



BY APPOINTMENT
TO H.M. QUEEN ELIZABETH
THE QUEEN MOTHER
BRITISH LEYLAND UK LIMITED
LEYLAND CARS
MANUFACTURERS OF DAIMLER JAGUAR,
ROVER CARS AND LAND ROVERS

REPAIR OPERATION MANUAL

For

JAGUAR SERIES III V.12 'E' TYPE

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FOREWORD

- (i) The Manufacturers reserve the right to vary their specifications with or without notice, and at such times and in such manner as they think fit. Major as well as minor changes may be involved in accordance with the Manufacturer's policy of constant product improvement.
- (ii) Whilst every effort is made to ensure the accuracy of the particulars contained in this Manual, neither the Manufacturer nor the Distributor or Dealer, by whom this Manual is supplied, shall in any circumstance be held liable for any inaccuracy or the consequences thereof.

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INTRODUCTION

The purpose of this manual is to assist skilled mechanics in the efficient repair and maintenance of Jaguar vehicles. Using the appropriate service tools and carrying out the procedures as detailed will enable the operations to be completed in the time stated in the 'Repair Operation Times'.

Indexing

For convenience, the manual is divided into a number of sections. Page 01-3 lists the titles and reference numbers of the various sections.

A list of the operations within each section appears in alphabetical order on the page preceding each section.

Operation Numbering

A master index of numbered operations has been compiled for universal application to all vehicles manufactured by the British Leyland Motor Corporation and, therefore, because of the different specifications of various models, continuity of the numbering sequence cannot be maintained throughout this manual.

Each operation described in the manual is allocated a number from the master index and cross-refers with an identical number in the 'Repair Operation Times'. The number consists of six digits arranged in three pairs.

Each instruction within an operation has a sequence number and, to complete the operation in the minimum it is essential that the instructions are performed in numerical sequence commencing at 1 unless otherwise stated here applicable, the sequence numbers identify the relevant components in the appropriate illustration.

Service Tools

Where performance of an operation requires the use of a service tool, the tool number is quoted under the operation heading and is repeated in, or following, the instruction involving its use. An illustrated list of all necessary tools is included in section 99.

References

References to the left- or right-hand side in the manual are made when viewing from the rear. With the engine and gearbox assembly removed, the 'timing cover' end of the engine is referred to as the front. A key to abbreviations and symbols is given on pages 01-5 and 01-6.

Amendments

Revised and additional procedures resulting from changes in the vehicle specifications will be issued as revised or additional pages.

The circulation of amendments will be confined to Distributors and Dealers of Jaguar Cars Limited.

REPAIRS AND REPLACEMENTS

When service parts are required it is essential that only genuine Jaguar or Unipart replacements are used.

Attention is particularly drawn to the following points concerning repairs and the fitting of replacement parts and accessories.

Safety features embodied in the car may be impaired if other than genuine parts are fitted. In certain territories, legislation prohibits the fitting of parts not to the vehicle manufacturer's specification. Torque wrench setting figures given in the Repair Operation Manual must be strictly adhered to. Locking devices, where specified, must be fitted. If the efficiency of a locking device is impaired during removal it must be renewed. Owners purchasing accessories while travelling abroad should ensure that the accessory and its fitted location on the car conform to mandatory requirements in their country of origin.

The car warranty may be invalidated by the fitting of other than genuine Jaguar parts. All Jaguar or Unipart replacements have the full backing of the factory warranty.

Jaguar Distributors and Dealers are obliged to supply only genuine service parts.

AGREED ABBREVIATIONS AND SYMBOLS

Term	Abbreviation or Symbol
Across flats (bolt size)	A.F.
After bottom dead centre	A.B.D.C.
After top dead centre	A.T.D.C.
Alternating current	a.c.
Ampere	Amp
Ampere-hour	Amp hr
Before bottom dead centre	B.B.D.C.
Before top dead centre	B.T.D.C.
Bottom dead centre	B.D.C.
Brake mean effective pressure	B.M.E.P.
Brake horse power	b.h.p.
British standards	BS
Carbon monoxide	CO
Centimetre	cm
Centigrade	C
Cubic centimetre	cm ³
Cubic inches	in ³
Degree (angle)	deg or °
Degree (temperature)	deg or °
Diameter	dia.
Direct current	d.c.
Fahrenheit	F
Feet	ft
Feet per minute	Ft/min
Fifth	5th
Figure (illustration)	Fig
First	1st
Fourth	4th
Gramme	g
Gallons (Imperial)	gal
Gallons (U.S.)	U.S. gal
High compression	h.c.
High tension (electrical)	h.t.
Hundredweight	cwt
Independent front suspension	i.f.s
Internal diameter	i.dia
Inches of mercury	in Hg
Inches	in
Kilogramme	kg
Kilogramme centimeter (torque)	kg.cm
Kilogramme per square centimetre	kg/cm ²
Kilogramme metres (torque)	kg.m
Kilometres	km
Kilometres per hour	km/h
Kilovolts	KV
King pin inclination	k.p.i.
Left-Hand	L.H.
Left-hand steering	L.H. Stg.
Left-hand thread	L.H. Thd.
Litres	litre
Low compression	l.c.
Low tension	l.t.
Maximum	max.
Metre	m
Microfarad	mfd
Midget edison screw	MES
Millimetre	mm

AGREED ABBREVIATIONS AND SYMBOLS

Term	Abbreviation or Symbol
Miles per gallon	m.p.g.
Miles per hour	m.p.h.
Minimum	min
Minute (of angle)	'
Minus (of tolerance)	— or ±
Negative (electrical)	—
Number	No.
Ohms	ohm
Ounces	oz
Ounce inch	oz. in
Outside diameter	o.dia
Paragraphs	para
Part number	Part No.
Percentage	%
Pints (Imperial)	pt
Pints (U.S.)	U.S. pt
Plus (tolerance)	+ or ±
Positive (electrical)	+
Pound (Force)	lbf
Pounds feet	lb.ft
Pounds inches	lb.in
Pound (mass)	lb
Pounds per square inch	lb/in ²
Radius	r
Rate (Frequency)	c/min
Ratio	:
Reference	ref
Reverse	reverse
Revolutions per minute	rev/min
Right-hand	R.H.
Right-hand steering	R.H. Stg
Second (angle)	"
Second (numerical order)	2nd
Single carburetter	SC
Specific gravity	sp.gr.
Square centimetres	cm ²
Square inches	in ²
Standard	std.
Standard wire gauge	s.w.g.
Synchroniser/synchromesh	synchro.
Third	3rd
Top dead centre	T.D.C.
Twin carburetters	TC
United Kingdom	UK
Volts	V
Watts	W

SCREW THREADS

American Standard Taper Pipe	N.P.T.F.
British Association	B.A.
British Standard Fine	B.S.F.
British Standard Pipe	B.S.P.
British Standard Whitworth	Whit.
Unified Coarse	U.N.C.
Unified Fine	U.N.F.



AMENDMENTS

To ensure that a record of amendments to this manual is available, this page will be re-issued with each revised page or each set of revised pages.

The amendment number, date of issue, appropriate instructions and revised page numbers will be quoted. Revised pages must be inserted in place of the existing pages carrying the same number and the old pages discarded.

Additional pages may also be issued. In such cases, the new pages will carry suffix letters and must be inserted immediately following the existing page carrying the original number. To assist in identifying amendments on revised pages, two asterisks (**) will be inserted at the beginning and end of the amended paragraph, instruction or illustration.

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GENERAL SPECIFICATION DATA

Clutch

Make	Borg and Beck
Type	Diaphragm spring
Clutch release bearing material	Graphite
Clutch adjustment	Push rod adjustable for length
Operation	Hydraulic
Hydraulic fluid	Castrol/Girling Brake fluid GREEN — exceeding Specification S.A.E. **J.1703/C**

Gearbox

Speeds	Four forward, one reverse
Synchromesh	All forward gears
Ratios — First	2.933:1
— Second	1.905:1
— Third	1.389:1
— Fourth	1.000:1
— Reverse	3.378:1

Final Drive Unit

Type	Hypoid
Ratio: Cars fitted with:—	
Manual transmission U.S.A./Canada Only	3.54:1
Automatic transmission U.S.A./Canada Only	3.31:1
Manual transmission Other Countries	3.31:1
Automatic transmission Other Countries	3.07:1

Automatic Gearbox

Make and Type	Borg Warner Model 12
---------------	----------------------

Cooling System

Water pump — Type	Centrifugal
— Drive	Belt
Number of cooling fans	2
Type of fans	Electrically driven, thermostatically controlled
Cooling system control	Thermostats, one to each cylinder head
Operating temperature	82°C
Fully open temperature	93.5°C to 96°C
Header tank pressure cap rating	,91 kg/sq. cm (13 lb/sq. in.)
Cap — Make	A. C. Delco

Fuel System

Carburettors — Make and Type	Zenith Stromberg 175 CD2SE
— Size	44,45 mm (1.750 in.)
Jet Needle — Type	B1.BH
— Size	2,54 mm (.1 in.) NOMINAL, flowed jet
Fuel pump — Operation	Electrical
— Type	S. U. AUF.406



Braking System

Front brakes — Make and Type

Rear brakes — Make and Type

Handbrake — Type

Disc diameter — Front

— Rear

Disc thickness — Front

— Rear

Master cylinder bore diameter

Brake operation

Hydraulic fluid

Main brake friction pad material

Hand brake friction pad material

Servo unit type

Girling; ventilated disc, bridge

type calipers

Girling; disc, bridge type calipers
incorporating handbrake friction pads

Mechanical, operating on rear discs

284 mm (11.18 in.)

263,5 mm (10.375 in.)

24,13 mm (.950 in.)

12,7 mm (.500 in.)

22,22 mm (.875 in.)

Hydraulic

Castrol/Girling Brake fluid GREEN — exceeding
specification S.A.E. **J.1703/C**

Ferodo 2430

Mintex M.34

Girling type 8 remote servo unit

Front Suspension

Type

Castor angle

Camber angle

Front wheel alignment

Dampers

Fully independent

 $2\frac{1}{2}^{\circ} \pm \frac{1}{2}^{\circ}$ positive $0^{\circ} \pm \frac{1}{4}^{\circ}$ positive

1.6 mm to 3.2 mm (.062 in. to .125 in.)

