P. OLYSLAGER MOTOR MANUALS 101

BRITISH LEYLAND 1100/1300

AUSTIN

MG

MORRIS

RILEY KESTREL

VANDEN PLAS

- PRINCESS

WOLSELEY

Mk I and II models

from 1962

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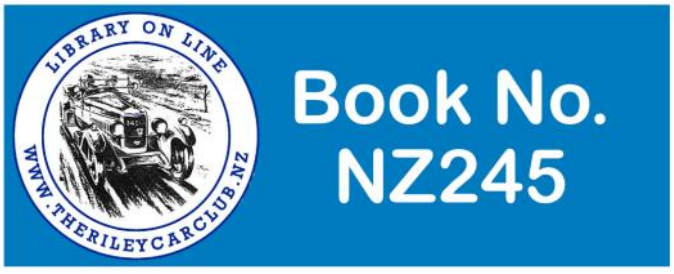

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Reproduced in 2022 for The Riley Car Club of New Zealand Inc.

Handbook for the

BRITISH LEYLAND 1100/1300

AUSTIN
MORRIS
MG
RILEY KESTREL
VANDEN PLAS PRINCESS
WOLSELEY

all models from 1962

PIET OLYSLAGER MSIA MSAE

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SPECIAL NOTE

Although every care is taken to ensure accuracy and completeness in compiling this book, no liability can be accepted for damage, loss or injury caused by any errors or omissions in the information given.

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Preface

THIS MANUAL is intended to supplement (not to replace) the instruction book issued with the vehicle by the manufacturer. It contains more detailed information on the maintenance and repair of British Leyland 1100/1300 vehicles, without being, or pretending to be, a fully comprehensive workshop manual.

The first sections of the book contain general information essential for both owner driver and mechanic. They give full details about the models covered so that the reader does not have to refer to many different publications in order to find correct model designations, serial numbers, major modifications, prices, dimensions, lubrication, maintenance and other information.

The section 'Repair Data' has been compiled and presented on the assumption that the reader knows something about repair work. Elementary procedures have therefore been omitted and the space has been devoted to more advanced information. Readers who are not qualified to carry out repairs and adjustments are strongly advised to leave them to official BLMC dealers or distributors whose mechanics possess special equipment and are fully informed about the latest modifications and design changes. Often it will be more economical to replace a component by either a new or factory-reconditioned unit rather than attempt to repair it. In all cases of doubt it will pay to consult a dealer.

All the important dimensions, tolerances and other specifications are presented in convenient tabular form at the end of the book, followed by a general engine fault-finding chart, and an index.

PIET OLYSLAGER, MSIA, MSAE

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Fig. 1. Morris 1100 Mk 1 four-door saloon, 1962–67

Fig. 2. MG 1100 Mk 1 four-door saloon, 1962–67

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BRITISH LEYLAND 1100/1300

AUSTIN, MORRIS, MG, RILEY VANDEN PLAS AND WOLSELEY Mk I and II models from 1962

General

INTRODUCTION

The 1100 (ADO. 16) was first introduced by the then-British Motor Corporation* on August 15th 1962, as the Morris 1100 saloon (two- and four-door). Being the logical extension of designer Alex Issigonis's 'Mini' theme, the Morris 1100, like its smaller brother, was designed with an 'east-west' engine and front-wheel-drive (allowing 80 per cent of the car's length to be used for passengers and luggage). Also featured was the then-revolutionary new Moulton 'Hydrolastic' liquid-and-rubber suspension, making its debut.

In October 1962, the MG 1100 two- and four-door versions were announced. Fitted with a twin-carburettor version of the engine, this model featured the traditional MG front grille and more luxurious trim. The Austin 1100 models, introduced in September 1963, differed from the Morris version only in that the typical Austin grille (eight 'wavy' bars) and a different facia panel layout were incorporated. The Vanden Plas Princess 1100, announced at the 1963 Earls Court Motor Show, and acclaimed as 'the ultimate in small car luxury', is mechanically identical to the MG 1100 and has a hand-finished interior of English hide and walnut. The Riley Kestrel and the Wolseley 1100, both announced at the 1965 Motor Show, are mechanically identical to the MG and Vanden Plas; there are differences of interior trim, the Riley's facia incorporating a rev-counter. Externally they are distinguishable by their traditional Riley and Wolseley front grilles, the latter incorporating the illuminated Wolseley badge.

In October 1965, the AP/BMC automatic transmission became available on the Austin and Morris models. Estate car versions of the Austin (Countryman) and Morris (Traveller) were introduced in March 1966.

In June 1967, the MG, Riley, Vanden Plas and Wolseley 1100 models became optionally available with a 1275 cc (77.8 cu. in.) engine. This option applied only until October 1967 when the 1300 range proper was introduced.

The 1100 Mk II range was announced in October 1967, to replace the earlier (Mk I) 1100 models. New features included slotted wheels, redesigned tail fins with larger rear light clusters (saloons only), a steering-column-mounted combination switch unit, restyled seats and trim, redesigned instrument panel layout (Morris), simulated wood side strip (Countryman and Traveller) and revised grille shape (Austin and Morris).

The 1300 models (Austin, Morris, MG, Riley, Vanden Plas and Wolseley) introduced at the same time, are similar to the 1100 Mk II range but fitted with the larger 1275 cc engine (single carburettor version) all-synchromesh gearbox, more powerful brakes and new front grille (Austin and Morris). The automatic transmission also became optionally available on MG, Riley, Vanden Plas and Wolseley models in October 1967.

*Became British Leyland in 1968.

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Fig. 3. Austin 1100 Mk 1 four-door saloon, 1963–67

Fig. 4. Vanden Plas Princess 1100 Mk 1 four-door saloon, 1963–67

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The Riley Kestrel 1100 Mk II was discontinued in January 1968, the Wolseley 1100 Mk II in February 1968, the MG 1100, Vanden Plas Princess 1100 Mk II, Austin/Morris Super de luxe 2-door and de-luxe 2-door 1100 Mk II and de-luxe 2- and 4-door 1300 models in March 1968 and the MG 1300 4-door in April 1968.

In early 1968, without official public announcement, British Leyland incorporated the twin-carburettor version of the 1275 cc engine in MG, Riley, Vanden Plas and Wolseley 1300 models with manual transmission. In October 1968 the MG, Riley and Wolseley 1300 Mk II models were announced. Improvements included a revised and uprated 1275 cc twin-carburettor engine and new close ratio gearbox (original 1275 cc twin-carburettor engine and gearbox retained on Wolseley models only), new trim and new facia panel layout (MG only). The Vanden Plas Princess retained its 1300 (Mk I) model tag.

In February 1969 Crayford Auto Development Ltd of Westerham, Kent, offered convertible conversions of the Austin/Morris 1100/1300 and MG 1300.

The Riley Kestrel 1300 Mk II was discontinued in July 1969.

Summary of Models

Saloons

Austin 1100 Mk I saloon (two-door 'export' and four-door, September 1963–October 1967)

Austin 1100 Mk II saloon (de-luxe two-door 'export' and Super de-luxe four-door, from October 1967, Super de-luxe two-door 'export' and de-luxe four-door, October 1967–March 1968)

MG 1100 Mk I saloon (two-door 'export' and four-door, October 1962–October 1967)

MG 1100 Mk II saloon (two-door 'export' and four-door, October 1967–March 1968)

Morris 1100 Mk 1 saloon (two-door 'export' and four-door, August 1962–October 1967)

Morris 1100 Mk II saloon (de-luxe two-door 'export' and Super de-luxe four-door, from October 1967, Super de-luxe two-door 'export' and de-luxe four-door, October 1967–March 1968)

Riley Kestrel Mk 1 saloon (four-door, September 1965–September 1967)

Riley Kestrel Mk II saloon (four-door, October 1967–January 1968)

Vanden Plas Princess 1100 Mk I saloon (four-door, October 1963–September 1967)

Vanden Plas Princess 1100 Mk II saloon (four-door October 1967–March 1968)

Wolseley 1100 Mk I saloon (four-door, September 1965–September 1967)

Wolseley 1100 Mk II saloon (four-door, October 1967–February 1968)

Austin 1300 saloon (de-luxe two-door and four-door, October 1967–February 1968, Super de-luxe two-door and four-door from October 1967)

MG 1300 Mk I saloon (two-door 'export' October 1967–May 1968, two-door May 1968–October 1968, four-door October 1967–April 1968)

MG 1300 Mk II saloon (two-door from October 1968)

Morris 1300 saloon (de-luxe two-door and four-door October 1967–February 1968, Super de-luxe two-door and four-door from October 1967)

Riley Kestrel 1300 Mk I saloon (four-door October 1967–October 1968)

Riley Kestrel 1300 Mk II saloon (four-door October 1968–July 1969)

Vanden Plas Princess 1300 saloon (four-door from October 1967)

Wolseley 1300 Mk I saloon (four-door October 1967–October 1968)

Wolseley 1300 Mk II saloon (four-door from October 1968)

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Fig. 5. Riley Kestrel Mk I four-door saloon, 1965–67

Fig. 6. Wolseley 1100 Mk 1 four-door saloon, 1965–67

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Fig. 7. Morris 1100 Traveller, 1966–67

Fig. 8. Austin 1100 Mk 11 two-door saloon, from 1967

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Estate Cars
Austin 1100 Mk I Countryman (March 1966–October 1967)
Austin 1100 Mk II Countryman (October 1967–March 1968)
Morris 1100 Mk I Traveller (March 1966–October 1967)
Morris 1100 Mk II Traveller (October 1967–March 1968)
Austin 1300 Countryman (from October 1967)
Morris 1300 Traveller (from October 1967)

DESCRIPTION

Austin/Morris 1100 saloon: two- or four-door model with four/five passenger body of all-steel mono-construction. Transversely-mounted 1098 cc (67.0 cu. in.) 'east-west', single-carburettor engine derived from the BMC 'A' Series power unit. Gearbox incorporated in the engine sump, below crankshaft, forms a unit with both engine and final drive. A coil-spring type clutch was fitted up until September 1964 when a diaphragm-spring type clutch was introduced.

The four-speed gearbox has synchromesh on second, third and top gears (all-synchromesh on later models). Independent suspension is by means of the Moulton 'Hydrolastic' liquid and rubber system, rubber cone springs (or 'displacers') being interconnected front to rear by fluid-filled pipes and hydraulically damped; these are used in conjunction with transverse wishbone assemblies at the front and trailing arms, an anti-roll bar, and auxiliary torsion bars (progressive rubber bump stops on later models) at the rear. Rack-and-pinion steering gear, hydraulically-operated front disc and rear drum brakes, 5.50–12 in. tubeless tyres and an 8-gallon fuel tank are all fitted as standard.

Externally the Austin and Morris versions are distinguishable only by their differing front grilles, eight 'wavy' horizontal bars (reshaped surround on Mk II models) on Austin and eight plain horizontal bars (seven on Mk II models together with reshaped surround) on Morris versions. The front doors have opening quarter vents, all doors have child safety catches and the 9.5 cu. ft. capacity lockable luggage compartment has a counter-balanced lift-up lid with concealed hinges. All Mk II models have repeater flashers on the front wings, slotted wheels, reshaped tail fins and larger rear light clusters.

Internally the general finish of both Austin and Morris cars is similar although on Mk I models, the facia panel layouts are different (see figs. 16 and 17). Mk II Super de-luxe models, have an instrument panel layout (full width silver facia with ribbon-type speedometer) which is the same on both Austin and Morris versions. Mk II de-luxe models have a central wood-finished panel with circular speedometer and rocker type switches.

Standard equipment includes separate adjustable front seats, leathercloth upholstery, floor-mounted gearchange lever, rubber floor covering with nylon carpeting on toe-board and tunnel areas (full nylon carpeting fitted on later models), full width parcel shelf (front and rear), padded sun visor(s), twin horns (de-luxe models), heater (de-luxe models from March 1965), steering column-mounted combination switch (Mk II models) and restyled seats and trim (Mk II models). Automatic transmission has been available as an optional extra on all models since October 1965.

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Fig. 9. Morris 1300 four-door saloon, from 1967

Fig. 10. Austin 1300 two-door saloon, from 1967

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Fig. 11. MG 1300 Mk 11 two-door saloon, from 1968 (also externally similar to 1100 Mk 11 and 1300 Mk 1 versions, 1967–68)

MG 1100 saloon: two-door (export only) or four-door models, externally distinguishable from other 1100 models by the traditional MG front grille and round front/side/direction indicator lamps. Powered by the more powerful twin-carburettor version of the 1098 cc engine which develops 55 bhp (net) at 5500 rpm (8.9:1 compression ratio). The 1275 cc (77.8 cu. in.) single-carburettor engine (58 bhp at 5250 rpm) was available as an optional extra between June 1967 and October 1967. Otherwise mechanically similar to the Austin/Morris 1100 models. Interior trim includes moulded carpets, full width walnut veneer facia (from January 1963), ribbon-type speedometer, leathercloth upholstery, twin horns, twin sun visors, an interior-controlled bonnet-lock, illuminated ashtray and heater and demister. Items featured on the Mk II model include a steering-column-mounted combination switch, slotted wheels, redesigned tail fins with larger light clusters and restyled seats and trim. Models are finished in either a single colour or duotone colours.

Riley Kestrel (1100) saloon: Four-door model mechanically similar to the MG 1100. Externally this model has the traditional Riley front grille with side/direction indicator lamps mounted in side extensions of the horizontal bars. The interior trim includes moulded carpeting, real leather upholstery and safety padding, walnut veneer facia with circular instrumentation (including a tachometer as standard) and a heater and demister. Items featured on the Mk II Kestrel are as for the later MG 1100 above. Also available with a duotone body finish.

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Fig. 12. Riley 1300 Mk 11 four-door saloon, 1968-69 (also externally similar to the 1100 Mk 11 and 1300 Mk 1 versions, 1967–68)

Vanden Plas Princess 1100 saloon: Four-door luxury model, mechanically similar to the MG 1100 and Riley Kestrel. Externally identifiable by means of the traditional Vanden Plas grille, the twin fog lamps and the 'P' emblem located in the hub cap centres. The interior is luxuriously appointed and trim and fittings include English hide leather seat upholstery and contact surfaces, front and rear arm rests, deep pile carpeting and walnut veneer facia (housing recessed circular instruments) a switch panel, clock, cigar lighter, ashtray, and a lockable glove compartment. Front seat-backs recline and have pull-out picnic tables in walnut veneer. A chromium-plated ashtray is located on the floor tunnel for rear passengers.

The luggage compartment is fully carpeted and optional extras include a sunshine roof and Weathermaster tyres. Modifications on the Mk II models are as listed for the MG Mk II.

Wolseley 1100 saloon: Four-door model mechanically similar to the MG 1100 and Riley Kestrel. Fitted with the traditional Wolseley front grille and side/direction indicator lamps in side extensions of horizontal bars. The interior finish is similar to the MG 1100 as are the items featured on the Mk II models.

1100 Estate Cars: Austin Countryman and Morris Traveller estate cars technically similar to their saloon car counterparts. The one-piece torsion-bar balanced tailgate gives access to 37.7 cu. ft. of luggage space with the rear seat back-folded, or 14 cu. ft. with the rear seat raised. On the Mark II models, the front and rear seats can also by fully reclined to allow a 6.5 ft. long double sleeping area. The overall length of theestate-car is identical to that of the saloon.

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Fig. 13. Wolseley 1300 Mk 11 four-door saloon, from 1968 (also externally similar to the 1100 Mk 11 and 1300 Mk 1 versions, 1967–68)

Austin/Morris 1300 saloon: Two- or four-door model, powered by the 1275 cc, single-carburettor engine, fitted with an all-synchromesh gearbox and more powerful brakes, and featuring a new front grille (four horizontal twin bars on Austin and three horizontal triple bars on Morris). The instrument panel layouts and trims are the same as on 1100 Mk II models. A '1300' badge is located at the rear. Otherwise similar to 1100 Mk II models.

MG 1300 saloon: Two- or four-door model, powered by the 1275 cc, single-carburettor engine (twin-carburettor version fitted from May until September 1968); Mk II models were fitted with an uprated twin-carburettor version of the 1275 cc engine from October 1968 onwards. Incorporates an all-synchromesh gearbox (close ratio on Mk II models) and more powerful brakes. The improved interior on Mk II models includes deep pile carpeting, redesigned facia in walnut veneer with circular instruments (tachometer and oil pressure gauge as standard) and rocker type switches, additional safety padding and a leather rimmed light-weight alloy steering wheel.

Riley Kestrel 1300 saloon: Four-door model mechanically similar to the MG 1300 model. The improved interior and new fittings on Mk II models are the same as for the MG 1300 models. Otherwise similar to the 1100 cc Kestrel Mk II saloon.

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Fig. 14. Morris 1300 Traveller from 1967

Vanden Plas Princess 1300 saloon: Four-door luxury model, powered by the single-carburettor version of the 1275 cc engine, up until May 1968 when the twin-carburettor version was introduced. Incorporates an all-synchromesh gearbox and more powerful brakes. Otherwise similar to Princess 1100 Mk II models.

Wolseley 1300 saloon: Four-door model mechanically similar to the Vanden Plas 1300 model. Mk II models have an improved interior including deep pile carpeting, modified facia with rocker type switches, additional padding and restyled seats. Otherwise similar to Wolseley 1100 Mk II models.

1300 Estate Cars: Austin Countryman and Morris Traveller, mechanically similar to their saloon car counterparts. A simulated wood side strip is fitted on either side of the body. Interior finish and instrumentation are as for the Super de-luxe models and luggage space afforded is the same as on the 1100 estates.

1100/1300 Convertible: A conversion to the Austin/Morris 1100/1300 and MG 1300 models is carried out by Crayford Auto Development Ltd of Westerham, Kent, see Fig. 15.

Austin America: This is a special version of the two-door Austin 1300 with automatic transmission, made exclusively for export to the U.S.A.

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Fig. 15. Morris 1300 Crayford two-door convertible, from 1969

Fig. 16: Facia (left to right) light switch, ignition//generator warning light, ignition/starter switch, oil pressure warning light, choke, main beam warning (top) and oil filter warning (bottom) lights, windscreen wiper switch, windscreen washer control and panel light switch.
Fig. 17: Facia (top, left to right) oil filter, ignition/generator, main beam and oil pressure warning lights; (bottom left to right) choke, ignition/starter switch, light switch, panel light switch, windscreen washer control and windscreen wiper switch.

IDENTIFICATION

Engine number: The engine number is stamped on a plate attached to the right-hand side of the crankcase. The actual serial number is prefixed by three groups of code letters/numbers indicating engine model, gearbox and engine compression ratio.

Prefix Group 1

10 AMW	Austin/Morris 1100
10 AH	Austin/Morris 1100 with positive crankcase ventilation
10 AG	1100 Automatic models
10 GR	MG 1100
10 GRB	Wolseley 1100, and MG 1100 with positive crankcase ventilation
10 R	Riley Kestrel 1100
10 V	Vanden Plas Princess 1100
12 G and 12 H	1300 models
12 H 157	Austin America (U.S.A. only)
12 H 185	Austin America (U.S.A. only)

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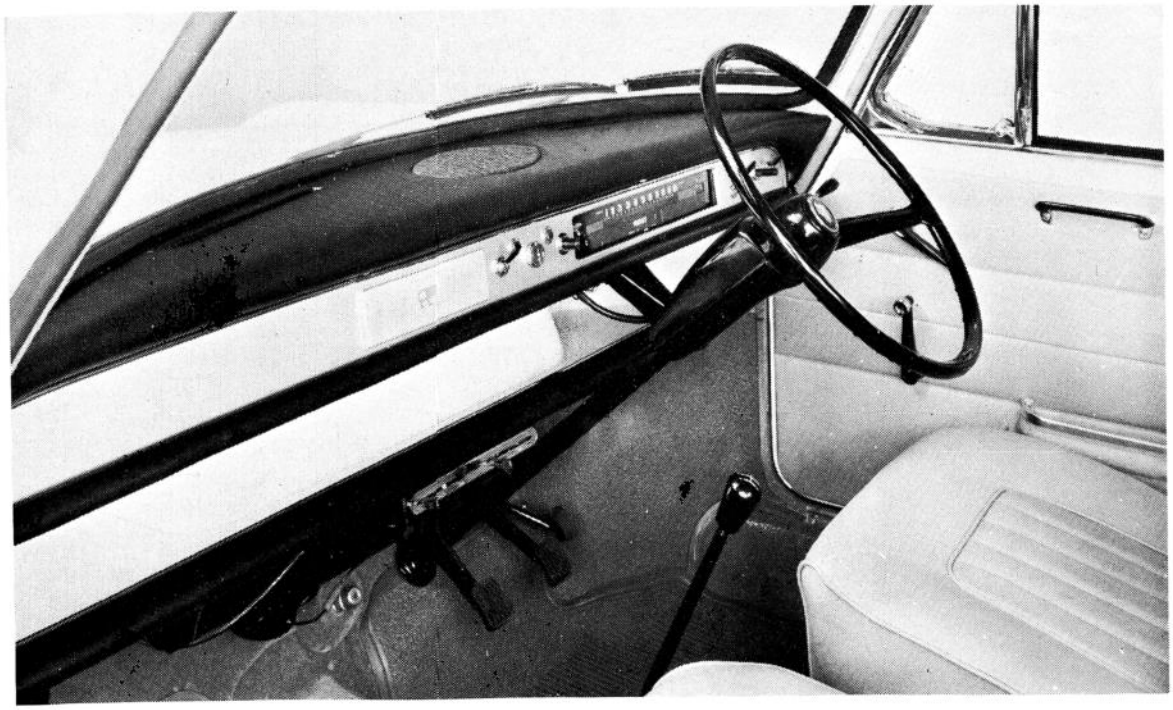

Fig. 16. Austin 1100 Mk 1, front compartment

Fig. 17. Morris 1100 Mk 1, front compartment

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Prefix Group 2

A	Automatic transmission
U	Central gear change
SA	Close ratio gearbox
TA	Standard ratio gearbox

Prefix Group 3

H	High compression ratio
L	Low compression ratio

Example of complete engine number: 10 AMW–TA–H–12345

Commission number: This number is stamped on a plate attached to the right-hand wing valance just above the battery.

Car (or chassis) number: This number, prefixed by the actual car model series designation, is stamped on a plate attached to the bonnet lock platform.

Examples (starting numbers only)

A2S10 101	Austin 1100 Mk I 2 d. saloon
AS10 101	Austin 1100 Mk I 4 d. saloon
A/A2W10 101	Austin 1100 Mk I Countryman estate-car
A/A2SA 373629	Austin 1100 Mk II 2 d. de-luxe saloon
A/ASAS 389558	Austin 1100 Mk II 4 d. Super de-luxe saloon
A/A2WA 29732	Austin 1100 Mk II Countryman estate-car
A/A2SA 394492	Austin 1300 2 d. de-luxe saloon
A/A2SAS 385616	Austin 1300 2 d. Super de-luxe saloon
M/GS1 101	Morris 1100 Mk I 4 d. saloon (August 1962)
M/AS1 7992	Morris 1100 Mk I 4 d. saloon (October 1962)
M/A2S2S 412351	Morris 1100 Mk II 2 d. Super de-luxe saloon
M/AS2 440331	Morris 1100 Mk II 4 d. de-luxe saloon
M/AW2 29822	Morris 1100 Mk II Traveller estate-car
M/A2S2S 423455	Morris 1300 2 d. Super de-luxe saloon
M/A2W2 29601	Morris 1300 Traveller estate-car
G/GS1 101	MG 1100 Mk I 4 d. saloon (early October 1962)
G/AS3 2094	MG 1100 Mk I 4 d. saloon (late October 1962)
G/AS4 118966	MG 1300 Mk I 4 d. saloon
G/A2S4 131918	MG 1300 Mk II 2 d. saloon
R/AS1 101	Riley Kestrel 1100 Mk I saloon
R/AS4 12239	Riley Kestrel 1300 Mk I saloon
V/AS1 101	Vanden Plas Princess 1100 Mk I saloon
V/AS2 16508	Vanden Plas Princess 1300 saloon
W/AS1 101	Wolseley 1100 Mk I saloon
W/AS4 17228	Wolseley 1300 Mk I saloon
W/AS4 21393	Wolseley 1300 Mk II saloon

MODIFICATIONS

See under 'Description'. For modifications of a purely technical nature see under 'Repair Data'.

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PRICES

UK prices, inclusive of purchase tax to the nearest £1

	Aug. 1962	*Jan. 1963*	*Jan. 1964*	*Jan. 1965*	*Jan. 1966*	*Aug. 1966*	*Aug. 1967*	*Oct. 1967*		*Oct. 1968*		*Aug. 1969*	
	4 d.	*4 d.*	*4 d.*	*4 d.*	*4 d.*	*4 d.*	*4 d.*	*2 d.*	*4 d.*	*2 d.*	*4 d.*	*2 d.*	*4 d.*
Austin/Morris 1100	675*	593*	593*	594	614	631	658	—	—	—	—	—	—
De-luxe	695*	611*	611*	612*	644	655	689	647	672	689	—	714	—
Super de-luxe	—	—	—	—	—	—	—	672	696	—	750	—	766
Estate-car	—	—	—	—	—	711	745	745		—	—	—	—
Austin/Morris 1300													
De-luxe	—	—	—	—	—	—	—	672	696	698	750	—	—
Super de-luxe	—	—	—	—	—	—	—	696	721	750	775	766	792
Estate-car	—	—	—	—	—	—	—	770		826		844	
MG 1100	—	713	713	714	742	755	788	—	788	—	—	—	—
MG 1300	—	—	—	—	—	—	—	—	813	911	—	931	—
Riley 1100	—	—	—	—	781	795	828	—	828	—	—	—	—
Riley 1300	—	—	—	—	—	—	—	—	852	—	935	—	955
Vanden Plas 1100	—	—	895	896	926	942	975	—	975	—	—	—	—
Vanden Plas 1300	—	—	—	—	—	—	—	—	1000	—	1065	—	1088
Wolseley 1100	—	—	—	—	754	767	801	—	801	—	—	—	—
Wolseley 1300	—	—	—	—	—	—	—	—	825	—	884	—	903
Automatic Transmission	—	—	—	—	92	92	92	92		96		97	

*Morris models only

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INSTRUMENTS AND CONTROLS

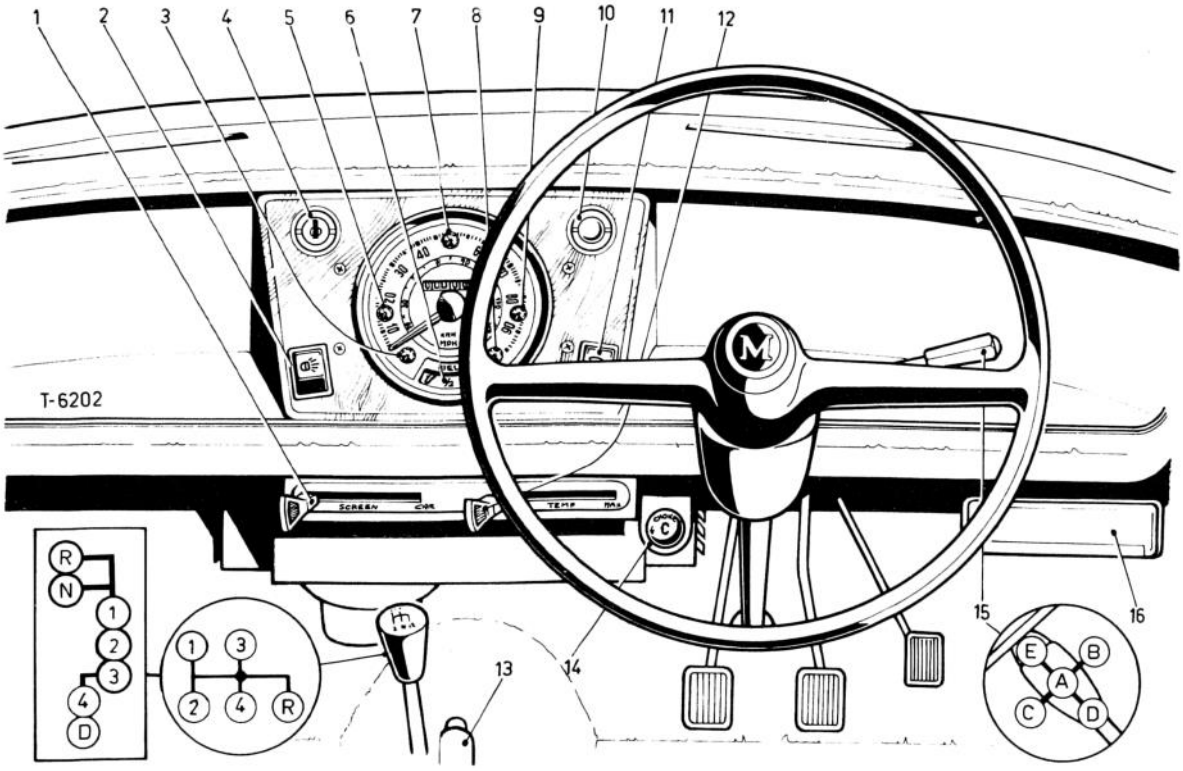

Fig. 18. Instruments and controls, Austin/Morris 1100 Mk 11 and 1300 De-Luxe

Key to Fig. 18

1 Air vent control
2 Lights switch
3 Main beam warning light
4 Ignition/starter switch
5 Oil filter warning light
6 Fuel gauge
7 Direction indicator warning light
8 Ignition/generator warning light
9 Oil pressure warning light
10 Windscreen washer control
11 Windscreen wiper switch
12 Heater control
13 Parking brake
14 Choke control
15 Combination switch,
A—Horn push
B and C—Direction indicators
D—Main beam
E—Flasher

Key to Fig. 19.

1 Ashtray
2 Lights switch
3 Ignition/generator warning light
4 Ignition/starter switch
5 Oil pressure warning light
6 Choke control
7 Coolant temperature gauge
8 Direction indicator warning light
9 Speedometer
10 Direction indicator warning light
11 Fuel gauge
12 Oil filter warning light
13 Main beam warning light
14 Windscreen wiper switch
15 Windscreen washer control
16 Air vent control
17 Heater booster switch
18 Heater control
19 Combination switch,
A—Horn push
B and C—Direction indicators
D—Main beam
E—Flasher

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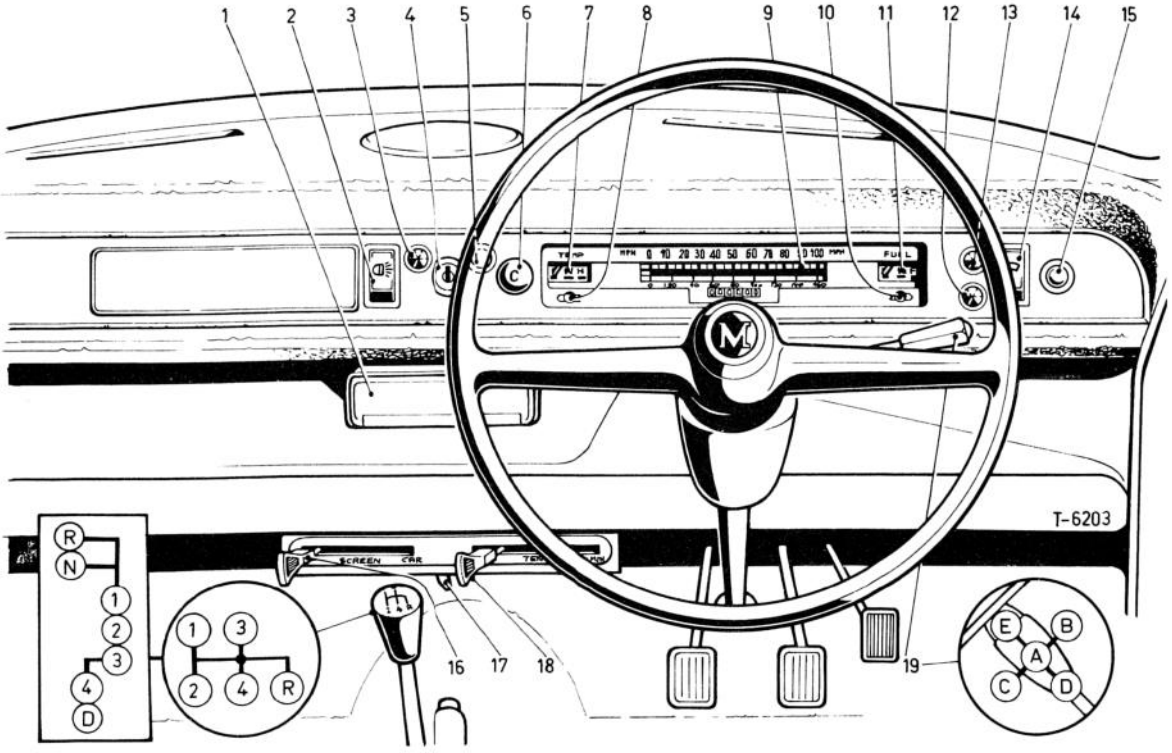

Fig. 19. Instruments and controls, Austin/Morris 1300 Super de-luxe

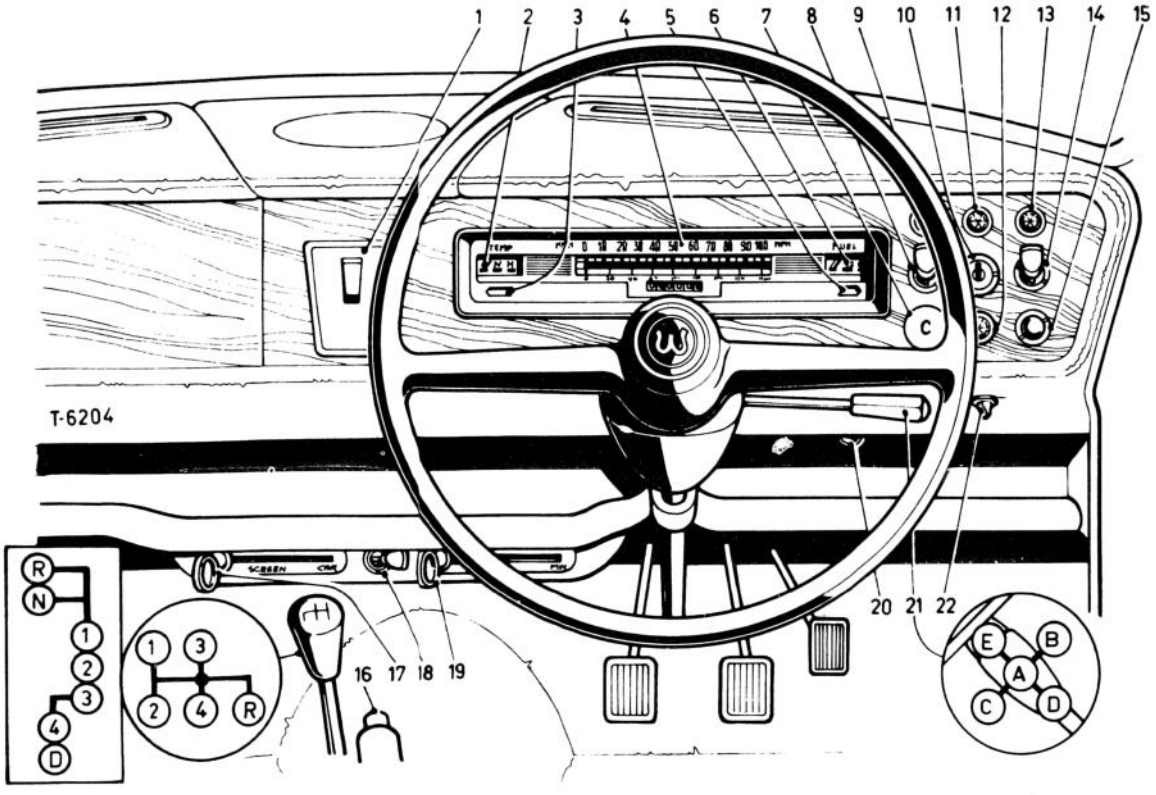

Fig. 20. Instruments and controls, MG/Wolseley, 1100 Mk 1, 11 and 1300 Mk 1

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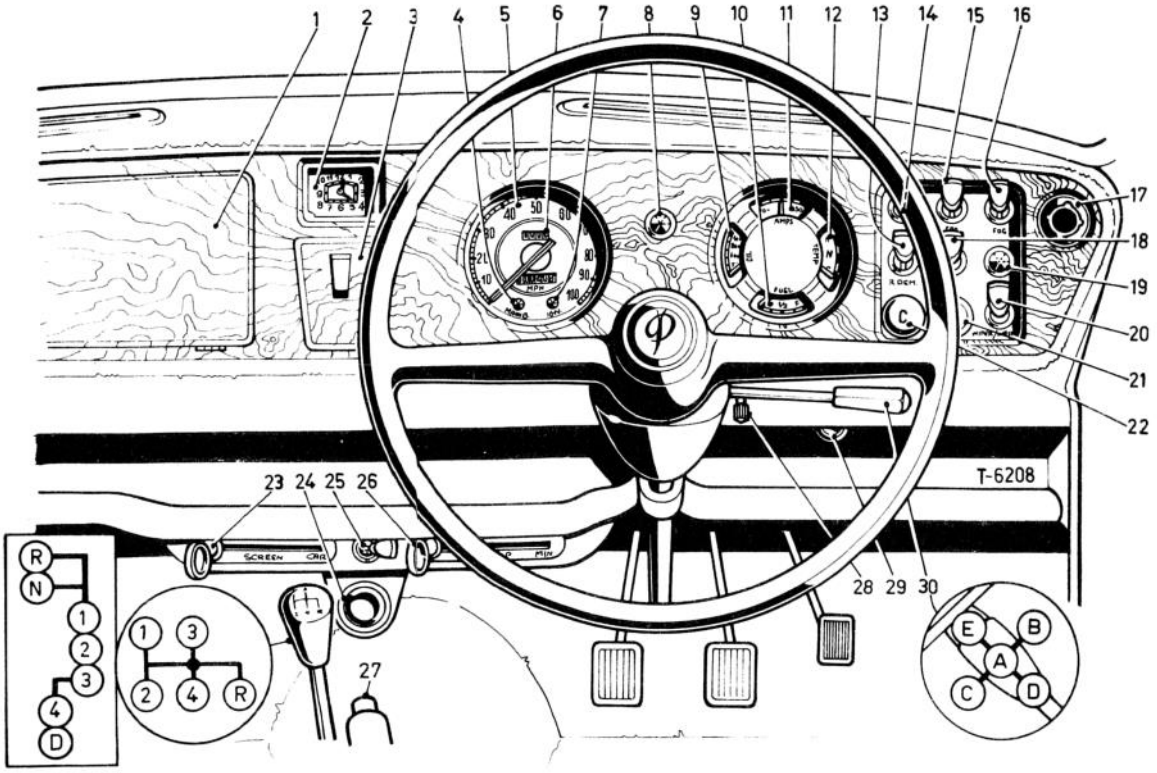

Fig. 21. Instruments and controls, Vanden Plas Princess

Key to Fig. 20.

1 Ashtray
2 Coolant temperature gauge
3 Direction indicator warning light
4 Speedometer
5 Direction indicator warning light*
6 Fuel gauge
7 Choke control
8 Windscreen wiper switch
9 Oil filter warning light
10 Ignition/starter switch
11 Oil pressure warning light
12 Ignition/generator warning light
13 Main beam warning light
14 Lights switch
15 Windscreen washer control
16 Parking brake
17 Air vent control
18 Heater booster switch
19 Heater control
20 Bonnet release control
21 Combination switch (not 1100 Mk 1)**,
A—Horn
B and C—Direction indicators
D—Main beam E—Flasher
22 Panel light switch (where fitted)

*Not on 1100 Mk 1

**On 1100 Mk 1 models a combined direction indicator/headlamp flasher control is fitted. The horn control is at the centre of the steering wheel and the headlamp dimmer is floor-mounted

Key to Fig. 21.

1 Glove compartment
2 Clock
3 Ashtray
4 Main beam warning light
5 Speedometer
6 Trip mileage indicator
7 Ignition/generator warning light
8 Direction indicator warning light*
9 Oil pressure gauge
10 Fuel gauge
11 Ammeter
12 Coolant temperature gauge
13 Rear window demister switch
14 Fog light switch
15 Fog light switch
16 Lights switch
17 Air vent
18 Panel light switch
19 Oil filter warning light
20 Windscreen wiper/washer control
21 Ignition/starter switch
22 Choke control
23 Air vent control
24 Cigar lighter
25 Heater booster switch
26 Heater control
27 Parking brake
28 Trip reset control
29 Bonnet release control
30 Combination switch (not 1100 Mk I)**

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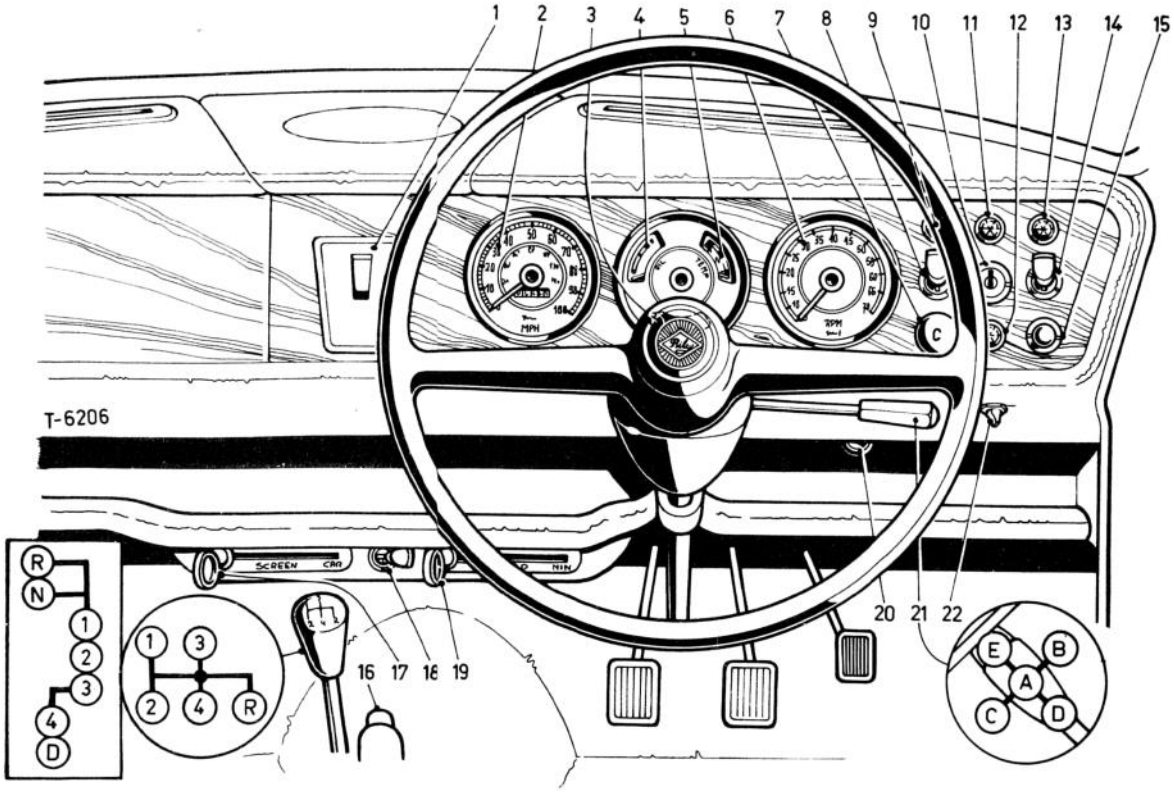

Fig. 22. Instruments and controls, Riley Kestrel 1100 Mk 1, 11 and 1300 Mk 1

Key to Fig. 22.

