

# Motor Trader

SERVICE DATA NO. 429

## MG B

Manufacturers: B.M.C. Ltd., Cowley, Oxford.

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**I**NTRODUCED two years ago, the MG B was seen to be a logical development of the then current "A" model. From a construction point of view, the "B" car was brought into line with other B.M.C. products, and opportunity taken to fit major units which compare, basically at least, with those used on other models of the range. There are, of course, detail differences in the units as applied to the MG B, and since original introduction there have been several changes to specification. Where service procedure is affected, these are mentioned in the text matter of this article.

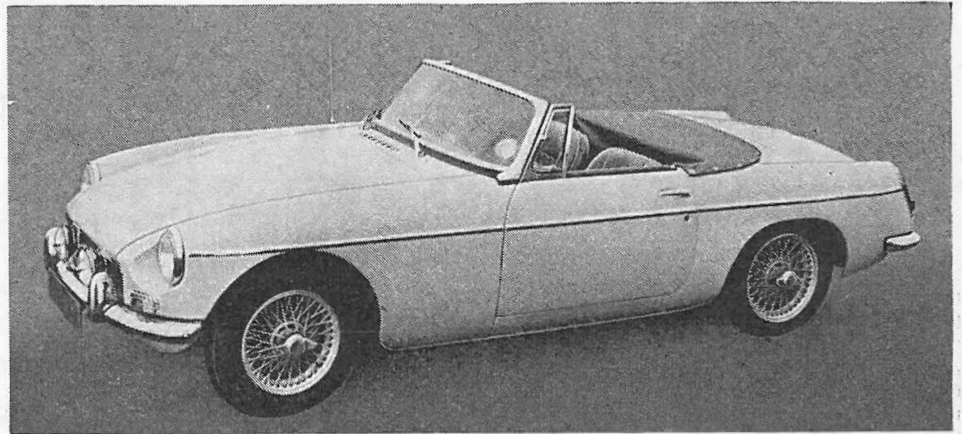
The car is powered by a 4-cylindere d.o.h.v. engine of some 1798cc. This unit is available in two compression ratios, and the higher of these is "standard." In basic construction, this engine is similar to the "B"-series units. Transmission of the drive is taken through an hydraulically operated single dry plate clutch to a four-speed synchromesh gearbox controlled by centre remote type lever. Overdrive is an optional fitment, and when installed, compares in detail with that described in Service Supplement No. 262/C20. From the output shaft of the overdrive, or gearbox, the drive is taken via a short universally jointed propeller shaft to the hypoid bevel drive gear contained within the casing of the three-quarter floating rear axle.

Front suspension is of the coil spring and wishbone pattern, damped by hydraulic shock absorbers, and steering is effected through a rack and pinion layout. Suspension at the rear is by semi-elliptic leaf springs, damped by hydraulic piston type shock absorbers.

Identification of vehicles follows customary B.M.C. pattern, and consists of chassis (car) and engine serials. The car number is to be found stamped on a plate which is attached to the top left-hand side of the front bulkhead, and the engine number is to be found stamped on a plate which is secured to the right-hand side of the cylinder block. The engine number itself comprises a series of letters and numbers which present in code the capacity, make and type of the unit fitted, ancillaries fitted, and the type of compression ratio together with the serial number of the unit. Other major units, notably the gearbox, rear axle, etc., are also numbered in serial. It is essential that all these relevant numbers are quoted when corresponding with the vehicle manufacturers, or when ordering spare parts.

Special tools for use in speeding up certain repair operations are available from the manufacturers through their distributive network, and a list of those considered the more essential is included in this article.

Threads and hexagons are, in the main, of the S.A.E. pattern and form.



**DISTINGUISHING FEATURES.** This model is easily recognizable from almost any standpoint, due to the revised styling treatment incorporating wrap around bumpers front and rear, recessed headlamps at the front, and flush fitting/tail lamps at rear. The fog lamps depicted in the illustration are optional fittings

## ENGINE

### Mounting

At front, mounting rubber blocks are bolted up to frame brackets which are in turn bolted up to engine plate flanges. Lower portion of each mounting bracket is bolted to crankcase side direct, and mounting plates are bolted to body side members.

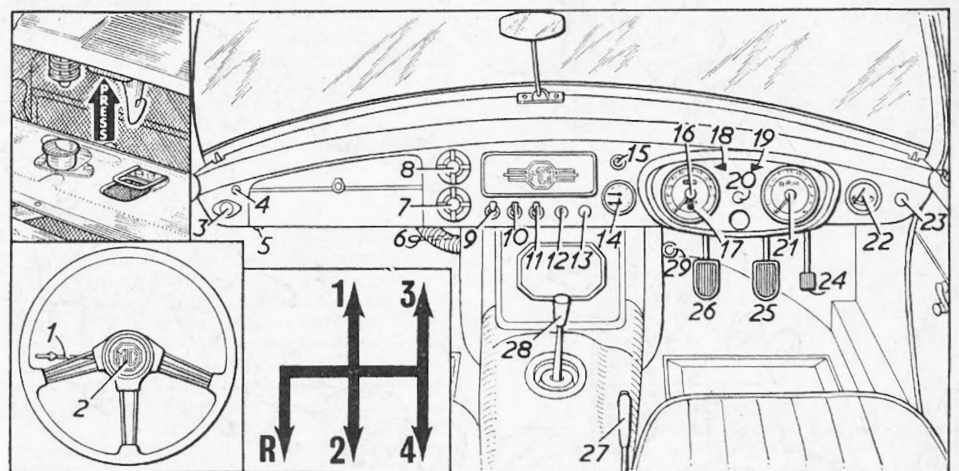
At rear, tailcase of gearbox rests in cradle of mounting cross-member, which is bolted up between chassis frame members. Bonded rubber mounting blocks are bolted up to cradle mounting bracket abutments by one bolt each, and to gearbox bosses by two bolts each. Additional stay rod bolted up to chassis frame member at one end, and clevis

bolted to gearbox extension at the other. Tighten all bolts and nuts fully.

### Removal

Engine may be removed with or without gearbox. If gearbox is to be serviced, complete power unit should be removed.