Toe in

Telescopic, gas filled

Rear Suspension

Camber angle

Dampers

 $\frac{3}{4}^{\circ} \pm \frac{1}{4}^{\circ}$ negative

Telescopic, gas filled

Power Assisted Steering

Steering gear — Type

Number of turns — Lock to lock

Turning circle — Pressed wheels

Turning circle — Wire wheels

Oil pump — location

— Operating pressure

Rack and pinion

3½

R.H. Lock 10,8 m (35ft. 7in.)

L.H. Lock 11,07 m (36ft. 4in.)

R.H. Lock 10,6 m (34ft. 10in.)

L.H. Lock 11,07 m (36ft. 4in.)

Front left hand side of engine

77,3 kg/sq. cm to 84,4 kg/sq. cm

(1100 lb/sq. in. to 1200 lb/sq. in.)

Tyre Pressures

Tyres — Make and Type

Dunlop. E.70 VR 15 SP Sports

For normal use with speeds up to
192 km/h (120 m.p.h.)**Front**

1,7 kg/sq. cm

(1,65 Bars)

(24 lb/sq.in.)

Rear

2,0 kg/sq. cm

(1.9 Bars)

(28 lb/sq.in.)

For sustained speeds in excess of
192 km/h (120 m.p.h.)

2,67 kg/sq. cm

(2.62 Bars)

(38 lb/sq.in.)

2,8 kg/sq. cm

(2.75 Bars)

(40 lb/sq.in.)



Snow Tyres

Dunlop S.P.44 Weathermaster tyres (185 x 15) may be fitted to rear wheels only. With these tyres, speeds should be restricted to 137 km/h (85 m.p.h.) for normal use with an absolute maximum of 160 km/h (100 m.p.h.). Recommended tyre pressures are 2,25 kg/sq.cm. (2,2 Bars) (32 lb/sq.in.).

Special inner tubes marked with the tyre size and carrying the lettering WEATHERMASTER ONLY are available and MUST be fitted with these tyres.

Electrical Equipment

Battery – Make and Type
Voltage
Number of plates per cell
Capacity at ten hour rate
Capacity at twenty hour rate

Early cars
Lucas XCA 55/8
12
11
53
60

Later cars
Lucas CP 13/11/8
12
11
60
70

Alternator

Make
Nominal voltage
Maximum output
Maximum operating speed
Resistance of rotor coil

Butech
12 volts
60 amperes
10,000 alternator revs/min.
3.6 to 4.0 Ohms.

Starter Motor

Make and Type
Lock torque
Torque at 1,000 rev/min
Light running current

Lucas M45G Pre-engaged drive
4,007 kg/m (29 lb.ft.) at 940 Amps.
1,8 kg/m (13 lb.ft.) at 535 Amps.
100 Amps at 5,000 to 6,000 revs/min

Starter Motor Solenoid Switch

Closing coil resistance (measured
between terminal 'STA', copper
link removed and Lucar terminal)

0.36 to 0.42 Ohms.

Hold on coil resistance (measured
between Lucar terminal and solenoid
outer case)

1.49 to 1.71 Ohms.

Distributor

Make and Type
Service Number

Lucas 36 DE 12
41321

Windscreen Wiper Motor

Light running speed – rack
disconnected (after 60 seconds
from cold) – Normal
– High

40 revs/min.
60 revs/min.

Light running current (after 60
seconds from cold) – Normal
– High

1.0 Amps.
1.5 Amps.

Pressure of blades against windscreen

425g to 481g (15 to 17 ozs.)



ROAD SPEED/R.P.M. DATA

The following tables give the relationship between engine revolutions per minute and road speed in miles and kilometers per hour.

The safe maximum speed is **6,500 revolutions per minute**.

Engines must not, under ANY CIRCUMSTANCES, be allowed to exceed this figure.

It is recommended that engine revolution in excess of **6,000 per minute** should not be exceeded for long periods.

Therefore, if travelling at sustained high speed on motorways, the accelerator should be released occasionally to allow the car to overrun for a few seconds.

Road Speed		Final Drive Ratio 3.31:1 Engine Revolutions Per Min.			
K.p.h.	M.p.h.	First Gear 9.71:1	Second Gear 6.31:1	Third Gear 4.6:1	Top Gear 3.31:1
32	20	2551	1658	1209	869
64	40	5100	3314	2416	1739
96	60		4972	3624	2608
128	80			4833	3477
160	100				4345

Road Speed		Final Drive Ratio 3.54:1 Engine Revolutions Per Min.			
K.p.m.	M.p.h.	First Gear 10.39:1	Second Gear 6.74:1	Third Gear 4.92:1	Top Gear 3.54:1
32	20	2729	1770	1292	930
64	40	5456	3541	2584	1860
96	60		5311	3877	2789
128	80			5169	3718
160	100				4647

Note: The figures in these tables are theoretical and actual figures may vary slightly from those quoted due to such factors as tyre wear, pressures etc.



AUTOMATIC TRANSMISSION DATA

Maximum ratio of torque convertor	2.00:1
1st gear reduction	2.40:1
2nd gear reduction	1.46:1
3rd gear reduction	1.00:1
Reverse gear reduction	2.00:1

Automatic Shift Speeds
(All Axle Ratios)

	M.P.H.	K.P.H.
Light Throttle Upshifts		
1 - 2	8-16	12-25
2 - 3	20-31	32-49
Shut Throttle Downshifts		
2 - 1	3-7	4-11
3 - 2	16-21	25-33
Full Throttle Upshifts		
1 - 2	45-59	72-95
2 - 3	80-95	128-152
Manual Shut Throttle Downshift		
3 - 1	22-31	35-49
Part Throttle Downshift		
Obtainable up to	30-41	48-66



GENERAL SPECIFICATION DATA 04

Dimensions and Weights

Wheel base	2,66 m (8 ft. 9 in.)
Track – Front	1,38 m (4 ft. 6.375 in.)
– Rear – wire wheels	1,35 m (4 ft. 5.375 in.)
– Rear – pressed wheels	1,33 m (4 ft. 4.750 in.)
Overall length	4,67 m (15 ft. 4.375 in.)
Overall height (2 + 2)	1,30 m (4 ft. 3.125 in.)
(Open sports)	1,25 m (4 ft. 0.125 in.)
Kerb weight – approximately	1558 kg. (3435 lb.)
– with air conditioning	1587,5 kg. (3500 lb.)
Ground clearance	140 mm (5.500 in.)

Capacities

	Litre	Imp. Pints	U.S. Pints
Engine – Refill including filter	10,7	19.0	23
Gearbox	2,4	3.0	3.25
Automatic transmission unit (from dry)	9,0	16.0	19.0
Final drive unit	1,54	2.75	3.05
Cooling system	20,5	36.0	43
Petrol tank	81,0	18.0 gallons	20.25 gallons
Luggage compartment – Open two seater	0,135 m ³ (4.75 cu.ft.)		
– 2 + 2 seat back lowered	0,354 m ³ (12.5 cu.ft.)		
– 2 + 2 seat back raised	0,27 m ³ (9.5 cu.ft.)		



LAMP BULBS				
LAMP	LUCAS BULB NO.	VOLTS	WATTS	APPLICATION
Head	Sealed Beam Unit 411	12	75/50 50/40 60/50 45/40 (Yellow)	Home and R.H. drive export U.S.A./CANADA L.H. drive (Not U.S.A./CANADA) FRANCE
Side/flasher	380	12	6/21	U.S.A./CANADA – ITALY ONLY
Front flasher	382	12	21	All countries (Not U.S.A./ CANADA – ITALY)
Sidelamp	501	12	5	All countries (not U.S.A./ CANADA – ITALY)
Rear Flashing Indicators	382	12	21	
Reversing Light	273	12	21	
Rear/Brake	380	12	21/6	
Number Plate Illumination	989	12	5	
Interior Lights	382 989	12 12	21 6	Open 2 Seater 2 + 2
Map Light	989	12	6	
Instrument Illumination Headlamp warning light Ignition warning light Fuel level warning light Handbrake/Brake Fluid warning light Mixture control warning light Traffic warning device indicator light	987	12	2	
Switch indicator strip Flashing indicator warning light	281	12	2	
Automatic transmission selector quadrant	281	12	2	

Piston Rings

Number of compression rings	2
Number of oil control rings	1
Top compression ring width	3.81 mm to 4.06 mm (.150 in to .160 in)
Second compression ring width	3.81 mm to 4.06 mm (.150 in to .160 in)
Oil control ring width	Self expanding
Width of oil control ring rails	3.37 mm \pm .07 mm (.103 in \pm .003 in)
Top compression ring thickness	1.56 mm to 1.58 mm (.062 in to .063 in)
Second compression ring thickness	1.95 mm to 1.98 mm (.077 in to .078 in)
Side clearance of top compression ring in groove	.07 mm (.0029 in)
Side clearance of second compression ring in groove	.08 mm (.0034 in)
Side clearance of oil control rings in groove	.14 mm to .17 mm (.0055 in to .0065 in)
Top compression ring gap in bore	.35 mm to .48 mm (.014 in to .020 in)
Second compression ring gap in bore	.25 mm to .38 mm (.010 in to .015 in)
Gap of oil control ring rails in bore	.38 mm to 1.14 mm (.015 in to .045 in)

Gudgeon Pins

Type	Fully floating
Length	79.24 mm to 79.40 mm (3.120 in to 3.125 in)
Outside diameter – Grade 'A' Red	23.80 mm (.9375 in)
– Grade 'B' Green.	23.75 mm (.9373 in)

Camshafts

Number of journals	Seven per shaft
Number of bearings	Seven per shaft (fourteen half bearings)
Type of bearings	Aluminium alloy – Camshafts run direct in caps
Journal diameter – All journals	27.11 mm \pm .015 mm \pm .000 mm (1.0615 in \pm .0005 in \pm .000 in)
Diametrical clearance	.03 mm to .07 mm (.001 in to .003 in)
Thrust taken	Front end of shafts

Jackshaft

Number of bearings	3
Diametrical clearance in block	.015 mm to .076 mm (.0005 in to .003 in)
Thrust taken	Front end of shaft
Permissible end float	.13 mm (.005 in)
Line bore of front bearing	31.77 mm to 32.00 mm (1.251 in to 1.252 in)
Line bore of centre and rear bearing	30.22 mm to 30.24 mm (1.190 in to 1.191 in)

Valve Timing

Inlet valve opens	17° B.T.D.C.
Inlet valve closes	59° A.B.D.C.
Exhaust valve opens	59° B.B.D.C.
Exhaust valve closes	17° A.T.D.C.

