

# COMMER 3/4-TON F/C VAN

Manufacturers: Commer Cars, Ltd., Luton, Beds.

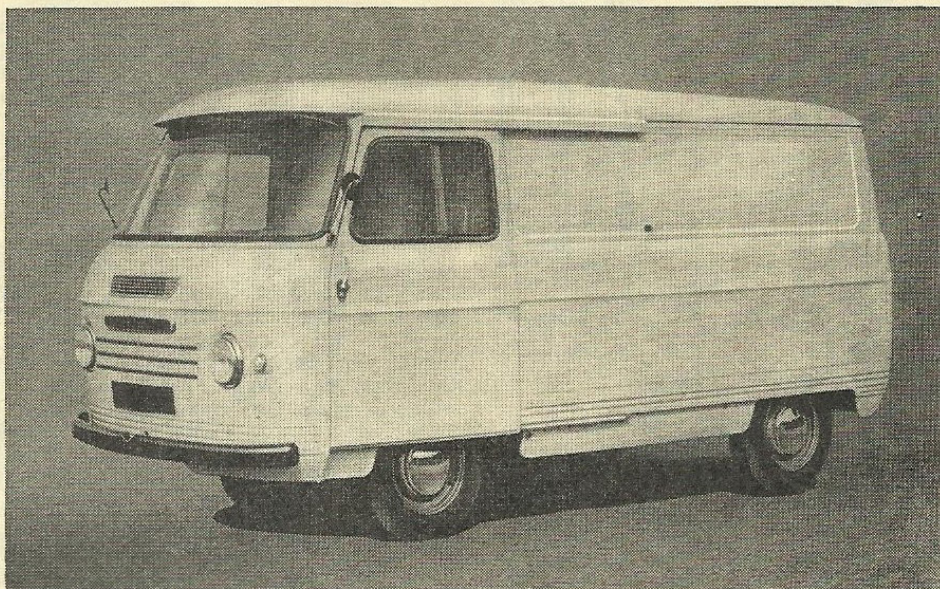
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LATEST addition to the Commer range of commercial vehicles is the 3/4-ton light van which was introduced to the market last month. It has a wide field of application, and there are many body versions which may be fitted to the "chassis" components on initial order. Mechanically, the process of standardization within the manufacturing group is seen to have taken place. Major components are basically very similar to those used on other models within the Rootes Group, but, as might be expected, their detail specification for use on this van are different. For the first time, a diesel power unit is offered as an option and, in this case, it is the Perkins Four 99 engine. This has been fully described in a previous publication, Service Data No. 331, to which readers are referred for full constructional details. The petrol power unit is the 1,494 c.c. o.h.v. engine which has been well tried and proven on other Rootes and Commer models.

Transmission is orthodox, the drive being taken from the engine through a single dry plate clutch to synchromesh gearbox, and thence via one-piece propeller shaft to the hypoid bevel semi-floating rear axle. No options with regard to overdrive are offered.

Vehicles are identified in the customary fashion, with prefixes and six-figure serials. The chassis numbers are to be found stamped on a plate which is fitted to the front wheel arch, on the driver's side, facing the door. Engine numbers on early petrol-engined models are to be found stamped on the rear face of the cylinder block, and on the later petrol-engined vehicles on the cylinder block sump flange, on the left-hand side of the unit. Diesel-engined models bear the engine number upon the left-hand side of the cylinder block, immediately in front of the injection pump. Vehicles so fitted also have the suffix letter "D," i.e. "1500 VHD," etc. It is important that all these numbers and letters are quoted when referring to the makers or their agents, or when ordering spare parts.

Some special tools are available for speeding up certain repair operations, and those considered the more essential are listed in these pages. They are obtainable from Messrs. V. L. Churchill & Co., Ltd., Great South West Road, Bedford, Nr. Feltham, Middx. Threads and hexagons are in the main of the Unified thread series pattern and form, although some threaded parts of proprietary units will be found to be of BSF and BSW form.



DISTINGUISHING FEATURES. Latest van model is fully forward control, and the body is available in many variations. Illustration shows standard type fitted with two side doors and rear loading doors.

## ENGINE

### Mounting

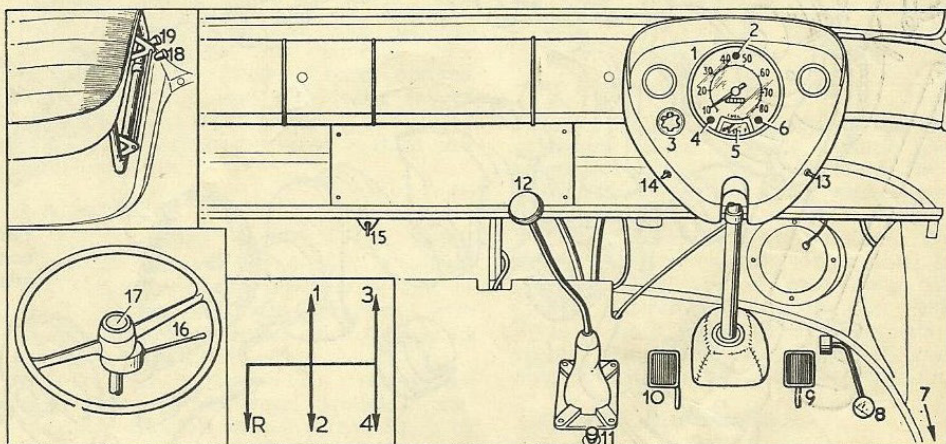
At front, bonded rubber blocks are sandwiched between lugs on engine front plate and feet on front suspension cross-member, secured by two through bolts each. Tighten fully. At rear, mounting bracket is flange bolted to gearbox tail-case. Bonded rubber blocks are bolted up either side between bracket extremities and chassis cross-member by two bolts each (one either side of bracket web).

### Removal

Engine should be removed without gearbox. To remove proceed as follows: drain oil from sump and coolant from radiator, take off two engine compartment

side covers (beside right- and left-hand seats), disconnect battery. Remove radiator by taking out engine cowl and cover. Release hose clips and slide off top and bottom hoses. Remove accelerator linkage relay lever and support bracket secured to left-hand side. Remove nuts and bolts at four side support brackets. Note position of plain and shakeproof washers. Fan cowlings sides are also secured by these nuts, but two further bolts and nuts secure top half of cowl to fan guard, which is integral with radiator. Remove nuts and bolts and take out cowl. Matrix may then be lifted up and out of vehicle.

