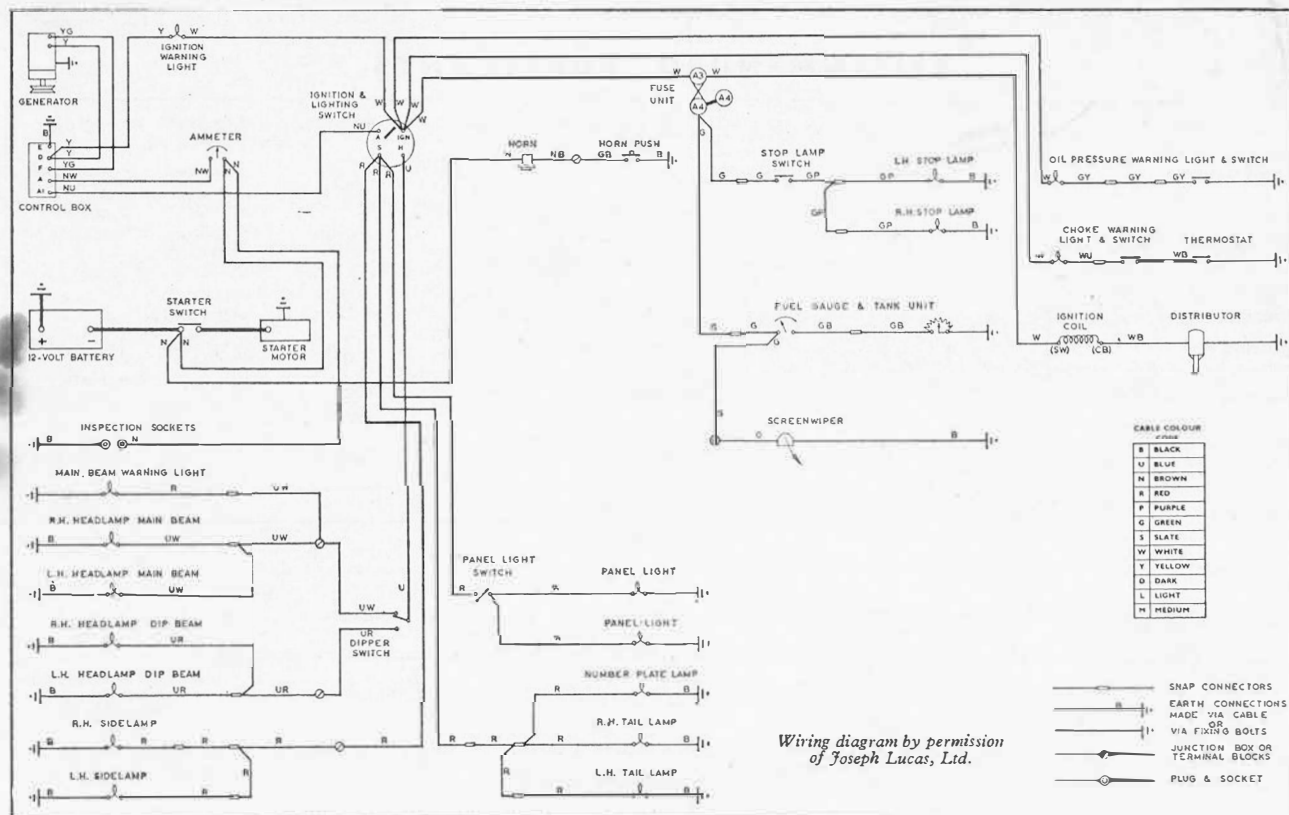
LUCAS EQUIPMENT

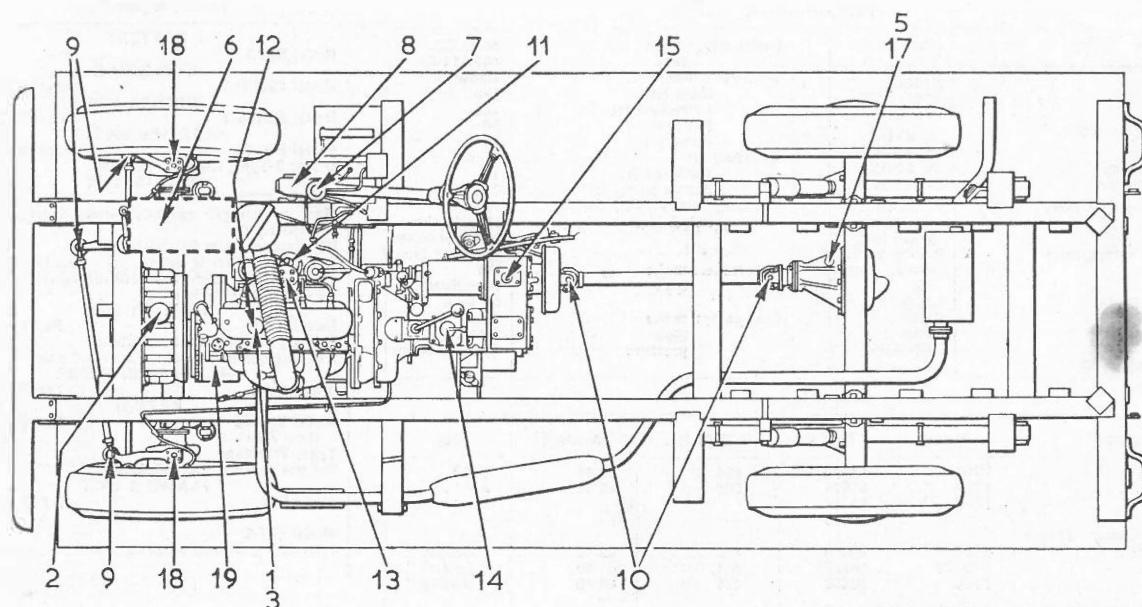
BATTERY	
Model BT9A	GENERATOR
Model C39PV-2	CONTROL BOX
Model RB106-2	STARTING MOTOR
Model M418G	DISTRIBUTOR
Drive: S-Type, Inboard (255194)	
Model DM2P4	Max. centrifugal advance (crank degrees) 42° at 5,400 r.p.m.
Max. centrifugal advance (crank degrees) 22°-26°	
No advance below 450 r.p.m.	
Centrifugal advance springs	Part No. 55410187
Max. vacuum advance (crank degrees) 22°-26°	
No advance below 2in Hg	
IGNITION COIL	
Model HA12	Part No. 45054N
Primary resistance 3.0-3.5 ohms	
Running current at 1,000 r.p.m. 1.0 amp	
WINDSCREEN WIPER	
Model FW2	Part No. 75113
HORN(S)	
Model WT618 (Low Note)	Part No. 69046F
Type: Windtone	
Current consumption 7.5-8.5 amp	
FLASHER UNIT	
Model FL5	Part No. 35010A
FUSE UNIT	
Model SF5-2	
Fuse rating 35 amp (188218)	

Lamps	Model	Part No.
Side	638	52437
Front flasher	639	52438
Stop tail	581	53783
Rear flasher	637	53806
Number plate	467-2	53876
Ignition warning	WL3-1	38046
Flasher warning	WL13	38084
Choke warning	WL3-1	38043
Oil warning	WL3-1	38018

SUNDRY EQUIPMENT

	Model	Part No.
Mirror	434/108	62054
Ammeter	CZU30	36159
Inspection sockets	—	39517
Junction box	6J	78266





KEY TO MAINTENANCE DIAGRAM

1. Engine sump } check and top up
2. Radiator }

EVERY 3,000 MILES (or 120 hrs.)