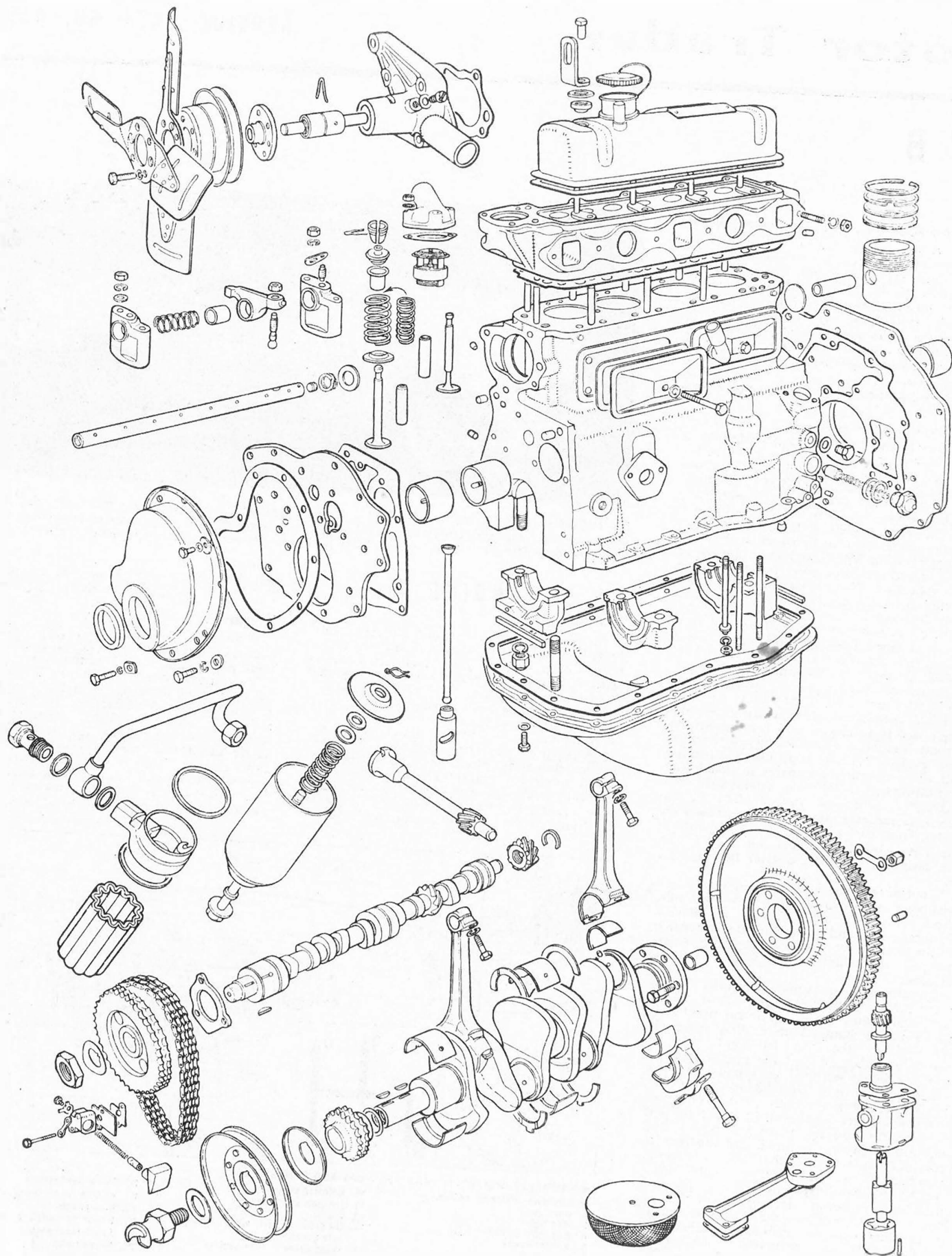
To remove complete unit proceed as follows: drain oil from engine and coolant from radiator, disconnect batteries. Remove bonnet after taking out hinge securing nuts, washers and screws, also stay rod. Detach safety catch and bracket, also bonnet lock cable control. Take out radiator matrix after removal of top and bottom water hoses and, if an oil cooler is *not* fitted, taking out top radiator/diaphragm screws to release stays,



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

- |  |  |                                 |
|--|--|---------------------------------|
| 1. Direction indicator switch.           | 11. Lighting switch                          | 20. Panel light switch          |
| 2. Horn push                             | 12. Ignition/starter switch                  | 21. Engine r.p.m. indicator     |
| 3. Map light                             | 13. Choke                                    | 22. Fuel gauge                  |
| 4. Map light switch                      | 14. Oil pressure and water temperature gauge | 23. Overdrive switch (optional) |
| 5. Bonnet release                        | 15. Windscreen washer control                | 24. Accelerator pedal           |
| 6. Ventilator                            | 16. Speedometer                              | 25. Brake pedal                 |
| 7. Heater air control (optional)         | 17. Main-beam warning light                  | 26. Clutch pedal                |
| 8. Heater temperature control (optional) | 18. L.H. indicator warning light             | 27. Handbrake                   |
| 9. Blower motor switch                   | 19. R.H. indicator warning light             | 28. Gear lever                  |
| 10. Windscreen wiper switch              |  | 29. Headlamp dip switch         |

Inset upper left; shows method of releasing bonnet safety catch. Below inner left: siting of the steering column mounted controls and near left operative positions of the centre mounted gear lever.



Parts of the engine, showing cylinder head, block and associated parts above, with crankshaft and other reciprocating parts below

GENERAL DATA		
Wheelbase	7ft	7in
Track: front and rear (wire wheels)	4ft	1 1/2in
front disc wheels	4ft	1in
rear disc wheels	4ft	1 1/2in
Turning circle	32ft	
Ground clearance (min)	5in	
Tyre size: front		
rear	5.60—14	
Overall length	12ft	8 1/2in
Overall width	4ft	11 1/2in
Overall height (hood raised)	4ft	1 3/4in
Weight (dry)	1,920lb	

SPECIAL TOOLS	
	Part No.
Crankshaft gear and pulley remover	18G2
Engine front cover locating bush	18G3
Valve spring compressor	18G 45
Oil pump release valve grinding-in tool	18G 69
Starling dog nut spanner	18G 98
Camshaft liner remover and replacer	18G 124A
Adaptors: front	18G 124F
centre	18G 124C
rear	18G 124B
Camshaft liner reamer	18G 123A
Cutters: front	18G 123E
rear	18G 123B
Reamer pilot: front	18G 123L
centre	18G 122AB
rear	18G 123AC
Impulse extractor (UNF)	18G 284
Adaptor	18G 284A
GEARBOX	
Oil seal remover	18G 389
(adaptor)	18G 389B
Dummy layshaft	18G 471
FRONT AND REAR AXLE	
Front and rear hub extractor	18G 304
(adaptor bolts 3/4 in UNF)	18G 304B
Pinion outer race extractor (basic tool)	18G 264
Diff. bearing cage remover (basic tool)	18G 47C
(adaptor)	18G 47T
Pinion bearing pre-load gauge	18G 207
Rear axle setting fixture and gauge block	18G 191A
Coil spring compressor	18G 693
Wire wheel bush remover	18G 363

NUT TIGHTENING TORQUE DATA	
	lb. ft
ENGINE	
Main bearing cap nuts	70
Flywheel set screws	40
Small end clamp bolts	25
Big end bolts	35-40
Cylinder head nuts	45-50
Clutch/flywheel bolts	25-30
REAR AXLE	
Crown wheel/diff. carrier	55-60
Diff. bearing cap nuts	60-65
Pinion bearing nut	135-140
Rear hub nuts	180
FRONT SUSPENSION	
Brake disc/hub	40-45
Brake caliper mounting	40-45
Bearing retaining nut	40-70

then removing screws securing each side of diaphragm to body. If oil cooler is fitted, its pipe connections must be parted before taking out radiator and diaphragm assembly. Disconnect and remove carburettors, together with associated controls and linkages. Disconnect and remove all pipes, wires and controls to engine. Undo exhaust pipe at manifold flanges, remove heat shield. Take off coil, together with bracket from front engine mounting, remove oil filter and starter motor. Take weight of engine and support gearbox. Drain oil from gearbox, mark propeller shaft flanges for correct replacement, and remove shaft, also undo speedometer drive. Remove clutch slave cylinder from bellhousing and tie up out of way. Take out screws securing rear cross-member to chassis frame, and allow gearbox to rest on fixed body cross-member. Remove stay rod from

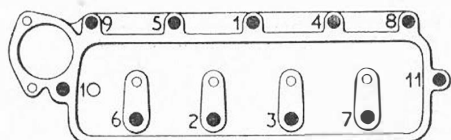


Diagram showing order of tightening cylinder head. See also table of "Nut Tightening Torque Data"

gearbox, and screws securing rear mountings to gearbox. Take out cross-member and stay rod. Remove gearlever from tower and rubber boot from tunnel. Remove screws and nuts securing front mounting brackets to frame brackets, and manoeuvre assembly forward until it is clear of cross-member, tilt assembly and lift out of car.