Disconnect and remove all pipes, wires and controls to engine, including heater pipes (if fitted) and electrical leads to dynamo and starter. Take off air cleaner

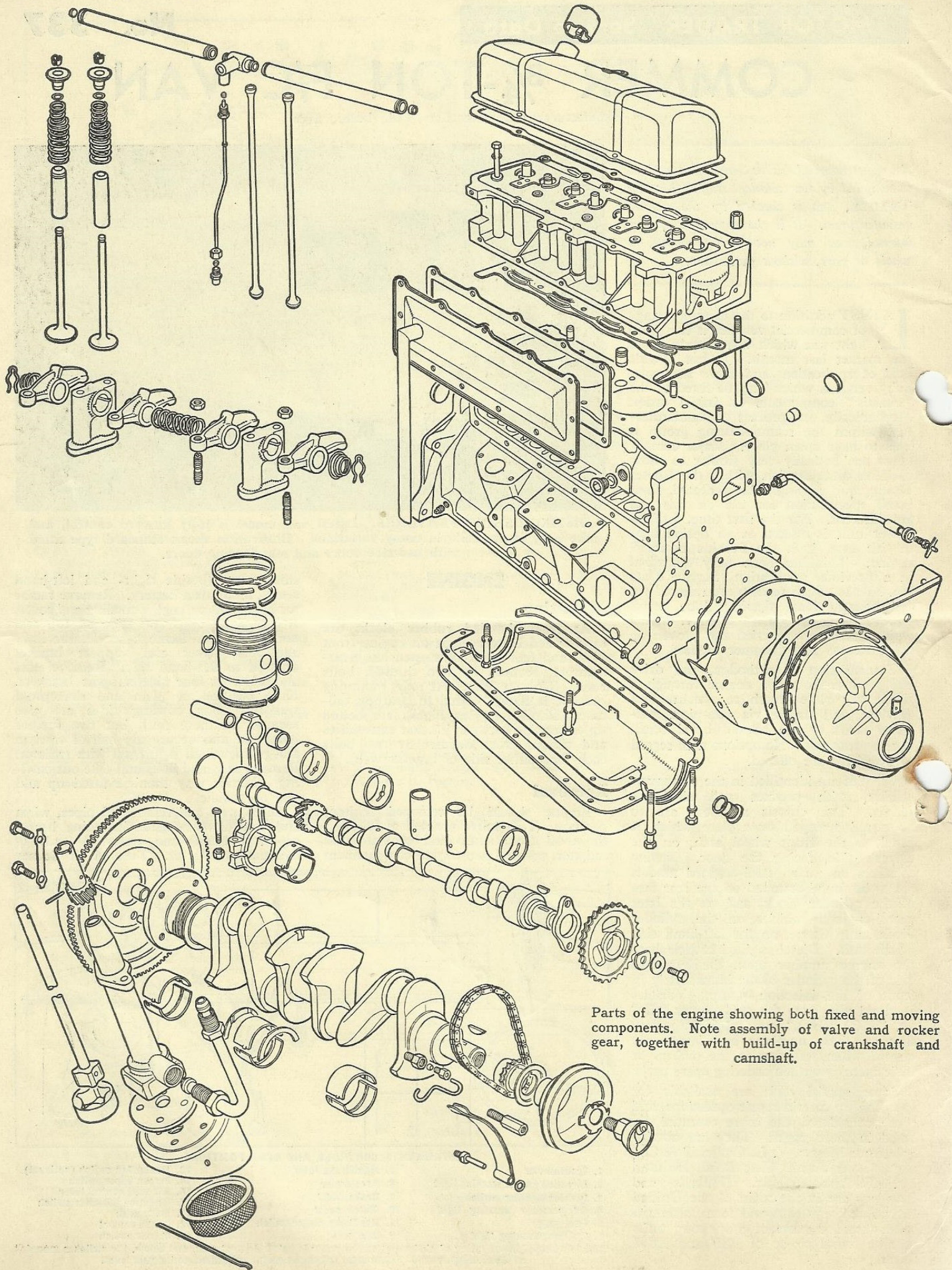


INSTRUMENTS, CONTROLS, AND GEAR POSITIONS

- |                                    |                            |                                  |
|------------------------------------|----------------------------|----------------------------------|
| 1. Speedometer                     | 7. Handbrake lever         | 13. Heater fan switch (optional) |
| 2. Direction flasher warning light | 8. Accelerator             | 14. Screen wiper switch          |
| 3. Ignition/lighting switch        | 9. Brake pedal             | 15. Air vent control lever       |
| 4. Oil pressure warning light      | 10. Clutch pedal           | 16. Direction indicator switch   |
| 5. Fuel gauge                      | 11. Headlamp dipper switch | 17. Horn push                    |
| 6. Ignition warning light          | 12. Gear lever             | 18. Choke control                |
- Inset left above, shows siting of choke and starter controls below drivers' seat, and below, the switches mounted on the steering column. Inset inner left shows operative positions of the gear lever.

SERVICE DATA SHEET	INDEX ENTRY—FEBRUARY	COMPONENT SUPPLEMENT
Commer 3/4-ton F/C Van	337 24/2/60 336/C55	Smiths Automatic Transmission (Part 3)





Parts of the engine showing both fixed and moving components. Note assembly of valve and rocker gear, together with build-up of crankshaft and camshaft.



GENERAL DATA	
Wheelbase ... ..	7ft 6in
Track: front ... ..	47.88in
rear ... ..	4ft 7½in
Turning circle ... ..	36ft
Ground clearance:	
6.00/6.40in tyres ... ..	7½in
6.50/6.70in tyres ... ..	7¾in
Tyre size: front ... ..	6.00/6.40-15/6
rear ... ..	6.50/6.70-15/6
Overall length ... ..	13ft 10in
Overall width ... ..	6ft 2½in
Loading height } 6.00/6.40in tyres	1ft 11½in
Overall height }	6ft 7in
Weight (kerb):	
Van—hinged door ... ..	2,579lb
Van—sliding door ... ..	2,530lb

SPECIAL TOOLS	Part No.
<b>ENGINE:</b>	
Valve Guide Remover and Replacer (Main Tool) ... ..	RG.10A
Valve Guide Remover and Replacer (Adaptors) ... ..	RG.10A-1
Camshaft Bushes Remover and Replacer (Main Tool) ... ..	32
Camshaft Bearing Remover and Replacer (Adaptors) ... ..	RG.32-2
Timing Cover Centraliser ... ..	RG.89A
Small Two-Legged Adjustable Puller ... ..	155
Adaptor Set for 155 Puller ... ..	RG.155-1
Adaptor Set for 155 Puller ... ..	RG.155-5
Valve Seat Cutter ... ..	316X
Con. Rod Aligning Jig ... ..	335
Master Multi-purpose Arbor ... ..	336
Master Multi-purpose Arbor (Adaptor) ... ..	RG.336-1
Valve Spring Compressor ... ..	6513
Valve Spring Compressor (Adaptor) ... ..	RG.6513-1
Valve Seat Insert Cutter ... ..	RG.6056
Valve Seat Insert Replacer ... ..	RG.6057
Small End Bush Remover and Replacer ... ..	RG.6201
Flywheel Bearing Remover ... ..	7600
Primary Shaft Spigot Bearing Remover (Adaptor) ... ..	RG.7600-2
Ignition Timing Setting Gauge ... ..	RG.285

<b>CLUTCH: GEARBOX:</b>	
Clutch Assembly Fixture ... ..	99
Selector Shaft Loading Adaptor ... ..	RG.62
Change Speed Remote Control Setting Jig and Pin ... ..	RG.282

<b>REAR AXLE:</b>	
Axle Shaft Remover (Main Tool) ... ..	RG.16A
Axle Shaft Remover (Adaptor) ... ..	RG.16A-2
Hand Press ... ..	RG.4221B
Adaptor Set for RG.4221B ... ..	RG.4221B-2
Adaptor Set for RG.4221B ... ..	RG.4221B-3
Differential Assembly Jig ... ..	RG.329
Axle Shaft Bearing Remover ... ..	RG.330A
Differential Bearing Replacer ... ..	RG.4222

<b>SUSPENSION:</b>	
Coil Spring Compressor (Main Tool) ... ..	RG.50D
Coil Spring Compressor (Adaptor) ... ..	RG.50D-2
Anvil ... ..	RG.23
Broaching Kit ... ..	RG.25
King Pin Remover ... ..	RG.17
King Pin Remover (Adaptor) ... ..	RG.17-1
Precision Track Gauge ... ..	95B
Alignment Gauge ... ..	121LA
(checks Caster/Camber/KP1)	
Shackle Bush Remover and Replacer ... ..	RG.43-1

<b>STEERING:</b>	
Drop Arm Remover ... ..	RG.59A
Thrust Pad ... ..	RG.59A-1
Ball Joint Remover ... ..	RG.190C
Rocker Shaft Thrust Plug Socket ... ..	RG.283
Drop Arm to Side Steering Rod, Ball Joint Remover ... ..	RG.284

NUT TIGHTENING TORQUE DATA	
	lb/ft
Cylinder head bolts ... ..	41-43
Main bearing caps ... ..	50-60
Con-rod cap bolts ... ..	17
Flywheel securing bolts ... ..	37-43

and elbow connection to carburettor and disconnect exhaust pipe at manifold flange. Support engine by suitable tackle. Remove gearbox as detailed in "Gearbox" section, under heading "Removal."

