CITROËN
AFTER-SALE
TECHNICAL DEPARTMENT

REPAIR MANUAL N° 818

VOLUME 1

FEBRUARY 1975

CX VEHICLES

CHARACTERISTICS

ADJUSTMENTS

CHECKS

Manual 818-1

Printed in France

SOCIETE ANONYME AUTOMOBILES CITROEN
S.A. AU CAPITAL DE 600.000.000 F - Régie par les articles 118 à 150 de la loi sur les Sociétés Commerciales
R.C. PARIS B 642 050 199 - SIRET 642 050 199 - 00016
SIEGE SOCIAL 117 à 167, QUAI ANDRE CITROEN 75747 PARIS CEDEX 15 - TELEPHONE 578-61-61

HOW TO USE THE MANUAL

PRESENTATION

To facilitate the use of the manual, operations have been grouped in three volumes :

- Volume **1** contains :
  - the CHARACTERISTICS - ADJUSTMENTS - CHECKS

  This volume is essential for all workshops for repairs or overhauls.

- Volume **2** contains the operations usually carried out and concerning :
  - REMOVAL and FITTING
  - RECONDITIONING
  - ELECTRICAL, HEATING and AIR-CONDITIONING SYSTEMS
  - BODYWORK

- Volume **3** deals with the CX Diesel.

The above volumes are sold separately. They are presented bound in dark red Fibrex with a « MULTO » type mechanism to facilitate the insertion of supplements or the extraction of a particular operation required by the workshop.

Supplement N° 1 to Manual 818-1 (CORR)

COMPOSITION

Every volume comprises :

- the list of operations contained in the volume

- these operations filed in numerical sequence

- the list of all the tools mentioned in the operations and the manufacturing drawings for special tools which are not sold but are intended to be manufactured by the workshop itself («MR» tools).

OPERATIONS

The sequence of operations has been devised in order to obtain the best standard of work in the shortest possible time.

The numbering of the operations is made up as follows :

a) The code letter for the car : « MA » for all CX vehicles except « Fuel Injection ». « MA-IE » for CX vehicles with « Fuel Injection ».

b) A number made up of three figures denoting the unit or its component.

c) A figure code designating the type of repair :

- **the figures 0 0 0 indicate the characteristics of the car**
- the figures 0 0 indicate the characteristics of the unit
- the figure 0 indicates checks and adjustments
- the figures 1, 4, 7 indicate removal or fitting
- the figures 2, 5, 8 indicate dismantling or reassembly and
- the figures 3, 6, 9 indicate reconditioning

The thumb-indexing which corresponds to the list of operations enables the particular operation to be found without difficulty.

TOOLING

Special tooling is denoted in the text by a number followed by the letter T.

The part-numbers inferior to the 6000 series concern tools already in use and common to vehicles previously introduced and to CX vehicles.
The 6000 series refers to tools specially designed for CX vehicles.

Additional tools of local manufacture are indicated in the text by a number preceded by the index MR : manufacturing drawings for these tools appear at the end of the particular volume filed in numerical order.

TIGHTENING TORQUES :

Torques are expressed in the following units :

- either in metres Newton (m.N) : the legal unit for measuring torque, with the corresponding amount in metre-kilogrammes (m.kg)
- or in decanewton-metres (da Nm) : 9.81 N m = 1 m.kg = 0.981 da Nm

The numbers corresponding to the torques are « rounded off »

Examples : 2 m.N = 0.2 m.kg
60 m.N = 6 m.kg

IMPORTANT : When a tightening torque figure is followed by the words « torque wrench », the operation must without fail be carried out with a torque wrench.

IMPORTANT : WITHOUT FAIL after each operation or group of operations, there is a chapter headed « TIGHTENING TORQUES »; the screws, nuts or studs which are **underlined** indicate that they are of a special grade : « SECURITY HARDWARE ». When refitting it is ESSENTIAL to use this type of HARDWARE, TO THE EXCLUSION OF ANY OTHER.

ADVISORY SERVICE

For all technical information concerning these vehicles, please contact :

The Service Department,
Citroën Cars Ltd.,
Mill St.,
Slough, Berks., GB. Tel. Slough 23808

or : DEPARTEMENT TECHNIQUE APRES-VENTE,
ASSISTANCE TECHNIQUE,
92000 NANTERRE - FRANCE - Tel. 204 40 00

LIST OF OPERATIONS
IN MANUAL 818-1
« CX Petrol » vehicles

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2 ➧
3 ➧

LIST OF OPERATIONS
IN MANUAL 818-1
« CX Petrol » vehicles

Operation number	DESCRIPTION
	GEARBOX and GEARBOX CONTROL ➧ 4
MA. 330-00	Characteristics and special features of the gearbox - Four-speed gearbox with pedal-operated clutch - Gearbox with torque converter - Draining and refilling the gearbox and the torque converter - Five-speed gearbox with pedal-operated clutch
MA. 344-0	Adjusting the gearbox control mechanism
	DRIVE SHAFTS ➧ 5
MA. 372-00	Characteristics and special features of the drive-shafts
	SOURCE AND RESERVE OF PRESSURE ➧ 6
MA. 390-00	Characteristics and special features of the source and reserve of pressure - hydraulic system
MA. 390-0	Checking the hydraulic components on the vehicle
	FRONT AXLE ➧ 7
MA. 410-00	Characteristics and special features of the front axle
MA. 410-0	Checking and adjusting the front axle : - Checking the camber - Checking and adjusting the castor angle - Checking and adjusting the wheel alignment - Checking and adjusting the steering geometry - Checking the steering for straight line deviation *(vehicles equipped with power steering)*
	REAR AXLE ➧ 8
MA. 420-00	Characteristics and special features of the rear axle
MA. 420-0	Checking and adjusting the rear axle
	SUSPENSION SYSTEM ➧ 9
MA. 430-00	Characteristics and special features of the suspension system
MA. 430-0	Checking and adjusting the suspension and its controls
MA. 434-0	Adjusting the anti-roll bar
	STEERING SYSTEM ➧ 10
MA. 440-00	Characteristics and special features of the steering system - Manual steering - Power steering with powered return
MA. 440-0	Checking and adjusting the steering *(see Op. MA. 410-0)*

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5 ➧
6 ➧
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LIST OF OPERATIONS
IN MANUAL 818-1
« CX Petrol » vehicles

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IDENTIFICATION OF ALL « CX » VEHICLES

SALOONS

Commercial symbol	Guarantee symbol	Official symbol	Engine type	French fiscal rating
CX 2000 *9-1974* →	MB	MA series MB	M 20/616	11 hp
CX 2200 *1-1975* → *7-1976* *Manual gearbox or torque converter*	MC	MA series MC	M 22/617	12 hp
CX 2200 Diesel *12-1975* →	MG	MA series MG	M 22/621	9 hp
CX « Prestige » *2-1976* →	MK	MA series MK	M 23/623	13 hp
CX 2400 *9-1976* → *Manual gearbox or torque converter*	MJ	MA series MJ	M 23/623	13 hp
CX 2400 GTI *5-1977* → *Manual 5-speed gearbox*	ME	MA series ME	M 23/622	13 hp

ESTATES AND AMBULANCES

Commercial symbol	Guarantee symbol	Official symbol	Engine type	French fiscal rating
CX 2000 *1-1976* →	MD	MA series MD	M 20/616	11 hp
CX 2200 Diesel *2-1976* →	MH	MA series MH	M 22/621	9 hp
CX 2400 *9-1976* →	MF	MA series MF	M 23/623	13 hp
* CX 2000 Ambulance *9-1976* →		MA series MD	M 20/616	11 hp
CX 2200 Ambulance Diesel *9-1976* →	MHA	MA series MH	M 22/621	9 hp
CX 2400 Ambulance *9-1976* →	MFA	MA series MF	M 23/623	13 hp

* *This vehicle is for export only.*

Supplement N° 1 to Manual 818-1 (CORR)

CX 2000 and CX 2200 SALOON

(Vehicles fitted with M 20/616 1985 cc and M 22/617 2175 cc engines)

I. GENERAL CHARACTERISTICS

	CX 2000	CX 2200
- Official symbol	MA series MB	MA series MC
- Commercial symbol	CX 2000	CX 2200
- Factory symbol (guarantee)	MB	MC
- Date of introduction	September 1974	January 1975
- French fiscal rating	11 CV	12 CV
- Number of seats	5	5

NOTE : « CX 2200 » vehicles can be fitted with a gearbox with torque converter **as optional equipment.**

Wheels and tyres :

- Rims .... 5 1/2 J × 14 FHA

CX 2000 *(with Manual steering)*	Front	Rear	Spare
- Tyres *(tubeless)*	185 SR 14 ZX	175 SR 14 ZX	175 SR 14 ZX
- Tyre pressures (in bars, and psi)	2 bars (29 psi)	2.1 bars (30 1/2 psi)	2.3 bars (33 1/2psi)
Authorized alternative			
- Tyres *(tubeless)*	185 SR 14 ZX	185 SR 14 ZX	185 SR 14 ZX
- Tyres with inner tubes 14 F 9 - 13			
a)	185 SR 14 ZX	185 SR 14 ZX	185 SR 14 ZX
b)	185 SR 14 ZX	175 SR 14 ZX	175 SR 14 ZX
- Tyres (special equipment)	185 R 14 X (M+S)	185 R 14 X (M+S)	185 R 14 X (M+S)

From September 1976 onwards, Michelin type ZX tyres, have been replaced by type **XZX**.
The size and pressure remain the same.
In case of replacement of two TX tyres by two **XZX** tyres, it is preferable to fit the latter at the rear.

All CX 2200 vehicles and
CX 2000 *(with power steering)*

	Front	Rear	Spare
- Tyres *(tubeless)*	185 HR 14 XVS	175 HR 14 XVS	175 HR 14 XVS
- Pressures	1.9 bars (27 1/2psi)	2.1 bars (30 1/2 psi)	2.3 bars (33 1/2psi)
Authorized alternative :			
- Tyres *(tubeless)*	185 HR 14 XVS	135 HR 14 XVS	185 HR 14 XVS
- Tyres with inner tubes 14 F 9-13			
a)	185 HR 14 XVS	185 HR 14 XVS	185 HR 14 XVS
b)	185 HR 14 XVS	175 HR 14 XVS	175 HR 14 XVS
- Tyres (special equipment)	185 R 14 X (M+S)	185 R 14 X (M+S)	185 R 14 X (M+S)

NOTE : Tyre pressures are indicated on a label located on the panel at the front of the door on the driver's side.

II. GENERAL DIMENSIONS

Dimensions :

- Front track .... 1.474 m (4 ft. 10 ins)
- Rear track .... 1.360 m (4 ft. 5 1/2 ins)
- Wheelbase .... 2.845 m (9 ft. 4 ins)
- Overall length : (CX 2000) .. 4.630 m (15 ft. 2 1/2 ins)
  (CX 2200) 4.660 m (15 ft. 3 1/2 ins)

Front overhang .... 1.050 m (3 ft. 5 1/2 ins)
Overall width .... 1.730 m (5 ft. 8 ins)
Height *(normal driving position)* .... 1.360 m (4 ft. 5 1/2 ins)
Ground clearance *(normal driving position)* .... 0.155 m (6 1/8th.ins)

Supplement N° 1 to Manual 818-1 (CORR)

Weights in kg (lb)

	CX 2000		CX 2200	
- Kerb weight *(with full tank of fuel)*	1265	(2789)	1285	(2833)
- Weight on front axle	845	(1863)	860	(1896)
- Weight on rear axle	420	(926)	425	(937)
- G.V.W. (Gross Vehicle Weight, *all optional equipment included)*	1740	(3836)	1760	(3880)
- Maximum authorised weight on front axle	1020	(2249)	1020	(2249)
- Maximum authorised weight on rear axle	750	(1653)	750	(1653)
- G.T.W. (Gross Train Weight)	2370 (5225) *(including a trailer without brakes weighing 630 kg (1389 lbs)*		2405 (5302) *(including a trailer without brakes weighing 645 kg (1422 lbs)*	

Towing : (Weights in kg (lb)

	CX 2000		CX 2200	
a) Vehicles equipped with a single electric cooling fan :				
- Maximum trailer weight *(gradient of 1 in 10)*	900	(1984)	900	(1984)
- Maximum weight for trailer without brakes	630	(1389)	645	(1422)
b) Vehicles equipped with twin electric cooling fans :				
- Gross Train Weight *(with 1300 kg (2866 lb) trailer with brakes)*	3040	(6702)	3060	(6746)
- Maximum authorised trailer weight *(within limits of G.T.W.)*	1500	(3307)	1500	(3307)
- Maximum starting gradient *(at G.T.W.)*	1 in 8 1/3		1 in 8 1/3	

IMPORTANT NOTE : References to trailers without brakes DO NOT APPLY in U.K.

III. GENERAL INFORMATION

Capacities :

- Fuel tank .... 68 litres (15 galls)
- Cooling system *(including heater unit)*
  - 16 dm2 (248 sq.in) radiator: 11 litres (19.3 pts)
  - 20 dm2 (310 sq.in) radiator: 10.6 litres (18.6 pts)
- Heater unit alone : .... 0.6 litres (1.05 pt)
- Engine oil :
  - After Oil Change .... 4.650 litres (8.2 pts)
  - Difference between Min and Max on dipstick .... 1.1 litre (1.9 pts)
- Hydraulic system (Approx) .... 4 litres (7 pts)
- Gearbox :

a) Manual gearbox :

- Overall capacity (TOTAL EP 80) .... 1.6 litres (2.8 pts)
- Difference between Min and Max on dipstick .... 0.150 litres (0.26 pts)

b) Gearbox with torque converter :

- Overall capacity (TOTAL Fluide T) : .... 5.5 litres (9.7 pts)
- After Oil Change .... 2 to 3 litres (3 1/2 to 5.2 pts) (according to draining time)
- Difference between Min and Max on dipstick *(with oil cold)* .... 0.150 litres (0.26 pts)

- Usable volume of boot .... 325 dm3 (11.48 cu. ft)

« CX 2000 » ESTATE

(Vehicle equipped with M 20/616 1985 cc engine)

I. GENERAL CHARACTERISTICS

- Commercial symbol .... CX 2000 Estate
- Official symbol .... MA series MD
- Factory symbol (*Warranty symbol*) .... MD
- Introduction date .... January 1976
- French fiscal rating .... 11 hp
- Number of seats 5

Wheels and tyres

- Wheel rims .... 5 1/2 J × 14 FHA

Tyres

MICHELIN		Type and pressure in bars (psi)		
		Front	Rear	Spare
Standard fitting	Manual steering	185 SR 14 ZX		
		2 (29)	2.2 (32)	2.4 (35)
	Power steering	185 HR 14 XVS-TU		
		1.9 (27 1/2)	2.1 (30 1/2)	2.3 (33 1/2)
Authorised fitting	Manual steering	185 HR 14 XVS-TU		
		1.9 (27 1/2)	2.1 (30 1/2)	2.3 (33 1/2)
	Manual or Power steering	185 R 14 X (M+S)		
		1.9 (27 1/2)	2.1 (30 1/2)	2.3 (33 1/2)

NOTE : - Vehicles are fitted with « TUBELESS » tyres as standard equipment.
- They can be fitted with tyres with inner tubes of the same type, the pressures remaining the same.
- The tyre pressures are indicated on a label located on the panel at the front of the door (on the driver's side).

From September 1976 onwards, MICHELIN ZX tyres are replaced by **XZX** tyres.
The sizes and pressures remain the same.
In case of replacement of 2 ZX tyres by 2 **XZX** tyres, it is preferable to fit the latter at the rear.

II. GENERAL DIMENSIONS

- Front track .... 1.474 m (4 ft. 10 ins)
- Rear track .... 1.390 m (4 ft. 6 3/4 ins)
- Wheelbase .... 3.095 m (10 ft. 1 3/4 ins)
- Overall length .... 4.920 m (16 ft. 1 3/4 ins)
- Front overhang .... 1.050 m (3 ft. 5 1/2 ins)
- Overall width .... 1.734 m (5 ft. 8 1/4 ins)
- Height of vehicle (*in normal driving position*) .... 1.465 m (4 ft. 9 3/4 ins)
- Ground clearance (*in normal driving position*) .... 0.155 m (0 ft. 6.1 ins)

Weights : (in kg (lb))

- Kerb weight *(with full tank of fuel)*	1385	(3053)
- Weight on front axle	880	(1940)
- Weight on rear axle	505	(1113)
- Gross Vehicle Weight *(including all optional equipment)*	2070	(4564)
- Maximum authorised weight on front axle	1050	(2315)
- Maximum authorised weight on rear axle	1030	(2271)
- Gross Train Weight with 690 kg (1521 lb) trailer without brales	2700	(5952)

Towing :

- Maximum authorised trailer weight (gradient of 1 in 10) :		
a) « Standard » vehicle	900	(1984)
b) Vehicle equipped with twin electric cooling fans	1300	(2866)
- Gross Train Weight with a 1300 kg (2866 lb) trailer with brakes	3370	(7429)
- Maximum authorised trailer weight, within limits of G.T.W.	1500	(3307)
- Maximum starting gradient *(at G.T.W.)*	1 in 9	(11 %)

IMPORTANT NOTE : References to trailers without brakes DO NOT APPLY in U.K.

III. GENERAL INFORMATION

Capacities :

- Fuel tank	68 litres (15 galls)
- Cooling system *(Heater unit included)* (20 dm2 - 310 sq.in)	10.6 litres (18.6 pts)
- Heater unit alone	0.6 litres (1.05 pts)
- Engine oil :	
- after draining	4.650 litres (8.2 pts)
- difference between Min and Max on dipstick	1.1 litres (1.9 pts)
- Hydraulic system (approx)	4 litres (7 pts)
- Gearbox :	
- after draining	1.6 litres (2.8 pts)
- difference between Min and Max on dipstick	0.150 litres (0.26 pts)
- Boot volume :	
- with rear seat in position	1100 dm3 (38.85 cu.ft)
- with rear seat folded	2030 dm3 (71.70 cu.ft)

CX « PRESTIGE » SALOON

(Vehicle equipped with the M 23/623 2350 cc engine)

I. GENERAL CHARACTERISTICS :

- Official symbol .... MA series MK
- Commercial symbol .... CX PRESTIGE
- Factory symbol (*Warranty symbol*) .... MK
- Introduction date .... February 1976
- French fiscal rating .... 13 hp
- Number of seats 5

NOTE : The following items are standard equipment on CX « Prestige » vehicles; VariPower steering (with powered return). Air-conditioning and a « Froid- 20 » heater unit. Since December 1976, these vehicles can be fitted with a gearbox with torque converter as optional equipment.

Wheels and tyres :

- Wheelrims .... 5 1/2 F × 14 FHA

	Front	Rear	Spare
- Tyres (*tubeless*)	185 HR 14 XVS	185 HR 14 XVS	185 HR 14 XVS
- Pressure in bars (psi)	2.2 (32)	2.2 (32)	2.4 (35)

Authorised alternatives :

- Tyres (*Special equipment*)	185 R 14 X (M + S)	185 R 14 X (M + S)	185 R 14 X (M + S)
- Pressure in bars (psi)	2.2 (32)	2.2 (32)	2.4 (35)

II. GENERAL DIMENSIONS

Dimensions :

- Front track .... 1.474 m (4 ft. 10 ins)
- Rear track .... 1.360 m (4 ft. 5 1/2 ins)
- Wheelbase .... 3.095 m (10 ft. 1 3/4 ins)
- Overall length .... 4.916 m (16 ft. 1 1/2 ins)
- Front overhang .... 1.057 m (3 ft. 5 1/2 ins)
- Overall width .... 1.734 m (5 ft. 8 1/4 ins)
- Height of vehicle (*in normal driving position*) .... 1.357 m (4 ft. 5 1/2 ins)
- Ground clearance (*in normal driving position*) .... 0.155 m (9 ft. 6.1 ins)

Weights in kg (lb) :

- Kerb weight *(with full tank of petrol) :*	1450 (3197)
- Weight on the front axle	970 (2138)
- Weight on the rear axle	480 (1058)
- Gross Vehicle Weight *(including all optional equipment)*	1890 (4167)
- Maximum authorised weight on front axle	1110 (2447)
- Maximum authorised weight on rear axle	790 (1742
- Gross Train Weight *(with a 1300 kg (2866 lb) trailer with brakes)*	3190 (7033)

III. GENERAL INFORMATION :

Capacities :

- Fuel tank	68 litres (15 galls)
- Cooling system *(including heater unit) :*	
- Manual gearbox (20 dm2 - 310 sq.in. radiator)	10.6 litres (18.6 pts)
- Torque converter gearbox (23 dm2 - 356 sq.in. radiator)	12.5 litres (22 pts)
- Heater unit alone	0.6 litres (1.05 pts)
- Engine oil :	
- after draining	4.650 litres (8.2 pts)
- difference between Min and Max. on dipstick	1.1 litres (1.9 pts)
- Hydraulic system (approx.)	4 litres (7 pts)
- Gearbox :	
a) Manual gearbox (TOTAL EP 80)	1.600 litres (2.8 pts)
- difference between Min. and Max. on dipstick	0.150 litres (0.26 pts)
b) Torque converter gearbox (TOTAL FLUIDE T)	5.5 litres
- after draining	2 to 3 litres (3.5 to 5.3 pts) (according to draining time)
- difference between Min. and Max. on dipstick *(with the oil cold)*	0.150 litres (0.26 pts)
- Usable volume of boot	325 dm3 - 11.48 cu.ft.

CX 2400 SALOON

(Vehicles equipped with the M 23/623 - 2350 cc engine)

I. GENERAL CHARACTERISTICS :

- Official symbol .... MA series MJ
- Commercial symbol .... CX 2400
- Factory symbol (*Warranty symbol*) .... MJ
- Introduction date .... September 1976
- French fiscal rating .... 13 hp
- Number of seats 5

NOTE : CX 2400 saloon vehicles can be fitted with a torque converter gearbox and an air-conditioning unit as optional equipment. From December 1976 onwards, these two items can be fitted together.

Wheels and tyres :

- Wheelrims .... 5 1/2 J × 14 FHA

MICHELIN TYRES	TYPE AND PRESSURE IN BARS (PSI)		
	FRONT	REAR	SPARE
STANDARD FITTING	185 HR 14 XVS-TU	175 HR 14 XVS - TU	
	1.9 (27.5)	2.1 (30.5)	2.3 (33.5)
AUTHORISED ALTERNATIVE	185 HR 14 XVS - TU		
	1.9 (27.5)	1.9 (27.5)	2.1 (30.5)
	185-14 X (M + S)		
	1.9 (27.5)	1.9 (27.5)	2.1 (30.5)

NOTE : Vehicles are fitted with TUBELESS tyres as standard equipment. They can be fitted with tyres with inner tubes of the same type, the pressures remaining the same.
The tyre pressures are indicated on a label located on the panel at the front of the door *(on the driver's side)*.

II. GENERAL DIMENSIONS

Dimensions :

- Front track .... 1.474 m (4 ft. 10 ins)
- Rear track .... 1.360 m (4 ft. 5 1/2 ins)
- Wheelbase .... 2.845 m (9 ft. 4 ins)
- Overall length .... 4.660 m (15 ft. 3 1/2 ins)
- Front overhang .... 1.050 m (3 ft. 5 1/2 ins)
- Overall width .... 1.730 m (5 ft. 8 ins)
- Height of vehicle *(in the normal driving position)* .... 1.360 m (4 ft. 5 1/2 ins)
- Ground clearance *(in the normal driving position)* .... 0.155 m (0 ft. 6.1 ins)

Weights in kg (lb)

- Kerb weight *(with full tank of fuel)*	1300 (2866)
- Weight on the front axle	870 (1918)
- Weight on the rear axle	430 (948)
- Gross Vehicle Weight	1790 (3946)
- Maximum authorised weight on the front axle	1050 (2315)
- Maximum authorised weight on the rear axle	750 (1653)
- Gross Train Weight (with a 1300 kg (2866 lb) trailer)	3090 (6812)
- Gross Train Weight (with a 650 kg (1433 lb) trailer without brakes)	2440 (5379)

Towing :

- Maximum weight of trailer without brakes	650 (1433)
- Maximum weight of trailer (within G.T.W. limit of 3090 kg (6812 lb)	1500 (3307)
- Maximum starting gradient (at G.T.W.)	12 % (1 in 8 1/2)

NOTE : For towing a trailer heavier than 900 kg (1984 lb), it is necessary to fit a second 10-blade electric cooling fan.

IMPORTANT NOTE : References to trailers without brakes DO NOT APPLY in U.K.

III. GENERAL INFORMATION

Capacities :

- Fuel tank	68 litres (15 galls)
- Cooling system *(including heater unit)* :	
- Manual or torque converter gearbox	10.6 litres (18.6 pts)
- Optional torque converter + air-conditioning unit	12.5 litres (22 pts)
- Heater unit alone	0.6 litres (1.05 pts)
- Engine oil :	
- after draining	4.650 litres (8.2 pts)
- difference between Min. and Max. on dipstick	1.1 litres (1.9 pts)
- Hydraulic system (approx)	4 litres (7 pts)
- Gearbox :	
a) Manual gearbox :	
- Overall capacity (TOTAL EP 80)	1.600 litres (2.8 pts)
- Difference between Min. and Max. on dipstick	0.150 litres (0.26 pts)
b) Torque converter gearbox :	
- Overall capacity (TOTAL FLUIDE T)	5.5 litres (9.7 pts)
- After draining	2 to 3 litres (3.5 to 5.3 pts) according to draining time
- Difference between Min. and Max. on dipstick *(with the oil cold)*	0.150 litres (0.26 pts)
- Usable volume of boot	325 dm3 (11.48 cu.ft)

CX 2400 ESTATE

(Vehicles fitted with the M 23/623 - 2350 cc engine)

I. GENERAL CHARACTERISTICS

- Commercial symbol .... CX 2400 Estate
- Official symbol .... MA series MF
- Factory symbol (*Warranty symbol*) .... MF
- Introduction date .... September 1976
- French fiscal rating .... 13 hp
- Number of seats 5

Wheels and tyres :

- Wheelrims .... 5 1/2 J × 14 FHA

Tyres

<table>
<tr><td colspan="2" rowspan="2">MICHELIN TYRES</td><td colspan="3">Type and pressure in bars (psi)</td></tr>
<tr><td>Front</td><td>Rear</td><td>Spare</td></tr>
<tr><td rowspan="4">STANDARD FITTING</td><td rowspan="2">Manual steering</td><td colspan="3">185 SR 14 XZX - TU</td></tr>
<tr><td>2.1 (30.5)</td><td>2.2 (32)</td><td>2.4 (35)</td></tr>
<tr><td rowspan="2">Power steering</td><td colspan="3">185 HR 14 XVS - TU</td></tr>
<tr><td>2 (29)</td><td>2.1 (30.5)</td><td>2.3 (33.5)</td></tr>
<tr><td rowspan="4">AUTHORISED ALTERNATIVE</td><td rowspan="2">Manual steering</td><td colspan="3">185 HR 14 XVS - TU</td></tr>
<tr><td>2 (29)</td><td>2.1 (30.5)</td><td>2.3 (33.5)</td></tr>
<tr><td rowspan="2">Manual or Power steering</td><td colspan="3">185 R 14 X (M + S)</td></tr>
<tr><td>2 (29)</td><td>2.1 (30.5)</td><td>2.3 (33.5)</td></tr>
</table>

NOTE : Vehicles are fitted with TUBELESS tyres as standard equipment. They can be fitted with tyres with inner tubes of the same type, the pressures remaining the same.
Tyre pressures are indicated on a label on the panel at the front of the door (on the driver's side).

II. GENERAL DIMENSIONS

- Front track .... 1.474 m (4 ft. 10 ins)
- Rear track .... 1.390 m (4 ft. 6 3/4 ins)
- Wheelbase .... 3.095 m (10 ft. 1 3/4 ins)
- Overall length .... 4.920 m (16 ft. 1 3/4 ins)
- Front overhang .... 1.050 m (3 ft. 5 1/2 ins)
- Overall width .... 1.734 m (5 ft. 8 1/4 ins)
- Height of vehicle (*in the normal driving position*) .... 1.465 m (4 ft. 9 3/4 ins)
- Ground clearance (*in the normal driving position*) .... 0.155 m (0 ft. 6.1 ins)

Supplement N° 1 to Manual 818-1 (ADD)

Weights in kg (lb)

- Kerb weight *(with full tank of fuel)*	1405 (3097)
- Weight on front axle	900 (1984)
- Weight on rear axle	505 (1113)
- Gross Vehicle Weight *(including all optional equipment)*	2095 (4619)
- Maximum authorised weight on front axle	1075 (2370)
- Maximum authorised weight on rear axle	1030 (2271)
- Gross Train Weight (with a 700 kg (1543 lb) trailer without brakes)	2795 (6162)

Towing :

- Maximum trailer weight (gradient of 1 in 10)	
a) « Standard » vehicle	900 (1984)
b) Vehicle fitted with a second 10-blade electric cooling fan	1300 (2866)
- Gross Train Weight with a 1300 kg (2866 lb) trailer with brakes	3395 (7485)
- Maximum trailer weight within limit of G.T.W. (3395 kg - 7485 lb)	1500 (3307)
- Maximum starting gradient *(at G.T.W.)*	11 % (1 in 9)

IMPORTANT NOTE : References to trailer without brakes DO NOT APPLY in U.K.

III. GENERAL INFORMATION

Capacities :

- Fuel tank	68 litres (15 galls)
- Cooling system *(including heater unit)*	10.6 litres (18.6 pts)
- Heater unit alone	0.6 litres (1.05 pts)
- Engine oil :	
- after draining	4.650 litres (8.2 pts)
- difference between Min. and Max. on dipstick	1.1 litres (1.9 pts)
- Hydraulic system (approx)	4 litres (7 pts)
- Gearbox :	
- after draining	1.6 litres (2.8 pts)
- difference between Min. and Max. on dipstick	0.150 litres (0.26 pts)
- Volume of boot :	
- with rear seat in position	1100 dm3 (38.85 cu.ft)
- with rear seat folded back	2030 dm3 (71.70 cu.ft)

CX 2400 GTI SALOON

(Vehicles fitted with the M 23/622 - 2350 cc fuel injection engine)

I. GENERAL CHARACTERISTICS

- Commercial symbol .... CX 2400 GTI
- Official symbol .... MA series ME
- Factory symbol (*Warranty symbol*) .... ME
- Introduction date .... May 1977
- French fiscal rating .... 13 hp
- Number of seats 5

Wheels and tyres :

- Wheelrims .... MICHELIN 5 1/2 J × 14 FHA 5.49 D

Tyres :

	Front	Rear	Spare
- Tyres (*tubeless*)	185 HR 14 XVS	185 HR 14 XVS	185 HR 14 XVS
- Pressure in bars (psi)	2.1 (30.5)	2.2 (32)	2.4 (35)

Authorised Alternative :

- Tyres (*special equipment*)	185 R 14 X (M+S)	185 R 14 X (M+S)	185 HR 14 X (M+S)
- Pressure in bars (psi)	2.1 (30.5)	2.2 (32)	2.4 (35)

NOTE : - Vehicles are fitted with TUBELESS tyres as standard equipment. They can be fitted with tyres with inner tubes of the same type, the pressures remaining the same.
- Tyre pressures are indicated on a label located on the panel at the front of the door (on the driver's side).

II. GENERAL DIMENSIONS :

- Front track .... 1.474 m (4 ft. 10 ins)
- Rear track .... 1.360 m (4 ft. 5 1/2 ins)
- Wheelbase .... 2.845 m (9 ft. 4 ins)
- Overall length .... 4.670 m (15 ft. 3 3/4 ins)
- Front overhang .... 1.057 m (3 ft. 5 1/2 ins)
- Rear overhang .... 0.764 m (2 ft. 6 ins)
- Overall width .... 1.734 m (5 ft. 8 1/4 ins)
- Height of vehicle (*in normal driving position*) .... 1.360 m (4 ft. 5 1/2 ins)
- Ground clearance (*in normal driving position*) .... 0.155 m (0 ft. 6.1 ins)

Weights in kg (lb) :

- Kerb weight *(with full tank of fuel)*	1345 (2965)
- Weight on front axle	910 (2006)
- Weight on rear axle	435 (959)
- Gross Vehicle Weight *(including all optional equipment)*	1810 (3990)
- Maximum authorised weight on front axle	1075 (2370)
- Maximum authorised weight on rear axle	750 (1653)
- Gross Train Weight with a 670 kg (1477 lb) trailer without brakes)	2480 (5467)

Towing :

- Maximum weight of trailer (on gradient of 1 in 10) :

a) « Standard » vehicle	900 (1984)
b) Vehicle equipped with a second 10-blade cooling fan	1300 (2866)
- Gross Train Weight with a 1300 kg (2866 lb) trailer with brakes	3110 (6856)
- Max. trailer weight within limit of G.T.W. (3110 kg - 6856 lb)	1500 (3307)
- Max. starting gradient *(at G.T.W.)*	12 % (1 in 8 1/2)

III. GENERAL INFORMATION

Capacities :

- Fuel tank	68 litres (15 galls)
- Cooling system *(including heater unit)*	12.3 litres (21.6 pts)
- Heater unit alone	0.6 litres (1.05 pts)
- Engine oil :	
- after draining	4.650 litres (8.2 pts)
- difference between Min. and Max. on dipstick	1.1 litres (1.9 pts)
- Hydraulic system (approx) :	4 litres (7 pts)
- Gearbox :	
- after draining	1.6 litres (2.8 pts)
- difference between Min. and Max. on dipstick	0.150 litres (0.26 pts)
- Usable volume of rear boot	325 dm3 (11.48 cu.ft)

CX 2400 AMBULANCE

(Vehicles fitted with the M 23/623 - 2350 cc engine)

I. GENERAL CHARACTERISTICS

- Commercial symbol .... CX 2400 Ambulance
- Official symbol .... MA series MF
- **Factory symbol (*Warranty symbol*)** .... **MFA**
- Introduction date .... September 1976
- French fiscal rating .... 13 hp
- Number of seats .... 4 sitting ; 1 lying

Wheels and tyres :

- Wheelrims .... 5 1/2 J + 14 FHA

Tyres :

<table>
<tr><td colspan="2" rowspan="2">MICHELIN TYRES</td><td colspan="3">Type and pressure in bars (psi)</td></tr>
<tr><td>Front</td><td>Rear</td><td>Spare</td></tr>
<tr><td rowspan="4">Standard fitting</td><td rowspan="2">Manual steering</td><td colspan="3">185 SR 14 ZX - TU or 185 SR 14 XZX - TU</td></tr>
<tr><td>2.1 (30.5)</td><td>2 (29)</td><td>2.3 (33 1/2)</td></tr>
<tr><td rowspan="2">Power steering</td><td colspan="3">185 HR 14 XVS - TU</td></tr>
<tr><td>2 (29)</td><td>1.9 (27.5)</td><td>2.2 (32)</td></tr>
<tr><td rowspan="4">Authorised Alternative</td><td rowspan="2">Manual steering</td><td colspan="3">185 HR 14 XVS - TU</td></tr>
<tr><td>2 (29)</td><td>1.9 (27.5)</td><td>2.2 (32)</td></tr>
<tr><td rowspan="2">Manual or Power steering</td><td colspan="3">185 R 14 X (M + S)</td></tr>
<tr><td>2 (29)</td><td>1.9 (27.5)</td><td>2.2 (32)</td></tr>
</table>

NOTE : The vehicles are fitted with TUBELESS tyres as standard equipment, they can be fitted with tyres with inner tubes of the same type, the pressures remaining unchanged.

Tyre pressures are indicated on a label located on the panel at the front of the door (on the driver's side).

II. GENERAL DIMENSIONS

- Front track .... 1.474 m (4 ft. 10 ins)
- Rear track .... 1.390 m (4 ft. 6 3/4 ins)
- Wheel base .... 3.095 m (10 ft. 1 3/4 ins)
- Overall length .... 4.985 m (16 ft. 4 1/4 ins)
- Front overhang .... 1.050 m (3 ft. 5 1/2 ins)
- Overall width .... 1.734 m (5 ft. 8 1/4 ins)
- Height of vehicle (*in the normal driving position*) .... 1.875 m (6 ft. 1 3/4 ins)
- Ground clearance (*in the normal driving position*) .... 0.155 m (0 ft. 6.1 ins)

Supplement N° 1 to Manual 818-1 (ADD)

Interior dimensions of the driver's compartment :

- Distance between windscreen and separating panels	1.330 m (4 ft. 4 1/4 ins)
- Width at elbow height	1.400 m (4 ft. 7 ins)

Interior dimensions of patient compartment :

- Distance between separating panel and rear window (at stretcher height)	2.180 m (7 ft. 1 3/4 ins)
- Width between rear side doors	1.400 m (4 ft. 7 ins)
- Width of floor between rear wheelarches	1.120 m (3 ft. 8 ins)
- Height between floor and roof :	
- at the front	1.420 m (4 ft. 8 ins)
- at the rear	1.175 m (3 ft. 10 1/4 ins)

Weights in kg (lb) :

- Kerb weight	1530 (3373)
- Weight on front axle	925 (2039)
- Weight on rear axle	605 (1334)
- Gross Vehicle Weight (G.V.W.)	2095 (4619)
- Maximum authorised weight on front axle	1075 (2370)
- Maximum authorised weight on rear axle	1030 (2271)

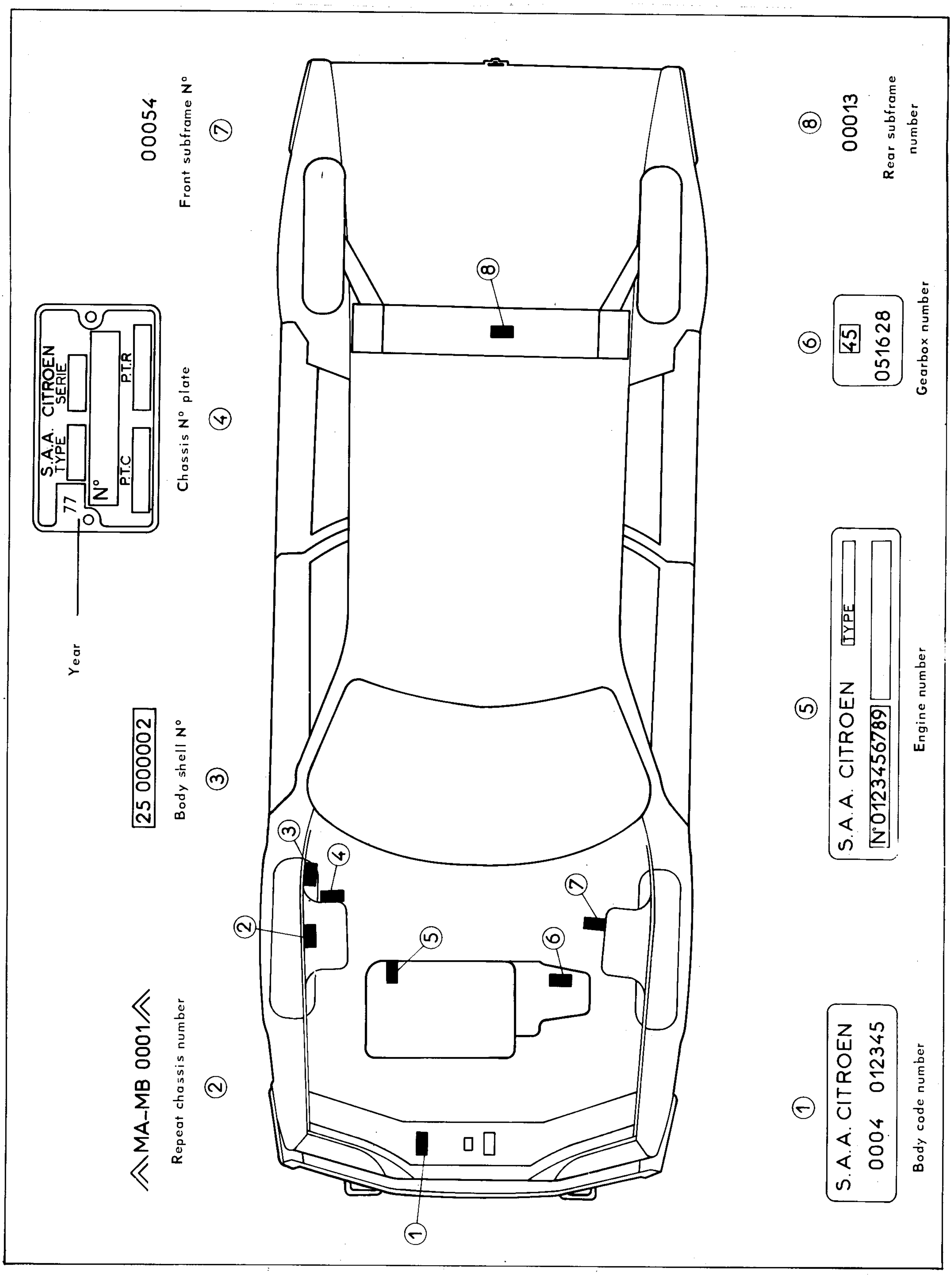
III. GENERAL INFORMATION

Capacities :

- Fuel tank	68 litres (15 galls)
- Cooling system (including the heater units)	11.8 litres (20.8 pts)
- Heater unit for driver compartment alone	0.6 litres (1.05 pts)
- Auxiliary heater unit for patient compartment	1.6 litres (2.8 pts)
- Engine oil :	
- after draining	4.650 litres (8.2 pts)
- difference between Min. and Max. on dipstick	1.1 litres (1.9 pts)
- Hydraulic system (approx.)	4 litres (7 pts)
- Gearbox :	
- after draining	1.6 litres (2.8 pts)
- difference between Min. and Max. on dipstick	0.150 litres (0.26 pts)

IDENTIFICATION OF VEHICLE COMPONENTS

(FRANCE)



Supplement N° 1 to Manual 818-1 (ADD)

I. JACKING POINTS.

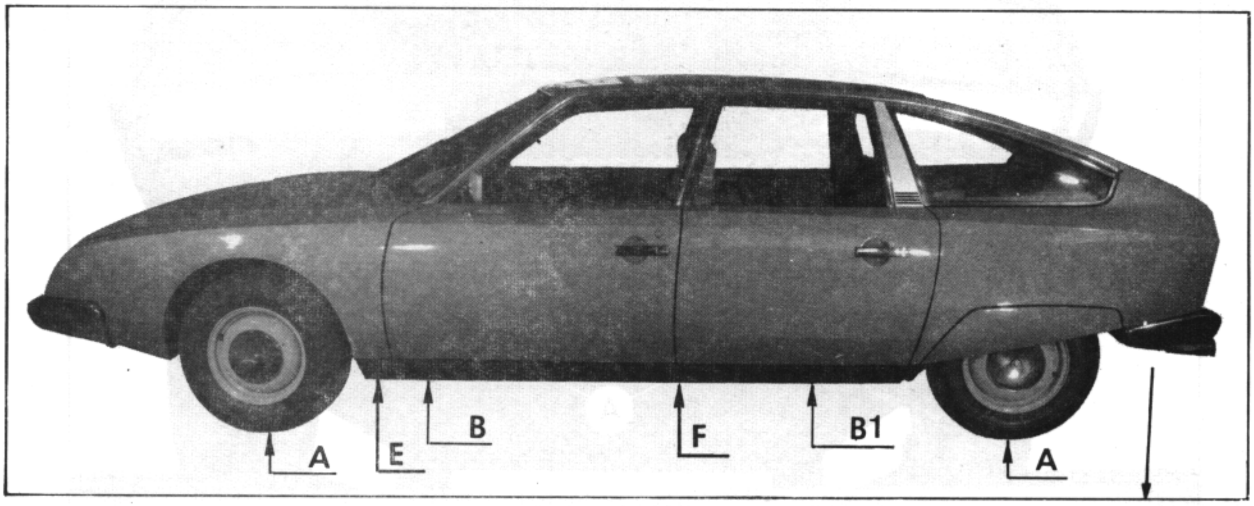
(CX vehicles : Saloon, « Prestige » saloons, Estates)

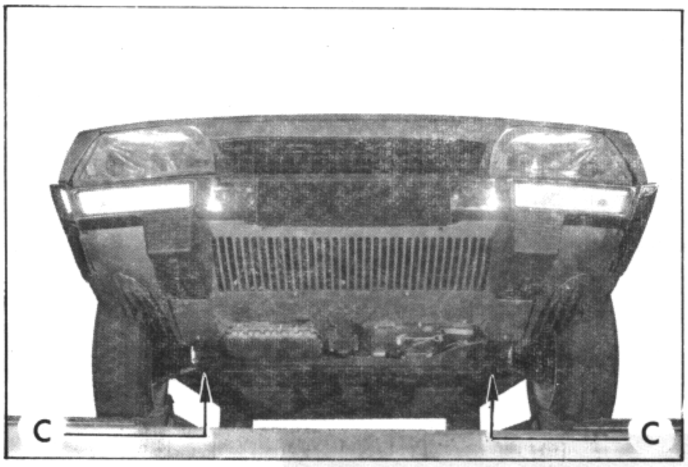
It is absolutely essential that the jacking points shown below be respected.

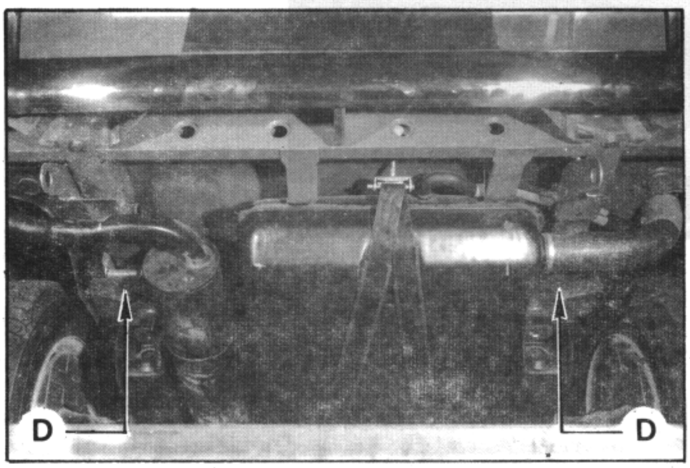
Under no circumstances must the vehicle be lifted by leverage against the underframe sidemembers or at any part of the front or rear subframe except as indicated.

Distortion of the sidemembers will inevitably result in :

- *the subframe being out of alignment.*
- *deterioration of sound insulation.*
- *unequal braking.*







A : Lifting points under wheels

B - B1 : Jack supports under body for car jack (wheel changing)

C : Supports under front axle (in line with the engine mountings)

D : Jacking points under body

E + B1 : Lifting points when raising the car with a twin-post lift (with chocks at E)

E + F : Lifting points when raising the car with a fork lift (with chocks at E and F)

NOTE : Special chocks to be positioned at E and F are sold by the lift suppliers

II - TOWING POINTS

Front towing points

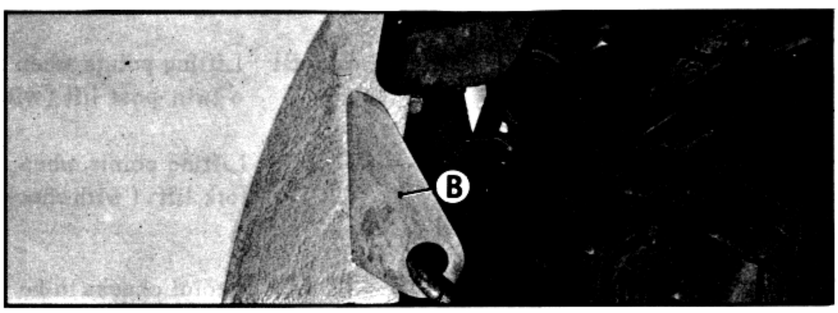
With the vehicle on its wheels, and the hydraulic system under pressure.

Use towing eye (eyes) A under the subframe front extensions.

With the wheels off the ground :

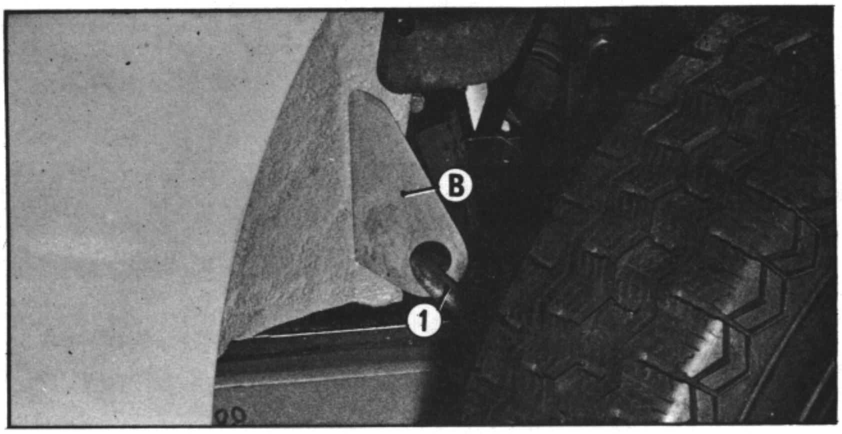
IMPORTANT NOTE : Towing the vehicle by lifting the front by means of towing eyes (A) IS PROHIBITED.

A) *Vehicles not fitted with towing brackets (B) welded to the lower rear section of the front R.H. and L.H. wheelarches.*

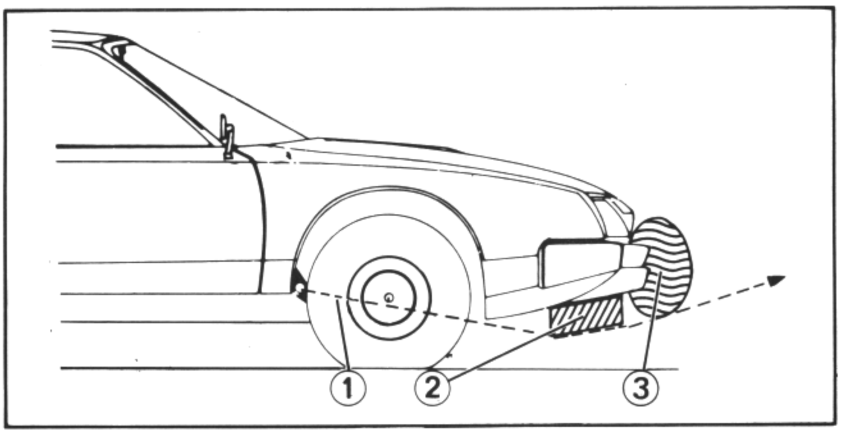


- Lift the back of the vehicle, using the rings provided for that purpose, or move the vehicle on a trailer.

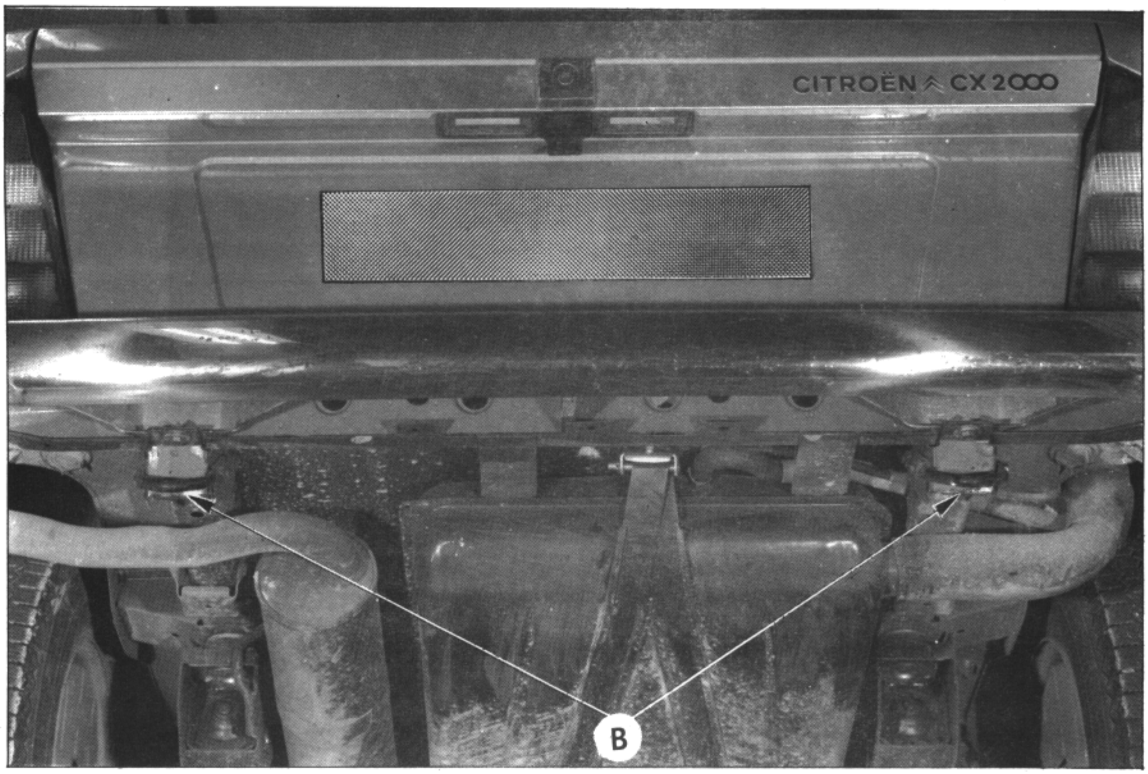
B) *Vehicles fitted with towing brackets (B) welded to the lower rear section of the front R.H. and L.H. wheelarches.*



- Attach a cable (1) in the holes of the brackets.
- Interpose a wooden beam (2) under the rear section of the rubber buffers, close to their fixing points.
- Interpose a piece of padding to protect the lower valance and the bumper.



2. Rear towing points :

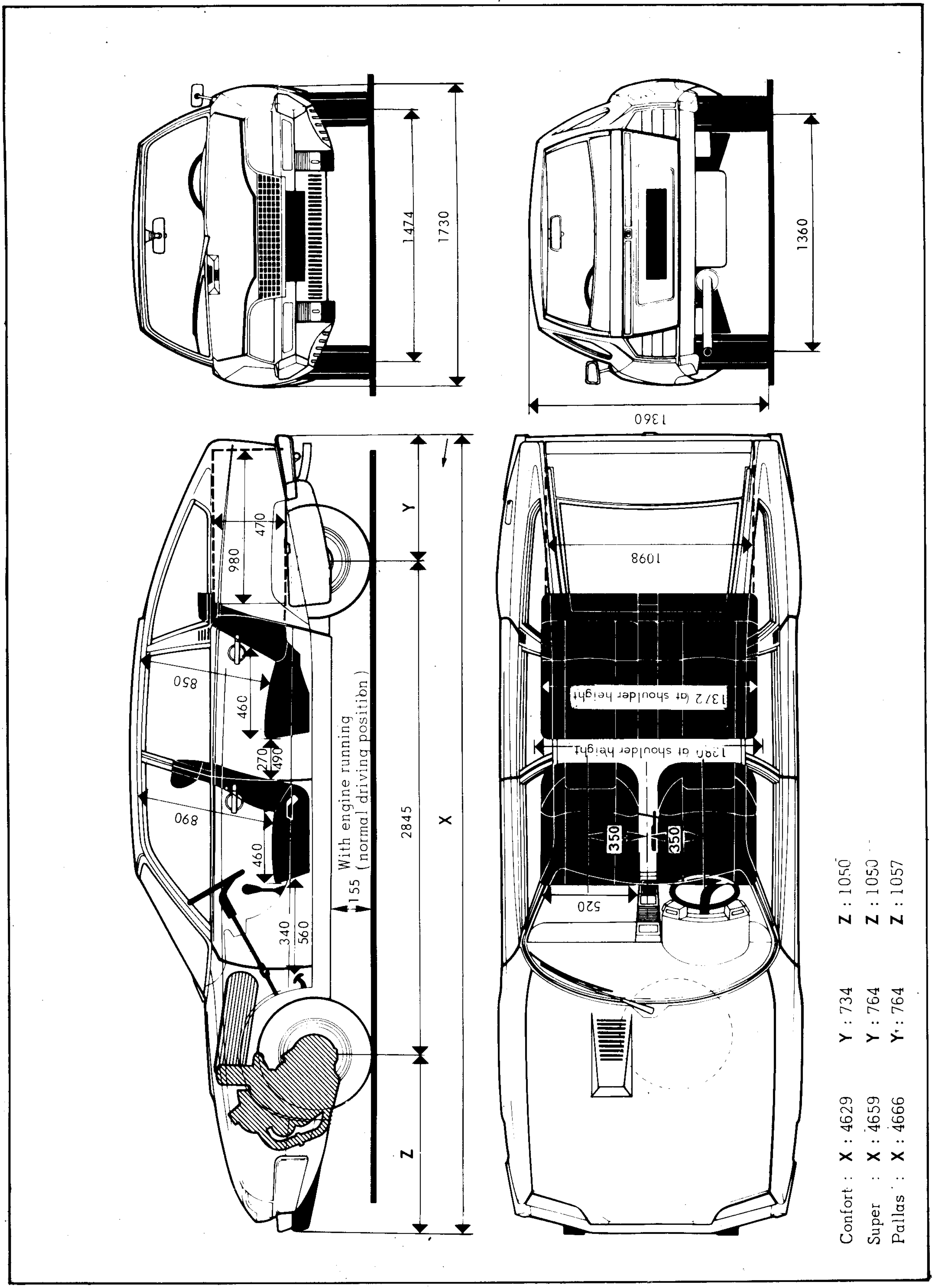


B - Towing eyes on the rear bodyshell sidemembers

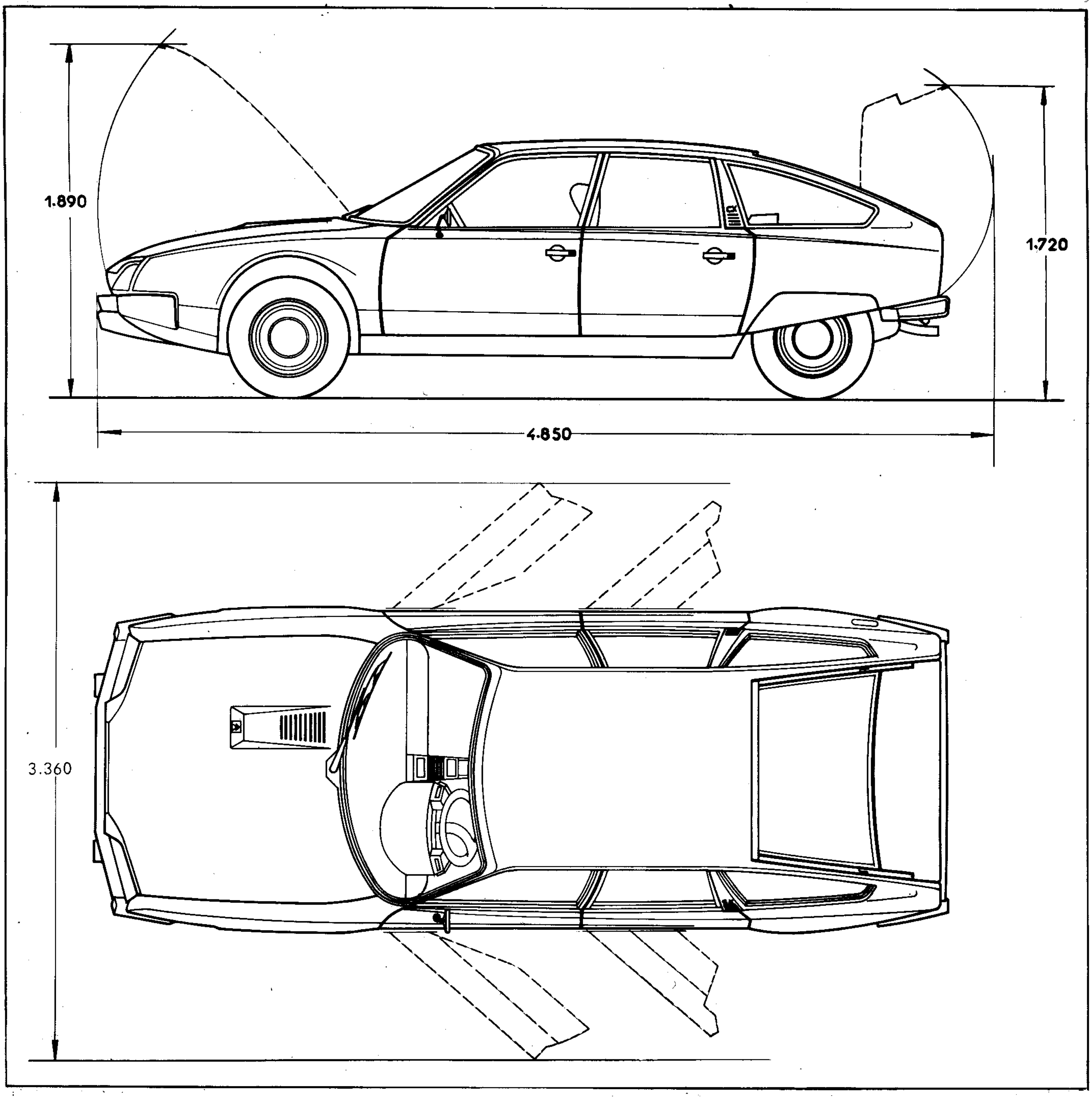
♦ I - EXTERIOR AND INTERIOR DIMENSIONS

(" CONFORT " - " SUPER " - " PALLAS " SALOONS)

L. 80-1a



Supplement N° 1 to Manual 818-1 (CORR)



ROOF - RACK

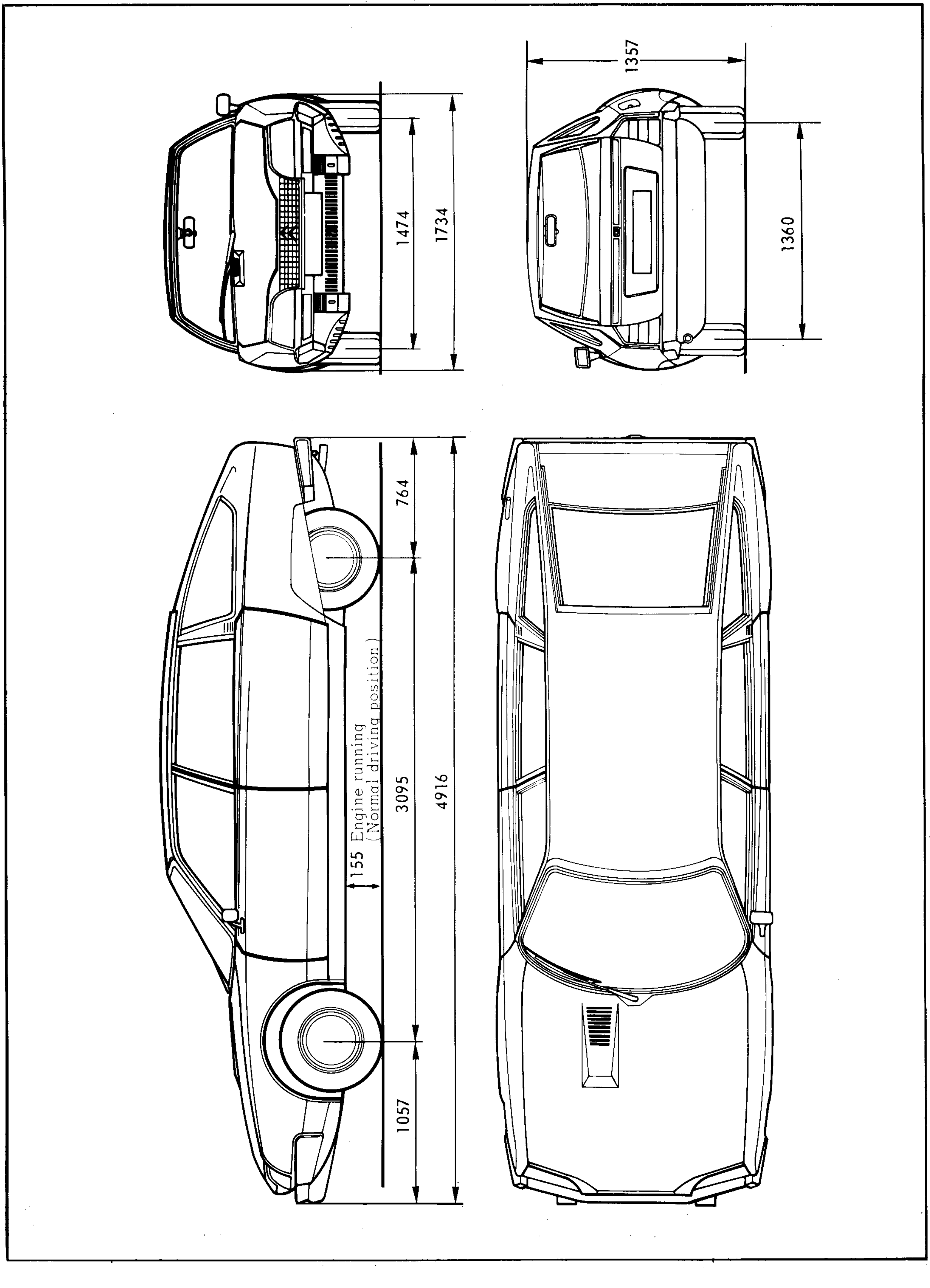
The maximum roof-rack load is 80 kg (176 lb); evenly distributed.

The roof-rack contact points must be on the gutter at the front, at the centre of the front door opening, and at the rear in line with the rear door pillar.

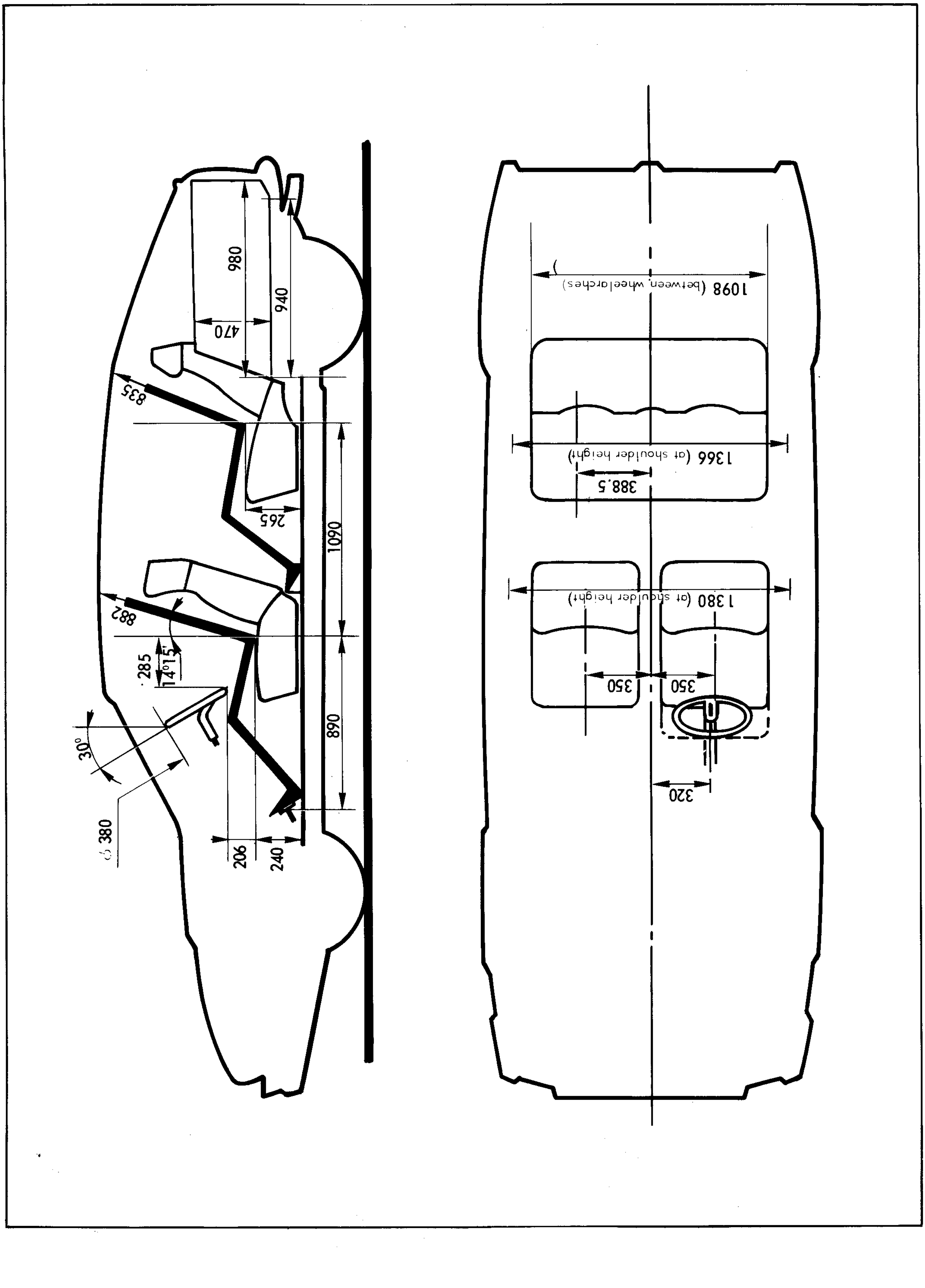
II. EXTERIOR AND INTERIOR DIMENSIONS

(" PRESTIGE " SALOON)

L. 80-13



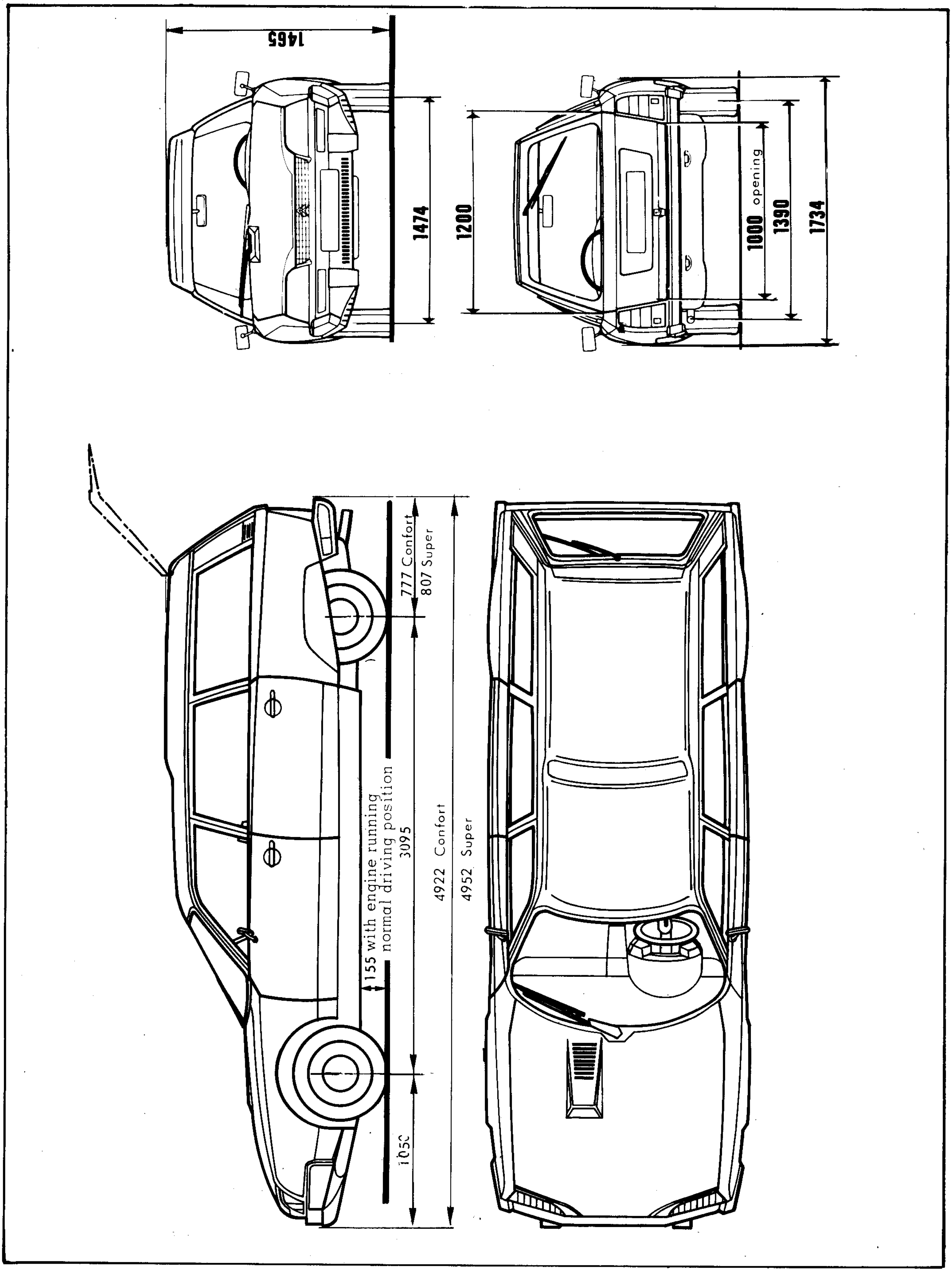
L.80-45


980
940
470
835
265
1090
882
285
14°15'
30°
380
206
240
890
1098 (between wheel arches)
1366 (at shoulder height)
388.5
1380 (at shoulder height)
350
350
320

III. EXTERIOR AND INTERIOR DIMENSIONS

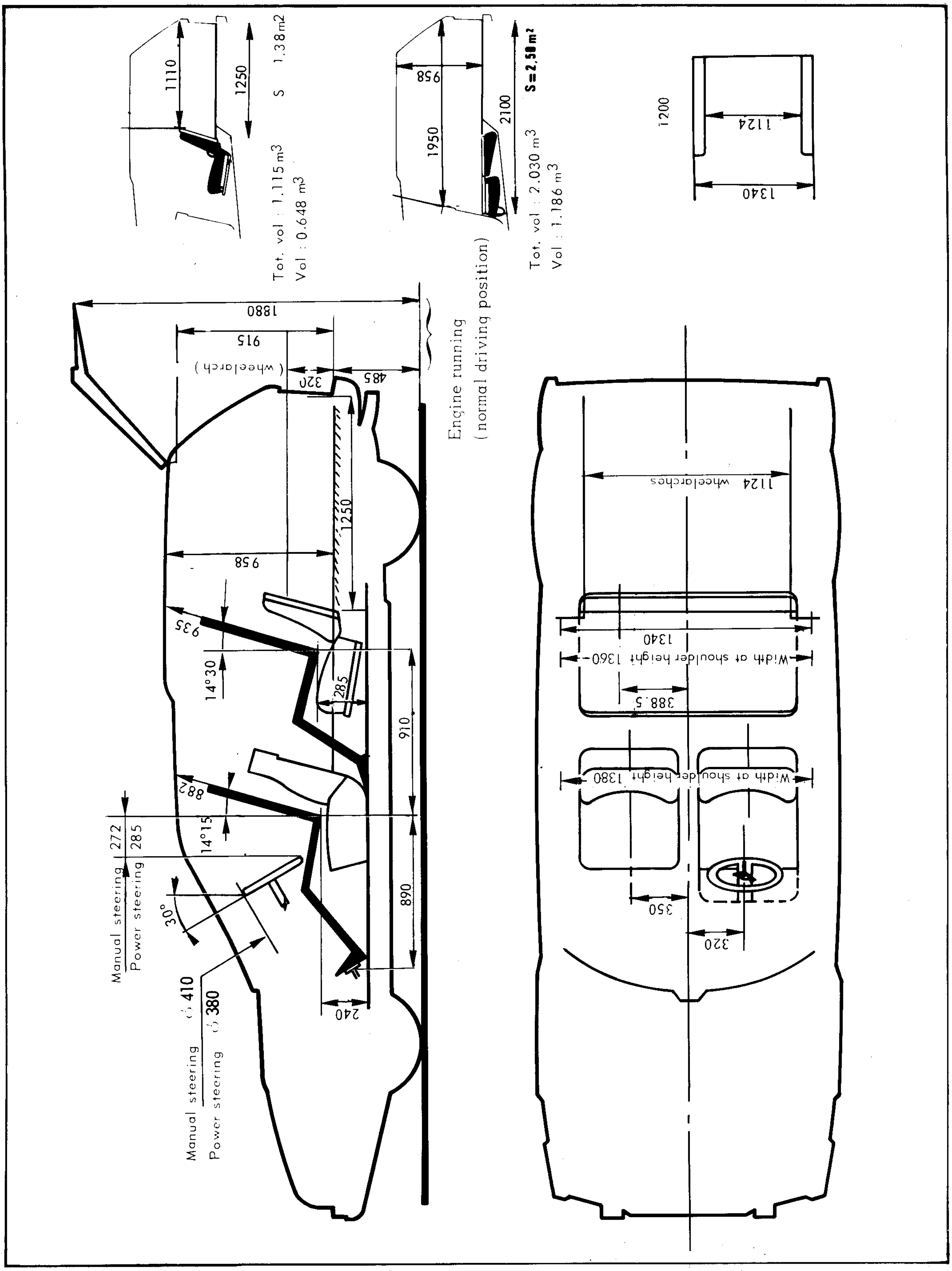
" ESTATE " and Estate variations

L. 80-12 et L. 80-44



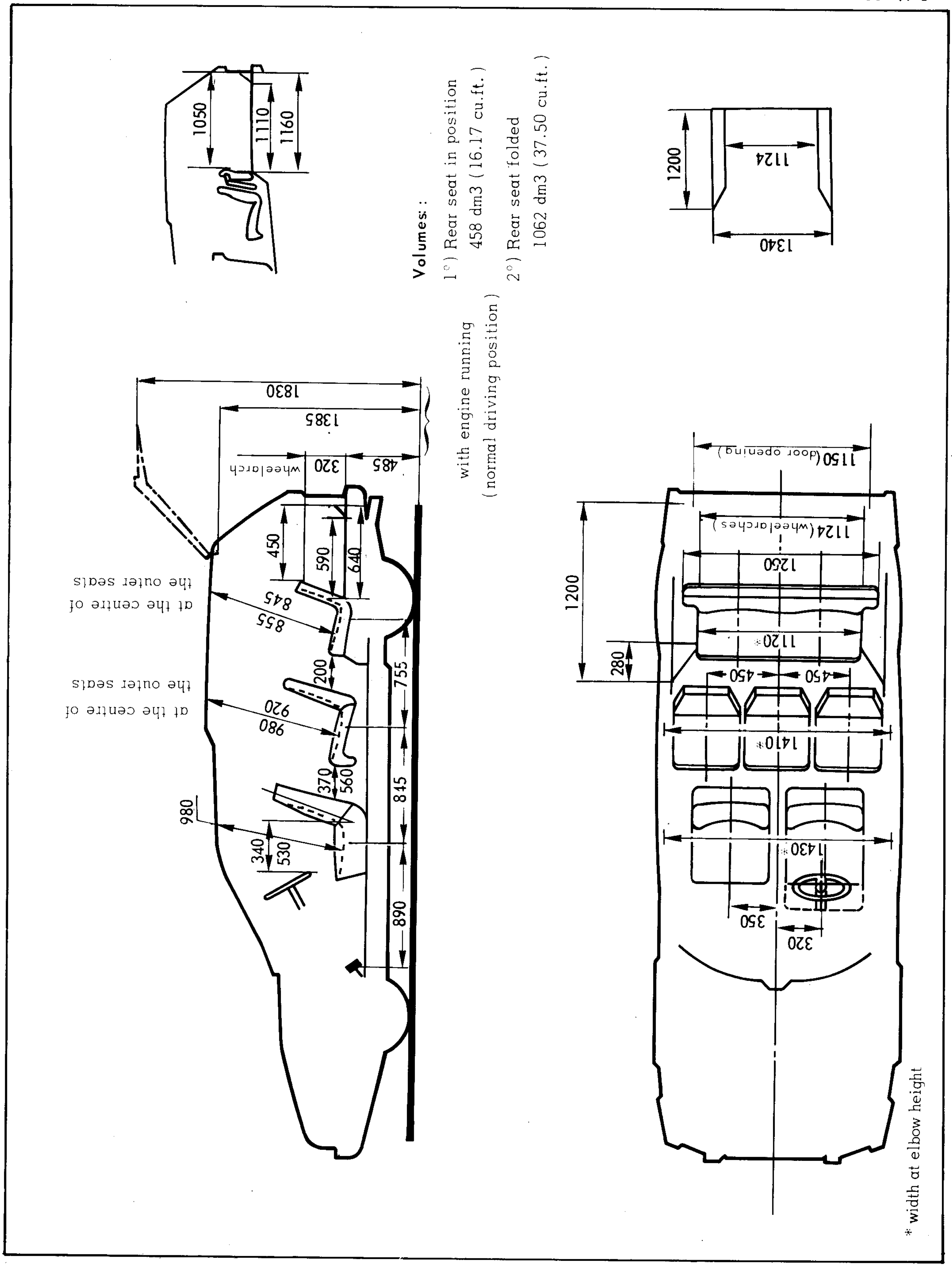
" ESTATE "

L.80-12 et L.80-43



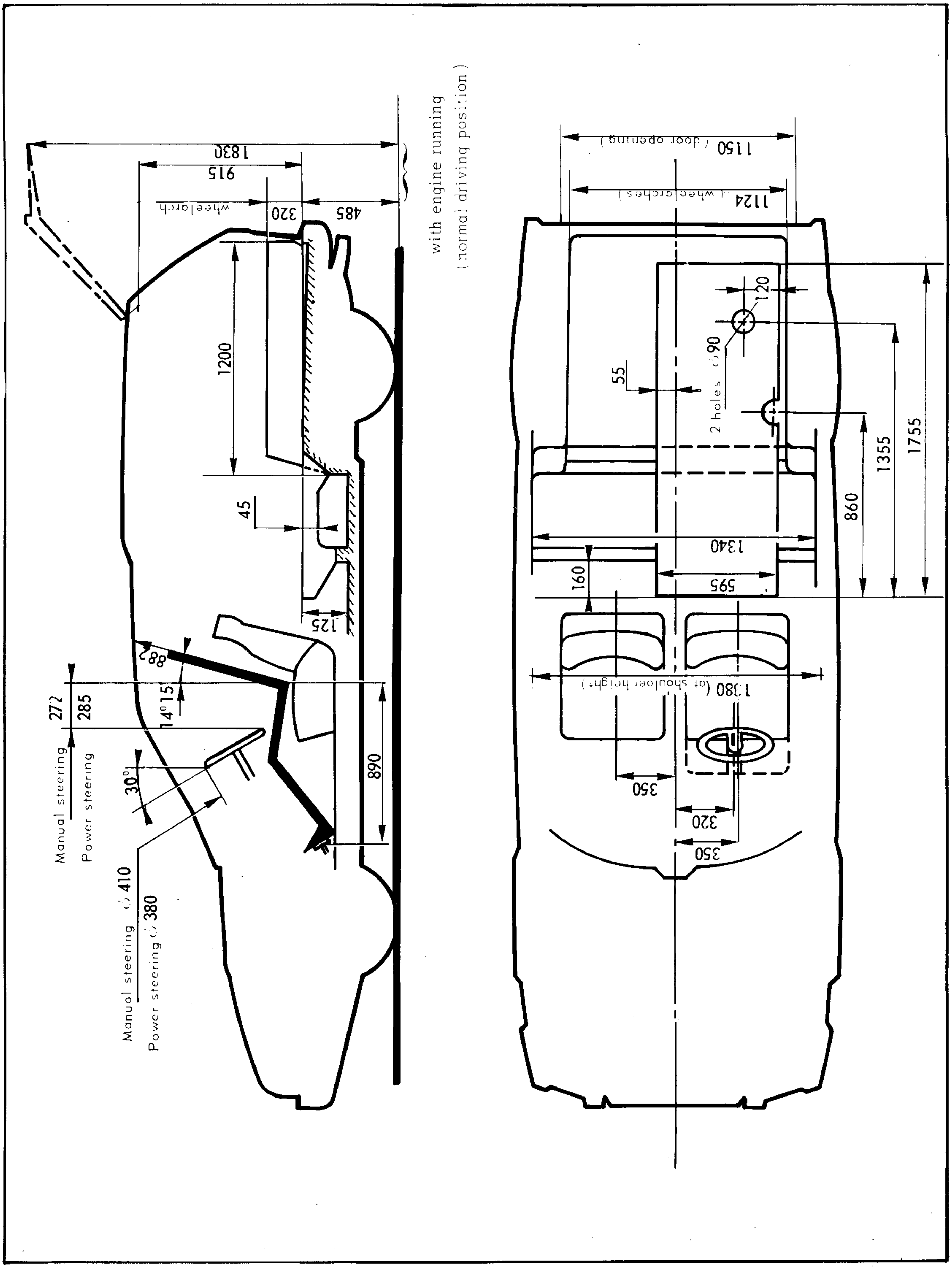
" FAMILIALE " Estate

L 80-41 a



" ESTATE " VEHICLE FOR TRANSFORMING INTO AMBULANCE

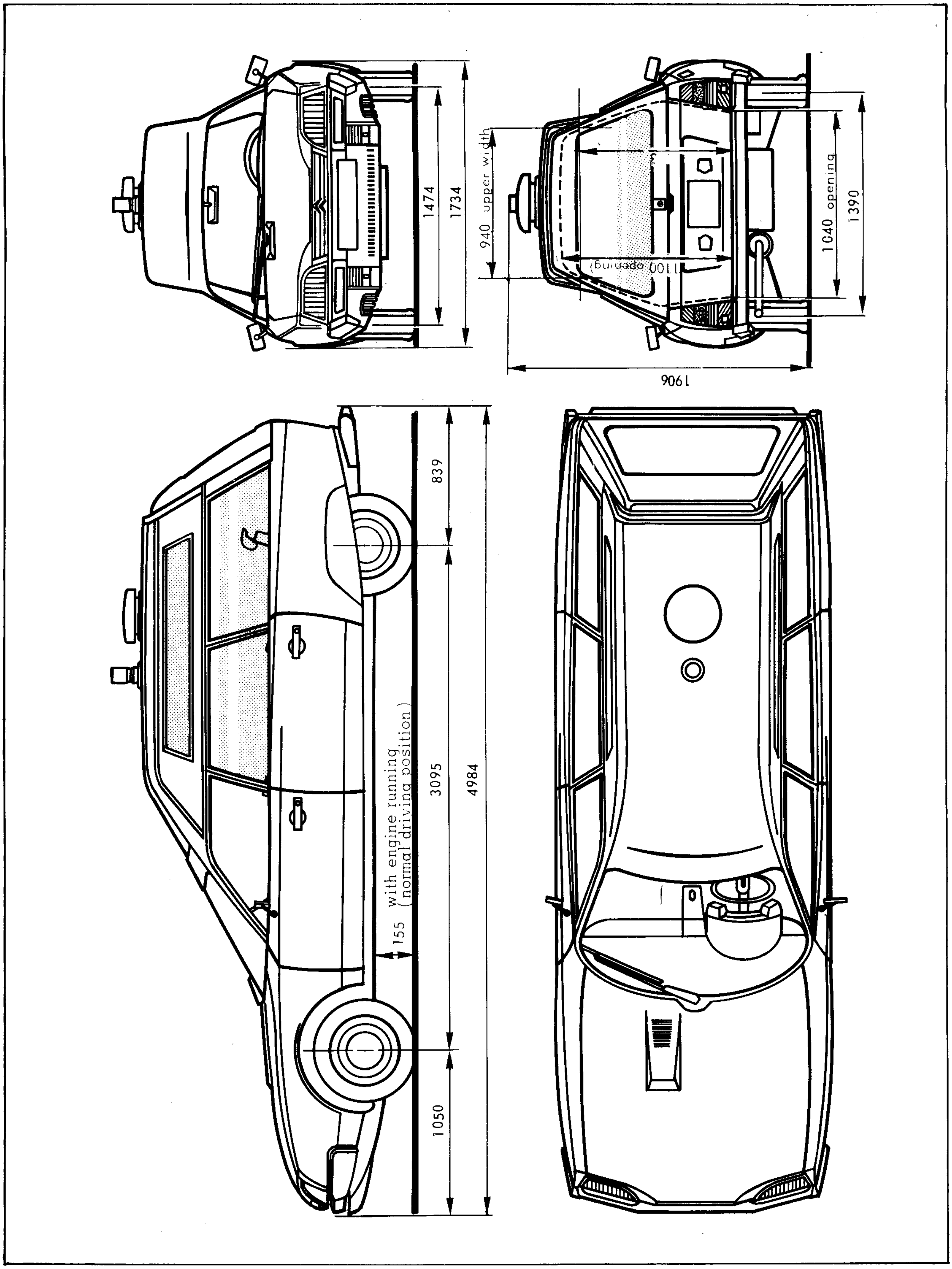
L 80 - 46



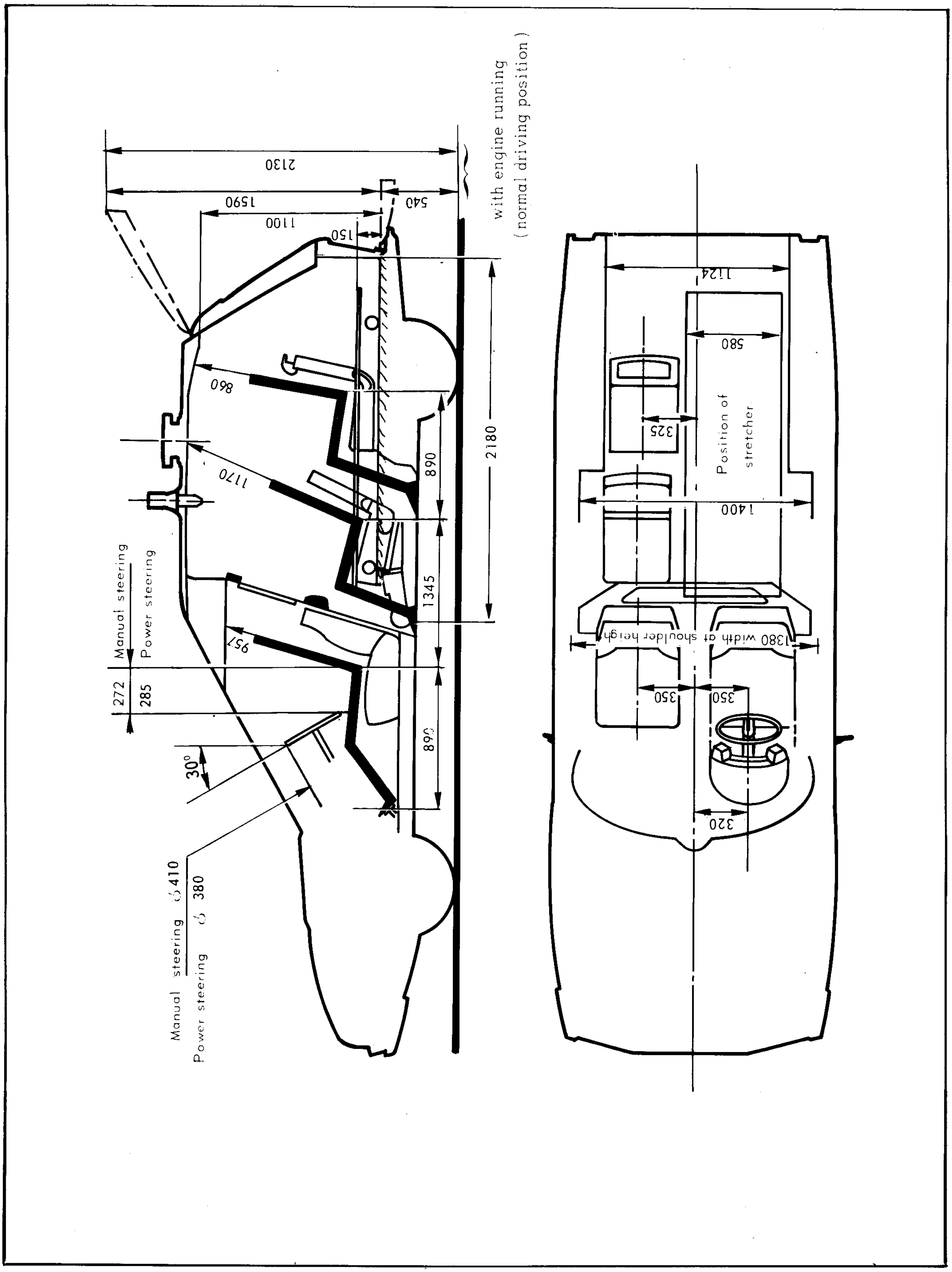
IV. EXTERIOR AND INTERIOR DIMENSIONS

(CX AMBULANCE)

L 80-48

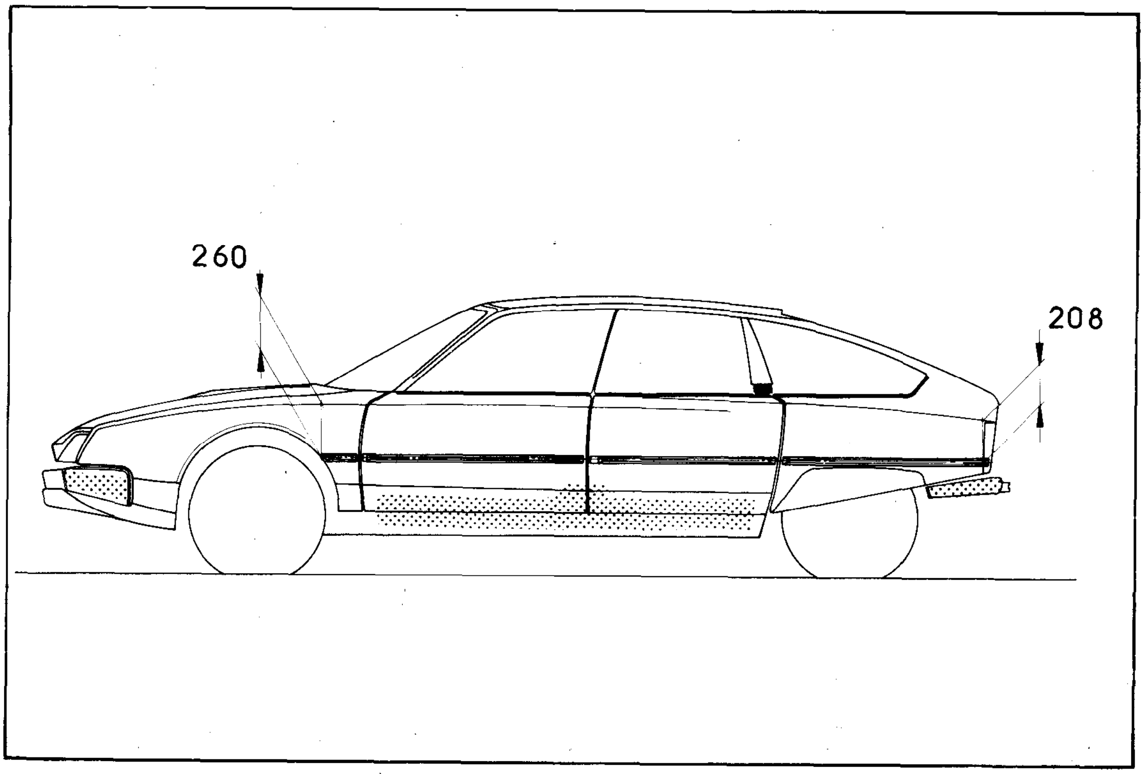


L 80-47


with engine running
(normal driving position)
2130
1590
1100
150
540
2180
860
1170
957
890
1345
890
Manual steering
Power steering
272
285
30°
Manual steering ⌀ 410
Power steering ⌀ 380
1124
580
325
Position of stretcher
1400
1380 width at shoulder heigh
350
350
320

FITTING THE SIDE FINISHING STRIPS

« PALLAS » and « ADMINISTRATION » type

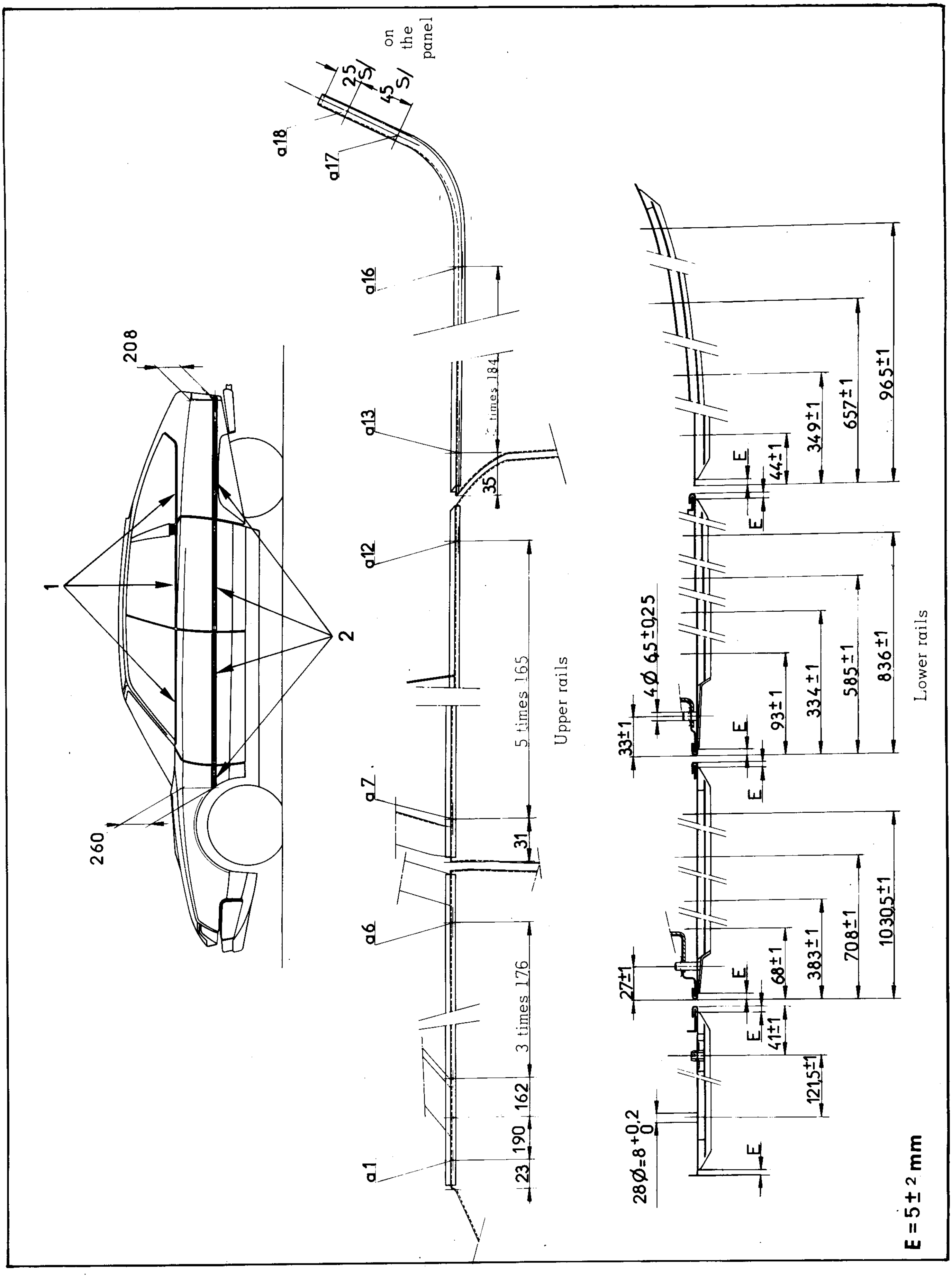


1. Fitting the lower body-shell finishing strips :

Position the inner embellishers : front, centre and rear. The clearance between each embellisher must not exceed 5 mm.
Mark and punch the eight fixing holes using a pin-punch, and fit the round headed self-tapping screws. Tighten them.
Position the outer embellishers, mark and punch each fixing hole using a pin-punch, and fit the self-tapping fixing screws. Tighten them.

2. Fitting the bumper and protective pads :

Fit the protective pads, and secure them using nuts and contact washers.


208
260
1
2
a1
a6
a7
a12
a13
a16
a17
a18
25 S/
45 S/
on the panel
23
190
162
3 times 176
31
5 times 165
times 184
35
Upper rails
Lower rails
28Ø=8+0,2 0
4Ø 6,5±0,25
33±1
27±1
44±1
349±1
657±1
965±1
93±1
334±1
585±1
836±1
68±1
383±1
708±1
1030,5±1
41±1
121,5±1
E
E = 5 ± 2 mm

1. Fitting the upper door finishing strips (1) :

Mark the following :
- on the front door, the point « a 1 » at a distance of 23 mm from the front upper corner of the door and 10 mm from the window surround embellishers,
- on the rear door, the point « a 7 » 31 mm from the front edge of the door, and 10 mm from the window surround embellisher,
- on the rear wing the point « a 13 » 35 mm from the front edge of the wing, and 6 mm from the upper edge of the wing.

Using a piece of string, draw a line passing through each point, and draw the axis of the strips.
Mark the axis of the strip fixing holes (see diagram page 2), as well as the holes at « a 17 » and « a 18 ».
Drill the holes (5 mm diameter).
Fit the plastic clips.
Position the strips on the clips.

2. Fitting the rubbing rails (2) at the centre of the doors :

Mark the front and rear points at a distance of 260 mm at the front and 208 mm at the rear from the waistline of the vehicle.
Mark the central axis of the rubbing rail using a length of string.
Draw a line linking the holes as per diagram on page 2.
Drill all the holes (diameter = 8 mm).
Fit the plastic clips, and secure them.
Position and fit the rubbing rails onto the clips.

PROTECTION OF THE ELECTRICAL UNITS

PRECAUTIONS WHEN CARRYING OUT WORK ON THE CAR

It is absolutely essential to avoid action which may destroy certain of the electrical units or create a short-circuit (with consequent risk of fire).

1. Battery :

a) Disconnect the negative terminal first, then the positive one.

b) Ensure the battery is properly connected, with the negative terminal being connected to earth.

c) Carefully connect both leads to the battery terminals, the negative lead being connected last.
Before connecting the negative lead ensure that there is no flow of current. This can be established by briefly touching the negative terminal with the lead end : sparks indicate a short circuit which must be corrected first.

d) Before using the starter ensure that the two leads are correctly tightened on their respective terminals.

2. Alternator-Regulator :

a) Do not rotate the alternator unless it is connected to the battery.

b) Before connecting the alternator ensure that the battery is correctly connected (negative terminal to earth).

c) Do not check the operation of the alternator by short-circuiting either the positive or the « EXC » terminals and the earth terminal.

d) Take care not to reverse the leads connected to the regulator.

e) Do not attempt to re-energize the alternator : this is never necessary and in any case would damage both the alternator and the regulator.

f) Do not connect a suppressor capacitor at the « EXC » terminal of the alternator or the regulator.

g) Do not connect a charging unit to the battery and never carry out arc welding (or spot welding) on the car chassis unless both the positive and the negative leads are disconnected from the battery.

3. Ignition coil :

a) Connect the supply lead of the coil to the external ballast resistor terminal and not to the coil itself.

b) Connect the suppressor with a jump lead to the feed terminal of the coil. Only fit the suppressor recommended by the factory.

4. Q.I. Headlamps :

a) Only replace a Q.I. bulb with the headlamps switched off. After having used the head-lamps, it is wise to let them cool down for five minutes before handling.

b) Do not touch a Q.I. bulb with bare fingers. Any fingerprints on the bulb must be cleaned off with soapy water and the bulb dried with a lint-free cloth.

Supplement No. 1 to Manual 818-1 (CORR)

I. PRECAUTIONS TO BE TAKEN WHEN WORKING ON THE HYDRAULIC UNITS OR THE SYSTEM.

The correct functioning of the entire hydraulic system presupposes perfect cleanliness of the fluid and the hydraulic units. Stringent precautions must therefore be taken when working on the hydraulic system and during the storage of the fluid and components.

1. HYDRAULIC FLUID :

Mineral hydraulic fluid (LHM) is the only suitable type and must be used to the exclusion of all others in the hydraulic system of the car.

This LHM fluid is *green in colour* and similar to engine oil.

The use of *any other would ruin* the rubber rings and seals in the system.

2. RUBBER UNITS AND PARTS :

Suitable components are identified by their *green colour* and may only be replaced by *genuine replacement components* painted or marked in green.

All rubber components (joints, hoses, diaphragms, etc ...) are of a *special quality for use with LHM fluid* and are identified by their white or green colour.

3. STORAGE :

Components must be stored *full of fluid and blanked off.* Like the piping they must be protected against shock and the ingress of dust.

Rubber tubing and joints must be stored away from dust, air, light and heat.

LHM hydraulic fluid must be stored in its original containers carefully sealed. We advise the use of litre (for topping up) or five litre containers (for refilling) to avoid having to keep opened containers.

4. CHECKS BEFORE CARRYING OUT WORK :

Before working on the hydraulic system in case of incorrect operation, ensure the following :

a) *That the controls or the mechanical linkages of the units or the group of hydraulic units involved are not stiff in operation.*

b) and that the *HP circuit is under pressure*, as follows :

With the engine at idling speed :

- Unscrew the pressure-release screw on the pressure regulator by one or one and one half turns : a sound of leakage should be heard from the regulator.
- Retighten the release screw : cut-out must occur which results in a reduction in the running noise emitted by the H.P. pump.

If not, check in the following sequence :

- that there is sufficient fluid in the reservoir,
- that the reservoir filter is clean and in good condition,
- that the H.P. pump is primed and there is no air leak on the suction side of the pump,
- that the release screw of the pressure regulator is correctly tightened.

Supplement No 1 to Manual 818-1 (CORR)

5. PRECAUTIONS TO BE TAKEN BEFORE WORKING ON THE HYDRAULIC SYSTEM :

a) *Carefully clean* the area of work, the unions and the unit to be removed.

- Disconnect the lead from the negative terminal of the battery.
- Only use petrol or lead-free petrol for cleaning.

b) *Release the pressure* in the circuits

- Place the vehicle in the « *low* » *position*, stop the engine.
- Slacken the Pressure Regulator release screw.
Wait until the front of the car has reached the low position.

6. PRECAUTIONS TO BE TAKEN DURING REMOVAL :

a) *Blank off the metal pipes* with plugs, and rubber tubes with round pins of the correct diameter.

b) *Blank off the openings* of components with plugs of the correct diameter.

NOTE : Plugs and pins must be carefully cleaned before insertion.

7. CHECK OR TEST OF HYDRAULIC UNITS :

- Use 3654-T *test bench* equipped and designed for use with LHM fluid.
This bench is *painted green* and its accessories are marked in green.
- Never use the bench with another fluid or for testing components operating with another fluid (units of a « D » car using LHS2 for instance).

NOTE : The « Le Bozec » pump used on test benches for checking DIESEL injectors can be resorted to for testing components operating with LHM mineral fluid provided that the bench is cleaned first.

8. PRECAUTIONS TO BE TAKEN DURING REFITTING :

a) *Cleaning :*

- steel pipes must be blown through with compressed air,
- rubber tubes and joints must be washed in petrol or white spirit and then dried with compressed air,
- hydraulic units must also be cleaned with petrol or white spirit and blown through with compressed air.

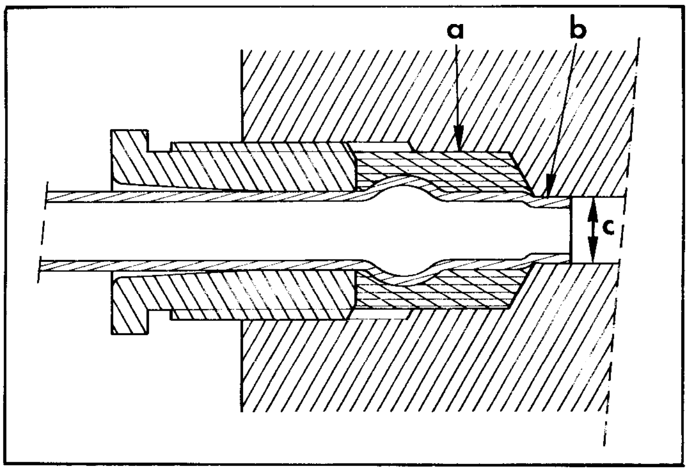
NOTE : Renew all joints and seals during refitting .

b) *Lubrification :*

- Follow the indications as stated in the operations in the Manual.
- Joints and internal parts must be lightly oiled before fitting (use mineral fluid LHM only).
- If parts in contact with hydraulic units have to be greased use a mineral grease only (as employed for Cardan shafts or bearings).

c) *Fitting :*

- Only use joints of a quality compatible with LHM mineral fluid.
- To connect a union proceed as follows :



- Position sleeve-seal « a » lightly coated with LHM fluid; this sleeve seal must not reach the extremity of pipe « b ».
- Centre the pipe in the housing by lining it up with the axis of the hole, avoiding all stress. (Ensure that the end « b » of the pipe enters into the small bore « c »).
- Start screwing in the union nut by hand.
- Tighten nut moderately : excessive force could cause a leak because of deformation of the pipe.

NOTE : Tightening torques :

3.5-mm pipe 4.5-mm pipe	5.8 to 6.6 ft.lbs 8 to 9 mN (0.8 to 0.9 m.kg)
6.0-mm pipe	6.6 to 8.0 ft.lbs 9 to 11 mN (0.9 to 1.1 m.kg)

The design of the various seals ensures that their sealing action increases with fluid pressure. The oiltightness is therefore not improved by greater tightness of the unions.

To connect a rubber tube a rubber ring of suitable diameter has to be positioned between the tube and the hose clip.

9. CHECKS ON COMPLETION OF WORK

On completion of work on hydraulic units or the system itself check the following :

a) The union for leaks.

b) The clearance between the pipes : pipes must not touch one another or any other component, nor may any other unit, whether fixed or movable, exert any stress on them.

II - REPAIRS PLASTIC TUBING.

OBSERVATIONS :

a) This operation can be carried out by sleeving the damaged tube.

b) If two sleeves are to be located on one length of tube the interval between them must be about 30 in. in order to retain the flexibility of the tubing.

c) Obtain a bottle of Rilsan adhesive (125 cc) sold by the BOYRIVEN firm , 37 bis rue de Villiers - 92200 - NEUILLY sur SEINE - Tel. 624-36-11.

(Rilsan adhesive harms the skin : avoid touching it with the fingers, use a wooden spatula instead).

1. Cut the tubing and roughen the ends over a length of some 3.5 in. with abrasive paper N° 600.

2. Carefully degrease the roughened ends and the sleeve with trichlorethylene.

3. Heat the Rilsan adhesive in a water-bath to raise its temperature to 60° C.

Do not exceed this temperature.

NOTE : This operation is essential to cut down drying time.

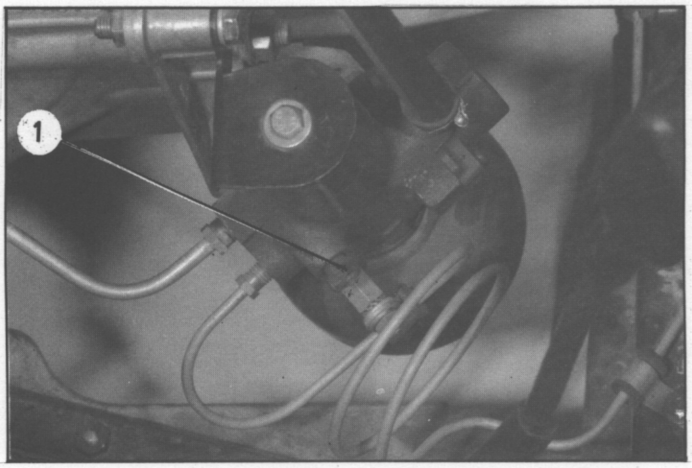
4. Coat the ends of the tube and the inside of the sleeve with adhesive.

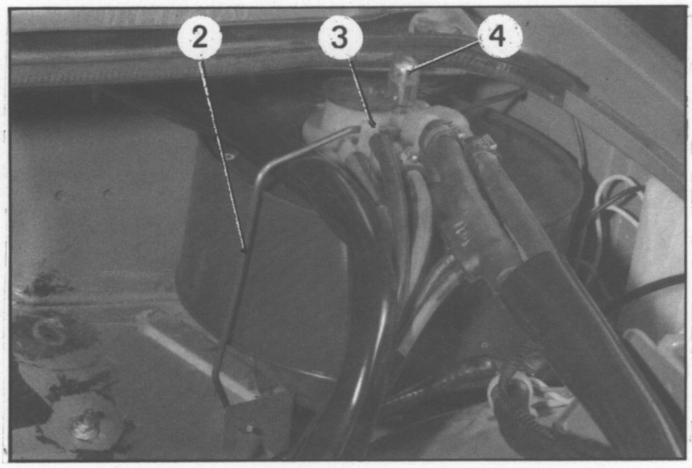
Leave the parts to dry for a few minutes.

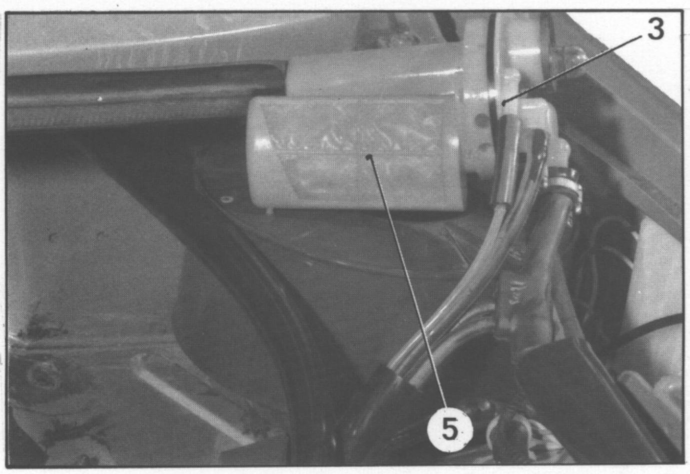
Insert the ends of the tube into the sleeve.

Allow the assembly to dry for three to four hours before using the repaired tube again.

III - DRAINING THE HYDRAULIC CIRCUIT.







DRAINING

a) Set manual control lever in *low position.*

b) Slacken the pressure regulator bleed screw (1).

c) Remove the reservoir retaining clip (2).

d) Free the control block (3).

e) Remove the following from the central block :
- the return filter (5),
- the intake filter (6).

f) Remove the reservoir, empty it, and free the deflector *(separating plate at bottom of reservoir).*

g) Clean filters (5) and (6), the reservoir and the deflector with petrol, then blow through with compressed air.

h) Reassemble the unit.

FILLING

a) Fill the reservoir with approximately 3 litres of LHM hydraulic fluid.

b) **Priming the HP pump :**

Fill the pump with hydraulic fluid through suction pipe.
Start the engine and set manual height control to the *high position.*
Tighten the pressure regulator bleed screw (1).
When vehicle has stabilized, top up level of fluid in the reservoir until level indicator (4) has reached the upper red mark.

MAIN RECOMMENDED MATERIALS
I. ADHESIVES.

BASE	MATERIAL TO BE BONDED	METHOD OF APPLICATION	TYPE OF ADHESIVE (Examples)	RECOMMEND SOLVENTS
Painted metal	Targa Rubber Finishing strip	Coating of the base Coating of the material Drying Positioning Smoothing	REST-AGRAF Neoprene Ref. Choisyprene TEROSON Ref. Térokal 2444	Petrol Trichlorethane 111
	Vinyl	Coating of the base Coating of the material Drying Positioning Smoothing	MINNESOTA synthetic rubber adhesive Ref. : EC 1236 MIPLACOL Acrylo-nitrite Ref. : HS 3688	Trichlorethane 111
Painted metal Cardboard Felt	Cloth Felt	Coating of the base Drying Positioning Smoothing	S.E.R. ONFROY Ref. : 306 BOSTIK Natural rubber adhesive Ref. : 1313	Petrol
Glass	Aluminium (Lower edge of windows)	Preparation of adhesive Preparation of surfaces Coating of both faces Application of pressure Bonding time	TEROSON Epoxy Ref. : Térokal COLFIX Ref. : Masticol	Warm water before polymerisation
	Base of mirror stems	Preparation of surfaces Coating of material Positioning Application of pressure	COMET Special Ref. : Glass/metal kit	Super-clean
	Rilsan (runners)	Coating of base Coating of material Drying Positioning Application of pressure	COLFIX Neoprene Ref. : 550 MINNESOTA Ref. : EC 1099	Petrol Trichlorethane 111
	Klégécel	Coating of base Coating of material Drying (3-8 mins) Positioning Application of pressure	BOSTIK Neoprene Ref. : 1400 MINNESOTA Ref. : EC 1099	Trichlorethane 111 Solvent S (P.C.A.S.)
Polyester	Polyurethane foam	Coating of the base Drying Positioning Smoothing	COLFIX Neoprene Ref. : 180 MINNESOTA Ref.: Spray Pavillon 77	Petrol Trichlorethane

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II. CLEANSING PRODUCTS

USAGE	PRODUCT	CHARACTERISTICS	MANUFACTURERS
Rinsing LHM hydraulic piping	TOTAL Hydro-rinçage	For a thorough rinse, leave the product in the circuit for 1000 km (600 m)	TOTAL C.F.R.
Degreasing of mechanical assemblies, when cold	MAGNET 6	Insoluble, in water, dries rapidly has high insulating qualities	MAGNUS
	OIL AND GREASE REMOVER	Let the product act (undiluted in solvent) then rinse with water	MULLER AND CO
	PROTOLAN 3 D	Is used undiluted and must be rinsed with water	Ets N BREGER
	RAVITOL X		Ets RAVICOLOR
Joint face cleanser	MAGSTRIP	Gelatineous liquid for removing liquid gaskets and non-metal gaskets	MAGNUS
	SUPER-CLEAN	Dry cleanser to be used before application of Loctite products	COMET Department D.A.V.A.
Cleaning of carburettors	Carburettor cleaner	Product to be used undiluted Is supplied as : an aerosol or a liquid	SOFRALUS-BARDAHL
	P.D.R.		AGIR
	Carbuclin		REDEX - FRANCE

III. SEALING PASTES.

USAGE	PRODUCT	CHARACTERISTICS	MANUFACTURERS
Sealing of joint faces, screws, studs and nuts	PROTO-JOINT	Resist mechanical stress, and oil-derived products	JEAN - BRASSART
	CURTYLON	Clean with alcohol	CEFILAC Department Joint Curty
	LOWAC	Resists hydrocarbons	SEBIS
	FRENETANCH	Locks and seals any assembly which is screwed on, but must remain removable	COMET Department D.A.V.A. NOTE : These five products are available as a kit, with in addition SCELBLOC (to be used when securing bearings, bushes etc..) and SUPER-CLEAN (cleansing product)
	FRENEBLOC	Locks and seals studs, screws and nuts with maximum effectiveness	
	FORMETANCH	Seals joint faces and unions	
	FORMAJOINT	Seals joint faces, as replacement of ordinary gaskets	
Sealing of door and windscreen sealing rubbers	SILICOMET noir *(black)*		

SEALING PASTES (continued)

USAGE	PRODUCT	CHARACTERISTICS	MANUFACTURERS
Sealing of porous sections of casings	DEVCON F	Aluminium based	COMET Department D.A.V.A.
	METALIT		DISEMPEX
	METOLUX A	Light metal based	METOLUX
	SILASTIC 732 R.T.V.	Remains supple after drying	DOW CORNING S.A.R.L.
Sealing of the pipes waming the inlet manifold	Refractory adhesive paste Ref. 1500 (COLLAFEU)		Ets BARTHELEMY

IV. PENETRATING OILS.

USAGE	PRODUCT	CHARACTERISTICS	MANUFACTURERS
Rusty or corroded components, or assemblies rusted in position	DEGRIPPANT	Aerosol	MOLYDAL
	DEGRIPPANT MO	Aerosol or 5 litre can	SOFRALUS-BARDAHL

V. GREASES AND LUBRICANTS.

USAGE	PRODUCT	CHARACTERISTICS	MANUFACTURERS
Greasing of « fluid-bloc » suspension bushes	RHONE-POULENC S.I. 33	Silicone grease	LAMBERT-RIVIERE
	GRAISSE 33 (MEDIUM)		DOW CORNING S.A.R.L.
Greasing of drive-shafts	GRAISSE 1495	Highly adhesive universal grease	MOLYDAL
	MOLYKOTE LONGTERM 2	Extreme pressure grease, good adhesive, and is waterproof	DOW CORNING S.A.R.L.
	TOTAL MULTIS MS	Universal grease	TOTAL C.F.R.
Lubricant for rubber and plastic	REDEX-SILICONE	Aerosol	REDEX - FRANCE
Components operating under difficult conditions	HI - LUB - HTC	Aerosol lubricant; resists salt and fresh water at high pressures and temperatures	COMET (Department D.A.V.A.)
Lubricant for spark-plug threads	NO-BIND	Anti-locking lubricant ; resists high temperatures	CEFILAC (Department Joint Curty)

LIST OF MANUFACTURERS

NAME	ADDRESS	TELEPHONE
AGIR	69360 SEREZIN du RHONE	(78) 49.80.27
BARTHELEMY	61, rue Defrance - 94300 VINCENNES	328.42.87
BOSTIK S.A.	5, route de St Leu 95360 MONTMAGNY	964.64.12
BRASSART J.	44, rue de la Boetie - 75008 PARIS	359.54.82
ETN BREGER	Le Pasty St Aubin de Luigne - 49190 ROCHEFORT / LOIRE	(41) 41.73.03
CEFILAC (Department joint Curty)	25, rue Aristide Briand 69800 SAINT PRIEST .... or 7 à 11, rue de la Py 75020 PARIS	(78) 20.08.94 797.01.49
C.F.R. (TOTAL)	11, rue du Docteur Lancereaux 75381 PARIS CEDEX 08	267.15.00
COMET (Department D.A.V.A.)	10, rue Eugène Cazeau 60300 Z.I. de SENLIS	453.13.20
COLFIX (SCHULTZ)	43, route de la Metzeau 68100 MULHOUSE	(89) 42.10.84
DISIMPEX	1, rue Goethe 75016 PARIS	727.89.59
DOW-CORNING S.A.R.L.	140, avenue Paul Doumer - 92500 RUEIL-MALMAISON	977.00.40
LAMBERT-RIVIERE	16, rue de Miromesnil - 75008 PARIS	265.16.50
MAGNUS	12, rue du Moulin de Cage 92390 VILLENEUVE LA GARENNE	798.13.30
METOLUX S.A. FRANCE (Societe Henri Lecocq)	167, rue de Fontenay 94300 VINCENNES	808.55.11
MINNESOTA DE FRANCE	135, boulevard Sérurier - 75019 PARIS	202.80.80
MIPLACOL	52, avenue de la Concorde 93270 SEVRAN	939.85.36
MOLYDAL	60, rue des Orteaux 75020 PARIS	797.28.30
MULLER & Cie	28, avenue de l'Opéra 75002 PARIS	742.58.36
ONFROY	35, rue L. Sampaix - 75010 PARIS	206.84.70
P.C.A.S.	23, rue Bossuet - 91160 LONGJUMEAU	909.77.85
RAVICOLOR	32, rue de Mulhouse - 68304 St LOUIS	(89) 67.13.37
REDEX-FRANCE	86, avenue de la République 93300 AUBERVILLIERS	352.75.94
REST-AGRAF	6, place du Général Leclerc - 92300 LEVALLOIS	757.67.34
S.E.B.I.S.	3 à 5, rue de Metz - 75010 PARIS	770.13.08
SOFRALUS-BARDAHL	27, boulevard du Général Leclerc - BP 29 - 59051 ROUBAIX	(20) 70.02.12
TEROSON	175 à 179, avenue J. Jaurès - 75019 PARIS	202.50.72

P.T.O.

I. CHARACTERISTICS

	CX 2000	CX 2200	CX 2400 and Prestige	CX 2400 GTI
- Type (on engine plate) :	M 20/616	M 22/617	M 23/623	M 23/622
- Cubic capacity :	1985 cc	2175 cc	2350 cc	2350 cc
Transversely mounted, inclined 30° towards the front				
- Number of cylinders :	4 *(in line)*	4 *(in line)*	4 *(in line)*	4 *(in line)*
- Bore :	86 mm	90 mm	93.5 mm	93.5 mm
- Stroke :	85.5 mm	85.5 mm	85.5 mm	85.5 mm
- Compression ratio :	9/1	9/1	8.75/1	8.75/1
- Maximum power **(DIN)** :	102 bhp at 5500 rpm	112 bhp at 5500 rpm	115 bhp at 5500 rpm	128 bhp at 4800 rpm
- Maximum torque **(DIN)** :	15.5 m.kg (112 ft.lb) at 3000 rpm	17 m.kg (123 ft.lb) at 3500 rpm	18.2 m.kg (132 ft.lb) at 3000 rpm	20.1 m.kg (145 ft.lb) at 3600 rpm
- Maximum engine rpm in 4th gear :				
*13/62 final drive ratio :	5600 rpm	5800 rpm	5900 rpm	
*14/61 final drive ratio (→ *1/1975*)	4600 rpm			
- Maximum engine rpm in 5th gear (13/62 final drive ratio) :				5600 rpm

* NOTE : For CX 2200 and CX 2400 vehicles fitted with a torque converter, the maximum rpm in 3rd gear is 5600 rpm.

Cooling system : Water cooled.

Lubrification :
Under pressure, supplied by a gear-type oil-pump driven by the camshaft.
External oil filter cartridge (PURFLUX, LS 105 type).

Fuel supply :

a) *Engines fitted with a carburettor :*
WEBER compound-type twin choke carburettor (see Operations MA. 142-00, 142-00 a, 142-00 b for the type, and the identification marks).
Dry-type air filter, with filter cartridge.
Mechanical fuel pump, driven by an eccentric on the camshaft.

b) *Engines fitted with fuel injection :*
BOSCH L-Jetronic electronic fuel injection system.

Grade of petrol to be used : .... *R. 99 Octane rating* (FRANCE : Super grade) (U.K. : 4-star)

Ignition :
Distributor (DUCELLIER or MARELLI) driven by the camshaft.

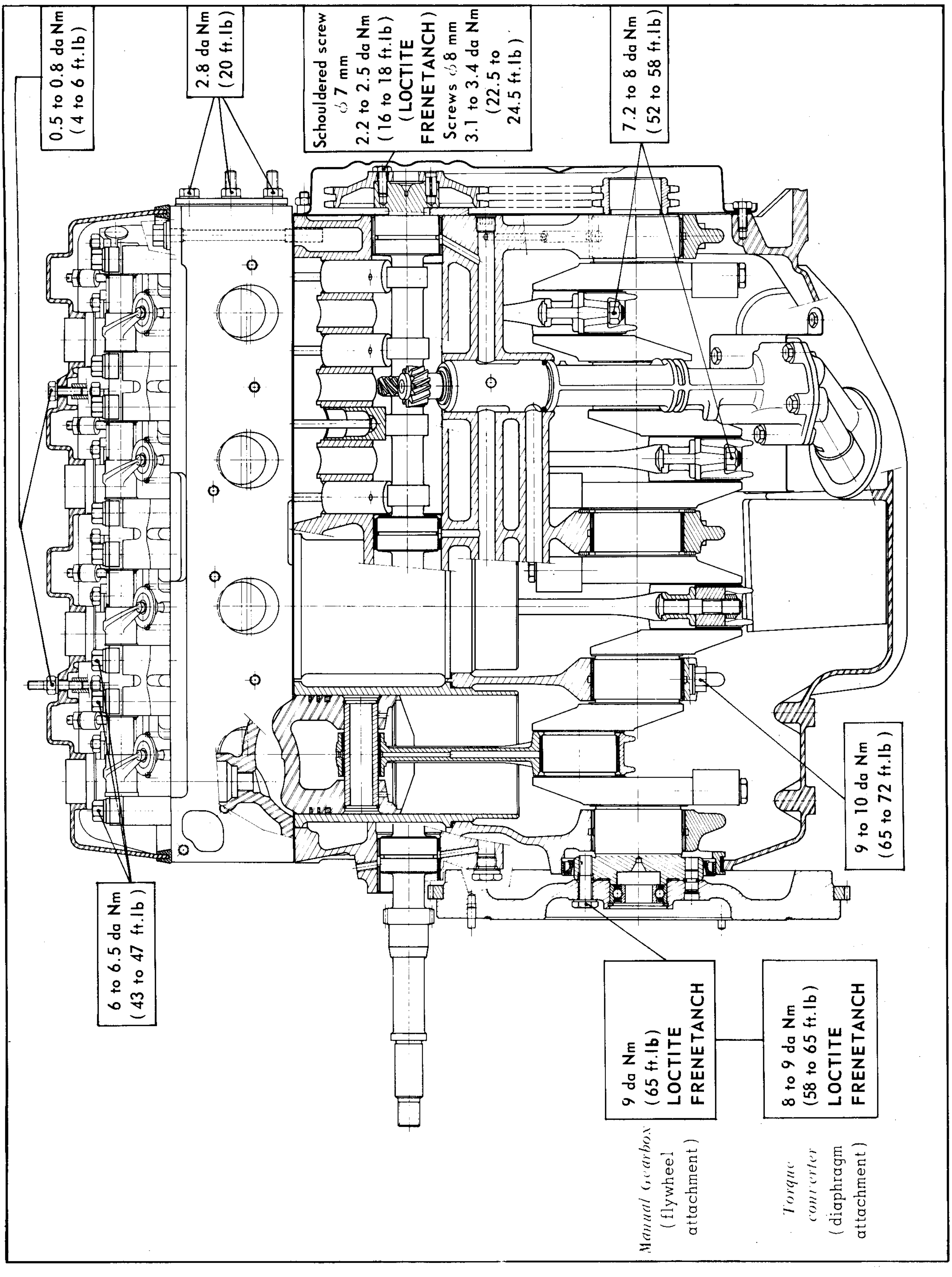
NOTE : The M 23/622 engine with fuel injection is fitted with a DUCELLIER distributor with a magnetic sensor, and an « AC-DELCO » electronic module.

- Spark plugs : .... *short reach*
- Firing order : .... 1 - 3 - 4 - 2 *(the cylinders are marked on the rocker cover)*

Timing :
Side mounted camshaft located in crankcase.

ENGINE

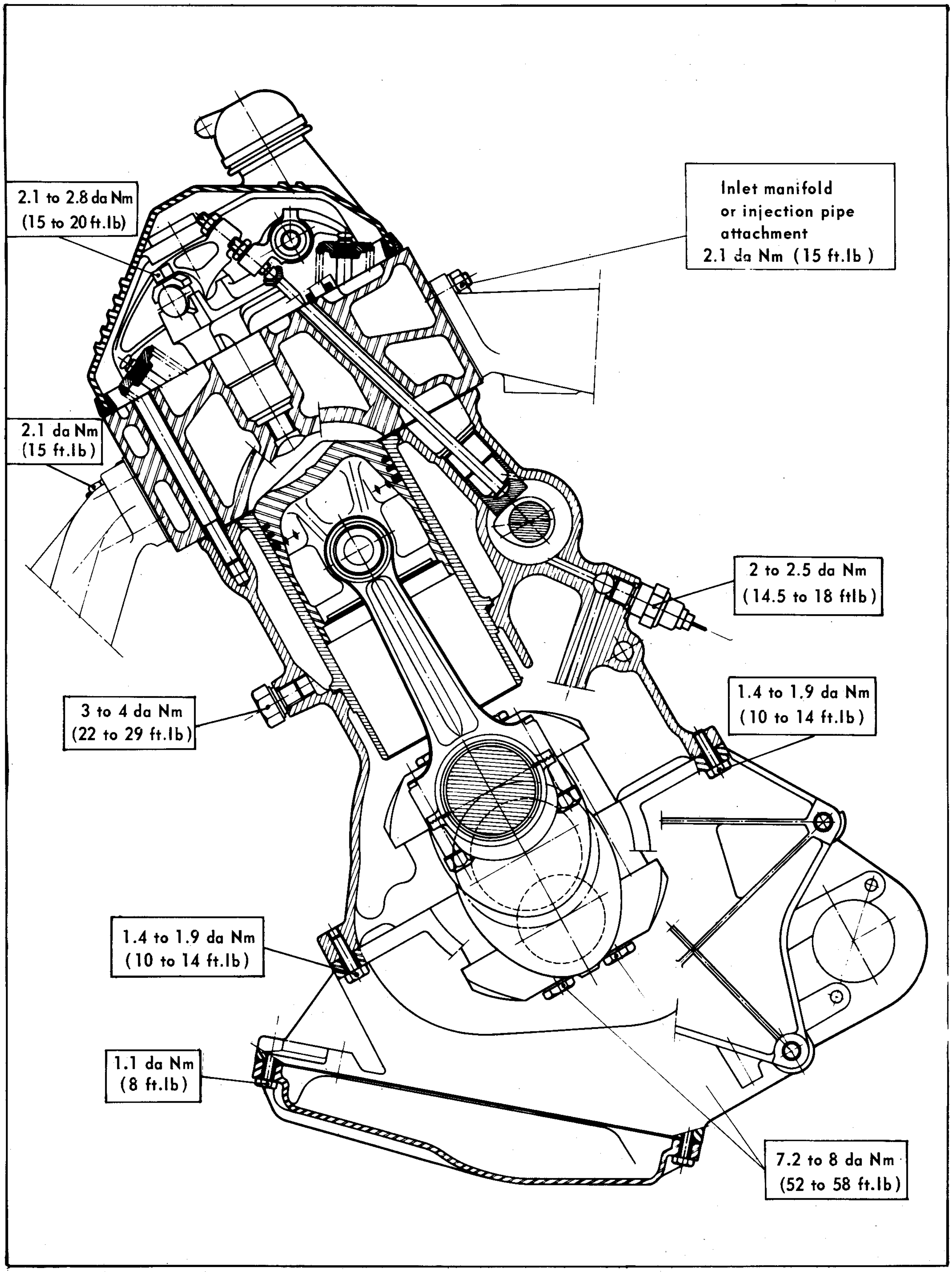
Longitudinal section



NOTE : For the remaining tightening torques, see page 17.

ENGINE

Cross-section



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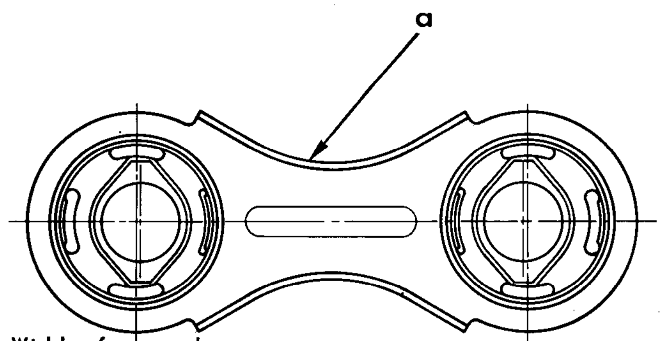
NOTE : For the remaining tightening torques, see page 17.

II. PARTICULAR FEATURES.

1. Engine suspension :

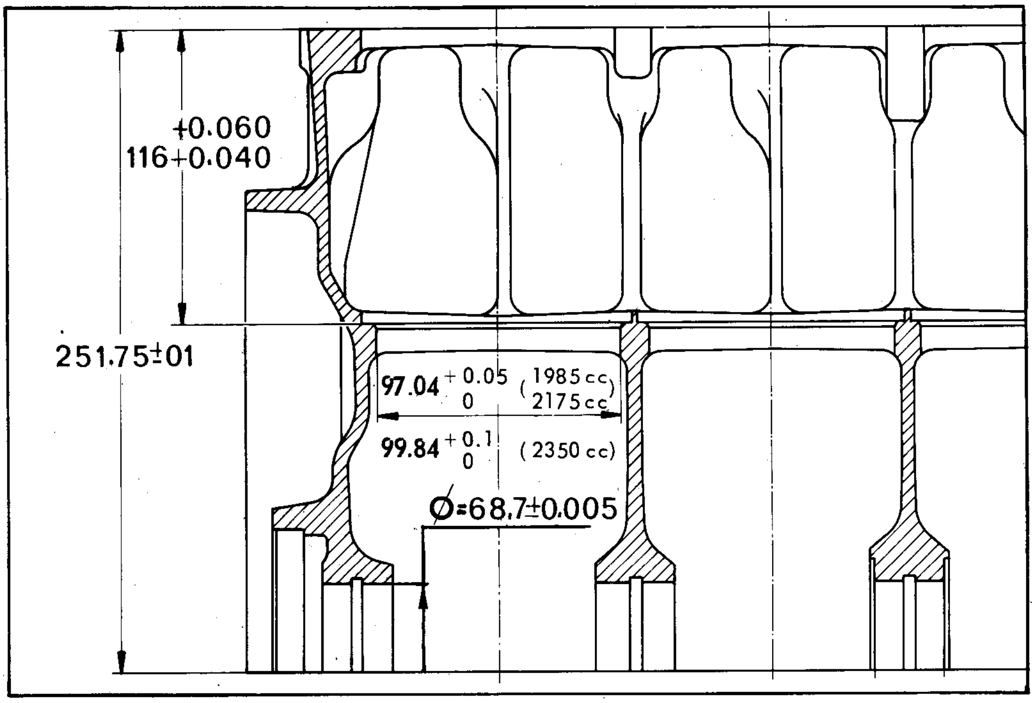
4 speed manual gearbox	5 speed manual gearbox, and torque converter gearbox
2 bearers under the engine gearbox unit : - 1 on the engine side - 1 on the gearbox side *(adjustable by means of slots)* **2 torque bars at the upper section :** - torque bar on the gearbox side : • *yellow paint mark at « a »* - torque bar on the engine side : • *blue paint mark at « a »* NOTE : When fitting, position the paint mark uppermost.	**1 bearer under the engine-gearbox unit on the engine side** *(adjustable on the subframe by means of slots)* **1 vertical flexible mounting on the gearbox side** **1 torque bar at the upper section** *(green paint mark at « a » to be positioned uppermost on fitting)* NOTE : The 5-speed manual gearbox has a different vertical flexible mounting from the torque converter gearbox



Width of torque bar :
- *Manual 4-speed gearbox :* .... 36 mm
- *Manual 5-speed gearbox and torque converter gearbox :* .... 42 mm

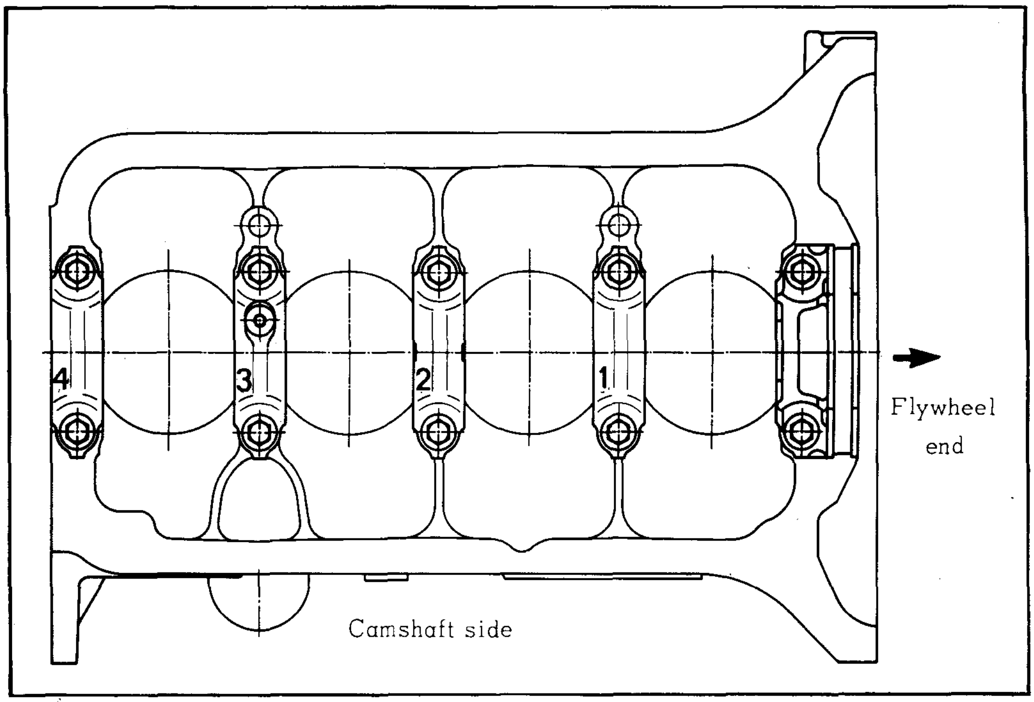
2. Crankcase :

a) Cylinder block in cast iron with removeable barrels.



- Tappet housing bore : .... 24 $^{+0.05}_{+0.025}$ mm

FITTING THE CRANKSHAFT BEARING CAPS.



b) Lower crankcase :
Cast in aluminium, and provides a mounting for the right-hand drive-shaft bearing.

c) Timing chain cover :
Pressed steel, sealed by a cork gasket.

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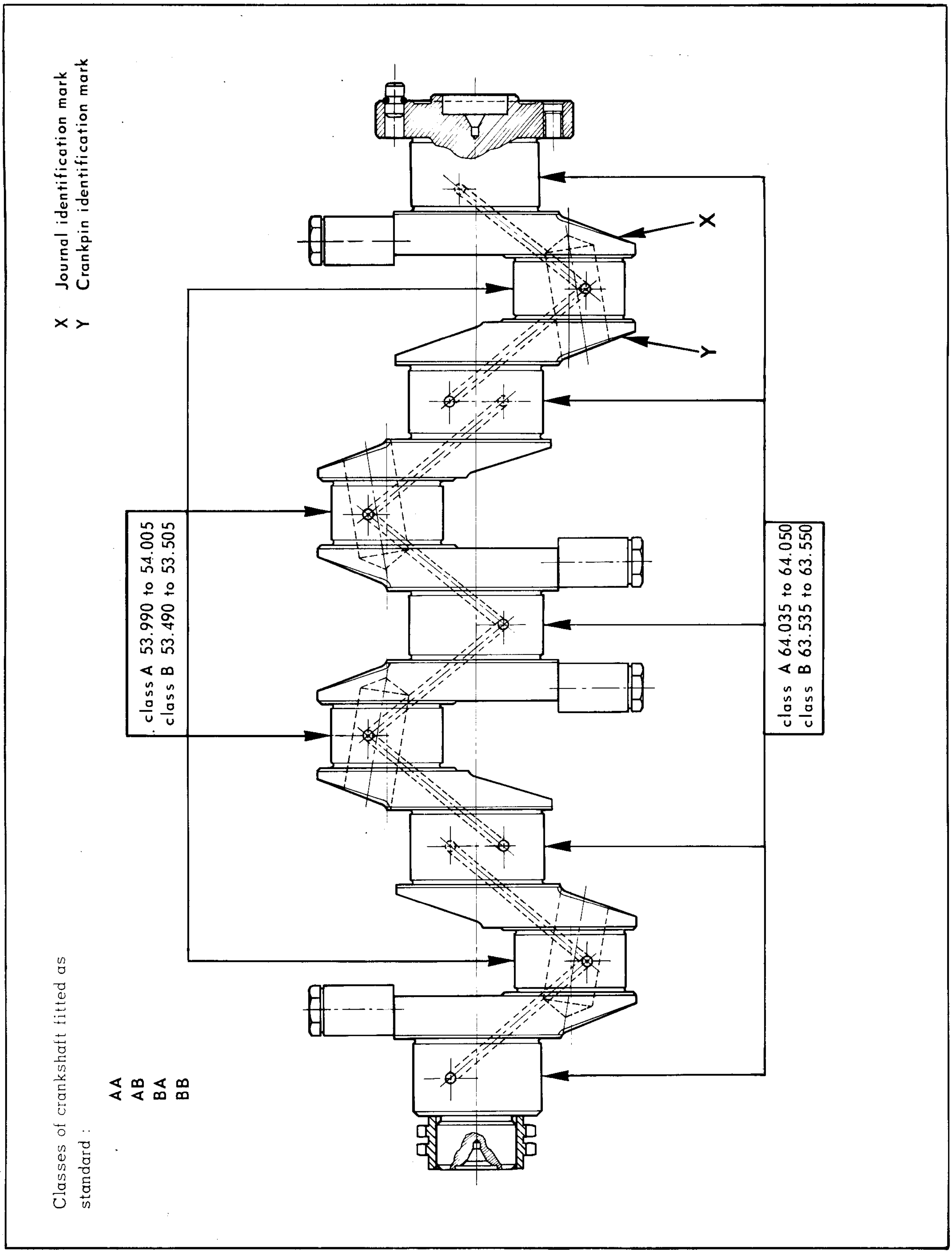
3. Crankshaft :

Five-bearing, forged steel crankshaft.
The junctions between the crankshaft webs and the crankpins, the crankshaft webs and journals, as well as the thrust faces for the bearing half-rings and the oil-seal are rolled *(treatment for improving surface hardness).*

NOTE :
There is an oil-seal on the flywheel side of the crankshaft, in the form of a bush.