Valves and Valve Springs

Inlet valve material	Silico chrome steel
Exhaust valve material	Austenitic steel
Inlet valve head diameter	41.22 mm to 41.32 mm (1.623 in to 1.627 in)
Exhaust valve head diameter	34.5 mm to 34.6 mm (1.358 in to 1.362 in)
Valve stem diameter – Inlet and Exhaust	**7.84 mm to 7.87 mm (.3092 in to .3097 in)**
Valve lift	9.5 mm (.375 in)
Inlet valve clearance	.304 mm to .355 mm (.012 in to .014 in)
Exhaust valve clearance	.304 mm to .355 mm (.012 in to .014 in)
Outer valve spring free length	53.4 mm (2.103 in)
Inner valve spring free length	44.0 mm (1.734 in)

Valve Guides and Seats

Valve guide material	Cast iron
Inlet valve guide length	48.5 mm (1.910 in)
Exhaust valve guide length	54.0 mm (2.125 in)
Inlet valve guide outside diameter	As exhaust valve guide



Valve Guides and Seats – Continued

Exhaust valve guide outside diameter

Standard:— 12.75 mm to 12.72 mm

(.502 in to .501 in) Diameter

First oversize (2 grooves) 12.92 mm to 12.85 mm

(.507 in to .506 in) Diameter

Second oversize (3 grooves) 15.29 mm to 15.26 mm

(.512 in to .511 in) Diameter

Inlet valve guide finished bore

7.87 mm to 7.88 mm (.311 in to .312 in)

Exhaust valve guide finished bore

7.87 mm to 7.88 mm (.311 in to .312 in)

Maximum clearance between valve stem and guide

.05 mm to .06 mm (.0020 in to .0023 in)

Interference fit in cylinder head

.05 mm to .15 mm (.002 in to .006 in)

Valve seat insert material

Sintered iron

Inlet valve seat insert diameter

43.9 mm $\begin{smallmatrix} +.01 \\ -.000 \end{smallmatrix}$ mm (1.7282 in $\begin{smallmatrix} +.0005 \\ -.0000 \end{smallmatrix}$ in)

Exhaust valve seat insert diameter

37.8 mm $\begin{smallmatrix} +.01 \\ -.000 \end{smallmatrix}$ mm (1.4882 in $\begin{smallmatrix} +.0005 \\ -.0000 \end{smallmatrix}$ in)

Inlet valve seat inside diameter

33.4 mm $\begin{smallmatrix} +.25 \\ -.00 \end{smallmatrix}$ mm (1.350 in $\begin{smallmatrix} +.010 \\ -.000 \end{smallmatrix}$ in)

to

to

37.84 mm $\begin{smallmatrix} +.25 \\ -.00 \end{smallmatrix}$ mm (1.490 in $\begin{smallmatrix} +.010 \\ -.000 \end{smallmatrix}$ in)

Exhaust valve seat inside diameter

29.4 mm $\begin{smallmatrix} +.20 \\ -.00 \end{smallmatrix}$ mm (1.160 in $\begin{smallmatrix} +.008 \\ -.000 \end{smallmatrix}$ in)

to

to

33.5 mm $\begin{smallmatrix} +.25 \\ -.00 \end{smallmatrix}$ mm (1.325 in $\begin{smallmatrix} +.010 \\ -.000 \end{smallmatrix}$ in)**Service replacements**

Inlet valve seat insert diameter

44.26 mm $\begin{smallmatrix} +.01 \\ -.00 \end{smallmatrix}$ mm (1.744 in $\begin{smallmatrix} +.0005 \\ -.0000 \end{smallmatrix}$ in)

Exhaust valve seat insert diameter

38.17 mm $\begin{smallmatrix} +.01 \\ -.00 \end{smallmatrix}$ mm (1.503 in $\begin{smallmatrix} +.0005 \\ -.0000 \end{smallmatrix}$ in)

Inlet valve seat inside diameter

35.56 mm $\begin{smallmatrix} +.07 \\ -.00 \end{smallmatrix}$ mm (1.400 in $\begin{smallmatrix} +.003 \\ -.000 \end{smallmatrix}$ in)

to

to

39.74 mm $\begin{smallmatrix} +.25 \\ -.00 \end{smallmatrix}$ mm (1.565 in $\begin{smallmatrix} +.010 \\ -.000 \end{smallmatrix}$ in)

Exhaust valve seat inside diameter

30.1 mm $\begin{smallmatrix} +.07 \\ -.00 \end{smallmatrix}$ mm (1.185 in $\begin{smallmatrix} +.003 \\ -.000 \end{smallmatrix}$ in)

to

to

33.4 mm $\begin{smallmatrix} +.12 \\ -.00 \end{smallmatrix}$ mm (1.315 in $\begin{smallmatrix} +.005 \\ -.000 \end{smallmatrix}$ in)**Tappets and Tappet Guides**

Tappet Material

Cast Iron (Chilled)

Outside diameter of tappet

34.89 mm to 34.90 mm (1.373 in to 1.374 in)

Diametrical clearance

.02 mm to .04 mm (.001 in to .002 in)

Lubricating System

Oil pump

Epicyclic gear type

Oil pump gears

Diametrical Clearance

Radial Clearance.

Driving gear O/D

.127 mm to .304 mm

.07 mm to .152 mm

Driven gear O/D

(.005 in to .012 in)

(.0025 in to .006 in)

Driven gear I/D

.178 mm to .254 mm

.09 mm to .13 mm

(.007 in to .010 in)

(.0035 in to .005 in)

Side clearance — Driving and

.28 mm to .46 mm

.14 mm to .23 mm

Driven Gear

(.011 in to .018 in)

(.0055 in to .009 in)

Oil filter type

.12 mm to .17 mm. (.0045 in to .0065 in)

Full flow, renewable element

Timing Chains and Sprockets

Type of chain

Duplex endless

Pitch

9.5 mm (.375 in)

Number of pitches

180

Camshaft sprockets — number of teeth (each)

42

Crankshaft sprocket — number of teeth

21

Jackshaft sprocket — number of teeth

21

Sparking Plugs

Make

Champion

Type

N9Y

Gap

.63 mm (.025 in)



TORQUE WRENCH SETTINGS

ENGINE

	Kg.m	lb.ft.
Cylinder head nuts 7/16 in U.N.F.	7.2	52
3/8 in U.N.F.	**3.7	27.5**
Main bearing nuts 3/8 in U.N.F.	3.7	27.5
1/2 in U.N.F.	8.6	62.5
Big end nuts	5.1	37.5
Flywheel bolts	9.1	66.5
Crankshaft bolt	17.3 to 20.7	125 to 150
Camshaft bearing cap nuts	1.2	9
Camshaft cover nuts and bolts	1.1	8
Torque converter bolts	4.8	35
Main bearing studs 3/8 in.	0.7	5
1/2 in.	2.7	20
Cylinder head studs 3/8 in.	0.7	5
1/2 in.	2.1	15
Engine mounting bracket to frame	2.1 to 2.5	15 to 18
Mounting rubber to frame bracket	3.8 to 4.4	28 to 32
Mounting rubber to engine bracket	3.8 to 4.4	28 to 32
Rear engine mounting bolt	9.6 to 10.4	70 to 75
Rear engine mounting to body	2.1 to 2.5	15 to 18

Fuel System

Sump to petrol tank	3.5	25
Petrol tank drain plug	3.5	25
Petrol tank mounting bolts	1.6	12
Fuel pump mounting to bracket	1.0	7
Fuel pump bracket to body	1.0	7
Fuel filter to mounting bracket	2.5	18
Mounting bracket to body	2.5	18
1. Petrol pipe to torsion bar reaction bracket	3.8 to 4.4	28 to 32
Carbon canister to body	2.5	18
Banjo bolts and unions with exception of 1 above	3.0 to 3.5	21 to 25

Cooling System

Support bracket to radiator	2.5	18
Support bracket to sub-frame	3.5	25
Thermostatic switch to tee-piece	0.5	4
Fan cowl to radiator	0.8	6

Manifold and Exhaust System

Exhaust manifolds to down pipes	3.5	25
Exhaust pipe coupling flange nuts	1.5 to 1.8	11 to 13

Clutch

Pedal box to body	1.8	13
Pedal shaft retaining nut	2.5 to 3.0	18 to 22
Master cylinder to pedal box	1.8	13

Automatic Transmission

Pump to gear case bolt	2.35 to 3.04	17 to 22
Front servo to gear case bolt	4.15 to 4.84	30 to 35
Rear servo to gear case bolt	5.53 to 6.91	40 to 50
Centre support to gear case bolt	2.76 to 3.46	20 to 25
Valve body to gear case bolts 1/4 in.	0.69 to 1.11	5 to 8
Valve body to gear case bolts 5/16 in.	2.35 to 2.76	17 to 20
Extension housing to gear case bolts	3.87 to 4.56	28 to 33
Oil pan to gear case bolts	1.38 to 1.80	10 to 13



Automatic Transmission (Cont.)