Take off two stud nuts and spring washers from each engine front mounting. Attach another lifting sling to front engine lifting hook and raise unit to clear mounting studs. Draw engine right forwards before lifting clear and turn unit so as to withdraw it through left-hand door aperture (r.h.d. models).

### Crankshaft

Three main bearings. Thin wall, steel-backed, white metal-lined shells located by tabs. End float controlled by split thrust washers either side of centre main bearing. No hand fitting permissible.

Main bearing shells can be changed, in emergency, without removal of shaft.

Flywheel, with shrunk-on starter ring gear, spigoted on rear flange of crankshaft and retained by four setscrews, and one locating dowel. Oil impregnated clutch spigot bush pressed into end of crankshaft.

Timing sprocket (large boss to rear) and pulley keyed on front end of shaft with single Woodruff key, oil thrower disc between. Assembly retained by hand starter dog nut locked by tab washer. Nut is die-cast and should not be over-tightened.

Sump sealing effected by composition gaskets on face joints. Curved cork strips fitted between each end main bearing cap and its sump location, and should be fitted after side points are in place.

### Connecting Rods

Big ends thin wall, steel-backed, copper lead-lined shells located by tabs as main bearings. No hand fitting permissible.

Gudgeon pins fully floating in steel-backed bronze bushes in small ends. Replacement bushes must be honed to size.

### Pistons

"Lo-Ex" alloy, "T" slotted. Fit with slot to nearside ("Front" stamped on piston crown). Top compression ring chrome plated, parallel faced. Second compression ring taper-faced, fit narrow face to top of piston.

Pistons are graded for production in .0004in steps, marked A, B, C, D, on crown. E and F grades available for servicing, B being nearest to nominal size, A smaller and D largest. Cylinder bores are similarly graded and sizes stamped on manifold face of block or on the two machined bosses at the ends of the cylinder block on the manifold side. Pistons must be fitted to bores marked with same letter, and with feeler gauges to limits indicated in tables.

Oil control rings are fitted in third and fourth grooves.

### Camshaft

Duplex roller endless chain drive. Camshaft sprocket keyed with Woodruff key and retained by setscrew in end of shaft. Draw off both sprockets with chain. To time, replace with dot marks together and in line.

End float controlled by steel thrust plate trapped between sprocket and shoulder on shaft, bolted to crankcase by two setscrews reached through holes in sprocket.

Camshaft runs in three bearings, steel-backed white metal-lined bushes pressed into crankcase.

### Valves

Overhead, non-interchangeable. Inlet larger than exhaust. Split cone cotter

ENGINE DATA	
<b>General</b>	
Type ... ..	o.h.v.
No. of cylinders ... ..	4
Bore x stroke: mm ... ..	79 x 76.2
in ... ..	3.11 x 3.00
Capacity: c.c. ... ..	1494
cu in ... ..	92
R.A.C. rated h.p. ... ..	13.2
Nett h.p. at r.p.m. ... ..	49 at 4,500
Nett torque at r.p.m. ... ..	76 lb/ft at 2,200
Compression ratio ... ..	7.0 : 1

CRANKSHAFT AND CON. RODS		
	Main Bearings	Crankpins
Diameter ... ..	2.2495-2.2490in	1.8760-1.8755in
Running clearance:		
main bearings ... ..		.0007-.0025in
big ends ... ..		.0015-.002in
End float: main bearings ... ..		.002-.004in
big ends ... ..		.0012-.0075in
Undersizes ... ..		.020,
		.040, .060in
Con. rod centres ... ..		5.751-5.749in

PISTONS AND RINGS	
Clearance (skirt) ... ..	"T" slot 1¼-3/16 pull on .0015in feeler strip ¼in wide .040in
Max. oversize ... ..	.040in
Max. variation per set ... ..	2 drams
Gudgeon pin:	
diameter (medium grade)* ... ..	.8751-.8750in
fit in piston ... ..	firm hand push at 65°F.
fit in con. rod ... ..	fully floating
Compression height ... ..	1.850-1.845in

	Compression	Oil Control
No. of rings ... ..	2	2
Gap† ... ..	.009-.014in	.009-.014in
Side clearance in grooves ... ..	.0015-.0035in	.0015-.0035in
Width of rings ... ..	.0781-.0771in	.1563-.1553in

\*High grade (painted white) .8752-.8751in.  
Low grade (painted yellow) .8750-.8749in.  
†"A" -Grade bore.

CAMSHAFT	
Bearing journal: diameter ... ..	1.7477-1.7470in
Bearing clearance ... ..	.003-.0013in
End float ... ..	.002-.003in
Timing chain: pitch ... ..	.375in
No. of links ... ..	54

	Inlet	Exhaust
Head diameter ... ..	1.374-1.370in	1.114-1.110in
Stern diameter ... ..	.311-.310in	.310-.309in
Face-angle ... ..	45°	45°
Spring length:		
fitted ... ..	1.46in	1.58in
at load ... ..	26.6lb	53.7lb

fixing. Double springs, replaceable only as mated pairs. Spring collars have groove for rubber ring fitting round valve stem. Renew rubber rings when valves are dismantled.

Valve guides plain, no shoulder. Not interchangeable, exhaust longer than inlet and chamfered at each end, inlet guides grooved at upper end only. Press in until guide projects .58in above spring seat. Replacement guides available .001in and .003in oversize for service.

### Tappets and Rockers

Barrel tappets sliding directly in crankcase. Remove through side opening. Tappets, push rods and rockers should always be reassembled in same positions.

Rockers (1, 3, 5, 7 and 2, 4, 6, 8 are separate replacements) run direct on hollow shafts supported by four pillars (all alike, oil feed from centre camshaft bearing via pipe to centre branch union be-



tween pillars). Pair of rockers for each cylinder fit on either side of pillar. Long springs separate rockers of Nos. 1 and 2, and 3 and 4 cylinders. Short springs, washers and spring rings retain centre and end rockers. Oil feed through drillings in rockers and adjusting screws.

Rocker gear must be removed for access to centre row of cylinder head nuts and bolts.

**Lubrication**

Hobourn-Eaton eccentric rotor type pump spigoted and flange bolted to bottom face of crankcase. Skew drive gear pinned to central shaft.

Non-adjustable ball and spring type pressure relief valve covered by large hexagon plug fitted in front end of full flow external oil filter.

Normal oil pressure 30-50 lb/sq in. Warning light fitted on interior dash panel indicates very low oil pressure.

**TRANSMISSION**

**Clutch**

Borg & Beck single dry plate. Graphite thrust release bearing, hydraulically operated from foot pedal by slave cylinder mounted on bell-housing. No provision for external adjustment as linkage is self adjusting and no free play exists.