3. Engine sump—drain and refill
4. Front axle
5. Rear axle
6. Battery
7. Clutch and brake fluid reservoir
8. Steering box
9. Steering joints—check rubber boots
10. Propeller shafts—grease

EVERY 9,000 MILES (or 360 hrs.) as for 6,000 miles plus following:

14. Gearbox
15. Transfer box
16. Front axle
17. Rear axle
18. Front swivel pin housings

} drain and refill

EVERY 12,000 MILES (or 480 hrs.) as for 9,000 miles plus following:

19. Dynamo—lubricate

EVERY 6,000 MILES (or 240 hrs.) as for 3,000 miles plus following:

11. Engine oil external filter element—renew
12. Breather filters—clean
13. Distributor—oil shaft bearing, contact breaker pivot and auto advance mechanism, smear cam with grease

See page vii for Draining Points

FILL-UP DATA

	Pints	Litres
Engine sump	11	6.0
Extra when refilling after fitting new filter	3	1.75
Air cleaner	1½	0.85
Main gearbox	2½	1.5
Transfer box	4½	2.5
Rear differential	3	1.75
Front differential	3	1.75
Swivel pin housing (each)	1	0.5
Fuel tank	10 galls	45
Hydraulic front winch, supply tank	4½ galls	20.0
Hydraulic front winch, gearbox	2	1.0
Tyre pressures, front and rear (normal 88 model)	25lb/sq in	1.75 Kg/cm²
front and rear (fully laden)	30lb/sq in	2.1 Kg/cm²
†109 model (normal)	22lb/sq in	1.55 Kg/cm²
†109 model (full load) rear	35lb/sq in	2.53 Kg/cm²

RECOMMENDED LUBRICANTS

COMPONENTS	S.A.E.	B.P. Energol	CASTROL	DUCKHAM'S	ESSO	MOBIL	REGENT	SHELL
Engine, Air Cleaner and Governor ...	20W	SAE 20W	Castrolite	NOL Twenty	Extra Motor Oil 20W/30	Mobiloil Arctic	Advanced Havoline 20/20W	Shell X100 SAE 20/20W
Gearbox and Transfer Box ...	90EP	EP SAE 90	Hypoy	Hypoid 90	Gear Oil GP 90	Mobilube GX 90	Universal Thuban 90	Spirax 90 EP
Differentials and Swivel Pin Housings	90EP	EP SAE 90	Hypoy	Hypoid 90	Gear Oil GP 90	Mobilube GX 90	Universal Thuban 90	Spirax 90
Steering Box...	90EP	EP SAE 90	Hypoy	Hypoid 90	Gear Oil GP 90	Mobilube GX 90	Universal Thuban 90	Spirax 90 EP
Steering Relay Unit (sealed)	90EP	EP SAE 90	Hypoy	Hypoid 90	Gear Oil GP 90	Mobilube GX 90	Universal Thuban 90	Spirax 90 EP
Rear Power Take-off, Pulley Unit and Capstan Winch	90EP	EP SAE 90	Hypoy	Hypoid 90	Gear Oil GP 90	Mobilube GX 90	Universal Thuban 90	Spirax 90 EP
Hydraulic Winch Gearbox ...	90EP	EP SAE 90	Hypoy	Hypoid 90	Gear Oil GP 90	Mobilube GX 90	Universal Thuban 90	Spirax 90 EP
Hydraulic Winch Supply Tank	—	—	Hyspin 70 or Castrolite	—	Teresso 43 or Esso-lube HD10W	DTE Light	—	Tellus 27
Lubrication Nipples	—	Energol L2	Castrol LM	LB10 Grease	Multi-purpose Grease H	Mobilgrease MP	Marfak Multi-purpose 2	Retinax A

Note: These recommendations apply to temperate climates where operational temperatures may vary between approx. 10°F. (12°C.) and 90°F. (32°C.). Information on oil recommendations for use under extreme winter or tropical conditions may be obtained through Rover dealers or distributors or from the Technical Service Dept., Rover Co., Ltd. Multigrade oils of a 10W/30 rating produced by the companies listed above are also recommended for the engine, subject to its being in good mechanical condition.