### Crankshaft

Three main bearings, thin-wall, steel-backed, copper-lead lined shells located by tabs in bearing caps. End-float controlled by split thrust washers either side of centre main bearing, and lower halves retained by tabs in cap. Fit with oil grooves to crankshaft. No hand fitting permissible. Main bearings may be changed without removal of shaft. Flywheel spigot mounted and flange bolted to crankshaft by six bolts and nuts. Spigot bush, renewable, pressed into crankshaft end, shrunk-on starter ring gear fitted. Timing sprocket keyed to front end of crankshaft by inner of two Woodruff keys, aligning shim abuts against inner boss of sprocket. Renewable oil seal pressed into timing case cover. Dynamo and water pump drive pulley keyed to crankshaft by outer of two Woodruff keys, retained by starter dog screw. Sump sealing effected by composition gasket around flange, and two square section seals at rear, either side of main bearing cap, which forms lower half of collecting ring around oil return thread on crankshaft.

All bolts to be tightened to specified torque figures.

### Connecting Rods

Big ends offset, thin-wall bearings, steel backed, copper-lead liners located by tabs in rod caps. No hand fitting permissible. "H"-section rods split diagonally, for removal through cylinder bores. Assemble rods with locating tabs mating, and oil bleed hole in longer side of rod shoulder away from camshaft. Gudgeon pins are bolt-clamped in split small ends, clamp bolts fitted towards camshaft.

### Pistons

Aluminium alloy, dished crowns and solid skirt type. Pistons supplied for selective assembly and oversize dimensions are stamped in an ellipse, together with word "FRONT" on piston crowns. When re-boring, ensure that oversize dimension of bores is stamped in prominent position on cylinder block face.

Top piston ring (compression) plain, second and third rings are taper faced and marked "T" (top) for correct assembly. All rings, including scraper ring are fitted above gudgeon pin.

Oversize pistons available for service as in table of "Piston Data."

### Camshaft

Double row roller endless chain drive. Spring-loaded helix and neoprene slipper type tensioner bolted to crankcase. Chain slack is taken up by increase of spring pressure on slipper as helix unwinds. Chain wheel is keyed to front end of shaft and retained by lock tab and nut. Camshaft runs in three white metal-lined, steel-backed bearing shells which are pressed direct into block. End-float controlled on front bearing. Dot punch marks on both driving and driven wheels indicate correct timing and must be together, engine at TDC No. 1 cylinder on compression, when chain is fitted.

### Valves

Overhead, non-interchangeable. Inlet larger than exhaust, split cone cotter fixings, retained by spring clips. Rubber sealing rings with retainers on valve stems below collars. Valve guides plain, no shoulder, non-interchangeable, exhaust guides counter-bored at bottom and both types countersunk

ENGINE DATA		
<b>GENERAL</b>		
Type		18G and 18GA
No. of cylinders		4
Bore x stroke: mm		80.26 x 89
in		3.16 x 3.50
Capacity: c.c.		1,798
cu. in.		109.8
Max. b.h.p. at r.p.m.		95 at 5400
Max. torque lb. ft. at r.p.m.		105 at 110 at 3,000 3,000
Compression ratio		8:1 8.8:1
CRANKSHAFT AND CON. RODS		
	Main Bearings	Crankpins
Diameter	2.126-2.127in	1.8759-1.8764in
Length	1.125in	.995-1.005in
Running clearance: main bearings		.001-.0027in
big ends		.001-.0027in
End float: main bearings		.002-.003in
big ends		.008-.012in
Undersizes		.020-.040in
Con. rod centres		6.50in
No. of teeth on starter ring gear/pinion		120, 9
PISTONS AND RINGS		
Clearance (skirt) top		.0036-.0048in
bottom		.0018-.0024in
Oversizes		.010, .020, .030, .040in
Gudgeon pin: diameter		.750in
fit in piston		.0001-.00035in
fit in con. rod		.0001-.0006in
	Compression	Oil Control
No. of rings	3	1
Gap	.012-.017in	.012-.017in
Side clearance in grooves	.0015-.0035in	.0016-.0036in
Width of rings	.0615-.0625in	.1552-.1562in

CAMSHAFT			
	Front	Centre	Rear
Bearing journal: diameter(in)	1.788 1.789	1.728 1.729	1.622 1.623
Bearing clearance	.001-.002in		
End float	.003-.007in		
Timing chain: pitch	.375in		
No. of links	52		

VALVES		
	Inlet	Exhaust
Head diameter	1.562-1.567in	1.343-1.348in
Stem diameter	.342in	.341-.342in
Face-angle	45° <sub>2</sub>	45° <sub>2</sub>
	Inner	Outer
Spring length:		
free	1 3/4in	2 3/8in
fitted	1 1/8in	1 1/8in
at load	28-32lb	72lb

at top. Exhaust guides are larger than inlet guides. When renewing, guides should be pressed or driven in from top until they project 3/8in. from machined surface of valve spring seat.

#### Valve Guides

Projected 3/8in. before the following numbers:—

18GA-U-H 11927  
18GA-RU- 11150  
18GA-RU-L 9710  
18GA-U-L 8313

After the above numbers, projected 3/8in. except 18GA-U-H 12001 to 12175 inclusive.

### Tappets and Rockers

Shouldered barrel type tappets sliding direct in crankcase. Access obtained through side openings in crankcase. Bushed rockers, all interchangeable, are mounted on shaft carried in four pillars on cylinder head. Shaft located by grub screw and lockplate on top of No. 4 (rear) pillar, which is drilled for oil feed through drillings in head and cylinder block. Pairs of rockers for each cylinder are positioned each side of each rocker pillar and are located by separating springs between rockers of adjacent cylinders.

Pushrods may be removed after tappet adjusting screws have been slackened right off. Inner rockers may then be pulled aside



against separating springs. End rockers must be taken off, after removal of split pin, plain washer and double coil spring washer.

### Lubrications

Eccentric type pump spigoted in recess at rear of cylinder block and driven by slotted shaft from skew gear at rear end of camshaft. Pump may be removed after taking off sump and pick-up strainer and three securing nuts. Two pump body bolts must be undone, after removal of assembly from engine, to dismantle pump. Cylindrical gauze intake strainer in sump, flange bolted to suction pipe on pump body, strainer components retained by central set bolt. Normal running pressure between 30 and 80 lb/sq in, engine hot.

### Cooling System

Pump and fan, thermostat located in water outlet port in cylinder head. Pump spindle has renewable seal and runs in two ball bearing races. Adjust fan belt so that there is 1in play either way in vertical run of belt.

## TRANSMISSION

### Clutch

Hydraulically operated, diaphragm spring type. Unit consists of driven plate, pressure plate, diaphragm spring and cover assembly. Hydraulic system consists of master cylinder coupled to slave cylinder operating release mechanism.