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

**Gearbox**

Four speed. Synchromesh (inertia lock type) on 2nd, 3rd and top gears.

Forward mounted remote lever control change.

**To Remove Gearbox**

Drain oil and disconnect speedo drive. Mark propeller shaft flange and remove nuts and securing set bolts, and draw out forward end from gearbox tail casing.

Disconnect two change speed operating rods at gearbox top cover external levers. Remove split pin, washer and jaw pin between clutch slave cylinder and withdrawal lever; undo hydraulic pipe, remove nuts and take off slave cylinder. Remove securing bolts and take out starter motor. Remove nuts, washers and bolts from change speed relay shaft rear support bracket, move bracket along shaft until clear of bell-housing front face. Support rear of engine and remove bell-housing setscrews, also clutch housing bottom cover plate setscrews and plate. Remove self-locking nuts and plain washers at rear mounting support plate (note order of washer assembly). Draw gearbox and bell-housing rearwards away from engine unit.

**To Dismantle Gearbox**

Mount box upright in vice and remove top cover with rocking selector lever and combined interlock fork and cross-change selector, and bell-housing with clutch operating fork.

Push out reverse (offside) selector rod, releasing from fork gently so that ball and spring, recessed in fork, do not jump out. Lift out fork, noting distance piece. Push out 1st/2nd and 3rd top selector rods, using dummies of 7/8 in rod about 5 in long to keep selector balls and springs in place in forks. Ball in 1st/2nd fork is in inverted drilling. Spring in 3rd/top fork is shimmed to give axial resistance of 25-30 lb to sliding of fork on rod.

Detach layshaft and reverse spindle locking plate. Turn box upside down and drive out layshaft spindle to front with dummy spindle 3/4 in dia. and 6.3 in long, leaving dummy spindle just clear of front thrust washer. Turn box right way up and draw out primary shaft, front ball bearing and bearing housing assembly with 27 needle rollers. Pick off top gear baulking ring and mark (identical

with 3rd gear ring, but should not be exchanged).

Remove mainshaft rear nut, drive mainshaft forward into box, and draw out through front, sliding off 1st gear and 2nd synchro assembly, and lifting out through top. Slide 1st gear off hub and pick off three shifting plates and detent spring. Second detent spring located inside hub.

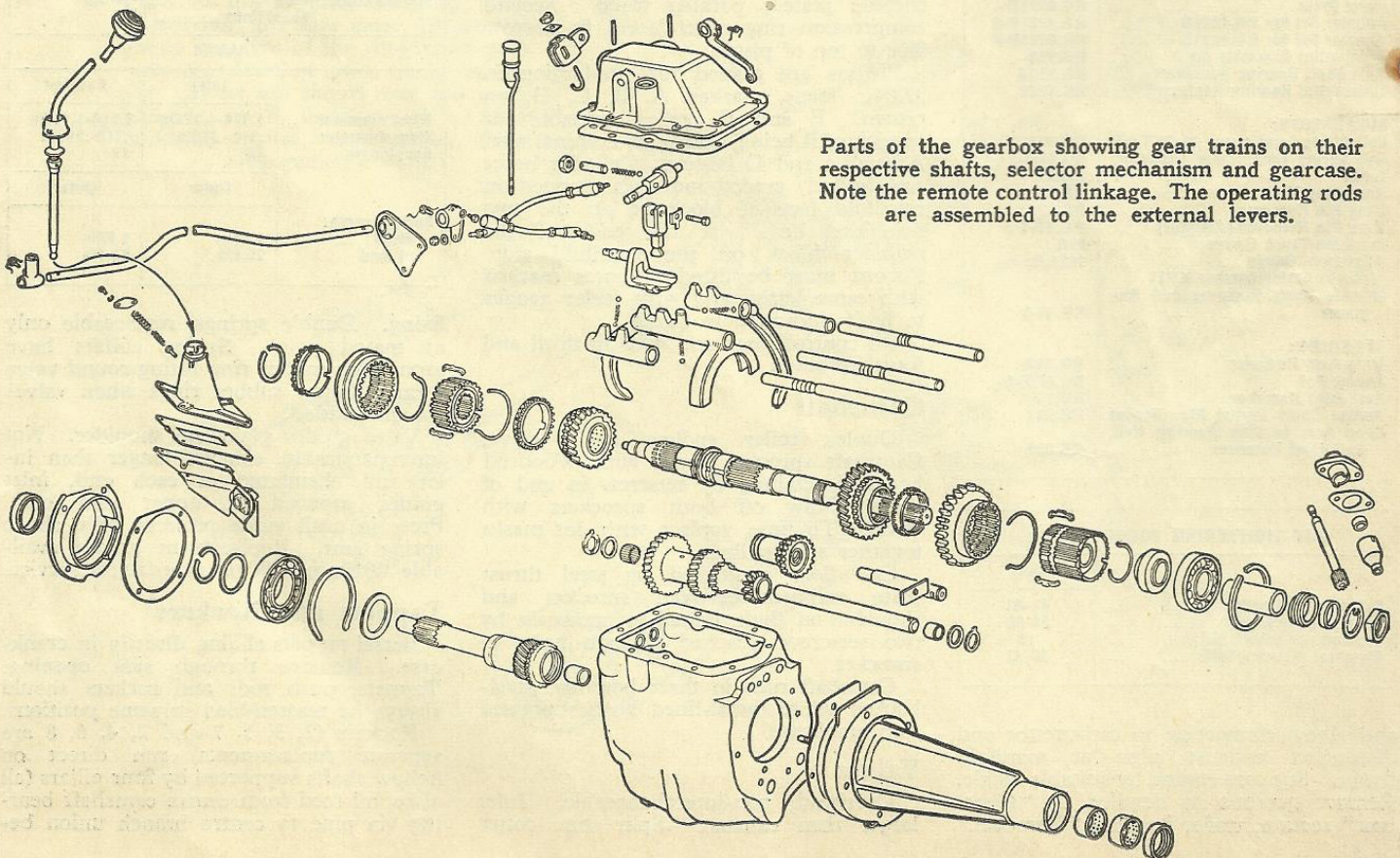
Pick 2nd gear baulking ring (mark with "2") and 2nd gear off mainshaft. Remove lock ring on front end of mainshaft. Draw off 3rd and top synchro assembly, 3rd gear baulking ring (mark with "3"), and 3rd gear (bushed but replaceable as assembly only). Slide sleeve off synchro hub, releasing three shifting plates (shorter than 2nd gear plates) and detent springs.

Lift out layshaft cluster with needle roller bearings, pick out thrust washers. Drive out reverse idler spindle to rear with bent drift, releasing bushed idler (replaceable as assembly only). Support box on its face and press out rear bearing.

Extract spring ring retaining primary shaft bearing in housing, and press shaft and bearing out. Extract spring ring from shaft, followed by packing ring, and press bearing off shaft. Note chip shield behind.

**To Reassemble Gearbox**

Reverse above process noting following points: 2nd synchro hub assembly: Ensure that free ends of circlips follow opposite directions, with eyes in different plates. Mainshaft: Bevel of 1st speed teeth to rear. 3rd/4th circlips to be assembled in same fashion as 1st/2nd, noting that shifting plates are the shorter of the two sets. 3rd/4th synchro hub must be pressed on to mainshaft to ensure that hub is fully located against mainshaft shoulder. Fit spring ring by selective assembly to ensure zero—.001 in clearance



Parts of the gearbox showing gear trains on their respective shafts, selector mechanism and gearcase. Note the remote control linkage. The operating rods are assembled to the external levers.



of ring in groove at front of mainshaft. Five thicknesses of spring ring available to achieve this condition. When refitting mainshaft it is essential that distance piece in 2nd synchro hub locates fully against inner race of mainshaft rear bearing.