CRANKSHAFT



NOTE : The Replacement Parts Department only supplies one class of crankshaft : AA

- Tightening torque for the balance-weight fixing screws : .... 7.2 to 8 da Nm (52 to 57 3/4 ft.lb)

CRANKSHAFT BEARINGS AND RINGS

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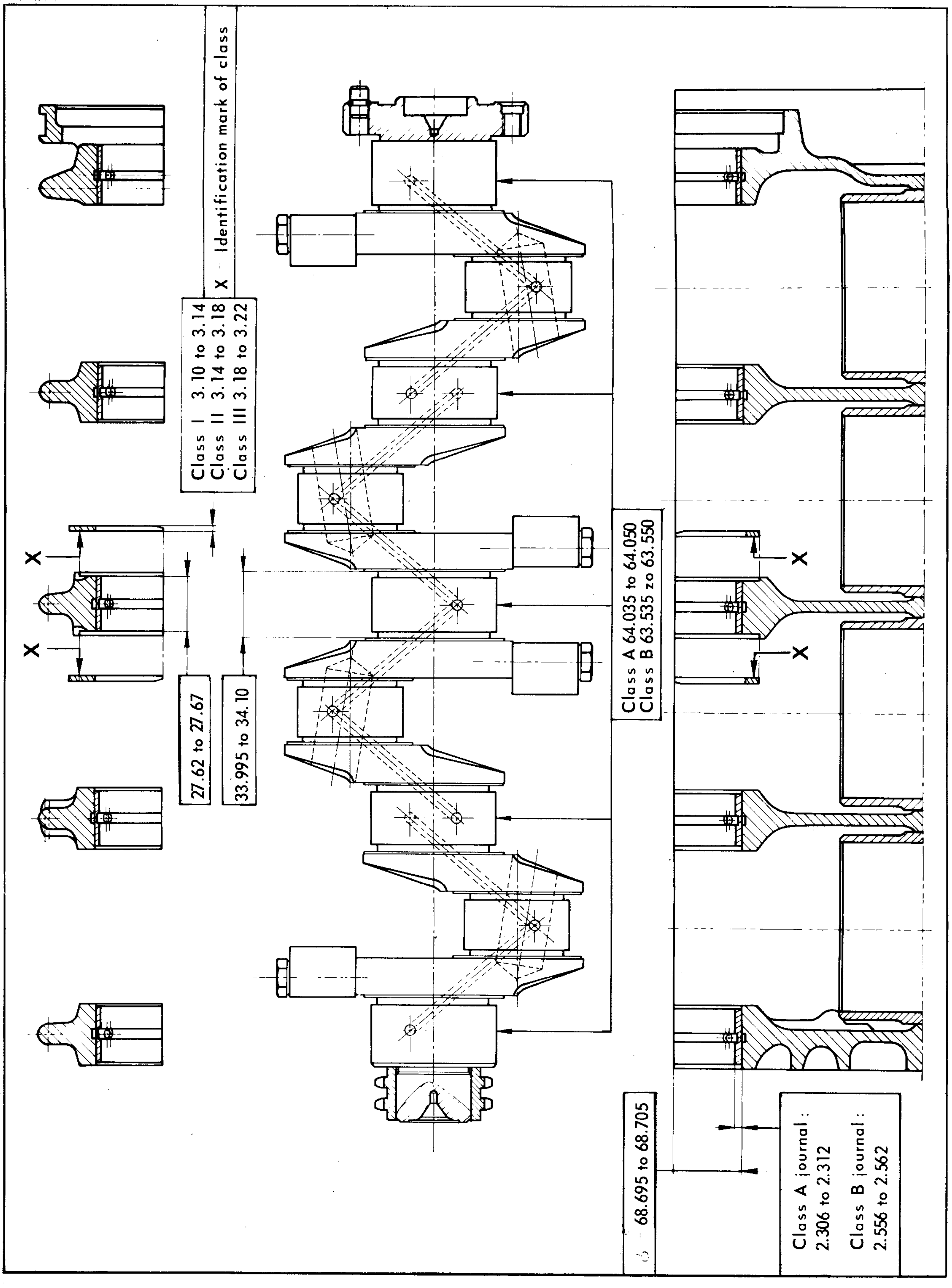
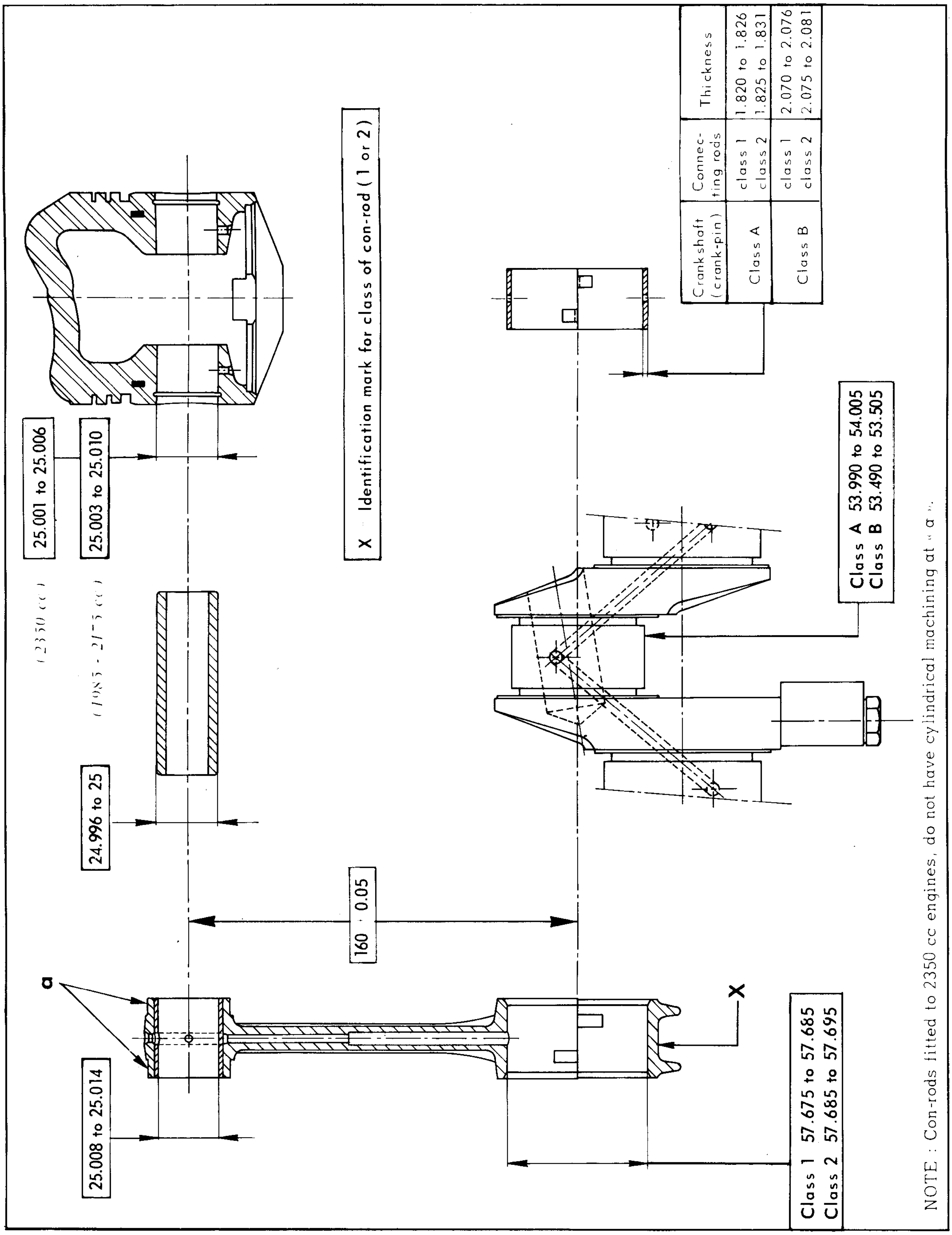


Crankshaft end-float .... 0.045 to 0.16 mm

♦NOTE : On engines fitted with **a torque converter gearbox**, the half-rings for adjusting the crankshaft end-float have an additional lead-tin surface treatment.

CRANKSHAFT - CONNECTING RODS - PISTONS



Crankshaft (crank-pin)	Connecting rods	Thickness
Class A	class 1	1.820 to 1.826
	class 2	1.825 to 1.831
Class B	class 1	2.070 to 2.076
	class 2	2.075 to 2.081

The Replacement Parts Department only supplies connecting rods in sets of 4 (class 1)

- End-float of connecting rods on crankshaft : .... 0.037 to 0.247 mm
- Variation in the weight of the connecting rods on the same engine : .... 7 g max.

4. Barrels and pistons :

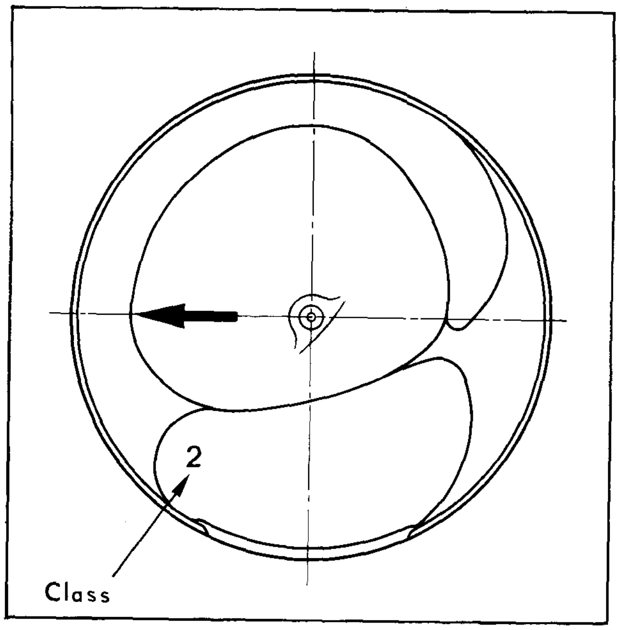
a) Barrels :

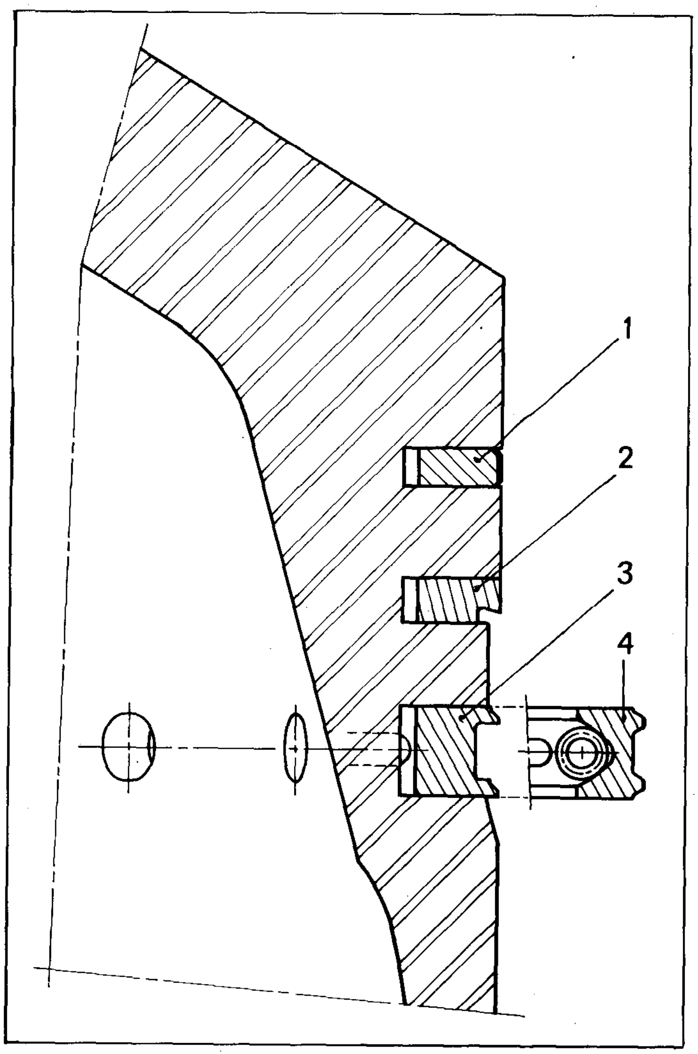
- cast iron wet-type removable barrels.

b) Pistons :

- autothermic pistons, in lead-coated alpax,
- correct fitting : the arrow must point towards the engine flywheel.

PISTON IDENTIFICATION MARKS





c) Piston rings :

Correct fitting of piston rings :

The mark « TOP » or the manufacturer's mark must face the crown of the piston.

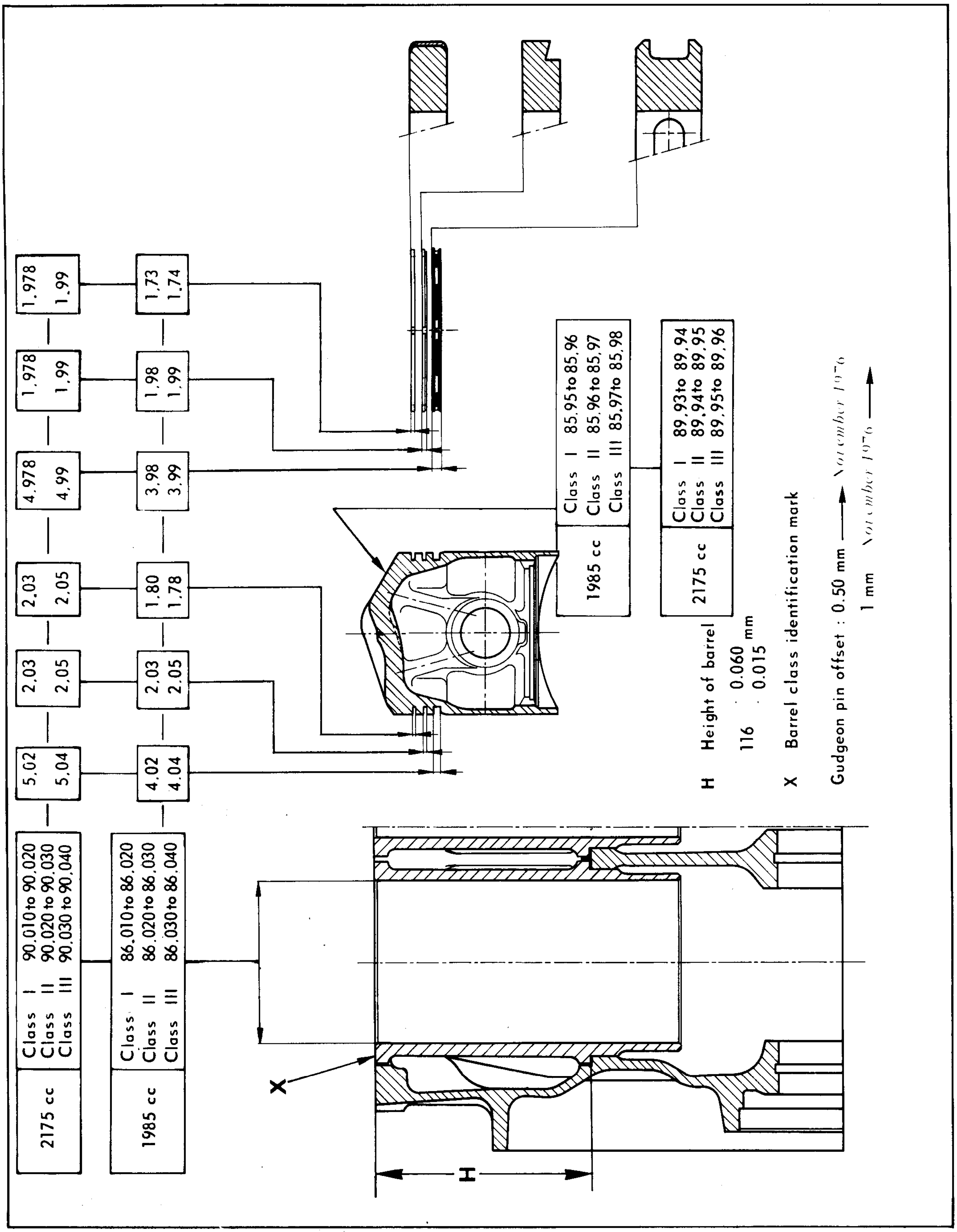
1. Compression ring (no mark)

2. Oil scraper ring (marked).

3. Scraper-collector ring (marked) 3 or 4.

NOTE : Since February 1976, the scraper ring (2) on 1985 cc engines is conical, and not « tooth-shaped ».

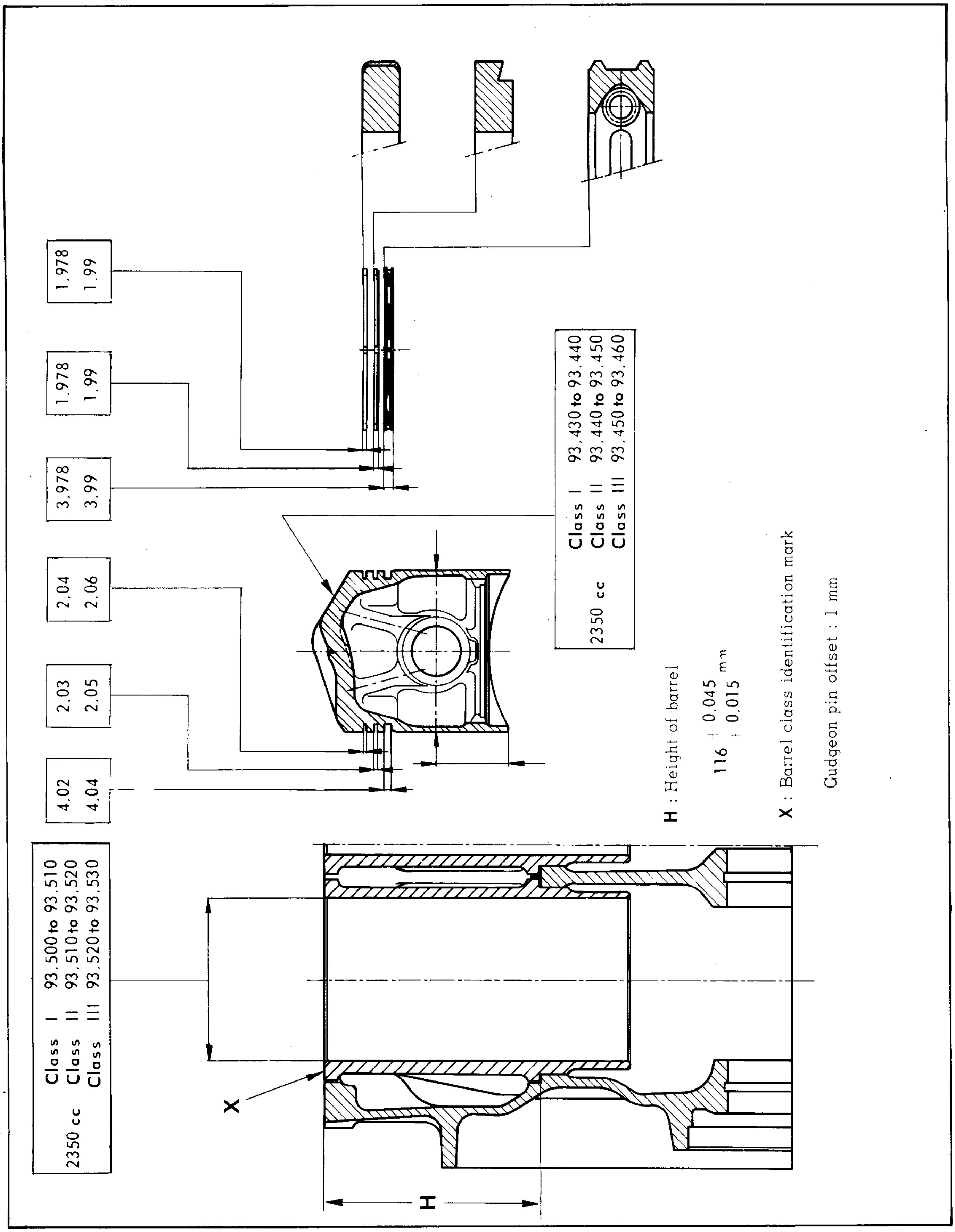
BARRELS AND PISTONS *(1985 cc and 2175 cc)*



Replacement Parts Department only supplies barrel piston, gudgeon pin and piston ring assemblies in sets of 4.

- Thickness of barrel base gasket (uncompressed) : .... 0.1 ± 0.015 mm
- Protrusion of barrel (with gasket uncompressed) : .... 0.04 to 0.135 mm
- Variation in weight (gudgeon pins, piston and piston rings) on the same engine : .... 5 g max.

BARRELS AND PISTONS *(2350 cc)*



Supplement No. 1 to Manual 818-1 (CORR)

The Replacement Parts Department only supplies barrel, piston, gudgeon pin and piston ring assemblies in sets of 4.

- Thickness of barrel base gasket (uncompressed) : .... 0.1 ± 0.010 mm
- Protrusion of barrel (with gasket uncompressed) : .... 0.045 to 0.115 mm
- Variation in weight (pistons, gudgeon pins, and gudgeon pin circlips) on the same engine : .... 5 g max.

5. Cylinder head :

Aluminium alloy, with hemispherical combustion chambers.

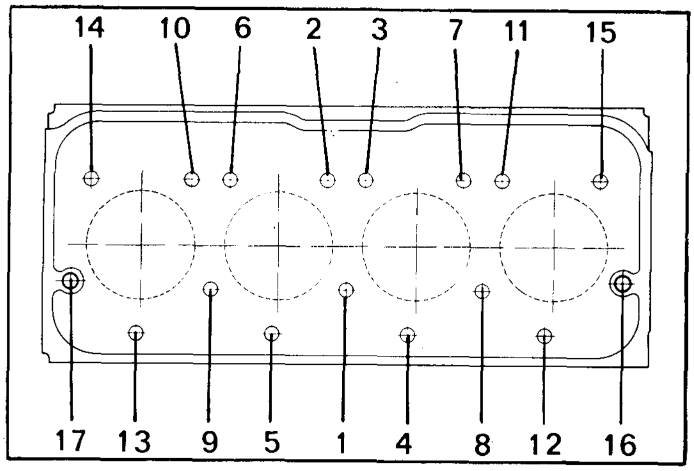
- Original height : .... 90 mm
- Overall flatness to within : .... 0.10 mm
- Flatness between fixing holes to within : .... 0.025 mm

a) Head gasket :

Round clinching (diameter = 92.5 mm), the identification mark « CEFILAC » or « COOPERS » towards the cylinder head (1985 cc).
Oval clinching; the identification mark « CEFILAC » towards the cylinder head (2175 cc).
Round clinching (diameter = 96.5 mm), the identification mark « CEFILAC » towards the cylinder head (2350 cc).

Tightening torques *(cold)* :
- Initial tightening............ 3 da Nm (21 3/4 ft.Ib)
- Final tightening.............. 6 to 6.5 da Nm (43 1/2 to 47 ft.Ib)

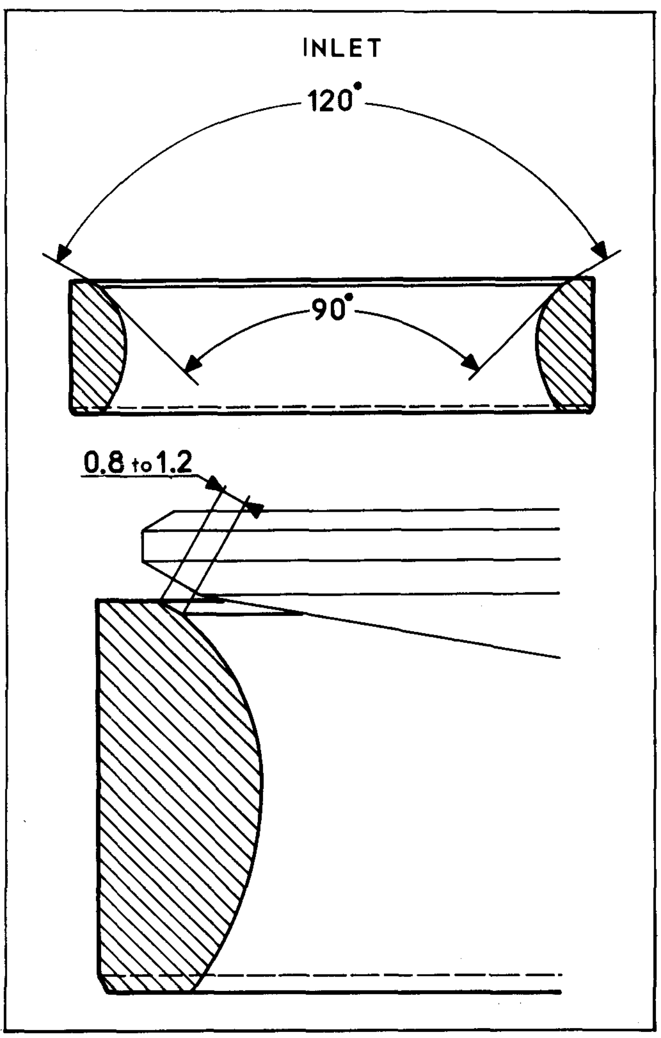
TIGHTENING SEQUENCE

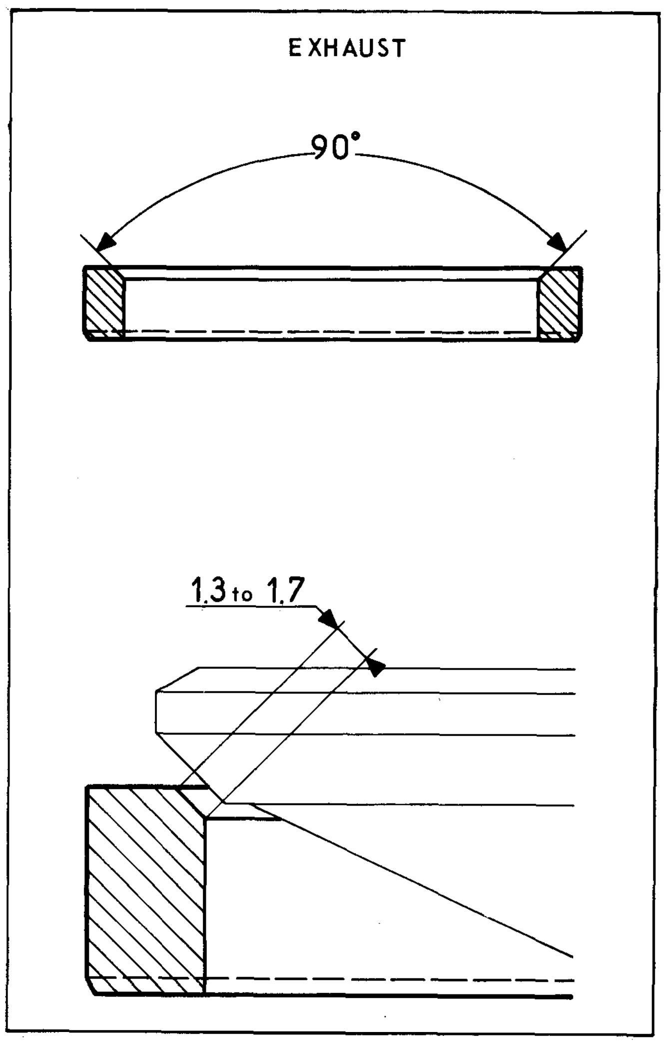


b) Valve seats :

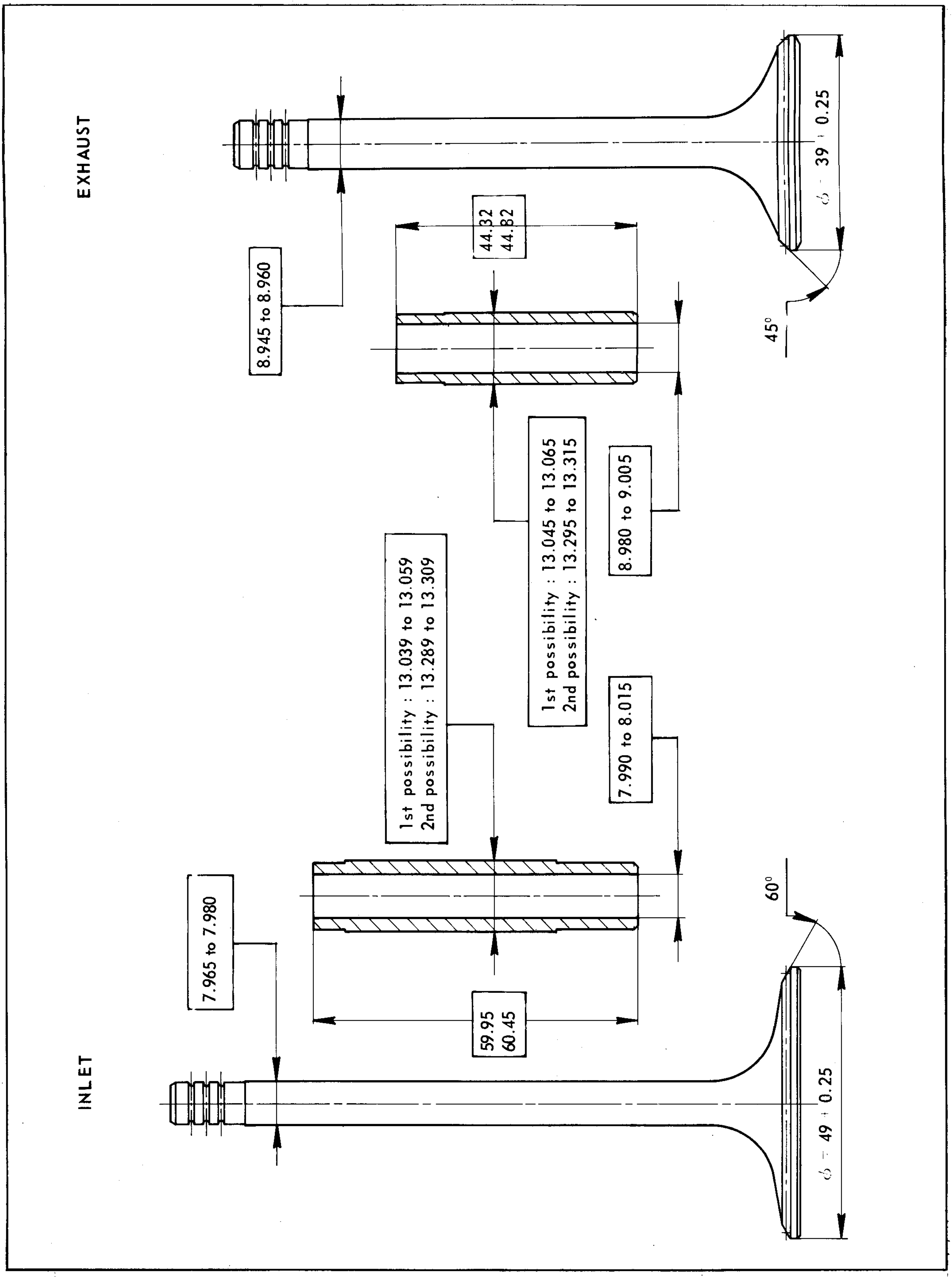
The valve seats are fitted by temperature shrinking.

VALVE SEAT WIDTH





c) Valve guides and valves :



NOTE : Inlet and exhaust valves are fitted with oil-seals.

d) Valve springs :

The inlet and exhaust valve springs are identical.

Characteristics :

- Diameter of wire : .... 4.6 ± 0.02 mm
- Interior diameter : .... 25 ± 0.2 mm
- Length of spring under load : .... 39 mm (load = 40 ± 2.8 kg) / 30.6 mm (load = 84 ± 1.8 kg)
- Coating : .... Red or blue varnish

e) Upper spring cups : Identical inlet and exhaust.

f) Retaining clips : Identical inlet and exhaust.

6. Timing :

a) Camshaft :

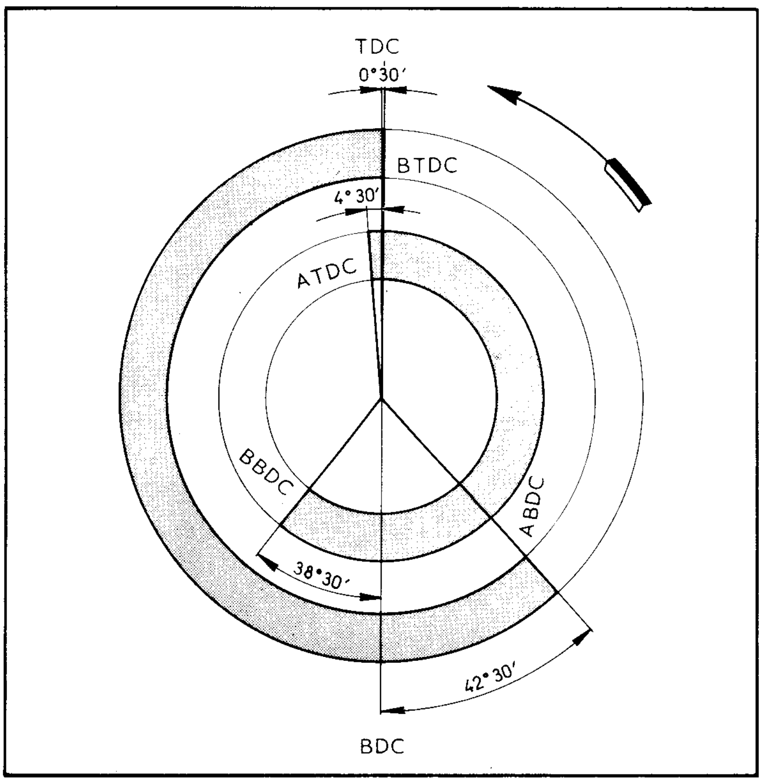
Chain-driven camshaft, resolving in three cupro-lead bearings.

- Camshaft end-float *(only 1 thickness of flange)* : .... 0.05 to 0.30 mm
- Thickness of flange : .... 5.44 to 5.46 mm
- Amount of cam lift :
  - Inlet : .... 6.63 ± 0.02 mm
  - Exhaust : .... 6.14 ± 0.02 mm

WARNING :
Never attempt to rotate the engine by means of the camshaft pulley fixing nut.

TIMING DIAGRAM

(With theoretical inlet and exhaust clearance of 1.10 mm)



b) Timing chain :

- Clearance between the chain and the chain guide : .... 0.10 to 0.50 mm

c) Rockers :

- Length of push rods :
  - Inlet : .... $189.10\ ^{+0.3}_{-0.75}$ mm
  - Exhaust : .... $213.35\ ^{+0.3}_{-0.75}$ mm
- Maximum out of true of pushrods : .... 1 mm
- Rocker clearance *(engine cold)* :
  - Inlet : .... 0.15 mm
  - Exhaust : .... 0.20 mm

7. Flywheel :

- Distance between the clutch mechanism thrust face, and the clutch disc thrust face : .... $0.5\ ^{0}_{-0.5}$ mm

NOTE : It is essential to fit the diaphragm or flywheel mounting screws with LOCTITE FRENETANCH.

- Correct fitting of starter ring : non machined face of the ring facing the flywheel shouldering.

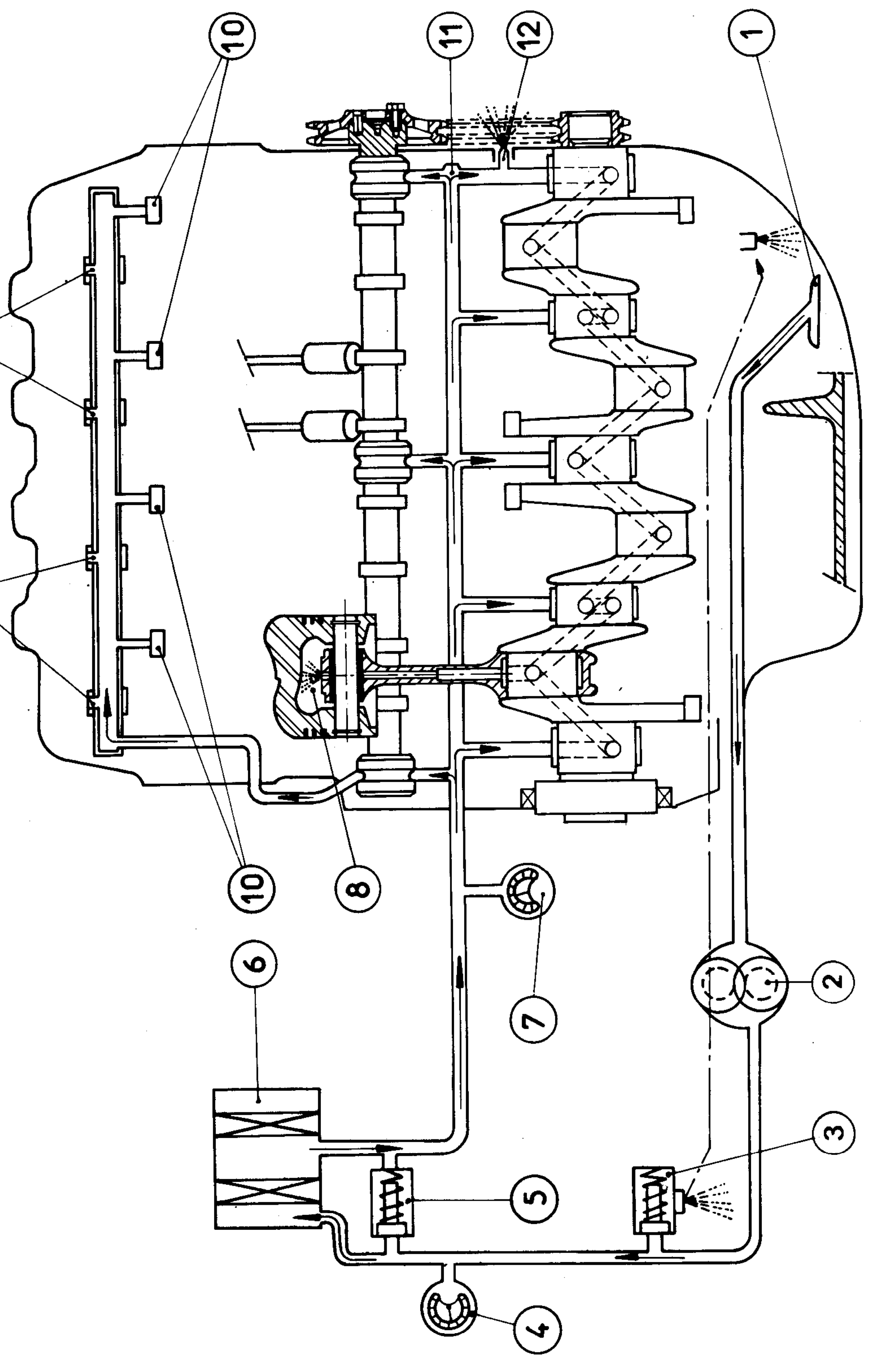
8. Lubrication system :

- Grade of oil : .... TOTAL ALTIGRADE GTS 20/W 50
- Capacity of sump :
  - after dismantling : .... 5.800 litres (10.2 pts)
  - after draining and changing the filter : .... 5.300 litres (9.3 pts)
  - after draining : .... 4.650 litres (8.2 pts)
- Oil pressure :
  (At a temperature of 100 ± 5° C)
  - at 2000 rpm : .... 3 bar min. (43.5 psi)
  - at 4000 rpm : .... 4 to 5 bar (58 to 72 1/2 psi)
- Calibration of pressure switch : .... 475 to 675 mbar (7 to 9.8 psi)
  (warning lamp goes out)
- Calibration of temperature switch (CX 2000 ⟶ *Jan. 1975*) : .... 147° to 150° C
  (warning lamp goes comes on)
  (*All* CX *vehicles Jan. 1975* ⟶) : 135° to 138° C
  (warning lamp comes on)
- Calibration of relief valve spring :
  - length of spring fully compressed : .... 31 mm
  - length of spring under load of 10.9 kg : .... 42 mm
- Filter cartridge :
  - calibration of « by-pass » valve : .... 550 mbar (8 psi)

NOTE : When changing the filter cartridge, check the cleanliness of the seal and the contact area on the filter housing.

- For removing and fitting the cartridge : .... Use Tool 6002-T

LUBRICATION SYSTEM



1. Suction strainer
2. Oil pump
3. Pressure relief valve
4. Oil temperature switch
5. By-pass valve (incorporated in filter cartridge)
6. Filter cartridge
7. Oil pressure switch
8. Oil cooling inside piston
9. Supply to inlet valve rocker arms
10. Supply to exhaust valve rocker arms
11. Gallery supplying camshaft and crankshaft bearings
12. Hydraulic chain tensioner and chain lubrication

9. Tightening torque :

a) Engine suspension :

4-speed manual gearbox :

- Torque bar « Nylstop » fixing nuts : .... 8.2 da Nm (59 ft.lb)
- Securing screws for the flexible bearer on the subframe ; .... 3 da Nm (22 ft.lb)
- Flexible bearer assembly screws : .... 10 da Nm (72 ft.lb)

5-speed manual gearbox, and torque converter gearbox :

- Torque bar « Nylstop » fixing nuts : .... 10 da Nm (72 ft.lb)
- R.H. flexible mounting assembly screws : .... 10 da Nm (72 ft.lb)
- L.H. flexible bearer assembly screws : .... 16 to 17 da Nm (116 to 123 ft.lb)

b) Crankcase :

- Screws and nuts securing the timing cover : .... 1.4 to 1.9 da Nm (10 to 14 ft.lb)

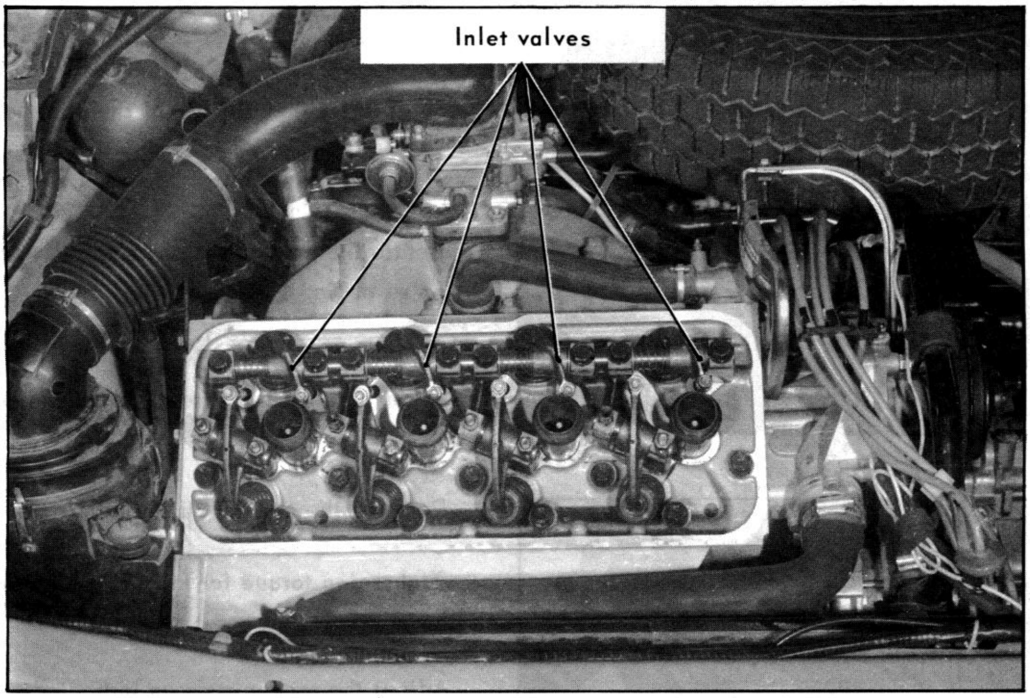
c) Timing :

- Screw on the camshaft thrust bearing : .... 1.4 to 1.9 da Nm (10 to 14 ft.lb)
- Timing chain guide securing screw : .... 1.4 to 1.9 da Nm (10 to 14 ft.lb)
- Timing chain tensioner securing screw : .... 0.9 to 1.1 da Nm (6.5 to 8 ft.lb)

d) Lubrication system :

- Oil filter mounting (LOCTITE FRENETANCH) : .... 1 to 1.5 da Nm (7 to 11 ft.lb)
- Oil temperature switch : .... 3 to 3.5 da Nm (22 to 25 ft.lb)
- Union screw for cylinder head lubrication passage : .... 1 to 1.2 da Nm (7 to 9 ft.lb)
- Oil filter cartridge *(see manufacturer's note)* : .... 1.1 to 1.5 da Nm (8 to 11 ft.lb)
- Engine oil drain plug *(lower sump cover)* : .... 3.5 to 4.5 da Nm (25 to 32.5 ft.lb)

ADJUSTING THE ROCKER ARMS



Rotating the crankshaft :

Vehicles fitted with a manual gearbox :
Raise one front wheel of the vehicle, and engage 4th or 5th gear in order to rotate the crankshaft by means of the raised wheel.

Vehicles fitted with a torque converter :
There are two methods for rotating the crankshaft :
- feed the starter using a 6-volt battery,
- remove the protective plate under the converter casing, and rotate it using a screwdriver.

Never attempt to rotate the engine using the camshaft pulley locknut.

1. **Remove the following :**
   a) The rocker cover and its gasket (*engines fitted with a carburettor*).
   b) The injection manifold and the rocker-cover (*fuel injected engines*).
2. **Adjust the engine cold :**

With the engine cold { Inlet : 0.15 mm; Exhaust : 0.20 mm

3. **Fit the rocker cover and its gasket.**

Tightening torque of fixing screws : 0.5 to 0.8 daNm (3.5 to 6 ft.lbs).

Fit the injection manifold (*if need be*).
Lower the wheel to the ground, and disengage the gear.

ACCEPTABLE METHODS

I. « Rocking » the valves :

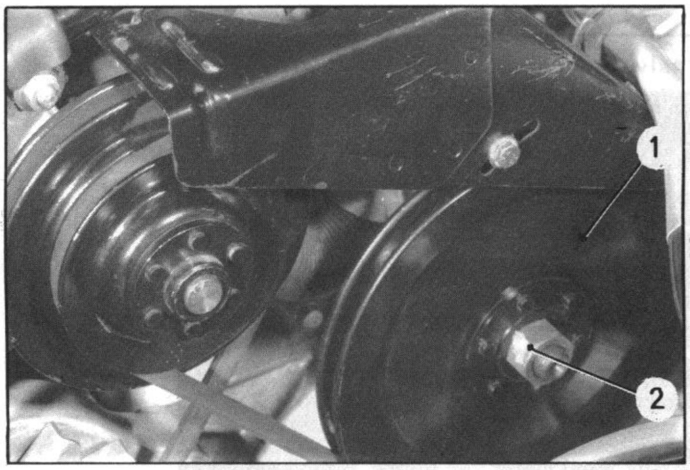
(Inlet valve starting to open, and exhaust valve closing)

Bring No. 1 in « rocking position »	adjust No. 4
" No. 3 "	" " " No. 2
" No. 4 "	" " " No. 1
" No. 2 "	" " " No. 3

II. Exhaust valves fully open :

Valve to be opened fully :	Adjustment of rocker arm clearance	
	Inlet	Exhaust
Exhaust valve No. 1	No. 3	No. 4
" " No. 3	No. 4	No. 2
" " No. 4	No. 2	No. 1
" " No. 2	No. 1	No. 3

If a rocker-arm noise persists after adjustment, proceed as follows :

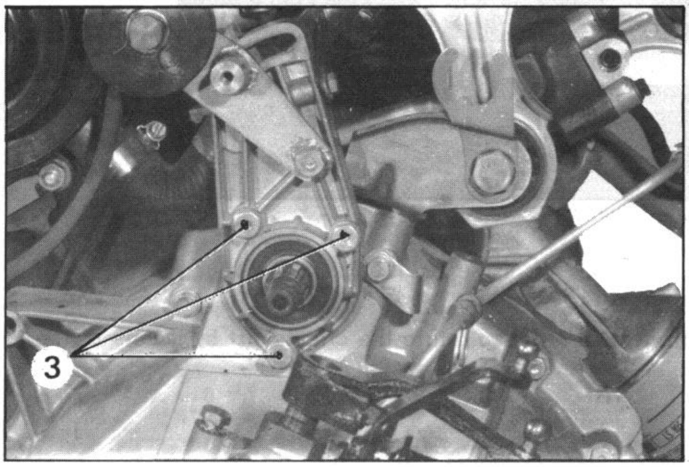


- Remove the control pulley (1) from the extremity of the camshaft.

- Slacken fixing nuts (3) of the camshaft bearing housing.

- Rotate the crankshaft so as to fully open the exhaust valve of No. 4 cylinder.

- Lock the securing screw (3) for the bearing housing.



- Position the control pulley.

Tightening torque for nut (2) : 8 daNm (58 ft.lbs).

- Adjust the rocker arms as indicated previously.

CHECKING THE TIMING.

Rotating the crankshaft :

a) *Vehicles fitted with a manual gearbox :*
Lift one of the front wheels of the vehicle, and engage 4th or 5th gear so as to rotate the crankshaft by means of the raised wheel.

b) *Vehicles fitted with a torque converter :*
Two methods are permissible to rotate the crankshaft :
- feed the starter motor from a 6-volt battery,
- or remove the protective plate under the converter casing, and rotate the converter using a screwdriver.

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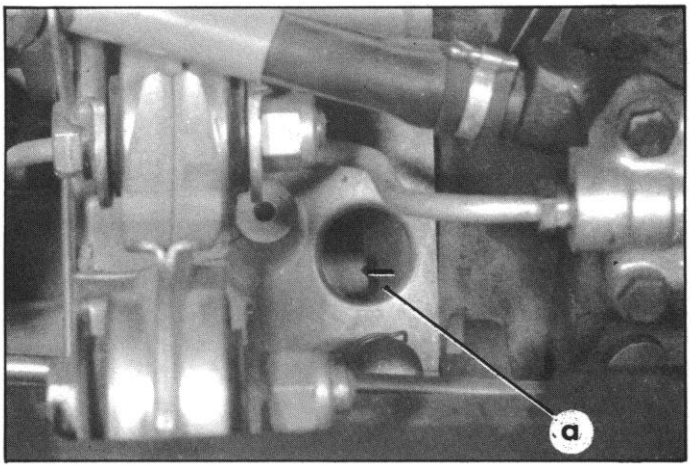

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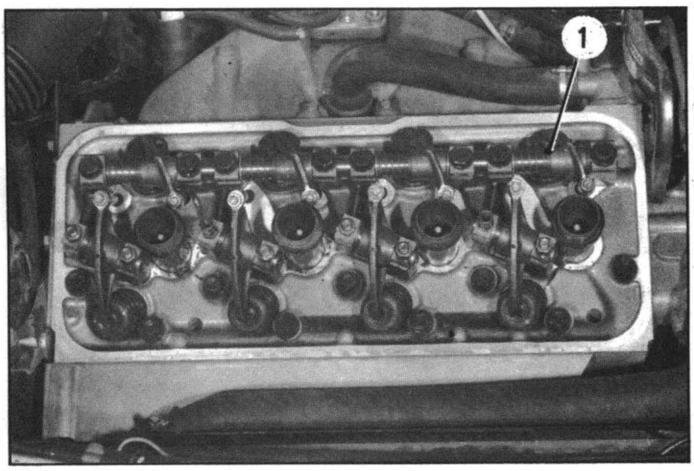


1. **Remove :**
   - spare wheel,
   - cylinder head (carburettor engine),
   - the injection manifold and the rocker cover (fuel injection engine).

2. Bring piston of cylinder No. 4 to TDC, with the valves in « rocking position ».

   NOTE : The TDC mark on engine flywheel can be seen at point « a » on the clutch housing.

3. Adjust clearance of inlet valve (1) of No. 1 cylinder to **1.10 mm** (theoretical clearance).

4. Turn crankshaft exactly one turn in direction of rotation of engine (*anti-clockwise from flywheel side*).

5. Check clearance of inlet valve on cylinder No. 1. This must be between **0.05 and 0.25 mm.**

6. **Check and adjust rocker-arm clearance** (engine cold)

   Inlet .... **0.15 mm**
   Exhaust .... **0.20 mm**

Supplement No. 1 to Manual 818-1 (CORR)

> NOTE : This operation is relevant for all vehicles from 1977 models onwards.

Every « PETROL » vehicle introduced from October 1st 1976 onwards must be fitted with a « tamper-proof » carburettor *(Valid for all EUROPEAN countries, except SWEDEN).*

This device is made up of a protective plug for the mixture adjustment screw (SOLEX and WEBER), and for the butterfly adjustment screw or screws (SOLEX).

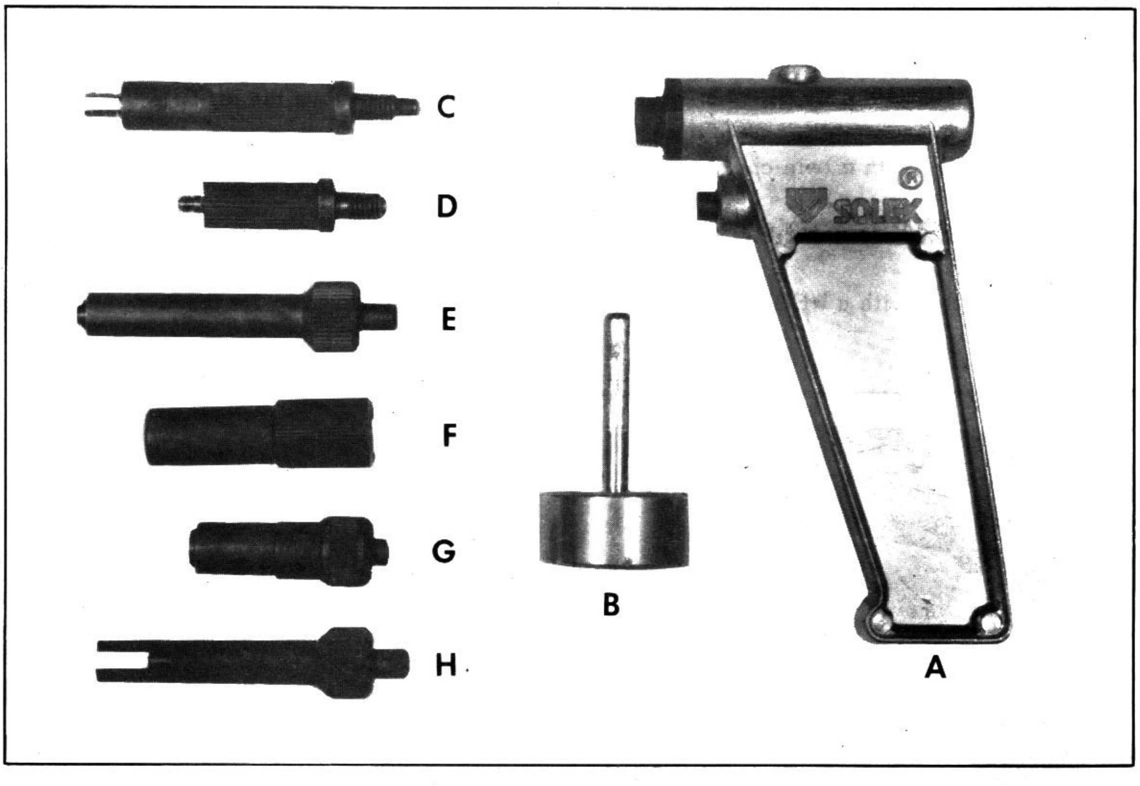
If the carburettor is not properly adjusted, the original protective plug *(white on WEBER carburettors, black on SOLEX carburettors)* will be removed, and after adjustment of the carburettor, will be replaced by a « REPAIR » protective plug *(black on WEBER carburettors, and white on SOLEX carburettors).*

The Replacement Parts Department supplies under Reference Number **4035-T** a new kit for removing and refitting the protective plugs on WEBER and SOLEX carburettors.

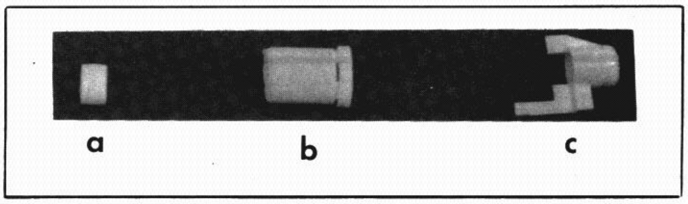
NOTE : The first kits supplied by the Replacement Parts Department (Ref. 4029-T) can be supplemented with tools **(D)** 4031-T and **(F)** 4032-T.

TOOLS INCLUDED IN KIT 4035-T :

A - Gun
B - Tool for loading gun
C - Tool for extracting the plug **(a)** protecting the sunken mixture adjustment screw *(SOLEX).*
D - Tool for extracting the plug **(a)** protecting the sunken mixture adjustment screw *(WEBER)*
E - Tool for fitting plug **(a)** and cap **(b)** *(SOLEX and WEBER)*
F - Tool for breaking the head of cap **(b)** of the sunken mixture screw with collar *(SOLEX)*
G - Tool for extracting cap **(b)** *(SOLEX)*
H - Tool for fitting cap **(c)** protecting the stop-screw for the throttle spindle *(SOLEX)*



This kit also contains a set of plugs SOLEX carburettors :



a - Protective plug for sunken mixture adjustment screw
b - Protective cap for mixture adjustment screw with collar
c - Protective cap for throttle spindle stop screw

The Replacement Parts Department supplies caps in packets of 10, under the following refrence nos :

Protective cap for sunken mixture adjustment screw :
SOLEX carburettor .... 5 489 718 Y (white)
WEBER carburettor .... 5 489 716 B (black)

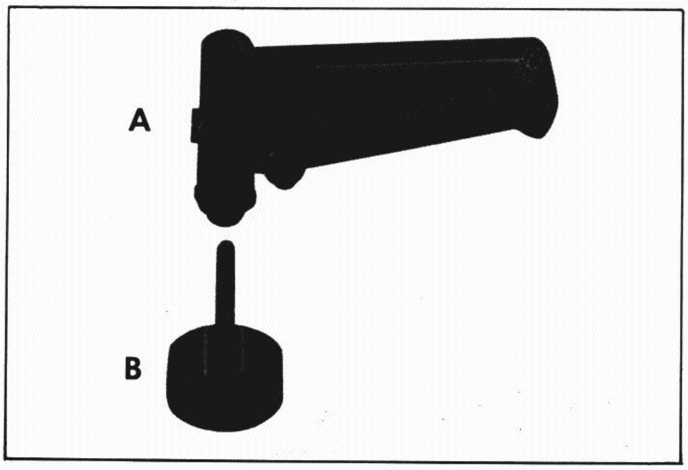
- **Protective cap for mixture adjustment screw with collar :**
SOLEX carburettor .... 5 501 075 U (white)

- **Protective cap for throttle spindle stop screw :**
SOLEX carburettor .... 5 507 643 K (white)

UTILIZATION

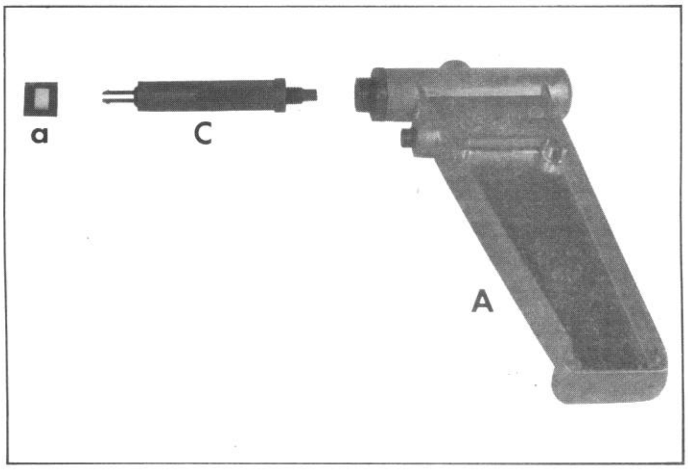
I. REMOVING AND FITTING A PROTECTIVE PLUG FOR SUNKEN MIXTURE ADJUSTMENT SCREW ON A WEBER OR SOLEX CARBURETTOR (**plug (a)**).

NOTES :
1 - On GS vehicles fitted with a WEBER carburettor, it is necessary to remove the air-filter to carry out this operation.
2 - On GS vehicles fitted with a twin-choke SOLEX carburettor, it is advisable to remove the throttle closing dashpot.
3 - On all 2 CV vehicles, Mehari and 250/400 vans, it is necessary to remove the air filter to facilitate the use of the tool.
4 - On CX vehicles fitted with a WEBER carburettor, lower the supporting clamp for the hose to allow the tool to be aligned.



REMOVAL.

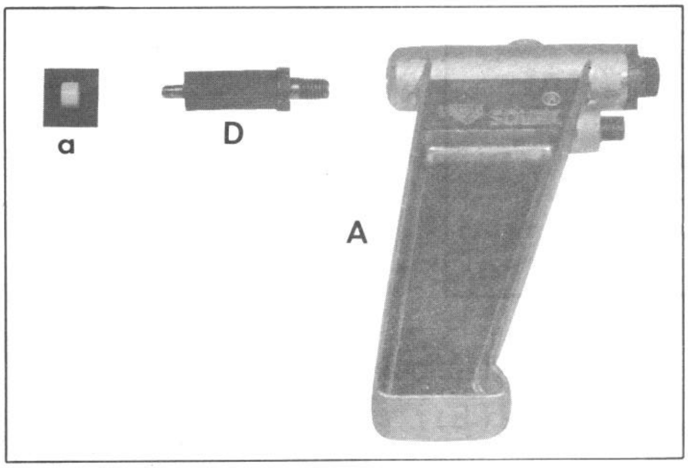
1. Load gun **A** on tool **B.**



2. Pierce plug (a) :

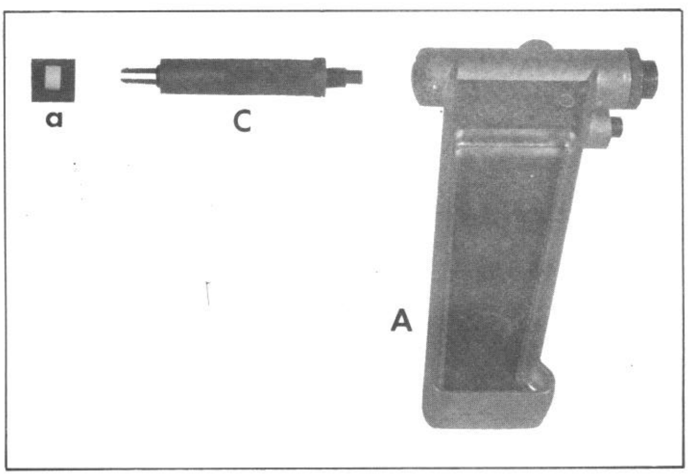
SOLEX carburettor :

- Position tool **C** and hold it against gun **A**.
- Position the gun and tool assembly against plug (**a**) making sure that the nozzle of gun **A** is properly centred against the plug, and that the assembly is aligned as precisely as possible in the axis of the plug.
- Actuate the gun, and remove it, leaving tool **C** on the carburettor.



WEBER carburettor :

- Position and hold tool **D** against gun **A**.
- Position the gun and tool assembly against plug (**a**) making sure that the nozzle of the gun is properly centred against the plug, and that the assembly is aligned as precisely as possible in the axis of the plug.
- Actuate the gun, and screw the tool into the plug (L.H. thread).
- Remove the gun leaving tool **D** on the carburettor.

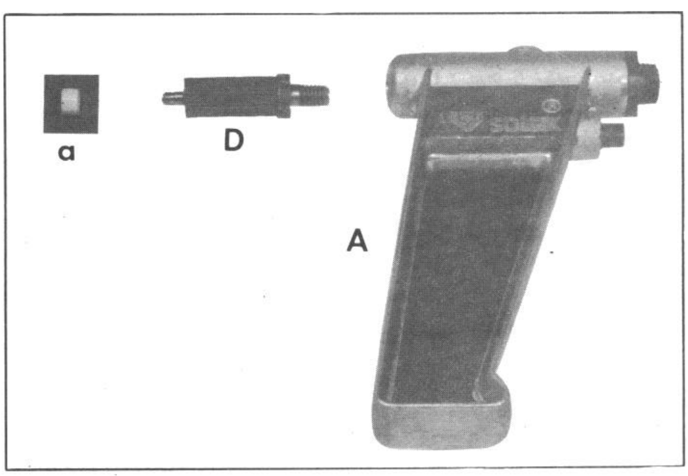


3. Remove plug (a) :

- Load gun **A**.

SOLEX carburettor :

- Screw tool **C** *into the back* of gun **A**.
- Actuate the gun to remove the plug.

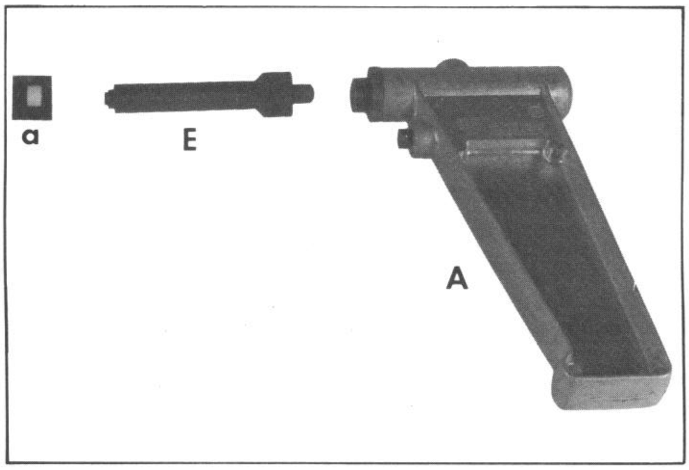


WEBER carburettor :

- Screw tool **D** *into the back* of gun **A**.
- Actuate the gun to remove the plug.

4. Adjust the level of pollution :

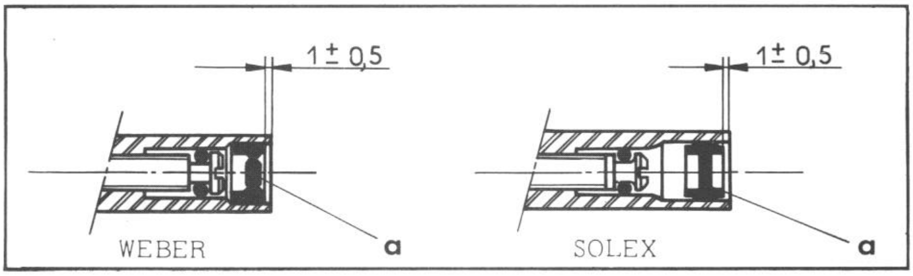
NOTE : If the air filter has been removed, *(GS and 2 CV vehicles)* refit it *without securing it* so as to carry out the adjustment.



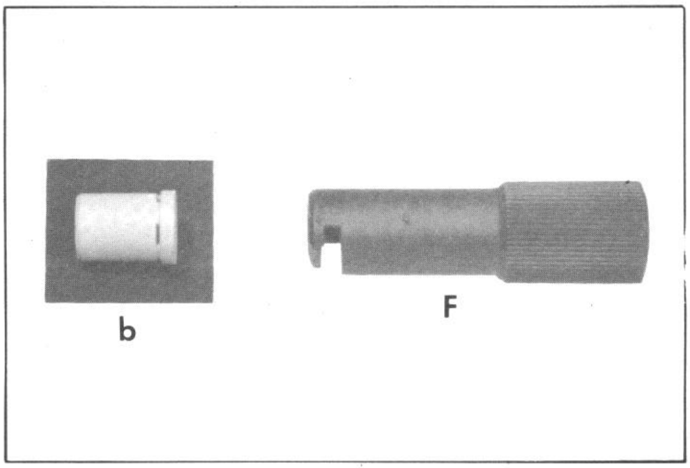
FITTING.

5. **Fit the tamper-proof protective plug (a) :**
   - Load gun **A**.
   - Screw tool **E** onto gun **A**.
   - Position plug **(a)** in its housing on the carburettor. *On a WEBER carburettor make sure it is fitted the right way round (see diagram below).*
   - Actuate the gun until the plug is properly located.

NOTE : If the air filter has been removed, refit it and *secure it permanently.*

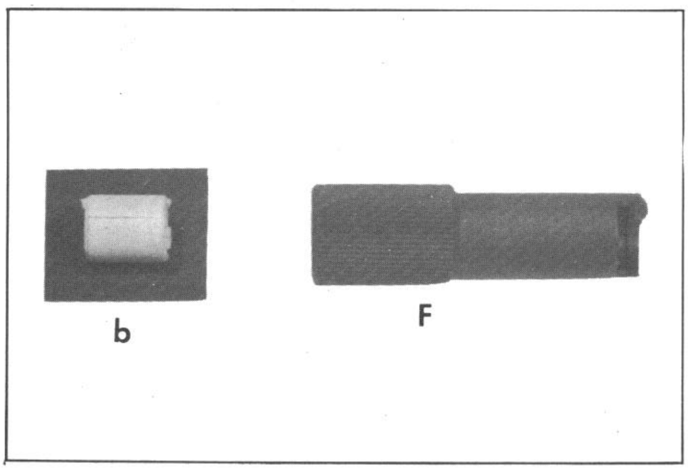


II. REMOVING AND FITTING THE PROTECTIVE CAP FOR THE MIXTURE CONTROL SCREW WITH COLLAR ON A SOLEX CARBURETTOR (cap **(b)**).



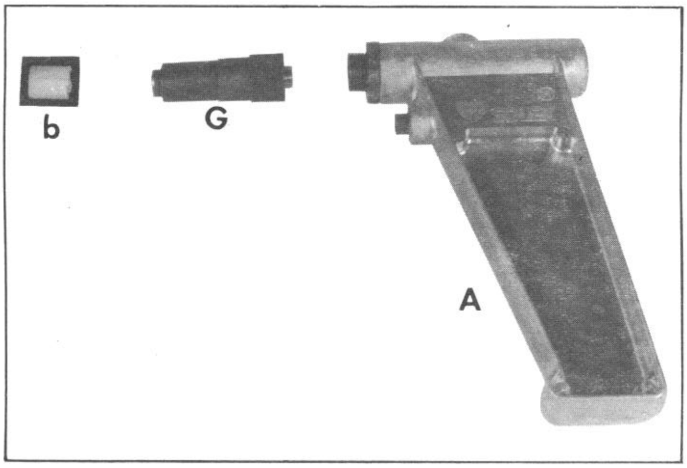
REMOVAL.

1. Break the head of cap **(b)** using tool **F**.



The cap must protude from the metal collar by at least 6 mm : the cut-out in tool **F** placed the other way round serves as a yardstick.

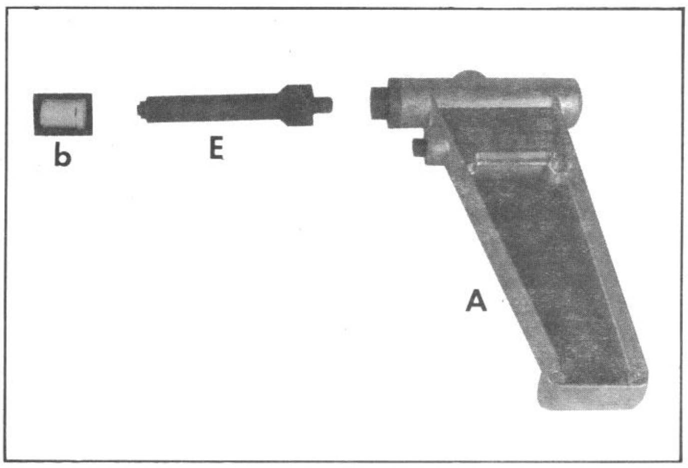
If this value is not obtained, unscrew the mixture control screw.



2. Extract cap (b) :

- Load gun **A**.
- Screw tool **G** onto the gun.
- Place the tool and gun assembly against the cap. **Make sure alignment is correct.**
- Actuate the gun and remove the cap.

FITTING.



3. Pre-snap cap (b) :
(See fig. 1 of diagram below)

- Fit cap into the collar of the mixture control screw.
- Load gun **A**.
- Screw tool **E** onto the gun.
- Place the tool and gun assembly against the cap.
- **Actuate the gun once.**

4. Adjust the exhaust emission.

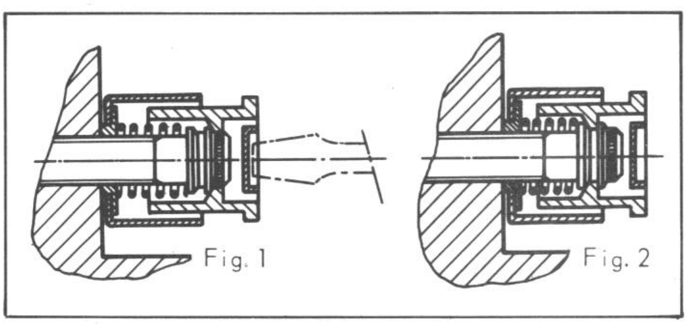


Fig. 1 Fig. 2

5. Snap cap (b) into position :

- Load the gun, and **actuate it a second time** onto the cap to set it in position as per fig. 2 of diagram below.

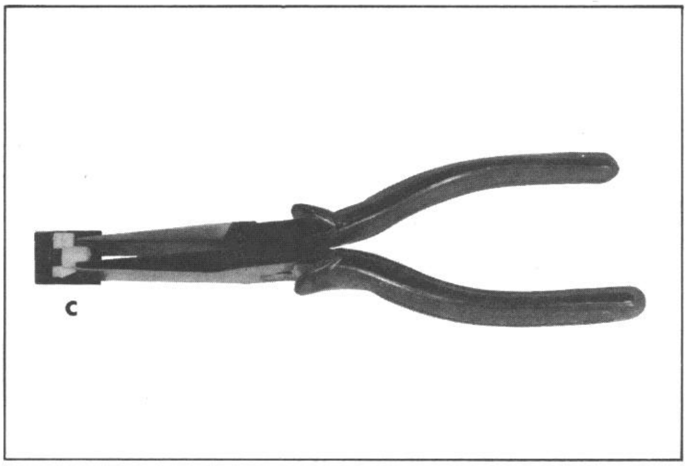
Supplement No. 1 to Manual 818-1 (ADD)

III. REMOVING AND FITTING THE PROTECTIVE CAP FOR THE THROTTLE SPINDLE ON A SOLEX CARBURETTOR (**cap (c)**).

This operation is to be carried out only in the case of a check and adjustment on a carburettor test bench (L'POLLU 2000 type).

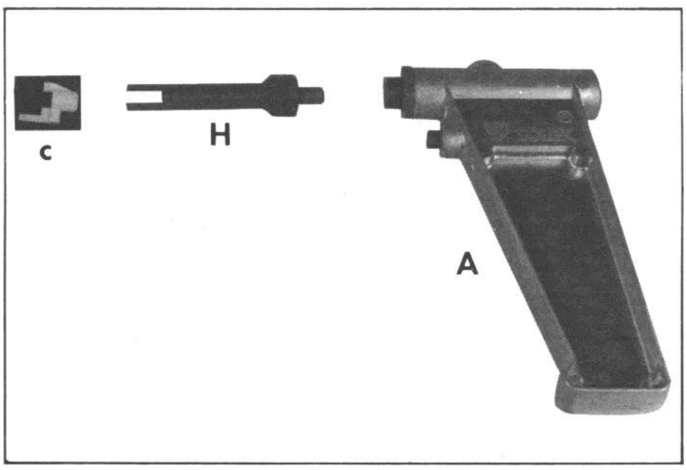
REMOVAL.

1. Remove cap (**c**) using flat-nose pliers.



2. **Adjust the butterfly opening :**

- Adjust the butterfly opening using the test bench according to the Norms laid down in the « Etudes Equipement » Nos : 14-1/16 ter, and 14-1/16 quater, *(sent on request to the users of carburettor test benches).*



FITTING.

3. **Fit cap (c) :**

- Load gun **A**.
- Screw tool **H** onto the gun.
- Fit cap (**c**) onto the throttle spindle stop screw.
- Place the tool and gun assembly against the cap (**c**) and actuate the gun.

In order to conform to current regulations, checking and adjustment the exhaust emission on « **Petrol** » vehicles must without fail be carried out after the following operations :

I. REPLACEMENT OF ENGINE.

II. REPLACEMENT OF CARBURETTOR.

III. WORKING ON THE CARBURATION

- Replacing the components of the carburettor
- Adjusting the carburettor
- Working on the carburettor controls

IV. WORKING ON THE INLET SYSTEM

Replacing or removing the following :

- the inlet manifold,
- the air-filter,
- the crankcase gases recycling system.

V. WORKING ON THE ENGINE

Adjusting the rocker arms

Replacing or removing the following :

- the cylinder head,
- the camshaft,
- the rockers,
- the valves,
- the barrels and pistons.

VI. WORKING ON THE IGNITION

- Replacing or reconditioning the distributor (partly or completely)
- Adjusting or replacing the spark plugs
- Adjusting the ignition timing

VII. WORKING ON THE EXHAUST SYSTEM

Replacing or removing the following :

- the exhaust manifold,
- the exhaust pipe, or any other section of the exhaust system.

VIII. WORKING ON THE ANTI-POLLUTION SYSTEM

When the vehicle is fitted with special equipment (*vehicles for SWEDEN, AUSTRALIA and JAPAN, for example*).

ENGINE M 20/616

WEBER CARBURETTORS

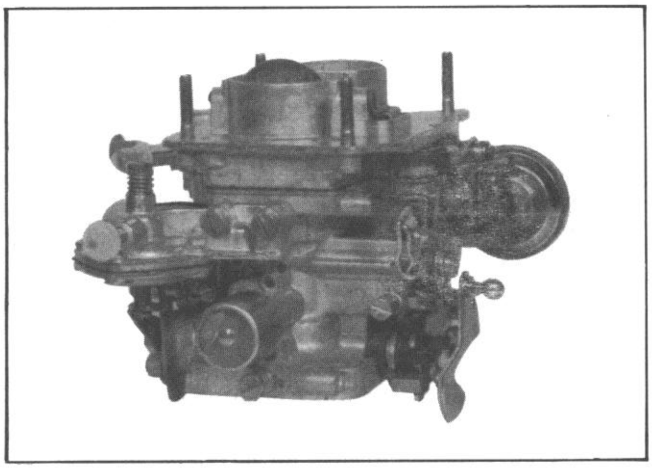
34 DMTR 25/200 IDENTIFICATION MARK W 55-00 *CX 2000 → 7/1976*

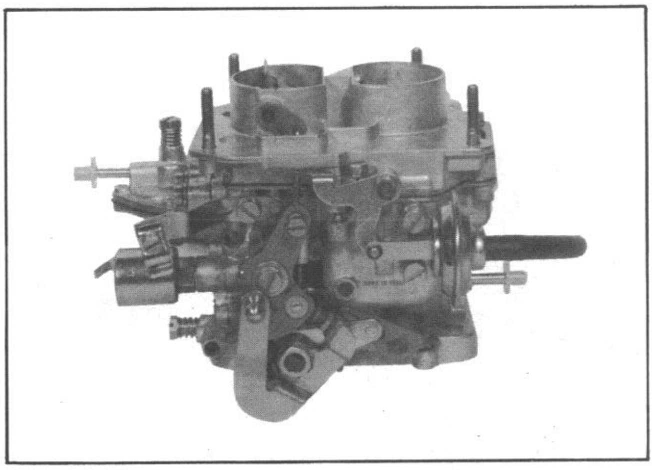
34 DMTR 25/250 IDENTIFICATION MARK W 55-50 *CX 2000 7/1976 →*

34 DMTR 25/100 IDENTIFICATION MARK W 54-00 * *CX 2000 AIR COND. → 7/1976*

34 DMTR 25/150 IDENTIFICATION MARK W 54-50 * *CX 2000 AIR COND. 7/1976 →*

Supplement N° 1 to Manual 818-1 (CORR)





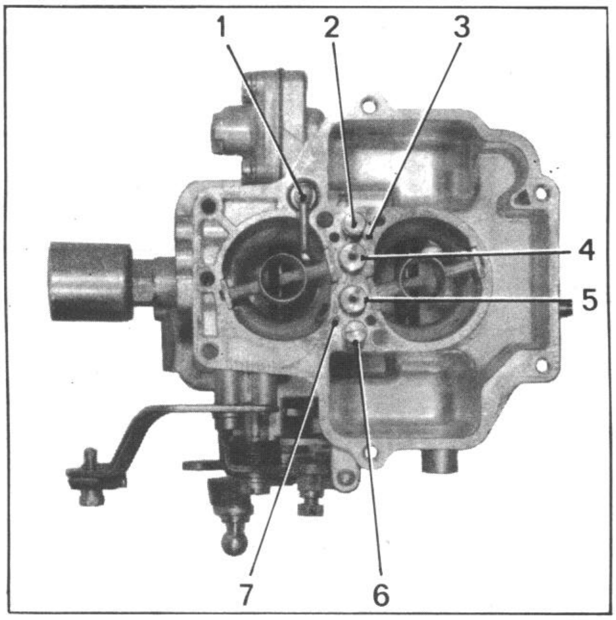
DESCRIPTION

- Dual choke « compound » type, **anti-pollution** carburettor with mechanically controlled second choke butterfly
- Mechanically controlled acceleration pump (cam) on 1st choke .
- Choke on 1st body : vacuum assisted cold start strangler flap
- Fitted damper on idling speed system.

* with incorporated fast idle device

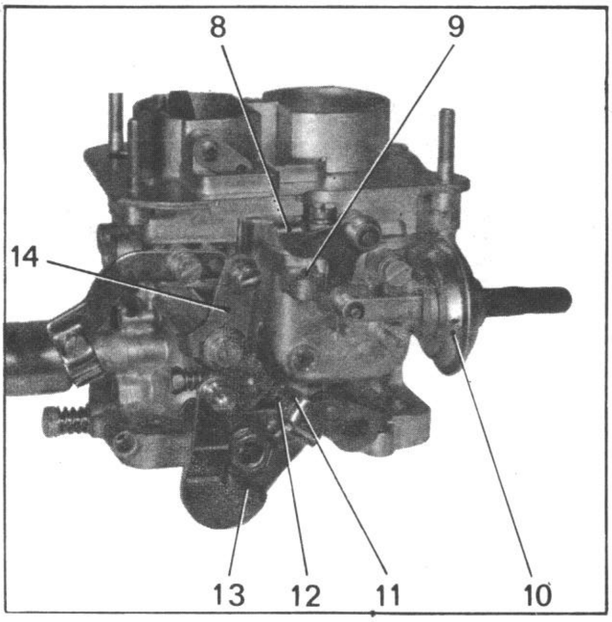
ADJUSTMENTS

DESCRIPTION	Primary choke	Secondary choke
Venturi bore	22	26
Main jets (removable)	115	135
Air correction jets	AD 1 (195)	AD 2 (180)
Emulsion tubes	F 30	F 25
Idling jets (removable)	50	70
Air-bleed idling jets	110	70
Acceleration pump injector high type (weighted)	40	
Econostat petrol jet (in cover)	110	
Econostat delaying orifice (in cover)	100	
Ball-operated needle valve	1.75 mm	
Double float : Weights	13 ± 0.5 g	
Positive butterfly opening - Strangler flap fully closed	1.25 ± 0.05 mm	



1. Location of main adjustments on carburettor (cover removed) :

- (1) Acceleration pump injector
- (2) 1st choke petrol idling jet
- (3) 1st choke idling speed air jet
- (4) Air correction jet with emulsion tube and 1st choke main jet
- (5) Air correction jet with emulsion tube and 2nd choke main jet
- (6) 2nd choke idling jet
- (7) 2nd choke idling speed air jet

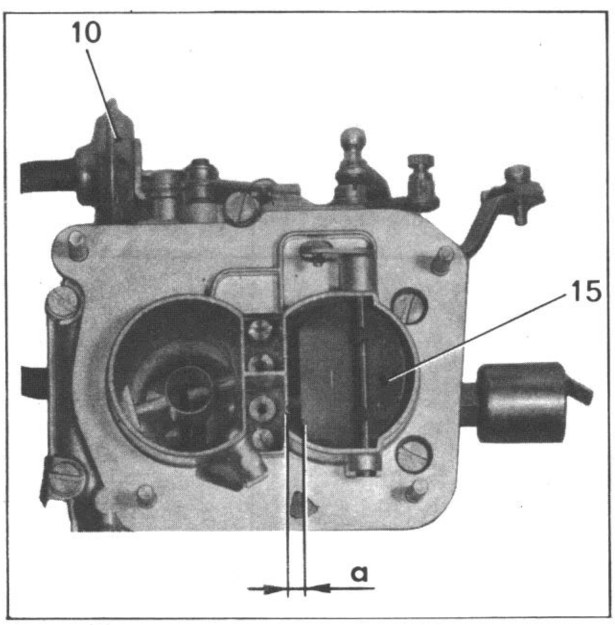


2. Adjustment of positive opening of 1st choke butterfly (strangler flap fully closed) :

Set strangler flap control lever (14) to fully closed position.
Hold butterfly control lever (13) in closed position so that stop (12) contacts edge of lever (14).
Measure distance between the edge of the first choke butterfly and the carburettor body.
This measurement must be :

a = 1.25 ± 0.05 mm

If not, adjust the positive opening distance of the butterfly by means of adjusting stop (12). This clearance should always be measured with adjusting stop lock-nut (11) fully tightened.

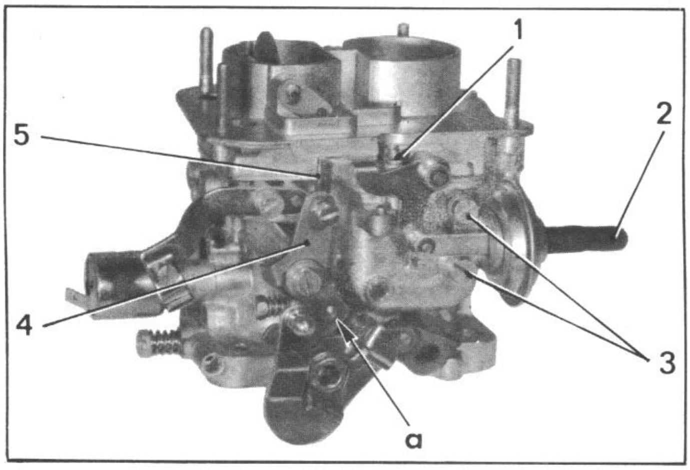


3. Adjustment of clearance of strangler flap (13) activated by vacuum capsule (10).

Actuate strangler flap control lever (14) and maintain in fully closed position.
Fit vacuum gauge on vacuum capsule (10).
With minimum vacuum depression of 400 mm of Hg the thrust lever (8) should come into contact with stop (9). If not, replace vacuum capsule (10).

With these settings, measurement « **a** » taken between the edge of the strangler flap and the bore **must be between 3.25 and 3.75 mm.**
If not, adjust stop screw (9).

CHECKING AND ADJUSTING OF THE FLOAT CHAMBER LEVEL

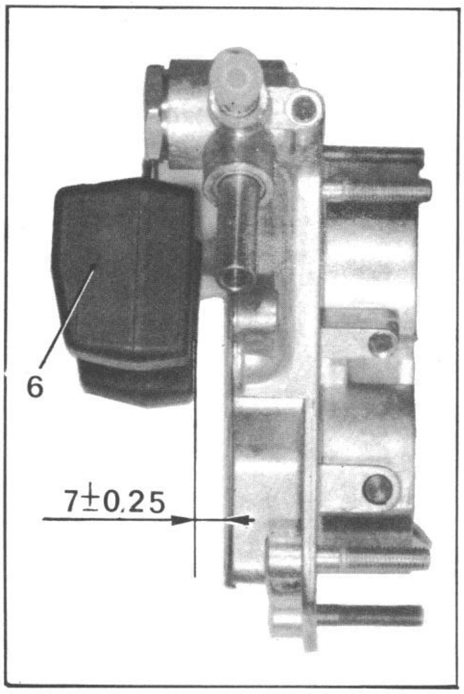


1. **Removing the carburettor cover :**

   Disconnect tube (2) from capsule.
   Remove the two capsule fixing screws (3).

   Disconnect the butterfly operating arm from lever (4) by raising rimmed collar at « a ».

   Remove cover fixing screws (1) and free cover with its float (6) and gasket (7).



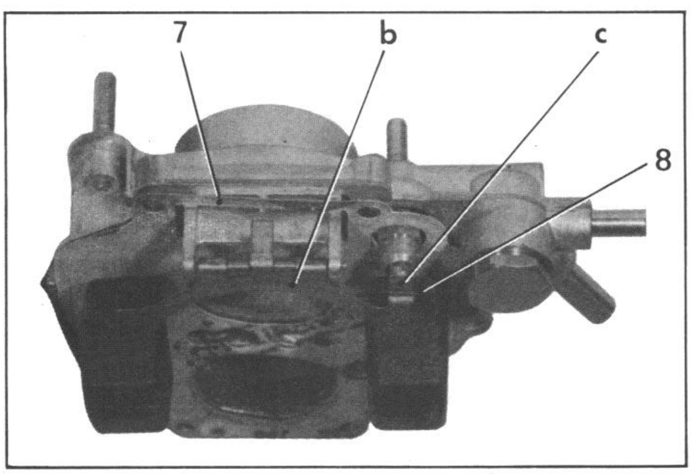
2. **Adjusting the float :**

   Check that pin (8) is properly positioned on tongue « c » and hook it onto the needle valve.

   Hold cover vertically so that the tongue « c » of float comes into contact with the needle valve ball **without pushing it in.**

   Take the measurement of the float with needle valve in closed position as shown opposite **(with gasket (7) on cover).**

   This measurement must be 7 ± 0.25 mm.
   If not, adjust tongue « c », until correct value is obtained.
   This measurement must be the same under each of the floats. If not, correct by adjusting the connecting bar « b ».



3. Fit cover, performing operations in the reverse sequence.

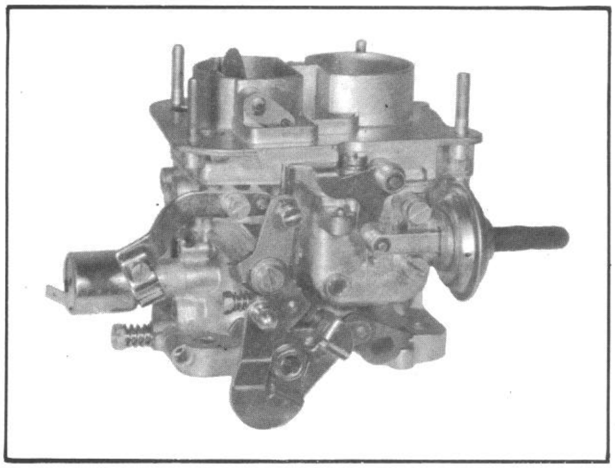
Supplement N° 1 to Manual 818-1 (CORR)

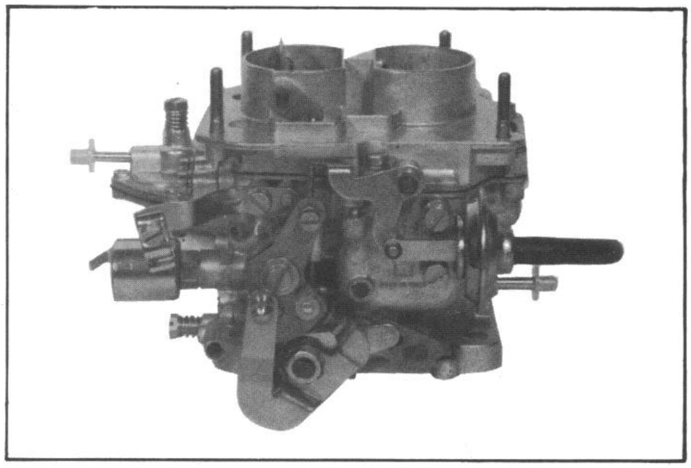
M 22/617 ENGINE

WEBER 34 DMTR 28/200 CARBURETTOR, IDENTIFICATION MARK W 57-00 : *CX 2200*

WEBER 34 DMTR 28/100 CARBURETTOR, IDENTIFICATION MARK W 56-00 : *CX 2200 Air cond.*

WEBER 34 DMTR 28/300 CARBURETTOR, IDENTIFICATION MARK W 73-00 : *CX 2200 Torque converter*





Supplement N° 1 to Manual 818-1 (ADD)

CHARACTERISTICS

- **Anti-pollution** carburettors, twin-choke compound type with mechanical control of the second choke butterfly.
- Mechanically controlled acceleration pump (cam) on first choke
- Cold start device operates on the 1st choke, vacuum assisted cold-start strangler flap.
- Idling speed circuit with incorporated damper.

ADJUSTMENTS :

Description	1st Choke	2nd choke
Venturi bore	23	26
Main jets (removable)	120	135
Air correction jets	AD 1 (195)	AD 2 (180)
Emulsion tubes	F 30	F 25
Idling jets (removable)	50	70
Air-bleed idling jets	110	70
Acceleration pump injector; high type (weighted)	40	
Econostat jet (in cover)		110
Econostat delaying orifice (in cover)		100
Ball operated needle valve	1.75 mm	
Double float , weight	13 ± 0.5 g	
Positive butterfly opening - strangler flap fully closed	1.25 ± 0.05 mm	

M 23/623 ENGINE

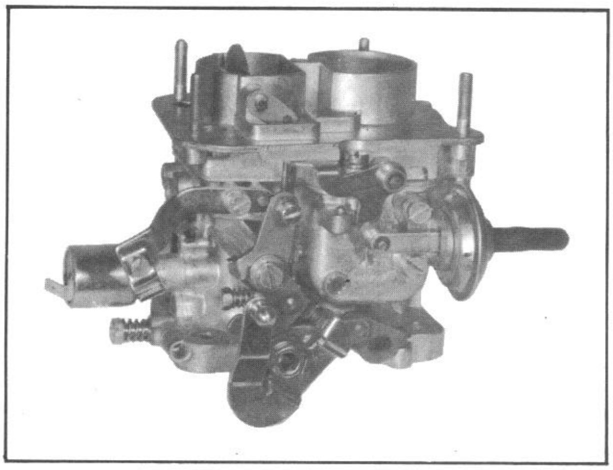
WEBER CARBURETTORS

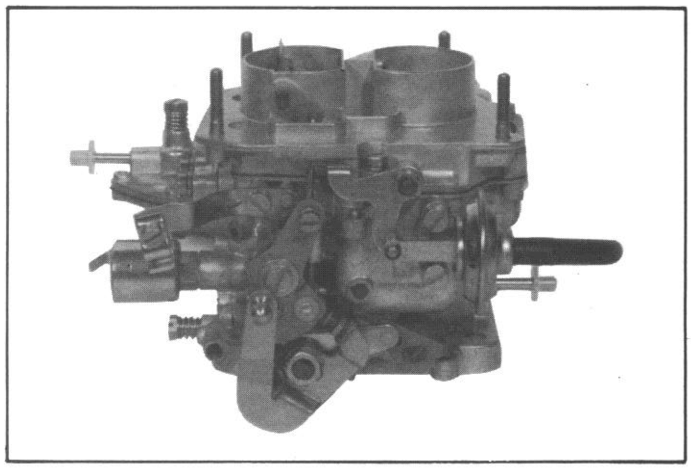
WEBER CARBURETTORS

34 DMTR 35/300 IDENTIFICATION MARK W 74-00 * *CX 2400 (PRESTIGE) ⟶ 7/1976*

34 DMTR 35/350 IDENTIFICATION MARK W 74-50* *CX 2400* { *PRESTIGE or AIR COND.* / *TORQUE CONVERTER* / *AIR COND. + T. CONV.* } *7/76 ⟶*

34 DMTR 35/250 IDENTIFICATION MARK W 69-50 *CX 2400 (basic model) 7/1976 ⟶*





Supplement N° 1 to Manual 818-1 (ADD)

CHARACTERISTICS

- **Anti-pollution** carburettor, twin choke « compound » type, with mechanically operated second choke butterfly.
- Mechanically controlled acceleration pump (cam) on first choke
- Cold start device operates on first choke ; vacuum assisted cold-start strangler.
- Electric cut-out on idling speed circuit.

* With fast idle device.

ADJUSTMENTS

DESCRIPTION		1st choke	2nd choke
MAIN ADJUSTMENT			
Venturi bores	ϕ	23	27
Main jets	ϕ	115	130
Air correction jets	ϕ	225	190
Emulsion tubes	N°	F 21	F 25
IDLING SPEED CONTROLS			
Petrol jets	ϕ	50	50
Air jets	ϕ	100	70
Anti-spill hole	ϕ	100	
Leakage rate past the butterfly under a pressure of 450 mm of mercury	kg/h		$2^{+0.2}_{0}$
PROGRESSIVENESS			
Staggered holes		3	2
« By-pass » jets (*first starting from the bottom*)	1/100ϕ	80	100
(*second starting from the bottom*)	1/100ϕ	110	100
(*third starting from the bottom*)	1/100ϕ	100	
ACCELERATION PUMP			
Pump control cam	N°	14850094	14 850094
Injector (upper non-weighted type)	ϕ	45	
Volume of pump - total	cm3	120 ± 0.2	
- partial (*for reference purposes*)	cm3	0.5	0.7
Outlet tube	ϕ		200
COLD START DEVICE			
Return spring for the anti-flooding membrane; 550 g* or 850 g**			
Pressure calibrator for membrane control	ϕ	40	
Return spring for the clutch flap : 180 g	N°	47600140	
Positive opening of butterfly under operation of cold-start device	ϕ	1.25 ± 0.05	
Cam for cold-start device	N°	45200051	
Opening of strangler flap (*measured at the lower edge under a pressure of 400 mm of mercury*)	Pin ϕ	* 3.5 ± 0.25 ** 4 ± 0.25	
IDLING SPEED CUT-OUT			
Electrically operated	N°	43840013	
GENERAL FUEL SUPPLY			
Float needle	ϕ	1.75	
Two plastic floats	g.	13 ± 0.5	
Pre-adjustment setting with float and gasket	mm	7 ± 0.25	
Calibration of fuel return to tank	mm	0.8 to 0.9	

* W 74-00 only

** W 69-50 and W 74-50

CX VEHICLES

ANTI-POLLUTION SYSTEM

FOR SWEDISH MARKET VEHICLES

ALL CX VEHICLES
ANTI-POLLUTION SYSTEM (SWEDISH MARKET)

I - CX 2200 :

The object of the system is to reduce the amount of unburnt hydrocarbons and the amount of CO in the exhaust (2 to 3 % of CO) by injecting air under pressure into the exhaust manifold.

OPERATION :

As the engine rotates air pump (1) supplies the air injectors (4) situated close to the exhaust valves; flap (3) prevents the exhaust fumes from entering the air pump (1) and valve (2) assembly.

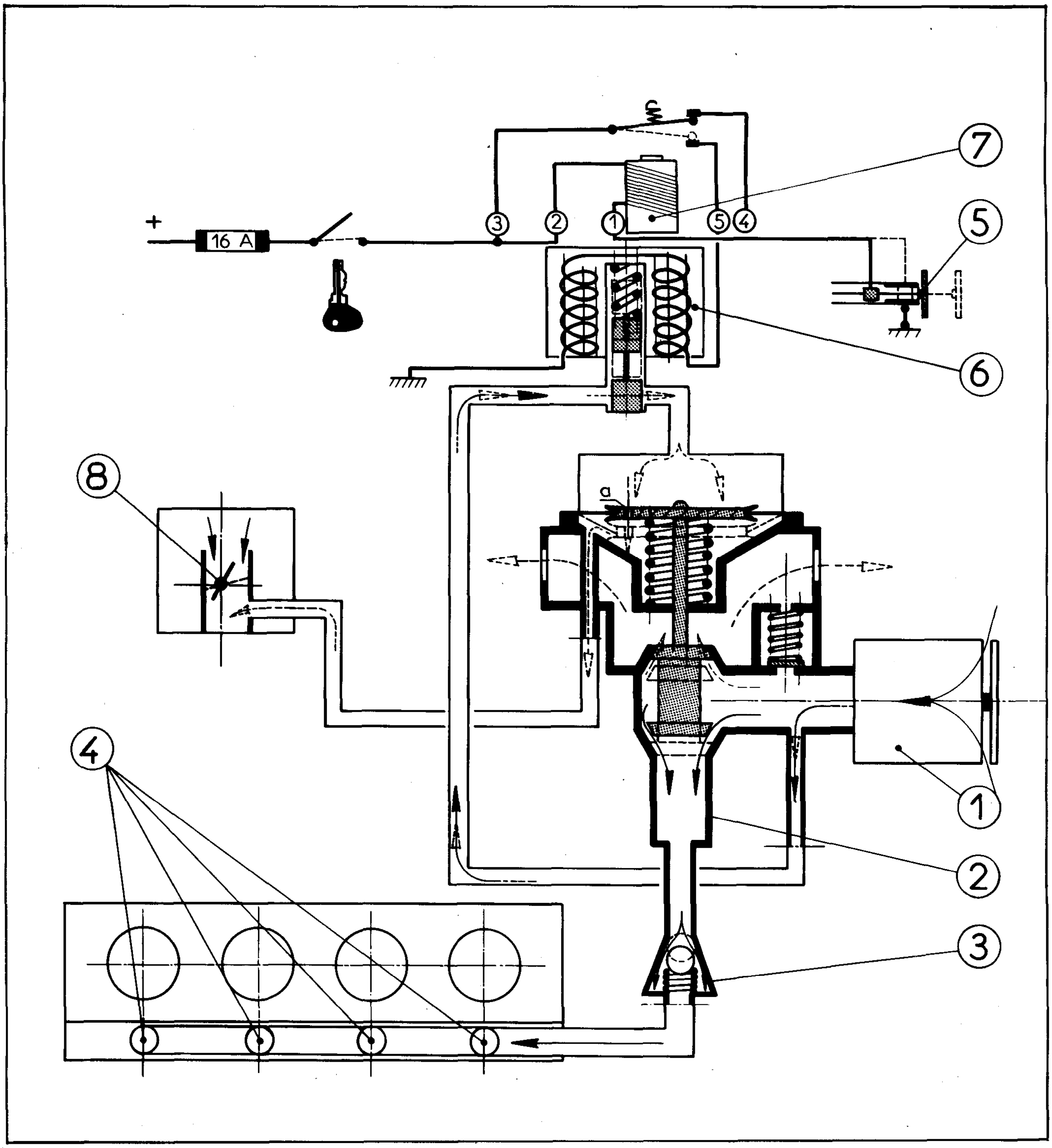
There are two cases when it is necessary to stop the injection of air into the exhaust manifold.

1. During deceleration :

During fast decelerations, the mixture becomes richer, combustion is incomplete, and the injection of air is stopped in order to avoid a second combustion taking place in the exhaust system (which would result in back-firing). During deceleration there is extreme low pressure downstream of the butterfly (8). This in turn draws in for a short period of time the diaphragm in valve (2).
The air supplied by pump (1) is released into the atmosphere, the calibrated hole « a » on the diaphragm balances the pressure on either side of it, and the diaphragm returns to its initial position, allowing air to be once more injected into the exhaust manifold.

2. With the choke out :

With the choke in this position, the quantities of unburned hydrocarbons and CO are very considerable. It is therefore necessary to stop the injection of air into the exhaust manifold so as to avoid an excessive increase of temperature in the manifold. With the choke out, lever (5) connects relay (7) to earth.
The « WEBER » electric contact is energized. The air pressure at the outlet of air pump (1) increases the effect of the low pressure on the diaphragm in valve (2) (the air-pressure is felt above the diaphragm and the low pressure produced by the carburettor (8) is felt below the diaphragm), the sliding valve in valve unit (2) changes position, and the air is expelled into the atmosphere.
If choke (5) is pushed back in, air is once again injected into the exhaust manifold.



Key to diagram :

1. Air-pump
2. Air supply valve
3. One-way valve
4. Air-injectors (situated in the cylinder head)
5. Choke control knob
6. « WEBER » electric contact
7. CARTIER relay
8. Throttle butterfly

II. CX 2000

The object of the system is to reduce the amount of unburnt hydrocarbons and the amount of CO in the exhaust (approximately 2 to 3 % of CO) by injecting air under pressure into the exhaust manifold.

OPERATION :

As the engine rotates, air pump (12) supplies the air injectors located near the exhaust valves; flap (13) **prevents the exhaust fumes from entering the air pump and air supply duct assembly.**

There are two cases where it is necessary to stop the injection of air into the exhaust manifold.

1. During deceleration :

During fast deceleration, the mixture becomes richer, combustion is incomplete, and the injection of air is stopped in order to avoid a second combustion taking place in the exhaust system (which would result in back-firing). During deceleration, there is extreme low pressure downstream of the butterfly (1). This in turn draws in for a short period of time the diaphragm in valve (11).
The air supplied by pump (12) is released into the atmosphere, the calibrated hole « a » on the diaphragm balances the pressure on either side of it, and the diaphragm returns to its initial position, allowing air to be once more injected into the exhaust manifold.

2. With the choke out, for an engine coolant temperature of above 45° ± 3° C, and whenever the coolant temperature remains above 35° $^{+3°}_{-2°}$ C.

In this situation, the quantities of unburnt hydrocarbons and CO are very considerable. It is therefore necessary to stop the injection of air into the exhaust manifold so as to avoid any excessive increase of temperature in the manifold. On CX 2000 vehicles, injection of air will be stopped when the engine water temperature reaches 45° ± 3° C. Thermal switch (8) opens, relay (9) is no longer energized, but electro-valve (7) remains live (relay lead), and is earthed via the choke control.
The air pressure at the outlet of air-pump (12) increases the effect of the low pressure on the diaphragm in valve (11) (the air pressure is felt above the diaphragm, and the low pressure produced by the carburettor (2) is felt below the diaphragm), the sliding valve in the duct changes position, and the air is expelled into the atmosphere. If the choke (10) is pushed back in, air is once again injected into the exhaust manifold.

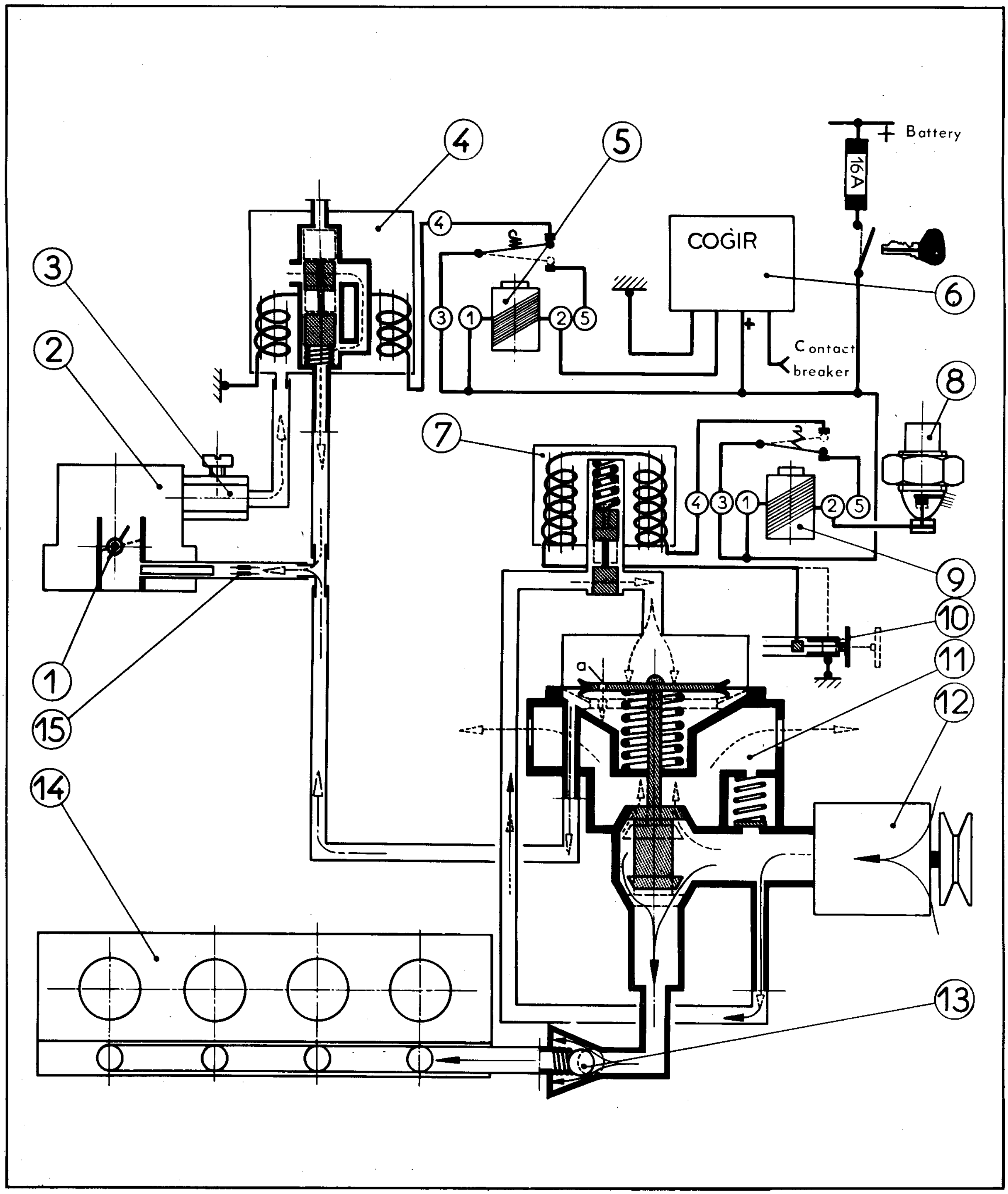
DEVICE FOR OPENING THE BUTTERFLY :

The object of the device is to maintain combustion during sudden deceleration up to an engine speed of **Nd = 1800 ± 100 rpm.**
During deceleration for any engine speed above **Nd,** the electronic tachometer housing (6) earths the winding of relay (5). Therefore the « PIERBURG » electro-valve (4) is no longer energized. Electro-valve (4) is then under low-pressure, below the diaphragm of the device (3) for opening the butterfly.
When the decreasing engine speed falls below **Nd,** the electronic tachometer housing (6) cuts out the earth of the winding in relay (5). Therefore the « PIERBURG » electro-valve (4) is energized. The electro-valve is no longer under low pressure below the diaphragm of the device (3) for opening the butterfly, the throttle butterfly returns to its stop against the idling speed adjustment screw. The diaphragm of the device (3) for opening the butterfly will once again be affected by low pressure (under the control of the electronic tachometer housing) once the increasing engine speed reaches :

Nc = Nd + 50 to 250 rpm

NOTE : *The engine speeds are correct for an ambient temperature in between - 20° C and + 60° C, and a voltage in between 12 and 15 volts.*

L.14-6



1 - Throttle butterfly
2 - Carburettor
3 - Butterfly opening device
4 - « PIERBURG » 3-way electro-valve
5 - Control relay for butterfly opening device
6 - Electronic tachometer housing
7 - « WEBER » electro-valve
8 - Engine coolant temperature switch
9.- Relay controlling exhaust manifold air injection
10 - Choke control
11 - Air supply valve
12 - Air pump
13 - One way valve
14 - Cylinder head
15 - Jet (calibrated to 0.40)

ADJUSTING THE IDLING SPEED

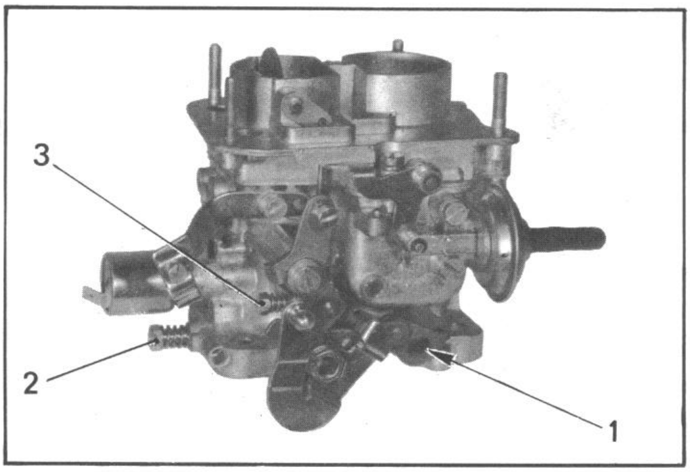
To carry out this adjustment, the following is needed :
- A tachometer
- A device for checking idling speed adjustments on the carburettor (or an approved gas analyser)
- A CDA 23 checking apparatus or a workshop test bench (equipment mentioned in the Equipment and Repair Materials list, or in the Tools and Equipment notes - green notes).

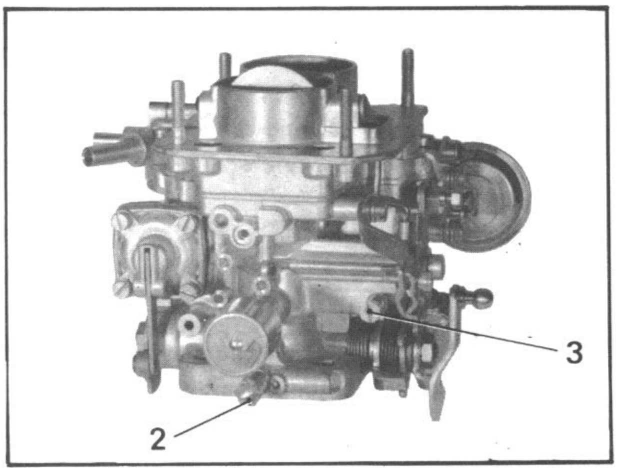
NOTE : WEBER Carburettors ref. N° W 54-50, 55-50, 69-50, 74-50 fitted on 1977 models onwards are fitted with a fool-proof plug (white) on the mixture screw. To adjust the exhaust emission, this plug has to be removed, and replaced, after adjustment, with a « Repair » plug (black). See Op. MA. 142-000 for removing and fitting the plug, and the necessary tools.

ADJUSTMENT CONDITIONS

1. The idling speed adjustment must be carried out on an engine on which the rocker clearances and the ignition are correctly set, with a clean air filter and **with the engine in good order.**
2. Check that the butterflies return fully to their stops.
3. Do not let anything except the ignition and the engine cooling fan (or fans) impose any load on the alternator.
4. Run the engine to bring **the oil temperature up to 70 to 80° C** (wait for the electric cooling fan (or fans) to cut in).

I. M 20/616, M 22/617, M 23/623 ENGINES *(vehicles without torque converter or air conditioning)*



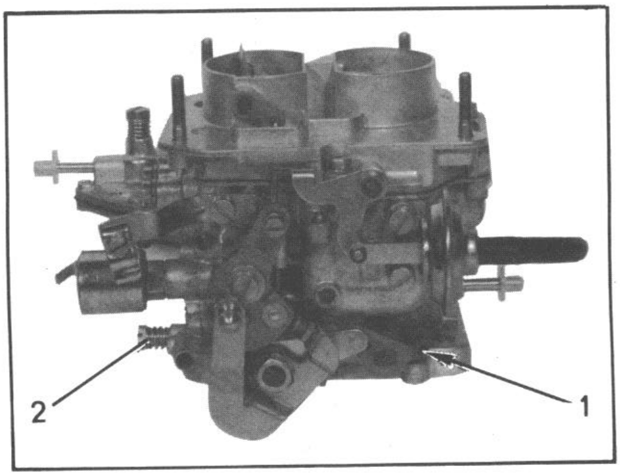


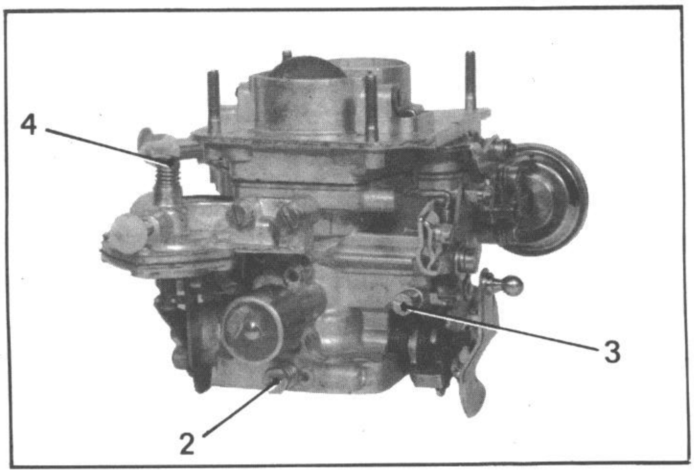
IMPORTANT : *It is absolutely forbidden to change the setting of stop-screw (1) for the second choke butterfly, which has been adjusted by the manufacturer with a micrometer.*

1. **Wait for the electric cooling fan (or fans) to cut in.**
2. Adjust screw (3) controlling the first choke butterfly opening until the following result is obtained : **an idling speed of 850 to 900 rpm.**
3. Slowly adjust mixture screw (2) to obtain the following result :
   1.5 to 2.5 % of CO } *These authorised readings correspond to an*
   8.7 % or more of CO^2 } *ambient temperature of 15° to 30° C.*
4. Adjust screws (3) and (2) so that both the idling speed and the quantity of CO and CO^2 are correct.

   Make sure that mixture screw (2) is adjusted last

Supplement N° 1 to Manual 818-1 (CORR)





II. M 20/616, M 22/617, M 23/623 ENGINES *(vehicles fitted with air-conditioning but without a torque converter)*

IMPORTANT : *It is absolutely forbidden to change the setting of stop-screw (1) for the second choke butterfly which has been adjusted by the manufacturer with a micrometer.*

1. **Wait for the electric cooling fans to cut in**

2. **Engine idling speed** : Adjust screw (3) to obtain the following result : **idling speed of 850 to 900 rpm.**

3. Slowly adjust mixture screw (2) so as to obtain the following result :
   1.5 to 2.5 % of CO } *These authorised readings correspond to an*
   8.7 % **or more of CO^2** } *ambient temperature of 15 to 30° C*

4. Adjust screws (3) and (2) so that both the idling speed and the quantities of CO and CO^2 are correct.
   Make sure that mixture screw (2) is adjusted last.

5. **Fast idling speed :**
   Switch on the air conditioning compressor, and adjust screw (4) to obtain the following : **Fast idling speed of 1000 to 1050 rpm.**
   NOTE : In case this idling speed is impossible to obtain, the capsule can be moved (by unscrewing its two fixing screws on the carburettor) in order to reduce the clearance at the fixing point of the rod opening the first choke butterfly.

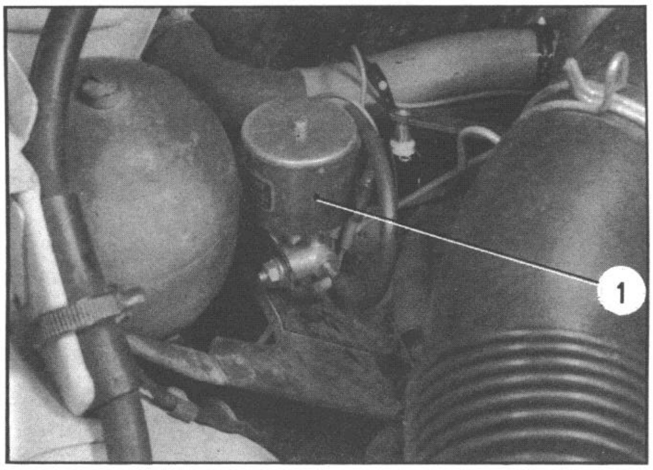
III. M 22/617 ENGINES *(vehicles with torque converter)* **M 23/623 ENGINES** *(vehicles with torque converter with or without air-conditioning).*

NOTE : On vehicles fitted with air-conditioning the compressor must be switched off during adjustment.

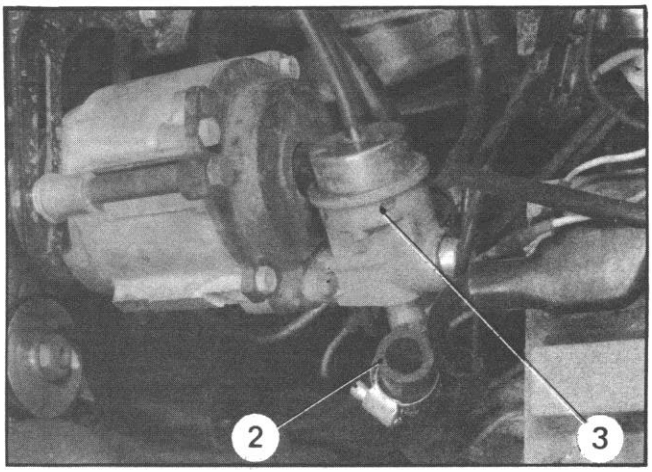
1. **Wait for the electric cooling fans to cut in.**
2. **Engine idling speed** : with the gear lever in the « Neutral » or « Parking » position, adjust screw (3) for the opening of the first choke butterfly to obtain the following : **an idling speed of 700 to 750 rpm.**
3. Slowly adjust the mixture screw (2) so as to obtain :
   1.5 to 2.5 % of CO } *These authorised readings correspond to an*
   8.7 % **or more of CO** 2 } *ambient temperature of 15 to 30° C*
4. Adjust screws (3) and (2) so that both the idling speed and the quantities of CO and CO2 are correct : **Make sure that mixture screw (2) is adjusted last.**
5. **Fast idling speed** : *with the handbrake applied, and a gear engaged :* adjust screw (4) to obtain the following; **fast idling speed of 725 to 775 rpm.**

CHECKING THE SAFETY DEVICE FOR THE CHOKE *(CX 2200)*

76-175



76-179



1. Electrical components :

Switch on the ignition.
Pull the choke control knob : the « WEBER » electro-valve (1) must be heard. If not, use a test lamp to check its electricity supply, and its earthing. If the electro-valve is not supplied, check its energizing and its earthing via the choke control.

2. Pneumatic components :

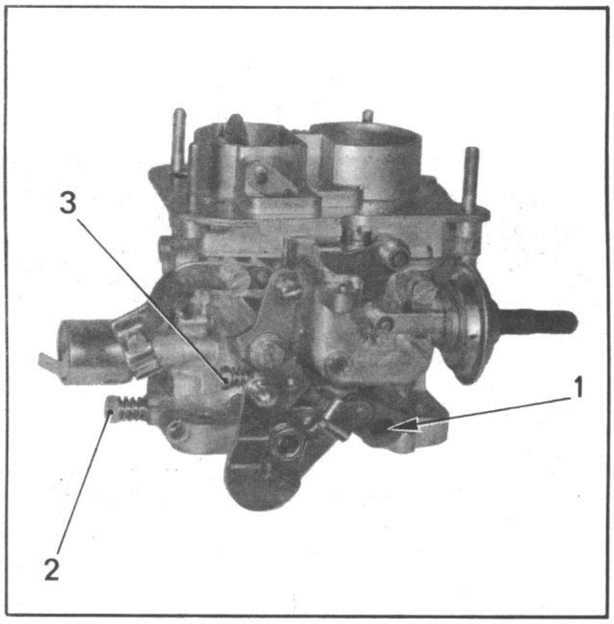
Disconnect from the air-supply valve (3) the pipe from the valve to the exhaust manifold (2).
Plug the tube so as to avoid the exhaust pressure deteriorating the end of the tube and the valve.
Use the starter to rotate the engine.
In this position, the air-pump must not supply air through the opening in the air-supply valve previously disconnected.

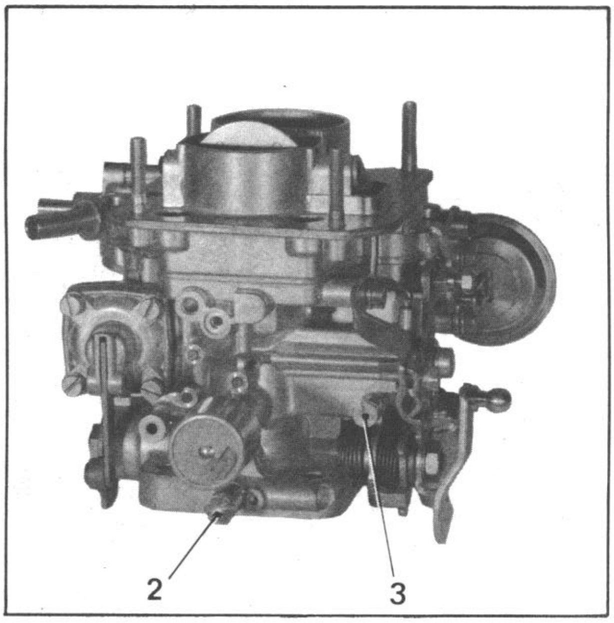
CHECKING THE AIR INJECTION

Push back the choke :
In this position, the air-pump must supply air through the previously disconnected opening in the air-supply valve.

Accelerate the engine, and suddenly decelerate :
The injection of air through the opening must stop for a short while.

CHECKING THE IDLING SPEED AND THE CO READING *(CX 2200)*





IMPORTANT : *It is absolutely forbidden to change the setting of stop-screw (1) for the second choke butterfly, which has been adjusted by the manufacturer with a micrometer.*

On a vehicle fitted with the following :

- distributor : **DUCELLIER 4510 B**

Dwell ratio	: 61 % ± 3 %
Dwell angle	: 55° ± 2°
Static advance	: 6°
Strobe timing	: 6° at 850 rpm
Centrifugal curve	: LA 2

- carburettor : **WEBER 34 DMTR 30/200 Identification mark W 63-00**
- spark plugs: **AC 42 FS**
- **engine, with the following rocker clearances : Inlet = 0.15 mm, Exhaust = 0.20 mm**

Checking and adjusting the CO is carried out in the following conditions :

1. Disconnect from the air-supply valve (3) the pipe from the valve to the exhaust manifold.

2. Bring the engine oil up to a temperature of 85 ± 5° C.

3. Wait for the cooling fan *(or fans)* to cut in.

4. Adjust screw (3) for opening of first choke butterfly in order to obtain an idling speed of 850 to 900 rpm.

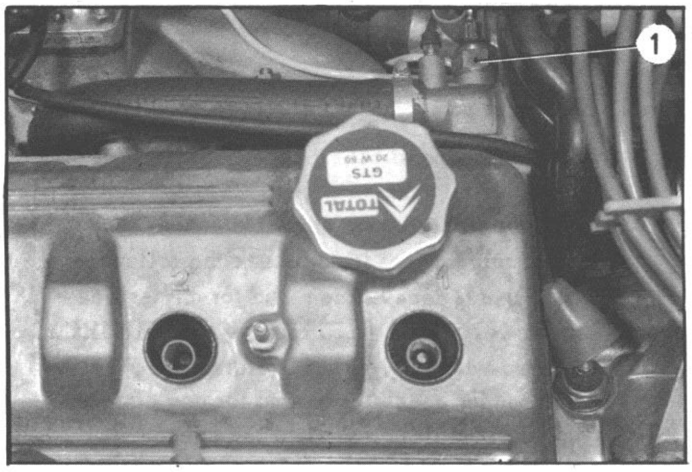
5. Slowly adjust the mixture screw (2) so as to obtain a CO reading of 2 to 3 % for a temperature of 15° to 30° C.

6. Adjust the mixture screw (2) last.

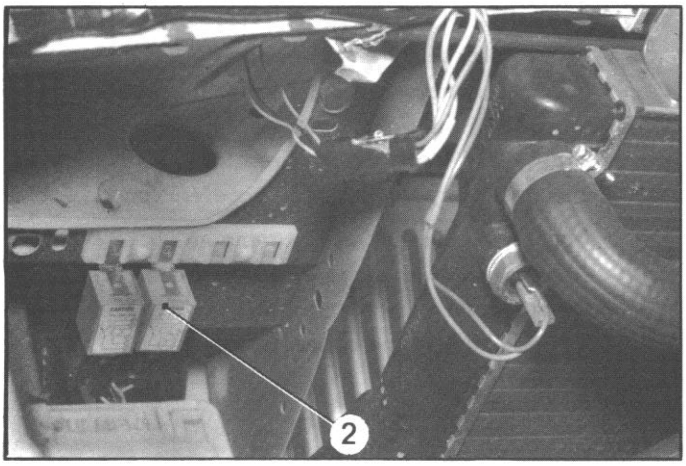
7. Connect to the air-supply valve (3) the pipe from the valve to the exhaust manifold.

NOTE : The operations for checking the safety device on the choke must be carried out in the correct sequence, each operation depending on the results of the preceding one.

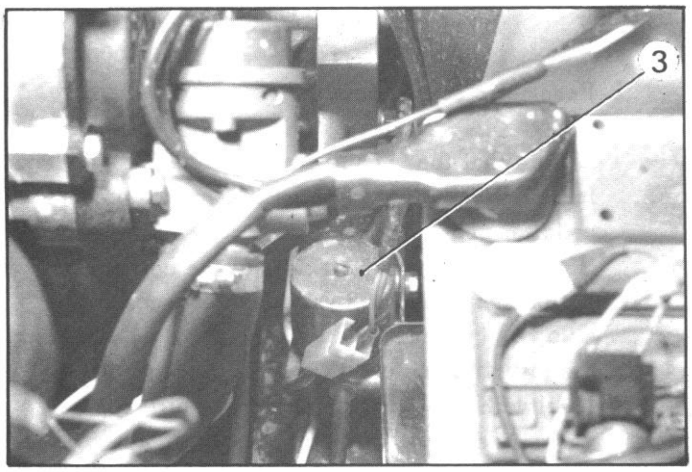
76-408



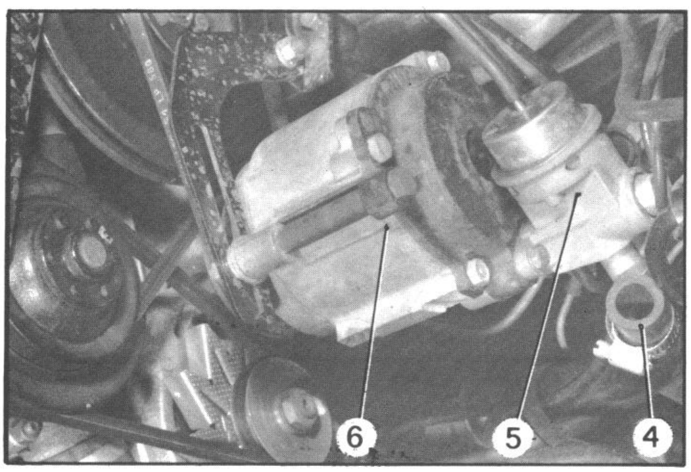
76-412



76-410



76-179



Supplement N° 1 to Manual 818-1 (ADD)

CHECKING THE SAFETY DEVICE FOR THE CHOKE

(CX 2000) :

1. Electrical components :

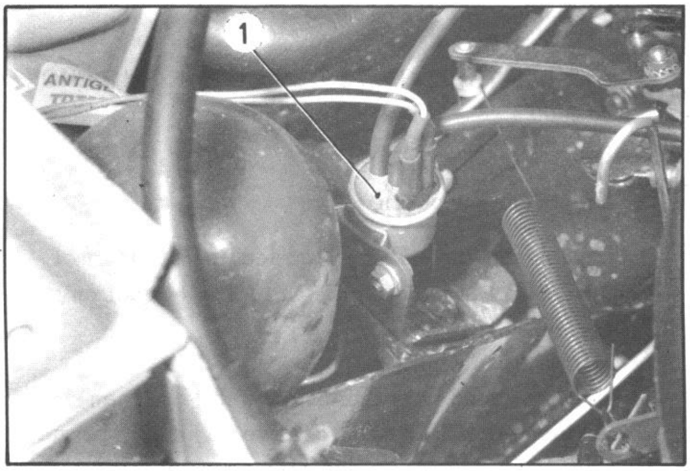
Disconnect the « *blue* » lead feeding the thermal switch (1) located on the water outlet duct on the cylinder head.
Switch on the ignition.
Earth the lead from thermal switch (1) : the relay (2) for the « WEBER » electro-valve (3) must operate.
Leave the thermal switch disconnected, with the lead insulated from earth.
Pull the choke knob, electro-valve (3) is supplied by relay (2) and is closed by earthing via the choke control.

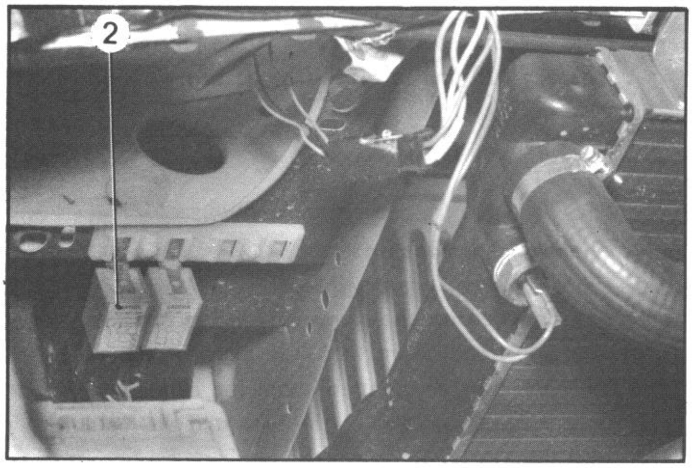
2. Pneumatic components :

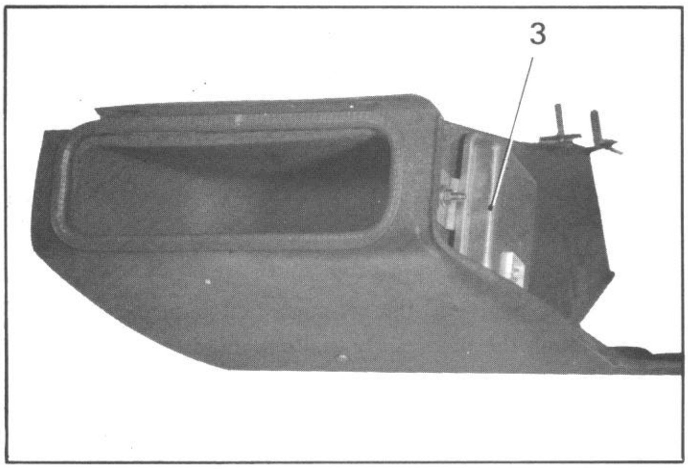
Disconnect from the air-supply valve (5) the pipe (4) from the valve to the exhaust manifold.
Plug the pipe in order to avoid the exhaust pressure deteriorating the end of the tube and the valve.
Use the starter to rotate the engine.
In this position, the air pump (6) must not supply air through the previously disconnected opening in the air supply valve (5).

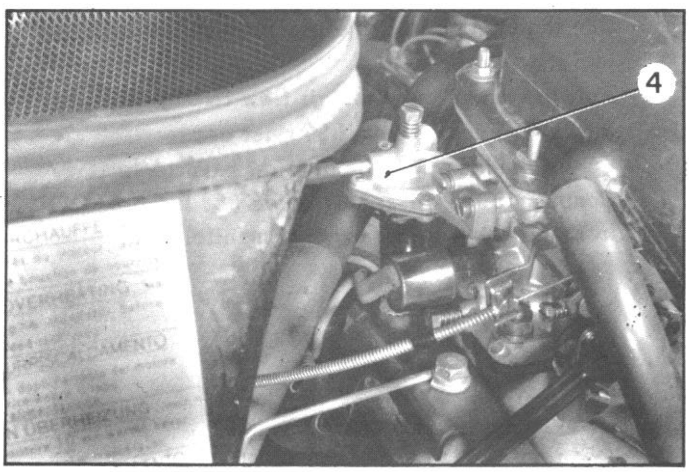
CHECKING THE AIR INJECTION

Push back the choke :
In this position, the air-pump (6) must supply air through the previously disconnected opening in the air-supply valve (5).
Accelerate the engine, and suddenly decelerate.
The injection of air through the opening must stop for a short while.
Run the engine until the cooling fan (or fans) cut in.
Pull the choke out : the air flow through the opening in the air supply valve (5) must cease.
Push the choke in : the air flow must resume.
Connect to the air-supply valve (5) the pipe (4) from the valve to the exhaust manifold.









CHECKING THE DEVICE FOR OPENING THE BUTTERFLY

1. Electrical components :

With the engine *at idling speed*, disconnect one of the leads to the « PIERBURG » electro-valve (1), the engine speed must increase.
If not, using a test lamp, check the following :
- that, **under deceleration** and for any engine speed **Nd** > 1800 ± 100 rpm the « PIERBURG » electro-valve (1) is not energized.
- that, **under acceleration** and for any engine speed from idling speed to the speed **Nc** = Nd + 50 to 250 rpm, the « PIERBURG » electro-valve is energized.

If in this case the electro-valve is not energized, ensure (using a test lamp) that the winding in relay (2) is not energized for an engine speed below " **Nd** " (under deceleration) or an engine speed below " **Nc** " (under acceleration).

Accelerate the engine up to engine speed " **Nc** " :
- the winding in relay (2) must be energized.

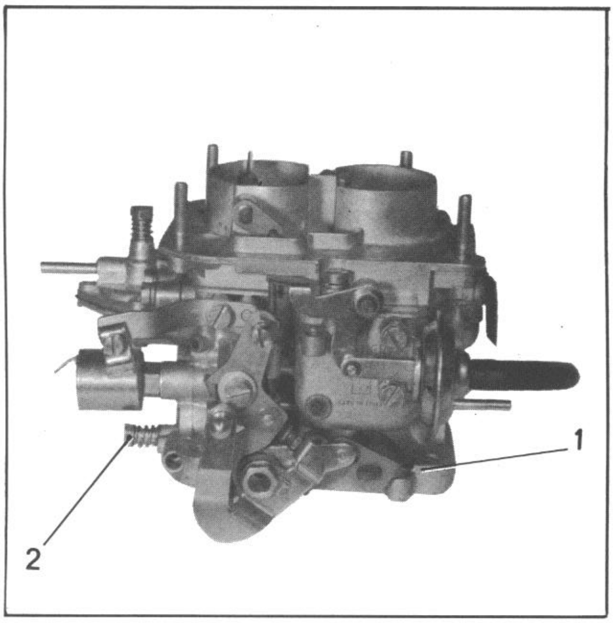
If not, replace the electronic unit (3) after having checked the connections.

2. Pneumatic components :

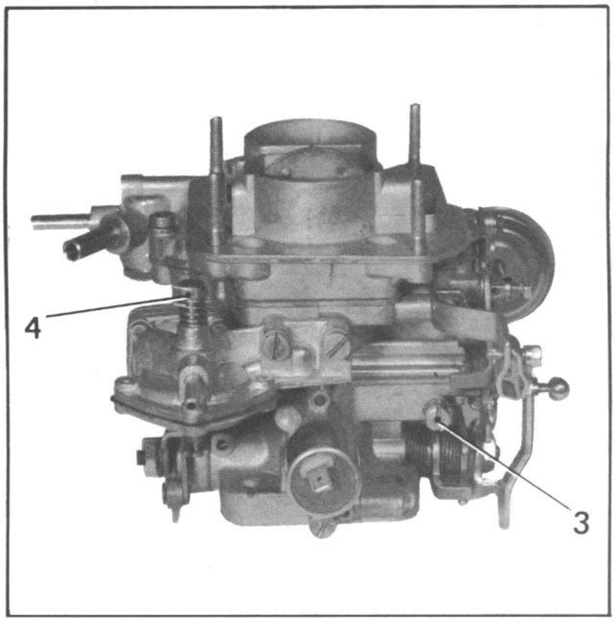
Ensure that the vacuum reaches capsule (4) (device for opening butterfly) when the engine speed is equal or above " **Nc** ".
Make sure the vacuum exists at the carburettor outlet. If it does, and yet does not reach capsule (4) (device for opening butterfly), check the circuit along all its length, plugging it first level with the 3-way union, on the air-supply valve side.

ADJUSTING THE IDLING SPEED AND THE CO READING *(CX 2000)*

76-173



76-164



IMPORTANT : *It is absolutely forbidden to change the setting of stop-screw (1) for the second choke butterfly which has been adjusted by the manufacturer with a micrometer.*

On a vehicle fitted with the following :

- **distributor** : **DUCELLIER 4510 B**

Dwell ratio	61 % ± 3 %
Dwell angle	55° ± 2°
Static advance	6°
Strobe timing	6° at 850 rpm
Centrifugal curve	LA 2

- **carburettor** : **WEBER 34 DMTR 29/200 Identification mark W 61-00**
- **spark plugs** : **AC 42 FS (gap = 0.7 mm)**
- **engine with the following rocker clearances : Inlet = 0.15 mm, Exhaust = 0.20 mm**

Checking or adjusting the CO reading is carried out in the following conditions :

1. Disconnect from the air-supply valve the pipe from the valve to the exhaust manifold.
2. Bring the engine oil up to a temperature of 85° ± 5° C.
3. Wait until the cooling fan *(or fans)* cut in.
4. Adjust screw (3) for the first choke butterfly in order to obtain an idling speed of 850 to 900 rpm.
5. Slowly adjust the mixture screw (2) so as to obtain a CO reading of 2 to 3 % for a temperature of 15 to 30° C.
6. Adjust the mixture screw (2) last.
7. **Adjust the throttle butterfly opening :**
   Disconnect one of the leads from the « PIERBURG » electro-valve
   Adjust screw (4) to obtain an engine speed of 1450 ± 50 rpm
   Connect the « PIERBURG » electro-valve
8. Connect to the air-supply valve, the pipe from the valve to the exhaust manifold.

« L - JETRONIC »

System

Supplement N° 1 to Manual 818-1 (ADD)

« L - JETRONIC »

The « L-Jetronic » system is an intermittent low-pressure injection system which injects petrol into the inlet manifold.

The system measures the quantity of air drawn in by the engine, which is the main parameter for calculating the amount of fuel to be injected. The metering of the fuel is carried out by electro-magnetically triggered injectors. These are under constant fuel pressure. The quantity of fuel injected is proportional to the duration of injection, which in turn is optimally determined for any given engine operating condition by an electronic control unit (E.C.U.) from information supplied by several electric sensors.

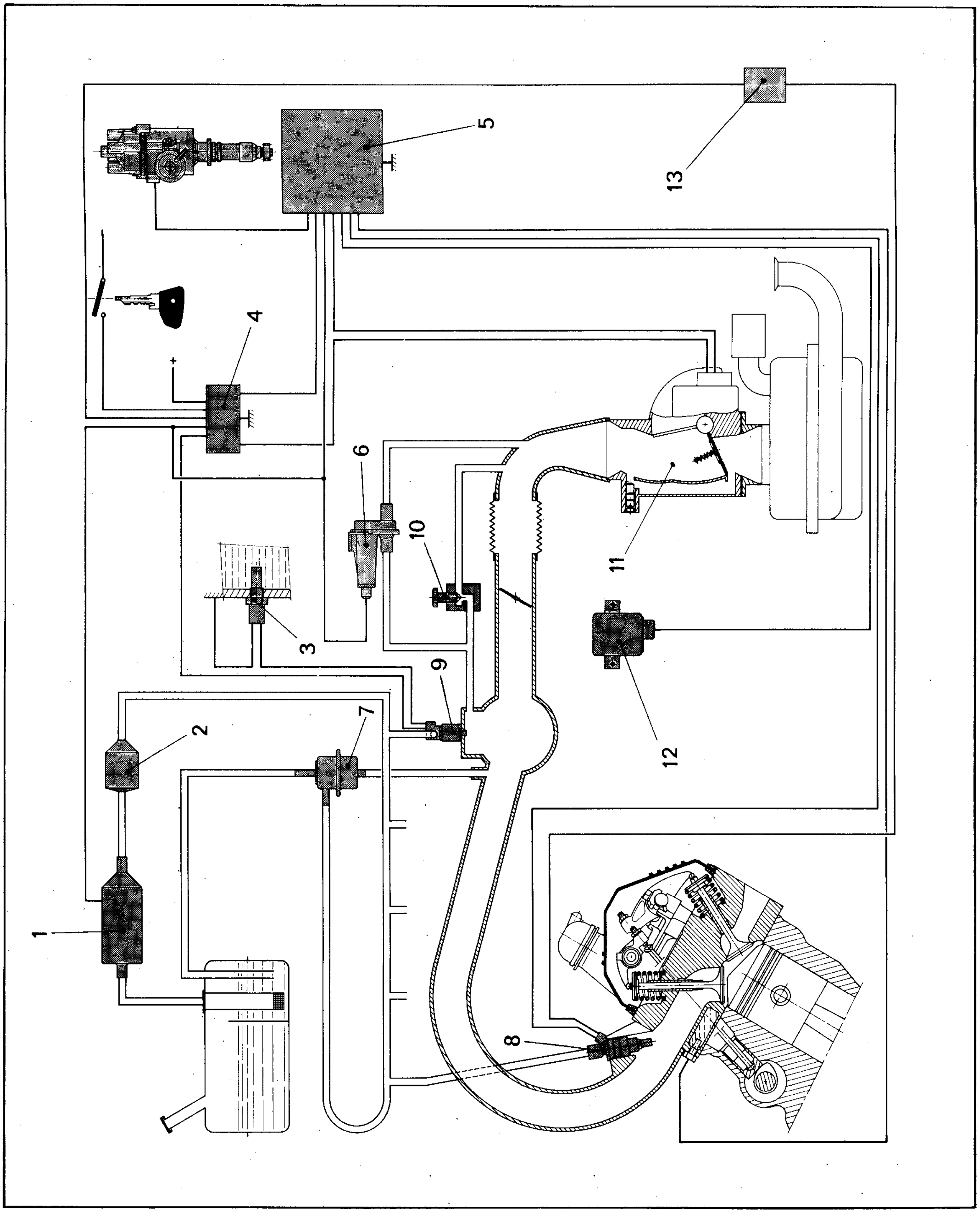
One of the principal contributions of the « L-Jetronic » system is the reduction in the level of pollution of the exhaust emissions.

The « L-Jetronic » system is made up of the following components :

1 : Electric fuel pump
2 : Fuel filter
3 : Thermal switch
4 : Double relay
5 : Electronic control unit (E.C.U.)
6 : Supplementary air control
7 : Pressure regulator
8 : Injectors
9 : Cold-start injector
10. Idling speed adjustment screw
11 : Air-flow sensor (with incorporated air temperature sensor)
12 : Switch on throttle butterfly spindle
13 : Additional resistors for the injectors (8)

GENERAL LAYOUT

L 14-19



AIR INLET SYSTEM

Air drawn in via air filter (1) passes through the air-flow sensor (2), via butterfly (3) and arrives in the inlet distribution chamber, each pipe of which (4) leads to a cylinder.

Each cylinder has an electro-magnetic injector which is located very close to the inlet valve in order to improve engine performance.

The supplementary air control (6) is located in parallel with the butterfly, and supplies the supplementary air required by the engine to run smoothly when cold.

Once the engine has reached its normal running temperature, the idling speed air-flow is provided by a by-pass valve (5) which by-passes the butterfly as well.

It is important that the system be air-tight downstream from the air-flow sensor, so that no « secondary » air can be drawn in, which would falsify the air-volume reading.

FUEL CIRCUIT

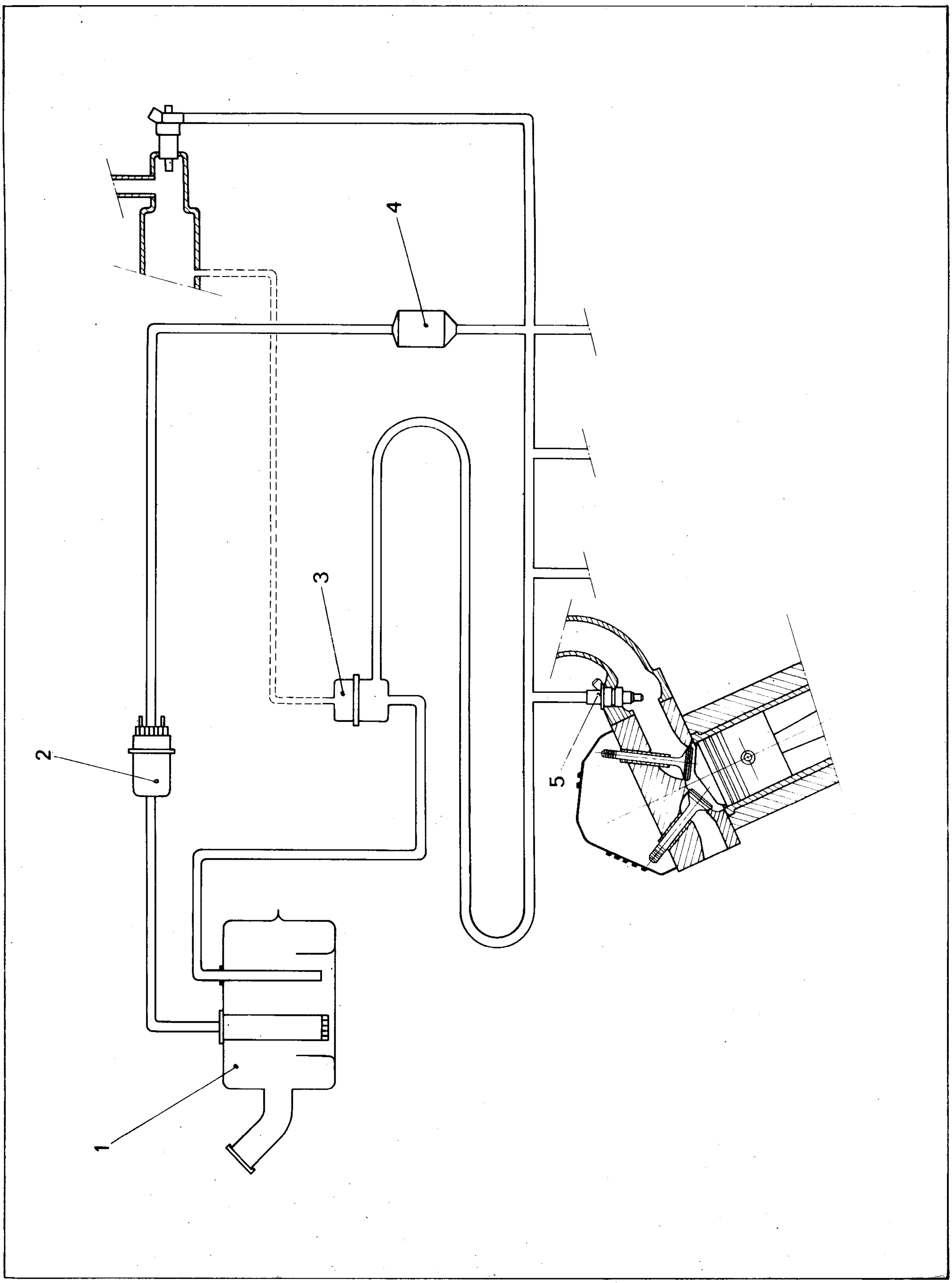
A multiple roller-valve pump (2) draws the fuel from tank (1) and provides the injection pressure.

A filter (4) is fitted to the system.

In the fuel return pipe, the pressure regulator (3) maintains, under fuel load, a relative constant fuel pressure of 2 bars (29 psi).