	Kg.m	lb.ft.
Pressure check point plug	1.80 to 2.35	13 to 17
Filler tube nut	2.76 to 3.46	20 to 25
Rear band adjusting screw locknut	5.53 to 6.08	40 to 44
Gear case to bell housing bolts	8.02 to 8.98	58 to 65
Manual lever attaching nut	4.84 to 5.53	35 to 40
Front pump cover attaching screw	0.28 to 0.42	2 to 3
Governor inspection cover attaching screws	0.69 to 0.83	5 to 6
Governor valve body to counter-weight bolts	0.55 to 0.69	4 to 5
Governor valve body cover screws	0.28 to 0.35	2 to 2.5
Valve body and strainer screws	0.28 to 0.35	2 to 2.5
Vacuum control unit	1.80 to 2.35	13 to 17
Rear seal cover to extension housing bolt	4.15 to 4.84	30 to 35
Selector lever return spring locknut	0.5 to 0.6	4 to 4.5
Reverse switch	2.7	20
Ball end to gearbox lever	0.8 to 0.9	6 to 7
Cable to ball end	1.5 to 1.8	11 to 13

Propeller Shaft

Driving flange nuts	3.8 to 4.3	28 to 32
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Final Drive Unit

Final drive unit to cross beam	9.7 to 10.6	70 to 77
Fulcrum pin (inner) securing nut	6.2 to 6.9	45 to 50
Fulcrum pin (outer) securing nut	13.1 to 14.5	95 to 105
Final drive unit to drive shafts	6.9 to 7.6	50 to 55
Half shaft to hub carrier	19.3	140
Companion flange nut	16.6 to 19.3	120 to 140
Output shaft oil seal housing bolts	7.6 to 9.7	55 to 70
Drive gear bolts	9.7 to 11.1	70 to 80
Differential bearing cap bolts	**8.3 to 9.0**	60 to 65

Power Assisted Steering

Track rod ball joint nut	6.2 to 6.9	45 to 50
Steering rack to track rod	8.3 to 11.1	60 to 80
Steering column to body	2.1 to 2.5	15 to 18
Steering wheel to inner column	7.0 to 7.6	50 to 55
Universal joint to steering pinion	1.1	8
Universal joints to upper and lower columns	2.1 to 2.5	15 to 18

Front Suspension

Stub axle to vertical link	**13.4 to 14.8	97 to 107**
Tie rod lever to vertical link	7.0 to 7.6	50 to 55
Ball joint cap to vertical link	2.1 to 2.7	15 to 20
Upper fulcrum shaft nut	8.3 to 9.7	60 to 70
Lower fulcrum shaft nut	11.1 to 13.1	80 to 95
Upper wishbone pinch bolt	2.1 to 2.5	15 to 18
Fulcrum mounting brackets to frame	3.8 to 4.4	28 to 32
Anti-roll bar to frame	2.5	18
Link to anti-roll bar	7.0 to 7.6	50 to 55
Link to lower wishbone	7.0 to 7.6	50 to 55
Torsion bar cam adjuster nut	7.0 to 7.6	50 to 55
Torsion bar mounting bracket to body	7.0 to 7.6	50 to 55
Damper to frame	6.2 to 6.9	45 to 50
Damper to wishbone	6.2 to 6.9	45 to 50

Rear Suspension	K.gm	lb.ft.
Radius rod to wishbone	6.2 to 6.9	45 to 50
Radius rod and safety strap to body	5.5 to 6.2	40 to 45
Safety strap to body	2.1 to 2.5	15 to 18
Vee mounting fixings	2.1 to 2.5	15 to 18
Damper fixings	4.1 to 5.0	30 to 36
Front Brakes		
Brake disc to hub	4.1 to 5.0	30 to 36
Brake caliper to vertical link	7.0 to 8.3	50 to 60
Disc shield to vertical link	1.0	7
Rear Brakes		
Brake caliper to drive flange	7.0 to 7.6	50 to 55
Handbrake assembly to body	2.1 to 2.5	15 to 18
Fork end locknut	1.0	7
Compensator to cross beam	2.1 to 2.5	15 to 18
Brake Controls		
Pedal box to body	1.5 to 1.8	11 to 13
Pedal shaft nut	2.5 to 3.0	18 to 22
Vacuum tank to body	0.8 to 1.0	6 to 7
Fluid container clamp	0.45 to 0.61	3.5 to 4.5
Banjo bolt on master cylinder	3.8 to 4.4	28 to 32
1. Three way connections	1.0	7
2. Flexible hoses to body	3.8 to 4.4	28 to 32
3. Brake pipe to torsion bar reaction bracket	3.8 to 4.4	28 to 32
Hydraulic connections with exception of 1, 2 and 3 above	0.9 to 1.0	6.5 to 7
Road Wheels		
Wheel nuts	6.9 to 8.3	50 to 60
Body		
Accelerator mounting bracket to floor	1.0	7
Accelerator pedal to mounting bracket	1.0	7
Sub-frame to body	2.1 to 2.5	15 to 18
Sub-frame to body channels	3.8 to 4.4	28 to 32
Upper cross member to sub-frame	3.8 to 4.4	28 to 32
Lower cross member to sub-frame	2.1 to 2.5	15 to 18
Brake air duct to body	0.5	4
Heating System		
Heater box to bulkhead	1.0	7
Air Conditioning		
Condenser to radiator	1.0	7
Hose to evaporator	3.0 to 3.7	21 to 27
Evaporator hose to compressor	4.2 to 4.8	30 to 35
Condenser hose to compressor	4.2 to 4.8	30 to 35
Compressor hose to condenser	3.0 to 3.7	21 to 27
Drier bottle hose to condenser	2.0 to 2.7	15 to 20
Hoses to drier bottle — Aluminium tank	1.5 to 2.1	11 to 13
— Steel tank	4.2 to 4.8	30 to 35
Drier bottle hose to evaporator	1.5 to 2.1	11 to 13
Expansion valve to evaporator joint — expansion valve	2.1 to 2.8	15 to 20



RECOMMENDED LUBRICANTS, FLUID AND FUEL

Component	MOBIL	CASTROL	SHELL	ESSO	B.P.	DUCKHAM	TEXACO
Engine	Mobiloil Super or Mobiloil Special 20/50	Castrol GTX	Shell Super Oil	Uniflo	B.P. Super Visco-Static 20-50	Q20-50	Havoline 20W/40 or 10W/30
Upper cylinder lubrication	Mobil Upperlube	Castrollo	Shell U.C.L. or Donax U	Esso U.C.L.	B.P. U.C.L.	Adcoid Liquid	Texaco U.C.L.
Distributor oil can points Oil can lubrication	Mobiloil Super	Castrol GTX	Shell Super Oil	Uniflo	B.P. Super Visco-Static 20-50	Q20-50	Havoline 30
Gearbox Final Drive Unit ("Powr-Lok") top up only	Mobilube GX 90	Castrol Hypoy	Spirax 90 EP	Esso Gear Oil GX 90/140	B.P. Gear Oil SAE 90 EP	Hypoid 90	Multigear Lubricant EP.90
Final Drive Unit ("Powr-Lok") refill	Mobilube 46	Hypoy LS	Shell S.7143	Esso Gear oil GP 90/140	B.P. Linslip Gear oil 90/1	Hypoid 90 DL	3450 Gear Oil
Front wheel bearings Rear wheel bearings Final drive halfshafts Steering tie-rods Wheel swivels Door Hinges Steering housing	Mobil-grease MP or Mobil grease Super	Castrol LM Grease	Retinax A	Esso Multi-purpose Grease H	B.P. Energ grease L. 2	LB.10	Marfak All Purpose
Automatic transmission unit Power steering system	Mobil ATF 210	Castrol T.Q.F.	Shell Donax 17	Esso Glide	B.P. Autran B	Q-matic	Texamatic Type F

RECOMMENDED HYDRAULIC FLUID

Braking System and Clutch Operation

Castrol-Girling Brake Fluid (Green). This fluid exceeds S.A.E. **J.1703/C** specification.

FUEL REQUIREMENTS FOR
V12 ENGINES

The engine of this car is fitted with high compression ratio pistons (indicated by H after the engine number) use only Super grade fuel with a minimum octane rating of 98.
(Research method)

In the United Kingdom use '4 STAR' FUEL

If, of necessity, the car has to be operated on lower octane fuel do not use full throttle otherwise detonation may occur with resultant piston trouble.



CAPACITIES AND VEHICLE DIMENSIONS

	Capacities		
	Litres	Imp. Pints	U.S. Pints
Engine (refill including filter)	10,7	19.0	23
Gearbox	2,4	3.0	3.25
Automatic transmission unit (from dry)	9,0	16.0	19
Final drive unit	1,54	2.75	3.25
Cooling system	20,5	**36.0**	43
Petrol tank	81,0	18 Galls:	20.25 Galls:
Luggage Compartment (Open sports)		.135 m ³ (4.75 cu.ft)	
(2+2 – seat back lowered)		.354 m ³ (12.5 cu.ft)	
(2+2 – seat back raised)		.27 m ³ (9.5 cu.ft)	

Dimensions and Weights

Wheel base	2.66m (8ft 9ins)
Track (front)	1.38m (4ft 6 3/8ins)
(rear – wire wheels)	1.35m (4ft 5 3/8ins)
(rear – ventilated disc wheels)	1.33m (4ft 4 3/8ins)
Overall length	4.67 m (15ft 4 3/8ins)
Overall height (2+2)	1.30m (4ft 3 1/8ins)
(open sports)	1.25m (4ft 0 1/8ins)
Kerb weight (approximately)	1558kg (3435lb)
(with air-conditioning)	1587.5kg (3500lb)
Turning circle – (approximately)	
Wire wheels – Left lock	11.07m (36ft 4ins)
– Right lock	10.6m (34ft 10ins)
Ventilated disc wheels – Left lock	11.07m (36ft 4ins)
– Right lock	10.8m (35ft 7ins)
Ground clearance	140mm (5 1/2ins)



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20,000 Km. (12,000 miles)	10.10.24	—
40,000 Km. (24,000 miles)	10.10.48	—
80,000 Km. (48,000 miles)	10.10.96	—
Summary chart	—	10.05



LUBRICATION CHART

Daily

1. Engine — Check oil level and top up if necessary.
2. Cooling system — Check coolant level and top up if necessary.

Weekly

3. Battery — Check electrolyte level and top up if necessary.
4. Tyres — Check for damage; adjust pressures including spare.