Fit rear bearing, spacer, speedo gear, lock washer and nut. Position 27 needle rollers in stemwheel and fit front cover and stemwheel assembly. Invert gearbox, insert layshaft spindle, ensuring thrust washers are correctly positioned. Fit layshaft and reverse spindle lock plate.

Place gearbox upright; fit 3rd/top, 1st/2nd and reverse selector forks in that order. Fit reverse distance-piece and shaft with long end of selector shaft to front. Fit 1st and 2nd, then 3rd and top selector shafts. Refit rear cover and check that shafts are free and that all gears can be selected.

Fit main cover, positioning it so that internal selector lever moves freely across slots in forks. Renew all gaskets, paper joints, etc., and use liquid jointing compound when fitting.

Use Tool No. RG282 to set remote change speed linkage. Pin of tool fits through hole in selector lever boss in top cover and plate replaces gear lever tower. Adjust operating rods to fit in gearbox external levers.

### Propeller Shaft

Hardy Spicer, needle roller bearing universal joints, self lubricated, reverse spline type.

### Rear Axle

Hypoid bevel drive, semi-floating shafts. Rear cover welded to banjo casing.

Half-shafts incorporate integral wheel hubs at outer end, splined in differential bevel gears at inner ends. Ball hub bearing retained on each shaft by nut, and in end of axle tube by brake back-plate, bolted up with grease shield and oil seal by six fitted bolts (nuts outside).

Bevel pinion shaft carried in taper roller bearings. Outer races pressed into final drive housing. Distance-piece between inner races, which are nipped up by driving flange nut. Oil seal pressed into housing (lip inwards) bears on driving flange hub. Note oil thrower ring between hub and inner race of front bearing. Shims between distance-piece and front bearing (.003in, .005in and .010in available) for bearing adjustment, to give 10 lb/in preload for new bearings or 6 lb/in with original bearings.

Shims (same thicknesses as bearing shims, but larger diameter) between shoulder of bevel pinion and rear bearing for pinion mesh.

Crown wheel spigoted on one-piece differential cage and retained by eight fitted setscrews. Differential side bevel gears run directly in cage with flat thrust washers behind. Planet bevel pinions have spherical washers behind.

Differential assembly carried in taper roller bearings in split housings. Shims behind inner races for bearing and mesh adjustment, to give .002in bearing preload each side with .005-.009in backlash measured tangentially on crown wheel teeth.

## CHASSIS

### Brakes

Lockheed hydraulic. Two-leading shoe front brakes with separate cylinder for

each shoe. Rear brakes are leading and trailing shoe type with single floating cylinder incorporating bell-crank for handbrake operation through transverse linkage from compensator. Single cable in flexible conduit between handbrake lever and compensator.

Micram adjuster on each wheel cylinder, with slotted head reached through hole in wheel and drum after removal of nave plate. To adjust, apply brakes hard to position shoes in drum, jack up wheel, turn adjuster clockwise until shoe touches drum, then back off one click. Note two adjusters on each front wheel.

### Rear Springs

Semi-elliptic leaf type, having triple rating. Steel and bonded rubber bushes are used in spring front eyes and rubber bushes in both rear shackle locations. Tighten all bolts fully, with vehicle in laden position.

### Front Suspension

Independent. Coil springs and double wishbone links with screwed bushes all round. Upper and lower inner fulcrum bushes are pressed into links with fulcrum pins in place, and should be renewed as pin and bush assembly.

Stub carrier, which is connected to upper and lower links by screwed bushes and eyebolts, also supports a cotter located king pin on which pivots a bushed stub axle. Thrust is taken by bearing washer, sealing washer and thrust washer located between lower face of carrier boss and stub axle boss. Brake backing plate and oil catcher secured to stub axle flange by four fitted setscrews and nuts.

To remove suspension unit, raise vehicle with jack under front cross-member, and place side frame members on suitable stands. Remove road wheels and disconnect main hydraulic fluid pipe at offside front connector. Place blocks of wood under sump to support engine and disconnect front engine mountings from cross-member. Remove steering rod from main relay lever. Remove front shock absorbers, support each spring pan and release frame bracket to fulcrum pin bracket bolts (2 each side). Hang upper link complete with shims (tied on) to hook provided on each coil spring housing. Take off 4 bolts and washers securing front cross-member to underframe (2 each side through holes in underside of cross-member). Steady assembly and remove it complete from underframe.

Hubs run on taper roller bearings, lipped oil seal fitted behind inner bearings, lip inwards. Hubs retained on stub axles by split pin and slotted nuts. When tightening a front wheel hub nut, torque spanner reading should be 15-20 lb/ft, and when nut is finally split-pinned after backing off 1-1½ flats, permissible end float of hub is .005-.009in.

### Steering Gear

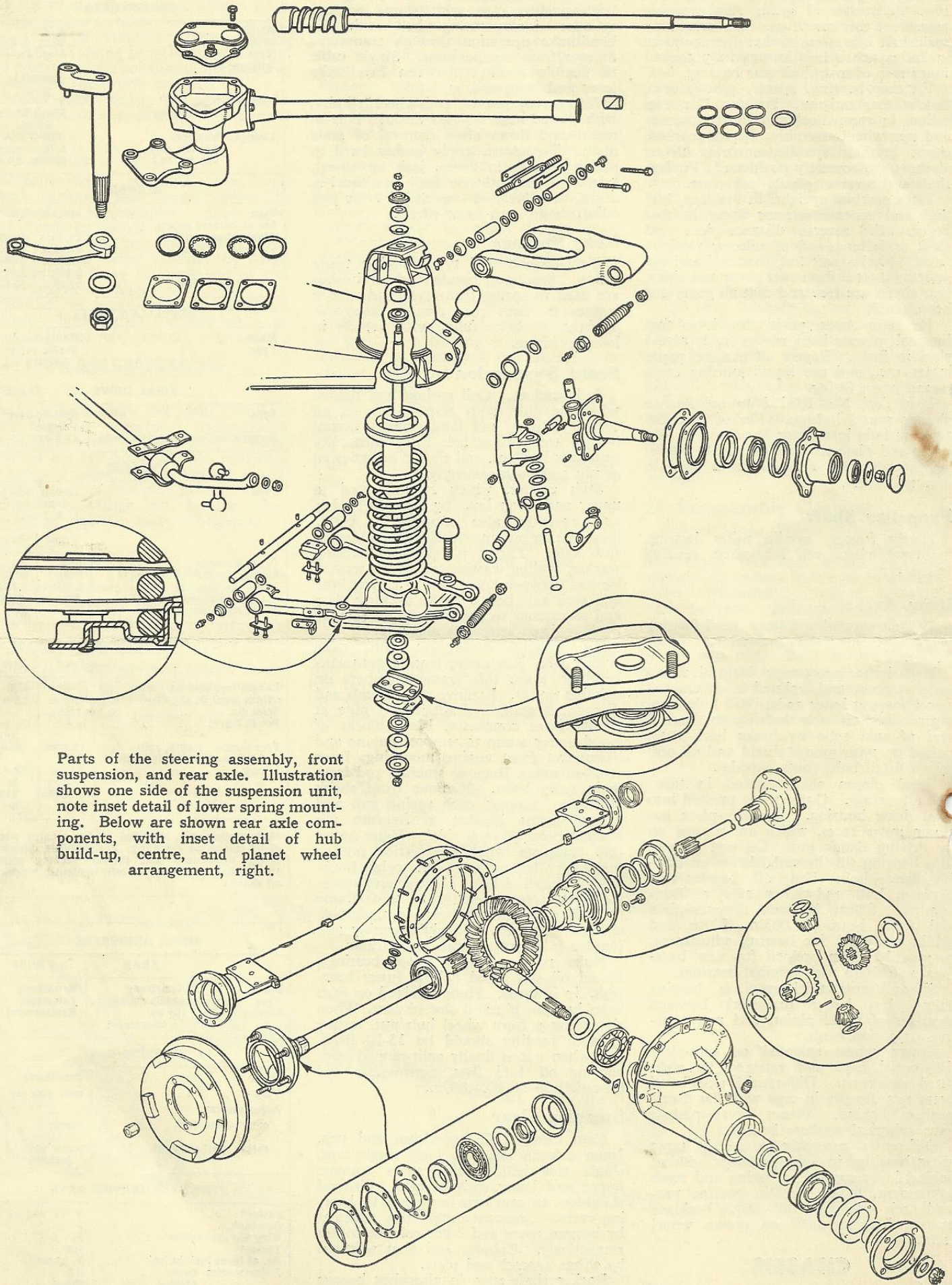
Cam Gears L.Q. type cam and peg. Inner column and cam form single unit, single row ball bearing races support upper and lower ends of cam. Ground shoulders on cam form inner cups for bearing races. Separate outer cups retained by bottom cover and outer column socket respectively. Column end float adjusted by shims beneath end plate.