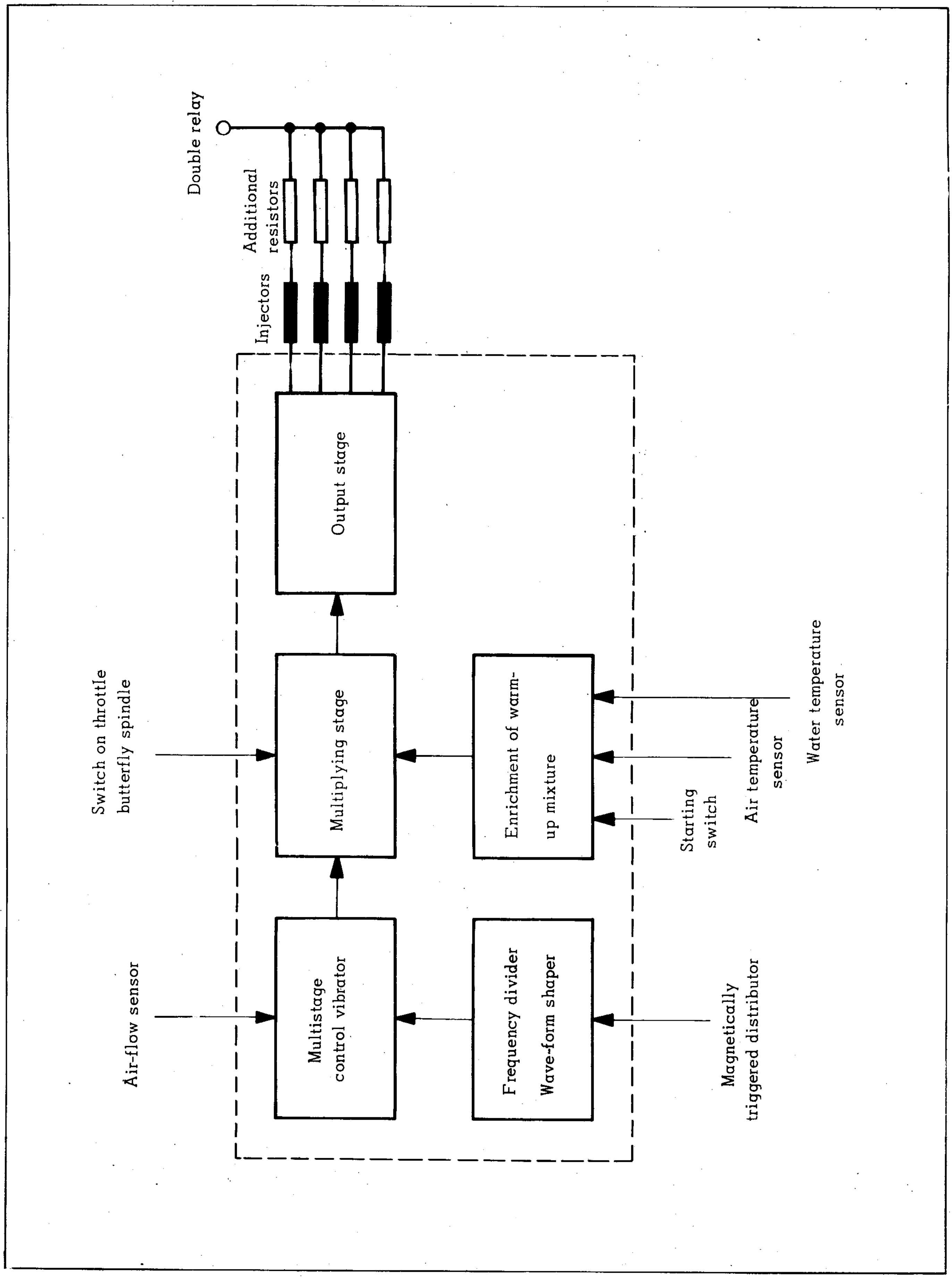
The pressure regulator is connected to the intake manifold by a flexible pipe. This allows the difference of pressure between the fuel and the inlet manifold to remain constant. Thus the necessary quantity of fuel delivered by the injectors (5) depends exclusively on its duration of opening.

FUEL CIRCUIT



Supplement N° 1 to Manual 818-1 (ADD)

E.C.U.
(ELECTRONIC CONTROL UNIT)



E.C.U. (ELECTRONIC CONTROL UNIT)

Apart from three integrated circuits (I.C.) forming the main part of the E.C.U., there are in addition only a few semi-conducting components condensers, calibrating resistors and filters so as to avoid any interference.

The function of the E.C.U. is to supply an impulse to the injectors, and to control their opening for a precisely defined amount of time. The E.C.U. to this effect uses the information provided by all the engine sensors which translate the operating conditions of the engine into electric impulses.

All the injectors are connected in parallel, and inject fuel simultaneously twice for each rotation of the camshaft (therefore,twice for each engine cycle), injecting half the quantity of fuel required each time. With this system, it is not necessary for the camshaft angle to coincide with the beginning of injection point, which eliminates the need for a generating switch incorporated in the distributor.

The injection impulse control is ensured by the distributor impulses. The distributor produces four impulses for every operational cycle. Since injection only occurs twice in every cycle, the E.C.U. must divide the frequency by 2.

The impulses coming from the distributor are transformated into square waves by the wave form shaper. Since injection only occurs twice for each camshaft rotation, whereas the distributor provides 4 impulses in the same amount of time, the frequency of the impulses must be divided by 2 in the frequency divider.

These signals are used to charge a condenser. The condenser discharge determines the beginning of injection point; the position of the air-flow sensor flap (which determines the quantity of air drawn in) being the main parameter for calculating the duration of injection.

At the multiplying stage of the E.C.U., various correction values (full load and idling speed via throttle butterfly spindle switch, engine temperature via the water temperature sensor, air temperature via the air-temperature sensor located in the air-flow sensor) are combined with the signals from the air-flow sensor and the injection frequency in order to determine the injection duration which is transmitted to the injectors by way of impulses.

The time it takes for the injector needle to open and close depends on the battery voltage.
As the supply voltage increases, the injection duration increases. The fact that the quantity of fuel injected depends on the voltage is cancelled out by the fact that the injection duration is inversely proportional to the voltage in the E.C.U.

The final impulse determines the time during which the injectors are connected to earth (injection duration supplied by the output stage).

Supplement N° 1 to Manual 818-1 (ADD)

AIR-FLOW SENSOR (1) :

The role of the air-flow sensor is to supply the E.C.U. with a signal proportional in voltage to the quantity of air drawn in.

With the engine running, the sensor flap is maintained at an angular position determined by the intensity of the-air-flow, against the resistive action of a spiral spring. The resistance to deflection of the sensor flap, produced by the spiral spring, is calculated so as to compensate for any mechanical friction (bearings, bushes) and to limit the pressure drop at the flap.

The movement of the sensor flap is damped by a blade rigidly attached to it. This damping blade rotates inside a housing in which it is a close fit. The operating clearance determines the degree of damping. The use of a damping blade cancels the effects on the angular position of the sensor flap of pressure variations in the inlet collector.

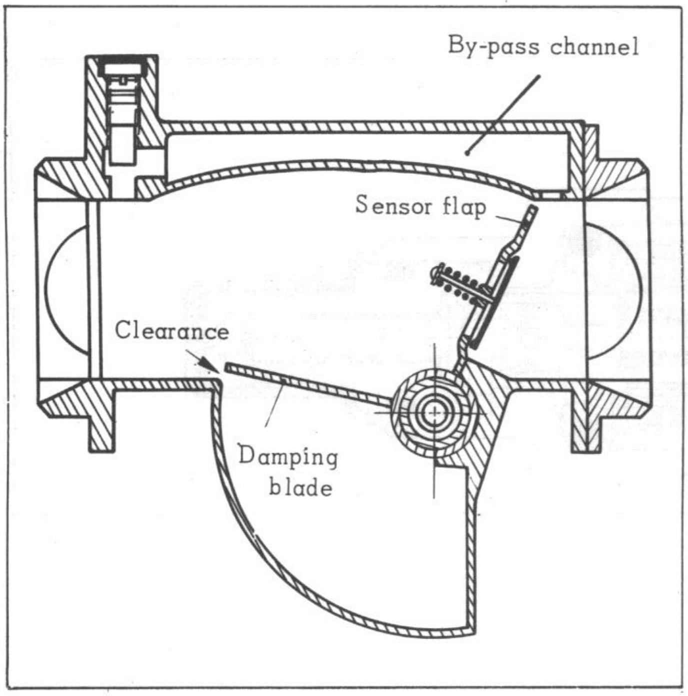
A potentiometer, actuated by the sensor flap spindle, transforms movement of the sensor flap into an electrical circuit which is transmitted to the E.C.U.. The voltage of the electrical current is inversely proportional to the amount of air drawn in.

In order to cancel the effects of any combustion taking place in the inlet manifold, a one-way valve is incorporated in the sensor flap.

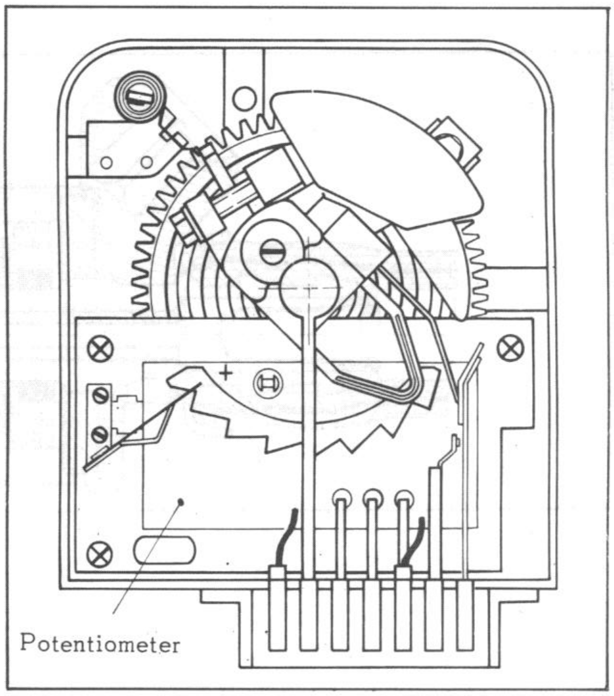
Thanks to a by-pass channel, a small quantity of the air drawn in by-passes the sensor flap. This offers the possibility of determining the air/fuel mixture at idling speed by varying the diameter of the by-pass channel, since the air going through the by-pass is not measured. The switch for the pump (engine running) and the air temperature sensor are located in the air-flow sensor.

AIR-FLOW SENSOR

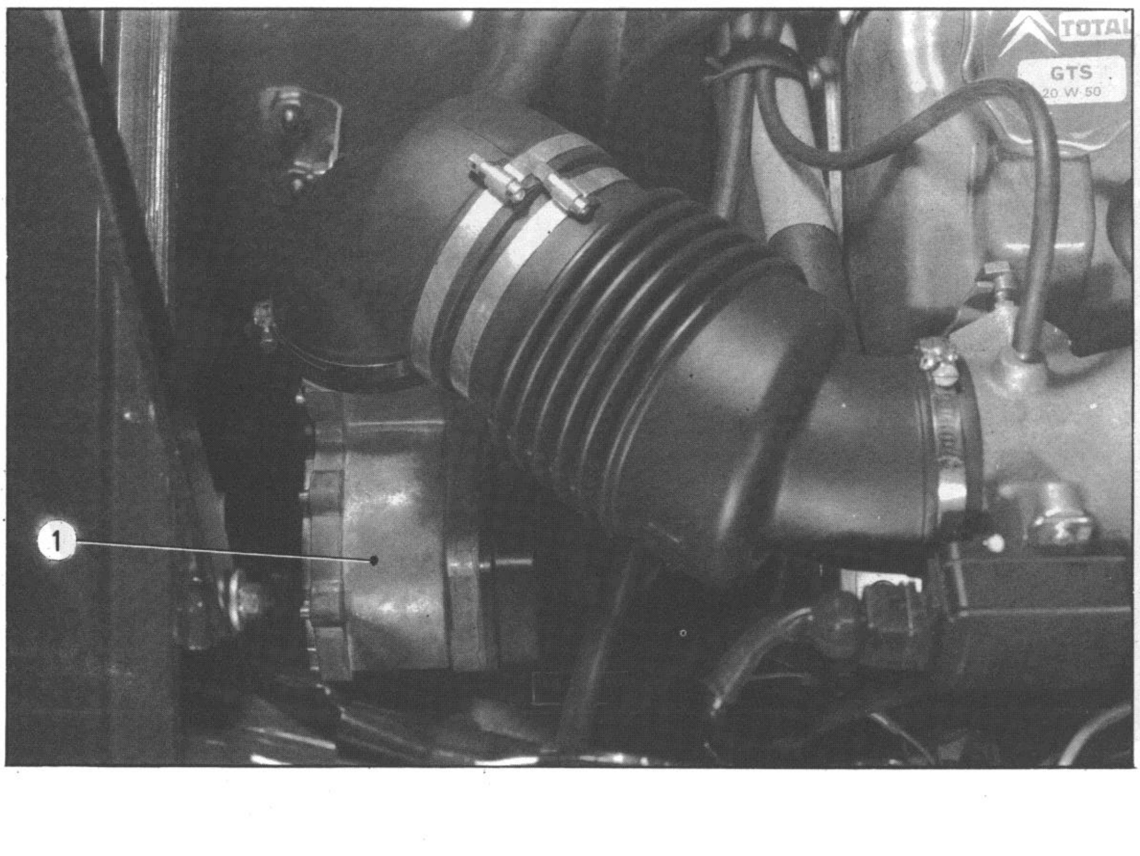
L 14-10



L 14-13

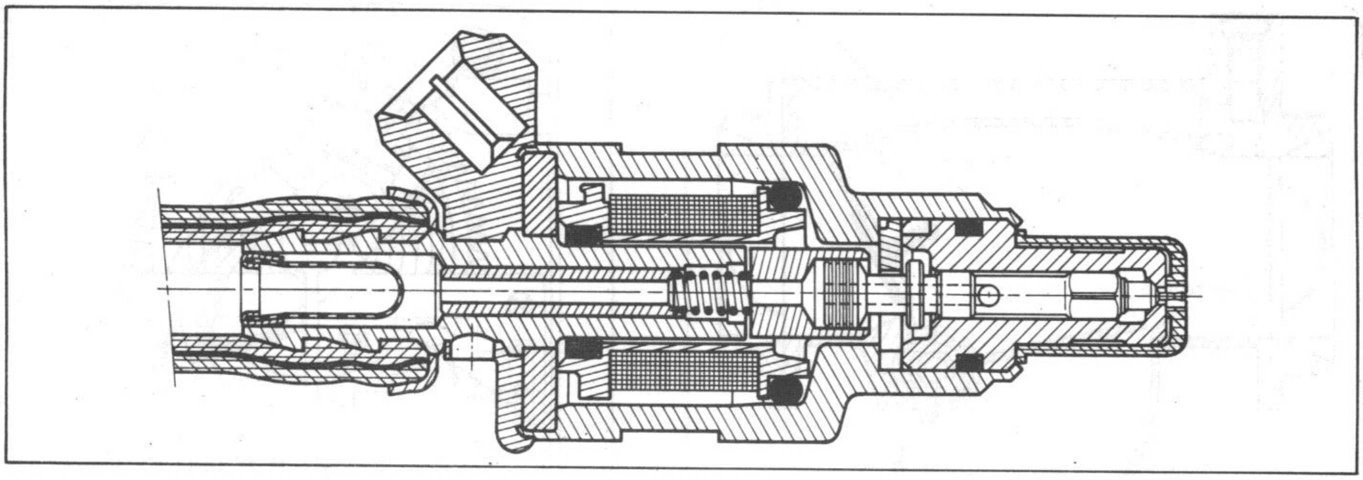


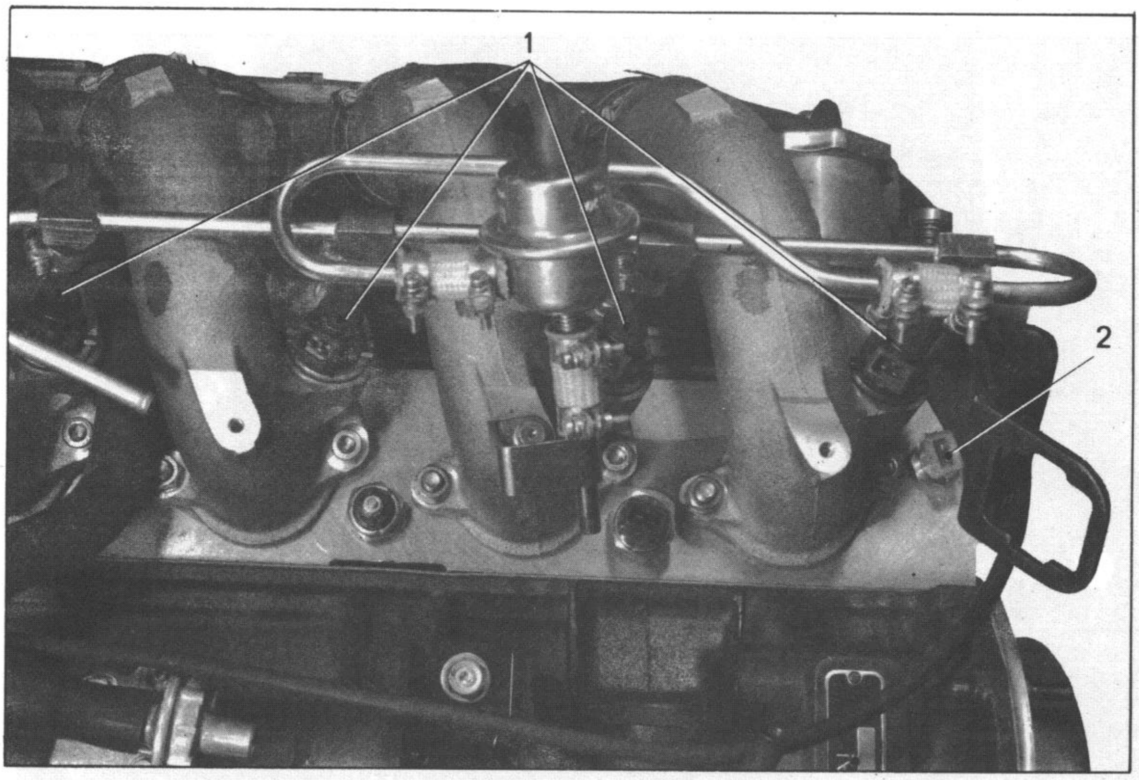
77-19



INJECTORS

L 14-21





INJECTORS (1) :

Each cylinder is supplied by an electro-magnetically controlled injector which is fitted in the inlet duct; the injector vaporises the fuel upstream of the inlet valve. In the case of the « L-Jetronic » system, all the injectors operate simultaneously. However, in order to ensure regular fuel supply to the cylinders, there are two injections for each rotation of the camshaft, each one supplying half the metered quantity of fuel required for the complete engine cycle.

The injector consists of a valve housing and an injector needle fitted with a magnetic core. The mobile magnetic core is in one piece with the needle, which in turn is compressed against the air-tight injector housing seat by a helicoidal spring. At the rear end of the injector, there is a solenoid, and at the front a guide for the injector needle.
Impulses coming from the E.C.U. create a magnetic field in the solenoid; the magnetic core is attracted, and the needle lifts off its seat the fuel under pressure is free to pass through. The movement of the magnetic core is approximately 0.15 mm.
The duration of opening is determined by the E.C.U. as a function of the operating conditions of the engine at the moment in question.

TEMPERATURE SENSORS «

When the engine is started, for a temperature of approximately – 20° C, it needs two to three times more fuel than when it has reached normal operating temperature. The enrichment of the mixture must be reduced as the engine warms up, and must cease as soon as the engine has reached normal operating temperature. In order to start off this regulating procedure, the engine temperature must be communicated to the E.C.U. (Electronic Control Unit). This is the object of the temperature sensors.

The temperature sensor consists of a hollow threaded rod in which is located an NTC Thermistor made in semi-conducting material. The letters NTC, which signify « negative temperature coefficient » characterise its specific property : its electrical resistance decreases as the temperature increases.

The « L-Jetronic » system is fitted with a water temperature sensor (2) and an air temperature sensor, the latter situated in the air-flow sensor.

COLD START INJECTOR

When the engine is cold, fuel settles on the inlet distribution chamber, and on the cylinder walls. Therefore, the quantity of fuel which mixes with the inlet air is smaller than in an engine which has reached normal running temperature. The mixture thus obtained will not ignite.

The cold-start injector enriches the mixture in each inlet duct by vaporizing fuel in the inlet manifold. However, it only comes into operation when the starter motor is actuated, and when a thermal switch located in the engine coolant has simultaneously closed the circuit.

A helicoidal spring compresses the mobile core of the electro-magnet and its seal : fuel cannot pass through.

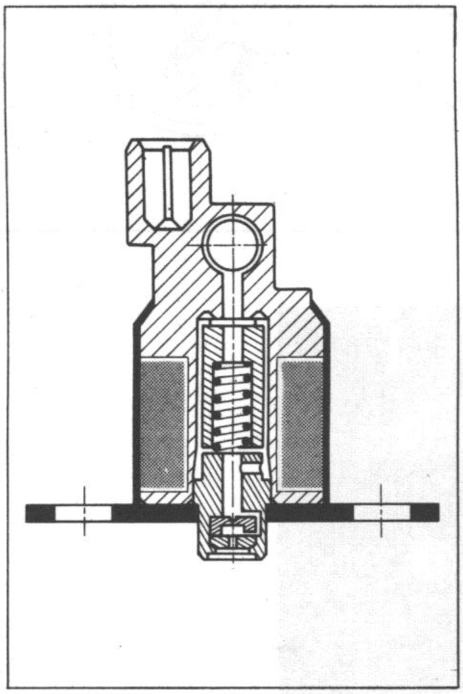
When the magnetic core is attracted, the injector seat is freed-off, the fuel flows past the core, and reached the spiral effect injector, which injects the fuel, simultaneously giving it a spiral motion, and vaporizing it very finely.

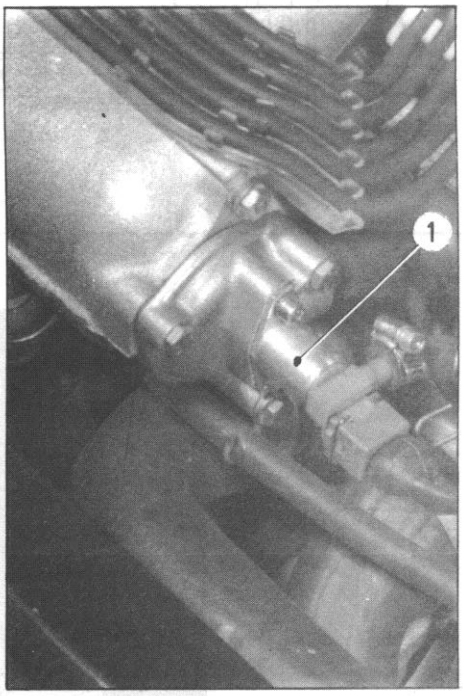
THERMAL SWITCH

The thermal switch cuts out the operation of the cold-start injector when the temperature of the engine reaches + 35° C. For any temperature below + 35° C, the thermal switch limits the duration of injection. The maximum duration is approximately 7.5 secs. at – 20° C. Duration of injection is reduced as temperature increases.

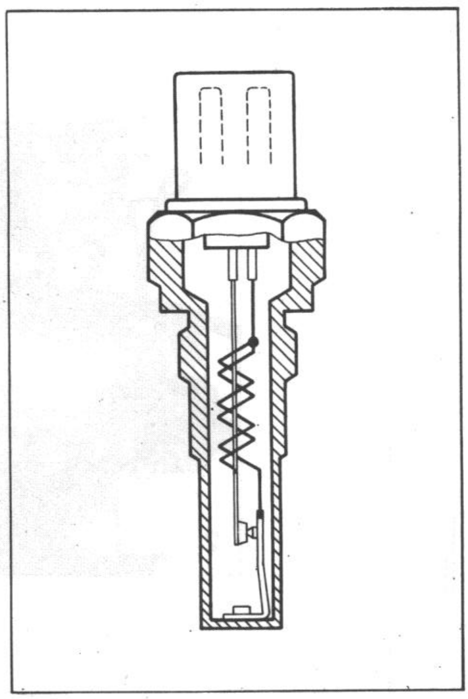
The variation in duration, determined by the thermal switch, is obtained by means of a bi-metallic strip heated by an electrical resistance. The bi-metallic strip cuts out the circuit according to the temperature reached after it has heated for a certain amount of time.

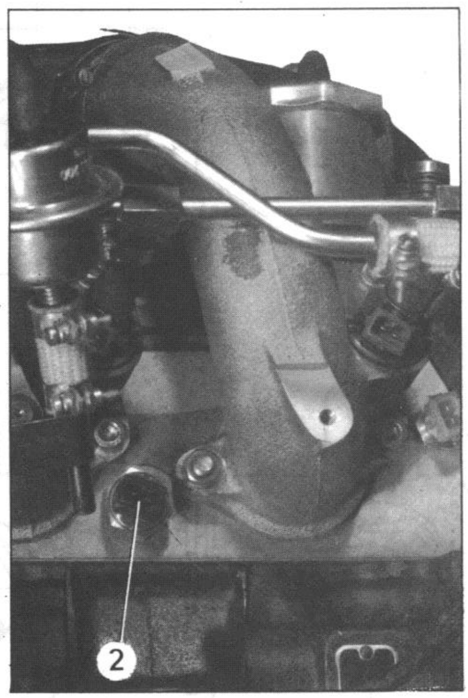
COLD-START INJECTOR



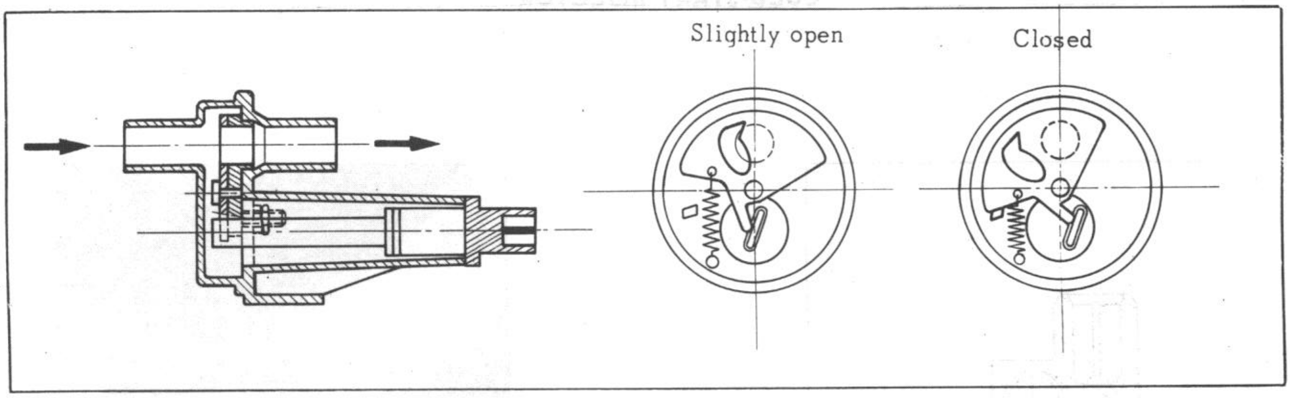


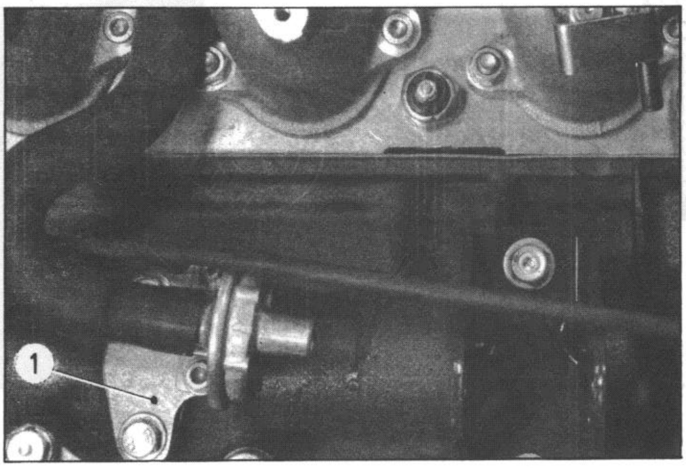
THERMAL SWITCH



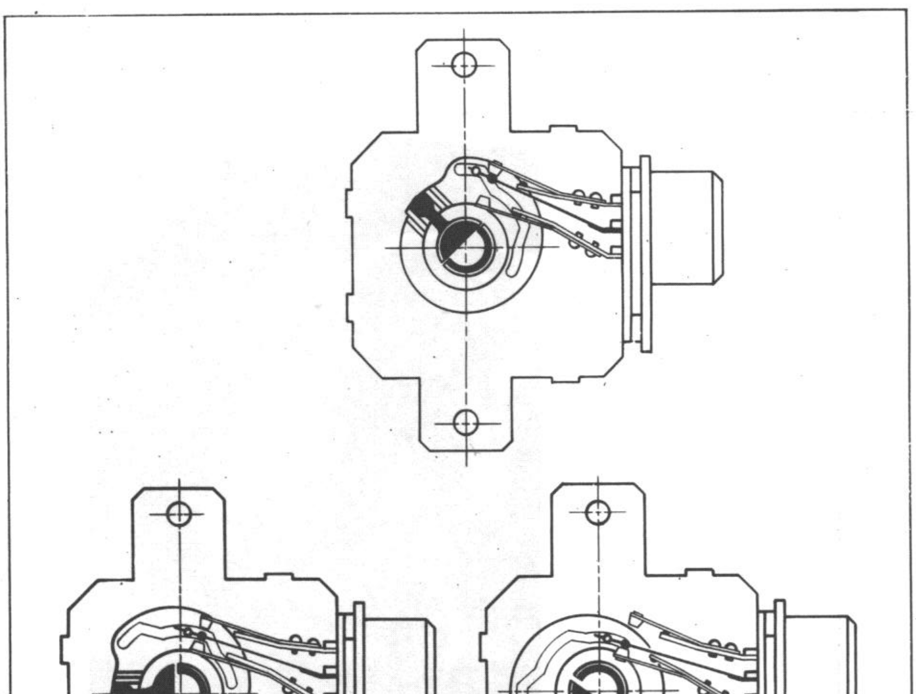


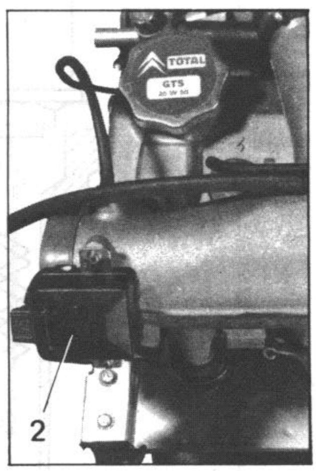
SUPPLEMENTARY AIR CONTROL





SWITCH ON THROTTLE BUTTERFLY SPINDLE





SUPPLEMENTARY AIR CONTROL (1) :

At idling speed and when cold, the engine must produce more torque so as to counteract increased resistance caused by friction. In addition to an enriched air fuel mixture, the engine also needs, when starting from cold and during the warming-up period, to be supplied with supplementary air. The E.C.U. compensates for this supplementary air by providing more fuel; the engine therefore has a larger amount of mixture at its disposal to reach normal running temperature. The supplementary air control fitted in parallel with the throttle butterfly supplies the supplementary air. The supplementary air control is heated only when the engine is running, and its heater winding is supplied electrically as long as the ignition is switched on.

The location of the supplementary air control on the engine block was selected for its good heat transfer characteristics, and so as to subject the unit to the changing ambient temperature of the engine.

The opening section of the supplementary air control is automatically adjusted according to the temperature, so that the required idling speed is maintained regardless of engine temperature. When the latter increases, the air channel is gradually reduced, until it is completely closed when the coolant temperature reaches approximately + 60° C.

The supplementary air control is situated at a representative spot for engine running temperature. A bi-metal spring actuates a rotary valve thereby altering the size of the air passage. Electric heating has the advantage of allowing the supplementary air to be adjusted at pre-set times.

SWITCH ON THROTTLE BUTTERFLY SPINDLE :

The switch on the throttle butterfly spindle contains two contacts : the idling speed contact, and the full load contact. The control contact, which slides along a slot, closes the idling speed contact or the full load contact for a given position of the butterfly. The E.C.U. analyses the signals received so as to adjust the duration of injection.

ELECTRIC PETROL PUMP

The petrol pump is of the multi roller-vane type, driven by an electric motor which is energized as long as the ignition is switched on. The rotor, which is fitted eccentrically in the pump housing, has metal roller vanes in grooves around the periphery which, when they are forced outwards under the action of the centrifugal force, ensure the system is sealed.
Fuel is drawn into the cavities which appear in between the roller-vanes, and is then forced into the injection piping.
The electric motor is submerged in fuel. However, there is no fire risk, since there is never any combustible mixture in the pump housing. The pump supplies more fuel than the engine consumes under full load, so that there is always sufficient pressure in the fuel system, whatever the engine speed. Excess fuel flows back to the tank.

Once the ignition is on, the pump operates at the same time as the starter motor. Once the engine is running, the air flow sensor energizes the pump.

Thanks to this type of system, if an injector is faulty (leaks) the cylinder in question cannot be flooded if one has ommitted to switch the ignition off.

PETROL FILTER (1) :

A fuel filter, fitted between the pump and the injectors, prevents any impurities from reaching the injectors.

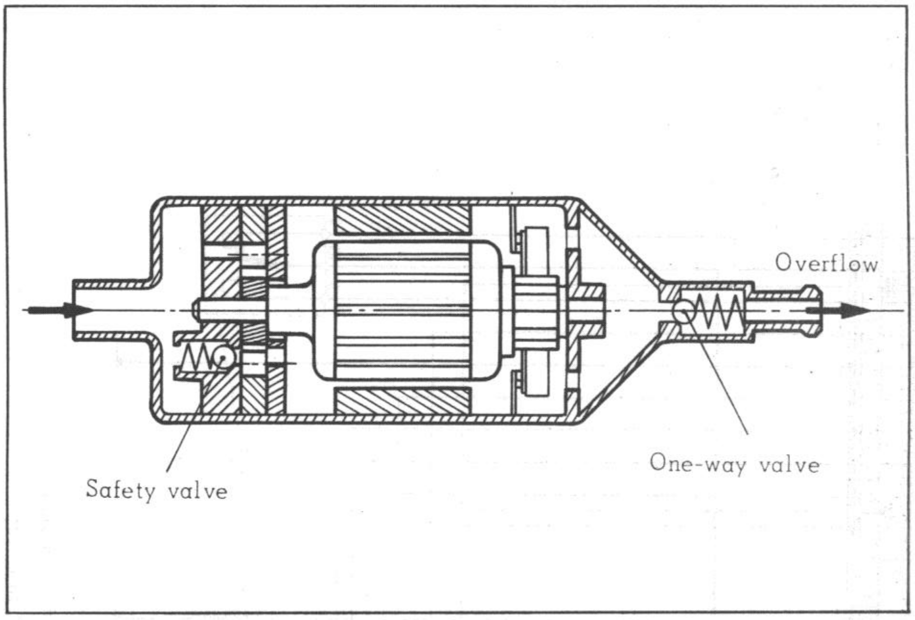
PETROL PRESSURE REGULATOR (2) :

The fuel pressure is maintained constant by the pressure regulator. It comprises a metal housing inside which is a diaphragm. One side of the diaphragm is subjected to the fuel under pressure, and the other side is subjected to the action of a calibrated spring.
When the fuel pressure is in excess of 2 bars (29 psi), the diaphragm lifts and allows fuel to flow back to the tank.

The pressure provided by the regulator is pre-adjusted at the factory. The chamber on the side of the spring is connected via a flexible pipe to the inlet manifold. Therefore, the difference between the pressure in the inlet manifold and that of the fuel is maintained constant.
For any engine load, the drop in pressure at the injectors is therefore the same.

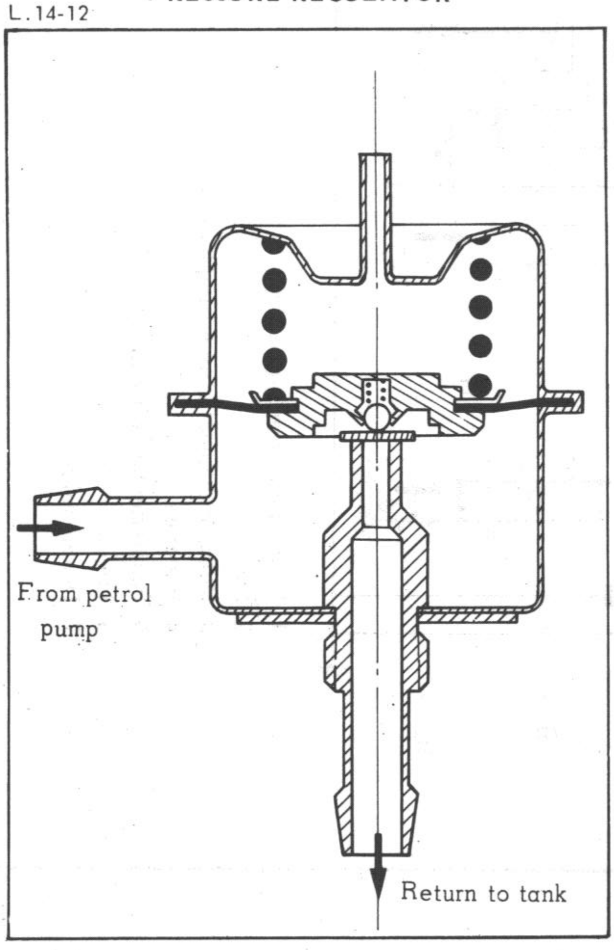
ELECTRIC PETROL PUMP

L.14-14

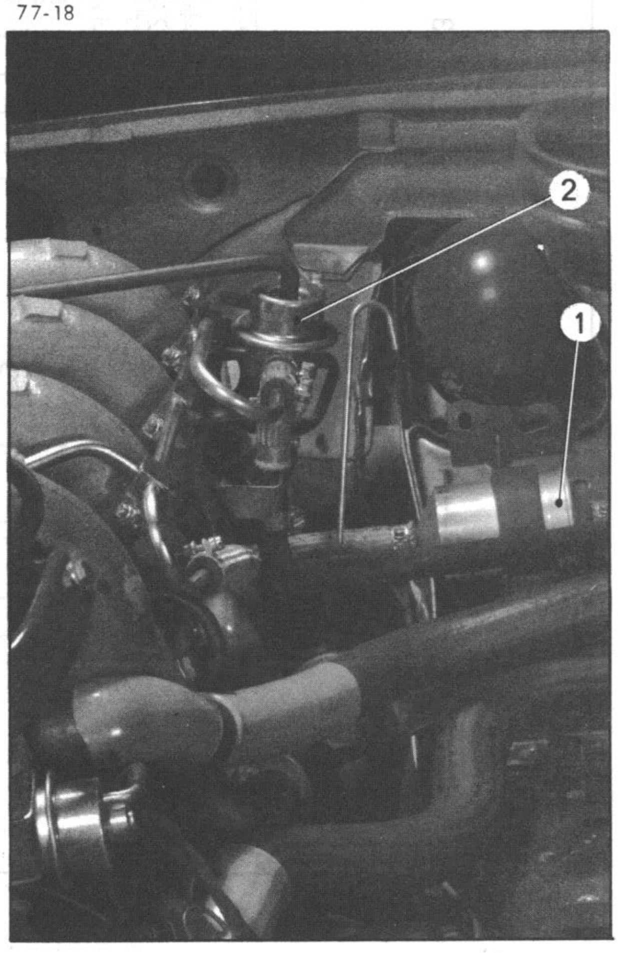


PRESSURE REGULATOR

L.14-12

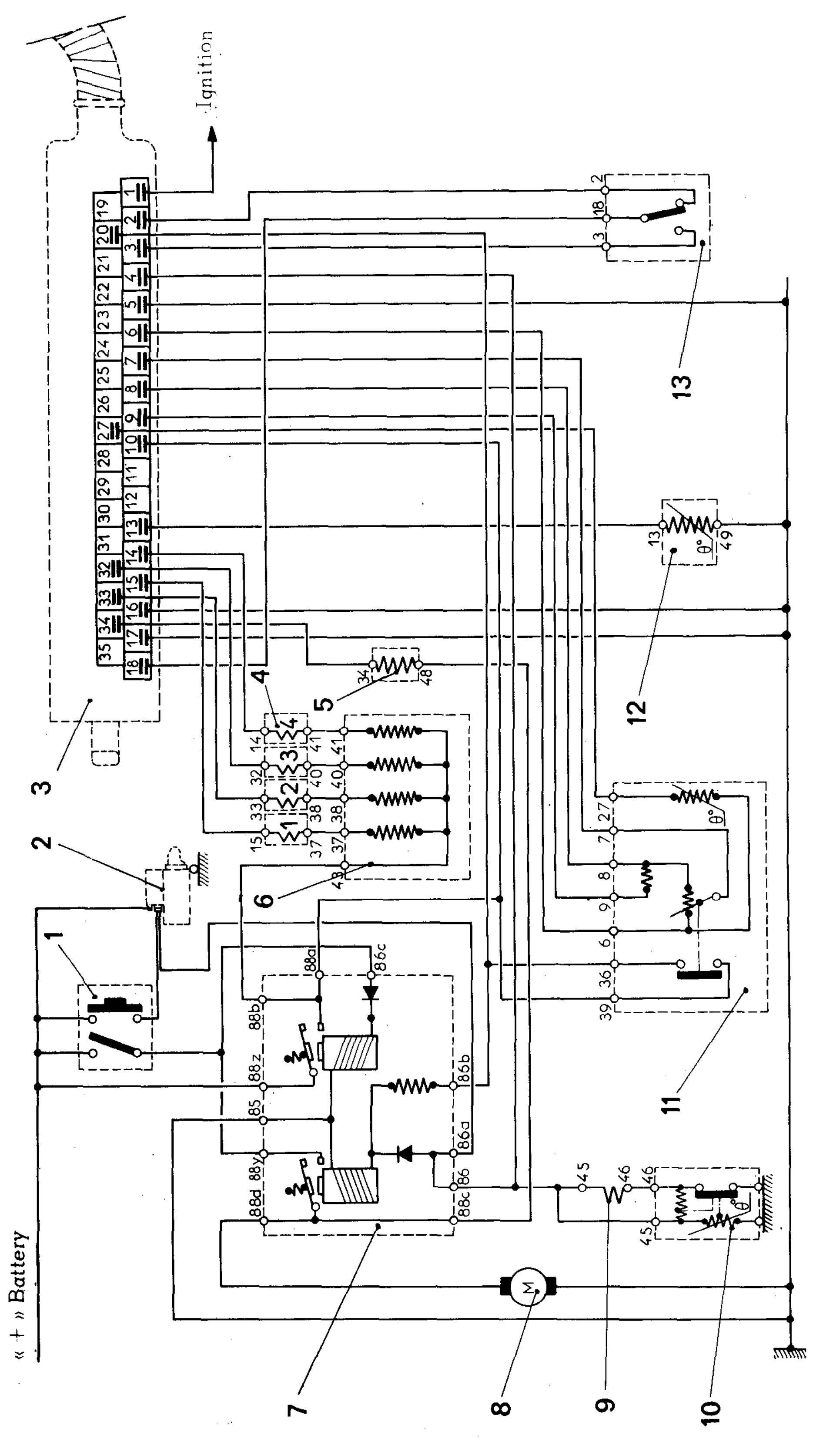


77-18



CIRCUIT DIAGRAM

L.51-19



1. Ignition and starting switch
2. Starter
3. Multiple connector on wiring harness
4. Injectors
5. Supplementary air control
6. Injector resistors
7. Double relay
8. Electric petrol pump
9. Cold start injector
10. Thermal switch
11. Air-flow sensor with air temperature sensor
12. Water temperature sensor
13. Throttle butterfly spindle switch

I - PRECAUTIONS TO BE TAKEN WHEN WORKING ON A VEHICLE FITTED WITH THE « L-JETRONIC » SYSTEM.

1. Do not run the engine if the battery leads are improperly secured

2. Do not use a quick-start charging trolley for starting the engine

3. Never disconnect the battery with the engine running

4. When charging the battery, disconnect the leads

5. Before checking the injection system, check the ignition : (advance, advance curve, proper grade of plugs)

6. Remove the E C U before putting the vehicle through a paint-stoving oven

7. Check the conditions of the various connections

8. Never disconnect the E,C U. while the ignition is on.

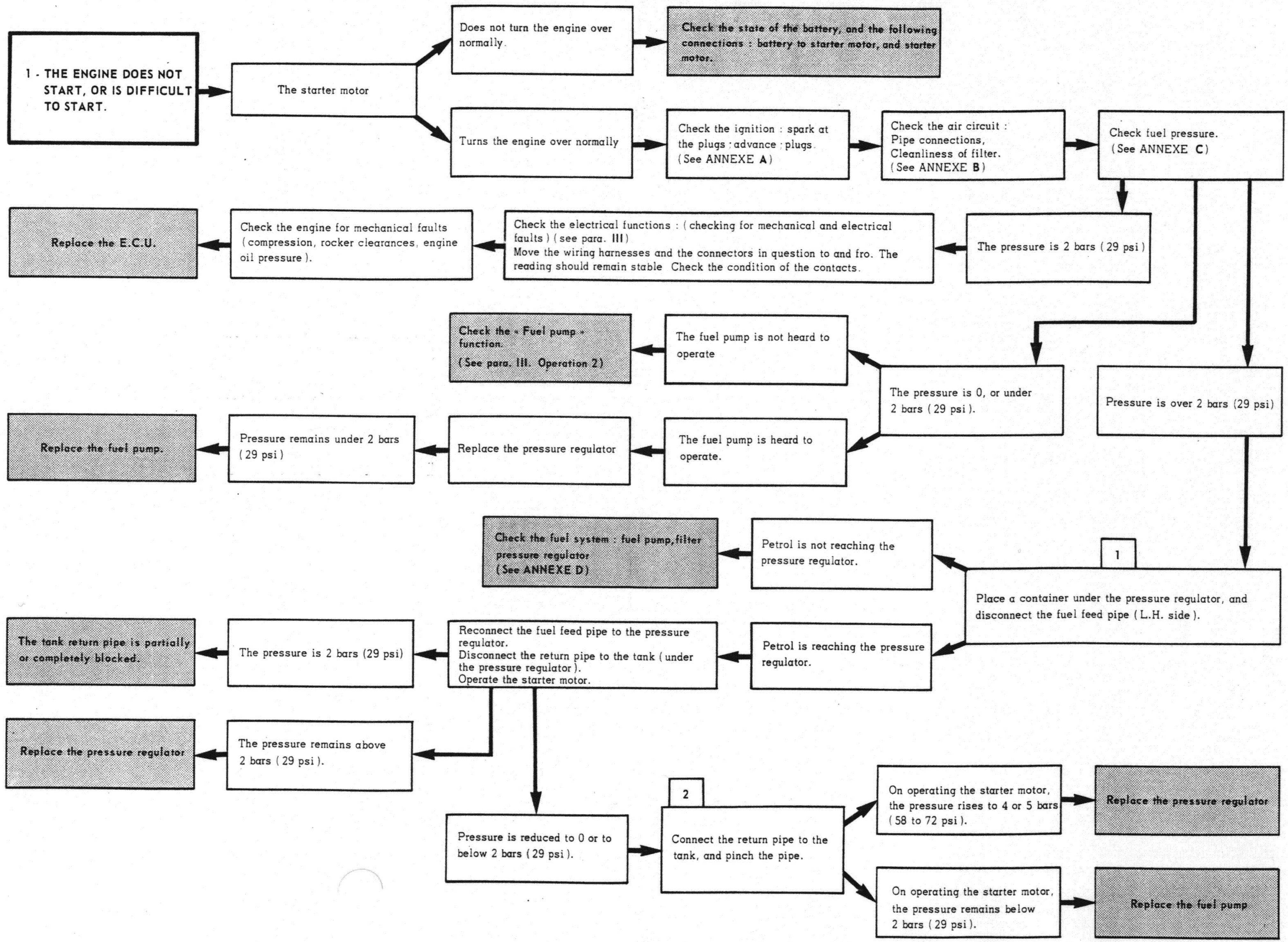
9. When checking compression, disconnect the positive terminal of the coil (in order to stop the injection signal).

10. When carrying out a check requiring an ohmmeter, use exclusively a battery-powered ohmmeter.

II. FAULT-FINDING.

1 - THE ENGINE DOES NOT START, OR IS DIFFICULT TO START.

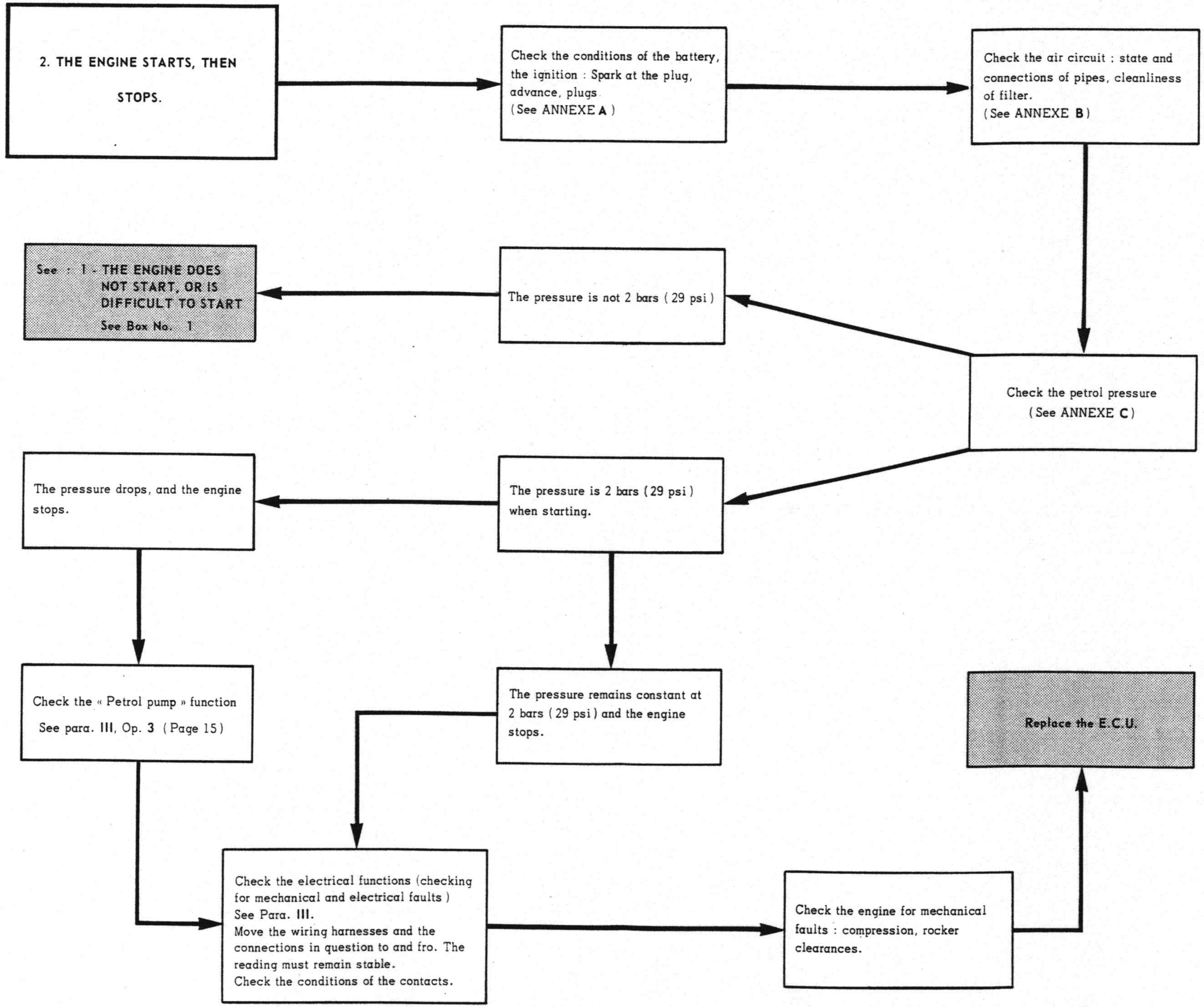
P.T.O.


1 - THE ENGINE DOES NOT START, OR IS DIFFICULT TO START.
The starter motor
Does not turn the engine over normally.
Check the state of the battery, and the following connections : battery to starter motor, and starter motor.
Turns the engine over normally
Check the ignition : spark at the plugs ; advance ; plugs. (See ANNEXE A)
Check the air circuit : Pipe connections, Cleanliness of filter. (See ANNEXE B)
Check fuel pressure. (See ANNEXE C)
The pressure is 2 bars (29 psi)
Check the electrical functions : (checking for mechanical and electrical faults) (see para. III) Move the wiring harnesses and the connectors in question to and fro. The reading should remain stable Check the condition of the contacts.
Check the engine for mechanical faults (compression, rocker clearances, engine oil pressure).
Replace the E.C.U.
The pressure is 0, or under 2 bars (29 psi).
The fuel pump is not heard to operate
Check the « Fuel pump » function. (See para. III. Operation 2)
The fuel pump is heard to operate.
Replace the pressure regulator
Pressure remains under 2 bars (29 psi)
Replace the fuel pump.
Pressure is over 2 bars (29 psi)
1
Place a container under the pressure regulator, and disconnect the fuel feed pipe (L.H. side).
Petrol is not reaching the pressure regulator.
Check the fuel system : fuel pump, filter pressure regulator (See ANNEXE D)
Petrol is reaching the pressure regulator.
Reconnect the fuel feed pipe to the pressure regulator. Disconnect the return pipe to the tank (under the pressure regulator). Operate the starter motor.
The pressure is 2 bars (29 psi)
The tank return pipe is partially or completely blocked.
The pressure remains above 2 bars (29 psi).
Replace the pressure regulator
Pressure is reduced to 0 or to below 2 bars (29 psi).
2
Connect the return pipe to the tank, and pinch the pipe.
On operating the starter motor, the pressure rises to 4 or 5 bars (58 to 72 psi).
Replace the pressure regulator
On operating the starter motor, the pressure remains below 2 bars (29 psi).
Replace the fuel pump

2 -

THE ENGINE STARTS, THEN STOPS

P.T.O.

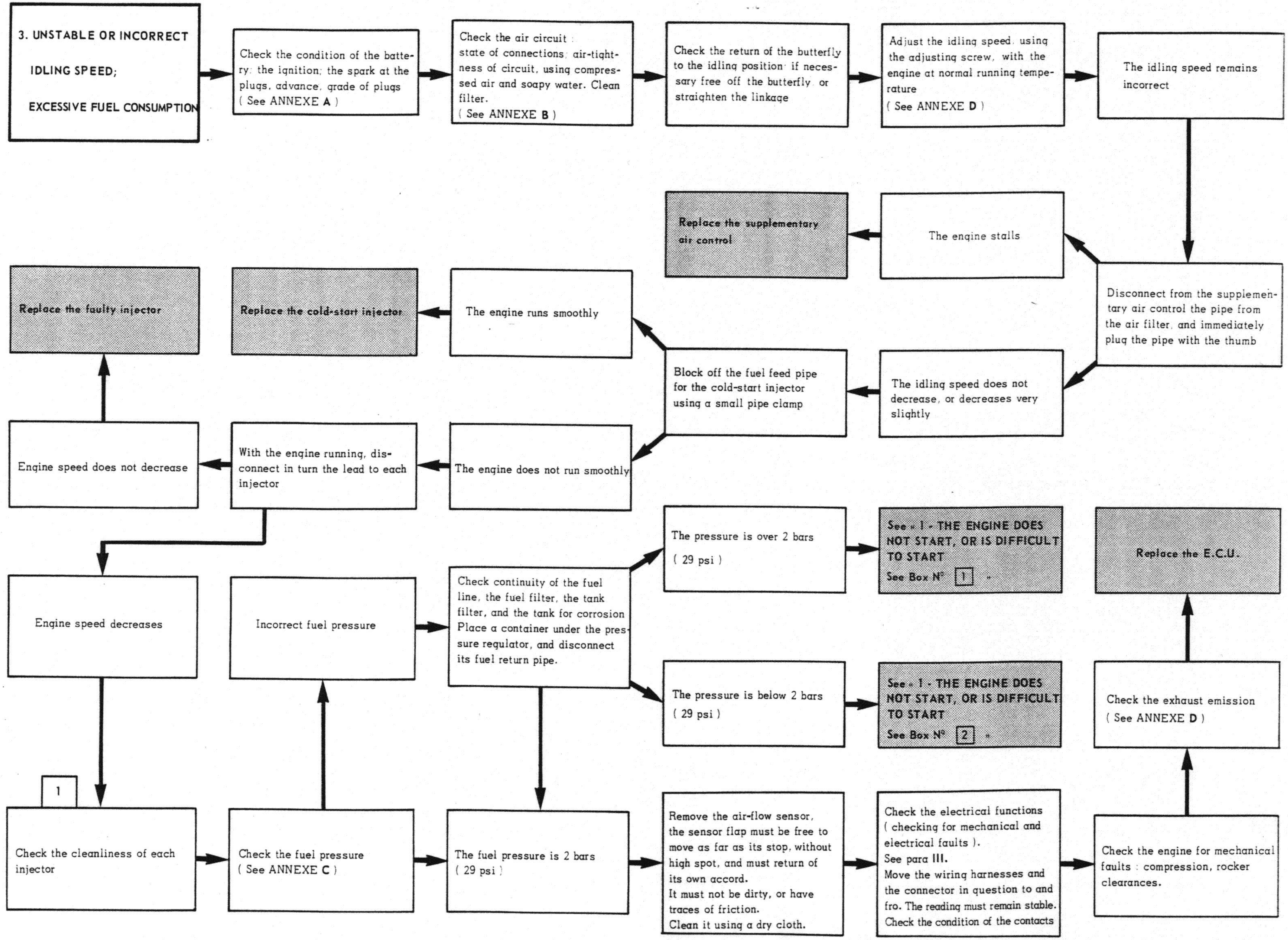

2. THE ENGINE STARTS, THEN STOPS.
Check the conditions of the battery, the ignition : Spark at the plug, advance, plugs (See ANNEXE A)
Check the air circuit : state and connections of pipes, cleanliness of filter. (See ANNEXE B)
Check the petrol pressure (See ANNEXE C)
The pressure is not 2 bars (29 psi)
See : 1 - THE ENGINE DOES NOT START, OR IS DIFFICULT TO START See Box No. 1
The pressure is 2 bars (29 psi) when starting.
The pressure drops, and the engine stops.
Check the « Petrol pump » function See para. III, Op. 3 (Page 15)
The pressure remains constant at 2 bars (29 psi) and the engine stops.
Check the electrical functions (checking for mechanical and electrical faults) See Para. III. Move the wiring harnesses and the connections in question to and fro. The reading must remain stable. Check the conditions of the contacts.
Check the engine for mechanical faults : compression, rocker clearances.
Replace the E.C.U.

- 3 -

UNSTABLE OR INCORRECT IDLING SPEED

EXCESSIVE FUEL CONSUMPTION

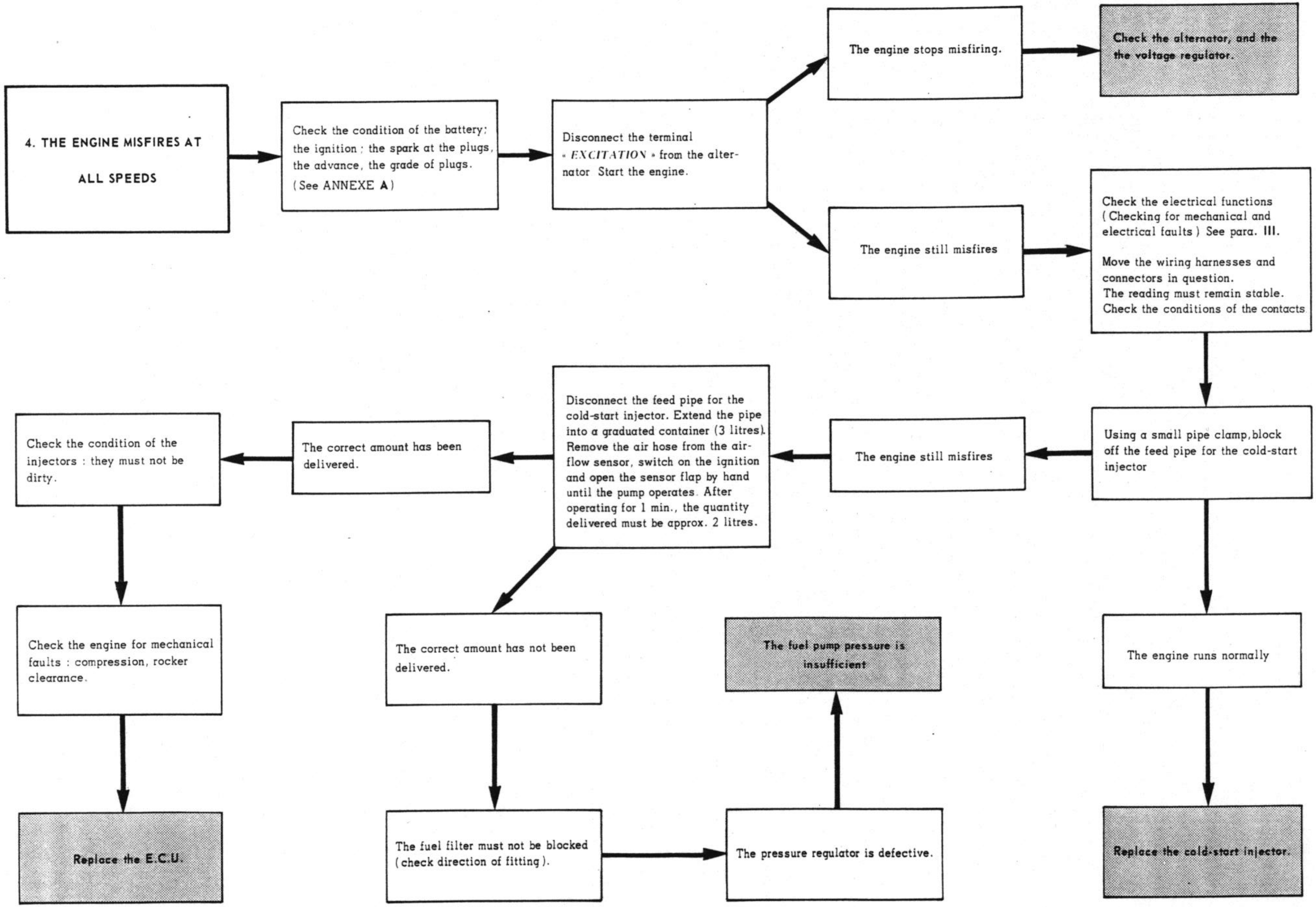
P.T.O.


3. UNSTABLE OR INCORRECT IDLING SPEED; EXCESSIVE FUEL CONSUMPTION
Check the condition of the battery; the ignition; the spark at the plugs, advance, grade of plugs (See ANNEXE A)
Check the air circuit : state of connections; air-tightness of circuit, using compressed air and soapy water. Clean filter. (See ANNEXE B)
Check the return of the butterfly to the idling position: if necessary free off the butterfly or straighten the linkage
Adjust the idling speed, using the adjusting screw, with the engine at normal running temperature (See ANNEXE D)
The idling speed remains incorrect
Disconnect from the supplementary air control the pipe from the air filter, and immediately plug the pipe with the thumb
The engine stalls
Replace the supplementary air control
The idling speed does not decrease, or decreases very slightly
Block off the fuel feed pipe for the cold-start injector using a small pipe clamp
The engine runs smoothly
Replace the cold-start injector
The engine does not run smoothly
With the engine running, disconnect in turn the lead to each injector
Engine speed does not decrease
Replace the faulty injector
Engine speed decreases
1
Check the cleanliness of each injector
Check the fuel pressure (See ANNEXE C)
Incorrect fuel pressure
Check continuity of the fuel line, the fuel filter, the tank filter, and the tank for corrosion Place a container under the pressure regulator, and disconnect its fuel return pipe.
The pressure is over 2 bars (29 psi)
See « 1 - THE ENGINE DOES NOT START, OR IS DIFFICULT TO START See Box N° 1 »
The pressure is below 2 bars (29 psi)
See « 1 - THE ENGINE DOES NOT START, OR IS DIFFICULT TO START See Box N° 2 »
The fuel pressure is 2 bars (29 psi)
Remove the air-flow sensor, the sensor flap must be free to move as far as its stop, without high spot, and must return of its own accord. It must not be dirty, or have traces of friction. Clean it using a dry cloth.
Check the electrical functions (checking for mechanical and electrical faults). See para III. Move the wiring harnesses and the connector in question to and fro. The reading must remain stable. Check the condition of the contacts
Check the engine for mechanical faults : compression, rocker clearances.
Check the exhaust emission (See ANNEXE D)
Replace the E.C.U.

4 -

THE ENGINE MISFIRES AT ALL SPEEDS

P.T.O.


4. THE ENGINE MISFIRES AT ALL SPEEDS
Check the condition of the battery; the ignition : the spark at the plugs, the advance, the grade of plugs. (See ANNEXE A)
Disconnect the terminal « EXCITATION » from the alternator Start the engine.
The engine stops misfiring.
Check the alternator, and the the voltage regulator.
The engine still misfires
Check the electrical functions (Checking for mechanical and electrical faults) See para. III.
Move the wiring harnesses and connectors in question.
The reading must remain stable.
Check the conditions of the contacts
Using a small pipe clamp, block off the feed pipe for the cold-start injector
The engine runs normally
Replace the cold-start injector.
The engine still misfires
Disconnect the feed pipe for the cold-start injector. Extend the pipe into a graduated container (3 litres). Remove the air hose from the air-flow sensor, switch on the ignition and open the sensor flap by hand until the pump operates. After operating for 1 min., the quantity delivered must be approx. 2 litres.
The correct amount has been delivered.
Check the condition of the injectors : they must not be dirty.
Check the engine for mechanical faults : compression, rocker clearance.
Replace the E.C.U.
The correct amount has not been delivered.
The fuel filter must not be blocked (check direction of fitting).
The pressure regulator is defective.
The fuel pump pressure is insufficient

5 -

LACK OF POWER

P.T.O.

5. LACK OF POWER.

Check the condition of the battery ; the ignition : the spark at the plugs, the advance, the plugs. (See ANNEXE **A**)

Check the fuel pressure (See ANNEXE **C**)

Make sure the butterfly opens fully, check the linkage, the accelerator pedal, the carpeting, etc.......

Check the air circuit connections, and its air-tighteness using compressed air and soapy water. Clean the filter. (See ANNEXE **B**)

Disconnect the cold-start injector pipe. Extend the pipe into a 3-litre graduated container. Remove the air hose from the air-flow sensor, switch the ignition on, and open the sensor flap by hand until the pump operates. After operating for 1 min., the quantity delivered must be approximately 2 litres.

The correct quantity has been delivered

See 3 : UNSTABLE OR INCORRECT IDLING SPEED - EXCESSIVE FUEL CONSUMPTION.
See Box. No. $\boxed{1}$

The correct quantity has not been delivered

The fuel filter must not be blocked (Check the direction of fitting)

Replace the pressure regulator and check the delivery.

The correct quantity has not been delivered.

Replace the petrol pump.

III. CHECKING AND ADJUSTING

NOTE : On the wiring harness for the injectors, the numbers of the terminals on the E.C.U. terminal board are visible on the rear section, after having withdrawn the casing secured by the end screw.

1. Energizing the system : (DIAGRAM 1)

NOTE : *The double relay is secured under the L.H. headlamp.*

- Disconnect the E.C.U.

- Switch the ignition on

- Using a voltmeter, ensure that each point in *diagram 1* is effectively energized, after having tested the earthing. If not, switch off the ignition, and test the circuit using a battery operated ohmmeter. With the voltmeter connected between terminals (1) and (5) of the E.C.U., operate the starter : the voltmeter must register the ignition impulses. If it does not, check the ignition (**ANNEXE A**).

2. Fuel pump feed (on operating the starter) (DIAGRAM 2)

- Disconnect the E.C.U.

- Switch on the ignition

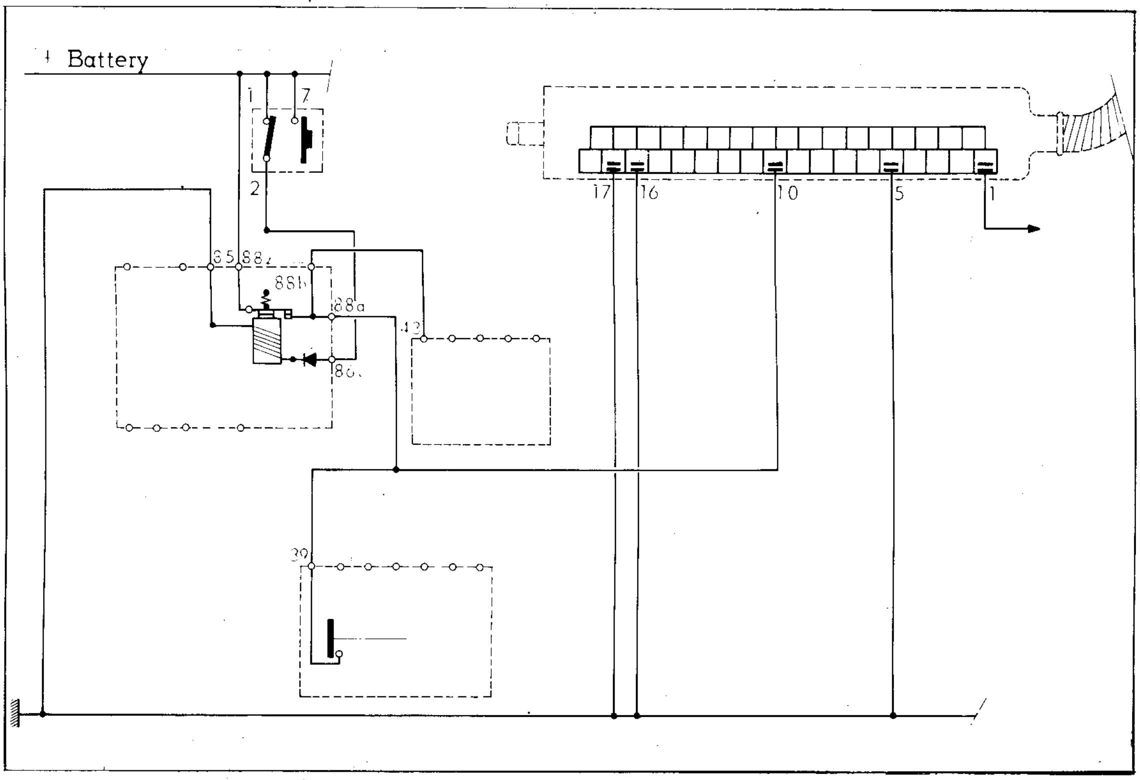
- On operating the starter, the fuel pump (*secured under the vehicle, near the R.H. rear wheel*) must be heard to operate by someone standing close by.

  If not, switch off the ignition, and test the circuit using a battery operated ohmmeter.

  The resistance between terminal « 88 d » of the relay assembly (*under the L.H. headlamp*) and earth must be : 1 Ω approx.

  Make sure the petrol pump is properly earthed.

DIAGRAM 1



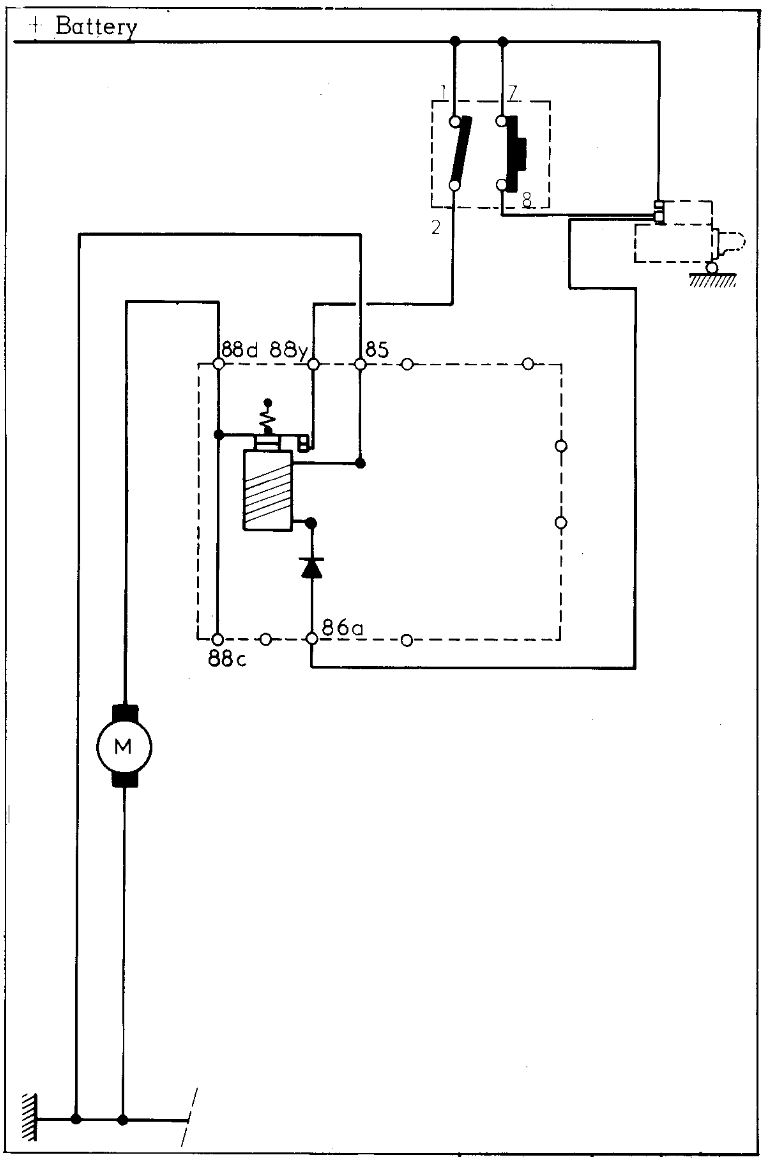


DIAGRAM 2

DIAGRAM 3

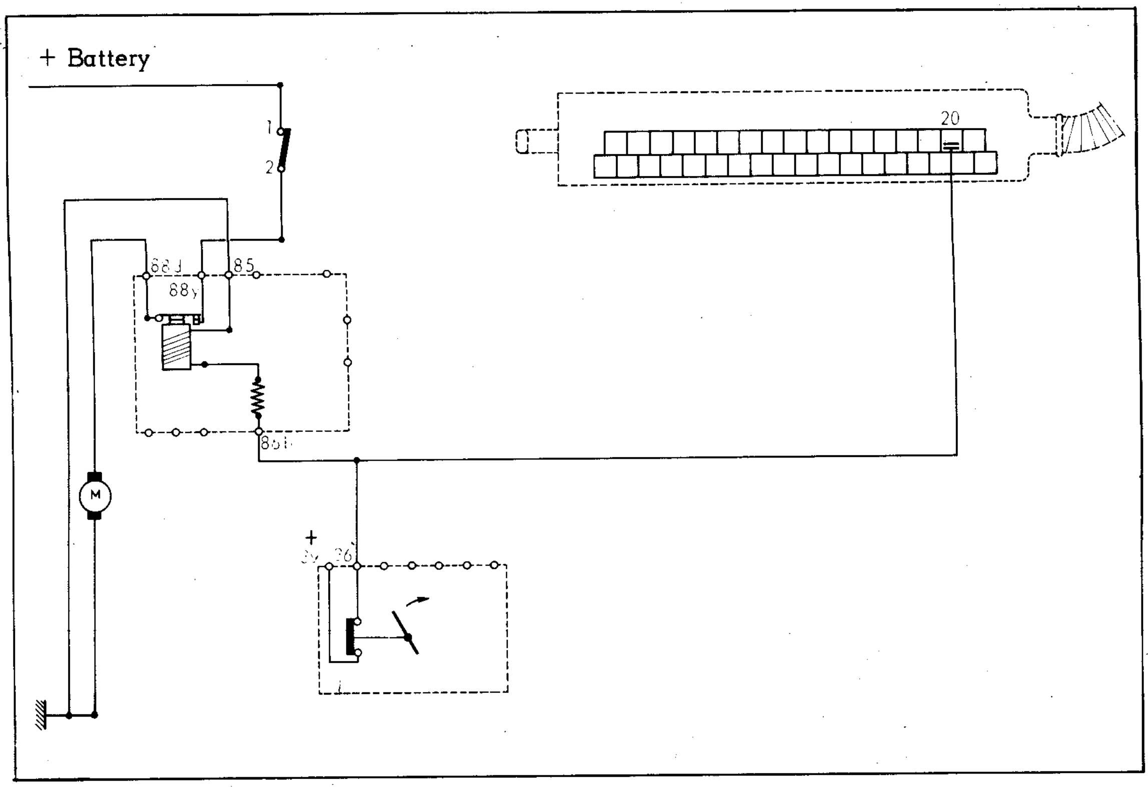
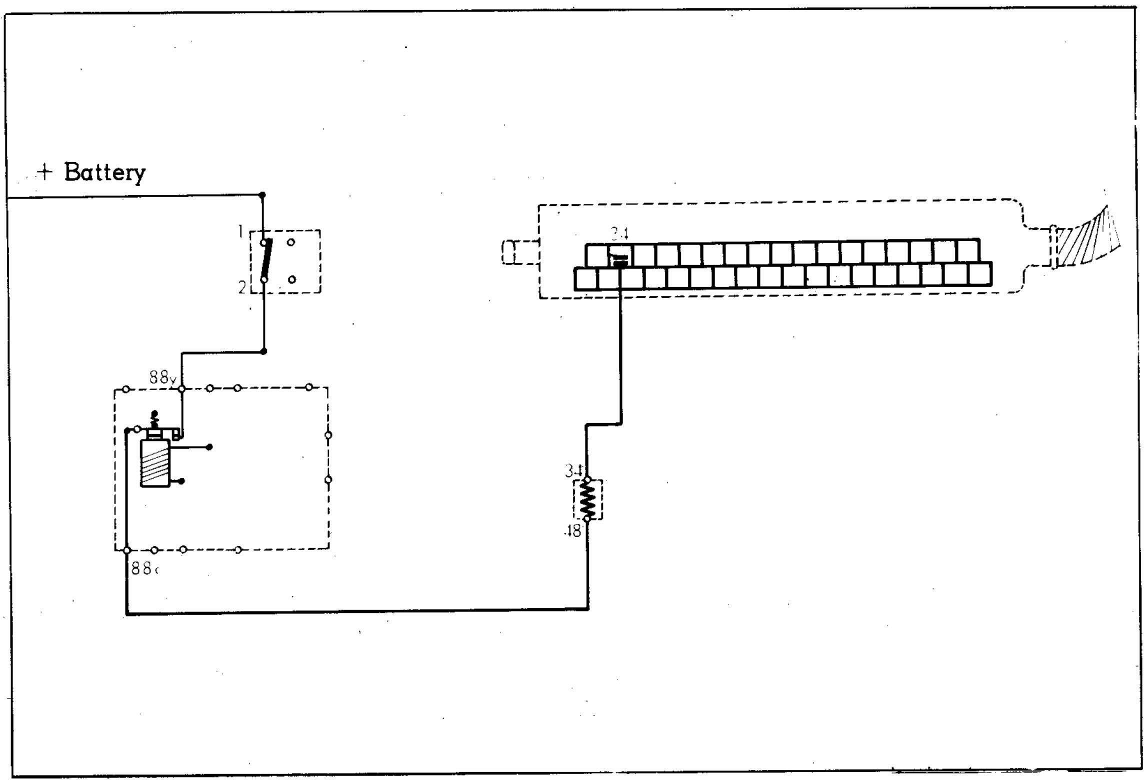


DIAGRAM 4



3. Fuel pump feed (with engine running) : (DIAGRAM 3)

- Disconnect the E.C.U.
- Disconnect from the air-flow sensor the air hose to the butterfly housing.
- Switch on the ignition.
- Actuate the air-flow sensor flap by hand; when the petrol pump contact closes, the pump should be heard working.
  If not, test the circuit using a **battery operated ohmmeter,** without forgetting to test between terminal « 36 » on the air-flow sensor and terminal « 20 » on the E.C.U. for continuity (The 2nd terminal is not connected to the E.C.U.).
- The resistance between terminals « 86 b » and « 85 » on the relay box (*under the L.H. headlamp*) must be between 52 and 78 Ω.

4. Supplementary air control (DIAGRAM 4)

- Disconnect the E.C.U.
- Check that the supplementary air control is properly connected (arrow on the casing).
  If it is fitted the wrong way round, the port may be blocked.
- The resistance between terminals « 34 » and « 48 » on the supplementary air control must be 50 Ω approx.
- Visual checking : the port on the supplementary air control must be open when the engine is cold, and closed when the engine temperature is above 60° C.
- With the engine cold, if the air pipe to the supplementary air control is flattened the engine rpm must decrease.
- With the engine warm, if the air pipe is disconnected, the engine must accelerate.

5. Air-flow sensor (DIAGRAM 5)

- Disconnect the E.C.U.
- Using an ohmmeter check the continuity of circuits « 6 », « 7 », « 8 » and « 9 » linking the air-flow sensor to the multiple terminal board, as well as the continuity between each of the terminals.
- The air-flow meter does not require any maintenance. It is not necessary to oil the flap. It must work without high spot or catching.
- When the air-flow sensor is removed, blank off the ducts so as to protect it from dust.
- Check the air circuit for air-tightness.

6. Resistors and injectors :

- A dirty injector may cause a lack of power, or an unstable idling speed.
- It is possible to test the functioning of the injectors with the engine idling by disconnecting each injector in turn the engine rpm should decrease each time.
- Disconnect the E.C.U.
- The resistance of an injector is 2 to 3 Ω.
- Each supplementary resistance is 5 to 7 Ω.
- The volume delivered by an injector (kept constantly open and under the normal operating pressure) is approximately 200 cm3 / min (12.20 cu.in/ min).
- If the rubber pipe on one of the injectors appears wet on the outside, the injector must be replaced.
- Using an ohmmeter, check the continuity of the circuits.

DIAGRAM 5

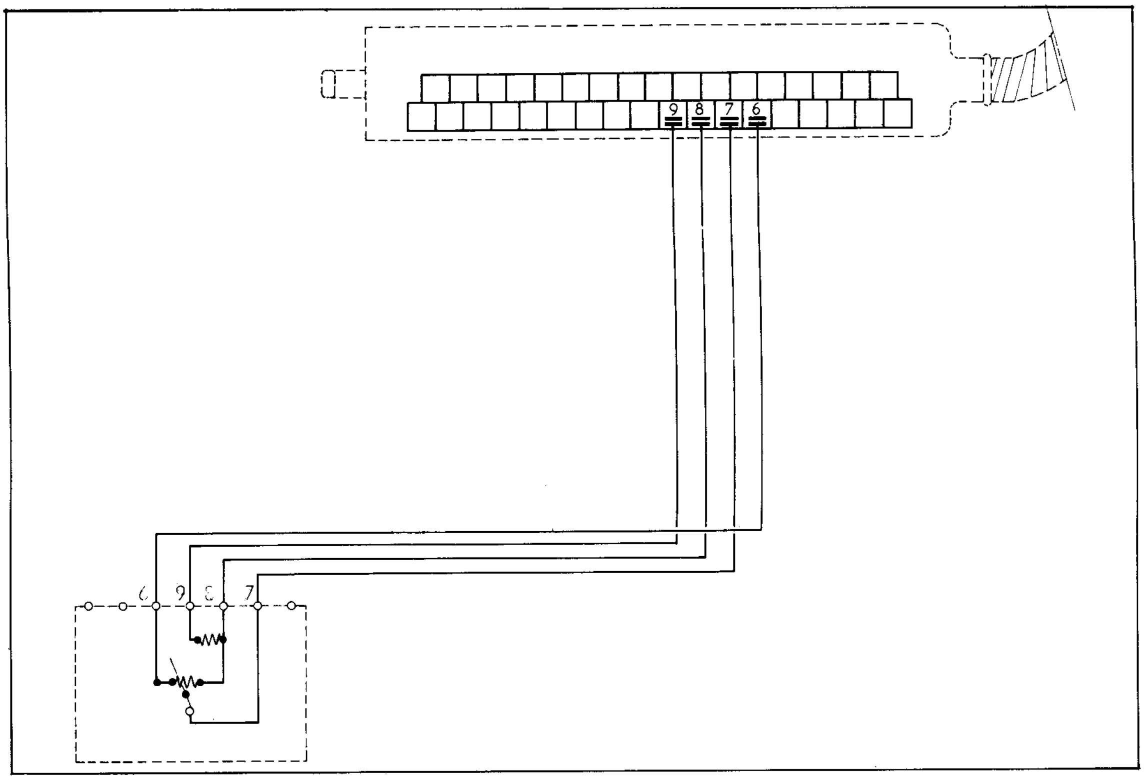


DIAGRAM 6

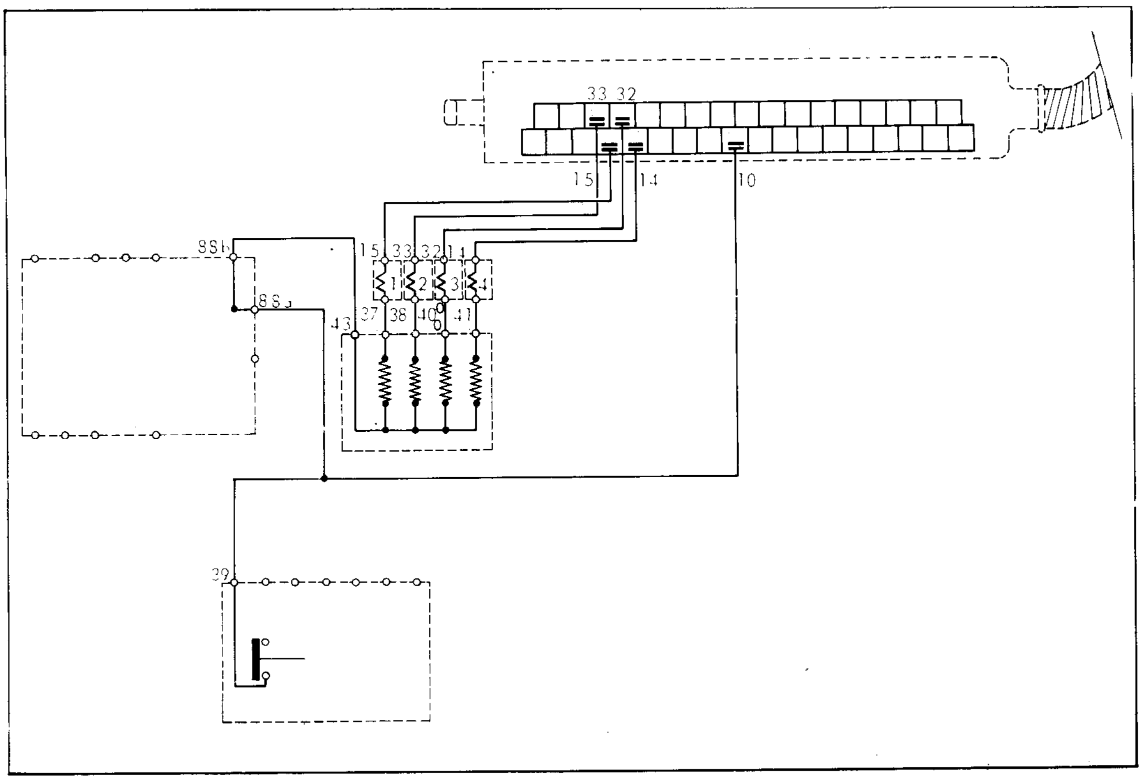


DIAGRAM 7

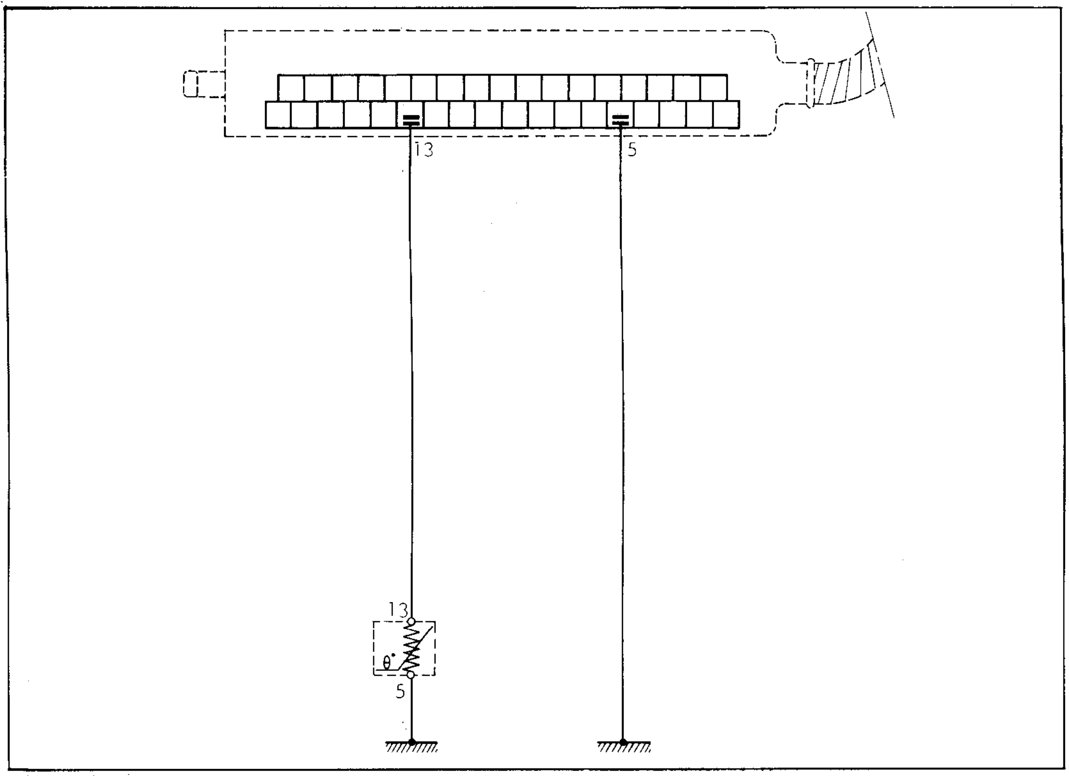
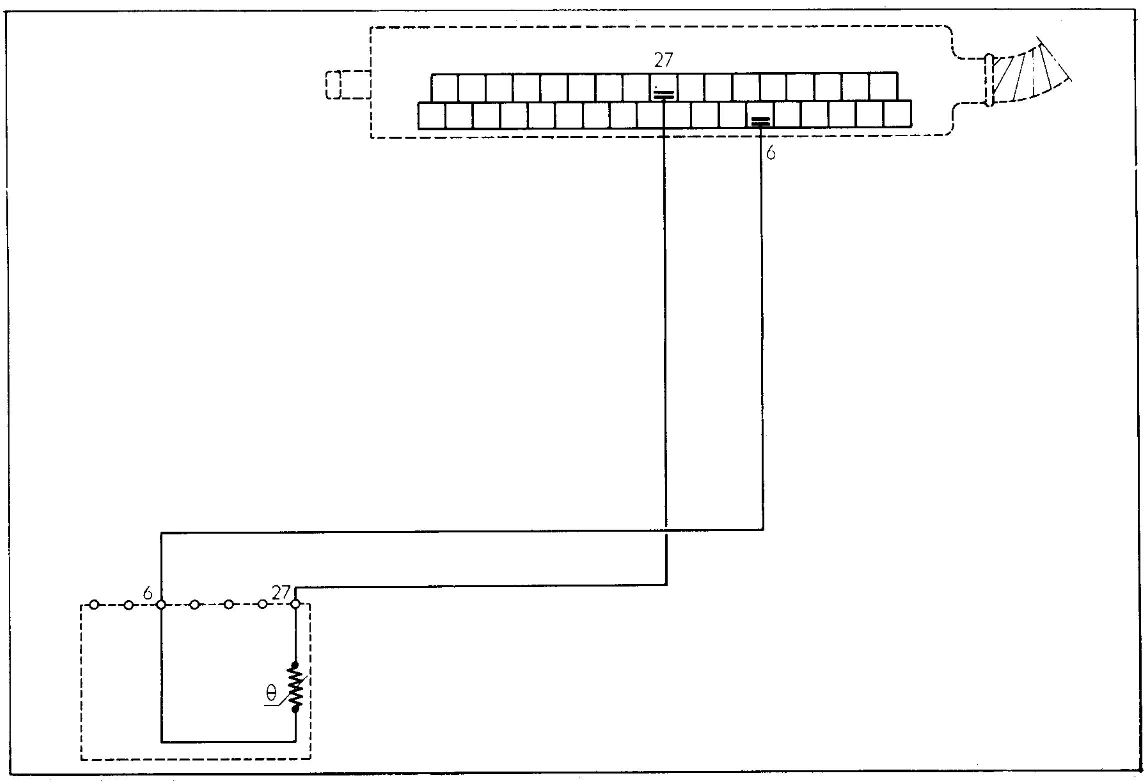


DIAGRAM 8



7. Water temperature sensor : (DIAGRAM 7)

- Disconnecting the water temperature sensor should cause the engine to stall, when hot.

- Disconnect the E.C.U.

- Using the ohmmeter, test the continuity of the circuit. and measure directly the resisitance using the sensor

« - 10° C » : R = 7 to 12 kΩ

« + 20° C » : R = 2 to 3 kΩ

« + 80° C » : R = 250 to 400 Ω

8. Air temperature sensor : (DIAGRAM 8)

- Disconnect the E.C.U.

- Using an ohmmeter, test the continuity of the circuit. and measure the resistance of the sensor between terminals « 6 » and « 27 ».

« - 10° C » : R = 8 to 11 kΩ

« + 20° C » : R = 2 to 3 kΩ

« + 50° C » : R = 750 to 900 Ω

9. Cold-start injector, and thermal switch : (DIAGRAM 9)

- Disconnect the E.C.U.

- Remove the cold-start injector, and place it above a graduated container.

- Disconnect the thermal switch, and connect terminal « 46 » to earth.

- Switch the ignition on, and actuate the starter motor, the quantity delivered must be approximately : 135 cm^3 / min (8 1/4 cu.in/min).

- Disconnect the injector; its resistance must be 4.2 Ω at 20° C.

- Connect the injector to the thermal switch.

- If the water temperature is below 35° C, on operating the starter motor, the cold-start injector must supply petrol for the following amounts of time .

  - 7.5 secs for a temperature of « − 20° C »
  - 5 " " " " « − 10° C »
  - 3 " " " " « 0° C »
  - 1 " " " " « 20° C »

- On operating the starter, terminal « 4 » of the E.C.U. terminal board must be energized (voltmeter between terminals « 4 » and « 5 »).

10. Switch on throttle butterfly spindle (Idling speed function) : (DIAGRAM 10)

- Disconnect the E.C.U.

- Using an ohmmeter, check that there is no resistance between terminals « 2 » and « 18 » of the multiple connector, without touching the accelerator pedal.

DIAGRAM 9

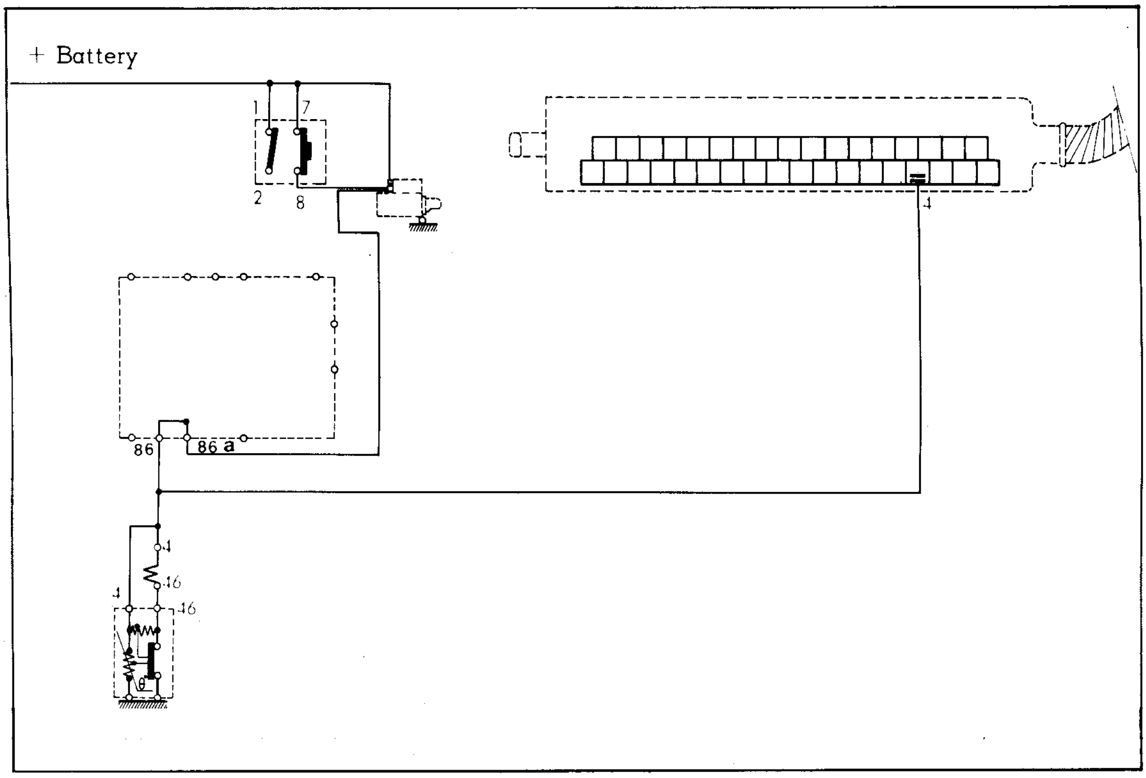


DIAGRAM 10

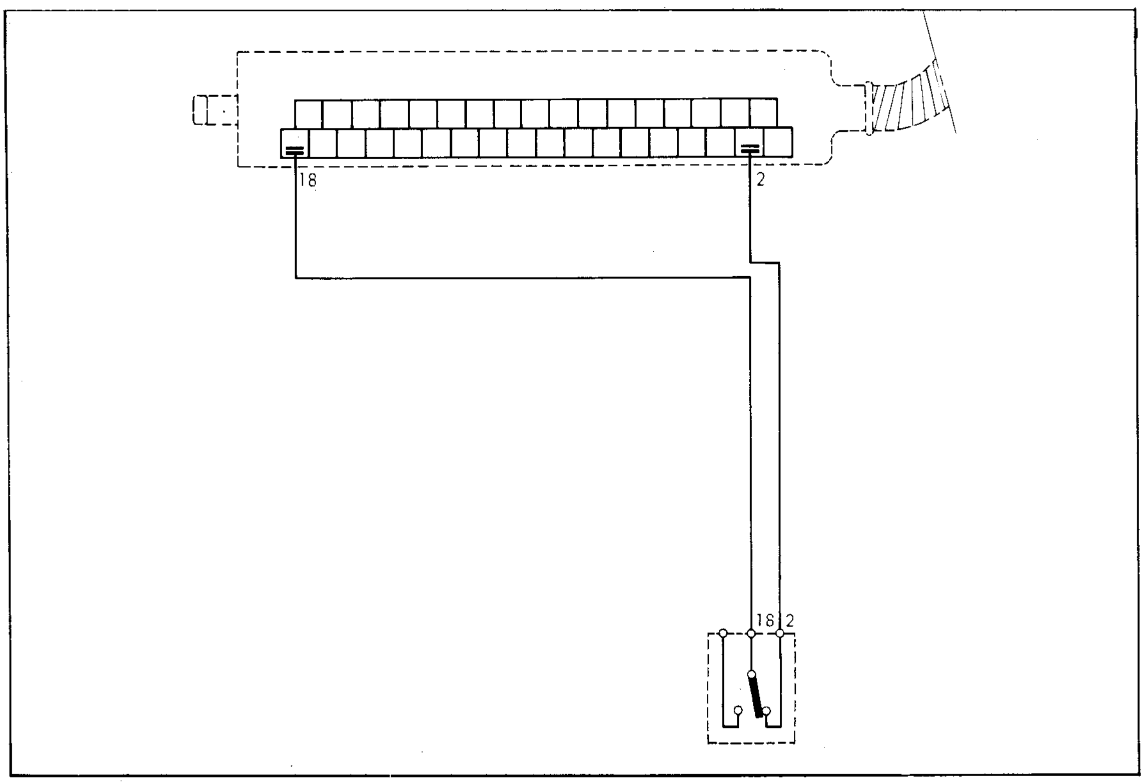


DIAGRAM 11

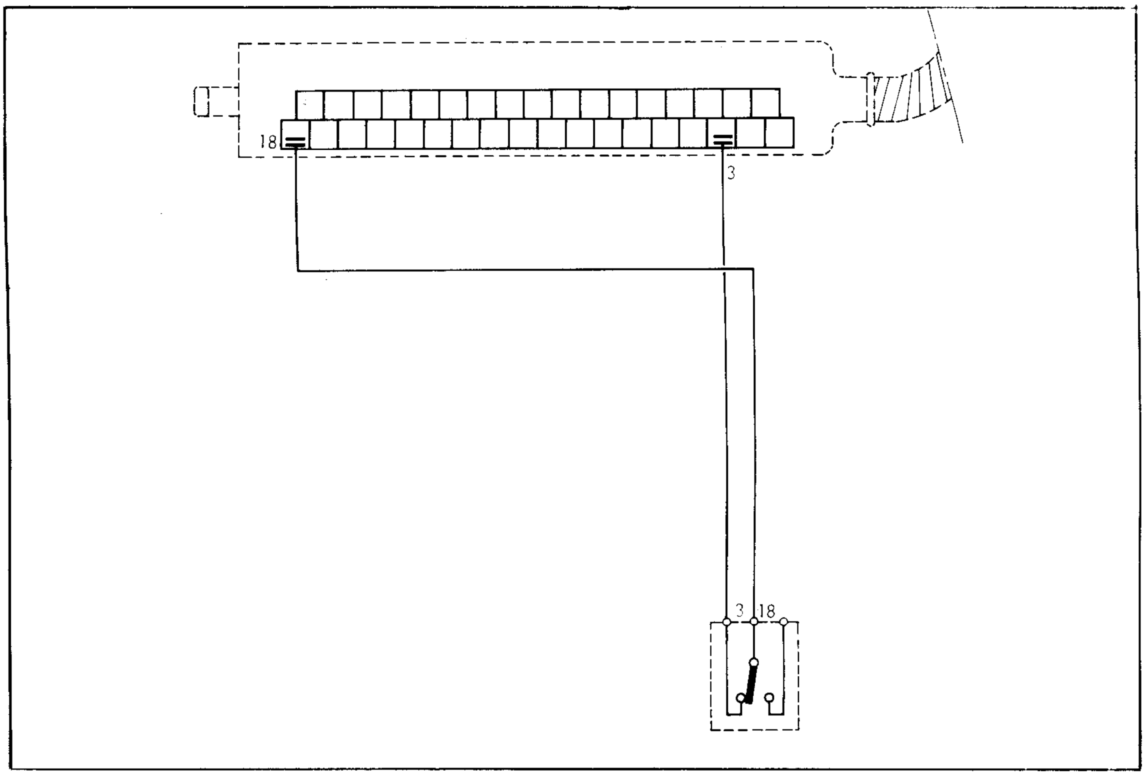
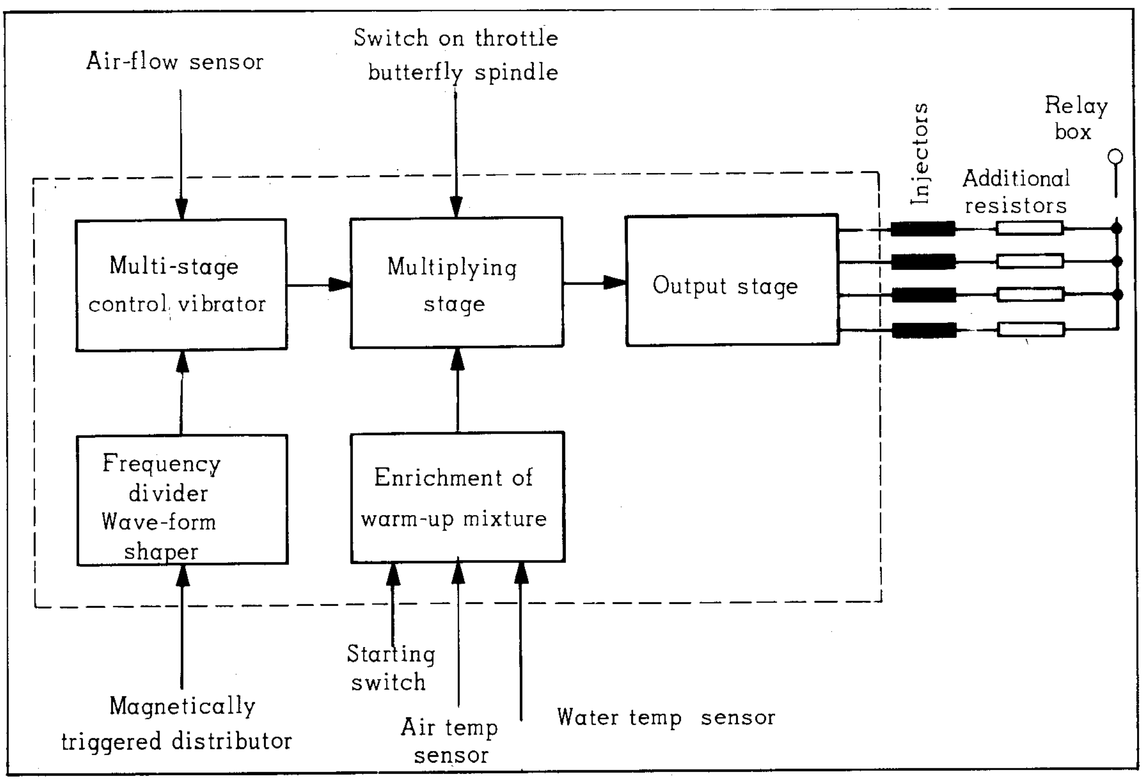


DIAGRAM 12



11. Switch on throttle butterfly spindle (maximum power function) (DIAGRAM 11)

- Disconnect the E.C.U.

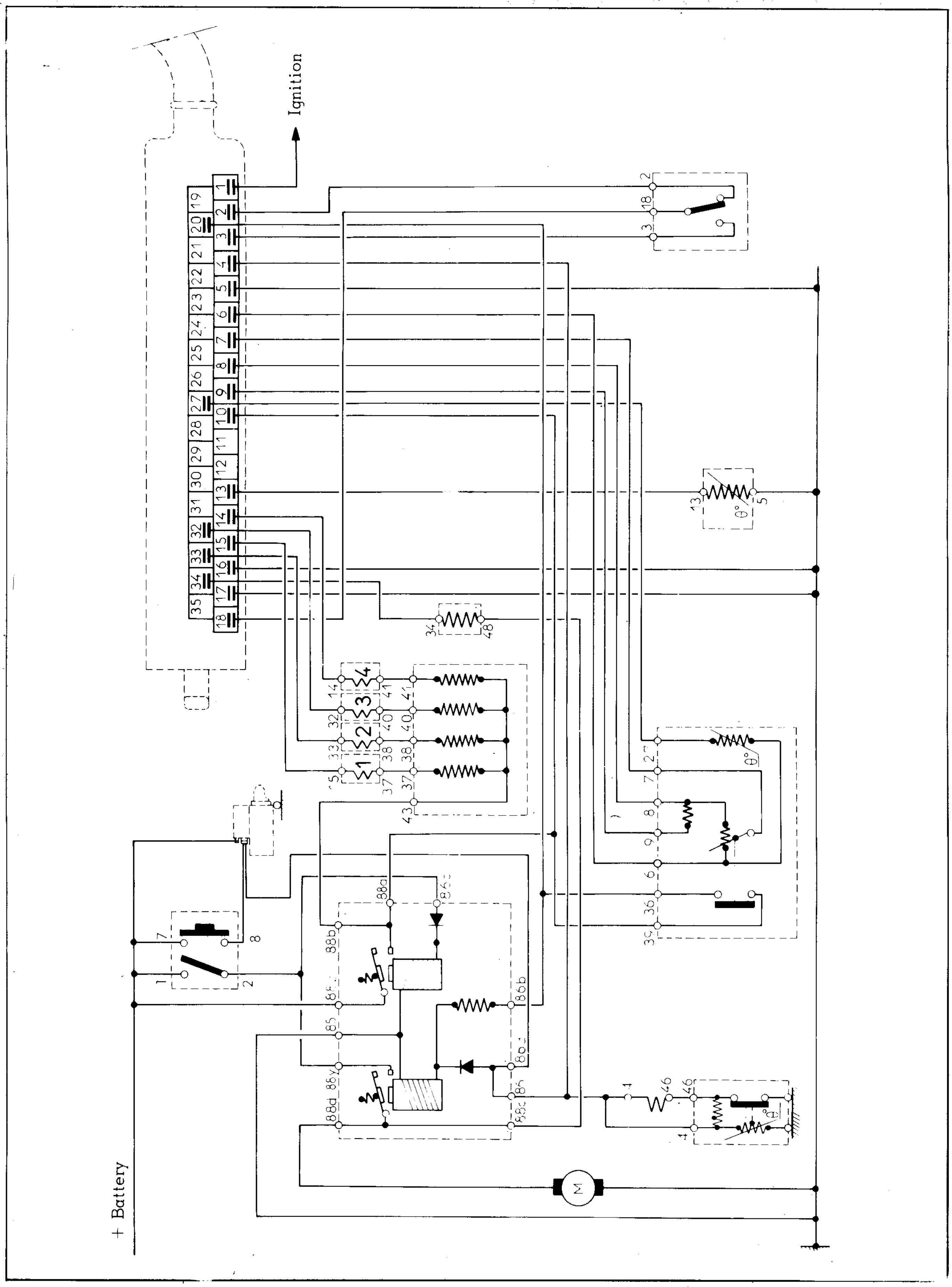
- Using a battery operated ohmmeter, check there is no resistance between terminals « 3 » and « 18 » of the multiple connector board, with the accelerator pedal fully depressed.

12. E.C.U. : (DIAGRAM 12)

- Visually check the condition of the terminals (male connectors on the E.C.U., and female connectors on the multiple connector socket).

- With the engine running, tap lightly on the E.C.U., to detect any possible defect in the soldering (dry joints).

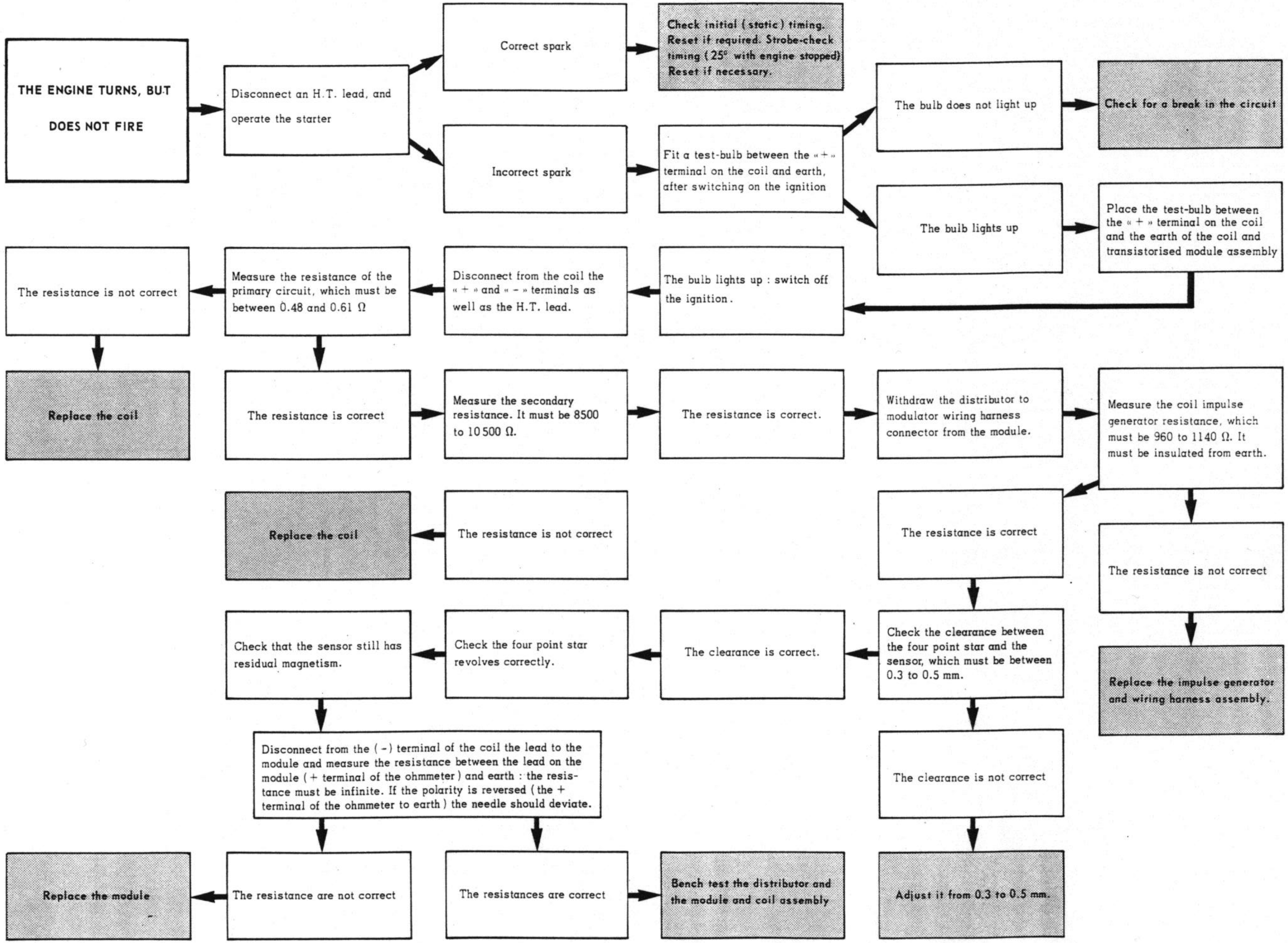
ELECTRICAL CIRCUIT



ANNEXE : A - CHECKING THE IGNITION

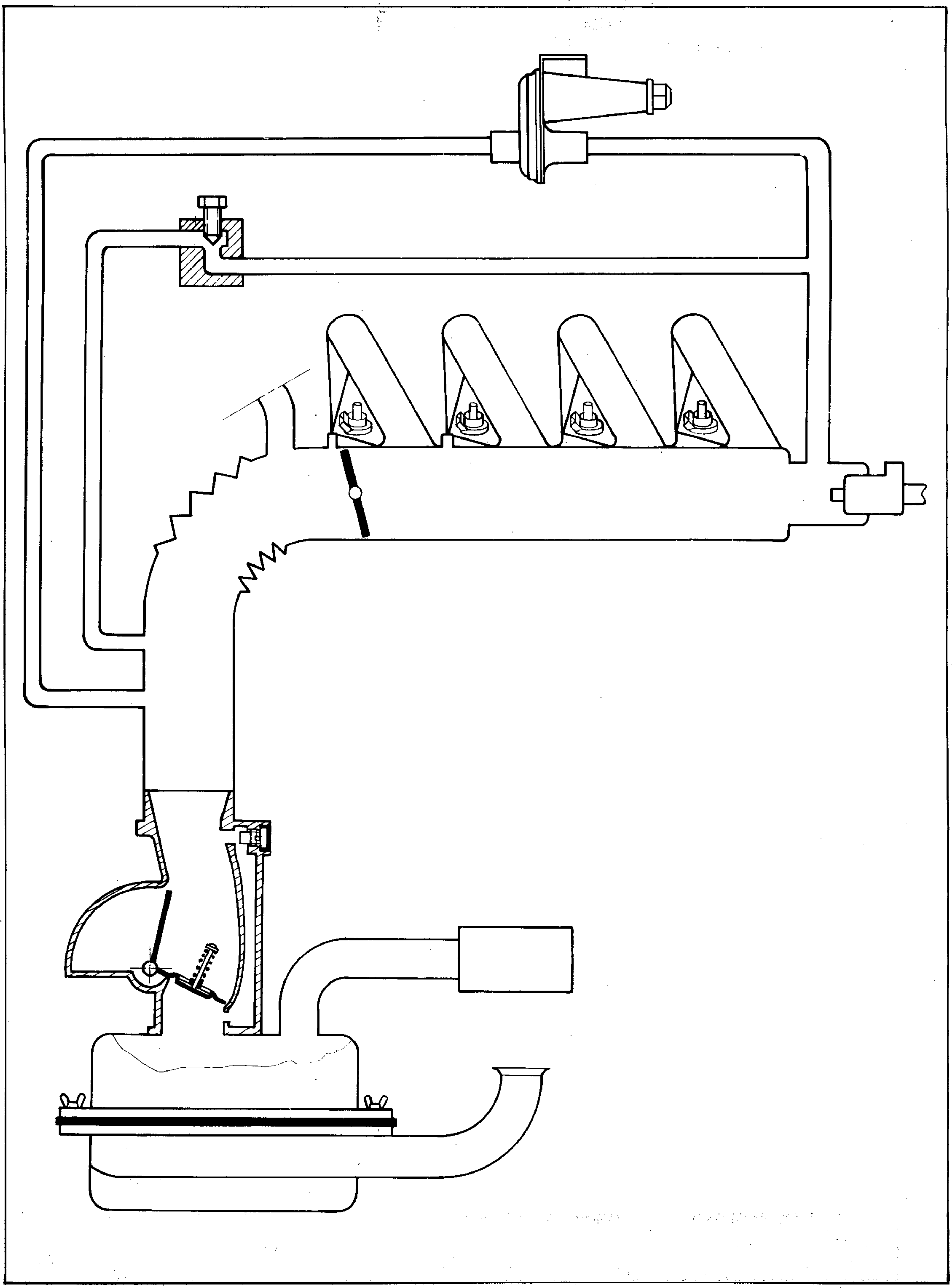
THE ENGINE TURNS, BUT DOES NOT FIRE

P.T.O.

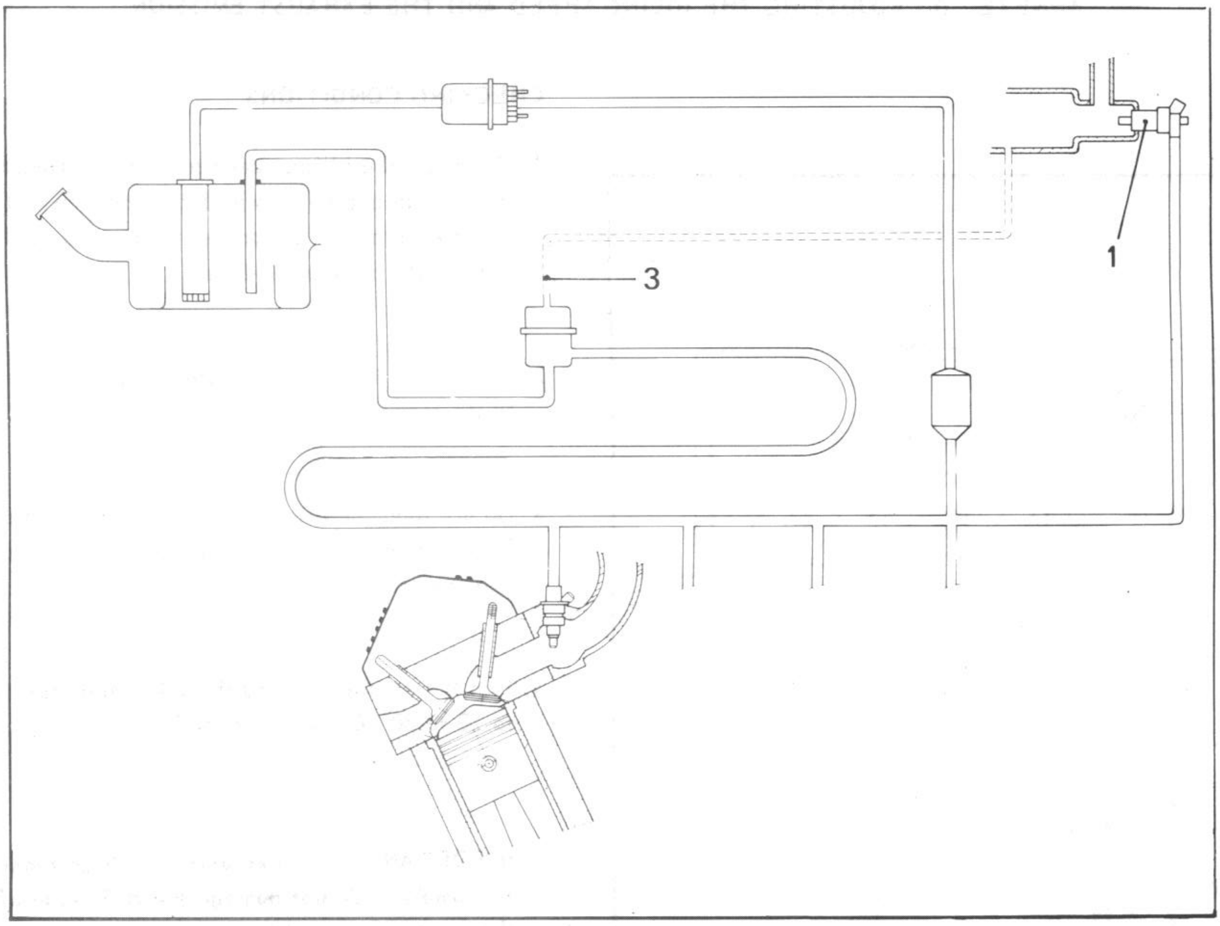

THE ENGINE TURNS, BUT DOES NOT FIRE
Disconnect an H.T. lead, and operate the starter
Correct spark
Check initial (static) timing. Reset if required. Strobe-check timing (25° with engine stopped) Reset if necessary.
Incorrect spark
Fit a test-bulb between the « + » terminal on the coil and earth, after switching on the ignition
The bulb does not light up
Check for a break in the circuit
The bulb lights up
Place the test-bulb between the « + » terminal on the coil and the earth of the coil and transistorised module assembly
The bulb lights up : switch off the ignition.
Disconnect from the coil the « + » and « – » terminals as well as the H.T. lead.
Measure the resistance of the primary circuit, which must be between 0.48 and 0.61 Ω
The resistance is not correct
Replace the coil
The resistance is correct
Measure the secondary resistance. It must be 8500 to 10 500 Ω.
The resistance is not correct
Replace the coil
The resistance is correct.
Withdraw the distributor to modulator wiring harness connector from the module.
Measure the coil impulse generator resistance, which must be 960 to 1140 Ω. It must be insulated from earth.
The resistance is not correct
Replace the impulse generator and wiring harness assembly.
The resistance is correct
Check the clearance between the four point star and the sensor, which must be between 0.3 to 0.5 mm.
The clearance is not correct
Adjust it from 0.3 to 0.5 mm.
The clearance is correct.
Check the four point star revolves correctly.
Check that the sensor still has residual magnetism.
Disconnect from the (–) terminal of the coil the lead to the module and measure the resistance between the lead on the module (+ terminal of the ohmmeter) and earth : the resistance must be infinite. If the polarity is reversed (the + terminal of the ohmmeter to earth) the needle should deviate.
The resistance are not correct
Replace the module
The resistances are correct
Bench test the distributor and the module and coil assembly

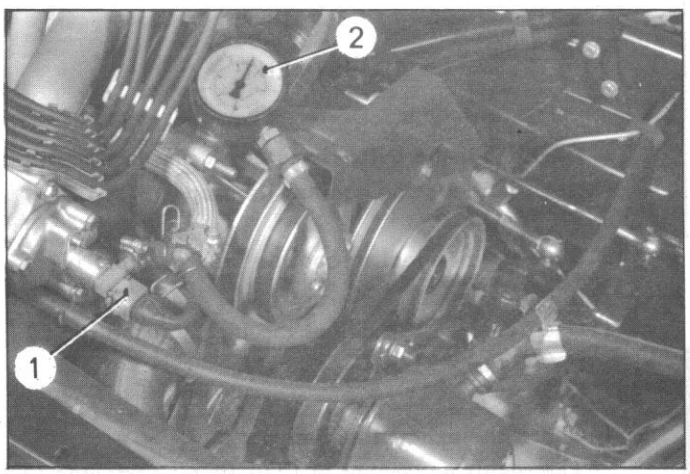
ANNEXE : B - CHECKING THE AIR CIRCUIT

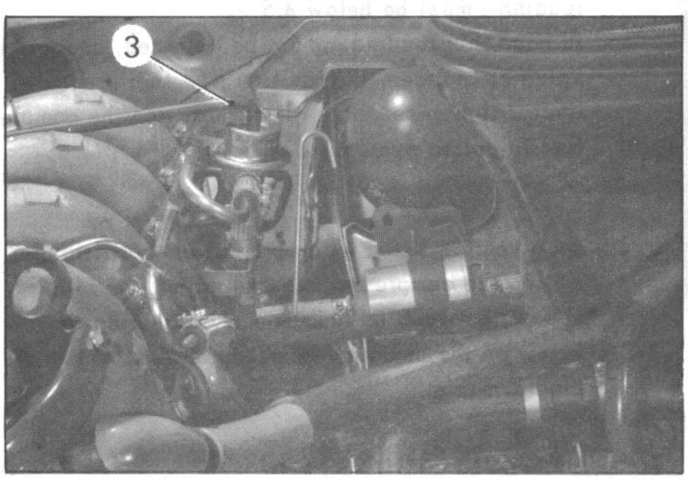
L.14-11



ANNEXE : C - CHECKING THE FUEL CIRCUIT AND PRESSURE



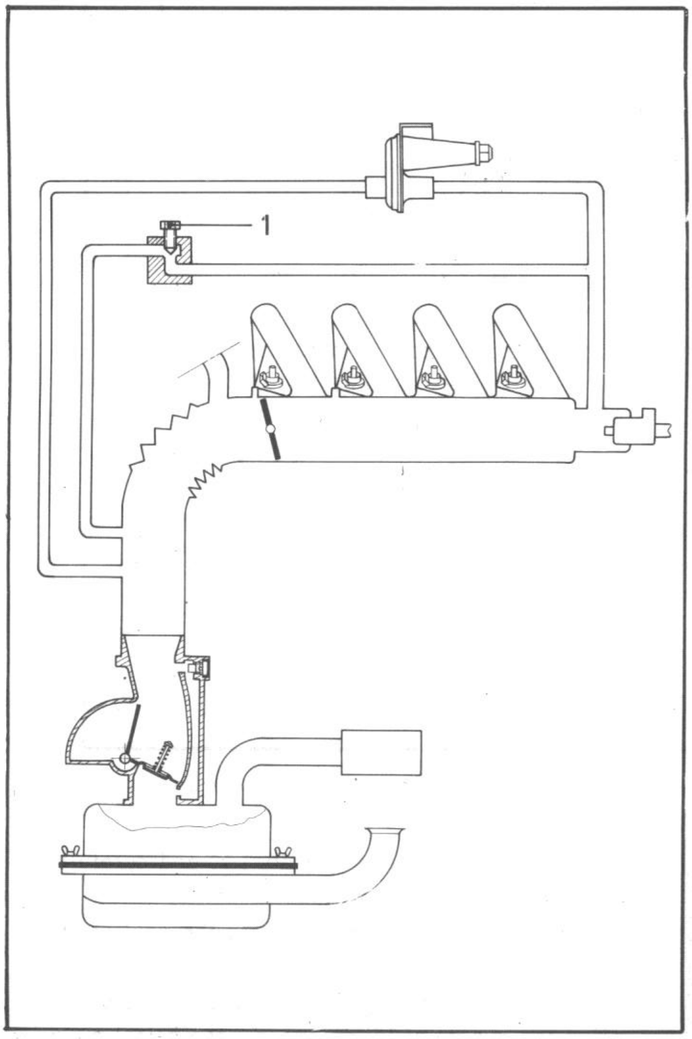


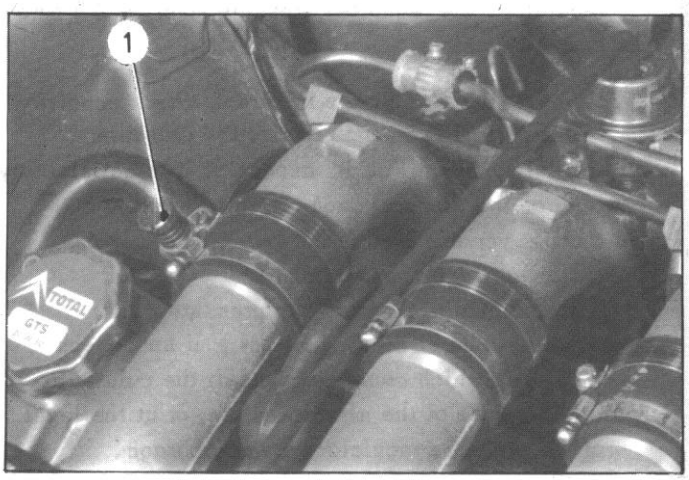


- Remove the cold-start injector (1) and carefully remove its petrol feed pipe.
- Connect pressure gauge (2) onto the cold-start injector petrol line.
- Fit the cold-start injector onto the manifold.
- Run the engine at idling speed : the petrol pressure must be regulated to 2 bars (29 psi).
- Disconnect the vacuum pipe (3) from the pressure regulator : the regulated pressure must be 2.5 bars (36 1/4 psi).

If one of the readings is incorrect, check condition of the flexible vacuum pipe for the pressure regulator, as well as its aspect. If it is satisfactory replace the pressure regulator after making sure that its vacuum pipe is not blocked totally or partially at the manifold end.
With the engine stopped, the pressure must remain stable at 2 bars (29 psi); if not, check for a leak which could be found at the cold-start injector, one of the main injectors, or at the level of the pressure regulator valve diaphragm.

ANNEXE : D - ADJUSTING THE IDLING SPEED AND THE EXHAUST EMISSION





CHECKING CONDITIONS

1. Checking the idling speed must be carried out on a clean engine on which the ignition and the valve clearances are properly adjusted, and fitted with a clean air-filter.

2. Check that the throttle butterfly returns correctly to its stop.

3. Do not load the alternator by switching on any of the electrical components, except the ignition, and the electric cooling fan (s).

4. Run the engine to **bring the oil temperature up to 70 to 80° C** (wait for the electric cooling fan (s) to cut in).

IMPORTANT : Use exclusively a high tension tachometer (do not damage the H.T. lead of the ignition wiring harness).

ADJUSTMENT

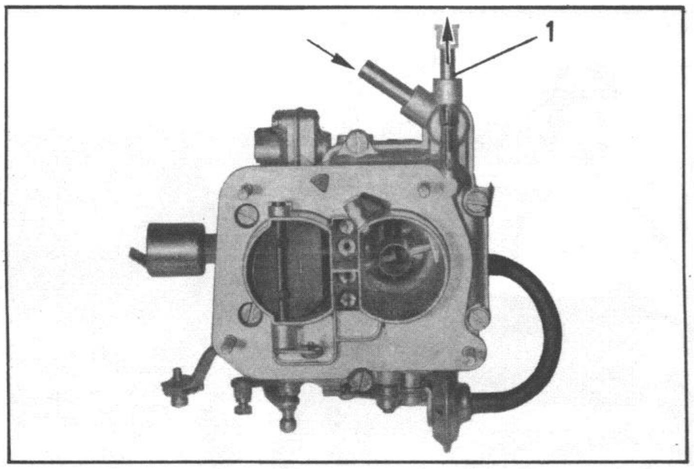
1. Check that the butterfly is not jammed in position when it is resting against its stop.

2. Wait for the electric cooling fan (s) to cut in.

3. Use screw (1) to adjust the idling speed to **850 to 900 rpm.**

4. Check the exhaust emission :
   The resulting amount of CO - CO^2 (corrected CO reading) **must be below 4.5 %.**
   In case this reading cannot be obtained, check the valve clearances, the ignition, the fuel pressure, the air-tightness of the air-circuit, and the complete fuel injection system.

5. On a vehicle fitted with optional air-conditioning switch the compressor on, and adjust the idling speed from **1000 to 1050 rpm,** by adjusting the screw on the auxiliary box located next to the electro-valve.



PETROL PUMP

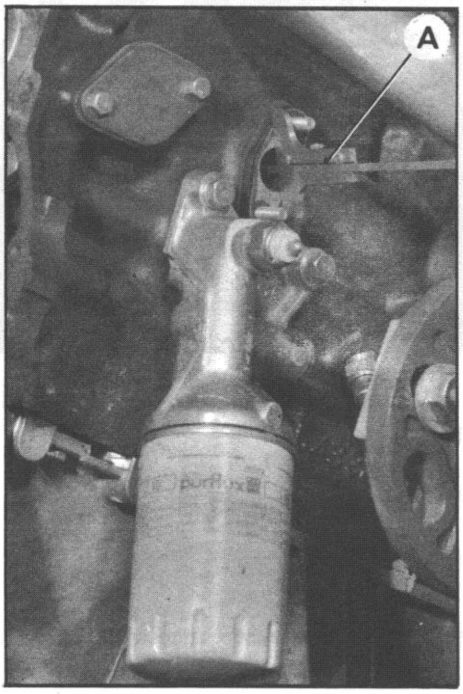
AC DELCO pump reference E/PE 4.777

- Auto-regulating diaphragm lift and force pump operated by eccentric on camshaft.
- This pump is fitted with a device which enables it to function on re-cycled petrol. This re-cycling is effected by means of a by-pass (1) fitted on the carburettor cover.
  Excess petrol supplied by the pump returns to the tank across an orifice calibrated from 0.8 to 0.9mm in the by-pass union (1).

PETROL PUMP OUTPUT

a) Output nil, maximum pressure : 325 mbars (4.7 psi).
b) Output through open carburettor float needle valve.

engine rpm	Minimum output in litres per hour	Minimum pressure in mbars
500	45	88
3000	65	170
5500	69.5	192



INSTALLATION OF PETROL PUMP

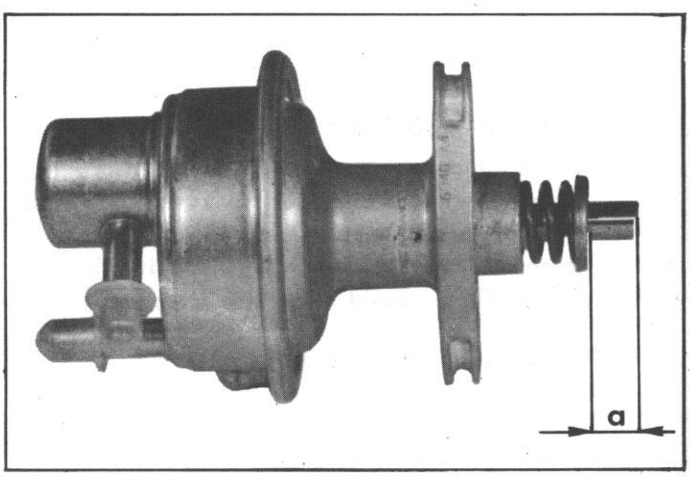
Fitted on the crankcase with :
- one « Phenoplaste P12 » spacer 6 ± 0.1 mm thick.

- two « SOCOID » paper gaskets fitted dry.

Tightening torque for petrol pump nuts :

21 mN (2.1 m.kg) (15 1/4 ft.lb)

CHECKING THE STROKE OF THE PUMP PUSH-ROD

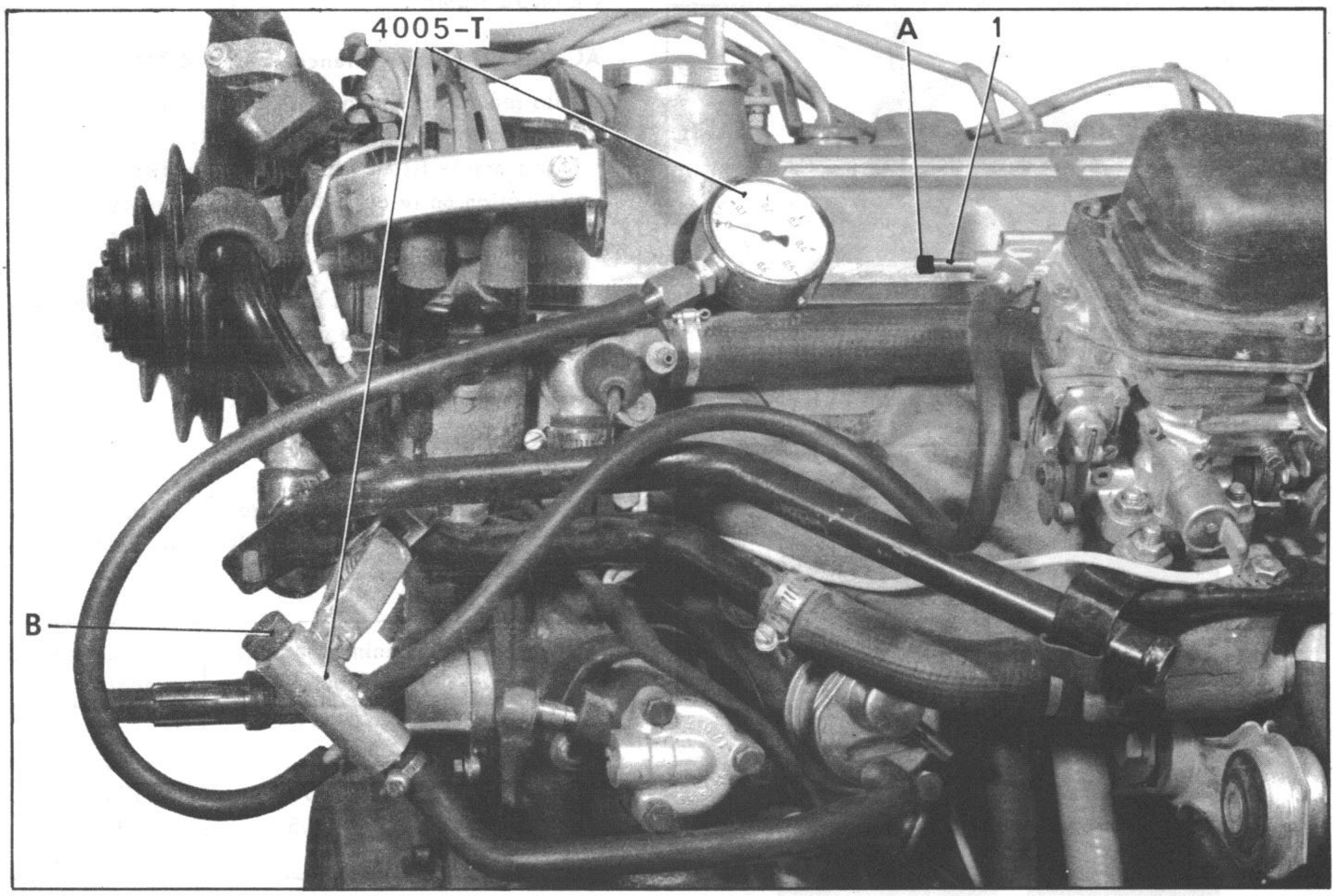


a) With the pump removed and using a depth gauge A, take the measurement between the upper face of the spacer (with paper joints) and the camshaft eccentric in its high position and in its low position.
   This measurement should be :
   - **Upper position of eccentric 27.4 ± 0.35 mm**
   - **Lower position of eccentric 32.4 ± 0.35 mm**

b) Measure the length « a » between the spring stop cup and the tip of the pump control push-rod.
   This length should be :

a = 4.5 mm minimum

Supplement N° 1 to Manual 818-1 (CORR)



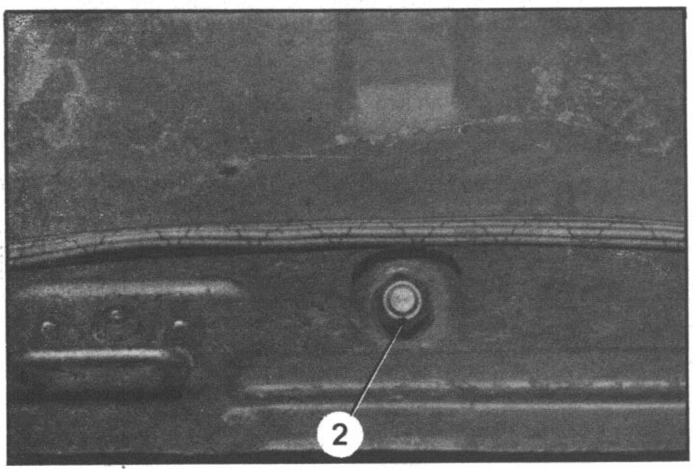
CHECKING THE PETROL PRESSURE USING APPARATUS 4005-T

- Install apparatus 4005-T as shown above.
- Disconnect reservoir return line from the carburettor and fit plug A on by-pass union (1).
- Unscrew knurled knob B by approximately one and a half turns.
- Start the engine.

a) **Check pressure of petrol at nil output :**
  - Fully screw down knurled knob B and read the stabilized pressure on the pressure gauge which should be **325 mbars (47 psi) maximum.**

b) **Check the proper sealing of the pump return valve**
  - Stop the engine. **There should be no sudden drop in pressure**

c) **Check the proper sealing of the carburettor needle valve :**
  - Unscrew knurled plug B and start the engine. Let it run for a few minutes.
  - Stop the engine. **There should be no sudden drop in pressure.**
  - Remove appartus 4005-T and fit to carburettor the tank supply and return pipes (after having removed plug A).



CHECKING THE PUMP FOR LEAKS

- Close the pump return pipe.
- Blow compressed air under pressure of 800 mbar (11.6 psi) into suction tube.
- Immerse pump in a container filled with clean petrol. **There should be no sign of any leak.**

Work on petrol gauge sender unit :

To work on the petrol gauge sender unit it is necessary to drain the tank (drain plug), and remove it. It is held by double strap fixed by nut (2).

Tightening of nut (2) = 15 mN (1.5 m.kg) (10 3/4 ft.lb).

M 20/616
M 22/617
M 23/623 ENGINES

CHARACTERISTICS

ENGINES	M 20/616 - M 22/617		M 23/623
DISTRIBUTORS	MAGNETI-MARELLI	DUCELLIER	DUCELLIER
Reference N°	S 167 A	4510 B	525 068 A
Rotation direction (seen from drive side)	Anti-clockwise		
Contact pads pressure (for information purposes)	440 ± 50 g		
Distance between contact pads	0.40 mm		
Closing angle of cam	55° ± 2° 30'		
DWELL ratio	61 % ± 3 %		
Angular gap between the four opening points (symmetry of the cams)	1° max		
Capacity of condenser	0.30 ± 0.03 μF		
Minimum resistance of condenser	5 MΩ		
Centrifugal advance, ref. n° of curve	LA 2		LA 4
Vacuum advance correction, curve advance			LD 2

Static advance : 10° engine flywheel

Strobe setting : 10° ± 1° at idling speed : 850 to 900 rpm for manual gearbox
700 to 750 rpm for converter gearbox

SPARK PLUGS

To find out the make and type of plug to use, consult the Technical Bulletins on this subject, which are published regularly.

Spark plug gap .... 0.6 to 0.7 mm
Tightening torque (cylinder head cold) .... 20 to 25 mN (2 to 2.5 m.kg)
(Smear the thread with « NO-BIND ») (14 1/2 to 18 ft.lb)

IGNITION COIL

External resistor type

Manufacturer	DUCELLIER	SEV-MARCHAL	MARELLI
Reference N°	2777 C	E 44 910 312	BZR 206 A
Primary circuit resistance (at 20° C)	0.68 ± 0.02 Ω	1.1 to 1.2 Ω	0.8 ± 10 % Ω
Resistance of outer resistor (at 20° C)	1.32 ± 5 % Ω	1.5 to 1.6 Ω	1.35 ± 4 % Ω
Secondary circuit resistance (at 20° C)	7500 ± 1000 Ω	6000 ± 5 % Ω	7500 ± 10 % Ω

H.T. LEADS

Manufacturer .... ELECTRIFIL
Reference .... Bougicord 400 RTF 33

All vehicles (→ 1/ 1975)

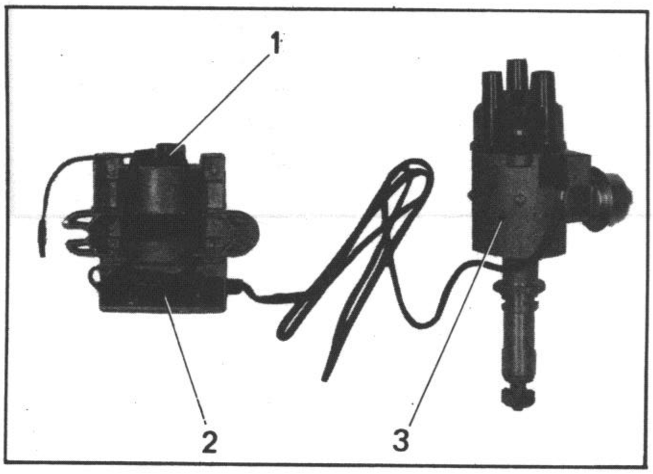
Description of leads	Length in mm	Resistance of leads (at 20° C)
Coil to distributor	570 to 580	625 to 1025 Ω
Distributor to N° 1 cylinder	400 to 410	420 to 645 Ω
Distributor to N° 2 cylinder	520 to 530	555 to 850 Ω
Distributor to N° 3 cylinder	540 to 550	580 to 880 Ω
Distributor to N° 4 cylinder	710 to 720	770 to 1165 Ω

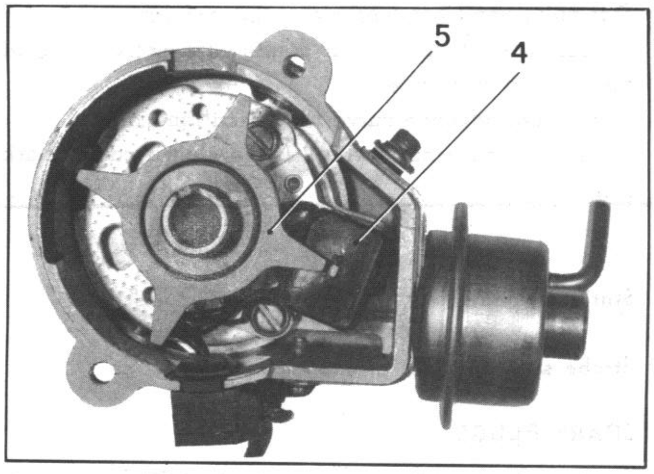
All vehicles (1/ 1975 →)

Description of leads	Length in mm	Resistance of leads (at 20° C)
Coil to distributor	820 to 830 → *10/75* → 850 to 860	920 to 1400 → *10/75* → 950 to 1450
Distributor to N° 1 cylinder	360 to 370	400 to 570 Ω
Distributor to N° 2 cylinder	520 to 530	555 to 850 Ω
Distributor to N° 3 cylinder	540 to 550	580 to 880 Ω
Distributor to N° 4 cylinder	710 to 720	770 to 1165 Ω

M 23/622 ENGINE

TRANSISTORISED IGNITION WITH ELECTROMAGNETICALLY CREATED IMPULSES





OPERATING PRINCIPLE

The electronic ignition comprises a coil (1), a transistorised module (2) which includes among other components, a power transistor working as a contact breaker, and a distributor (3) with a magnetic pick-up (impulse generator) and an H.T. rotor.

The primary current from the coil goes through a switching transistor situated in the module (the earthing is carried out via the fixing bracket for the coil and module assembly).

As an impulse is created by the sensor in the distributor, it switches off the transistor and thus cuts off the flow of current in the coil primary circuit, which causes a « High Tension » current in the coil secondary circuit.

The module is located in the distributor, replacing the contact breaker unit in a conventional ignition system. It comprises a sensor (4) and a 4-point star (5).

The sensor has a permanent magnet inside a winding. This winding is connected electrically to the module.

The 4-point star is made of metal, and has one star per cylinder. It is fitted in place of the rotor arm cam in a conventional ignition system.

Supplement N° 1 to Manual 818-1 (ADD)

CHARACTERISTICS

ENGINE REF.	M 23/622
DISTRIBUTOR	DUCELLIER
Reference	525 100 A
Direction of rotation (seen from drive end)	Anti-clockwise
Star point gap (between star point and sensor)	0.3 to 0.5 mm
Angular positioning of star points (symmetry of signal) to within	1° max.
Resistance of module	960 to 1140 Ω
Centrifugal advance curve identification mark :	LA 5
Vacuum advance correction : curve identification mark :	LA 3

Static advance : 10° engine flywheel

Strobe setting : 25° at 2500 rpm

SPARK PLUGS

To find out the make and the type of spark plug to use, consult the Technical Bulletins on this subject, which are published regularly.