Every 5,000 Km. (3,000 miles)

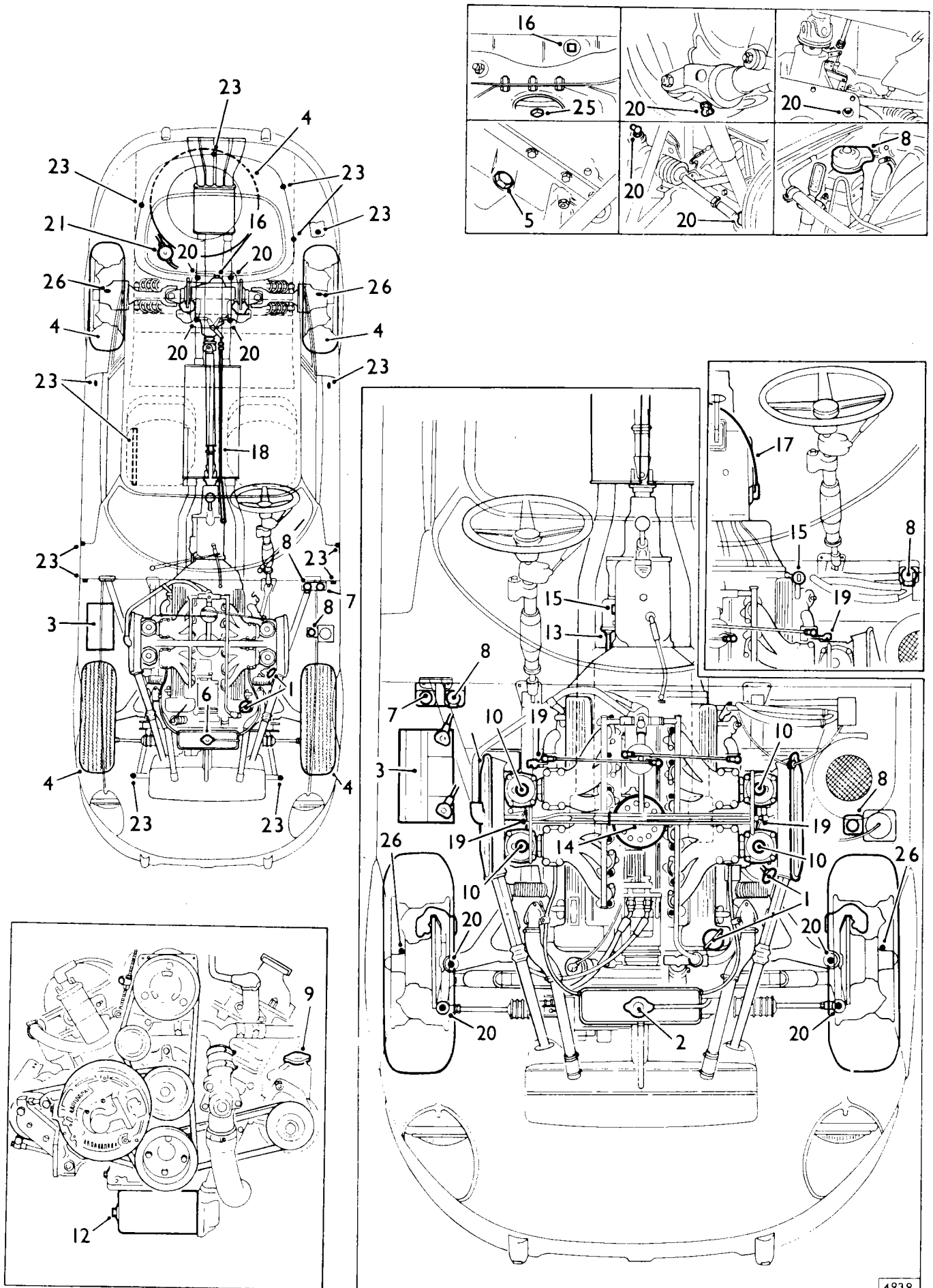
5. Engine — Change oil.
6. Cooling system — Check coolant level and top up if necessary.
7. Clutch fluid reservoir — Check fluid level and top up if necessary.
8. Brake fluid reservoirs — Check fluid level and top up if necessary.
9. Power assisted steering — Check fluid level in reservoir and top up if necessary.
10. Carburettors — Top up carburettor piston dampers.

Every 10,000 Km. (6,000 miles)

11. Carry out operations 5 to 10.
12. Engine — Renew oil filter element.
13. Clutch — Lubricate linkage — Manual transmission cars only.
14. Distributor — Lubricate.
15. Gearbox — Check oil level and top up if necessary.
16. Final drive unit — Check oil level and top up if necessary.
17. Lubricate gearbox selector linkage — Cars fitted with automatic transmission only.
18. Handbrake — Lubricate mechanical linkage and cables.
19. Lubricate accelerator linkage.
20. Grease all points excluding wheel hubs.
21. Fuel filter — Renew element.
22. Battery — Check electrolyte level and top up if necessary.
23. Lubricate — Bonnet, boot and door locks; boot and door hinges.

Every 20,000 Km. (12,000 miles)

24. Carry out operations 11 to 13, 17 to 19 and 21 to 23.
25. Final drive unit — Drain oil and refill.
26. Grease all points including wheel hubs.



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RECOMMENDED LUBRICANTS, FLUID AND FUEL

Component	MOBIL	CASTROL	SHELL	ESSO	B.P.	DUCKHAM	TEXACO
Engine	Mobiloil Super or Mobiloil Special 20/50	Castrol GTX	Shell Super Oil	Uniflo	B.P. Super Visco-Static 20-50	Q20-50	Havoline 20W/40 or 10W/30
Upper cylinder lubrication	Mobil Upperlube	Castrollo	Shell U.C.L. or Donax U	Esso U.C.L.	B.P. U.C.L.	Adcoid Liquid	Texaco U.C.L.
Distributor oil can points Oil can lubrication	Mobiloil Super	Castrol GTX	Shell Super Oil	Uniflo	B.P. Super Visco-Static 20-50	Q20-50	Havoline 30
Gearbox Final Drive Unit ("Powr-Lok") top up only	Mobilube GX 90	Castrol Hypoy	Spirax 90 E.P.	Esso Gear Oil GX 90/140	B.P. Gear Oil SAE 90 E P	Hypoid 90	Multigear Lubricant EP.90
Final Drive Unit ("Powr-Lok") refill	Mobilube 46	Hypoy LS	Shell S.7143	Esso Gear Oil GP 90/140	B.P. Limslip Gear oil 90/1	Hypoid 90 DL	3450 Gear Oil
Front wheel bearings Rear wheel bearings Final drive half shafts Steering tie-rods Wheel swivels Door Hinges Steering housing	Mobil-grease MP or Mobil grease Super	Castrol LM Grease	Retinax A	Esso Multi-purpose Grease H	B.P. Energrease L.2	LB.10	Marfak All Purpose
Automatic transmission unit Power steering system	Mobil ATF 210	Castrol T.Q.F.	Shell Donax T7	Esso Glide	B.P. Autran B	Q-matic	Texamatic Type F

RECOMMENDED HYDRAULIC FLUID

Braking System and Clutch Operation

Castrol-Girling Brake Fluid (Green). This fluid exceeds S.A.E. **J.1703/C** specification.

FUEL REQUIREMENTS FOR V12 ENGINES

The engine of this car is fitted with high compression ratio pistons (indicated by H after the engine number) use only Super grade fuel with a minimum octane rating of 98. (Research method)

In the United Kingdom use '4 STAR' Fuel

If, of necessity, the car has to be operated on lower octane fuel do not use full throttle otherwise detonation may occur with resultant piston trouble.



Operation number Description	10.10.06 EVERY 5,000 Km. (3,000 mls.)	10.10.12 EVERY 10,000 Km. (6,000 mls.)	10.10.24 EVERY 20,000 Km. (12,000 mls.)
ENGINE			
Oil – Drain and refill		X	X
Oil – Check/top up	X		
Oil filter – Renew element	X	X	X
Check engine for oil leaks and report	X	X	X
Check engine timing using stroboscope		X	X
Clean/adjust spark plugs		X	
Renew spark plugs			X
Lubricate distributor		X	X
Check tightness of manifold nuts and bolts			X
Clean crankcase breather filter			X
COOLING SYSTEM			
Check/top up coolant	X	X	X
Check cooling and heating system for leaks and report		X	X
FUEL SYSTEM			
Check/top up carburettor piston dampers	X	X	X
Check/adjust carburettor settings		X	X
Lubricate throttle linkage		X	X
Air cleaners – Renew filter element and seal			X
Fit red emission pack	<div> <div></div> <div>Cars fitted with exhaust emission control</div> </div>		40,000 Km. (24,000 mls.)
Renew charcoal canister			40,000 Km. (24,000 mls.)
Check fuel pipes and unions for leaks, chafing and corrosion; report findings		X	X
Fit new fuel filter element		X	X
CLUTCH – Cars fitted with manual transmission only			
Check/top up fluid level in reservoir	X	X	X
Check/adjust push rod free travel		X	X
Check clutch pipes and unions for leaks, chafing and corrosion; report findings	X	X	X
Lubricate linkage		X	X
MANUAL GEARBOX (if fitted)			
Check/top up oil level		X	X
Check for oil leaks and report	X	X	X
AUTOMATIC GEARBOX (if fitted)			
Check/top up oil level		X	X
Lubricate exposed selector linkage		X	X
Check for oil leaks and report	X	X	X
FINAL DRIVE UNIT			
Check/top up oil level		X	
Drain oil and refill with correct grade of hypoid oil			X
Check for oil leaks and report	X	X	X

ROUTINE MAINTENANCE

Operation number Description	10.10.06 EVERY 5,000 Km. (3,000 mls.)	10.10.12 EVERY 10,000 Km. (6,000 mls.)	10.10.24 EVERY 20,000 Km. (12,000 mls.)
BRAKING SYSTEM			
Check/top up fluid level in reservoirs	X	X	X
Check brake pads for wear, condition of discs and report	X	X	X
Lubricate hand brake mechanical linkage and cable		X	X
Check brake pedal travel, handbrake operation and report	X	X	X
Drain system, refill with fresh fluid			40,000 Km. (24,000 mls.)
Overhaul complete braking system			80,000 Km. (48,000 mls.)
Check brake pipes and unions for chafing, leaks and corrosion; report findings	X	X	X
POWER ASSISTED STEERING			
Check/top up oil in reservoir	X	X	X
Check condition of steering joints and report	X	X	X
Check condition of gaiters and report	X	X	X
Check steering system for oil leaks and report	X	X	X
Check security of suspension fixings			X
DRIVING BELTS			
Check/adjust driving belts and report condition	X	X	X
EXHAUST SYSTEM			
Check exhaust system for security and signs of leaks; report findings	X	X	X
Check exhaust manifold nuts for tightness			X
ELECTRICAL SYSTEM			
Check/top up battery	X	X	X
Check battery condition, if necessary, clean and grease terminals		X	X
Check/adjust headlight alignment	X	X	X
Check operation of electrical systems and report	X	X	X
WINDSCREEN WIPERS AND WASHERS			
Check/top up windscreen washer reservoir	X	X	X
Check condition of windscreen wiper blades, renew if necessary	X	X	X