No provision for adjustment in service. Flywheel run-out not to exceed .003in., and alignment of thrust pad relative to its face and trunnions should be within .005in.

Access to clutch for service after removal of engine or gearbox.

### Gearbox

Four-speed and reverse, synchromesh engagement on 2nd, 3rd and top gears. Centre

lever control, remote control pattern. Propeller shaft sliding joint on mainshaft.

**To remove gearbox**—power unit should be removed as detailed in engine section, after which, gearbox may be parted from engine at engine rear mounting plate, great care being taken to ensure that no load or stress is placed upon clutch release plate drive straps. Gearbox, complete with bellhousing and rear extension may not be removed separately, without removal of engine.

### To Dismantle Gearbox

Remove dipstick, drain plug and speedometer drive pinion. With Tool No. 18G 2 remove propeller shaft drive flange. Take off remote control tower, gearbox extension side cover, lift out interlock plate and bracket. Slacken locating screw on remote control front selector lever, unscrew nuts and screws securing extension to gearbox, and take off extension. Preserve remote control selector lever, which will be freed upon withdrawal of extension and withdraw shaft and rear selector lever from rear extension. Take selector lever off shaft, and withdraw split bush and circlip from selector.

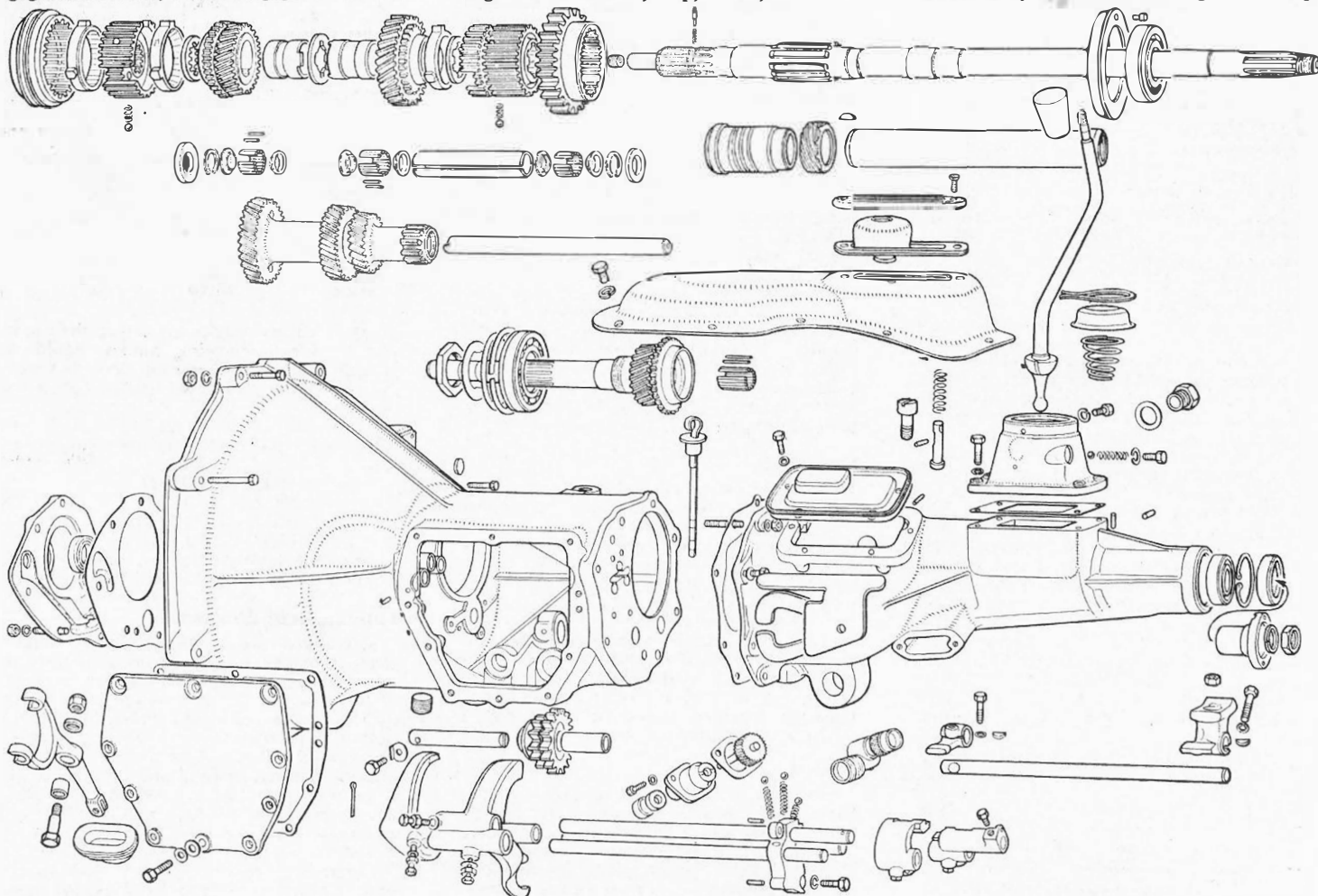
Unscrew three countersunk setscrews and seven hexagon head setscrews holding gearbox cover and remove cover. Remove two nuts and six setscrews securing extension to gearbox, and pull off extension simultaneously manoeuvring remote control shaft selector lever down and out from selectors. Cut locking wire and unscrew three change speed fork setscrews. Release three locknuts and slacken fork locating screws. Undo two setscrews and remove shifter shaft locating block, with shifter shafts. Note dowels in block. If rods are withdrawn from locating block preserve three selector balls and springs. Withdraw forks from box in following order: reverse, top, third, first and

second. Remove gearbox front cover, noting shims between cover and front bearing. Unscrew retaining setscrew and remove reverse shaft and idler gear. Tap out layshaft, allowing cluster to rest on bottom of box. Withdraw mainshaft assembly to rear, and withdraw first motion shaft and drive gear from front. Note 18 spigot needle rollers. Lift out layshaft gear cluster and two thrust washers. To dismantle rear extension remove rear remote control rod selector arm and key.

To dismantle mainshaft assembly, remove items in following order: 3rd/4th speed baulk ring synchro sleeve and hub; second speed baulk ring. If and when synchro sleeve is removed from its hub, care should be taken to preserve three locating balls and springs. Press down front thrust washer locating peg, rotate splined washer to line up with those on shaft and remove washer. Take off 3rd speed gear and bush, also thrust washer to release 2nd speed gear, bush and baulk ring. Remove thrust washer from splined shaft and take off 2nd speed gear and hub. Take off rear retaining nut, washer and speedometer drive gear and key together with distance-piece, from shaft. Take off bearing and its housing. Extract one circlip from laygear, push out bearing and distance tube assemblies (three races, one distance tube).

### To Assemble Gearbox

**To assemble gearbox**—Reverse procedure of dismantling, noting following points:—Layshaft: fit circlip to innermost groove in gear, hold shaft vertically in vice, assemble a roller bearing on shaft against vice jaws and slide gear over shaft and bearing with largest gear downwards. Remove shaft from vice and push bearing into gear against circlip. Fit end roller bearing assembly and circlip. Slide distance tube into other end of gear followed by other end bearing and circlip.