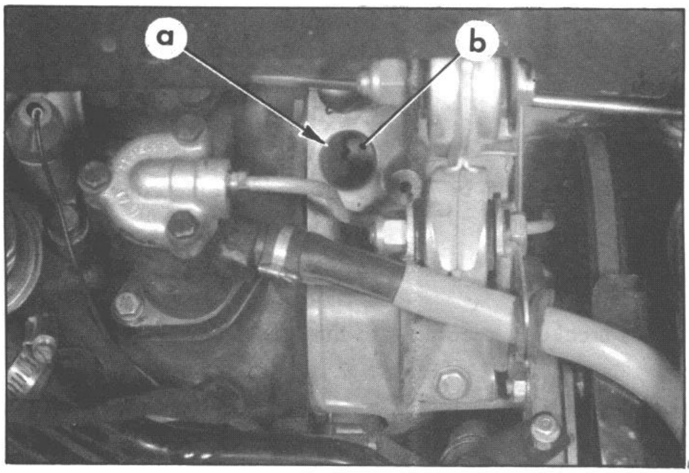
Spark plug gap	0.6 to 0.7 mm
Tightening torque (cylinder head cold)	2 to 2.5 daNm
(smear the thread lightly with « NO BIND »)	(14.5 to 18 ft.lb)

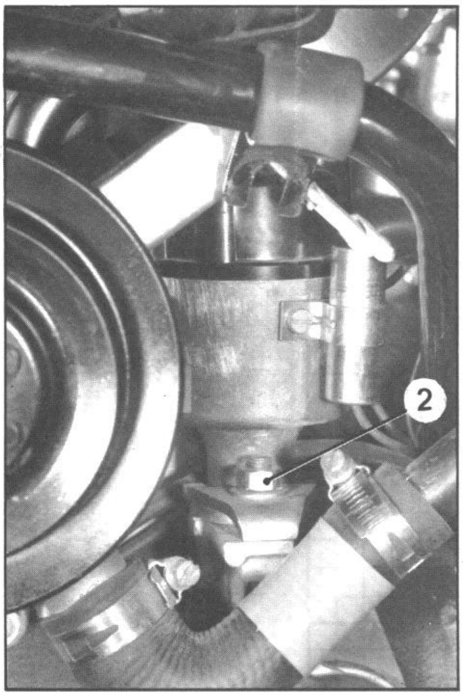
IGNITION COIL AND TRANSISTORISED MODULE ASSEMBLY	
Manufacturer	AC - DELCO
Reference N°	210
Resistance of coil primary circuit (at 20° C)	0.48 - 0.61 Ω
Resistance of coil secondary circuit (at 20° C)	8500 to 10500 Ω

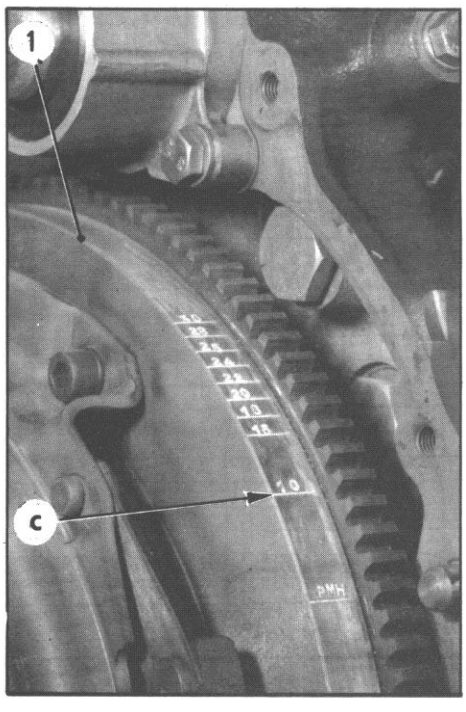
H.T. LEADS

Description of leads	Length in mm	Resistance of leads (at 20° C)
Coil to distributor	1040 to 1050 mm	1120 to 1765 Ω
Cylinder N° 1	440 to 450 mm	480 to 780 Ω
Cylinder N° 2	520 to 530 mm	530 to 895 Ω
Cylinder N° 3	780 to 790 mm	825 to 1335 Ω
Cylinder N° 4	850 to 860 mm	900 to 1445 Ω

M 20/616
M 22/617
M 23/623 ENGINES







1. Checking the dwell angle :

a) *Using a set of feeler gauges :*
Adjust the clearance at the contact points **to 0.40 mm** *(This imprecise method is not adviseable).*

b) *Using a cam angle checking device or an oscilloscope :*
The closing angle must be 55° ± 2° 30'

c) *Using a dwellmeter :*
The DWELL ratio must be 61 % ± 3 %

2. Checking the distributor timing :
(Disconnect the vacuum advance correction on 2350 cc engines - **M 23/623**)

a) *Using a strobe lamp :*
Connect the H.T. lead from the strobe lamp to the H.T. lead for No 1 cylinder at the distributor cap. Shine the strobe onto the flywheel (1) through opening « a ».
Run the engine at idling speed : **850 to 900 rpm (Torque converter : 700 to 750 rpm).**
Read off the advance on flywheel (1) in line with fixed mark « b ». It must be 10° ± 1° before T.D.C. *(yellow mark « c »).*
If not, slacken nut (2) and rotate distributor to obtain this condition. Tighten nut (2) from 1.9 to 2.1 daNm (13.5 to 15 ft.lb).
Stop the engine.

b) *Using a diagnostic and adjusting test-bench :*
TECALEMIT **Model Tecamatic 30, SOURIAU,** models **1615-01, 1625-01 or 1256-61.**
RABOTTI, model **Rabofast 103.**
(These models are mentioned in the Equipment and Repair Materials manual, or in the green Tools and Equipment Bulletins).
This method is recommended for its speed, its precision and the ease with which it is carried out.
Connect the 12-pin plug of the test-bench to the corresponding socket on the diagnostic wiring harness of the vehicle, *making sure the inhibitor is fitted correctly.*
Run the engine at idling speed.
Read out the advance *(crankshaft degrees)* on the test-bench. It must be 10° ± 1°. If not, slacken nut (2) and rotate the distributor to obtain this condition.
Tighten nut (2) from 1.9 to 2.1 daNm (13.5 to 15 ft.lb).
Stop the engine.
Connect the vacuum advance correction on 2350 cc engines **(M 23/623).**

If a strobe lamp or a diagnosis test bench are not available, adjusting the distributor timing may be carried out using a test lamp, with the engine at static advance point. (See Chapter III, pages 4 and 5).

3. Check the spark regularity :

Using a strobe lamp :

With the distributor timing properly adjusted : (10° ± 1° at 850 ± 50 rpm or 700 ± 50 rpm for torque converter), the advance point must remain within 2°.

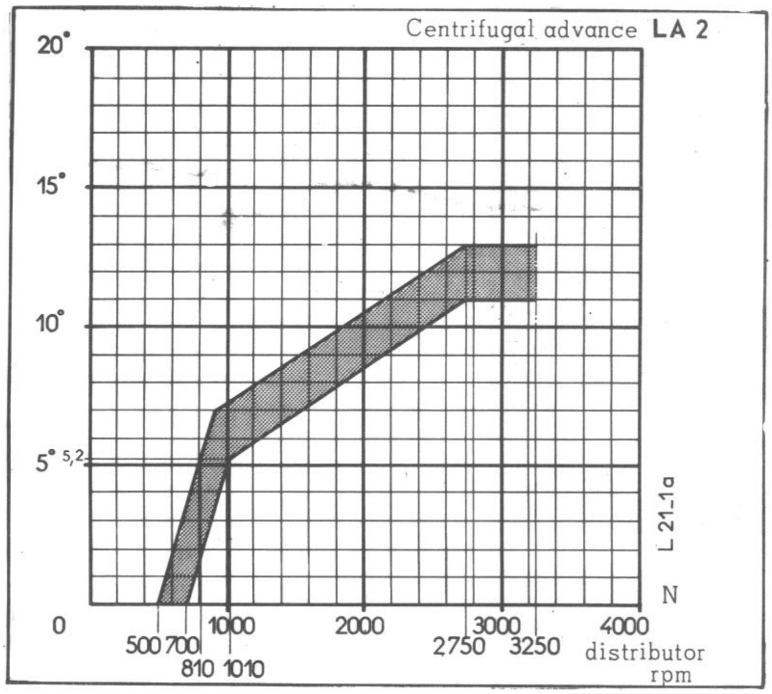
Using a diagnostic test-bench :

The start of opening, or the dwell angle value of the contact breaker (according to the type of test-bench used) should not vary by more than 2° on each boss of the cam.

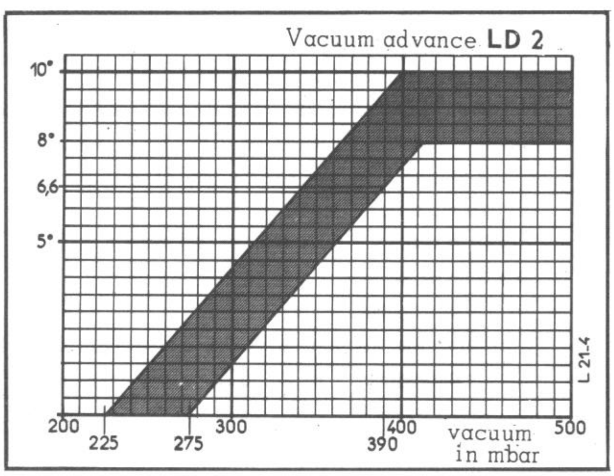
If this is not the case, the rotor arm or the contact breaker back-plate are faulty.

The distributor must be reconditioned or replaced.

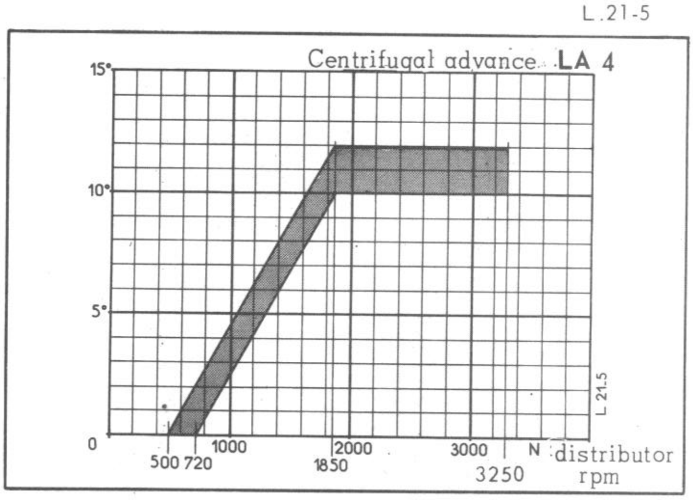
II. CHECKING AND ADJUSTING THE DISTRIBUTOR ON A TEST-BENCH



L.21-4



L.21-5



NOTE : *Direction of rotation : clockwise, seen from distributor cap end.*

1. Checking the condition of the contacts :

Check the voltage drop across the contacts (contacts closed) under a voltage of 12 volts, using a test-bench. The voltage drop should be 0.2 volts max.

2. Checking the centrifugal advance curve :

a) Note the advance in stages for steadily increasing engine speeds from 0 to 3000 rpm, and for steadily decreasing engine speeds from 3000 rpm to 0, *making sure the increase or decrease is continuous.* These points must fall within the shaded area of the curve.

b) To a certain extent, it is possible to correct the advance curve, by altering the tension of the springs for the centrifugal weights. To obtain this condition, slightly bend (*in the appropriate direction*) the securing brackets for the springs, or replace them.

NOTE : If luminous spots are produced outside the four normal positions at speeds under 3000 rpm, make sure the contact points are clean, and if necessary make sure the test-bench battery is fully charged, before replacing the contact-breaker unit, the spring of which may have weakened.

3. Checking the spark regularity :

Whatever the speed of rotation, **the angular difference** of the four opening positions of the points **must not exceed 1°** (*Maximum rpm of distributor : 3250 rpm, except DUCELLIER 525 068 A : 2750 rpm*).

4. Checking and adjusting the dwell angle :

Run the distributor at a steady speed, and check that the dwell angle **is equal to 55° ± 2° 30'**. If this is not the case, adjust the contact breaker to obtain this condition.

5. Checking the ignition condenser :

With the contact points open, measure the capacity of the condenser. This value must be **0.30 ± 0.03 μF**. If this is not the case, replace the condenser.

6. Check the vacuum advance curve :

This check is carried out at a constant rpm of 200, **with no centrifugal advance**.

Check the points of the increasing curve, and the decreasing curve. If the vacuum capsule has *a breather*, it will be necessary to blank it off during this check.

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III. FITTING THE DISTRIBUTOR ONTO THE VEHICLE

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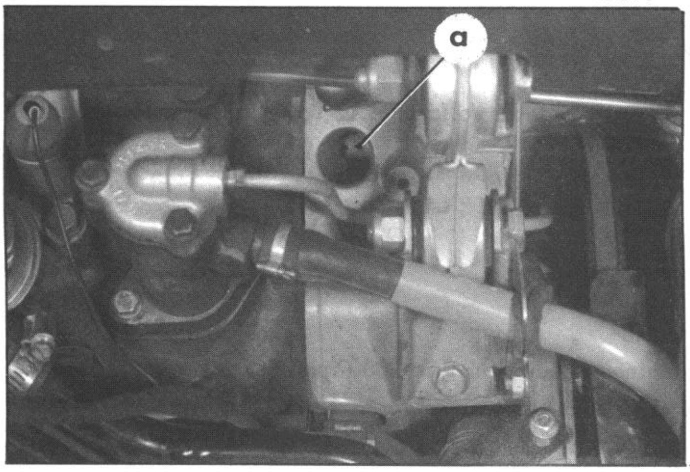
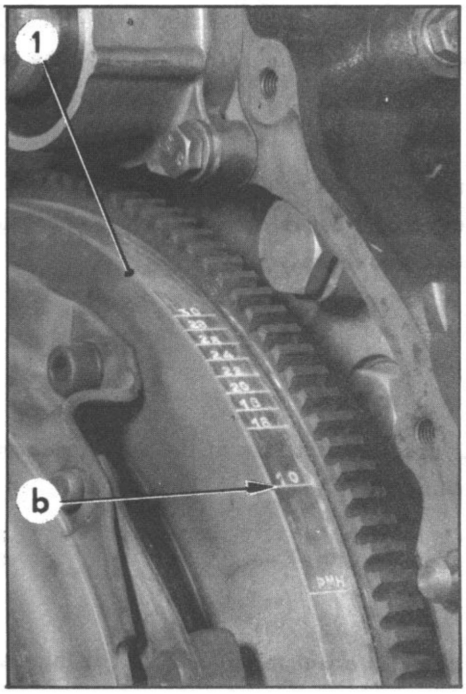


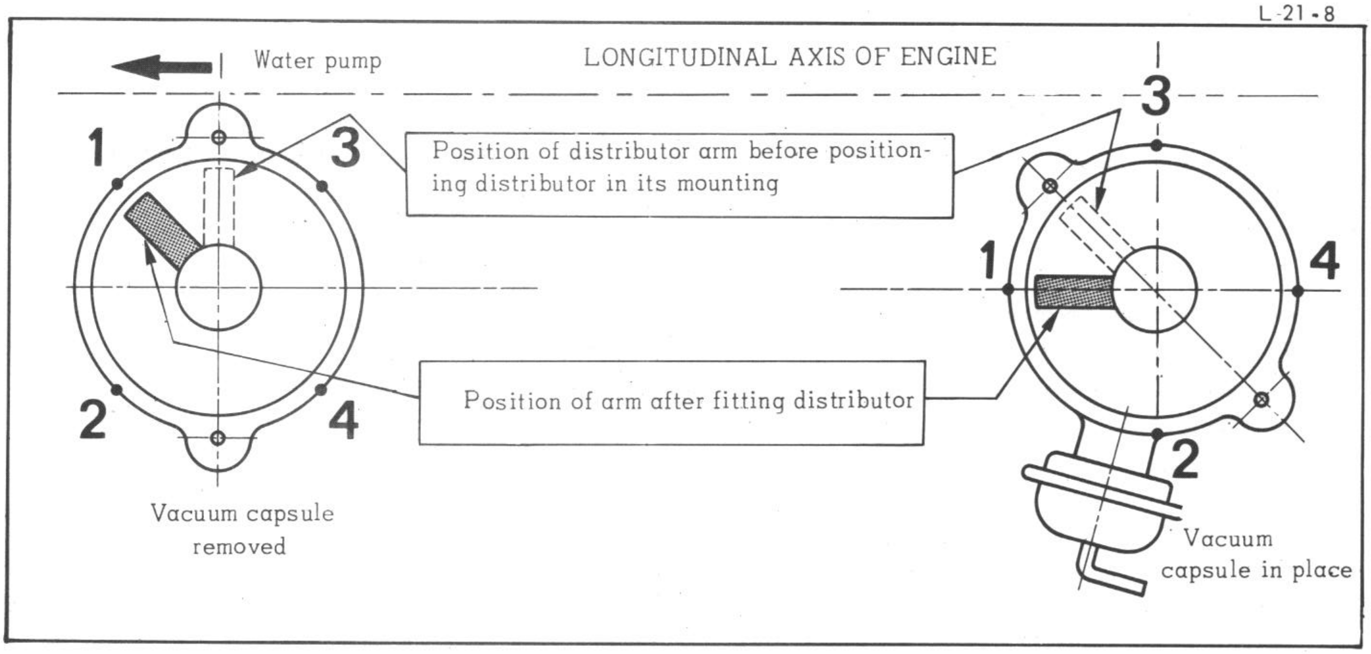


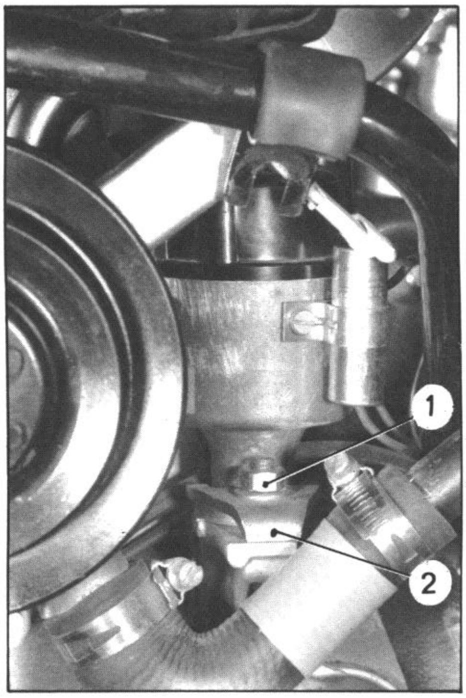
1. Set the distributor to the static advance point :

a) Bring piston of N° 1 cylinder to the static advance point, as follows :
Lift the L.H. front wheel of the vehicle (L.H. side of the vehicle jacked up) and engage 4th gear.
Blank off the plug-hole with the palm of the hand.
Rotate the L.H. front wheel, and stop when the palm of the hand is pushed back by the force of the compression.
Slowly rotate the wheel to bring the **10°** mark « b » of the engine flywheel (1) opposite the fixed mark « a ».

b) Fit the distributor :
Remove the distributor cap.
Insert the distributor into its housing (see position on the diagram below).

L-21-8





Provisionally position support plate (2) and gently tighten nut (1).

c) Switch on ignition.
Connect a test lamp to earth and to the « RUP » terminal of the ignition coil.
Turn the distributor until the exact moment when the indicator lamp lights up.
At this point the distributor is at the static advance point.
Switch off the ignition.
Tighten nut (1) from 19 to 21 mN (1.9 to 2.1 m.kg) (13 1/2 to 15 ft.lb).
Fit distributor cap and secure it.
Fit sparking plug in cylinder No 1.

2. Checking the ignition timing using a stroboscopic lamp or a test-bench
(See chapter I, page 1).

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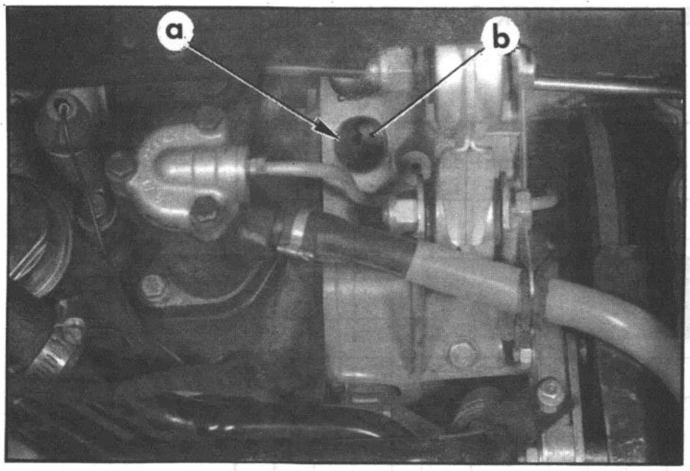
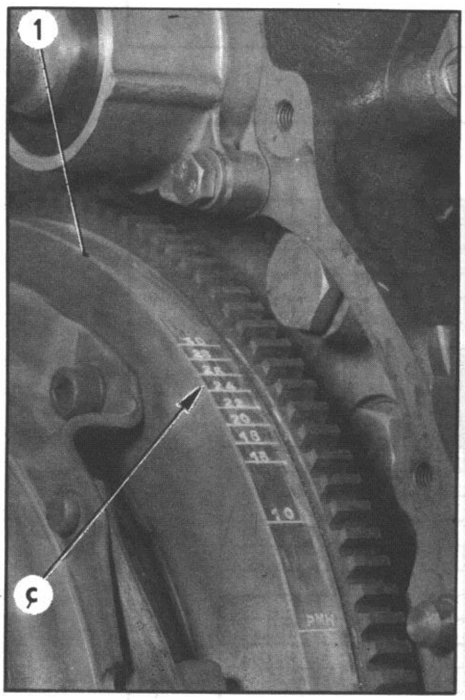
M 23/622 ENGINE

I. CHECKING THE IGNITION ON THE VEHICLE





1. Checking the star-point gap :

a) *Using a set of feeler gauges :*
Set the star-point gap to 0.3 to 0.5 mm

2. Check the distributor setting :
Disconnect the vacuum advance correction.

a) *Using a strobe-lamp :*
Connect the H.T. lead from the strobe-lamp to the H.T. lead for N° 1 cylinder at the distributor cap.
Shine the strobe onto the flywheel (1) through opening « a ».
Run the engine at 2500 rpm.
Read off the advance on the flywheel (1) in line with fixed mark « b ». It must be 25° before TDC (*mark « c »*).
If not, slacken the distributor clamp nut, and rotate the distributor to obtain this condition.
Tighten nut from 1.9 to 2.1 daNm (13 1/2 to 15 ft.lb).
Stop the engine.

b) *Using a « diagnostic » test-bench :*
This method is recommended for its speed, its precision and the ease with which it is carried out.
Connect the 12-pin plug of the test-bench to the corresponding socket on the « diagnostic » wiring harness of the vehicle, *making sure the inhibitor is fitted correctly.*
Run the engine at 2500 rpm.
Read off the advance (*crankshaft degrees*) on the test-bench.
It must be 25°.
If not, slacken nut (2) and rotate the distributor to obtain this condition.
Tighten nut (2) from 1.9 to 2.1 daNm (13.5 to 15 ft.lb).

Stop the engine.

Connect the vacuum advance correction.

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3. Checking the spark regularity :

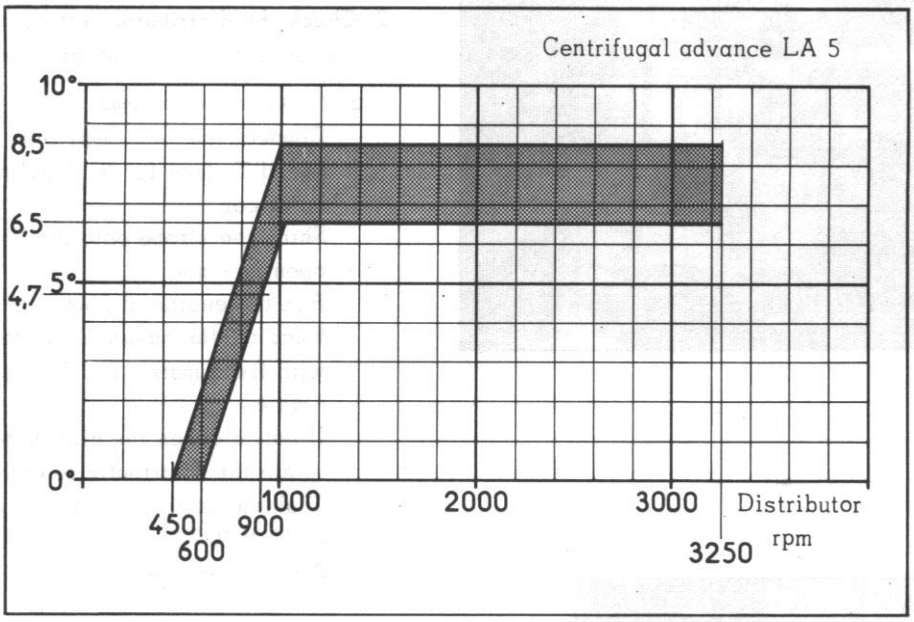
With a strobe-lamp :

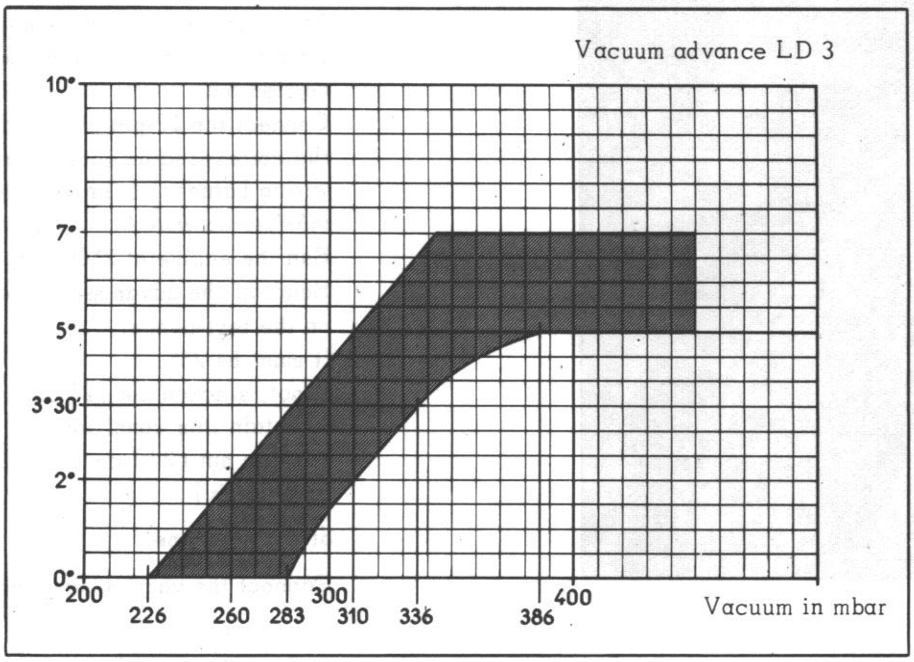
With the distributor timing properly adjusted (25° at 2500 rpm) the advance point must not vary by more than 2° on the four cylinders.

With a test-bench :

The impulse must not vary by more than 2° for the four star-points.

II. CHECKING AND ADJUSTING THE DISTRIBUTOR ON A TEST-BENCH





NOTE : *For the special method for connecting the magnetically triggered distributor to the test-bench, see Tools and Equipment Bulletin N° 77-11.*

- *The direction of rotation of the distributor is clockwise seen from the 4-point star end.*

1. **Adjust star-point gap** : 0.3 to 0.5 mm

2. **Check the centrifugal advance curve** :

   a) Note the advance in stages for steadily increasing engine speeds from 0 to 3000 rpm, and for steadily decreasing engine speeds from 3000 rpm to 0, making sure the increase or decrease is continuous. These points must fall within the shaded area of the curve.

   b) To a certain extent, it is possible to correct the advance curve, by altering the tension of the springs for the centrifugal weights. To obtain this condition slightly bend *(in the appropriate direction)* the securing brackets for the springs, or replace them.

3. **Checking the symmetry of the star-points** :

   The angular positioning of the 4- star-points must be the same to within 1°, whatever the speed of the engine.

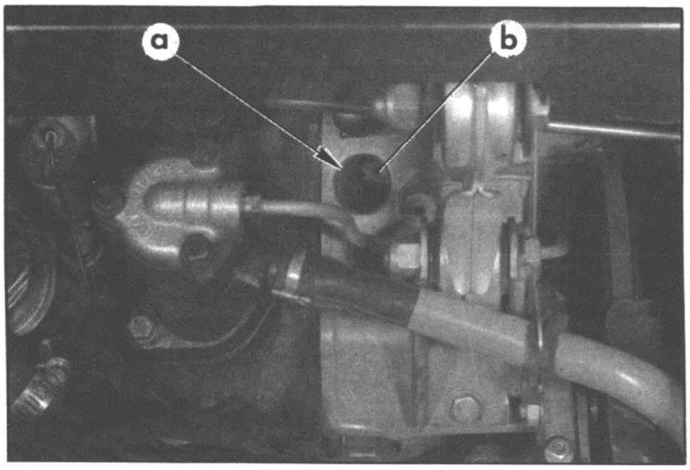
4. **Checking the vacuum advance curve** :

   This check is carried out at a constant 200 rpm, with **no centrifugal advance.**
   Check the points for the increasing curve, then the decreasing curve.

   If the vacuum capsule has a breather, it will be necessary to blank it off during the test.

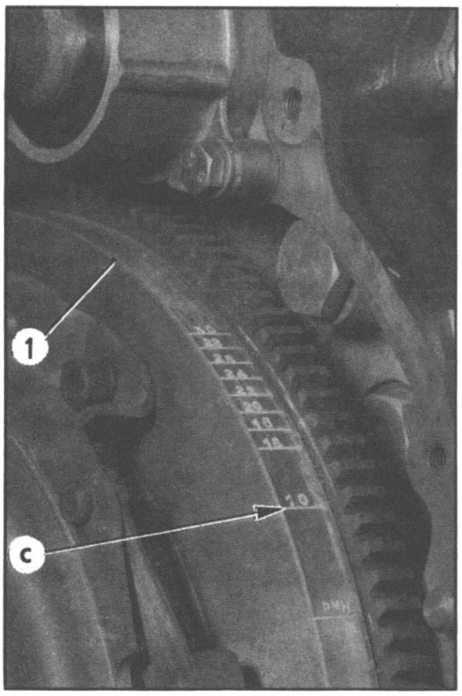
Supplement N° 1 to Manual 818-1 (ADD)

III. FITTING THE DISTRIBUTOR ONTO THE VEHICLE



1. Set the distributor to the static advance curve :

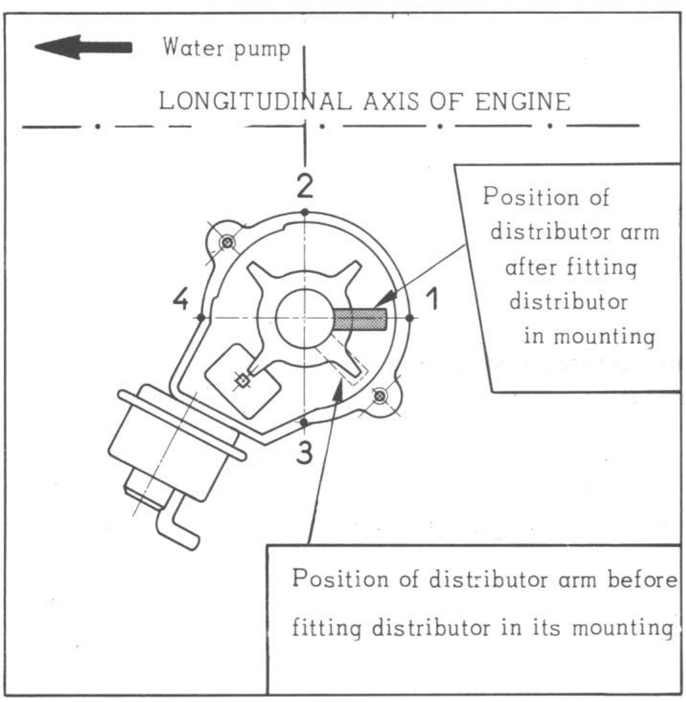
a) Bring piston in N° 1 cylinder to the static advance point as follows :
Lift the L.H. front wheel of the vehicle (*L.H. side of vehicle jacked up*) and engage 4th or 5th gear.
Remove the spark plug from N° 1 cylinder.
Blank off the plug-hole (use a plug).
Rotate the L.H. front wheel and stop when the plug is forced out by the compression.
Rotate wheel slowly to bring the 10° mark « c » on the flywheel (1) opposite fixed mark « b » visible through opening « a ».

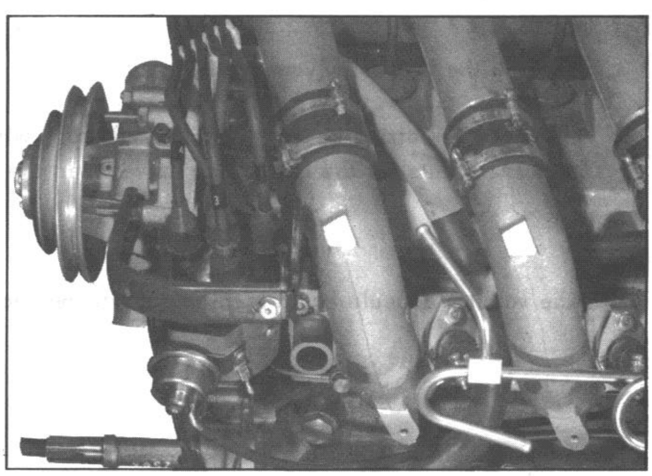


b) Fit the distributor :
Remove the distributor cap; insert the distributor into its housing (see position in diagram and photograph on this page).
Provisionally position fixing clamp, and moderately tighten nut.
Position distributor cap, and secure it.
Fit spark plug to N° 1 cylinder.

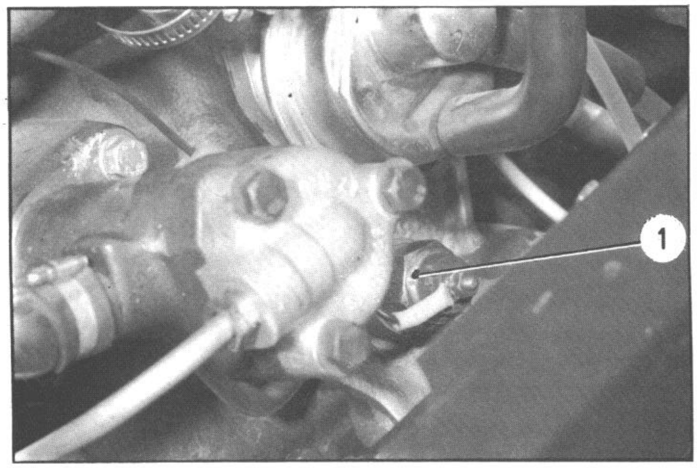
2. Adjust distributor timing using either strobe lamp or test-bench :

25° at 2500 rpm (*vacuum advance disconnected*)
Tighten distributor clamp nut from **1.9 to 2.1 daNm** (**13.5 to 15 ft.lb**).





CHECKING THE OIL PRESSURE ON THE VEHICLE

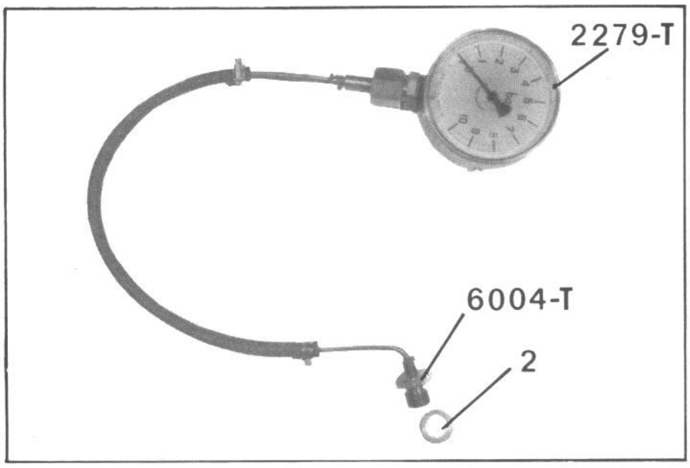


1. Remove spare wheel.

2. Check oil level if necessary.

3. Remove thermal-switch (1)*(from oil filter bracket)*.

4. Preparing pressure checking apparatus : Connect pressure gauge 2279-T *(graduated from 0 to 10 bars)* to union 6004-T.



5. Screw union 6004-T into location for thermal switch *(fit copper washer (2) under screw-head)*

   Tighten union screw (3).

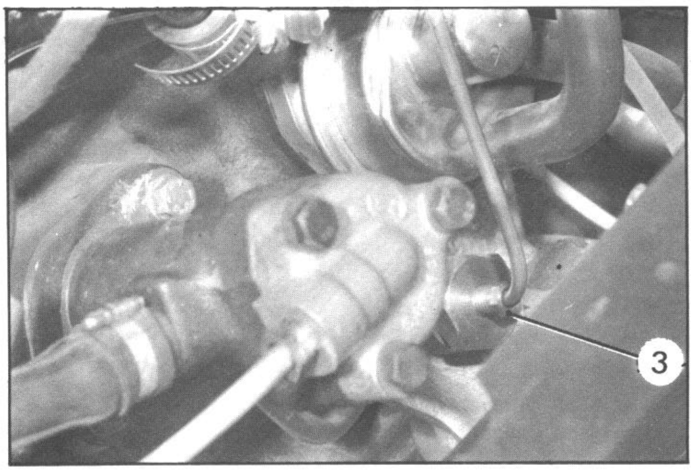
6. Start engine

   With oil temperature at 100° C pressure should be :

   at 2000 rpm = 3 bars min.(43.5 psi)

   at 4000 rpm = 4 to 5 bars (58 to 72.5 psi)

NOTE : *Adjustment of the oil pump pressure relief valve spring is not possible after engine components have been assembled.*



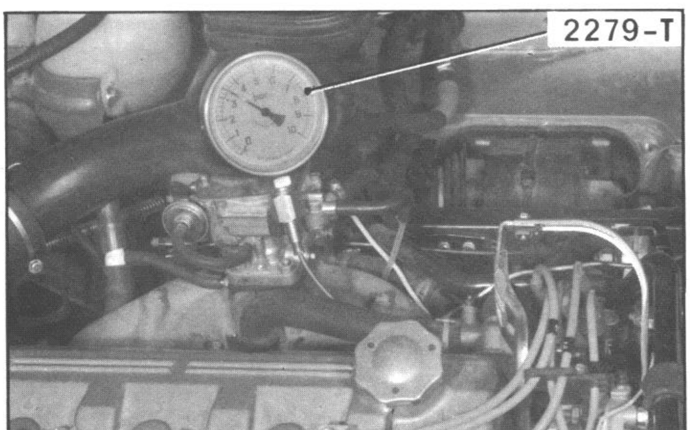
7. Remove union 6004-T and pressure gauge.

   Fit pressure switch (1) *(with copper washer)*.

   Tightening torque : 30 to 35 mdaN (3 to 3.5 m.kg) (21 1/2 to 25 1/2 ft.lb)

   Connect supply lead
   Replace spare wheel.

NOTE : This operation can also be carried out with the aid of a MULLER kit, reference 451.



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FILLING AND ADJUSTING THE PNEUMATIC OIL GAUGE

A - FILLING

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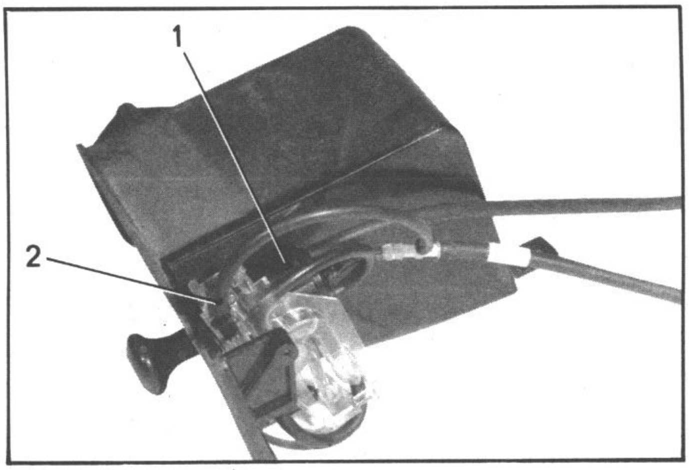


1. Remove the map pocket on the driver's side and the supporting bracket for the oil gauge unit.

2. Check that the pump (1) (*one piece unit*) and the rubber piping are not soiled with oil.

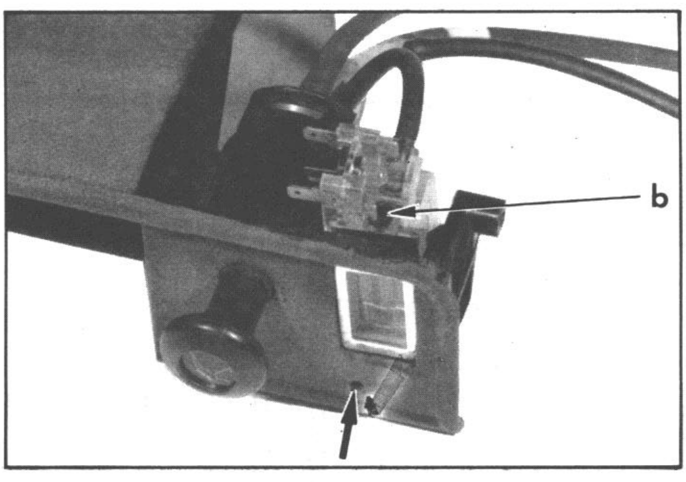
   If they are, replace the pump, and blow through pipes with compressed air.

3. **Filling the gauge :**

   WARNING : This operation is to be carried out with great care so as to fill the gauge with LHM Fluid which is **not emulsified.**

   - Disconnect tube (2) from the unit so as to get to the filler orifice « b ».

14757



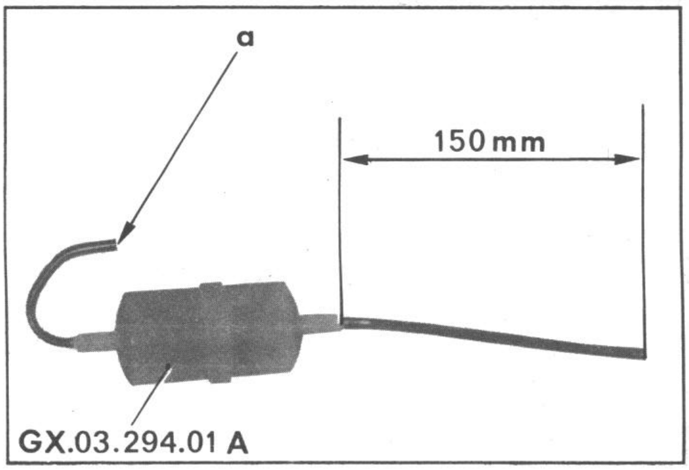
   - Undo completely the calibrating screw (marked with arrow) to allow the gauge to be adjusted on completion of the operation.

   - Fill the gauge (*two methods can be used*)

   a) Using a hypodermic syringe, slowly inject 2.4 cm3 (0.146 in3) of LHM fluid into orifice « b » of the gauge.

Supplement N° 1 to Manual 818-1 (ADD)

14758



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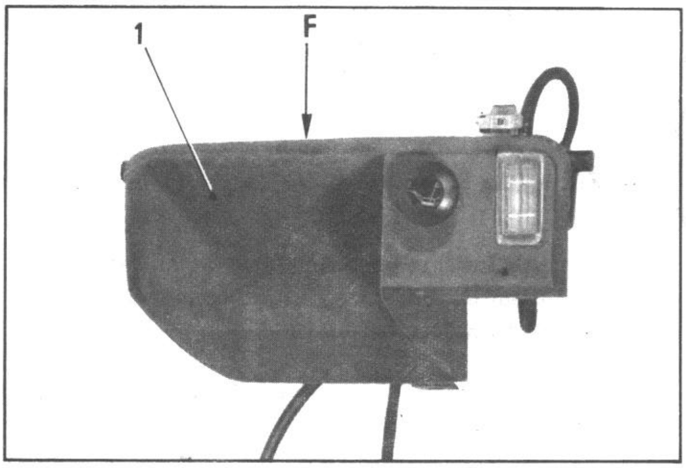

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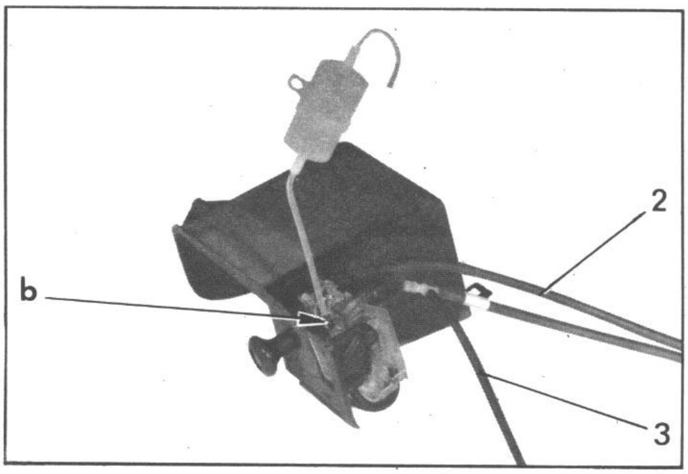
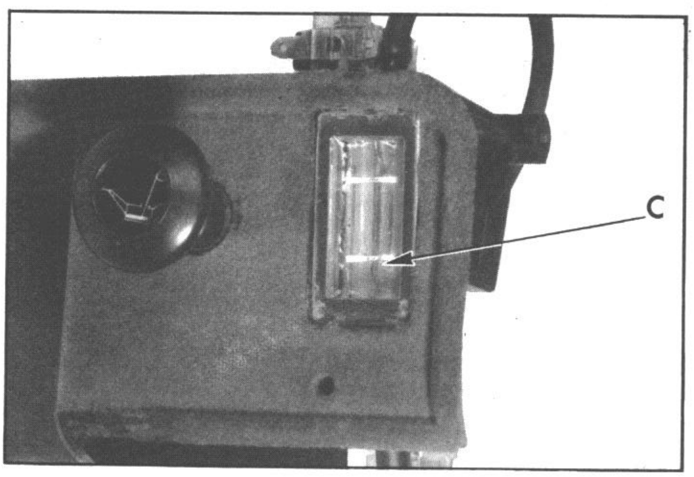


14755



b) Using an air breather chamber GX 03 294 01 A as in photograph 14 758.
- Half fill the breather chamber with LHM fluid, and keep a finger on orifice « a ».
- Place the gauge supporting bracket (1) so that surface F is approx. horizontal.
- Fill the gauge through orifice « b » until the level of the fluid reaches the min. mark on the gauge.

4. Connect tube (3) from the gauge to the filler orifice « b ».

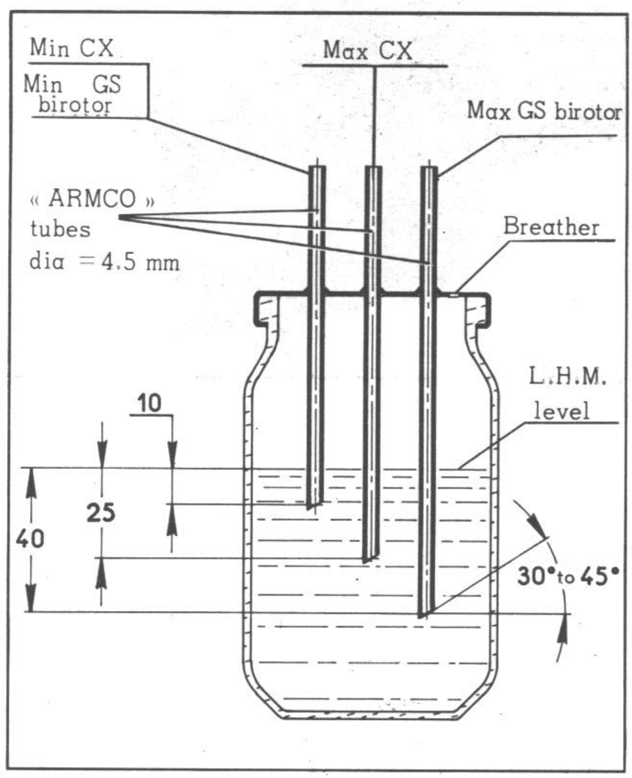
B. ADJUSTING THE GAUGE

Two methods are possible :
- Adjusting the gauge using an engine sump simulator.
- Adjusting the gauge on the vehicle.

Adjusting the gauge using the simulator

1. Prepare a jar as per diagram on page 2.
NOTE : This simulator is also suitable for adjusting a gauge on a GS « Birotor ».vehicle.

2. Connect the rubber tube (2) (unmarked) to the tube labelled « mini CX » in the jar, and place the gauge supporting bracket in the position it occupies on the vehicle.



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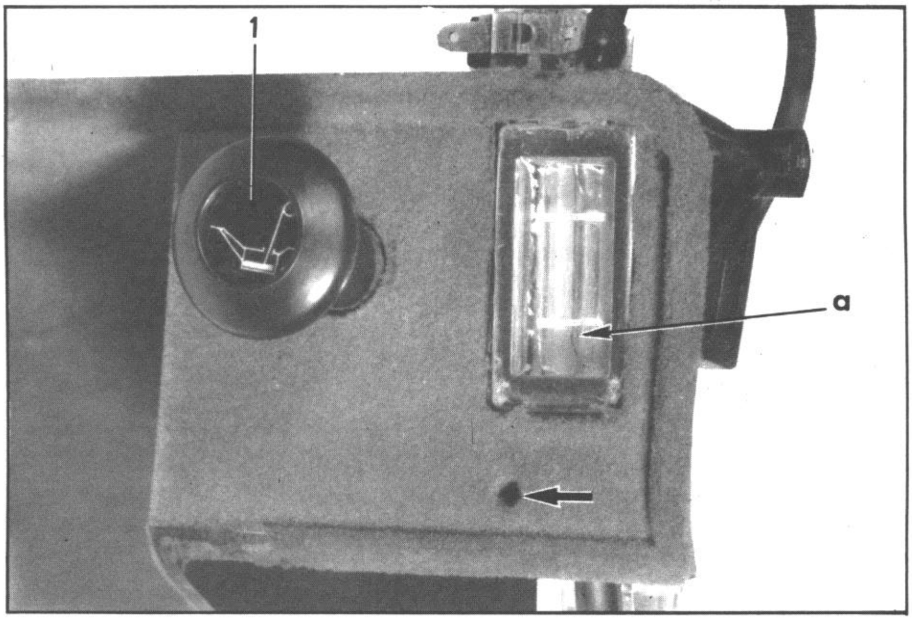


3. Calibrating the gauge :

a) Depress the oil-gauge pump-knob (1) and maintain it fully depressed :
In the jar, air bubbles must be discharged at regular intervals.

If the discharge of air bubbles is weak and intermittent, the pump must be replaced.

After the fluid has stabilised in the gauge, the surface of the fluid must be level with mark « a » (min.).

If not, adjust the calibrating screw (marked with arrow) so as to obtain the correct level (within 1.5 mm).

b) Repeat the operation using the « max » CX tube in the simulator jar to check the max. level in the gauge.

Adjusting the gauge on the vehicle

1. Refit the pneumatic gauge and map pocket unit onto the vehicle, making sure that the pipes are fitted correctly according to their colour marks.

This operation must be carried out with the vehicle on a level horizontal surface, and with the engine switched off at least five minutes beforehand.

2. Check the oil level **using the manual gauge.**

3. Calibrating the gauge :

a) Depress the oil gauge pump knob (1) and maintain it fully depressed.
When the liquid is stabilised in the gauge, adjust the calibrating screw (marked with arrow) so that the level indicated on the gauge is the same as that indicated on the manual gauge.

b) Release the pump knob .
- the level of the liquid should fall below the min. mark on the gauge.

c) Repeat the adjustment to check that the levels correspond exactly.

OPERATION N° MA. 230-00 : *Characteristics and special features of the cooling system.*

P.T.O.

CHARACTERISTICS

1. Water circuit :

Self de-aerating type, with header tank.

- Filling : .... Cap on header tank
- Level *(Cold, in de-aerated state)* : .... See mark in header tank
- Coolant : .... Water + anti-freeze
- Circuit protection : .... { - 15° C (28 % of anti-freeze) / - 30° C (50 % of anti-freeze) }

2. Radiators :

Surface of radiator :

- CX 2000 (⟶ *1/1975*) Except optional towing equipment : .... 16 dm^2 (248 sq.in)
- CX 2000 (⟶ *1/1975*) optional towing equipment : .... 20 dm^2 (310 sq.in)
- CX 2000 (*1/1975* ⟶) and CX 2200 : .... 20 dm^2 (310 sq.in)
- CX Prestige, except optional torque converter-air conditioning : .... 20 dm^2 (310 sq.in)
- CX 2400, except Injection and optional torque converter-air-conditioning : .... 20 dm^2 (310 sq.in)
- **CX 2400 torque converter - air-conditioning + CX 2400 GTi : .... 23 dm^2 (356.5 sq.in)**
- CX Prestige torque converter - air-conditioning : .... 23 dm^2 (356.5 sq.in)

NOTE : Radiators originally fitted to the vehicles differ according to the type of vehicle on which they are fitted, in the material used for the coolant channels, and the distance between the cooling fins.

3. Radiator cap (or pressure relief valve) calibration *(cap screwed on)* : .... 1 bar (14.5 psi)

4. Thermostat :

- Make : .... CALORSTAT
- Reference N° : .... V 6215
- Begins to open at : .... 84° C

5. Thermal switch for temperature warning lamp *(on cylinder-head)* :

- The warning lamp lights up *(on the instrument panel)* at the following temperatures :
  - 16 dm^2 (248 sq.in) radiator : .... 113 to 117° C
  - 20 and 23 dm^2 (310 and 356.5 sq.in) radiators : .... 110.5 to 113.5° C

- Tightening torque : .... **2.5 to 3 da Nm (18 to 21.5 ft.lbs)**

NOTE :

The coolant return hose for the heater unit has a white identification mark painted on it.

Make sure heater hoses are correctly fitted to the heater unit.

6. Electric cooling fans :

- 16 dm^2 (248 sq.in) radiator (CX 2000 except optional towing equipment) .... 1 10-blade fan
- 20 dm^2 (310 sq.in) radiator (CX 2000 and 2200 except optional towing equipment, or torque converter, or air-conditioning) .... 1 5-blade fan
- 20 dm^2 (310 sq.in) radiator (CX 2200 with optional towing equipment or torque converter) .... 2 5-blade fans
- 20 dm^2 (310 sq.in) radiator (CX 2200 with air-conditioning) .... 2 10-blade fans
- 20 dm^2 (310 sq.in) radiator (CX Prestige) .... 2 10-blade fans
- 20 dm^2 (310 sq.in) radiator (CX 2400, except optional towing equipment or torque converter, or air-conditioning) .... 1 10-blade fan
- 20 dm^2 (310 sq.in) radiator (CX 2400 with optional towing equipment, or torque converter, or air-conditioning) .... 2 10-blade fans
- 23 dm^2 (356.5 sq.in) radiator, (CX 2400 GTi except optional towing equipment) 1 10 blade fan
- 23 dm^2 (356.5 sq.in) radiator, (CX 2400 and Prestige with optional torque converter and air-conditioning, and CX 2400 Gti with optional towing equipment) .... 2 10-blade fans

The electric cooling fans are controlled by a thermal switch (*on the radiator*)
- Power rating of electric fan : .... 150 W
- Direction of rotation (*seen from electric motor side of fan*) : .... Clockwise
- Cut-in thermal switch :

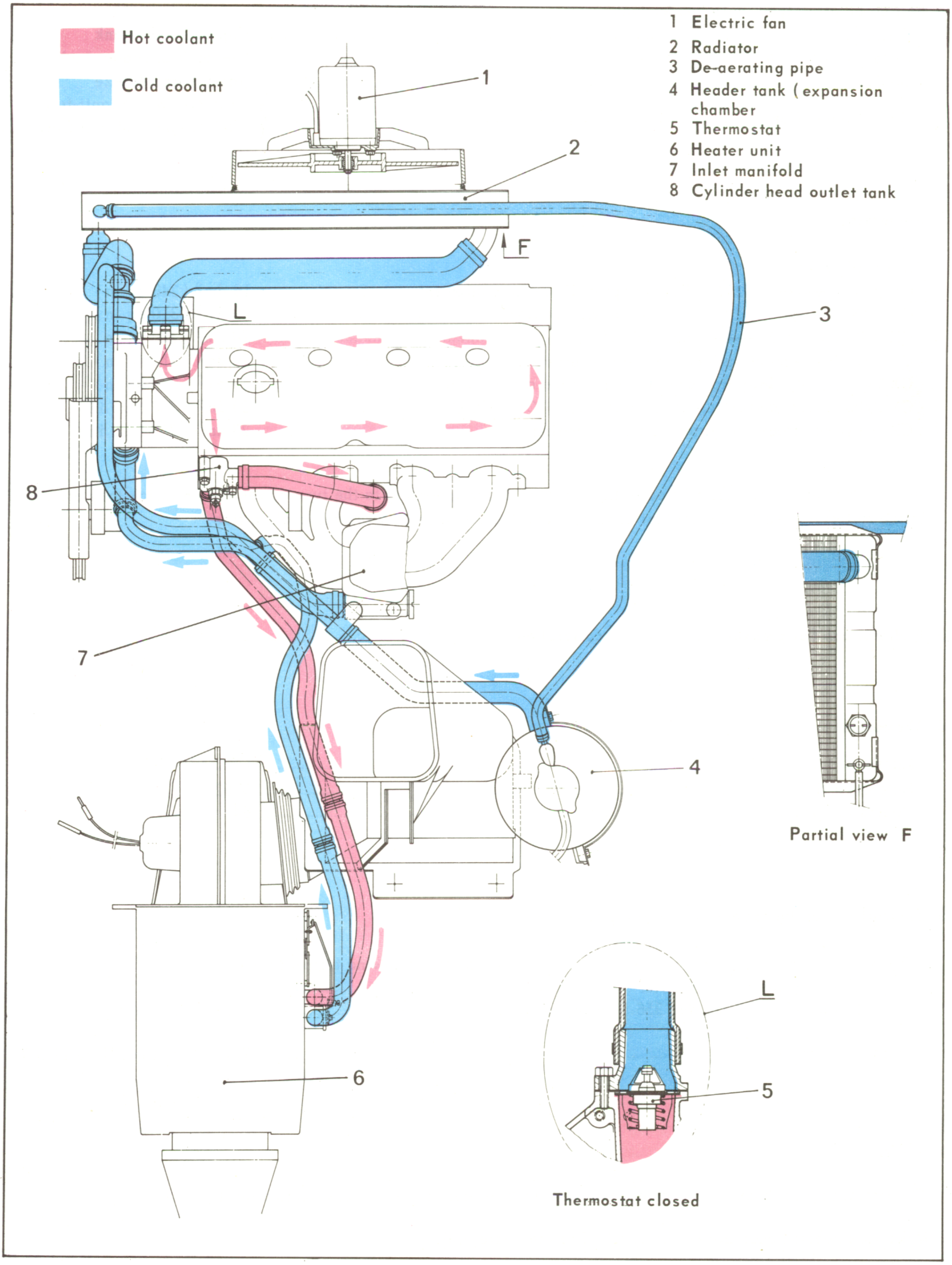
	1.6 dm^2 (248 sq.in) radiator	20 dm^2 (310 sq.in) and 23 dm^2 (356.5 sq.in·) rads
- Electric fan (s) cuts in at	*101 to 103.5° C*	*95 to 100° C*
- Electric fan (s) cuts out (*with temperature decreasing*) at :	*95 to 92° C*	*95 to 90° C*

- Tightening torque (fit gasket with LOCTITE FRENETANCH) : **1.8 to 2 da Nm (13 to 14.5 ft.lbs)**

COOLING SYSTEM

2 litre engine (——→ *1/ 1975*) except optional towing equipment

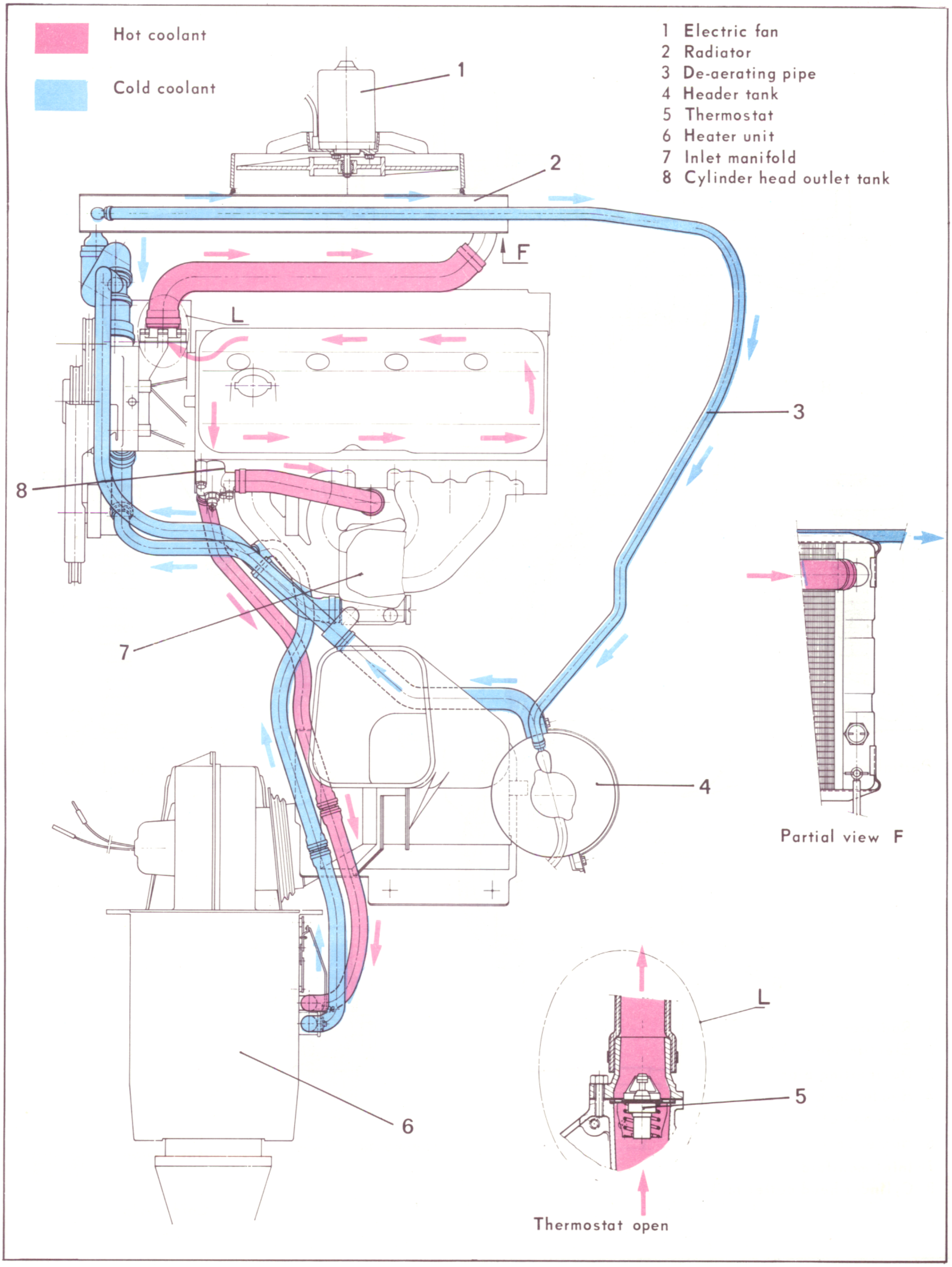
(Thermostat closed and heater system open)



COOLING SYSTEM

2-litre engine (⟶ 1/1975) except optional towing equipment

Thermostat and heater unit open



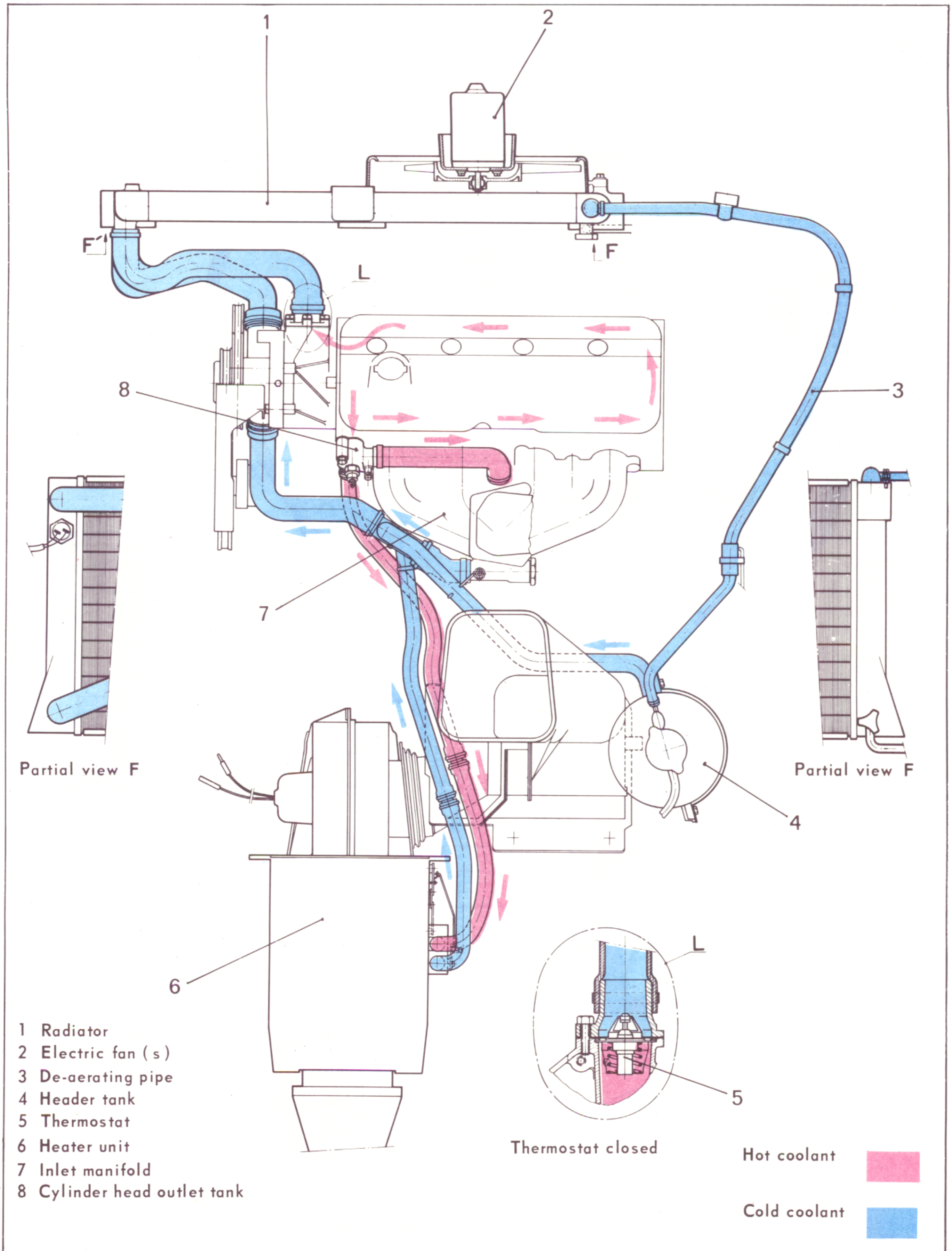
Supplement N° 1 to Manual 818-1 (ADD)

COOLING SYSTEM

2-litre engine (⟶ 1/1975) with optional towing equipment

2-litre engine (1/1975 ⟶) 2.2 litre and 2.4 litre engines *(except converter, air-conditioning, and fuel injection)*

(Thermostat closed and heater unit open)



1 Radiator
2 Electric fan (s)
3 De-aerating pipe
4 Header tank
5 Thermostat
6 Heater unit
7 Inlet manifold
8 Cylinder head outlet tank

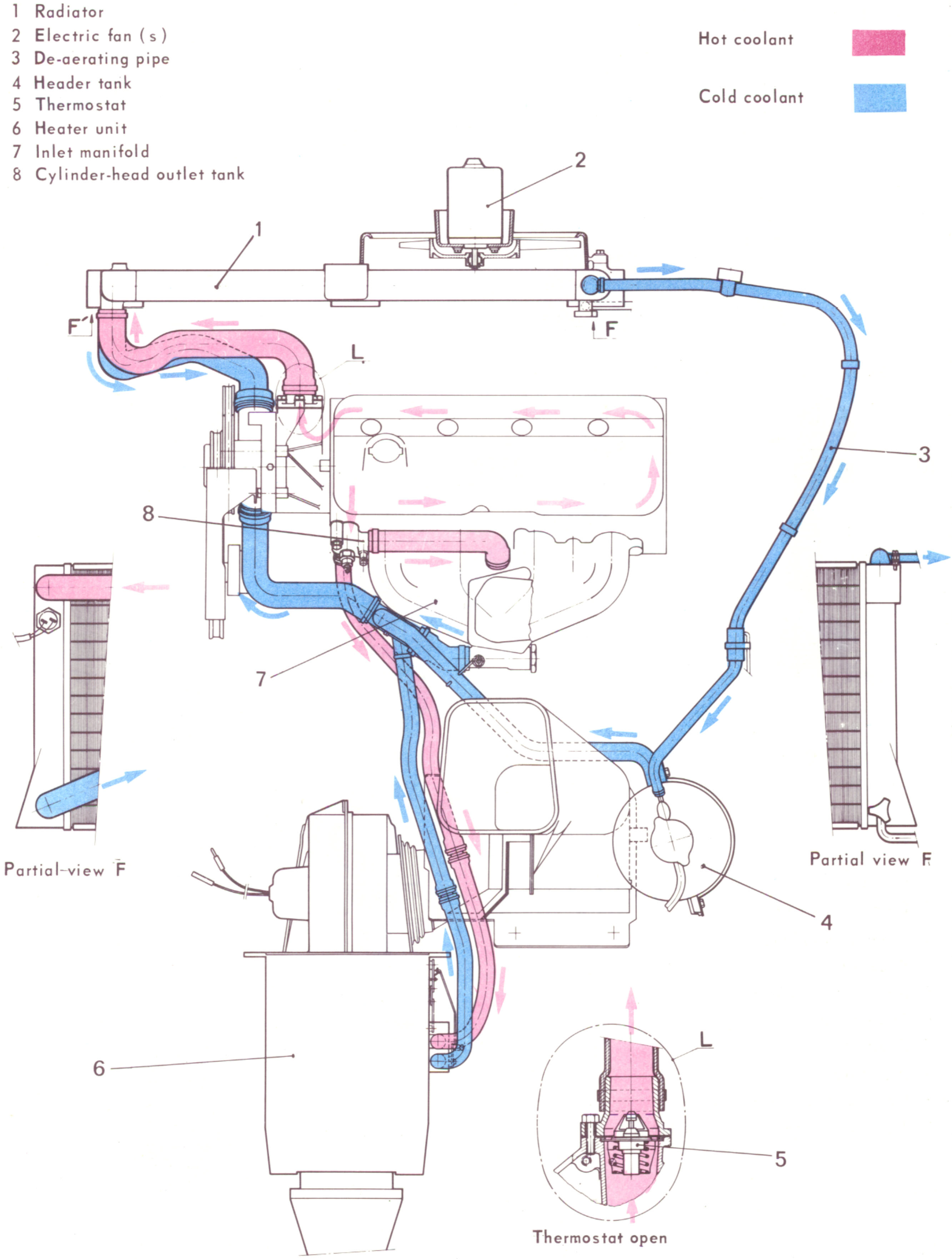
COOLING SYSTEM

2-litre engine (*——► 1/1975*) with optional towing equipment

2-litre engine *(1/1975 ——►)* 2.2 and 2.4 litre engines (*except torque converter, air-conditioning and fuel injection*)

(Thermostat and heater unit open)

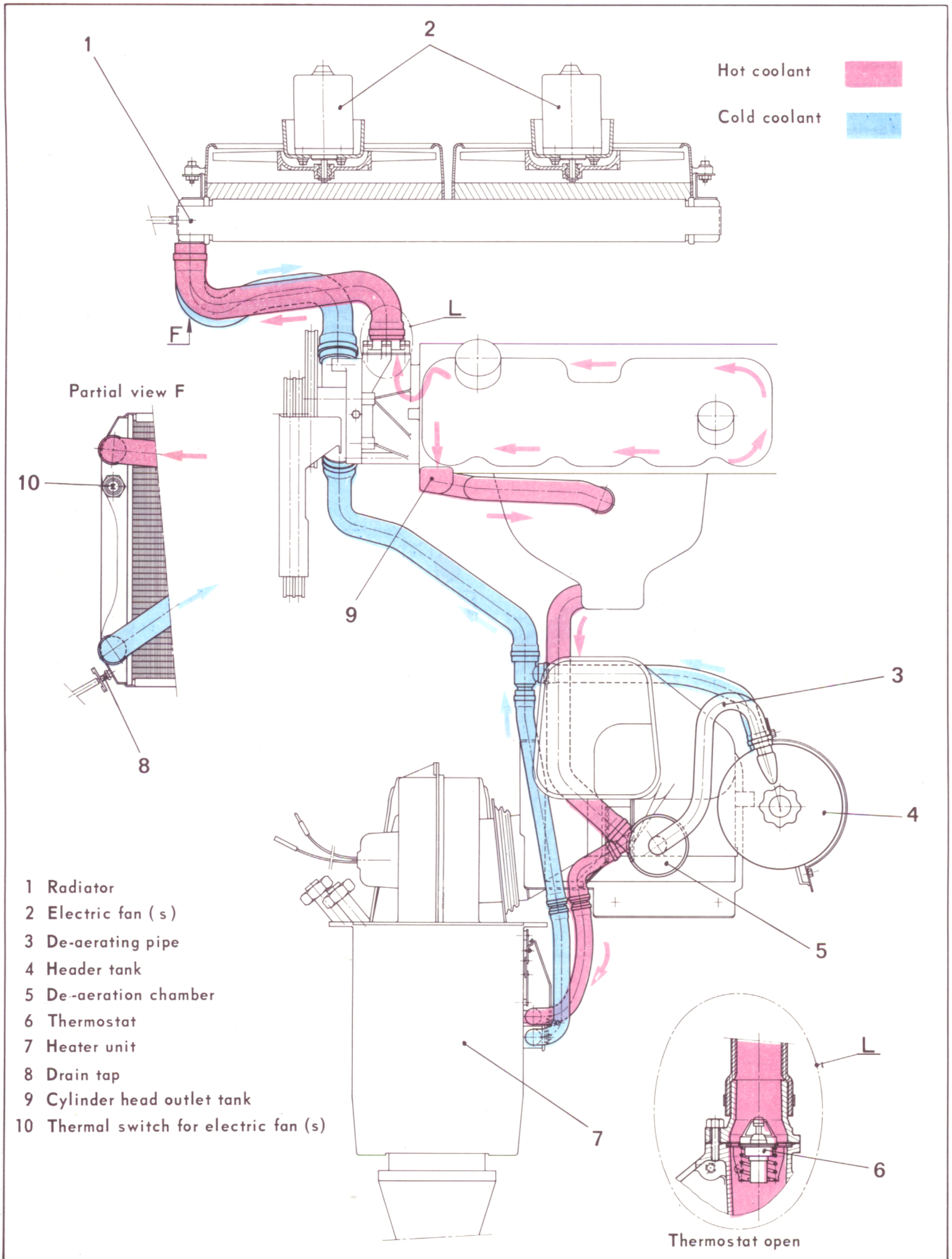
1 Radiator
2 Electric fan (s)
3 De-aerating pipe
4 Header tank
5 Thermostat
6 Heater unit
7 Inlet manifold
8 Cylinder-head outlet tank



COOLING SYSTEM

2.4 litre engine, torque converter and air-conditioning

(Thermostat and heater unit open)

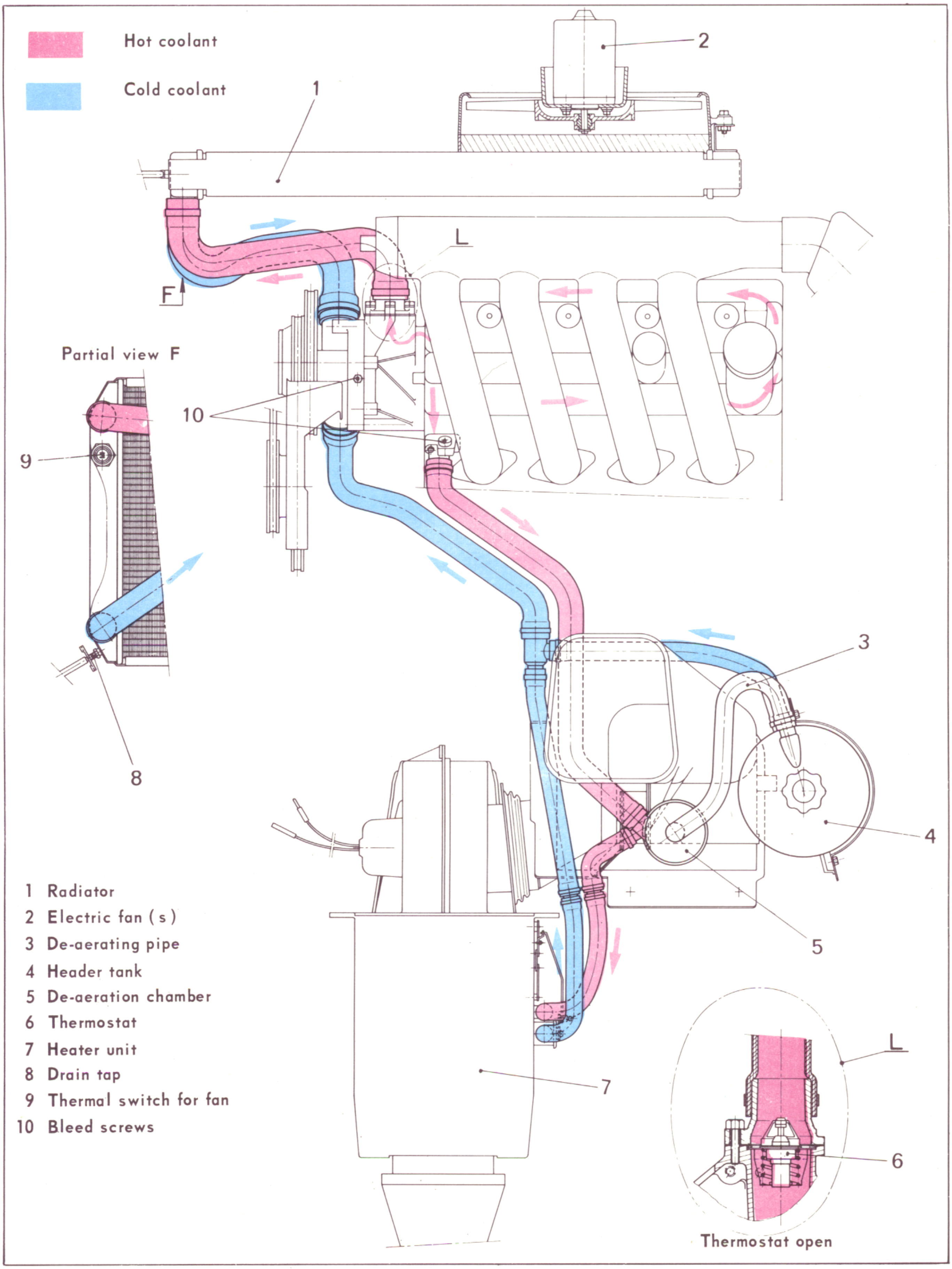


1 Radiator
2 Electric fan (s)
3 De-aerating pipe
4 Header tank
5 De-aeration chamber
6 Thermostat
7 Heater unit
8 Drain tap
9 Cylinder head outlet tank
10 Thermal switch for electric fan (s)

COOLING SYSTEM

2.4 litre engine, fuel injection

(Thermostat and heater unit open)



1 Radiator
2 Electric fan (s)
3 De-aerating pipe
4 Header tank
5 De-aeration chamber
6 Thermostat
7 Heater unit
8 Drain tap
9 Thermal switch for fan
10 Bleed screws

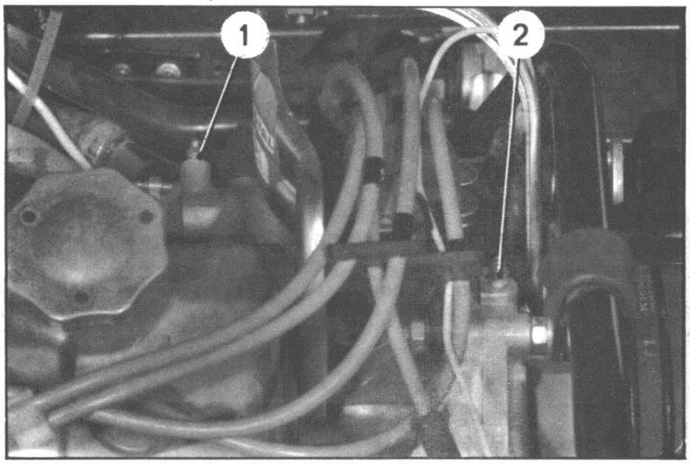
Supplement N° 1 to Manual 818-1 (ADD)

FILLING THE WATER SYSTEM

IMPORTANT : Care must be taken to **protect alternator** from water whenever working on cooling systems fitted **close to this unit.**

Two operations are involved :
- Complete filling (*cooling system and heater unit*)
- Partial filling (*cooling system only*)

NOTES :
- Draining the radiator and the engine unit does not involve draining the heater unit.
- De-aeration of the system is only operative when the thermostat is open (*engine warm*).

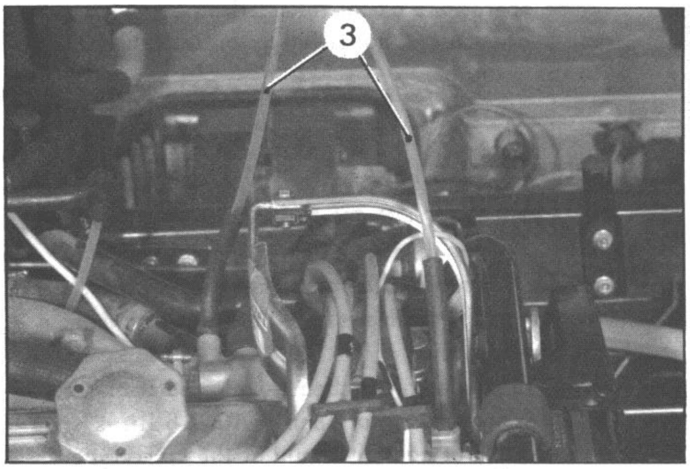


I. COMPLETE REFILLING

1. Remove spare wheel.

2. Open heater control to fullest extent (inside vehicle).

3. Unscrew the two bleed screws (1) and (2). Place a transparent tube 200 mm in length over each screw in order to avoid the escape of the liquid.

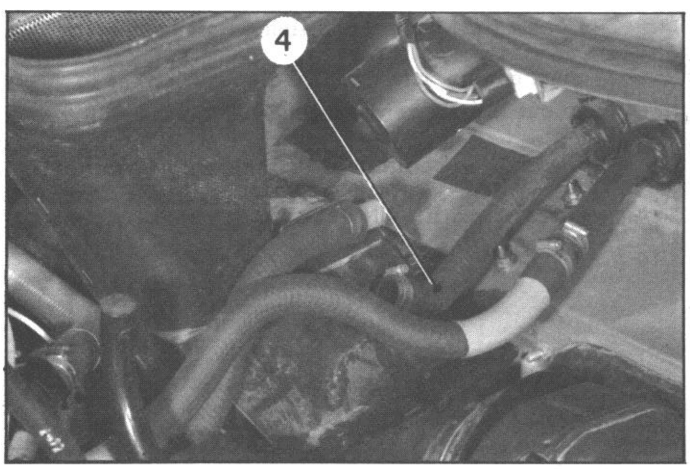


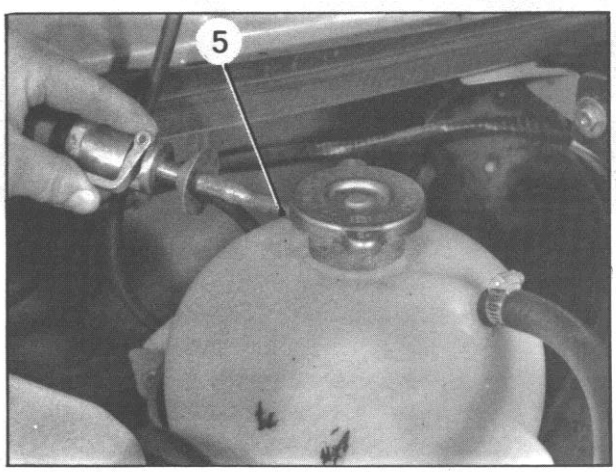
4. Disconnect the heater outlet hose and pour in approximately 0.6 litre of cooling liquid. Reconnect tube (4).

5. Fill remainder of circuit **slowly** through the header tank and close bleed screws (1) and (2) after releasing air.

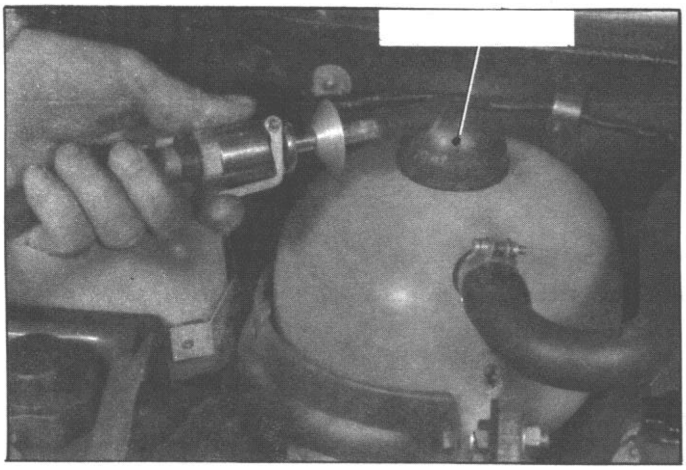
   (*Header tank should be full*).

6. Remove transparent tubes (3) and close header tank.
   NOTE : *To induce priming of pump, pressurizing of circuit (1 bar) (14.5 psi) may be effected :*
   a) through overflow orifice (5).
   (*Vehicles ——► 2/ 1976*).





Supplement N° 1 to Manual 818-1 (CORR)



b) by replacing the header tank cap with a flexible rocker-cover union
(Vehicles 2/ 1976 ⟶)

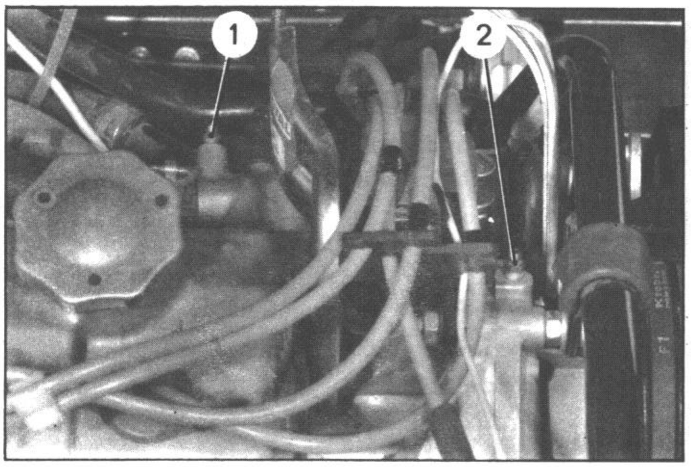
7. Run engine at approximately 2000 rpm until electric fan (s) cut (s) in.
Thén let the engine idle for about 10 mins.

Never open header tank cap while electric fan (s) are/is in operation.

Do not open bleed-screws (1) and (2) while engine is running.

8. After releasing the air, water level should stabilize in header tank. Level should be checked when the engine is cold.

13 358



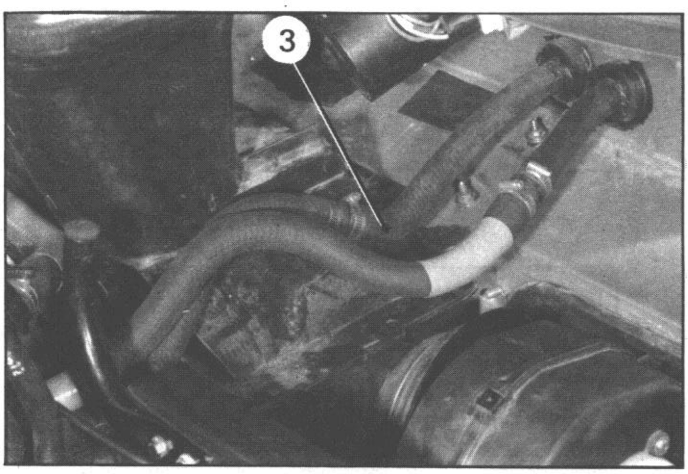
9. Fit the rubber covers on the bleed-screws.

Replace spare wheel.

II. PARTIAL FILLING

Same operations as for total filling except that the heater unit is not filled by outlet tube (3) to the radiator.

13 360

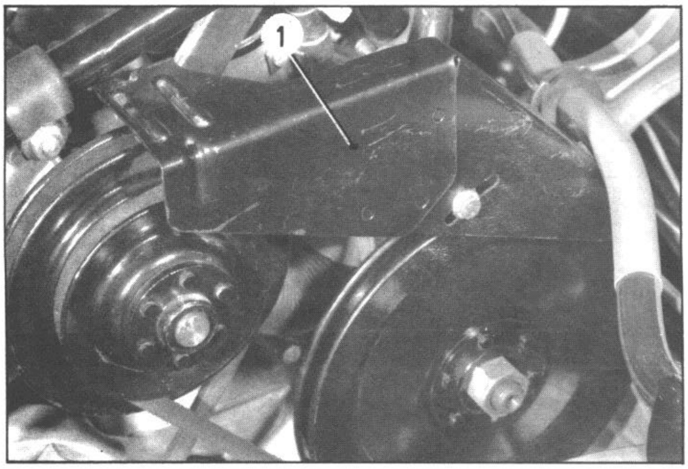


III. FILLING AND DE-AERATING THE AUXILIARY HEATER UNIT ON CX AMBULANCE VEHICLES

Before connecting the auxiliary heater unit water system to the main system, the following must be carried out :

- Fill up the auxiliary heater unit and its hoses (with heater control open) with 1.6 litres (2.8 pts) of coolant liquid of the same type as that used in the main system.
- Connect all hoses, and tighten all hose clips.
- Start engine, and wait for electric fan (s) to to cut-in (De-aeration time).
- Check the operation of the auxiliary heater unit.
- WHEN THE ENGINE IS COLD, check the level, and top up if necessary.

PULLEY ALIGNMENT



Remove the protective plate (1) and the belts.

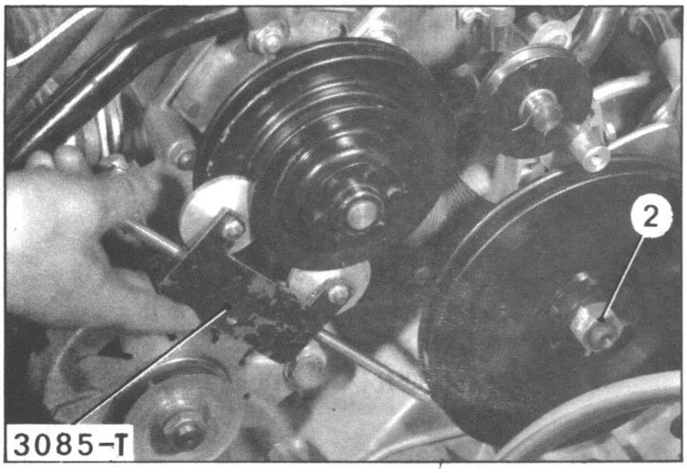
1. Aligning the camshaft pulley :

a) Position device 3085-T on the **water pump pulley.**

b) Bring its rod into contact with the groove of the camshaft pulley.

NOTE : Aligning the camshaft pulley is carried out by placing shims behind the pulley.

Tightening torque for nut (2) for the camshaft pulley : 8 daNm (58 ft.lb).

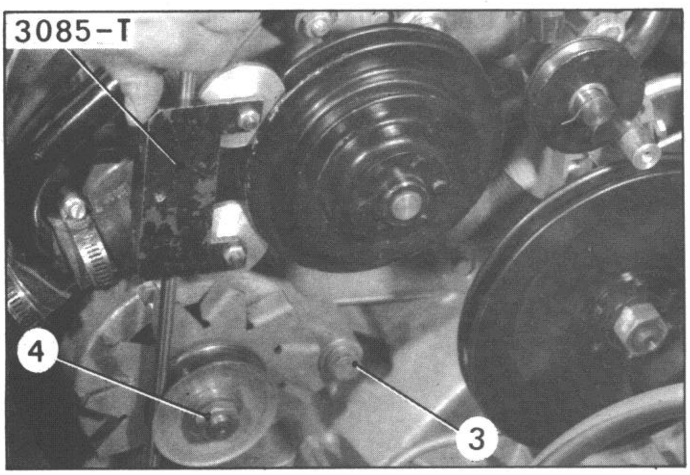


2. Aligning the alternator pulley :

Proceed as for camshaft pulley (*with securing screw (3) for the alternator screwed in*).

NOTE : Aligning the alternator pulley is carried out by placing shims behind the pulley.

Tightening torque for nut (4) for the alternator pulley : 4 daNm (29 ft.lb).



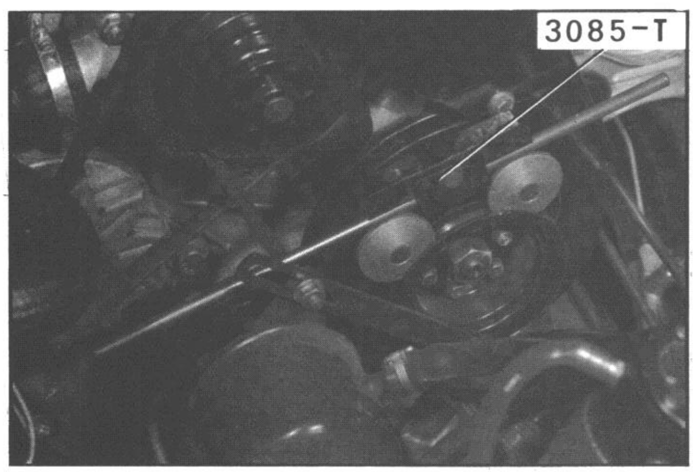
Vehicles equipped with a 7-piston pump :

3. Aligning the high pressure pump :

a) Tighten pump on its support plate.

b) Place device 3085-T on the camshaft pulley.

c) Bring its rod into contact with the groove of the pump pulley.



NOTE : Aligning the H.P. pump is carried out using adjustment shims placed between the pump housing and the support plate.

Tightening torque for the nut securing the H.P. pump : 4 daNm (29 ft.lb).

NOTE : *Vehicles fitted with air-conditioning :*
For the alignment of the compressor pulley , *see Operation M.A. 640-0.*

Supplement N° 1 to Manual 818-1 (CORR)

TENSION OF BELTS

RECOMMENDED TENSIONS (*for information*)

Water pump belt :

New belt :	400 to 450 N (40 to 45 kg) 88 to 99 lb
Run-in belt	250 to 300 N (25 to 30 kg) 55 to 66 Ib

Alternator belt :

New belt	400 to 450 N (40 to 45 kg) 88 to 99 lb
Run-in belt :	250 to 300 N (25 to 30 kg) 55 to 66 Ib

Vehicles with power steering :

H.P. pump belt :

New belt	350 to 400 N (35 to 40 kg) 77 to 88 lb
Run-in belt	200 to 225 N (20 to 22.5 kg) 44 to 50 lb

Vehicles fitted with air-conditioning :

Compressor belt :

New belt	400 to 450 N (40 to 45 kg) 88 to 99 lb
Run-in belt	250 N (25 kg) 55 Ib

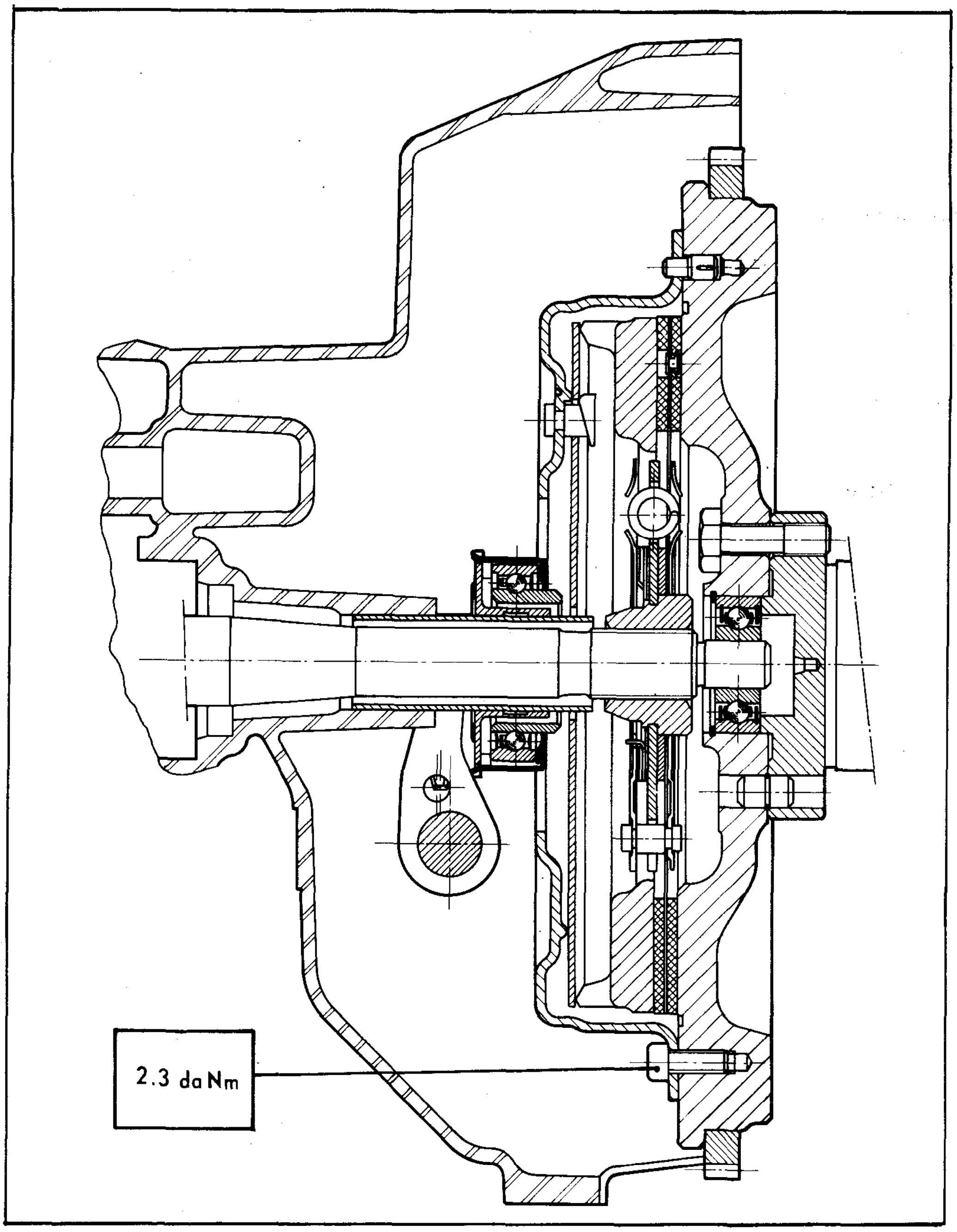
Toothed belt for water pump :	150 to 180 N (15 to 18 kg) 33 to 40 lb

NOTE : Insufficient tension reduces considerably the reliability of the toothed belt.
Tension in excess of 180 N (18 kg) (40 Ib) will cause whistling noises.

Consequently, adjust toothed belt tension as tight as possible without it whistling : tighten until it whistles whilst running, and slacken until the noise disappears.

OPERATION N° MA. 312-00 : *Characteristics and special features of the pedal-operated clutch mechanism*

Supplement N° 1 to Manual 818-1 (CORR)



CHARACTERISTICS

VEHICLES	CX 2000 Saloon and Estate	CX 2200	All CX 2400 vehicles
Diaphragm mechanism Type	215 DBR 410	235 DBR 490 (1/1975 →) 235 DBR 410 (3/1975 →) 235 DBR 450 (1/1976 →)	Prestige → 8/76 } 235 DBR 490 CX 2400 Injection Prestige 8/76 → } 235 DBR 450 All CX 2400's except Injection
Disc : Ref. «VERTO»	62838 if **D** = 136 mm 63550 if **D** = 142 mm	62957 (ϕ = 225 mm) (1/75 →) 63266 (ϕ = 225 mm) (3/75 →) 63571 (ϕ = 228.6 mm) (1/76 →)	63571 (ϕ = 228.6 mm)

II. REPAIRS *(CX 2200 vehicles)*

Replacing the disc :

- With 235 DBR 490 or 235 DBR 450 mechanisms, fit a « VERTO » disc, ref. n° 63571 (ϕ = 228.6 mm)
- With 235 DBR 410 mechanism, fit a « VERTO » disc, ref. n° 63266 (ϕ = 225 mm).

Replacing the mechanism :

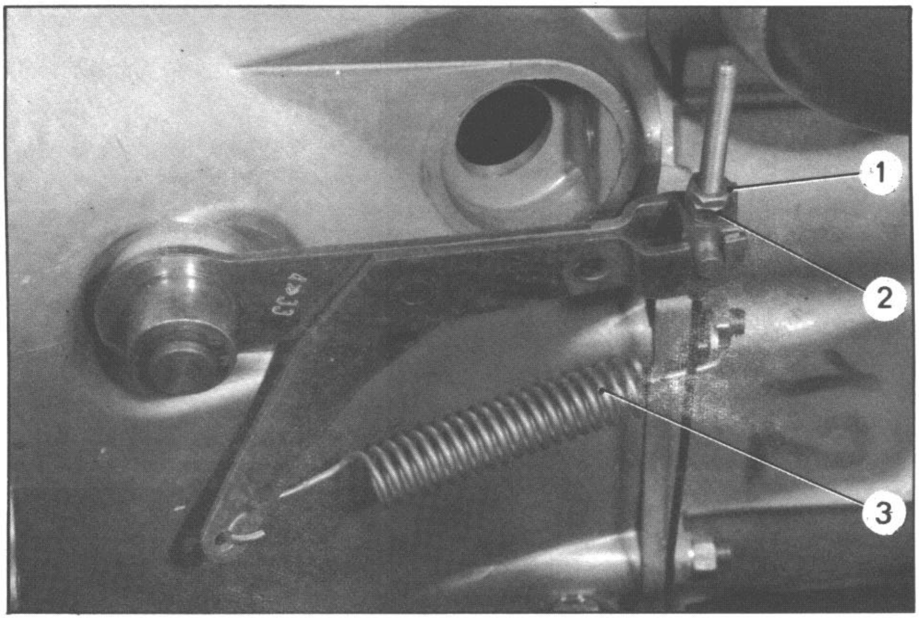
- Replace the 235 DBR 490 and 235 DBR 410 mechanisms, by a 235 DBR 450 mechanism, with a « VERTO » disc, ref. n° 63571 (ϕ = 228.6 mm).

Thrust bearing : self-centering

III. SPECIAL FEATURES

Clearance between thrust bearing and diaphragm : 1 to 1.5 mm

ADJUSTING THE CLUTCH FREE-PLAY



Put the vehicle on a lift or over a pit.

Adjust the clutch free-play

Remove spring (3).

Loosen lock nut (1).

Tighten nut (2) until the thrust bearing is in contact with diaphragm (hard point).

NOTE : Clutch pedal should be in contact with its upper stop at « a ».

Unscrew nut (2) two turns and a half to obtain a clearance **of 1 to 1.5 mm between thrust bearing and diaphragm.**

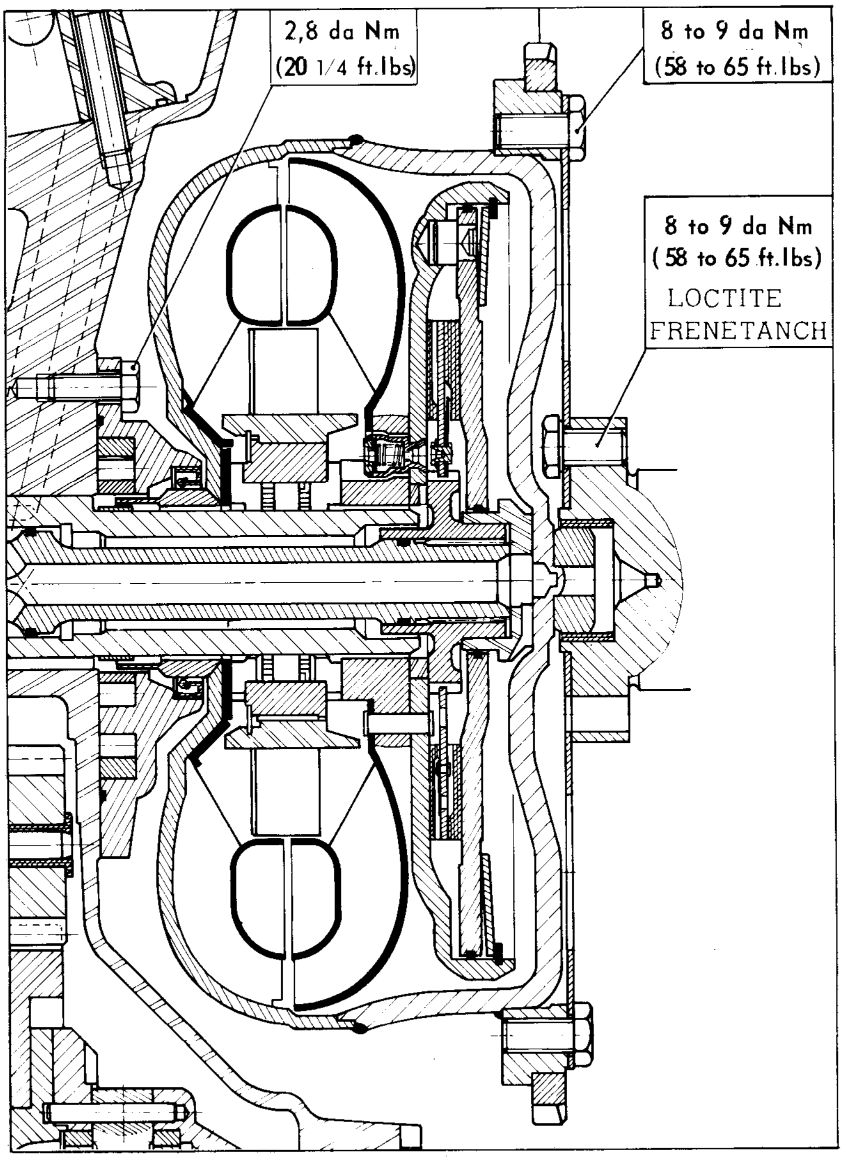
Tighten lock nut (1).

Fit spring (3).

OPERATION N° MA. 320-00 : *Characteristics and special features of the torque converter* **Op. MA. 320-00** 1

I. CHARACTERISTICS

- Torque converter with incorporated disc clutch. Make : FERODO (VERTO system). Type : 697 (CX 2200) or 693 (CX 2400).
- Clutch engagement and disengagement are controlled by a hydraulic system with an electro-valve unit.
- This electro-valve is itself controlled by an electric switch operated by the gearbox selector shafts.
- Conversion ratio of converter : 2.30 : 1 (697 type)
  2.20 : 1 (693 type)



II. SPECIAL FEATURES

Adjustments :

- Contact gap in electric switch unit controlling the electro-valve :
  NOTE : The gap for the 2nd/3rd gear contacts must only be adjusted once the selector shaft stop-screws have been adjusted (See : Op. MA. 330-00).
- Gap at 2nd/3rd gear contacts : .... 0.8 to 1.1 mm
- Gap at 1st/Rev. gear contacts .... 1.3 ± 0.2 mm
- Operating pressure for the converter oil system *(pump return)* :
  - at 700 rpm .... 3.5 bars (51 psi) min } *Oil temperature = 80° C*
  - at 2000 $^{+100}_{0}$ rpm .... 5.5 bars (80 psi) min }
  - at maximum revs .... 10 bars (145 psi) *(whatever the temperature)*

Supplement N° 1 to Manual 818-1 (ADD)

- Calibration of thermal switch for temperature warning lamp .... 135 ± 3° C
- Type of oil .... TOTAL « FLUIDE » T
- Total capacity *(including gearbox)* .... 5.5 litres (9.7 pts)
- Interchangeable suction filter :
- Filling the converter : during fitting, actuate the electro-valve a dozen times.

Tightening torques :

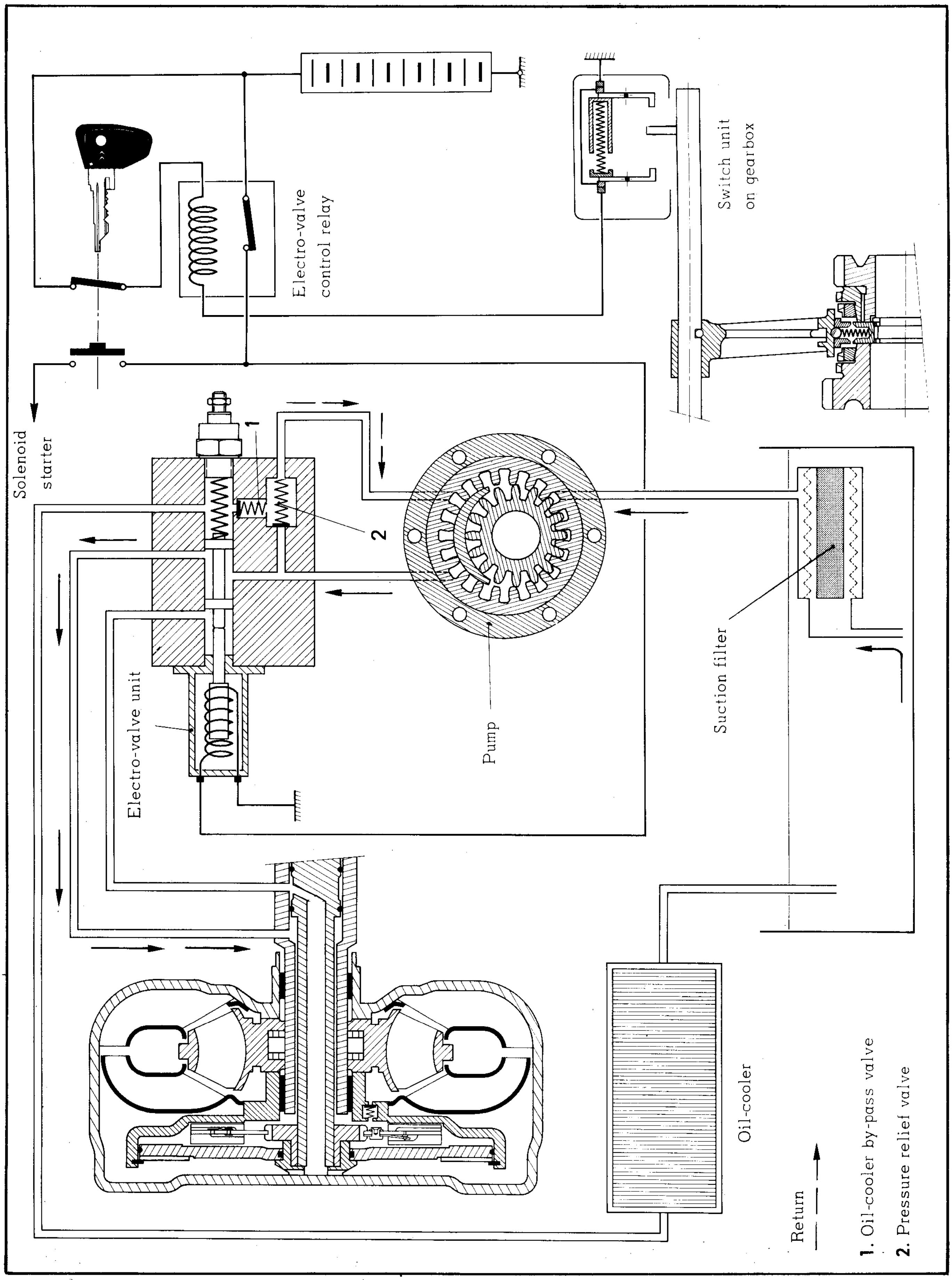
- Electro-valve fixing screw .... 2.8 daNm (20 1/2 ft.lb)
- Union-screw for oil pipe .... 3 to 3.5 daNm (21 1/2 to 25 1/2 ft.lb)
- Suction filter .... 3.5 to 4 daNm (25 1/2 to 29 ft.lb)
- Contact fixing screws .... 0.2 to 0.3 daNm (1 1/2 to 2 ft.lb)

IMPORTANT : In the course of repairs, it is permissible to replace a 697-type (CX 2200) converter by a 693-type (CX 2400) one.

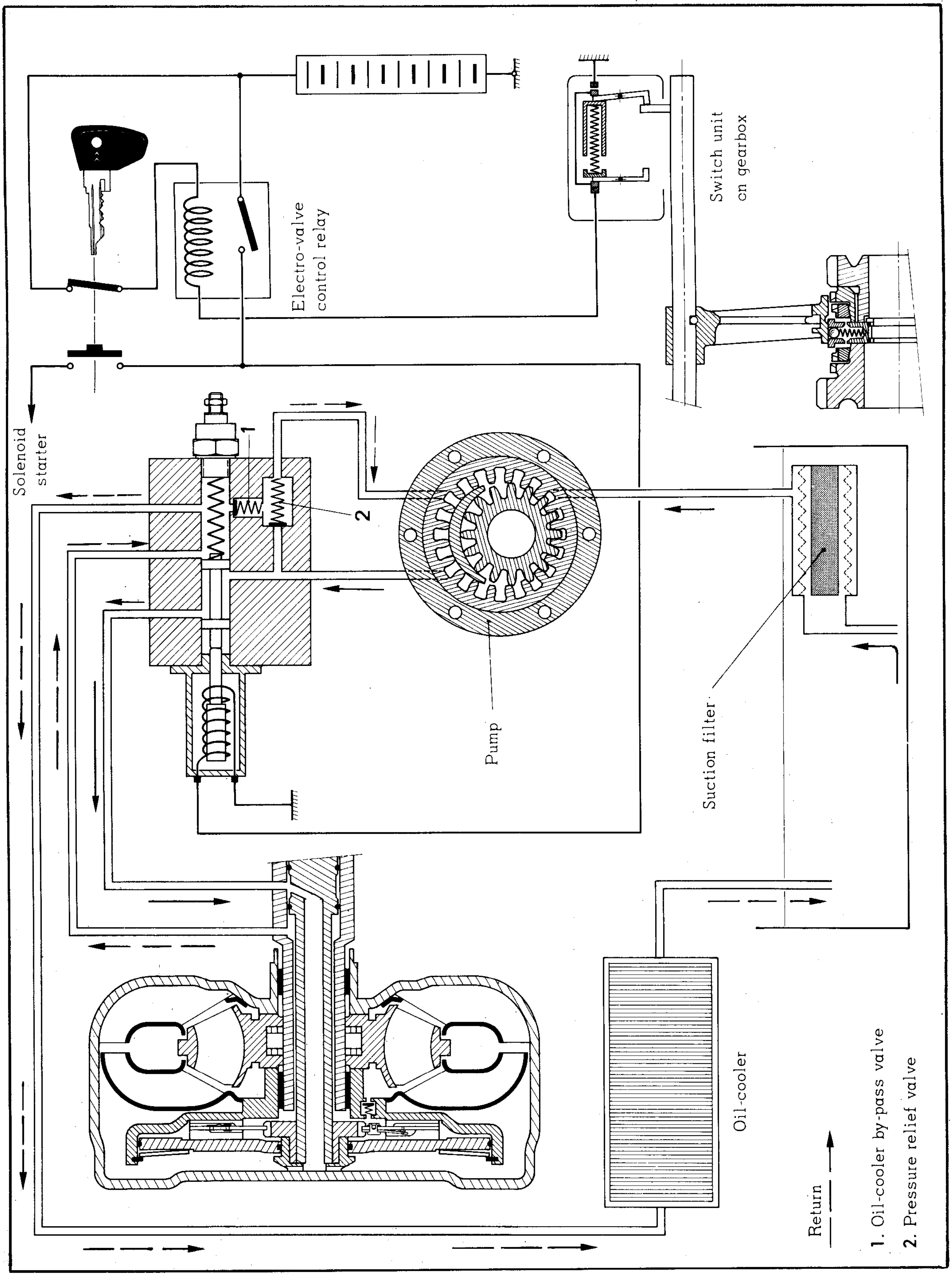
However, the reverse operation (replacing a 693-type by a 697-type converter) is prohibited.

III. OPERATIONAL DIAGRAM OF TORQUE CONVERTER

Engine running, gear-lever in neutral



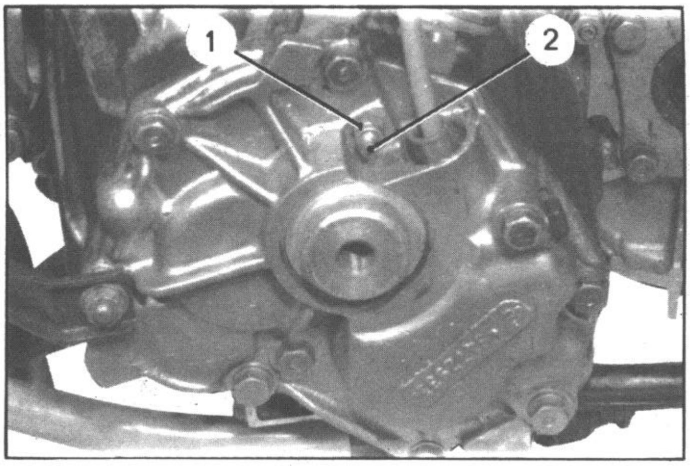
Engine running, one gear engaged



I. CHECKING AND ADJUSTING THE CONTACT GAP IN THE SWITCH CONTROLLING THE ELECTRO-VALVE

WARNING : To carry out this operation, the stop-screws for the 2nd/3rd gear selector shaft must be adjusted

The stop-screw for 3rd gear can be adjusted on the vehicle.
Carry this out as follows : Slacken locknut (1) and stop-screw (2). Engage 3rd gear. Bring stop-screw (2) into contact with the selector shaft, and tighten 1/2 a turn, which affords a clearance of 0.4 to 0.7 mm.
Tighten locknut (1) and disengage gear.



NOTE : Adjusting the stop-screw for 2nd gear can only be carried out with the gearbox removed from the vehicle. To adjust it, proceed in exactly the same manner as for 3rd gear.

Checking and adjusting the contacts :

1. Remove cover (3) from the switch unit controlling the electro-valve.

2. **Check adjustment of contact gaps :**

   Proceed in the same way for each of the 4 contacts.

   a) Engage a gear.

   WARNING : In order to obtain correct opening of a contact, the corresponding gear must be fully engaged, otherwise the adjustment would not be correct.

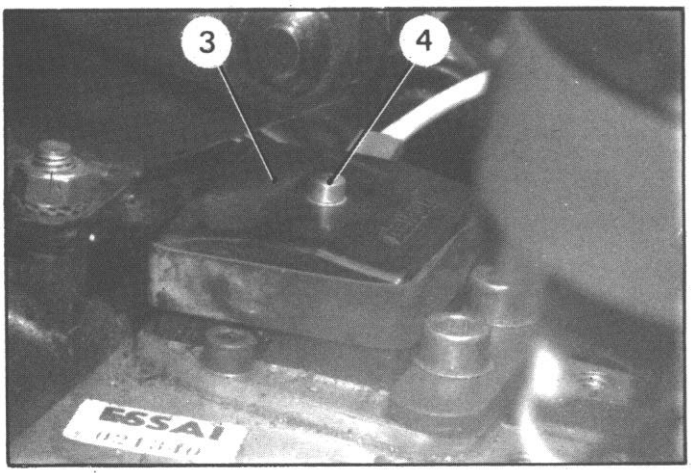
   b) Check the contact gap corresponding to the gear engaged, using a set of feeler gauges :

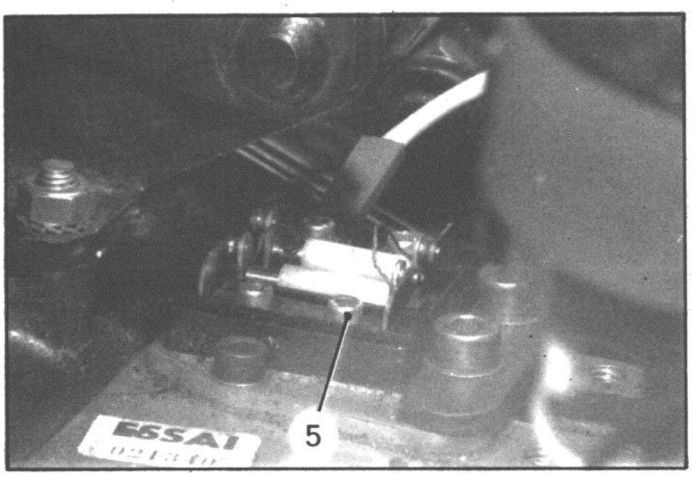
   Contact gap :
   2nd and 3rd gears : 0.8 to 1.1 mm
   1st and Reverse : 1.3 ± 0.2 mm

   c) Adjust the contact by slackening screw (5) on the fixed contact (4 mm Allen key) and move this contact along its slot.
   Tighten screw (5) from 0.35 to 0.4 daNm (2 1/2 to 3 ft.lb).

   IMPORTANT : This adjustment must be carried out with precision, otherwise, the clutch might disengage at times without the gear lever having been touched.

   d) Fit cover and tighten screw (4).





4-SPEED MANUAL GEARBOX

I. CHARACTERISTICS

1. Gear ratios :

NOTE : Speeds are given for vehicles equipped with 185 SR 14 ZX, 185 SR 14 XZX or 185 HR XVS tyres, the rolling circumference of which is 1.970 m under load.

a) « **All CX Vehicles** » **gearbox** :

Gears	Gearbox ratios		Final drive ratio	Overall ratios	Speed at 1000 rpm in km/h	(mph)
1st	(12/38)	3.1666 : 1	13/62 4.769 : 1	15.1022 : 1	7.82	(4.89)
2nd	(18/33)	1.8333 : 1		8.7434 : 1	13.51	(8.44)
3rd	(30/34)	1.1333 : 1		5.4049 : 1	21.86	(13.66)
4th	(35/28)	0.8 : 1		3.8153 : 1	30.97	(19.36)
Reverse	(13/41)	3.1538 : 1		15.0411 : 1	7.85	(4.90)
Speedometer drive ratio : 5 × 12						

b) « Economy option » gearbox on **CX 2000** ——► 7 1975

Gears	Gearbox ratios		Final drive ratio	Overall ratios	Speed at 1000 rpm in km/h	(mph)
1st	(12/38)	3.1666 : 1	14/61 4.357 : 1	13.7973 : 1	8.56	(5.35)
2nd	(18/33)	1.8333 : 1		7.9879 : 1	14.79	(9.24)
3rd	(30/34)	1.1333 : 1		4.9379 : 1	23.93	(14.96)
4th	(36/27)	0.75 : 1		3.2678 : 1	36.16	(22.6)
Reverse	(13/41)	3.1538 : 1		13.7415 : 1	8.60	(5.38
Speedometer drive ratio : 5 × 11						

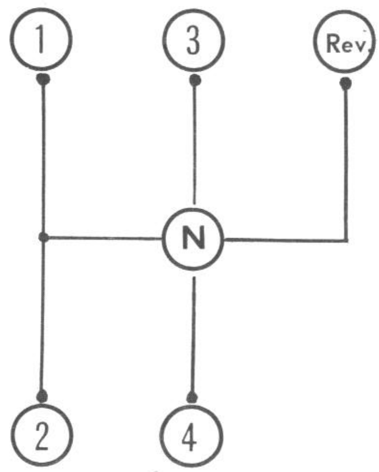
2. Lubrication :

- Type of oil :	TOTAL EP 80
- Capacity	1.600 litres (2.8 pts)
- Difference between min and max on dipstick	0.150 litres (0.26pts)

3. Gear control :

- Floor mounted gear lever

Gear Pattern



II. SPECIAL FEATURES

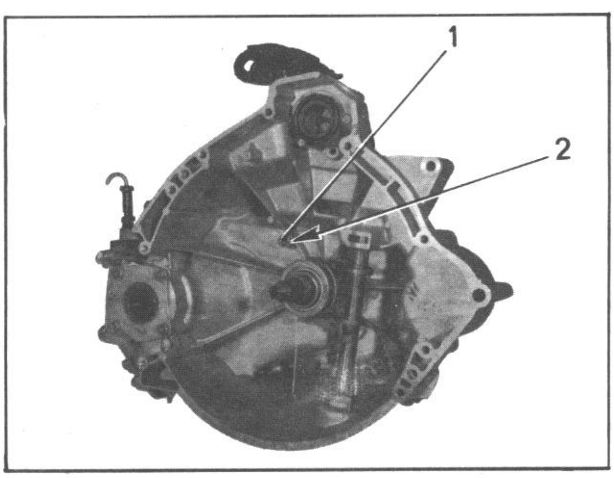
Adjustments :

- 1st/2nd gear synchro hub endfloat	0.05 mm max.
- Endfloat of half rings between 1st and 2nd gear pinions	0.05 mm max.
- Clearance between bearing split pin and gearbox casing	0.05 mm max.
- Differential bearing pre-load	0.15 mm

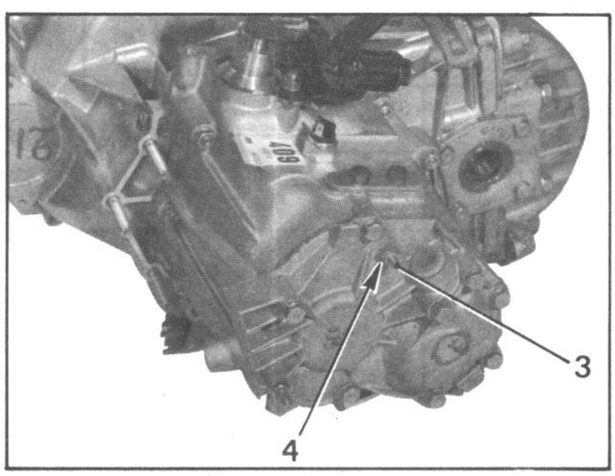
Adjusting the selector shaft stops :

- **Adjusting the 3rd gear stop** (*gearbox removed*)
  Smear thread of stop-screw (1) with sealing compound.
  Engage 3rd gear, with 3rd/4th gear sliding pinion resting against 3rd gear idling pinion.
  Bring the stop-screw into contact with selector shaft, then screw it in one turn in order to obtain a clearance between the selector shaft and the face of the groove of the sliding pinion.
  Tighten locknut (2).

- **Adjusting the 4th gear stop** (*can be carried out with gearbox in situ*).
  Proceed as above (stop-screw « 3 » and locknut « 4 »).



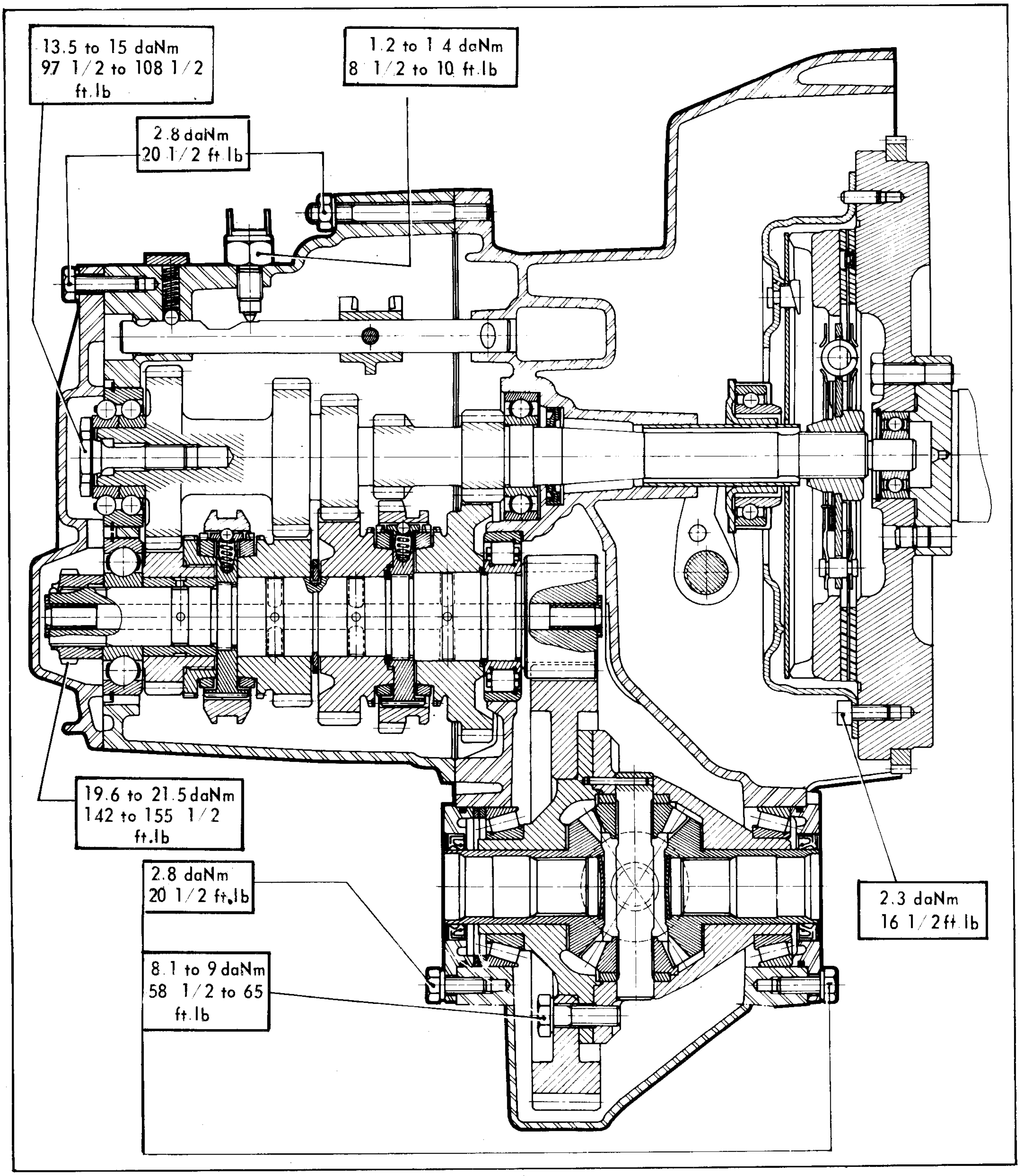
Adjusting the 3rd gear stop



idjusting the 4th gear stop

MANUAL 4-SPEED GEARBOX

Tightening torques



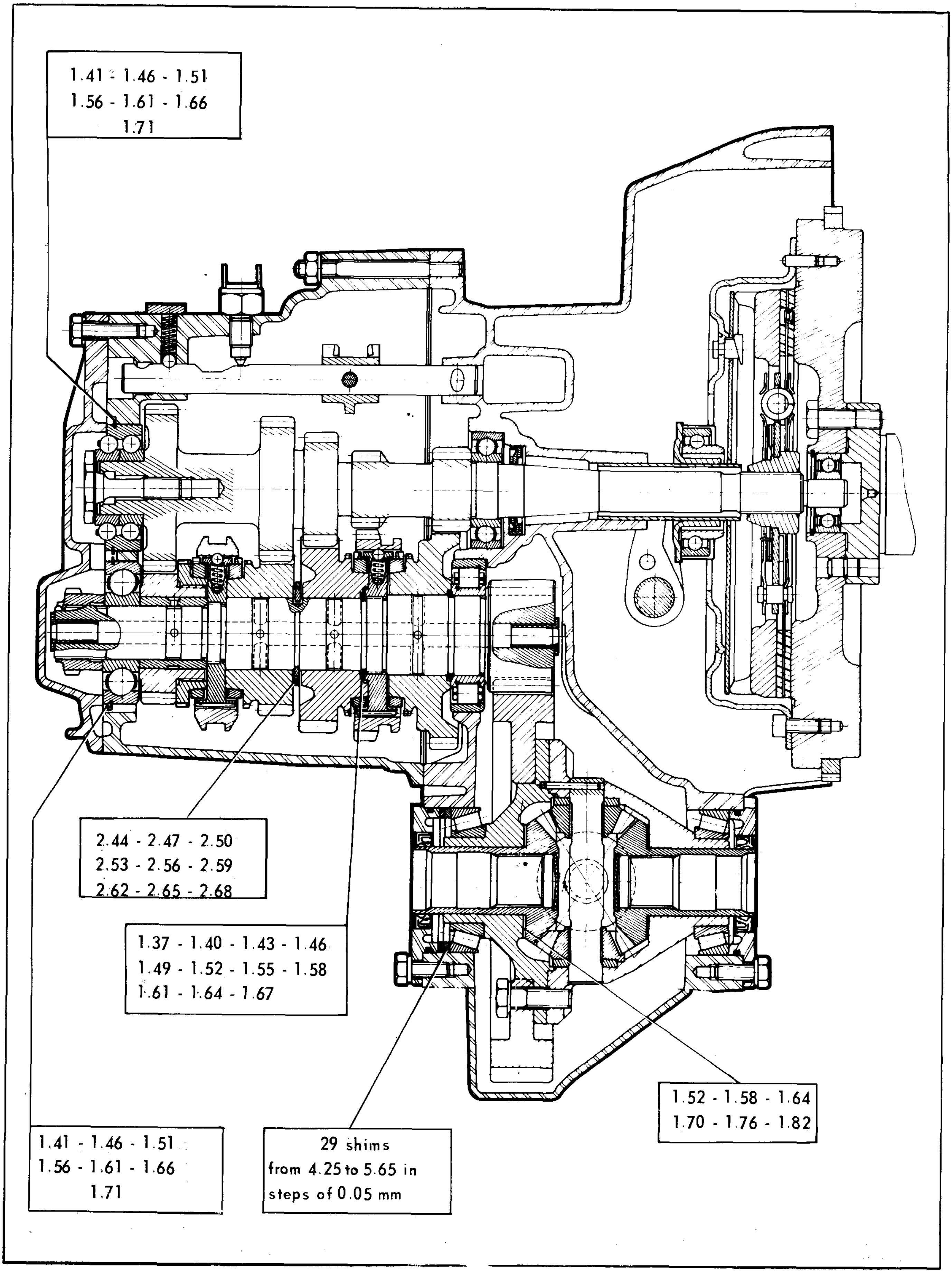
Drain and filler plug	3.5 to 4.5 daNm (25 1/2 to 32 1/2 ft.lb)
Final drive casing assembly nuts (dia = 8 mm)	2.8 daNm (20 1/2 ft.lb)
Final drive casing assembly nuts (dia = 10 mm)	5 daNm (36 ft.lb)
Bush-nut for gear selector shaft	11 to 12 daNm (79 1/2 to 87 ft.lb)
Bush-nut for dipstick guide	3 to 4 daNm (21 1/2 to 29 ft.lb)

Assembling the gearbox casings :

Sealing : Smear the contact faces of the gearbox casings and the rear cover with sealing compound.

MANUAL 4-SPEED GEARBOX

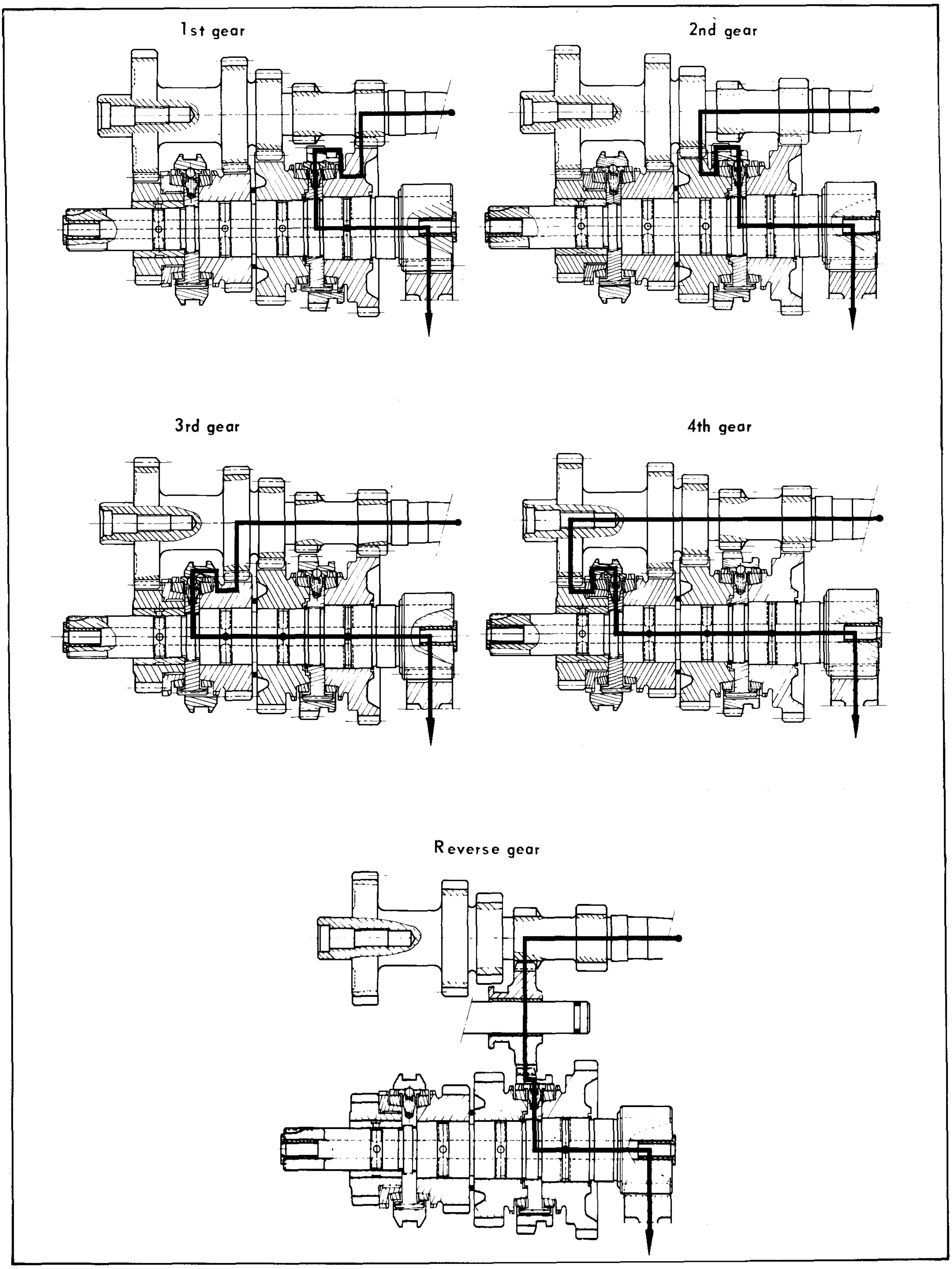
Adjustment shims



GEARBOX

Gear sequence

L. 33-1 a



Supplement N° 1 to Manual 818-1 (CORR)

TORQUE CONVERTER GEARBOX

I. CHARACTERISTICS

Gearbox ratios :

NOTE : Speeds are given for vehicles with 185 HR 14 XVS tyres, the rolling circumference under load of which is 1.970 m.

The gearbox with a safety locking device (**P** position) for parking.

Gears	Gearbox ratios		Final drive ratio	Overall ratio	Speed at 1000 rpm in km/h	(mph)
1st	(18/35)	1.944 : 1	13/62 4.789 : 1	9 273 : 1	12.75	(7.97)
2nd	(30/34)	1.133 : 1		5.405 : 1	21.90	(13.69)
3rd	(35/28)	0.800 : 1		3.815 : 1	31	(19.38)
Rev.	(18/43)	2.388 : 1		11 393 : 1	10.40	(6.50)
Speedometer drive ratio : 5 × 12						

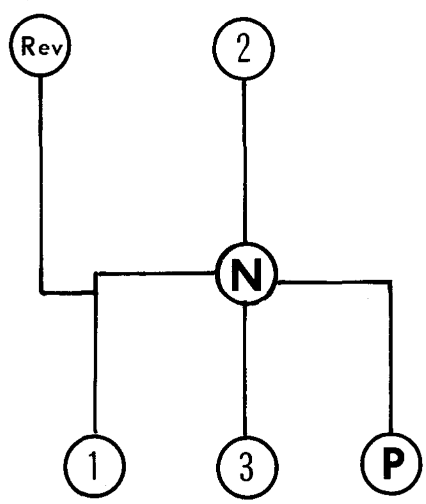
Lubrication :

Type of oil .... TOTAL « FLUIDE T »
Total capcity (including converter) .... 5.5 litres (9.7 pts) approx.
Draining .... 2 to 3 litres (3.5 to 5.3 pts) (depending on draining time
Difference between min. and max. on dipstick .... 0.15 litres (0.26 pts)
VERY IMPORTANT : **It is ABSOLUTELY ESSENTIAL to use TOTAL « FLUIDE T »**

Gear control :

Floor mounted gear lever

Gear pattern



SPECIAL FEATURES

Adjustments :

- Endfloat of 1st/Rev gear synchro hub	0.05 mm max.
- Endfloat of half-ring between 1st and 2nd gear pinions	0.05 mm max.
- Clearance between bearing split pin and gearbox casing	0.05 mm max.
- Differential bearing overall pre-load	0.15 mm

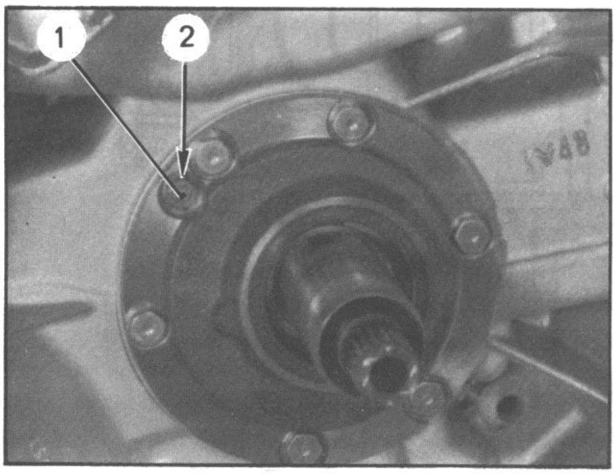
Adjusting the selector shaft stops ;

- **Adjusting the 2nd gear stop** *(gearbox removed) :*

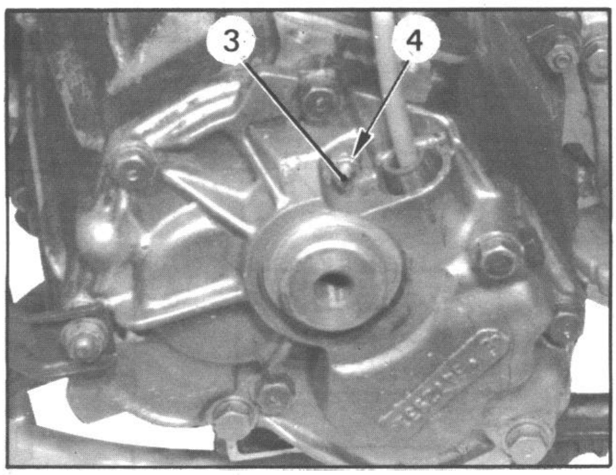
Smear thread of stop screw (1) with CURTYLON
Engage 2nd gear, with 2nd/3rd gear sliding pinion resting against 2nd gear idling pinion.
Bring stop-screw into contact with selector shaft, then screw it in 1/2 a turn, in order to obtain a clearance of 0.4 to 0.7 mm between the selector fork and the face of the sliding pinion groove.
Tighten locknut (2).

- **Adjusting the 3rd gear stop** *(can be carried out with gearbox in situ) :*
Proceed as above, (stop-screw « 3 » and locknut « 4 »).