Operation number Description	10.10.06 EVERY 5,000 Km. (3,000 mls.)	10.10.12 EVERY 10,000 Km. (6,000 mls.)	10.10.24 EVERY 20,000 Km. (12,000 mls.)
WHEELS AND TYRES			
Check tightness of road wheel nuts	X	X	X
Check/adjust tyre pressures including spare	X	X	X
Check that tyres fitted are in accordance with manufacturer's specification	X	X	X
Check and report depth of tread, cuts in fabric, exposure of fabric, lumps or bulges	X	X	X
Check front wheel alignment and report		X	X
LUBRICATION			
Lubricate all grease nipples excluding wheel bearings		X	
Lubricate all grease nipples including wheel bearings			X
Lubricate all door bonnet and boot locks and hinges		X	X
GENERAL			
Check and report security and condition of safety belts	X	X	X
Check and report security of seats	X	X	X
Check and report rear view mirrors for looseness, cracks or crazing	X	X	X
Check operation of door locks and window controls	X	X	X
Carry out road/roller test and report any additional work required		X	X
Ensure cleanliness of seats, controls, door handles, steering wheel etc.	X	X	X

5,000 Km. (3,000 MILES) SERVICE

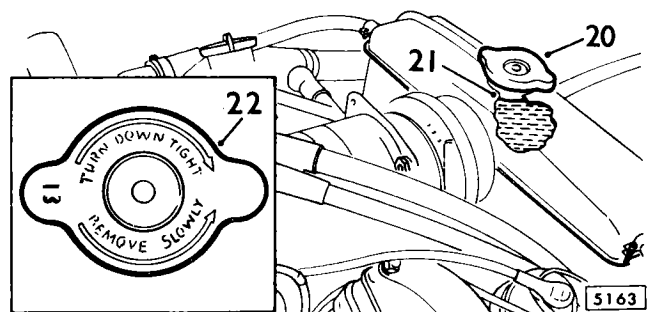
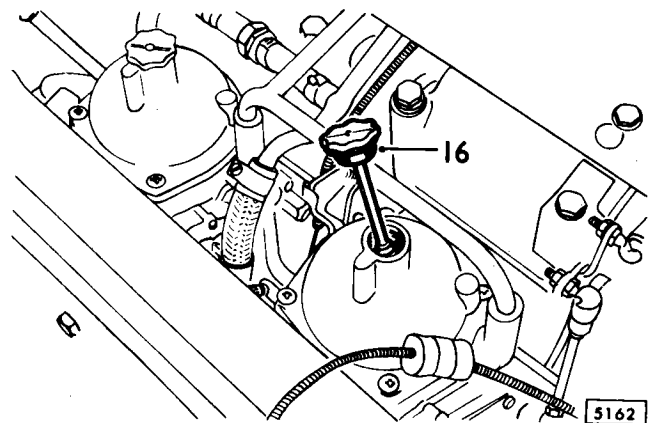
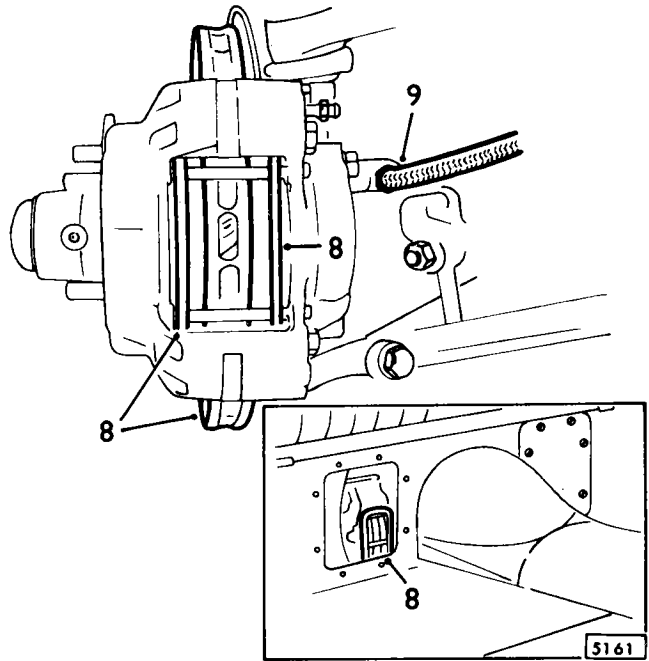
10.10.06

- **1. With engine cold, check engine oil level.
2. If necessary, remove oil filler cap and top up oil level.**
3. Refill engine with recommended grade of oil to top of knurled patch on dipstick.
4. Run engine at fast idle, switch off ignition, wait one minute, recheck oil level and top up if necessary.
5. Check engine for oil leaks and report findings.
6. Check fuel pipes and unions for leaks, chafing and corrosion; report findings.
7. Check clutch pipes and unions for leaks, chafing and corrosion; report findings.
8. Check brake pads for wear and that discs are not damaged or scored; report findings.
9. Check brake pipes and unions for leaks, chafing and corrosion; report findings.
10. Check gearbox for oil leaks and report findings.
11. Check final drive unit for oil leaks and report findings.
12. Check exhaust system for security and signs of leaks; report findings.
13. Check condition of steering joints and report findings.
14. Check power assisted steering system for oil leaks and report findings.
15. Check condition of gaiters and report findings.
16. Unscrew piston damper from piston cover.
17. Top up guide rod of piston with Zenith Lube pack or S.A.E. 20 engine oil to within 6 mm. (.250 in.) of top of rod.
18. Refit piston damper, do not overtighten.
19. Carry out operations 16 to 18 on remaining carburettors.
20. Remove header tank filler cap.
21. Check coolant level; if necessary, add coolant until level is at bottom of filler neck.
22. Refit filler cap.

CAUTION: **During winter months Bluecol 'U' antifreeze must be used, this is a specially formulated antifreeze which is designed to afford maximum corrosion protection to all metals normally found in engine cooling systems as well as having the normal frost protection properties necessary during winter months. It should not, therefore, be mixed with other antifreezes. In places where Bluecol 'U' is not available for top-up or replenishment, drain the system, flush and fill with antifreeze which complies with specification B.S.3150 for aluminium or B.S.3152 for other engines.

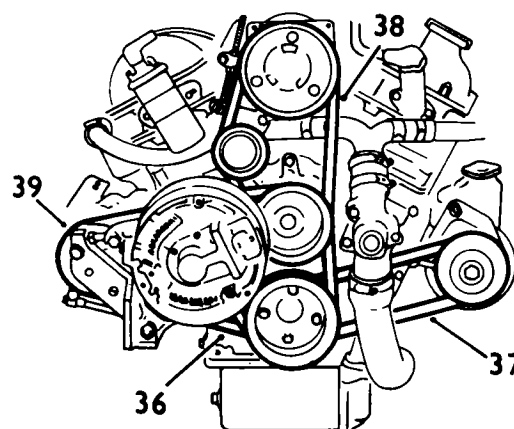
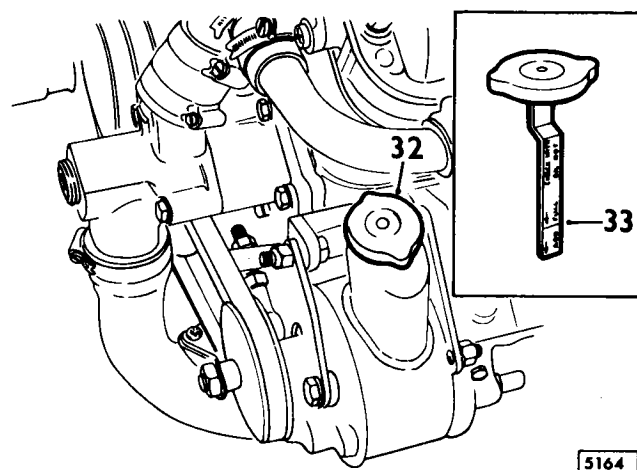
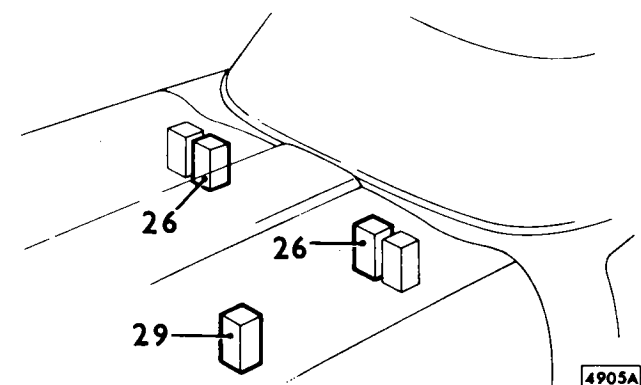
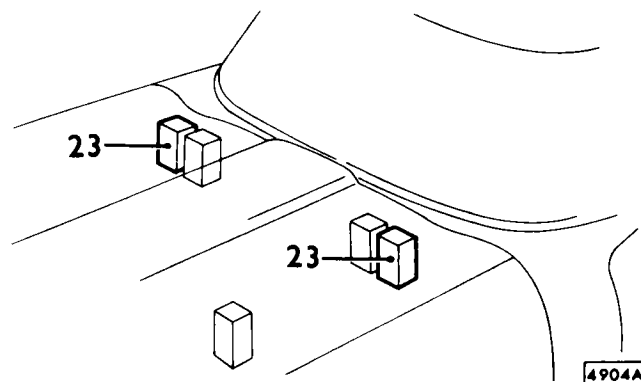
A 40% solution by volume (55% U.S.A./Canada) of all antifreeze must be used at all times, either when topping up or replenishing the cooling system. For maximum corrosion protection, the concentration should never be allowed to fall below 25%. Always top-up with recommended strength of antifreeze, **NEVER WITH WATER ONLY.**

In countries where it is unnecessary to use antifreeze, Marston SQ.36 Corrosion Inhibitor must be used in the cooling system in the proportion of 3 fluid ounces to one gallon of water. **CHANGE COOLANT ANNUALLY.****



NOTE: Items 23 to 25 apply only to cars fitted with manual transmission.