1 Ashtray
2 Speedometer
3 Fuel gauge
4 Oil pressure gauge
5 Coolant temperature gauge
6 Tachometer
7 Choke control
8 Windscreen wiper switch
9 Oil filter warning light
10 Ignition/starter switch
11 Spare warning light
12 Ignition/generator warning light
13 Main beam warning light
14 Lights switch
15 Windscreen washer control
16 Parking brake
17 Air vent control
18 Heater booster switch
19 Heater control
20 Bonnet release control
21 Combination switch (not 1100 Mk 1)*,
A—Horn push
B and C—Direction indicators
D—Main beam
E—Flasher
22 Panel light switch (where fitted)

*On 1100 Mk 1 models a combined direction indicator/headlamp flasher control is fitted. The horn control is at the centre of the steering wheel and the headlamp dimmer switch is floor mounted.

Key to Fig. 23.

1 Ashtray
2 Speedometer
3 Oil gauge
4 Direction indicator warning light
5 Fuel gauge
6 Coolant temperature gauge
7 Direction indicator warning light
8 Tachometer
9 Choke control
10 Windscreen wiper switch
11 Oil filter warning light
12 Ignition/starter switch
13 Spare warning light
14 Ignition/generator warning light
15 Main beam warning light
16 Lights switch
17 Windscreen washer control
18 Parking brake
19 Air vent control
20 Heater booster switch
21 Heater control
22 Boot release control
23 Combination switch,
A—Horn push
B and C—Direction indicators
D—Main beam
E—Flasher
24 Panel light switch

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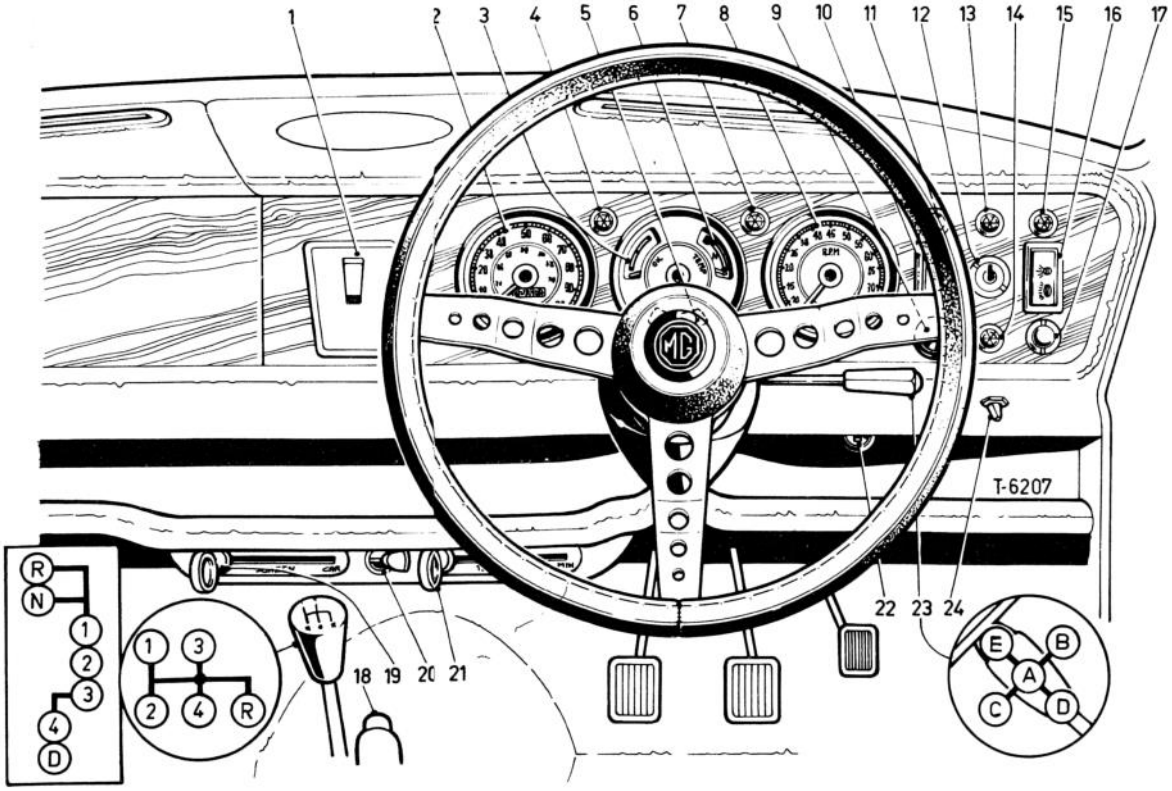

Fig. 23. Instruments and controls, MG/Riley Kestrel 1300 Mk 11

AUTOMATIC TRANSMISSION

The automatic transmission is an optional extra on models from October 1965 onwards. The selector lever is floor-mounted and the positions are R-N-1-2-3-4-D. The various positions are briefly explained as follows:

R	=	Reverse
N	=	Neutral
1-2-3-4	=	Manual selection of each gear
D	=	Automatic selection

For normal driving, select the neutral position on the lever, start the engine, allow it to warm up for a short time and, depending on conditions, select either 'D' or one of the manual positions. Release the handbrake, depress the accelerator pedal and the car will move off smoothly as the torque-converter takes up the drive. When the car is stationary, select a gear from neutral only when the engine is idling; this will ensure a smooth engagement. Do not attempt to change down to third gear above 50 mph or to second gear above 40 mph when using the manual control.

When on automatic control ('D'), a lower gear for extra acceleration is obtained immediately by pressing the accelerator hard to the floor. However, third cannot be down-shifted by use of this 'kick-down' facility above 43 mph, second above 34 mph or first above 22 mph. Should a change-down be required above these speeds, it will be necessary to resort to manual selection, but take care to avoid over-revving the engine.

NOTE: See Driver's Handbook for detailed description of driving procedure under various conditions.

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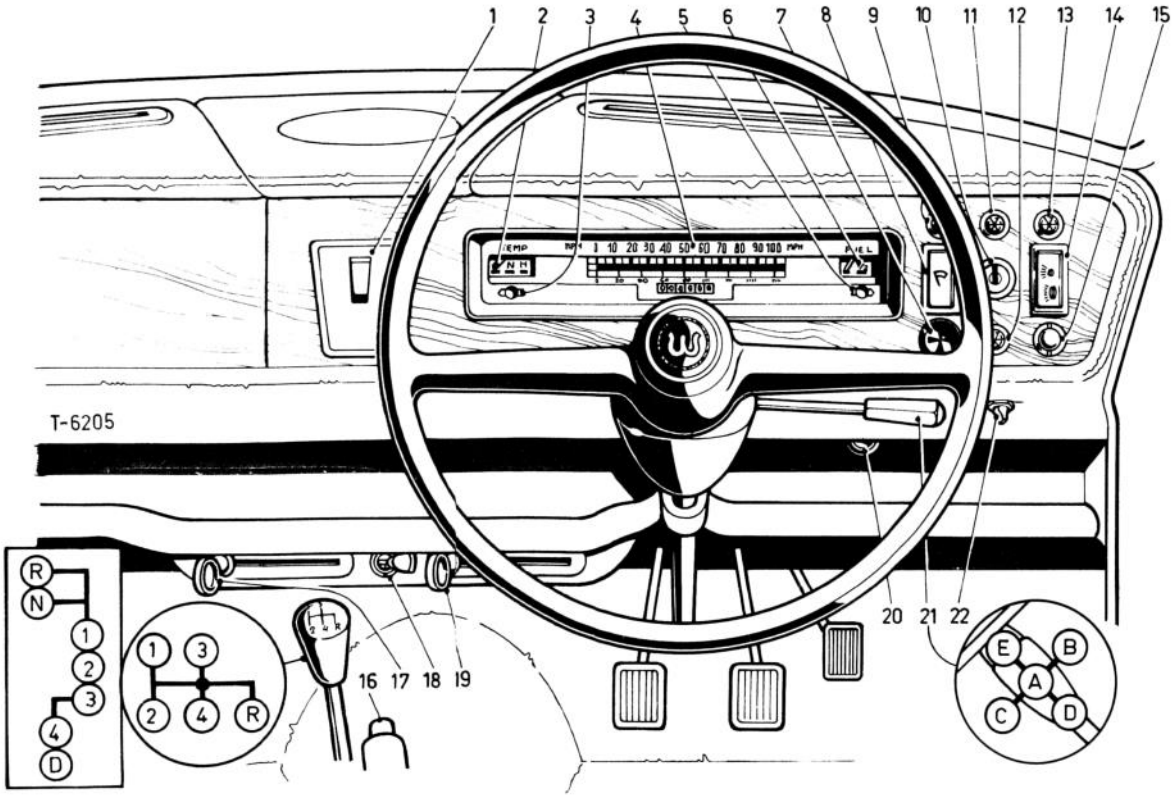

Fig. 24. Instruments and controls, Wolseley 1300 Mk 11

1 Ashtray
2 Coolant temperature gauge
3 Direction indicator warning light
4 Speedometer
5 Direction indicator warning light
6 Fuel gauge
7 Choke control
8 Windscreen wiper switch
9 Oil filter warning light
10 Ignition/starter switch
11 Spare warning light
12 Ignition/generator warning light
13 Main beam warning light
14 Lights switch
15 Windscreen washer control
16 Parking brake
17 Air vent control
18 Heater booster switch
19 Heater control
20 Boot release control
21 Combination switch,
A—Horn push
B and C—Direction indicators
D—Main beam
E—Flasher
22 Panel light switch

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Dimensions and Weights

EXTERIOR DIMENSIONS

	inches
Wheelbase	93½
Track, front	51½
Track, rear	50⅞
Overall length	146¾
Overall width	60⅜
Overall height	53
Ground clearance	6 (estate car 6¼)
Turning circle	34 ft. 9 in.
Width of front door opening	37
Width of rear door opening	36½
Width of front door windows	24
Height of front door windows	14½
Width of rear door windows	24¼
Height of rear door windows	14¼
Height of windscreen	18½
Height of rear window	19

INTERIOR DIMENSIONS (Saloons)

	inches
Pedal to front seat	19
Steering wheel to seat	7
Steering wheel to seat back-rest	17¾
Height over front seat	37¾
Height of front seat	14½
Maximum adjustment of front seat	4½
Depth of front seat	19¼
Height of front seat back-rest	19¾
Front seat back-rest to rear seat	8¼
Height over rear-seat	36
Height of rear seat	13½
Depth of rear seat	17
Height of rear seat back-rest	20¾
Height of luggage compartment	13
Width of luggage compartment	43¼
Depth of luggage compartment	32¼
Maximum interior height	45¼
Height of front door opening	35
Height of rear door opening	34½

ESTATE CAR DIMENSIONS

Load space length, as two-seater	48
as four-seater	28
Load space entrance, width	39
height	34

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Load space interior height, maximum 35
Load space capacity, as two-seater 37.7 cu. ft.
as four-seater 14 cu. ft.

WEIGHTS

Saloons

Austin 1100/1300	1829 lb.
MG 1100/1300	1852 lb.
Morris 1100/1300	1834 lb.
Riley Kestrel 1100/1300	1852 lb.
Vanden Plas Princess 1100/1300	1989 lb.
Wolseley 1100/1300	1830 lb.

Estate-Cars

1100 Countryman/Traveller	1820 lb.
1300 Countryman/Traveller	1881 lb.

NOTE: The above approximate kerb weights are based on manufacturers information.

Performance Data

NOTE: For engine performance, transmission, gear ratios etc., see 'Technical Specifications'.

THEORETICAL ROAD SPEEDS

1100 models

	rpm	*first gear (mph)*	*second gear (mph)*	*third gear (mph)*	*top gear (mph)*	*mean piston speed (ft./min.)*
(a)	1000	4.1	6.9	10.6	14.9	550
(b)	2500	10.3	17.2	26.5	37.2	1375
(b)	2750*	11.3	19.0	29.1	41.0	1512
(c)	5100	20.9	34.9	54.1	76.0	2805
(c)	5500*	22.5	38.0	58.3	82.0	3025
1300 models						
(a)	1000	5.0	8.2	12.6	16.8	533
(b)	2500	12.5	20.5	31.5	42.0	1332
(b)	3000*	15.0	24.6	37.8	50.4	1599
(c)	5250	26.25	43.0	66.15	88.2	2798
(c)	6000*	30.0	49.2	75.6	100.8	3198

(b) = engine speed at maximum torque; (c) = engine speed at maximum bhp.
*twin-carburettor models.

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ROAD TEST DATA

NOTE: These figures are approximate and should be considered to be fair averages.

	1100 engine		*1300 engine*	
	single carb.	*twin carb.*	*single carb.*	*twin carb.*
Maximum speed (mph)	80	89	91	97
Cruising speed (mph)	70	75	75	80
Cruising range (miles)	300	300	290	280
Acceleration (sec.)				
0–30 mph	5.7	5.1	5.0	4.0
0–40 mph	9.8	8.0	7.6	6.2
0–50 mph	14.0	12.9	11.4	9.4
0–60 mph	21.9	18.9	17.5	13.0
0–70 mph	37.9	28.8	25.6	18.2
Standing $\frac{1}{4}$ mile	21.8	20.5	20.0	18.9
20–40 in top gear	12.5	12.5	13.4	10.7
30–50	13.5	13.5	13.5	10.4
40–60	15.1	15.0	15.1	10.3
50–70	—	20.0	20.1	11.7
60–80	—	—	—	16.8
Fuel consumption (mpg)	35	35	35	33

Lubrication and Maintenance

RUNNING-IN PERIOD

Avoid fierce acceleration for the first 500 miles and do not exceed 45 mph in top gear or corresponding speeds in the lower gears. Do not maintain this maximum speed for long periods. Avoid long periods of idling, full throttle acceleration and over-revving of the engine. Never overload the engine, but change down to a lower gear when necessary; the engine must be operated at normal rpm.

GENERAL DATA

Engine/Gearbox/Differential

Sump capacity	$8\frac{1}{2}$ Imp pints (10.2 US pints)
Oil viscosity: above – 12°C (10°F) –	SAE 20W/50
– 18°C to – 7°C (0°–20°F)	SAE 10W/30, 10W/40
below – 18°C (0°F)	SAE 5W/20, 5W/30
Oil dipstick	at the front of engine, between distributor and generator
Oil filler	on valve-rocker cover
Oil drain plug	on right-hand side of sump
Oil warning light	the warning light will glow continuously to indicate lack of oil, low oil pressure or the need for a new filter element (separate warning light except on early MG and Morris 1100's)

Change oil when the engine is warm and allow the oil to drain for at least ten minutes.

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Engine/Automatic transmission

Sump capacity	13 Imp pints (16 US pints)
Oil viscosity	as for engine with manual transmission

NOTE: No filter element renewal oil warning light is fitted on models with automatic transmission.

Oil filter (full-flow): Change oil filter element every 6000 miles or when indicated by warning light. On models with automatic transmission the oil filter should be changed every 3000 miles. The engine oil filter is located at the right-hand side of the engine. Remove the filter bowl, extract the element and clean the bowl in petrol. Make sure that all washers and seals are in their correct positions. Fit new element; refill the bowl and refit it to the filter head.

Breather control valve (if fitted): The crankcase breather control valve as fitted to certain models needs servicing every 12,000 miles. It is situated adjacent to the oil filler cap, alongside the valve-rocker cover. Remove the spring clip and lift out the diaphragm and top control spring. Clean all parts thoroughly and flush in methylated spirits (do not use solvents such as trichlorethylene, acetone, benzene and cresol, as they will damage the diaphragm and the backfire-valve seat). Examine the valve interior, the control orifice, the diaphragm, and the control needle. Renew the diaphragm if necessary. Reassemble the valve, taking care to locate the spring centrally under the diaphragm.

Air-cleaner (dry type): Every 12,000 miles fit new air-cleaner element(s) (in dusty operating conditions this should be done at shorter intervals). Unscrew the wing nut(s) on top of the cleaner, withdraw the cover, remove the old element(s), clean the container, insert new element(s) and refit.

Cooling system:	Capacity without heater	5.75 Imp pints (6.8 US pints)
	Capacity with heater	6.75 Imp pints (8.0 US pints)

There are two drain plugs, one at the bottom of the radiator and the other at the rear of the cylinder block on the left-hand side. During cold weather, use an anti-freeze conforming to BS.3151 or BS.3152. For temperatures down to −13°C (9°F) use 1.5 Imp pints (2.0 US pints) of anti-freeze (25 per cent solution), and for temperatures down to −19°C (−2°F) use 2.25 Imp pints (2.5 US pints) (33⅓ per cent solution). For temperatures below −36°C (−33°F), a solution of 50 per cent or more must be used.

Water pump: To lubricate the water pump (where applicable), remove plug and inject a small quantity of lithium-base multipurpose grease. Replace plug.

Generator: Lubricate rear bearing every 6000 miles with a few drops of engine oil.

Steering gear: Oil capacity ⅓ Imp pint (0.4 US pint). Oil viscosity SAE 90 EP. This is a rack and pinion unit and does not require periodical lubrication.

Brake and clutch systems: The hydraulic fluid reservoirs are located on the bulkhead, in the engine compartment, on the driver's side of the car. Use only Lockheed Disc Brake Fluid (Series II) or 329 for topping up†.

Jacking-up: Lifting one side of the car at a time, insert the jack lifting bar into the socket just below the door; the jack should lean outwards slightly at the top before lifting. Ensure that the bar is fully inserted into the jacking socket before turning the jack screw, otherwise the jack may become damaged.

C

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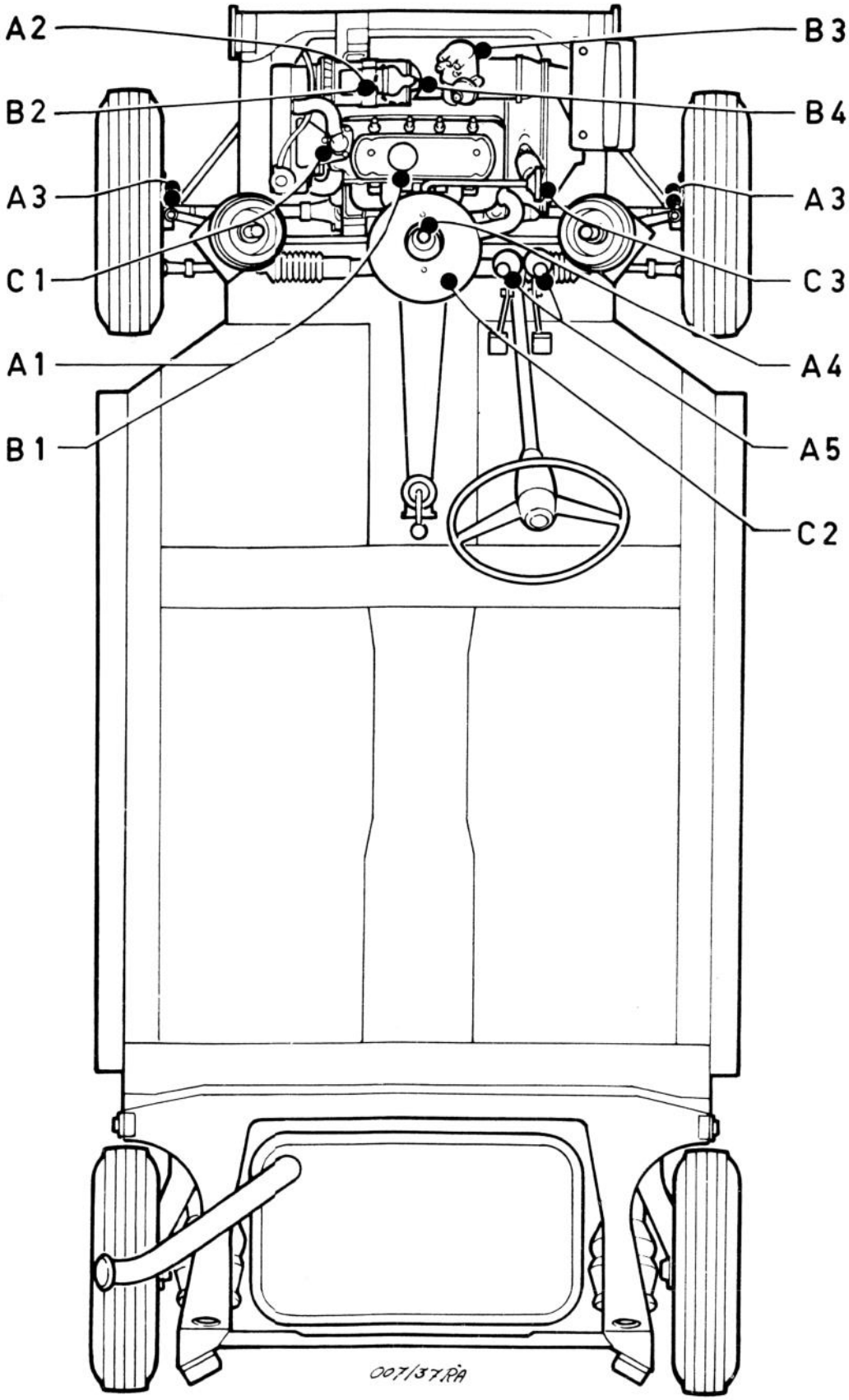

Fig. 25. Lubrication chart

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Fuel tank: Fuel tank capacity—all models 8 Imp galls. (9.6 US galls)

†329 only in U.S.A.

TYRE PRESSURES

Tyre size:	except Austin America	5.20–12 in. or 145–12 in.
	Austin America	5.95–12 in.
Tyre pressures,	cold (lb./sq. in.)	
	5.20–12 in.	28 front, 24 rear (26 on estate-cars)
	145–12 in.	32 front, 28 rear
	Austin America	28* front, 24* rear

*add 4 lb./sq. in. when fully laden.

ROUTINE MAINTENANCE

Important: The following maintenance instructions do not cover fully vehicles subject to the statutory regulations regarding exhaust emission control existing in the U.S.A. The local Distributor or Dealer and approved polution service station should be consulted before attempting to service such models (i.e. Austin America).

Daily: Check engine oil, windscreen washer, fuel tank, tyres.

Weekly: Check cooling system, battery electrolyte, wheel nuts, lights.

NOTE: The above checks should also be carried out at every routine service.

A. Every 3000 miles or 3 months

A1. Engine/Automatic transmission sump: drain (when hot) and refill.
A2. Engine oil filter (Automatic transmission): clean housing and renew element.
A3. Steering: swivel ball joints: lubricate with grease gun (4 nipples).
A4. Carburettor(s): top up damper(s) with engine oil. Note: Correct level is $\frac{1}{2}$ in. above top of hollow piston rod.
A5. Brake and clutch fluid reservoirs: check fluid levels; top up if necessary.
Steering: check tightness of steering column clamp bolt.
Brake system: check all pipes and hoses for leaks or chafing; adjust rear brakes if necessary.
Electrical: check headlight alignment.

B. Every 6000 miles or 6 months

B1. Engine/manual transmission sump: drain (when hot) and refill*.
B2. Engine oil filter (manual transmission): clean housing and renew element*.
B3. Ignition distributor: remove the rotor arm and apply a few drops of engine oil on the exposed screw, one drop on the breaker arm pivot and a few drops on the automatic advance mechanism through the hole in the base plate. Lightly smear the cam profile with grease.
B4. Generator: sparingly lubricate the end bearing with engine oil.
General lubrication; Oil can: all hinges, catches, etc.
Engine: check fan belt tension and valve clearances.
Ignition system: clean and adjust spark plugs and contact breaker points: check operation of distributor advance/retard mechanism.
Transmission: check clutch return stop clearance; check tightness of universal joint nuts and bolts.

*Service earlier if indicated by panel warning light.

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Steering and suspension: check front wheel alignment; check tightness of suspension mounting nuts and bolts.
Brake system: check front disc pads for wear.
Electrical: check battery electrolyte specific gravity; check all equipment for correct functioning.
Test: short road test.

C. Every 12,000 miles or yearly

C1. Water pump (if plug is fitted): remove plug and sparingly lubricate with grease.
C2. Air cleaner: clean housing and renew paper element(s) (more frequently under adverse conditions).
C3. Crankcase ventilation control valve (if fitted): test, dismantle and clean if necessary (metal parts in solvent, diaphragm is methylated spirits): renew oil filler/breather cap.
Ignition system: renew spark plugs.
Steering and suspension: check all moving parts for wear.
Brake system: check linings for wear; blow out drums and drum mechanisms with air line.
Test: full road test.

D. Every 24,000 miles or 18 months

Brake system: drain, refill with fresh fluid and bleed system. Note, every 36,000 miles/3 years: overhaul hydraulic system and renew components as necessary.

Servicing the 'Hydrolastic' Suspension

The servicing of the 'Hydrolastic' system should be carried out only by authorized B.L.M.C. Dealers, who have special equipment for this purpose. The fluid used in this system is marketed solely by B.L.M.C. under their Part No. 97H 2801.

Repair Data

Repairs are best performed by authorized B.L.M.C. dealers who possess special tools and experience. These data have been compiled from the official repair manuals and other manufacturer's information, supplied through the kind co-operation of the British Leyland Motor Corporation.

ENGINE

NOTE: As this engine is transversely mounted, it is essential to have a clear understanding of the terms 'left', 'right', 'front' and 'rear' as used in this section of the manual. The front of the engine is the radiator end, the rear is the flywheel end, the left-hand side is the carburettor side (from the flywheel end) and the right-hand side is the distributor side.

DESCRIPTION

Water-cooled, four-cylinder, in-line, ohv petrol engine, of unit construction with the gearbox, clutch and transmission, transversely mounted in the front of the vehicle and suspended by means of flexible rubber mountings. The engine is of

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either 1098 cc (67.0 cu. in.) or 1274.86 cc (77.8 cu. in.) capacity with either single or twin carburettors according to model. Engines are referred to as 1100 and 1300 respectively throughout this section of the manual. The cast-iron cylinder block incorporating the upper crankcase has integral cylinder bores, although dry cylinder liners can be fitted in service when the bores are worn to such an extent that they cannot be rebored further.

The pistons are of the solid skirt type (dished crown on 1300 engines) and are made of aluminium alloy. Each piston has three compression rings, the upper one being straight and the lower two tapered, plus one oil control ring of the slotted-scraper type (early 1100 engines) or the Duaflex 61 type (later 1100 and 1300 engines), all fitted above the piston pin, which is either of the fully-floating type retained by end circlips (1100 engines), or the interference (shrink fit) type (1300 engines). The connecting rods are steel forgings of I-beam section and are fitted to the crankshaft by means of replaceable steel-backed lead-bronze, lead-indium plated (1100 engines) or steel backed copper-lead-indium plated thin-walled bearings (1300 engines). The small-ends of the connecting rods are fitted with bronze piston-pin bushes (1100 engines only). The crankshaft is a steel forging and runs in three replaceable steel backed lead-bronze bearing shells with lead-indium plated inserts (1100 engines) or steel backed copper-lead-indium, thin-walled bearing shells (1300 engines). Crankshaft end-float is taken by semi-circular steel-backed thrust washers, lined with lead-bronze, fitted on each side of the centre main bearing. Unlike crankshafts of conventional engine units, this crankshaft has a straight rear journal, the end of which is tapered. The straight journal accommodates the primary pinion of the transmission drive, while the tapered portion of the journal serves as a rigid mounting for the clutch and flywheel assembly, which is retained in position by means of a single central bolt in the crankshaft (see also 'clutch' section).

The camshaft runs in three steel-backed white-metal-lined bearings; camshaft end-float is taken by a thrust flange located immediately behind the camshaft sprocket. A single-row timing chain and sprockets drive the camshaft from the crankshaft, chain tension being maintained by two synthetic rubber tensioners. The shrunk-on starter ring gear provides the starter motor drive at the flywheel periphery.

The cast-iron cylinder head carries overhead valves mounted vertically and operated by barrel type (1100 engines) or bucket type (1300 engines) tappets, push rods and shaft-mounted rockers. The valves are retained in the conventional manner by means of split type cotters which are located in the tapered bores of the retaining caps, and either single valve springs or dual valve springs (according to the engine type); replaceable valve guides are fitted in the cylinder head, as are integrally machined valve seats, although valve seat inserts are available for re-conditioning purposes. Valve clearance adjustment is by rocker arm screws.

The oil pump, of the vane or rotor type, is located at the rear of the crankcase and is driven from the rear of the camshaft by means of either a mortise and tenon coupling or by splined shaft and flange engagement.

A non-adjustable oil pressure relief valve, on the right-hand side at the rear of the cylinder block, opens when the oil pressure in the system exceeds the requisite operating pressure. A full-flow oil filter with a replaceable element is situated on the right-hand side of the crankcase. A differential oil pressure switch, which controls a separate warning light on the instrument panel to indicate when the filter element should be changed, is fitted on all models with manual gearboxes, except early MG and Morris 1100's. The engine, gearbox and differential

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are all lubricated with the same oil, the transmission housing serving as a sump. Oil is drawn from the sump by the oil pump and is fed, via the filter, through drilled channels to the main, camshaft and connecting-rod big-end bearings. The cylinder walls are fed by oil delivered from jet holes in the connecting-rod big-ends, and oil under a reduced pressure lubricates the valve/rocker mechanism via the front camshaft bearing. The tappets are fed by oil flowing from the rocker mechanism, via the push-rod apertures, and by splash. An instrument panel warning light (combined with oil filter renewal warning light on early Morris and MG 1100 models), working in conjunction with a low-oil-pressure switch, gives an indication when the oil pressure is below the predetermined minimum figure.

The positive crankcase ventilation system consists of a tube connected between the valve rocker cover and the air-cleaner cover, thus ensuring that crankcase fumes are drawn into the carburettor(s). The alternative ventilation system, fitted on certain models, employs a rocker cover oil-filler cap with two holes and a filter, a breather outlet pipe located at the front of the engine, and a breather control valve mounted near the rocker cover.

Engine cooling is provided by a pressurized radiator mounted at the left-hand side of the vehicle in front of the engine, an expansion chamber connected to the radiator top tank, a water pump of the impeller type, a 16-bladed fan and a thermostat which controls the coolant temperature and ensures quick engine warm-up when starting from cold. The water pump, fan and generator/alternator are belt-driven from the crankshaft pulley; fan belt tension is adjusted by loosening the generator/alternator mounting bolts and pivoting the unit as required. The fuel system comprises either a single or twin, semi-downdraught SU carburettor(s), a paper element type air cleaner, an electrically-operated fuel pump and a rear mounted fuel tank. The inlet and exhaust manifold on single-carburettor engines form a single unit with hot-spot, on the left-hand side of the cylinder head. On twin-carburettor engines the light-alloy inlet and cast-iron exhaust manifolds are separate units and without a hot-spot.

Ignition is by means of battery, coil and ignition distributor fitted with centrifugal and vacuum advance mechanism. The distributor is mounted on the right-hand side of the engine and is driven by a skew gear from the crankshaft. The direction of rotation of the distributor shaft is anti-clockwise and the firing order is 1, 3, 4, 2.

Engine removal and reinstallation

The engine can be removed from the car together with the sub-frame; *this can only be done when the special equipment necessary for evacuating, filling and pressurizing the suspension system is available.*

The engine/gearbox assembly can however be hoisted out through the bonnet aperture as follows. Drain the coolant, remove the bonnet and disconnect the earth lead at the clutch housing and the wiring of the generator/alternator, the starter motor, ignition coil, distributor, oil pressure unit and coolant temperature transmitter unit. Remove the starter motor, carburettor(s) and air cleaner(s), disconnect the heater control valve cables and hoses and after releasing the clutch release arm tension spring, disconnect the clutch operating cylinder; tie it clear of the engine assembly without disturbing the fluid line. Remove the exhaust pipe and the overflow hose from the radiator and disconnect the speedometer cable. Remove the gear-change lever dust boot and the two retaining plate screws; withdraw the lever. Disconnect the tachometer cable, where fitted.

With the front of the vehicle jacked up and supported under the chassis frame

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side-members, remove the extension-to-differential casing lower retaining set-screws (two each side); remove the casing. Disconnect the drive shaft flexible couplings (each side) after removing the 'U' bolts; the sliding joints should be pushed onto the shafts to separate the couplings. Disconnect the left-hand engine mounting and having removed the two right-hand cylinder head stud nuts, fit two lifting eyes and take the weight of the engine assembly with suitable lifting tackle; remove the right-hand engine mounting bracket and the rear mounting bracket screws at the sub-frame. After ensuring that all controls and connections have been disconnected, lift the assembly from the vehicle. Reinstallation is a reversal of the removal procedure, remembering to refill the cooling system.

Dismantling and reassembly

Drain the engine oil, remove the coil, spark plugs, oil pressure relief valve, oil pressure switch (or pipe union), oil filter assembly with oil pipe, dipstick, breather control valve (where fitted), thermostat and water outlet. Slacken the generator/alternator mounting bolts and remove the fan belt, fan, water pump and pulley and the generator/alternator. When the engine is completely cold remove the inlet and exhaust manifold(s). Remove the valve rocker cover and cork gasket, gradually slacken off the rocker shaft bracket nuts and the cylinder head stud nuts in the correct sequence (see page 37) to avoid distortion, and remove the rocker shaft assembly complete with rockers; withdraw the pushrods, keeping them in the correct order for reassembly. The rocker shaft assembly can be dismantled by removing the rocker-shaft-to-mounting-bracket grub screw, withdrawing the split pin and washers from the front end of the shaft and then sliding the rockers, brackets and springs from the shaft, noting their positions for correct reassembly; on 1300 engines distance pieces are located on each side of the two outer rockers and on the bracket side of the two centre rockers. Remove the plug from the front end of the rocker shaft to give access to the oilway.

When lifting the cylinder head from the block, tap it with a hide mallet to loosen the joint and carefully lift the assembly evenly over the studs, together with the gasket. The cylinder head can be dismantled as follows: remove the valve cotter clip (1100 engines), compress the valve spring(s) with a suitable compressor tool and remove the split cotters. Release the spring(s) and remove the retaining cap, spring(s), oil seal and spring seat (where fitted); on 1300 engines the oil seal is located on the upper end of the valve guide. Remove the valves, retaining them in their correct order for reassembly. Remove the tappet covers and lift out the tappets keeping them in the same order to ensure correct reassembly (1100 engines only).

Remove the clutch-cover-to-flywheel-housing setscrews, withdraw the clutch cover assembly, unscrew the nuts (coil spring clutch) or remove the spring ring (diaphragm spring clutch) and remove the clutch thrust plate from the spring plate.
NOTE: *Prior to removing the flywheel it will be necessary to turn the crankshaft so that pistons 1 and 4 are at T.D.C. to prevent the 'C' plate from dropping behind the oil seal.*

Bend back the lock-washer tab and slacken off the flywheel retaining bolt three or four threads. Break the seating of the assembly on the crankshaft taper with service tool 18G 304, together with adaptor set 18G 304 M (coil spring clutch) or 18G 304 N (diaphragm spring clutch).

NOTE: ***When pulling the flywheel from the crankshaft, the oil behind the flywheel oil-seal will run out over the clutch driven plate, unless the flywheel is kept in***

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a strictly vertical position whilst withdrawing it. If this point is not observed, it may be difficult to determine whether the clutch linings were contaminated with oil whilst the vehicle was in service.

With three studs from the adaptor set screwed through the recessed holes in the clutch spring plate onto the flywheel, and the plate of tool 18G 304 fitted over the studs, install the three nuts on the studs in such a way that the plate remains parallel with the flywheel. Insert the centre extractor bolt and withdraw the flywheel and clutch as an assembly after having removed the central flywheel retaining bolt and keyed washer.

Mark the positions of the bolts and stud nuts securing the flywheel housing to the cylinder block and transmission casing so that they can be reinstalled in their original positions. Slide the protecting sleeve 18G 570 over the clutch plate splines prior to withdrawing the flywheel housing; keep the sleeve firmly in position to avoid damaging the oil seal. Withdraw the retaining bolts from the flange of the transmission casing and, with a suitable hoist, lift the engine to separate it from the transmission. Remove the distributor and its clamp plate; screw a $\frac{5}{16}$ in. UNF bolt into the tapped hole provided in the distributor drive shaft and withdraw the shaft. Bend back the tab on the crankshaft pulley lock washer; remove the pulley retaining bolt and carefully lever the pulley and damper assembly from the crankshaft. Remove the timing cover and the oil thrower plate. Unlock and remove the camshaft sprocket retaining nut. Gradually lever the camshaft and crankshaft sprocket wheels, together with the timing chain, from their respective shafts taking care not to lose the Woodruff keys and noting the thickness of the packing washers fitted behind the crankshaft sprocket; separate the chain from the sprockets. Remove the triangular camshaft retaining plate and carefully withdraw the camshaft from the 1100 engine to avoid damaging the bearing surfaces with the cam lobes. On *1300 engines* it is necessary to turn the engine slightly so that the tappets clear the camshaft prior to carefully withdrawing the camshaft; if the oil pump driving flange comes away with the camshaft this must be refitted to the oil pump drive shaft (driving lug side facing the oil pump). Withdraw the tappets from the *1300 engine* with the aid of a magnet or by inverting the engine and allowing them to drop out.

Detach the engine front plate and gasket. Remove the oil pump after having released the retaining screws. Camshaft bearing bushes can be extracted and renewed as necessary; see the appropriate paragraphs in this manual. Check the crankshaft end-float to determine whether renewal of the semi-circular thrust washers is necessary; end-float should be 0.002–0.003 in. Extract the retaining 'C' washer and backing washer and withdraw the primary crankshaft gear together with the front and rear thrust washers.

NOTE: *Check the markings on main and connecting rod bearing caps; make new markings if necessary to ensure correct reassembly.*

Remove the connecting rod bearing caps and shells, keeping the shells with their respective caps for correct replacement, and push the piston/connecting rod assemblies upwards into the cylinder bores until the piston tops are flush with the cylinder head mating face; remove the connecting rod upper bearing shells. Remove the three main bearing caps together with the lower half bearing shells and the lower halves of the thrust washers fitted to the centre main bearing. Carefully lift out the crankshaft and withdraw the upper halves of the thrust washers and the upper half main bearing shells. The piston/connecting rod assemblies may now be pushed upwards and out of the cylinders. A piston

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can now be removed from its connecting rod (where necessary), noting the following: on *1100 engines* the piston pin is retained in the piston by means of a circlip at each end. It is important to note that the piston pin must not be renewed independently of the piston and that the connecting rod and small-end bush must also be renewed only as an assembly.

On *1300 engines* the piston pin is an interference fit in the connecting rod and it is recommended that service tool 18G 1002 be used to remove the piston pin, exercising great care to avoid damaging the piston in the process. Mark the pin and piston to ensure that the pin is replaced in the same side of the piston from which it was removed.

Clean and inspect all parts. For details regarding reconditioning and adjustments refer to the appropriate paragraphs in this manual. If the engine is to be left stripped down for any length of time, cover all moving parts with clean engine oil to prevent rust and corrosion.

Reassembly

NOTE: Renew all gaskets and seals, using suitable jointing compound where necessary; lubricate all moving parts with clean engine oil as work proceeds.

Assemble the pistons to their respective connecting rods in the reverse order to dismantling. Each piston top is stamped with a figure enclosed in a diamond which indicates the piston size grading; the cylinder block is also marked with identical numbers adjacent to the cylinder bores. Pistons are available in standard size and in 0.010 and 0.020 in. oversizes. The actual oversize diameter of the cylinder bore into which the piston must be fitted is enclosed in an ellipse and stamped on the piston top; the requisite piston clearance is allowed for in the machining of the pistons (see Technical Specifications). When installing standard or oversize pistons, always ensure that each piston and its cylinder bore are marked with the same grading numbers.

Carefully clean the piston ring grooves and install the piston rings in their respective grooves. Prior to fitting new piston rings, first remove the glaze from the cylinder bores with a special hone. The piston ring gap is measured after inserting the piston ring into the cylinder bore squarely to a depth of approximately one inch. Fit the oil control ring to the piston followed by the tapered lower and middle (mark 'T' upwards) and the straight upper compression rings. Space the piston ring gaps alternately on opposite sides of the piston periphery and fit the piston/connecting rod assemblies into their respective cylinder bores with a suitable piston installation tool; do not push the pistons all the way down into the bores at this stage.

Invert the cylinder block. Fit the top main bearing shells and the upper halves of the thrust washers (without locating tabs). Locate the crankshaft in position followed by the lower main bearing shells and caps, with the lower halves of the thrust washers (with locating tabs) correctly positioned (oil grooves facing outwards) each side of the centre main bearing. Fit the main bearing cap bolts, with new locking plates, and tighten to the recommended torque of 60 lb. ft.; lock the bolts. Install the upper half big-end bearing shells in the connecting rods and carefully push the piston/connecting rod assemblies down until the bearing halves rest on the crankpins. Fit the lower half big-end bearing shells in their respective caps; install the caps with their bolts and new locking plates and tighten to the recommended torque of 35 lb. ft.; lock the bolts. Check that the crankshaft rotates freely. Refit the engine front plate together with a new gasket.

Install the oil pump with its paper gasket so that neither the suction nor

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delivery ports are blanked off, tighten the oil pump retaining bolts to 9 lb. ft. Install the valve tappets in their respective bores (1300 engines). Carefully slide the camshaft into position taking care not to damage the bearing surfaces and at the same time rotate it slowly to permit engagement of the oil pump drive flange. Install the triangular camshaft locating plate (white-metal side facing camshaft) and tighten the three retaining bolts.

To prevent the ingress of dirt into the engine during further reassembly, it is advisable to install the transmission casing at this stage. If a new drive-gear train has been fitted, the end-float of the intermediate gear must be checked and if necessary corrected before the transmission is fitted, as follows: thoroughly clean the casing joint faces and fit a new flywheel housing gasket. Install the intermediate gear with the chamfered bore of the thrust washer against the gear face. Smear some high melting point grease on to the main drive shaft bearing rollers to prevent them becoming dislodged as they enter the bearing outer race in the flywheel housing. When refitting the flywheel housing avoid the use of force. Tighten the retaining stud nuts to 18 lb. ft. and check the end-float of the intermediate gear which should be 0.004–0.007 in. Any discrepancy should be corrected by adding or removing thrust washers which are available in thicknessess ranging from 0.132–0.0139 in. Remove the flywheel housing with the gasket and install the transmission casing; when lowering the engine onto the transmission, ensure that the front bearing cork seal remains in position. Gradually tighten the retaining studs and stud nuts to the correct torque, see 'Tightening Torques'.