Gearbox components, running gear and layshaft shown above, with detail of the gearcasing and selector mechanism centre and below

## Mainshaft

Press rear bearing into housing, and bearing on to shaft. Fit speedo gear drive to shaft, together with key. Fit 1st/2nd gear synchro assembly to shaft, followed by baulk ring and rear thrust washer. Fit 2nd speed gear bush to shaft, ensure that lugs face forward, and that oil hole in bush lines up with oil hole in shaft. Assemble 2nd speed gear and interlock washer so that the washer engages lugs on bush. Fit 3rd speed gear bush, lugs first; engage lugs with thrust washer and ensure that oil hole and cut-away in bush line up with holes in shaft. Place retaining pin spring and pin in shaft and 3rd speed gear on bush, cone frontwards. Position gear so that hole in cone is in line with retaining peg, depress peg with thin drift, fit thrust washer to shaft, turn washer to allow peg to lock in position. Check end-float of 2nd/3rd speed gear. Thrust washers available in four thicknesses, .001in tolerance from .1565-.1615in. Assemble 3rd/4th speed gear rear baulk ring, synchromesh and front baulk ring.

Refit front end cover to gearbox, clutch lever and release fork and fit selectors to shifter shaft rear ends. Both shifter shaft locating block to rear face of gearbox and insert shifter shafts. Insert selector forks; reverse, first and second, third and top in gearbox. Push shifter shafts into box and through forks; insert, tighten and wire up setscrews. Position selectors on rear end of shifter shafts, tighten and wire up setscrews. Assemble rear extension of gearbox locating control rod selector arm in shifter rod selectors. Fit interlock arm to rear extension and refit cover.

## Propellor Shaft

Hardy Spicer needle roller bearing universal joints. Sliding joint behind front drive flange. Nipples provided for lubrication of joints.

## Rear Axle

B.M.C. "B"-type three-quarter floating, hypoid bevel final drive. Rear cover welded to banjo-housing. Apart from attention to hubs and half-shafts, axle cannot be serviced without full range of tools. Replacement axles are available as units and should be used when possible. Axle components may be withdrawn without removing axle from vehicle.

Half-shafts (interchangeable) upset at outer ends to form flanges which register on wheel studs on hub flanges. Hubs for wire wheels fitted to splined half-shafts and retained by hub studs. Hubs run on ball bearings retained on axle tube ends by nuts with tab-washers. Lipped oil seal in hub behind bearing (lip to bearing), and spacer washer is fitted on outer side of bearing. If shaft is withdrawn, note paper gasket behind flange.

Bevel pinion shaft runs in tape-roller bearings. Outer races pressed into final drive housing. Distance-piece between inner races, which are nipped up by driving flange nut. Shims between distance-piece and front bearing (.004-.012in available) regulate pre-load on bearings, which should give 13-15lb in. drag with oil seal fitted. No adjustment for pinion mesh without special tools and graded distance-pieces.

Crown wheel spigoted on one-piece differential cage and retained by six setscrews. Differential side bevel gears run directly in cage, planet pinions have spherical washers.

Differential assembly carried in semi-thrust ball bearings in split housings. Thrust side of bearings must face outwards. Shims between differential cage and inner races of bearings for mesh adjustment. Adjust so that the crown wheel is just free, without play, and backlash is as etched on crown wheel (usually .005-.011in.), then add shims to offside bearing to give .002in. total pre-load. Differential assembly should then be light push fit in housing. Backlash must be not less than .005in.

To remove axle from car, proceed as follows: Raise rear of car, mark propellor shaft universal joints for correct replacement, undo coupling flanges and remove shaft. Remove check straps. Take out split pins and clevis pin securing brake cables to each operating lever. Remove small nut and Phillips recessed-head screw securing hand-brake cable to axle casing. Remove brake balance lever from pivot on casing. Disconnect brake fluid pipe line at union, release flex pipe from battery box support bracket. Release exhaust pipe from manifold junction and support brackets, lower pipe assembly. Take out nut and spring washer from front anchor pin. Support axle casing, remove rear shackle plates, brackets and rubbers. Lower axle support until axle rests on road wheels. Remove front anchor pins, and roll axle from beneath car.

## CHASSIS

### Brakes

Lockheed hydraulic, disc at front, leading and trailing shoe brakes at rear. Rear brakes have single floating cylinder incorporating bell-crank for handbrake operation through cables from compensator and handbrake lever.

Front brakes are self-adjusting, consequently require no service apart from replacement of friction pads when these are worn to  $\frac{1}{16}$ in. Minimum permissible thickness of pads in use  $\frac{1}{16}$ in, at which time it is imperative to renew them. To remove pads, jack up car and remove appropriate wheel. Remove steady springs at rear of caliper by depressing each spring and taking out retaining split pin. Rotate protruding lug upwards and lift out pad. To refit, clean off caliper unit, also recesses which accommodate pressure plates of brake pads. Position anti-squeak step, machined on protruding ends of caliper piston to aperture at rear of brake caliper, check level of brake fluid in reservoir to prevent overflowing when pistons are refitted and refit pistons. Fit brake pads, top end first, into caliper and rotate slightly to obtain proper pad location in both ends of caliper. Fit two new steady pins (longer legs of each pointing to one another) and secure with split pins. Top up master cylinder, if necessary; unnecessary to bleed system.

Rear brakes have micram adjusters.

### Rear Springs

Semi-elliptic. Silent bloc bushes in front eyes and rubber bushes in rear eyes. Tighten all shackle bolts fully with normal working load applied to springs.

### Front Suspension

Independent. Coil springs and double wishbone links. Inner ends of upper links pivoted on shock absorbers. Outer ends of upper links and inner ends of lower links rubber bushed. Outer ends of lower links have screwed bushes.

Both disc and wire wheel type hubs run on semi-thrust ball bearings, inner races separated by a solid distance-piece. Lipped oil seal pressed in behind inner bearing, lip to bearing. When refitting, bush bearings must be adjusted to give end-float of .002-.004in, which should be measured with dial gauge. Shims available, .003, .005 and .010in thick. Tighten link unit to torque of 40-70 lb ft. Tighten until split pin can be inserted in nearest slot and hole. N.B.: On wire wheel hubs, O/S hub is RIGHT-HAND and N/S hub is LEFT-HAND threaded.

### Steering Gear

Rack and pinion, consisting of rack bar and tooth pinion mounted on front cross-member. No adjustment of bearing wear provided for and, in new condition, backlash is of order .001-.003in.

CHASSIS DATA	
Clutch Make Type	Borg & Beck sdp. 8in. dia-phragm 6
Damper springs: no. colour load	maroon/lt. green 110-120lb
Facing material Release bearing	wound yarn graphite (MY3D)

GEARBOX	
Type	synchromesh 4
No. of forward speeds	14.214 : 1
Final ratios: 1st	8.656 : 1
2nd	5.369 : 1
3rd	3.909 : 1
4th	18.588 : 1
Rev.	