23. Clean any dirt from around clutch fluid reservoir filler cap; remove cap.
24. Check fluid level; if necessary, add fluid to bring level up to mark on reservoir. Use only recommended grade of hydraulic fluid.
25. Refit filler cap.
26. Clean any dirt from around brake fluid reservoir filler cap; remove cap.
27. Check fluid level; if necessary, add fluid to bring level up to mark on reservoir. Use only recommended grade of hydraulic fluid.
28. Refit filler cap.
29. Carry out items 26 to 28 on remaining brake fluid reservoir.
30. Check brake pedal travel, handbrake operation and report findings.
31. Run engine until it reaches normal operating temperature.
32. Remove combined filler cap and dipstick from power assisted steering pump reservoir.
33. Check oil level on dipstick; if necessary, add oil to bring level to 'full' mark on dipstick.
34. Turn steering from lock to lock several times.
35. Re-check oil level and top up if necessary.
36. Check alternator driving belt tension and adjust if necessary. See operation **86.10.05.**
37. Check power assisted steering pump drive belt tension and adjust if necessary. See operation 57.20.01.
38. **Cars fitted with air conditioning only.** Check compressor drive belt tension and adjust if necessary – See operation 82.10.01.
39. **Cars fitted with exhaust emission control only.** Check air pump drive belt tension and adjust if necessary – See operation 17.25.13.
40. Check condition of all driving belts and report.



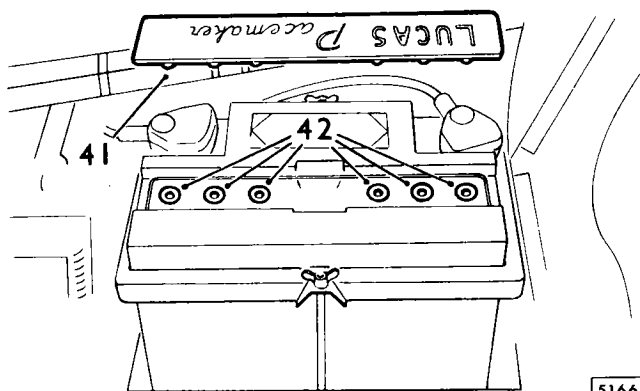
41. Remove manifold cover and check battery electrolyte level.
42. If necessary, top up with distilled water to bottom of filler tubes.
43. Refit manifold cover.
44. Check headlight alignment and adjust if necessary – See operation 86.40.17.
45. Check function of all electrical systems and report.
46. Remove filler cap from windscreen washer reservoir.
47. Top up level if necessary with clean water to bottom of filler neck.
48. Refit filler cap.

NOTE: In cold weather the water container can be given a safe degree of protection from frost damage down to -28 deg. F (-33 deg C) by the use of proprietary anti-freeze solvents as marketed by 'TRICO' or 'HOLTS'. Instructions regarding the use of the solvent will be found on the container. Denatured alcohol (methylated spirits) must NOT be used. The use of this chemical will discolour the paintwork.

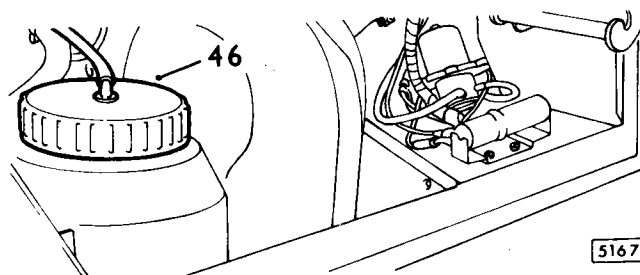
49. Check condition of windscreen wiper blades and report.
50. Check tightness of road wheel nuts.
51. Check that tyres fitted are as specified.
52. Check tyre pressures and adjust if necessary.

CAUTION: Tyres must be cold when checking and adjusting pressures.

53. Check depth of tyre tread, general condition of tyres e.g. cuts or lumps in fabric or exposure of fabric; report findings.
54. Check and report condition and security of seat belts.
55. Check and report security of seats.
56. Check and report rear view mirrors for looseness, cracks or crazing.
57. Ensure cleanliness of seats, controls, door handles, steering wheel etc.



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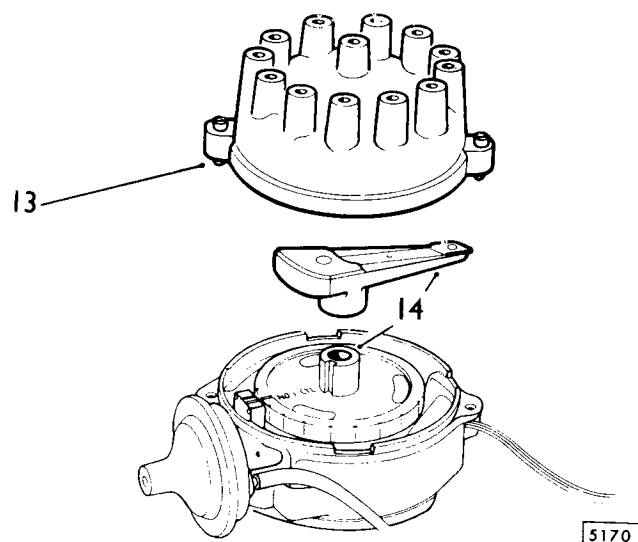
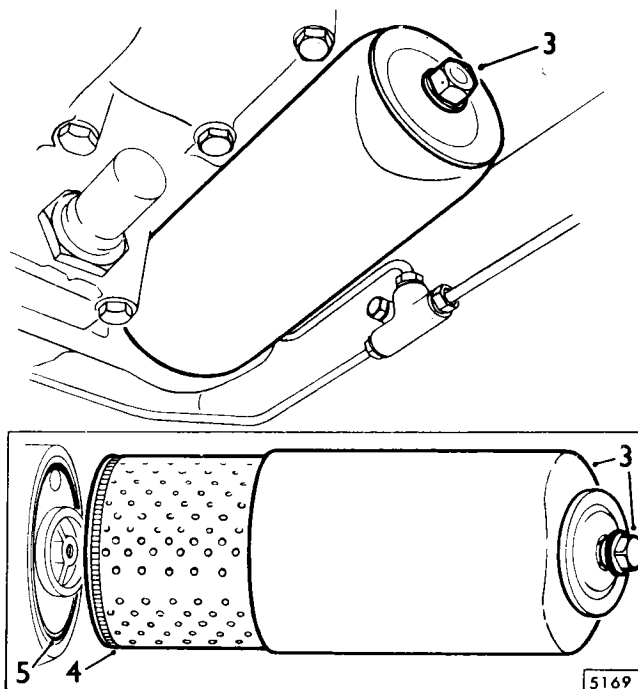


5167

10,000 Km. (6,000 MILES) SERVICE

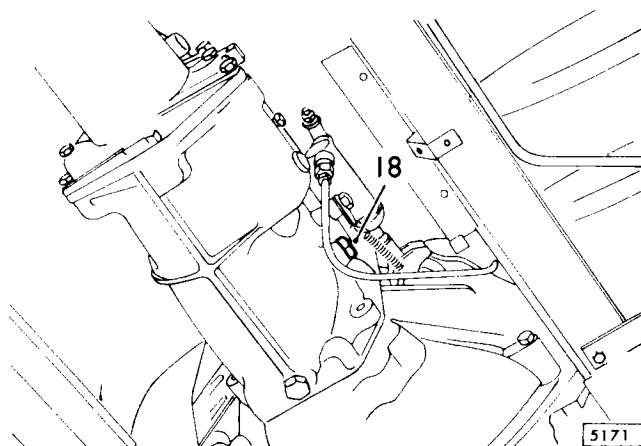
10.10.12

1. Remove drain plug from sump, allow oil to drain into suitable container; discard sealing washer.
2. Refit drain plug, use new sealing washer; do not overtighten plug.
3. Slacken central bolt securing oil filter canister; withdraw canister together with bolt and filter element.
4. Remove element and discard.
5. Remove canister seal from filter head; discard seal.
6. Wash canister in clean petrol and allow to dry.
7. Fit new canister seal in filter head.
8. Position new filter element in canister; refit canister; do not overtighten central bolt.
9. Refill engine with recommended grade of oil to top or knurled patch on dipstick.
10. Run engine at fast idle. Switch off ignition, wait one minute, recheck oil level and top up if necessary.
11. Remove spark plugs, clean by sand blasting and adjust gap. Correct gap is .64 mm. (.025 in).
12. Refit spark plugs.
13. Remove screws securing distributor cap; lift off cap.
14. Lubricate distributor.
15. Wipe cap clean and refit.
16. Check engine timing by means of a stroboscope.
17. Carry out items 5 to 15 — detailed in operation 10.10.06.

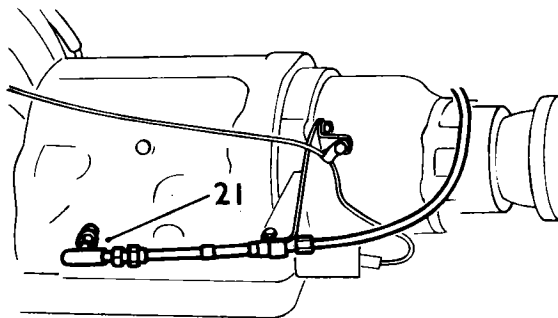


NOTE Items 18 to 20 apply only to cars fitted with manual transmission.

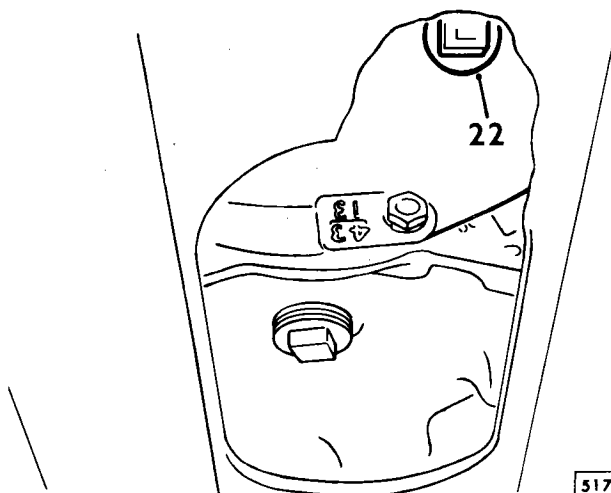
18. Remove filler/level plug.
19. Check oil level and if necessary, top up level to bottom of filler plug hole.
20. Refit filler/level plug.