Rocker shaft runs in phosphor bronze bushes and peg is located by needle rollers. Adjustment of mesh by adjusting screw and locknut in top cover.

CHASSIS DATA			
Clutch	...	...	8/96A
Make	...	...	Borg & Beck
Type	...	...	8 dp. 8in
Springs: No.	...	...	6
colour	...	...	Cream/Lt. green
Centre springs: No.	...	...	6
colour	...	...	Black/Lt. Green
Linings: thickness... dia. ext. in dia. int. in	...	...	.120-.130in
	...	...	5.75in approx.
	...	...	8.00in approx.
GEARBOX			
Type	...	...	synchromesh
No. of forward speeds	...	...	4
Final ratios: 1st 2nd 3rd 4th Rev.	...	...	20.90:1
	...	...	22.95:1
	...	...	11.95:1
	...	...	13.10:1
	...	...	7.769:1
...	...	8.527:1	
...	...	5.125:1	
...	...	5.625:1	
...	...	27.87:1	
...	...	30.59:1	
PROPELLER SHAFT			
Make	...	...	Hardy Spicer
Type	...	...	Needle roller bearing u.j.
FINAL DRIVE			
Type	...	...	semi-floating hypoid
Crownwheel/bevel pinion teeth	...	...	41/8 or 45/8
BRAKES			
Type	...	...	Lockheed 2LS front L & T rear
Drum diameter	...	...	10in
	...	...	9in
Lining: length ... width ... thickness ...	...	...	9.4in
	...	...	8.3in
	...	...	2.20in
No. of rivets per shoe	...	...	1.70in
	...	...	.20in
...	...	...	12
...	...	...	12
SPRINGS			
Length (eye centres, laden)	...	...	—
	...	...	47in
Width (or O.D. of coils)	...	...	4.68in
Wire dia.	...	...	.70in
No. of leaves	...	...	—
	...	...	6+3 aux.
Free camber (length, coil)	...	...	12.30in
Loaded camber (length, coil) at load	...	...	4.61in†
	...	...	9.83in @ 1800 lb
...	...	...	.89-1.09 in @ 900 lb**
*Late models only, identified by 1in packing piece above coil spring mounting. Early models, different spring dimensions and thicker packing piece. †Clamped—"U"-bolt nuts fully tightened. **Spring off vehicle.			
SHOCK ABSORBERS			
Make ... Type ... Service ...	REAR	FRONT	
	Armstrong double acting top up/ replacement	Armstrong Telescopic Replacement	
STEERING BOX			
Make ...	...	...	Cam Gears
Type ...	...	...	cam and peg
Adjustments: column end float ... rocker shaft end float...	...	...	shims
	...	...	screw and locknut
	...	...	
FRONT-END SERVICE DATA			
Castor*	...	...	0° 45' neg ± 1°
Camber*	...	...	± 1°
King pin inclination*	...	...	8½° ± 1°
Toe-in*	...	...	± in
No. of turns lock to lock	...	...	3½ approx.
Adjustments: castor camber toe-in	...	...	Nil
	...	...	shims
	...	...	screw track rod ends

\*Static laden



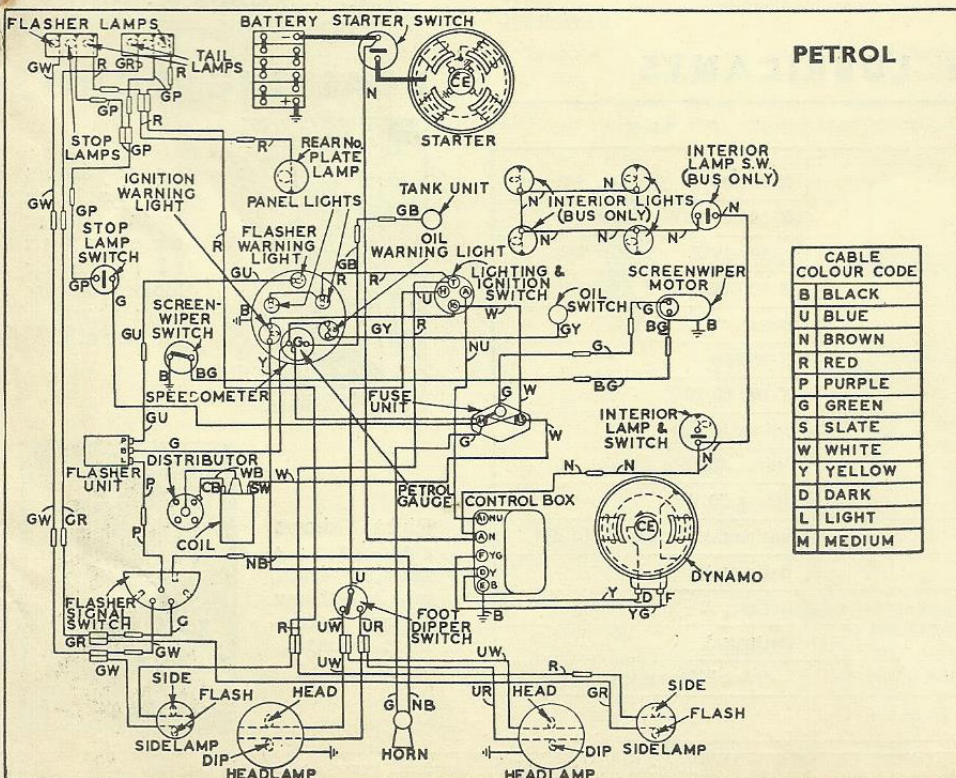
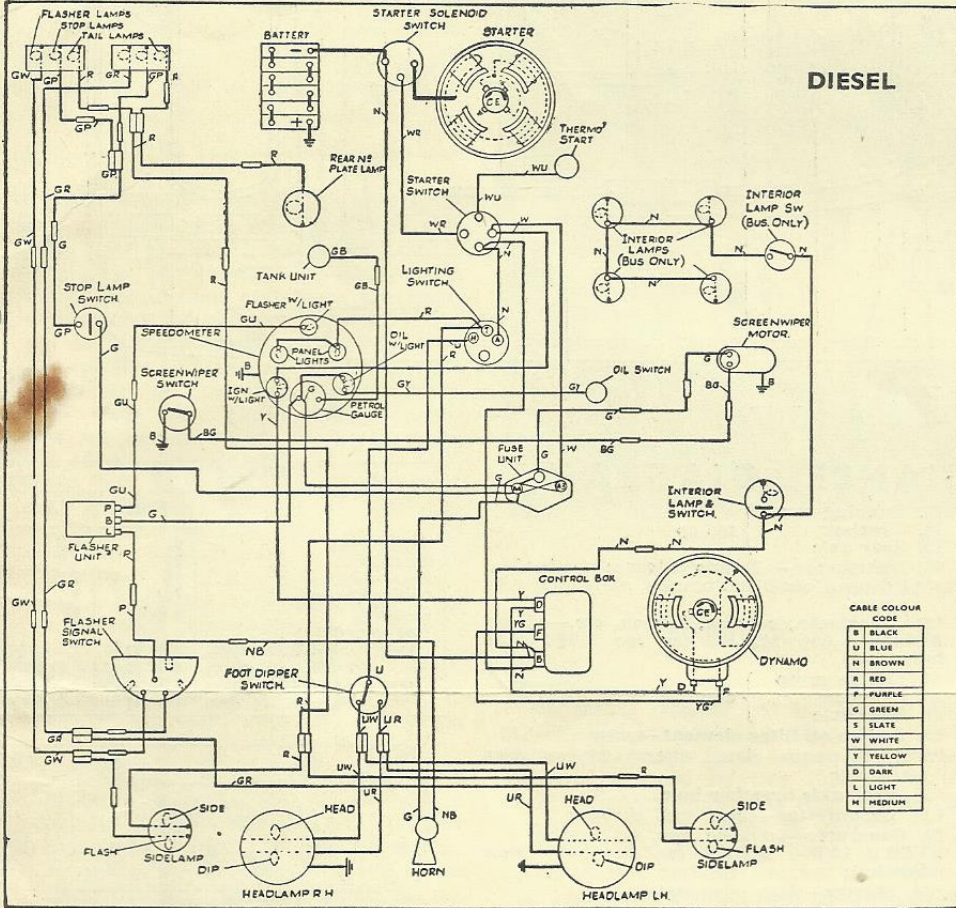