PROPELLOR SHAFT	
Make Type	Hardy Spicer needle roller bearing u.j.
FINAL DRIVE	
Type	floating hypoid 43/11
Crownwheel/bevel pinion teeth	

BRAKES		
Type	Front (Disc)	Rear (drum)
Disc or drum diameter	10 $\frac{1}{2}$ in	10in
Lining: length	—	9 $\frac{1}{2}$ in
width	—	1 $\frac{1}{2}$ in
thickness	—	$\frac{1}{8}$ in
Lining material	Don 55	Don 24
Swept area	203.2 sq in	106.8 sq in

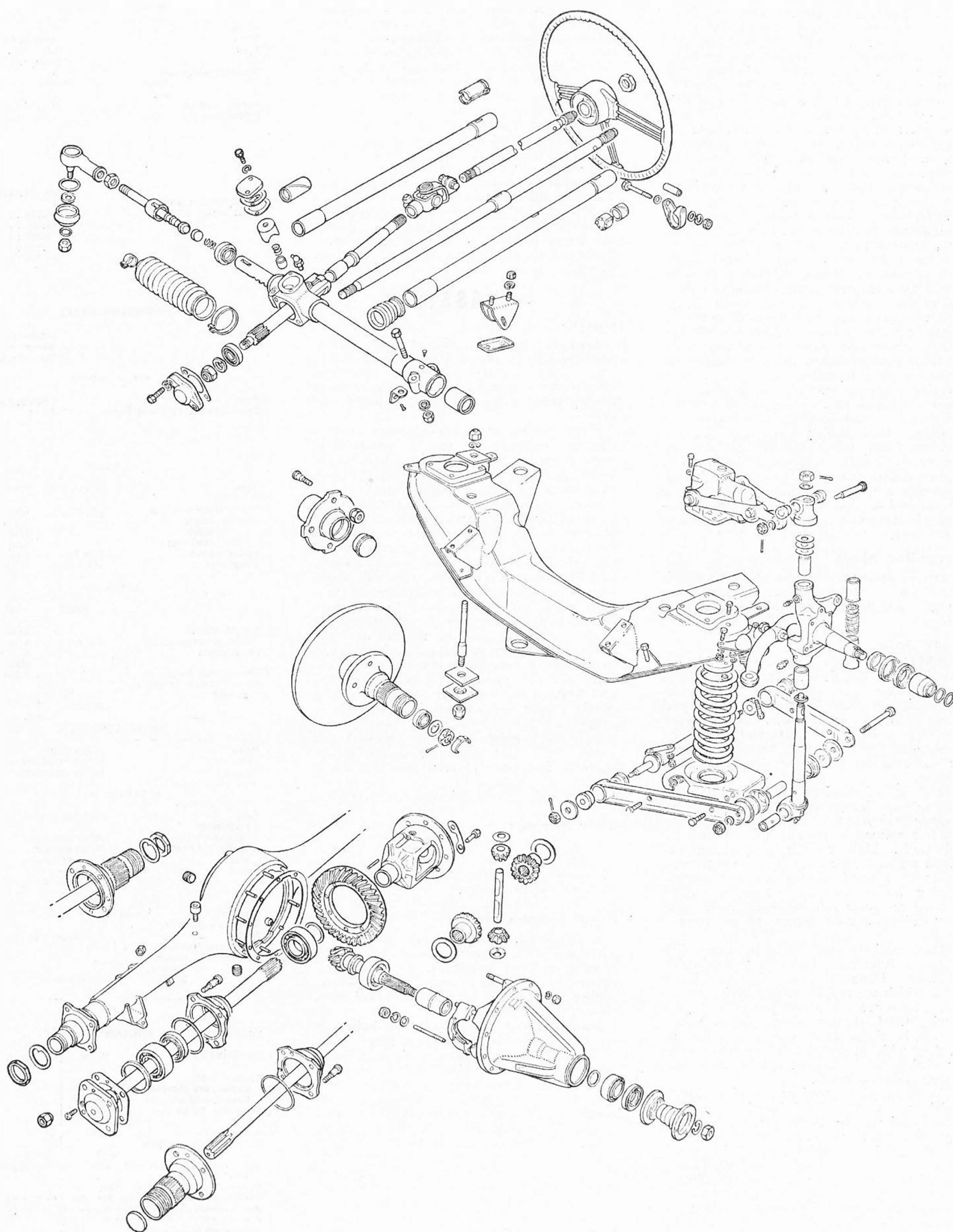
SPRINGS		
	Front	Rear
Length (overall)	—	44in
Width (or mean coil dia)	3.238in	1 $\frac{1}{2}$ in
No. of leaves	—	5 + base plate
Free camber (length, coil)	9.9 ± $\frac{1}{16}$ in	4.04in
Loaded camber (length, coil) at load	7 ± $\frac{1}{16}$ in at 1030lb	—

SHOCK ABSORBERS	
Make Type Service	Armstrong Piston (front and rear) top up/replacement

STEERING BOX	
Type	rack and pinion
Adjustments: rack end float pinion end float mesh	shims on damper thrust washer shims on damper

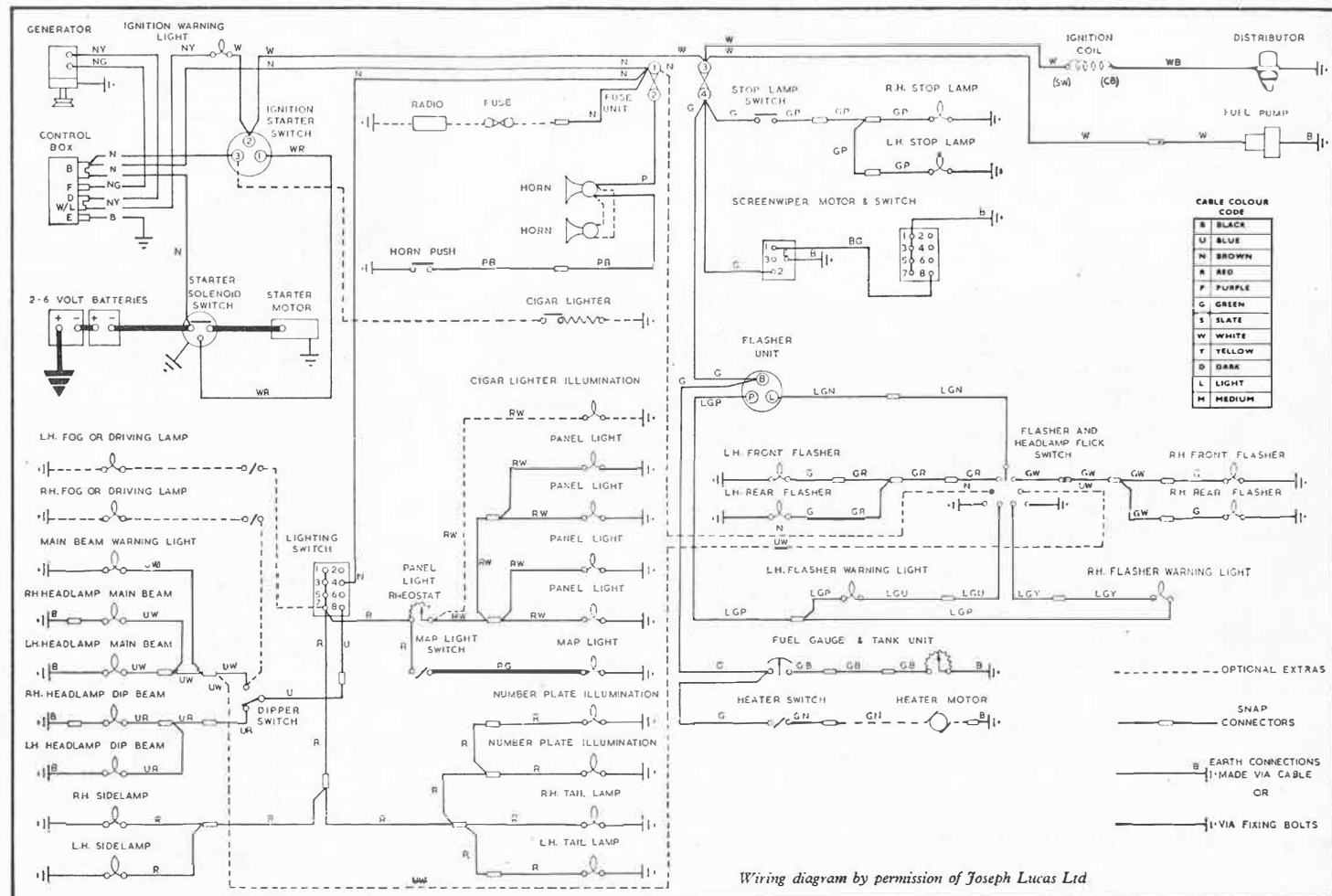
FRONT-END SERVICE DATA	
Gaster Camber } un-laden	7°
King pin inclination } 8°	
Toe-in	$\frac{1}{16}$ - $\frac{3}{16}$ in unladen
No. of turns lock to lock	2.93
Adjustments: caster camber toe-in	nil
	screwed tie rod ends