NOTE: *Do not use sealing compound of any kind. The gradual and even tightening of the retaining studs and nuts is extremely important to ensure correct tooth contact between the driving gears and to obtain a perfect oil-tight joint.*

The paper gasket, used during the check, on the flywheel housing should *not* be used on the final assembly. Refit the crankshaft sprocket wheel, with adjustment shims and the camshaft sprocket wheel. Push the crankshaft and the camshaft towards the rear of the engine to eliminate end-float, and check the alignment of the sprocket wheel teeth in relation to each other, with the aid of a straight-edge. Any discrepancy can be corrected by adding or removing the shims behind the crankshaft sprocket.

Remove both sprockets, turn the crankshaft until the Woodruff key-way is at TDC and turn the camshaft until its key-way is at approximately 'one-o'clock'. Having positioned both sprockets in the timing chain so that the markings on their front faces are lined up, fit the assembly on to the shafts, rotating the camshaft slightly to line up the key as necessary. Secure the camshaft sprocket with its lock washer and nut. Slide the oil thrower ('F' face, or on early models the concave side, facing outwards) onto the crankshaft. NOTE: The early-type timing cover must be used with the early type (concave) oil thrower. If the special tool for centralizing the timing cover oil-seal is not available, this may be done with the hub of the crankshaft pulley. Insert the lubricated pulley boss into the oil-seal, with a turning movement, and fit the timing cover together with a new gasket onto the crankshaft using the centralizing tool or pulley hub; gradually tighten the cover retaining screws, to the recommended torque.

Install the crankshaft primary gear with the inner thrust washer (chamfered bore next to crankshaft flange) and measure the distance between the rear face of the primary gear and the adjoining shoulder on the crankshaft; this clearance can be adjusted by fitting a thrust washer of the required thickness (see below) to give the correct running clearance of 0.0035–0.0065 in.

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Early models (lubricated primary gear bushes)

Measured gap	*Required washer*
0.1335–0.1345 in.	0.129–0.131 in.
0.1315–0.1335 in.	0.127–0.129 in.
0.1295–01315 in.	0.125–0.127 in.

Later models (non-lubricated primary gear bushes)

Measured gap	*Required washer*
0.123–0.125 in.	0.118–0.120 in.
0.121–0.123 in.	0.116–0.118 in.
0.119–0.121 in.	0.114–0.116 in.
0.1175–0.119 in.	0.112–0.114 in.

With service tool 18G 570 protecting the oil seal, refit the flywheel housing together with a new joint washer, inserting the bolts in their former positions.

Important: Ensure that the correct short set screw is fitted in the top right-hand position on the housing.

Tighten the retaining nuts and bolts to the correct torque. A cut-away in the joint washer enables a feeler gauge to be located between the two machined faces to check that the gasket has attained its correct compression thickness of 0.030 in. Refit the flywheel and clutch assembly, tightening the heavy-duty retaining bolt to the torque of 110–115 lb. ft.

Install the valve tappets in their respective bores (1100 engines). New tappets are a selective fit; when coated with light engine oil they should slide down their bores by their own weight. Refit the tappet covers with new cork gaskets.

With No. 1 piston at T.D.C. on its compression stroke and the valves of No. 4 cylinder just 'rocking', screw a $\frac{5}{16}$ in. UNF bolt into the tapped hole in the distributor drive shaft and whilst holding the shaft so that the slot is just below the horizontal (large offset uppermost) insert the shaft; the slot will turn slightly ('2-o'clock' position) as the gear meshes with the camshaft drive gear. Remove the $\frac{5}{16}$ in. bolt and refit the housing and distributor.

Press in new valve guides, where applicable, refit the valve assemblies in the reverse order to dismantling, place a new cylinder head gasket in position (noting that it is marked 'Front' and 'Top' for correct installation) and carefully lower the cylinder head into position. Insert the push rods, replacing them in the positions from which they were removed, replace the valve rocker assembly, (reassembled in the reverse order to dismantling) and, with the screwed plug end of the shaft at the front of the engine; fit all retaining nuts finger tight. Gradually tighten the cylinder head nuts a turn at a time in the sequence given below to a torque of 40 lb. ft. (50 lb. ft. on 1300 engines) and the rocker stud nuts to a torque of 25 lb. ft.

9 5 1 3 7

Front 8 4 2 6

8 4 2 6

Adjust the valve clearances in accordance with the table below:

Valves open:	8 6 4 7 1 3 5 2
Adjust valve nos:	1 3 5 2 8 6 4 7

The requisite initial valve rocker clearance with the engine still cold is 0.012 in.,

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inlet and exhaust. Refit the rocker cover using a new gasket. Further reassembly is a reversal of the dismantling procedure.

After having installed the engine in the vehicles, refill with engine oil and coolant; check for leaks and rectify as necessary.

DETAILED DESCRIPTION OF RECONDITIONING AND SERVICING OF ENGINE COMPONENTS

Cylinder Block

Cylinders

When cylinders are worn beyond rebore limits, new dry cylinder liners can be fitted. This operation must be carried out with special equipment, including a set of suitable pilots made up to suit the particular cylinder liner diameter, and an 8 ton press. New liners are pressed in with a force of 3 tons and old liners require a pressure of 5–8 tons to be removed. After pressing in, the new liners must be machined and honed to give correct running clearance for the pistons to be fitted.

Pistons: In production pistons and cylinder bores are graded. The piston grade number is stamped in a diamond on top of the piston; the cylinder block is also marked with identical numbers adjacent to the cylinder bores. In addition to the standard piston, two oversize pistons (0.010, 0.020 in.) are available for service purposes. The actual oversize diameter of the bore in to which the piston must be fitted is enclosed in an ellipse stamped on the piston top; the requisite running clearance is allowed for in the machining of the pistons (see Technical Specifications).

Camshaft bearings: If necessary the camshaft bearings can be renewed. This operation necessitates the use of service tool 18G 124A, together with adaptor 18G 124K (on front liners) adaptor 18G 124M (on rear liners) and adaptors 18G 124K and B (on centre liners). Ensure when fitting that the oil-ways in the liners and the cylinder block line up with each other. After installing new bearing liners they must be reamed in line with a special reamer set.

Valve timing diagram: The valve timing must be checked in accordance with the diagram and with the valve rockers adjusted to a timing clearance of 0.029 in. (1100 engines) or 0.021 (1300 engines). After checking be sure to readjust the valve rockers to their normal working clearances.

Cylinder head

Valve guides

Worn valve guides are removed from the cylinder head by driving them downwards into the combustion chambers. Drive in the new guides (with the larger chamfer at the top on the inlet type and with the counterbore at the bottom on the exhaust type) until they protrude $\frac{19}{32}$ in. (0.540 in. on 1300 engines) above the machined face of the spring seat. After fitting new valves guides, or oversize valves, the seats must be recut to centralize the seat in relation to the new guide axis.

Valve seats

If the valve seats become so badly worn or pitted that with normal workshop cutting and refacing no satisfactory result can be obtained, valve seat inserts

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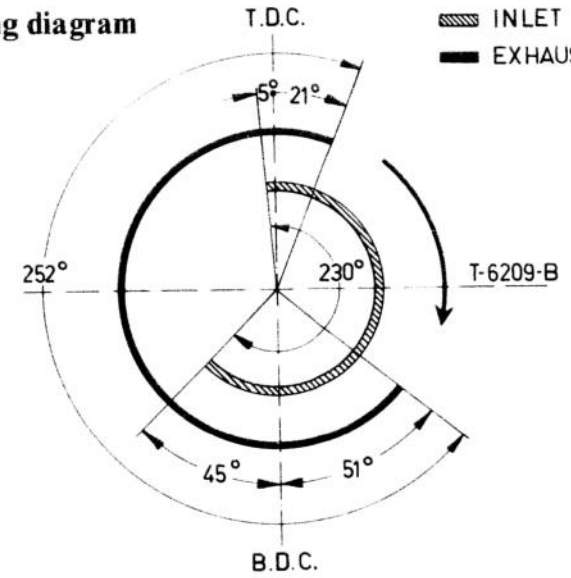
can be fitted. The seating in the cylinder head must be machined to the dimensions shown in Fig. 27. The inserts should have an interference fit of 0.0025–0.0045 in. and must be pressed and not driven into the cylinder head.

Valves

Valves that are badly burned or have bent or worn stems must be renewed; lightly burned valves may be trued on a valve refacer set at 45°. Both new or refaced valves should be lapped-in on their seats with fine valve-lapping compound. Clean the cylinder head and the valves thoroughly after grinding and lapping valves and seats.

Fig. 26. Valve timing diagram



Key to Fig. 27

A Exhaust

(1100 engines)

C 1.124–1.125 in
D 0.186–0.188 in
E Maximum radius 0.015 in
F 1.0235–1.0435 in
H 45°

(1300 engines)

C 1.2505–1.2515 in
D 0.186–0.188 in
E Maximum radius 0.015 in
F 1.144–1.164 in
H 45°

B Inlet

(1100 engines, single carburettor)

J 1.3075–1.3085 in
K 0.186–0.188 in
L Maximum radius 0.015 in
M 1.1435–1.1635 in
P 45°

(1100 engines, twin carburettors)

J 1.3745–1.13755 in
K 0.186–0.188 in
L Maximum radius 0.015 in
M 1.206–1.226 in
P 45°

*(1300 engines)**

J 1.3805–1.3815 in
K 0.186–0.188 in
L Maximum radius 0.015 in
M 1.2995–1.3195 in
P 45°

*not MG/Riley 1300Mk II engines fitted with larger inlet valves

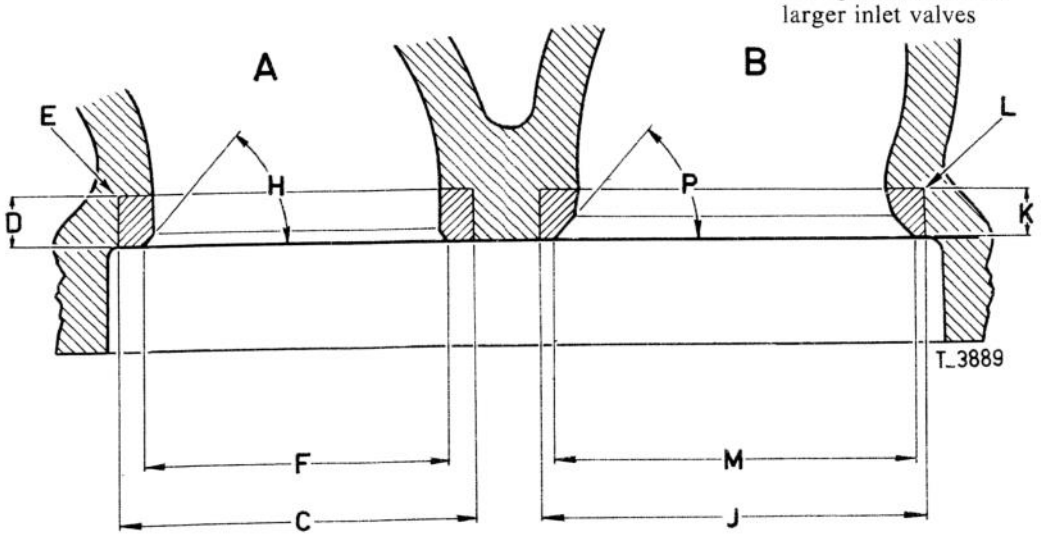


Fig. 27. Valve seat dimensions

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A Rotor type pump
B Vane type pump
1 Cover
2 Inner rotor*
3 Outer rotor
4 Pump body
5 Pump (serviceable as an assembly only)
*Some rotor shafts have a splined drive end.

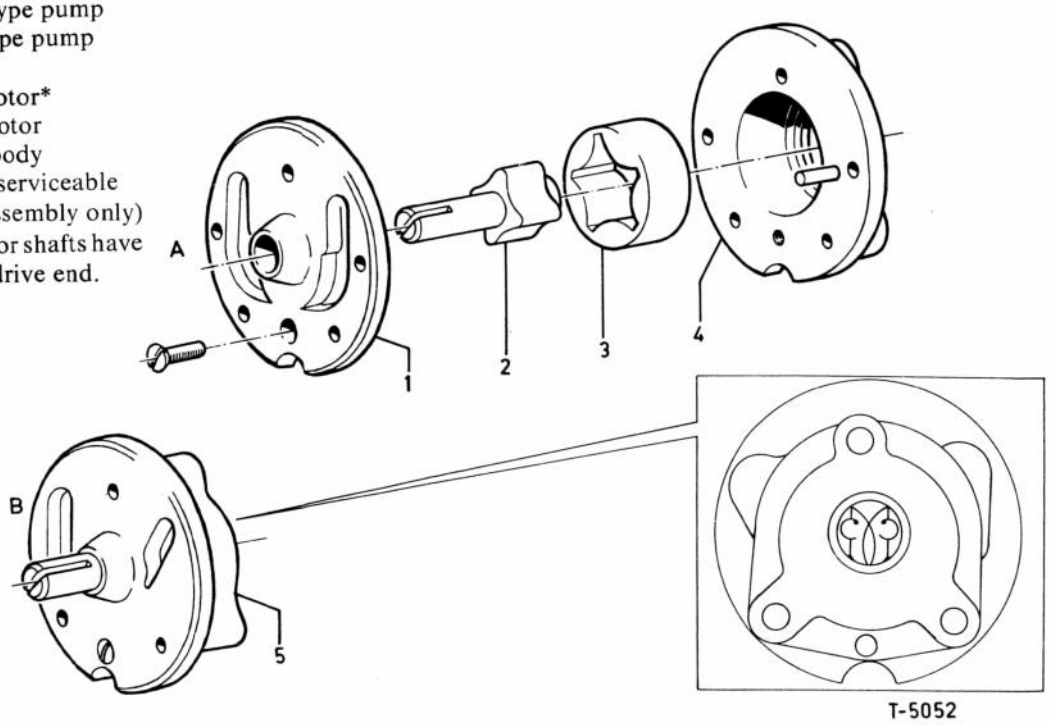
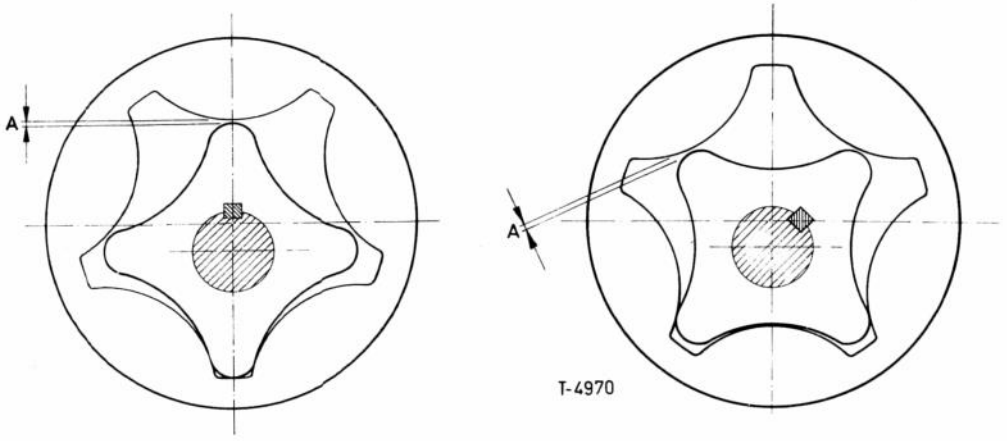


Fig. 28. Oil pump, exploded view

Starter ring gear: If the starter ring gear needs replacing it can be removed by splitting with a cold chisel. Make certain that the new ring gear and its seating on the flywheel are free from burrs and are perfectly clean. Heat the ring gear to a temperature of 300–400°C (572–752°F); at this temperature the colour of the ring gear turns to light-blue. Do not exceed this limit or the teeth may be affected. Place the heated ring gear squarely on to its seating with the chamfer on the teeth towards the flywheel boss and allow it to cool naturally, thereby shrinking to a tight fit on the flywheel.



A Maximum clearance 0.006 in

Fig. 29. Oil pump, rotor clearance check points

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Oil Pump

Removal and refitting

Remove the engine, the flywheel and clutch assembly and the flywheel housing; disconnect and withdraw the oil pump from the crankcase.

Refitting is a reversal of the removal procedure, but ensure that the inlet and outlet ports are not impeded by the paper joint.

Dismantling and reassembly (where applicable)

The pump cover is located on the pump body by two dowels and the two parts can be separated by removing the single retaining screw.

With the rotors in the pump body and a straight-edge placed across the joint face of the body, check that the clearance between the top face of the rotors and the underside of the straight edge does not exceed 0.005 in. If the clearance is excessive, remove the locating dowels and lap the joint face of the body.

Again with the rotors in the pump body, check that the clearance between the rotor lobes and the pump body, at the closest point, does not exceed 0.006 in. If the clearance is excessive the rotors must be renewed.

Reassembly is a reversal of the dismantling procedure. Check the pump for freedom of movement after reassembly.

Ignition: Ignition is by means of battery, coil and an ignition distributor which is equipped with vacuum and centrifugal advance mechanism. The distributor is situated on the right-hand side of the engine and is secured by two bolts. The static ignition timing is indicated by timing marks on the flywheel and a fixed pointer which are visible, with the aid of a mirror, after the clutch cover inspection plate has been removed.

Removal of the distributor

With Nos. 1 and 4 pistons at TDC, the rotor arm pointing towards No. 1 segment in the distributor cap and the points just breaking, disconnect the low-tension lead from the terminal on the side of the distributor and the vacuum advance pipe at its union. Remove the clamp plate set screws and withdraw the distributor; do not loosen the pinch bolt from the clamping plate.

Reinstallation and timing

With the spark plugs and flywheel inspection cover removed, No. 1 piston at TDC on its compression stroke (the 1/4 mark on the flywheel aligned with the pointer and No. 4 valves 'rocking') rotate the crankshaft back past the timing mark and then turn it forwards (direction of rotation) until the appropriate timing mark (see Technical Specifications) lines up with the pointer. NOTE: It is also good practice to hold the distributor rotor with the fingers, 'against rotation' whilst timing the ignition.

Set the contact breaker points gap (fully open) to 0.014–0.016 in. and insert the distributor into its housing, slowly turning the rotor arm until the driving lug engages the driving shaft slot. Tighten the two retaining setscrews after ensuring that the clamp-plate pinch-bolt is tight.

Slacken off the clamp-plate pinch-bolt, turn the distributor body until the breaker points are fully closed and connect the low-tension lead to the distributor. Switch on the ignition, connect a 12 volt bulb between the low-tension terminal on the side of the distributor and a good earth on the engine. Rotate the distributor clockwise until the bulb lights up, signifying that the breaker points have just

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1 Rotor arm
2 Insulating pivot piece
3 Contact breaker lever
4 Condenser
5 Fibre washer
6 Fixed contact plate
7 Contact breaker moving plate
8 Contact breaker base plate
9 Cam
10 Springs
11 Weights
12 Centrifugal timing control plate
13 Thrust washer
14 Low tension terminal
15 Vacuum control unit
16 Micrometer adjuster assembly
17 Body
18 'O' Ring

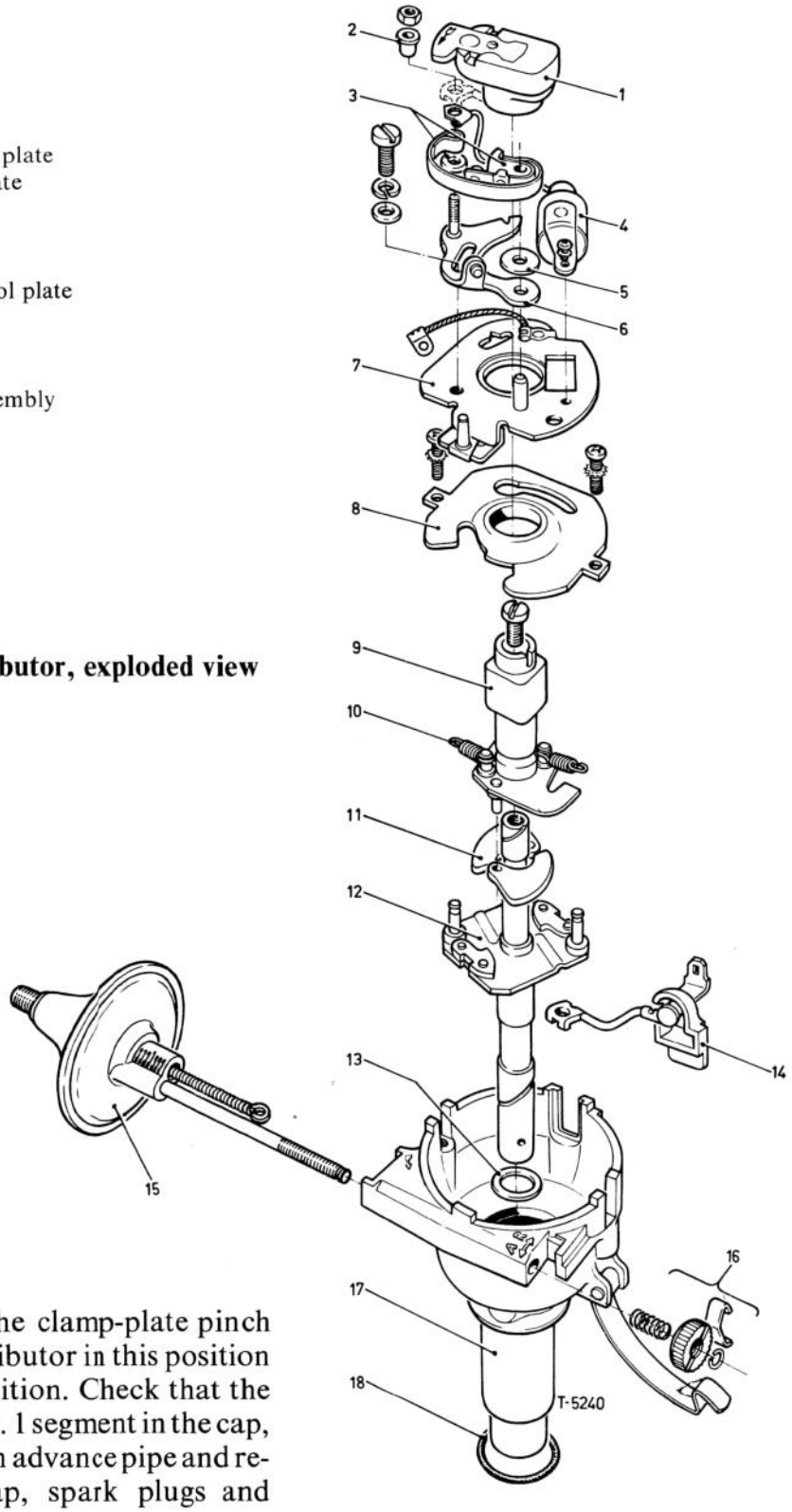

Fig. 30. Ignition distributor, exploded view

opened. Tighten up the clamp-plate pinch bolt to secure the distributor in this position and switch off the ignition. Check that the rotor is pointing to No. 1 segment in the cap, connect up the vacuum advance pipe and refit the distributor cap, spark plugs and flywheel inspection cover.

The setting can afterwards be adjusted without loosening the clamp-plate pinch-bolt by turning the knurled adjustment nut in the required direction. The markings on the distributor housing, adjacent to the nut, represent A (Advance) and R (Retard).

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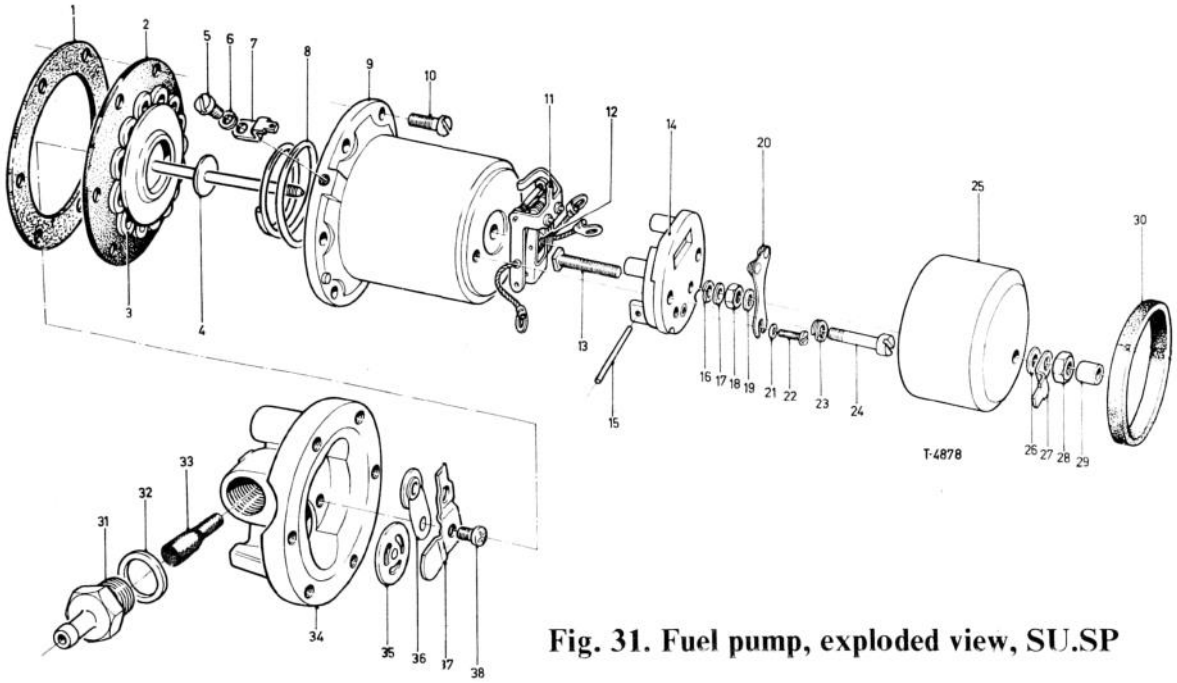

Fig. 31. Fuel pump, exploded view, SU.SP

1 Gasket
2 Diaphragm spindle assembly
3 Brass rollers
4 Impact washer
5 Set-screw
6 Lock washer
7 Earth connector
8 Diaphragm spring
9 Coil housing
10 Pump body attaching screw
11 Rocker assembly
12 Trunnion
13 Terminal stud
14 Support plate
15 Rocker pivot pin
16 Spring washer
17 Lead washer
18 Terminal nut
19 End-cover sealing washer
20 Contact blade
21 Washer
22 Contact blade screw
23 Spring washer
24 Set-screw
25 End cover
26 Shake-proof washer
27 Male connector
28 Nut
29 Insulating sleeve
30 Sealing band
31 Inlet connector (Set-screw)*
32 Sealing washer (Retaining plate)*
33 Filter (Connector)*
34 Pump body (strainer)*
35 Outlet valve (Seating ring)*
36 Inlet valve (Outlet valve)*
37 Valve retaining plate (Inlet valve)*
38 Set-screw (Pump body)*
*AUF. 201 parts, where different

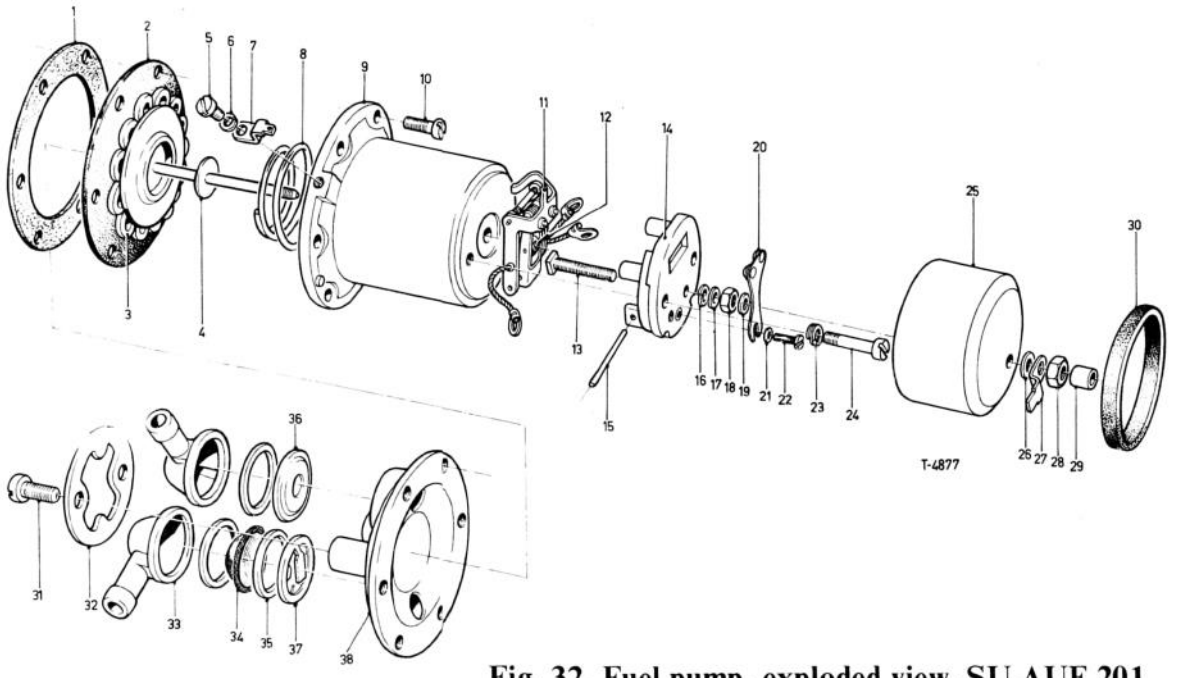

Fig. 32. Fuel pump, exploded view, SU.AUF 201

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Fuel pump

Removal The electrically-operated SU fuel pump is located beneath the luggage compartment floor; on early models on the left-hand side, on later models on the right-hand side of the vehicle. Before removing the fuel pump, be sure to disconnect the battery earth lead; when removing the pump the flexible hoses remain on the pump connections. The pump can then be removed from within the luggage compartment by lifting the floor and unscrewing the retaining screws.

Installation
Installation is a direct reversal of the removal procedure.

Dismantling
Before dismantling the pump, its exterior should be thoroughly cleaned to avoid contamination of the important parts. First remove the insulating sleeve, the terminal nut and the connector with its shakeproof washer. Remove the end-cover after having removed the tape seal (if any). Withdraw the condenser from its clip (if fitted) and remove the screw holding the contact-blade to the support plate. Withdraw the coil housing attaching screws with a thick-bladed screwdriver to prevent damaging the screw heads.

Remove the earthing screw and separate the coil housing from the pump body. Next, turn the exposed diaphragm away from the coil housing, taking care not to lose the eleven brass rollers. The diaphragm and its spindle form one unit and should not be separated. Remove the terminal nut from the support plate, followed by the lead washer, which in most cases must be cut to allow removal. Remove the support plate-to-coil housing securing screws and remove the earth terminal tag and the condenser retaining clip (if fitted). Tilt the support plate and withdraw the terminal stud from the tag. The support plate, together with the rocker mechanism, may now be removed.

Push out the tempered steel pin securing the rocker mechanism to the support plate. The line connections, filter and valve assembly of the AUF fuel pump can be removed after removal of the two screws securing the spring clamp plate holding the inlet and outlet nozzles. The two valve assemblies of the SP fuel pump can be taken out after unscrewing the inlet union and withdrawing the filter.

Re-assembly should be preceded by thorough examination of all parts, particularly those mentioned below:

Inspect the fuel pump body for cracks, damaged joint faces and threads. Examine the plastic valve assemblies for distortion, wear or damage; this can best be done by blowing or sucking with the mouth. Check that the valve retaining tab is positioned to retain the valve in the recess but allows a valve lift of approximately $\frac{1}{16}$ in. If the valve seats are pitted, the pump body must be replaced.

Check that the coil housing vent is unobstructed. Carefully examine the general condition of the rocker mechanism, replacing those parts that show signs of wear, damage or distortion. The following parts should always be renewed: fibre and cork washers, gaskets and O-rings; worn or damaged rollers, damaged bolts and unions.

Re-assembly
NOTE: *The hardened steel pin securing the rocker assembly to the support plate should be replaced only by a genuine SU part, if necessary.*

Place the support plate upside down and attach the rocker assembly by means of the hardened steel pin. Position the centre toggle in such a manner that when

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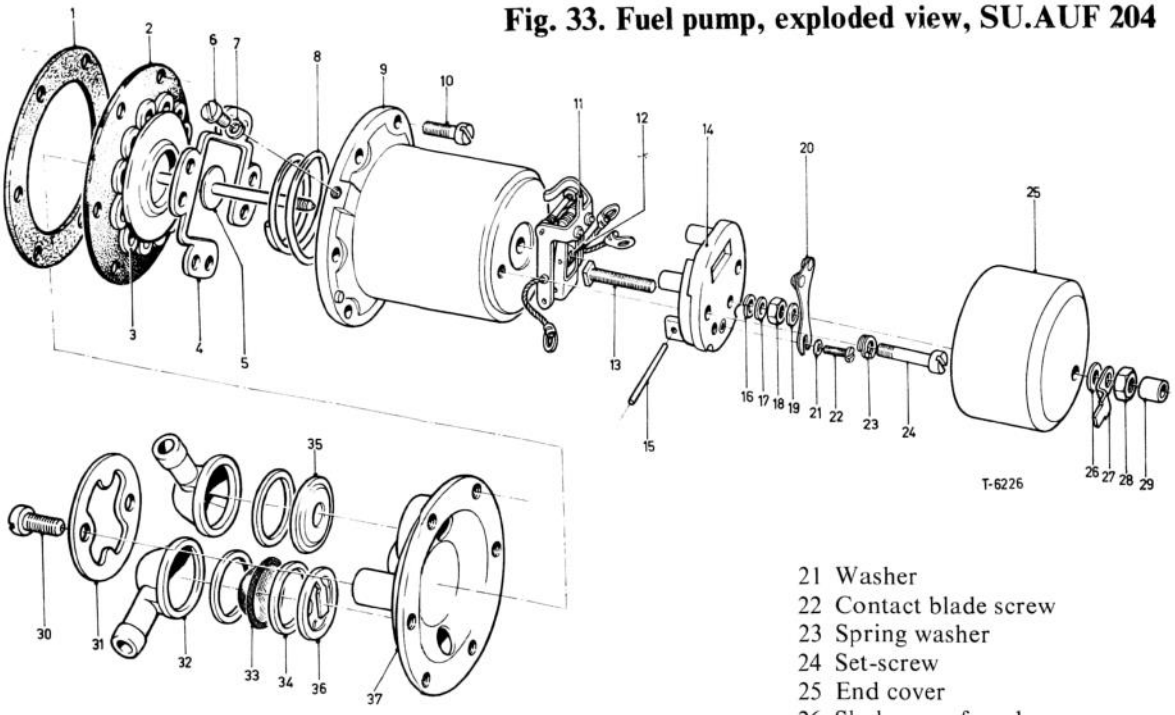
Fig. 33. Fuel pump, exploded view, SU.AUF 204



1 Gasket
2 Diaphragm spindle assembly
3 Brass rollers
4 Plate
5 Impact washer
6 Setscrew
7 Washer
8 Diaphragm spring
9 Coil housing
10 Pump body attaching screw
11 Rocker assembly
12 Trunnion
13 Terminal stud
14 Support plate
15 Rocker pivot pin
16 Spring washer
17 Lead washer
18 Terminal nut
19 End cover sealing washer
20 Contact blade
21 Washer
22 Contact blade screw
23 Spring washer
24 Set-screw
25 End cover
26 Shake-proof washer
27 Male connector
28 Nut
29 Insulating sleeve
30 Set-screw
31 Retaining plate
32 Connector
33 Strainer
34 Seating ring
35 Outlet valve
36 Inlet valve
37 Pump body

the inner rocker spindle is tensioned against the rear of the contact point, the centre toggle spring is above the spindle carrying the rollers.

The importance of a completely free-moving rocker mechanism cannot be over-emphasized; any bent parts should be straightened with suitable needle-nosed pliers.

Further assembly of the rocker mechanism is a reversal of the dismantling procedure; the contact blade, however, should not be installed at this stage. The support plate retaining screws should not be overtightened or damage to the plate will result.

Place the diaphragm spring, larger diameter first, into the housing. Before fitting the diaphragm, make sure the small neoprene washer is fitted to the armature recess. The diaphragm should not be installed with gasket sealing compound of any kind. Install the diaphragm assembly and screw its spindle into the threaded hole of the centre rocker trunnion only until the rocker will not throw-over.

Install the eleven brass rollers by turning up the diaphragm edge and dropping the rollers into the coil recess; during this operation the pump should be held with the rocker end downwards, thus preventing the rollers from dropping out. On later models fitted with modified rocker assemblies (adjustable fingers) fit the contact blade and adjust the finger settings, as described on page 48 and carefully remove the contact blade.

Firmly push in the diaphragm spindle whilst unscrewing the diaphragm and

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pushing repeatedly until the rocker just 'throws-over'; now unscrew the diaphragm until the nearest holes in the diaphragm and pump housing line-up, and then turn four holes further. To prevent the rollers falling out, press the centre of the armature whilst fitting the retaining fork (SU tool) at the rear of the rocker mechanism.

Fit the outlet valve assembly of the AUF pump in the recess marked 'outlet', place a joint washer on top of the valve and install the outlet connection.

Install the inlet valve of the AUF pump, tongue-side downwards, in the recess marked 'inlet'; place a joint washer, the filter (domed side up) followed by a second joint washer and fit the inlet connection. Position both connections as required; install and tighten down the clamping plate.

The valve assemblies of the SP fuel pump are fitted as follows:

Place the filter in the inlet union recess and screw it, together with the fibre washer, into the pump body. Place the outlet valve assembly (spring downwards) into the recess, making sure that it sits squarely on the seating; secure the assembly with the clamping plate. Ensure that the valve disc is properly centralized on its seating.

Place the coil housing on the pump body and align the six holes. Carefully remove the retaining fork, bearing in mind that a displaced roller will cut the diaphragm. Tighten the securing screws evenly in a diagonal sequence. Fit the contact blade and the coil lead to the support plate; if a condenser is fitted, its tag should be clamped under the coil lead tag. Adjust the contact blade so that when closed the contact points on it are a fraction above the rocker points and when the contact points just commence to open or close, one set of points wipe across the centre line of the other in a symmetrical manner. Some adjustment is possible by means of the slotted retaining hole in the contact blade.

Ensure that when the outer rocker is pressed toward the coil housing, the contact blade rests on the thin edge or ridge protruding just above the main face of the support plate; if not, swing the blade clear of the support plate and bend it downwards to such an extent that when installed, it rests lightly against the ridge. Do not over tension the blade.

1 Contact blade
2 Pedestal
3 Outer rocker
4 Inner rocker
5 Trunnion
6 Coil spring
A 0.035 in. ± 0.005 in.
B 0.070 in. ± 0.005 in.
7 Correct location of the assembled centre toggle spring

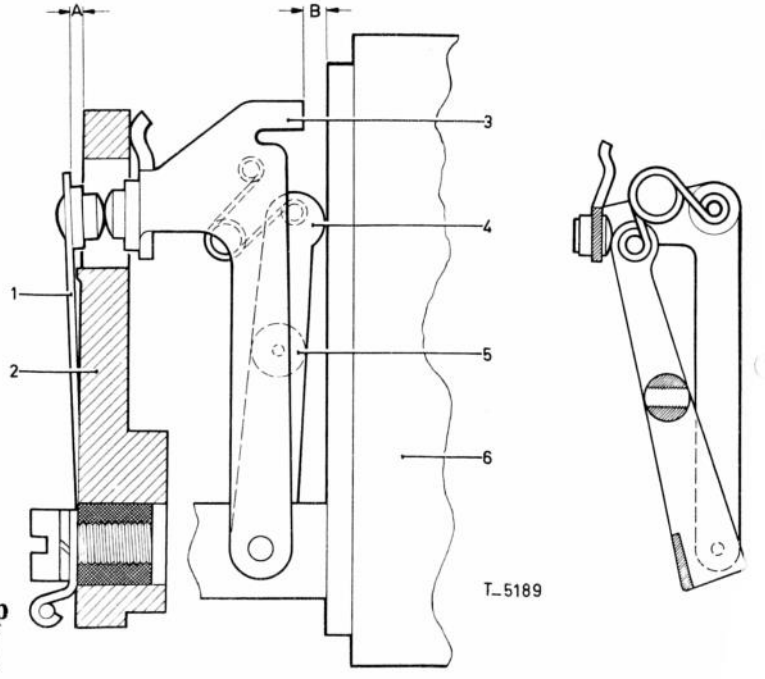

Fig. 34. Adjustments of fuel pump rocker mechanism (later models)

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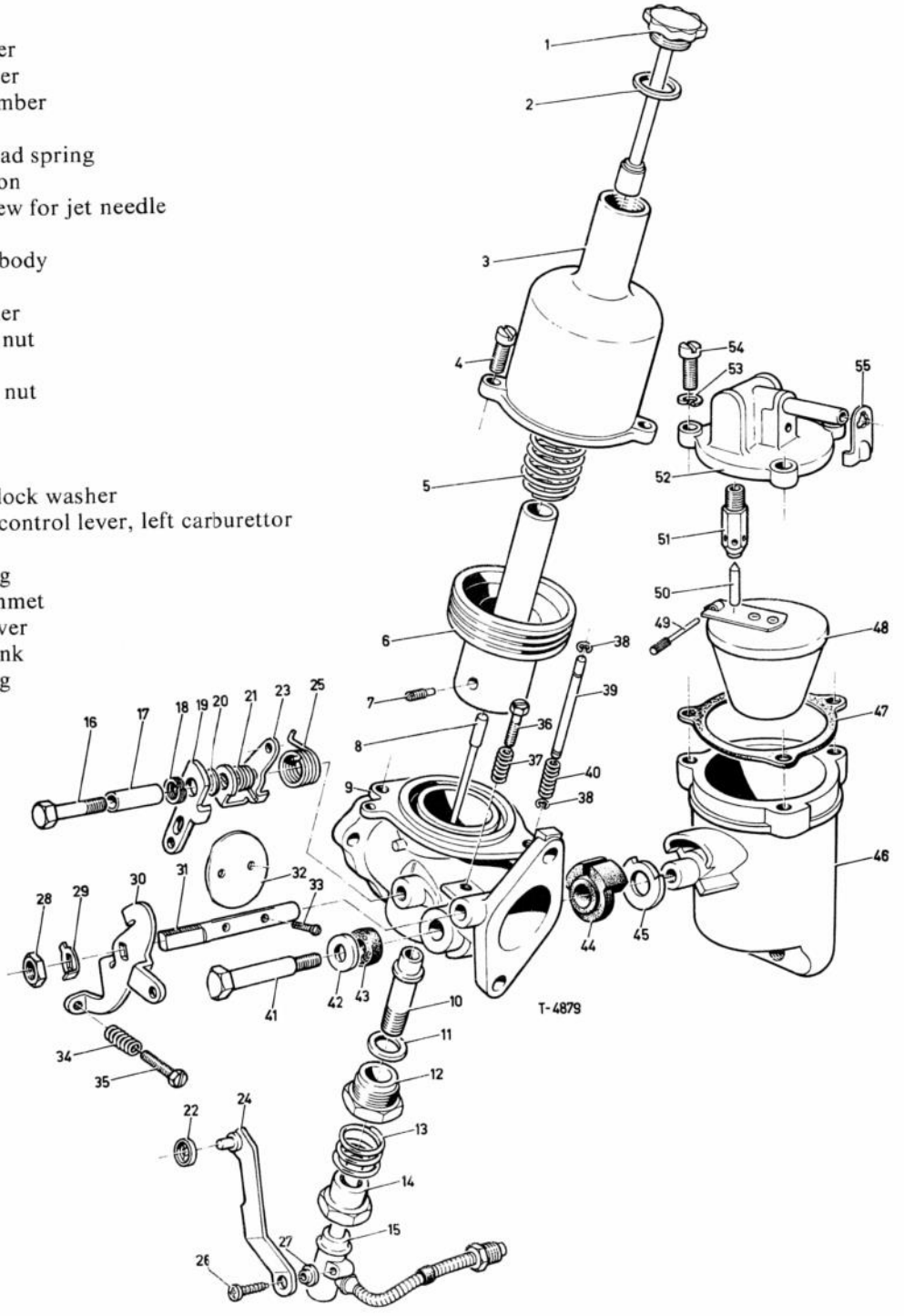
1 Piston damper
2 Sealing washer
3 Vacuum chamber
4 Set-screw
5 Piston pre-load spring
6 Vacuum piston
7 Locating screw for jet needle
8 Jet needle
9 Carburettor body
10 Jet retainer
11 Sealing washer
12 Jet retaining nut
13 Spring
14 Jet adjusting nut
15 Jet assembly
16 Bolt
17 Spacer bush
18 Double coil lock washer
19 Fast-idle jet control lever, left carburettor
20 Washer
21 Return spring
22 Rubber grommet
23 Operating lever
24 Jet control link
25 Return spring



26 Self-tapping screw
27 Fulcrum bush
28 Throttle return lever nut
29 Tab washer
30 Throttle return lever
31 Throttle shaft
32 Throttle disc
33 Screw
34 Spring
35 Fast-idle screw
36 Idle adjusting screw
37 Spring
38 Circlip
39 Piston lifting pin
40 Spring
41 Float chamber retaining bolt
42 Washer
43 Rubber washer
44 Rubber grommet
45 Washer
46 Float chamber
47 Cover gasket
48 Float
49 Float hinge pin
50 Valve needle
51 Float valve seat
52 Float chamber cover
53 Lock washer
54 Cover retaining screw
55 Baffle plate

Fig. 35. Carburettor, exploded view (HS.2)

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Adjustment

Earlier type rocker mechanism
Check the contact points gap by carefully holding the contact blade against the projected rib on the support plate; do not press on the contact-blade tip. Then check if a 0.030 in. feeler gauge will pass between the fibre rollers and the surface of the coil housing. If required the tip of the blade can be bent to obtain the requisite gap.