Parts of the steering assembly, front suspension, and rear axle. Illustration shows one side of the suspension unit, note inset detail of lower spring mounting. Below are shown rear axle components, with inset detail of hub build-up, centre, and planet wheel arrangement, right.



Lamps	Model	Part No.	BULB		
			Part No.	Wattage	Cap
Head Home (R.H.D.)	F700	51736	414	50/40	B.P.F.
L.H.D. (export Europe)	F700	58270	410	45/40	B.P.F.
Export U.S.A.	F700	58493	—	—	—
Side/flasher ...	594	52403	380	6/21	S.B.C.
Stop tail and } Export	572	53640	380	Stop/tail 6/21	S.B.C.
Rear flasher } U.S.A.	572	53754	382	Flasher 21	S.C.C.
Number plate ...	532	53630	222	4	M.B.C.
Main beam warning ...	WL15	54360191	281 (North America only)		

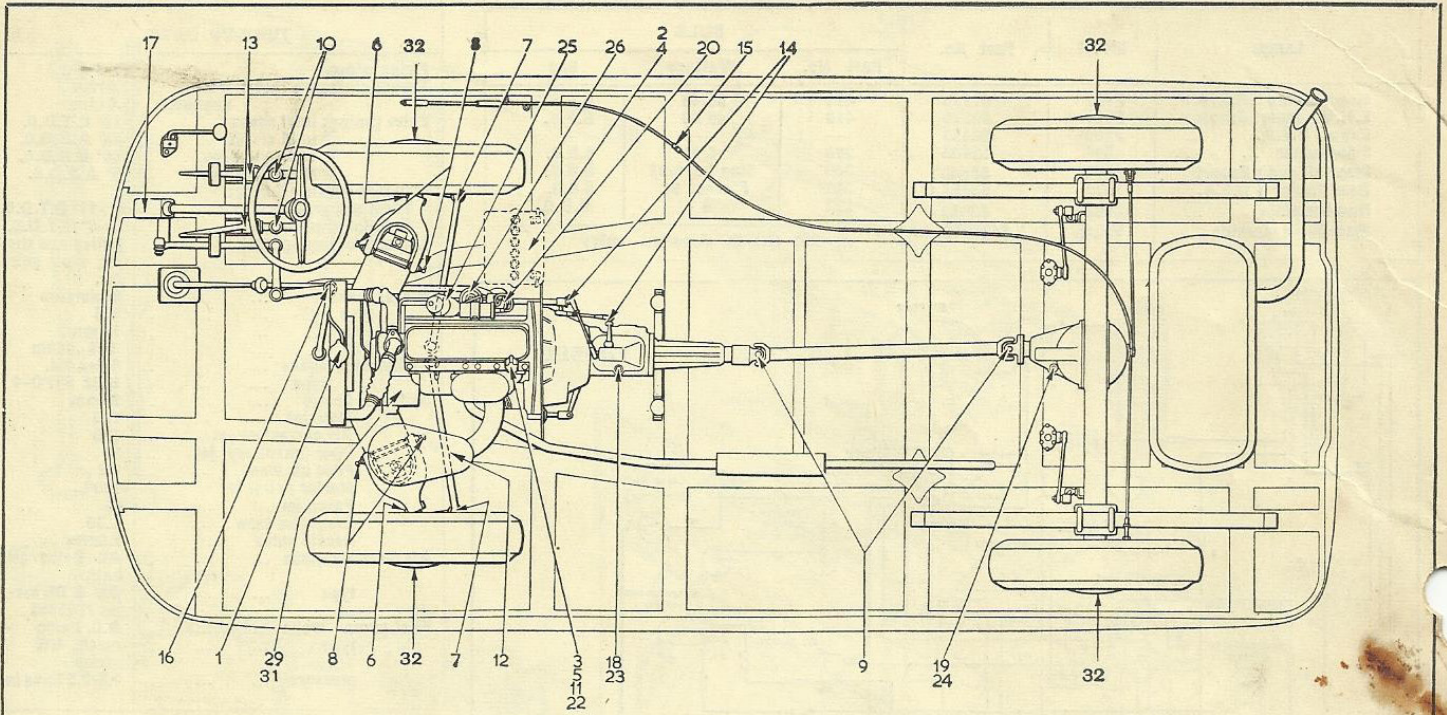
TUNE-UP DATA	
Firing order ...	1-3-4-2
Tappet clearance (hot): inlet ...	.012in
... exhaust ...	.014in
Valve timing: inlet opens ...	10° B.T.D.C.
... inlet closes ...	45° A.B.D.C.
... exhaust opens ...	46° B.B.D.C.
... exhaust closes ...	9° A.T.D.C.
Standard ignition timing:	
Premium grade ...	9°-11° B.T.D.C.
Regular grade ...	6°-8° B.T.D.C.
Location of timing mark	pulley and timing case pointer.
Plugs: make ...	Champion
type ...	N.8
size ...	14 mm.
gap ...	.025-.028in
Carburettor: make ...	Solex d.d.
type ...	B.32 BIPO-4
Settings: Choke ...	25mm
Main jet ...	120
Air correction jet ...	160
Pilot (auxiliary) jet ...	50
Pilot air bleed ...	1.2
Starter petrol jet ...	130
Pump jet ...	45
Emulsion tube ...	L.30
Needle valve ...	2.0mm
Air cleaner: make ...	AC Delco oil bath
type ...	DB & CL series 7955482
Fuel pump: make ...	A.C. Delco mech. UG series
type ...	
pressure ...	1.5-2.5 lb/sq in