LUCAS ADDENDA (see p.vii)		
COMPONENT	Model	Part No.
Battery (2-off) Export, dry charged Export, cold climates Generator, Police cars	STGZ9E FGKZ11E	
Control box	C42	22902
Distributor, Low octane fuel	RB340	37331
Max. centrifugal advance (crank degrees)	25D4	40916
No advance below 400 rev./min.		
Centrifugal advance springs Part No. 544 154 28		
Max. vacuum advance (crank degrees) 14°-18 at 18in Hg.		
Vacuum advance commences at 2in Hg.		
Windscreens wiper, earlier fitment	DR3A	75469
Horns, earlier fitment	9H	540 680 08 HN
Direction indicator and Headlamp flasher switch optional	85SA	34588
		540 680 09 LN



From top to bottom, parts of the steering mechanism complete with column and universal jointing; the front suspension with detail of component parts and the rear axle unit





LUCAS EQUIPMENT		
*BATTERY (2-off)		
Model SG9E		
Model C40		*GENERATOR
		Part No. 22700
Model RB340		*CONTROL BOX
		Part No. 37334
Model M418G		*STARTING MOTOR
Drive 'S'-type	' Inboard	Part No. 25555
*DISTRIBUTOR		
		High Octane Fuel
Model 25D4		Part No. 40897
Max. centrifugal advance (crank degrees) 18-22 at 3000 rev/min.		
No advance below 400 r.p.m.		
Centrifugal advance springs. Part No. 54415428		
Max. vacuum advance (crank degrees) 18-22 at 20in Hg.		
No advance below 2½ in. Hg.		
*IGNITION COIL		
Model HA12		Part No. 45102
Primary resistance 3.0-3.5 ohms		
Running current at 2,000 r.p.m. 1.4 amp.		
*WINDSCREEN WIPER		
Model DR3A		Part No. 75442
*HORN(S)		
Model 9H		Part No(s) 54068024HN
		54068025 LN
Type: Windtone		
Current consumption 3.0-3.5 amp. (per horn)		
*FLASHER UNIT		
Model FL5		Part No. 35020
*FUSE UNIT		
Model 54038033		
Fuse ratings 35 amp 50 amp		
*See also Addenda p.v		

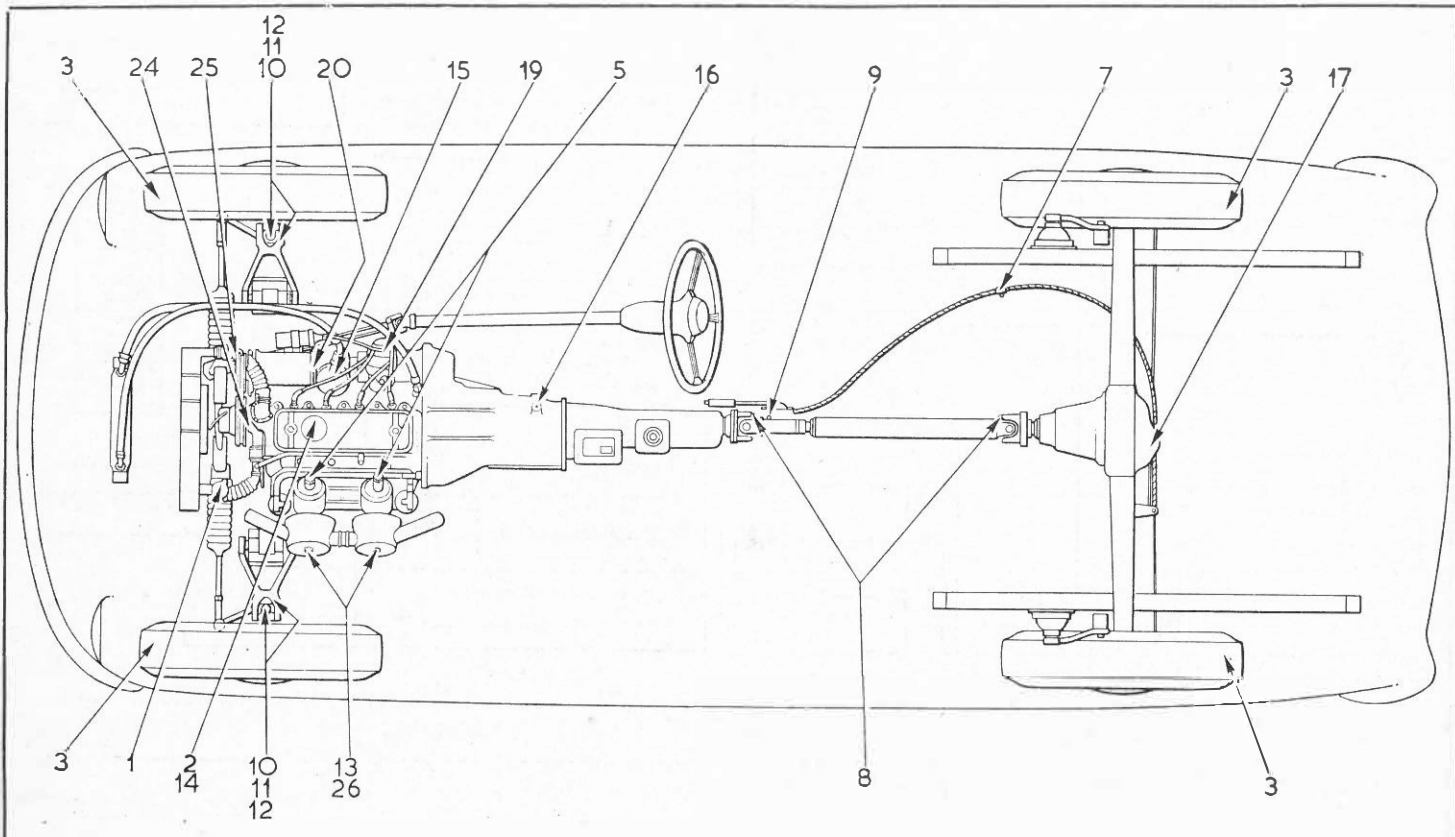
SWITCHES	Model	Part No.
Ignition/starter	47SA	31973
Starter solenoid	25T	76464
Lighting	57SA	31837
Fog lamp	65SA	31828
Long range driving lamp	65SA	31828
*Direction indicator	85SA	34518
Dip	21SA	31800
Stop light	31SA	31802
Panel light	3R	78405
Wiper	57SA	34426
Steering column control	CC5	33590