Later type rocker mechanism (modified)
Check the gap produced by the lift of the contact blade above the top of the support plate; if necessary the stop finger beneath the support plate can be bent to obtain the requisite gap of 0.035 ± 0.005 in. Measure the gap between the rocker finger and the coil housing with a feeler gauge; if necessary the stop-finger can be bent to obtain the requisite gap of 0.070 ± 0.005 in.

Further assembly is a reversal of the dismantling procedure.

Carburettor(s)

NOTE: *The following information and adjustments do not apply to vehicles exported to the U.S.A. (conforming to the statutory regulations regarding exhaust emission control).*

SU HS carburettors are of the variable-choke type; the fuel is metered by a tapered needle in the jet. The needle is secured to a sleeve, which determines the amount of choke opening; the position of the sleeve and needle are determined by the vacuum piston (the upper part of the sleeve), according to the throttle valve opening. The piston is a free fit in the vacuum chamber with a very small clearance. A guide spindle is centrally located in the piston; this spindle is free to move up and down in the guide bore of the vacuum chamber, thus ensuring correct alignment of the piston and vacuum chamber at all times. When the engine is not running, the piston and needle assembly will fall by their own weight and rest on the bridge in the choke (there is also a soft assist spring on top of the vacuum piston). With the engine running, the sleeve forms a restriction to the airstream; thus a partial vacuum is created. This pressure drop also creates a partial vacuum in the vacuum chamber above the piston, causing the piston, the sleeve and the needle to rise a certain amount. The raised needle determines the amount of fuel emerging from the jet; thus the correct mixture is automatically established. When starting a cold engine, the mixture may be enriched by pulling down the jet; the mouth of the jet will now be in line with a thinner portion of the needle, thus supplying a richer mixture. The jet is mounted in a jet retainer bush and is fed with fuel by a flexible nylon tube connected to the base of the float chamber.

Centring the jet
Screw the adjusting nut all the way up and then lift and release the piston and the needle assembly, listening for it to fall with an audible 'click'. If no click is heard, the needle is fouling the jet, which will have to be recentred by disconnecting the rod at the bottom of the jet together with the feed chamber from the bottom of the float chamber, pulling out the jet and tube and unscrewing and removing the jet adjuster nut and spring. With the adjuster nut refitted, minus the spring and screwed in all the way up, loosen the jet bearing locknut until the bearing is finger tight, remove the piston damper, press the piston down until

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1 Piston damper
2 Sealing washer
3 Vacuum chamber
4 Piston spring
5 Vacuum piston with guide spindle
6 Jet needle locating screw
7 Jet needle
8 Piston guide key
9 Carburettor body
10 Jet retainer
11 Sealing washer
12 Jet retaining screw
13 Spring
14 Jet adjusting nut
15 Jet assembly
16 Throttle jet interconnecting link
17 Carburettor coupling assembly
18 Throttle assembly
19 Idle speed adjusting screw
20 Lift pin assembly
21 Float chamber attaching bolt
22 Adaptor
23 Special washer
24 Float chamber
25 Gasket
26 Float
27 Float hinge pivot pin
28 Float valve needle
29 Float valve seat
30 Float chamber cover

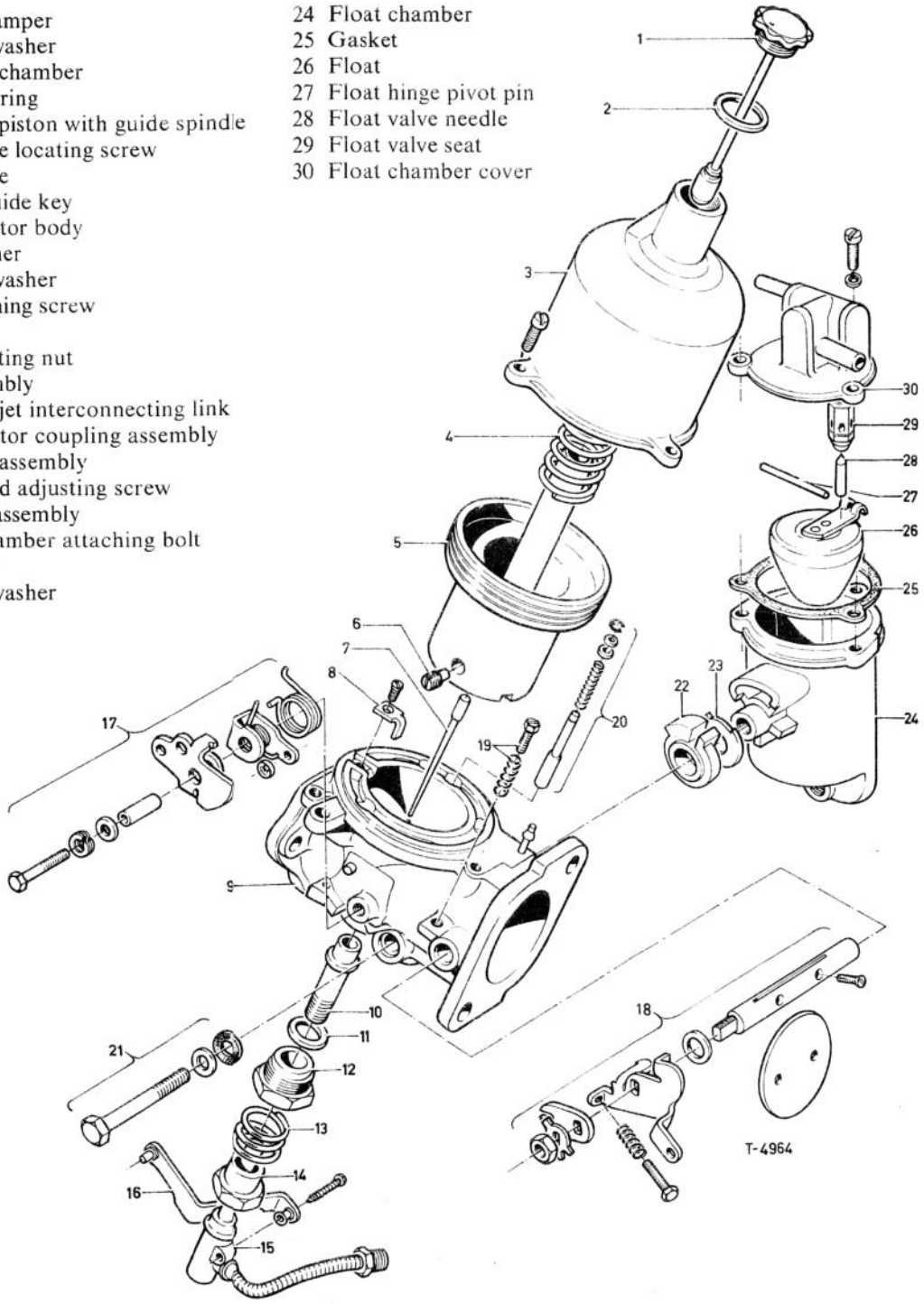

Fig. 36. Carburettor, exploded view (HS.4)

it bears against the bridge and tighten the locknut. Recheck whether the piston will now fall with an audible 'click'; recentre the jet as necessary. Refit all parts removed previously and pour engine oil into the piston damper rod to within 0.5 in. of the top; secure the dashpot cap.

Checking the float setting

The float level is checked, with the float chamber cover and float inverted, by inserting a $\frac{1}{8}$—$\frac{3}{16}$ in. round bar between the lip of the float chamber and the

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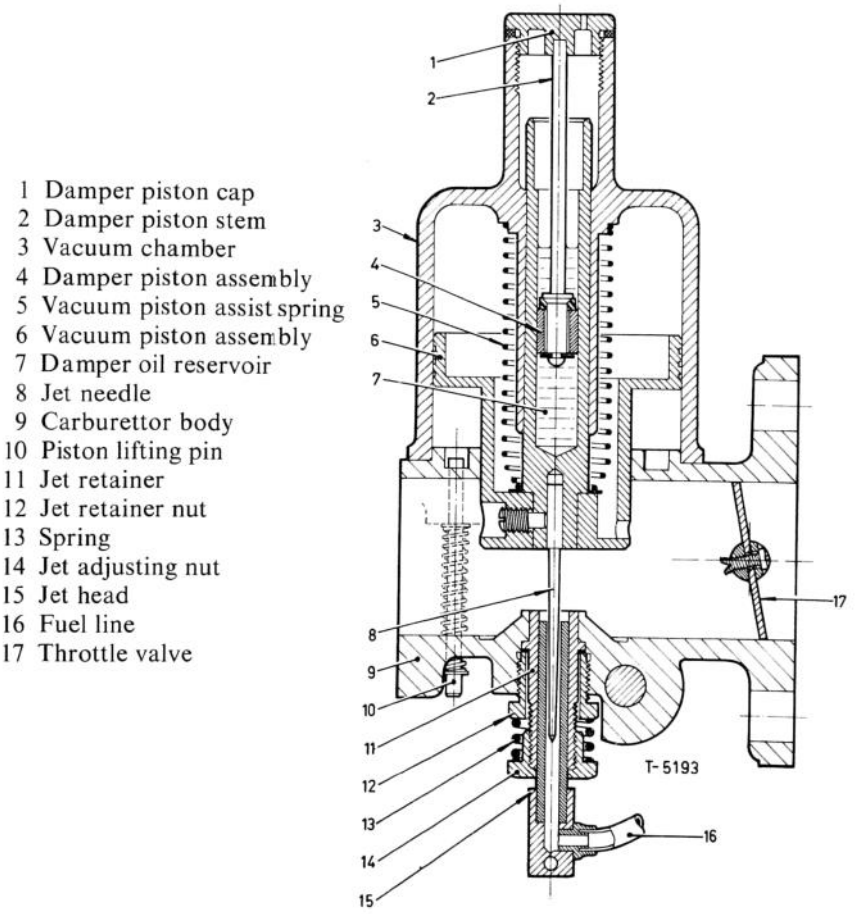

Fig. 37. Carburettor, schematic view (HS.2)

hinged lever. Bend the lever where the shank meets the curved part, to correct as necessary.

Adjustment (single carburettor), manual transmission, except early models with 1300 engines

Warm up the engine. Close the throttle fully by unscrewing the throttle adjusting screw so that its end face just clears the stop, then open the throttle by screwing it in one and a half turns. With the piston and suction chamber removed and the choke cable disconnected, screw the jet adjusting nut up all the way. Refit the piston and suction chamber and with the piston lifting pin, check that the piston falls freely with an audible 'click'. Turn back the jet adjusting nut two turns. Restart the engine, adjust to obtain the fastest idling speed consistent with smooth running, and then check the mixture, lifting the piston approximately $\frac{1}{32}$ in. by means of the piston lifting pin. If, when the piston is lifted, the engine speed increases, the mixture is too rich and the jet adjusting nut must be screwed up one-sixth of a turn; if the speed decreases, the mixture is too lean and the jet adjusting nut must be screwed down one-sixth of a turn. Continue adjusting the carburettor until, when the piston is lifted, no increase or only a very slight increase in speed is detected; the mixture is now correct and the engine should run smoothly.

Reconnect and adjust the choke cable ($\frac{1}{16}$ in. free movement). Adjust the fast idle to around 1000 rpm when the choke control knob is pulled out to the limit of its free travel, without moving the jet.

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Key to Fig. 38
1 Vacuum chamber
2 Choke control arm
3 Jet adjusting nut
4 Jet head
5 Choke rod
6 Throttle adjustment screw
7 Fast-line adjustment screw

Key to Fig. 39
1 Machined lip of float chamber cover
2 Bar for checking float level
3 Float arm
4 Float hinge pin
5 Float needle and seat assembly
A $\frac{1}{8}$–$\frac{3}{16}$ in.

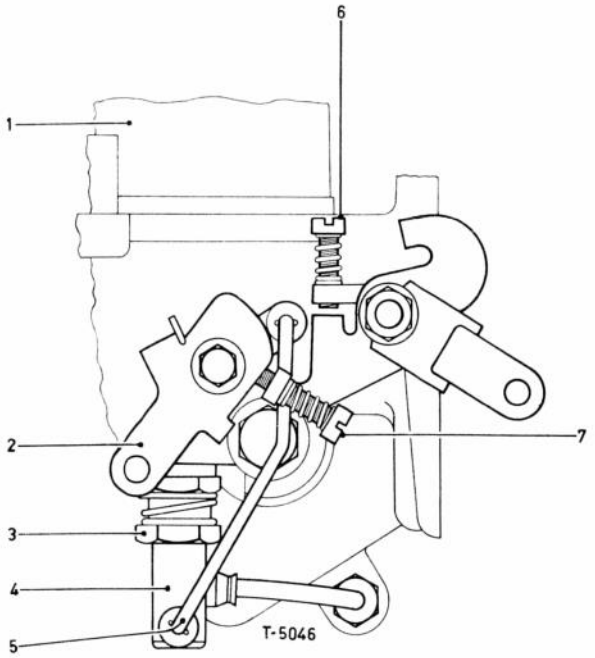

Fig. 38. Carburettor, adjustment of controls

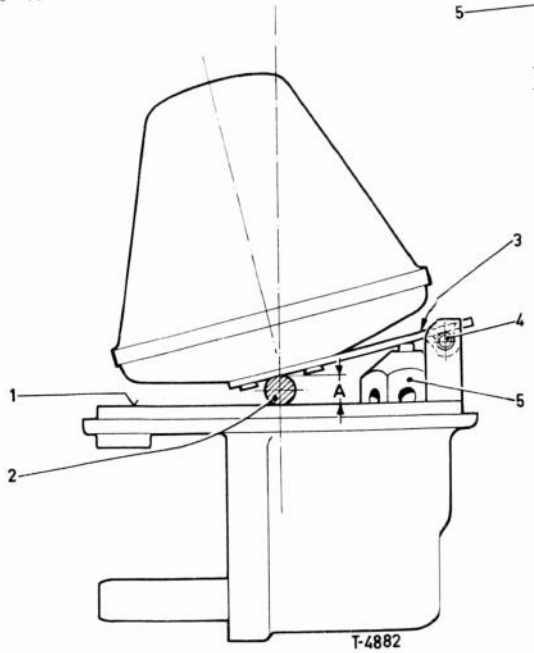

Fig. 39. Carburettor, checking float setting

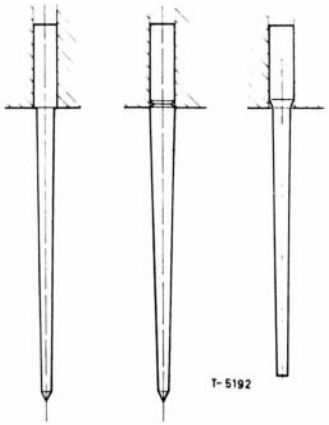

Fig. 40. Carburettor, jet needles

Adjustment and synchronization (twin carburettors)
After ensuring that the vacuum chambers and pistons on both carburettors are clean and that the needles are correctly centred, check the dampers for correct oil level and proceed as follows:

Having warmed up the engine, remove the air cleaner and slacken the throttle interconnecting rod clamping bolts. Unscrew the idle adjustment screws (throttles closed) and then screw them up one and a half turns (throttle partly open).

With the suction chambers and pistons removed and the choke cable disconnected, rotate each jet adjusting nut until both are flush with their respective bridges. Refit the pistons and suction chambers, check that the pistons fall freely onto their bridges and turn down the jet adjusting nuts two turns (12 flats).

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Restart the engine, set the throttles to give an idling speed of approximately 550 rpm. Listen to the hiss at each carburettor air intake (the use of a piece of tubing about $\frac{3}{8}$ in. dia., one end held to the ear and the other to each intake in turn, will make it easier to compare the sound of both carburettors). Adjust both idle screws until the hiss is equal at both units.

Adjust the jet adjusting nuts by equal amounts (up or down) whilst ensuring that the jets are held in contact with the adjusting nuts, until the fastest idling speed consistent with even firing is obtained. While the engine is idling, check the mixture of each carburettor in turn by lifting the piston approximately $\frac{1}{32}$ in. with a penknife blade or thin screwdriver inserted in the air intake, or by means of the built-in piston lifting pin.

NOTE: *Do not lift the piston with a finger, as this will obstruct the air intake, so altering the mixture and therefore giving a false indication.*

If, when the front piston is lifted, the engine speed increases, the mixture strength of the front carburettor is too rich. If the engine speed quickly decreases, the mixture strength of the front carburettor is too weak. If a slight momentary increase in engine speed is shown, then the mixture strength of the front carburettor is correct. Repeat the above process for the rear carburettor and after adjustment recheck the front carburettor.

An even and regular exhaust note indicates that the mixture is correct.

Linkage adjustment (twin-carburettors)

With the choke cable disconnected, the air cleaner removed (1300 engines) and the throttle shaft levers free on the shaft, insert a 0.070 in. feeler gauge between the choke control interconnecting rod and the tail of the throttle shaft operating lever. Push each throttle lever down so that the pin rests lightly on the throttle lever forks lower arm; tighten the throttle shaft lever clamp. With both carburettors adjusted, the throttle lever pins should have the correct clearance in the forks. Connect up the choke cable; when the choke knob is pushed fully home, the jet heads must return against the jet adjusting nuts. Adjust the fast idling screws.

Slow running adjustment (single-carburettor) early 1300 engines and all models with automatic transmission

The adjustment is the same as described previously for the other models but with the following differences: connect a tachometer, select neutral and apply the parking brake. Adjust the idling speed, with the engine warm, to 650 rpm. Pull out the choke to the maximum fast idle position (without pulling down the jet) and adjust the fast idle screw to obtain a fast idle speed of 1050 rpm. Push in the choke and recheck the idling speed.

Throttle damper adjustment (single carburettor, manual transmission), 1300 engines

Loosen the damper operating lever retaining nut and with an 0.020 in. feeler gauge located between the operating lever and the damper plunger (carburettor butterfly in the closed position) fully compress the damper by depressing the lever; secure the lever retaining nut and withdraw the feeler gauge. Increase or decrease the feeler gauge setting by 0.010 in. at a time, to either decrease or increase respectively, the damper setting as necessary.

Water pump: Remove the water pump after draining the cooling system, removing the generator/alternator, fan belt and pulley and disconnecting the hoses. In early 1968 the pump bearing was modified and a neoprene seal was fitted. This bearing is sealed for life and consequently the grease plug is omitted.

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1 Vane
2 Pump body
3 Carbon ring
4 Water seal
5 Spring
6 Grease plug (where fitted)
7 Locking wire
8 Spindle
9 Ball bearing race
10 Sealing washer
11 Hub
A 0.020–0.030 in.

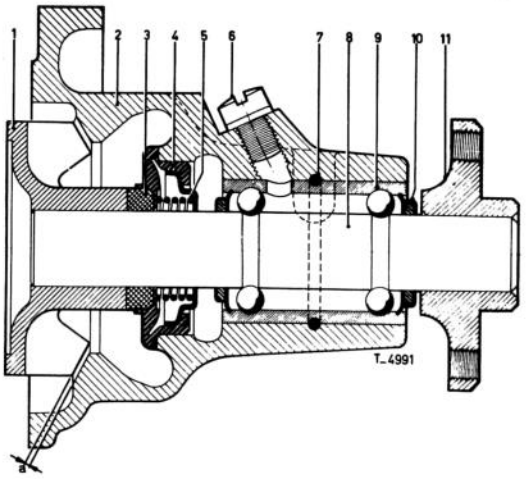


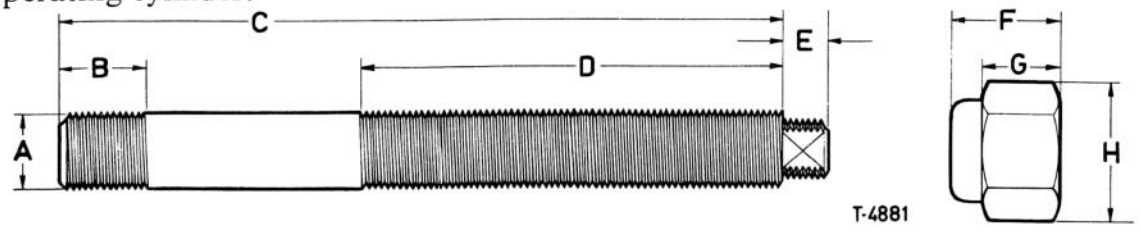
Fig. 41.a. Water pump, sectional view

Dismantling and reassembly

Remove the bearing locating wire through the hole in the top of the pump body, and with a press remove the spindle and bearing assembly; remove the vane and seal from the spindle. Reassembly is a reversal of the removal procedure, noting the following: When reassembled the clearance between the vane and the pump body must be between 0.020 in. and 0.030 in., the lubricating hole in the body must line up with the bearing hole and the hub face flush with the end of the spindle.

TRANSMISSION

Clutch: The single dry plate clutch, of the coil spring type (early 1100 models) or the diaphragm spring type (all later models), is mounted on the splined hub of the primary gear on the rear of the crankshaft and forms a unit with the flywheel. The clutch is hydraulically actuated by means of a master cylinder and a clutch operating cylinder.



A $\frac{3}{8}$ in. B $\frac{1}{2}$ in. C $4\frac{3}{8}$ in. D 3 in.
E $\frac{1}{4}$ in. F $\frac{13}{16}$ in. G $\frac{1}{2}$ in. H $\frac{7}{8}$ in.

Fig. 41.b. Extractor stud and nut

Removal

Remove the battery and carrier and the starter motor, disconnect the clutch operating cylinder (tying it to the engine bulkhead without disturbing the hydraulic line) remove the exhaust pipe clamp and the radiator cowling retaining bracket and withdraw the engine mounting retaining nuts and screw at the sub-frame side-member and the clutch cover retaining screws at the flywheel housing. With suitable lifting tackle, raise the engine just enough to permit clutch cover removal, at the same time ensuring that the fan blades do not foul the radiator. Unscrew the nuts (coil spring type) or remove the spring ring (diaphragm spring type) and remove the clutch thrust plate from the spring plate. To prevent the crankshaft primary 'C' plate becoming wedged behind the flywheel and causing possible damage when the flywheel/clutch assembly is withdrawn, rotate the crankshaft so that Nos. 1 and 4 pistons are at TDC. Bend back the tab washer, slacken the flywheel

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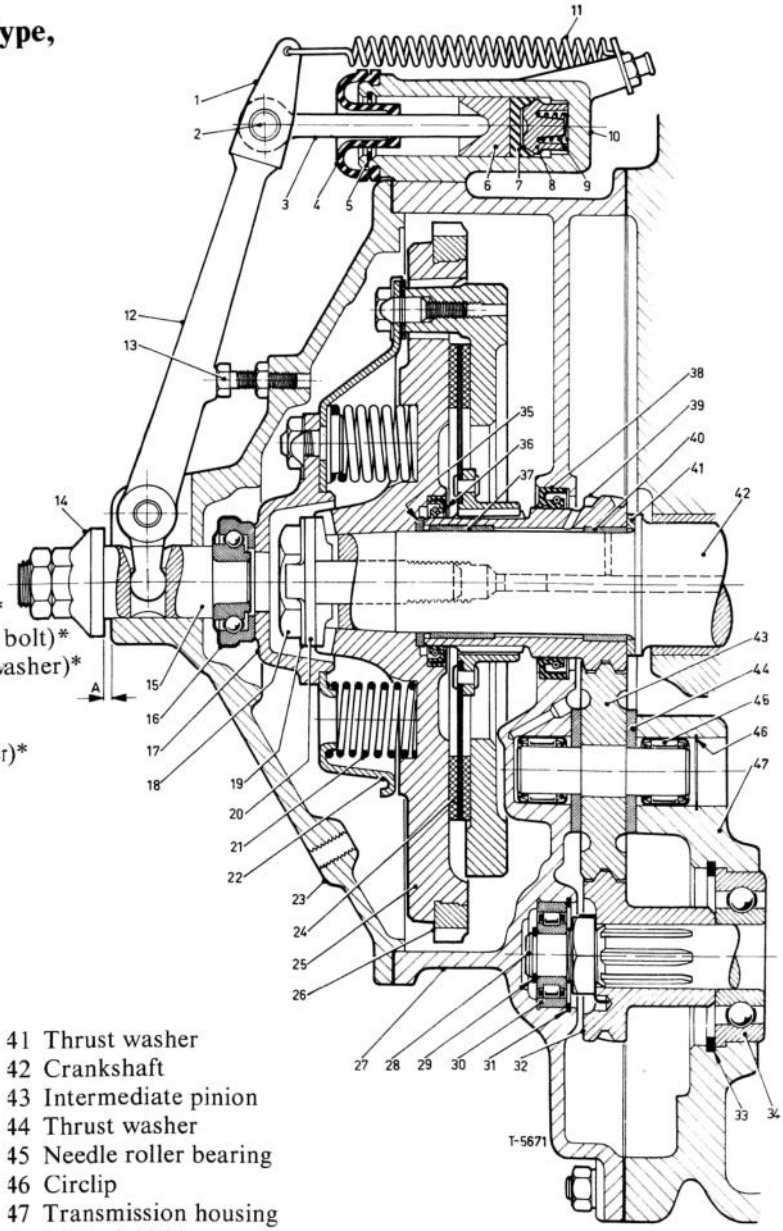
Fig. 42. Clutch, coil spring type, sectional view

Key to Figs. 42 and 44

1 Clutch operating lever arm
2 Clevis pin
3 Push rod
4 Rubber boot
5 Circlip
6 Piston
7 Cup
8 Cup filler
9 Spring
10 Operating cylinder body
11 Return spring
12 Clutch operating lever
13 Stop bolt
14 Stop
15 Clutch operating shaft
16 Clutch release bearing
17 Retaining spring (Thrust plate)*
18 Thrust ring (Flywheel retaining bolt)*
19 Flywheel retaining bolt (Lock washer)*
20 Flywheel hub (Keyed washer)*
21 Clutch cover (Coil spring)*
22 Diaphragm spring (Clutch cover)*
23 Flywheel housing end cover
24 Friction linings
25 Flywheel
26 Starter ring gear
27 Flywheel housing
28 Main drive shaft
29 Circlip
30 Roller bearing
31 Circlip
32 Main drive gear pinion
33 Circlip
34 Main drive shaft bearing
35 Circlip
36 Thrust washer (Oil seal)*
37 Bearing bush for 39
38 Oil seal
39 Crankshaft primary gear
40 Bearing bush for 39
41 Thrust washer
42 Crankshaft
43 Intermediate pinion
44 Thrust washer
45 Needle roller bearing
46 Circlip
47 Transmission housing
A 0.002–0.005 in
*Coil spring clutch parts where different



retaining screws a few turns and with the aid of service tool 18G 304 together with adaptor set 18G 304M (coil spring clutch) or 18G 304N (diaphragm spring clutch) remove the flywheel/clutch assembly. See 'Engine dismantling' for details.

Dismantling (coil-spring type)

Mark all parts carefully prior to dismantling to ensure correct reassembly. With three screws from adaptor set 18G 304M inserted through the recessed holes in the spring housing and screwed fully into the flywheel, turn the nuts so that they just bear against the housing and then tighten them one turn at a time until the load is released from the driving pins. Withdraw the pins and gradually release the coil springs.

Check the clutch spring housing for wear on the driving pin holes. Renew the driving pins and straps as a set, if necessary.

NOTE: Clutch assemblies on certain earlier models (engine serial Nos. 10AMW-TA-H101 to 300 and 10AMW-TA-H401 to 511) were fitted with double clutch springs.

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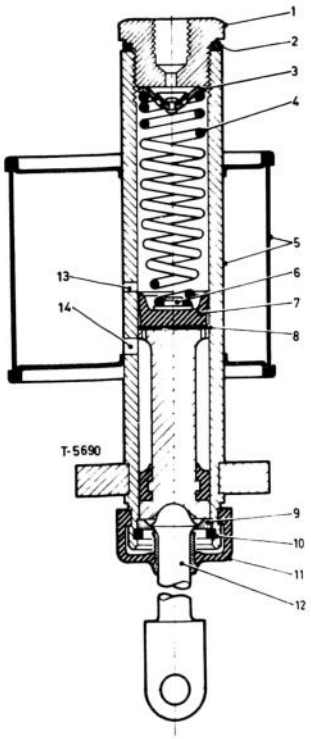

1 End plug
2 Washer
3 Valve assembly (not fitted on clutch version)
4 Spring
5 Reservoir and cylinder body
6 Spring retainer
7 Main cup
8 Piston washer
9 Stop washer
10 Circlip
11 Dust boot
12 Push rod
13 Compensating port
14 Feed port

Fig. 43. Master cylinder, sectional view

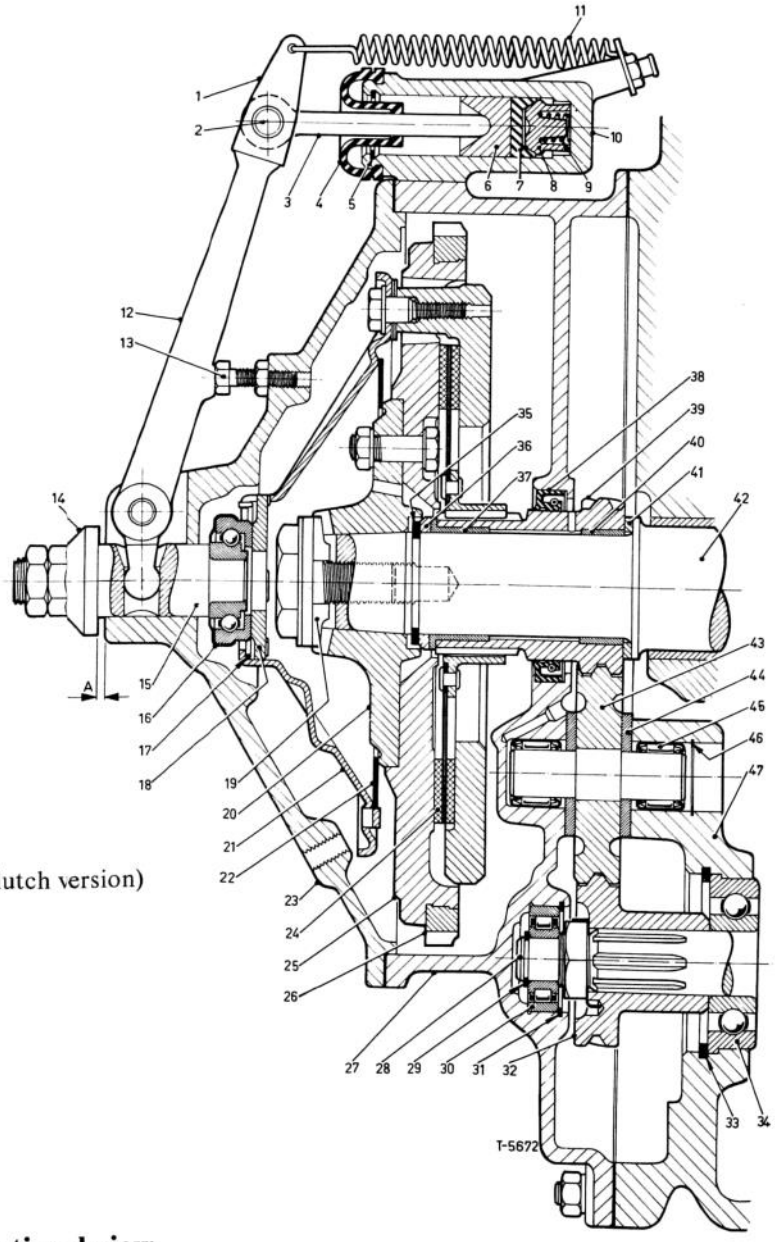

Fig. 44. Clutch, diaphragm spring type, sectional view

To dismantle and reassemble these units, bolts and nuts locally manufactured to the dimensions shown in Fig. 41.b. must be used in place of tool 18G 304M.

Dismantling (diaphragm spring type)

Dismantling is a straight-forward operation, remembering to mark carefully all parts prior to dismantling to ensure correct reassembly.

Check the clutch spring housing for wear on the driving pin holes. Renew the driving pins and straps as a set, if necessary.

Reassembly

Reassembly is a reversal of the removal procedure, noting the following: Use tool 18G 684 to ensure that the hub of the driven plate is centralized and retained in place in relation to the flywheel hub during reassembly. Insert the tool through the hub of the clutch driven plate and the bore of the flywheel, and attach it with

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the setscrew and retaining plate against the flywheel boss. Note that the three driving straps are laminated, each strap consisting of two blades.

On diaphragm spring clutches, the cover balance mark 'A' must be adjacent to the 1/4 timing mark on the flywheel.

Reinstallation

Reinstallation is a reversal of the removal procedure, noting the following: Oil the flywheel oil seal prior to reassembly. Ensure that the 'C' plate is correctly located in its groove and that the flywheel and crankshaft mounting tapers are clean and dry. Tighten the flywheel retaining bolt to a torque of 110–115 lb. ft.

Adjustments

To avoid possible clutch slip, regularly check and if necessary adjust the clearance between the clutch thrust bearing race and the thrust ring to 0.020 in. as follows: pull the clutch operating lever outwards until the free-play is just taken up and then check the clearance between the lever and the head of the stop bolt with a feeler gauge; correct as necessary by turning the bolt in the required direction.

The throw out stop is set and locked during initial assembly and should not normally be disturbed. If dismantling has taken place, the central stop must be adjusted as follows: slacken the stop and locknut completely, depress the clutch pedal and while in this position, screw up the stop until it bears against the housing. Release the clutch pedal and screw up the stop another 0.002–0.005 in., (approximately one flat of the adjusting nut); tighten the locknut. Check the lever stop bolt clearance as detailed previously.

Clutch master cylinder

Removal and dismantling

Disconnect the pedal lever at the push rod, unscrew the fluid pipe union at the cylinder and remove the unit from the engine bulkhead. Drain off the fluid, lever off the rubber boot and extract the circlip, stop washer and push rod, followed by the piston cups and return spring; use only the finger when removing the secondary cup from the piston. Inspect all parts, renewing those that are worn or damaged. Thoroughly clean all rubber parts with brake fluid and metal parts with alcohol; blow dry with compressed air.

Reassembling and refitting

Reassemble using new rubbers and coating all internal parts with clean brake fluid. Fit the secondary cup over the end flange of the piston, with the lip facing the opposite end of the piston; ensure that the cup forms a correct seal. Insert the return spring, large end first, ensuring that the spring seat is located on the small end of the spring. Fit the main cup, lip leading, pressing it firmly on to the spring seat, push the piston down into the bore and refit the push rod, circlip and rubber boot.

Refitting is a reversal of the removal procedure, not forgetting to top-up the reservoir with the recommended fluid and bleed the system.

Clutch operating cylinder

Removal and dismantling

With a bleed tube between the cylinder bleed nipple and a clean container, pump the clutch pedal and drain off the fluid; disconnect the pressure pipe.

Detach the push rod at the clutch lever and remove the cylinder from the bell-housing. Clean the exterior of the cylinder, remove the rubber boot and

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withdraw the push rod. Remove the circlip, piston, piston cup, cup filler and return spring. Renew all rubber parts and check all metal parts.

Reassembly and refitting
Reassembly and refitting is a reversal of the removal and dismantling procedure, not forgetting to top up the reservoir with the recommended fluid and bleed the system.

Bleeding
Clean the bleed screw area, fit a bleed tube on to the bleeder screw and hang the free end in a clean glass container which is partly filled with brake fluid. Check the fluid level in the master cylinder and top up as necessary. Open the bleeder screw about three-quarters of a turn and pump the pedal; at the end of each down stroke close the bleed screw before allowing the pedal to return to the original position. Continue this process until bubble-free fluid is delivered into the container.

Close the bleed screw and top up the fluid reservoir.

Gearbox/differential
The four-speed gearbox is housed in the engine sump and forms a single unit with the differential; second, third and top gears are synchronized ('A' and 'B' type gearboxes) on early 1100 models, whereas on later 1100 and all 1300 models, all-synchromesh gearboxes are fitted. 'A' type gearboxes (see Fig. 45) incorporate second and third idler gear bushes with an interlocking ring between; the idler gears on 'B' type and all-synchromesh gearboxes (see Figs. 46 and 47 respectively) are fitted with needle roller bearings. The drive from the gearbox to the drive shaft is taken through a pair of spur gears behind the mainshaft. The countershaft gear cluster bearings and the mainshaft pilot bearings are of the needle roller type. Gear cluster end-float is determined by the thickness of thrust washers fitted at both ends of the countershaft.

Automatic transmission may be fitted as an optional extra on certain models. The overhaul of this type of transmission, however, is not covered in this manual.

Removal and dismantling of the gearbox
Remove the engine and transmission assembly from the vehicle, detach the clutch cover, the flywheel/clutch assembly, the starter motor and the flywheel housing and, disconnect the transmission from the engine unit, as detailed in the *Engine* section. Withdraw the intermediate pinion together with its thrust washers and with the aid of service tool 18G 581 remove the bearings.

Remove the differential assembly (see page 62). Withdraw the reverse detent plug, plunger and spring; remove the clamp screw from the selector lever and withdraw the gear change operating shaft, ensuring that the key fitted at the inner end of the shaft does not foul the oil seal in the casing. Withdraw the speedometer pinion housing and pinion and the speedometer gear retainer plate and gear. Remove the gearbox end cover. Remove the bolt securing the oil-pipe support to the gearbox, together with the two bolts through the pipe flange and the outer cover and disconnect the oil pipe from the strainer; retain the paper joint located behind the oil pipe flange. Remove the circlip and roller bearing from the main drive gear shaft. Engage first and second gears to lock the mainshaft; bend back the locking plates and unscrew the nut on the end of the main drive shaft. Remove the nut from the final drive gear end and withdraw the input and final drive gear pinions. Bend back the locking plates, withdraw the bearing retainer screws from the gearbox partition and remove retainer and shims.