Supplement N° 1 to Manual 818-1 (ADD)



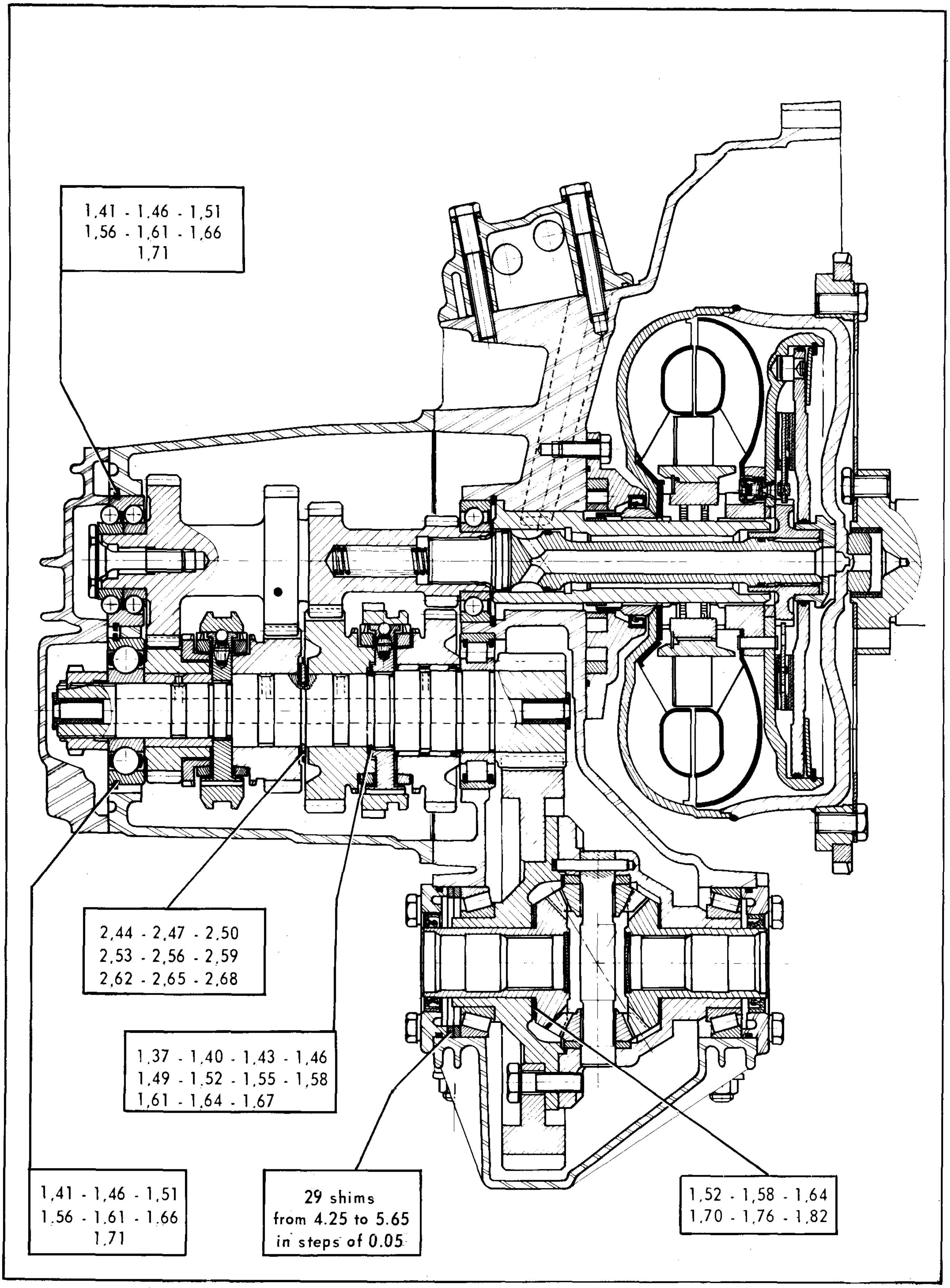
Adjusting the 2nd gear stop



Adjusting the 3rd gear stop

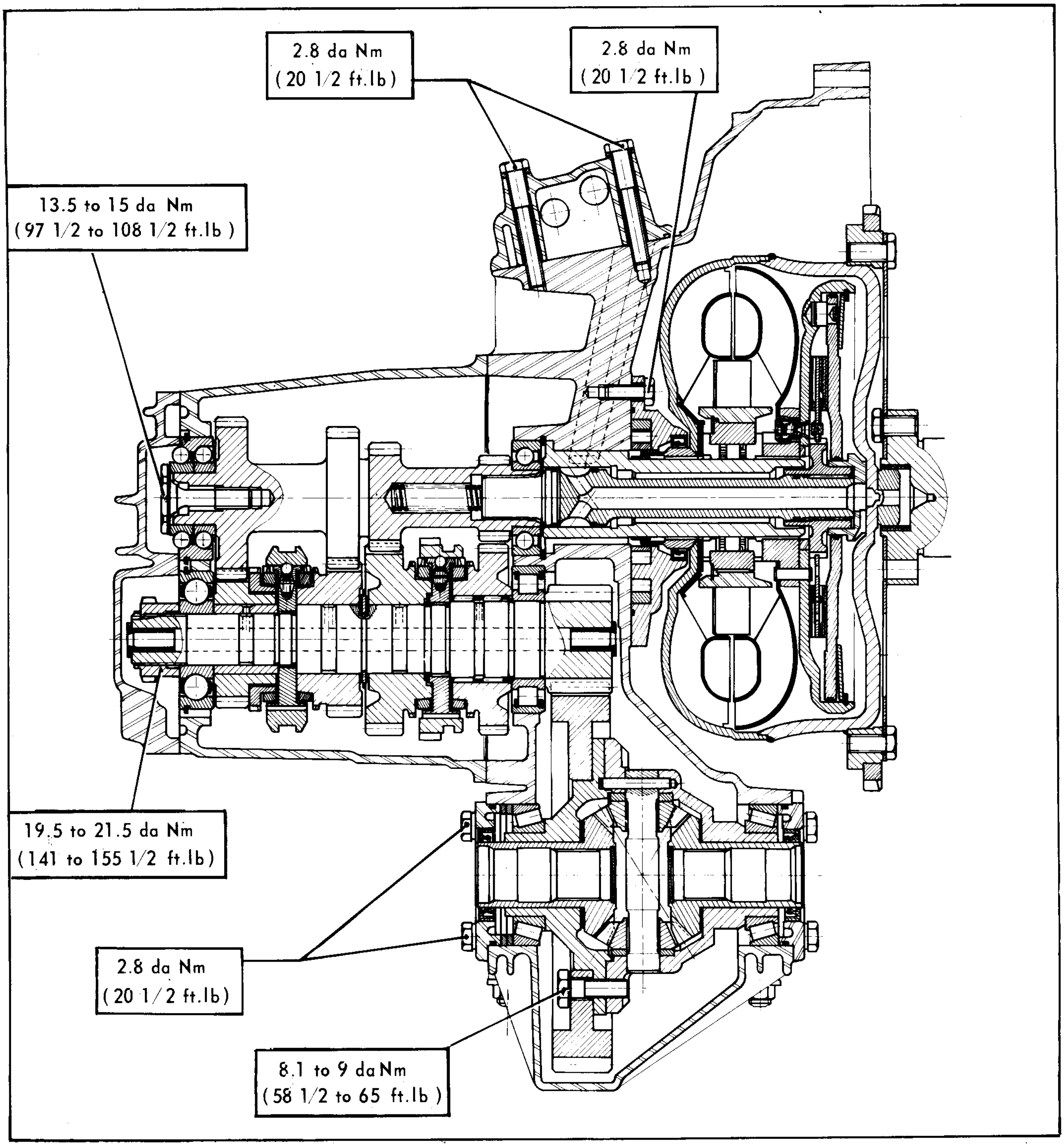
GEARBOX

Longitudinal section



TORQUE CONVERTER GEARBOX

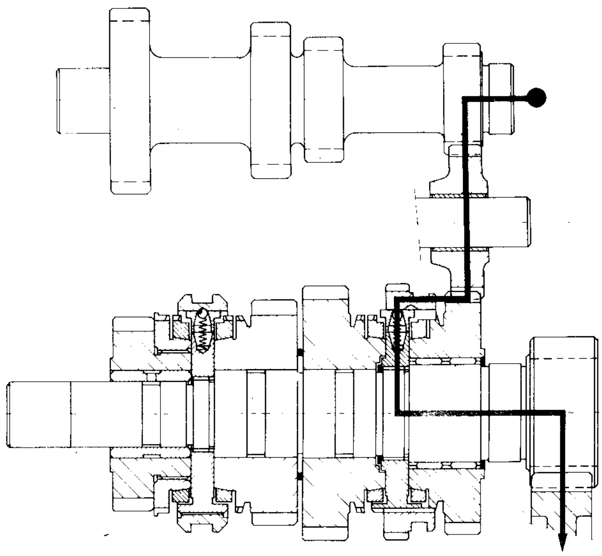
Tightening torques



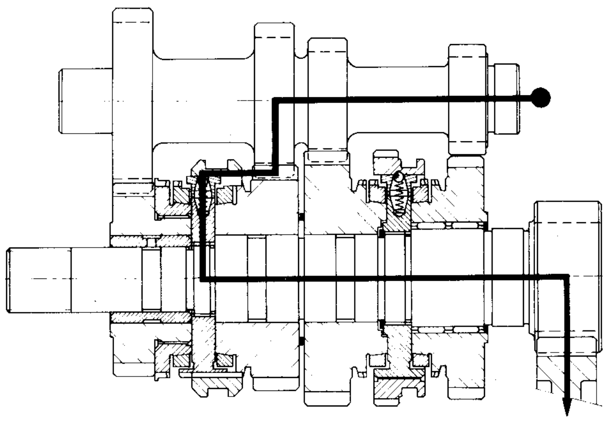
- Gearbox casing assembly screws and nuts (dia 8 mm)	2.8 daNm (20 1/2 ft.lb)
- Final drive casing assembly nuts (dia = 10 mm)	5 daNm (36 ft.lb)
- Bush nut for selector shaft	11 to 13 daNm (79 1/2 to 94 ft.lb)
- Suction filter	3.5 to 4 daNm (25 1/2 to 29 ft.lb)
- Drain and filler plugs	3.5 to 4.5 daNm (25 1/2 to 32 1/2 ft.lb)
- Screw for return union to valve unit	3 to 3.5 daNm (21 1/2 to 25 1/2 ft.lb)

TORQUE CONVERTER GEARBOX

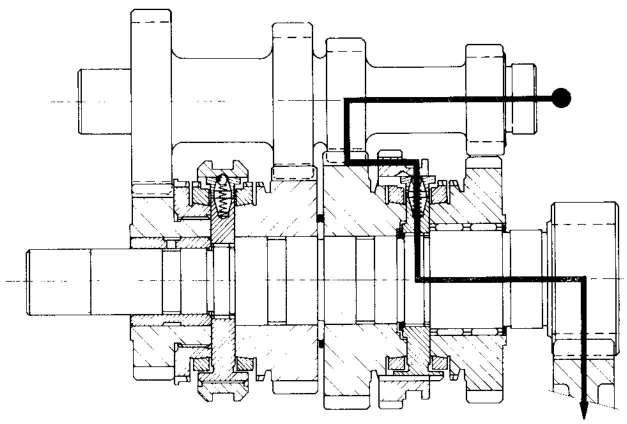
(gear sequence)



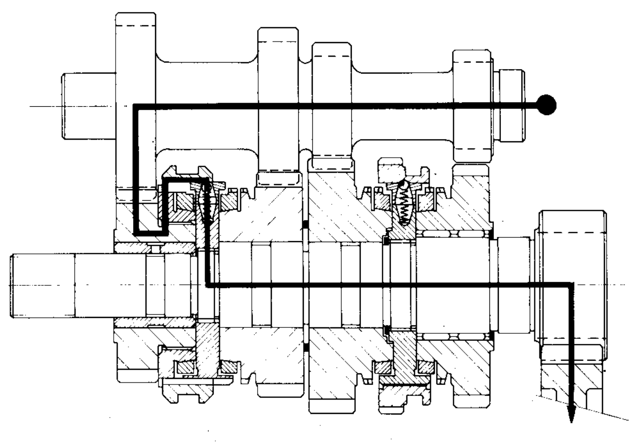
REVERSE GEAR



2nd GEAR

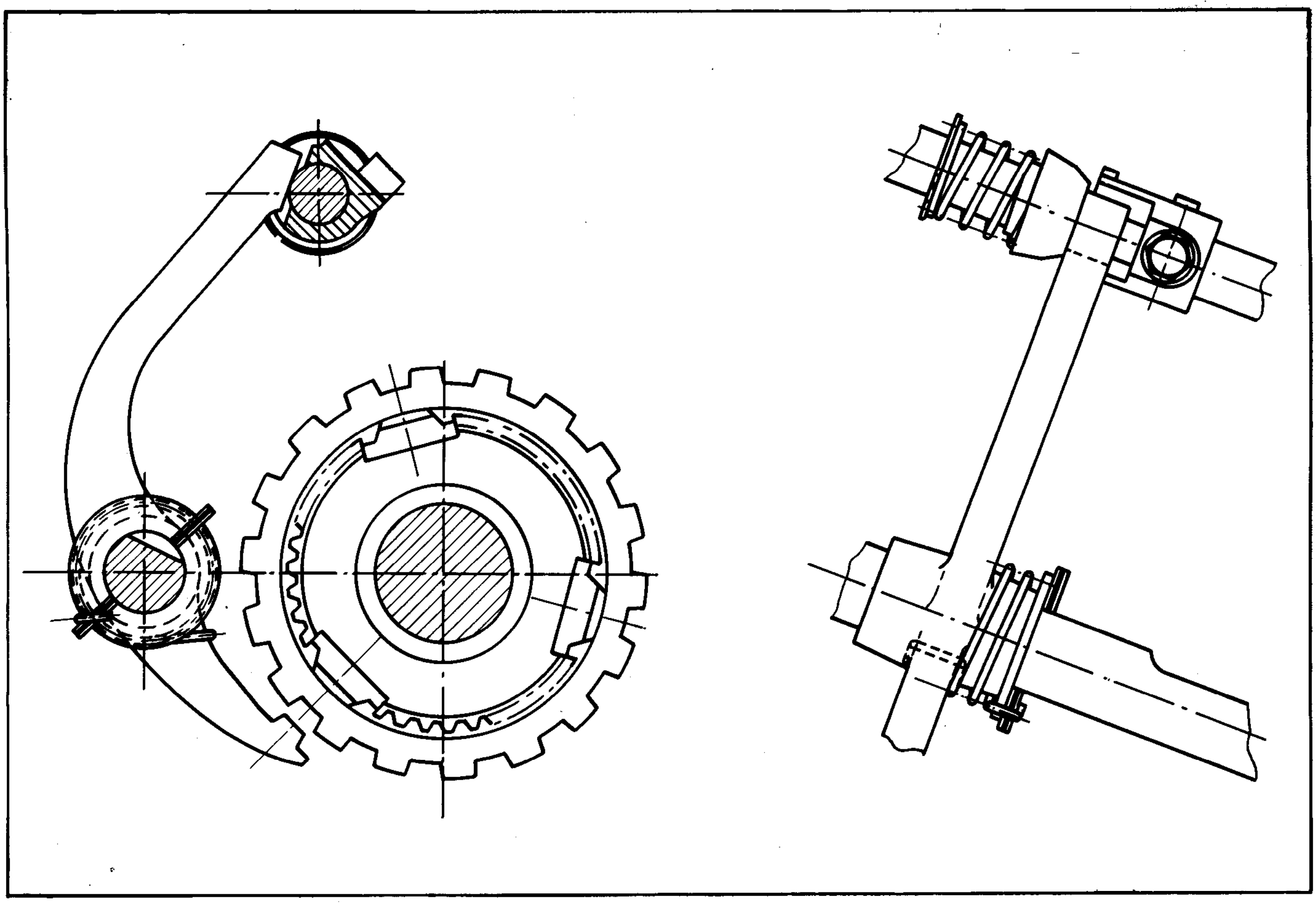


1st GEAR

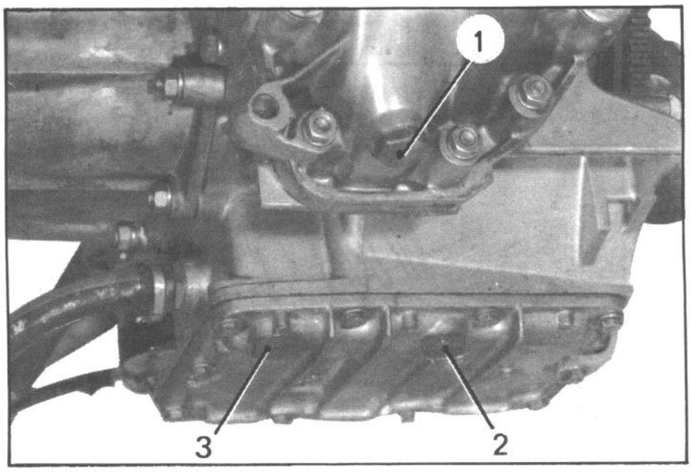


3rd GEAR

GEARBOX LOCKING DEVICE FOR PARKING



III. DRAINING AND REFILLING THE GEARBOX AND THE CONVERTER



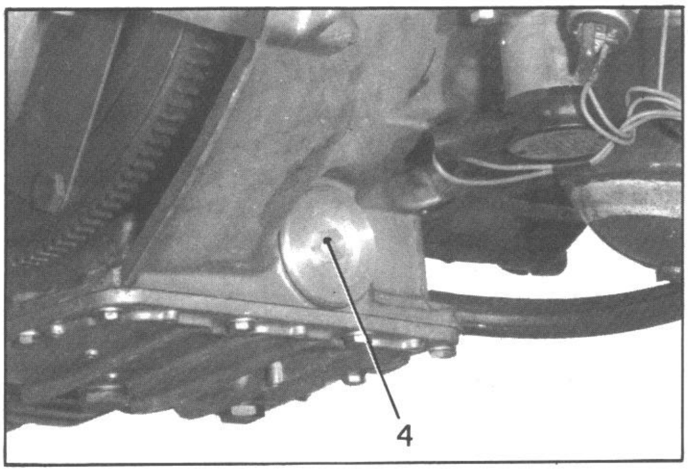
1. Place the vehicle over a pit or on a ramp.

2. **Draining** :
   Remove the following :
   - spare wheel,
   - drain plugs (1), (2) and (3),
   - plug (5) from the filler orifice.

   NOTE . The suction filter (4) for the converter pump must be replaced at the 1000 km (600 miles) service.

3. **Filling** :
   Refit drain plugs (1), (2) and (3).
   Tightening torque : 3.5 to 4.5 daNm (25 1/2 to 32 1/2 ft.lb)

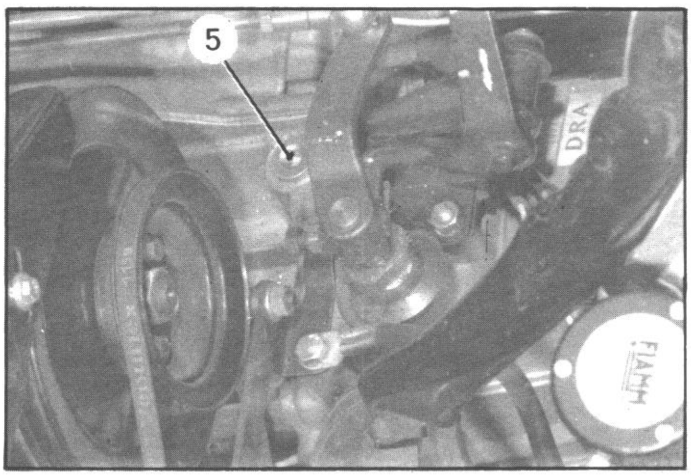
   VERY IMPORTANT :
   USE EXCLUSIVELY
   « **TOTAL FLUIDE T** »
   THE USE OF ANY OTHER LUBRICANT WOULD DESTROY THE CLUTCH, AND CONSEQUENTLY THE CONVERTER.



   Fill up the gearbox
   (Capacity 2-3 litres (3 1/2 to 5 1/4 pints) according to draining time)
   Check the level with the dipstick

4. **Top up the gearbox** : *So as to be certain to obtain the correct level, proceed strictly as follows :*
   a) **Immobilise the front wheels and put the hand-brake on.**
   b) Run the engine at idling speed, and engage a gear (3rd gear, for example)
      Slightly move the gear lever to actuate the electro-valve controlling the clutch, (it is actuated when a click is heard). (Repeat a dozen times).
   c) Check the level with the dipstick with the engine running and gear lever **in the P position.**
   d) Fit the filler plug.

   NOTE : *The difference in level between a « cold » gearbox and a « warm » gearbox is approximately 0.2 litres.*



5. Fit spare wheel.

FIVE-SPEED MANUAL GEARBOX

I. CHARACTERISTICS

Gear ratios :

NOTE : Speeds are given for vehicles fitted with 185 HR 14 XVS tyres, the rolling circumference of which is 1.970 m.

Gear	Gearbox ratio		Final drive ratio	Overall ratio	Speed at 1000 rpm in km/h (mph)	
1st	(12/38)	3.1666 : 1		15.1025 : 1	7.82	(4.89)
2nd	(18/33)	1.8333 : 1		8.7435 : 1	13.51	(8.44)
3rd	(28/35)	1.25 : 1	(13/62) 4.769 : 1	5.9615 : 1	19.82	(12.39)
4th	(33/31)	0.9393 : 1		4.4801 : 1	26.38	(16.49)
5th	(45/33)	0.7333 : 1		3.4974 : 1	33.79	(21.12)
Rev.	(13/41)	3.1538 : 1		15.0414 : 1	7.85	(4.90)
Speedometer drive ratio : 10/20						

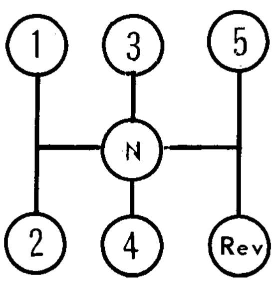
Supplement N° 1 to Manual 818-1 (ADD)

Lubrication :

- Type of oil .... TOTAL « EP » 80
- Total capacity .... 1.7 litres (3 pts)
- Capacity after draining .... 1.6 litres (2.8 pts)
- Difference between min. and max. on dipstick .... 0.150 litre (1/4 pt)

Gear control : floor mounted lever

Gear pattern



II. SPECIAL FEATURES

Adjustments :

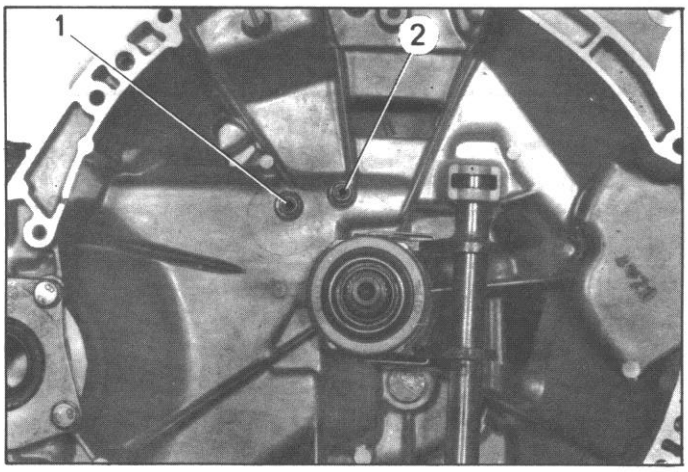
- Endfloat of 1st/2nd gear synchro nuts	0.05 mm max.
- Endfloat of half-ring between 2nd and 3rd gear pinions	0.05 mm max.
- Clearance between bearing split pin and gearbox casing	0.05 mm max.
- Overall preload on differential bearing	0.15 mm

Adjusting the selector shaft stops :

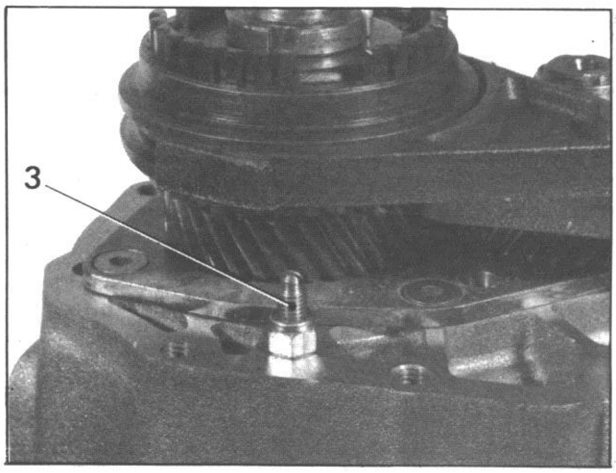
- **Adjusting the stop for 3rd and 5th gears** (*gearbox removed*) :
  Smear thread of stop-screws (1) and (2) with sealing compound.
  Engage 3rd gear, with 3rd and 4th gear sliding pinion resting against 3rd gear idling pinion.
  Bring stop-screw (1) into contact with selector shaft, and screw it in one turn, to obtain the correct clearance between the selector fork and the sliding pinion groove.
  Tighten lock-nut.
  Proceed in the same manner to adjust stop-screw (2) for 5th gear.

- **Adjusting 4th gear stop-screw** (*This operation can be carried out with the gearbox in situ, as long as the gearbox cover is removed*).

  Proceed as above (stop-screw « 3 »).



Adjusting the 3rd and 5th gear stop-screws

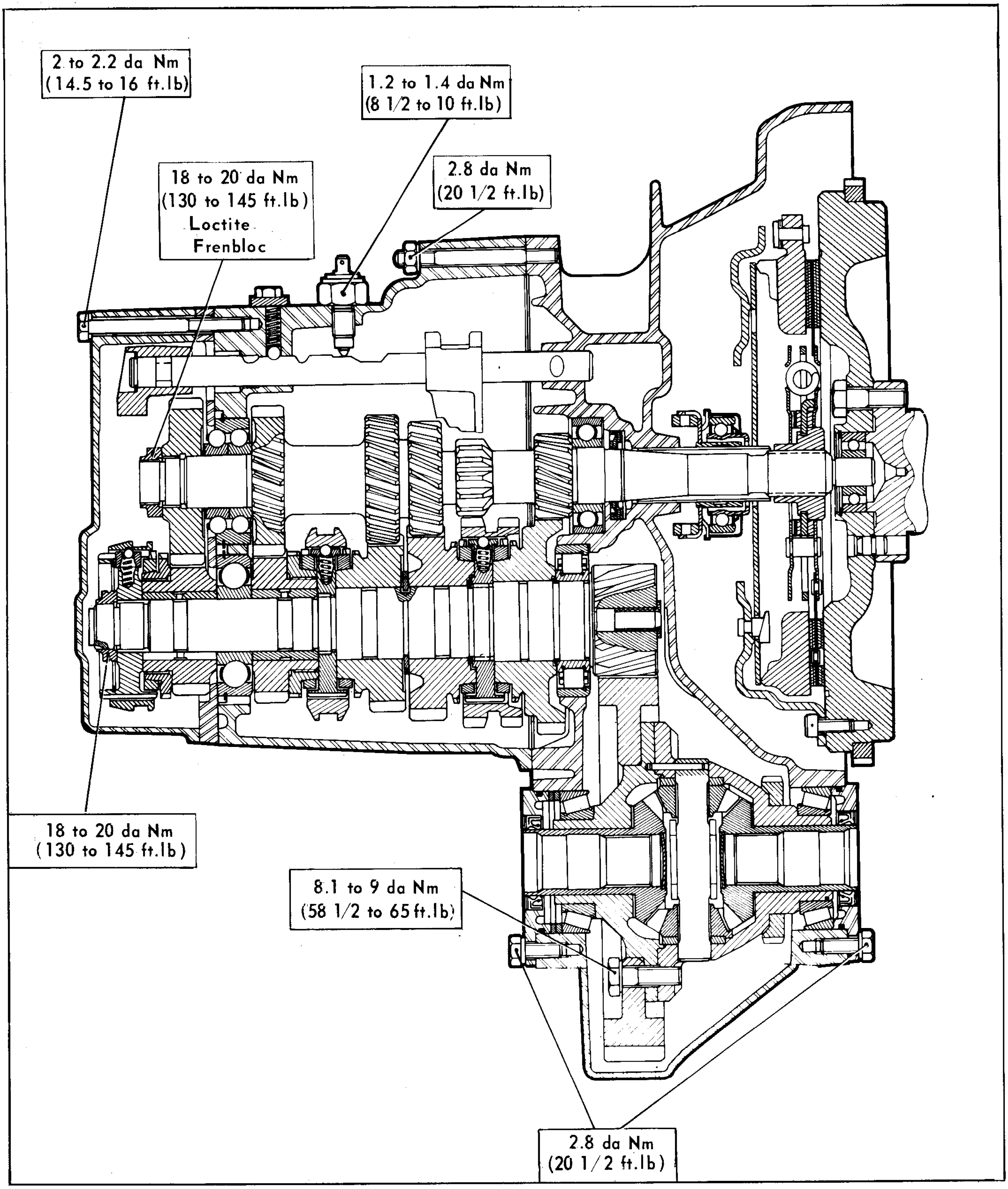


Adjusting the 4th gear stop-screw

FIVE-SPEED MANUAL GEARBOX

Tightening torques

L. 33-5



Filler plug and main plug .... 3.5 to 4.5 daNm (25 1/2 to 32 1/2 ft.lb)
Final drive casing assembly nuts (dia = 8 mm) .... 2.8 daNm (20 1/2 ft.lb)
Fianl drive casing assembly nuts (dia = 10 mm) .... 5 daNm (36 ft.lb)
Selector shaft bush-nut .... 11 to 12 daNm (79 1/2 to 87 ft.lb)

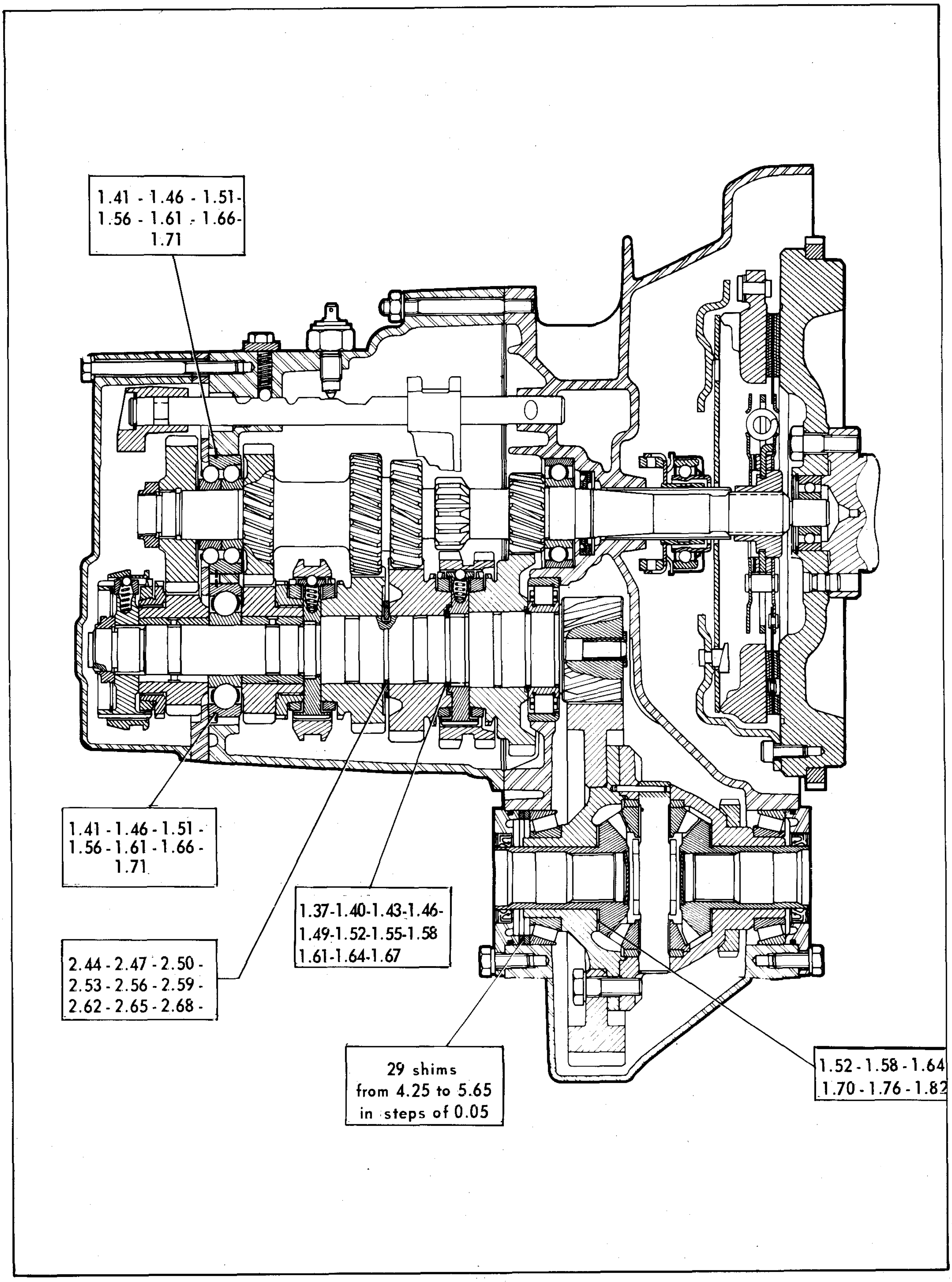
Assembling the gearbox casings :

Sealing : Smear the contact faces of the casings and the cover with sealing compound

FIVE-SPEED MANUAL GEARBOX

(Adjustment shims)

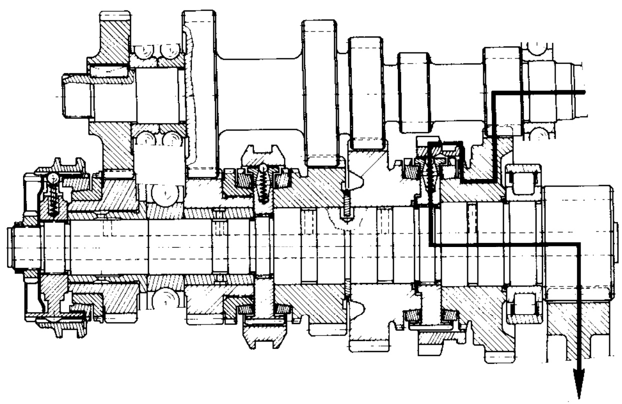
L. 33-5



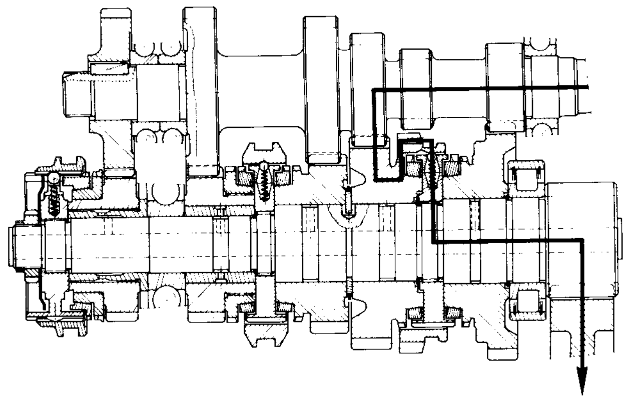
FIVE-SPEED MANUAL GEARBOX

(gear sequence)

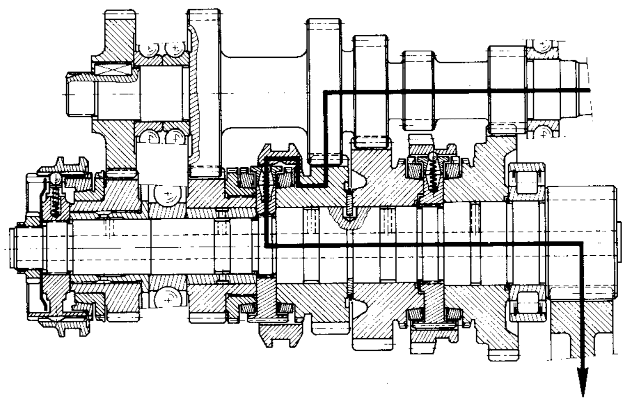
1st gear



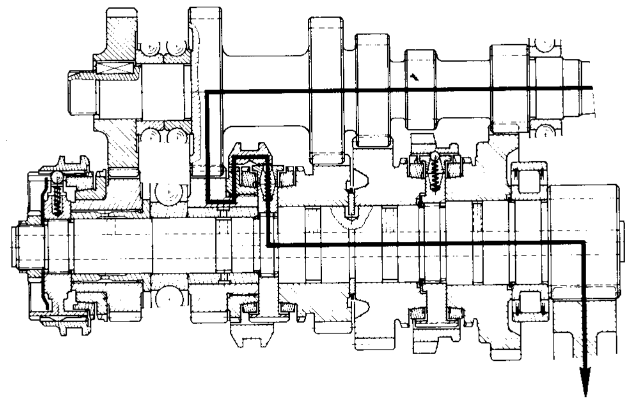
2nd gear



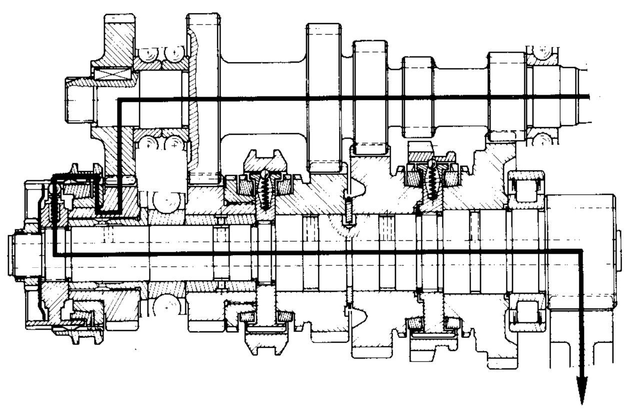
3rd gear



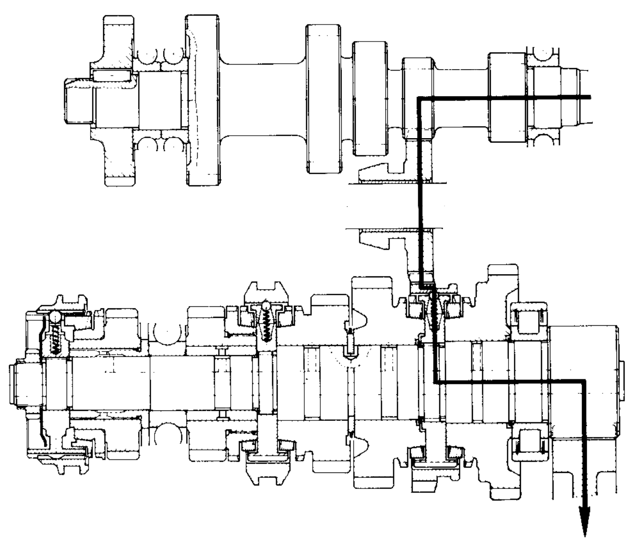
4th gear



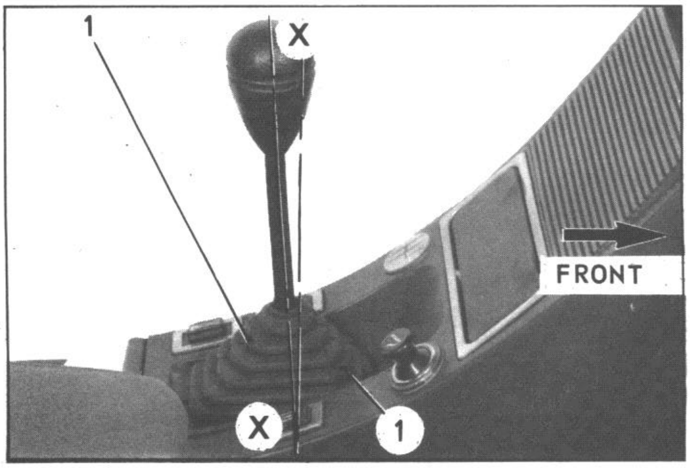
5th gear



Reverse gear



ADJUSTING THE GEAR LEVER



With gear lever set in neutral position :

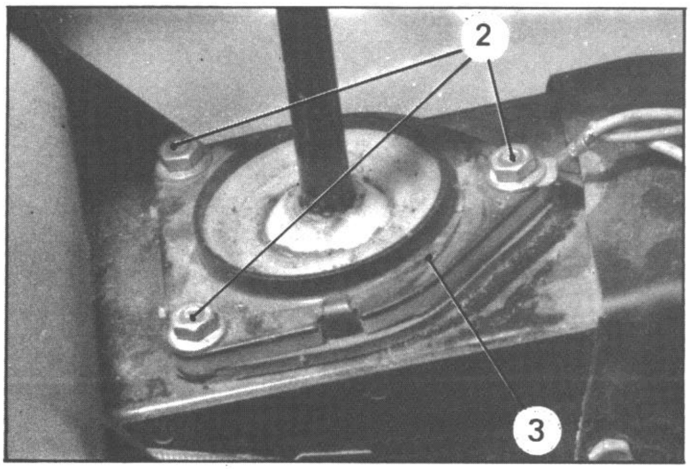
a) the lever should be inclined approximately 3° towards the rear in relation to the vertical axis XX' of the vehicle.

If not :

- remove dust cover (1),
- remove three screws (2),
- shift cover (3) to obtain correct position of gear lever.

NOTE : Should it be impossible to effect adjustment by means of cover (3), make necessary adjustment at control shaft ball joint (5).

- Tighten three screws (2).
- Refit dust cover (1).



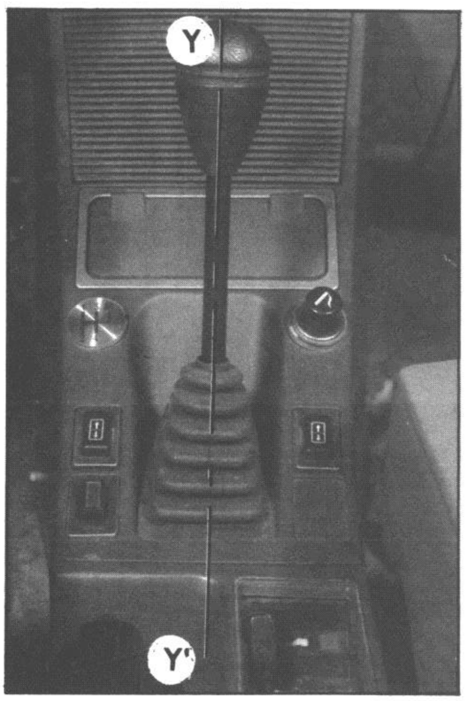
b) the gear lever should be located in the longitudinal axis YY' of the vehicle.

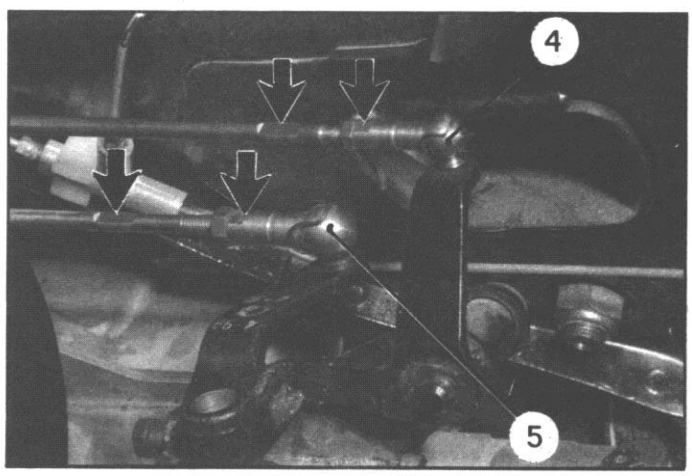
If not :

- Adjust selector shaft ball joint (4) to obtain this position.

NOTE :
When adjusting ball joints (4) or (5) it is imperative **that the flats (——►)** on each shaft are **properly aligned.**

After adjustment, check that gear lever will select and engage all gears.

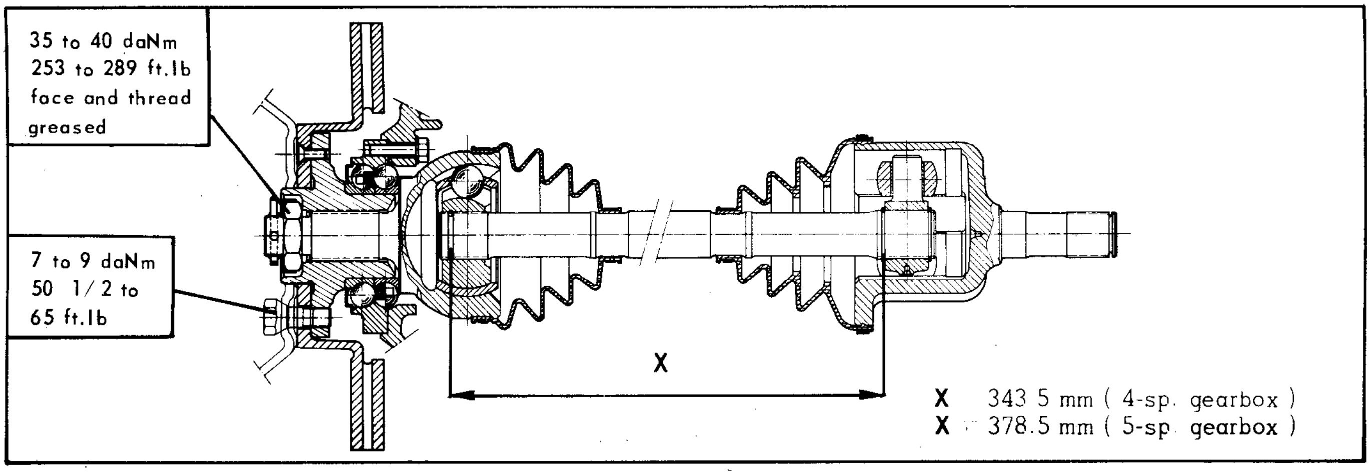




Supplement N° 1 to Manual 818-1 (CORR)

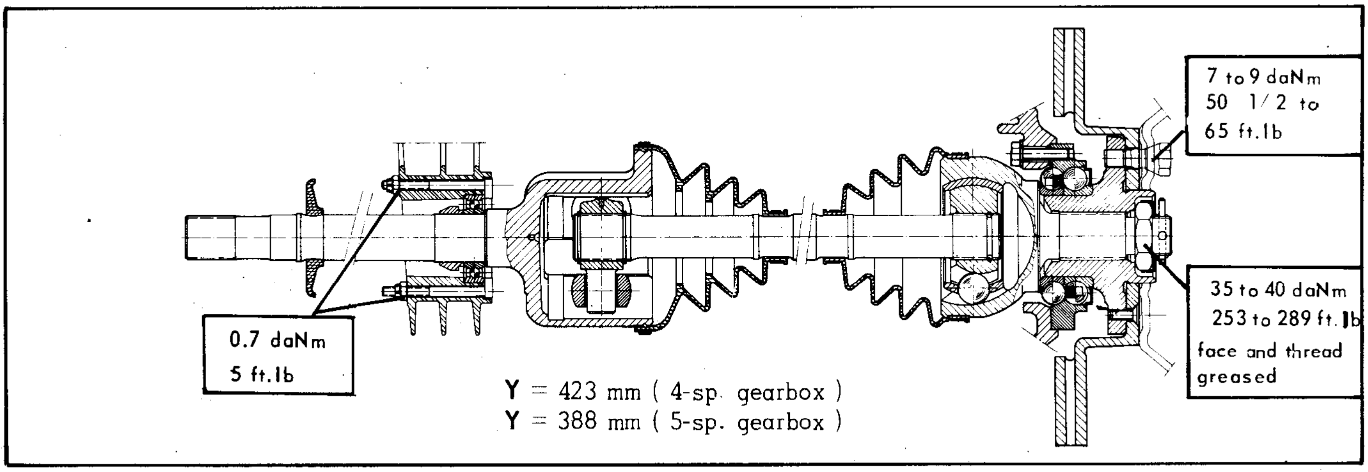
LEFT-HAND DRIVE SHAFT

L. 37-1



RIGHT-HAND DRIVE SHAFT

L. 37-2



I. CHARACTERISTICS

- 1 constant velocity ball-joint at wheel end
- 1 tri-axe joint at gearbox end

II. SPECIAL FEATURES

Lubrication :

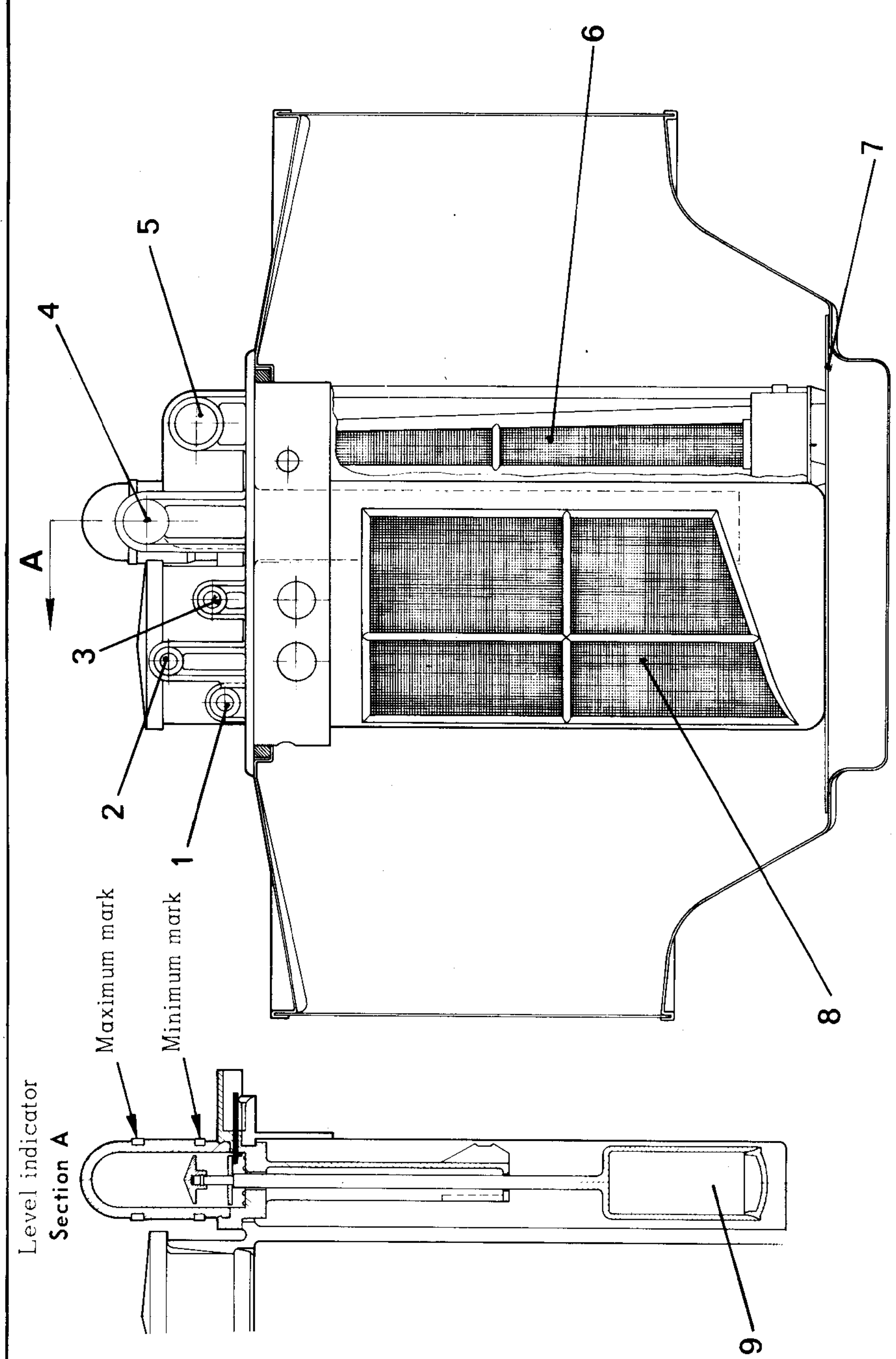
- TOTAL MULTIS MS grease

Supplement N° 1 to Manual 818-1 (CORR)

OPERATION N° MA. 390-00 : *Characteristics and special features of the source and reserve of pressure - Hydraulic system.*

RESERVOIR

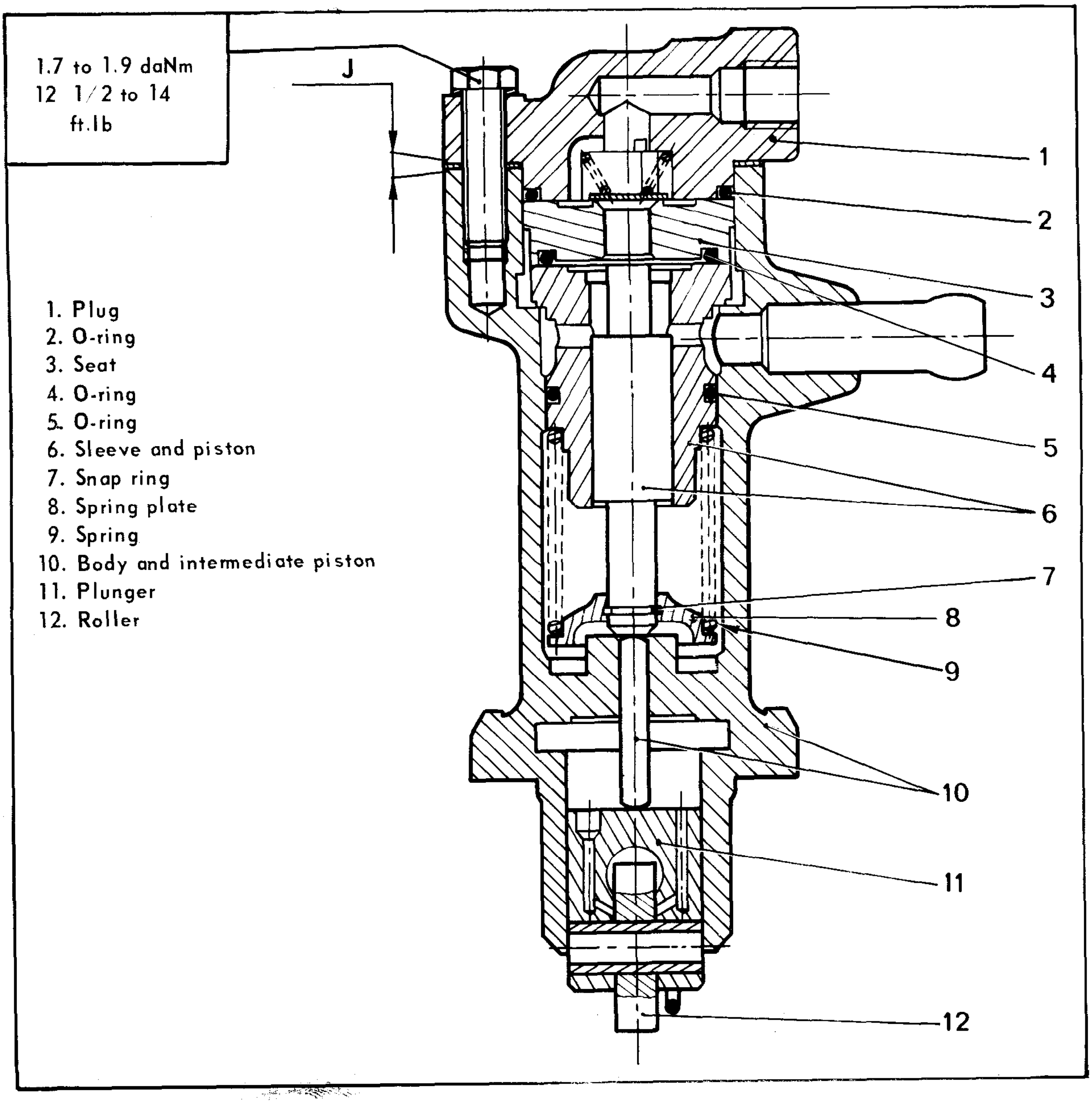
Supplement N° 1 to Manual 818-1 (CORR)



1. Overflow return from front and rear suspension cylinders
2. Overflow return from brake valve, safety valve and front and rear height correctors
3. Brake valve return
4. Return from pressure regulator and front and rear correctors
5. Suction line for HP pump
6. Filter on suction line for HP pump
7. Deflector
8. Overflow and return line filter
9. Level indicator float

NOTE : The reservoir on CX 2000 and CX 2200 vehicles produced after July 1975 is fitted with a pre-shaped protective plate located between the central unit and the outer panel of the reservoir

HIGH PRESSURE SINGLE CYLINDER PUMP *(——► 10/1976)*



DESCRIPTION

Reciprocating single-cylinder pump, operated by an eccentric machined on camshaft

- Operating ratio .... 1 cycle/2 engine revolutions
- Piston diameter .... 14 mm
- Piston stroke *(eccentric lift)* .... 10 ± 0.10 mm
- *By way of indication :* output *(under load of 175 bars, fluid at 60° C)* .... 1.07 cm³ per cycle

SPECIAL FEATURES

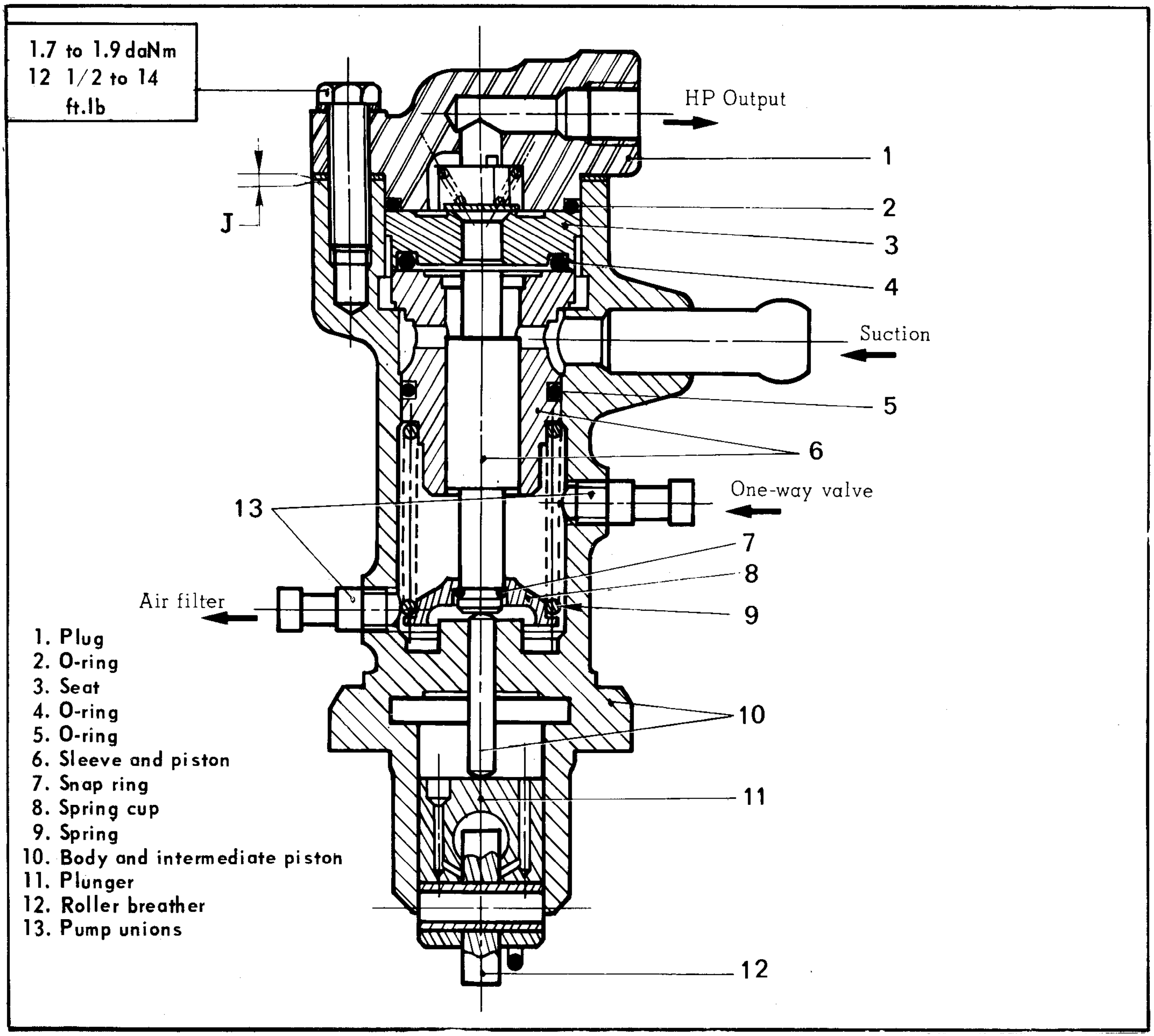
Adjustment :

- Clearance between pump body and plug *(before tightening)* .... 0.05 to 0.09 mm
- *Clearance obtained by using shims of different thicknesses* .... 0.05 - 0.10 - 0.15 - 0.20 mm

Tightening torques :

- Pump fixing screw on crankcase .... 19 mN (1.9 m.kg) (14ft.lb)
  (Fit a new paper seal whenever pump is dismantled)

H.P. SINGLE-CYLINDER PUMP (*10/1976* ⟶)



1. Plug
2. O-ring
3. Seat
4. O-ring
5. O-ring
6. Sleeve and piston
7. Snap ring
8. Spring cup
9. Spring
10. Body and intermediate piston
11. Plunger
12. Roller breather
13. Pump unions

Supplement N° 1 to Manual 818-1 (ADD)

CHARACTERISTICS

It differs from the single-cylinder pump fitted up to 10/1976 only in the two pump breather unions.

Reciprocating single-cylinder pump, driven by an eccentric machined on the camshaft

- Operating ratio .... 1 cycle/2 engine revolutions
- Piston diameter .... 14 mm
- Piston stroke (*eccentric lift*) .... 10 ± 0.10 mm

• *For information :* output (*under pressure of 175 bars (2538 psi),* *and with fluid at 60° C* .... 1.07 cm3 per cycle

SPECIAL FEATURES

Adjustments :

- Clearance between pump and body (*before tightening*) .... 0.05 to 0.09 mm

• *Clearance obtained by using shims of different thicknesses* ..... 0.05 - 0.10 - 0.15 - 0.20 mm

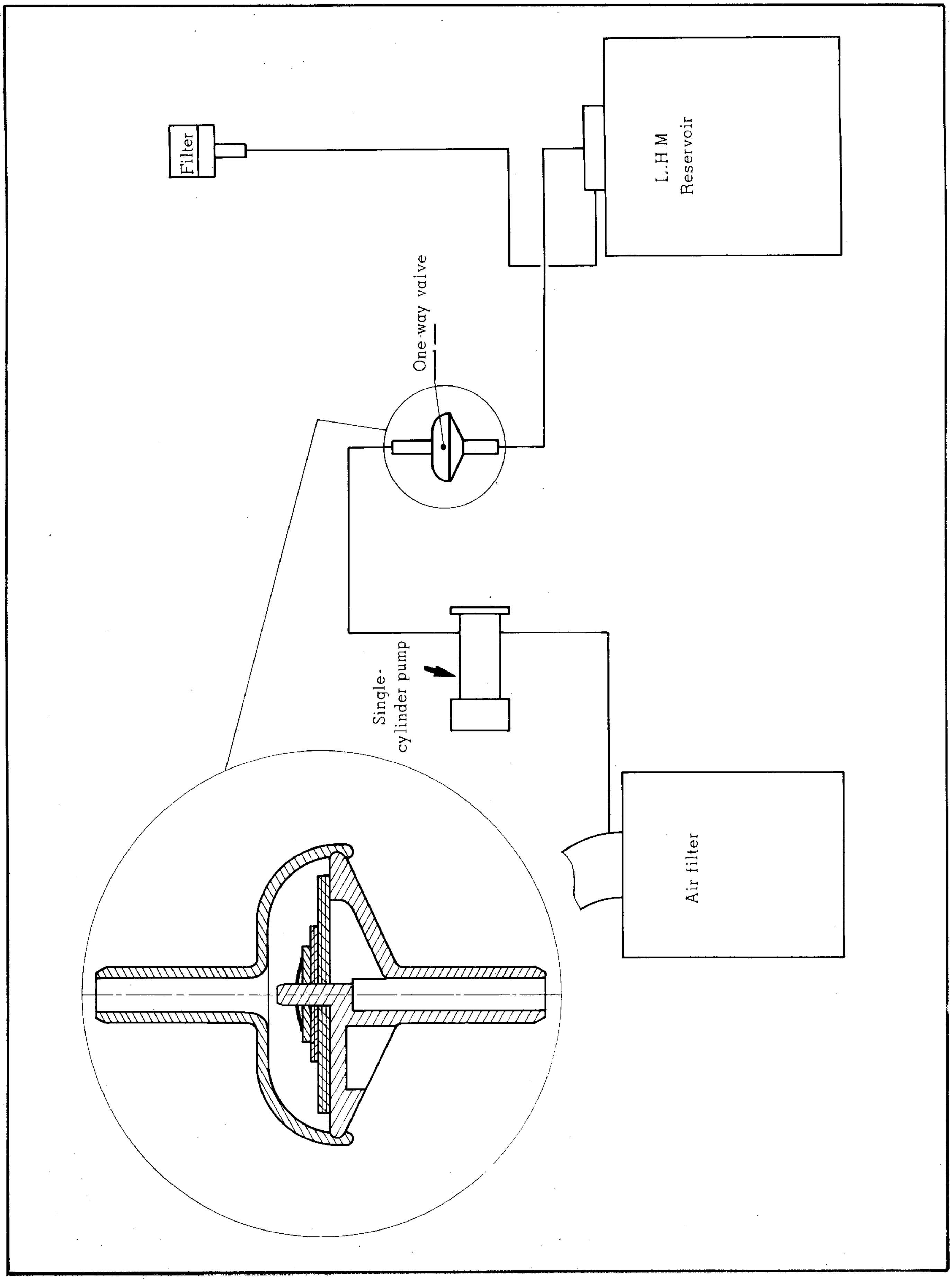
Tightening torques :

- Pump fixing screws on crankcase .... 1.9 daNm (14 ft.lb)

(Fit a new paper seal whenever pump is dismantled)

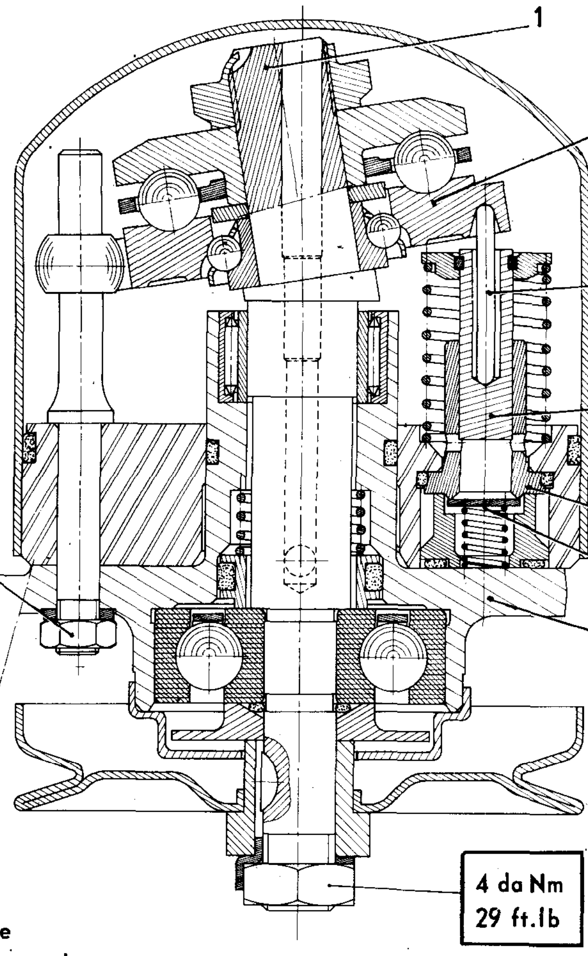
DIAGRAM OF BREATHER CIRCUIT FOR SINGLE-CYLINDER PUMP

(CX « Saloon » vehicles with manual steering 10/1976 ⟶)



SEVEN-PISTON H.P. PUMP

(Power steering and « Estate » vehicles)



1. Control shaft
2. Oscillating plate
3. Piston connecting rod
4. Piston
5. Sleeve
6. Pump valve
7. Pump body

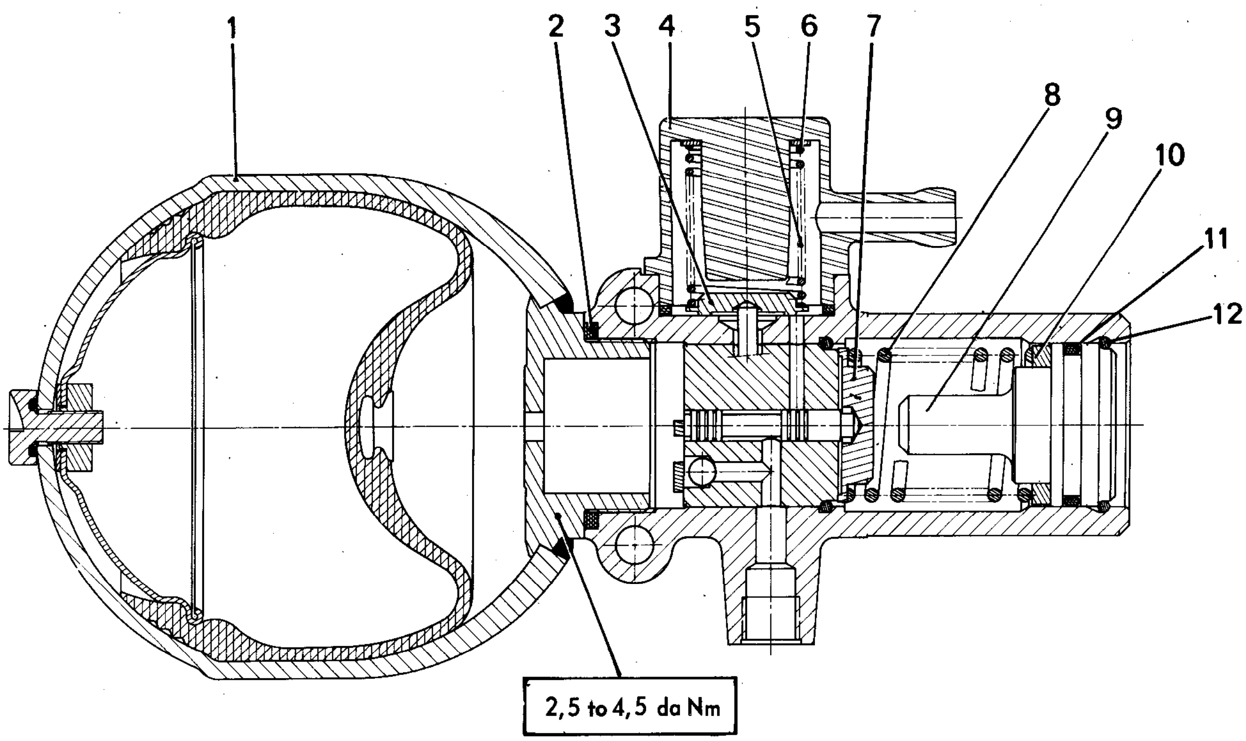
CHARACTERISTICS

- The pump rotates at half engine speed :
- Output for each pump cycle (*for information*) 2.8 cm3
- Valves (6) oil tight up to .... 150 bars (2175 psi)

SPECIAL FEATURES

- Piston connecting rods : length (in steps of 0.1 mm) .... 28.8 to 30.5 mm
- Clearance between crown of piston (TDC) and pump valve .... 0.5 mm

PRESSURE REGULATOR
MAIN ACCUMULATOR



1	Main accumulator	7	Spring cup
2	O-ring	8	Cut-in spring
3	Spring base plate	9	Spring plug
4	Spring housing	10	Spring adjusting shims
5	Cut-out spring	11	O-ring
6	Spring adjusting shims	12	Snap ring

CHARACTERISTICS

Pressure regulator with pilot slide-valve :
- Cut-out pressure .... 170 ± 5 bars (2466 ± 73 psi)
- Cut-in pressure .... 145 ± 5 bars (2103 ± 73 psi)

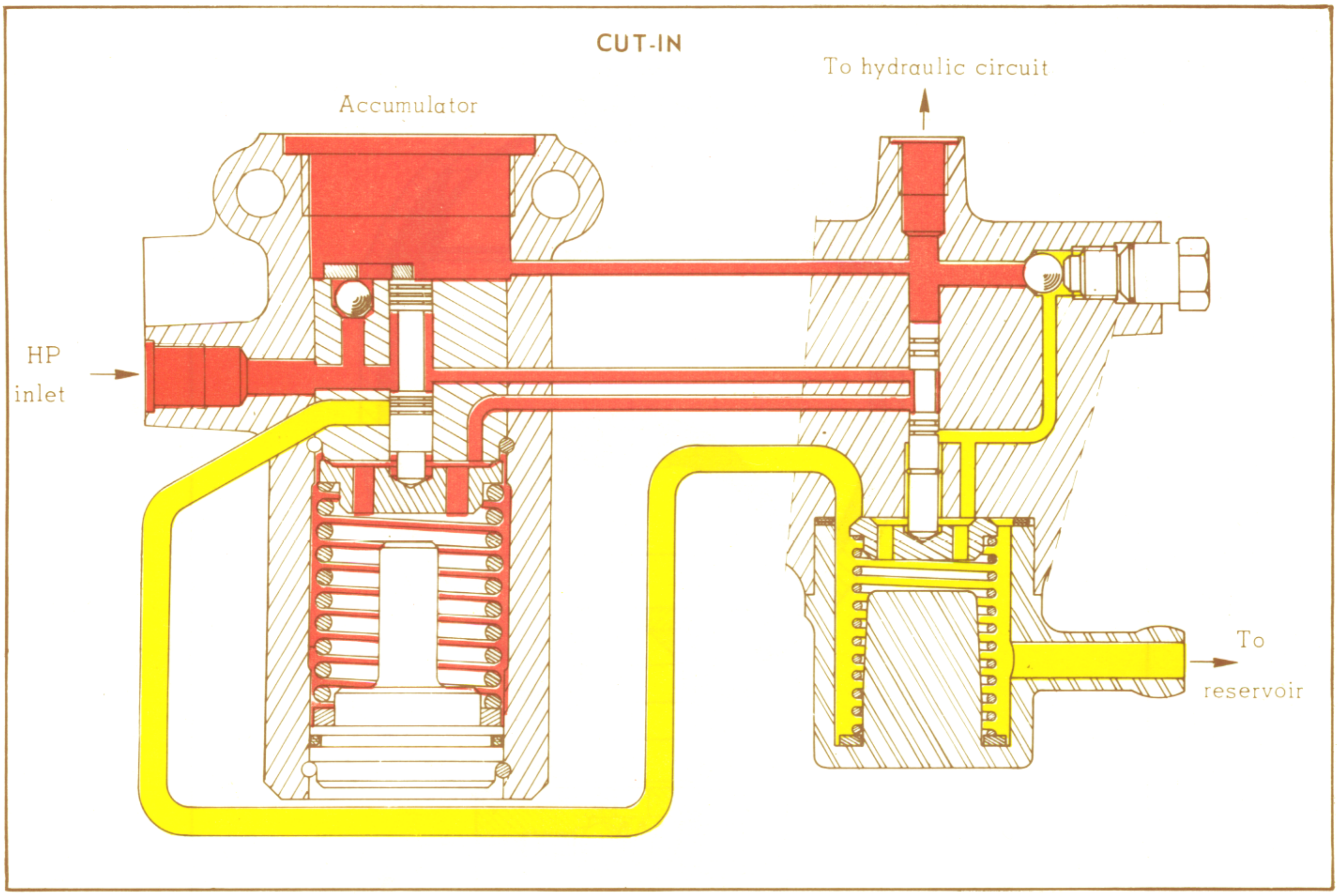
Main accumulator :
- Capacity .... 0.400 litre (0.70 pints)
- Mark on filler plug 62
- Calibrated pressure *(for checking purposes)* .... 62^{+2}_{-10} bars (899^{+29}_{-145} psi)

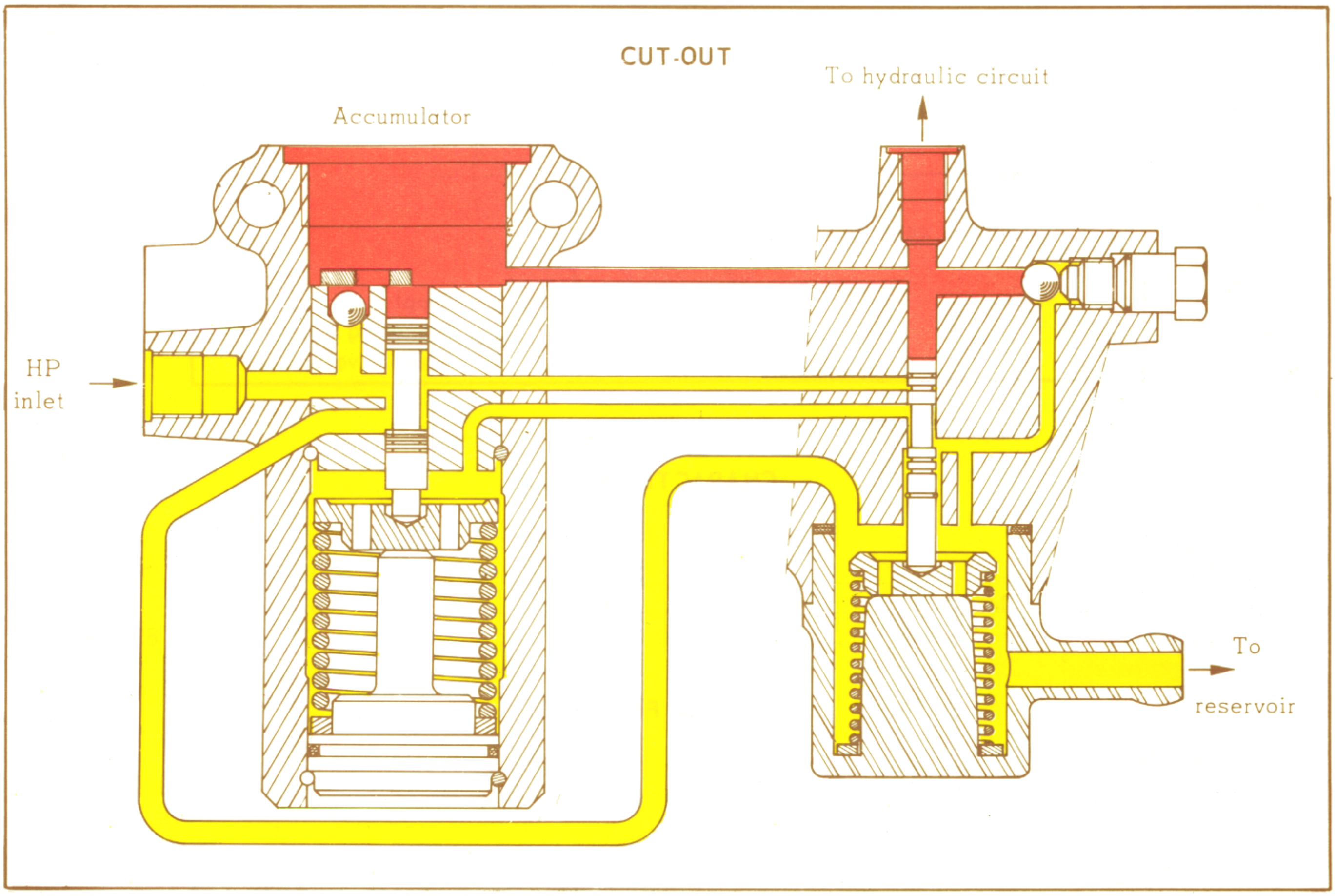
SPECIAL FEATURES

Pressure regulator :
- Thickness of adjusting shims .... 0.30 mm
- For cut-out .... 0.30 mm
- For cut-in .... 0.30 and 0.70 mm
- One .30 mm shim brings about a change in pressure by .... approx. 3 bars (44 psi)
- One .70 mm shim brings about a change in pressure by .... approx. 7 bars (102 psi)

Tightening torques :
- Pressure regulator fixing screws .... 1.8 daNm (13 ft.lb)
- Main accumulator .... 2.5 to 4.5 daNm (18 to 32 1/2 ft.lb)

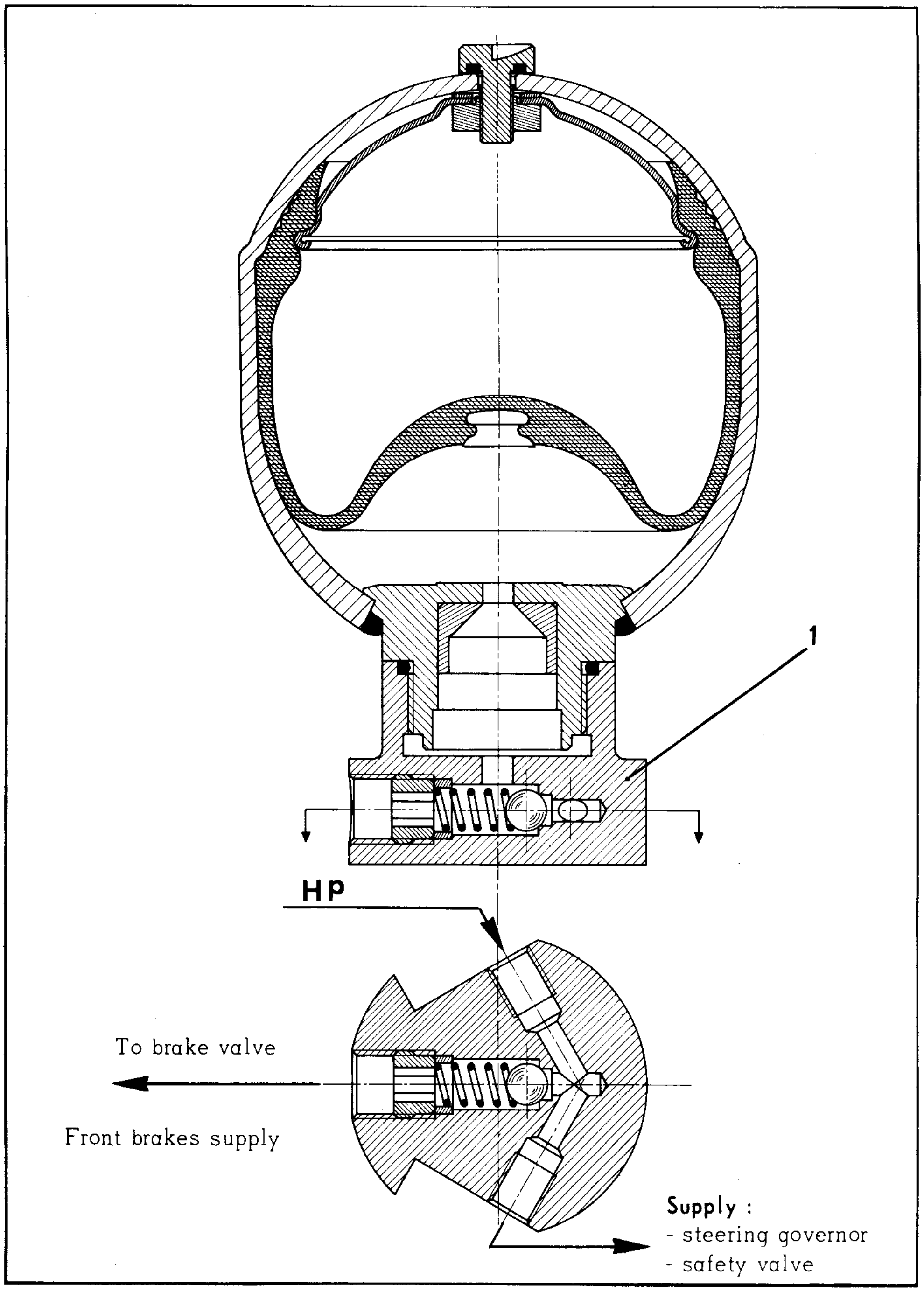
DIAGRAMS OF OPERATION





BRAKE ACCUMULATOR

(Power-steering vehicles)



CHARACTERISTICS

Brake accumulator :

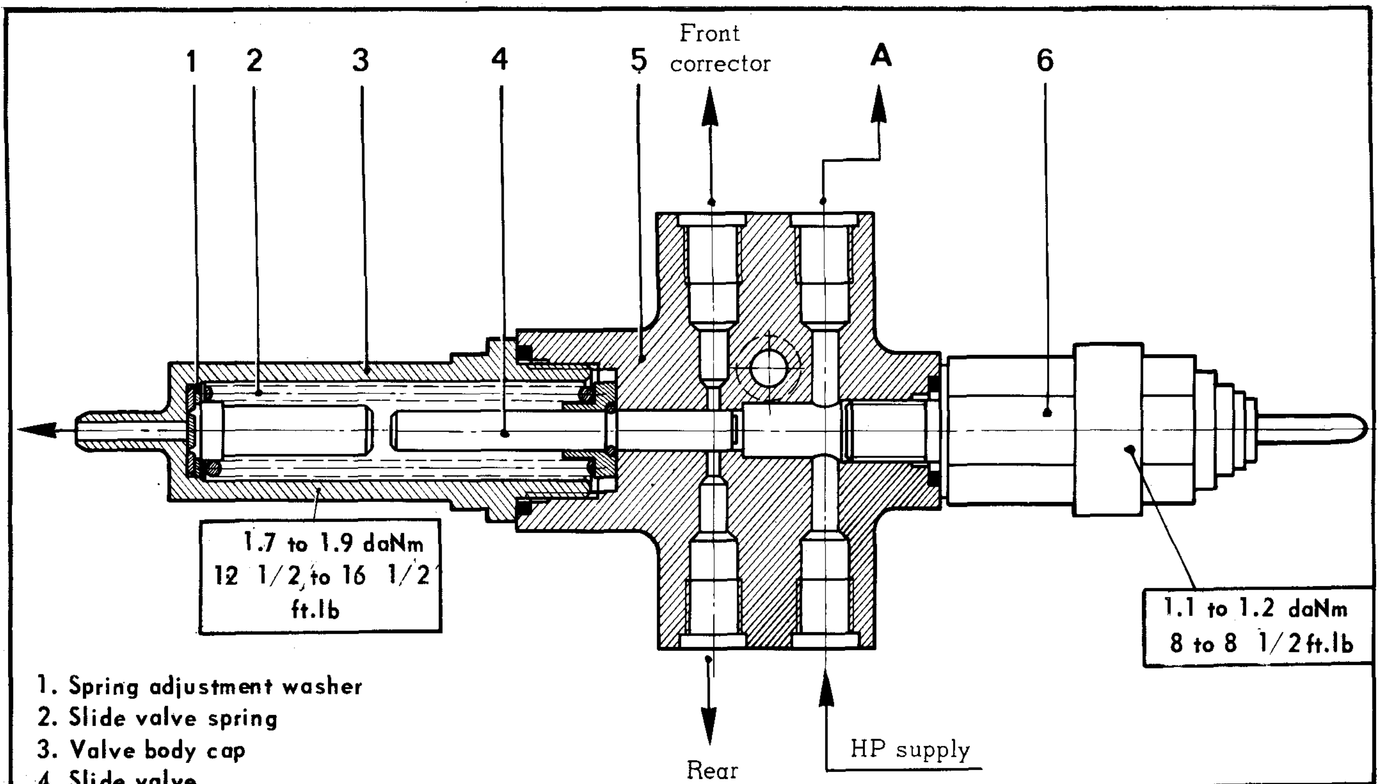
- Capacity .... 0.400 litre (0.70 pts)
- Identification mark on filler plug 62
- Calibration pressure *(for checking)* .... 62^{+2}_{-32} bars (899^{+29}_{-464} psi)

SPECIAL FEATURES

Tightening torque :

- Accumulator, onto its mounting .... 3 daNm (21 1/2 ft.lb)

SAFETY VALVE



A	
	Brake valve supply dia = 3.5 mm Manual steering vehicle
	Steering system supply dia = 4.5 mm Power steering vehicle

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CHARACTERISTICS

Calibration pressures for slide valve return spring
- Increasing pressure .... 130 bars (1885 psi)
- Decreasing pressure .... 110 bars (1595 psi)

Pressure for checking effectiveness of slide valve seal .... 175 bars (2538 psi)

Pressure switch :
- Calibration pressure (Mark 1 on pressure switch) .... 75 to 95 bars (1088 to 1378 psi)

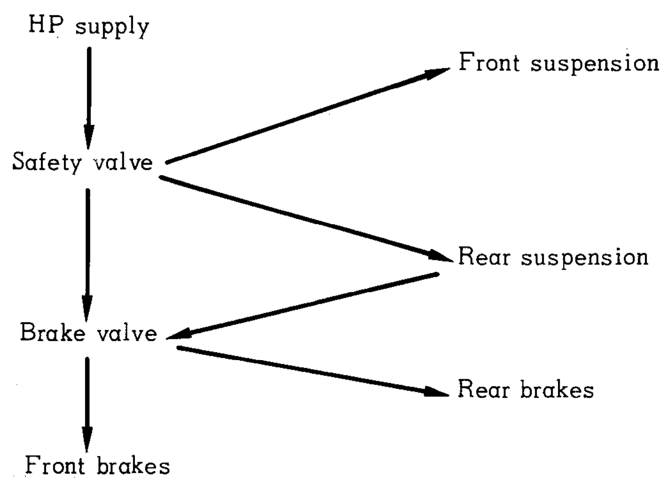
SPECIAL FEATURES

Thickness of adjusting shims (*slide valve return spring calibration*) .... 0.9 mm

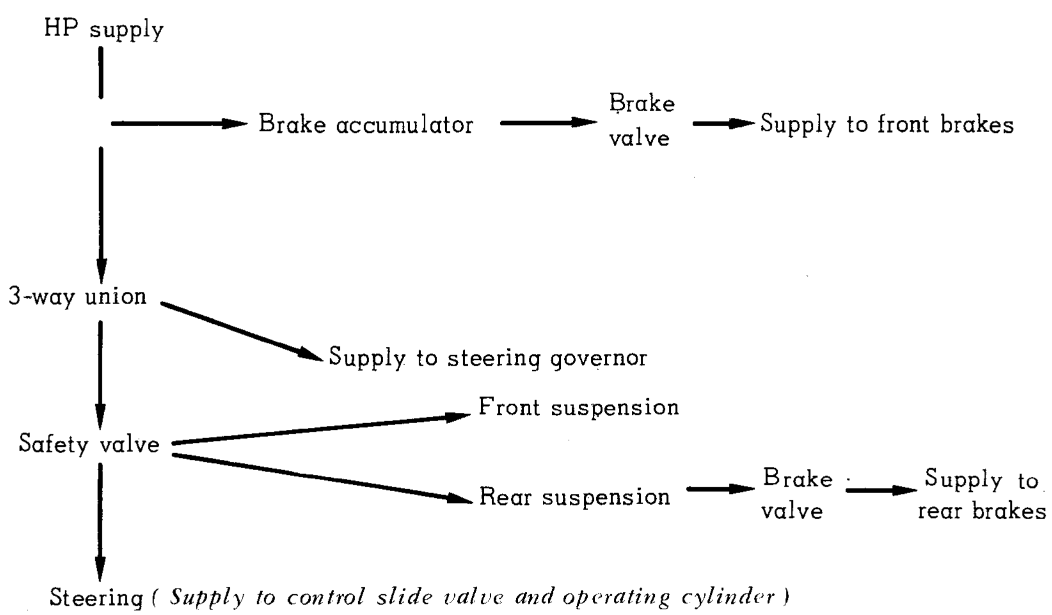
HYDRAULIC SYSTEM SUPPLY DIAGRAMS

1. Supply diagram :

a) *Manual steering vehicles :*

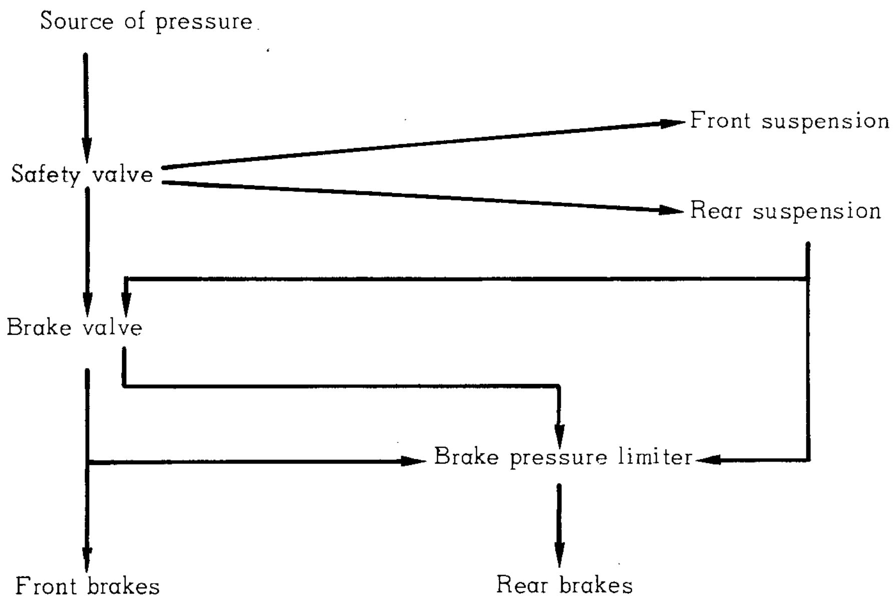


b) *Power steering vehicles :*

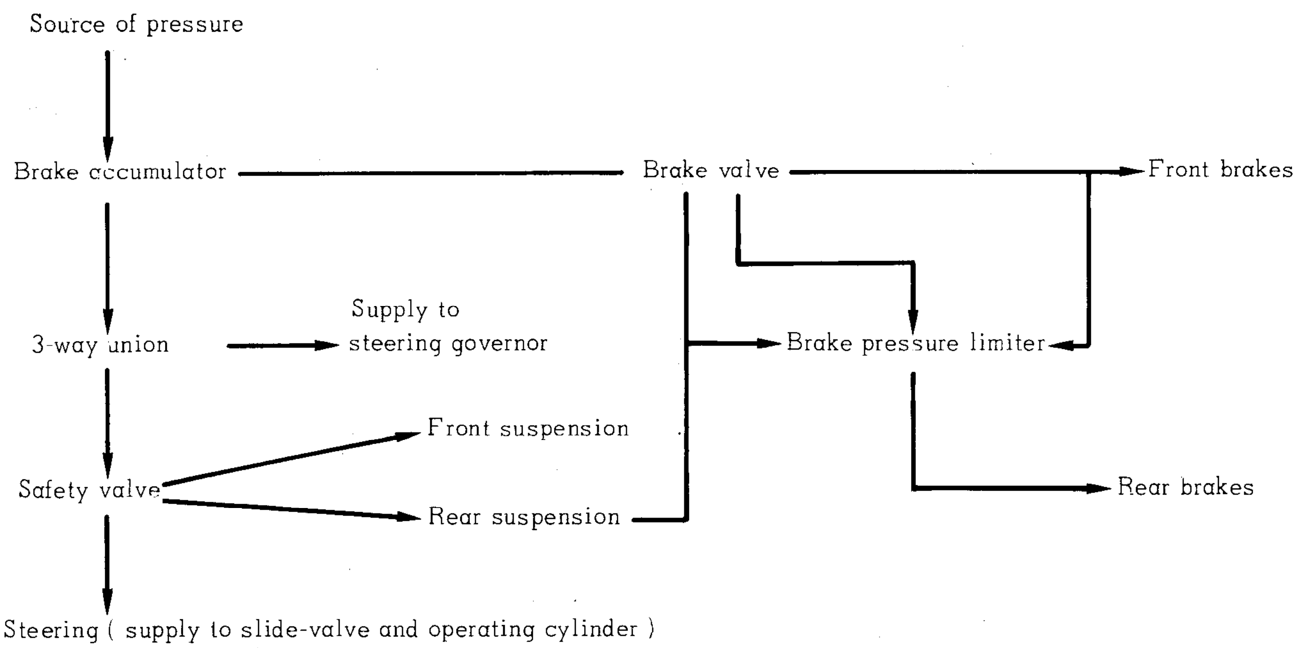


HYDRAULIC SYSTEM SUPPLY DIAGRAMS

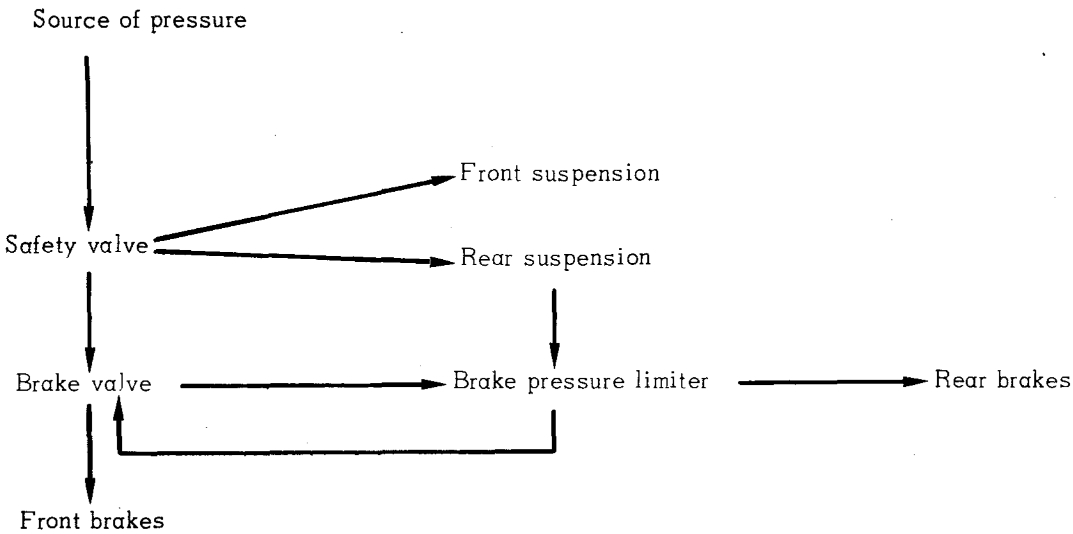
c) *Estate vehicles with manual steering* ⟶ 9/1976



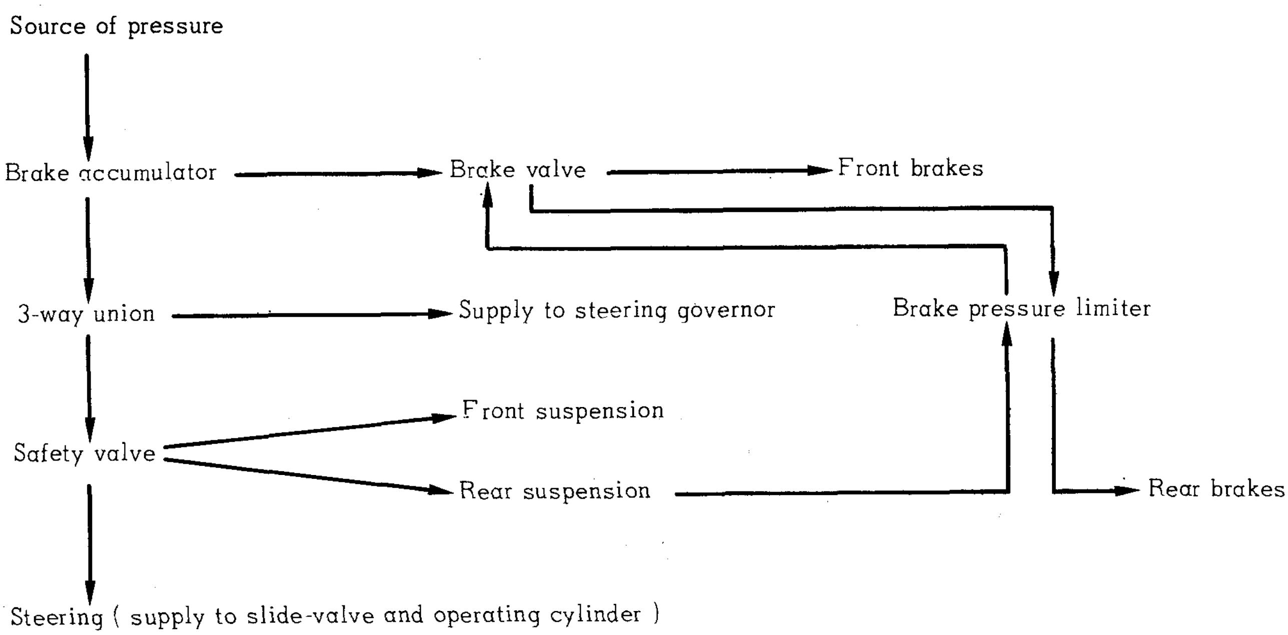
d) *Estate vehicles with power-steering* ⟶ 9/1976 :



e) *Estate vehicles with manual steering 9/1976* →

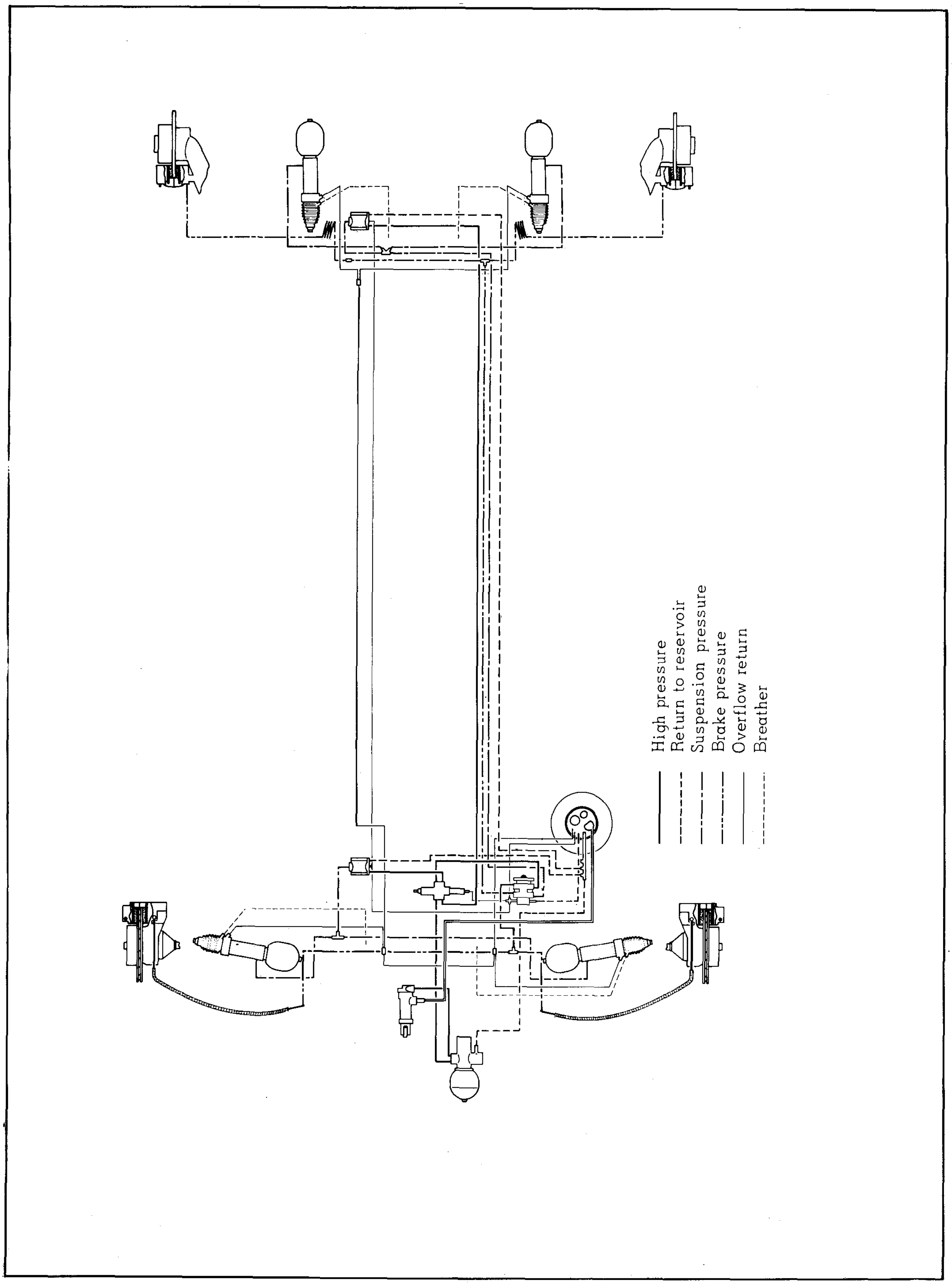


f) *Estate vehicles with power-steering 9/1976* →

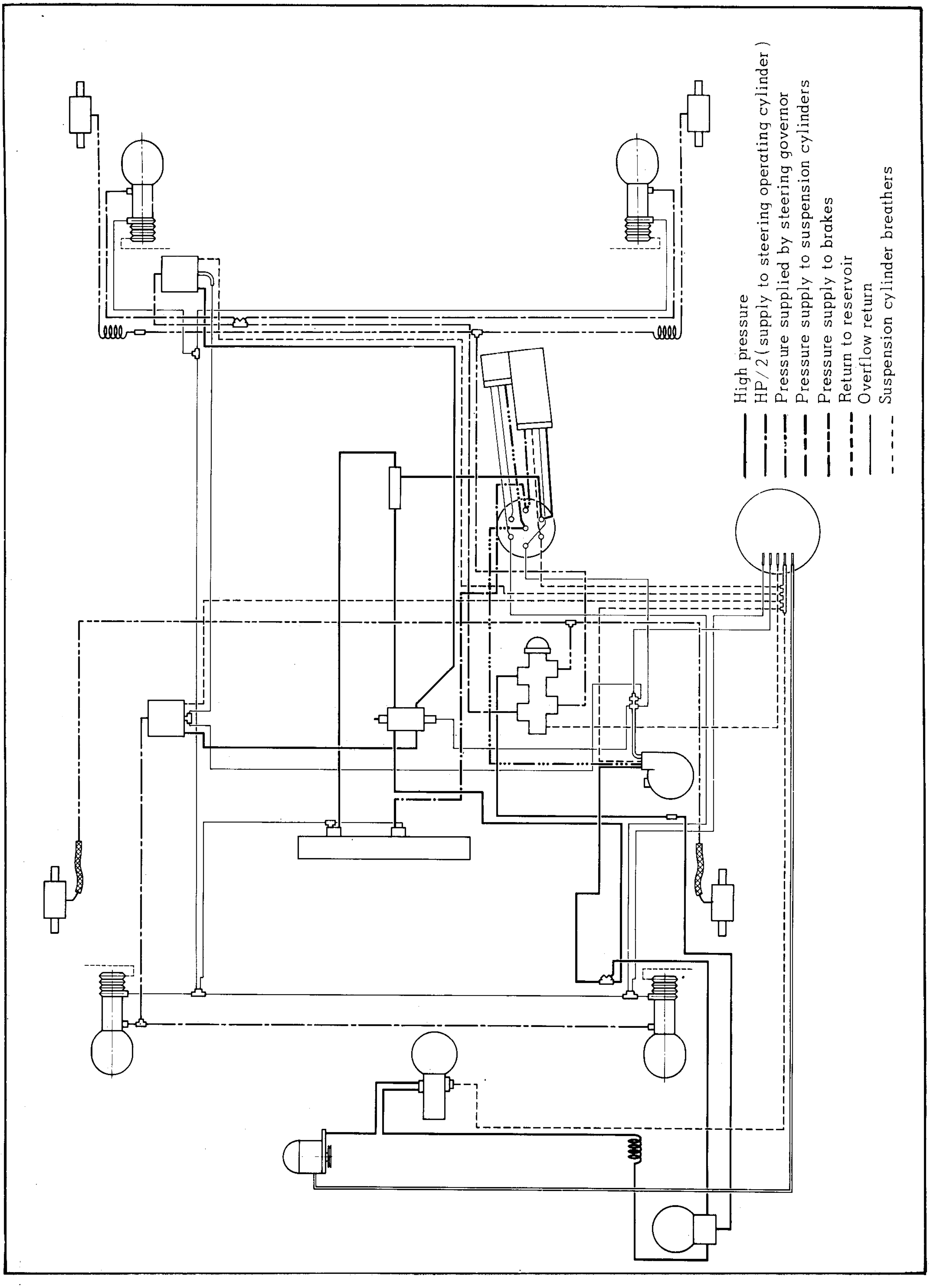


2. Assembly diagram :

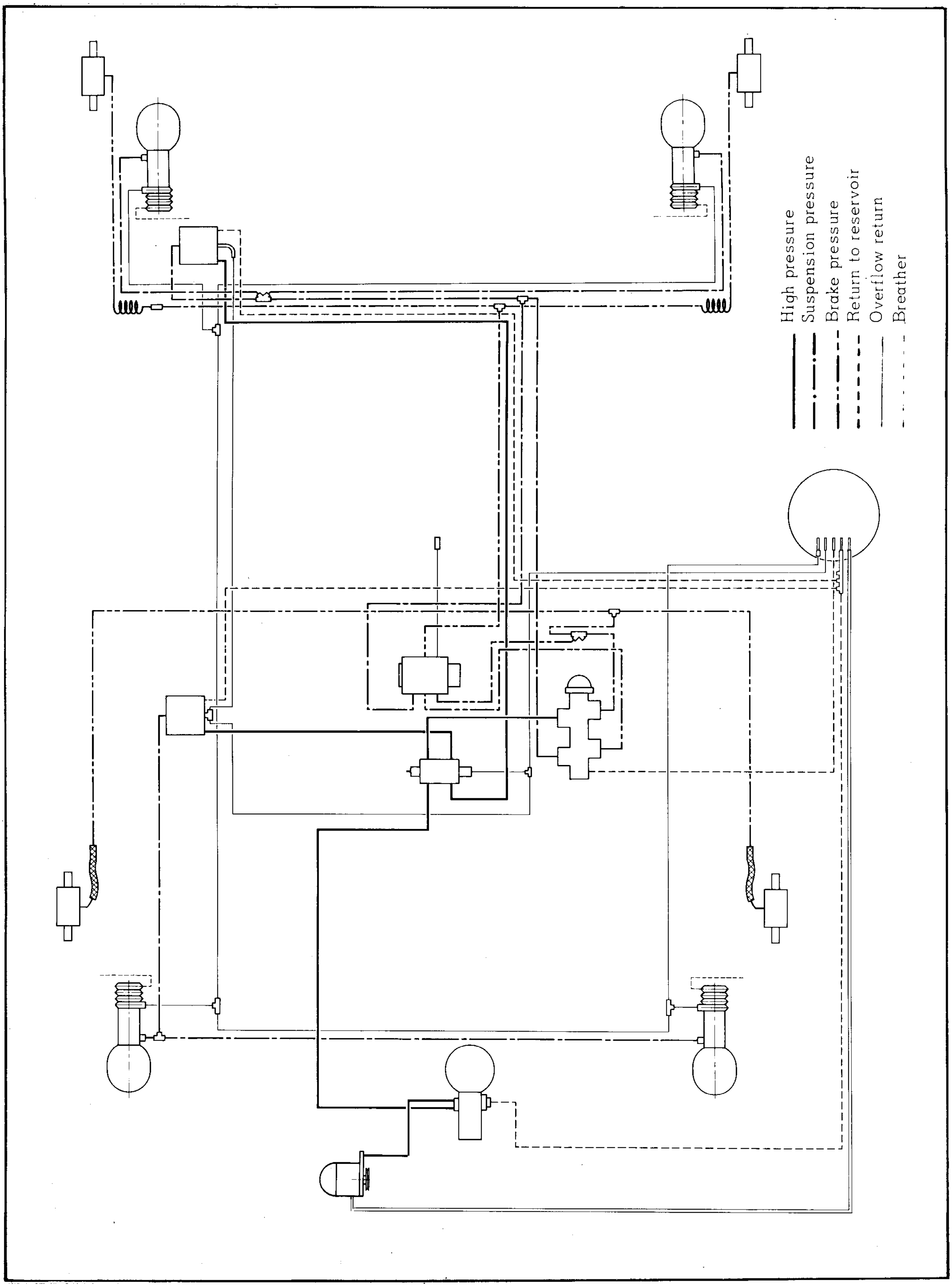
a) *Saloon vehicles with manual steering :*



b) *Saloons fitted with power steering :*



c) *Estate vehicles with manual steering* ⟶ *10 1976*



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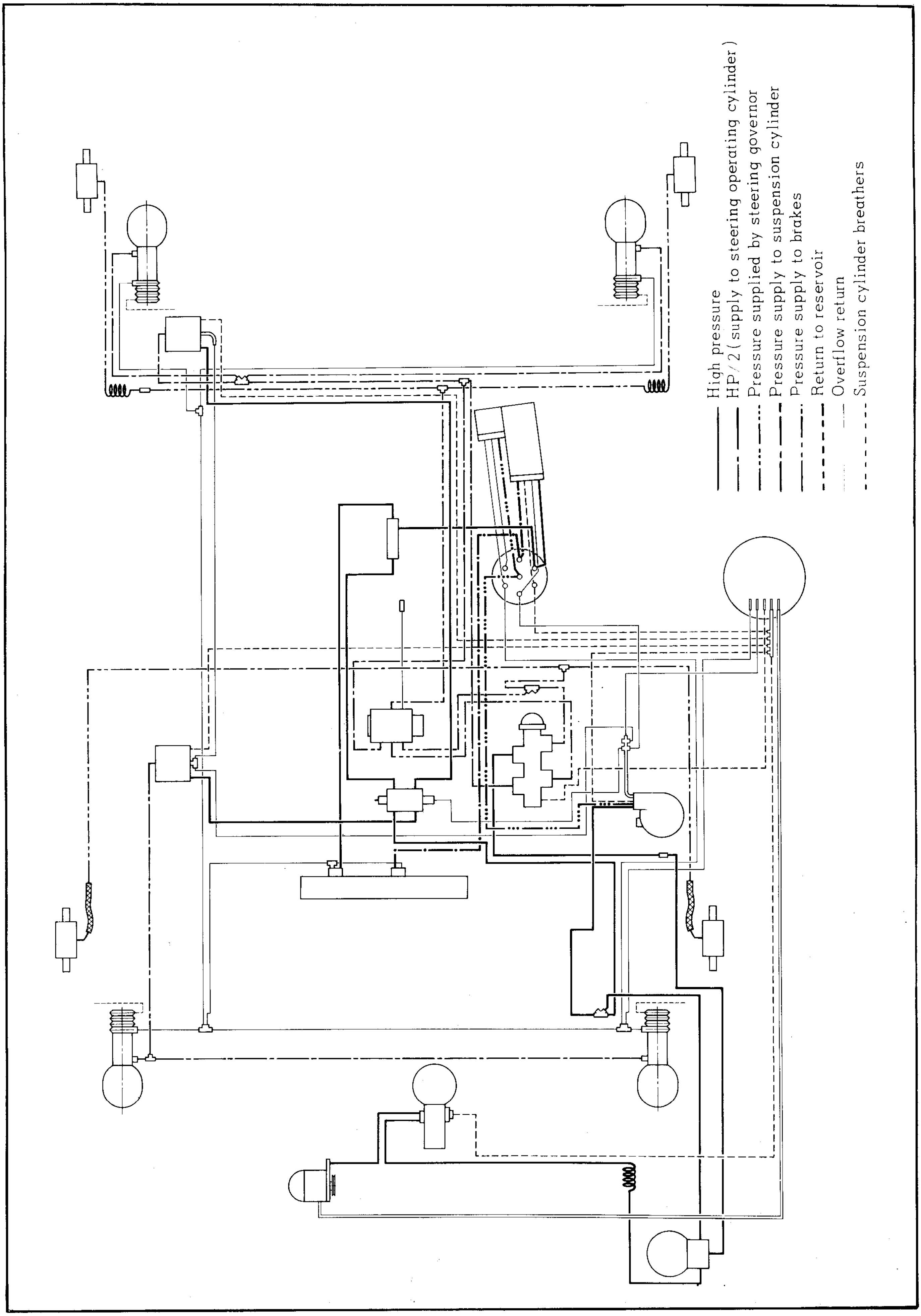
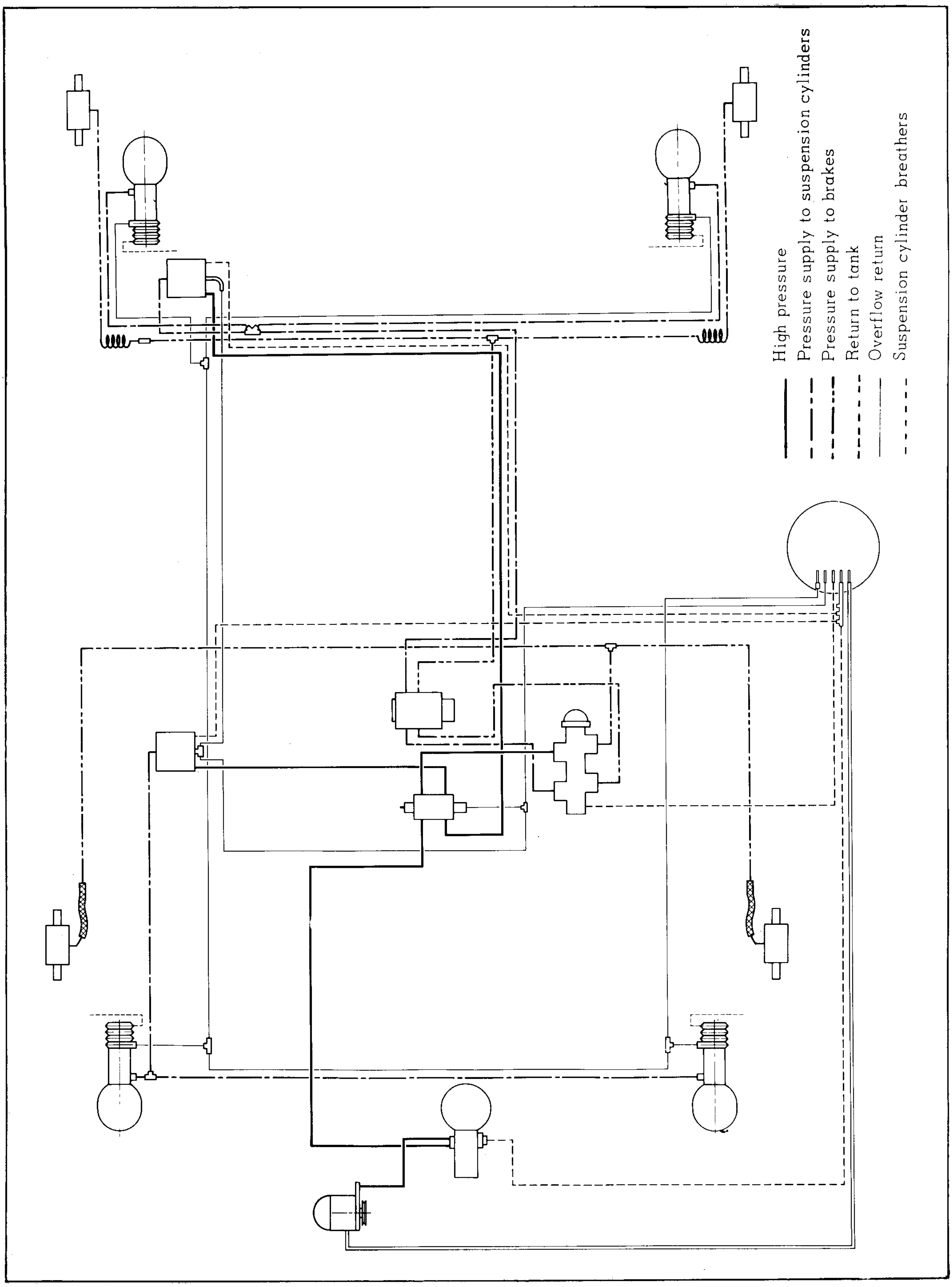
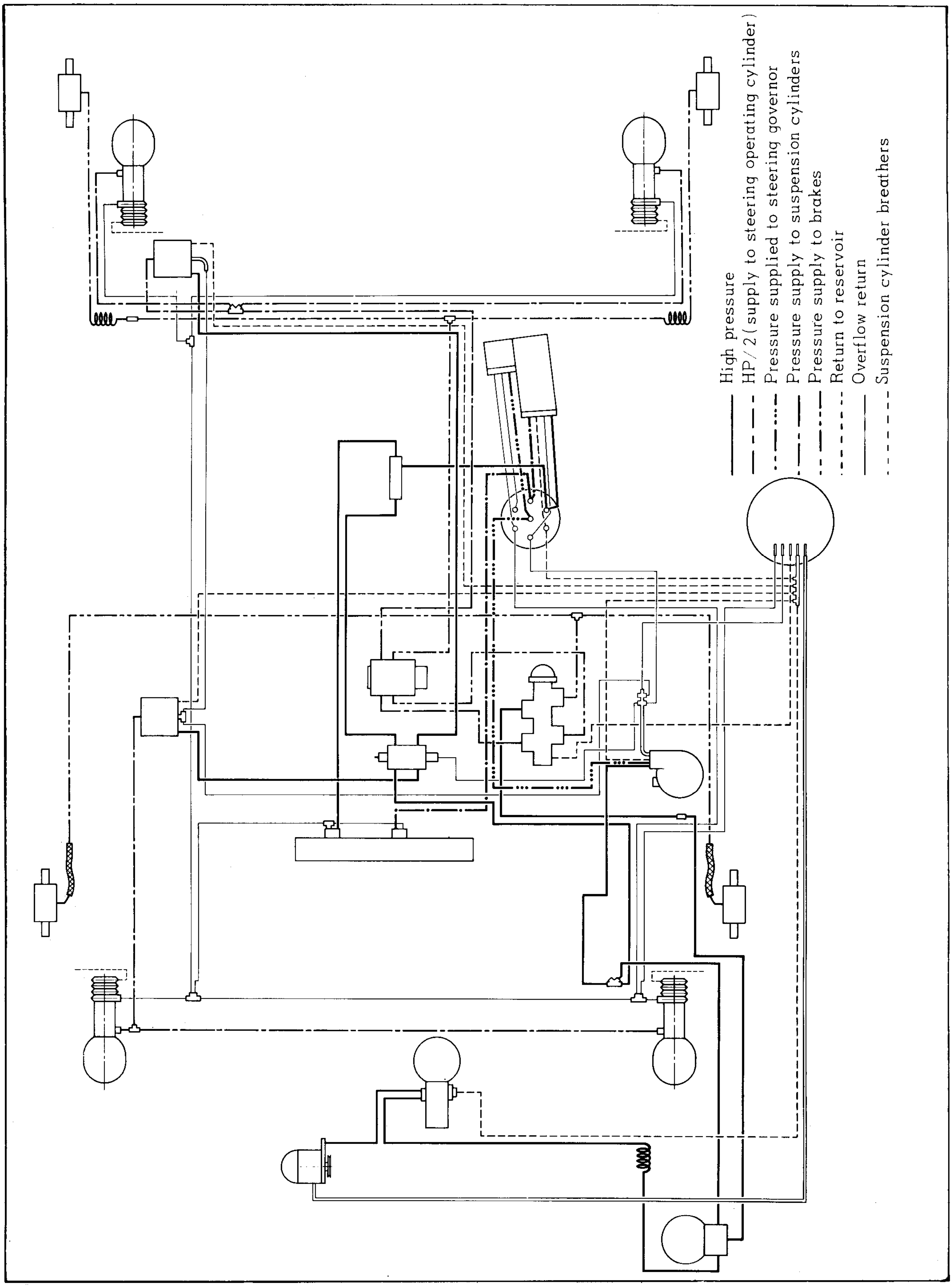
d) *Estate vehicles with power steering* ⟶ 10 - 1976



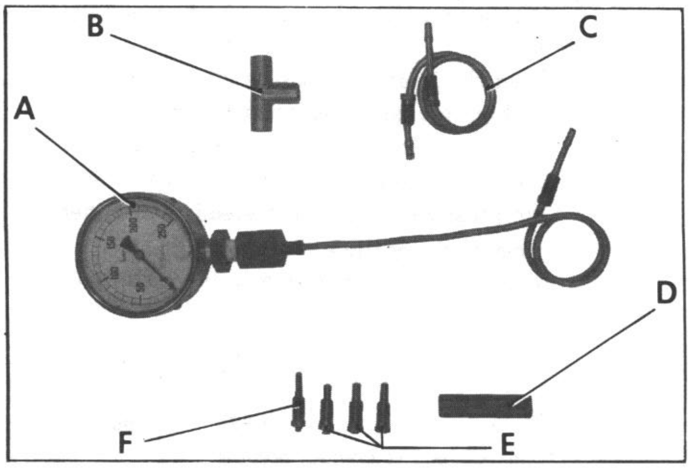
e) *Estate vehicles with manual steering 10/1976* →



f) *Estate vehicles with power steering 10/1976* ⟶



CHECKING THE HYDRAULIC COMPONENTS



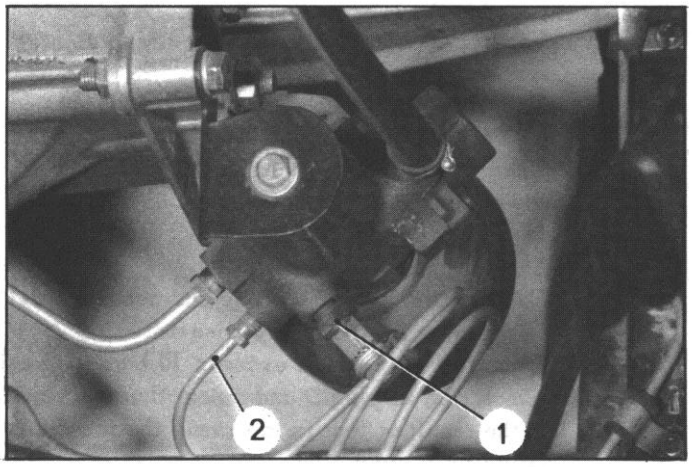
NECESSARY EQUIPMENT

- 1 pressure gauge **A**, 0 - 250 bars (0 to 3650 psi)
- 1 3-way union **B** (N° 5 416 494 K)
- 1 pipe **C** (DX 394-185)
- 1 plug **D** (2 female ends ϕ = 1.25 and ϕ = 9 × 1.25)
- 3 plugs **E** (male ends : ϕ = 8 × 1.25)
- 1 plug **F** (male ϕ = 9 × 1.25)

NOTE : *Plugs D, E and F are part of the kit sold under number 3657-T.*

PREPARATION

To facilitate this sequence of checks raise the vehicle on a ramp or place it over a pit. Access to safety valve is easier from beneath the vehicle.



1. First ensure :
   - that hydraulic reservoir filter is clean,
   - that hydraulic fluid is at normal running temperature (*Carry out a road test first if vehicle is cold*).

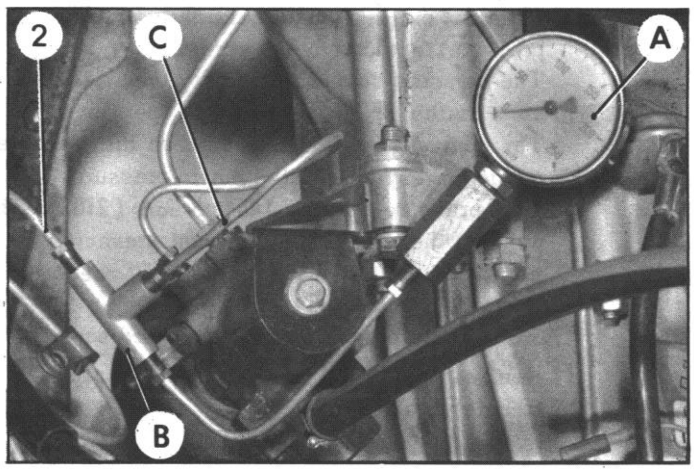
2. **Draining the circuits :**

   Place manual height control lever in *low position*.

   Slacken pressure regulator bleed screw (1).

3. **Fitting pressure gauge A :**

   Disconnect the tube (2) HP outlet from pressure regulator.
   Connect the following assembly into the circuit : pressure gauge A, 3-way union B and pipe C between pipe (2) and the pressure regulator.
   This assembly must remain in position throughout the test.



IMPORTANT :

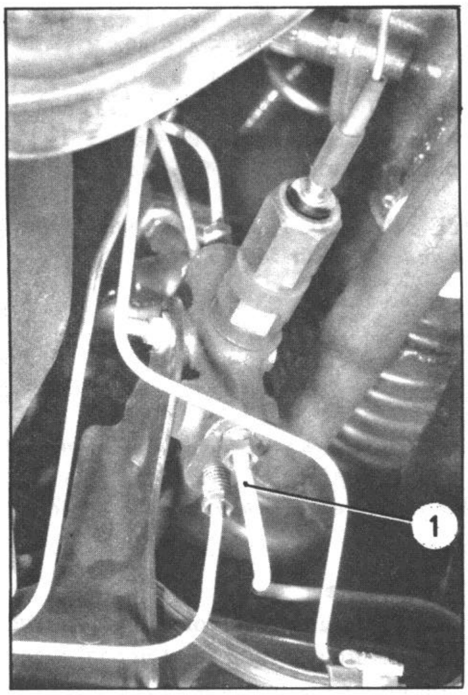
The testing sequence described below must be followed.

If after the test, a component appears defective, either replace it or repair it before proceeding to the next test.

Supplement N° 1 to Manual 818-1 (CORR)

CHECKS

4. Checking the main accumulator :



a) Disconnect HP inlet pipe (1) from safety valve.

b) Plug HP inlet pipe *(using plugs D and E).*

c) Tighten pressure regulator bleed screw.
Disconnect contact breaker lead from coil.
Operate starter, watching the pressure gauge : the pressure should rise steadily and then appear to stabilize.
Note this reading, which is the inflation pressure of accumulator.

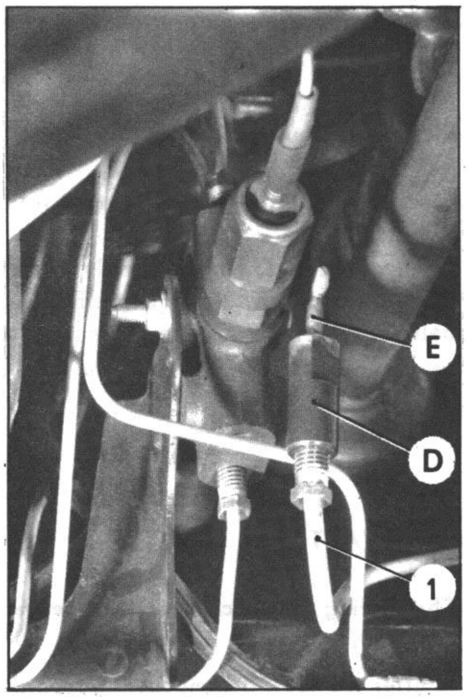
This pressure must equal **62** $^{+2}_{-10}$ **bars**

(899 $^{+29}_{-145}$ **psi)**

Connect lead of contact breaker

5. Checking cut-out :

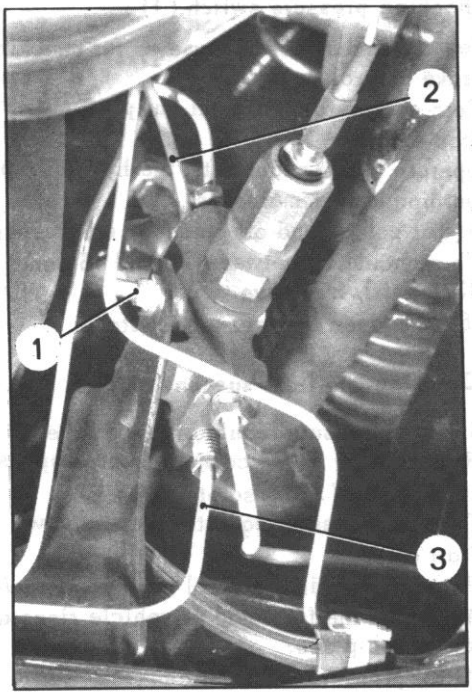
a) *Checking cut-out pressure :*
Start engine.
With pressure regulator bleed screw tightened, examine the pressure gauge.
When pressure stops rising, reading indicates maximum cut-out pressure.
This pressure must be equal to **170 ± 5 bars (2466 ± 73 psi).**
When the cut-out pressure is obtained allow the engine to run for a few minutes in order to stabilize pressure.
Stop engine.
Examine the pressure gauge and note the fall in pressure for the next **3 minutes.**
If the fall in pressure exceeds **10 bars (145 psi)** check seal of plug D and repeat the test sequence.
If the result of test is the same, the pressure regulator is defective.
Replace it or repair it.



b) *Checking the cut-in pressure :*
Start engine.
When cut-out takes place, slightly slacken pressure regulator bleed screw.
The pressure should fall gently then rise as soon as the HP pump begins to operate.
The minimum reading indicated on the pressure gauge corresponds to the cut-in pressure.
This pressure must be **145 ± 5 bars (2103 ± 73 psi).** If these cut-in and cut-out pressures do not lie within the given tolerances, check the pressure regulator.

c) Slacken the pressure regulator bleed screw.

d) Remove plug D and connect HP inlet pipe (1) to safety valve.

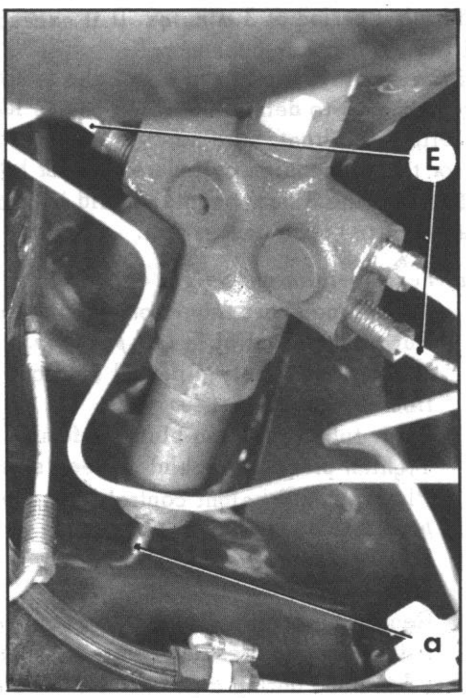


6. Checking the safety valve :

a) Remove safety valve fixing screw (1).
b) Remove from safety valve :
- supply pipe for front suspension (2),
- supply pipe for rear suspension (3).

c) Plug openings of safety valve *(plugs E).*
d) Tighten pressure regulator bleed screw and start engine.
e) Disconnect rubber overflow return pipe and watch aperture « a » of safety valve.
- *If there is a slight amount of seepage the safety valve is « in good order ».*
- *If there is a discharge of fluid the safety valve must be replaced..*

f) Slacken pressure regulator bleed screw. Connect overflow return pipe to safety valve. Secure safety valve (screw « 1 »).



7. Checking the safety valve slide-valve :

a) Remove plug from rear suspension outlet on safety valve at « b ».

b) Disconnect contact breaker lead on coil and turn engine using starter : fluid should start to run through the opening « d » when pressure reaches **110 to 130 bars (1585 to 1885 psi)**

c) Slacken pressure regulator bleed screw. Connect contact breaker lead.

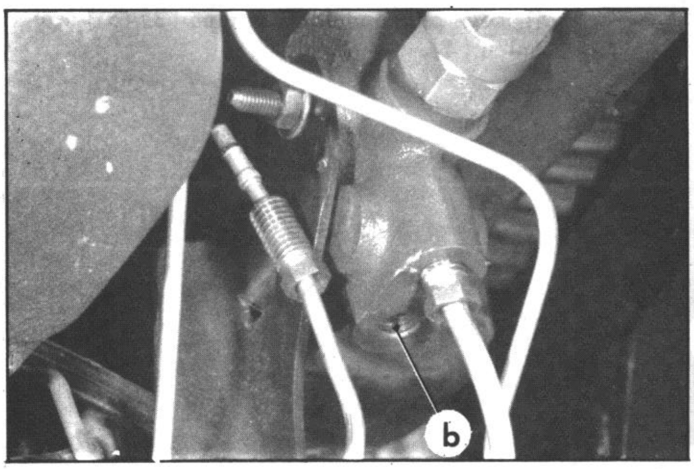
d) Plug safety valve opening « b » *(plug E).*

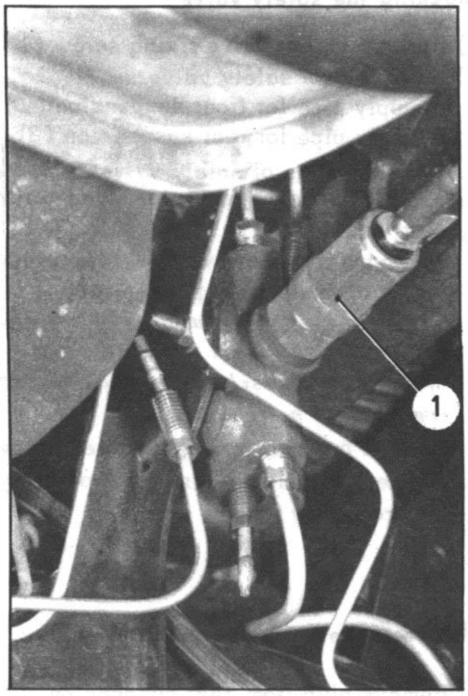
8. Checking the hydraulic brake control :

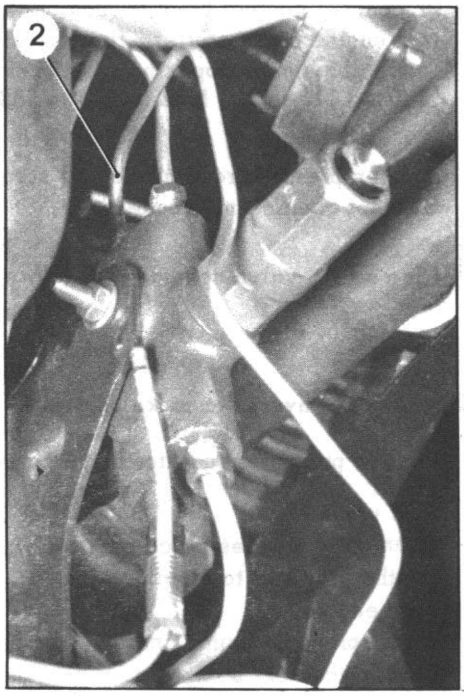
a) Tighten pressure regulator bleed screw.

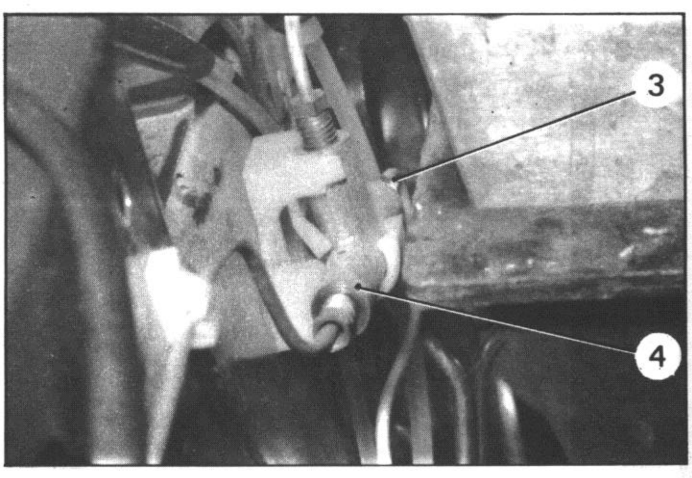
b) Start up engine.
When cut-out takes place wait a few seconds for the pressure to stabilize.
Stop engine.
Watch pressure gauge and note the pressure drop in the next **3 minutes.** If pressure drop exceeds **10 bars (145 psi)** repeat the test.

If the result is the same, the brake control valve is defective : change it.









9. Checking pressure switch (1) :

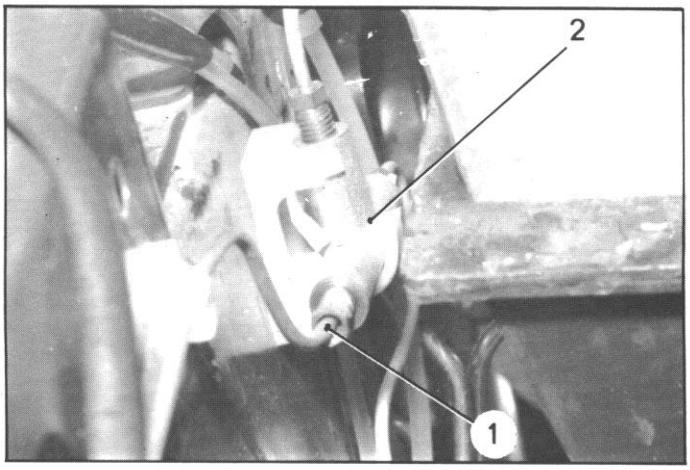
Test procedure is the same as for checking brake control.
Turn engine to obtain cut-out pressure.
Stop engine.
Operate brake pedal until the hydraulic pressure warning lamp remains on.
At that point, read off pressure on pressure gauge.
This should be between **75 and 95 bars (1088 to 1378 psi),** inclusive.
If not, change the pressure switch.

10. Checking the front suspension :

Slacken pressure regulator bleed screw.
Remove plug E and connect front suspension supply pipe (2) to safety valve.
Tighten pressure regulator bleed screw.
Start engine.
Put manual height control in *normal running position.*
Wait until the front end of vehicle rises and cut-out takes place.
Allow pressure to stabilize.
Stop engine.
Examine pressure gauge and note pressure drop during a period of **3 minutes.** If it exceeds **10 bars (145 psi),** check once more.
If the result is confirmed check the following components to determine which one is leaking :
- either the front corrector
- or the suspension cylinders (one or both).

Testing the 3 components should be carried out by eliminating each one in turn.

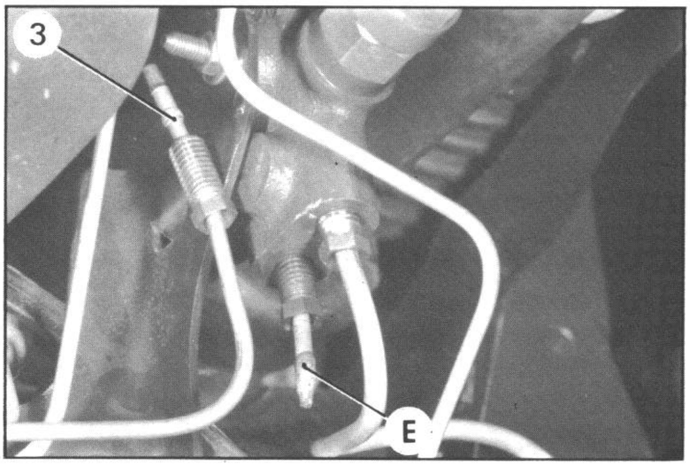
a) *Testing the front height corrector :*
Loosen pressure regulator bleed screw.
Put manual control in *low position.*
Disconnect supply pipe (3) for front cylinders from 3-way union (4).
Plug tube (3) using plug D (female).
Tighten pressure regulator bleed screw.
Place manual height control in *normal running position.* Start engine.
Allow pressure to stabilize.
Stop engine.
Read off pressure drop on pressure gauge.
If this drop in pressure is greater than **10 bars (145 psi)** during a period of **3 minutes,** repeat test. If the result is confirmed, the front height corrector is defective : change it.
Remove plug and connect pipe (3) to 3-way union (4).



b) *Checking the front suspension cylinders :*

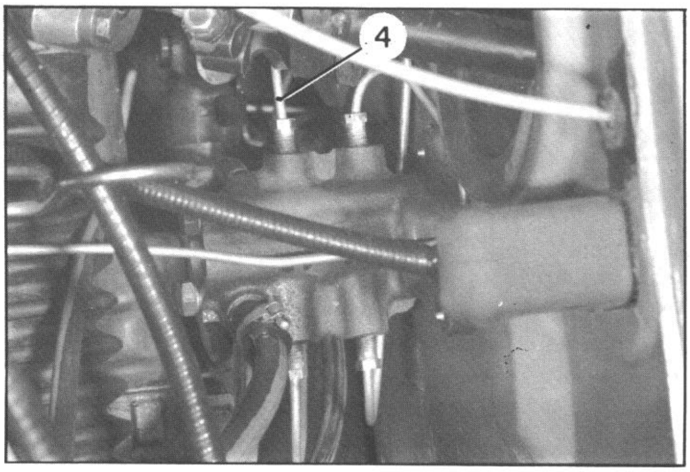
Slacken pressure regulator bleed screw.
Put manual height control in *low position*
Disconnect front left-hand cylinder supply pipe (1) from 3-way union (2).
Plug 3-way union opening using plug E.
Repeat test as described in preceding paragraph.
If the front left suspension cylinder is defective, replace or repair it.
Remove plug E.
Fit supply pipe (1).
If after testing the front height corrector and the left-hand front suspension cylinder, the drop in pressure persists, the front right-hand cylinder is defective.

Replace or repair it.



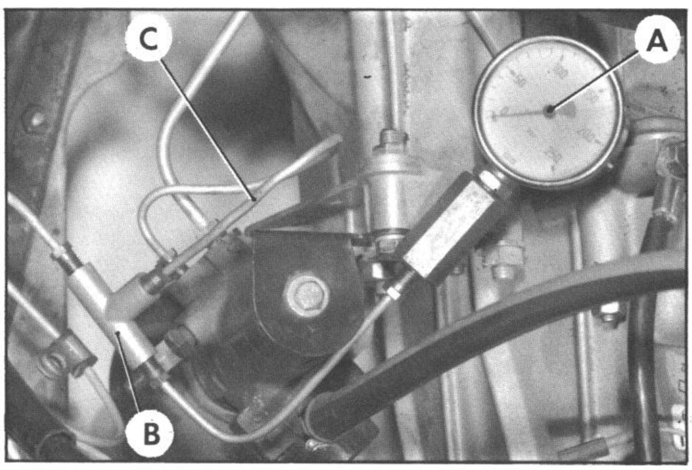
11. Checking the rear suspension :

Slacken pressure regulator bleed screw.
Put manual height control in *low position.*
Remove plug E.
Connect rear suspension supply pipe (3) to safety valve.
Disconnect rear brake supply pipe (4) from brake valve.
Plug orifice of pipe using plug D.
Tighten pressure regulator bleed screw.
Place manual height control in *normal running position.*
Proceed as for test of front suspension.



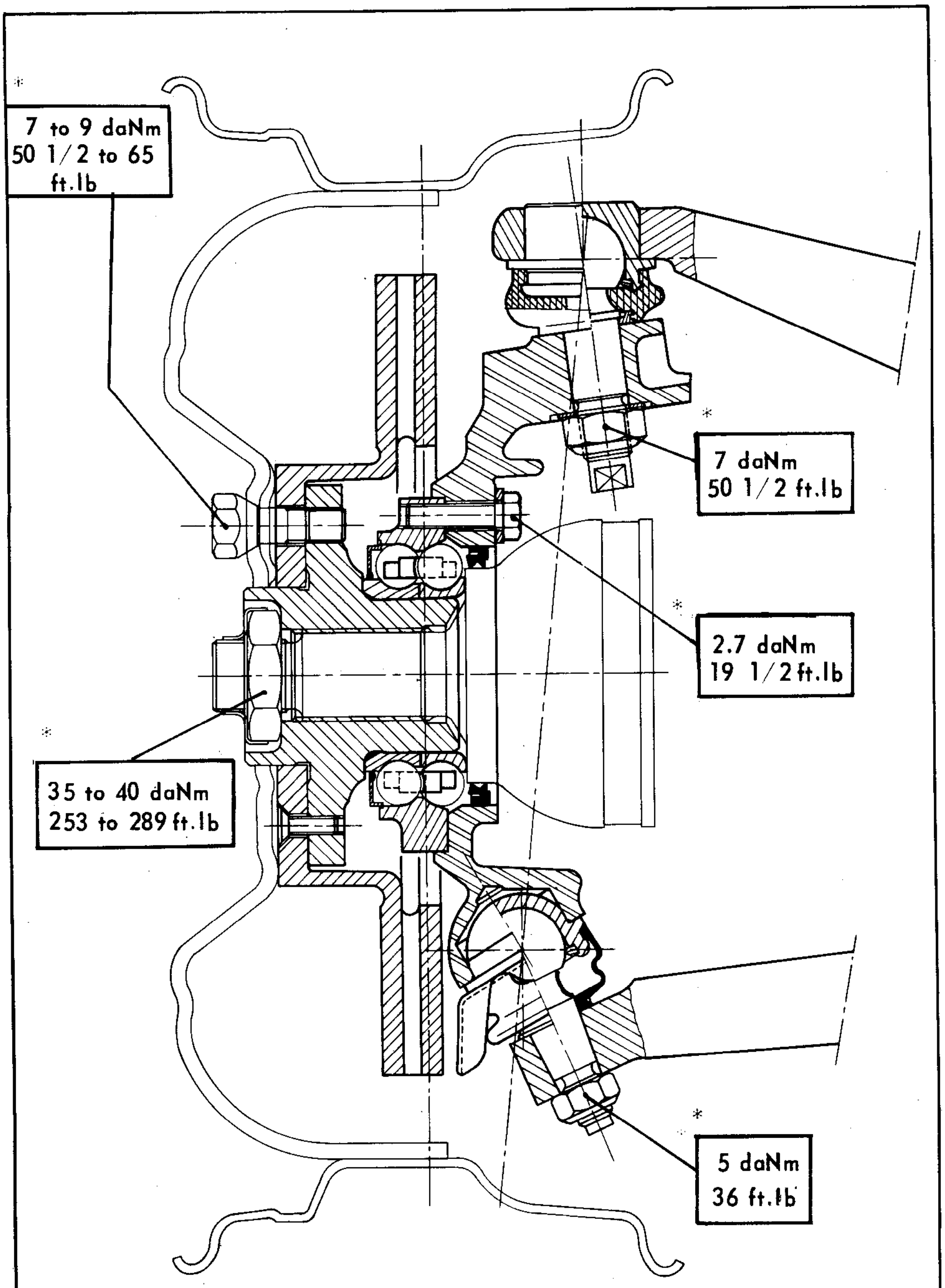
12. Slacken pressure regulator bleed screw.
Disconnect 3-way union B together with pressure gauge A and pipe C.
Fit connecting pipe of safety valve to pressure regulator.

Tighten pressure regulator bleed screw.