TRANSMISSION UNITS		
	Model	Part No.
LAYCOCK		
Control switch	65SA	31828
Transmission gear solenoid	11S	76522
Vacuum switch	60SA	34508

TUNE-UP DATA			
Firing order	1-3-4-2	Carburettor: make	S.U.
Tapet clearance* (cold): inlet	.015in	type	H.8.4 (twin)
exhaust	.015in	Settings: choke	1½in
Valve timing: inlet opens	16° BTDC	main jet	.090in
inlet closes	56° ABDC	needs: standard	No. 5
exhaust opens	51° BBDC	rich	No. 6
exhaust closes	21° ATDC	weak	21
Standard ignition timing: H.C.	10° BTDC	Piston spring colour	red
L.C.	8° BTDC	Air cleaner: make	Cooper
Location of timing mark	c/shaft pulley	type	paper element
Plugs: make	Champion	Fuel pump: make	8.U.
type	N-9Y	min. flow	electric H.P.
size	14mm (2in reach)		7 gall/hr.
gap	.024-.026in		
		*Set to .021in. for timing.	

Lamps	Model	Part No.	BULB OR SEALED BEAM UNIT		
			Lucas No.	Wattage	Cap
*Head RHD dip left	F700	58683	54521872	60/45	8BU
Fog (optional)	WFT576	55189	323	48	BPF
Long range driving (optional)	WLR576	55188	185	48	BPF
Side/flasher	677	52551	989 side	6	MCC
Stop tail	676	53915	382 flasher	21	SCC
&			380 stop/tail	6/21	SBC
Rear and flasher			382 flasher	21	SCC
Number plate	534	54108	207	6	SCC
Panel bulbholder only		554734	987	2.2	MES
Bulbholder		554734	987	2.2	MES
Cover		574825			
Glass		573915			
Gasket		573916			
Ignition warning bulbholder only		319408	987	2.2	MES
Main beam warning bulbholder only		54944812	987	2.2	MES
Flasher warning bulbholder only		863511	987	2.2	MES
*See also Addenda.					

ADDENDA			BULB OR SEALED BEAM UNIT		
Lamps	Model	Part No.	Lucas No.	Wattage	Cap
Head LHD, dip right	F700	58687	415	50/40	Unified European
Head, Export Europe	F700	58685	410	45/40	Unified European
Head, Export France	F700	58686	411	45/40	Unified European
Head, Export Sweden	F700	58688	410	45/40	Unified European
Head, Export U.S.A. and Canada	F700	58684			
Side and flasher, Export N. America	677	52552	989 side	6	MCC
Stop/tail and flasher, Export N. America	676	53916	382 flasher	21	SCC
			380 stop/tail	6/21	SBC
			382 flasher	21	SCC



## KEY TO MAINTENANCE DIAGRAM

## DAILY

1. Radiator
2. Engine sump

} check and top up

## WEEKLY

3. Tyre pressures—check
- \*4. Batteries—check and top up

## EVERY 3,000 MILES

5. Carburettor piston dampers
- \*6. Brake and clutch fluid reservoirs
7. Handbrake cable
8. Propeller shaft front and rear universal joints
9. Propeller shaft sliding joint
10. Front suspension & swivel pin top bush
11. Front suspension swivel pin lower bush
12. Front suspension swivel pin base
13. Carburettor air filters (dry type)—clean

} check and top up

} grease gun

## EVERY 6,000 MILES

14. Engine sump—drain and refill
15. Engine oil filter element—renew
16. Gearbox/overdrive
17. Rear axle
- \*18. Engine valve rocker clearances—check and reset as necessary

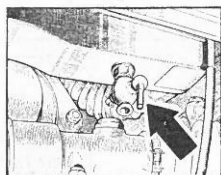
} check and top up

19. Distributor—check contacts setting, oil auto. advance mechanism, shaft bearing and contact breaker pivot, smear cam with grease
20. Dynamo—two drops engine oil to end bearing, check belt tension
- \*21. Sparking plugs—clean
- \*22. Disc brake pads—examine for wear, replace if necessary
- \*23. Front wheel alignment—check

## EVERY 12,000 MILES (AS FOR 6,000 MILES PLUS FOLLOWING)

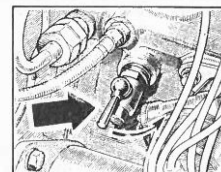
24. Water pump—lubricate sparingly with grease
25. Steering rack—apply oil gun to nipple and give no more than 10 strokes
26. Carburettor air cleaners (dry type)—renew

\*—Not shown on diagram



## DRAINING POINTS

Left: shows radiator matrix drain tap access from beneath. Right: cylinder block drain tap situated adjacent to the distributor unit



## FILL-UP DATA

	Pints	Litres
Engine sump	7½	4.26
Oil cooler (when fitted)	2½	.42
Gearbox	4½	2.56
Gearbox with overdrive	5	2.84
Rear axle	2½	1.28
Cooling system	9½	5.4
Cooling system with heater	10	5.7
Fuel tank	10 galls.	45.4
Tyre pressures:		
*front and rear	18lb/sq in	1.27kg/cm²
†front and rear	24lb/sq in	1.69kg/cm²

\*Standard tyres, normal motoring including sustained speeds up to 90 m.p.h.

†Maximum at speeds in excess of 90 m.p.h.

## RECOMMENDED LUBRICANTS

	CASTROL	ESSO	B.P.	DUCKHAMS	MOBIL	SHELL	FILTRATE	STERNOL
Engine: All temperatures above 0°F (−18°C), and Gearbox	Castrolite*	Extra Motor Oil	Energol Visco-Static	Q5500	Mobiloil Special	X-100 Multigrade 10W/30	10W/30 Multigrade	Multiplie
Steering rack and Rear Axle (a)	Castrol Hypoy	Gear Oil GP 90	Energol SAE 90EP	Hypoid 90	Mobilube GX 90	Spirax 90 EP	Hypoid Gear 90	Ambroleum EP 90
Water pump and Grease points	Castrollease LM	Multi-purpose Grease H	Energol L2	L.B. 10 Grease	Mobilgrease MP	Retinax A	Super Lithium Grease	Ambroline LHT
Oil can, SU carb dashpots.	Castrolite*	Extra Motor Oil	Energol Visco-Static	Q5500	Mobiloil Special	X-100 Multigrade 10W/30	10W/30 Multigrade	Multiplie
Upper cylinder lubricant	Castrollo	Upper Cylinder Lubricant	Energol UCL	Adcoid Liquid	Upperlube	Upper Cylinder Lubricant	Petroyle	Magikoyl

(a) Rear axle and steering: For temperature below 10°F use SAE 80 Hypoid lubricant.

Hydraulic brakes and clutch: Lockheed disc brake fluid (Series II)

Shock absorbers: Armstrong Super (thin) Shock Absorber Fluid.

Note: MULTIGRADE OILS. \*For temperatures below 10°F (−12°C) use SAE 10W/30 oil  
\*\*Approval is also given to Duckhams Q.20-50, B.P. Visco-Static "Longlife" oils and to Monograde or single viscosity oils supplied by the companies listed in this chart.