WIRING DIAGRAMS	
LUCAS EQUIPMENT	
<b>BATTERY</b>	
Model BT7A, petrol.	Model STXK13A, diesel.
<b>GENERATOR</b>	
Model G40-1, Part No. 22700 (petrol and diesel).	Model C45PV-6, Part No. 22489 (diesel—only where required)
<b>CONTROL BOX</b>	
Model RB106, Part No. 37290 (C40 petrol).	Model RB310, Part No. 37304 (C45 diesel).
Model RB310, Part No. 37299 (C40 diesel).	
<b>STARTING MOTOR</b>	
Model M35G, Part No. 25022 (petrol).	Model M45G, Part No. 26170 (diesel).
Drive, "S.B." Inboard (25022).	
<b>DISTRIBUTOR</b>	
Model DM2, Part No. 40682.	Max. Centrifugal advance (crank degrees), 32°-36° at 5,000 r.p.m.
No advance below 440 r.p.m. Centrifugal advance springs, Part No. 424103. Max. vacuum advance (crank degrees), 20°-24° with 20in. Hg. No advance below 2½ in. Hg.	
<b>IGNITION COIL</b>	
Model HA12, Part No. 45075.	Primary resistance 3.0-3.5 ohms. Running current at 1,000 r.p.m., 1.0 amp.
<b>WINDSCREEN WIPER</b>	
Model DL2, Part No. 54071019, R.H.D., Part No. 54071020, L.H.D.	
<b>WIPER ARM AND BLADE ASSEMBLY</b>	
Part No. 54711852, R.H.D., Part No. 54711851, L.H.D.	
Arm R.H.D.	Part No. 54711533
Arm L.H.D.	Part No. 54711532
Blade	Part No. 54711285
Supplied Separate	
<b>HORN</b>	
Model WT618, Part No. 69092.	Type: Windtone.
Current consumption 7½-8½ amp.	
<b>FLASHER UNIT</b>	
Model FL5, Part No. 35011.	
<b>FUSE UNIT</b>	
Model 5FJ.	Fuse rating 35 amp.

SWITCHES		
Ignition/starter ...	705A	31829 (diesel)
Starter ...	ST19	76423 (petrol)
Lighting and ignition ...	PRS3	54033046 (petrol)
Direction indicator ...	378A	31903
Dip ...	218A	31800
Stop light ...	HL2	31802
Horn push ...	GC5	33564





### KEY TO MAINTENANCE DIAGRAM

**DAILY**

1. Radiator—check and top up

**WEEKLY**

2. Battery—check and top up

**EVERY 250 MILES**

3. Engine sump—check and top up

**EVERY 1,000 MILES**

4. Battery—check and top up

5. Engine sump—check oil level

6. King pin bushes (4) }—grease gun

7. Steering rod joints (8) }—grease gun

8. Suspension link bushes (12)—oil gun

9. Propeller shaft bearings—no attention required

10. Brake and clutch master cylinders—check and top up

**EVERY 2,000 MILES** (as for 1,000 plus following)

11. Engine sump—drain and refill

**EVERY 3,000 MILES** (as for 1,000 plus following)

12. Air cleaner—clean and re-oil

13. Clutch and brake pedal pivot bushes } oil

14. Gear shift mechanism } can

15. Handbrake cable and guide } grease gun

16. Idler pivots

17. Steering box

18. Gearbox } top up

19. Rear axle

20. Distributor—oil auto advance mechanism, CB pivot, shaft and bearing, smear cam with grease

\*21. Doorlocks, catches, hinges, etc.—oil can **EVERY 6,000 MILES** (as for 3,000 plus following)

22. Engine sump } drain and refill

23. Gearbox } drain and refill

24. Rear axle

25. Engine oil filter element—renew

26. Fuel pump—clean filter and sediment chamber

\*27. Rear axle breather hole

\*28. Carburettor—clean float chamber

29. Generator—lubricate rear end bearing

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

\*30. Starter—clean commutator

31. Generator—clean commutator

32. Wheel hub bearings—check lubrication

\* Not shown on diagram

### FILL-UP DATA

	Pints	Litres
Engine sump ... ..	8	4.5
Gearbox ... ..	2½	1.5
Rear axle ... ..	1½	1
Cooling system ... ..	12½	7
Fuel tank ... ..	9 galls	41
<b>Tyre pressures:</b>		
front { 6.00/6.40in tyres	36lb/sq in	2.5Kg/cm <sup>2</sup>
{ 6.50/6.70in tyres	30lb/sq in	2.1Kg/cm <sup>2</sup>
rear { 6.00/6.40in tyres	32lb/sq in	2.2Kg/cm <sup>2</sup>
{ 6.50/6.70in tyres	26lb/sq in	1.8Kg/cm <sup>2</sup>

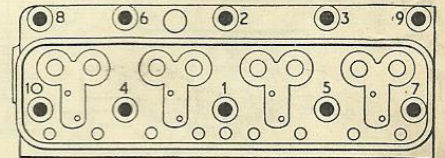
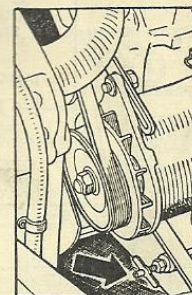


Diagram showing order of tightening cylinder head nuts. See also "Nut Tightening Torque Data."

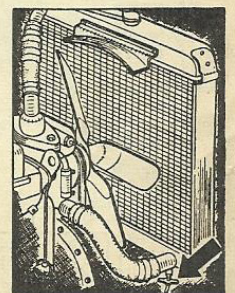
### RECOMMENDED LUBRICANTS

	Shell	
<b>ENGINE</b>		
Above 90°F (32°C) ... ..	X-100/30	20W/40*
90° to 10° (32° to 12°C) ... ..	X-100 20/20W	10W/30*
10° to -10°F (-12° to -23°C) ... ..	X-100 10W	10W/30*
Below -10°F (-23°C) consistently	X-100 5W	5W/20*
Upper cylinder lubricant ... ..	Donax "U" or U.C.L.	
<b>GEARBOX:</b> Above -10°F ... ..	X-100/30	
Below -10°F ... ..	X-100 20/20W	
<b>REAR AXLE:</b> Above -10°F ... ..	Spirax 90 EP	
Below -10°F ... ..	Spirax 80 EP	
<b>STEERING BOX:</b> ... ..	Spirax 90 EP	
Chassis nipples ... ..	Retinax A or Spirax 140 EP	
Prop. shaft (workshop overhaul re-assembly) ... ..	Retinax A	
Wheel hubs (front only) ... ..	Retinax A	
Distributor cam... ..	Retinax A	
Brake and clutch fluid reservoir: ... ..	Lockheed Heavy Duty Fluid	
	*Multigrade	

### DRAINING POINTS



Left: shows cylinder block drain tap at the front of cylinder block, access from above or beneath.



Right: shows radiator matrix drain tap in outflow elbow, access from beneath.