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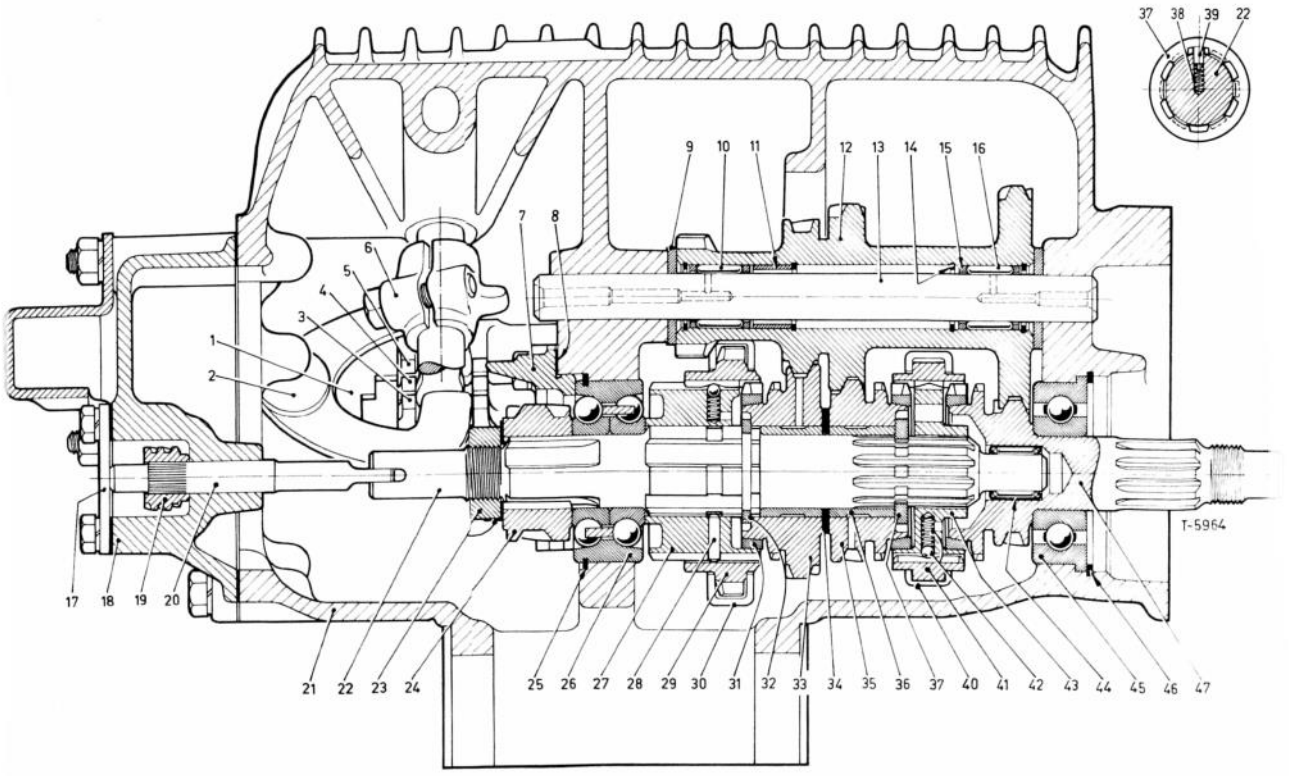

1 Gear change gate
2 Bellcrank
3 First/second shifter fork shaft
4 Third/top shifter fork shaft
5 Reverse shifter fork shaft
6 Operating shaft lever
7 Bearing retainer
8 Bearing retainer shim
9 Thrust washer
10 Needle roller bearing
11 Bush
12 Gear cluster
13 Countershaft
14 Circlip
15 Retainer ring
16 Needle roller bearing
17 Retainer plate
18 Front cover
19 Speedometer drive pinion
20 Speedometer drive shaft
21 Transmission casing
22 Mainshaft
23 Nut and tab washer
24 Drive pinion
25 Circlip
26 Ball bearing
27 First/second synchronizer hub
28 Plunger
29 First/second shifter gear
30 First/second shifter fork
31 Synchronizer ring
32 Thrust washer
33 Second speed gear pinion
34 Interlocking ring
35 Third speed gear pinion
36 Bush
37 Thrust washer
38 Spring
39 Peg
40 Third/top shifter fork
41 Third/top shifter sleeve
42 Ball and spring plunger
43 Third/top synchronizer hub
44 Needle roller bearing
45 Ball bearing
46 Circlip
47 Main drive shaft

Fig. 45. Gearbox, type 'A', sectional view

Remove the locking plates from the countershaft and the reverse idler shaft, carefully tap the countershaft from the casing and lift the gear cluster from the casing together with its thrust washers. Unscrew the plugs in the gearbox casing and remove the detent plungers and springs. Remove the main drive shaft bearing circlip and carefully tap the ball-bearing from its bore. Unscrew the locknut and bolt of the 1st/2nd gear shifter fork; carefully remove the shifter fork shaft and lift the fork from the casing.

Remove the mainshaft bearing by carefully tapping the mainshaft rearwards until special tool 18G 613 (18G 1127 with all-synchromesh gearboxes) can be interposed between the bearing and the first gear hub. Position the tool, with its recessed face towards the bearing. Carefully tap the mainshaft forward, ensuring that the shifter forks are not damaged in the process; lift the mainshaft assembly from the gearbox.

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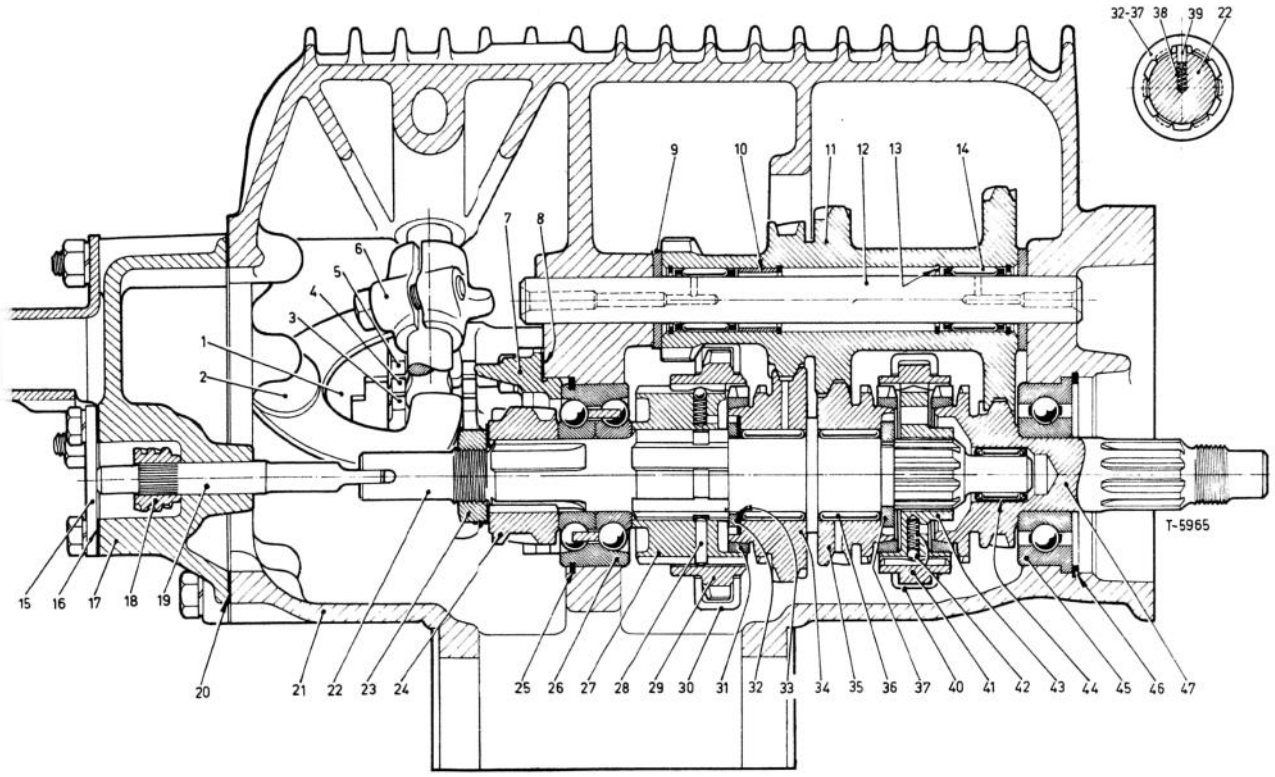

1 Gear change gate
2 Bellcrank
3 First/second shifter fork shaft
4 Third/top shifter fork shaft
5 Reverse shifter fork shaft
6 Operating shaft lever
7 Bearing retainer
8 Bearing retainer shim
9 Thrust washer
10 Bush
11 Gear cluster
12 Countershaft
13 Circlip
14 Needle roller bearing
15 Retainer plate
16 Gasket
17 Front cover
18 Speedometer drive pinion
19 Speedometer drive shaft
20 Gasket
21 Transmission casing
22 Mainshaft
23 Nut and tab washer
24 Drive pinion
25 Circlip
26 Ball bearing
27 First/second synchronizer hub
28 Plunger
29 First/second shifter gear
30 First/second shifter fork
31 Synchronizer ring
32 Thrust washer
33 Circlip
34 Second speed gear pinion
35 Third speed gear pinion
36 Needle roller bearing
37 Thrust washer
38 Spring
39 Peg
40 Third/top shifter fork
41 Third/top shifter sleeve
42 Ball and spring plunger
43 Third/top synchronizer hub
44 Needle roller bearing
45 Ball bearing
46 Circlip
47 Main drive shaft

Fig. 46. Gearbox, type 'B', sectional view

Remove the oil strainer; withdraw the 3rd/4th speed shifter fork shaft and fork followed by the reverse idler shaft, the gear and the shifter fork. Remove the circlip from the reverse gear shifter lever fulcrum pin and remove the lever.

If necessary the mainshaft assembly can be dismantled as follows:

'A' and 'B' type gearboxes

Remove 3rd/top gear synchronizer unit from the front and the first speed gear and 2nd gear synchronizer unit from the rear of the mainshaft. Remove the front thrust washer by depressing the spring-loaded plunger. Turn the thrust washer until the splines on the mainshaft are in line with the grooves in the thrust washer. Slide the thrust washer and third speed gear (with needle bearings, where applicable) from the shaft and remove the plunger and spring.

One 'A' type gearboxes, remove the third gear bush, interlocking ring, second

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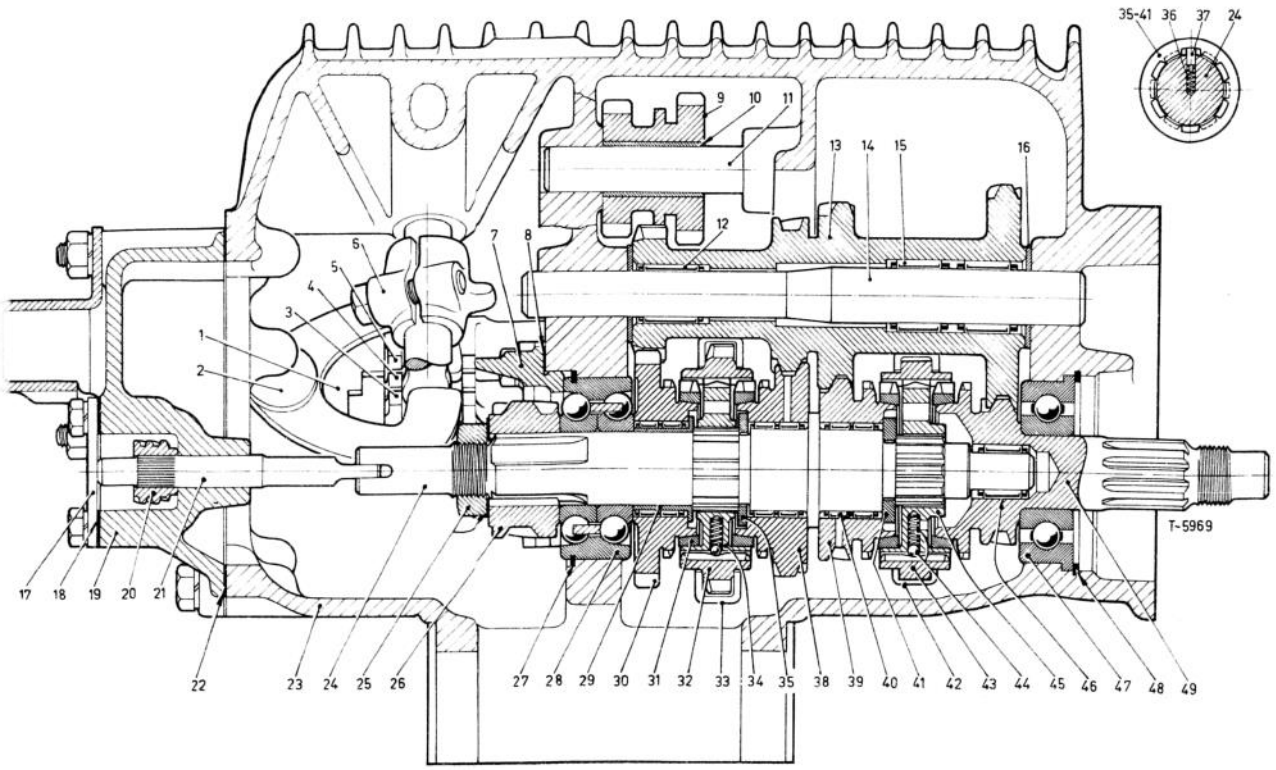

1 Gear change gate
2 Bellcrank
3 First/second shifter fork shaft
4 Third/top shifter fork shaft
5 Reverse shifter fork shaft
6 Operating shaft lever
7 Bearing retainer
8 Bearing retainer shim
9 Reverse idler gear
10 Bush
11 Reverse idler shaft
12 Needle roller bearing
13 Gear cluster
14 Countershaft
15 Needle roller bearing
16 Thrust washer
17 Retainer plate
18 Gasket
19 Front cover
20 Speedometer drive pinion
21 Speedometer drive shaft
22 Gasket
23 Transmission casing
24 Mainshaft
25 Nut and tab washer
26 Drive pinion
27 Circlip
28 Ball bearing
29 First speed gear pinion journal
30 First speed gear pinion
31 Synchronizer ring
32 First/second shifter sleeve
33 First/second shifter fork
34 First/second synchronizer hub
35 Thrust washer
36 Spring
37 Peg
38 Second speed gear pinion
39 Third speed gear pinion
40 Needle roller bearing
41 Thrust washer
42 Third/top shifter fork
43 Third/top shifter sleeve
44 Ball and spring plunger
45 Third/top synchronizer hub
46 Needle roller bearing
47 Ball bearing
48 Circlip
49 Main drive shaft

Fig. 47. Gearbox, all-synchromesh type, sectional view

speed gear, bush and rear thrust washer. On 'B' type gearboxes, depress the spring loaded pegs, remove the second speed gear lock collar and withdraw the split washers. Extract the gear from the rear and remove the needle bearings from their journal.

All-synchromesh type gearboxes

Remove the 3rd/top gear synchronizer unit from the front of the mainshaft. Remove the front thrust washer by depressing the spring-loaded plunger; turn the thrust washer until the splines on the mainshaft are in line with the grooves in

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the thrust washer and remove the washer, plunger and spring. Withdraw the third speed gear and needle bearing assembly; remove the first speed gear and synchronizer ring and needle bearing assembly. Using service tool 18G 2 withdraw the needle bearing journal from the shaft.

Remove the reverse gear pinion and the 1st/2nd synchronizer unit. Depress the rear thrust washer plungers and withdraw the thrust washer. Remove the second speed gear pinion and needle bearing assembly.

NOTE: If the shifter sleeve and hub assemblies are to be seperated (all gearboxes), extreme care should be taken not to lose the balls and springs.

Reassembly

Reassembly is a reversal of the dismantling procedure, noting the following: the idler gear bushes on 'A' type gearboxes are an interference fit and if disturbed they must be renewed; heat the new bushes to a temperature of 180–200°C (356–392°F) at which expansion allows them to be installed without force. On cooling down they will establish a shrink-fit. When assembled, the end-float of the 2nd and 3rd speed gears should be 0.0035–0.0055 in.

NOTE: *If on 'A' and 'B' type gearboxes the 1st and 2nd gear groups have been dismantled, particular attention should be paid to the position of the assembly in relation to its synchronizer hub; incorrect assembly will result in 1st gear being impossible to engage. It is therefore essential that when fitting the gear to the hub, the plunger inside the hub coincides with the recessed tooth in the gear.*

Reassembly and reinstallation of the gearbox

Fit the reverse gear shifter lever and fulcrum pin. Install the shifter shafts from the front engaging them with their forks; secure with the screws and locknuts. Locate the reverse gear and shifter fork in position and refit the reverse gear shaft, plain-end leading.

Install the pick-up strainer, remembering to smear a little grease on the sealing ring to facilitate the refitting of the oil suction pipe. Pass the slotted end of the mainshaft assembly through its bore in the gearbox centre partition and engage the shifter forks with their respective shifter sleeves.

Fit the ball-race to the main drive shaft and install the assembly in the gearbox housing with the aid of service tool 18G 579 (modified). Using service tool 18G 569 placed between the bearing face and its register, establish the size of circlip necessary to retain the bearing assembly; where the gap is 0.098–0.100 in. use circlip No. 2A 3711 or where the gap is 0.096–0.098 in. use circlip No. 2A 3710. Install the mainshaft bearing in the gearbox centre partition using service tool 18G 579 (modified), together with the spacing washer. Install the gear cluster, placing a standard thrust washer at one end and checking the gap (washer thickness required) at the opposite end. Service tool 18G 471 (dummy countershaft) can be used to retain the standard thrust washer in position. Washers are available in thicknesses ranging from 0.125–0.134 in. and when fitted the countershaft should have and end-float of 0.002–0.006 in.

Finally refit the countershaft assembly, from the clutch side, so that its slotted end is horizontal and facing that of the reverse shaft; fit the countershaft and reverse idler shaft lock plate. Fit the mainshaft bearing retaining plate, fitting shims as necessary (see table below) and ensuring that they are positioned under the countershaft and reverse idler shaft lock plate; secure the retaining bolts and bend over the tab washers.

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Mainshaft bearing to retainer, measured gap	*Shims required*
0.005–0.006 in.	0.005 in.
0.006–0.008 in.	0.007 in.
0.008–0.010 in.	0.009 in.
0.010–0.012 in.	0.011 in.
0.012–0.014 in.	0.013 in.
0.014–0.015 in.	0.015 in.

Position the oil suction pipe into the strainer; secure the external flange bolts before the bracket retaining bolts, ensuring that the oil seal is not displaced.

If the intermediate pinion bearing in the flywheel housing needs to be replaced, the area surrounding the bearing must be firmly supported during the pressing-in operation. The new bearings can be fitted to the flywheel housing/gearbox housing using service tool 18G 582 (18G 1126 with all-synchromesh gearboxes), the collar of which is used to determine the depth to which the bearing is to be pressed into the flywheel housing. The collar must not be used for pressing the bearing into the gearbox housing; replace the outer circlip, if fitted.

Refit the input and final drive gears; secure the main drive shaft and final drive gear nuts, together with new locking washers. Fit the main drive shaft roller bearing and circlip. Refit the shifter shaft interlocking springs, plungers and casing plugs, selector interlocking arm, front cover, speedometer gear and cover, pinion, bush and pinion housing. Insert the gear-change operating shaft and refit the key and clamp. Refit the reverse detent plunger and spring (reverse light switch, where fitted). Refit the differential assembly and check the adjustment, see page 63.

Prior to refitting the transmission assembly to the engine crankcase, the end-float of the intermediate pinion assembly should be checked, and if necessary corrected in the following manner:

Fit a new flywheel housing gasket and install the intermediate pinion with the chamfered bore of its thrust washers facing the pinion face. Assemble the flywheel housing to the gearbox after having applied a small amount of high-melting-point grease to the mainshaft bearing rollers to prevent them being dislodged as they enter the bearing outer race in the flywheel housing. *Never use force when installing the flywheel housing.*

Tighten the retaining stud nuts to the specified torque and check the intermediate pinion end-float; this should be between 0.004 and 0.007 in. Any discrepancy may be corrected with adjustment shims, available in thicknesses from 0.132 to 0.139 in.

Remove the flywheel housing and gasket and refit the transmission to the engine as described previously.

NOTE: *The flywheel housing-to-transmission paper gasket used for the above checking operation must be discarded and should not be used for final assembly.*

Removal and reinstallation of the differential assembly

Remove the engine and the transmission as described previously.

Remove the fulcrum pin and withdraw the bellcrank, unscrew the clamp screw and withdraw the remote-control shaft. The nylon seating and the tension spring can now be extracted from the remote-control shaft and lever. Using tool 18G 669 to grip the driving flanges, unscrew the nuts and withdraw the flanges from the differential shafts. Remove the bearing covers; note the number of shims located between the bearings and the housing. Unscrew the nuts, withdraw the differential housing and remove the differential assembly.

NOTE: *The transmission casing must not be used as a 'stop' for levering of the driving flanges etc., otherwise serious damage may result.*

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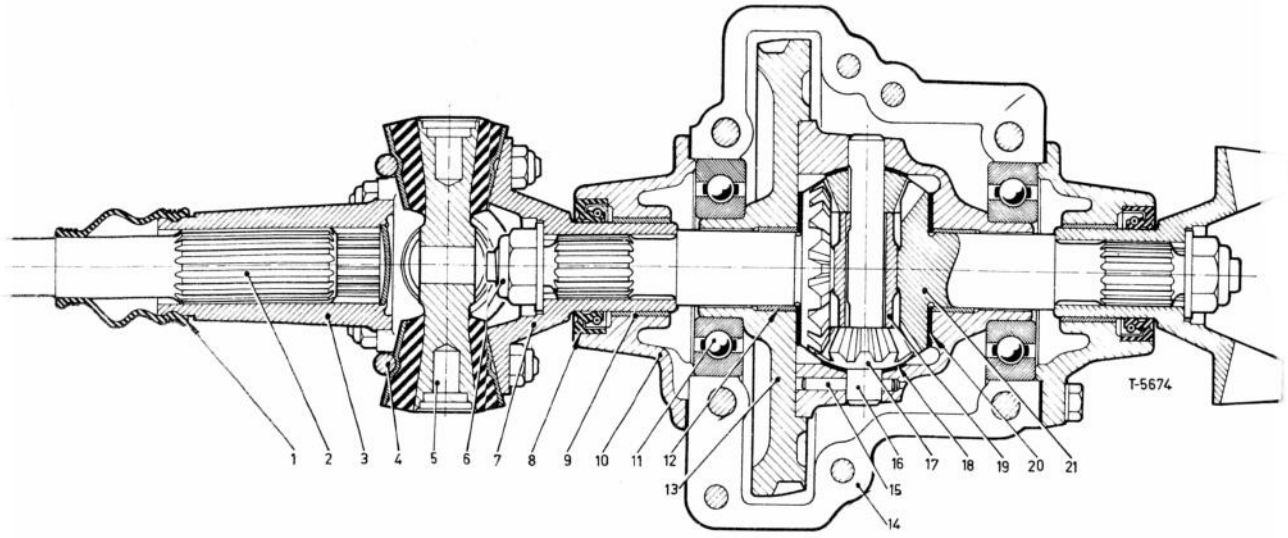

1 Dust boot
2 Drive shaft
3 Drive flange
4 Clamp bolt
5 Universal joint
6 Flange nut
7 Driving flange
8 Oil seal
9 Cover bush
10 End cover
11 Ball bearing
12 Bush
13 Drive gear
14 Differential carrier
15 Lockpin
16 Differential pinion shaft
17 Differential pinion
18 Pinion thrust washer
19 Thrust block
20 Gear thrust washer
21 Differential side gear

Fig. 48. Final drive/differential, sectional view

Reinstallation is effected as follows: place the differential assembly in the gearbox housing, slightly biased towards the flywheel end and refit the differential carrier with its gasket; screw down the nuts to hold the bearings in place but do not tighten them fully. Refit the right-hand bearing cover with its gasket, fitting a new oil seal as necessary; fit the screws and tighten evenly in order that the bearing cover locates snugly against the outer race of the bearing. When all the screws are tightened the differential will be moved away from the flywheel end of the engine. If necessary renew the oil seal in the left-hand bearing cover and fit the cover without its gasket. Engage the screws just sufficiently to bring the cover into even contact with the bearing outer race; overtightening will distort the cover. Measure the clearance between the cover flange and the differential carrier and gearbox housing with feeler gauges, at several points. Tighten or loosen the screws as necessary to obtain an even clearance at all points. If a feeler gauge cannot be inserted between the cover and the housing, add a shimpack of 0.008 in. between the bearing outer race and the inner face of the cover.

The thickness of the compressed cover gasket is 0.007 in. and the bearing pre-load is 0.001–0.002 in. (0.004 in. with later type 'Thrust'* bearing); the clearance between the cover and the housing should therefore be 0.008–0.009 in. (0.011 in. with later type 'Thrust'* bearing). Any deviation from this clearance should be corrected by fitting shims between the bearing and the cover. Remove the cover and fit the correct number of shims and the gasket; refit the cover and tighten down the bolts evenly. Tighten the differential carrier bolts. Install the drive flanges on the drive shafts. Tighten the castellated nuts and fit new split pins. Ensure that both drive shafts move freely, as binding or tightness on either shaft will cause the steering to pull to one side.

*Identified thus on the outer face which must face the end cover when fitted.

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Slide the shifter lever onto the splined end of the gearshift operating rod, making absolutely certain that the setscrew recess in the rod is exactly aligned with the hole in the boss on the lever and then fit the setscrew. Insert the remote control shaft lever (from the bottom upwards) into the gearshift extension, at the same time engaging the splined bore in the lever. Install the bell-crank lever.

Dismantling and reassembly of the differential assembly

With a suitable puller, withdraw the two differential bearings. Remove the differential cage from the driving gear, marking them both to ensure correct reassembly; extract the differential side gear and thrust washer from the driving gear bore. Tapping out the taper pin will enable the pinions, thrust washers and spacer and the remaining differential side gear and thrust washer to be removed.

Reassembly is a reversal of the removal procedure, remembering that the chamfered bores on the thrust washers are located against the machined faces of the differential gears.

Drive shafts: Each drive shaft incorporates a sliding joint at its inner end which is secured to the drive flange. At its outer end, the drive shaft is fitted with a constant velocity joint of the ball-in-cage type; this in turn drives the stub shaft to which the front wheel hub is splined. The hub runs on two bearings housed in the steering swivel. The constant velocity joints are packed with a measured amount of special grease during assembly and require no periodic lubrication or maintenance, except regular inspection of the dust boot to ensure that this is not damaged in any way. Provided the amount of wear is not excessive, the constant velocity joints may be overhauled. The amount of wear should be checked with the special calibrated gauge 18G 1012 to determine whether an overhaul set of standard parts, 0.004 in. oversize (early models only) parts, or 0.010 in. oversize parts is required. For removal of drive shafts refer to the appropriate illustrations.

Dismantling

Clean the exterior of the shaft and joints, remove the dust boot clips from both joints and slide the inner joint from the shaft. Hold the shaft vertically in one hand, with the outer end facing downwards and hit the outer ball race of the constant velocity joint sharply with a soft mallet; this will force the outer circlip from the groove allowing the joint to drop off the shaft. Mark the inner and outer races and the ball cage with indelible paint, to enable these parts to be fitted in their original positions during reassembly. Tilt the inner race until one of the balls is free to be removed; repeat this operation for all six balls. Now tilt the cage until the two larger 'windows' are in line with two lugs in the outer race and lift out the cage. Clean and inspect all parts. If any ball is found to be damaged, replace the complete joint. The contact faces of the inner and outer races must be smooth and free from pitting or scoring. If the axial play is less than 0.025 in., the joint is still serviceable.

NOTE: Some drive shafts are fitted in production with a ball cage of either 0.004 in. (early models only) or 0.010 in. oversize; be sure to measure the parts with the gauge 18G 1012 to determine which overhaul set is required.

The small bore in the gauge fits loosely over a standard inner race but will not fit over a 0.004 in. oversize one. The large bore in the gauge will fit loosely over a standard ball cage, but will not fit over a 0.010 in. oversize cage. If the inner race will fit in the small bore and the cage in the large one, the joint is size 'A' (standard). If the inner race will not fit in the small bore but the ball cage will fit in the large one, the joint is size 'B' (0.004 in. on early models only). If the

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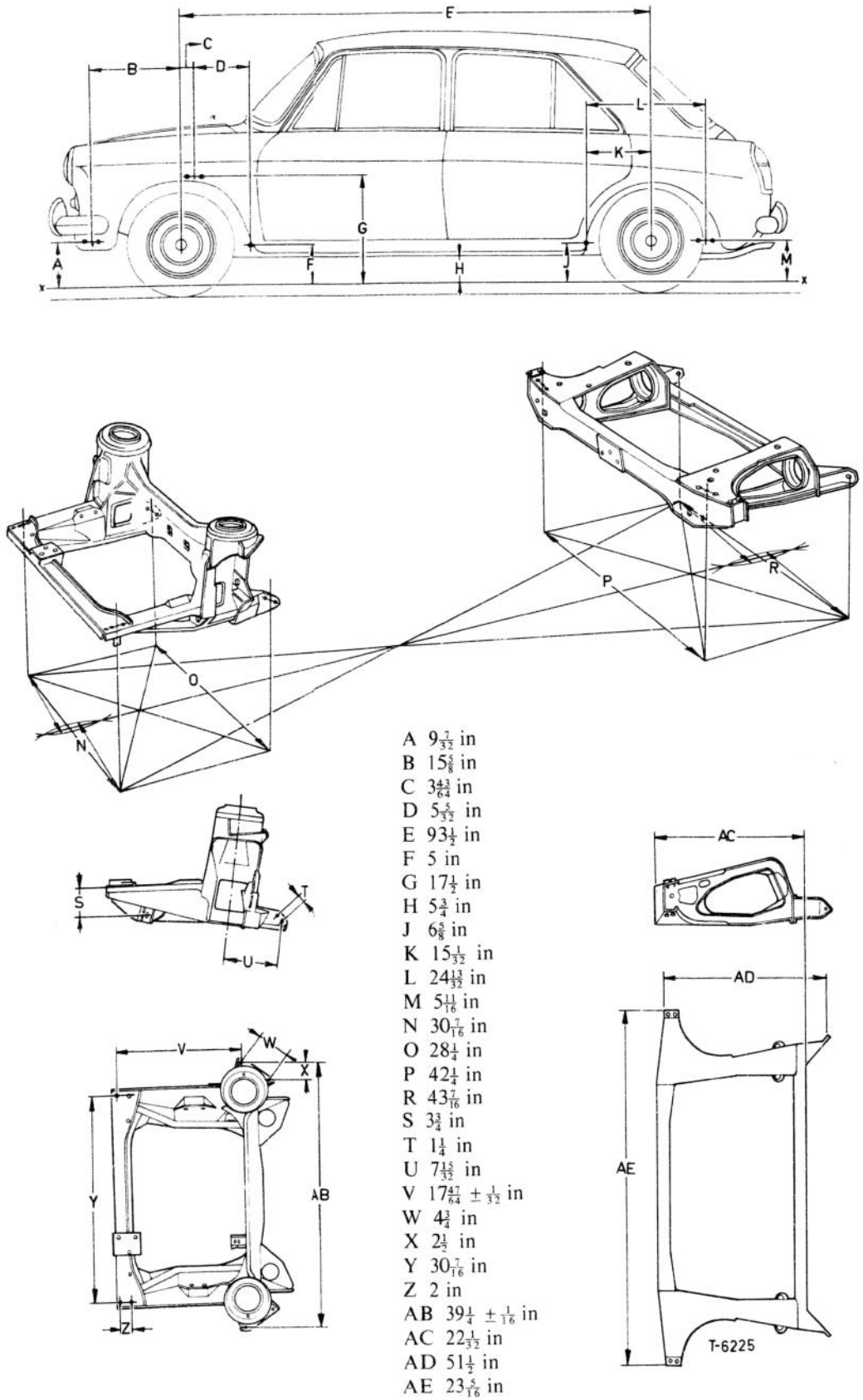

Fig. 49. Sub-frame dimensions

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1 Drive shaft nut
2 Outer tapered collar
3 Flange
4 Hub
5 Oil seal
6 Ball bearing
7 Spacer bush
8 Steering swivel housing
9 Spacer
10 Dowel
11 Brake backing plate
12 Steering arm
13 Ball joint housing
14 Ball pin seat
15 Dust seal
16 Ball pin
17 Lock washer
18 Spring
19 Tie-rod
20 Lower suspension arm
21 Ball joint
22 Steel ball
23 Ball cage
24 Inner ball race
25 Thrust washer
26 Rubber boot
27 Drive shaft
28 Seat
29 Roller joint foot
30 Locking pin
31 Locating bush
32 Rubber bush
33 Rubber boot
34 Upper suspension arm
35 Pivot pin
36 Pivot tube
37 Roller bearing
38 Seal
39 Collar
40 Washers
41 Displacer unit
42 Sub-frame tower

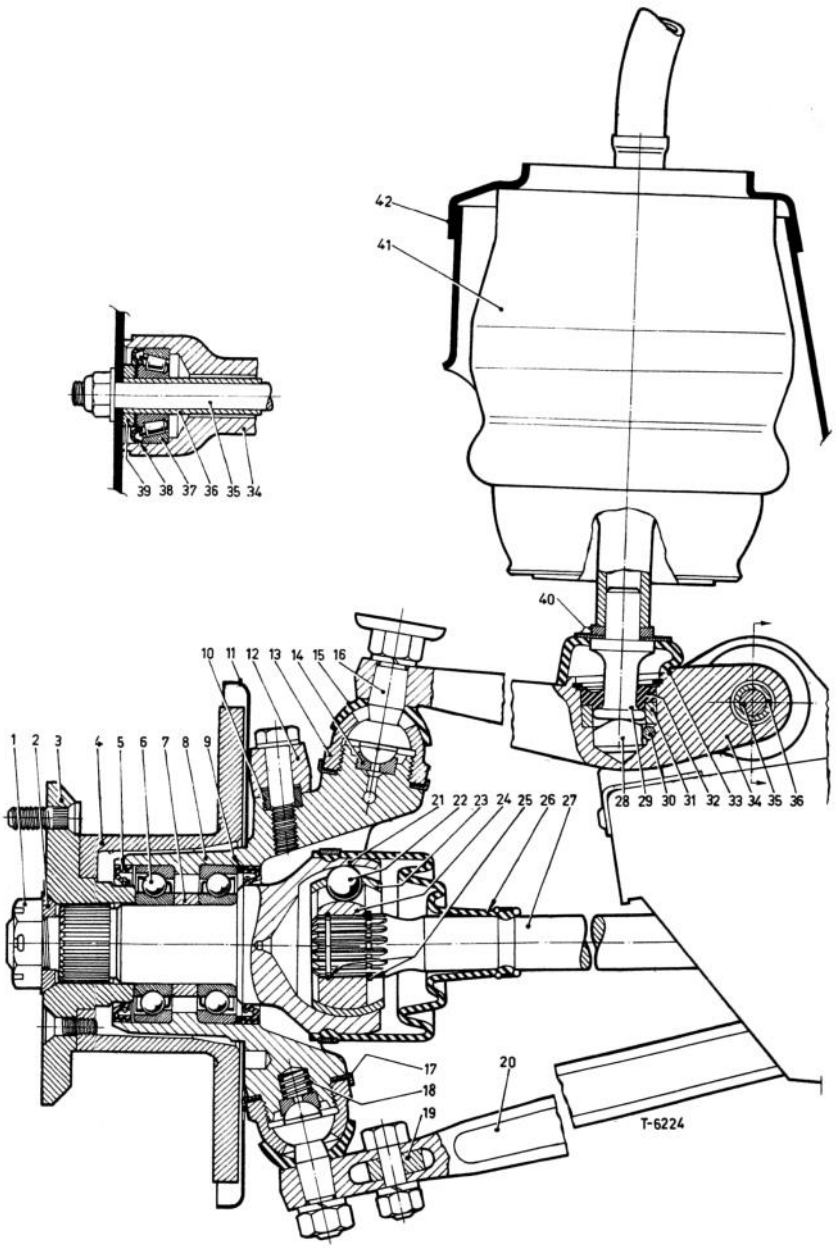

Fig. 50. Front suspension, sectional view

inner race will pass through the small bore, but the ball cage does not fit in the large one, the joints is size 'C' (0.010 in. oversize).

NOTE: If the inner race or the ball cage will not fit in the respective gauge bores, replace the complete joint. A measured amount of special grease forms part of the overhaul kit; this grease *must* be used to lubricate the parts during reassembly.

Reassembly

Reassembly is a reversal of dismantling, noting the following:

Observe the paint marks made before dismantling. Check that the joint articulates freely. Fit a new outer circlip in the groove of the shaft; if the shaft is also replaced, replace the inner circlip too, where applicable. Fill the joint with the remainder of the grease before the shaft is inserted. Fit a new dust boot (also coated lightly with the special grease on the inside) taking care not to damage it while fitting it over the shaft and the outer housing. Fit BMC dust boot clips.

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1 Interconnecting pipe
2 Position of rubber spring (front bump condition)
3 Rubber spring (rear bump condition)
4 Fluid separating member
5 Taper cylinder
6 Strut
7 Damper valves
8 Damper bleed hole
9 Rubber diaphragm
10 Butyl liner
11 Taper piston

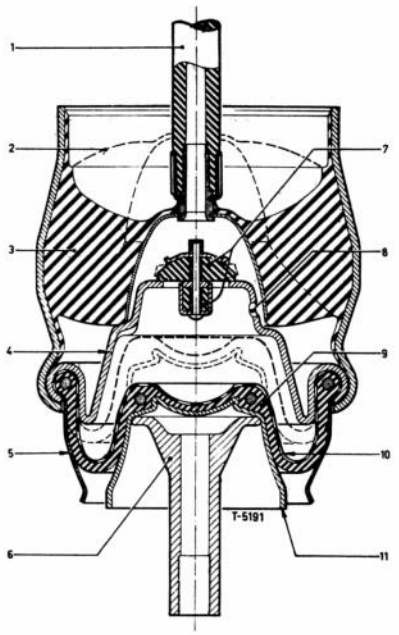

Fig. 51. Displacer unit, sectional view

DO NOT USE ORDINARY CLIPS OR WIRE, AS THESE MAY DAMAGE THE BOOT.

As the shaft is being inserted, allow the air to escape from the dust boot.

CHASSIS

Chassis: The body is of unit construction with detachable sub-frames. For dimensions refer to Fig. 49.

Front Suspension: All models are fitted with independent suspension of the 'Hydrolastic' type, consisting of one front and one rear displacer unit on each side. Each displacer unit is made of sheet steel and rubber and is not interchangeable with 'Hydrolastic' units fitted to other models. The unit consists of a lower and upper chamber housing, a conical spring of compressed rubber, a damper valve and a rubber diaphragm which is actuated by a piston, connected to the suspension arm.

When a front wheel meets a bump in the road, the piston pushes the diaphragm up and some of the fluid is displaced from the bottom chamber to the top chamber. Owing to the increased pressure and the displacement of the fluid, the rubber spring deflects, causing fluid to be discharged through the interconnecting pipe into the rear displacer unit. This forces the rear diaphragm to react against the piston and raises the car at the rear. When the rear wheels meet the bump, fluid passes in the opposite direction. The purpose of this is to reduce the pitch and bounce motion of the car. The suspension system is filled with a mixture of water and alcohol with an anti-corrosive additive. The front suspension, in addition, incorporates upper and lower arms, of unequal length, located in the front sub-frame side-members and with their outer ends attached to swivel-hub ball-joints.

NOTE: *Special equipment is needed to carry out any repairs or overhaul of the suspension units; never attempt to dismantle or remove any parts without having this equipment available.*

Front wheel alignment: Caster, camber and king pin inclination are set during production and cannot be altered. After any accident involving the steering or

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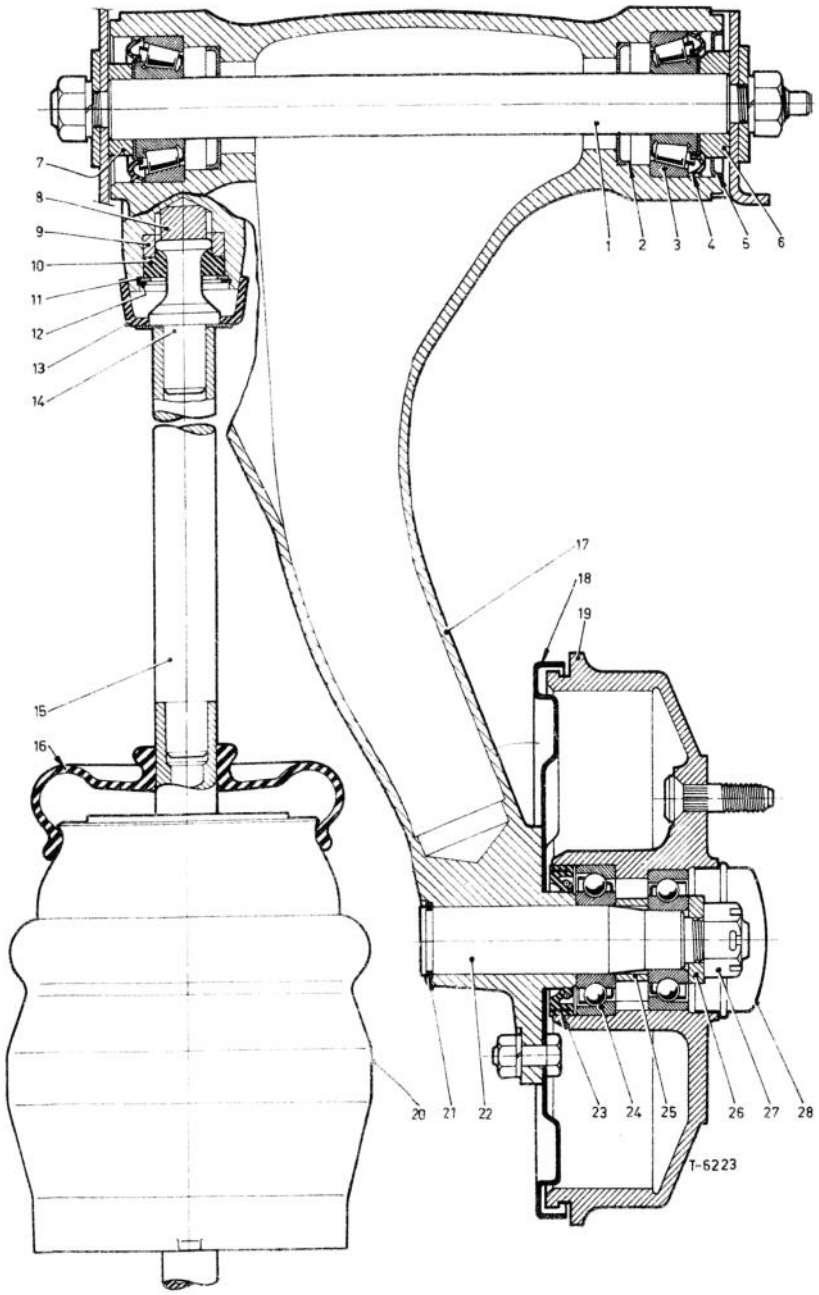

Fig. 52. Rear suspension, sectional view

suspension check these angles (see Technical Specifications), using reputable checking equipment.

With the car at kerb weight, the tyres inflated to the correct pressures and the wheels in the straight-ahead position, check with the aid of an alignment gauge that the toe-out is $\frac{1}{16}$ in. Measurements should be taken at $10\frac{1}{4}$ in. from ground level and at $16\frac{3}{4}$ in. diameter (on the tyre side-wall). If necessary, the track may be adjusted by slackening the tie-rod ball-joint locknuts and boot clips, and then rotating each tie-rod by equal amounts only, in the required direction; secure the locknuts and the boot clips, after ensuring that the rubber boots are not twisted.