SWIVEL

L. 41-1



* Fixing screw for lower ball joint on swivel : 2.7 daNm (19 1/2 ft.lb)

Supplement N° 1 to Manual 818-1 (CORR)

I. DESCRIPTION

Castor (*adjustable by displacing lower arm*) :
Castor angle (*for optical appliance readings*) : .... - 0° 40' to - 1°

Camber (*not adjustable*) :
Camber angle .... $0^\circ \begin{array}{l} +13' \\ -29' \end{array}$

Alignment :
Toe-in .... 1 to 4 mm

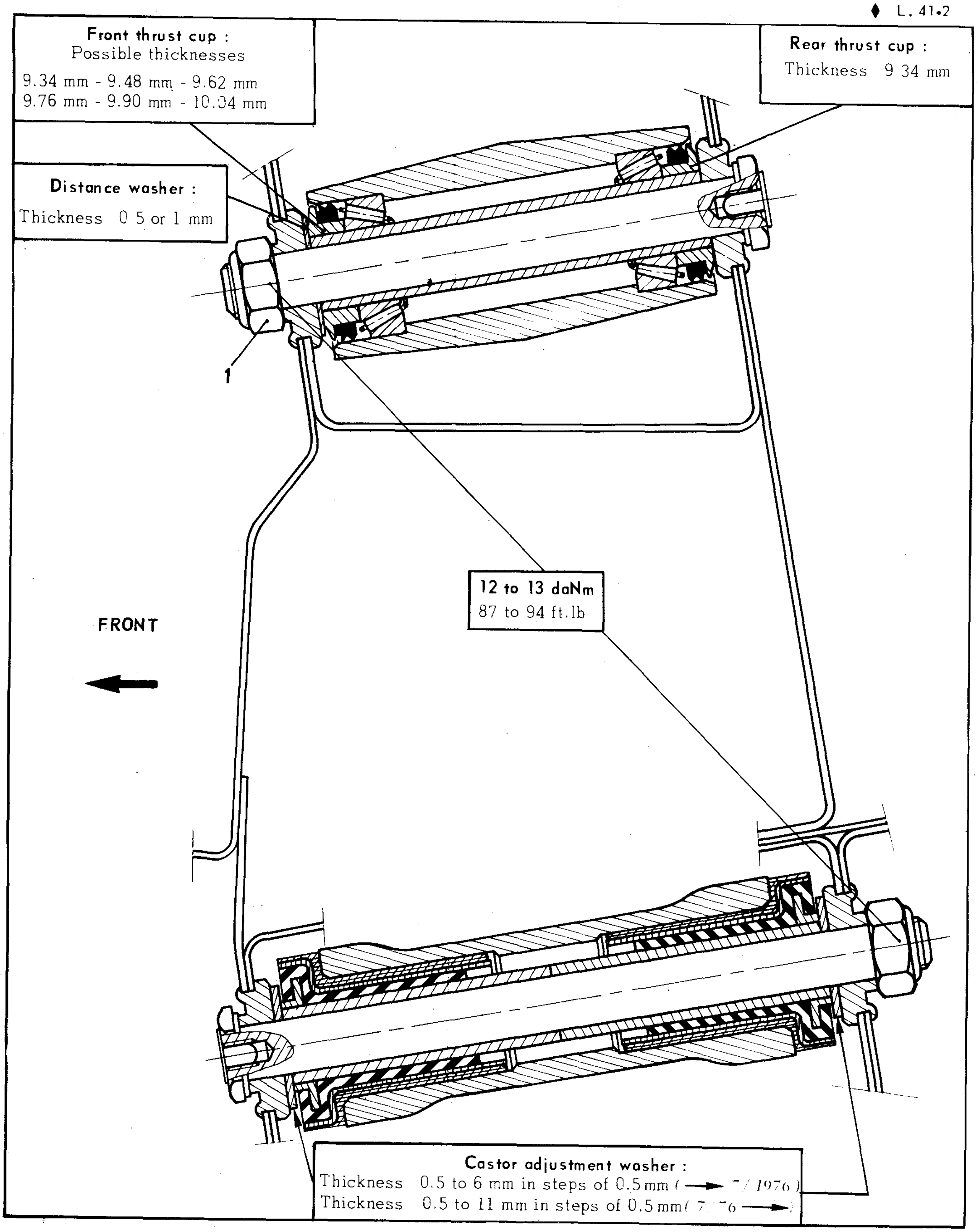
IMPORTANT : Checking of readings given above should be made :

- **with vehicle empty, engine running and in normal running position with heights maintained at 165 mm at the front and 215 mm at rear (Saloons) or 228 mm (Estates)** (See Op. MA. 410-0)

NOTE : *Castor angle at the ball joint can be checked and adjusted with equipment 6309-T (class 2 tools), see page 3.*

JOINTS AT WHEELARM SPINDLES

♦ L. 41-2



II. SPECIAL FEATURES

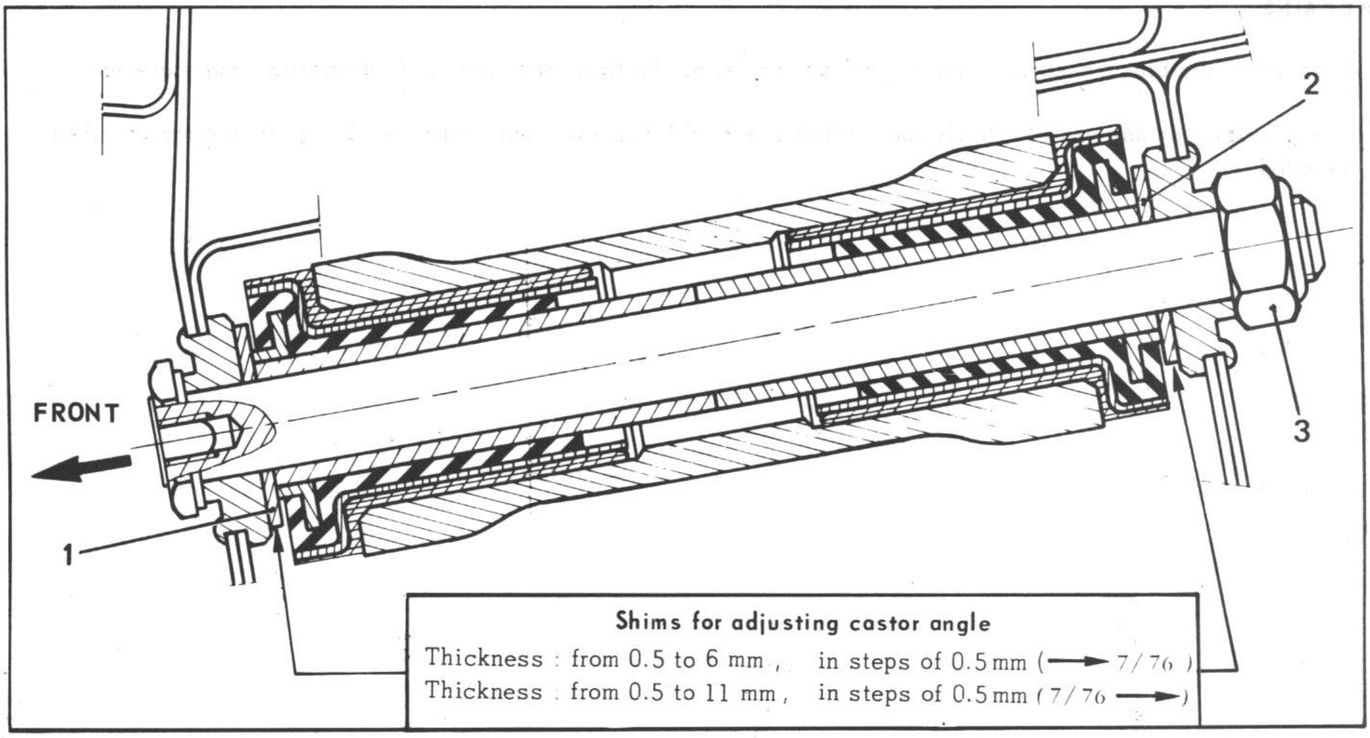
Upper wheelarms

Stress on bearings *(by selection of front thrust cup)* .... 500 N (50 kg)

Lateral play of arm before tightening screw (1) *(by selection of distance washer)* .... 0 to 0.9 mm

Wheel balancing : dynamic balancing to within 10 grams minimum

L. 41-2



Lower wheelarms :

Lateral clearance of wheelarm, before tightening nut (3)
(through choice of washer « 1 ») .... 0 to 0.9 mm

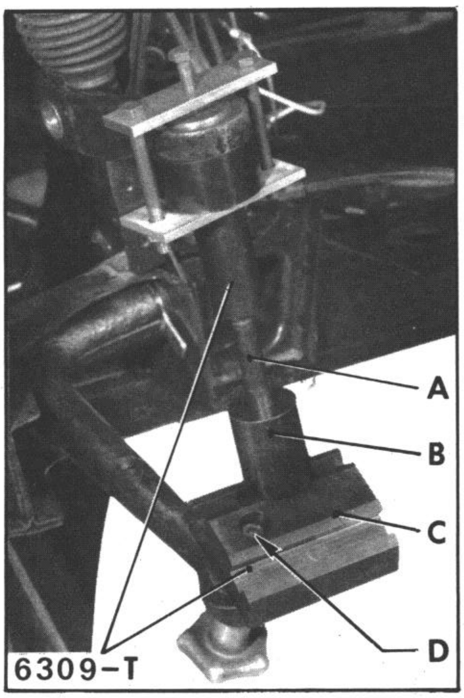
NOTE : To carry out this measurement, it is necessary to use tool 6312-T, class 2, in order to avoid any mistakes due to the expanding of the « fluid-bloc » bushes.

Checking and adjusting the castor angle, using tool 6309-T :

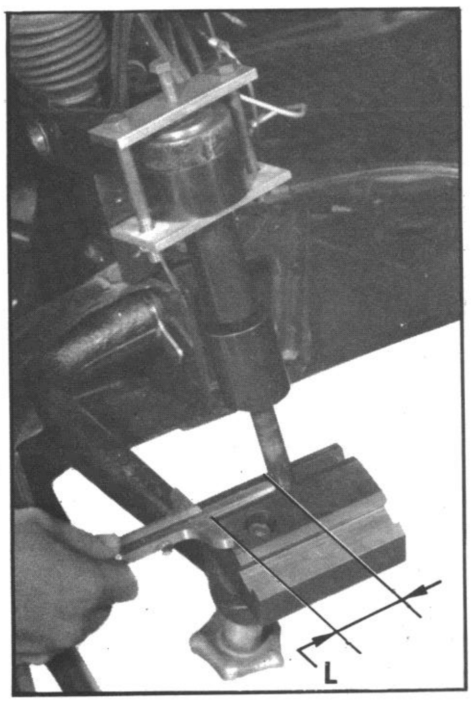
Assemble the components of tool 6309-T and place checking pin **A** in the groove of pad **C**.
Slacken screw **D**, and tilt pad **C** so that bush **B** is squarely in contact with it, over its entire contact face, and tighten screw **D**.
Measure distance **L**. It must be between **49 and 50.5 mm**.
NOTE : *A 1 mm change in the thickness of the adjustment shims produces a 1 mm variation of distance L.*
Remove the wheelarms, and determine the distribution of shims (1) and (2) in order to obtain distance **L**.

Supplement N° 1 to Manual 818-1 (CORR)

FRONT



FRONT



REPAIRS :

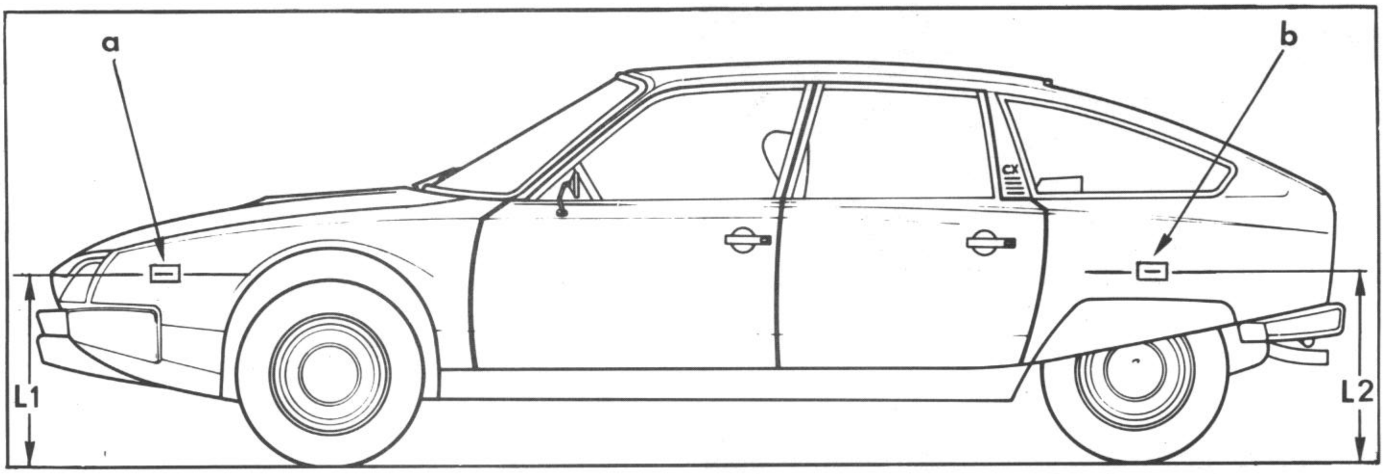
- Old type « fluid-bloc » bushes (length : 79.5 mm) must not be fitted with the later wheelarms., and vice-versa.

- It is possible, on any vehicle, to fit one, or both sides with the later wheelarms, providing the appropriate shims are used.

CHECKING AND ADJUSTING THE FRONT AXLE USING AN OPTICAL ALIGNMENT GAUGE

IMPORTANT . The checks and adjustments described in this operation are carried out with a BEM-MULLER 665 JUNIOR kit.
The sequence and the procedure remain the same when carried out using another type of equipment. In that case, take account of the instructions of the other kit.

I. PREPARING THE VEHICLE



IMPORTANT : *In order that the following checks be accurate, it is imperative to check and mark the « height » position of the vehicle.*

Supplement N° 1 to Manual 818-1 (CORR)

1. Check tyre pressures.

2. Reading off vehicle heights in normal running position.

a) *Checking heights :*
Adjust if necessary *(see Operation MA. 430-0)*

b) *Marking the position of the vehicle (engine running):*
Stick a strip of adhesive paper at « a » and « b » and mark a locating point on each strip.
Measure the distance L1 when vehicle is at a height of 165 mm at the front and the distance L2 when the vehicle is at a height of 165 mm at the front and the distance L2 when the vehicle is at a height of 215 mm at the rear (*Saloon vehicles*) or 228 mm (*Estate vehicles*). Note values L1 and L2 which will simplify the following checks.

3. Check that the lengths of visible thread on left and right trackrods are equal to within approximately 2 mm
(Manual steering vehicles only)

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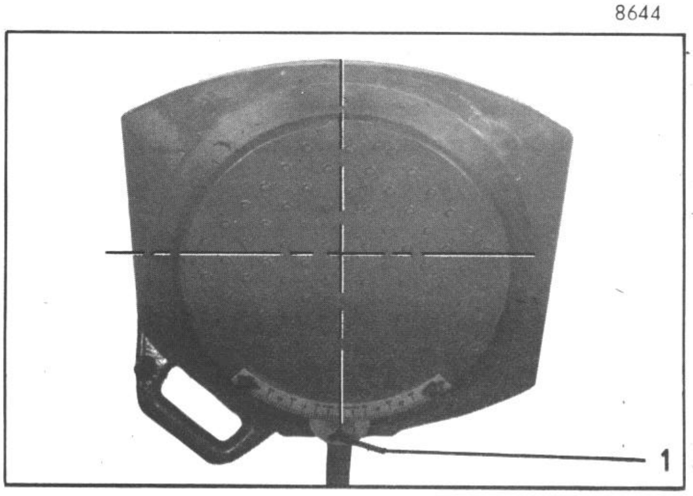


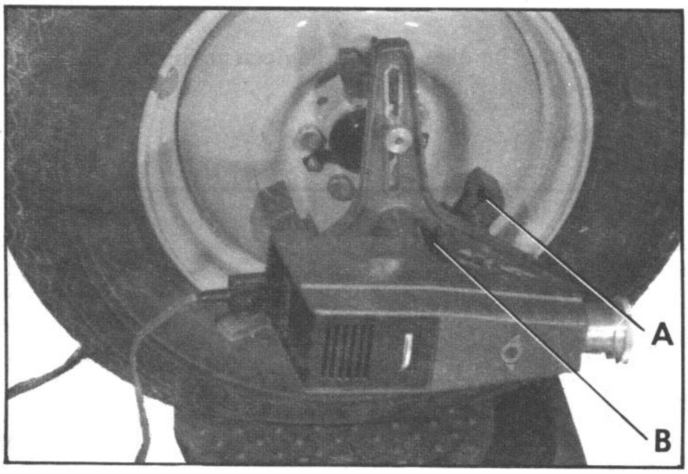
II. POSITIONING THE VEHICLE

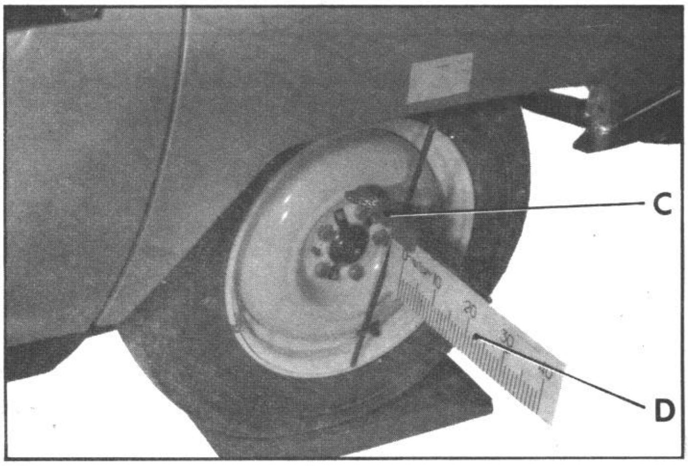
1. Prepare and position the vehicle :

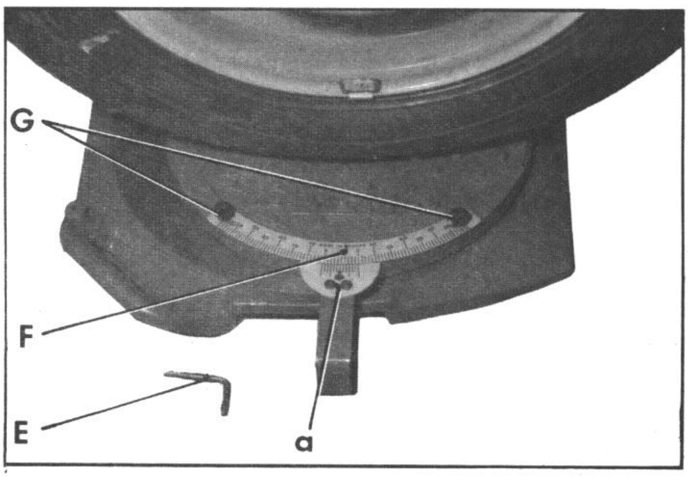
a) Lock turntables using pins (1).
Move the vehicle forward in a straight line in order *to place front wheels in the centre of the turntables.*

IMPORTANT : If the turntables are not flush with the ground (when not set in the ground), place a compensating chock, of identical thickness to that of the turntables, under each rear wheel.

b) Apply the handbrake.







2. Fitting the alignment gauges :

a) Remove all hubcaps and the two detachable rear wing panels.

b) Adjust the position of the magnetic feet **A** so that with supports in place, the central hole is in the centre of the rim.

c) Fix the projectors on supports (tighten knurled screw) (finger tight only).

NOTE : Great care should be taken in setting up this equipment since the accuracy of the tests depends on its correct adjustment.

Connect projectors to an appropriate electricity supply.

3. Obtaining « straight line » steering position :

IMPORTANT : In order that the following checks should be accurate, the zero setting of the turntables must correspond exactly to the *straight line* position of the vehicle.

a) Place the magnetic supports **C** of the graduated rule forward to its maximum extent against its stop.

b) With the engine idling, set the manual control to *normal running position.*

Check measurements L1 and L2.

c) Remove turntable locking pins E.

Focus beams on gratuated rules so that illuminated index is clearly shown on graduations.

A) Vehicles with manual steering :

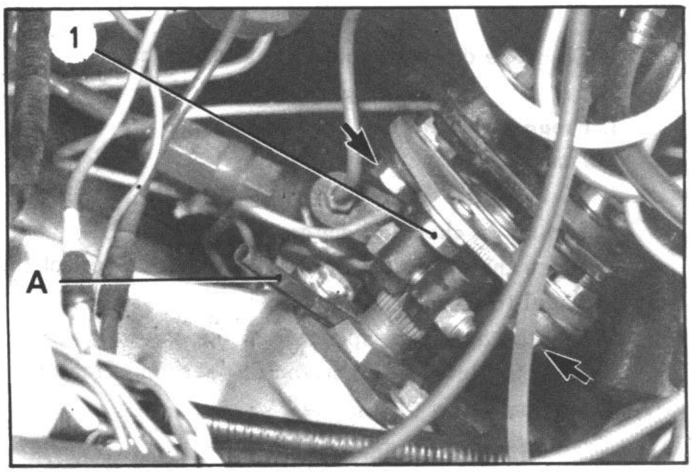
Take the reading shown for each side of the vehicle.

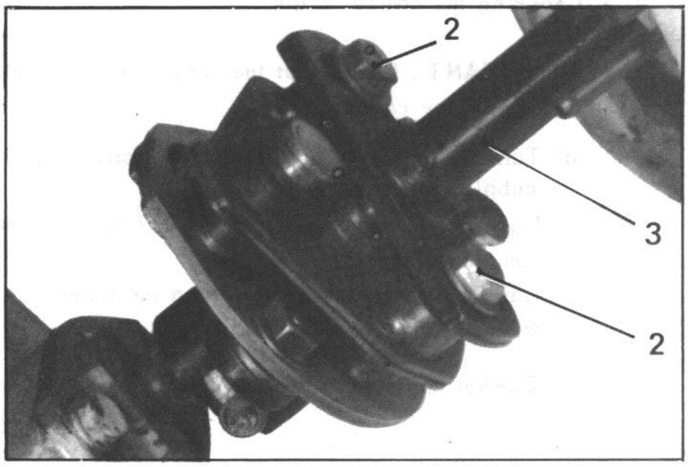
Turn the steering to obtain same reading for each side of the vehicle.

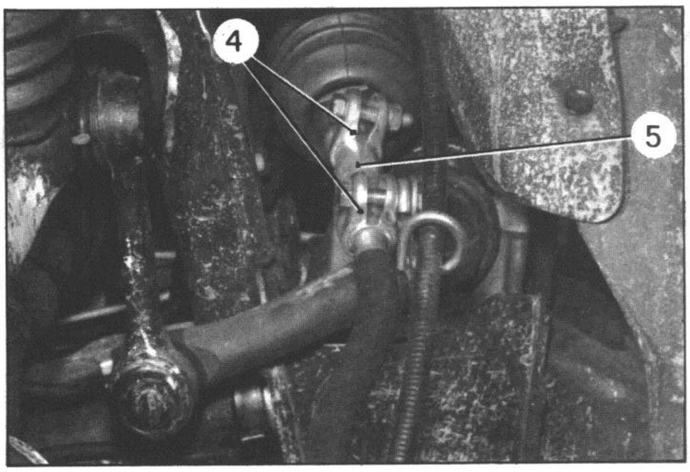
Line up the zero mark of the graduated sections **F** opposite the fixed mark « a » on each turntable.

Lock the selectors with screws **G**.

Remove projectors.
(Leave projector brackets in place).







B) *Vehicles fitted with power steering :*

The steering should return to the « straight ahead » position of its own accord.

In this position, check that the following two conditions are met.

1) That it is possible to insert pin **A** (dia = 6.5 mm) into the control pinion *(centre point of rack)*

2) That the values indicated on the rear graduated rules **B** are identical.

1st case : **The pin cannot be inserted :**

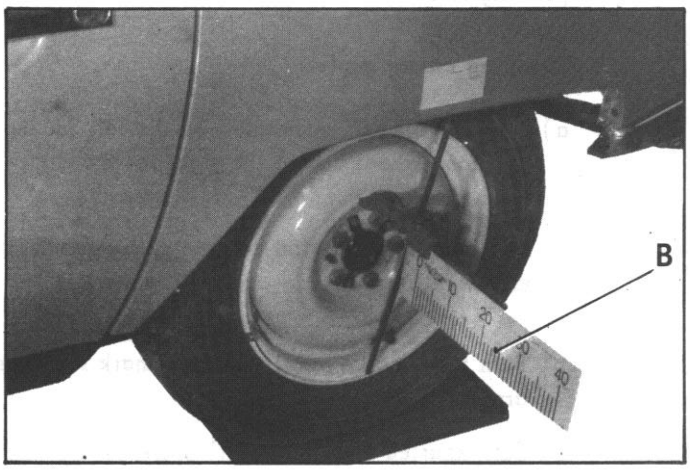
- Slacken screws (⟶) and operate eccentric (1) until pin inserts.

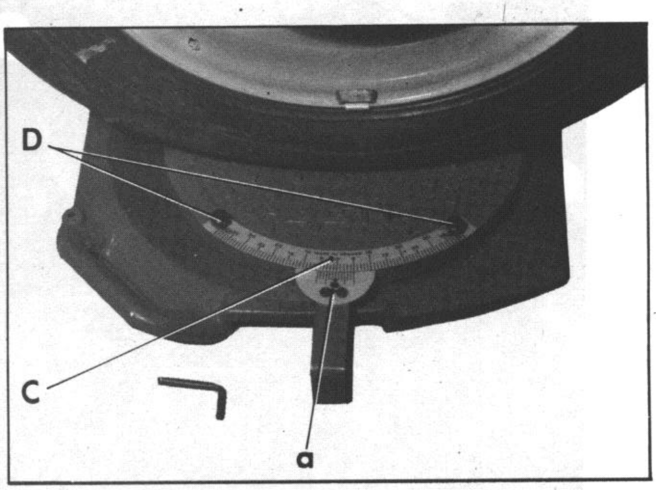
NOTE : In the case where the eccentric travel is insufficient :
- Place eccentric at the centre of its travel.
- Slacken screws (2) and rotate steering shaft (3) until pin inserts.

In the case where this last operation is unsuccessful, it is necessary to move the steering clamp on the rack control pinion.

2nd case : **The values indicated on rear graduated rules are different :**

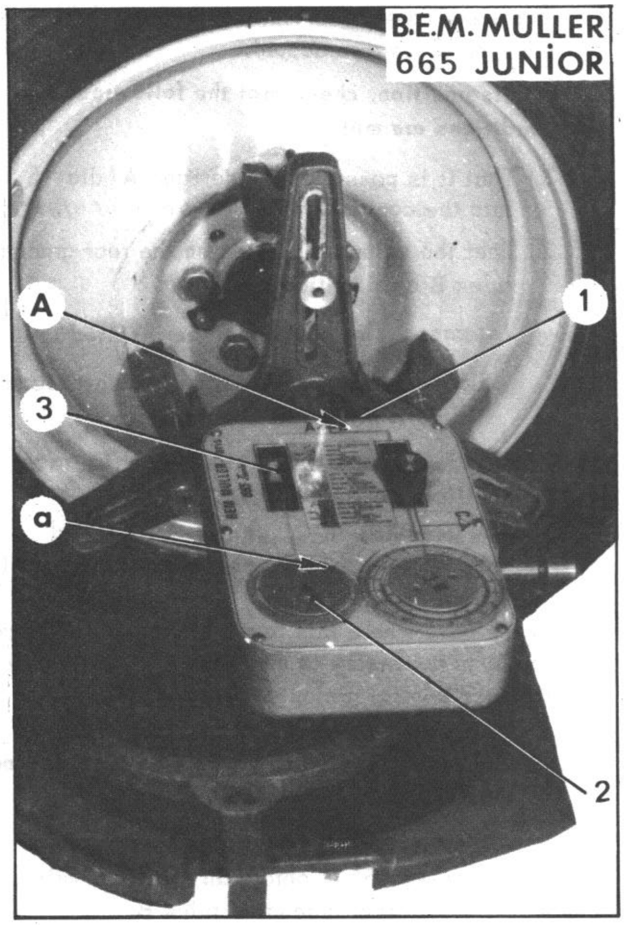
- Slacken collars (4) and use one of the sleeves (5) to obtain an identical value on both rear graduated rules **B**.
- Bring the zero of graduated sections **C** opposite fixed mark « a » of each turntable.
- Lock the graduated sections in place using screws **D**.
- Remove projectors (leave their brackets in position).





Supplement N° 1 to Manual 818-1 (ADD)

III. CHECKING THE CAMBER ANGLE



NOTE : The camber angle is not adjustable.

1. Prepare vehicle and set in position *(see chapters 1 and 2).*

2. Setting up checking apparatus :
Place the apparatus on the magnetic support of the wheel to be checked.
Use the axis corresponding to the *blue arrow A.*
Keep the level in a horizontal position. Tighten locking screw (1).

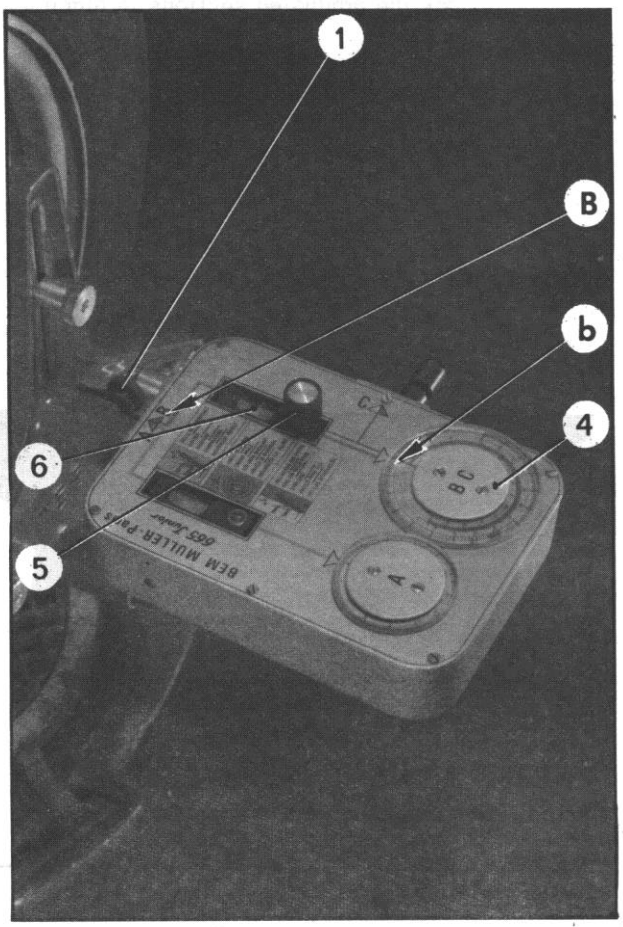
3. Checking the camber angle :

IMPORTANT : Check that the reading L1 has not changed *(see chapter 1).*

a) Turn the disc (2) until the fixed spirit-level bubble (3) is centred.
b) Note in *blue scale* (at « a ») the reading of the camber angle.
c) Carry out the same operation on the other wheel.

Camber angle must be between $0^{\circ}\ {}^{+13'}_{-29'}$

IV. CHECKING AND ADJUSTING THE CASTOR ANGLE



IMPORTANT : For precise results from this check it is imperative to set the vehicle heights as follows : 165 mm at front and 215 mm at rear *(Saloons)* **or 228 mm** *(Estates).*

1. Setting the vehicle height :
a) Check measurements L1 and L2 *(see chapter 1).*
b) Release pressure in suspension system.

2. Setting control appartus :

Place the apparatus on the magnetic bracket of the wheel to be checked using the axis corresponding to *green arrow B.*

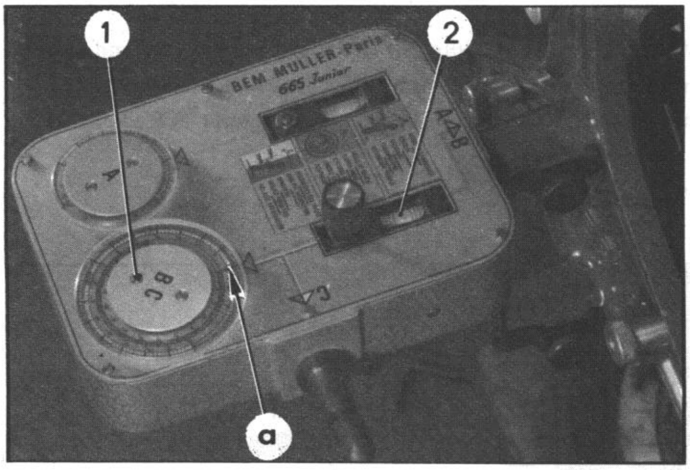
3. Checking castor angle :

a) Turn wheels 20° outwards : to the left for the left-hand wheel and to the right for the right-hand wheel.

Keeping the apparatus horizontal tighten locking screw (1).

b) Turn the disc (4) until the zero mark is opposite arrow (at « b »).

c) Turn knurled knob (5) until spirit-level bubble (6) is centred.



Turn the wheels 20° inwards.
Set apparatus back to horizontal position.

Re-centre spirit-level bubble (2) by turning disc (1).

Read off castor angle on *green scale* (at « a »).

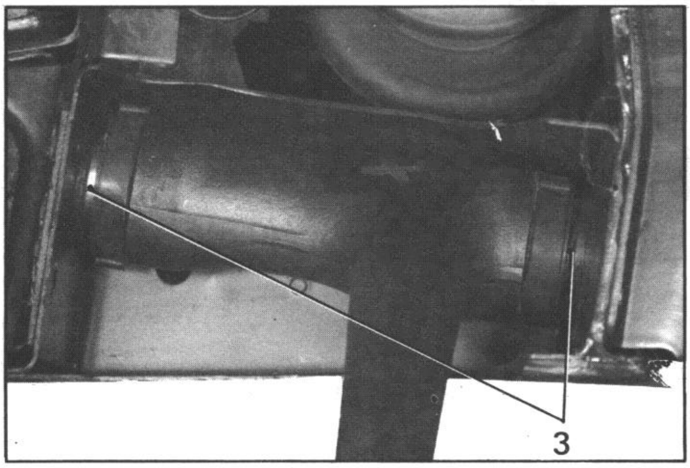
Castor angle must be between 0° 25' and 1° 15' overall.

If not, adjust castor angle.

4. Adjusting castor angle :

IMPORTANT NOTE :

To carry out this adjustment it is essential to use tool 6312-T **class 2** which is required for fitting lower wheelarm on front axle.



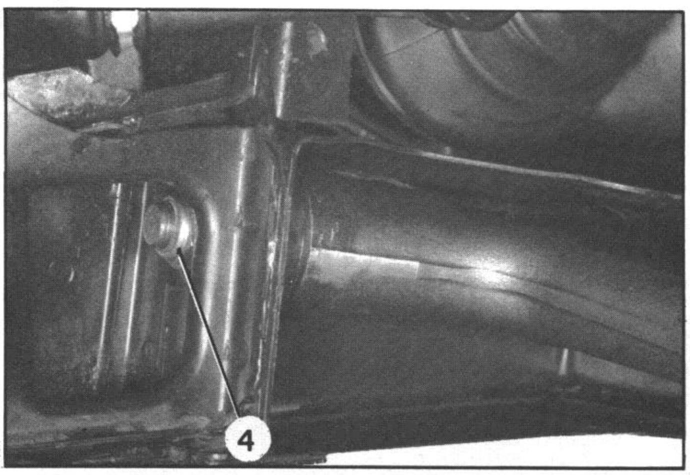
a) **Remove :**

- wheel,
- lower arm and castor angle adjusting shims (3).

b) **Determining distribution of shims :**

NOTES :

- A minimum of 1 shim should be set on each side of the wheelarm.
- Movement of **1 mm** will vary castor angle by **15'**.
- Total thickness of shims fitted must correspond to the total thickness of shims found on dismantling, in order to maintain the correct assembly of the wheelarm in axle unit.



c) **Fit :**

- Lower wheelarm and shims (3).

  Tightening torque on wheelarm spindle nut (4) : 130 m.daN (13 m.kg) (94 ft.lb).

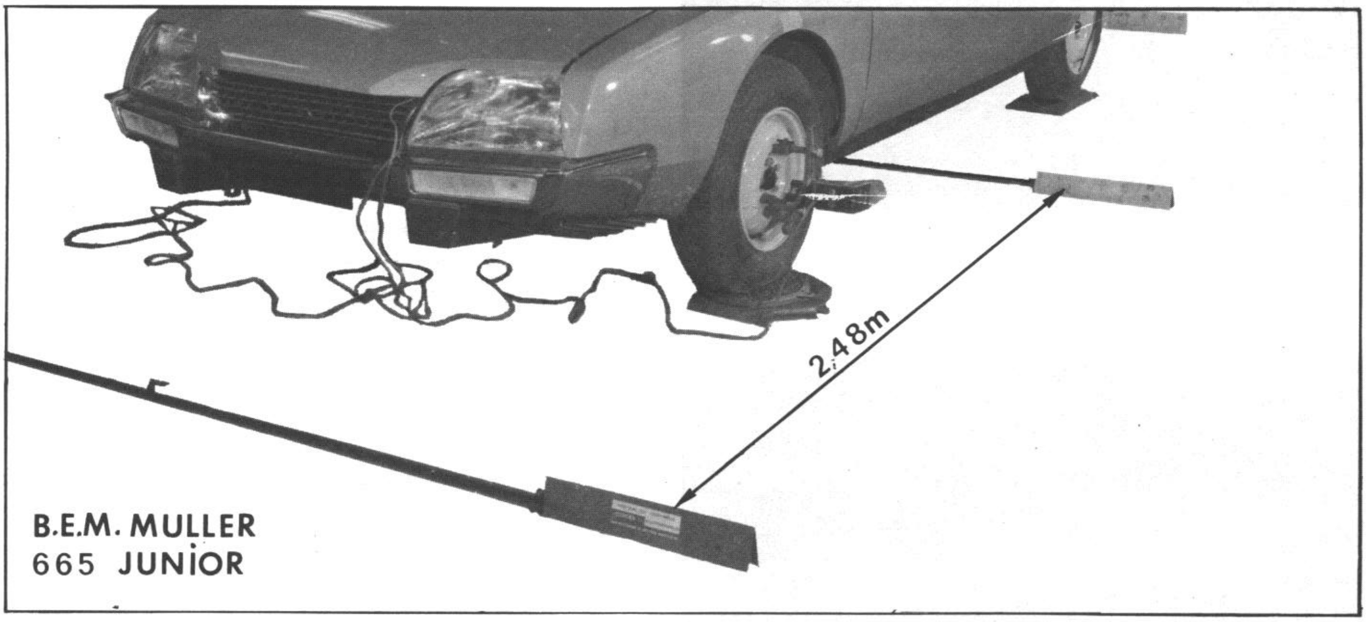
- wheel.

d) **Check castor angle.**

V. CHECKING THE ALIGNMENT OF THE FRONT WHEELS

(Front wheel toe-in)

1. *Preparation of vehicle. Position vehicle, set the steering to the straight line position*(see chapters I and II).
   IMPORTANT NOTE : **When the steering has been set in « straight line » position,** (the marks in line with zero on the sectors of the turntables) **steering wheel and front wheels must not be touched throughout the whole of the testing operation.**
   With the engine idling, set manual height control to « normal running » position.



2. Check readings L1 and L2 (see chapter I).
3. Adjust the length of the telescopic rods approximately according to the front track of the vehicle, both rods being of the same length.
   IMPORTANT : Place the rods on either side of front axle so that they are parallel to each other and perpendicular to the longitudinal axis of the vehicle and the overall **distance between them is exactly 2.48 meters.**
   The rods need not necessarily be at equal distance from the axle but the spacing between them is essential.
4. **To make the test :**
   Pivot one of the two projectors towards the front rod and read off on the graduated rule the value indicated by the luminous mark. Then pivot projector towards the rear rod and move this laterally until the same reading is obtained as for the front rod.
   Repeat this operation with the other projector, pivotting it successively towards the rear rod and then towards the front rod and each time note the readings indicated by the luminous mark.
   The reading shown on the rear alignment rod should be 1 to 4 graduations greater than the reading shown on the front alignment rod which corresponds to a **toe-in between 1 to 4 mm.**
   NOTE : Never adjust the lens between the two front and rear readings.

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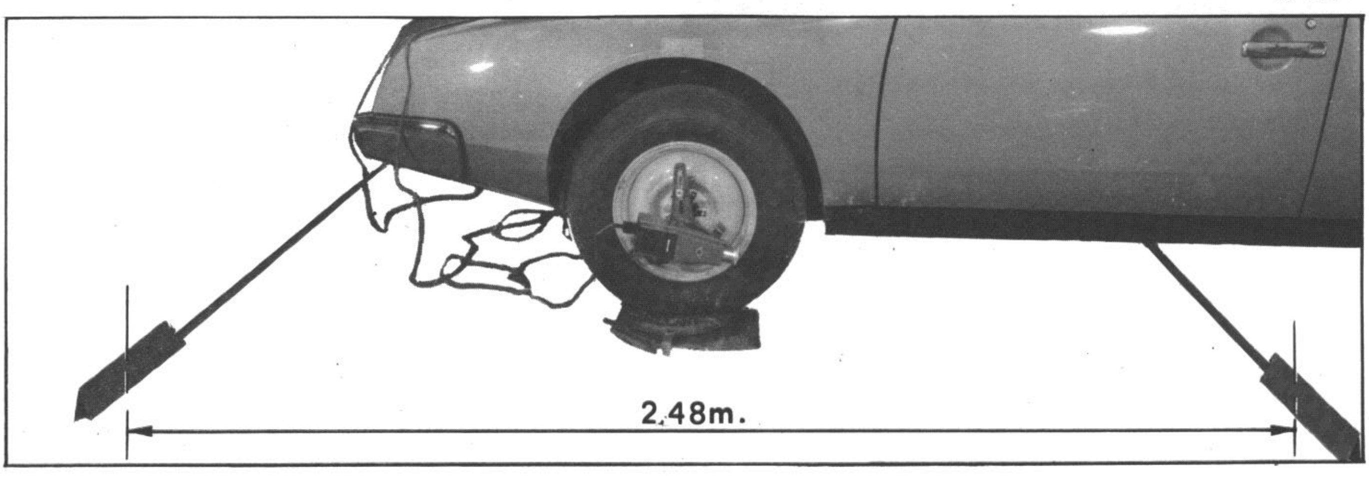
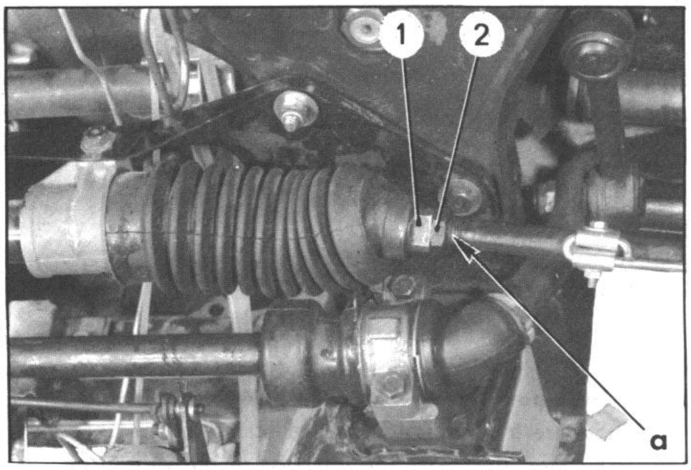
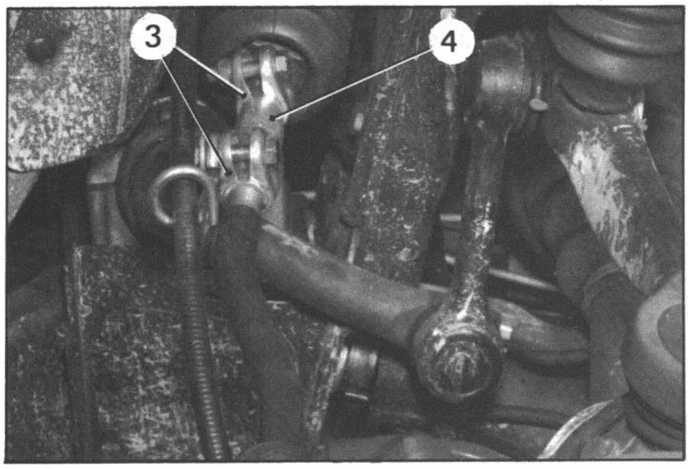
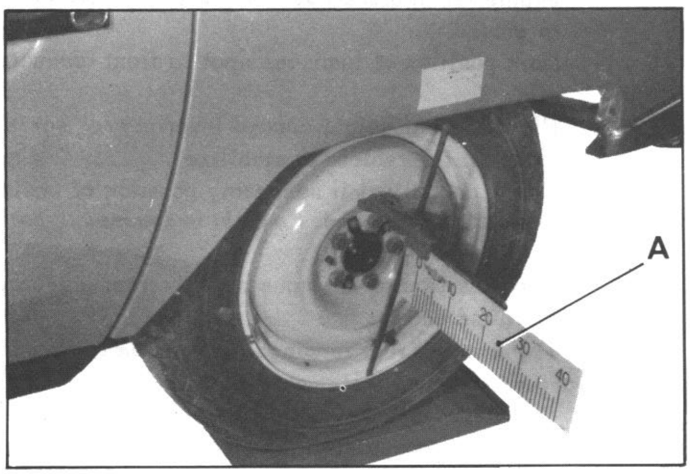
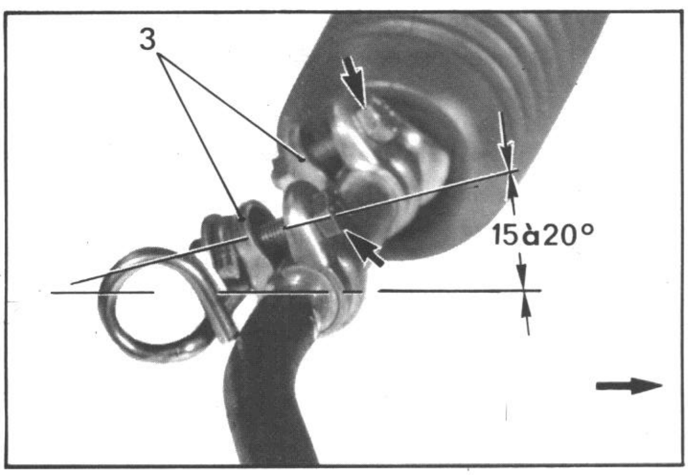










5. Adjust the wheel alignment :

Vehicles with manual steering :

Slacken locknuts (2).
Rotate the ball-joint stems (1) a fraction of a turn at a time to obtain correct setting.

NOTE : Rotate each stem the same amount.

- One complete rotation of each stem alters the adjustment by 4 mm approximately.

Tighten locknuts (2) from 3.6 to 4 daNm (26 to 29 ft.lb).

Check the adjustment
IMPORTANT : The length at « a » of the visible thread on the L.H. and R.H. trackrods *must be equal to within 2 mm.*

Vehicles fitted with power steering :

Slacken collars (3).

Turn sleeves (4) a fraction of a turn at a time to obtain correct setting.

NOTE : Turn **each** sleeve the same amount in order to retain the alignment with the rear axle unit.

(Same reading on each side on graduated rules A)

One complete turn of each sleeve alters the adjustment by 7 mm.

Position the two collars (3) as indicated on photograph.

Tightening torque of screws ⟶ 0.9 daNm. (6 1/2 ft.lb).

VI. CHECKING AND ADJUSTING THE STEERING GEOMETRY

The crossmember supporting the steering has slots at its fixing point on the front subframe.
Any vertical movement of this crossmember alters the steering geometry.

WARNING :
This operation is only to be carried out in certain cases, such as :
- accidental impact, with repercussions on the steering system,
- work on the vehicle entailing removal of steering crossmember,
- vehicle with poor road stability (**poor stright-line stability)** or with excessive tyre wear.

CHECKING

1. Prepare the vehicle, as for checking front wheel alignment (*See chapter V*).

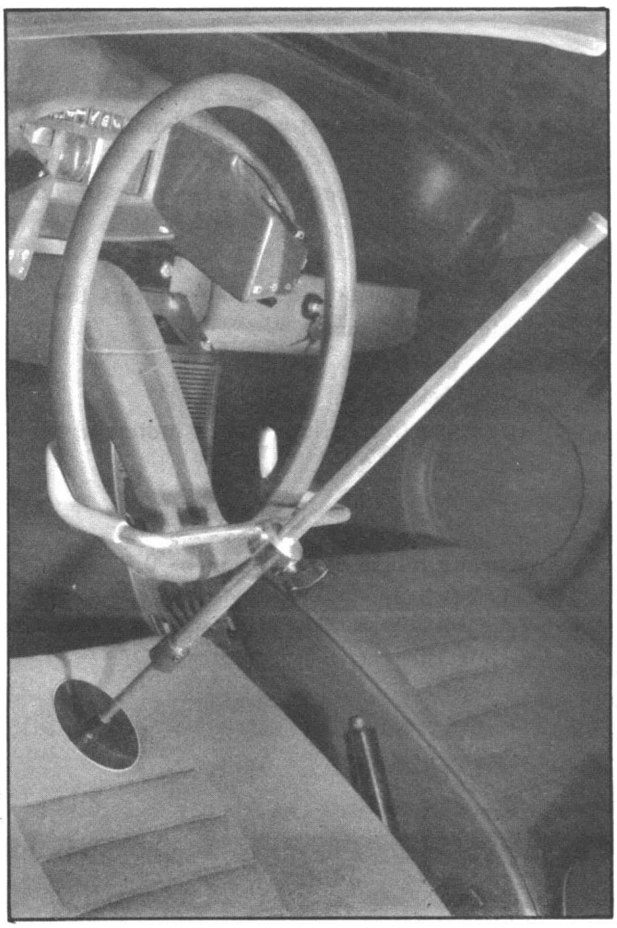
NOTE :

A) *Manual steering vehicles :*

With the steering in the « straight-ahead » position, lock the steering using a commercially available tool (FACOM - MULLER - WILMONDA)

B) *Power steering vehicles :*

Do not actuate steering wheel during check (hydraulic locking of rack).
As a precaution, a steering wheel locking tool may also be used.



2. **Mark position of vehicle in relation to ground :**
   Secure a weighted length of string to the front bumper, and mark the position of the weight on the ground (The object of this is to always bring the vehicle back **to the same position** in order to carry out correct measurements).

   NOTE : Other procedure :
   This check having to be carried out wheel by wheel, it is possible to use the free projector.
   Secure projector to scuttle panel crossmember, and focus it onto a fixed object, which will indicate the initial positioning of the vehicle.

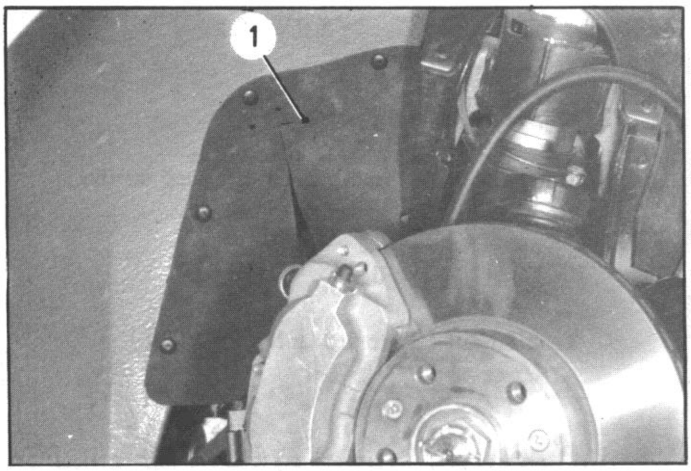
3. **Measure the variation in the wheel alignment wheel by wheel, as a function of the height of the vehicle.**

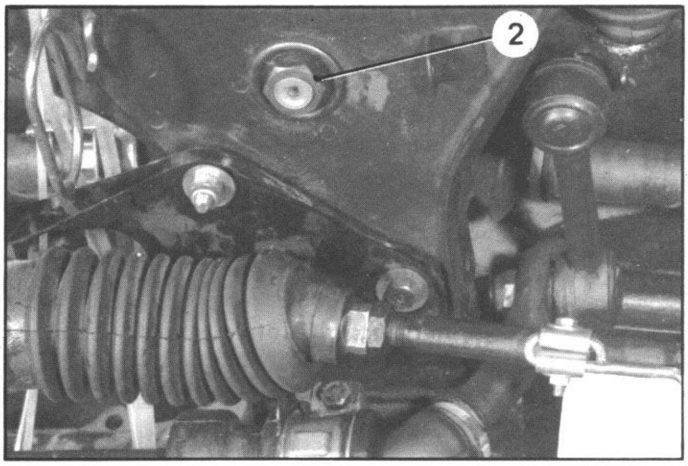
   a) *From the normal driving position to the high position (Bound) :*
   With vehicle in *normal driving position.*
   engine running and position marked in relation to ground :
   Mark position of luminous spot on front graduated rule.
   Place manual height control lever in *high position*, and wait for vehicle to stabilize.
   Check and adjust if necessary position of vehicle in relation to ground. (*weight or luminous spot on fixed object*).
   Mark position of luminous spot on front graduated rule, and on rear one :

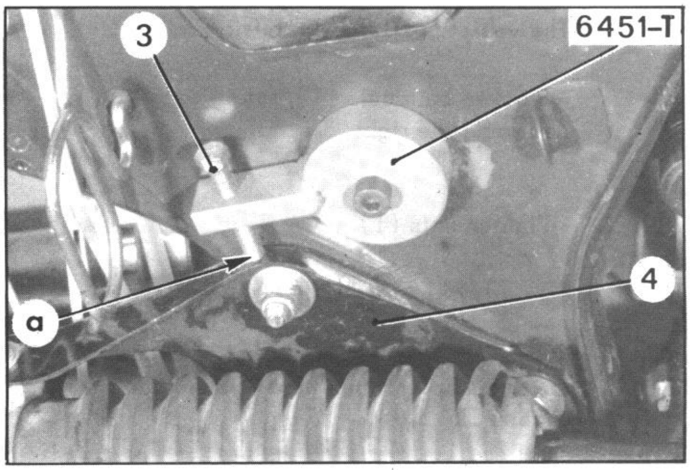
   1) **Front and rear readings are the same** (no variation in alignment in the wheel).
   NOTE : The reading (*high or low position*) on the graduated rules differs from the initial reading (*normal reading position*) because the front track has altered.

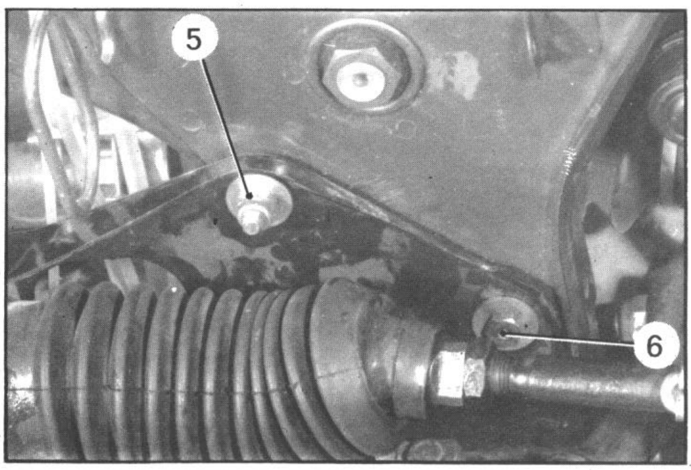
   2) **Front and rear readings are different** (in this case the alignment has altered, either in toe-in or toe-out).
   0 to 1 mm toe-in is permissible on either wheel.

   b) *From the normal driving position to the low position (Rebound) :*
   Proceed as for previous measurements, place manual height control lever in low position. In this case, the permissible difference in alignment is **0 to 1 mm toe-out.**









ADJUSTMENT

NOTE : The steering crossmember will have to be moved as a function of the readings obtained during checking :

a) Towards the **top** to obtain :
   - **toe-out** *in the high position*
   - **toe-in** *in the low position*

b) Towards the **bottom** to obtain :
   - **toe-in** *in the high position*
   - **toe-out** *in the low position*

4. Remove the rubber shields (1) from the wheel-arches.

5. On each upper wheelarm spindle (2), position tools 6451-T, screw (3) resting on steering crossmember (4).

   NOTE :
   One turn of screw (3) of tool 6451-T corresponds to a movement of the crossmember of 1 mm.

6. Slacken nut (5) and screw (6) securing the wind-screen crossmember, on the side to be moved. Slacken the upper fixing nut on the opposite side as well *(in order to avoid distorting the crossmember).*

7. Move the crossmember in the direction decided, by using as a mark extremity « a » of screw (3).

   NOTE :
   A movement of 1 mm of the crossmember corresponds to a movement of 0.8 mm at the wheel, on the relevant side.

8. Tighten the fixing nuts and the screw for the crossmember.
   Tightening torque : 2.5 to 2.8 daNm (18 to 20 1/2 ft.lb).

9. Check once more the variations in wheel alignment, and alter the position of steering cross-member, if necessary.

10. Remove tools 6451-T and fit the rubber shields to the wheelarches.

11. Check the toe-in of the front wheels : **1 to 4 mm**. Adjust if necessary.

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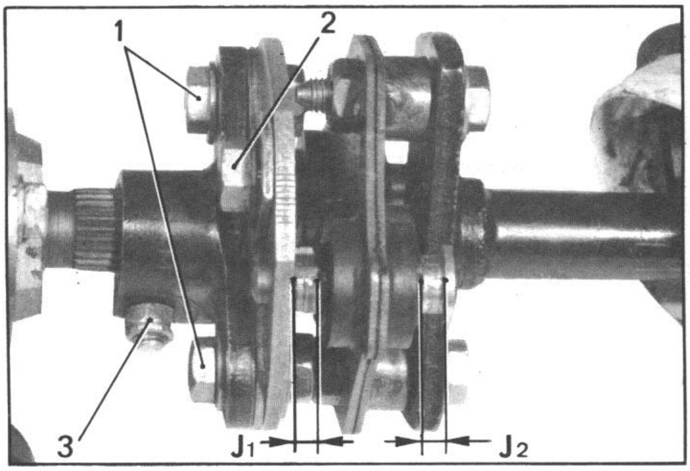


12. **Adjust the steering clamp :**

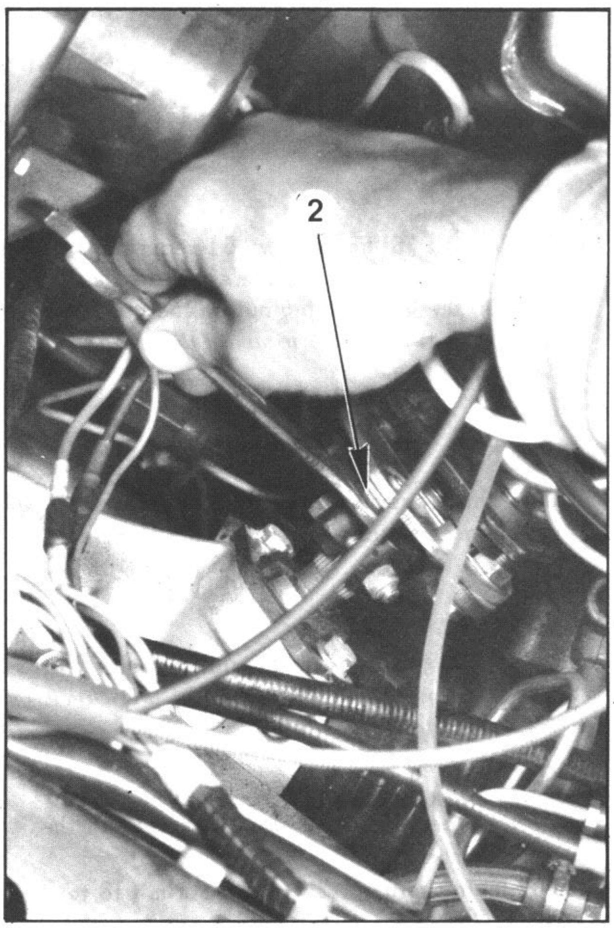
Slacken nut (3) and move the clamp on the steering pinion, in order to obtain :

J 1 = J 2

Tighten nut (3) to 1.4 daNm (10ft.lb)

VII. ADJUSTING THE STRAIGHT-LINE RUNNING

(Vehicles fitted with power steering)



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This operation is to be carried out on a level road, in the absence of any wind.

The vehicle pulls to the right :

- Slacken both nuts (1), rotate eccentric (2) towards the left.

- Tighten nuts (1).

The vehicle pulls to the left :

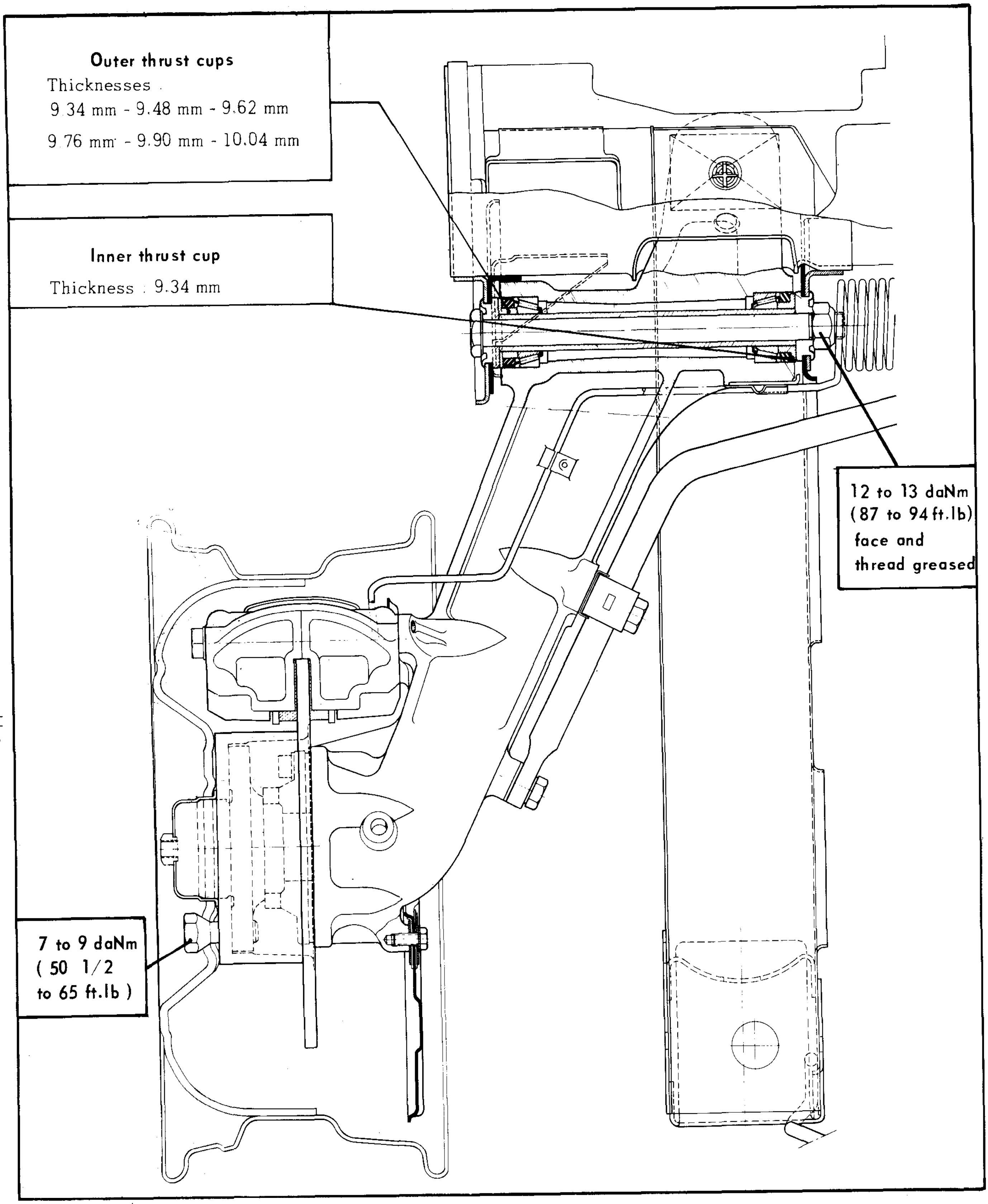
- Slacken both nuts (1), rotate eccentric (2) towards the right.

- Tighten nuts (1).

NOTE : In case the movement of eccentric (2) is not sufficient, see para 3, sub-para. B) of chapter II.

OPERATION N° MA. 420-00 : *Characteristics and special features of the rear axle unit* **Op. MA. 420-00** 1

REAR AXLE (*All Saloon vehicles*)

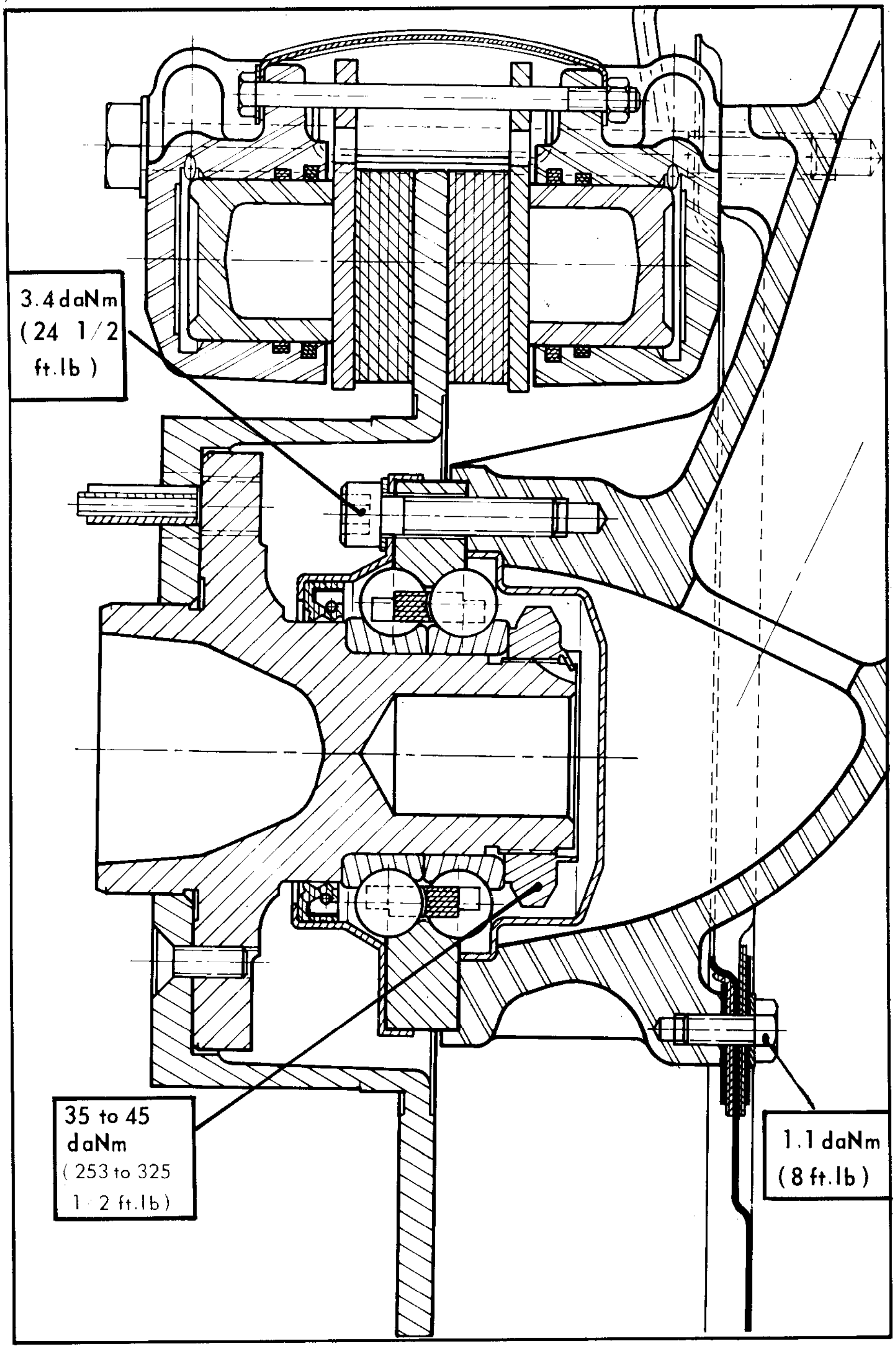


Supplement N° 1 to Manual 818-1 (CORR)

I. DESCRIPTION

- Alignment (*not adjustable*) (Front toe-in) .... 1 to 4 mm
- Camber (*not adjustable*) (Max. difference between the two sides : 12') .... $0^{\circ}\ {}^{0}_{-24'}$
- *Heights to be adhered to during this check* : - At front : 165 mm - At rear : 215 mm (*Saloons*)
  228 mm (*Estates*)

REAR AXLE (*All Saloon vehicles*)



II. SPECIAL FEATURES

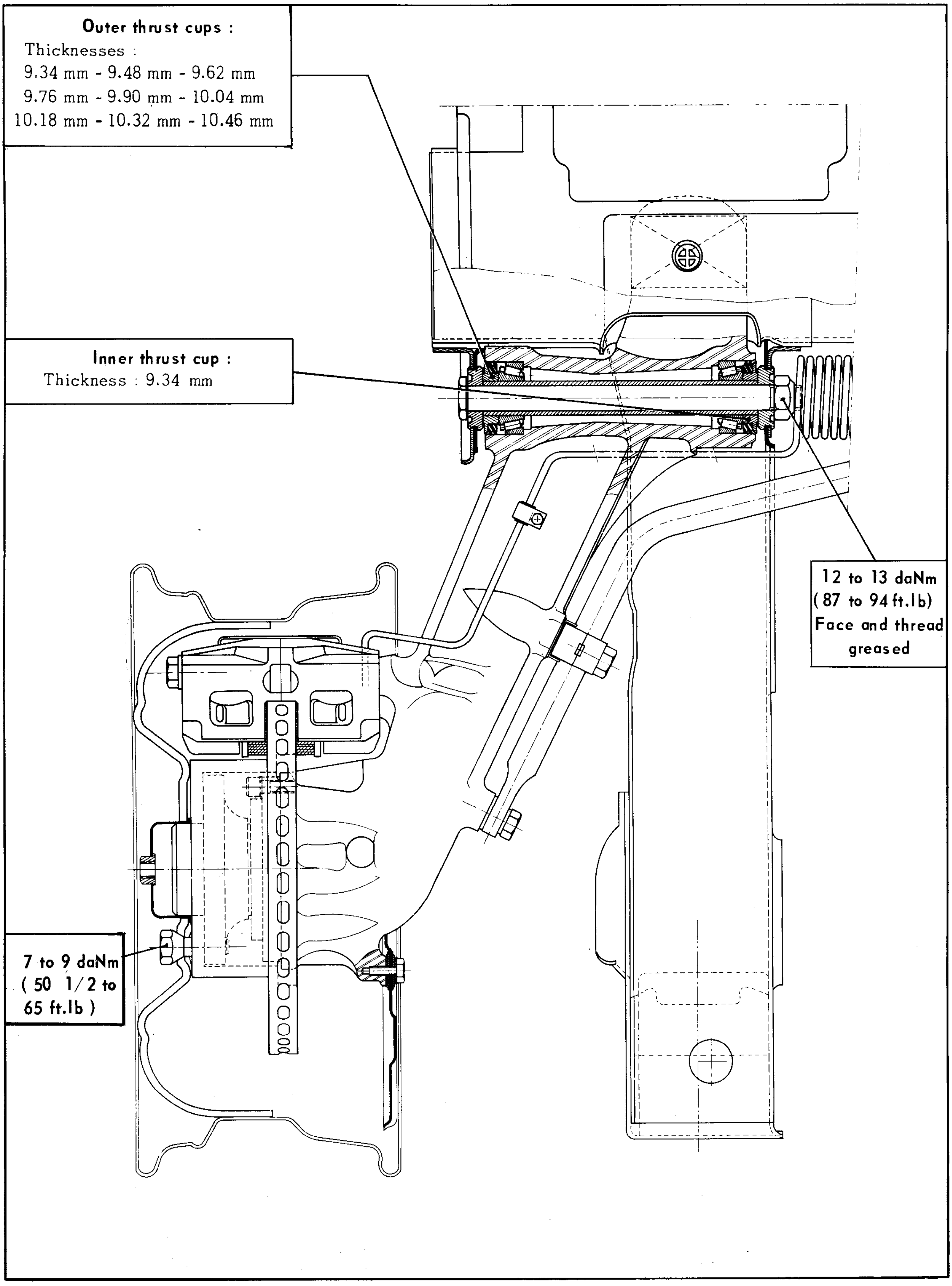
- Tightening of wheelarm spindle bearing .... preload of 500 N (50 kg)

  NOTE : Bearings and rear arm adjustment cups are identical to those of front wheelarms.
- Greasing of hub and arm joints .... TOTAL MULTIS MS grease

Wheel balancing : dyn[illegible] balancing to within 10 g. max.

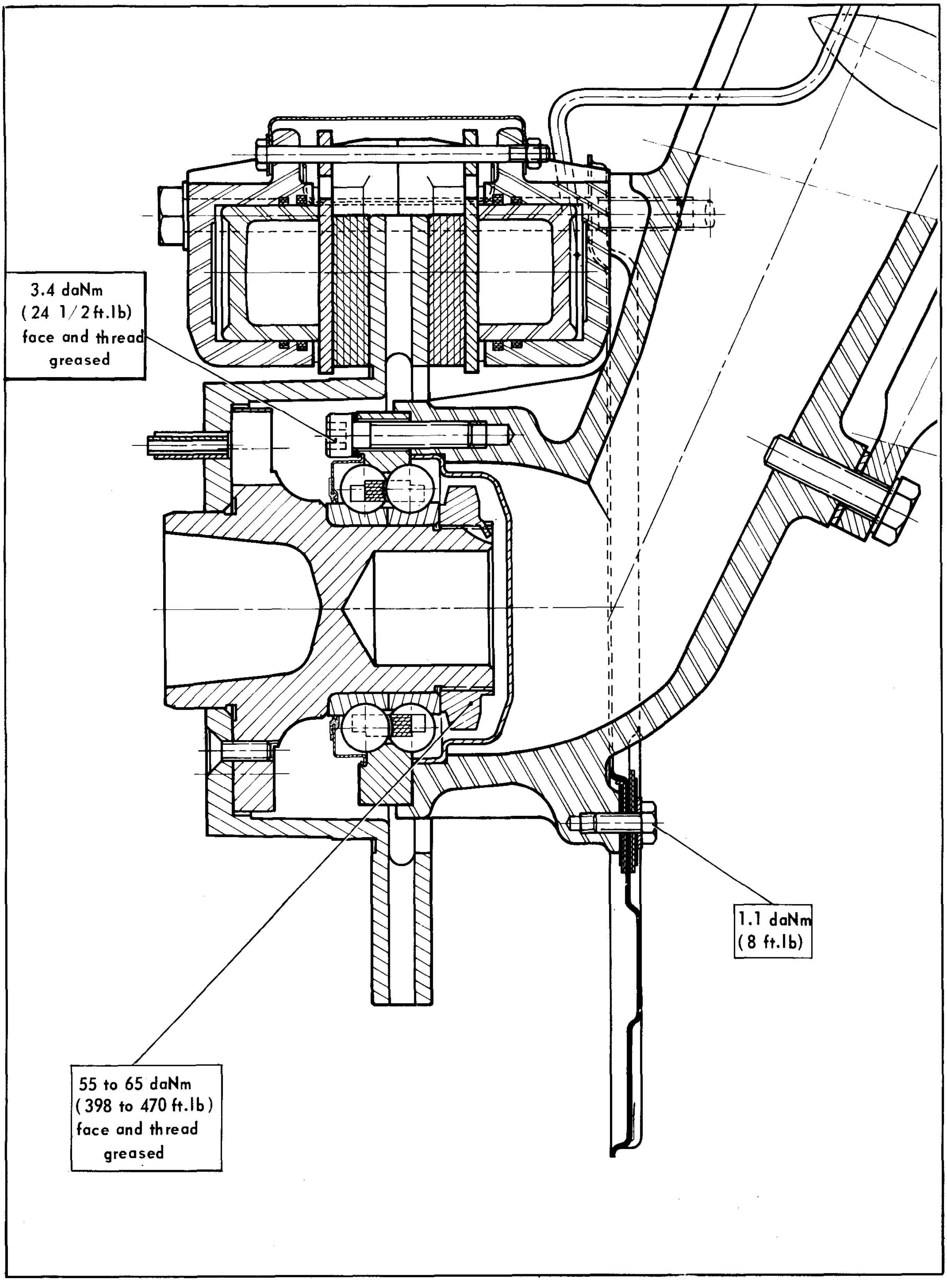
REAR AXLE (*Estate vehicles*)

L:42-5



REAR HUB *(Estate vehicles)*

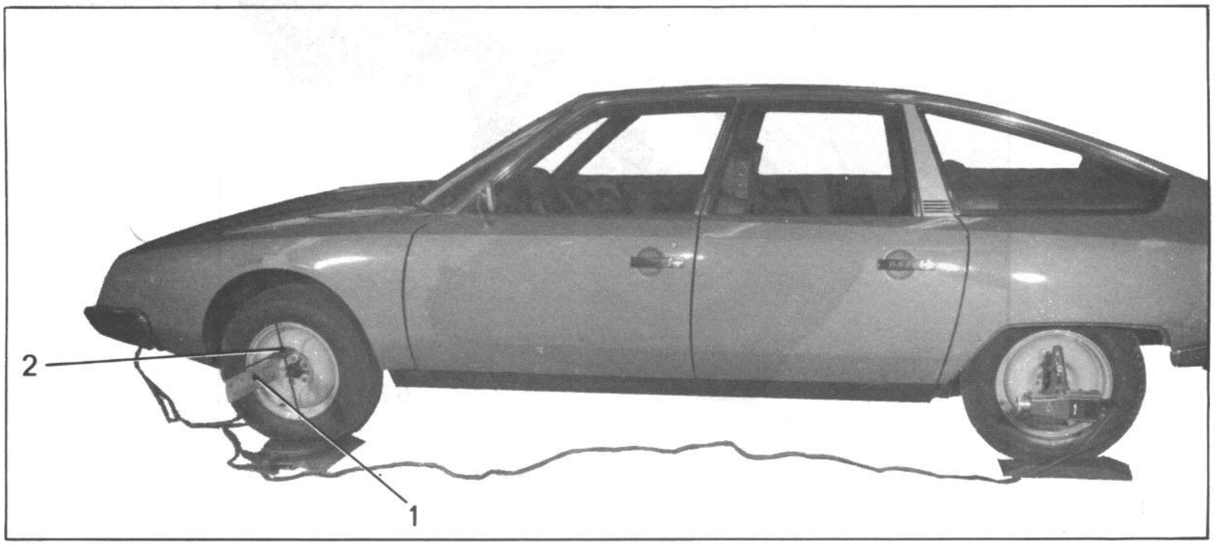
L.42-6



CHECKING THE REAR AXLE USING OPTICAL EQUIPMENT

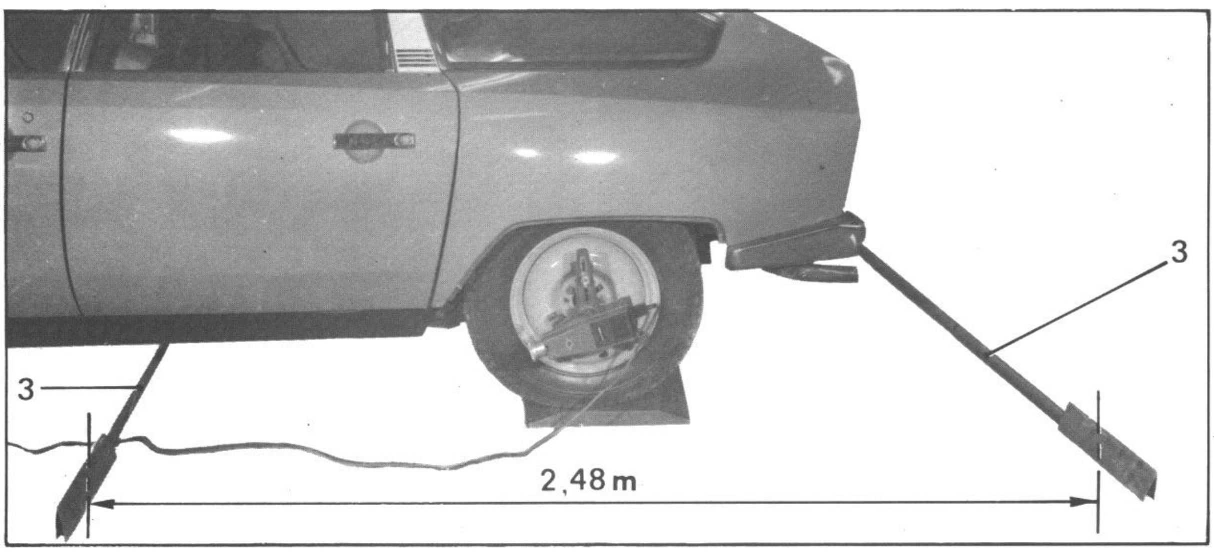
NOTE : For detailed instructions on the use of optical equipment see front axle checking operation (Op. MA. 410-0)

1. Checking axle alignment :



a) With the vehicle on the turntables (engine running and manual height control in *normal running* position) (turntables marks at zero), place a graduated plate (1) on the vertical centreline of each front wheel.
b) Fit the projector unit on *each rear wheel.*
c) Swivel the projectors towards the graduated plate. Focus luminous index on graduations.
d) Push the graduated plates against their stops (2).
The alignment of the rear axle is correct when **there is no difference in the reading between left-hand and right-hand sides.**

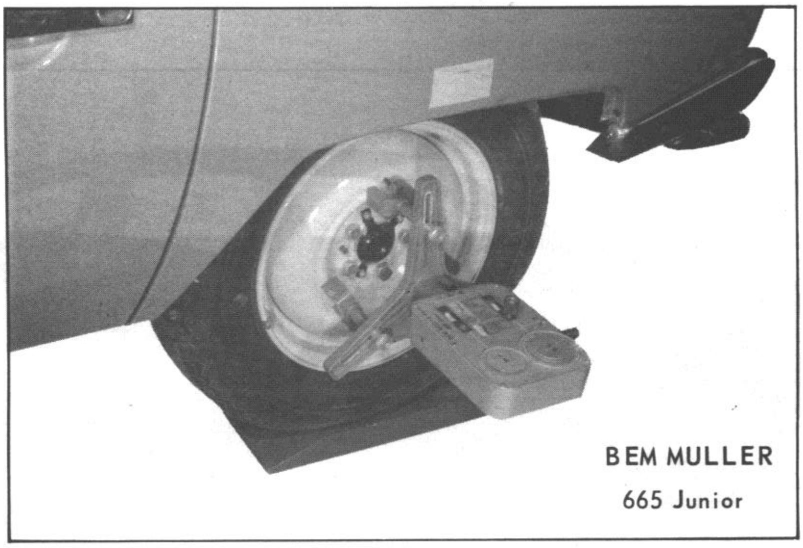
2. Checking wheel alignment :



Place the two alignment adjusting rods (3) on either side of the rear axle and proceed as for front wheels.
Alignment reading : Toe-in of rear wheels must be .... **1 to 4 mm**

Supplement N° 1 to Manual 818-1 (CORR)

3. Checking the camber angle :



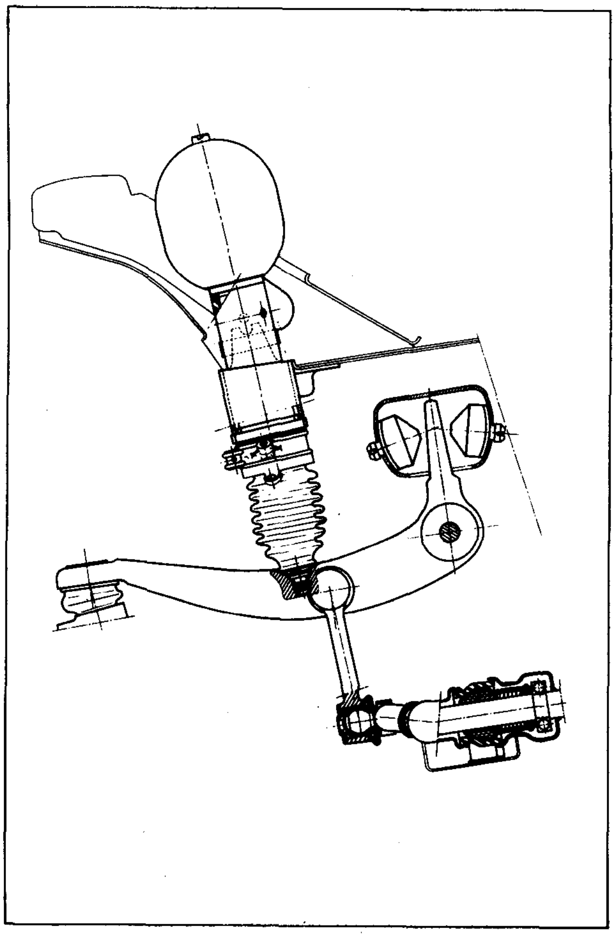
Proceed as for front wheels.

Height measurements to be scrupulously respected for this check

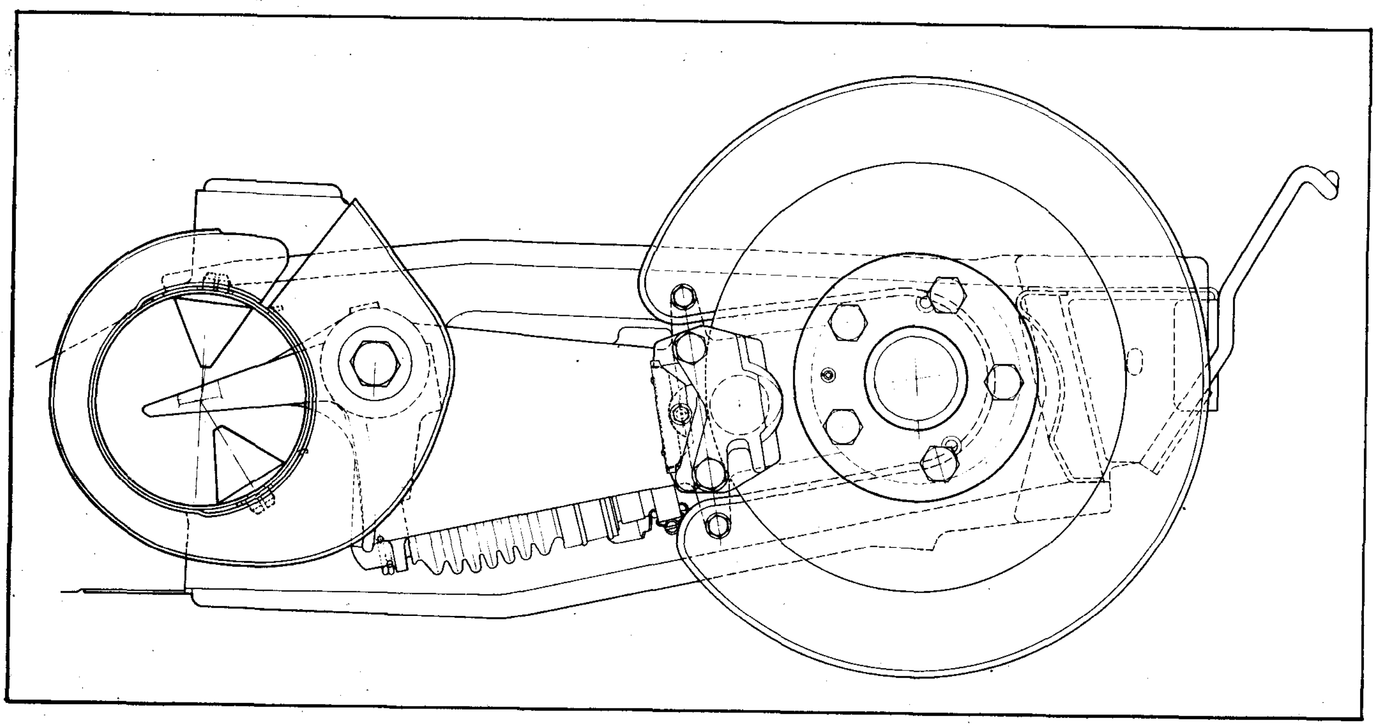
- at front : 165 mm
- at rear : 215 mm (*Saloons*)
- or : 228 mm (*Estates*)

Value of the camber angle : $0^\circ\,{}^{0}_{-24'}$

FRONT SUSPENSION

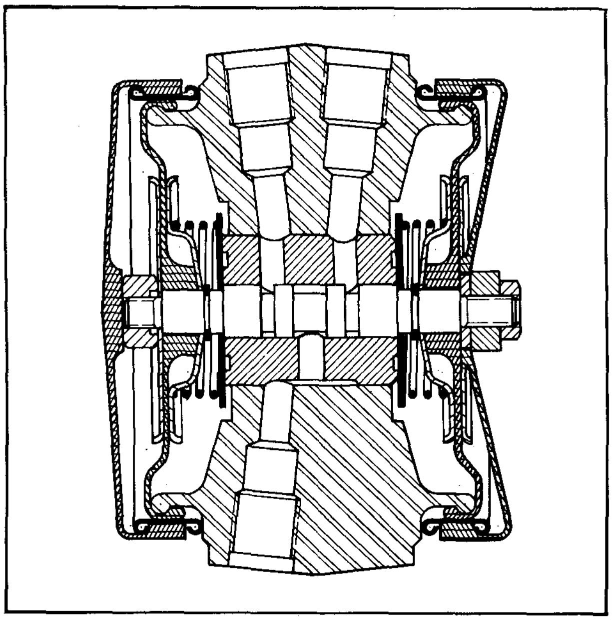


REAR SUSPENSION



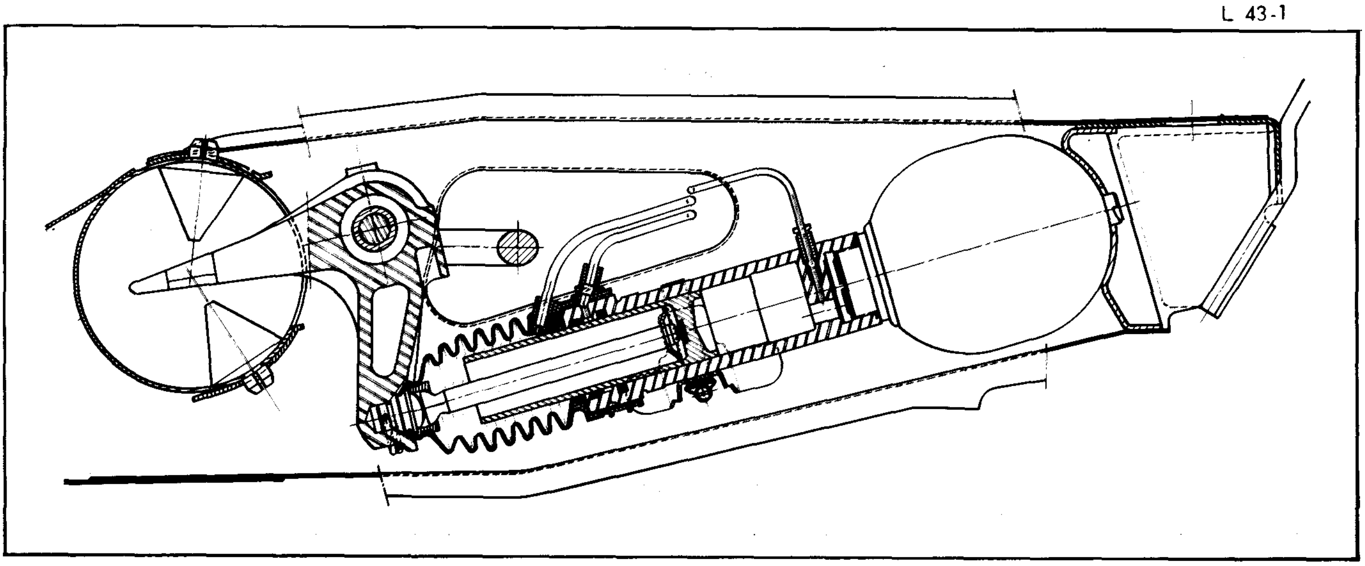
Supplement N° 1 to Manual 818-1 (CORR)

I. CHARACTERISTICS



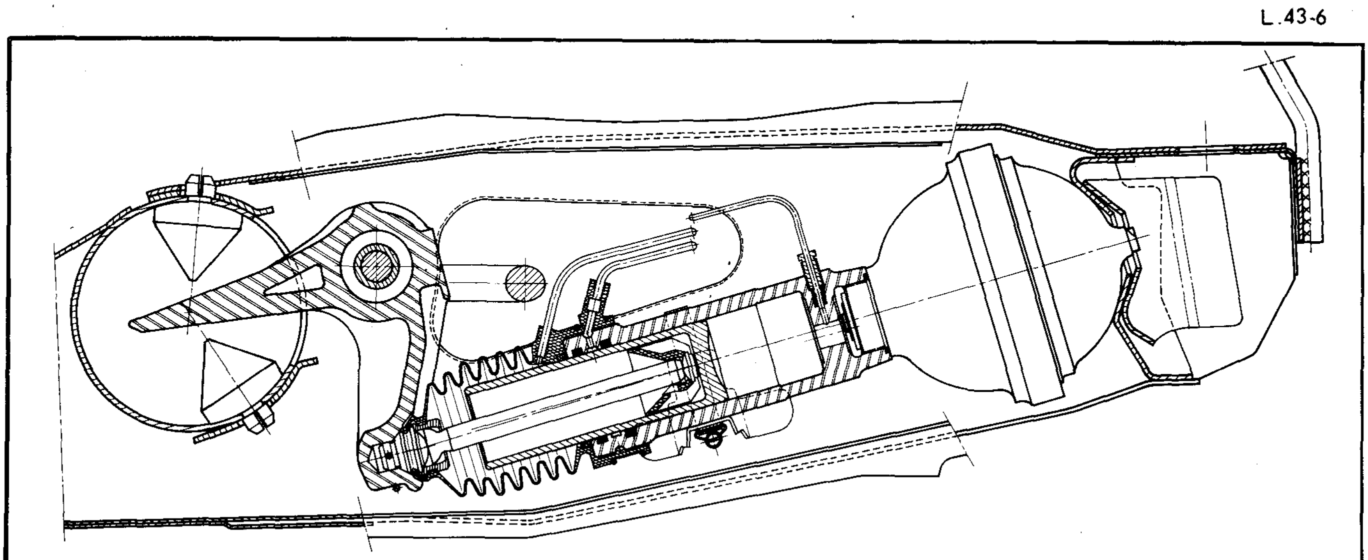
HEIGHT CORRECTOR

L 43-1



SUSPENSION CYLINDER (All Saloon vehicles)

L.43-6



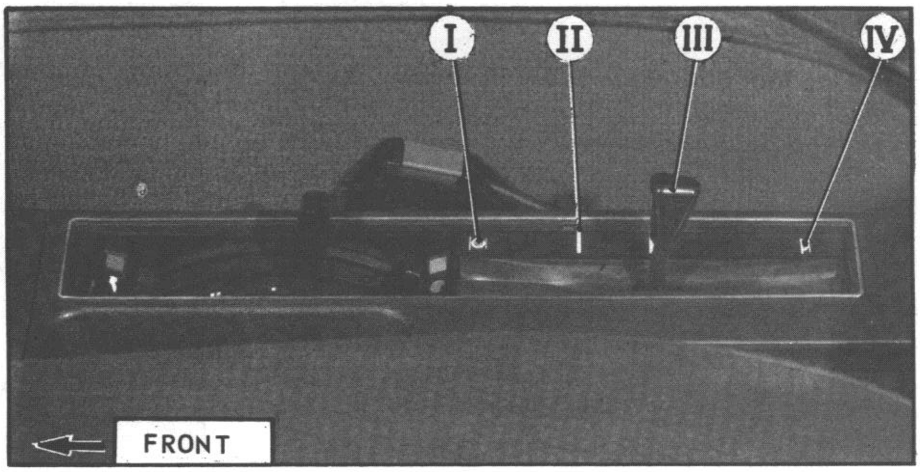
SUSPENSION CYLINDER (Estate vehicles)

MANUAL HEIGHT CONTROL

14 567

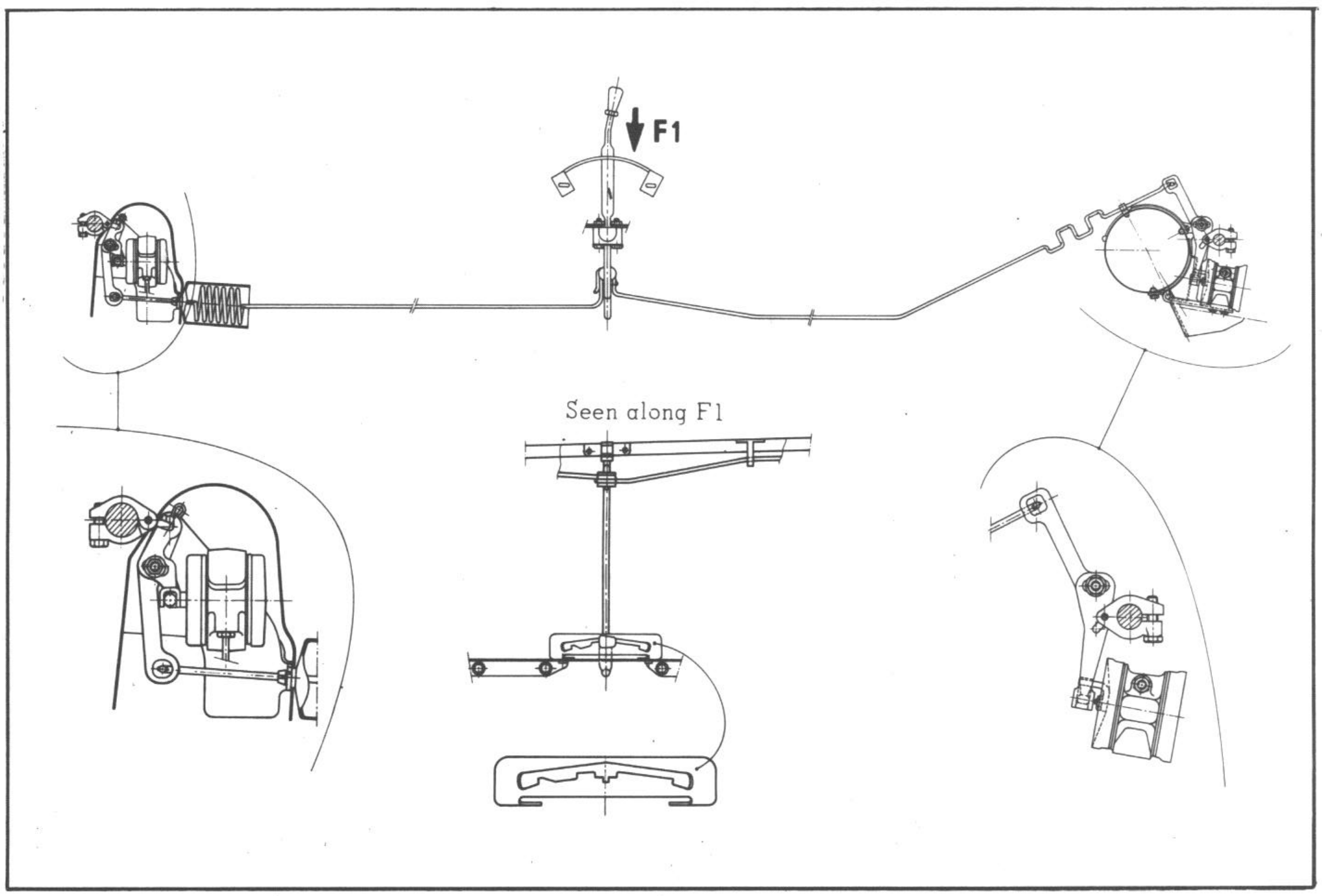
Manual height control quadrant :

I. High position
II. Intermediate high position
III. Normal driving position
IV. Low position



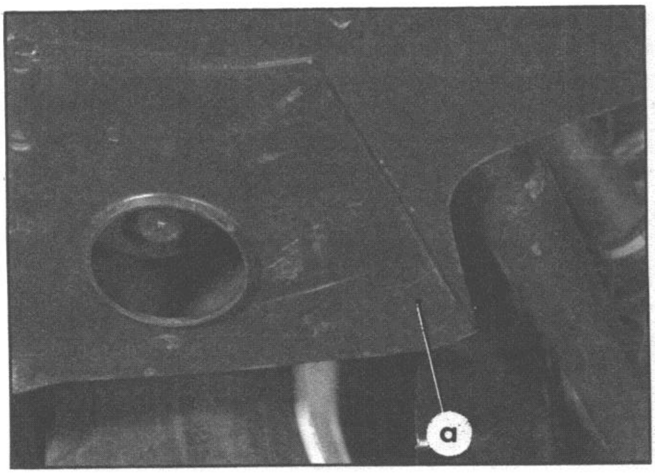
Assembly diagram for manual height control

L.43-2

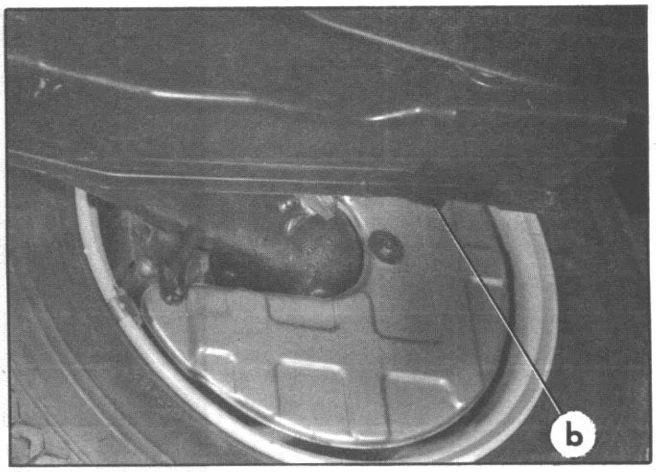


VEHICLE HEIGHTS

13 454



13 453



- Front height : measured from point « a » of the subframe, to the surface on which the vehicle is standing
- Rear height : measured from point « b » of the subframe, to the surface on which the vehicle is standing

Front height : *(in the normal driving position) :*	**165 ± 8 mm**
Rear height : *(in the normal driving position) :*	**215 ± 8 mm** *(Saloons)* **228 ± 8 mm** *(Estates)*

PNEUMATIC UNITS :

Volume of front units *(Saloons and Estates)* .... 500 cc (Pressed steel type)

Volume of rear units .... All Saloons 500 cc (Pressed steel type) / Estates 700 cc (Screwed in type)

Calibration pressures :

- Identification mark on filler plug ....
- Calibration pressure *(for checking)* ....

FRONT	REAR	
	All Saloon vehicles	*Estates*
75	40	35
75^{+2}_{-27} bars	40^{+2}_{-15} bars	35^{+2}_{-10} bars
(1088^{+29}_{-392} psi)	(580^{+29}_{-218} psi)	(508^{+29}_{-145} psi)

Dampers

- They are incorporated in the pneumatic units

NOTE : The front and rear dampers are different on CX 2400 GTI vehicles, and therefore, the pneumatic units are specific.

Suspension cylinders :

Diameter of pistons ....

	FRONT	REAR
All Saloon vehicles	35 mm	35 mm
Estates	35 mm	42 mm

Height correctors : Identical front and rear

Anti-roll bar :

Diameter of front anti-roll bar .... 23 mm *(Estates and all Saloons except CX 2400 GTI)* / 24 mm *(CX 2400 GTI)*

Diameter of rear anti-roll bar .... 17.5 mm

NOTE : The rear anti-roll bar on Estates and on Saloons is different.

II. SPECIAL FEATURES

Adjusting the anti-roll bars :

At the front :

- Lateral positioning . equal protrusion on either side to within .... 2 mm
- Anti-roll bar bearing preload .... 300 N (30 kg) (66 lb)
- Lateral clearance of anti-roll bar, under pressure of 500 N (50 kg) (110 lb) .... 0.2 to 1 mm

At the rear :

- Lateral positioning : same thickness of shim on both sides; within 1 mm
- Shimming, if necessary, level with the split collars, to within 0.6 mm

Greasing of the suspension piston con-rod joint :

(Carried out with LHM liquid contained in the dust cover)

- Front suspension cylinder 7 cm3
- Rear suspension cylinder 25 cm3

Upper front wheelarm stops :

WARNING : *The thinner stop must be fitted at the wheel end.*

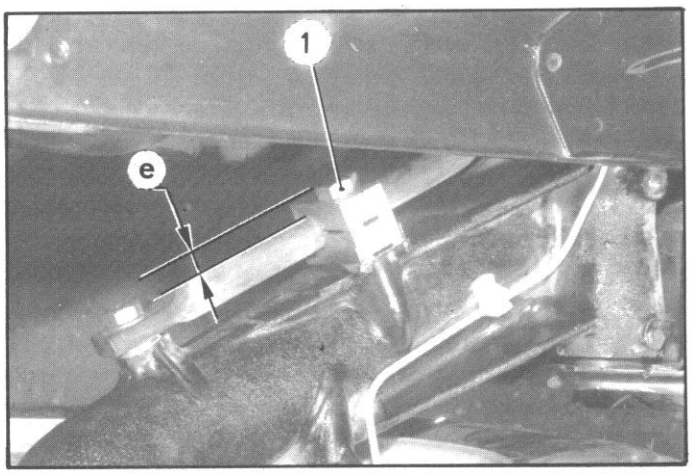
Tightening torques :

- Anti-roll bar link-rod on upper wheelarm. { Bush nut .... 3 daNm (21 1/2 ft.lb) ; NYLSTOP nut ...... 4.5 to 5 daNm (32 1/2 to 36 ft.lb) }
- Link-rod on anti-roll bar .... 4.5 to 5 daNm (32 1/2 to 36 ft.lb)
- **Screw securing front anti-roll bar bearing** .... 2.7 daNm (19 1/2 ft.lb)
- Clamps for adjusting pre-load on front anti-roll bar .... 1.3 daNm (9 1/2 ft.lb)
- Clamp for height corrector control rod (front and rear) .... 1.5 daNm (11 ft.lb)
- **Anti-roll bar on rear wheelarm (rear fixing points)** *(face and thread greased)* ...... 6 daNm (43 1/2 ft.lb)
- **Rear anti-roll bar split collars :**

Tightening torque for screw (1) according to width (e) of bearing :

e = 5 mm : **8 daNm (58 ft.lb)** (——► 12/1975)
e = 6 mm : **10 daNm (10 ft.lb)** (12/1975 ——►)

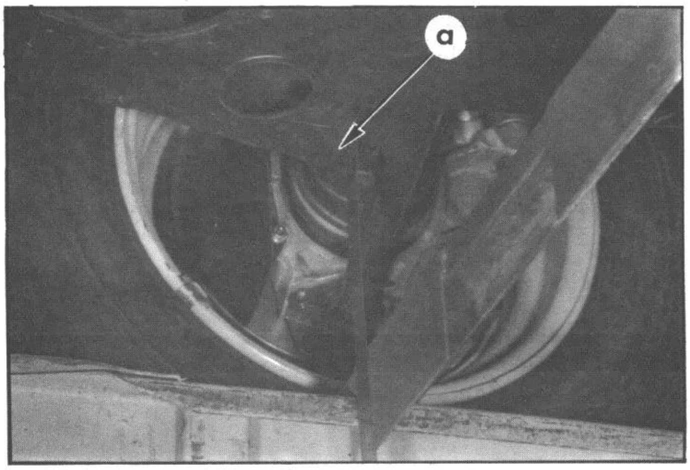
Supplement N° 1 to Manual 818-1 (CORR)

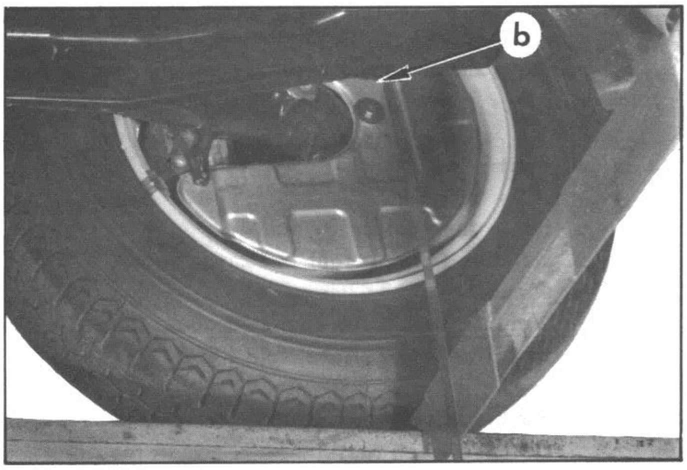


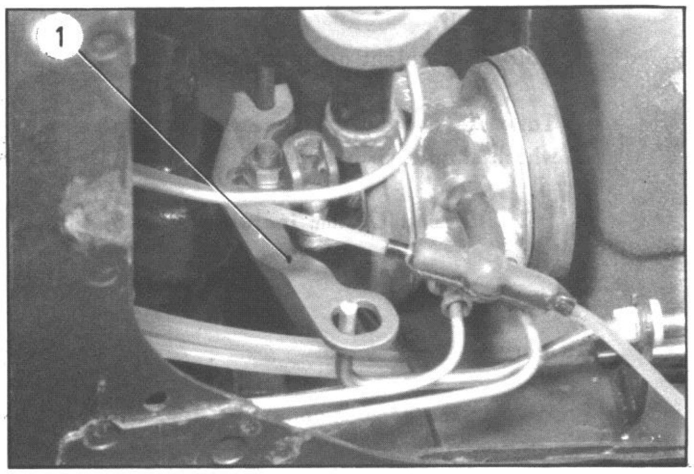
Fitting of the front and rear wheelarm stops : using water.

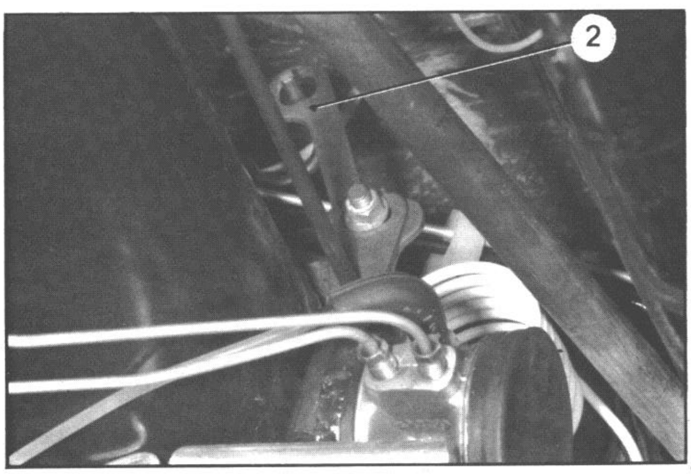
Fitting of the front anti-roll bar bearing shells : using « TOTAL MULTIS » grease.

ADJUSTING THE HEIGHTS









Heights are measured :

With engine idling and manual height control lever in « normal running » position.

AT FRONT : **Between under-face of point « a » subframe and point of contact of wheels with ground.**

AT REAR : **Between under-face of point « b » subframe and point of contact of wheels with ground.**

1. Check tyre pressures.

2. Remove corrector protectors and make sure the manual control rods are not exerting pressure on levers (1) and (2).

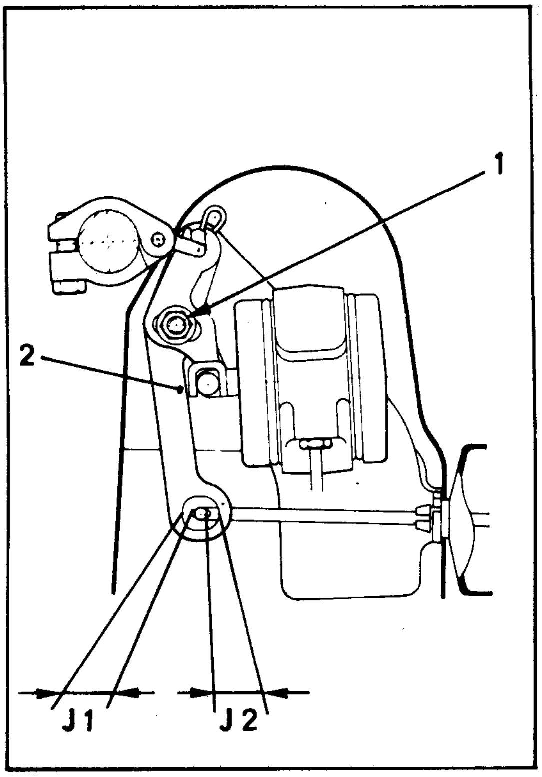
3. Slightly loosen automatic control clamp and adjust to obtain :

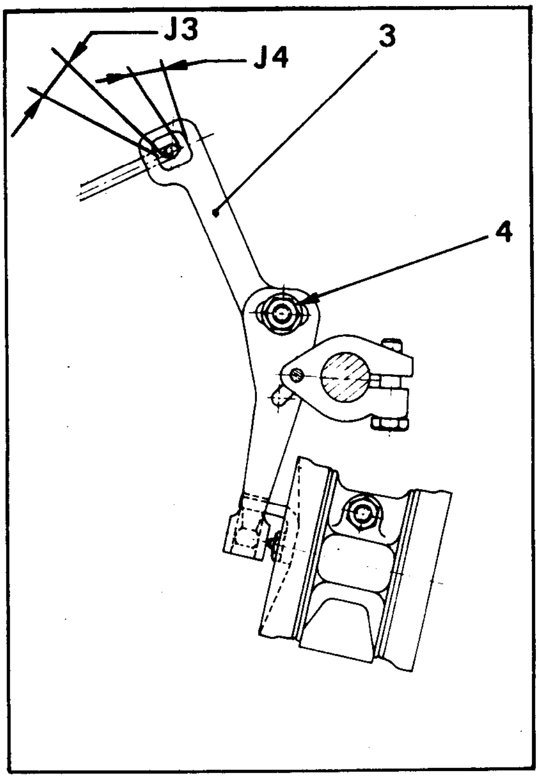
Front height = 165 ± 8 mm

Rear height = 215 ± 8 mm (Saloons)

228 ± 8 mm (Estates)

Tightening torque of clamps = 1.5 daNm (11 ft.lb)





4. **Adjusting the height control :**
   Slacken nuts (1) and (4)
   Set control levers (2) and (3) to obtain :

   J1 = J2
   J3 = J4

   Tighten nuts (1) and (4).

5. **Check the heights :**

   Engine idling, manual control lever in normal running position.

   Check that ball joints of front and rear correctors are not jammed in their forks.

   At front :

   a) Raise the vehicle by hand.
   Release when weight becomes too great to support.
   Vehicle will drop, then rise again and stabilize itself. Note front height.

   b) Push vehicle down by hand.
   Release when resistance becomes too great.
   Vehicle will rise again then drop and stabilize itself.
   Note front height again.

   c) Take the average of these two measurements which should be between

   157 and 173 mm inclusive

   At rear :

   Proceed in the same manner.

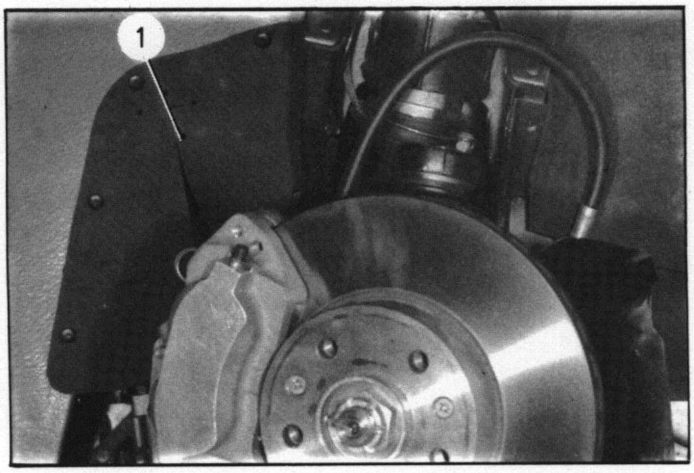
   Average of height readings should be between

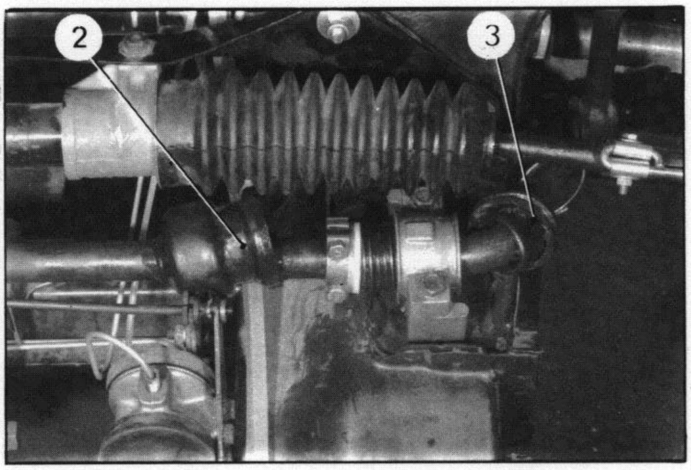
   210 and 220 mm inclusive (Saloons)

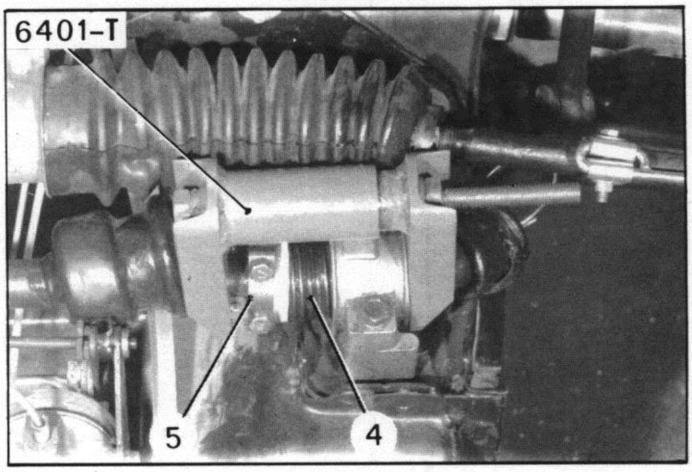
   220 and 236 mm inclusive (Estates)

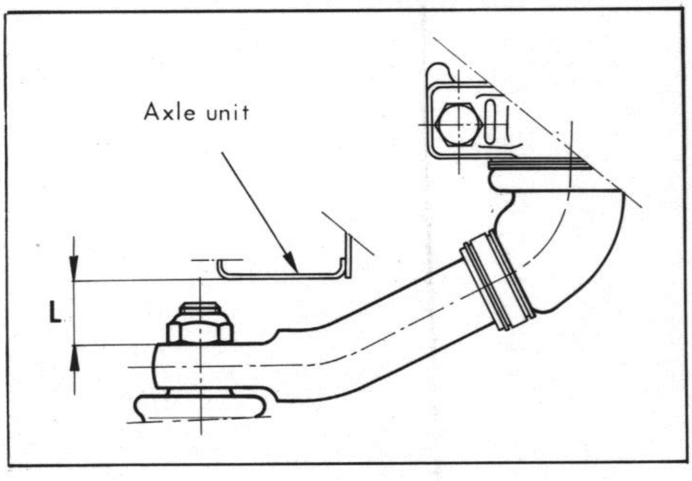
7. Fit front and rear protectors.

ADJUSTING THE ANTI-ROLL BAR









1. Place front of vehicle on stands

2. **Remove :**
   - front wheels,
   - left and right-hand rubber protectors (1) from wheelarches.

3. **Adjustment of pre-load on bearing shells :**

   NOTE : The anti-roll bar should be fitted with an axial pre-load of 30 kilos on bearing shells. For this operation, use grippers 6401-T.

   a) Free dust covers (2) and (3) *(metal hose clip on outer cover (3).*

   b) Set grippers 6401-T as shown in photograph and unscrew clamp-screws (5).

   c) Position anti-roll bar so that an identical distance of **L is obtained on both sides to within ± 2 mm.**

   d) Tighten alternately left and right-hand grippers 6401-T (nuts A).

   e) Compress spring (4) so that spirals touch, then loosen nut A 1/2 turn.

   f) Tighten fixing screws of clamps (5) to 1.3 daNm (9 1/2 ft.lb).

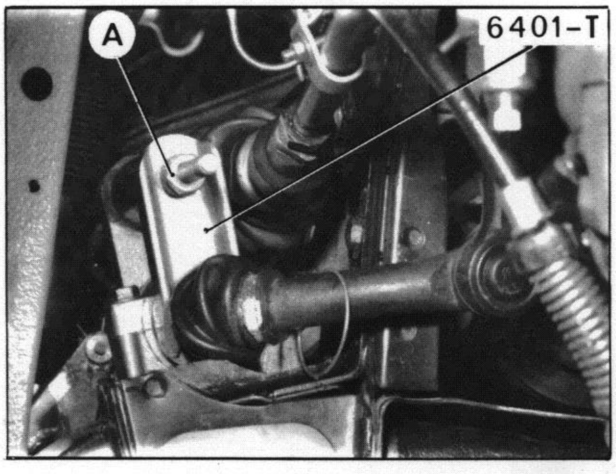
   g) Check distance L *(identical on both sides at ± 2 mm).*

   h) Remove grippers 6401-T.

4. **Refit :**
   - dust covers (2) and (3) *(metal hose clip on outer cover (3).*
   - left and right-hand rubber wheelarch protectors (1),
   - front wheels.

   Tighten wheel nuts from 6 to 8 daNm (43 1/2 to 58 ft.lb).

5. Lower vehicle to ground.

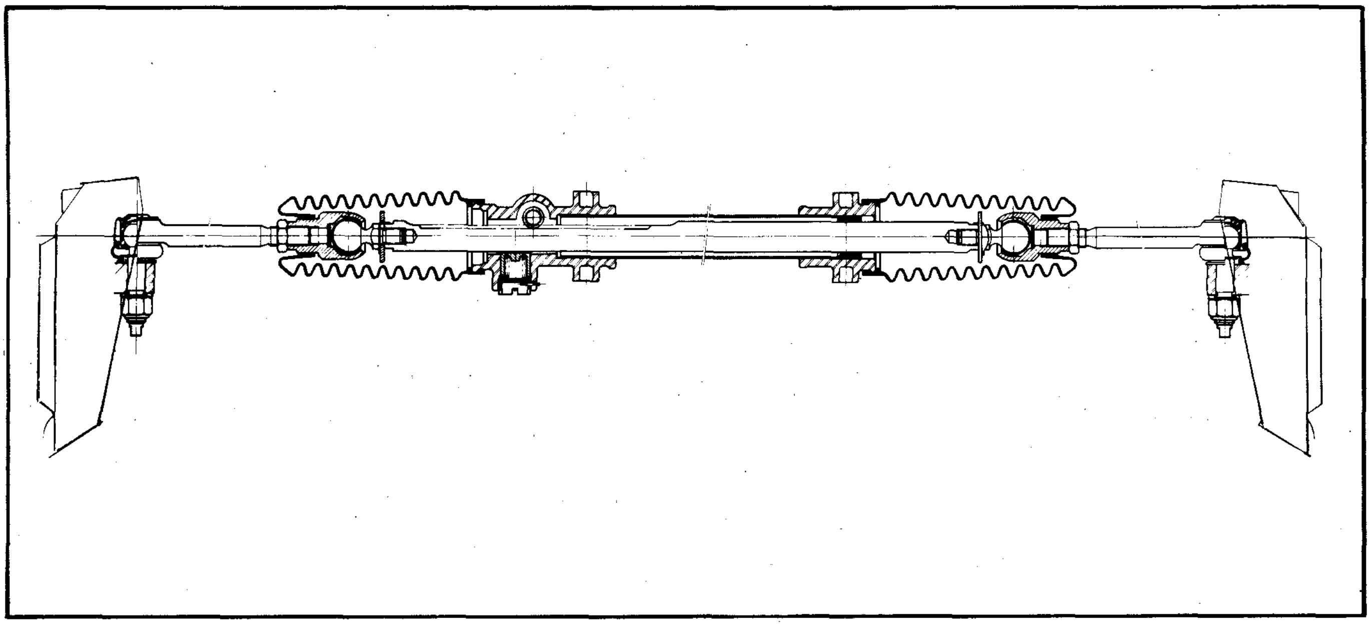


Supplement N° 1 to Manual 818-1 (CORR)

P.T.O.

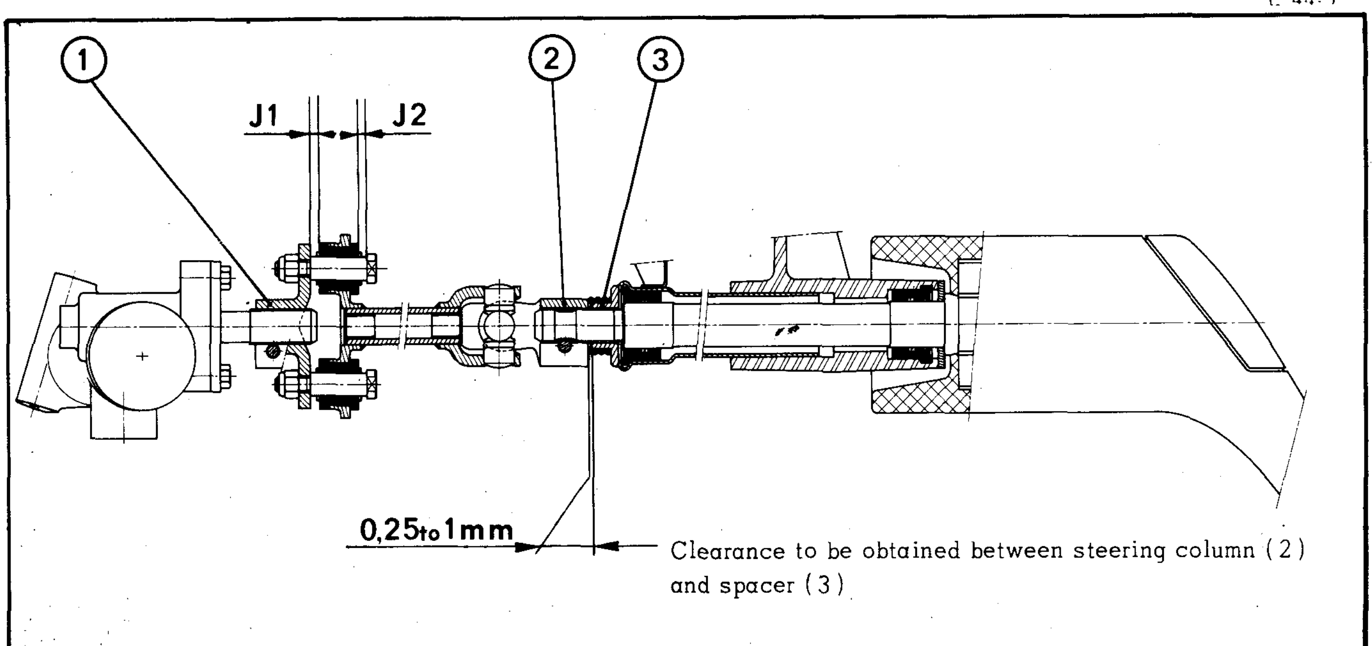
1. CHARACTERISTICS.

STEERING RACK



STEERING COLUMN (⟶ 9/1976)

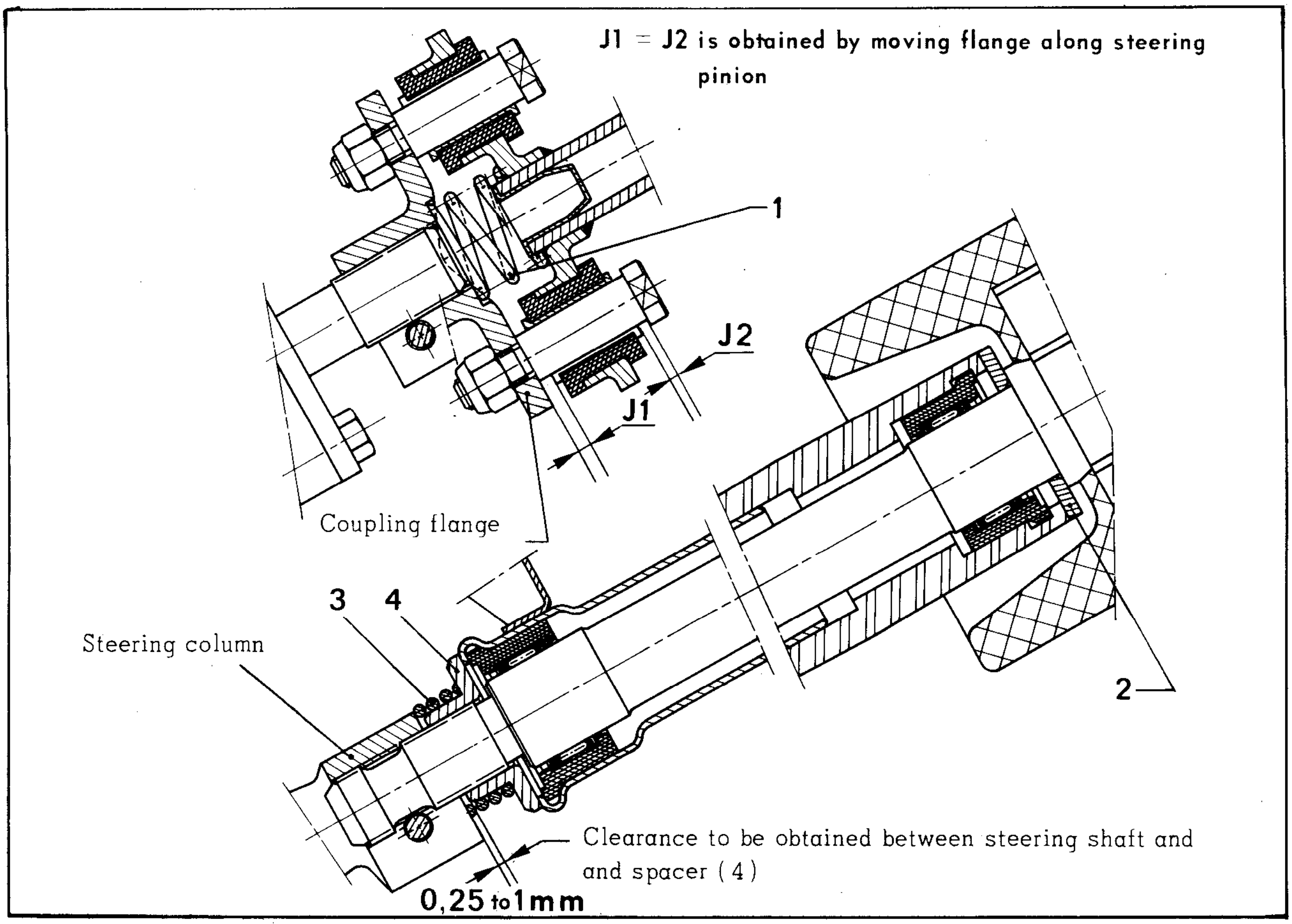
L 44-5



J1 = J2 is obtained by moving flange (1) along steering pinion

Supplement N° 1 to Manual 818-1 (ADD)

L.44-21



Rack and pinion steering :

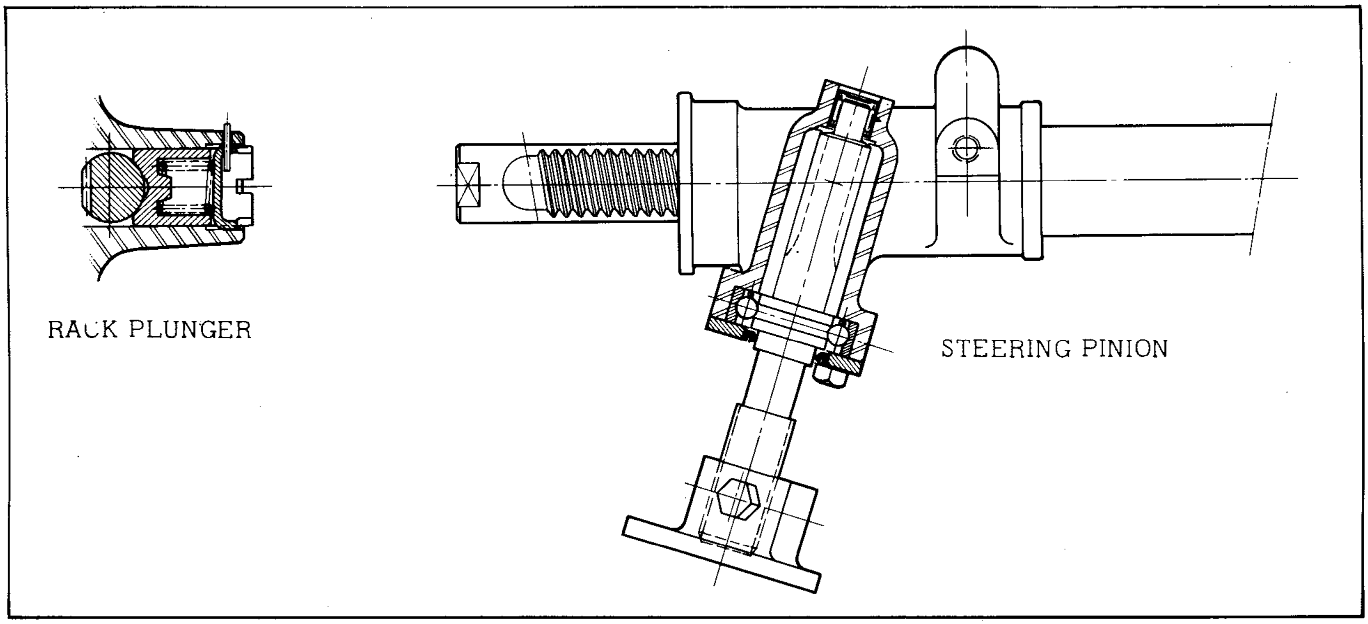
- Wheel alignment (toe-in of the wheels to the front, *in the normal driving position*) .... 1 to 4 mm
- Steering angle *(not adjustable)* .... inside wheel : 43° 30' $^{+1°}_{0}$; outside wheel : 32° 50' $^{+1°}_{0}$
- Turning circle :
  - « between walls » .... 11.80 m *Saloons* ; 12.70 m *Estates*
  - « between kerbs » .... 10.90 m *Saloons* ; 11.80 m *Estates*
- Steering ratio .... 24.5 : 1

REPAIRS :

The spring, on the flange side, can be fitted to a pre-September 1976 vehicle, as long as the following are also fitted :

- the new steering shaft with spring centering guide
- the increased calibration spring (3) on the fixed support side
- the Delrin spacer (2) on its steel mounting plate, at the steering wheel end.

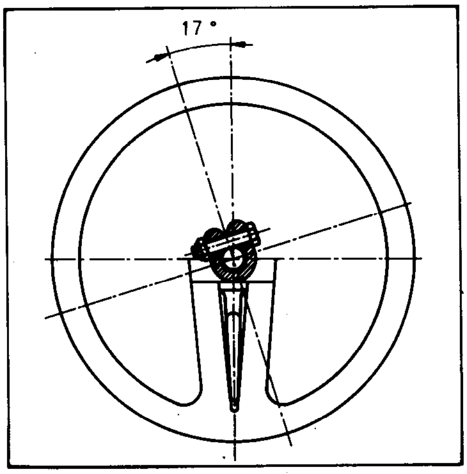
II. SPECIAL FEATURES



After adjusting wheel alignment, protrusion of track-rod thread in relation to lock-nut must be equal on either side *(to within 2 mm)*

Rack centre-point : Protrusion of rack must be equal on either side of rack housing
- Clearance at rack plunger (at minimum clearance point) ....0.1 to 0.25 mm
  (at minimum clearance point) .... 0.1 to 0.25 mm
- Rotational torque of pinion, after adjustment of plunger .... 1.2 daNm (8 1/2 ft.lb)

L 44-3



Steering control :
- Clearance between universal joint, steering shaft and fixed steering wheel tube spacer .... 0.25 to 1 mm
- Position of steering wheel spoke in « straight-ahead » position : single spoke pointing vertically downwards
- Angle of universal joint : 17° to the left approx. (with steering wheel in « straight-ahead » position.

Tightening torques :
- **Flange for universal joint on steering shaft** .... 1.3 to 1.4 daNm (9 1/2 to 10 ft.lb)
- Fixed steering wheel tube attachments .... 1.9 to 2.1 daNm (13 1/2 to 15 ft.lb)
- Coupling for steering pinion flange (steering shaft) .... 3.1 to 3.4 daNm (22 1/2 to 24 1/2 ft.lb)
- **Flange on steering pinion** .... 1.3 to 1.4 daNm (9 1/2 to 10 ft.lb)
- **Steering pinion securing flange** .... 1.3 to 1.4 daNm (9 1/2 to 10 ft.lb)
- Steering rack ball joint *(rack locked)* .... 5 to 5.5 daNm (36 to 40 ft.lb)
- Track-rod lock-nut .... 3.6 to 4 daNm (26 to 29 ft.lb)
- **Rack housing on steering crossmember** .... 2.5 to 2.8 daNm (18 to 20 1/2 ft.lb)
- **Steering crossmember on front subframe** .... 2.5 to 2.8 daNm (18 to 20 1/2 ft.lb)
- **Nut for track-rod ball-joint** .... 9 to 10 daNm (65 to 72 1/2 ft.lb)

- Greasing of steering rack .... TOTAL MULTIS MS

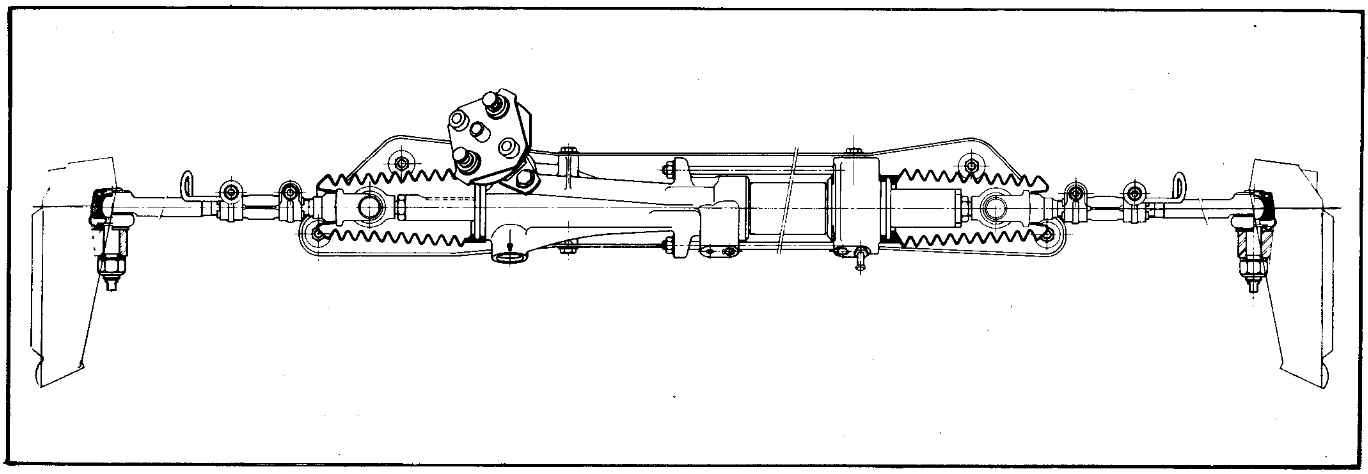
II. POWER STEERING WITH POWERED RETURN

I. CHARACTERISTICS

Hydraulically operated rack and pinion steering

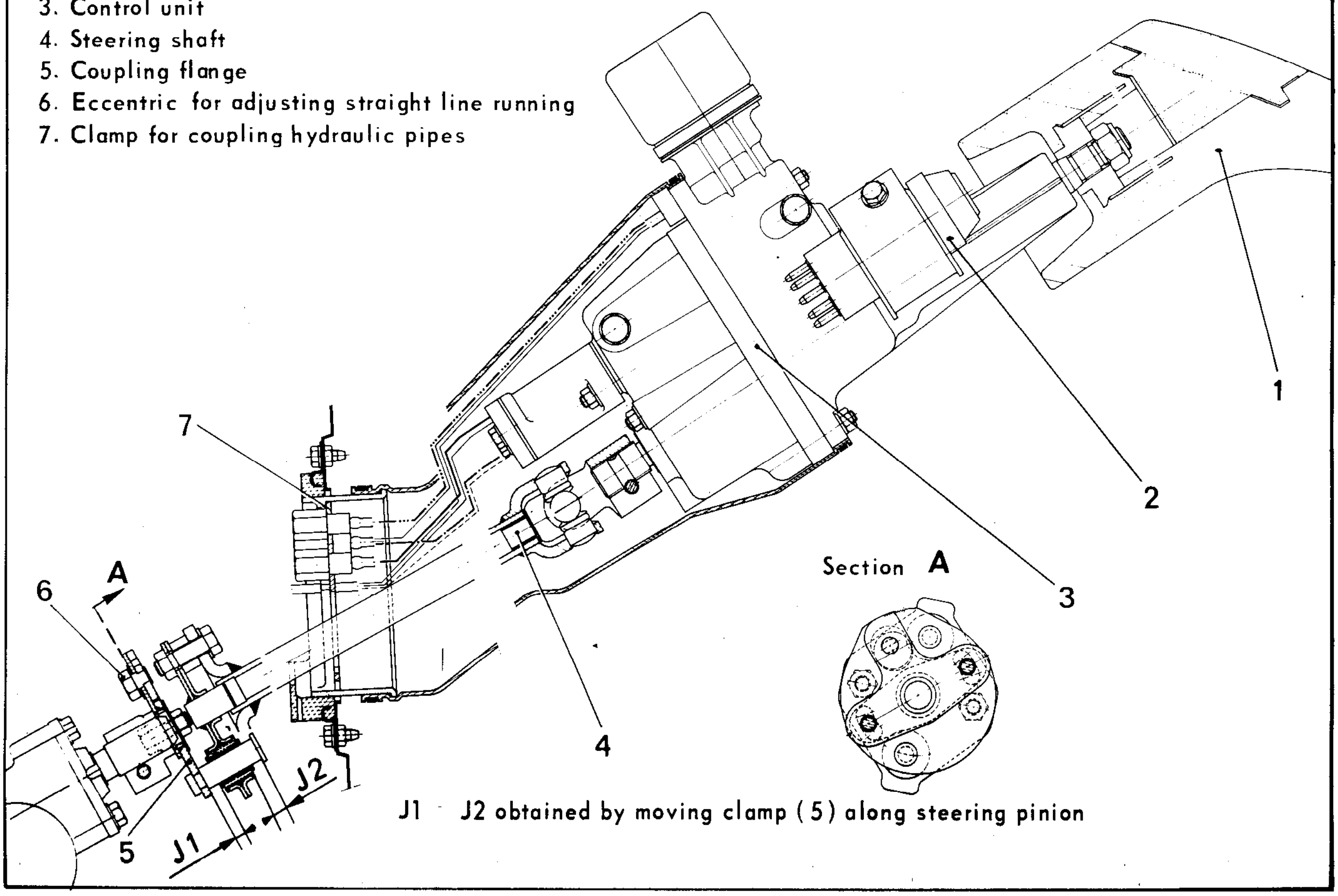
- Steering ratio .... 13.5 : 1
- No. of steering wheel turns from lock to lock 2.5
- Turning circle : « between walls » : 11.80 m, « between kerbs » : 10.90 m } *CX 2000 and CX 2200 Saloons*
  « between walls » : 12.70 m, « between kerbs » : 11.80 m } *Estates and Prestige*
- Wheel alignment (toe-in of wheels to the front) *(in the normal driving position)* .... 1 to 4 mm

L. 44-17



STEERING AND HYDRAULIC RACK CONTROL ASSEMBLY

1. Steering-wheel
2. Anti-theft device
3. Control unit
4. Steering shaft
5. Coupling flange
6. Eccentric for adjusting straight line running
7. Clamp for coupling hydraulic pipes



J1 - J2 obtained by moving clamp (5) along steering pinion

L. 44-9

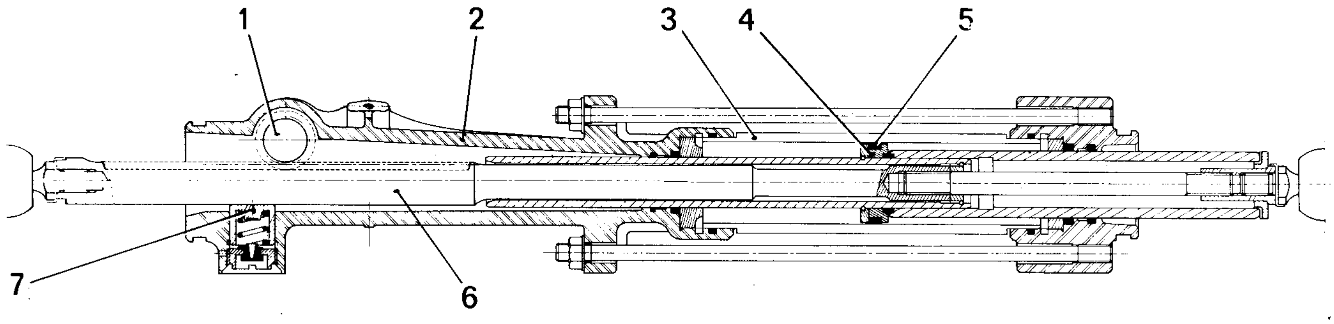
STEERING COLUMN, AND HYDRAULIC CONTROL UNIT

THIS STEERING SYSTEM HAS THREE DIFFERENT FUNCTIONS

- Power operation (*reduction of steering-wheel effort*)
- Stiffening of the steering as a function of the speed of the vehicle (*sufficient feel of the steering wheel whatever the vehicle speed*)
- Powered return (*automatic return to the « straight-ahead » position whatever the angle of lock*).

POWER OPERATION

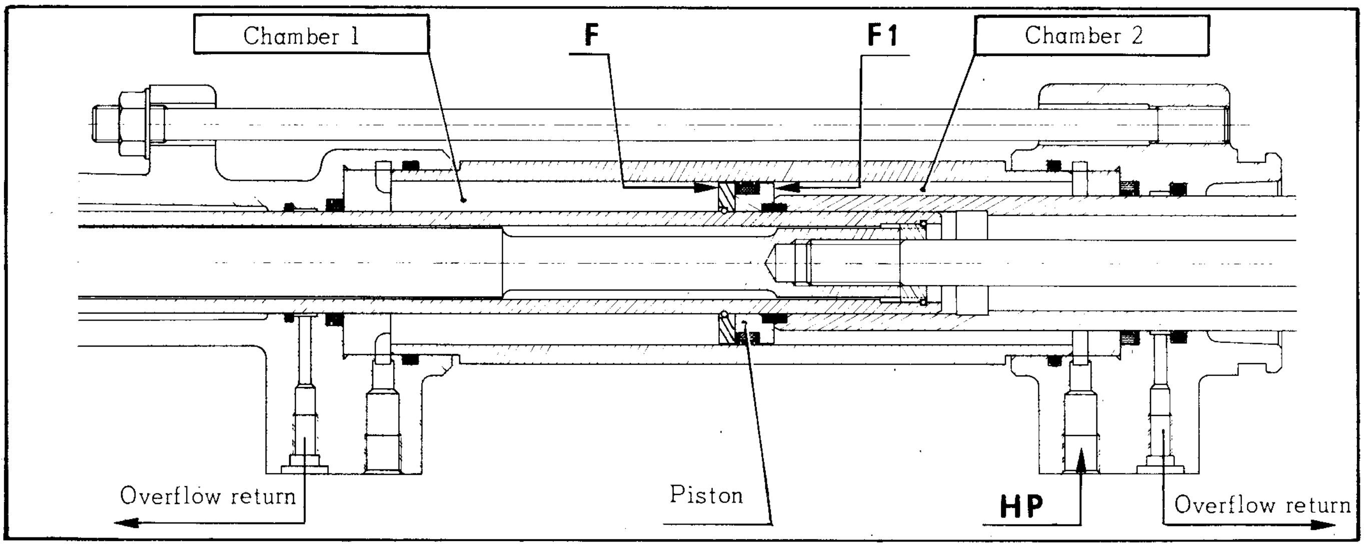
L. 44-7



1. Steering pinion
2. Rack housing
3. Sleeve
4. Piston
5. Piston seal
6. Rack
7. Rack plunger

SECTION THROUGH RACK AND HYDRAULIC RACK CONTROL UNIT (OPERATING CYLINDER)

L. 44-7



SECTION THROUGH HYDRAULIC RACK CONTROL UNIT (OPERATING CYLINDER)

a) **Hydraulic rack control unit (operating cylinder)**

The rack is connected to the hydraulic control unit (operating cylinder)

Assume S as the piston in chamber 1, and S/2 its surface (*as designed in chamber 2*).