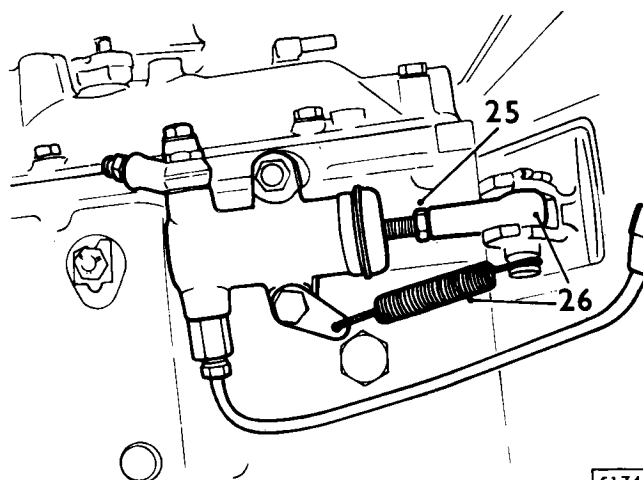
21. **Cars fitted with automatic transmission.**
Lubricate exposed selector linkage.
22. Remove filler/level plug from final drive unit.
23. Check oil level and if necessary, top up level to bottom of filler/level plug hole.
24. Refit filler/level plug.
- **Cars fitted with manual transmission****
25. Check and if necessary adjust slave cylinder push rod free travel – See operation 33.10.03.
- **Cars fitted with manual transmission****
26. Lubricate slave cylinder push rod.
27. Lubricate hand brake mechanical linkage and cable.
28. Lubricate all grease nipples excluding wheel bearings.



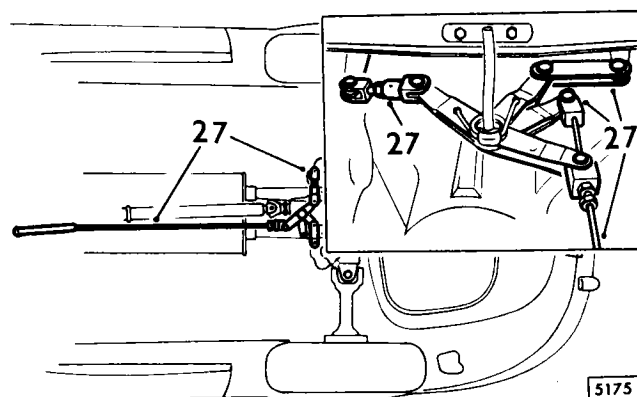
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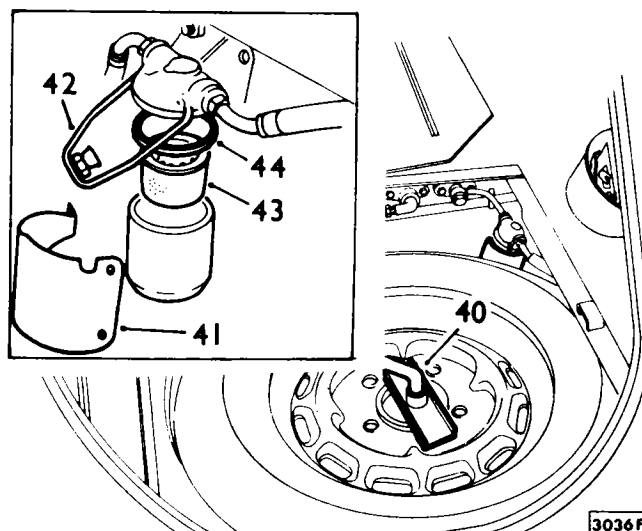
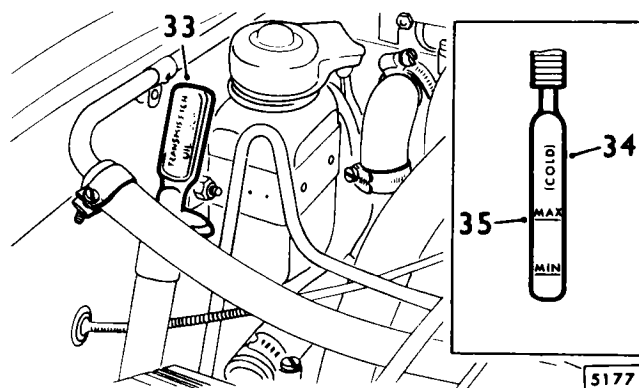
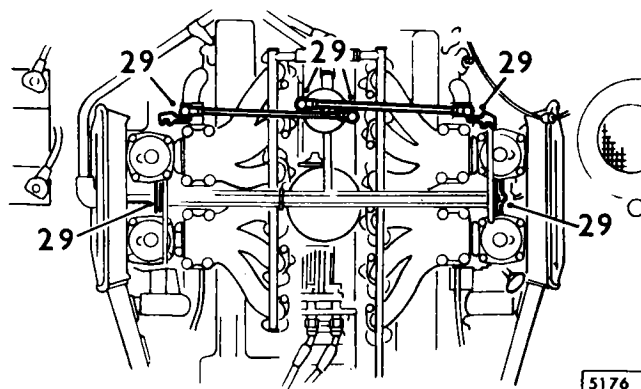


5175

29. Lubricate throttle linkage.
30. Check and if necessary adjust carburettors — See operation 19.15.02.

NOTE Items 31 to 35 apply only to cars fitted with automatic transmission.

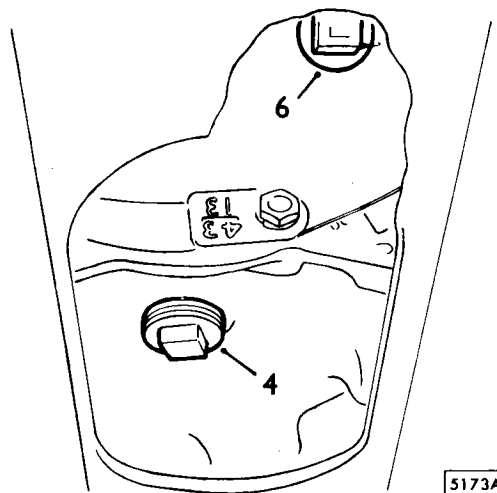
31. Place transmission selector lever in 'P' position, apply handbrake.
32. Run engine until it reaches normal operating temperature.
33. With engine running at idling speed, withdraw dipstick.
34. Wipe dipstick clean and replace. Withdraw dipstick immediately and check oil reading.
35. If necessary, top up oil to bring level to 'FULL' mark on dipstick.
36. Carry out items 20 to 56 detailed in operation 10.10.06.
37. Check cooling and heating system for leaks; report findings.
38. Disconnect battery earth lead — 86.15.19.
39. Remove boot/luggage compartment floor.
40. Lift out spare wheel.
41. Remove bolts securing fuel filter guard to mounting bracket; swing guard away from fuel filter.
42. Slacken knurled ring, swing retaining strap away from filter bowl; lower filter bowl.
43. Remove filter element and discard.
44. Examine filter bowl seal and renew if damaged.
45. Reverse items 39 to 44, run engine and check for leaks.
46. Clean any corrosion from battery terminals; smear terminals with petroleum jelly.
47. Check condition of battery and report.
48. Check front wheel alignment and report — See operation 57.65.01.
49. Lubricate all door, bonnet and boot locks and hinges and check operation.
50. Carry out road/roller test and report any additional work required.



20,000 Km. (12,000 MILES) SERVICE

10.10.24

1. Carry out items 1 to 10 – See operation 10.10.12.
2. Remove spark plugs and discard; fit new spark plugs.
3. Carry out items 13 to 21 – See operation 10.10.12.
4. Remove drain plug from final drive unit and allow oil to drain into suitable container.
5. Refit drain plug.
6. Remove filler/level plug.
7. Refill unit with recommended grade of hypoid oil to bottom of filler/level plug hole.
8. Refit filler/level plug.
9. Carry out items 25 to 27 – See operation 10.10.12.
10. Lubricate all grease nipples including wheel bearings.
11. Check tightness of inlet manifold nuts and bolts.
12. Renew air pump filter element – See operation 17.25.03 – Cars fitted with exhaust emission control.
13. Carry out items 31 to 50 – See operation 10.10.12.
14. Check suspension fixings for security.
15. Check tightness of exhaust manifold nuts.
16. Remove rubber boot together with clip from crankcase breather housing.
17. Lift out gauze, wash in petrol and dry.
18. Refit gauze.
19. Refit rubber boot.

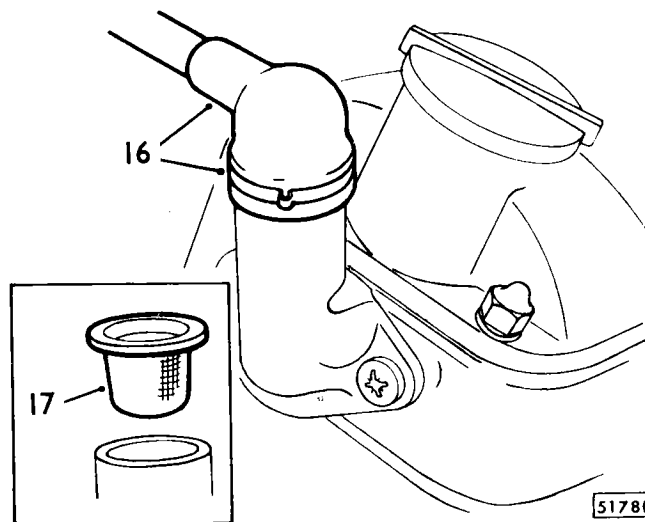


5173A

40,000 Km (24,000 MILES) SERVICE

10.10.48

1. Carry out items 1 to 11 – See operation 10.10.24.
2. Fit red emission packs – See operation 17.20.07 – Cars fitted with exhaust emission control.
3. Fit new air cleaner elements – See operation 19.10.08.
4. Fit new charcoal absorption canister – See operation 17.15.13. Cars fitted with exhaust emission control.
5. Flush braking system – See operation 70.25.17.
6. Carry out items 12 to 19 – See operation 10.10.24.



5178B

80,000 Km. (48,000 MILES) SERVICE

10.10.96

1. Carry out items 1 to 4 – See operation 10.10.48
2. Overhaul braking system – See operations 70.30.02, 70.30.04, 70.55.13, 70.55.14
Also renew any pipes or hoses showing signs of corrosion, splits, chafing etc.
3. Carry out item 6 – See operation 10.10.48.