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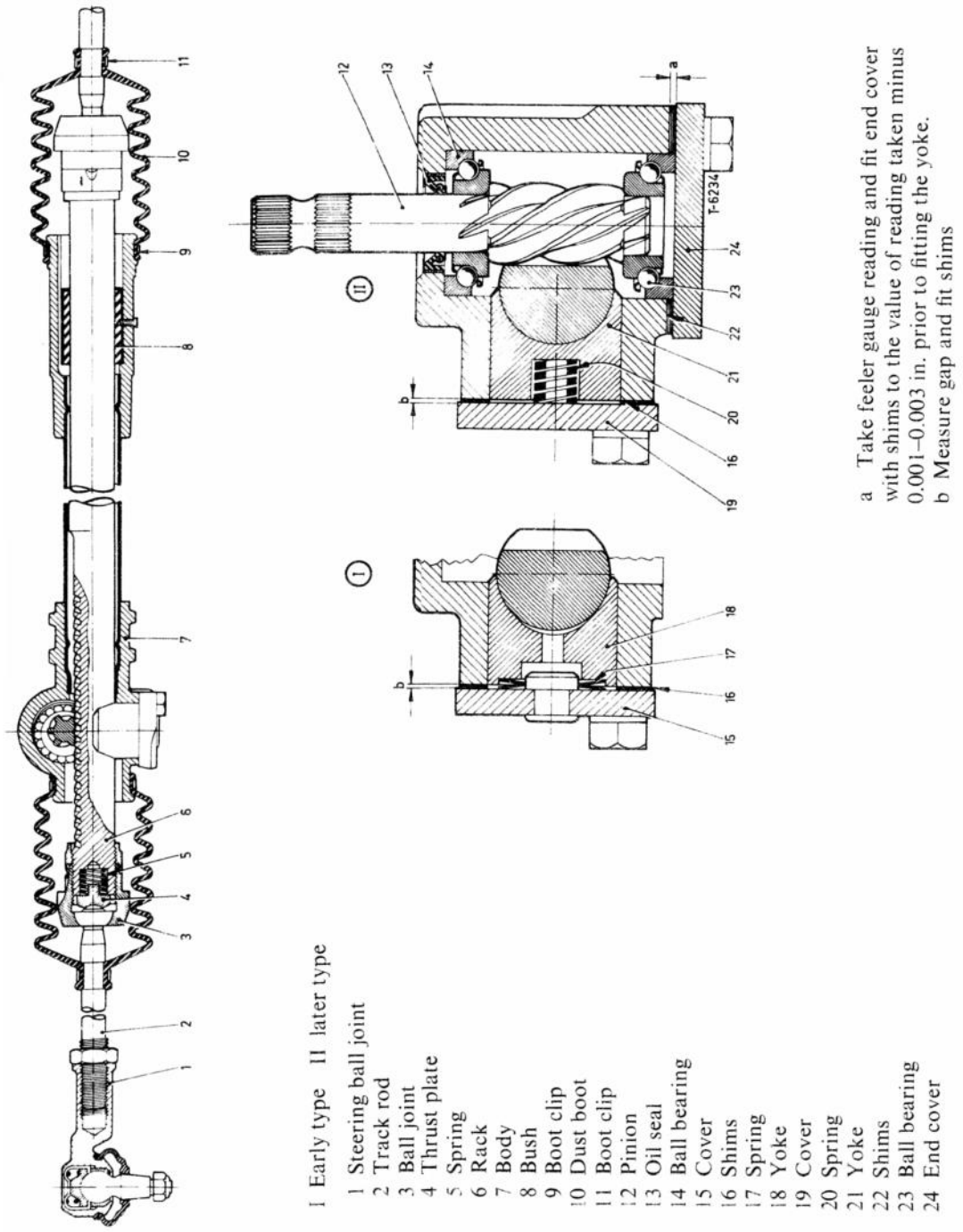

Fig. 53. Steering gear, sectional view

Front wheel hubs and bearings

Removal and reinstallation

Jack the car up underneath the transmission casing, remove the wheel, disconnect the brake caliper assembly, supporting it clear of the working area (not hanging by its hydraulic hose), remove the split pin and nut and with the aid of a suitable puller withdraw the hub/disc assembly. The hub can be detached from the disc assembly by removing the set screws. Reinstallation is a reversal of the removal procedure, noting the following: if the maximum run-out at the periphery of the braking surface exceeds 0.006 in., remove and reposition the disc on the drive-shaft splines. If the bearings are to be renewed ensure that they are fitted with the side marked 'Thrust' towards the bearing spacer. The bearings must be repacked with the appropriate grease.

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Rear suspension: The rear wheels are located by trailing arms, each connected to the piston of a displacer unit. In addition to both 'Hydrolastic' units, the rear suspension has either two auxiliary tension springs and an anti-roll bar (early models) or progressive rubber bump stops (later models).

NOTE: *As stated previously in 'Front Suspension', special equipment is needed to carry out any repair or overhaul; never dismantle or remove any part without having this equipment available.*

Rear wheel hubs and bearings

Removal and reinstallation

Jack up the car underneath the rear frame cross-member, remove the wheel, grease cap, split pin' hub nut and washer and, using a suitable puller, withdraw the hub assembly. Reinstallation is a reversal of the removal procedure noting the following: If the bearings are to be renewed, ensure that they are fitted with the side marked 'Thrust' towards the bearing spacer. Pack both bearings with grease so that a small amount protrudes on either side of each; pack the inner-bearing-to-oil-seal cavity and smear the spacer with grease.

Steering gear: The steering gear is of the rack and pinion type.

Removal

Disconnect the horn control and direction indicator snap-connectors below the parcel shelf, ease back the rubber shroud and disconnect the steering column from the pinion shaft; remove the two column support bracket retaining screws at the underside of the facia, withdraw the column assembly upwards to disengage it from the splines on the pinion shaft. Jack up the front of the vehicle place it on suitable chassis stands and remove the front wheels. Disconnect the tie-rod ball joints and, whilst supporting the engine from above, remove the sub-frame retaining bolts and setscrews. Working from inside the vehicle, remove the 'U' bolts securing the rack housing to the toe-board; lower the engine just sufficiently for the rack assembly to be removed from the toe-board and withdraw it, towards the driver's side, from the vehicle.

NOTE: *Do not disconnect any part of the 'Hydrolastic' system.*

Dismantling

Remove the nuts retaining the ball-ends on the steering track rods and remove the ball assemblies. Detach the clips from the rack housing and track rods; drain the oil and remove the rubber dust boots. Remove the damper cover plate and shims; withdraw the spring and yoke. Unscrew the pinion-shaft lower bearing retaining plate bolts; remove the plate and shims. Remove the lower thrust washer, bearing and bearing race and withdraw the pinion. The upper bearing and the bearing race can now be extracted, together with the thrust washer, and followed by the pinion shaft oil seal.

With the aid of service tool 18G 707 unscrew and remove the ball joint housing to release the tie-rod, ball seat and tension spring. Carefully withdraw the rack from the pinion end of the rack housing to avoid damaging the felt or plastic bush. Remove the bush retaining screw from the rack housing and extract the bush. Remove the felt bush metal sleeve, where applicable.

Clean and inspect all parts paying particular attention to the rubber dust boots. When reassembling, the felt bush, as fitted on the early type steering rack housing, should be replaced by the later plastic bush and fitted together with the steel-sleeved bush and a spacer.

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Reassembly

Reassembly is a reversal of the dismantling procedure, as follows: Insert the spacer into the housing, with its plain end leading, followed by the plastic bush fitted into the sleeve, also with its plain end leading. With the spacer and bush assembly correctly located and with the flats on the plastic bush offset to the screw retaining hole in the housing, drill through the hole and bush with a $\frac{7}{64}$ in. drill. Remove all swarf, coat with jointing compound and fit the retaining screw ensuring that it does not project into the bore of the bush.

Refit the upper pinion bearing; insert the rack into the body and fit the pinion and lower pinion bearing. With the cover plate fitted, minus the shims, check with a feeler gauge the clearance between the cover and the body; do not overtighten the cover retaining screws for this operation. Remove the cover and then refit it together with shims to the value of the feeler gauge reading minus 0.001–0.003 in., so giving the necessary pre-load. Use shellac on the cover and body mating faces to prevent oil leakage.

Screw a new lock-ring on to the steering rack to the full extent of its thread, install the springs and ball seats and fit the ball sockets and tie-rod. Tighten the ball sockets until the tie-rod is pinched, then turn the lock-ring to meet the ball socket. Slacken back the ball socket $\frac{1}{8}$th of a turn and tighten the lock-ring to the recommended torque. Ensure that the ball-housing does not rotate whilst tightening the lock-ring. Install the damper assembly and lock-up the assembly by tapping the lock-ring tabs into the slots of the ball socket and rack. A pull of 4–6.5 lb. with a spring balance attached to the steering ball-end should now be required to articulate the tie-rods. To adjust the rack damper (*early type*) proceed as follows: Refit the yoke, cover plate and spring minus the shims and, with the rack in the straight-ahead position, tighten the cover plate bolts evenly to the point where it is just possible to turn the pinion with a pre-load gauge set at 15 lb. in. Measure with a feeler gauge the clearance between the cover and the body.

Remove the cover and after coating the mating faces with shellac refit the cover with shims to the value of the reading taken minus 0.001–0.003 in. After assembly the torque load required to start the pinion moving should not exceed 25 lb. in.

To adjust the rack damper (later models) proceed as follows: Refit the yoke and cover plate minus the spring and shims and, with the rack in the straight-ahead position, tighten the cover plate bolts evenly to a point where it is just possible to turn the pinion with a pre-load gauge set at 15 lb. in. Measure with a feeler gauge the clearance between the cover and the body. Remove and then refit the yoke together with the spring, followed by the cover plate, with shims to the value of the reading taken, plus 0.002–0.005 in. After assembly the torque load required to start the pinion moving should not exceed 25 lb. in.

Install a new pinion shaft oil seal. Refit the rubber boots to the tie-rods and to the body, but prior to tightening the tie-rod clip at the pinion end, pour $\frac{1}{3}$ Imp pint (0.4 US pint) of the recommended lubricant through the end of the rubber boot with the assembly vertical; tighten the clip. Centralize the rack and mark the pinion so that the position of the rack can be checked after refitting the assembly to the vehicle. Refit the ball-ends and locknuts, screwing each end onto each tie-rod by equal amounts until the distance between the centre lines of the ball pins is 45.34 in.

Reinstallation

Reinstallation is a reversal of the removal procedure, noting the following: do not tighten the support nuts until after the steering-column clamp pinch bolt has been

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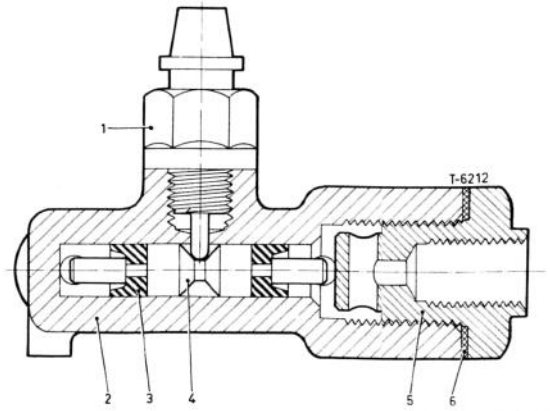

1 Switch
2 Body
3 Piston Seal
4 Piston
5 End plug
6 Copper washer

Fig. 54. Valve and switch assembly, sectional view

tightened to the required torque. After installation in the vehicle, the front wheel alignment should be checked and if necessary corrected; see page 103.

Brakes: Single line (dual line on Austin America models) hydraulically operated foot brakes on all four wheels, employing front disc brakes of the fixed caliper or swinging caliper type and rear drum brakes of the leading and trailing shoe type. The rear brakes are adjusted manually by means of a square headed adjuster located in the back-plate on each side; the front disc brakes are self-adjusting. The parking brake which operates on the rear brakes only is normally automatically adjusted with the rear brakes, although adjustment to cure excessive travel can be made at the handbrake lever by means of nuts, as necessary.

Brake master cylinder, single

The brake master cylinder which incorporates the brake fluid reservoir is situated under the bonnet and is mounted on the engine bulkhead, next to the clutch master cylinder on the driver's side; the fluid level should be checked at regular intervals and if necessary topped up, with the recommended brake fluid (see Lubrication and Maintenance).

The brake master cylinder is of similar construction to the clutch master cylinder except for the inclusion of a non-return valve fitted behind the brake master cylinder return spring. For removal, dismantling, reassembly and reinstallation, see page 55 and Fig. 43.

Safety valve and switch assembly: The valve and switch assembly is located in the pipe-line between the master cylinder and the brake assemblies and is attached to the engine bulkhead.

Removal and installation

Disconnect the brake pipes from the valve and switch body, plugging the open ends of the master cylinder pipes to prevent the ingress of dirt and detach the wiring at the switch. Remove the assembly from the engine bulkhead. Reinstallation is a reversal of the removal procedure.

Dismantling and reassembly

Unscrew the end plug discarding the copper gasket; remove the switch assembly. Carefully push the piston out of the bore; remove the piston seals and discard them.

Wash all parts in methylated spirits, commercial alcohol or the recommended brake fluid. Inspect all parts and renew as necessary.

Reassembly is a reversal of the dismantling procedure, noting the following: the lip of each new piston seal must be facing outwards, to the piston.

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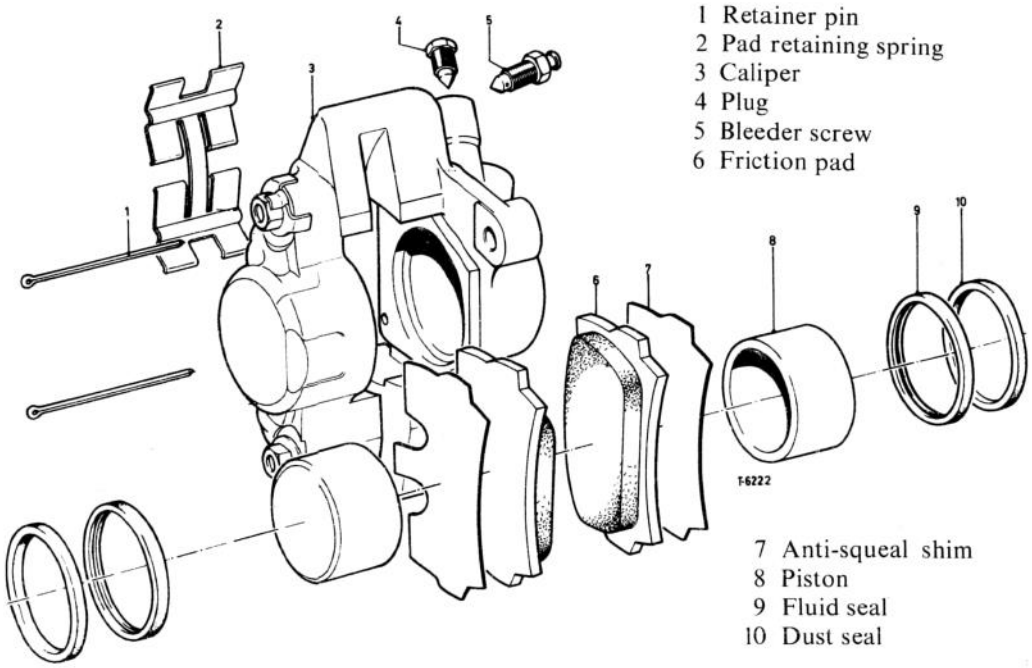

Fig. 55. Front brake, fixed caliper, exploded view

Having dipped it is clean brake fluid, insert the piston into the bore so that its groove is opposite to the switch plunger aperture. Fit the switch plunger, tightening it to a torque of 1.25lb. ft. Fit a new copper gasket to the plug and tighten to a torque of 16.5 lb. ft. Fit a new dust cover.

Bleeding the hydraulic brake system

Fill the fluid reservoir with the correct brake fluid. Attach one end of a length of rubber tube to a wheel cylinder bleeder screw and immerse the other end in a container of clean brake fluid. Unscrew the bleeder screw and apply the foot-brake slowly, allowing it to return unassisted, until bubble-free fluid enters the container; tighten the bleed screw with the footbrake pedal fully depressed. Repeat this process at each bleed screw (starting with the wheel furthest away from the master cylinder) and finally top up the fluid reservoir to the correct level. Keep the reservoir at least half-full of fluid during the entire operation.

Renewing front brake disc pads (caliper in situ)

Remove the wheel, withdraw the pad-retaining split pins, remove the spring and pull out the pads. Fit the new pads ensuring that the anti-squeal shims (where applicable) are correctly positioned and insert the retaining split pins. Pump the brake pedal several times to adjust, remembering on swinging caliper type brakes, to first slacken off the screw located on top of the caliper adjacent to the pivot pin boss.

If necessary the pistons and/or piston seals can be renewed but the two halves of the brake caliper must not be separated (where applicable). The caliper must be removed from the disc if pistons and/or seals are to be renewed.

Dismantling and reassembling a rear brake assembly

Remove the wheel, withdraw the drum/hub assembly, disconnect the steady springs and, noting their positions, detach the return springs from the shoe webs; remove the springs and shoes. Disconnect the flexible fluid pipe at the wheel cylinders and remove the bleed screw and the circlip from the rear of the cylinder body; withdraw the wheel cylinder.

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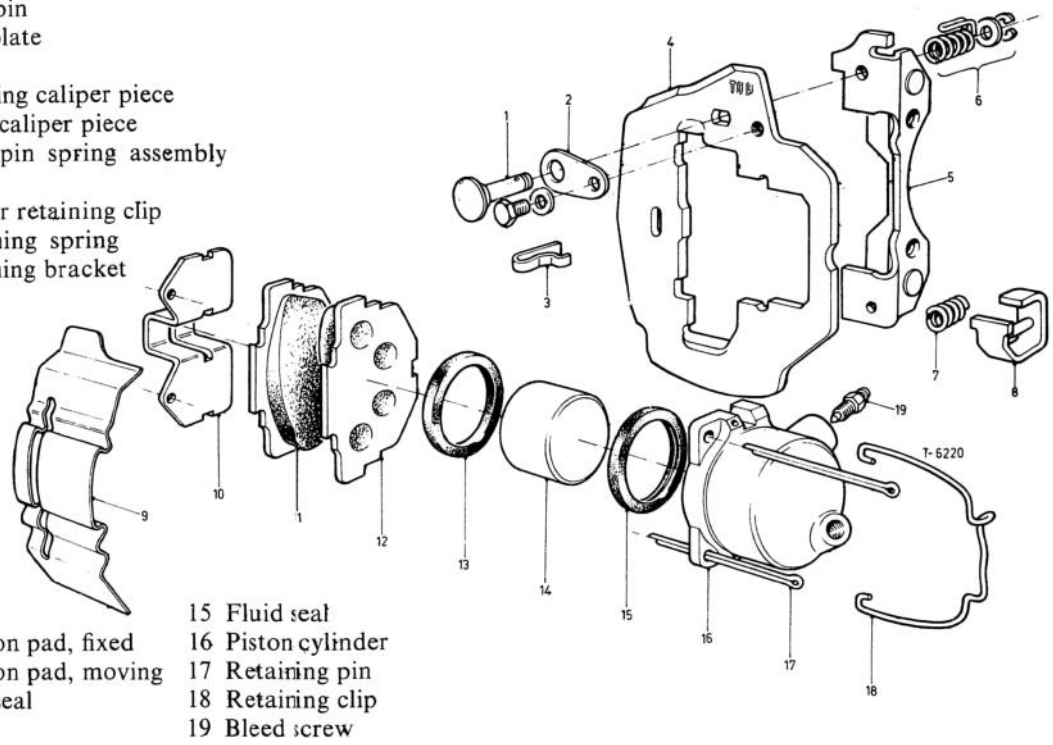

Fig. 56. Front brake, swinging caliper, exploded view

Remove the rubber dust boots and withdraw both pistons from the bore of the cylinder; the piston seals should be removed with the fingers only. Clean all parts with the recommended brake fluid. Reassembly is a reversal of the dismantling procedure, renewing all parts, as necessary. Adjust the rear brakes by turning each adjuster in a clockwise direction until the drum locks and then backing off just sufficiently to allow free rotation of the drum.

Pressure regulating valve: Fitted on all except Austin America models, to control the hydraulic pressure to the rear wheel cylinders at a set maximum pressure; additional pressure is transferred to the front brakes. The overhaul of this unit is a straightforward operation; bleed the hydraulic system after refitting.
NOTE: If an aluminium sealing washer is found during dismantling, this must be replaced by a new copper washer, together with a new end plug and a new short regulating-valve-to-chassis pipe.

Brake master cylinder, dual (Austin America models)

Removal and dismantling
Disconnect the brake pipes, plugging the open ends to prevent the ingress of dirt and detach the master cylinder from the bulkhead, leaving the push rod connected to the pedal. Drain the fluid, clean the cylinder body and remove the rubber boot. With the assembly gripped in a soft jawed vice, compress the return spring and very carefully remove the Spinolox ring from its groove in the primary piston. Extract the piston retaining circlip, manouevre the piston up and down in its bore to release the nylon guide bearing and seal, withdraw the plain washer, extract the inner circlip and withdraw the primary and secondary piston assembly together with the abutment washer.

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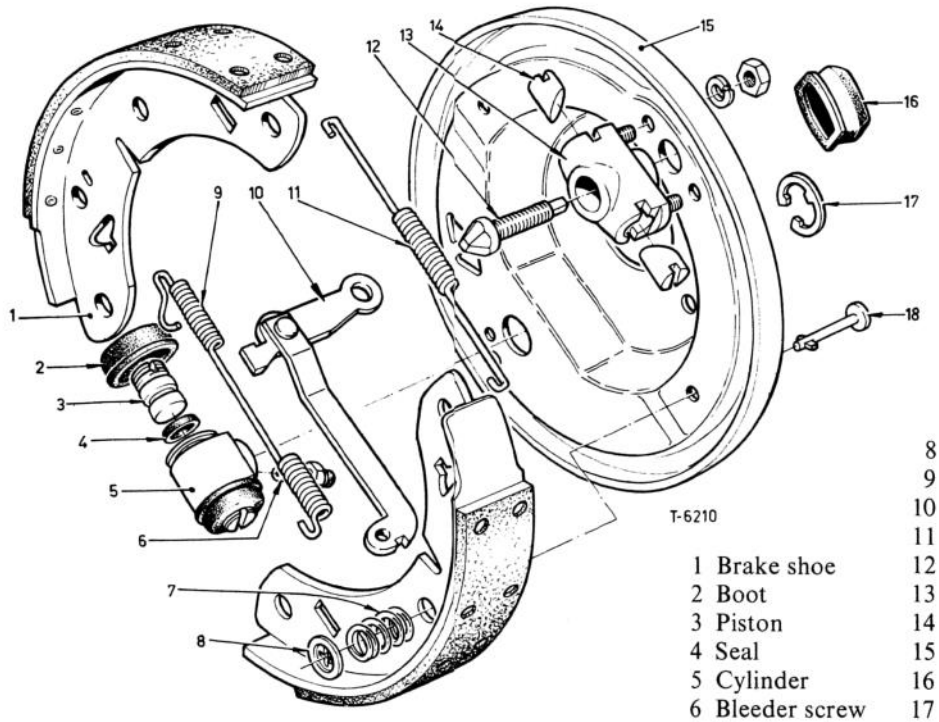
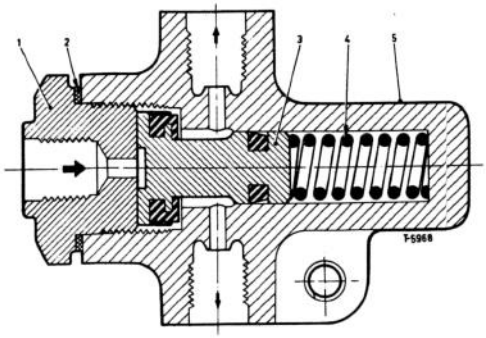


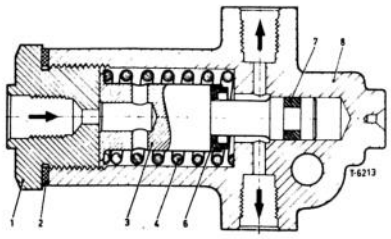
1 Brake shoe
2 Boot
3 Piston
4 Seal
5 Cylinder
6 Bleeder screw
7 Steady spring
8 Washer
9 Pull off spring
10 Parking brake lever
11 Pull-off springs
12 Adjuster wedge
13 Adjuster body
14 Adjuster peg
15 Brake backplate
16 Boot
17 Clip
18 Steady pin

Fig. 57. Rear brake, exploded view



1 End plug
2 Copper washer
3 Piston
4 Spring
5 Body

Fig. 58. Brake pressure limiting device, early type, sectional view



1 End plug
2 Copper washer
3 Piston
4 Spring
6 Large seal
7 Small seal
8 Body

Fig. 59. Brake pressure limiting device, later type, sectional view

Whilst compressing the piston separating spring, tap out the piston link retaining pin; remove the rubber cups and washers from the piston, after noting their position to ensure correct reassembly. Disconnect the cylinder body from the fluid reservoir, remove the two reservoir sealing rings, unscrew the connecting adaptors (discard the copper gaskets) and withdraw the spring and trap valves.

Wash all parts in the recommended brake fluid. Inspect all parts for wear or damage, renewing as necessary.

F

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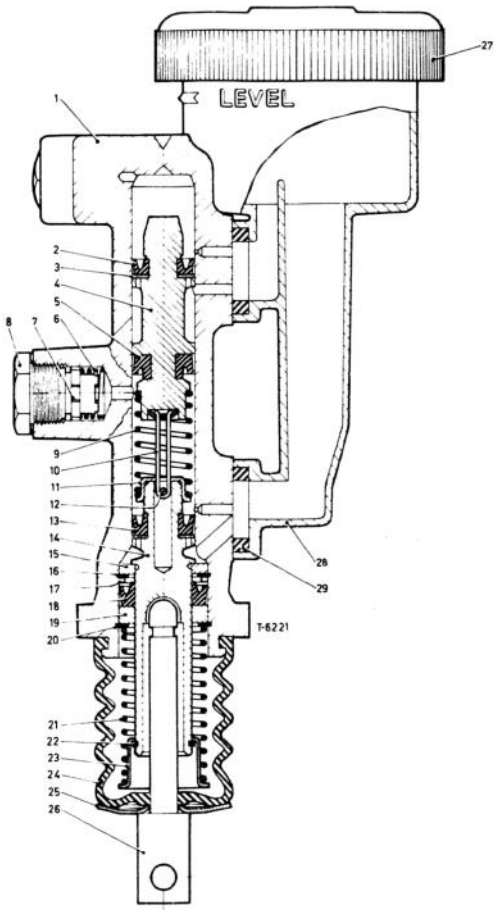
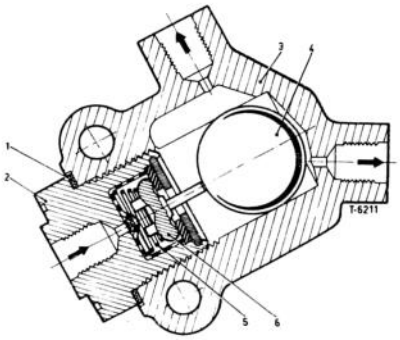


1 Cylinder body
2 Main cup
3 Washer
4 Piston
5 Main cup
6 Spring
7 Valve
8 Adaptor plug
9 Spring
10 Link
11 Pin retainer
12 Pin
13 Cup
14 Piston
15 Stop ring
16 Circlip
17 Washer
18 Cup
19 Bearing
20 Circlip
21 Spring
22 Spirolox ring
23 Spring retainer
24 Boot
25 Retainer
26 Push rod
27 Reservoir cap
28 Reservoir body
29 Reservoir seal

Fig. 60. Brake tandem master cylinder, sectional view



1 Washer
2 End plug
3 Body
4 Steel ball
5 Spring
6 Valve

Fig. 61. Brake inertia valve, sectional view

Reassembly and reinstallation

Reassembly and reinstallation is a reversal of the dismantling and removal procedure, noting the following: assemble all internal parts after having dipped them in the recommended brake fluid. Ensure that the piston washer is fitted on the head of the secondary piston, convex face leading. Use the fingers to fit the secondary main cup (lip trailing) over the end of the piston, locating it in the groove next to the washer.

Finally fill the hydraulic reservoir with the recommended brake fluid and bleed the brake system.

Inertia valve: Fitted on Austin America models only, in place of the pressure regulating valve, it is located in the fluid line to the rear brakes and is designed to reduce the likelihood of rear wheels skidding when braking, by controlling the delivery pressure; additional pressure is transferred to the front brakes.

The overhaul of this unit (located beneath the rear sub-frame cross-member) is a straightforward operation. On reassembly, fit a new valve and end-plug sub-assembly together with a new copper washer; tighten the end plug to 50 lb. ft. torque. Bleed the hydraulic system after refitting.

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ELECTRICAL EQUIPMENT

Battery: The battery is situated under the bonnet and mounted on the right-hand wing valance. The electrical system has a positive earth connection. Refer to pages 80 to 94 for wiring diagrams.

Generator

Dismantling

Remove the drive pulley retaining nut and withdraw the pulley and the Woodruff key from the armature shaft. Remove the two through-bolts and remove the commutator end-cover.

Withdraw the pulley end-cover, together with the armature and its ball-bearing from the yoke. Unless the ball-bearing is worn or damaged, its removal from the cover is unnecessary; if required, the bearing must be pressed out by means of a suitable hand press after the plate rivets have been drilled out. Thoroughly clean all parts and carry out the following inspections: Check the condition of the carbon brushes and ensure that these can move freely in their holders; if this is not the case, they should be polished with a smooth file. If the brushes are worn or broken, new brushes must be fitted and properly bedded on the commutator. This can be performed by wrapping a strip of very fine sandpaper around the commutator and pressing the brushes in their holders against the commutator, which should then be turned by hand until the brushes are seated properly.

The commutator should be smooth and free from pits, burrs or burned-in spots. Clean the commutator with a soft cloth soaked in petrol, and if necessary polish it with a strip of very fine sandpaper. A badly worn commutator should be turned in a lathe running at high speed and employing a sharp tool; undercut the insulation, after which the final polishing should be done with very fine sandpaper. The field coils may be tested *in situ* by means of an Ohm-meter of 6.0–6.3 Ohms, or by connecting a 12-volt battery with an ammeter in series between the field coil terminal and the yoke. The ammeter reading should be approximately 2 amps; no reading indicates on open circuit, necessitating renewal of the coils. An ammeter reading considerably more than 2 amps or an Ohm-meter reading of much less than 6 Ohms is evidence of a short-circuit in one of the field coils. Install new field coils as necessary. The armature should be checked with a 'growler' and voltage drop-test equipment; if these are not available, check the armature by substitution. The bearing bush can be removed by means of a suitable extractor or by screwing a $\frac{5}{8}$ in. tap into it, after which it can be withdrawn.

NOTE: *Before pressing in a new porous bronze bearing bush, it should be immersed in light engine oil for 24 hours (or for two hours in oil heated to 100°C). Do not ream the bush.*

When pressing the pulley end-cover onto the armature shaft, be sure to support the inner bearing race and not the end-cover; this is best accomplished with a piece of tube.

Reassembly

After thorough examination of all parts, renew those that are worn or damaged. Reassembly is effected in the reverse order to dismantling, paying particular attention to the following:

If the ball-bearing is to be renewed, the new bearing should be packed with high-melting-point grease before pressing it into the end-cover, preceded by

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the oil-retaining washer, the felt washer and the corrugated washer. After the bearing has been pressed home, the bearing retaining plate must be secured with new rivets. When installing the commutator end-cover complete with the brush gear, the brushes must be held clear of the commutator by partially withdrawing them from their holders until the brush springs push them sideways against the holders, thus keeping them in this lifted position. Once the end-cover is on the shaft and the distance between the cover and the yoke amounts to approximately ½ in., the brushes should be released onto the commutator with a small hook or screwdriver. Before finally pressing-on the end-cover, ensure that the brush springs are properly seated on the brushes.

Voltage regulator control box: Incorporates a cut-out relay, current regulator and voltage regulator, mounted beneath the bonnet on the right-hand side of the engine bulkhead.

Cleaning contacts and checking mechanical setting

Clean the cut-out relay contacts *in situ*, with fine glass paper only. Remove the voltage regulator and current regulator contacts, clean with a fine carborundum stone and wipe clean with methylated spirits before refitting. Adjust the armature-to-core gap by turning the current regulator and voltage regulator cams, using adjusting tool No. 54381742, in a clockwise direction to reduce armature spring tension, leaving clearance for placing a tube wrench on the current regulator adjustable contact nut. Insert a 0.056 in. feeler gauge (0.045 in. on early type regulator fitted with copper shims) between the regulator armature and the core face and with the regulator armature pressed firmly down, screw in the current or voltage regulator adjustable contact until it lightly touches the moving contact. The armature-to-core gap must be checked after first releasing the armature.

Bend the cut-out relay fixed contact until, with a 0.015 in. feeler between the cut-out relay armature and the core, the cut-out relay contacts touch lightly. With a feeler gauge check that the armature-to-core gap on the cut-out relay is 0.035–0.045 in. Adjust by bending the armature back stop.

Checking electrical adjustments

Voltage regulator

With 'B' terminal disconnected but not earthed and a voltmeter connected between 'WL' terminal and a good earth, start the engine and gradually run the generator up to 3000 rpm. If the voltmeter reading is steady but incorrect, adjust the voltage regulator cam with adjuster 54381742; recheck by stopping the engine, restarting it again and then running it up to 3000 rpm (generator). When correct, reconnect terminal 'B' wire.

Cut-out relay (cut-in and drop-off adjustment)

With the voltmeter connected as above and the headlamps switched on, start the engine and gradually increase the speed until the cut-in voltage at the point of contact closure is between 12.6 and 13.4 volts. If the reading is incorrect reduce engine speed to idling, adjust the cut-out relay cam and recheck. With 'B' terminal disconnected but not earthed, a voltmeter connected between terminal 'B' and a good earth, start the engine and gradually run up to 3000 rpm. Slowly decelerate; the pointer should return to zero at between 9.5–11 volts. If the reading is incorrect, stop the engine and adjust the fixed contact; a blade deflection of between 0.010—0.020 in. should now result.

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Current regulator (on-load adjustment)
With the ammeter connected between 'B' terminal and the disconnected 'B' terminal wire (not earthed), the headlamps switched on and a spring clip short-circuiting the voltage regulator contacts, gradually run the engine speed up to 4500 rpm. If the ammeter does not register a steady reading of 22 amps, adjust the current regulator cam.

Starter motor
NOTE: Before dismantling note that the commutator and the brush gear can be examined without dismantling the starter motor; in order to check the brush gear, it is sufficient to remove the starter cover band. If the brushes are sticky and do not move freely in their holders, they should be pulled out and lightly dressed with a smooth file. If the commutator is blackened or dirty, it can be cleaned by holding a soft cloth, soaked in petrol, against it while rotating the armature by hand.

Dismantling
Lift the brush springs and pull the brushes clear of their holders. Remove the terminal nuts and washer from the terminal post on the commutator end-cover. Remove the two through-bolts and remove the commutator end-cover. Remove the drive end-cover, together with the armature and drive assembly.

Examining and reconditioning
The correct brush spring tension of 25 to 15 oz. should be checked with a spring balance; if necessary, replace the springs.

Chipped, cracked, worn or otherwise faulty brushes should be renewed by unsoldering the flexible connections and soldering the new brush connections to the terminals. Replacement brushes are pre-formed, which makes bedding-in on the commutator unnecessary. The commutator must be smooth and free from pits and burned spots. Clean the commutator with a petrol-moistened cloth; if this gives unsatisfactory results, carefully polish the commutator with very fine sandpaper. A badly damaged commutator must be turned off using a high-speed lathe, with a sharp tool. Do not remove more material than is necessary.

NOTE: *Do not undercut the insulation between the segments.*

The field coils can be tested by connecting a 12-volt lamp with a 12-volt battery to the tapping point of the coils, to which the brushes are soldered, and the field terminal post. If the lamp does not light up, it indicates that there is an open circuit in the field coils, in which case they should be renewed. If the lamp does light up, this does not necessarily mean that the field coils are in good order, as a short-circuited coil will also cause the lamp to light. This condition may be checked by removing the test lead from the brush connector and connecting it to the yoke instead; if the bulb now lights up, it is certain that the coils are short-circuited.

The armature core should under no circumstances, be machined, nor should attempts be made to true-up a distorted armature shaft.

If the porous armature bearing-bushes are worn to such an extent that renewal is imperative, follow the procedure outlined under *Generator*.

The drive assembly can be withdrawn from the shaft after the spring has been compressed and the circlip has been removed.

Carefully clean and examine all parts and renew them if necessary.

Reassembly
Reassembly is a reversal of the above procedure.

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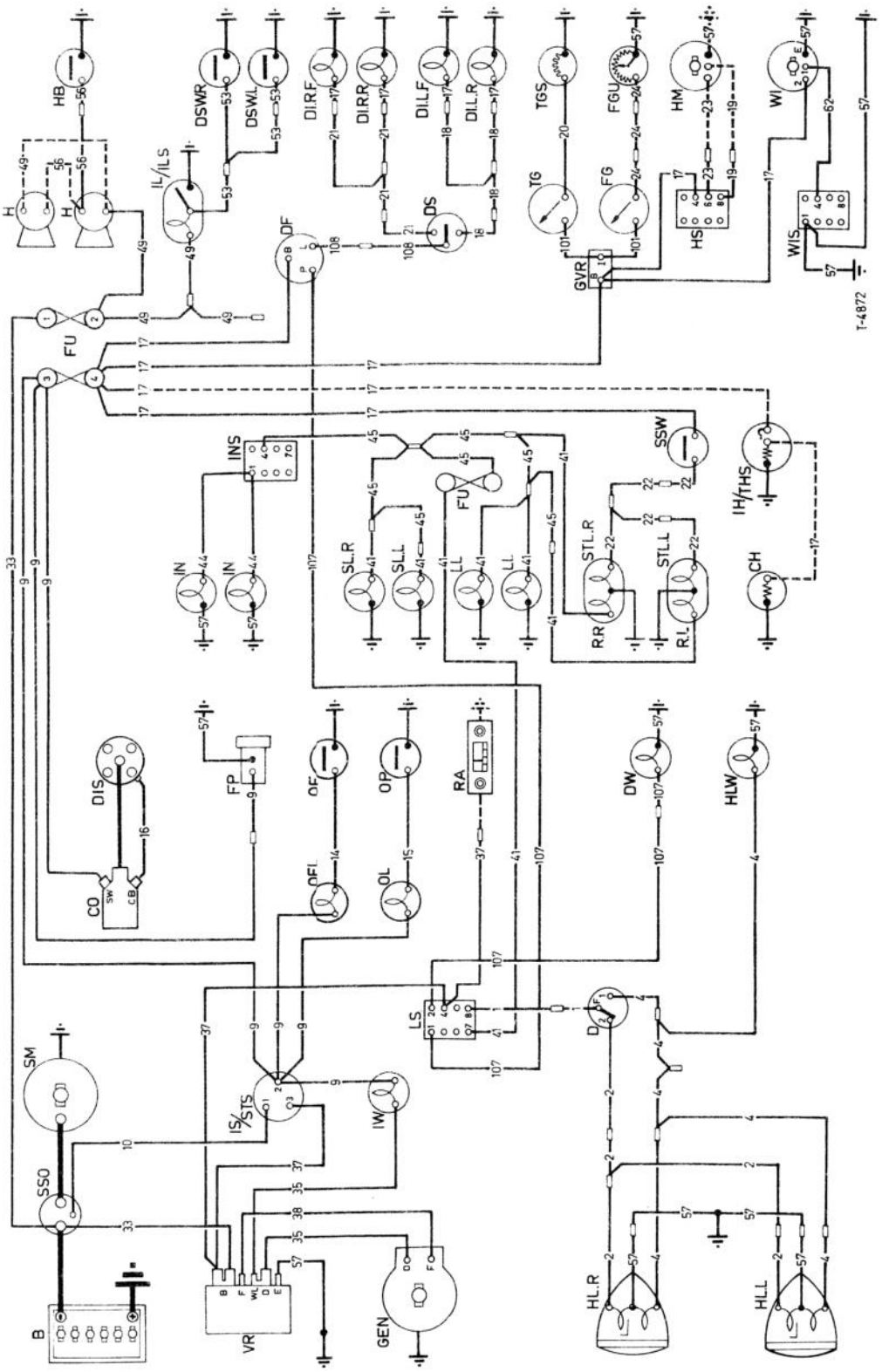

Fig. 62. Wiring diagram, Austin 1100 Mk 1

Colour key to wiring diagrams (Figs. 62 to 75).