The steering is balanced when forces **F and F1** exerted on each face of the piston are equal

$$\text{therefore } F = S \times \frac{HP}{2} = F1 = \frac{S}{2} \times HP$$

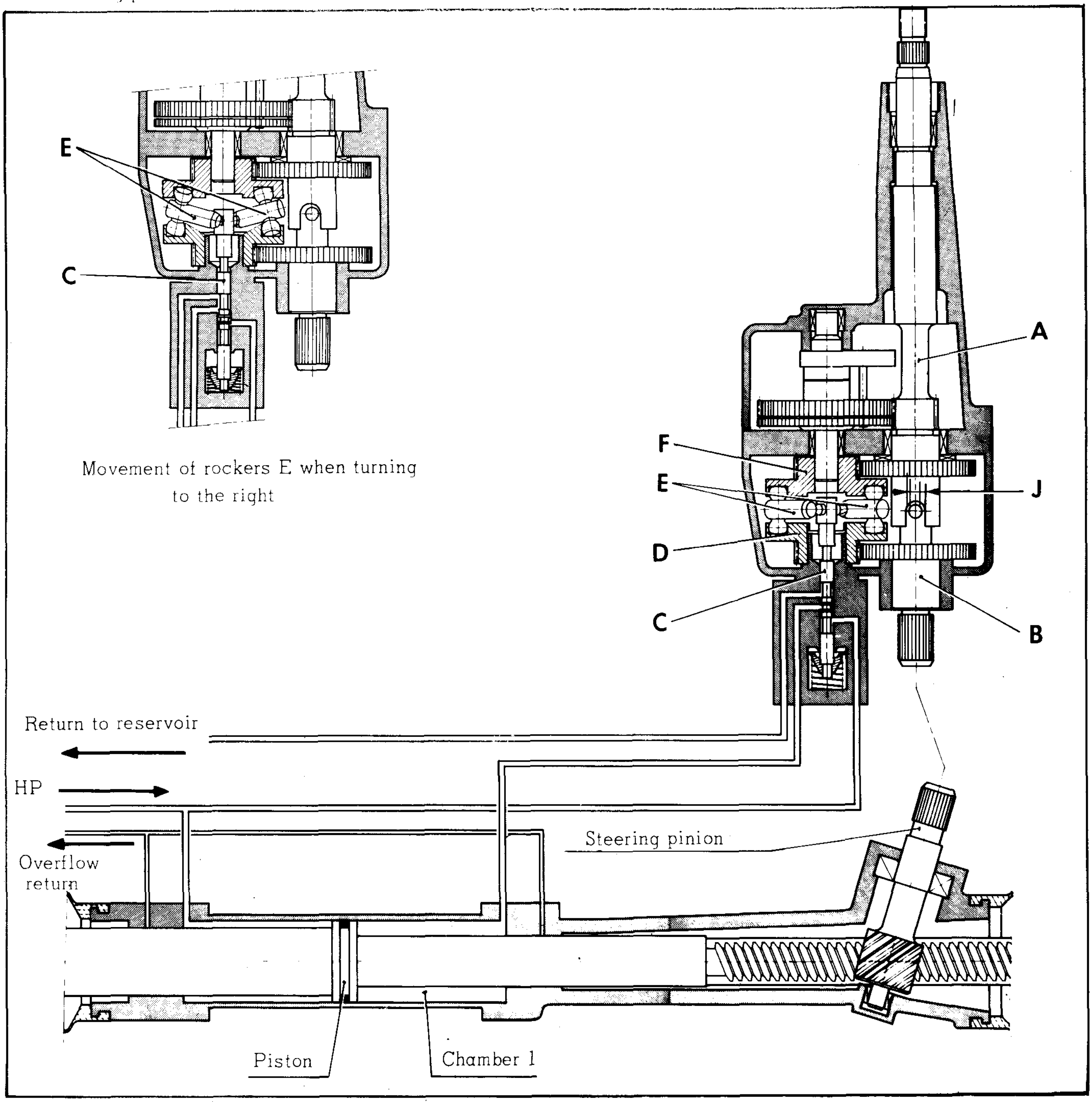
HP = operating pressure of hydraulic circuit (*raises from the cut-in pressure to the cut-out pressure*).

Movement of the rack (**therefore, power operation**) is ensured by a change in pressure inside chamber 1, such as :

- Return of fluid to the tank ——► HP / 2 decreases
- Inlet of fluid ——► HP/ 2 increases

b) **Control unit :**

The control unit located below the steering wheel, consists of a distributor slide-valve (C) which, when hydraulic pressure on either side of it is the same, ensures in chamber 1 the necessary pressure for the steering piston.



When steering :

Within permitted clearance « J », shaft A rotates pinion F. Pinion B and pinion D are then in mesh *(and mechanically linked to the steering pinion)*. Rockers E tilt, and cause slide-valve C to move along its bore.

- Upward movement : Chamber 1 of hydraulic ram supplied in HP
- Downward movement : Chamber 1 of hydraulic ram linked to the return to the reservoir

Return to position of equilibrium :

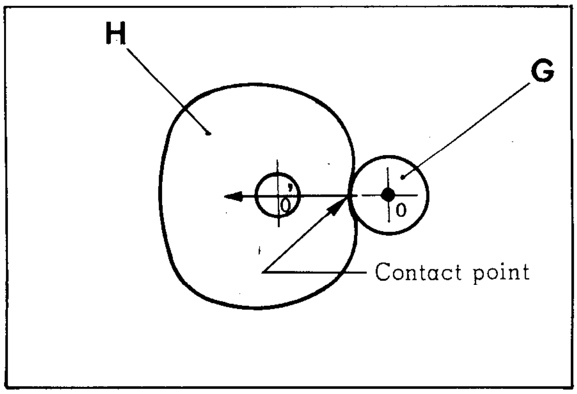
Movement of rack causes movement of its control pinion, pinion B and pinion D. Pinion F being then locked in position, pinion D acts on rockers E, which in turn bring back slide-valve C to its position of equilibrium.

NOTES :

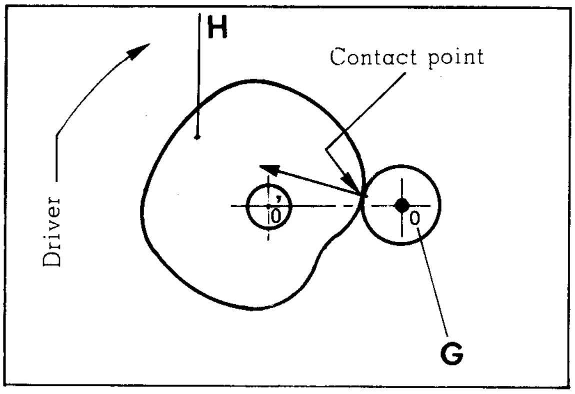
1) Manual operation is ensured by shaft A being mechanically connected to pinion B after cancellation of clearance « J ».
2) The steering rack is hydraulically locked for any steering position, which ensures great directional stability of the vehicle.

VARIATION OF FEEL as a function of the speed of the vehicle

The variation in feel is obtained by a variable mechanical force being applied to control shaft A.

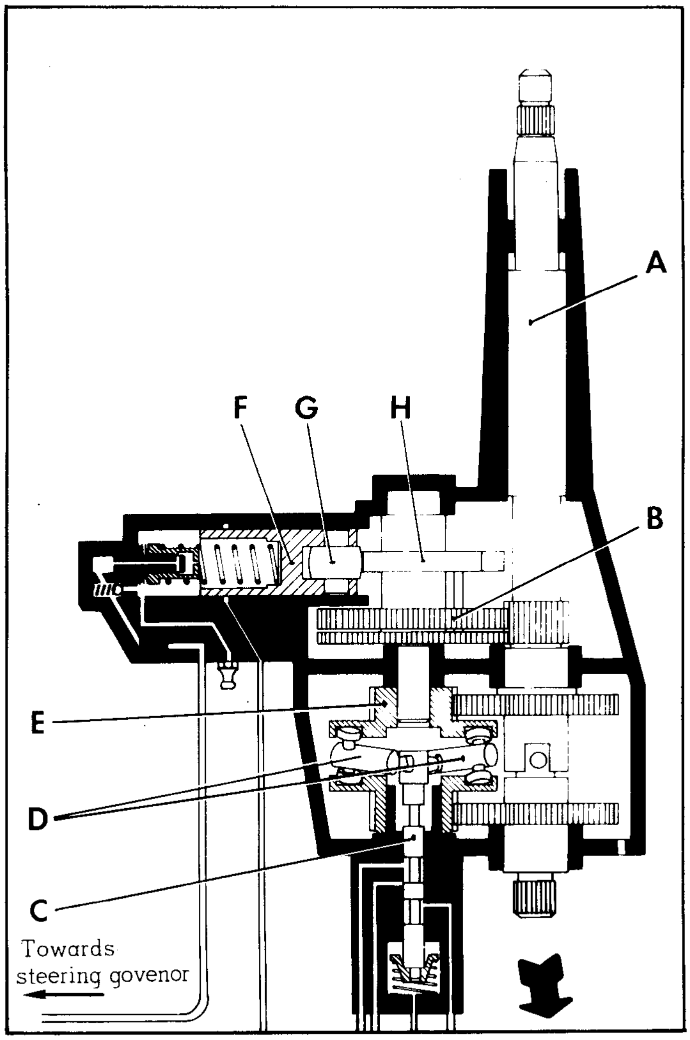


« STRAIGHT-AHEAD » POSITION



STEERING TO LEFT OR RIGHT

L. 44-14 d



a) **Mechanical principle :**

Control shaft A is in mesh with pinion B.

Pinion B is in one piece with Cam H against which piston F, through roller G, applies pressure, according to the following :

- Angle of rotation of shaft A (*effect of eccentric*)
- Pressure exerted on piston F (*variable pressure supplied by steering governor*)

« Straight-ahead » position :

Pressure of piston F is being exerted in the hollow on cam H, which tends to maintain the steering in the « straight-ahead » position.

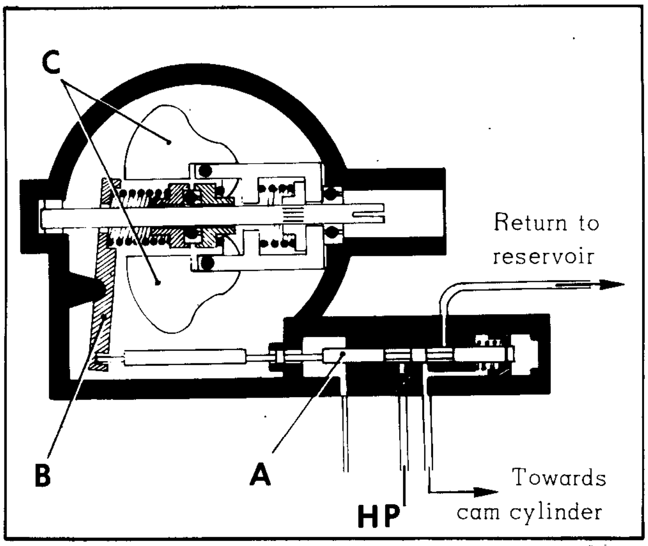
When steering :

The cam and roller contact point is situated away from the O-O axis; a force is applied against the effort of the driver, **which therefore increases the feel.**

b) **Steering governor :**

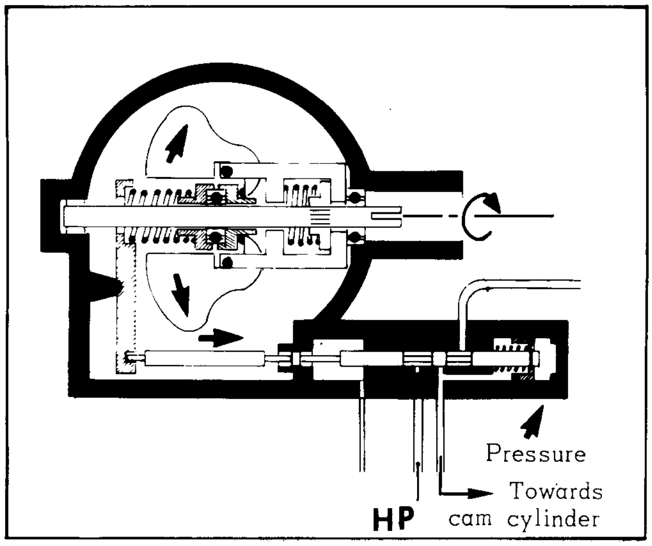
It is situated on the front subframe, and mechanically driven (cable) by the final drive unit in the gearbox.

L. 44-14 e



VEHICLE STOPPED (engine running)

L. 44-14 b



VEHICLE IN MOTION

Operating principle :

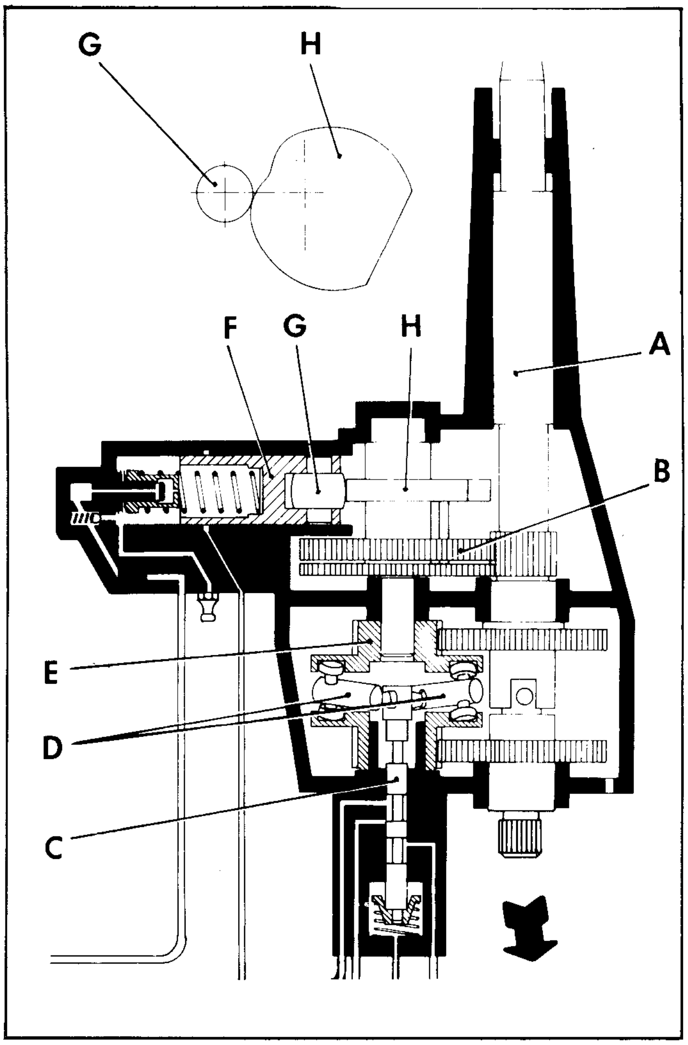
- Slide-valve A is linked in linear motion to lever B.
- Fly-weights C, which rotate (and fly towards under the effect of centrifugal force) cause lever B to tilt.
- *Variable* position of slide-valve A, allows the pressure exerted on the cam cylinder piston to be varied.

NOTE . In order to make possible the powered return function, the steering governor supplies a pressure of 20 ± 5 bars (290 ± 73 psi.) when the vehicle is stopped (*with the engine running*).

POWERED RETURN

The powered return is a combination of the two preceding functions, **the variable feel** function controlling the **power-operation function.**

L.44-14b



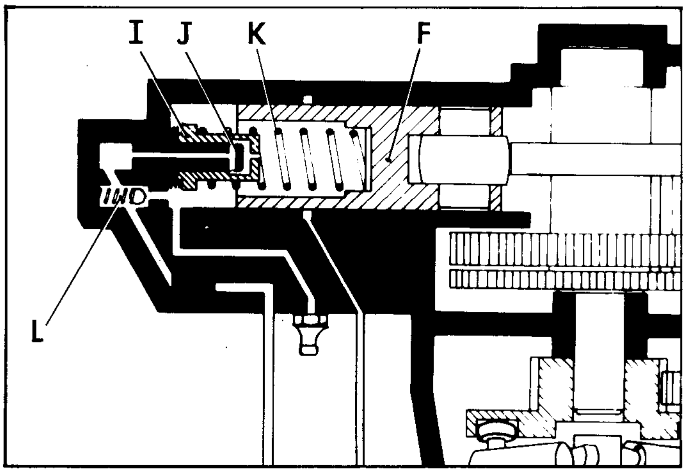
a) Mechanical principle

After having steered, the driver lets go of the steering wheel.

- Piston F, applying pressure to cam H, causes the latter to rotate.
- Pinion B in one piece with the cam, rotates control shaft A.
- Rotation of control shaft A, is transmitted to pinion E, which causes rockers D to tilt, and slide-valve C to move, which moves the rack. This movement stops when roller G reaches the hollow part of cam H (*rotational torque is cancelled*). The steering is then in the «straight-ahead» position.

NOTE : Pressure supplied by the steering governor is applied to piston F, via a variable output regulator, in order to slow down the return of the steering to the «straight-ahead» position.

L.44-14e



b) Variable output regulator :

When steering : return of piston F causes the following :

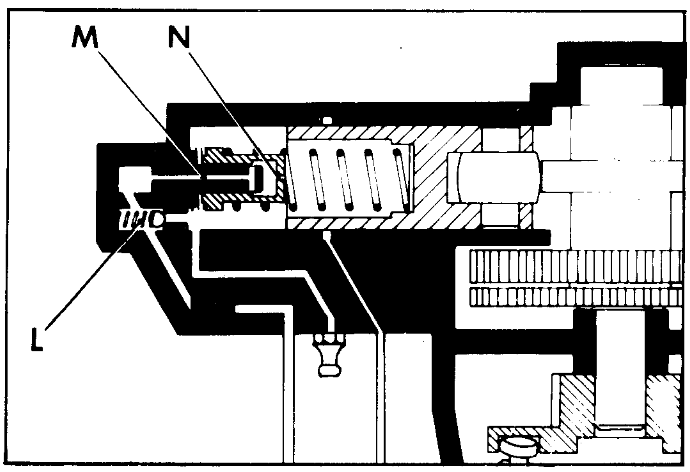
- Expulsion of fluid through one-way valve L
- Compression of spring K, which pushes back sleeve I, uncovering ports J.

« Steering return »

- Fluid flows through channel M (valve L closed) and through calibrated port N, forcing back sleeve I.

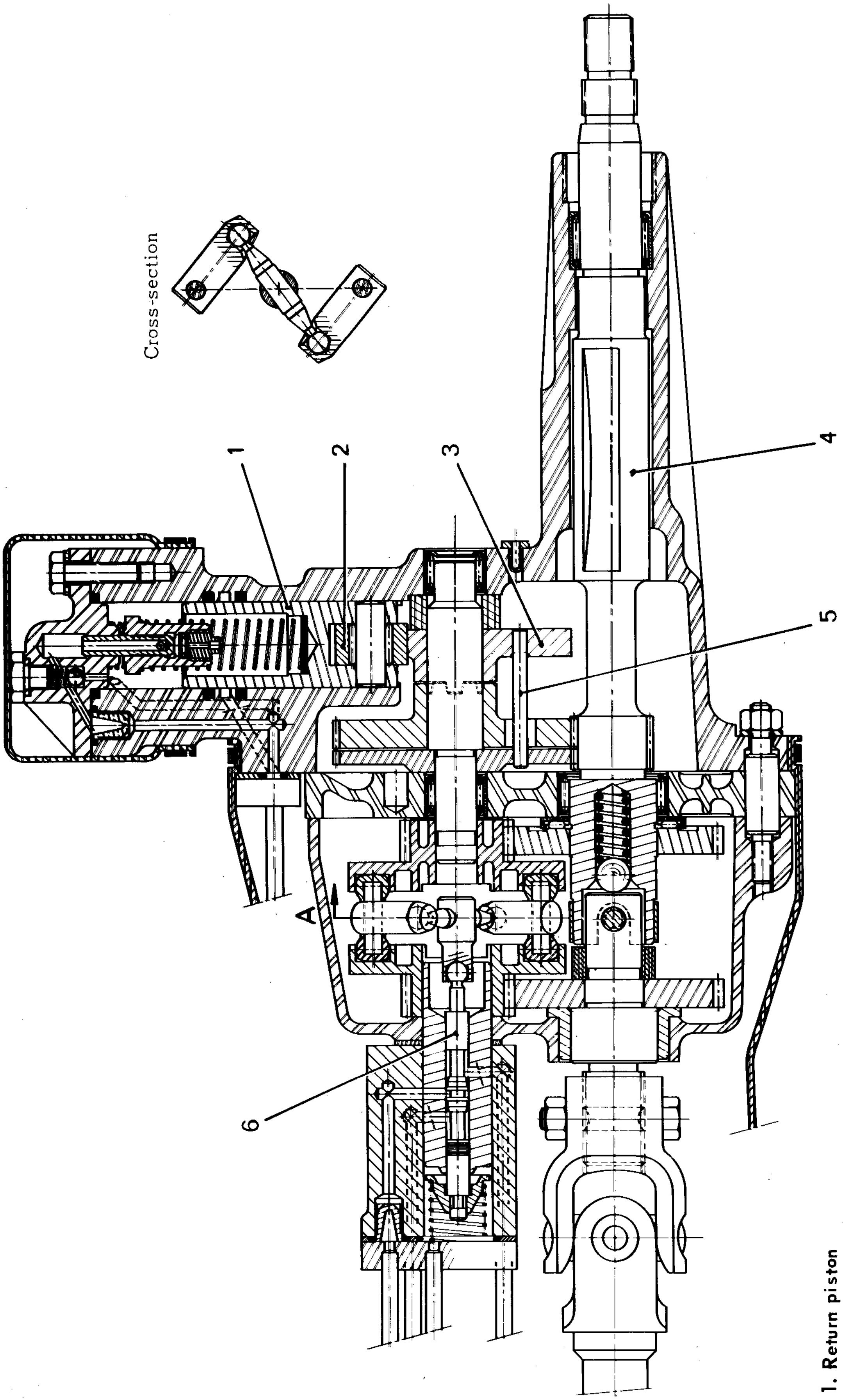
- Sleeve I compresses spring K slightly , and slowly covers ports J as piston F moves.

L.44-14b



CROSS-SECTION OF CONTROL UNIT

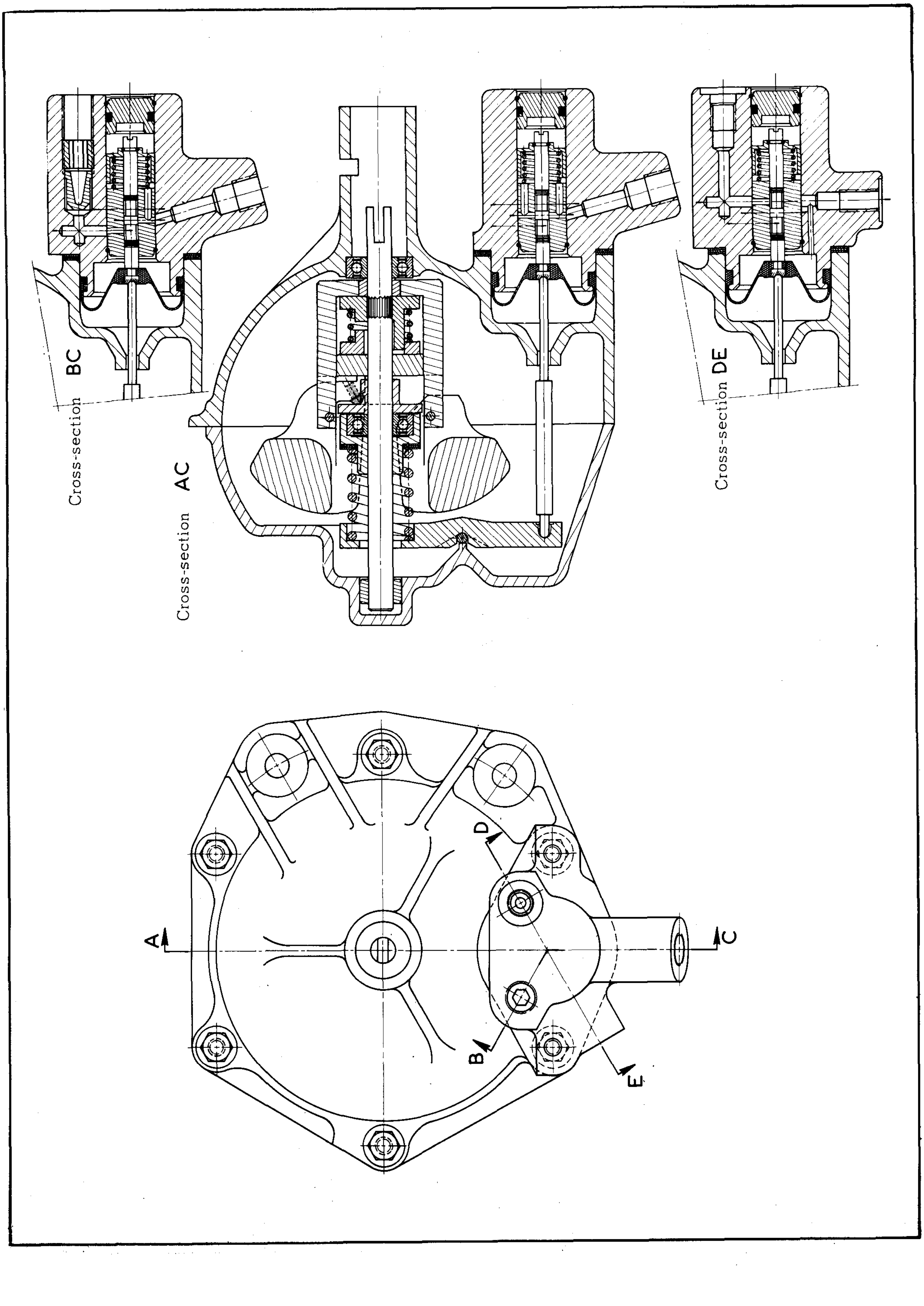
L. 14-8 a



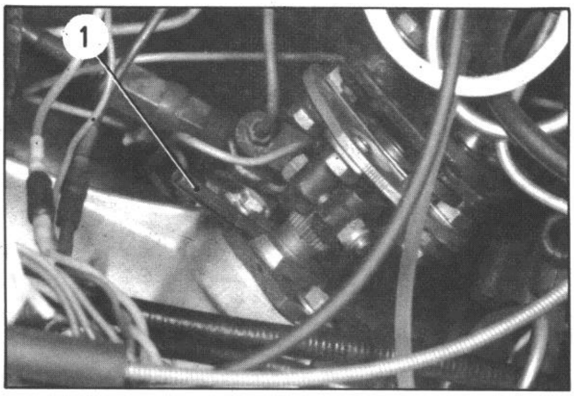
1. Return piston
2. Roller
3. Return cam
4. Control shaft
5. Backlash compensator
6. Slide-valve

CROSS-SECTION OF STEERING GOVERNOR

L. 44-16



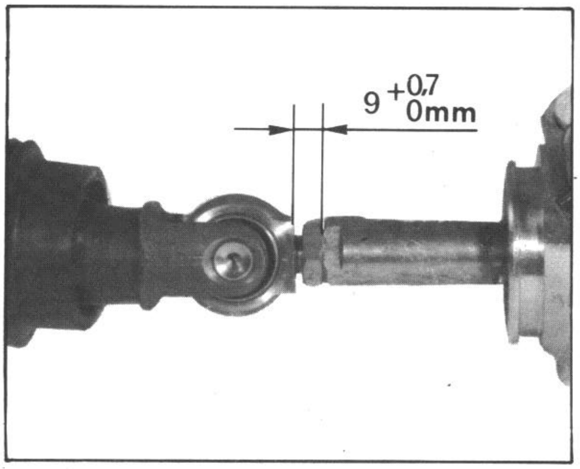
2. SPECIAL FEATURES



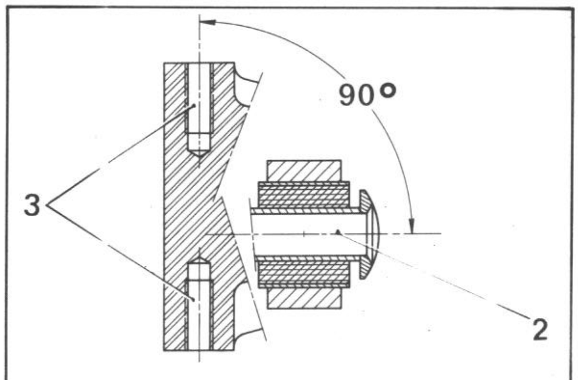
a) **Centre point of steering rack :**

Insert roll-pin (1) (dia = 6.5 mm) in the steering pinion, when the wheels are approximately in the « straight-ahead » position.

b) **Track rods :**
Positioning of flexible links

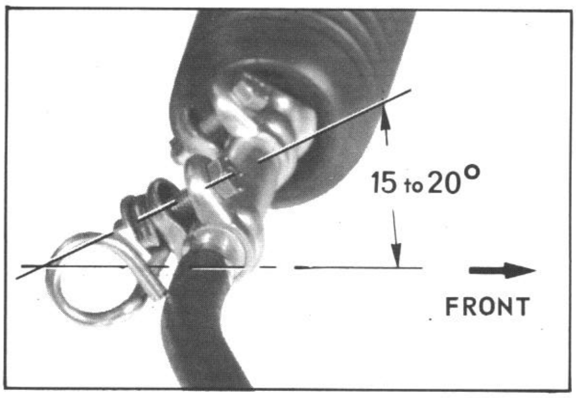


L.44-19



2 Link rod spindle
3 Fixing point of rack housing on crossmember

c) **Positioning steering-wheel spoke :**
In the « straight-ahead » position, the steering-wheel spoke must point vertically downwards



d) **Positioning the collars on the wheel alignment adjustment sleeves**

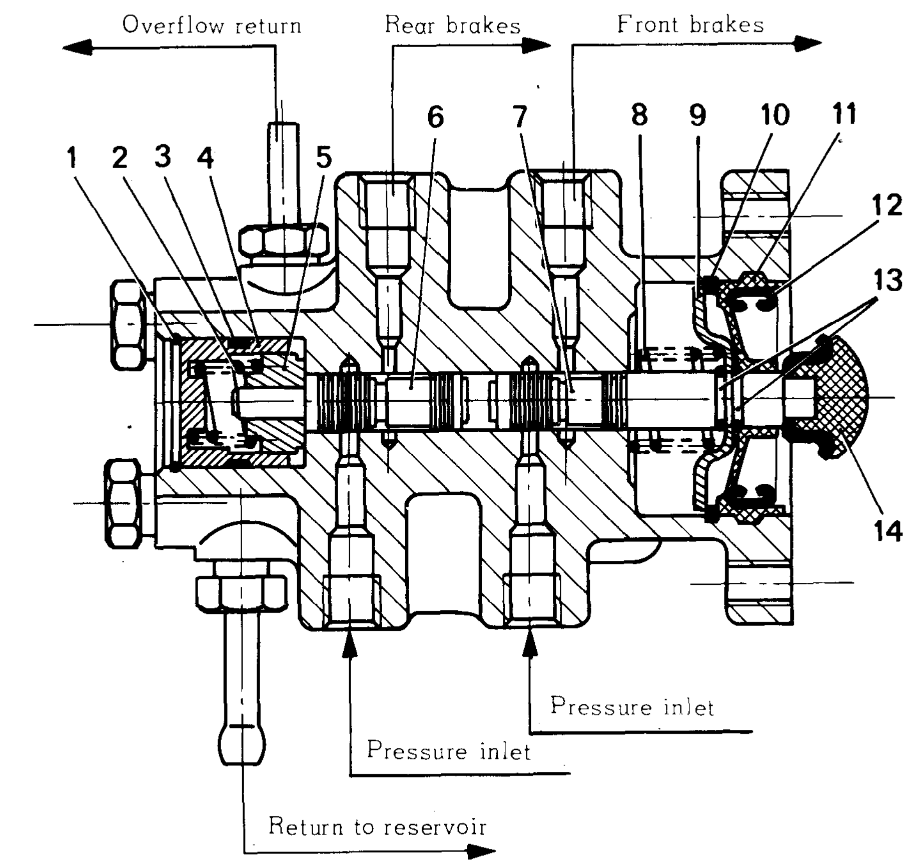
e) **Tightening torques :**

- Steering-wheel fixing nuts	6 to 8 daNm (45 1/2 to 58 ft.lb)
- Screws securing control nut on body-shell	2.1 daNm (15 ft.lb)
- Screws securing steering shaft to coupling flange	2.7 daNm (19 1/2 ft.lb)
- Nuts securing flexible black on rack *(rack locked in position)*	5.5 daNm (40 ft.lb)
- Securing collars for wheel alignment adjusting sleeves	0.9 daNm (6 1/2 ft.lb)

NOTE : Unspecified tightening torques are the same as for the manual steering

BRAKE VALVE

B.45-8 a



1. Snap ring
2. Spring
3. « O» ring
4. Plug
5. Thrust washer
6. Rear slide-valve
7. Front slide-valve
8. Spring
9. Thrust cup
10. Circlip
11. Rubber protective sleeve
12. Securing bush
13. Snap rings
14. Rubber damper

Supplement N° 1 to Manual 818-1 (CORR)

NOTE : If the brake valve is not fitted with an external overflow return, it is incorporated in the operational return (Return to reservoir).

WARNING Three types of brake valve fitted with a single return system incorporated in the operational return have been used.

- *1st fitting* : brake valve painted green, with overflow pointing upwards
- *2nd fitting* : brake valve with green paint mark, and overflow pointing downwards
- *3rd fitting* : brake valve with green paint mark on L.H. side and overflow pointing downwards

I. CHARACTERISTICS

Main braking system :

- Disc brakes on all four wheels, with *ventilated discs* { at the front (*Saloons*) / front and rear (*Estates*) }
  - Four pistons per brake unit, at the front
  - Two pistons per brake unit, at the rear
- Power operated hydraulic control (brake valve incorporated in system)
  - The front braking system is supplied by the main accumulator (*vehicles with manual steering*) or by the the brake accumulator (*Power steering vehicles*).
  - The rear braking system is supplied by the rear suspension, and is fitted with a brake pressure limiter on *Estate* vehicles.
  - The inner half-unit at the front is in one piece with the swivel.
  - The outer half-unit at the front is removable.

Handbrake (Emergency brake) :

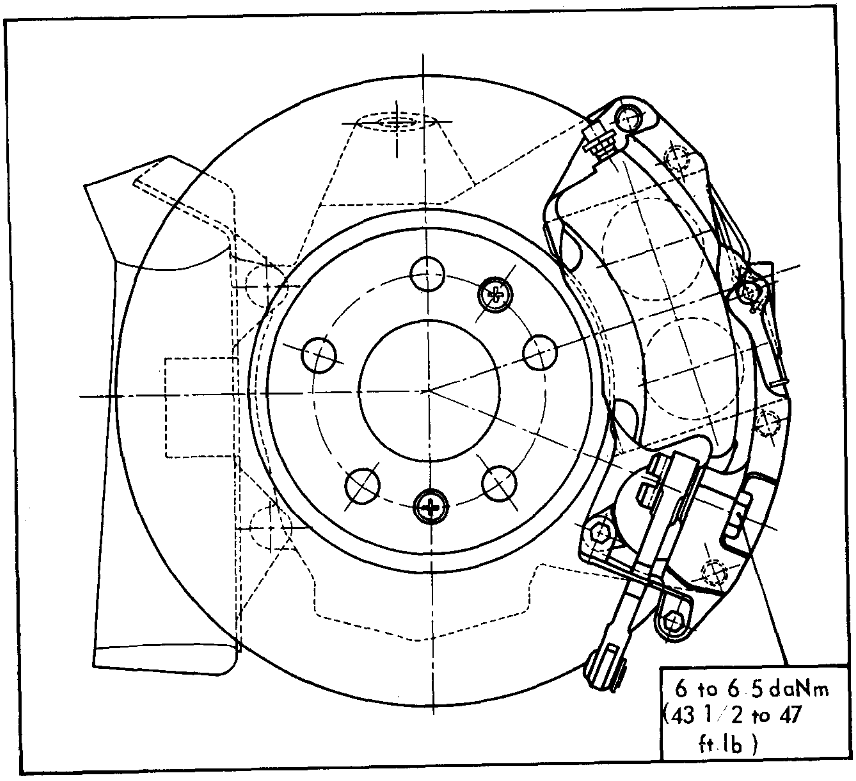
- Independent from the main braking system.
- Two independent brake pads acting on front discs.
- Ratio :
  - CX 2000 ⟶ 2/1975 .... 101 : 1
  - All CX vehicles 2/1975 ⟶ .... 123 : 1

Total braking area :

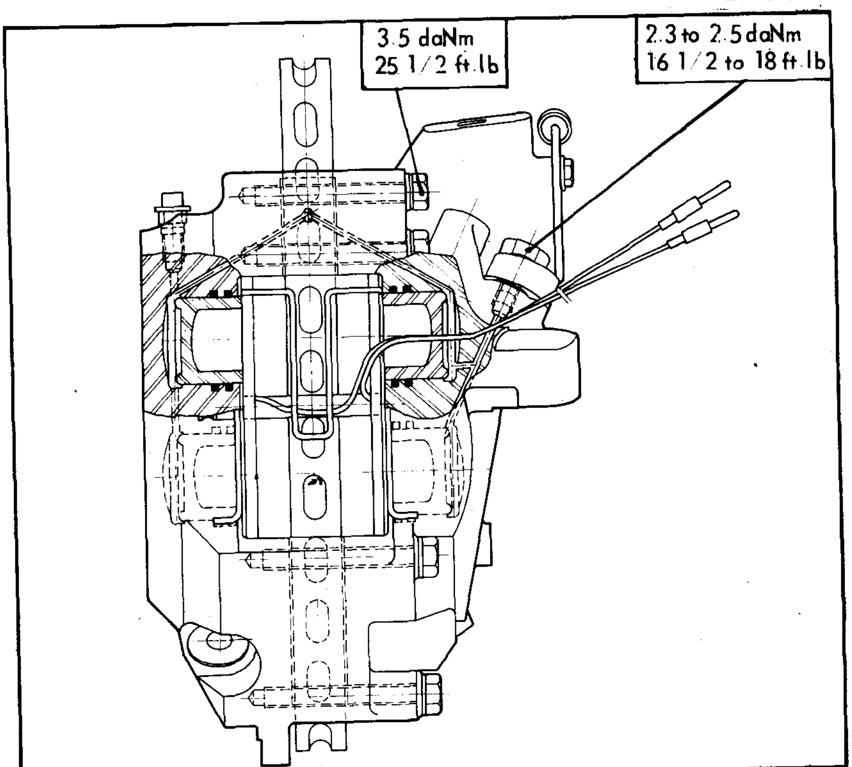
- Main braking system : 316 dm2 - 48.98 sq.in (*Saloons*) or 365 cm2 - 56.57 sq.in (*Estates*)
- Handbrake (emergency brake) : 49 cm2 (7.59 sq.in)

FRONT BRAKE UNIT

L. 45-1

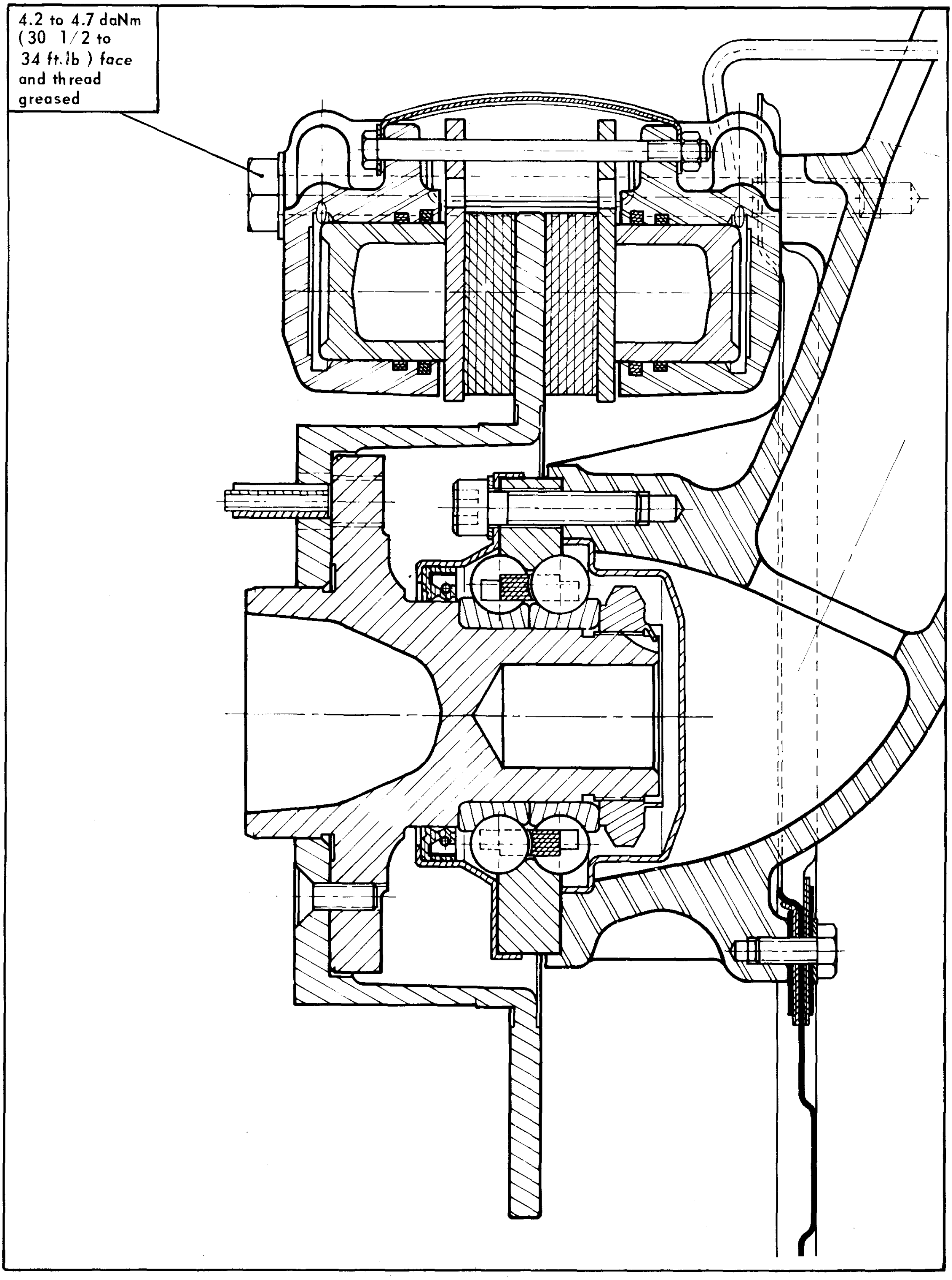


L. 45-3



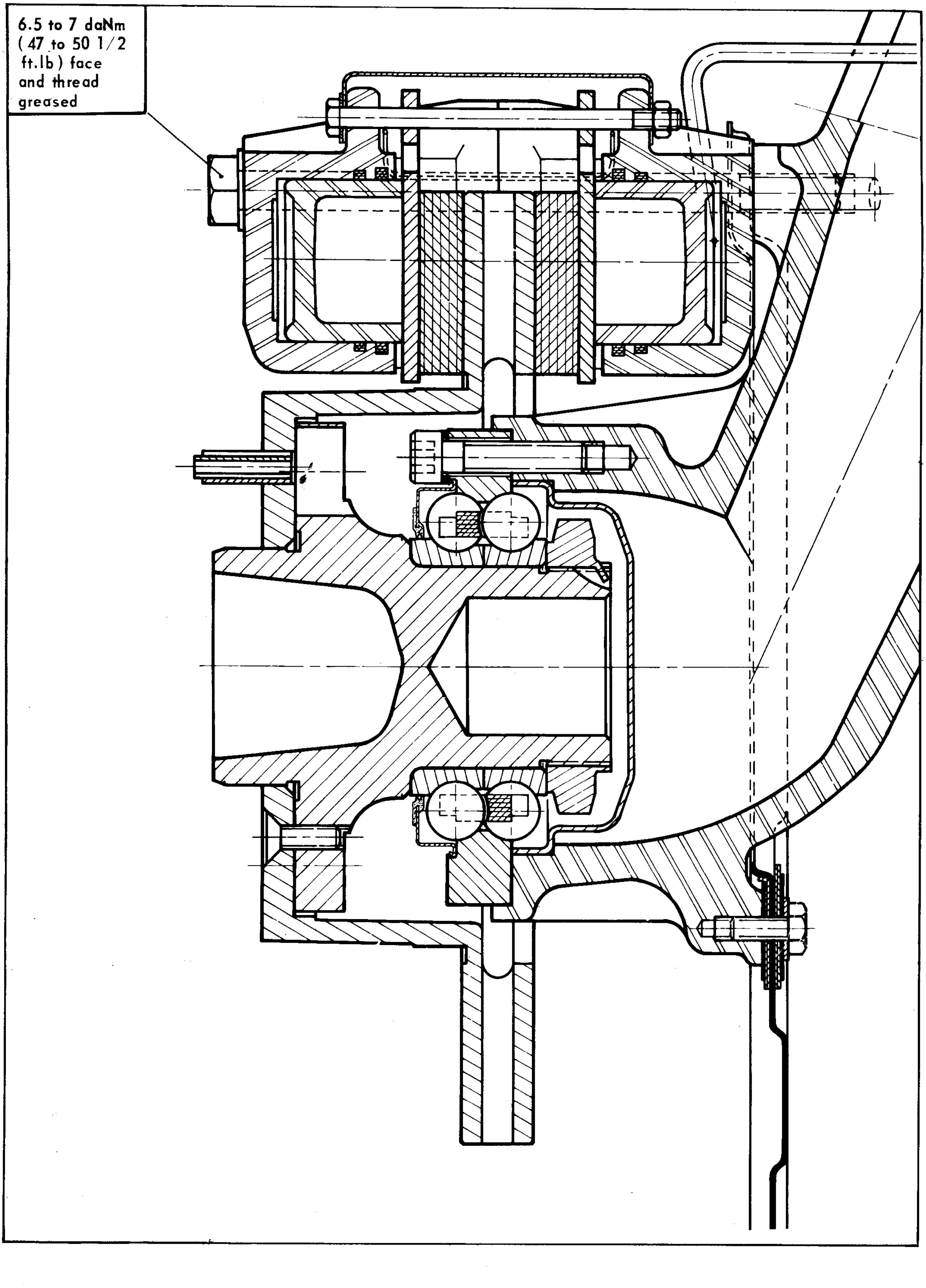
REAR BRAKE UNIT *(Saloons)*

L. 42•2



REAR BRAKE UNIT (*Estates*)

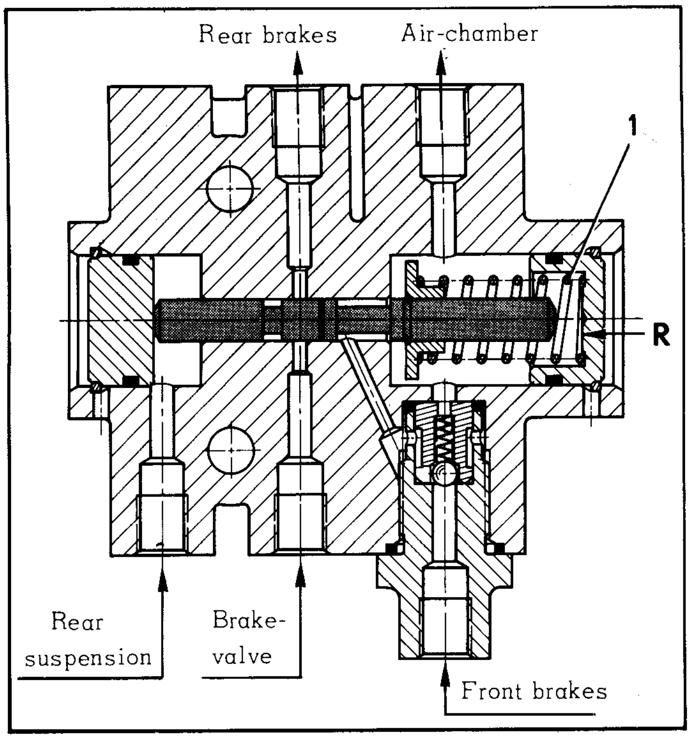
L 42-6



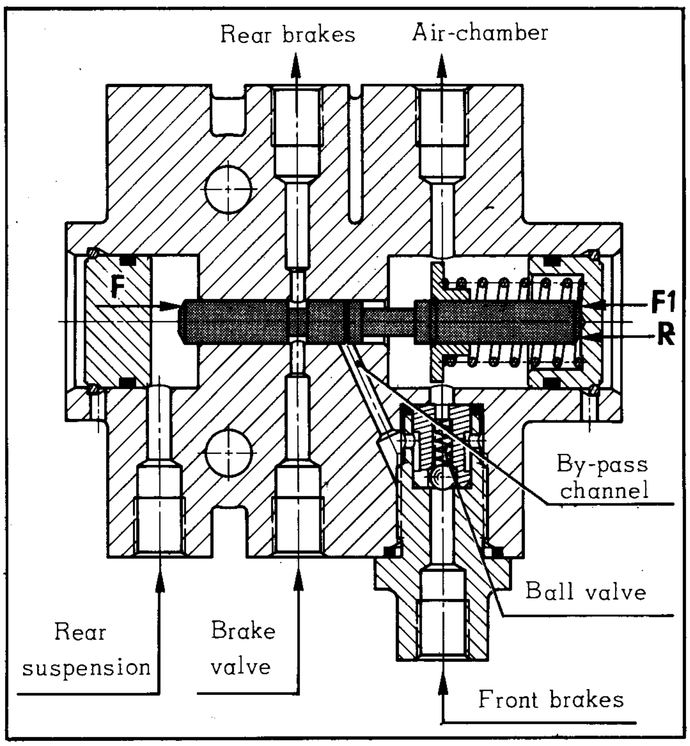
BRAKE PRESSURE LIMITER *(Estate vehicles)*

A brake pressure limiter is fitted to the rear braking system on Estate vehicles. Its object is to vary the maximum pressure in the rear braking system as a function of the load imposed on the rear suspension, and the pressure in the front braking system. It is secured horizontally on the front subframe, behind the safety valve.

L 45-6



L 45-6



OPERATION

(Vehicles ⟶ 9/1976)

The brake pressure limiter consists mainly of a slide-valve, the positions of which allow or do not allow the supply of fluid under pressure from the brake valve to the rear brakes.

The ends of this slide-valve are submitted to the action of two forces :

- Force **F** exerted by the fluid under pressure in the rear suspension.
- Force **R** exerted by spring (1) and increased by the value of force **F1** exerted by the front brake fluid pressure during braking action.

a) *Vehicles in the « low » position (no pressure) :*
Under the only force **R**,that of the spring, slide-valve is in the position indicated in figure 1. The fluid cannot pass from the brake valve to the rear brakes, (and vice-versa).

b) *Vehicle in the « normal » driving position, no action on brake pedal :*
Force **F** exerted by the rear suspension pressure is greater than Force **R** exerted by the spring. The slide-valve is in the position indicated by Figure 2, which allows flow of fluid from brake valve to rear brakes (and vice-versa).

c) *Vehicle in motion, with the brake pedal actuated :*
Fluid from the front brakes exerts a Force **F1** which is added to Force **R** exerted by the spring. When these two forces are smaller than force **F**, slide-valve is in position shown in Figure 2. The rear brakes are supplied.
When these two forces are greater than Force **F**, slide-valve is in the position shown on Figure 1. The rear brakes are not supplied.

NOTE : **F1** + **R** > **F** is true, when the pressure in the front brakes + 28 bars (406 psi) becomes greater than the pressure in the rear suspension. When **F** increases, **F1** increases. Consequently, maximum pressure in the rear brakes increases. In order to avoid a sudden cut-out of the supply to the rear brakes, a ball-valve slows the flow of liquid from the front brakes. The action of this valve is increased by the fact that an air-bubble trapped in its chamber, secured at the rear of the front subframe upper crossmember on the L.H. side, has to be compressed. Once the slide-valve has started moving, the supply of fluid is not slowed down, and it then flows through the by-pass channel.

Supplement N° 1 to Manual 818-1 (ADD)

FIG. 1

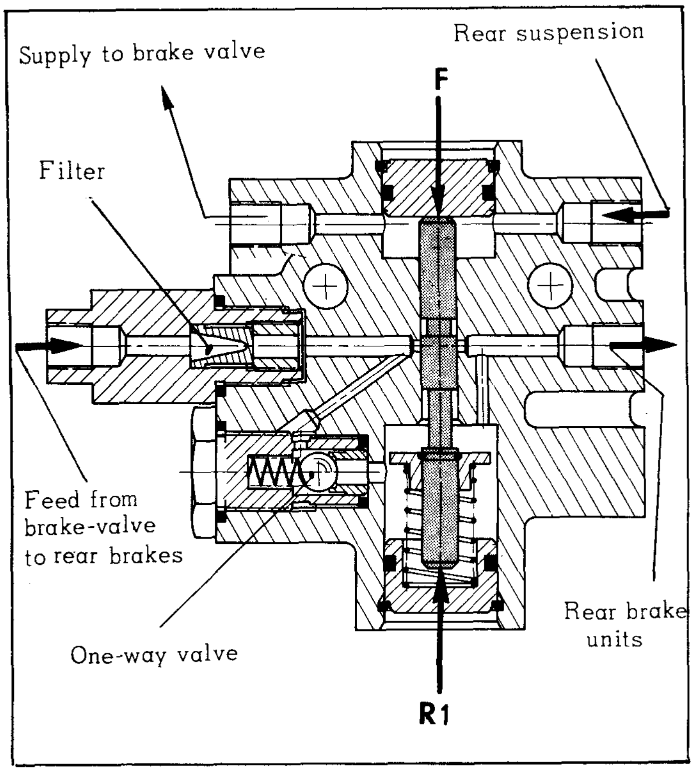
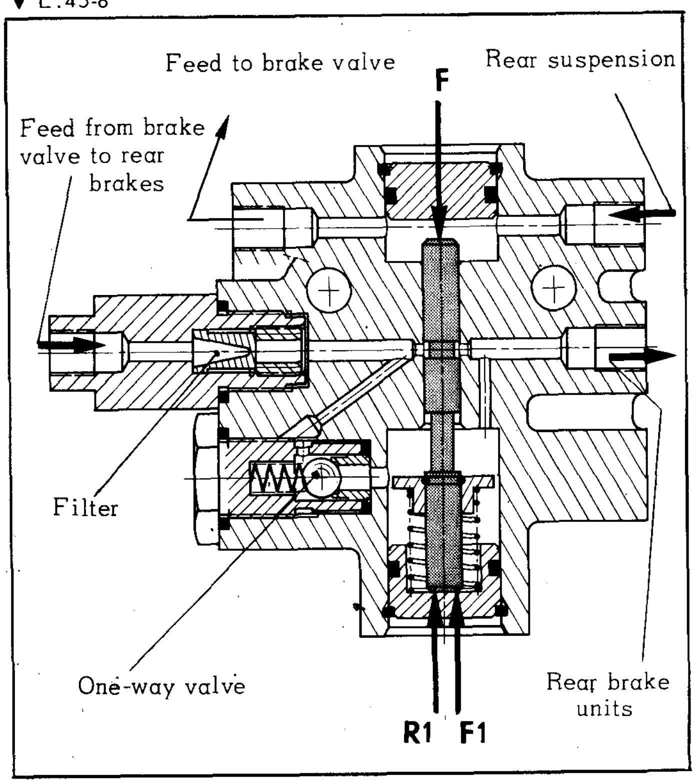


FIG. 2

♦ L.45-8



9/1976 ⟶ vehicles :

The brake pressure limiter consists mainly of a slide-valve, the position of which allows or does not allow supply of fluid under pressure from the brake valve to the rear brakes.

- one end of the slide-valve is constantly subjected to the pressure of the rear suspension fluid (which varies according to the load)
- the other end of the slide-valve is subjected to force **R1**, increased during braking action by force **F1** exerted by the fluid under pressure from the rear brakes.

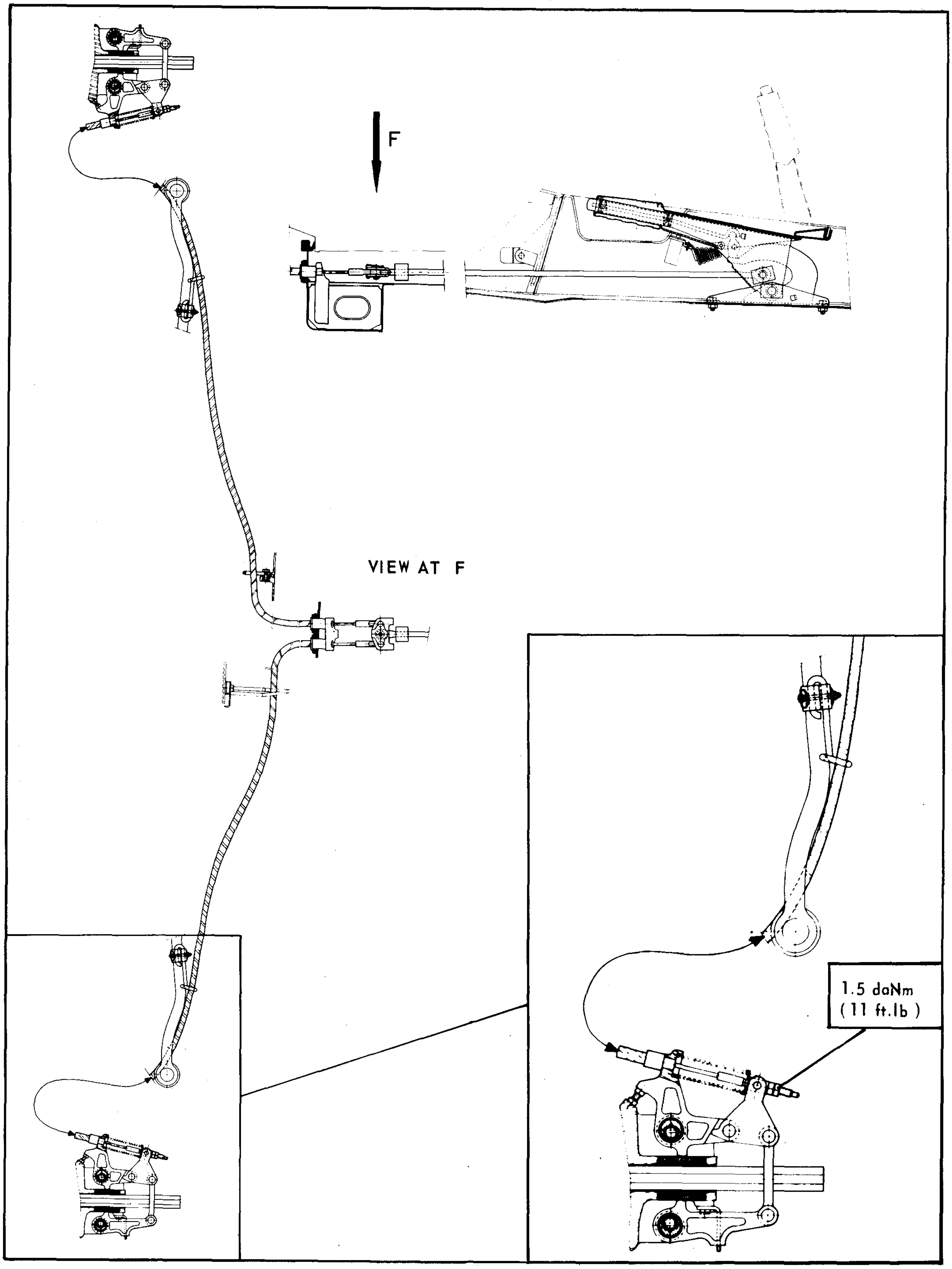
a) *Vehicle in the « low » position (no pressure) :*
Under the action of force **R1** alone, the slide-valve is in the position shown on Fig. 1.
The fluid cannot flow from the brake valve to the rear brakes.
On the other hand, the one-way valve allows fluid to flow from the rear brakes to the brake-valve.

b) *Vehicle in the « normal » driving position, with no action on the brake pedal :*
Force **F** exerted by the rear suspension fluid under pressure is greater than force **R1** produced by the spring. The slide-valve is in the position shown on Fig. 2 which allows fluid to flow from the brake valve to the rear brakes and vice-versa.

c) *Vehicle in motion, with the brake pedal being actuated :*
Fluid flowing from the rear brakes, exerts a force **F1** which is added to force **R1** produced by the spring.
Before « cut-out » :
At the start of the brake pedal movement, force **F1** being still very small, we have **F1** + **R1** **<** **F**. The slide-valve allows liquid to flow to the rear brakes.
After « cut-out » :
Force **F1** having increased, and being added to Force **R1**, we have **F1** + **R1** **>** **F**. The slide-valve interrupts the flow of fluid to the rear brakes.
The « easing » of the braking at the rear is then allowed to proceed via the one-way valve.

NOTE : **F1** + **R1** **>** **F** is true when the rear brake pressure **+ 28 bars (406 psi)** becomes greater than the rear suspension pressure. If **F** increases, **F1** increases as well until cut-out occurs. Consequently, maximum pressure in the rear brakes increases.

HANDBRAKE
(Emergency Brake)



II. SPECIAL FEATURES

- Clearance between pedal and brake-valve .... 0.05 to 3 mm
- Stoplamp switch : *lamp must light as soon as pedal touches brake valve*

Main braking system :

	FRONT (*all vehicles*)	REAR *Saloons*	REAR *Estates*
- Diameter of disc	260 mm	233.5 mm	235 mm
- Thickness of disc	20 mm	9 mm	18 mm
- Minimum thickness after wear	18 mm	7 mm	16 mm
- Max. run-out of disc	0 2 mm	0.2 mm	0.2 mm
- Diameter of operating pistons	42 mm	30 mm	40 mm
- Area of one pad	55 cm2 (8.52 sq.in)	24 cm2 (3.72 sq.in)	(36 cm2 (5.58 sq.in)
- Thickness of lining on the pad	11.5 mm	12 mm	12 mm

- Checking the flatness of a disc . take a reading in 8 different points . the results should be the same to within : 0.02 mm

TYPE OF BRAKE PAD LINING (Front linings incorporating warning-lamps leads)
AUTHORISED REPAIR FITTINGS

VEHICLE	FRONT		REAR
All Saloon Vehicles CX 2000 (MA series MB) CX 2200 (MA series MC) CX 2400 (MA series MJ) CX Prestige (MA series MK) CX 2400 GTI (MA series ME)	TEXTAR - T - 254		FERODO 748
		or	
	FERODO - 748		FERODO 748
Estate vehicles CX 2000 (MA series MD) CX 2400 (MA series MF)	TEXTAR - T - 254		TEXTAR - T 254
		or	
	TEXTAR - T 254		FERODO - 748
		or	
	FERODO - 748		FERODO - 748

Replacing rear brake pads on Estate vehicles ⟶ 9/1976 :

Two procedures are possible :

1. *With the hydraulic system pressurised :*
   Place the vehicle on stands, with the manual height control in the « *high* » position so that the pistons may be drawn in.

2. *No pressure in the hydraulic system* (or vehicle in « *low* » position) :
   Place the vehicle on stands
   Slacken the screws in order to draw the pistons in.

Handbrake (Emergency brake)

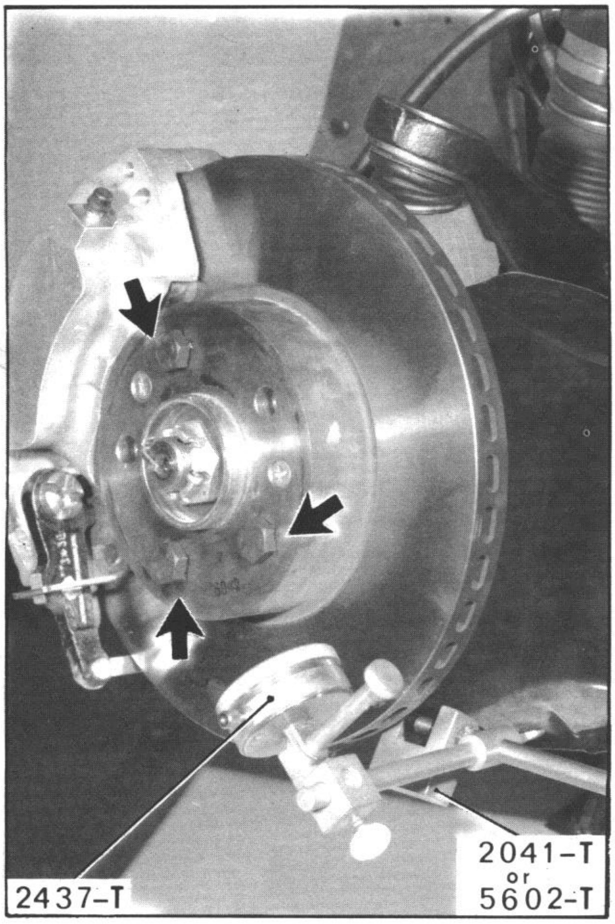
- Thickness of the lining on one pad .... 4.15 mm
- Type of lining .... TEXTAR T 270
- Area of one pad .... 12 cm2 (1 86 sq in)
- Adjusting the pads . the pads must just contact the disc at its highest points.

Tightening torques :

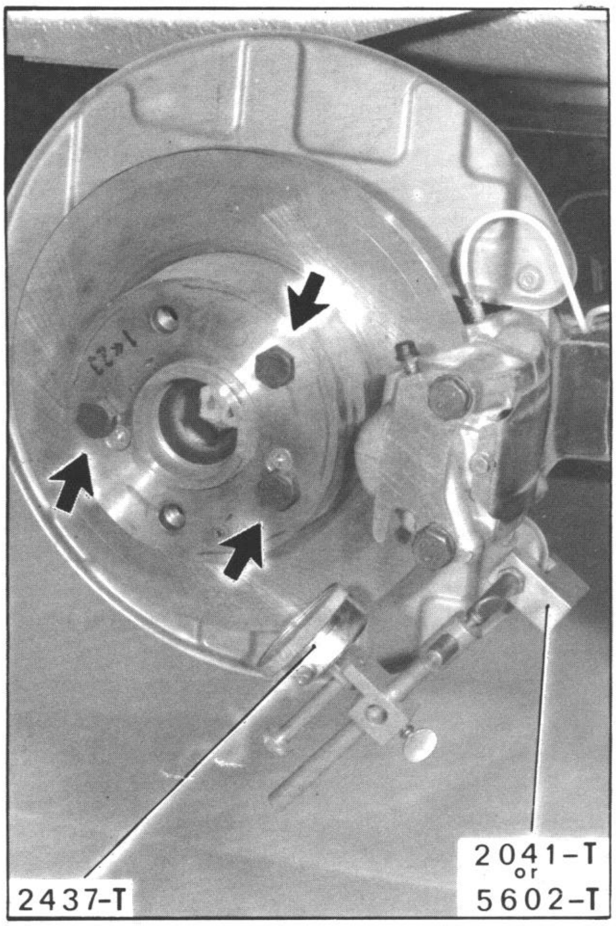
- Flexible brake pipe on front brake unit tube .... 3 6 to 4 daNm (26 to 29 ft.lb)
- Nut securing front brake pipe on subframe .... 2.1 to 2.4 daNm (15 to 17 1/2 ft.lb)
- **Brake valve securing point** .... 1 8 daNm (13 ft.lb)
- Pedal assembly securing point .... 0 5 daNm (3 1/2 ft.lb)

CHECKING THE RUN-OUT OF THE BRAKE DISC

FRONT BRAKES



REAR BRAKES



Supplement N° 1 to Manual 818-1 (CORR)

Equipment required :

- 1 universal dial gauge bracket (2041-T or 5602-T)
- 1 dial gauge 2437-T
- 3 screws, hex. head
  ϕ = 12 mm, thread pitch 1.25, length = 30 mm)

  (Ex. Crown wheel securing screws on « D » vehicles).

Method :

1. Raise vehicle and assemble equipment as shown above.

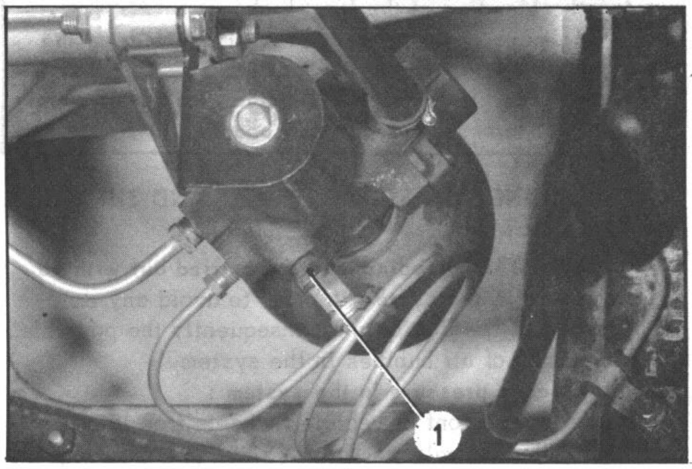
Tighten the three screws (➡) to approximately 70 mN (7 m.kg) (50 1/2 ft.lb).

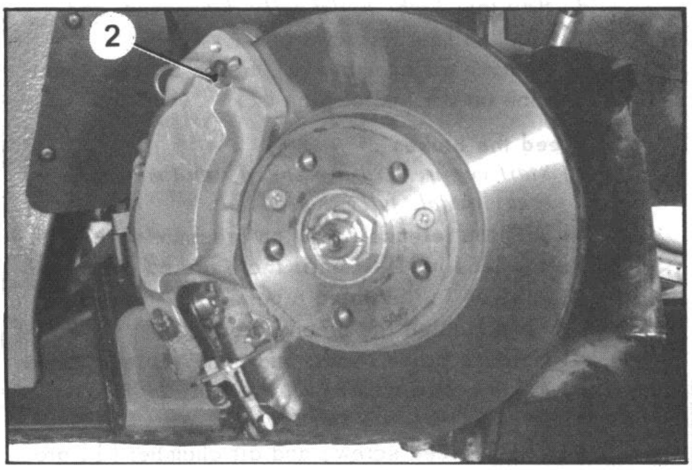
2. *Set dial gauge rod as perpendicular as possible to disc face.*

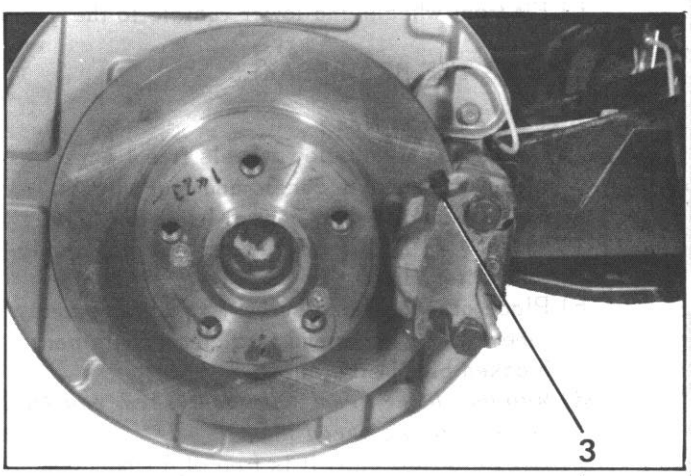
The run-out thus registered must not exceed 0.2 mm.

If this condition cannot be satisfied the disc must be changed.

I. BLEEDING THE BRAKES ON SALOON AND ESTATE VEHICLES (9/1976 ⟶)







A. FRONT BRAKE BLEEDING

NOTE : To avoid emulsifying the fluid and the consequent formation of air-pocket in the system, **the circuit should not be under pressure** when this operation is carried out.

1. **Release pressure in circuits :**
   a) Raise front of vehicle (wheels free).
   b) Slacken pressure regulator bleed screw (1). Remove front wheels.
   c) Place a transparent tube over each bleed screw (2) with its other end in a clean container.
   d) *Hold down brake pedal and loosen bleed screws (2).*
2. **Bleeding :**
   a) Start engine (idling speed) and maintain brake pedal fully depressed.
   b) Tighten pressure regulator bleed screw and allow fluid to flow until bleed tubes are free of air bubbles.
   Then tighten bleed screws (2).

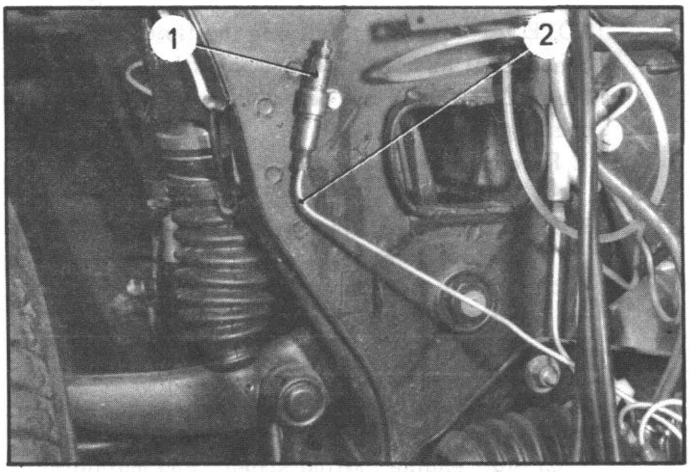
   c) Release brake pedal and remove bleed tubes. Check the bleed screws for leaks by depressing brake pedal to fullest extent.
   Stop engine.
   Fit rubber protectors over the bleed screws.
   d) Replace front wheels and lower vehicle to the ground.

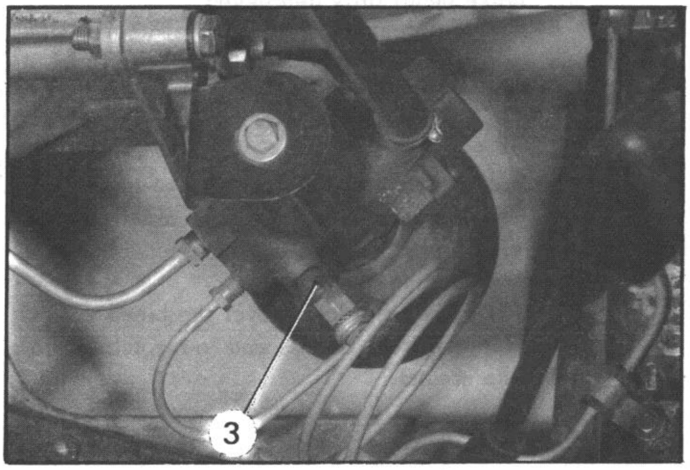
B. REAR BRAKE BLEEDING

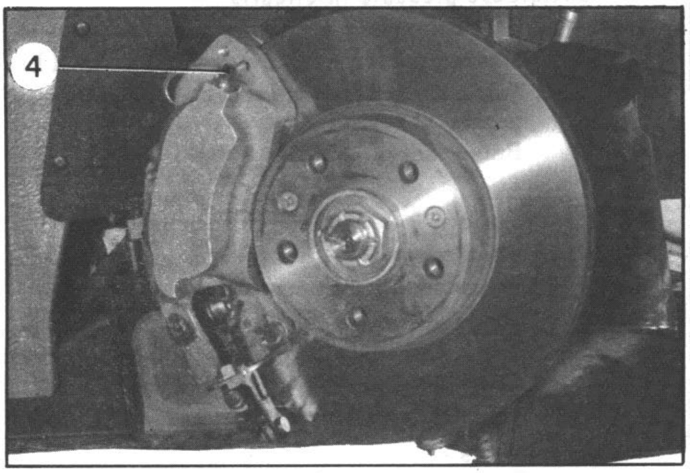
3. **Release pressure in circuits**
   a) Set manual height control to *low position.*
   b) Slacken pressure regulator bleed screw (1)
   c) Wait until vehicle has reached its lowest point.
   Raise rear of vehicles (wheels free)

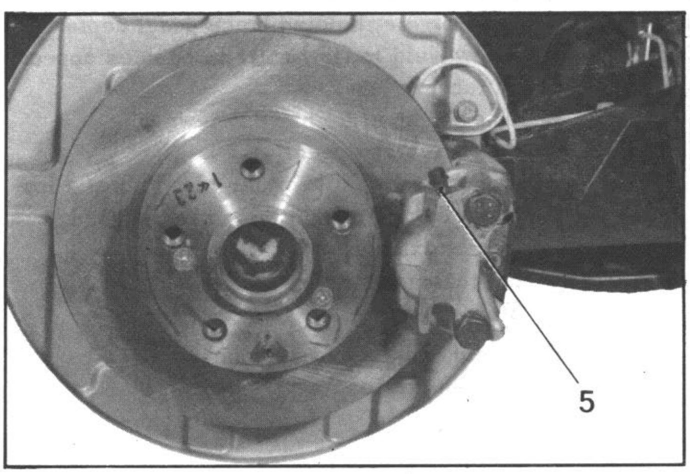
   Remove lower rear wheel panels and rear wheels.
   d) Set manual height control to *high position*
   e) Place a transparent tube over each bleed screw with its other end in a clean container.
   f) Open bleed screws (3) and depress brake pedal to fullest extent.
4. **Bleeding :**
   a) Tighten regulator bleed screw (1).
   Start engine, holding brake pedal depressed.
   b) Allow fluid to flow until no bubbles appear in tube.
   Then tighten the bleed screws.
   Release brake pedal.
   c) Remove tubes. Check the bleed screws for leaks by depressing the brake pedal to fullest extent.
   Fit rubber protectors.
   Stop engine.
5. Refit rear wheels and detachable panels.
   Lower vehicle to ground.

II. BLEEDING THE BRAKES ON ESTATE VEHICLES (⟶ 9 1976)









Response time of the brake pressure limiter depends on the bleeding of the front brakes.
- Too much air in air-chamber (1) slows down the cut-out of supply to the rear brakes.
- No air in air-chamber (1) causes cut-out of supply to rear brakes to occur too suddenly.

A. BLEEDING THE FRONT BRAKES AND THE AIR CHAMBER (1) :

NOTE : **This bleeding must be carried out with no pressure in the system** in order to avoid any emulsifying of the liquid, and consequently the possible formation of air bubbles in the system.

1. **Release pressure in the system :**
   a) Raise front of vehicle (wheels free).
   b) Slacken release screw (3) on pressure regulator. Remove the front wheels.
   c) Place on each bleed screw (4) a transparent tube with its other end in a clean container
   d) *Maintain brake pedal fully depressed*, and slacken bleed screws (4).
   e) Remove air chamber (1). Place a transparent tube on the end of pipe (2).

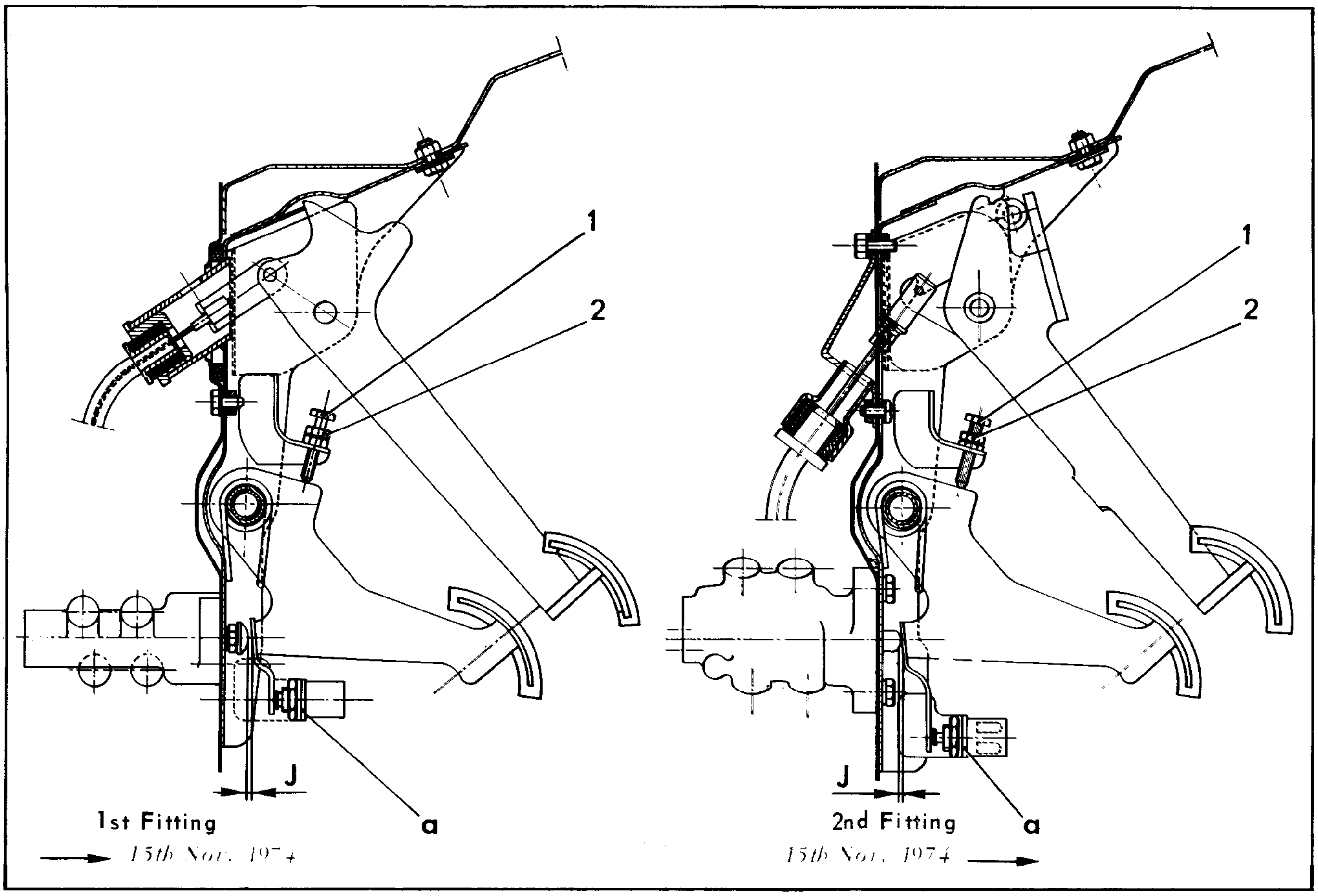
2. **Bleed the brakes :**
   a) *Start engine, (idling speed) and maintain brake pedal, fully depressed*
   b) Tighten release screw on pressure regulator, and let fluid flow until there are no more air bubbles in the bleed tubes.
   Then tighten the bleed screws.
   c) Release brake pedal, and remove bleed tubes.
   d) *Fit air chamber (1) after having blown it through with compressed air.*
   e) Check bleed screws and air chamber (1) are properly sealed by fully depressing brake pedal. Stop engine. Place rubber protective caps over bleed screws.
   f) Fit front wheels and lower vehicle to the ground.

B. BLEEDING THE REAR BRAKES

3. **Bleed the rear brakes :**
   a) Raise rear of vehicle (wheels free).
   Remove removable panels and rear wheels.
   b) Place manual height control lever in « *high position* » (Release screw on pressure regulator tightened).
   c) Place on each bleed screw (5) a transparent tube with its other end in a clean container.
   Slacken bleed screws (5).
   d) *Maintain brake pedal fully depressed, and start engine (idling speed).*
   e) Let fluid flow until it is free of air bubbles.
   Then tighten bleed screws.
   Release brake pedal.
   f) Remove bleed tubes.
   Check bleed screws are properly sealed by fully depressing brake pedal.
   Fit rubber protective caps.
   Stop engine.

4. Fit rear wheels and removable panels.
   Lower vehicle to the ground.

III. CHECKING BRAKE PEDAL FREE PLAY



1. Turn screw (1) to obtain a clearance of

« J » = **0.05 to 3 mm**

Tighten lock-nut (2).

2. **Checking operation of brake pedal** :
   a) Release pressure in system.
   Set manual height control to *low position*.
   Slacken pressure regulator bleed screw.
   (If the vehicle is fitted with a brake accumulator, actuate the pedal, so as to release the pressure in the brake accumulator).

   b) Depress pedal three or four times to move the control slide valve to the end of its stroke, and ensure that pedal returns freely to its stop.
   There should be no variation of clearance « J » as initially set.
   Tighten pressure regulator bleed screw.

IV. ADJUSTING THE STOPLAMP SWITCH

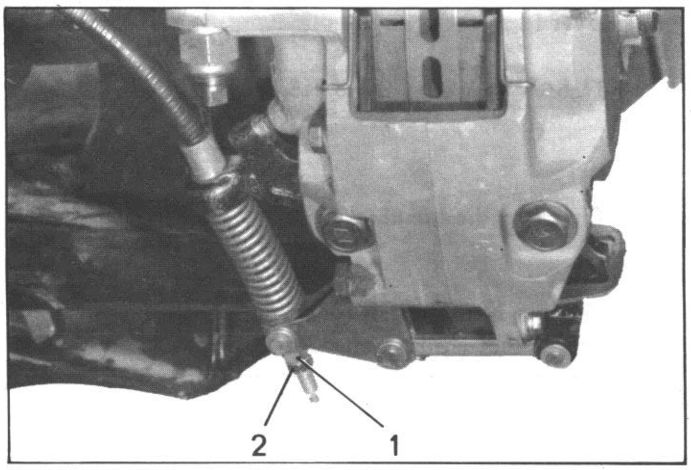
1. Check adjustment of free play on brake pedal (see above).

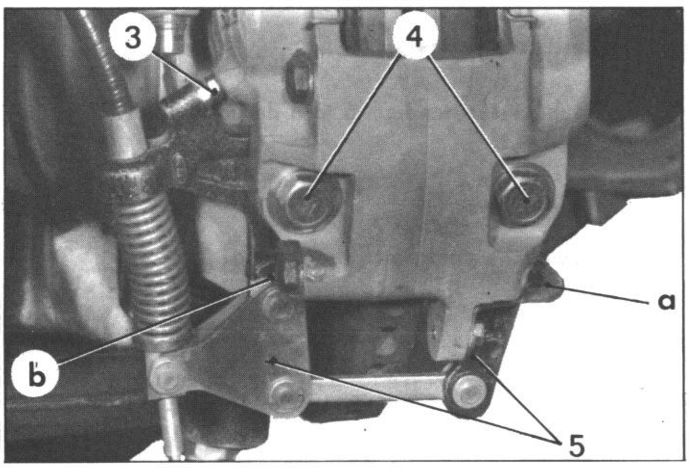
2. **Adjusting the stoplamp**

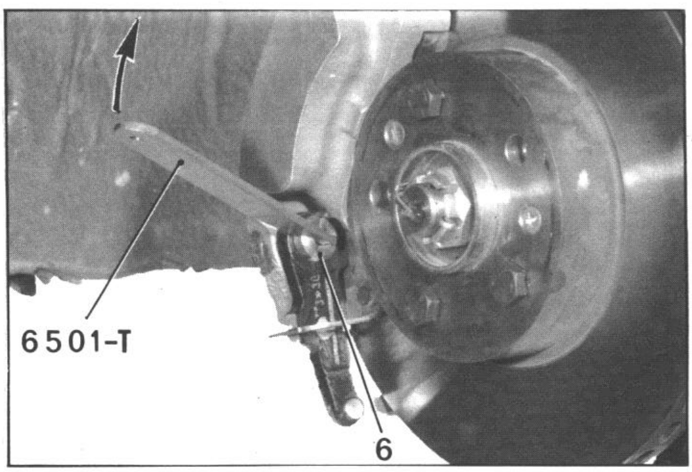
The stoplamps must light as soon as the pedal contacts the brake valve.
Bend support plate « a » of the switch in order to achieve this condition.

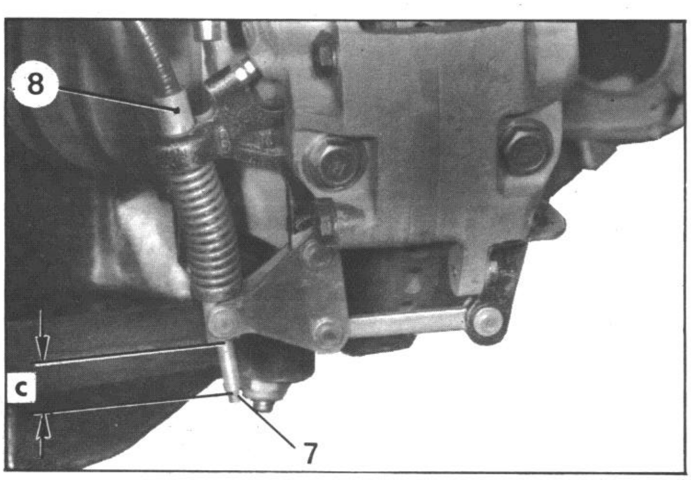
Supplement N° 1 to Manual 818-1 (CORR)

CHECKING AND ADJUSTING THE HANDBRAKE









1. Raise front of vehicle (wheels free).

   Remove front wheels.

   Release handbrake lever to maximum extent.

2. **Adjust eccentrics :**

   a) Remove adjustment nuts (1) and lock-nuts (2) for handbrake cables.

   b) *On each brake unit :*
   Slacken screws (4) of eccentrics (6). Ensure that levers (5) are on their stops « a » and « b ».
   If necessary tighten stop screw (3).
   With spanner 6501-T turn eccentrics as shown *(upwards)* **until the pads just contact the disc at point of maximum run-out.**
   Tighten screws (4) from 6 to 6.5 daNm (43 1/2 to 47 ft.lb).

   Ensure that eccentrics do not rotate.

   Check correct contact of pads.
   Screw down stop screw (3) until it contacts the brake unit housing *(tighten its lock nut)*.

3. **Adjusting handbrake control cables :**

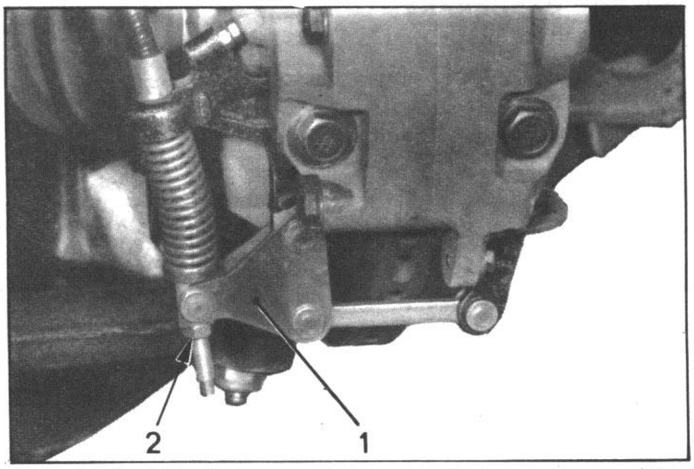
   On each brake unit :

   Ensure that the sleeve and its stop (8) are correctly positioned.
   Pull *alternately* on each threaded end-piece (7) and measure its protrusion « c ».

   Example : Protrusion on right-hand side = 30 mm
   Protrusion on left-hand side = 26 mm

   Difference in length of cable must remain the same after adjustment.

(This operation ensures that the brake cable compensator is in a central position).

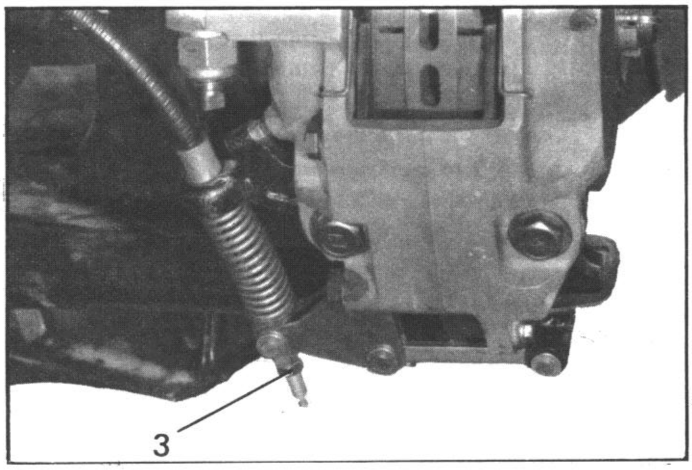


Screw down cable adjusting nut (2) against lever (1)

Tighten lock nut (3) to 1.5 daNm (11ft.lb)

4. **Checking the handbrake :**

Operate handbrake lever several times.
Check that adjustment does not change and that locking system operates satisfactorily.



5. Refit front wheels :

Tighten screws from 6 to 8 daNm (43 1/2 to 58 ft.lb).

Lower the vehicle to the ground.

M 20/616 ENGINE

All L.H.D. Vehicles (except vehicles fitted with optional towing equipment)

ARRANGEMENT OF THE ELECTRICAL INSTALLATION

(9/1974 ⟶ 1/1975)

PRESENTATION OF THE DIAGRAMS

1. CIRCUIT DIAGRAM

a) **Special feature** : The various circuits are presented in a functional way, therefore, where a unit is connected to several circuits, its various sections are shown in « exploded » form on different vertical grid lines.

b) **Method of identification** : Identification marks are divided into three sections :
- figures which identify components (and not leads)
- letters LG, TB, AR etc... identifying wiring harnesses
- other letters (Bc, F, Gr, FN, Bl ...) identifying the colour of the extremity of the insulating sleeve.

NOTE : For the last group of identification marks, four cases may occur :
- *coloured sleeve on a lead the colour of which is irrelevant :*
  marks on diagrams : Bc, Bl, Ve, Gr, ...
- *no sleeve on a lead the colour of which serves as identification mark :*
  marks on diagram : F, Gr, F.Ve, F.Bc ....
- *coloured sleeve on a lead the colour of which serves as identification mark as well :*
  marks on diagram : FN-Bl, F.Ve-Bc .....
- *unidentified lead :* its position cannot give rise to any confusion.

IMPORTANT : Identification marks for components and wiring harnesses are arbitrary : they have been chosen for the sole purpose of facilitating the use of the diagrams.
The colour of the sleeves and the leads are the only identification marks actually used on the leads making up the electric system of the vehicle.

2. WIRING DIAGRAM

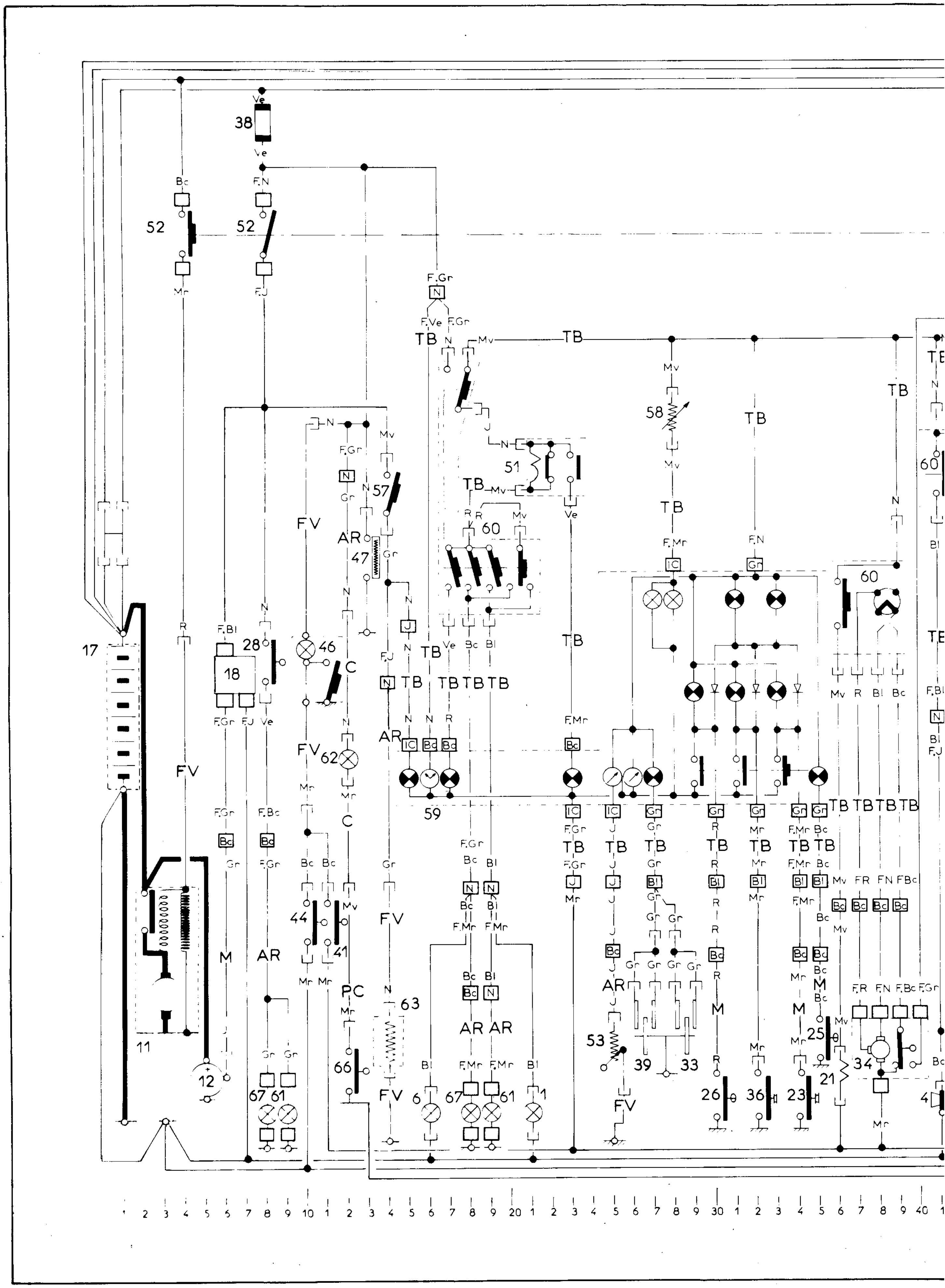
This is a schematic diagram of the components as they are fitted on the vehicle.
It indicates the layout of the leads, and the approximate location of the components.
The method of identification is the same as for the circuit diagram.

Supplement N° 1 to Manual 818-1 (CORR)

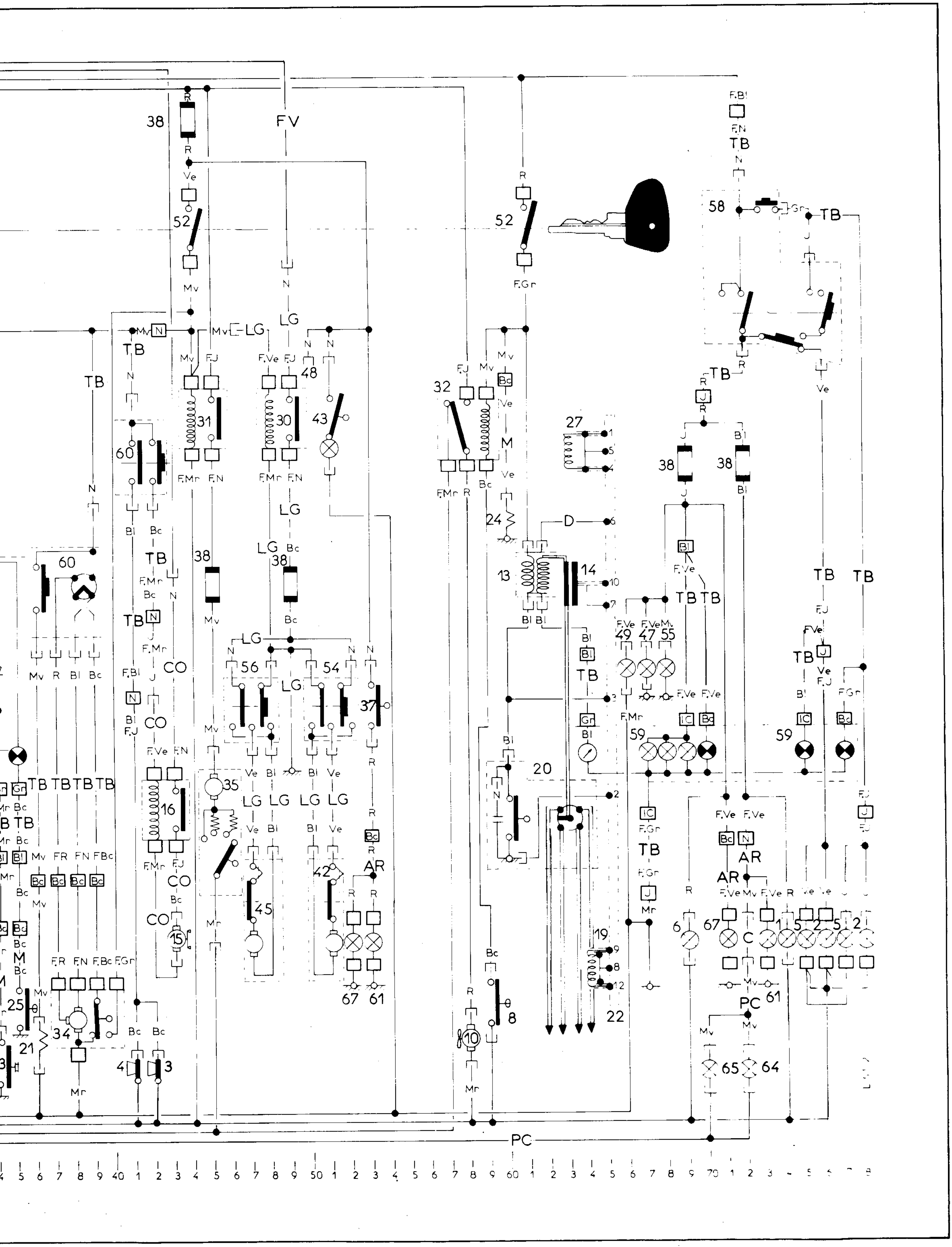
TABLE OF FUSES

Current supply	Fuses		Equipment protected
	Capacity	Colour	
Window operation control relay	16 A	White	Right-hand switch → Right-hand window winder Left-hand switch → Left-hand window winder
Heating relay	16 A	Mauve	Heating unit
Positive battery terminal « + »	16 A	Red	Stoplamps Accessory terminal Glove box lamp Lighting switch → Direction indicators → Instrument panel → Windscreen wiper → Horns → Heating relay (coil) → Window winder relay (coil)
Positive battery terminal « + »	16 A	Green	Interior lamp Boot lamp Cigar lighter Clock Hazard warning lamp Lighting switch → Voltage regulator → Reversing lamps → Rear window heater
Lighting switch	10 A	Yellow	Ash-tray lighting Lighting for cigar lighter Heating control lighting Dashboard lighting Side and tail lamp warning lamp Left-hand sidelamps and rear lamps
	10 A	Blue	Right-hand sidelamps and rear lamps Number plate lamp

CIRCUIT DIAGRAM P.T.O.



(9/1974 ——> 1/1975)



DESCRIPTION OF THE COMPONENTS

Rep.	Description and Position		Rep.	Description and Position	
1	Right-hand sidelamp	74	51	Flasher unit	21
	Front right hand direction indicator	21	52	Lighting and starter switch	4 8 44 - 61
2	Right-hand headlamp : - Main beam	78	53	Petrol gauge rheostat	25
	- Dipped beam	76	54	Right-hand window winder control switch	
3	Right-hand horn	42		*(Optional)*	51
4	Left-hand horn	41	55	Heating control illumination *(Optional)*	68
5	Left-hand headlamp : - Main beam	77	56	Left hand window winder switch *(Optional)*	47
	- Dipped beam	75	57	Heated rear window switch *Optional)*	14
6	Front left-hand direction indicator	16	58	Lighting switch unit	72
	Front left-hand sidelamp	69		Speedometer and tachometer lighting	
8	Electric fan thermal switch	59		rheostat	28
10	Electric fan	58	59	Instrument panel :	
11	Starter	3		Thermal voltmeter and illumination	26-28
12	Alternator	5		Petrol gauge and illumination	25-69
13	Ignition coil	61		Speedometer and tachometer lighting	28
14	High tension sensor	64		Clock and clock illumination	16-67
15	Compressor for horn	43		Heated rear window warning lamp	15
16	Compressor relay	43		Headlamp dipped beam warning lamp	75
17	Battery	1		Brake pad wear warning lamp	27
18	Voltage regulator	6		Oil temperature warning lamp	35
19	HT sensor for No. 1 cylinder	64		Coolant temperature warning lamp	29
20	Distributor	61		Emergency stop warning lamps	32-34
21	Windscreen washer pump	36		Hydraulic pressure warning lamp	31
22	Plug for diagnostic operations	65		Warning lamp for hazard warning	17
23	Engine oil pressure switch	34		Sidelamp warning lamp	70
24	Idle cut-off	60		Direction indicators warning lamp	23
25	Engine oil temperature switch	35		Headlamp main beam warning lamp	77
26	Engine coolant temp. switch	30	60	Left-hand control panel :	
27	Top dead centre sensor	64		- Direction indicator and hazard warning	19
28	Reversing lamp switch	8		- Horns	41
30	Window winder control relay *(Optional)*	49		- Windscreen wiper motor	38-39
31	Heating relay	45		- Windscreen washer pump	37
32	Electric fan relay	58	61	Rear right-hand lamp cluster	
33	Front right-hand brake unit	28		- Rear lamp	73
34	Windscreen wiper motor	38		- Stoplamp	53
35	Blower motor	45		- Direction indicator	19
36	Hydraulic pressure switch	32		- Reversing lamp	9
37	Stoplamp switch	53	62	Boot lamp	12
38	Fuse boxes	8-44-45-49-69-72	63	Rear window heating element	14
39	Front left-hand brake unit	26	64	Right-hand number plate lamp	72
41	Front right-hand door switch	11	65	Left-hand number plate lamp	70
42	Right-hand window winder motor *(Optional)*	51	66	Boot lamp switch	12
43	Glove box lamp	51	67	Rear left-hand lamp cluster	
44	Front left-hand door switch	10		- Rear lamp	71
45	Left-hand window winder motor *(Optional)*	47		- Stoplamp	52
46	Interior lamp	10		- Direction indicator lamp	18
47	Cigar lighter and illumination	13-67		- Reversing lamp	8
48	Accessory plug	50			
49	Ashtray illumination	66			

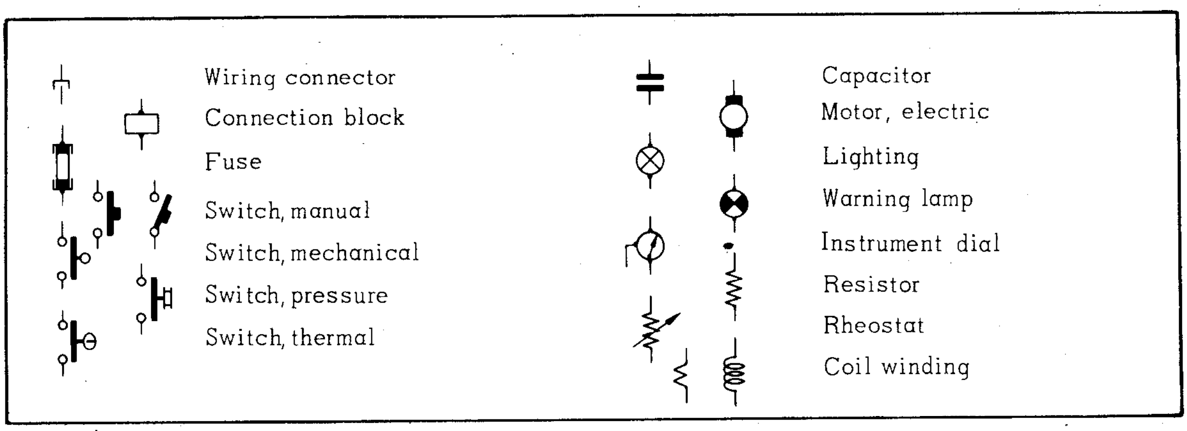
DESCRIPTION OF THE WIRING HARNESS

Not marked :	Front harness	CO	Compressor harness
AR	Rear harness	C	Boot harness
M	Engine harness	PC	Boot lid harness
LG	Window operation	D	Fault finding harness (Diagnostic)
TB	Instrument panel harness	FV	Flying lead

TABLE OF BULBS

Use	No.	Base	Type	Voltage	Wattage	French standard reference
Main and dipped beams	2	P. 45 t 41	yellow (for France)	12 V	40/45 W	R. 136-15
Quartz-Iodine long-range headlamps (Optional)	2	x 511	H 2	12 V	55 W	R. 136-17
Direction indicator lamps Stop lamps Reversing lamps	4 2 2	BA 15s/19	Pear-shaped P 25/1	12 V	21 W	R. 136-12
Front side lamps and rear lamps Number plate lamps	4 2	BA.15s/19		12 V	5 W	R. 136-13
Interior lamp Boot lighting	1 1	Festoon		12 V	5 W	R. 136-14
Dashboard lighting Glovebox lighting	5 1	BA. 9 s	T 8/2	12 V	2 W	R. 136-34
Warning lamp Lighting for cigar lighter Ashtray lighting	13 1 1	Wedge base		12 V	1.2 W	

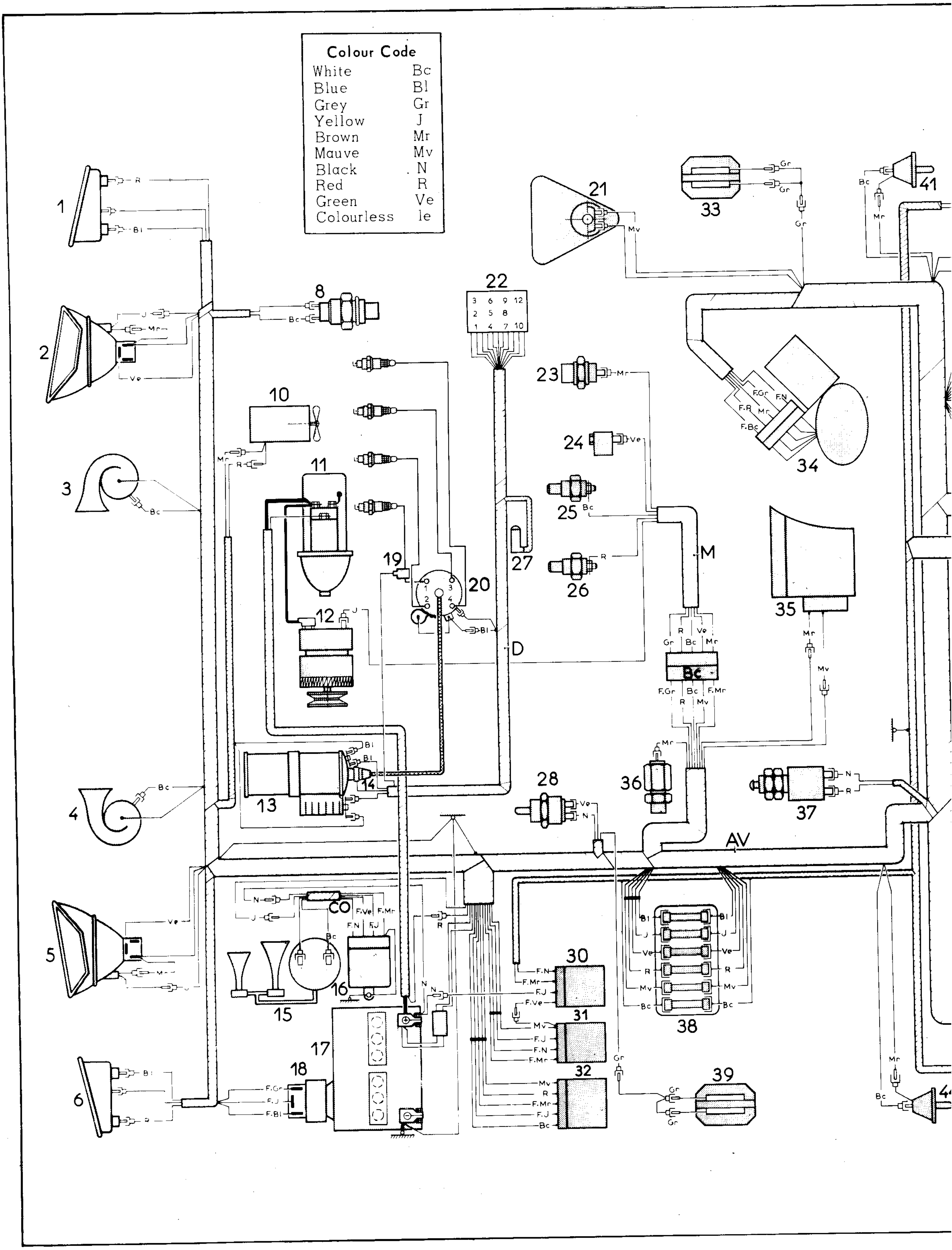
KEY TO CIRCUIT DIAGRAM SYMBOLS

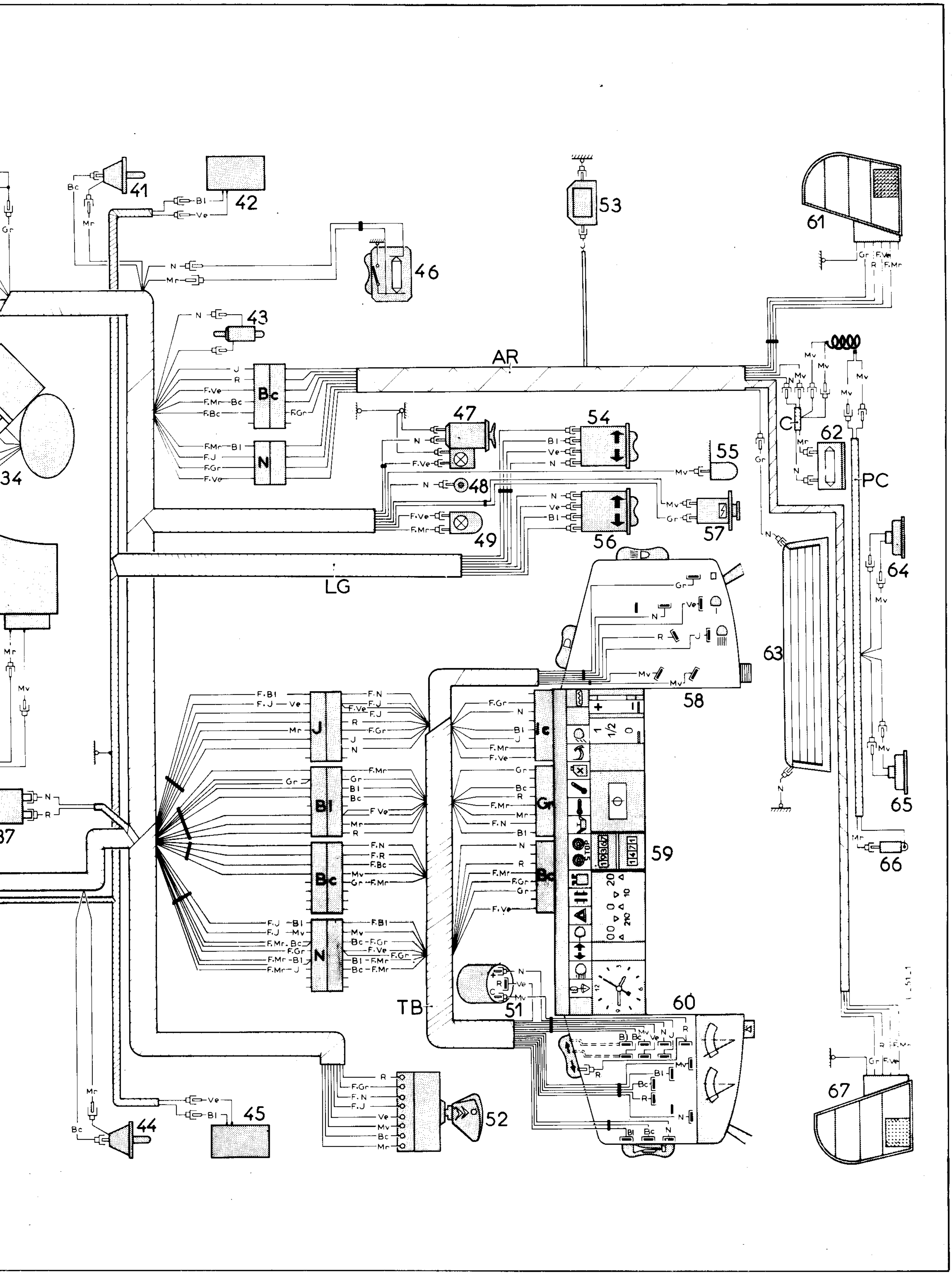


Supplement N° 1 to Manual 818-1 (CORR)

Colour Code

White	Bc
Blue	Bl
Grey	Gr
Yellow	J
Brown	Mr
Mauve	Mv
Black	N
Red	R
Green	Ve
Colourless	le

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66
67
44
45
34
37
AR
LG
TB
PC
C

All L.H.D. vehicles (except vehicles fitted with optional towing equipment)

ARRANGEMENT OF THE ELECTRICAL INSTALLATION

(1/1975 ⟶ 7/1975)

PRESENTATION OF THE DIAGRAMS

Supplement N° 1 to Manual 818-1 (ADD)

1. CIRCUIT DIAGRAM

a) **Special feature** : The various circuits are presented in a functional way, therefore, where a unit is connected to several circuits, its various sections are shown in « exploded » form on different vertical grid lines.

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- other letters (Bc, F. Gr, FN. Bl ...) identifying the colour of the extremity of the insulating sleeve.

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- *No sleeve on a lead the colour of which serves as identification mark :*
  Marks on diagrams : F.Gr, F. Ve, F. Bc, ...
- *Coloured sleeve on a lead the colour of which serves as identification mark as well :*
  Marks on diagrams : FN - Bl, F. Ve - Bc, ...
- *Unidentified lead :* Its position cannot give rise to any confusion.

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2. WIRING DIAGRAM

This is a schematic diagram of the components as they are fitted on the vehicle.
It indicates the layout of the leads, and the approximate location of the components.
The method of identification is the same as for the circuit diagram.

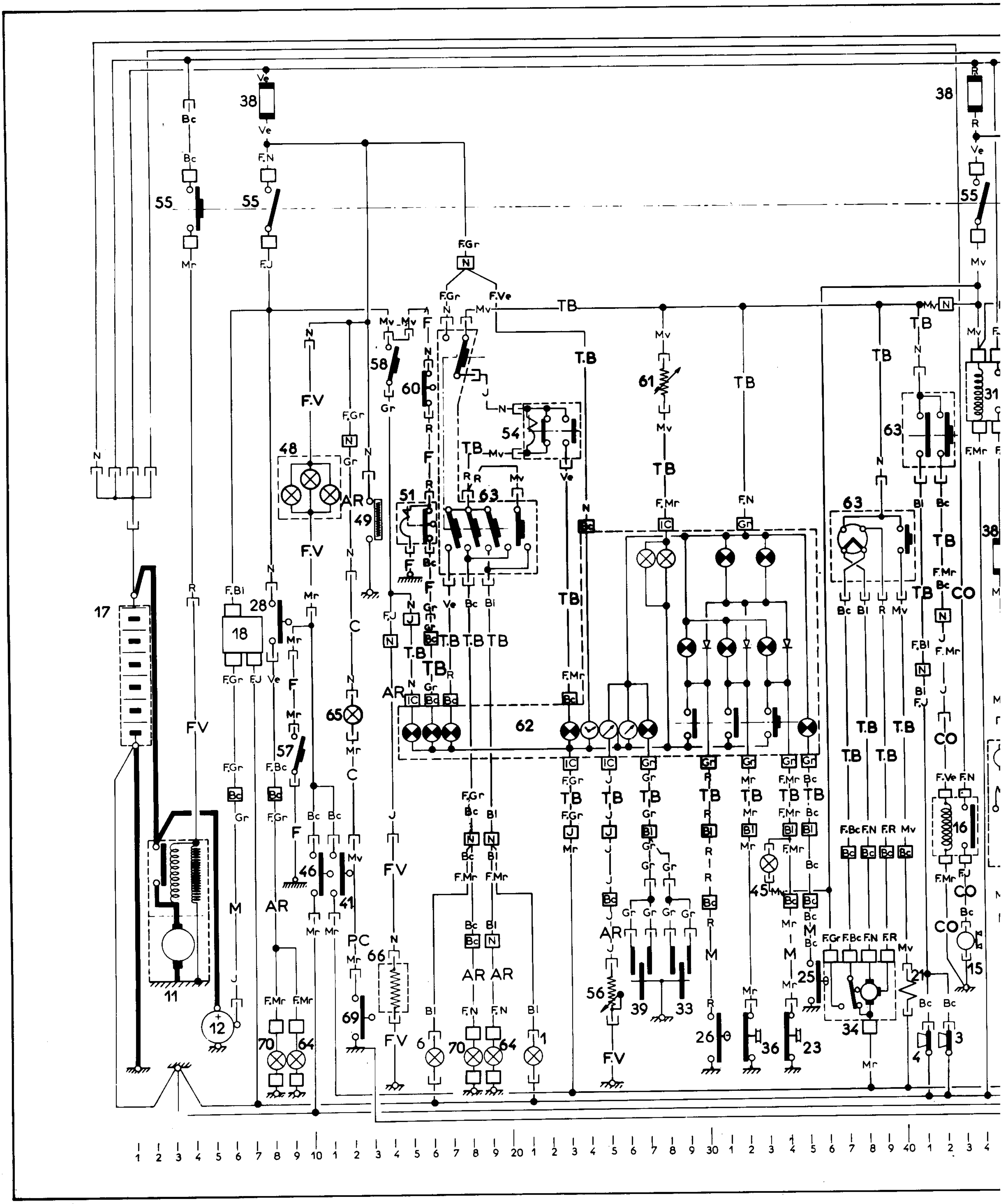
TABLE OF FUSES

Supply to	Fuse		Circuits protected
	Rating	Colour	
Heater unit relay	16 Amps	Mauve	Heater unit
Positive terminal of battery « + »	16 Amps	Red	Stoplamps Accessory terminal Glove box lighting Ignition switch ⟶ Direction indicators ⟶ Windscreen wipers and washers ⟶ Horns ⟶ Heater relay winding ⟶ Window-winder relay winding ⟶ Rheostat ⟶ speedometer lighting ⟶ Warning lamp panel : (Battery meter (Thermal voltmeter -- Brake pad wear warning lamp - Fuel gauge - Oil pressure warning lamp - Hydraulic fluid pressure warning lamp - Water temp. warning lamp)
	16 Amps	Green	Interior lamp Boot lamp Cigar-lighter Clock Hazard warning lamps Ignition switch ⟶ Voltage regulator ⟶ Reversing lamps ⟶ Rear window heating element ⟶ Handbrake warning lamp
Window winder relay	16 Amps	White	R.H. Switch ⟶ R.H. window winder L.H. Switch ⟶ L.H. window winder
Lighting Switch	10 Amps	Yellow	Ashtray lighting Cigar lighting Heater controls lighting Instrument panel lighting ⟶ Clock ⟶ Battery meter ⟶ Odometers ⟶ Sidelamp warning lamp L.H. sidelamps, front and rear
Lighting Switch	10 Amps	Blue	R.H. sidelamps, front and rear Number-plate lamp

CIRCUIT DIAGRAM P.T.O.

CIRCUIT DIAGRAM

(1/1975 ——> 7/1975)



RCUIT DIAGRAM

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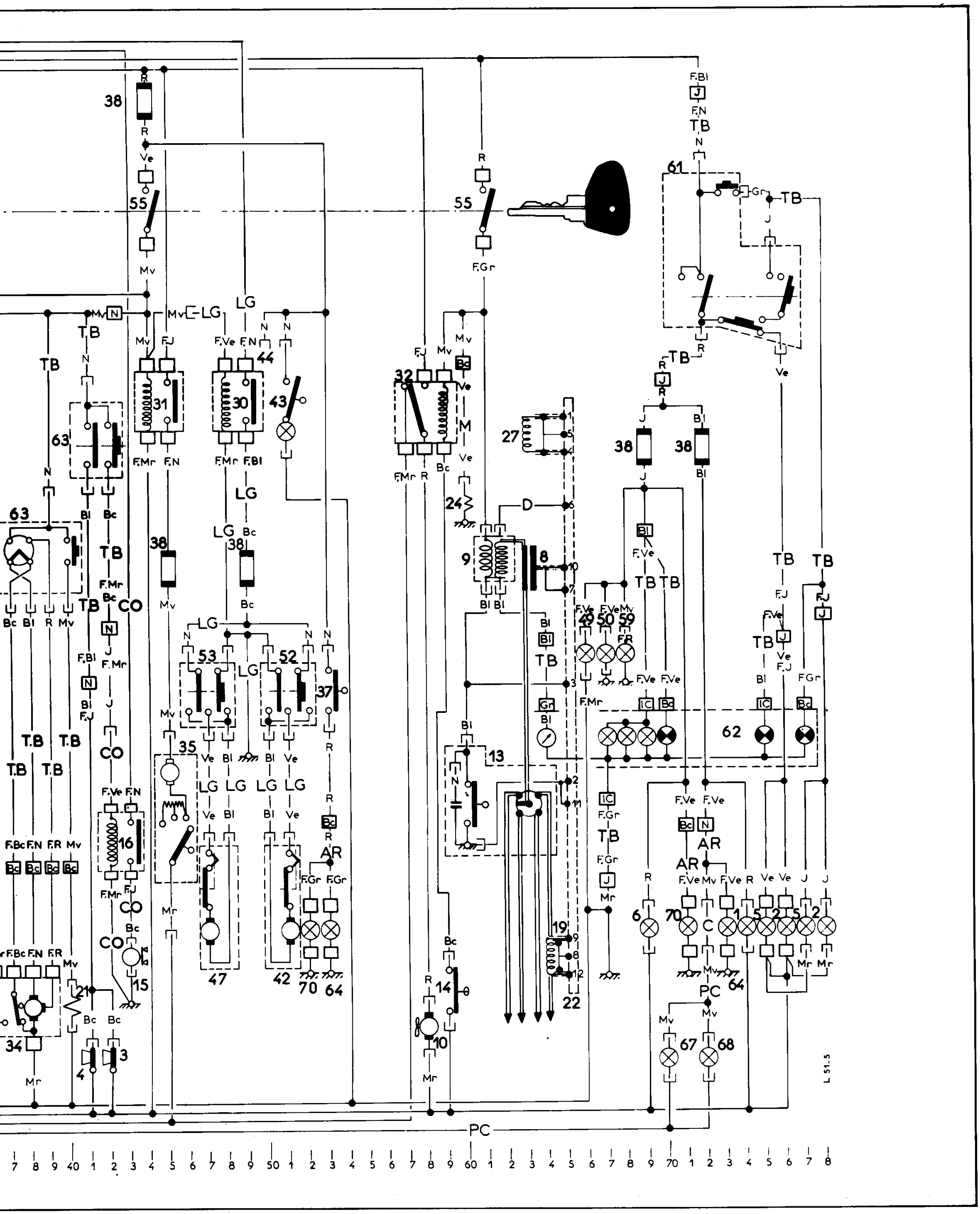


DESCRIPTION OF COMPONENTS

Ident. mark	Description and Location	
1	Front R.H. sidelamp	74
	Front R.H. direction indicator	21
2	R.H. headlamp : main beam	78
	dipped beam	76
3	R.H. horn	42
4	L.H. horn	41
5	L.H. headlamp : main beam	77
	dipped beam	75
6	Front L.H. sidelamp	69
	Front L.H. direction indicator	16
8	H.T. sensor	64
9	Ignition coil	61
10	Blower motor	58
11	Starter	3
12	Alternator	5
13	Distributor	61
14	Electric fan thermal switch	59
15	Compressor for horns	43
16	Compressor relay	42
17	Battery	1
18	Voltage regulator	6
19	Sensor for No. 4 cylinder	64
21	Windscreen washer pump	40
22	Socket for fault-finding (diagnostic)	65
23	Oil pressure switch	34
24	Idle cut-off	60
25	Oil temperature switch	35
26	Coolant temperature switch	30
27	T.D.C. sensor	63
28	Switch for reversing lamps	8
30	Relay for window winder	49
31	Relay for heater unit	45
32	Relay for electric fan	58
33	Front R.H. brake unit	28
34	Windscreen wiper motor	38
35	Blower motor	45
36	Hydraulic fluid pressure switch	32
37	Stoplamp switch	53
38	Fuse box	8-44-45-49-69-72
39	Front L.H. brake unit	26
41	Front R.H. door lighting switch	11
42	R.H. window-winder motor	51
43	Glove-box lighting	51
44	Accessory terminal	50
45	Lighting for pneumatic oil gauge	33
46	Front L.H. door lighting switch	10
47	L.H. window-winder motor	47

Ident. mark	Description and Location	
48	Central interior lamp	10
49	Cigar-lighter and lighting	13-66
50	Ashtray lighting	67
51	Handbrake warning lamp flasher unit	15
52	Switch for R.H. window-winder	51
53	Switch for L.H. window-winder	47
54	Flasher unit	21
55	Anti-theft switch	4-8-44-61
56	Rheostat for fuel gauge	25
57	Switch for interior lamp	9
58	Switch for heated rear window	14
59	Lighting for heater controls	68
60	Contact for handbrake	16
61	R.H. control unit (lighting)	72
	Lighting rheostat for tacho. and speedo.	28
62	Lighting for intrument panel	68-69
	Tachometer	64
	Battery meter (thermal voltmeter)	26
	Fuel gauge unit	25
	Lighting for odometers	28
	Clock and lighting	24-67
	Warning lamp for heated rear window	15
	Warning lamp for dipped beam	75
	Warning lamp for brake pads	27
	Warning lamp for oil temperature	35
	Warning lamp for water temperature	29
	Red « STOP » warning lamp	31-33
	Warning lamp for hydraulic fluid presssure	31
	Warning lamp for hazard warning	17
	Warning lamp for sidelamps	70
	Warning lamp for direction indicators	23
	Warning lamp for main beam	77
	Warning lamp for handbrake	16
63	L.H. control unit :	
	Direction indicators and hazard warning lamps	19
	Horns	41
	Windscreen wiper motor	38
	Windscreen washer pump	40
64	Rear R.H. lamp cluster :	
	Sidelamp	73
	Stoplamp	53
	Direction indicator	19
	Reversing lamp	9
65	Boot lamp	12
66	Heated rear window	14
67	R.H. numberplate lamp	70
68	L.H. numberplate lamp	72
69	Contact for boot lamp	12
70	Rear L.H. lamp cluster : - Sidelamp	71
	- Stoplamp	52
	- Dir. indicator	18
	- Rev. lamp	8

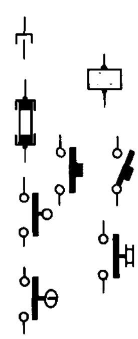
DESCRIPTION OF WIRING HARNESSES

No identification	Front harness	C	Boot harness
AR	Rear harness	PC	Boot-lid harness
M	Engine harness	D	Diagnostic harness
LG	Window-winder harness	F	Handbrake harness
TB	Instrument panel harness	FV	Flying lead
CO	Compressor harness		

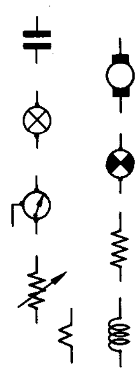
TABLE OF BULBS

Use	Quantity	Base	Type	Voltage	Power	French standard Ref. No.
Dipped beam headlamps	2	P.45 t. 41	Yellow (for France)	12 V	40/45 W	R. 136-15
Mains beam headlamps	2	× 511	H 2	12 V	55 W	R. 136-17
Direction indicators Stoplamps Reversing lamps	4 2 2	BA.15s/19	Pear-shaped P 25/1	12 V	21 W	R. 136-12
Front and rear sidelamps Number plate lamp	4 2	BA.15s/19		12 V	5 W	R. 136-13
Interior lamp	3	Festoon		12 V	7 W	R. 136-05
Boot lamp	1	Festoon		12 V	5 W	R. 136-14
Lighting for tachometer and speedometer	2	BA 9 s	T 8/4	14 V	4 W	
Lighting for glove box	1	BA 9 s	T 8/2	12 V	2 W	R. 136-34
Warning lamps Lighting for cigar lighter Lighting for ashtray Lighting for pneumatic oil gauge	14 1 1 1	Wedge base	dia = 5	12 V	1.2 W	
Lighting for instrument panel	3	Wedge base	dia = 10	12 V	2 W	

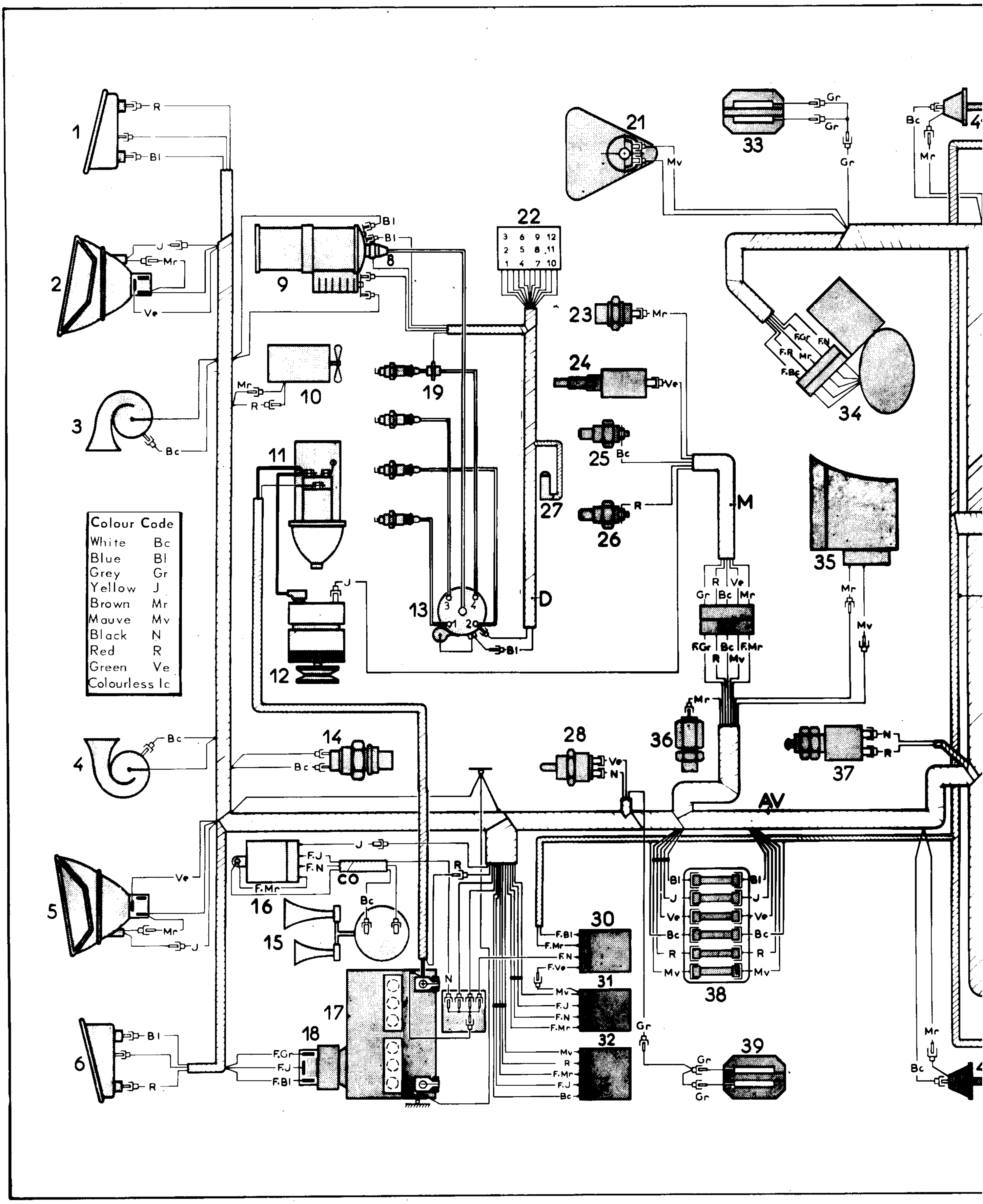
KEY TO CIRCUIT DIAGRAM SYMBOLS



Wiring connector
Connection block
Fuse
Switch, manual
Switch, mechanical
Switch, pressure
Switch, thermal

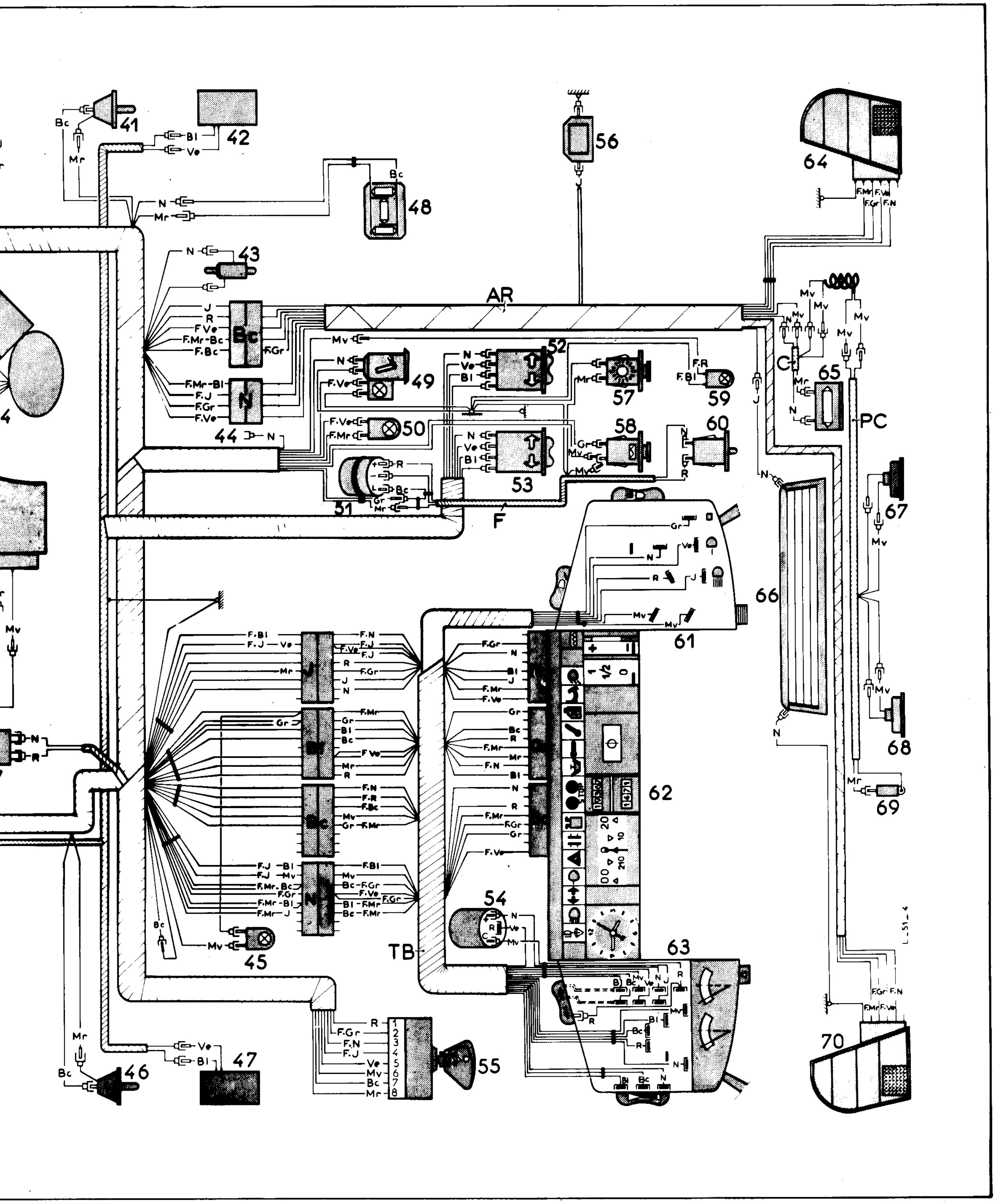


Capacitor
Motor, electric
Lighting
Warning lamp
Instrument dial
Resistor
Rheostat
Coil winding



Colour Code

White	Bc
Blue	Bl
Grey	Gr
Yellow	J
Brown	Mr
Mauve	Mv
Black	N
Red	R
Green	Ve
Colourless	Ic



All « Pallas » vehicles (L.H.D.)

ARRANGEMENT OF THE ELECTRICAL INSTALLATION

(from 9/ 1975)

PRESENTATION OF THE DIAGRAMS

1. CIRCUIT DIAGRAM

a) **Special feature** : The various circuits are presented in a functional way, therefore, where a unit is connected to several circuits, its various sections are shown in « exploded » form on different vertical grid lines.

b) **Method of identification** : Identification marks are divided into three sections :
- figures which identify components (and not leads)
- letters LG, TB, AR, etc ... identifying wiring harnesses
- other letters (Bc, F, Gr, FN.Bl ....) identifying the colour of the extremity of the insulating sleeve.

NOTE : For the last group of identification marks, four cases may occur
- *Coloured sleeve on a lead the colour of which is irrelevant :*
  Marks on diagrams : Bc, Bl, Ve, Gr .....
- *No sleeve on a lead the colour of which serves as identification mark :*
  Marks on diagram : F.Gr, F.Ve, F.BC...
- *Coloured sleeve on a lead the colour of which serves as identification mark as well :*
  Marks on diagram : FN-Bl, F.Ve-Bc, ...
- *Unidentified lead :* Its position cannot give rise to any confusion.

IMPORTANT : Identification marks for components and wiring harnesses are arbitrary : they have been chosen for the sole purpose of facilitating the use of the diagrams.
The colour of the sleeves and the leads are the only identification marks actually used on the leads making up the electric system of the vehicle.

2. WIRING DIAGRAM

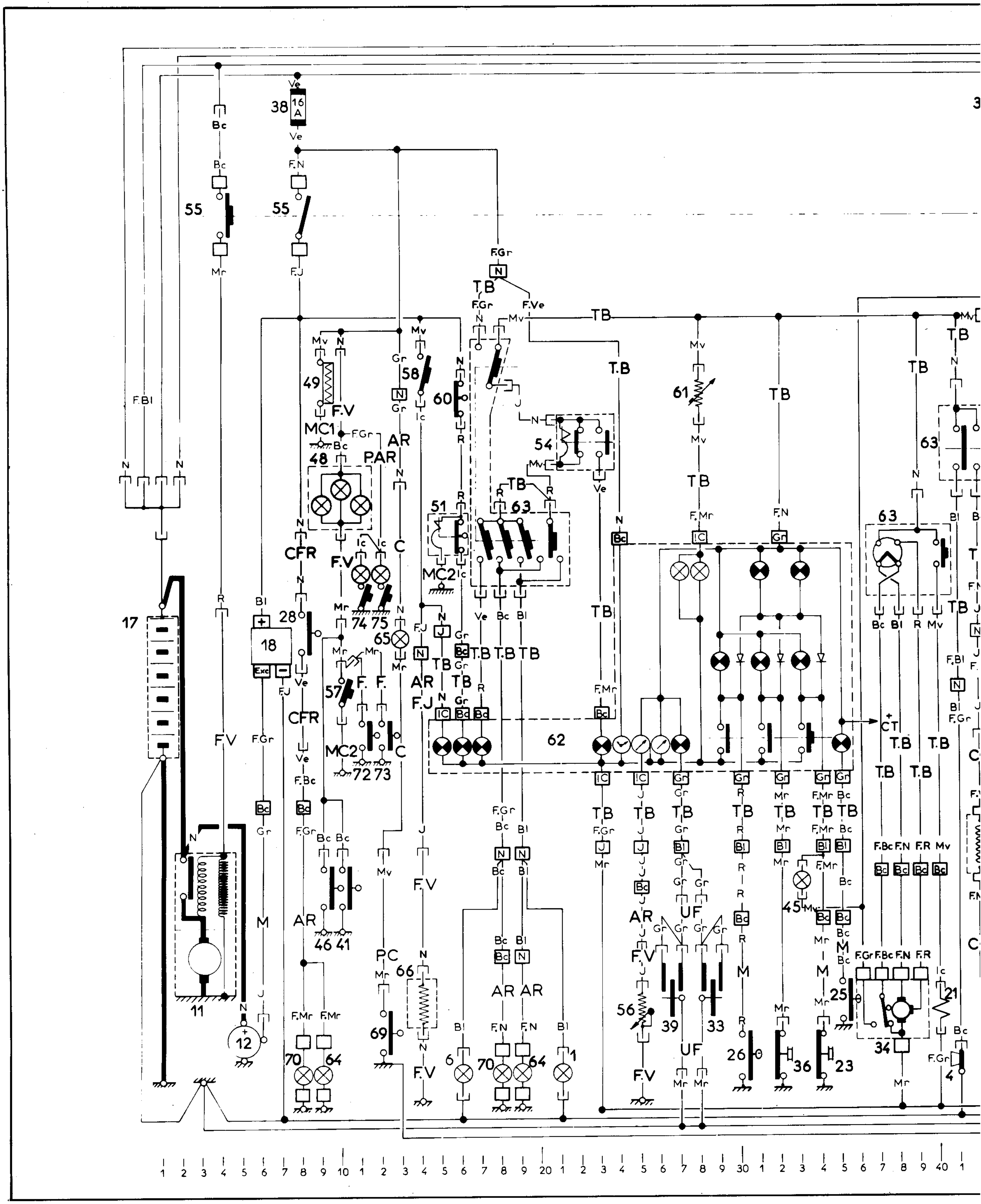
This is a schematic diagram of the components as they are fitted on the vehicle.
It indicates the layout of the leads, and the approximate location of the components.
The method of identification is the same as for the circuit diagram.

Supplement N° 1 to Manual 818-1 (ADD)

TABLE OF FUSES

Supply to	Fuse		Circuit protected
	Rating	Colour	
Relay for heater unit	16 Amps	Mauve	Heater unit
Positive battery terminal « + »	16 Amps	Red	Stoplamps Accessory terminal Glove-box lighting Ignition switch → Direction indicators → Windscreen washers and wipers → Horns → Winding for heater unit relay → Winding for window-winder relay → Rheostat → speedo lighting → Instrument panel : (Battery meter (thermal voltmeter) - Brake pad wear warning lamp - Fuel gauge - Oil pressure and temp. warning lamps - Hydraulic fluid pressure warning lamp - Coolant temp. warning lamp)
	16 Amps	Green	Interior lamp Boot lamp Cigar lighter Clock Hazard warning Ignition switch → Voltage regulator → Reversing lamps → Heated rear window element → Handbrake warning lamp
Relay for window winder	16 Amps	White	R.H. switch → R.H. window-winder L.H. switch → L.H. window-winder
Lighting switch	10 Amps	Yellow	Ashtray lighting Lighting for cigar-lighter Lighting for heater control Lighting for instrument panel → Clock → Battery meter and → Odometers → Sidelamp warning lamp L.H. sidelamps front and rear
	10 Amps	Blue	R.H. sidelamps front and rear Number plate lamp

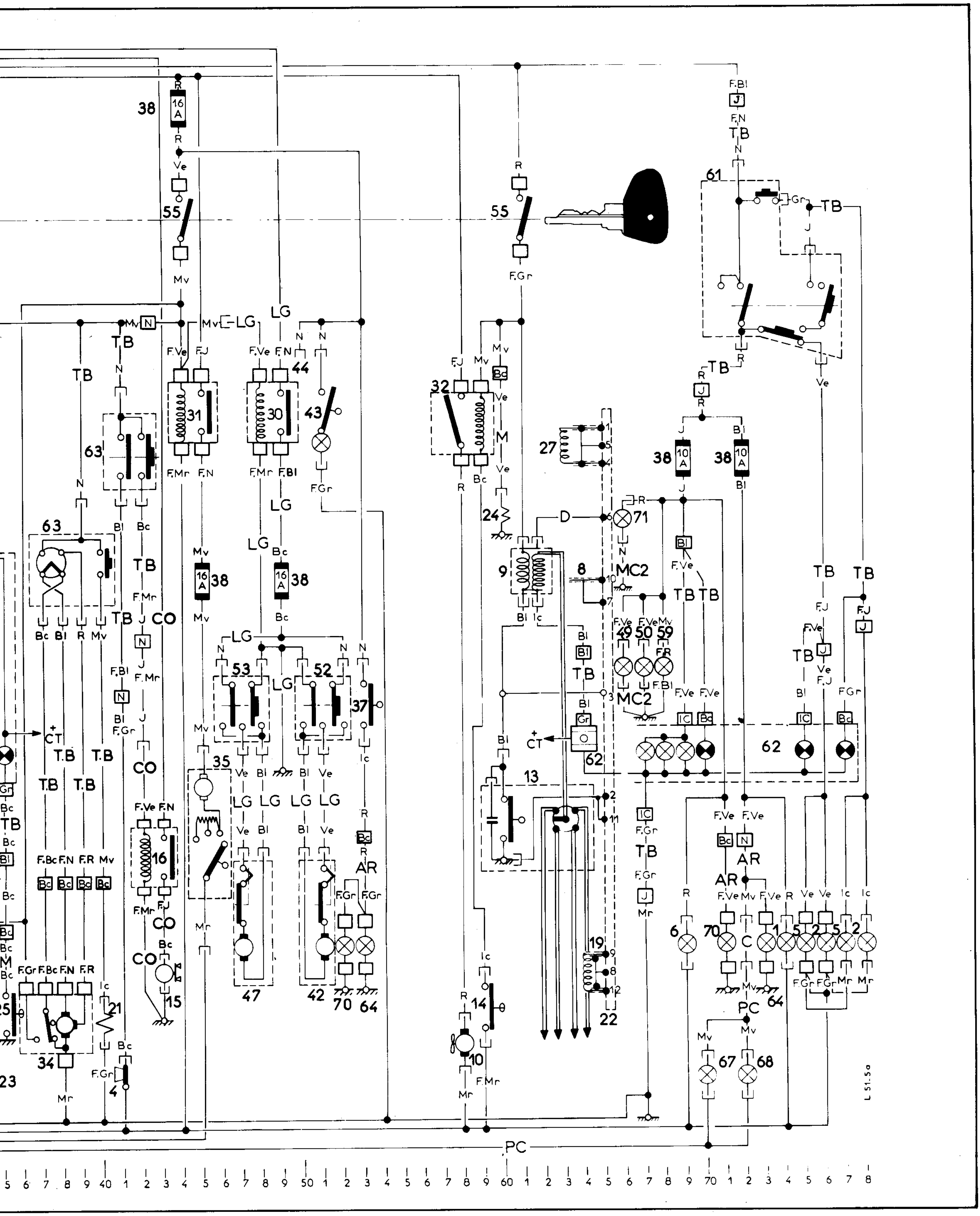
CIRCUIT DIAGRAM P.T.O.