1 Blue
2 Blue/red
4 Blue/white
9 White
10 White/red
13 White/green
14 White/purple
15 White/brown
16 White/black
17 Green
18 Green/red
19 Green/yellow
20 Green/blue
21 Green/white
22 Green/purple
23 Green/brown
24 Green/black
33 Brown
35 Brown/yellow
37 Brown/white
38 Brown/green
41 Red
42 Red/yellow
43 Red/blue
44 Red/white
45 Red/green
48 Red/black
49 Purple
53 Purple/white
56 Purple/black
57 Black
61 Black/white
62 Black/green
101 Light green

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Colour key to wiring diagrams, continued (Figs. 62 to 75):

103 Light green/yellow
104 Light green/blue
107 Light green/purple
108 Light green/brown
109 Light green/black
321 Red/light green
336 Blue/light green
351 Brown/light green
360 Light green/pink

Key to wiring diagrams (Fig. 62 to 74):

A	Ammeter
B	Battery
BPS	Brake pressure contact (automatic trans.)
BPW/BPP	Brake pressure warning light/ lamp push (automatic trans.)
CH	Suction chamber heater
CL	Clock
CLI	Cigar lighter
CO	Coil
D	Dimmer switch
DE	Defroster
DES	Defroster switch
DEW	Defroster warning light
DF	Direction-indicator flasher
D/HLS	Headlamp dimmer/flasher switch
DI.L.F	Direction-indicator, left front
DI.L.R.	Direction-indicator, left rear
DI.L.S	Direction-indicator, left-side
DI.R.S	Direction-indicator, right-side
DI.R.F.	Direction-indicator, right front
DI.R.R.	Direction-indicator, right rear
DIS	Distributor
DS	Direction-indicator switch
DSW.L	Door switch, left
DSW.R	Door switch, right
DW	Direction-indicator warning light
DW.L	Direction indicator warning light, left
DW.R	Direction indicator warning light, right
EF	Emergency flasher
EFS	Emergency flasher switch
FG	Fuel gauge
FGU	Fuel gauge tank unit
FL	Facia light
FM	Fan motor
FO.L	Fog lamp, left
FO.R	Fog lamp, right
FOS.L and R	Fog lamp switch, left and right
FP	Fuel pump
FU	Fuses
GEN	Generator
GVR	Gauge voltage regulator
H	Horn
HB	Horn ring (button)
HL.L	Headlamp left
HL.R	Headlamp, right
HLF	Headlamp flash contact
HLW	Mainbeam warning light
HM and HS	Heater motor and switch
IH/THS	Induction heater and thermostat
IL/ILS.	Interior light and switch
ILU.F	Interior light and switch, front
ILU.L.R.	Interior light and switch left rear
ILU. R.R.	Interior light and switch, right rear
IN	Instrument light
IN.AT	Ashtray illumination
IN.CI	Instrument light, central
IN.CL	Clock illumination
IN.CR	Tachometer illumination
IN.FG/TG/OG	Instrument light, fuel gauge/ temperature gauge/oil pressure gauge
IN.HS	Heater switch illumination
IN.RC	Instrument light, tachometer
IN.SPM	Speedometer illumination
INS	Instrument light switch
IS/STS	Ignition/starter switch
IW	Ignition/generator warning light
LFU	Line fuse
LL	Licence plate lamp
LS	Light switch
LU	Luggage compartment light
LUS	Luggage compartment light switch
NS	Neutral switch (automatic trans.)
OF	Oil filter light switch
OFL	Oil filter warning lamp
OL/OFL	Oil pressure/oil filter warning light
OL	Oil pressure warning light
OP	Oil pressure switch
R.L.	Rear lamp, left
R.R.	Rear lamp, right
RC	Tachometer
REL	Reversing lamp
RELS	Reversing lamp switch
RA	Radio
RBL	Radiator badge lamp
SL.L	Side lamp, left
SL.R	Side lamp, right
SM	Starter motor
SSO	Starter solenoid
SSW	Stoplamp switch
STL.L	Stoplamp, left
STL.R	Stoplamp, right
STL/R.L.	Stop/rear lamp, left
STL/R.R.	Stop/rear lamp, right
TG	Water temperature gauge
TGS	Water temperature gauge sender unit
VR	Voltage regulator
WA	Windshield washer
WI	Windshield wiper
WAS/WIS	Windshield washer-wiper switch

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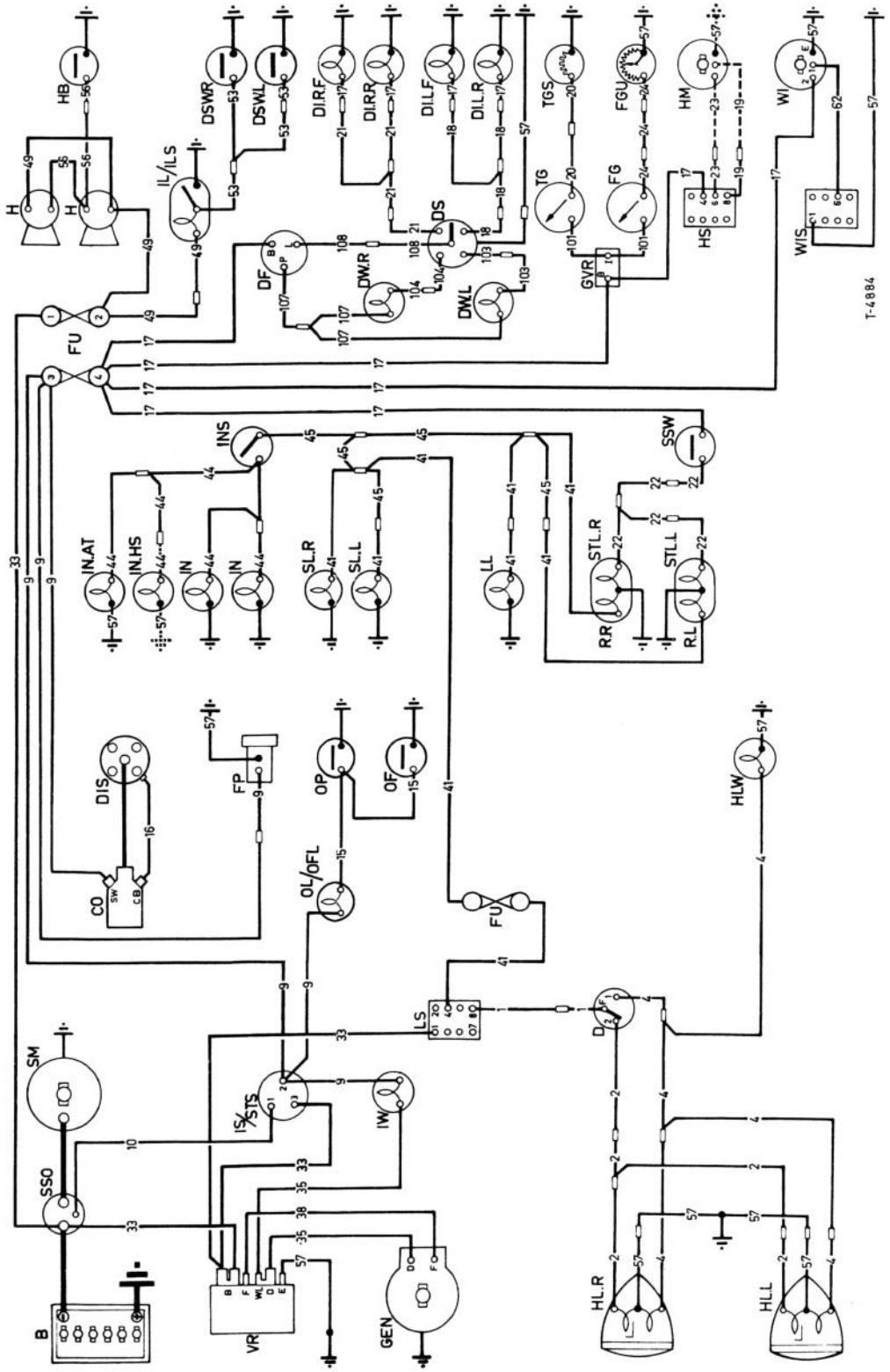

Fig. 63. Wiring diagram, MG 1100 Mk 1 (early type)

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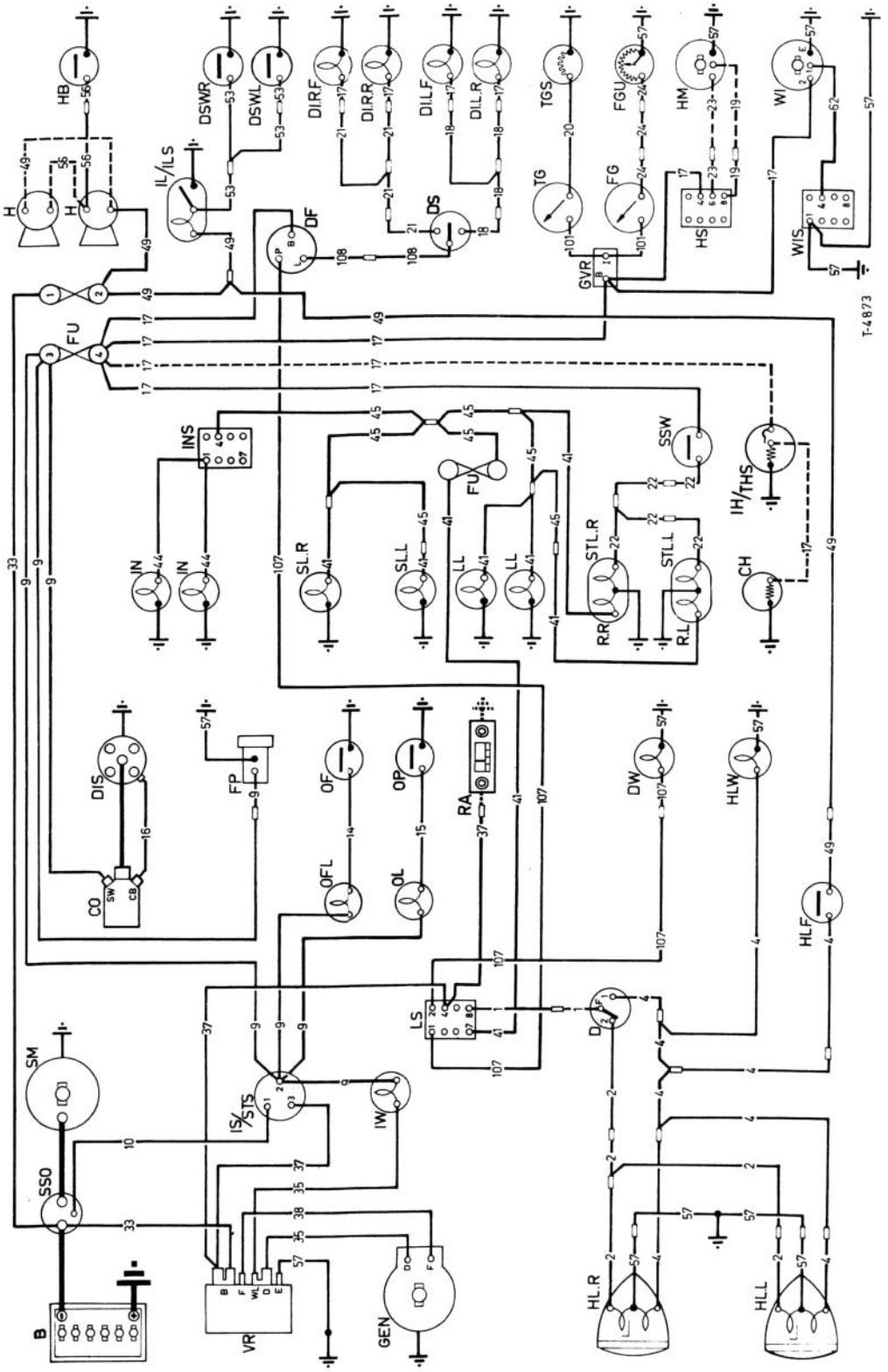

Fig. 64. Wiring diagram, MG 1100 Mk 1 (later type)

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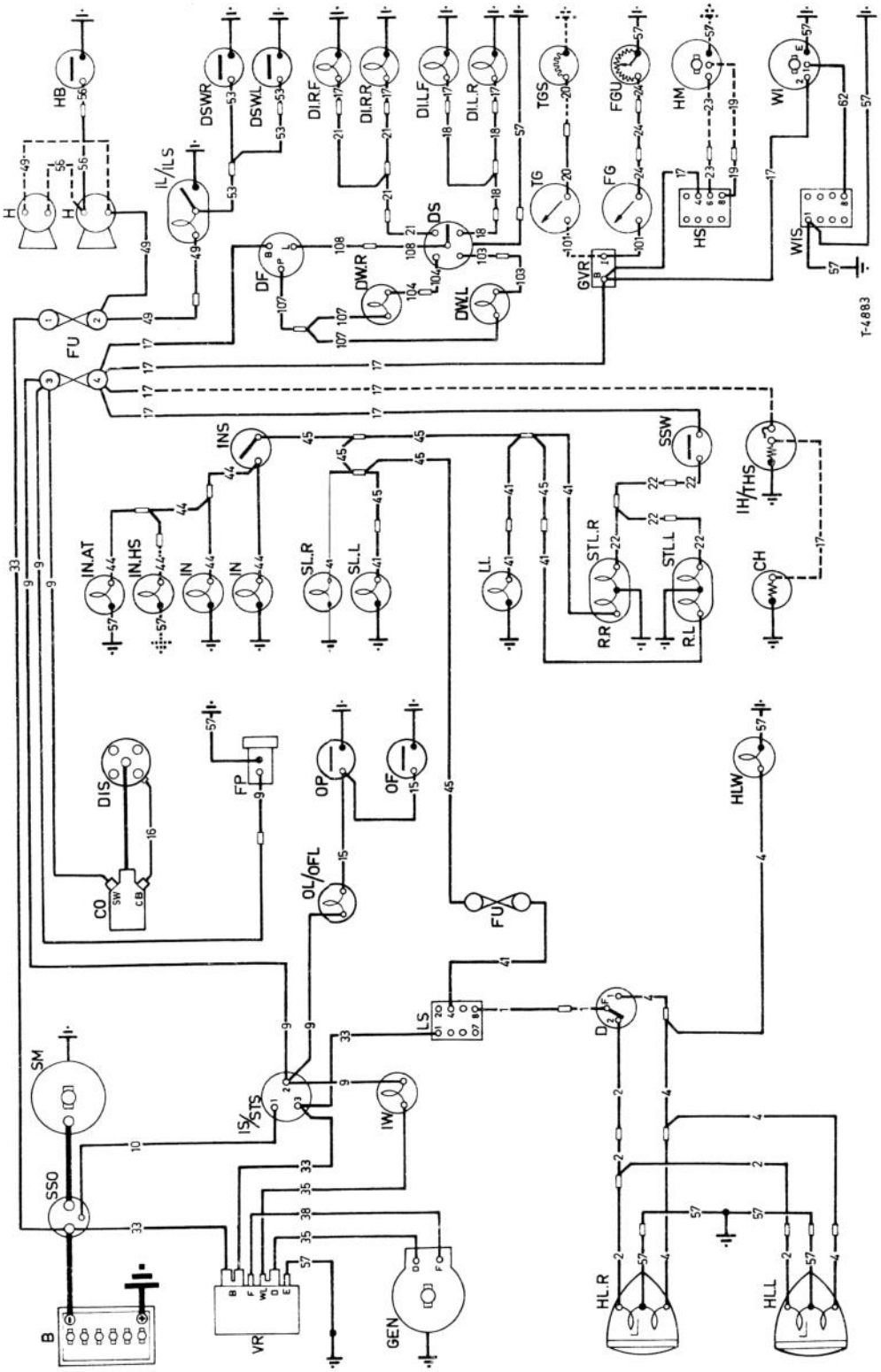

Fig. 65. Wiring diagram, Morris 1100 Mk 1 (early type)

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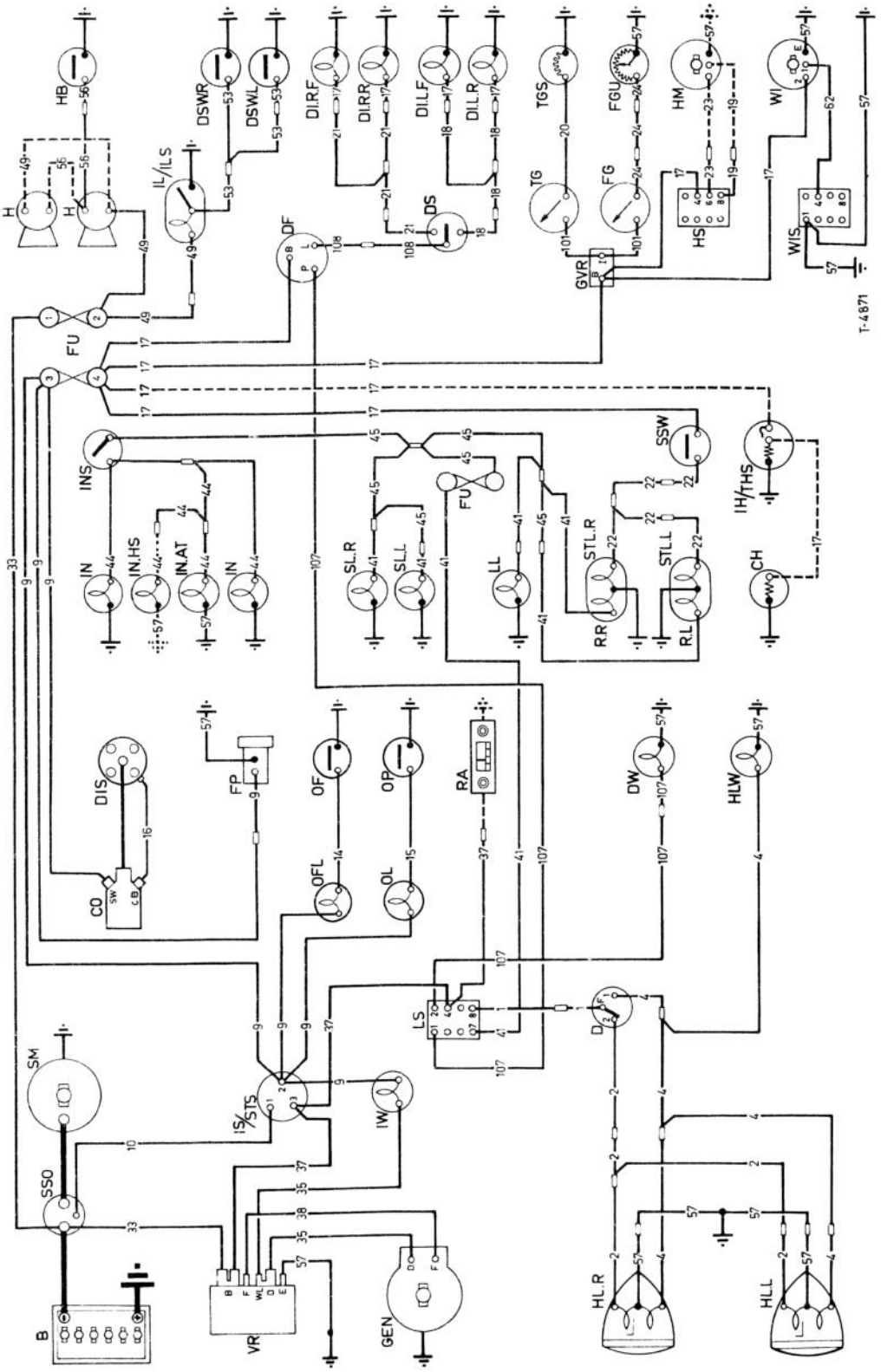

Fig. 66. Wiring diagram, Morris 1100 Mk 1 (later type)

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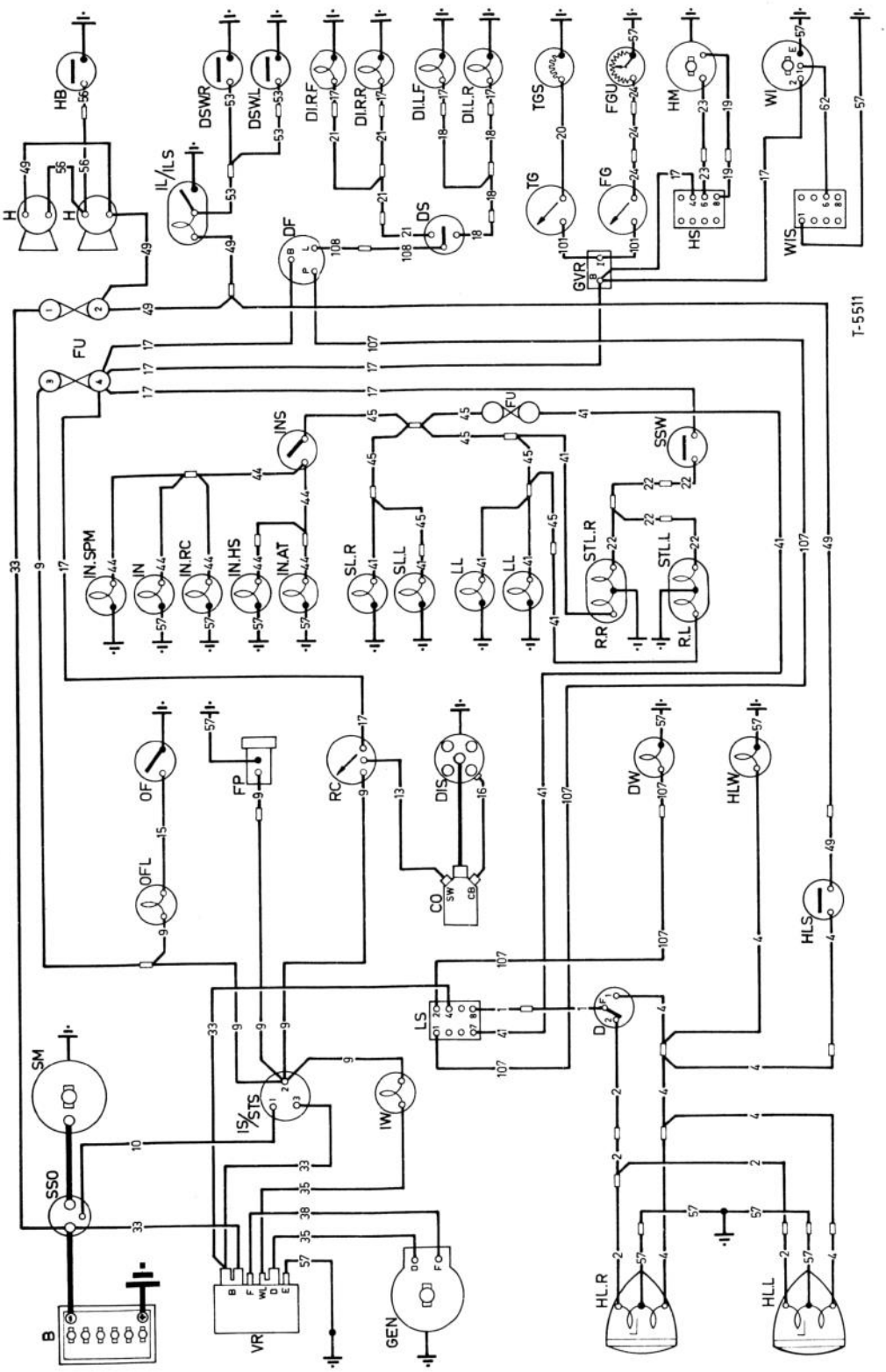

Fig. 67. Wiring diagram, Riley Kestrel, 1100 Mk 1

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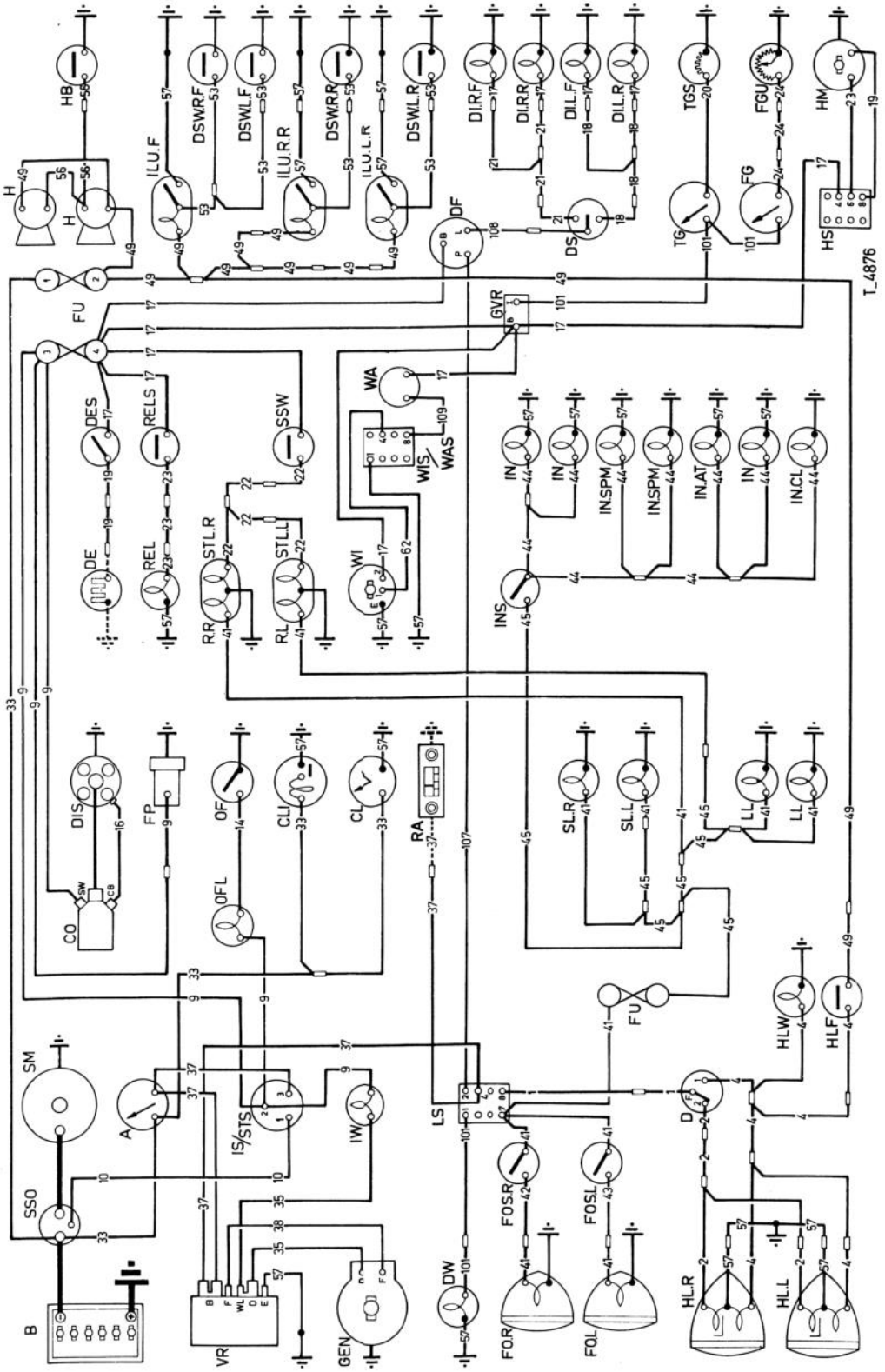

Fig. 68. Wiring diagram Vanden Plas Princess, 1100 Mk 1

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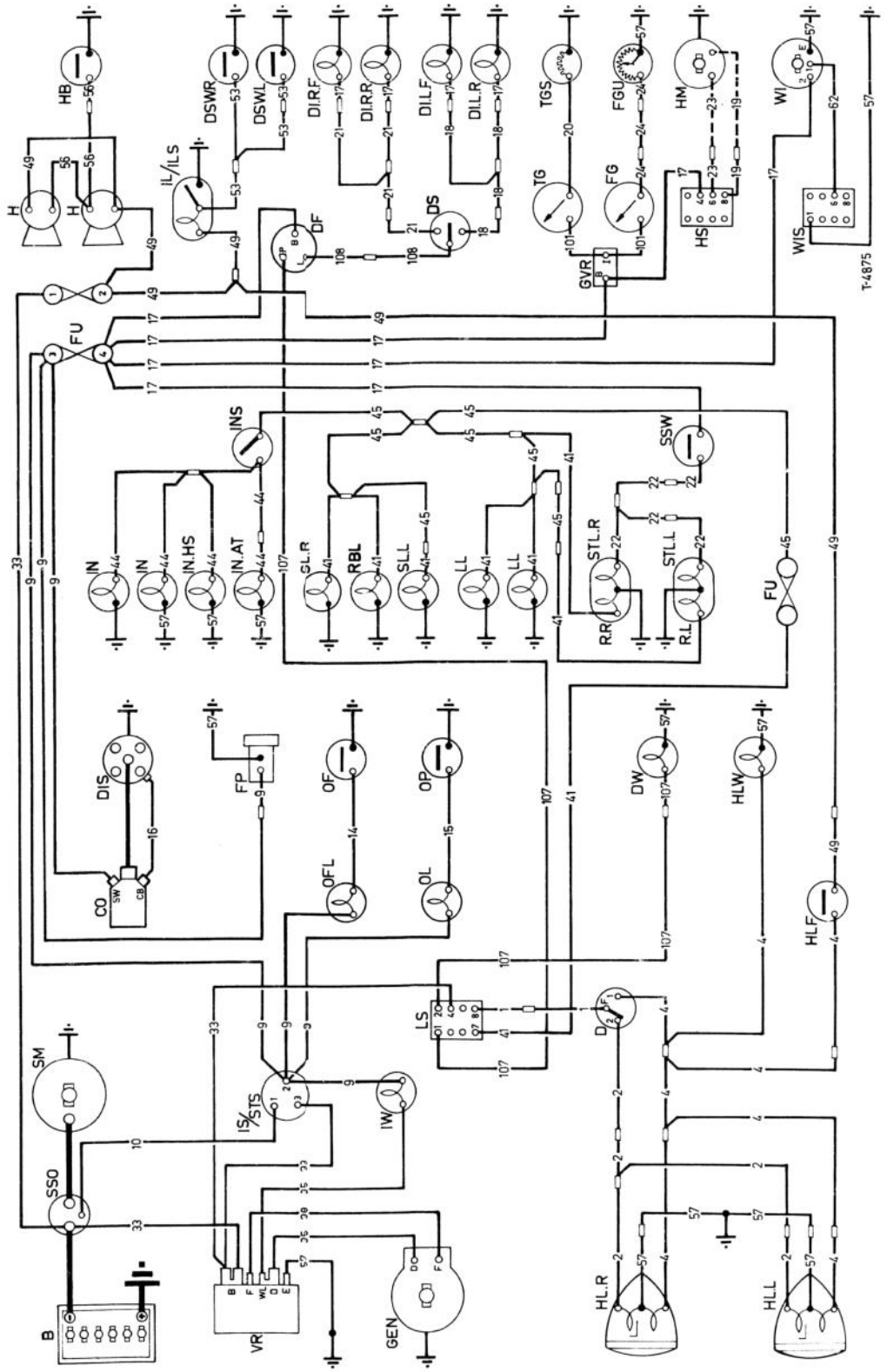

Fig. 69. Wiring diagram, Wolseley, 1100 Mk 1

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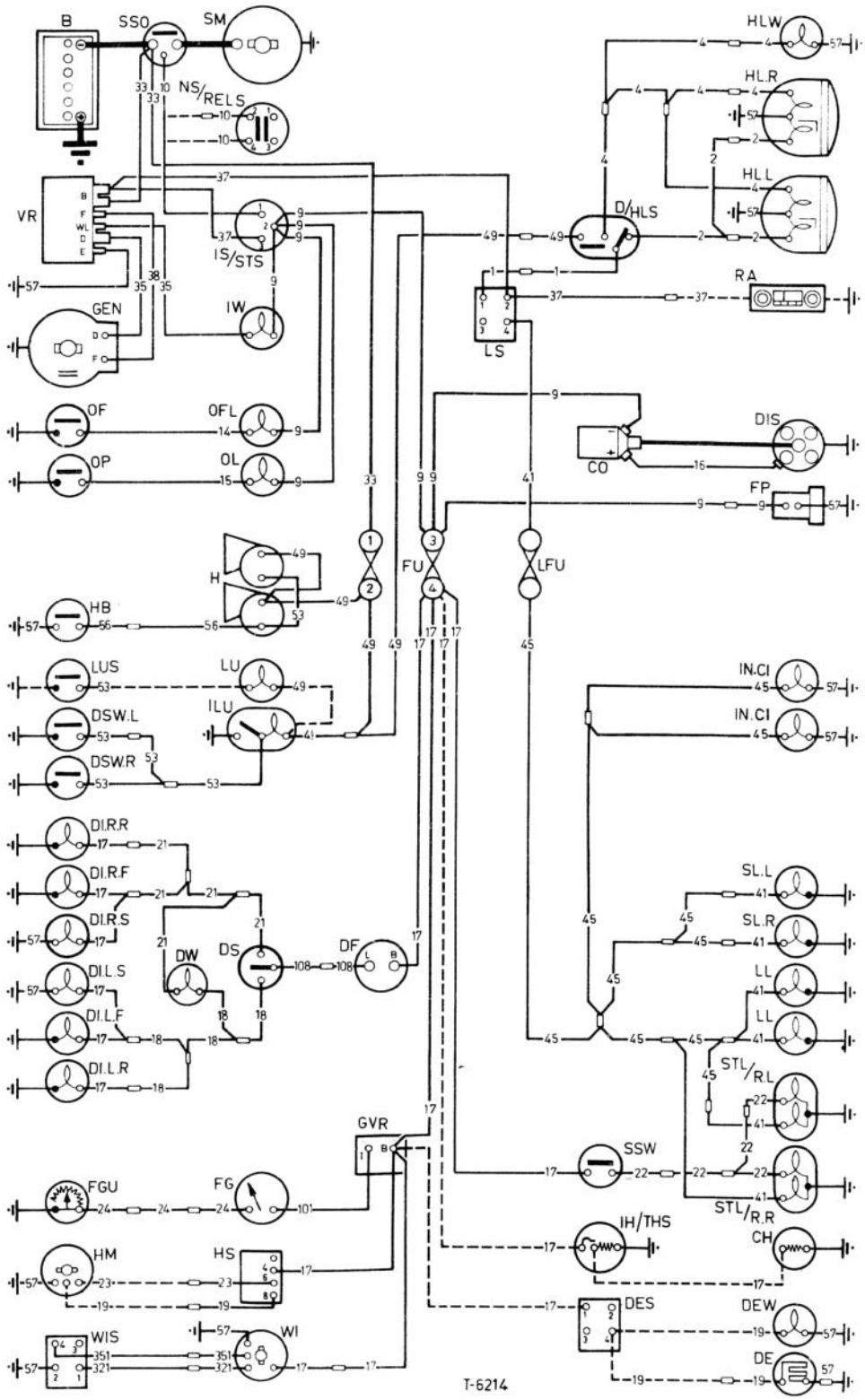

Fig. 70. Wiring diagram, Austin/Morris 1100 Mk 11

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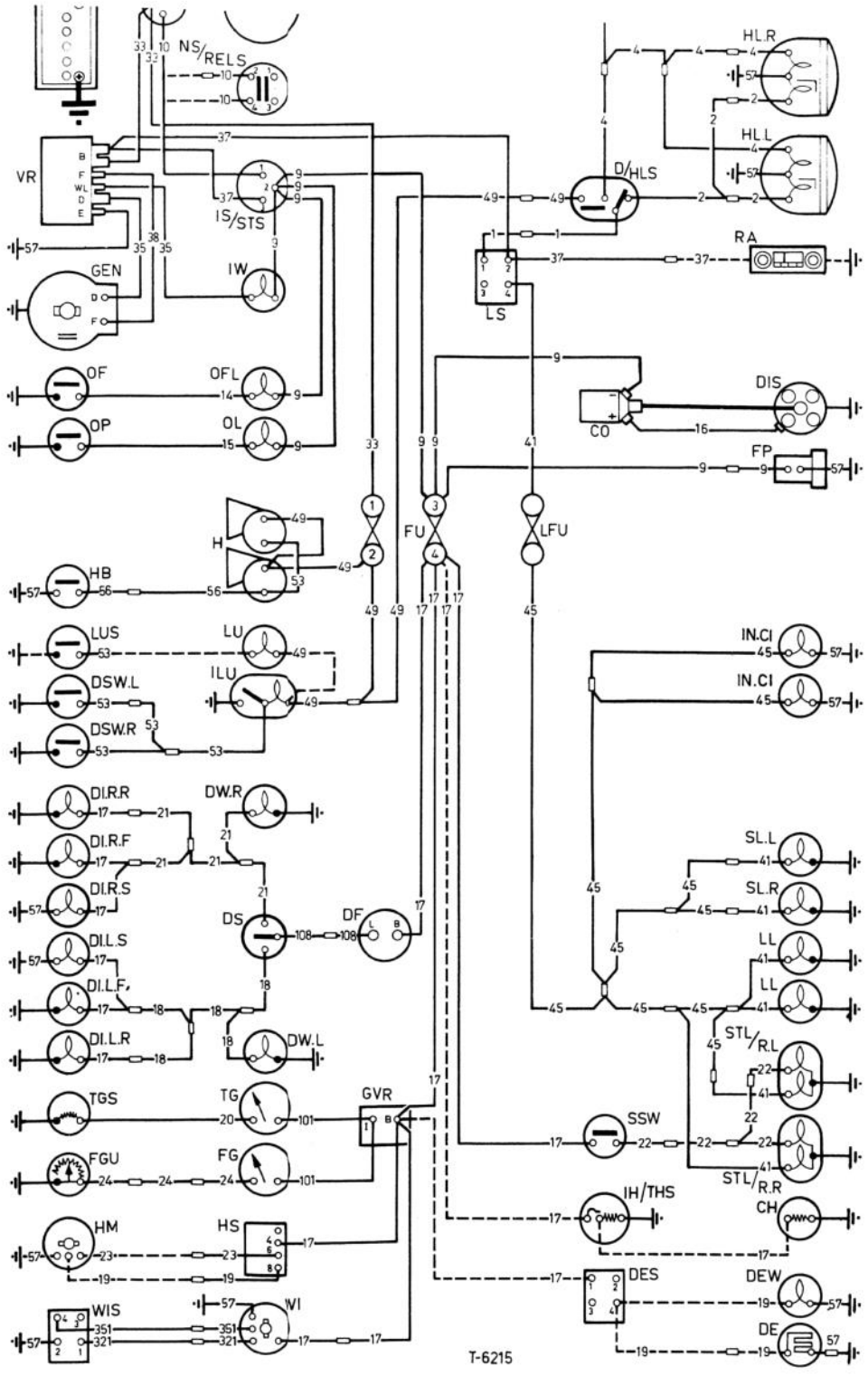

Fig. 71. Wiring diagram, Austin/Morris 1300

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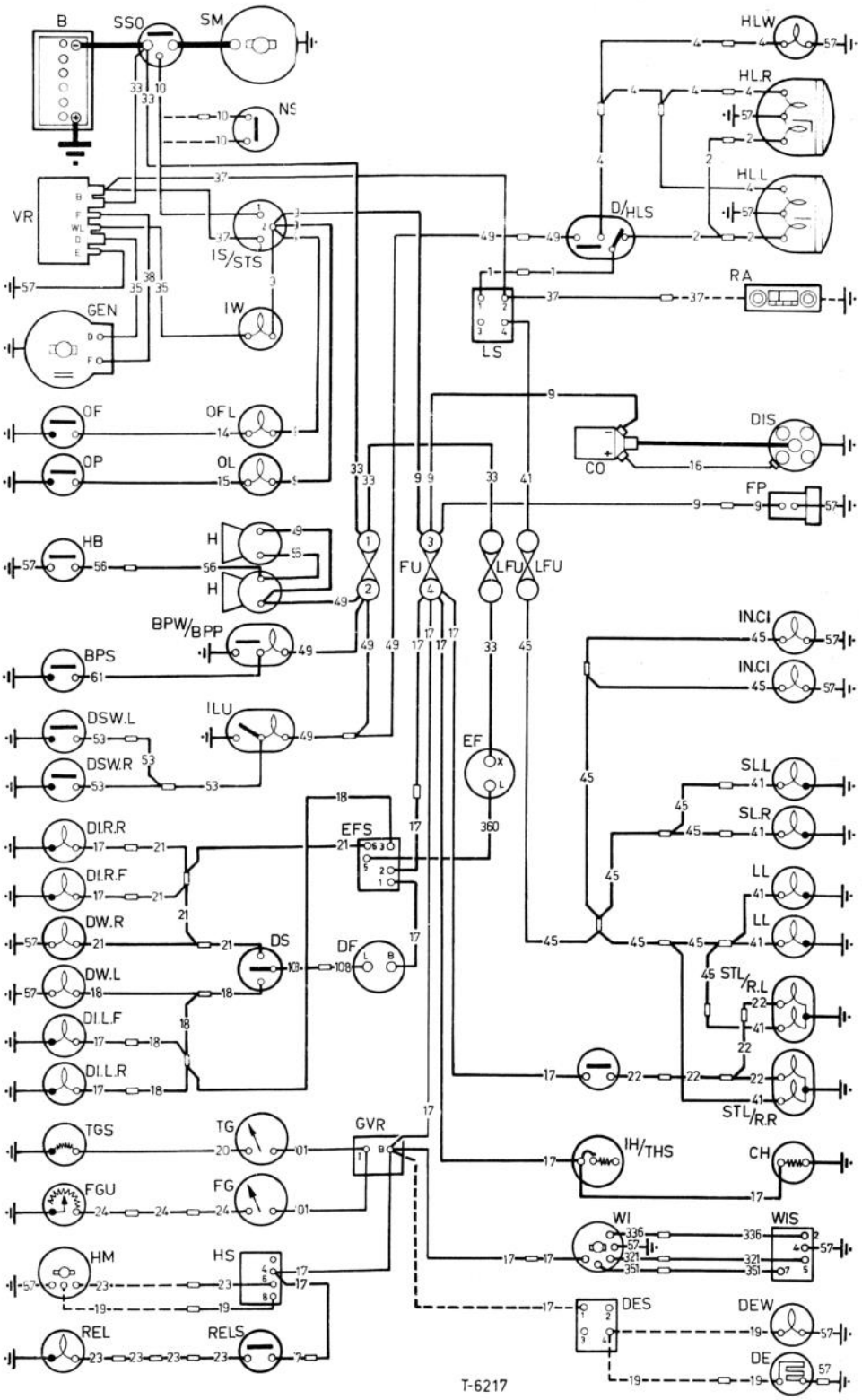

Fig. 72. Wiring diagram, Austin America

G

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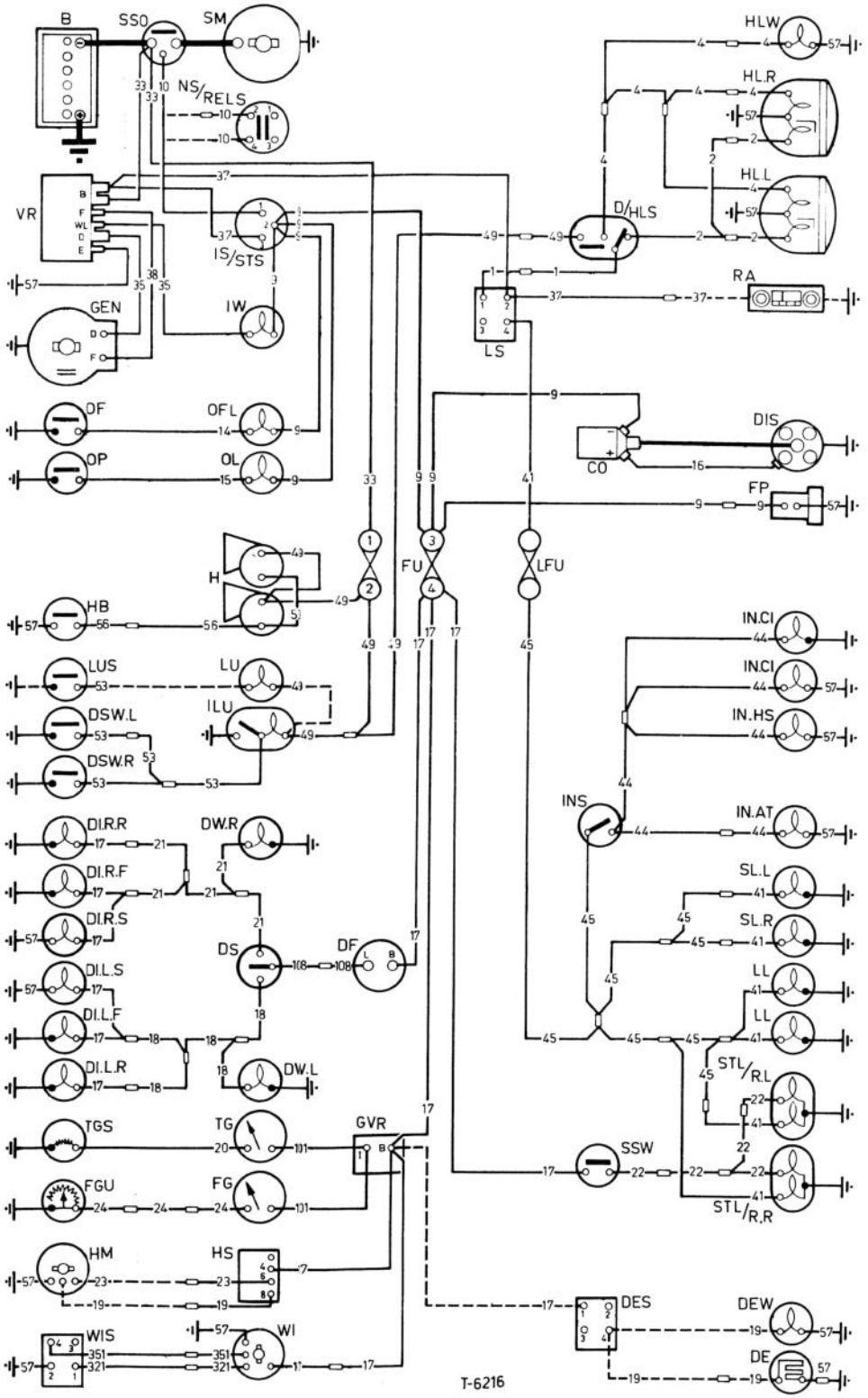

Fig. 73. Wiring diagram, MG/Wolseley 1100 Mk 11 and 1300 Mk 1 and Wolseley 1300 Mk 11

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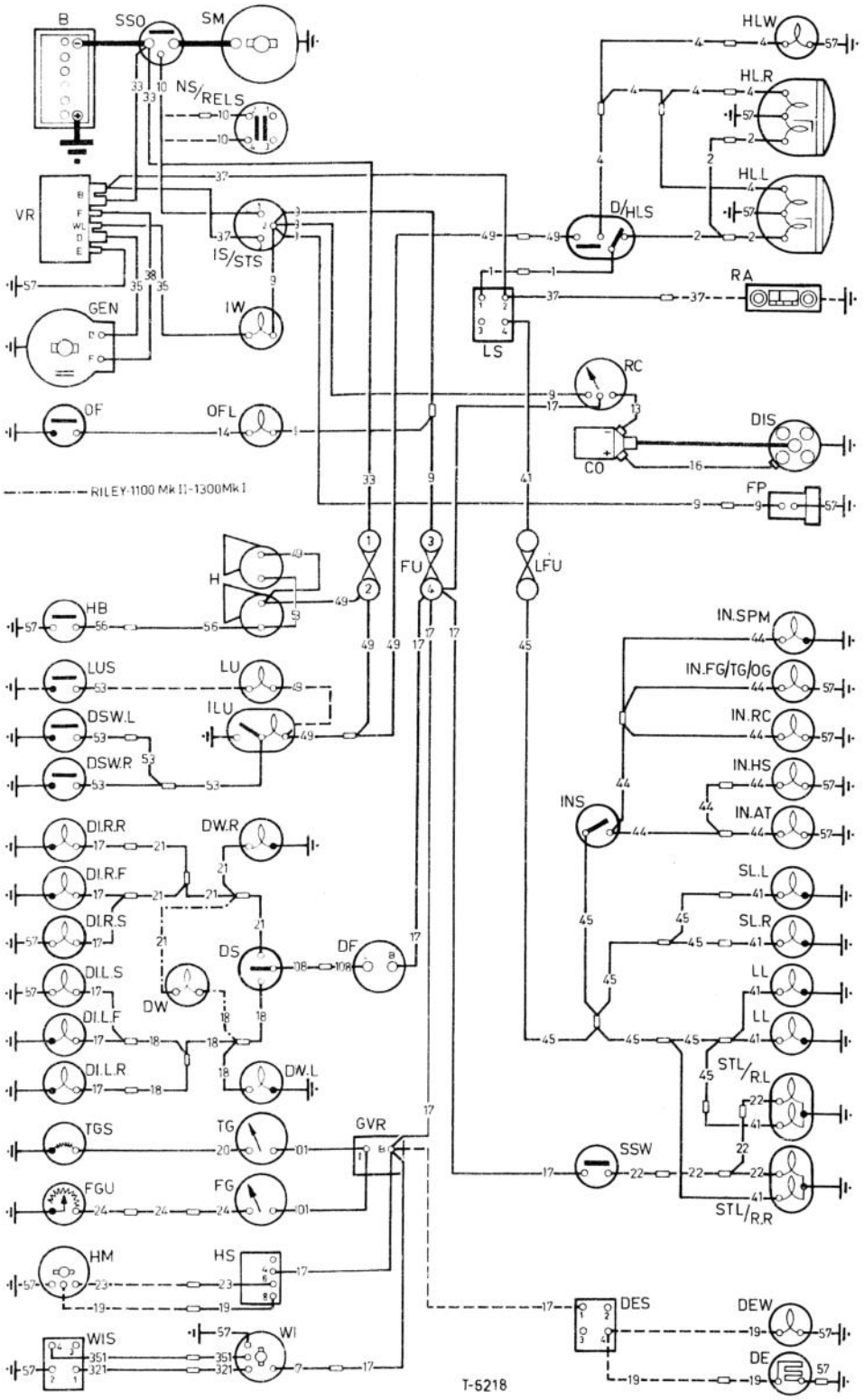

Fig. 74. Wiring diagram, Riley Kestrel 1100 Mk 11 and 1300 Mk 1, MG/Riley Kestrel 1300 Mk 11

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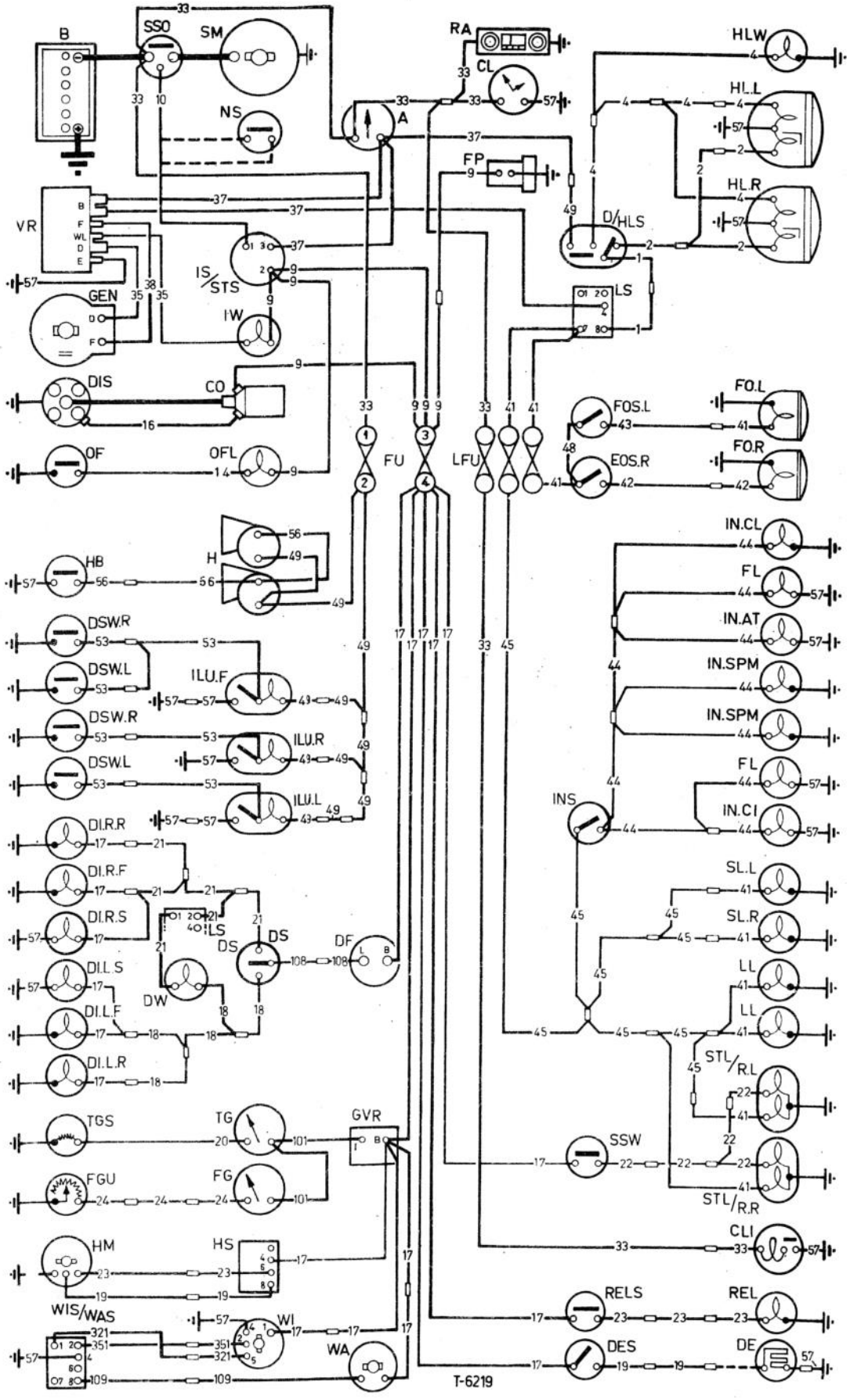

Fig. 75. Wiring diagram, Vanden Plas Princess 1100 Mk 1 and 1300

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Windscreen wiper

Removal (motor, gearbox and wheelboxes)
Disconnect the wiper arms, the electrical connections from the motor and the outer casing from the gearbox housing. Remove the setscrews securing the motor to the radiator valance and remove the motor and the cable rack. Remove the facia panel.

On all Models except Austin/Morris 1100 Mk II and 1300 models, remove the L.H. demister duct. Remove the nut, bush and washer from the front of each wheelbox and withdraw each wheelbox as an assembly.

On Austin/Morris De-Luxe 1100 Mk II and 1300 models, remove all the heater and fresh air vents and then follow the instructions detailed in the preceding paragraph.

On Austin/Morris Super De-Luxe 1100 Mk II and 1300 models, drop the steering column and remove the facia centre support. Remove the demister ducts, the wheelbox driving spindle retaining nuts and the outer casing grommet and withdraw each wheelbox/outer casing assembly.

Reinstallation is a reversal of the removal procedure; however, care should be taken to ensure that the wheelboxes are correctly lined-up and that the cable rack engages the gear and spindle assemblies.

Dismantling the motor
Remove the gearbox cover, withdraw the connectors and the through-bolts at the commutator end-bracket and remove this bracket from the yoke. Remove the brush gear as a unit; note the position of the brushes in order that they may be installed in their original setting on the commutator. If necessary, remove the yoke for gaining access to the armature and field coils. If necessary, the field coils may be removed by unscrewing the pole-piece-to-yoke securing screws. Press out the pole-piece complete with the field coil, marking the pole-piece so that it can be replaced in its correct position; finally, press the pole-piece out of the field coil.

Dismantling the gearbox
Remove the circlip and washer and withdraw the drive crank and the cable rack assembly. Remove the circlip and washer from the final-gear shaft at the bottom of the gearbox. Remove the worm drive and the armature. Clean and inspect all parts, replacing those that are worn.

Reassembly
Reassembly is a reversal of the dismantling procedure. Note that the following parts should be lubricated with engine oil SAE 20: the armature shaft (commutator end), the felt lubricator wick in the gearbox and the armature bearings; these should be immersed in engine oil SAE 20 for 24 hours prior to assembly.

Headlamp aiming procedure: The headlamps can be adjusted by means of vertical and horizontal adjusting screws, which are accessible after removing the headlamp outer rim.

Lamp bulb replacement

Headlamps

Sealed beam, U.K.
Release the retaining screw at the bottom of the the rim and withdraw the rim.

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Remove the inner rim retaining screws, disconnect the three-pin sealed-beam socket and withdraw the sealed-beam unit.

Reinstallation is a reversal of the removal procedure.

Sealed beam, North America

Release the retaining screw at the bottom of the outer rim and detach the rim. Loosen the three Phillips retaining screws, turn the headlamp rim anti-clockwise and carefully withdraw the light unit; detach the three pin socket. Reinstallation is a reversal of the removal procedure.

Replaceable bulb type

Release the retaining screw at the bottom of the outer rim and withdraw the rim. Remove the rubber dust ring, press the light unit against the tension of the three springs at the same time turning it in an anti-clockwise direction; the light assembly can now be withdrawn to allow access to the bulb. Reinstallation is a reversal of the removal procedure.

Side-lamp and front direction indicator lamp bulbs

Access is gained after removing the lens cover.

Tail, stop and direction indicator lamp bulbs

Access is gained, from inside the luggage compartment, through the recess in the rear wing valance. On MG and Wolseley models it will be necessary to first remove the luggage compartment floor and side trim. On certain later models, access is gained simply by removing two screws and withdrawing the lens cover.

Rear number-plate lamp bulb

Access to the bulb (two bulbs on Austin, early Riley and Vanden Plas) is gained by removing the two retaining screws and withdrawing the lens cover. On Wolseley, Riley 1100 Mk II and 1300 Mk I and Austin America models twin lamps (also twin bulbs on Wolseley models) are fitted.

Interior lamp bulb(s)

Removal of the bulb(s) is effected by carefully squeezing off the plastic cover(s) and withdrawing each bulb from its retaining clips.

BODY

Window glass and regulator, removal and replacement

Two-door

Remove the internal door handle (or door lock remote control retainer), window regulator handle, door pull (or arm rest), door trim panel and door liners. After removing the door glass stop, lower the glass to the bottom of the door, prise out the outer weatherstrip and inner waist rail, remove the ventilator screw from the upper edge of the door and withdraw the quarter light assembly. Centre the lower control channel and withdraw the glass by turning it upwards and forwards. Remove the ten window-winding-mechanism screws and lift out the assembly.

Four-Door

Remove the internal door handle, window regulator handle, door pull (or arm rest) and door trim panel. Unscrew the window regulator retaining screws and regulator bracket retaining screws, detach the window regulator and lift out the glass clear of the regulator. Remove the window regulator and bracket assembly.

Replacement is a reversal of the removal procedure.

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Door locks, removal and replacement

Two-door (1100 Mk I) and four door

Remove the internal door handle, window regulator handle, door-pull and door trim panel. Remove the clip and detach the remote-control rod from the door lock. Remove the door-lock-to-door-panel setscrews and withdraw the door lock assembly.

Two-door (1100 Mk II and 1300)

Remove the window regulator handle, arm rest, door-lock remote control retainer, door trim panel and door liners. Remove the remote control rod retaining clips, the anti-rattle clips and the four retaining screws and lift out the remote control assembly. Remove the two push button retaining clips and withdraw the push button assembly. Lift out the door lock assembly after releasing the retaining screws.

Replacement is a reversal of the removal procedure.

Technical Specifications

NOTE: Unless otherwise stated, the following specifications apply to all models.

ENGINE

General data

Engine designation	1100 (single-carburettor)	1100 (twin-carburettor)	1300 (single-carburettor)	1300 (twin-carburettor)
Engine type	4 cyl., 4-stroke, in-line, petrol			
Valve arrangement	Overhead, push-rod operated			
Bore (in.)	2.543		2.78	
(mm.)	64.58		70.61	
Stroke (in.)	3.296		3.2	
(mm.)	83.72		81.23	
Cubic capacity				
(cu. in.)	67.0		77.8	
(cc)	1098		1274.86	
Compression ratio				
(high)	8.5:1	8.9:1	8.8:1	9.75:1*
(low)	7.5:1	8.1:1	8.0:1	8.0:1(except MG and Riley Mk II models)
(automatic)	8.9:1		8.8:1	9.75:1*
Firing order	1, 3, 4, 2			
Location of No. 1 cylinder	Next to radiator			
Idling speed (rpm)	550† (650 automatic)			

*8.8:1 on Vanden Plas and Wolseley and Mk I MG and Riley †850 on Austin America

Performance data

Max. bhp at rpm (net) high CR	48/5100	55/5500	58/5250	65/5750 (70/6000 on Mk II MG and Riley)
low CR	—	—	—	—
automatic	56/5500		58/5250	62/5250 (except Mk II MG and Riley Models)

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Performance data

Engine designation				
Max. torque lb ft. at rpm (net) high CR	60/2500	61/2750	69/2500	70.5/3000 (74/3250 on Mk II MG and Riley Models)
low CR	57/3000	60/2750	—	—
automatic	61/2000		69/2500	—

Cylinder head

Valve guide length'	1100 engines	1.531 in.
	1300 engines	1.6875 in. (inlet) 1.8437 in. (exhaust)

Valves

Valve head diameter,	1100 engines	inlet	1.151–1.156 in.
			1.213–1.218 in. (later twin-carburettor engines)
		exhaust	1.000–1.005 in.
	1300 engines	inlet	1.307–1.312 in. (1.401–1.406 in. on Mk II MG and Riley models)
		exhaust	1.515–1.565 in.
Valve stem diameter, inlet			0.2793–0.2798 in.
exhaust			0.2788–0.2793 in.
Valve stem, radial clearance in guide, 1100 engines inlet			0.0015–0.0025 in.
exhaust			0.002–0.003 in.
1300 inlet and exhaust			0.0015–0.0025 in.
Valve lift 1100 engines			0.312 in.
1300 engines			0.318 in.

Valve seats

Replacement valve seat inserts interference fit	0.0025–0.0045 in.
Valve seat angle	45°
Valve seat machining dimensions	see Fig. 27.

Valve springs

single

Uncompressed length, 1100 engines, inlet and exhaust	1.750 in.
1300 engines, inlet and exhaust	1.950 in.
Number of effective coils	4½
Spring tension, 1100 engines, inlet and exhaust, valve open	85 lb.
valve closed	52.5 lb.
1300 engines inlet and exhaust at fitted length	79.5 lb.
at top of lift	124 lb.

twin	*inner*	*outer*
Uncompressed length, 1100 engines, inlet and exhaust	1.672 in.	1.750 in.
1300 engines, inlet and exhaust	1.703 in.	1.828 in.
Number of effective coils,	6½	4½

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Spring tension, 1100 engines, inlet and exhaust valve open	30 lb.	88 lb.
valve closed	18 lb.	52 lb.
Spring tension, 1300, inlet and exhaust at fitted length	25 lb.	51 lb.
at top of lift	44 lb.	87 lb.

Valve rockers and tappets

Valve rocker-bush bore (reamed to size)	0.5630–0.5635 in.
Valve tappet type, 1100 engines	barrel
1300 engines	bucket
outside diameter, 1100 engines	0.812 in.
1300 engines	0.81125–0.81175 in.
length, 1100 engines	1.5 in.
1300 engines	1.495–1.505 in.
Valve rocker clearance (cold)	0.012 in.

Valve timing

Timing clearance	0.021 in.
Inlet opens	5° BTDC
Inlet closes	45° ABDC
Exhaust opens	51° BBDC
Exhaust closes	21° ATDC

Cylinder block

Ground bore in cylinder block for fitting new liners, 1100 engines	2.64075–2.64125 in.
Outer diameter of liner, 1100 engines	2.64325–2.64400 in.
Interference fit of liner, in bore, 1100 engines	0.002–0.00325 in.
Finishing dimension of installed liner, 1100 engines	2.542–2.5435 in.

Pistons

Type	aluminium, solid skirt (dished crown on 1300 engines)
Piston clearance, bottom of skirt, 1100 engines	0.0005–0.0011 in.
1300 engines	0.0015–0.0021 in.
top of skirt, 1100 engines	0.0021–0.0037 in.
1300 engines	0.0029–0.0037 in.
Available oversizes	+0.010, 0.020 in.

Pistons	*Suitable bore size*	
	1100 engines	*1300 engines*
Standard	2.542–2.5435 in.	2.7800–2.7803 in.
0.010 in. oversize	2.5524–2.5547 in.	2.7900–2.7903 in.
0.020 in. oversize	2.5624–2.5647 in.	2.8000–2.8003 in.

Piston rings

Top ring, material	chrome faced
type	internally chamfered
width, 1100 engines	0.062–0.0625 in.
1300 engines	0.0615–0.0625 in.
ring-to-groove clearance, 1100 engines	0.002–0.004 in.
1300 engines	0.0015–0.0035 in.
ring gap, when fitted, 1100 engines	0.007–0.012 in.
1300 engines	0.011–0.016 in.

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Second and third compression rings, material	cast iron
type	tapered
width	0.0615–0.0625 in.
ring-to-groove clearance, 1100 engines	0.002–0.004 in.
1300 engines	0.0015–0.0035 in.
ring gap, when fitted, 1100 engines	0.007–0.012 in.
1300 engines	0.008–0.013 in.
Oil control ring, early 1100 engines	slotted scraper
later 1100 engines and 1300	Duaflex 61
early 1100 engines, width	0.124–0.125 in.
thickness	0.106–0.112 in.
fitted gap	0.007–0.012 in.
clearance in groove	0.0015–0.0035 in.
later 1100 engines, rails fitted, gap	0.012–0.028 in.
side springs fitted, gap	0.100–0.150 in.
1300 engines, fitted gap	0.012–0.028 in.

Piston pins

Type, 1100 engines	fully floating, retained by end circlips
1300 engines	interference fit
Outer diameter, 1100 engines	0.6245–0.6247 in.
1300 engines	0.8123–0.8125 in.
Fit in connecting rod, 1300 engines	0.0008–0.0015 in. (interference)

Connecting rods

Length between centres, 1100 engines	5.75 in.
1300 engines	5.748–5.792 in.

Connecting rod bearings

Type, 1100 engines	steel-backed, lead-bronze, lead-indium-plated
1300 engines	steel-backed, copper-lead-indium-plated
Bearing diametrical clearance	0.001–0.0025 in.
Crankpin end-float, 1100 engines	0.008–0.012 in.
1300 engines	0.006–0.010 in.

Crankshaft

Main journal diameter, 1100 engines	1.7505–1.751 in.
1300 engines	2.0005–2.0010 in.
Crankpin journal diameter, 1100 engines	1.6254–1.6259 in.
1300 engines (12H)	1.7504–1.7509 in.
1300 engines (12G)	1.6254–1.626 in.
Crankshaft end-float	0.002–0.003 in.
Crankshaft end-thrust	taken with thrust washers at centre main bearing

Main Bearings

Type, 1100 engines	steel-backed, lead-bronze, lead-indium-plated
1300 engines	thin wall, steel-backed copper-lead—indium
Length, 1100 engines	1.0625 in.
1300 engines	0.975–0.985 in.
Bearing clearance	0.001–0.0027 in.
Available undersizes	0.010 (1100 only) 0.020, 0.030 (1100 only) and 0.040 in.

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Camshaft

Journal diameter, front	1.6655–1.6660 in.
centre	1.62275–1.62325 in.
rear	1.37275–1.3735 in.
End-float	0.003–0.007 in.
End-thrust	taken on locating plate
Bearing type	steel-backed, white-metal lined
Bearing inner diameter, front	1.6670–1.6675 in.
centre	1.62425–1.62475 in.
rear	1.3745–1.3750 in.
Bearing clearance	0.001–0.002 in.

Oil pump

Type	internal gear or vane
Relief valve spring, free length	2.86 in.
fitted length	2.156 in.
Relief valve opens at	60 lb./sq. in. (50 lb./sq. in. on 1300 engines)
Oil pressure, running	60 lb./sq. in. (70 lb./sq. in. on 1300 engines)
idling	15 lb./sq. in.
Grade of oil, oil filter type and engine sump capacity	see 'Lubrication and Maintenance'.

Ignition

Firing order	1, 3, 4, 2
Coil type	Lucas LA.12
Resistance at 20°C (68°F) primary windings	3.2–3.4. ohms
Distributor, type	Lucas 25D4
rotation	anti-clockwise
Dwell angle	60° ± 3°

Static ignition timing

1100 engines (manual transmission)	3°BTDC (single carburettor)
	5° BTDC (twin carburettor)
1100 engines (automatic transmission)	
distributor No. 41134 A	7° BTDC
No. 41181 A	5° BTDC
1300 engines (Mk I and Wolseley Mk II models),	
distributor No. 41214 or 41257	8° BTDC
No. 41134 or 41251	5° BTDC
(MG and Riley Mk II models),	
distributor No. 41238	3° BTDC

Stroboscopic ignition timing (at 600 rpm):

1100 engines (manual transmission)	5° BTDC (single carburettor)
	7° BTDC (twin carburettor)
1100 engines (automatic transmission)	
distributor No. 41134 A	10° BTDC
No. 41181 A	8° BTDC
1300 engines* (Mk I and Vanden Plas and Wolseley Mk II models),	
distributor No. 41214 or 41257	10° BTDC
No. 41134 or 41251	8° BTDC
(MG and Riley Mk II models), distributor No. 41238	5° BTDC

*Austin America 3° BTDC at 1000 rpm (vacuum line disconnected).

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Distributor test data

1100 single carburettor HC engine
(prior to engine number 10 AMW/Ta/H559242)

Automatic advance (crankshaft degrees and rpm)
starts at 300 rpm
ends at 30–34° at 5500 rpm.
(after engine number 10AMW/Ta/H559241)
starts at 600 rpm
ends at 30–34° at 5400 rpm, (23–27° at 4800 rpm)*

Vacuum advance (crankshaft degrees)
14° at 13 in. Hg maximum

14° (24°)* at 13 in. Hg maximum

1100 single-carburettor LC engine

Automatic advance

Starts at 700 rpm
ends at 32–36° at 5600 rpm.

Vacuum advance (crankshaft degrees)
20° at 17 in. Hg maximum

1100 twin-carburettor engines

Automatic advance (crankshaft degrees and rpm).
starts at 700 rpm
ends at 28–32° at 5000 rpm.

Vacuum advance (crankshaft degrees)
14° at 7 in. Hg maximum

1300 single carburettor engines
Automatic advance starts 300 rpm
Maximum advance 18–22° at 5000 rpm
Deceleration check (vacuum pipe disconnected)
11–15° at 2800 rpm; 6–10° at 2000 rpm; 4–8° at 1600 rpm

Vacuum advance (crankshaft degrees)
20° at 10 in. Hg maximum

1300 (except MG and Riley Mk II and models), twin-carburettor

Automatic advance (crankshaft degrees and rpm)
starts at 600 rpm (300 rpm)*
Maximum at 26–30° at 5500 rpm
(18–22° at 4000 rpm)*

Vacuum advance (crankshaft degrees)
20° at 22 in. Hg maximum

1300 (MG and Riley Mk II models), twin-carburettor

Automatic advance (crankshaft degrees and rpm)
starts at 600 rpm
Maximum at 22–26° at 6000 rpm
*Automatic transmission models in brackets.

Vacuum advance (crankshaft degrees)
12–16° at 18 in. Hg maximum

Condenser capacity	0.18–0.24 microfarad
Spark plugs 1100 engines	Champion N5
1300 engines	Champion N9Y
Electrode gap	0.25 in.

Fuel system

Fuel pump type	SU electric; type SP (early 1100 engines only), AUF 200 or AUF 20(
Capacity	56 pints per hour
Delivery pressure	2.5–3 lb./sq. in.

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Carburettor(s)

Make and type	SU HS.2 (HS4 on 1100 automatic and 1300 single carburettor engines); single or twin according to model
Choke diameter, HS2	1.25 in.
HS4	1.5 in.
Jet size	0.90 in.

	single	*twin*	*automatic*
Needles, 1100 engines standard	AN	D3	DL
weak mixture	EB	GV	ED
rich mixture	H6	D6	BQ
1300 engines, standard	DZ	EB	DZ
weak mixture	CF	GG	CF
rich mixture	BQ	M	BQ
Piston spring colour, single carburettor	red		
twin carburettor	blue		

Cooling system

Capacity	see 'Lubrication and Maintenance'.
Opening pressure of radiator filler cap	13 lb./sq. in.
Thermostat, type	wax
settings	82°C (180°F) standard 74°C (165°F) hot climates 88°C (190°F) cold climates
Water pump type	impeller
Fan belt tension	$\frac{1}{2}$ in. movement midway between water pump and generator/ alternator pulleys

TRANSMISSION

Clutch

Type	s.d.p. coil spring type (early 1100 models only) or diaphragm spring type
Coil-spring type	
Driven plate diameter	7.125 in.
Number of springs	6
Colour	black/white spot
Friction material	wound yarn
Diaphragm spring type	
Diameter	7.125 in.
Colour	green

Gearbox/final drive (manual)

Type, early 1100 models	4-speed, synchromesh on top three gears
later 1100 and 1300 models	4-speed, all-synchromesh
Ratios to 1, 1100 models, g/b	1.000, 1.412, 2.172, 3.627, R3.627
overall	4.133, 5.83, 8.98, 14.99, R14.99
early 1100 models (1300 engine) g/b	1.000, 1.426, 2.420, 3.829, R3.829
overall	3.44, 4.91, 8.3, 13.16, R13.16
later 1100 models (1300 engine) g/b	1.000, 1.412, 2.172, 3.627, R3.627
overall	3.65, 5.16, 7.92, 13.21, R13.21
1300 Mk I models g/b	1.000, 1.43, 2.22, 3.52, R3.54
overall	3.65, 5.22, 8.08, 12.85, R12.92
1300 Mk II models g/b, MG and Riley	1.000, 1.35, 2.07, 3.30, R3.35

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Wolseley	1.000, 1.43, 2.22, 3.52, R3.54
overall, MG and Riley	3.65, 4.93, 7.57, 12.04, R12.22
Wolseley	3.65, 5.23, 8.10, 12.89, R12.93
Speedometer drive/driven gear ratio	6/17
Cluster gear end-float	0.002–0.006 in.
Intermediate pinion end-float	0.004–0.007 in.
Second/third gear end-float	0.0035–0.0055 in.
Final drive ratios to 1, 1100 models	4.133 (manual), 3.48 (early automatic) or 3.27 (later automatic)
Early 1100 (1300 engine) models	3.44 (manual)
Later 1100 (1300 engine) and 1300 models	3.65 (manual) or 3.76 (automatic)
Differential bearing pre-load, earlier models	0.001–0.002 in. (shim adjustment)
later models	0.004 in. (housing/flange gap 0.011 in.)

CHASSIS

Front and rear suspension

Front	levers of unequal length / trailing arms — 'Hydrolastic' displacers interconnected front to rear
Rear	
Fluid pressure, all 1100 and 1300 (manual) models except MG (Normalair) and Vanden Plas	205 lb./sq. in.
MG (Normalair)	220 lb./sq. in.
Vanden Plas	230 lb./sq. in.
all 1300 (automatic) models except Vanden Plas	225 lb./sq. in.
Vanden Plas 1300	250 lb./sq. in.
Front wheel alignment (unladen weight) caster	$5\frac{1}{2}°$ positive $\pm\frac{1}{2}°$
camber	$\frac{3}{4}°$ positive $\pm$ 1°
kingpin inclination	10°
toe-out	$\frac{1}{16}$ in.
steering lock angle of outer wheel with inner wheel at 20°	19°
Rear wheel alignment, toe-out	$\frac{1}{8}$ in.
wheel camber	1° positive

Steering gear

Type	rack and pinion
Pinion shaft bearing adjustment	0.001–0.003 in. pre-load shims
Yoke adjustment	0.001–0.003 in. pre-load (early type), 0.002–0.005 in. pre-load (later type)—shims

Brakes

Type, 1100 Mk I and early 1100 Mk II (manual) models	disc (fixed caliper type) front; leading and trailing shoe rear
later 1100 Mk II (manual) 1100 Mk II (automatic) and 1300 models	disc (swinging caliper type) front; leading and trailing shoe rear
Front brakes, disc diameter	8 in. (8.4 in. swinging caliper type)
total pad area	16.5 sq. in. (18.6 sq. in. swinging caliper type)

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total swept area	133.2 sq. in. (148 sq. in. swinging caliper type)
minimum pad thickness	$\frac{1}{16}$ in.
Rear brakes, drum diameter	8 in.
linings	7.68 × 1.25 × 0.094 in.
total swept area	63 sq. in.
Handbrake	mechanical (cable operated) on rear wheels only

ELECTRICAL EQUIPMENT

(see engine for ignition system)

Battery

Type	12 volt, positive earth
Specific gravity of electrolyte, below 80°F (27°C), fully charged	1.270–1.290
discharged	1.110–1.130
Electrolyte capacity (per cell)	$\frac{2}{3}$ Imp pint ($\frac{4}{5}$ US pint)

Generator

Type	Lucas C40
Maximum output	22 amps
Minimum permissible brush length	$\frac{9}{32}$ in.
Brush spring tension	18–24 oz. (new brushes) not below 15 oz. (used brushes)

Control Box

Type	Lucas RB 340
Cut-out, cut-in voltage	12.6–13.4 volts
drop-off voltage	9.3–11.2 volts
reverse current	8.0 amps (maximum)
armature-to-core gap	0.035–0.045 in.
follow-through of moving contact	0.010–0.020 in.
Current regulator, on-load setting	maximum rated generator output
armature-to-core gap	0.056 in. (0.045 in. on early type regulators with copper shims on the regulator head)
Voltage regulator (at 1500 rpm generator speed), open circuit setting*	14.2–14.8 volts
armature to core gap	0.056 in. (0.045 in. on early type regulators with copper shims on the regulator head)

*at 20°C (68°F). For ambient temperatures other than this, the following allowances should be made to the above setting: subtract 0.2 volts for every 10°C (18°F) above and add 0.2 volts for every 10°C below this temperature.

Starter Motor

Type	Lucas M 35 G
Brush spring tension	15–25 oz.

Lamp Bulbs

	Watts
Headlamps, (L.H.D. Europe)	45/40
(L.H.D. except North America and Europe)	50/40 (42/36 on early models)
Sidelamps, except Vanden Plas	6
Vanden Plas	5
Direction indicator lamps (front and rear)	21
Tail and stop lamps	6/21

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Number plate lamps	6
Panel and warning lights	2.2
Interior lamp	6

TIGHTENING TORQUES (lb. ft.)

Engine/transmission	
Cylinder head nuts	40 (50 on 1300 engines)
Main bearing cap bolts	60
Connecting rod big-end bolts	35
Flywheel centre bolt	110–115
Rocker bracket nuts	25
Inlet/exhaust manifold nuts	15
Timing cover bolts	6 (14 for $\frac{5}{16}$ in. UNF bolts)
Crankshaft pulley nut	70
Water pump to cylinder block	17
Oil pump	9
Transmission case to crankcase, studs	8 ($\frac{3}{8}$ in. UNC), 6 ($\frac{5}{16}$ in. UNC)
stud nuts	25 ($\frac{3}{8}$ in. UNF), 18 ($\frac{5}{16}$ in. UNF)
Flywheel housing bolts and nuts	18
Mainshaft nut	150
Final drive/differential	
Driven gear to differential cage	55–60
Drive shaft, flange nuts	70
'U' bolt nuts	10–12.5
End cover bolts	18
Drain plug	40–50
Suspension and steering gear	
Front hub nut (drive shaft)	150 (and align with next split pin hole)
Front suspension upper and lower arm pivot pin nuts	35–40
Rear suspension, stub axle nut	60 (and align with next split pin hole)
anti-roll bar bolts	70
Steering lever, ball joint nut	25
hub bolts	30–35
Steering knuckle, ball pin retainer	70
ball pin top and bottom nuts	35–40
Steering wheel nut	50
Brakes	
Caliper to swivel hub	45–50
Caliper pivot pin screws (1100 Mk II and 1300 models only)	65–80

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GENERAL FAULT FINDING CHART FOR PETROL ENGINES

Some items in this chart are not applicable to *every* make of petrol engine

Engine will not start

A. Starter does not crank engine	
Battery run down	*Recharge; replace if defective*
Battery posts and terminals loose or corroded	*Clean and tighten. If badly corroded, soak with water to facilitate removal and avoid damage to the battery posts*
Faulty starter switch or solenoid, if fitted; broken battery cable or loose connection	*Check wires and cables; check solenoid and switch, replace if defective*
Starter motor defective	*Repair or replace*
Starter drive stuck (starter will run, but does not crank engine)	*Clean and if necessary repair or replace*
Starter drive pinion jammed with starter ring gear	*Free by rotating squared end of starter spindle with a spanner*
B. Starter cranks engine slowly	
Battery partly run down	*Recharge; replace if defective*
Loose or corroded connections	*Clean and tighten*
Faulty starter switch or solenoid; partly broken cable or loose connection	*Check wires and cables; check solenoid and switch, replace if necessary*
Starter motor defective	*Repair or replace*
C. Starter cranks engine, but engine will not start	
Trouble in ignition system:	
No spark at plugs:	
Moisture on spark plugs, ignition distributor, coil and wires (this trouble often occurs after parking overnight in foggy or rainy weather)	*Clean and dry. Avoid recurrence by coating wires, distributor rotor, cap, coil and spark plug insulators with moisture-proof lacquer*
Spark plugs flooded, due to excessive use of choke	*Start engine on full throttle. If this does not help, clean plugs. With plugs removed, turn over the crankshaft a few times to blow the accumulated fuel from the cylinders*

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Spark plugs oiled up	*Clean; if necessary replace*
Spark plug insulator cracked	*Replace*
Spark plug gap too wide or too close	*Reset gap*
No spark at distributor:	
Loose, broken or shorted low-tension lead between coil and/or inside distributor	*Check and tighten; also check internal leads in distributor. These leads sometimes break inside their insulation, and the break is not always visible. Pull carefully on one end; a broken lead will stretch*
Cracked rotor or distributor cap	*Replace*
Contact breaker points dirty, worn or maladjusted	*Clean and adjust; if necessary replace*
Carbon brush in distributor cap not making contact	*Free; if necessary replace*
Faulty condenser	*Replace*
No spark at coil:	
High tension lead loose or broken	*Tighten or replace*
Broken or loose low-tension leads or faulty ignition switch	*Check wiring, repair or replace; check switch, replace if defective*

D. Starter cranks engine, but engine will not start	
Trouble in fuel system:	
No petrol in carburettor:	
Empty fuel tank	*Fill-up. If necessary, check and repair or replace fuel gauge*
Obstructed or damaged fuel pipe	*Clean; if necessary repair or replace*
Air leak in petrol line	*Check and repair or replace. Pay special attention to flexible fuel line (if fitted). If flexible fuel line is porous, a temporary 'get-you-home' repair can often be made securely wrapping the line with friction tape or rubbing with hard soap*
Fuel filter clogged	*Clean and refit with new gasket. Always carry a spare gasket and a glass filter bowl, if so equipped*

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Fuel pump defective	*Repair or replace. If electric pump does not function, lightly tap pump housing until ticking resumes*
Petrol in carburettor:	
Jets clogged	*Clean; blow out with air (never use wire to clean jets)*
Float needle stuck	*Clean or replace*
Carburettor flooded	*Clean float needle valve; if necessary replace. If this trouble persists, check fuel pump pressure*
Choke control faulty	*Repair or replace*
Air leak at inlet manifold or carburettor base	*Check nuts and bolts for tightness; if necessary replace gaskets*
Water or dirt in carburettor	*Clean. If this trouble persists, check rubber hose in fuel tank filler neck for damage or looseness, causing water to enter tank*

NOTE: *If ignition system and carburettor are in order, yet the engine will not start, check timing*

Engine starts but does not run properly

E. Engine misfires	
Ignition trouble	
Spark plug or coil leads loose or damaged	*Tighten; replace if necessary*
Incorrect spark plug gap	*Regap*
Cracked spark plug insulator	*Replace faulty spark plug*
Spark plug oiled up	*Clean, if necessary replace with spark plug of correct type. If trouble persists, check for mechanical trouble*
Cracked distributor cap	*Replace*
Loose connection in primary circuit	*Check and repair. Also check, and if necessary replace, ignition switch. In rare cases the ammeter has been found to be the cause of this trouble, due to faulty internal connection*
Distributor otherwise faulty	*See* **C**
Trouble in fuel system	*See* **D**

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Mechanical trouble:	
Incorrect valve clearance	*Adjust*
Valve sticking	*Try to free by pouring a gum solvent of good quality into carburettor air intake; if not successful, dismantle and repair*
Valve spring broken	*Replace. Usually the valve concerned will have to be ground*
Worn piston, piston rings and cylinder or burnt valve; cylinder-head gasket blown	*Test compression; if too low, dismantle for repairs*
F. Engine starts and stops	
Trouble in ignition or fuel system:	*See* **C** *and* **D**
Obstructed exhaust system	*Check and repair or replace*
G. Engine runs on wide throttle only	
Idle jet clogged or mixture improperly adjusted	*Clean idle jet and/or idle air bleed; adjust*
Valve sticking or burnt; valve spring broken; other mechanical trouble	*Check and repair.*
H. Lack of power	
Ignition too far retarded or other ignition trouble	*Check and correct* (*See* **C**)
Obstructed exhaust system	*Dented exhaust pipe and/or muffler* *Dislocated baffle plate or muffler* *Replace*
Trouble in fuel system	*Check and correct* (*See* **D**)
Loss of compression	*Test compression; if found to be too low, check valve clearance. If valve clearance is properly adjusted and compression is still low, check for other mechanical trouble, such as burnt valves and/or worn pistons, rings and cylinders*
Dragging brakes	*Check and correct. Essentially this is not an engine trouble*

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I. Engine runs roughly	
Ignition timing incorrect	*Check and correct. Pay attention to possibly stuck advance mechanism, because the fixed advance may be correctly adjusted, yet the timing while running will be incorrect if the automatic advance is stuck*
Lean or rich mixture	*Check carburettor and fuel system, (see* **D**)
Improperly adjusted valve clearance	*Check and correct*
J. Engine knocks	
Ignition too far advanced	*Check and correct. Attend to possibly stuck advance mechanism, (see* **I**)
Excessive carbon deposit	*Decarbonize*
Loose bearings or pistons or other mechanical cause	*Check and repair*
K. Engine overheats	
Cooling system:	
Lack of water	*Top-up and check for leaks*
Fan belt loose or broken	*Check and adjust or replace*
Radiator clogged by insects	*Clean*
Cooling system clogged internally (in water-cooled engines)	*Clean with a cooling system cleaner of a reputable make and flush out according to maker's instructions. Inspect radiator hoses and replace if in bad condition*
Thermostat stuck or faulty	*Check and replace if necessary*
Ignition improperly timed	*Check and correct. Attend to possibly stuck advance mechanism*
Lean or rich mixture	*Check fuel system; (see* **D**)
Excessive carbon deposit	*Decarbonize*
Obstructed exhaust system	*Check and repair or replace*
Cylinder-head gasket of the incorrect type	*Replace*

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P. OLYSLAGER MOTOR MANUALS 101

BRITISH LEYLAND 1100/1300

AUSTIN

MG

MORRIS

RILEY KESTREL

VANDEN PLAS

- PRINCESS

WOLSELEY

Mk I and II models

from 1962