CUIT DIAGRAM

/ 1975 ⟶)

L.51-5a



DESCRIPTION OF COMPONENTS

Ident. mark	Description and Location	
1	Front R.H. sidelamp	74
	Front R H. direction indicator	21
2	R.H. headlamp main beam	78
	dipped beam	76
4	Horn	41
5	L.H. headlamp main beam	77
	dipped beam	75
6	Front L H sidelamp	69
	Front L.H. direction indicator	16
8	H T sensor connector	64
9	Ignition coil	61
10	Blower motor	58
11	Starter	3
12	Alternator	5
13	Distributor	61
14	Electric fan thermal switch	59
15	Compressor for horns	43
16	Compressor relay	42
17	Battery	1
18	Voltage regulator	6
19	Sensor for No 4 cylinder	64
21	Windscreen washer pump	40
22	Socket for fault-finding (diagnostic)	65
23	Oil pressure switch	34
24	Idle cut-off	60
25	Oil temperature switch	35
26	Coolant temperature switch	30
27	T.D C. sensor	63
28	Switch for reversing lamps	8
30	Relay for window-winder	49
31	Relay for heater unit	45
32	Relay for electric fan	58
33	Front R.H. brake unit	28
34	Windscreen wiper motor	38
35	Blower motor	45
36	Hydraulic fluid pressure switch	32
37	Stoplamp switch	53
38	Fuse box	8-44-45-49-69-72
39	Front L.H. brake unit	26
41	Front R.H. door interior lamp switch	10
42	R.H. window-winder motor	51
43	Glove-box lighting	51
44	Accessory terminal	50
45	Lighting for pneumatic oil gauge	33
46	Front L.H. door interior lamp switch	9
47	L.H. window-winder motor	47
48	Central interior lamp	10
49	Cigar-lighter and lighting	9-66
50	Ashtray lighting	67
51	Handbrake warning lamp flasher unit	15
52	Switch for R.H. window-winder	51
53	Switch for L.H. window-winder	47
54	Flasher unit	21
55	Anti-theft switch	4-8-44-61
56	Rheostat for fuel gauge	25
57	Switch for interior lamp	10
58	Switch for heated rear window	14
59	Lighting for heater controls	68
60	Contact for handbrake	16
61	R.H control unit (lighting)	72
	Lighting rheostat for tacho. and speedo	28
62	Lighting for instrument panel	68-69
	Tachometer	64
	Battery meter (thermal voltmeter)	26
	Fuel gauge unit	25
	Lighting for odometers	28
	Clock and lighting	24-67
	Warning lamp for heated rear window	15
	Warning lamp for dipped beam	75
	Warning lamp for brake pads	27
	Warning lamp for oil temp.	35
	Warning lamp for water temp.	29
	Red « STOP » warning lamps	31-33
	Warning lamp for hydraulic fluid pressure	31
	Warning lamp for hazard warning	17
	Warning lamp for sidelamps	70
	Warning lamp for direction indicators	23
	Warning lamp for main beam	77
	Warning lamp for handbrake	16
63	L H control unit	
	Direction indicators and hazard warning lamps	19
	Horns	41
	Windscreen wiper motor	38
	Windscreen washer pump	40
64	Rear R.H. lamp cluster :	
	Sidelamp	73
	Stoplamp	53
	Direction indicator	19
	Reversing lamp	9
65	Boot lamp	13
66	Heated rear window	14
67	R.H. number plate lamp	70
68	L.H. number plate lamp	72
69	Contact for boot lamp	12
70	Rear L.H. lamp cluster - Sidelamp	71
	- Stoplamp	52
	- Direct. indic.	18
	- Reversing lamp	8
71	Map-reading lamp (*Pallas*)	66
72-73	Rear R.H. and L.H. door int. lamp switches (*Pallas*)	11-12
74-75	Rear R.H. and L.H. int. lamps (*Pallas*)	11-12

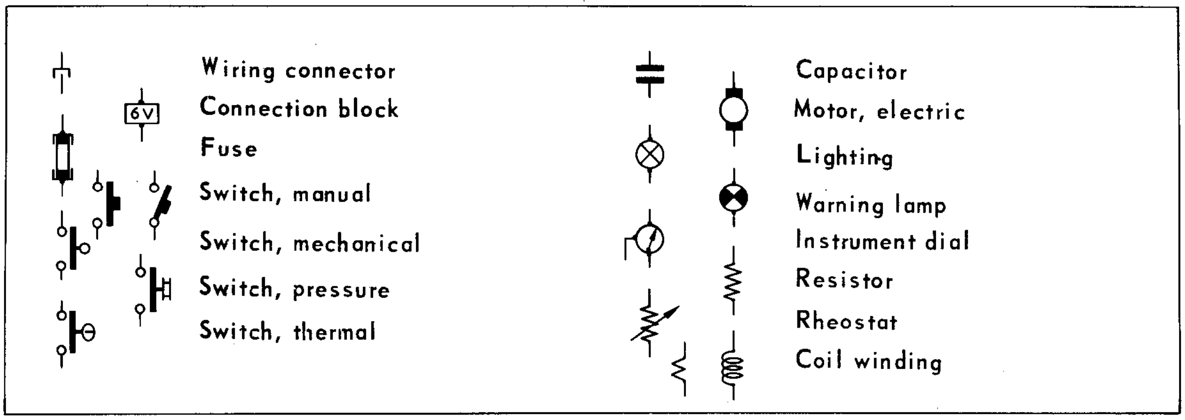
DESCRIPTION OF WIRING HARNESSES

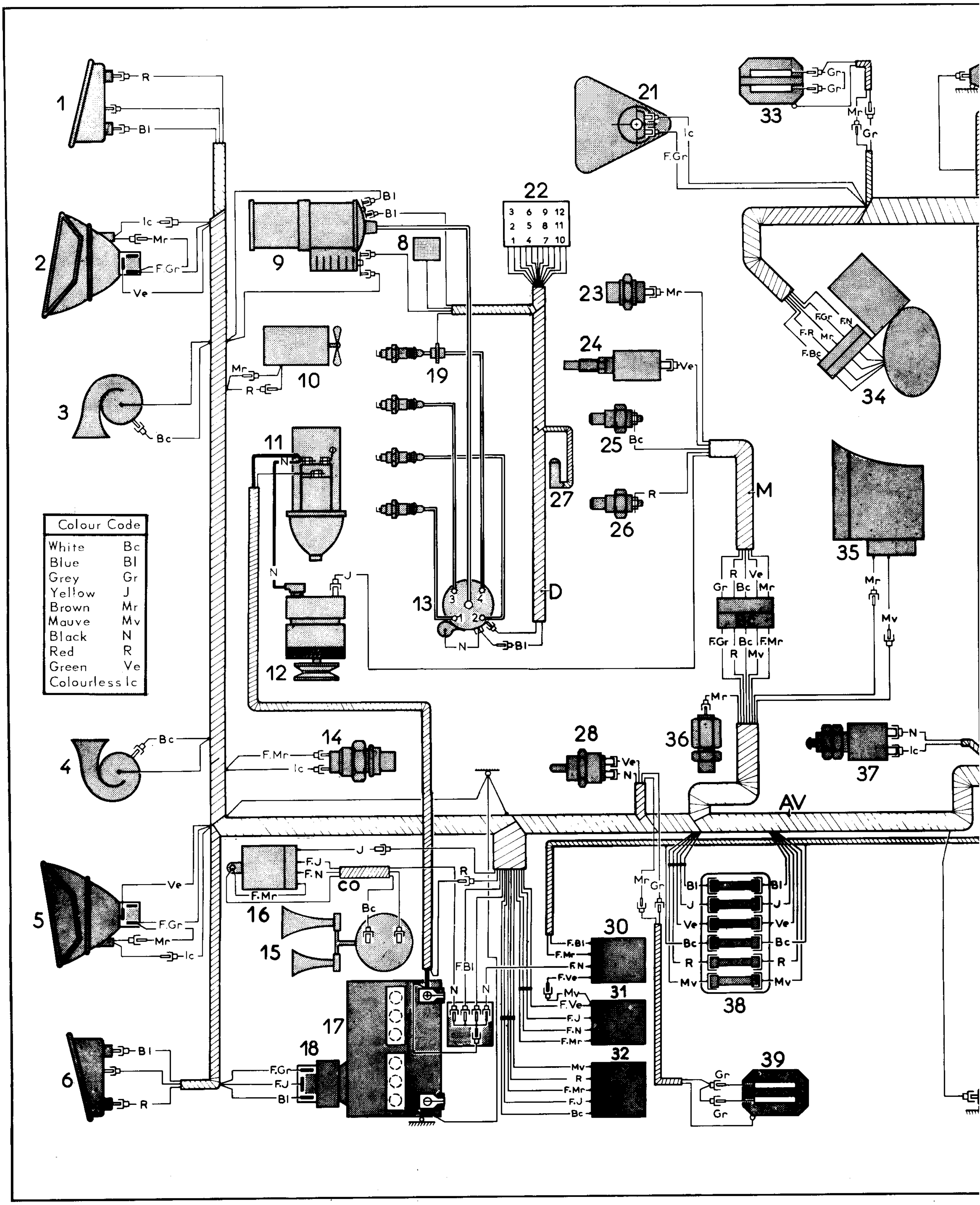
Ident. mark	Description
No identification mark	Front harness
AR	Rear harness
M	Engine harness
LG	Window-winder harness
TB	Instrument panel harness
CO	Compressor harness
UF	Front brake pad wear harness
C	Boot harness
PC	Boot lid harness
D	« Diagnostic » harness
P.AR	Rear interior lamps harness (*Pallas*)
F	Rear door interior lamp switch harness (*Pallas*)
MC1	Centre console earth lead (*Pallas/Super*)
MC2	Centre console earth lead
FV	Flying lead
CFR	Contact harness for reversing lamps

TABLE OF BULBS

Use	Quantity	Base	Type	Voltage	Power	French standard Ref. No.
Dipped beam headlamps	2	P.45 t 41	Yellow (for France)	12 V	40/ 45 W	R. 136-15
Main beam headlamps	2	× 511	H 2	12 V	55 W	R. 136-17
Direction indicators Stoplamps Reversing lamps	4 2 2	BA. 15 s/ 19	Pear-shaped P 25/ 1	12 V	21 W	R. 136-12
Front and rear side-lamps Number plate lamp	4 2	BA. 15s/19		12 V	5 W	R. 136-13
Interior lamp	3	Festoon		12 V	7 W	R. 136-05
Boot lamp	1	Festoon		12 V	5 W	R. 136-14
Lighting for tachometer and speedometer	2	BA. 9 s	T 8/ 4	14 V	4 W	
Lighting for glove-box	1	BA. 9 s	T 8/ 2	12 V	2 W	R. 136-34
Warning lamps Lighting for cigar-lighter Lighting for ashtray Lighting for pneumatic oil-gauge	14 1 1 1	Wedge base	dia. = 5	12 V	1.2 W	
Instrument panel lighting	2	Wedge base	dia. = 10	12 V	2 W	
Lighting for odometers	1			24 V	3 W	

KEY TO CIRCUIT DIAGRAM SYMBOLS

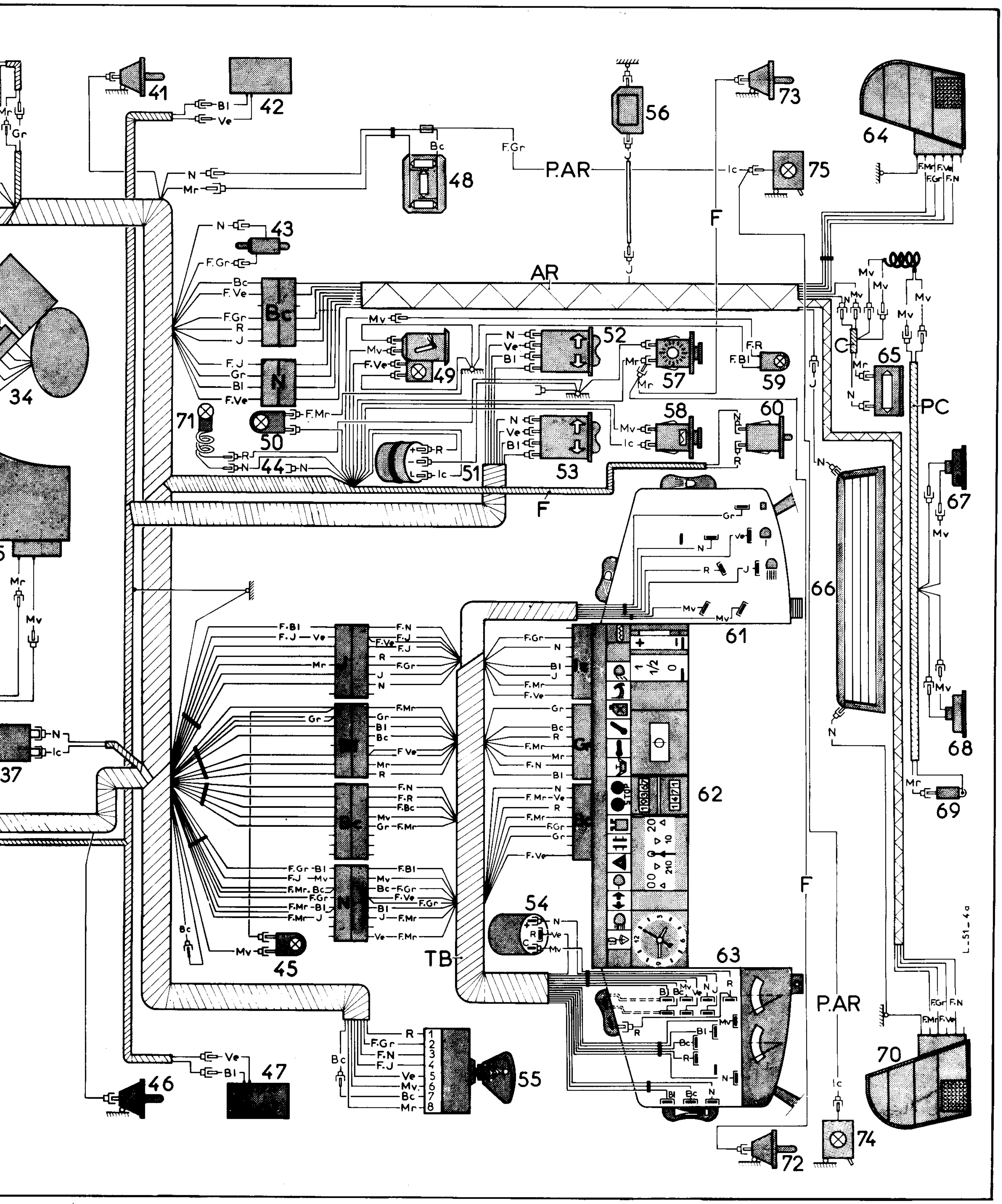




Colour Code	
White	Bc
Blue	Bl
Grey	Gr
Yellow	J
Brown	Mr
Mauve	Mv
Black	N
Red	R
Green	Ve
Colourless	Ic

WIRING DIAGRAM

(9/1975 ⟶)



CX « Prestige » vehicles (L.H.D.)

ARRANGEMENT OF THE ELECTRICAL INSTALLATION

(1/ 1976 ⟶)

PRESENTATION OF THE DIAGRAMS

1. CIRCUIT DIAGRAM

a) **Special feature** : The various circuits are presented in a functional way, therefore, where a unit is connected to several circuits, its various sections are shown in « exploded » form on different vertical grid lines.

b) **Method of identification** : Identification marks are divided into three sections.
- figures which identify components (and not leads)
- letters LG, TB, AR, etc ... identifying wiring harnesses
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- *Coloured sleeve on a lead the colour of which serves as identification mark as well :* marks on diagram : FN.-Bl, F.Ve. Bc ...
- *Unidentified lead* : Its position cannot give rise to any confusion

IMPORTANT : Identification marks for components and wiring harnesses are arbitrary, they have been chosen for the sole purpose of facilitating the use of the diagrams.
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2. WIRING DIAGRAM

This is a schematic diagram of the components, as they are fitted on the vehicle.
It indicates the layout of the leads, and the approximate location of the components.
The method of identification is the same as for the circuit diagram.

Supplement N° 1 to Manual 818-1 (ADD)

TABLE OF FUSES

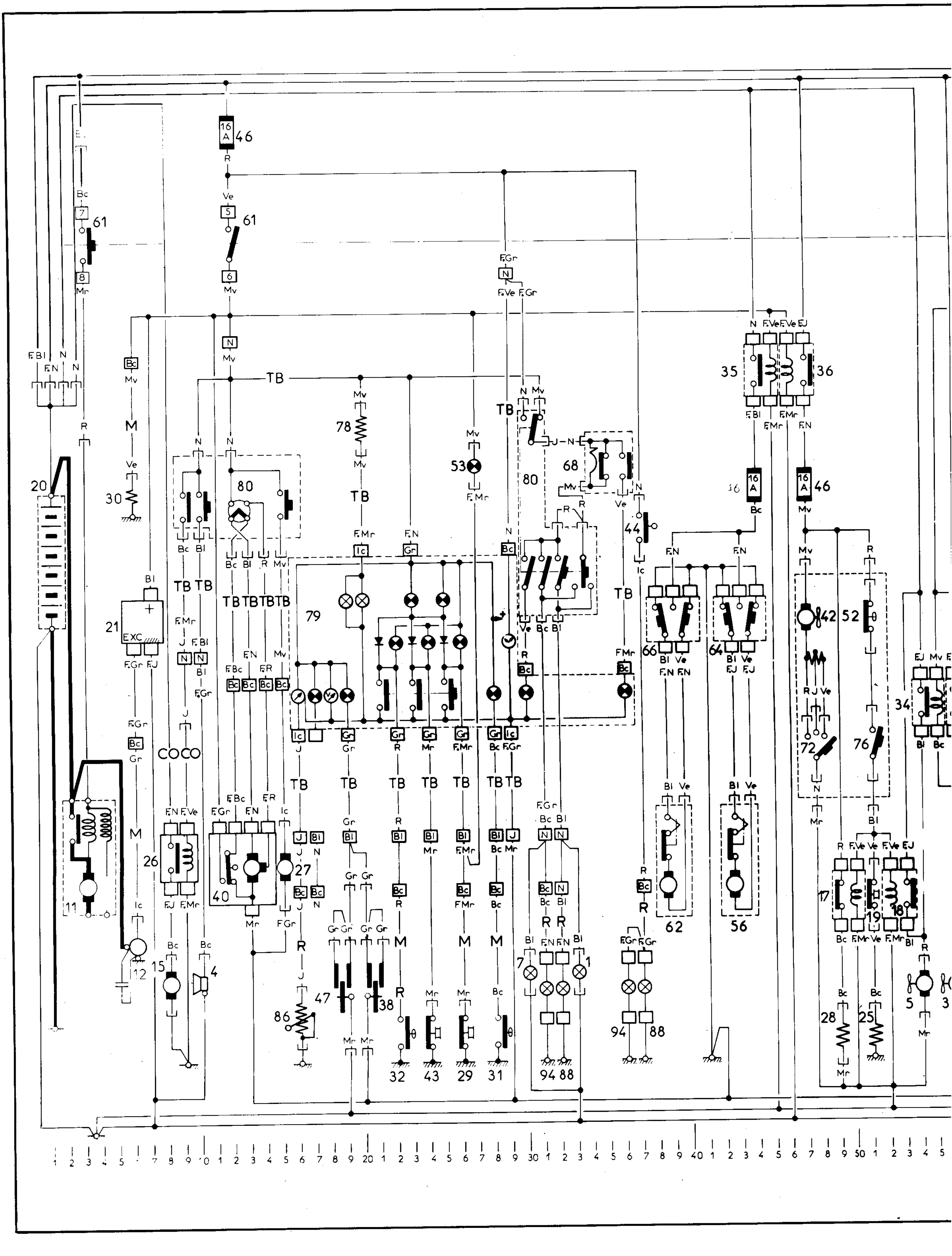
Supply to	Fuse		Circuit protected
	Colour	Rating	
Air-conditioning relay	Mauve	16 Amps	Air blower Fast idle electro-magnet Fast idle relay Compressor clutch Relay for L.H. air-conditioning blower
Positive terminal of battery « + »	Red	16 Amps	Clock Hazard warning Stoplamps Anti-theft device: → Idling speed cut-off → Voltage regulator → Horn → Relay for compressor horn → Windscreen wiper and washers → Instrument panel (lighting rheostat, battery meter, warning lamps for oil pressure and temp., brake pad wear, coolant, oil gauge lighting) → Direction indicators → Relay for front window-winder → Heater unit relay
	Green	16 Amps	Anti-theft device: → Relay for rear window-winder → Cigar-lighter on centre console → Exterior mirror → Water temperature gauge → Reversing lamps → Heated rear window → Handbrake warning lamp on instrument panel Glove-box lighting Centre and rear interior lamps Bonnet lighting Boot lamp Accessory terminal (radio)
Front window-winder relay	White	16 Amps	L.H. & R.H. switches L.H. & R.H. window-winder
Lighting switch	Yellow	10 Amps	Map-reading lamp (+ 5 Amp. in-line fuse) Lighting for heater controls Lighting for ashtray and cigar lighter Lighting for water temp. gauge and intrument panel Sidelamp warning lamp L.H. and R.H. sidelamps, front and rear Number plate lamp
Fog-lamp switch	White	10 Amps	Fog-lamp warning lamp L.H. and R.H. fog-lamps
«+» Battery terminal	Yellow	16 Amps	L.H. and R.H. rear cigar-lighters
Relay for rear window-winder	White	16 Amps	Switches → L.H. and R.H. window-winders, rear

IDENTIFICATION OF WIRING HARNESSES

AV Front (no identification of circuit diagram)
C Boot
CO Compressor
M Engine
PC Boot lid

PD Rear R.H. door
PG Rear L.H. door
PR Rear doors
R Rear
TB Instrument panel

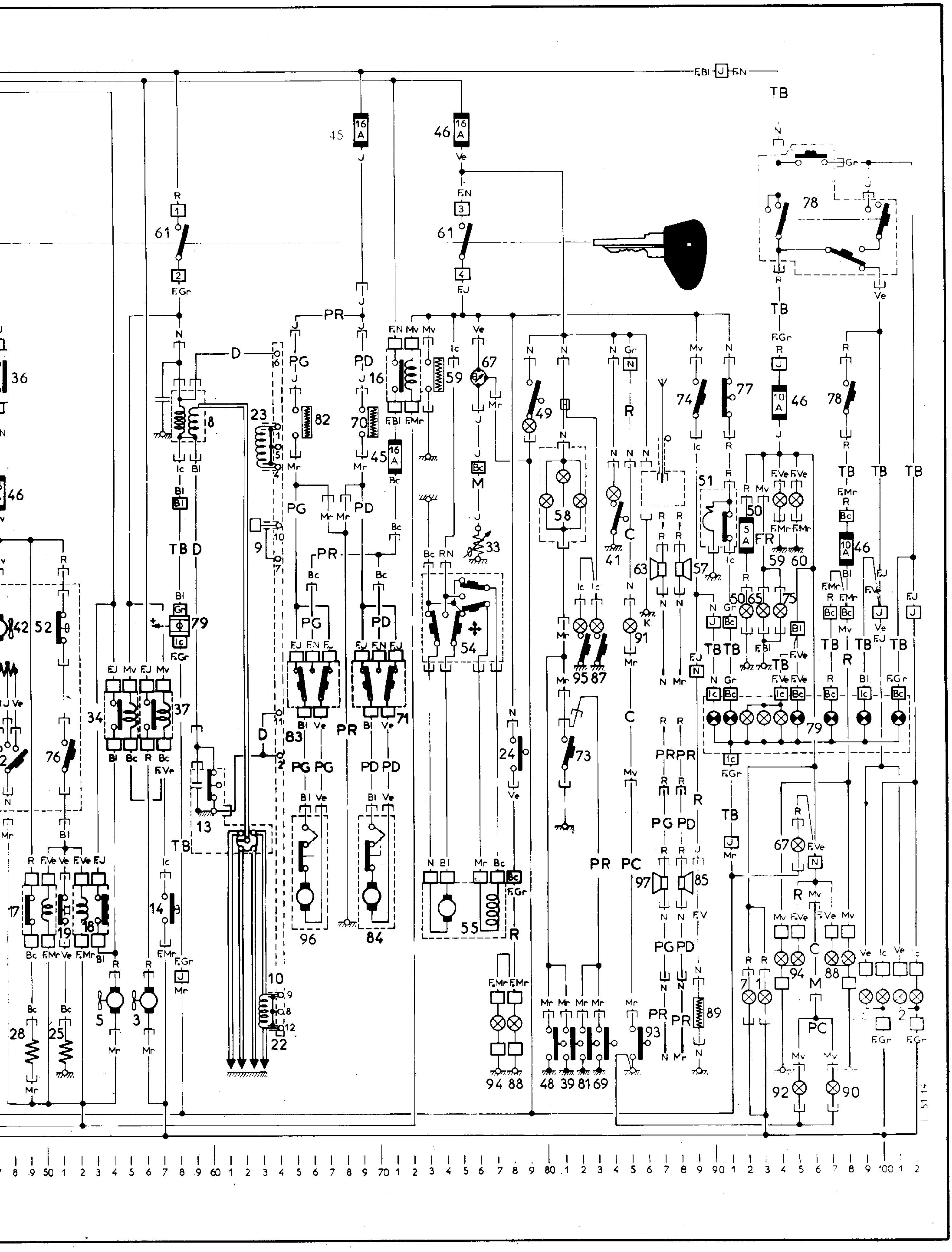
CIRCUIT DIAGRAM P.T.O.



RCUIT DIAGRAM

restige » 1/ 1976 →

L. 51-14



DESCRIPTION OF COMPONENTS

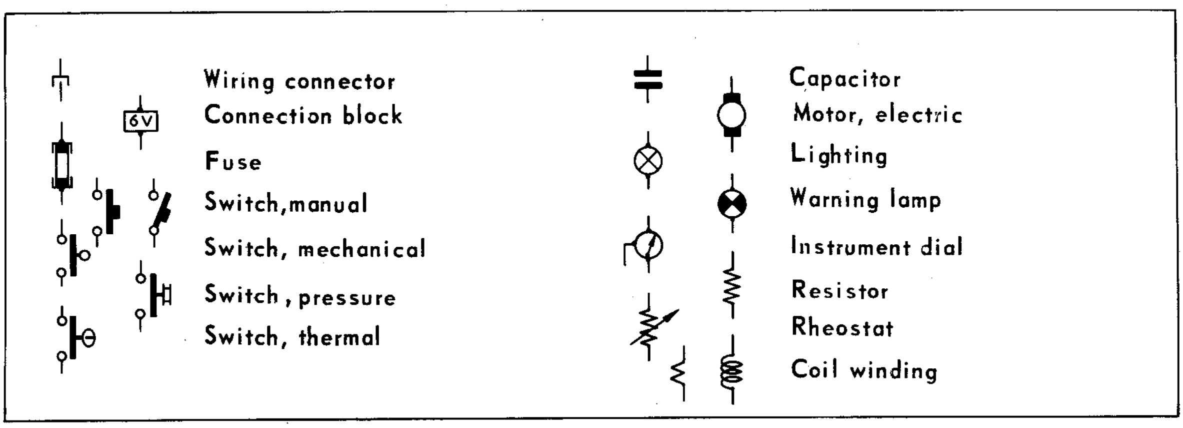
Ident. mark	Description and Location	
1	Front R.H. sidelamp	93
	Front R.H. direction indicator	33
2	R.H. headlamp : main beam	102
	dipped beam	101
3	R.H. blower motor	56
4	Horn	10
5	L.H. blower motor	54
6	L.H. headlamp : main beam	100
	dipped beam	99
7	Front L.H. sidelamp	92
	Front L.H. direction indicator	30
8	Ignition coil and anti-interference condenser	58
9	H.T. sensor socket	63
10	Sensor for No. 4 cylinder	63
11	Starter motor	3
12	Alternator and anti-interference condenser	6
13	Distributor	60
14	Thermal switch for ventilation	57
15	Horn compressor	8
16	Relay for rear door window-winder	71
17	L.H. air-conditioning blower relay	49
18	Relay for fast-idle	52
19	Air-conditioning pressure switch	51
20	Battery	1
21	Voltage regulator	6
22	Diagnostic socket	64
23	T.D.C. sensor	63
24	Reversing lamp switch	78
25	Air-conditioning compressor clutch	51
26	Relay for compressed air horn	8
27	Windscreen washer pump	15
28	Fast idle electro-valve	49
29	Engine oil pressure switch	26
30	Idle cut-off	6
31	Oil temperature switch	28
32	Coolant temperature switch	22
33	Coolant temperature sensor	76
34	Relay for L.H. blower	55
35	Relay for front window-winders	44
36	Relay for heating and air-conditioning	47
37	Relay for R.H. blower	57
38	Front R.H. brake unit	21
39	Front R.H. door lighting switch	81
40	Windscreen wiper motor	13
41	Under-bonnet lighting	84
42	Air blower motor	47
43	Hydraulic fluid pressure switch	24
44	Stoplamp switch	37
45	Fuse box (2 fuses)	69-71
46	Fuse box (6 fuses)	12-44-47-75-94-98
47	Front L.H. brake unit	18
48	Front L.H. door lighting switch	80
49	Glove-box lighting	79
50	Map-reading lamp and fuse	92
51	Handbrake warning flasher unit	90
52	Air-conditioning thermal switch	51
53	Lighting for pneumatic oil gauge	27
54	L.H. outside mirror switch	75
55	L.H. outside mirror	75
56	R.H. front door window-winder motor	43
57	Front R.H.loudspeaker	88
58	Interior lamp centre	81
59	Cigar,lighter on console and lighting	73-94
60	Lighting for ashtray	95

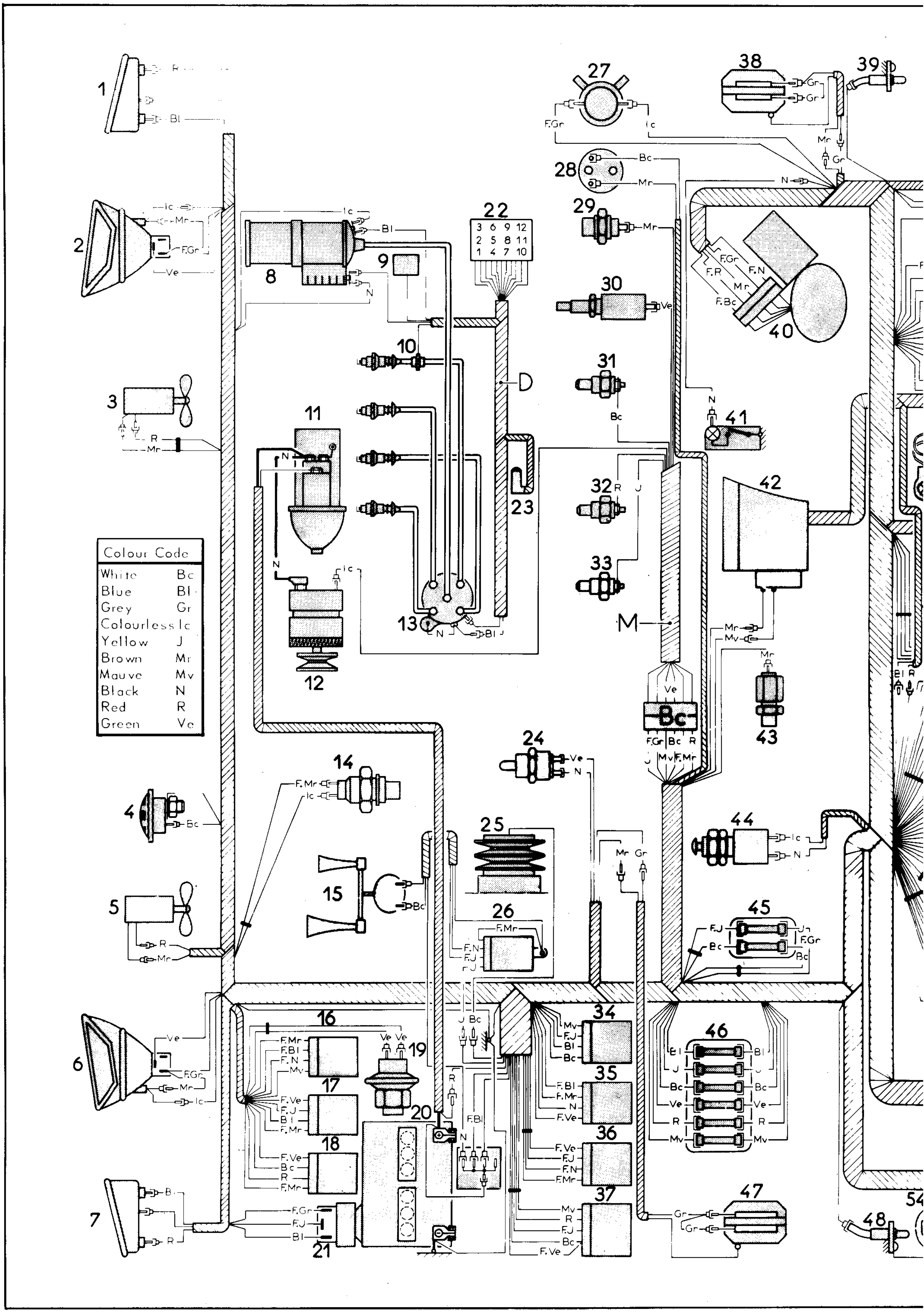
Ident. mark	Description and Location	
61	Anti-theft switch	3-12-58-75
62	L H front door window-winder motor	39
63	Front L.H. loudspeaker	87
64	Front R.H. window-winder switch	43
65	Front heater control lighting	93
66	Front L.H. window-winder switch	39
67	Coolant temp. gauge + lighting	76-95
68	Direction indicator flasher unit	34
69	Rear R.H. door lighting switch	83
70	Rear R.H. cigar-lighter	69
71	Rear R H. window-winder switch	70
72	Air blower switch	48
73	Centre interior lamp switch	81
74	Heater rear window switch	89
75	Lighting for rear heater controls	94
76	Air conditioning switch	51
77	Handbrake warning switch	91
78	Lighting + rear foglamp switch	94 to 100
	Speedo + tacho lighting rheostat	20
79	Instrument panel : Lighting	93-94
	Tachometer	58
	Battery meter (thermal voltmeter)	18
	Fuel gauge	16
	Lighting for speedo + tacho	19-20
	Clock and lighting	92-29
	Warning lamp for heated rear window	90
	Warning lamp for dipped beam	99
	Warning lamp for brake pad wear	19
	Warning lamp for engine oil temp.	28
	Warning lamp for coolant temp	22
	Warning lamp for eng. oil pressure	26
	Emergency « STOP » warning lamps	23-25
	Test button for « STOP » warning lamps	21-23-25
	Warning lamp for hydraulic fluid press	24
	Warning lamp for hazard warning	30
	Warning lamp for converter oil temp.	
	Warning lamp for sidelamps	95
	Warning lamp for direction indicators	36
	Warning lamp for main beam	101
	Warning lamp for handbrake	91
	Warning lamp for rear fog lamps	97
80	L.H. control unit	
	Direction indicators and haz.warning	30 to 35
	Horns	9 and 10
	Windscreen wipers and washers	12 to 15
81	L.H. rear door lighting switch	82
82	Rear L.H. cigar-lighter	65
83	Rear L.H. window-winder switch	65
84	Rear R.H. window-winder motor	69
85	Rear R.H loudspeaker	88
86	Fuel gauge rheostat	16
87	Rear R.H. interior lamp	83
88	Rear R.H. lamp cluster	
	Stoplamp and sidelamp	37-97
	Direction indicator	32
	Reversing lamp	78
	Foglamp	98
89	Heated rear window	89
90	R.H. number plate lamp	97
91	Boot lamp	85
92	L.H. number plate lamp	95
93	Boot lamp switch	85
94	Rear L.H. lamp cluster :	
	Stoplamp and sidelamp	36-95
	Direction indicator	31
	Reversing lamp	77
	Fog lamp	94
95	Rear L.H. interior lamp	82
96	Rear L.H. window-winder motor	66
97	Rear L.H. loudspeaker	87

TABLE OF BULBS

Use	Quantity	Base	Type	Voltage	Rating	French standard
Main and dipped beams	2	P. 43 t. 38	Yellow (for France)	12 V	60/55 W	
Rear sidelamps and stoplamps	2	BA 15 d	P.25/2	12 V	21/5 W	R. 136-12
Direction indicator Foglamps Reversing lamps	4 2 2	BA 15 s/19	Pear-shaped P. 25/1	12 V	21 W	R. 136-12
Front sidelamps Number-plate lamps Under-bonnet lamp	2 2 1	BA 15 s/19		12 V	5 W	R. 136-13
Interior lamp	3	Festoon		12 V	7 W	R. 136-05
Map-reading lamp Rear interior lamps	1 2	Festoon		12 V	5 W	R. 136-14
Lighting for speedo. and tacho.	2	BA. 9 s	T 8/4	14 V	4 W	
Glove-box lamp	1	BA. 9 s	T 8/2	12 V	2 W	R. 136-34
Warning lamps Lighting for cigar lighter Lighting for ashtray Lighting for oil gauge	15 1 1 1	Wedge base	dia. = 5	12 V	1.2 W	
Lighting for instrument panel	2	Wedge base	dia. = 10	12 V	2 W	
Lighting for odometers	1			24 V	3 W	

KEY TO CIRCUIT DIAGRAM SYMBOLS





Colour Code

White	Bc
Blue	Bl
Grey	Gr
Colourless	Ic
Yellow	J
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Mauve	Mv
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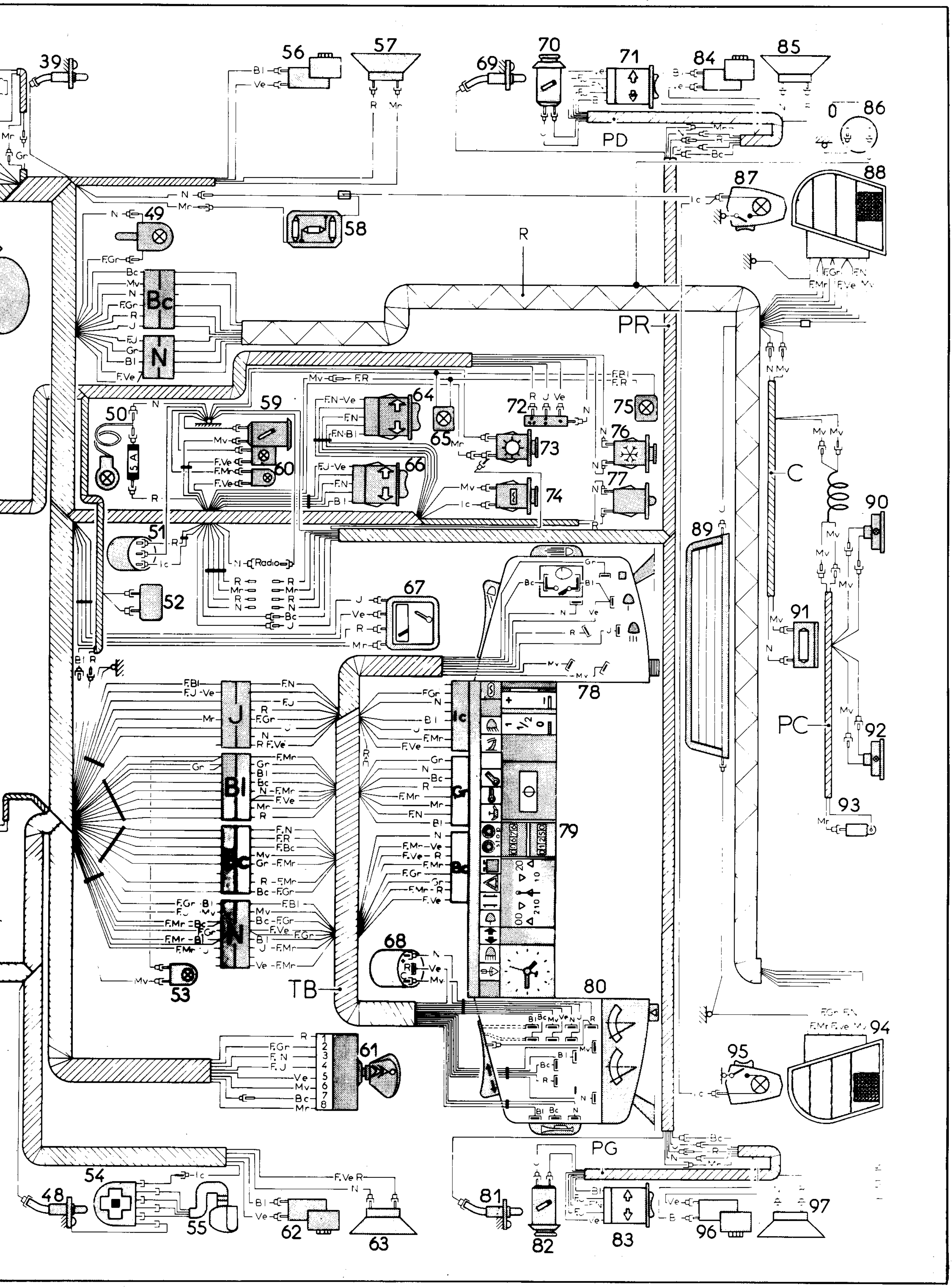
Green	Ve

CX « Prestige » 1/1976 →



« Super » Estate Vehicles

ARRANGEMENT OF THE ELECTRICAL INSTALLATION

(1/1976 ⟶)

PRESENTATION OF THE DIAGRAMS

1. CIRCUIT DIAGRAM

a) Special feature : The various circuits are presented in a functional way, therefore, where a unit is connected to several circuits, its various sections are shown in « exploded » form on different vertical grid lines.

b) Method of identification, Identification marks are divided into three sections
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  marks on diagrams : Bc. Bl, Ve, Gr ....
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  marks on diagrams : F. Gr, F. Ve, F. Bc ....
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The colour of the sleeves and the leads are the only identification marks actually used on the leads making up the electric system of the vehicle.

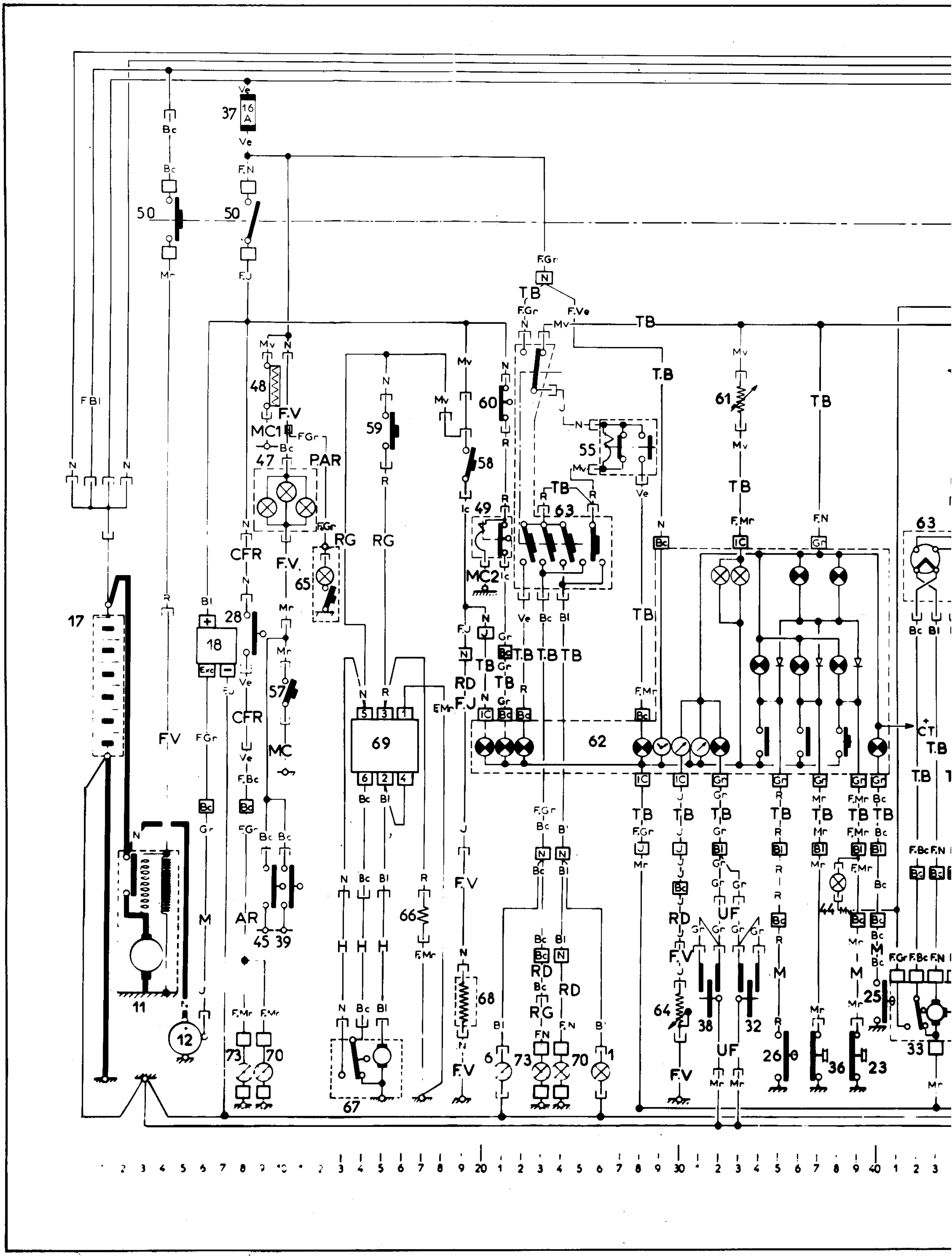
2. WIRING DIAGRAM

This is a schematic diagram of the components, as they are fitted on the vehicle.
It indicates the layout of the leads, and the approximate location of the components.
The method of identification is the same as for the circuit diagram.

TABLE OF FUSES

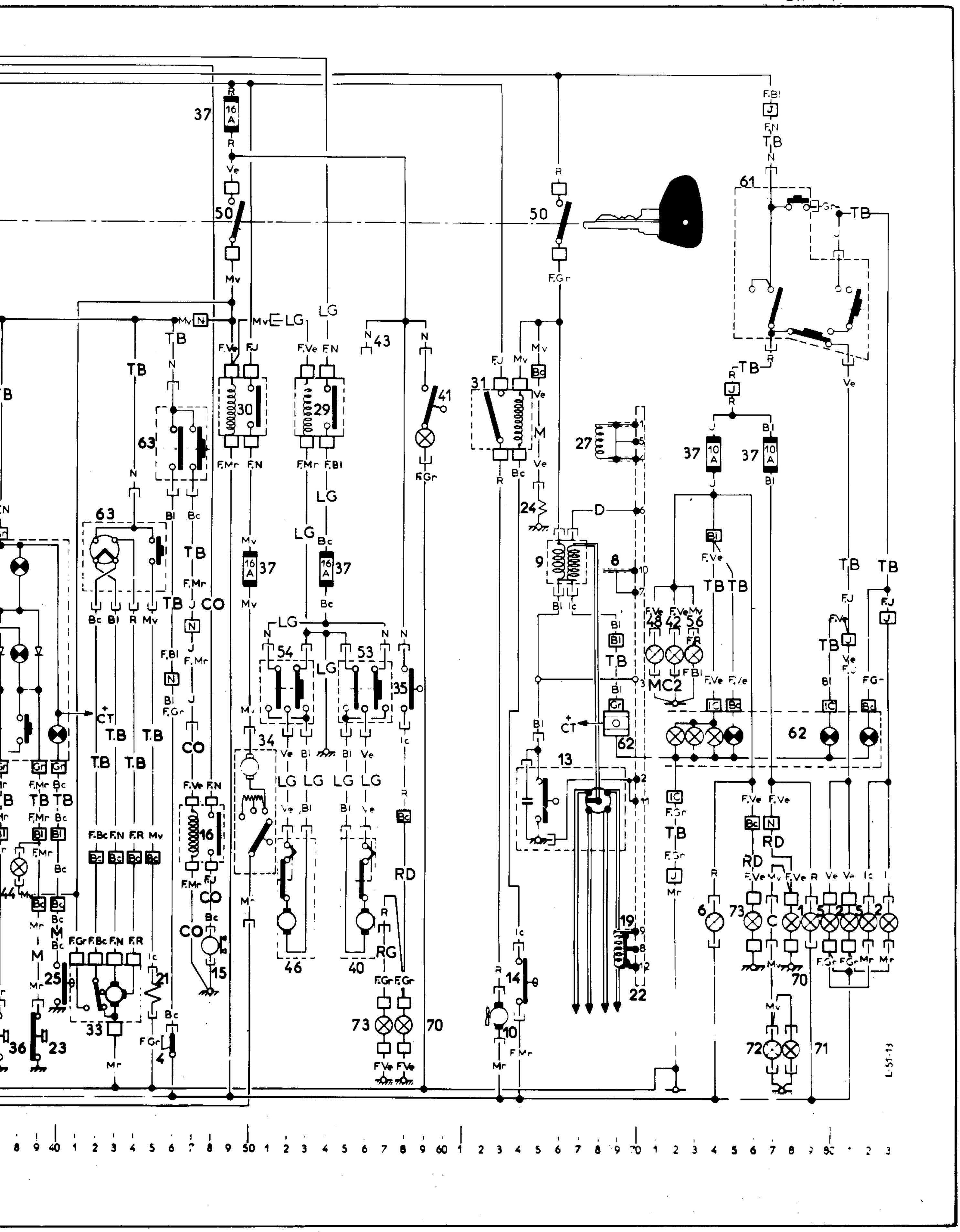
Supply to	Fuse		Circuits protected
	Rating	Colour	
Heater unit relay	16 A	Mauve	Heater unit
Positive terminal of battery « + »	16 A	Red	Stoplamps Accessory terminal Glove-box lighting Ignition switch → Direction indicators → Windscreen wipers and washers → Horns → Heater relay winding → Window-winder relay winding → Rheostat → speedo lighting → Warning lamp panel (Battery meter (thermal voltmeter) - Brake pad wear warning lamp - Fuel gauge - Oil pressure warning lamp - Hydraul. fluid pressure warn. lamp - Water temp. warning lamp) Tachometer. « STOP» warning lamp
	16 A	Green	Interior lamp Boot lamp Cigar lighter Clock Hazard warning lamps Ignition switch → Voltage regulator → Reversing lamps → Heated rear window → Handbrake warning lamp → Rear screen washers and wiper
Window-winder relay	16 A	White	R.H. switch → R.H. window-winder L.H. switch → R H. window-winder
Lighting switch	10 A	Yellow	Ashtray lighting Cigar-lighter lighting Heater controls lighting Instrument panel lighting : Clock Battery meter Odometers Sidelamp warning lamp L.H. sidelamps, front and rear
	10 A	Blue	R.H. sidelamps, front and rear Number plate lamp

CIRCUIT DIAGRAM P.T.O.



etrol) (French market) 1/ 1976 ⟶

L .51-13



DESCRIPTION OF COMPONENTS

Ident. mark	Description and Location	
1	Front R.H. sidelamp	79
	Front R.H. direction indicator	26
2	R.H. headlamp - main beam	83
	- dipped beam	81
4	Horn	46
5	L.H. headlamp main beam	82
	dipped beam	80
6	Front L.H. sidelamp	74
	Front L.H. direction indicator	21
8	H.T. sensor	69
9	Ignition coil	66
10	Blower motor	63
11	Starter	3
12	Alternator	5
13	Distributor	66
14	Electric fan thermal switch	64
15	Compressor for horns	48
16	Compressor relay	47
17	Battery	1
18	Voltage regulator	6
19	Sensor for No. 4 cylinder	69
21	Windscreen washer pump	45
22	Socket for fault-finding (diagnostic)	70
23	Oil pressure switch	39
24	Idle cut-off	65
25	Oil temperature switch	40
26	Coolant temperature switch	35
27	T.D.C. sensor	68
28	Switch for reversing lamps	8
29	Relay for window-winder	54
30	Relay for heater unit	50
31	Relay for electric fan	63
32	Front R.H. brake unit	34
33	Windscreen wiper motor	43
34	Blower motor	50
35	Stoplamp switch	58
36	Hydraulic fluid pressure switch	37
37	Fuse box	8-49-50-54-74-77
38	Front L.H. brake unit	31
39	Front R.H. door lighting switch	10
40	R.H. window-winder motor	56
41	Glove-box lighting	59
42	Lighting for ashtray	72
43	Accessory terminal (radio)	56
44	Lighting for oil gauge	38
45	L.H. front door lighting switch	9
46	L.H. window-winder motor	52
47	Central interior lamp	10
48	Cigar-lighter and lighting	9-71
49	Handbrake warning lamp flasher unit	20
50	Anti-theft switch	4-8-49-66
53	Switch for R.H. window-winder	56

Ident. mark	Description and Location	
54	Switch for L.H. window-winder	52
55	Flasher unit	26
56	Lighting for heater controls	73
57	Switch for interior lamp	10
58	Switch for heated rear window	19
59	Rear screen wiper switch	15
60	Contact for handbrake	21
61	R.H. control unit (lighting)	77
	Lighting rheostat for tacho and speedo	33
62	Lighting for instrument panel	73-74
	Tachometer	69
	Battery meter (thermal voltmeter)	31
	Fuel gauge unit	30
	Lighting for odometers	32-33
	Clock and lighting	29-72
	Warning lamp for heated rear window	20
	Warning lamp for dipped beam	80
	Warning lamp for brake pads	32
	Warning lamp for oil temp.	40
	Warning lamp for water temp.	34
	Red « STOP » warning lamp	36-38
	Warning lamp for hydraulic fluid pressure	36
	Warning lamp for hazard warning	22
	Warning lamp for sidelamps	75
	Warning lamp for direction indicators	28
	Warning lamp for main beam	82
	Warning lamp for handbrake	21
63	L.H. control unit	
	Direction indicators and hazard warning	24
	Horns	46
	Windscreen wiper motor	43
	Windscreen washer pump	45
64	Fuel gauge rheostat	30
65	Rear interior lamp	12
66	Rear screen washer pump	17
67	Rear screen wiper motor	13
68	Heated rear window	19
69	Rear screen wiper timer	15
70	Rear R.H. lamp cluster :	
	Sidelamp	78
	Stoplamp	53
	Direction indicator	24
	Reversing lamp	9
71	R.H. number plate lamp	75
72	L.H. number plate lamp	77
73	Rear L.H. lamp cluster :	
	Sidelamp	76
	Stoplamp	57
	Direction indicator	23
	Reversing lamp	8

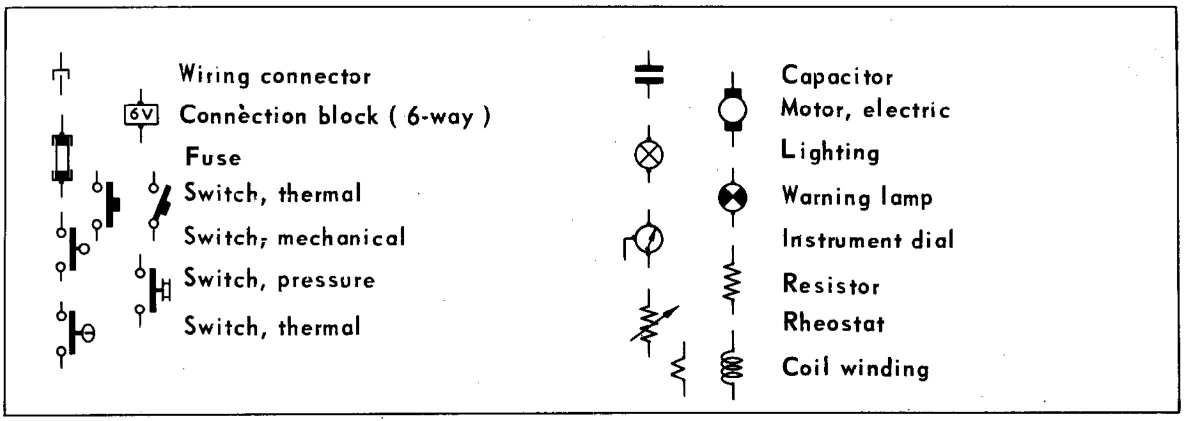
IDENTIFICATION OF WIRING HARNESSES

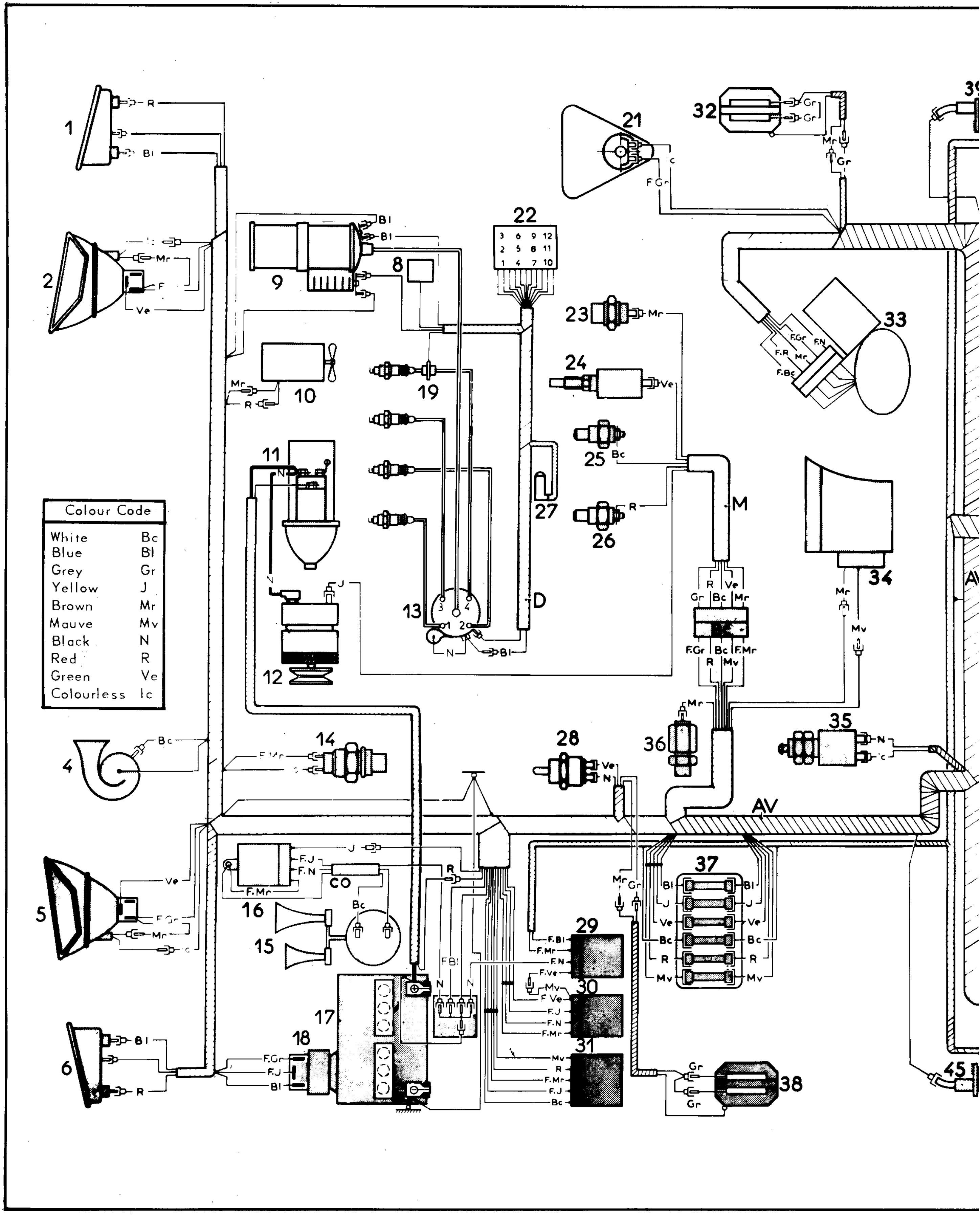
No mark	Front wiring harness	RG	Rear L.H. harness
RD	Rear R.H. harness	H	Rear door harness
M	Engine harness	D	Diagnostic harness (fault-finding)
LG	Window-winder	MC 1	Centre console earth lead
TB	Instrument panel	MC 2	Centre console earth lead
CO	Compressor	FV	Flying lead
UF	Front brake pad wear	CFR	Reversing lamp switch harness

TABLE OF BULBS

Use	Quantity	Base	Type	Voltage	Power	French standard Ref. No.
Dipped beam headlamps	2	P. 45 t 41	Yellow (for France)	12 V	40/ 45 W	R. 136-15
Main beam headlamps	2	× 511	H 2	12 V	55 W	R. 136-17
Direction indicators Stoplamps Reversing lamps	4 2 2	BA 15 s/ 19	Pear-shaped P 25/ 1	12 V	21 W	R. 136-12
Front and rear side-lamps Number plate lamp	4 2	BA 15 s/ 19		12 V	5 W	R. 136-13
Interior lamp	3	Festoon		12 V	7 W	R. 136-05
Boot lamp	1	Festoon		12 V	5 W.	R. 136-14
Lighting for tachometer and speedometer	2	BA 9 s	T 8/ 4	14 V	4 W	
Lighting for glove-box	1	BA 9 s	T 8/ 2	12 V	2 W	R. 136-34
Warning lamps Lighting for cigar-lighter Lighting for ashtray Lighting for pneumatic gauge	14 1 1 1	Wedge base	dia. 5	12 V	1.2 W	
Instrument panel lighting	2	Wedge base	dia. 10	12 V	2 W	
Lighting for odometers	1			24 V	3 W	

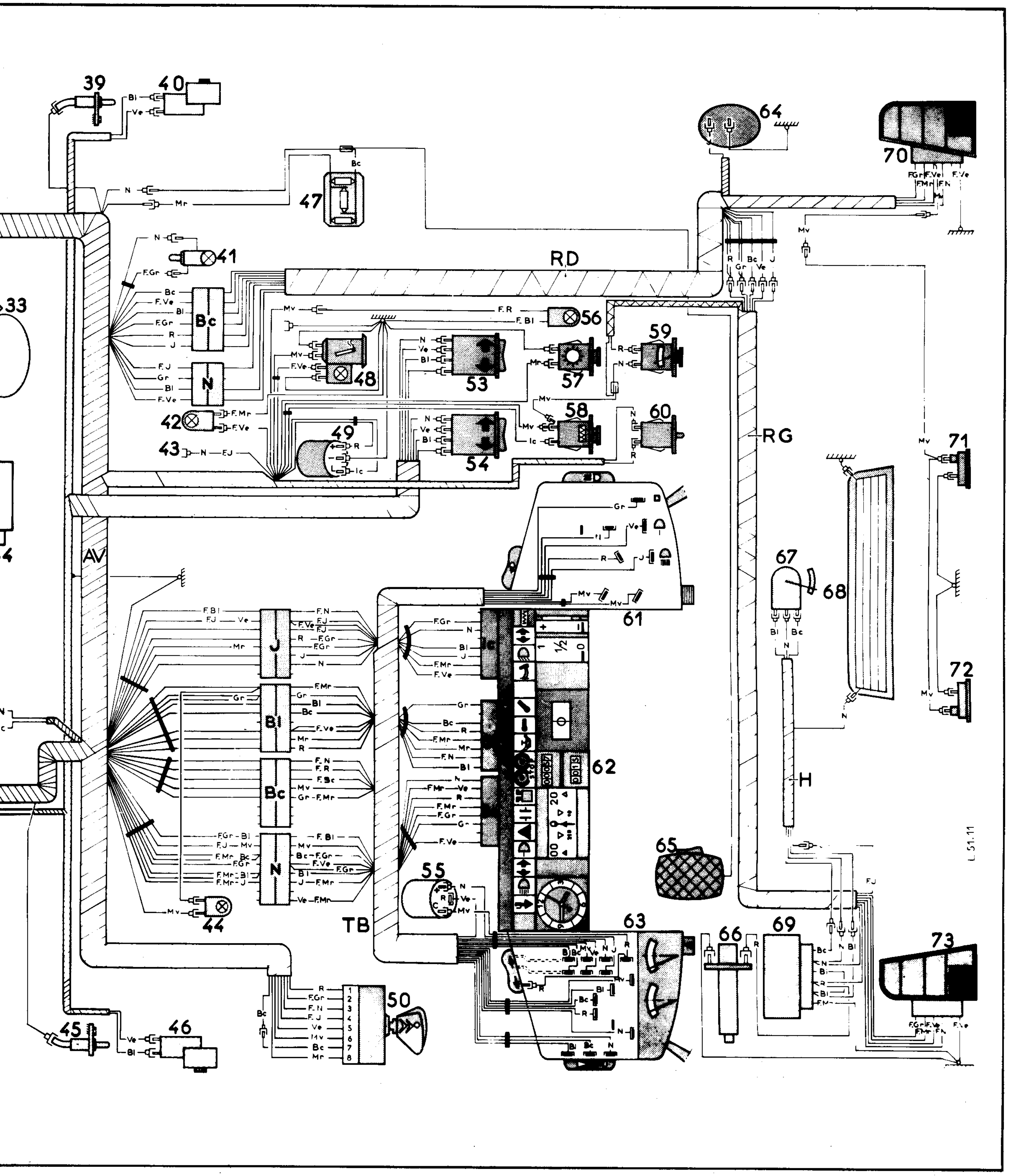
KEY TO CIRCUIT DIAGRAM SYMBOLS





Colour Code	
White	Bc
Blue	Bl
Grey	Gr
Yellow	J
Brown	Mr
Mauve	Mv
Black	N
Red	R
Green	Ve
Colourless	Ic

L.51-11


39
40
47
64
70
41
RD
33
Bc
N
56
59
48
53
57
42
58
60
49
43
54
RG
71
AV
67
68
61
J
Bl
Bc
N
62
72
H
65
44
55
TB
63
66
69
73
45
46
50

INSTRUMENT PANEL (9/ 1975 ⟶)

L 51 - 12 a

FRONT HARNESS

YELLOW

Direct « + » supply to lighting	1	F.N	5	F.Mr F.Gr	earth
Dipped beam	2	F.J F.Ve	6	J	fuel gauge
Main beam	3	F.J	7	N	rear window heater warning lamp
Sidelamps	4	R/F.Gr	8	R/F.Ve	pre-heat warning lamp

BLUE

Warning lamp for engine oil pressure	1	F.Mr	5	N/F.Mr	warning lamp for low fuel
Warning lamp for front brake pad wear	2	Gr	6	2 F.Ve	warning lamp for sidelamps
Tachometer	3	Bl	7	Mr	warning lamp for hydr. fluid pressure
Warning lamp for engine oil temp.	4	Bc	8	R	warning lamp for coolant temp.

WHITE

Windscreen wiper 1st speed	1	F.N	5	Gr/F.Mr	warning lamp for handbrake
Windscreen wiper 2nd speed	2	F.R	6		front foglamp switch
Windscreen wiper self parking position	3	F.Bc	7	R/F.Mr	warning lamp for rear foglamps
Windscreen washers	4	Mv	8	Bc	Rear foglamp switch

BLACK

Horn	1	F.Bl	5	Bl	R.H. direction indicators
« + » contact for Red fuse	2	Mv	6	J/F.Mr	relay for compressor horn
Direction indicators	3	Bc/F.Gr	7	J/F.Gr	" Taxi " alarm system or " Swedish market " headlamp wipers
Direct « + » supply through green fuse to clock and hazard warning	4	F.Ve F.Gr	8	Ve/F.Mr	Converter oil temp.

INSTRUMENT PANEL HARNESS

NO COLOUR

		1
Earth	F.Gr	2
H.R.W warning lamp	N	3
Trailer direction indic. warning lamp	F.N	4
Dipped beam warning lamp	Bl	5
Fuel gauge	J	6
Speedo and tacho lighting	F.Mr	7
Accessory lighting	F.Ve	8

Pre-heat warning lamp (Diesel) R/F.Ve

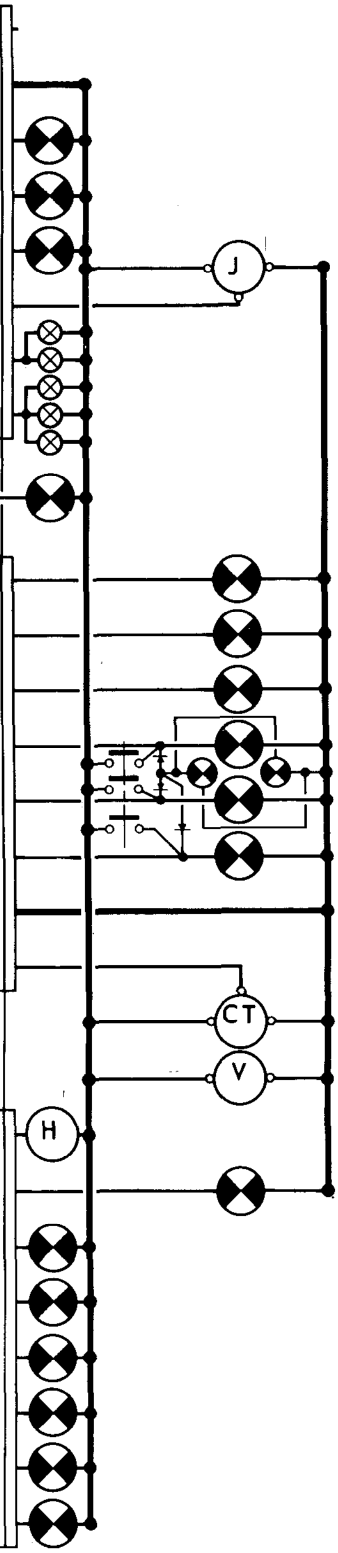
GREY

Front brake pad wear warning lamp	Gr	1
Low fuel warning lamp	N/F.Mr	2
Engine oil temp. warning lamp	Bc	3
Coolant temp. warning lamp	R	4
Engine oil press. warning lamp	F.Mr	5
Hydr. fluid press. warning lamp	Mr	6
« + » supply through fuse and contact	F.N	7
Tachometer	Bl	8

WHITE

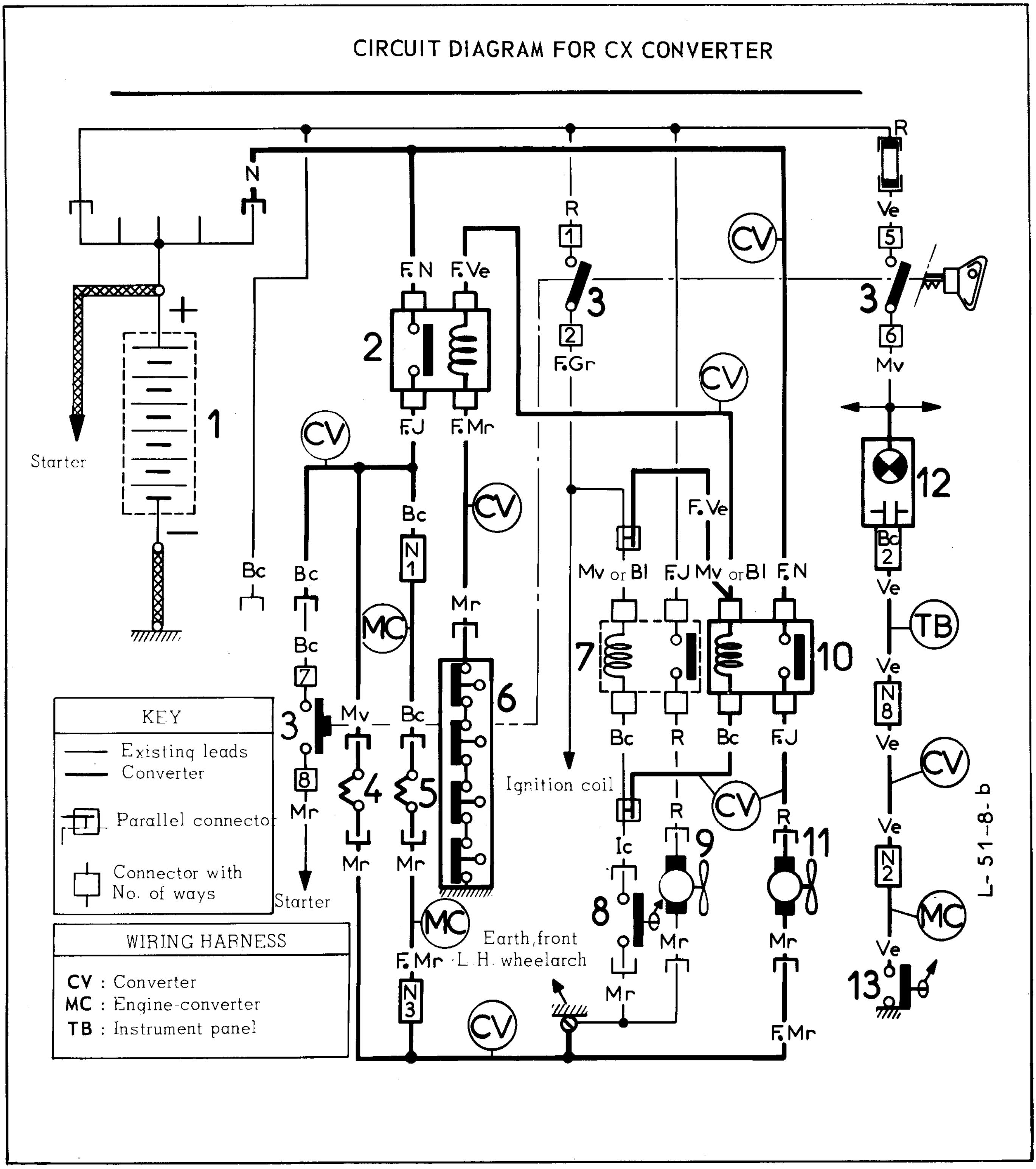
Direct « + » supply to clock	N F.Ve	1
Converter oil temp. warning lamp	Ve F.Mr	2
Warning lamp for hazard warning	R F.Ve	3
Warning lamp for direct indicators	F.Mr	4
Main beam warning lamp	F.Gr	5
Handbrake warning lamp	Gr	6
Rear foglamp warning lamp	R F.Mr	7
Sidelamp warning lamp	F.Ve	8

INSTRUMENT PANEL



TORQUE CONVERTER (1.1976 ⟶)

L 51-8 b



1 - Battery
2 - Relay for electro-valves
3 - Ignition and starting contact
4 - Electro-valve controlling fast idle
5 - Electro-valve controlling clutch
6 - Gearbox switch housing
7 - Control relay for electric fan
8 - Thermal switch controlling the electric fans
9 - Electric fan
10 - Relay controlling supplementary electric fan
11 - Supplementary electric fan
12 - Warning lamp for converter oil temperature
13 - Converter oil thermal switch

All CX 2400 vehicles fitted with optional

CONVERTER - AIR-CONDITIONING

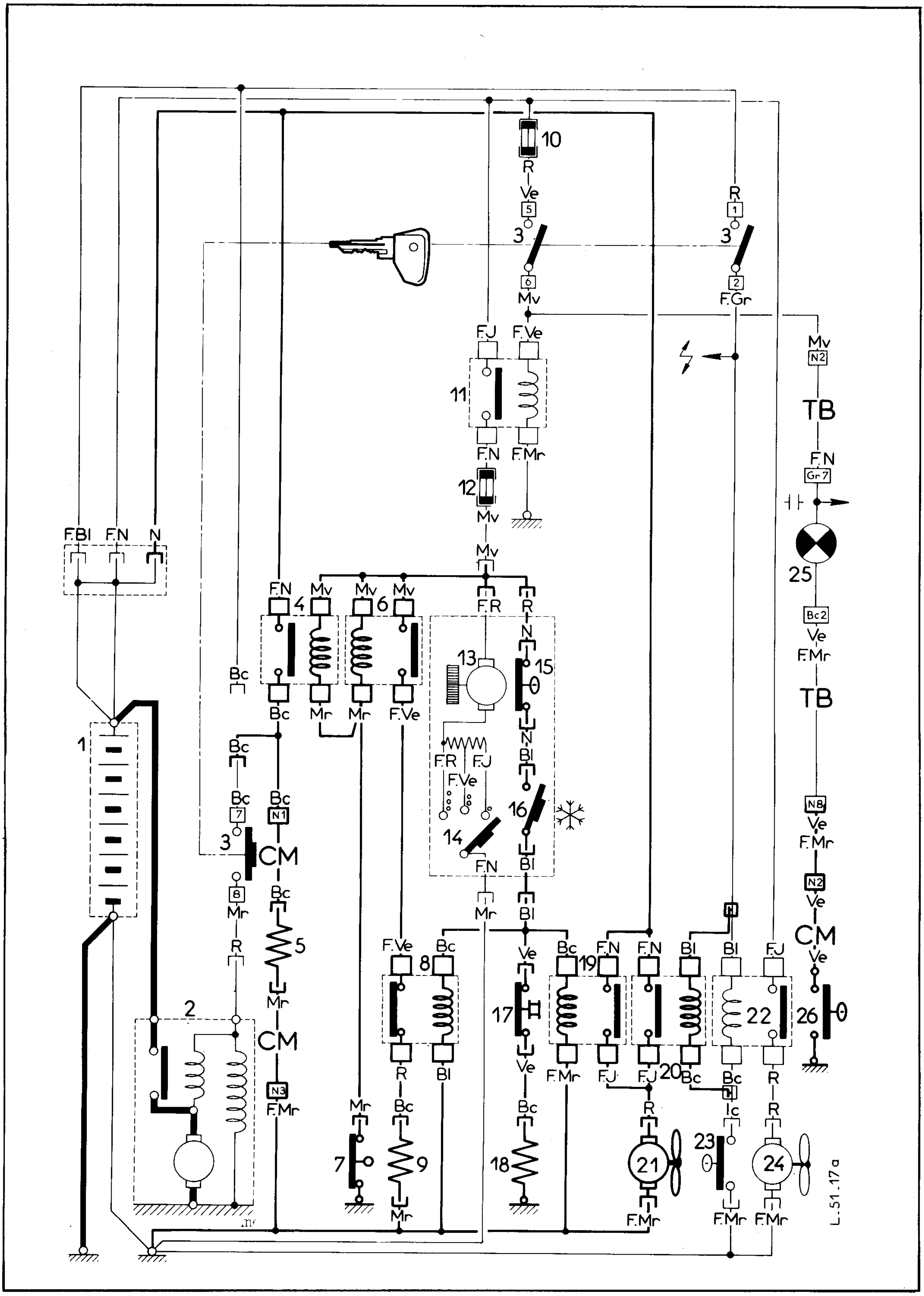
(12 1976 ⟶)

P.T.O.

CIRCUIT DIAGRAM

CIRCUIT DIAGRAM FOR CONVERTER - AIR-CONDITIONING OPTION

L.51-17 a



Supplement N° 1 to Manual 818-1 (ADD)

DESCRIPTION OF COMPONENTS

1. Battery
2. Starter
3. Anti-theft switch ignition and starting
4. Safety relay for starting and controlling the clutch electro-valve *(converter)*
5. Clutch electro-valve *(converter)*
6. Control relay for idling speeds *(converter)*
- relay energized = engine idling speed
- relay not energized = fast idling speed

7. Switch housing on gearbox *(converter)*
8. Fast idle control relay : *(air-conditioning)*
- relay energized = contact open = fast idle

9. « PIERBURG » electro-valve for fast idle
- energized = engine idle
not energized - fast idle

10. 16 Amp. fuse
11. General control relay
12. 16 Amp fuse
13. Air blower *(warm or cold)*
14. 3-speed blower control
15. Regulating thermostat *(air-conditioning)*
16. Air-conditioning switch
17. Pressure switch on de-watering tank *(air-conditioning)*
18. Compressor clutch *(air-conditioning)*
19. Control relay for L.H. supplementary electric fan (21) *(air-conditioning)*
20. Control relay for electric fan (21) *(cooling of radiator water)*
21. Supplementary electric fan for condenser *(air-conditioning)* and water radiator *(cooling)*
22. Control relay for R.H. electric fan (24) *(cooling)*
23. Thermal switch on water radiator *(cooling control)*
24. R.H. electric fan for gearbox oil radiator and coolant radiator
25. Converter oil temperature warning lamp *(converter)*
26. Thermal switch for converter oil *(converter)*

KEY TO WIRING HARNESSES

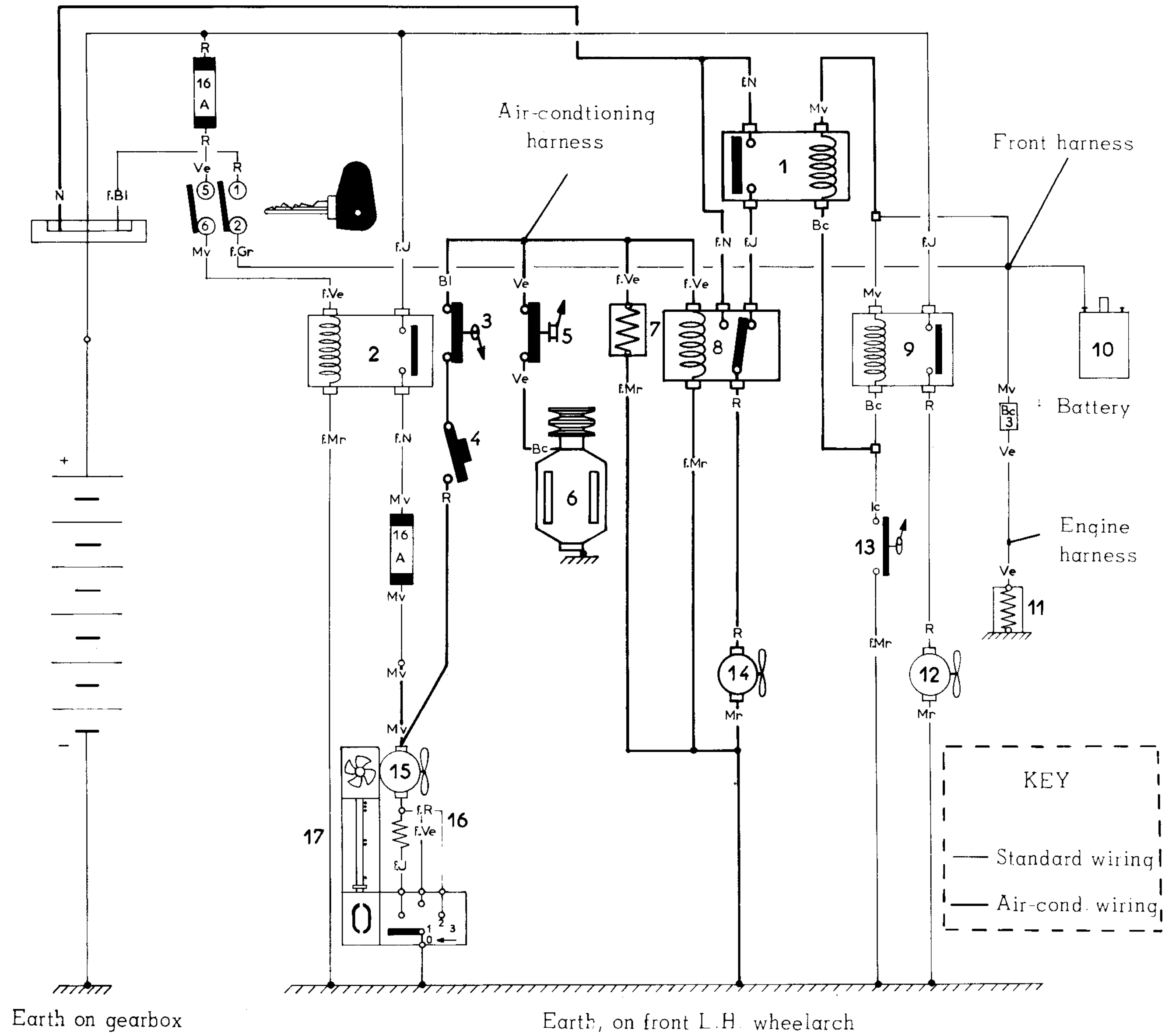
———— { **No Mark** : Standard circuit (no optional equipment)
TB : Instrument panel

———— Circuit for optional « Converter - air-conditioning »
- **No mark** ; Converter wiring on body-shell
- **CM** : Converter wiring on engine

WIRING DIAGRAM FOR ELECTRIC FAN AND AIR-CONDITIONING CONTROL

→ 7 1976

L 64-4



1. Control relay for supplementary electric cooling fan
2. Control relay for air blower
3. Ambient temperature thermostat (on evaporator)
4. Air-conditioning switch (on centre console)
5. High pressure switch (on de-watering tank)
6. Electro-magnetic clutch for compressor
7. Control electro-valve for fast idle and re-cycling ram (WEBER electro-valve)
8. Control relay for supplementary air-conditioning electric fan
9. Control relay for electric cooling fan
10. Ignition coil
11. Idle cut-off (on carburettor)
12. Electric cooling fan
13. Thermal switch for electric cut-in (on radiator)
14. Supplementary air-conditioning electric fan
15. Air blower for air-conditioning
16. Control resistors for air-blower speeds
17. Air blower switch (3-position)

WIRING DIAGRAMS FOR COOLING FAN AND AIR-CONDITIONING SYSTEM CONTROL

(7/1976 ⟶)

(SEE INSIDE FOLDING PAGE)

SPECIAL FEATURES

From 1977 models, the fast-idle electro-valve (9) is manufactured by « PIERBURG ».
When it is not energized, the electro-valve lets low pressure through towards the carburettor capsule (fast idle), contrary to the « WEBER » electro-valve fitted previously.

Fitting the « PIERBURG » electro-valve necessitates fitting a relay (8) which is energized when the air-conditioning system is operating. This relay, with its « *open* » contact cuts off supply to electro-valve (9) which therefore produces fast idle.

DESCRIPTION OF COMPONENTS :

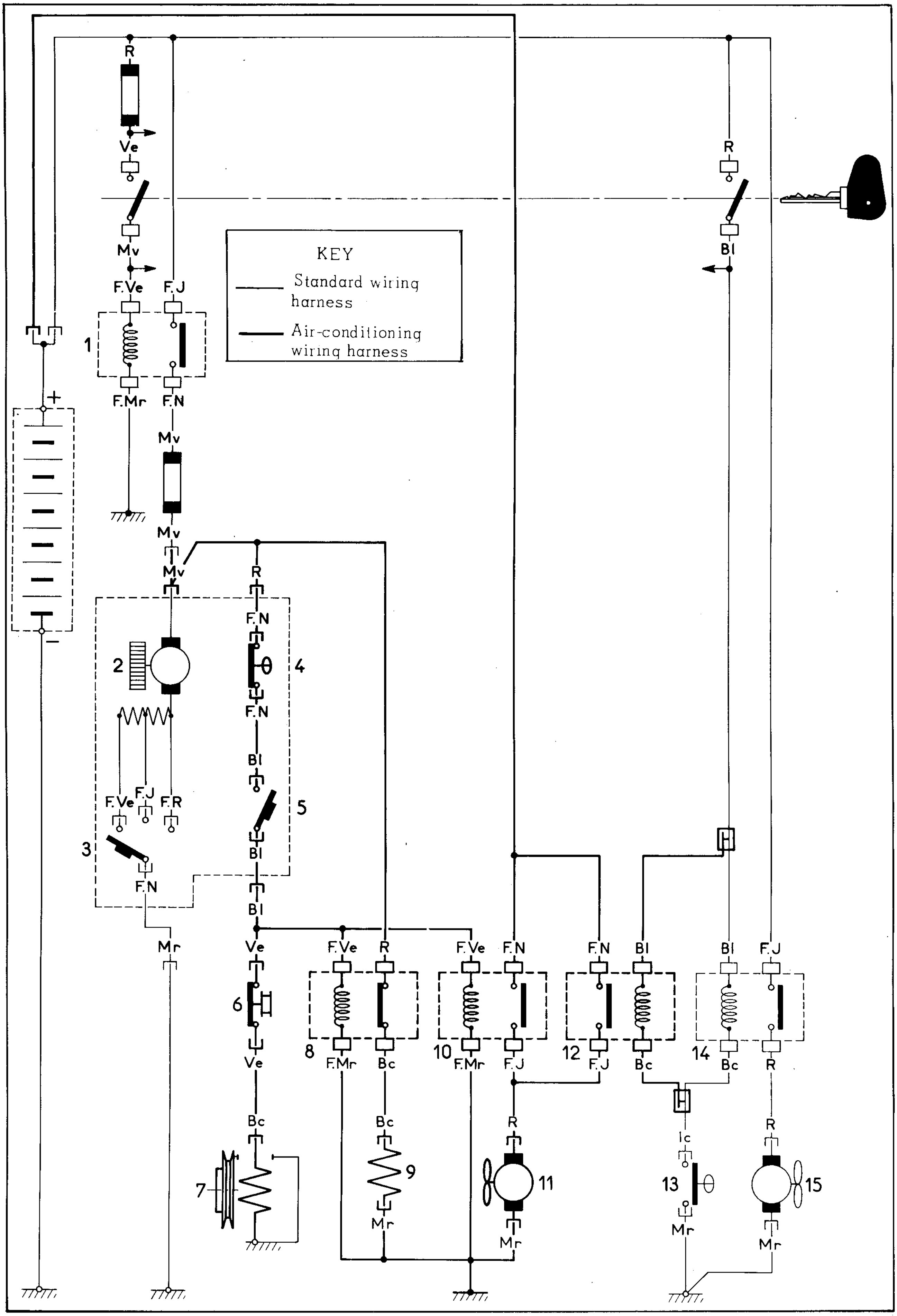
1 - Heater relay *(Standard)*
2 - Air blower *(Standard)*
3 - Speed control for blower *(Standard)*
4 - Regulating thermostat
5 - Air-conditioning switch
6 - Pressure switch *(on de-watering tank)*
7 - Compressor clutch
8 - Control relay for fast idle electro-valve
9 - Fast idle electro-valve
10- Relay for L.H. supplementary electric fan *(air-conditioning)*
11- Supplementary L.H. electric fan *(cooling)*
12- Relay for L.H. supplementary electric fan *(cooling)*
13- Control thermostat (on radiator) for electric fans *(Standard)*
14- Relay for R.H. electric fan *(Standard)*
15- Electric cooling fan *(Standard)*

P.T.O.

CIRCUIT DIAGRAM FOR COOLING FAN AND AIR-CONDITIONING FAN CONTROL

(7/1976 →)

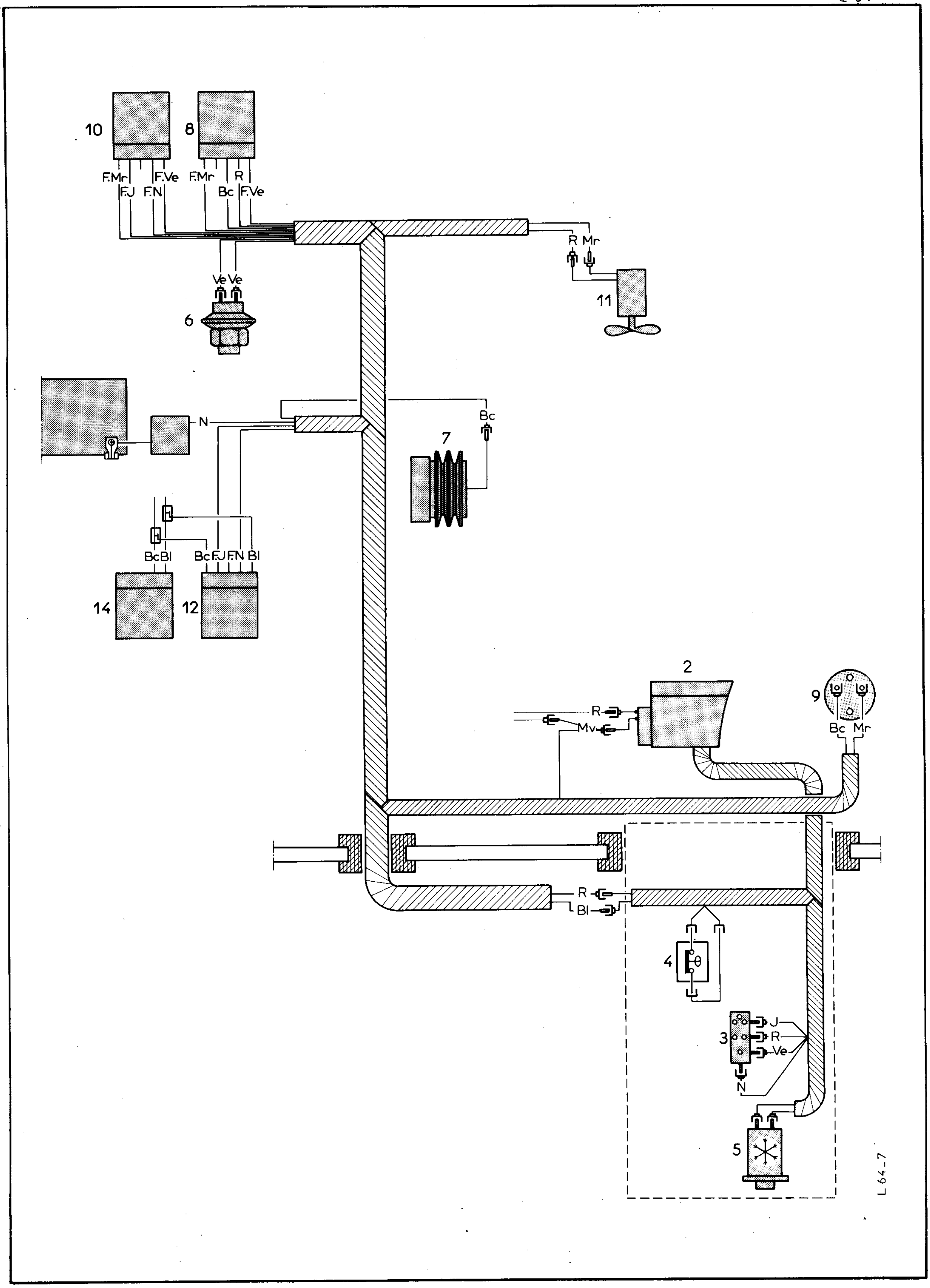
L.64-6



WIRING DIAGRAM FOR THE AIR-CONDITIONING SYSTEM

(7/1976 ——►)

L 64 7



ELECTRONIC FUEL INJECTION (5/1977 →)
TABLE OF FUSES (LHD)

Supply	Fuses		Circuits protected
	Rating	Colour	
« + » Battery terminal	16 Amps	Green (F2)	Lighting for glove-box, bonnet and boot Centre and rear interior lamps Accessory terminal Anti-theft switch → Front L.H. mirror → Flasher unit, and handbrake warning lamp → Water temperature gauge → Cigar lighter → Reversing lamps → Heated rear window, and warning lamp
	16 Amps	Red (F3)	Anti-theft switch → Instrument panel fuel gauge and low fuel warning lamp Lighting for speedo and tacho (Rheostat) Battery meter (thermal voltmeter), tachometer, warning lamp for brake pad wear, coolant and engine oil temp., engine oil and hydr. fluid pressure, direction indicators (flashing) → Direction indicators → Voltage regulator → Windscreen wiper and washers → Horn → Winding for relays for heater unit, front window-winders and horn compressor Hazard warning lamps Stoplamps Clock
Lighting switch	10 Amps	Yellow (F1)	Winding for relays, for front and rear foglamps Front and rear, L.H. and R.H. sidelamps, + warning lamp Number plate lamps Lighting for instrument panel (battery meter, clock, odo-meters) Lighting for ignition switch, cigar-lighter, ashtray, water temp. gauge and heater controls. Map-reading lamp and fuse (5 Amps)
	10 Amps	Blue (F 4)	Rear foglamps and warning lamp
Relay for window-winder	16 Amps	White (F 6)	Front L.H. and R.H. window-winder motors
Relay for air-conditioning	16 Amps	Mauve (F 5)	Air blower Air-conditioning, compressor clutch, winding for L.H. electric fan relay, idling speed control electro-valve (according to model)

Alternator 80 Amps Incorporated fuse (on printed circuit)

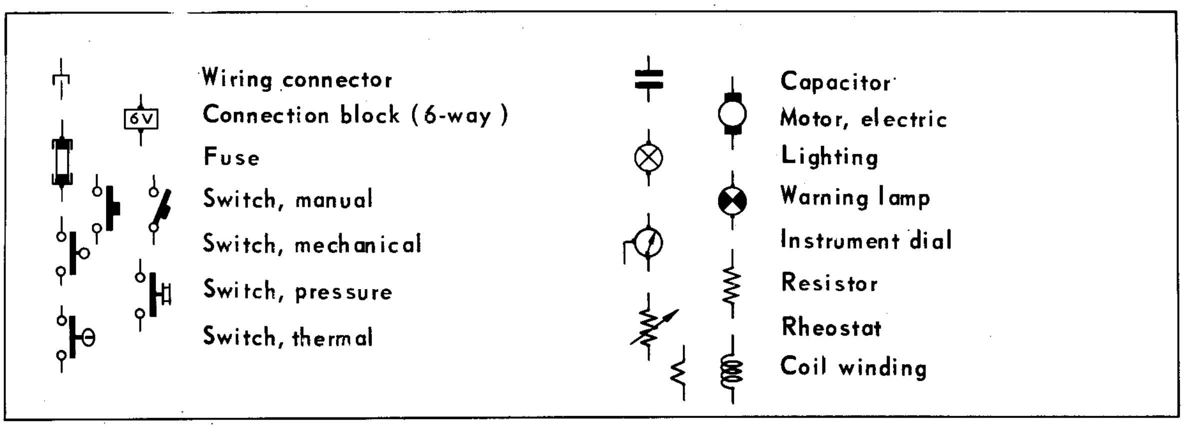
Components not protected : Starter, and horn compressor

- *on anti-theft switch* : ignition circuit, E.C.U. and injector relay, petrol pump, electric fan relays and electric fans
- *on lighting switch* : main and dipped beam headlamps and warning lamps, front foglamps, winding for rear foglamp cut-out relay.

TABLE OF BULBS

Use	Quantity	Base	Type	Voltage	Power	French standard Ref. No.
Dipped and main beam	2	P. 43 t 38	Yellow (for France) H 4	12 V	60/55 W	
Front foglamps	2	× 511	H 2	12 V	55 W	R. 136-17
Direction indicators Rear foglamps Reversing lamps	4 2 2	BA. 15 s/19	Pear-shaped P 25/1	12 V	21 W	R. 136-12
Rear sidelamps and stoplamps	2	BA. 15 d	P 25/2	12 V	21/5 W	R. 136-12
Front sidelamps Number plate lamps Under bonnet lighting	2 2 1	BA. 15 s/19		12 V	5 W	R. 136-13
Interior lamps - centre - rear	3 2	Festoon		12 V	7 W	R. 136-05
Boot lamp Map-reading lamp	1 1	Festoon		12 V	5 W	R. 136-14
Lighting f. speedo & tacho. Lighting for anti-theft switch	2 1	BA. 9 s	T 8/4	14 V	5 W	
Lighting for glove-box Lighting for coolant temp. gauge	1 1	BA. 9 s	T 8/2	12 V	2 W	R. 136-34
Instrument panel warning lamps Lighting for cigar-lighter Lighting for ashtray Lighting for oil gauge	16 1 1 1	Wedge base	dia 5	12 V	1.2 W	
Lighting for instrument panel	2	Wedge base	dia. 10	12 V	2 W	
Lighting for odometers	1			24 V	3 W	

KEY TO CIRCUIT DIAGRAM SYMBOLS



DESCRIPTION OF COMPONENTS

Ident. mark	Description and Location	
1	Front R.H. sidelamp	112
	Front R.H. direction indicator	66
2	Front R.H. foglamp	107
3	R.H. headlamp main beam	101
	dipped beam	102
4	R.H. electric fan	35
5	L.H. electric fan (air-conditioning)	37
6	Thermal switch for electric fan	34
7	Horn	55
8	L.H. headlamp main beam	99
	dipped beam	100
9	Front L.H. foglamp	106
10	Front L.H. sidelamp	111
	Front L.H. direction indicator	63
11	Air-flow sensor	13 to 18
12	Coil and ignition module	28 to 30
13	Butterfly spindle switch	10 to 12
14	Starter	3 to 5
15	Cold start injector	11
16	Alternator	5
17	Compressor clutch (air-conditioning)	40
18	Pressure switch	40
19	Double relay for injection control	7 to 27
20	L.H. electric fan relay (air-conditioning)	38 - 39
21	Rear foglamp cut-out relay (main beam)	104 to 105
22	Front foglamp relay	106 - 107
23	Supply relay for rear foglamps	106 to 108
24	« Diagnostic » socket	33
25	Connector for HT sensor	32
26	Water temp. sensor (Injection)	25
27	Ignition sensor on No. 4 cylinder	32
28	Injector for No. 4 cylinder	23
29	Injector for No. 3 cylinder	22
30	Injector for No. 2 cylinder	21
31	Injector for No. 1 cylinder	20
32	Thermal switch	10-11
33	Supplementary air control	8
34	T.D.C. sensor	31
35	Magnetically triggered distributor	29 to 32
36	Compressor for air horns	53
37	Voltage regulator	5-6
38	Battery	1
39	Under-bonnet lamp	81
40	Engine oil pressure switch	73
41	Coolant temperature switch	77

Ident. mark	Description and Location	
42	Engine oil temperature switch	71
43	Water temperature sensor	92
44	Reversing lamp switch	95
45	Horn compressor relay	53-54
46	Window-winder relay	44-45
47	Heating and air-cond. relay	42-43
48	Relay for R.H. electric fan	34-35
49	Relay for L.H. electric fan (air-cond.)	36-37
50	R.H. brake unit	80-81
51	Windscreen washer pump	56
52	Electro-valve for fast idle (air-cond.)	41
53	Windscreen wiper motor	57 to 60
54	Air blower	42
55	Regulating thermal switch (Air-cond.)	40
56	Hydraulic press. switch	75
57	Injector resistor housing	20 to 23
58	Fuse box	42-45-58-90-105-111
59	Hydraulic fluid level switch	76
60	L.H. brake unit	78-79
61	Front R.H. door lighting switch	88
62	Glove-box lighting	90
63	Map-reading lamp and fuse	110
64	Cigar-lighter and lighting	94-112
65	Ashtray lighting	113
66	Radio (equip. locat. + aerial)	83 to 85
67	Handbrake flasher unit housing	97-98
68	Electronic control unit (injection)	8 to 25
69	Lighting for pneumatic oil-gauge	72
70	Anti-theft switch	4-28-58-93
71	Stoplamp switch	52
72	Front L.H. door lighting switch	87
73	Rear view mirror	92 to 95
74	Rear view mirror switch	92 to 95
75	Front L.H. window winder motor	45-46
76	Front R.H. window-winder motor	49-50
77	Speaker (in front R.H. door)	85
78	Centre interior lamp	87 to 89
79	R.H. window-winder switch	49 to 51
80	Interior lamp switch	88
81	Air-blower switch and lighting	42-112-113
82	Air-conditioning switch	40
83	L.H. window-winder switch	45-47
85	Handbrake contact	98
86	Water temp. gauge + lighting	92-110
87	Windscreen wiper timer	59 to 61
88	R.H. switch unit for lighting	
	- Speedo. + tacho. lighting rheostat	79
	- General lighting	99-103
	- Rear foglamps	105

Supplement N° 1 to Manual 818-1 (ADD)

DESCRIPTION OF COMPONENTS

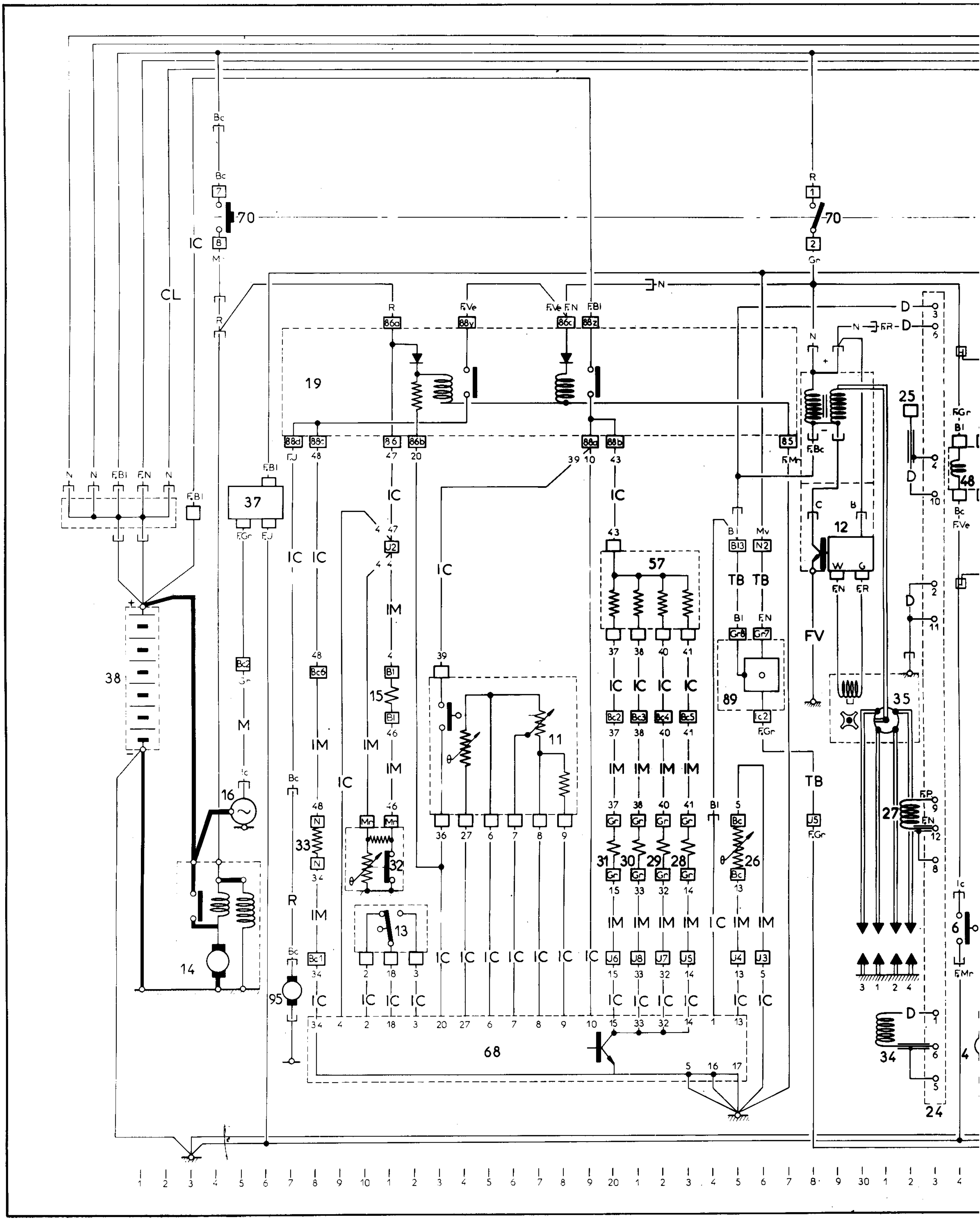
Ident. mark	Description and Location	Ident. mark	Description and Location
89	Instrument panel	91	Ignition switch lighting 110
	- Speedo and tacho lighting 79	92	Flasher unit 68-69
	- Tachometer 25-26	93	Speaker (in L.H. front door) 84
	- Battery meter and lighting 81-107	94	Rear R.H. door lighting switch 90
	- Fuel gauge 83	95	Fuel pump 7
	- Lighting for odometers 108	96	Rear R.H. interior lamp 90
	- Clock and lighting 70-109	97	Fuel gauge rheostat 82-83
	Warning lamps for	98	Boot lamp 86
	- Heated rear window 97	99	Heated rear window 96
	- Dipped beam 101	100	Rear L.H. interior lamp 89
	- Front brake pad wear 80	101	Rear L.H. door lighting switch 89
	- Low fuel 82	102	Rear R.H. lamp cluster
	- Engine oil temperature 71		- Foglamp 105
	- Coolant temperature 77		- Reversing lamp 95
	- Engine oil pressure 73		- Direction indicator 65
	- Emergency STOP (and test button)74-76-78		- Stoplamp 51
	- Hydraulic fluid pressure 75		- Sidelamp 105
	- Hazard warning lamps 63	103	R.H. number plate lamp 114
	- Sidelamps 106	104	L.H. number plate lamp 113
	- Direction indicators 69	105	Boot lamp switch 86
	- Main beam 99	106	Rear L.H. lamp cluster
	- Handbrake 98		- Foglamp 104
	- Rear foglamps 104		- Reversing lamp 94
90	L.H. switch unit		- Direction indicator 64
	- Horns 54-55		- Stoplamp 52
	- Direction indicators and hazard warning lamps .... 63 to 67		- Sidelamp 112
	- Windscreen wiper and washers .... 56 to 59		
	- Front foglamps 111		

DESCRIPTION OF WIRING HARNESSES

Id. Mark	Description	Id. Mark	Description
AV	Front wiring harness No mark on circuit diagram	FV	Flying lead
R	Rear	IC	Injection, on body- shell
C	Boot	IM	Injection, on engine
CL	Air-conditioning (optional)	M	Engine
CO	Compressed air horn	PC	Boot lid
D	« Diagnostic »	TB	Instrument panel
		UF	Front brake pad wear (2 harnesses)

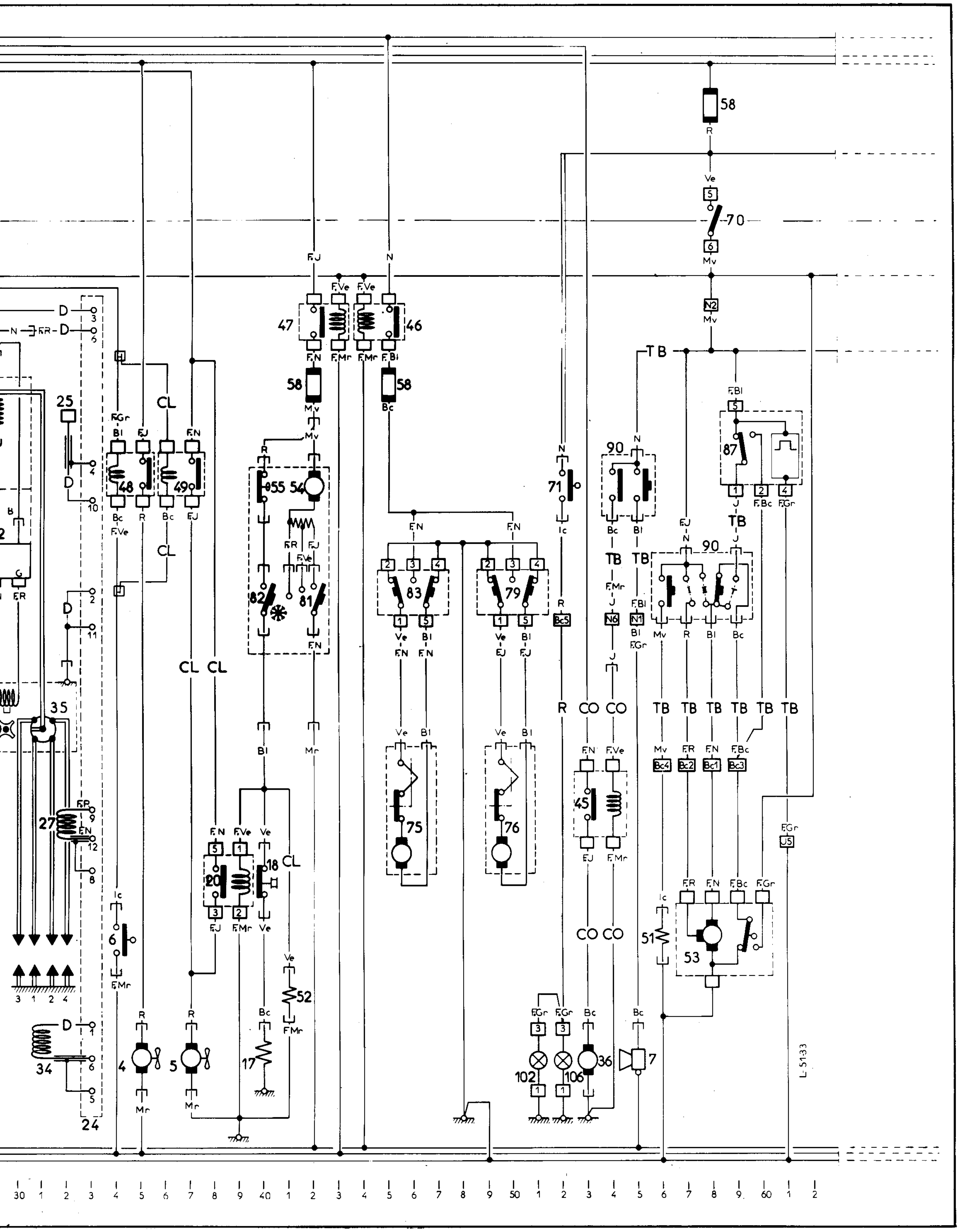
P.T.O.

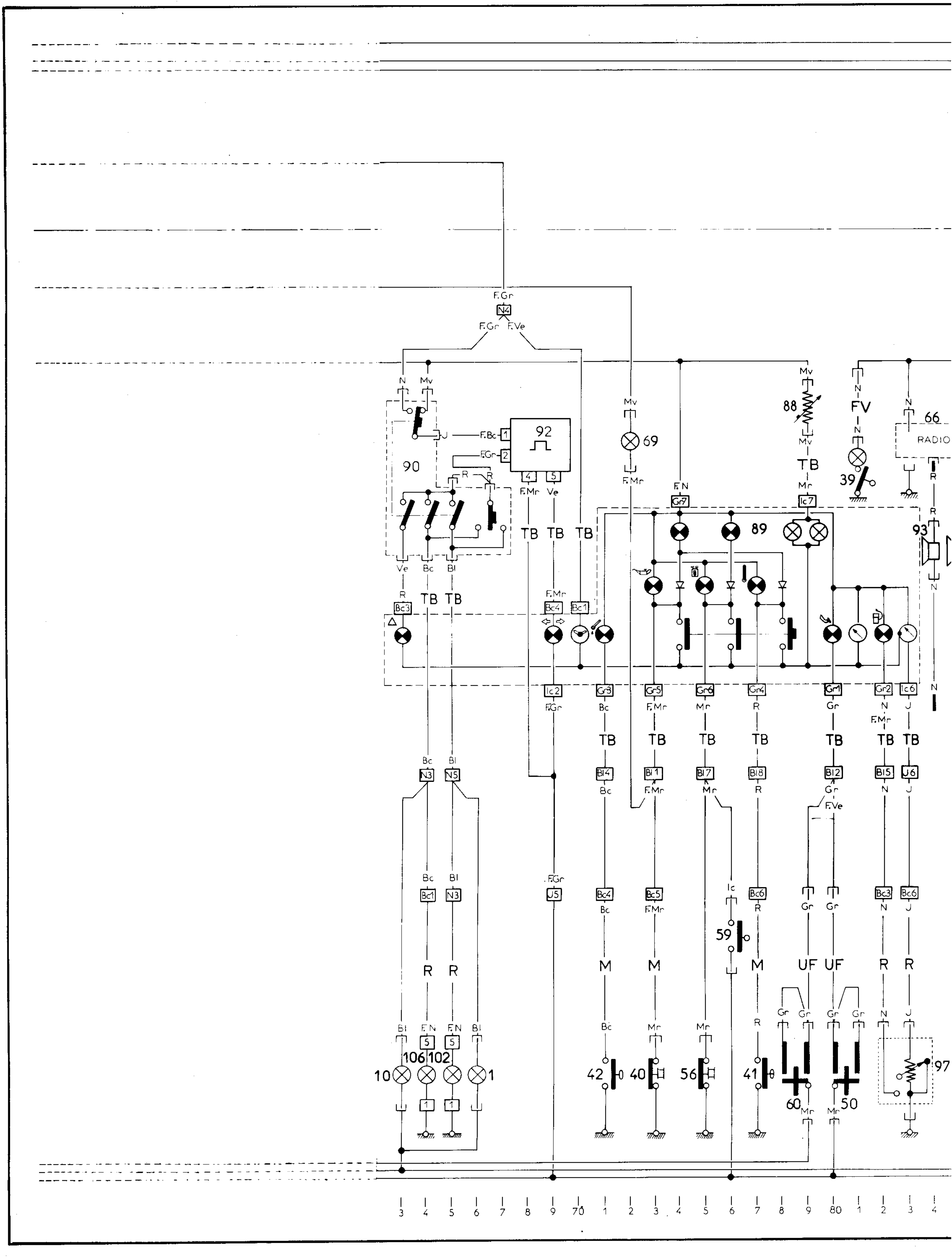
L.51-33



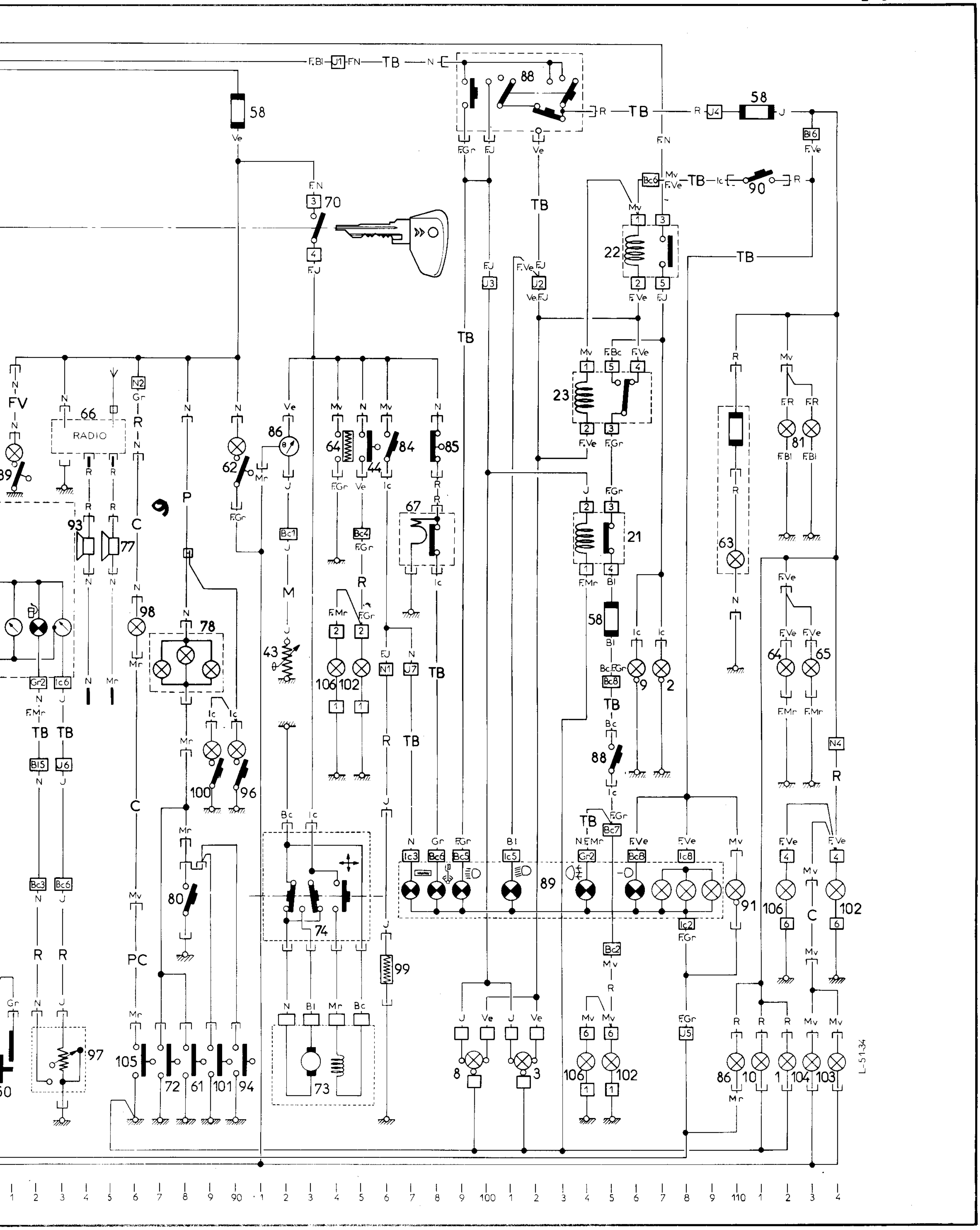
CUIT DIAGRAM

1977 ——►)



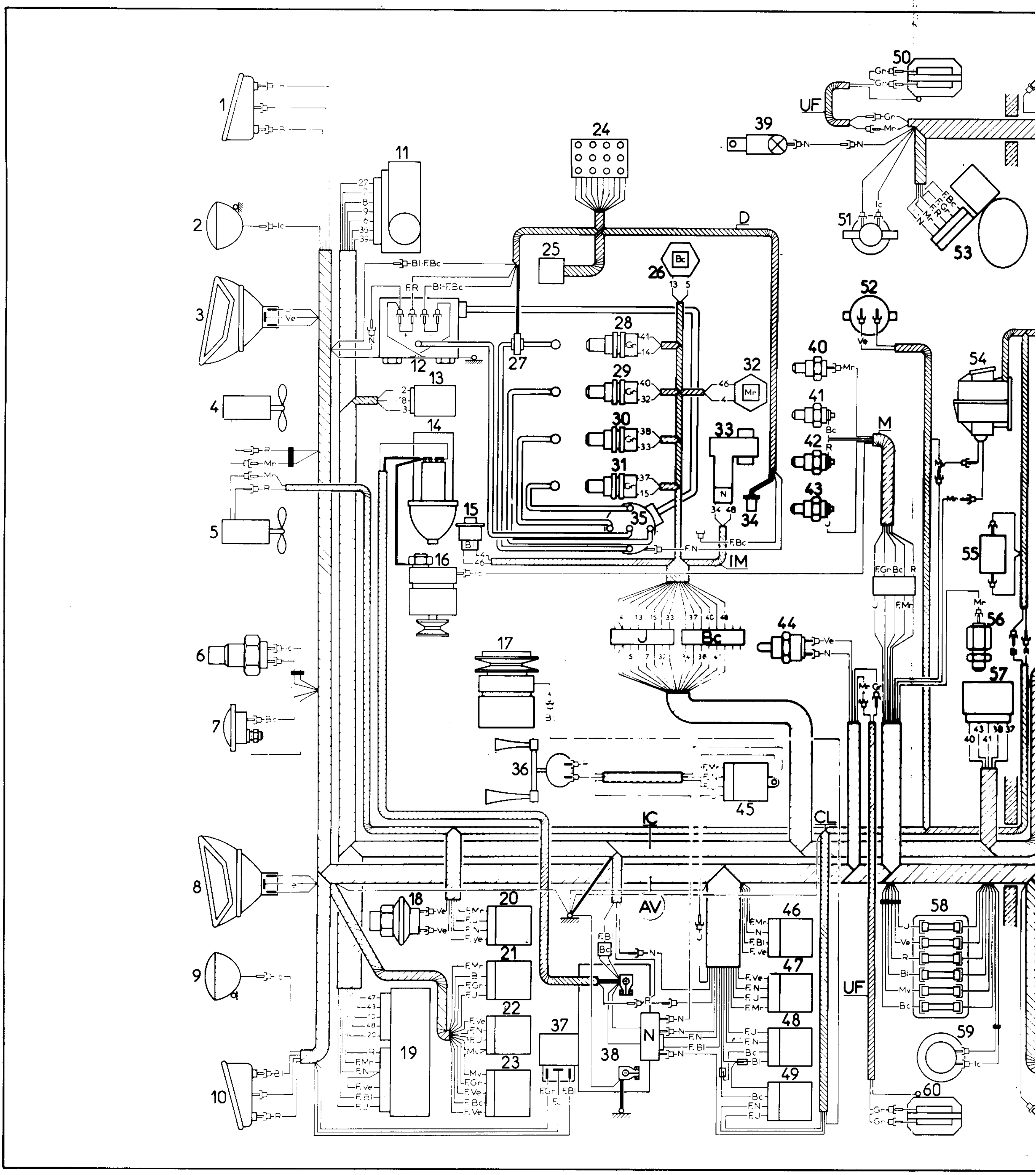

F.Gr
N4
F.Gr F.Ve
92
90
69
88
FV
66
RADIO
39
89
93
59
106
102
10
1
42
40
56
41
60
50
97
3 4 5 6 7 8 9 70 1 2 3 4 5 6 7 8 9 80 1 2 3 4

(5/ 1977 ⟶)



WIRING DIAGRAM

(9/1977 →)



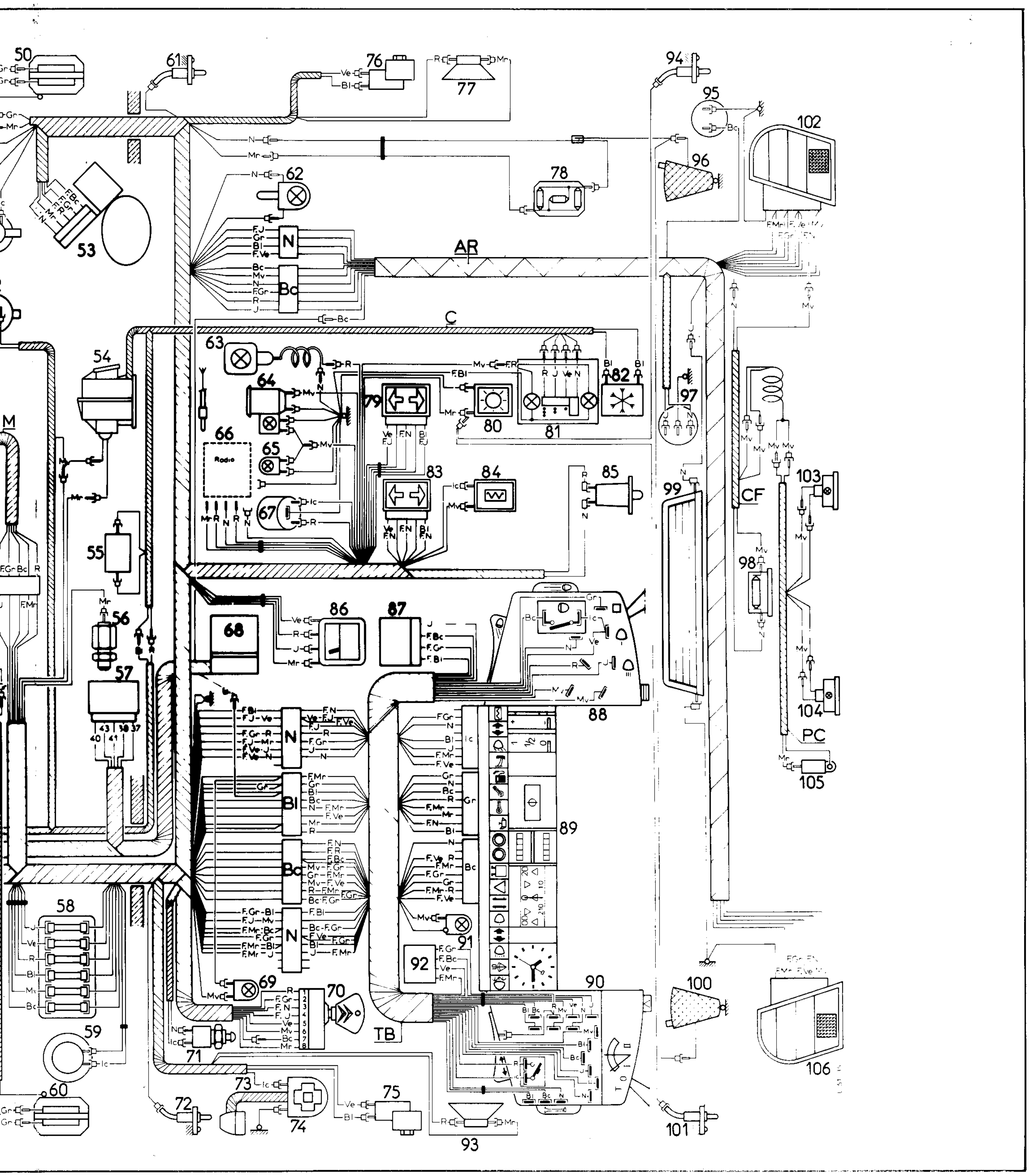
P.T.O.

CIRCUIT DIAGRAM

NG DIAGRAM

1977 ⟶)

L.51-35



I. ALTERNATORS - VOLTAGE REGULATORS

VEHICLES	ALTERNATORS	VOLTAGE REGULATORS
All vehicles except fitted with optional towing equipment *9/1974 ⟶ 9/1975*	*Three-phase 12 V - 53 Amps* DUCELLIER **7584 B** MOTOROLA **510-2** *(6/75 ⟶ 9/75)*	*12 V* PARIS RHONE AYC 2114 ⟶ *11/1975* SEV-MARCHAL F.14 V 727 171 02 DUCELLIER 8379 A *9/1975* ⟶ PARIS-RHONE AYC 2117 *11/1975* ⟶
All vehicles (optional towing equipment) 1/75 ⟶ 9/75	*Three-phase 12 V - 72 Amps* PARIS-RHONE **A 14 R 3**	
All vehicles 9/1975 ⟶ except Ambulances and E.F.I.	*Three-phase 12 V - 72 Amps* PARIS-RHONE **A 14 R 3** MOTOROLA **510-4**	
E.F.I. (Electronic Fuel Injection) and Ambulance Vehicles	*Three-phase 12 V - 80 Amps* PARIS-RHONE **A 14 R 11**	

CHARACTERISTICS	**7584 B** **510-2**	**A 14 R 3**	**510-4**	**A 14 R 11**
Voltage	⟵ 14 V ⟶			
Direction of rotation *(seen from drive end)*	⟵ Anti-clockwise ⟶			
Maximum power *(from 8000 alternator rpm)*	740 W	1050 W	1050 W	1120 W
Maximum power consumption	3400 W	3600 W	3600 W	4480 W
Cut-in speed, at 14 V	⟵ 1100 Alternator rpm ⟶			
Resistance of inductor	4.5 ± 0.3 Ω	4.5 ± 0.3 Ω	4 ± 0.2 Ω	4 ± 0.2 Ω
Nominal length of brushes	14.5 mm	14.5 mm	9.4 mm	14.5 mm
Minimum length of brushes after wear	6 mm	6 mm	4 mm	6 mm
Strength of strings on new brushes	2 N (200 g)	2.5 N (250 g)	1.77 N (177 g)	2.5 N (250 g)
Tightening torque for pulley nut	4 daNm (29 ft.lb)	4.5 da Nm (32 1/2 ft.lb)	4 daNm (29 ft.lb)	4.5 daNm (32 1/2 ft.lb)
Tightening torque for assembly screws	0.7 daNm (5 ft.lb)	0.6 da Nm (4 1/2 ft.lb)	0.5 daNm (3 1/2 ft.lb)	0.6 daNm (4 1/2 ft.lb)
Adjustment of pulley alignment	⟵ 1 mm washers ⟶			
Ratio of engine to alternator speed	⟵ 2.18/1 ⟶			

Supplement N° 1 to Manual 818-1 (CORR)

II. BATTERIES.

1. *All CX 2000 vehicles (9/1974 ⟶ 6/1975) and all CX 2200 vehicles (1/1975 ⟶ 1/1976)*

12 V - 50 Ah/250 Amps, L 2-type battery (except for the following countries) :
West Germany, Austria, Denmark, Greece, Norway, Sweden, Switzerland, Poland and Yugoslavia :

FULMEN	Ref. No. AS 310 SD
STECO	Ref. No. 72 514
TUDOR	Ref. No. 725 798

2. *All CX 2000 vehicles (6/1975 ⟶)*
and CX 2200 vehicles to temperate climates : Belgium, France, U.K., Ireland, Jamaica, Japan, Holland, Reunion, Italy (1976 ⟶)

12 V - 45 Ah/225 Amps, L 2-type battery.

3. *All vehicles for West Germany, Austria, Greece, Switzerland, Poland and Yugoslavia*

12 V - 60 Ah/300 Amps, L 3-type battery

FULMEN AS 311 M

4. *All vehicles, cold climates : Norway, Sweden, Denmark and Finland*
Air-conditioning option, Petrol TAXI-type, Ambulance

12 V - 70 Ah/350 Amps, L 3-type battery

FULMEN AS 311 S

5. *All CX 2400 vehicles, except paras. 3 and 4 :*

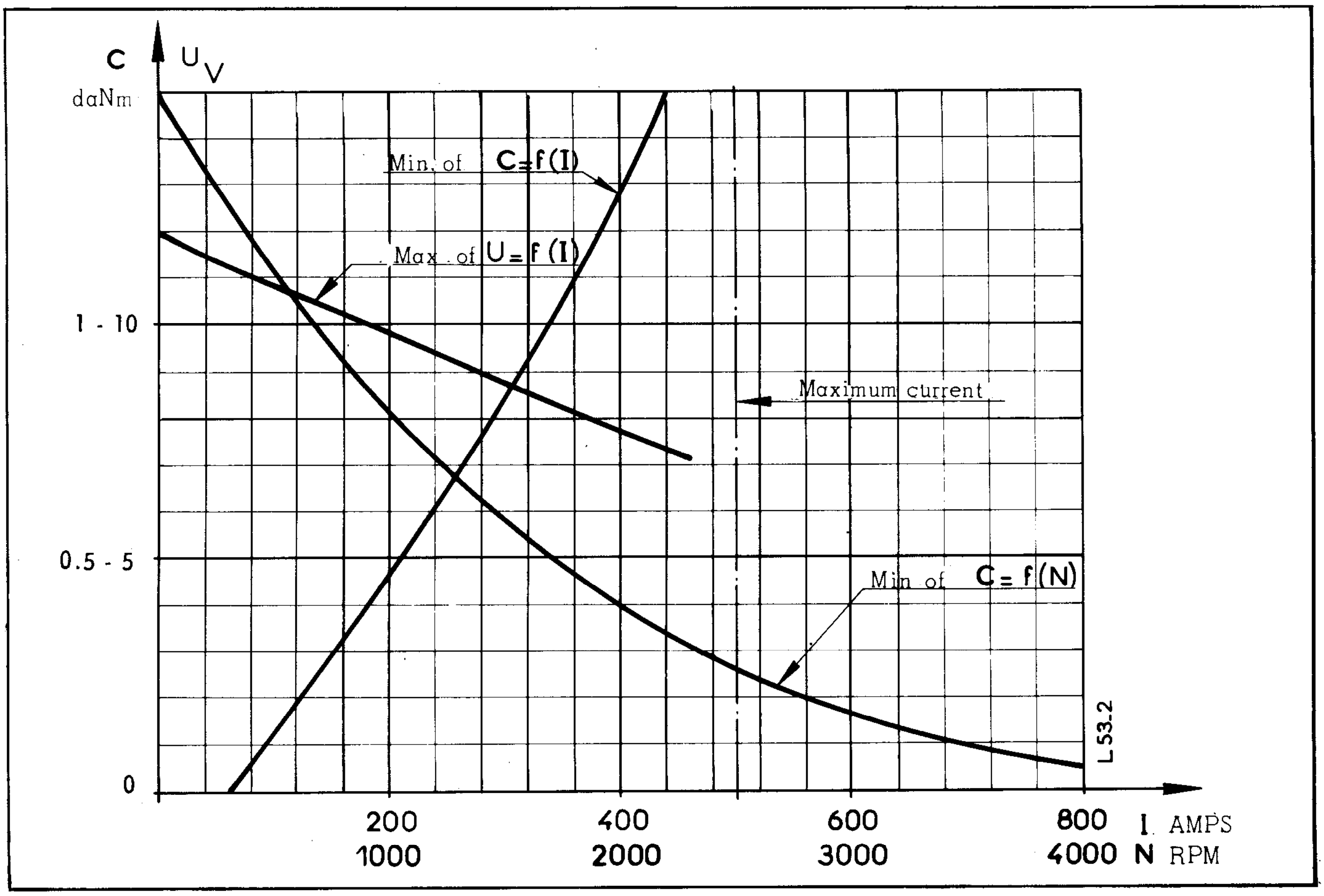
12 V - 55 Ah/275 Amps, L 2-type battery

III. STARTER MOTORS.

ALL ENGINES

DUCELLIER 6236 AND PARIS-RHONE D 9 E 16 STARTERS

CHARACTERISTIC CURVES



Supplement N° 1 to Manual 818-1 (CORR)

CHECKING.

ON VEHICLE : **Ensure that battery is fully charged, and measure the following :**

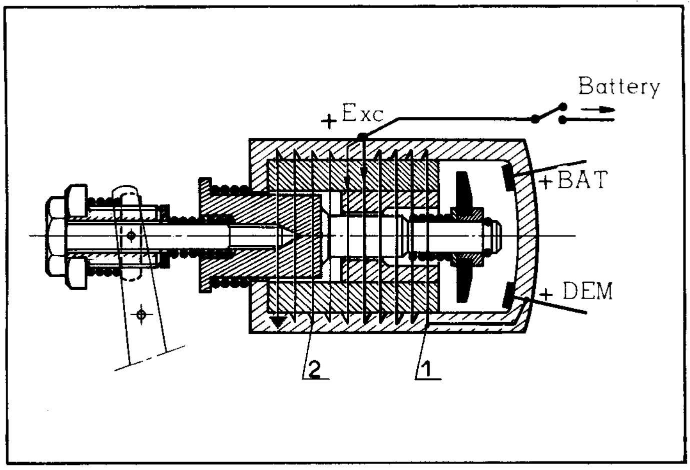
a) Current consumed (pinion locked) .... 440 A (6236) and 450 A (D 9 E 16)
b) Current consumed when starting (at 20° C) .... 150 to 170 A
c) Current consumed with no load (starter removed) .... 50 A maximum

BENCH TEST : **Use a 12 V - 200/40 Ah fully charged battery.**

MEASUREMENTS	DUCELLIER 6236	PARIS-RHONE D 9 E 16
- Average torque at 1000 rpm	0.85 daNm (6.1 ft.lb)	0.83 daNm (6 ft.lb)
Corresponding current	300 A	270 A
- Torque locked	0.15 daNm (1.08 ft.lb)	0.155 daNm (1.12 ft.lb)
Corresponding current	440 A	450 A
Voltage	7.4 V	7 V
- Maximum power	965 W	920 W
Voltage	9.4 V	9 V
Current	240 A	215 A
Torque	0.6 daNm (4.3 ft.lb)	0.6 daNm (4.3 ft.lb)

ALL ENGINES

DUCELLIER 6236 STARTER MOTOR



Characteristics :

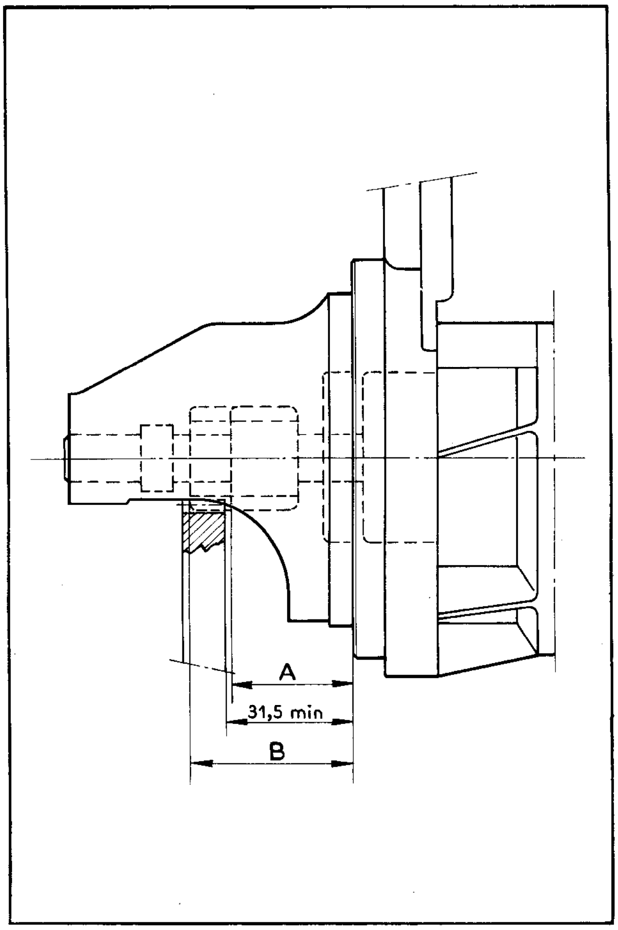
- 12 volt solenoid starter with positive control, pre-engaged pinion type.
- Maximum power .... 965 Watts
- Direction of rotation (seen from drive end) .... Clockwise
- Number of contacts 4
- Winding .... Series
- Engagement .... Free-wheel
- Positive control .... By solenoid
- Tightening torque of assembly screws : 0.7 daNm (5 ft.lb)
- Front bearing : internal ⌀ .... 12 mm
- Rear bearing : internal ⌀ .... 12 mm
- Self-lubricating bearings (no greasing).

Rotor :

- Diameter of armature .... $56.8\,^{0}_{-0.11}$ mm
- Clearance .... $0.5\,^{+0.17}_{-0.05}$ mm
- Nominal diameter of commutator .... 32.25 mm
- Minimum diameter of commutator after rectifying .... 30.25 mm
- End float (flexible washer) .... 0.5 mm

Brushes :

- Positive brush reference 680 568
- Negative brush reference 680 567
- Maximum force of springs on new brushes .... 1.5 daNm (11 ft.lb)
  Nominal length ....15 mm
- Minimum length after wear .... 8 mm

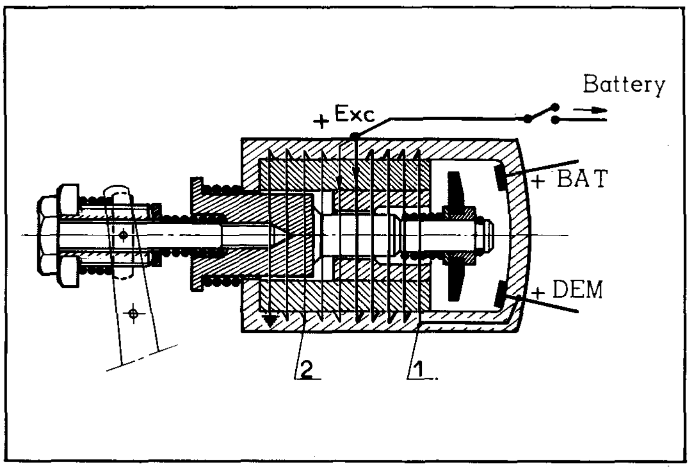


Solenoid :

- Reference 680 592
- Resistance of pull-in coil ....0.37 ± 0.02 Ω
  (Heavy-gauge wire winding connected in series with field coils)
- Resistance of hold-in coil ....1.08 ± 0.03 Ω
  (Light-gauge wire winding connected in parallel)
- Starter pinion travel adjustment (measured in relation to fixing clamp) :
  Solenoid not energized : « Free »
  position A = 30.5 mm maxi
  Solenoid energized : « Engaged »
  position B = 43.7 mm maxi

ALL ENGINES

PARIS-RHONE D 9 E 16 STARTER MOTOR



Specification :

- 12 volt solenoid starter with positive control, pre-engaged pinion type.
- Maximum power .... 920 watts
- Direction of rotation (seen from drive end) .... clockwise
- Number of contacts 4
- Energizing winding .... series
- Engagement .... free-wheel
- Positive control .... by solenoid
- Torque on assembly screws ...... 1.1 daNm (8 ft.lb)
- Front bearing : internal ϕ .... 12 mm
- Rear bearing : internal ϕ .... 12 mm
- Self-lubrication bearings (no greasing).

Rotor :

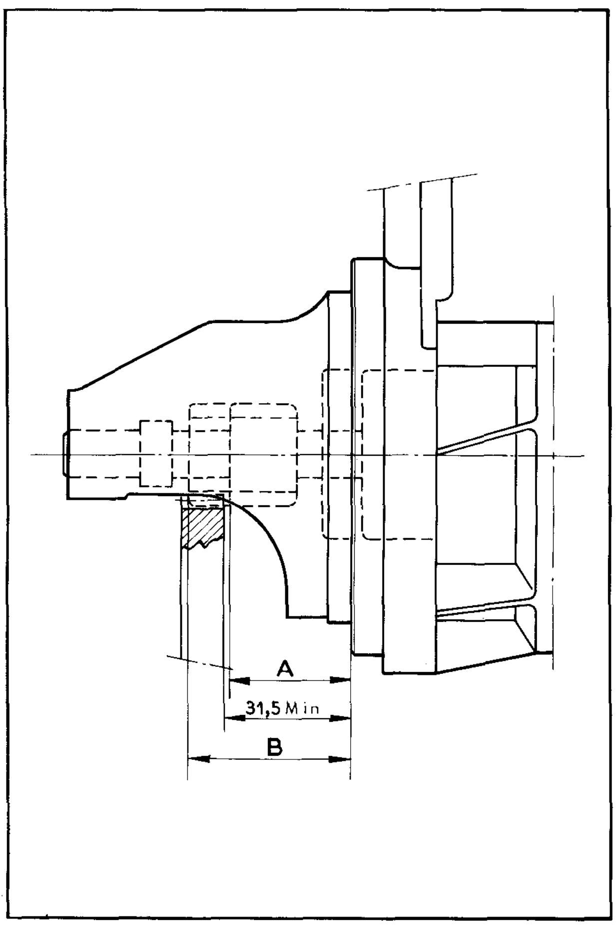
- Diameter of armature .... $55.9^{\ 0}_{-0.1}$ mm
- Clearance .... $0.5^{+0.17}_{\ 0.05}$ mm
- Nominal diameter of commutator .... 36.5 mm
- Diameter after rectifying .... 35.5 mm
- End-float (flexible washer) .... 2.2 mm

Brushes (52 R) :

- Positive brush, reference .... 92 550 N
- Negative brush, reference .... 92 550 N
- Maximum force of springs on new brushes .... 1.5 daNm (11 ft.lb)
- Nominal length .... 14 mm
- Minimum length after wear .... 8 mm

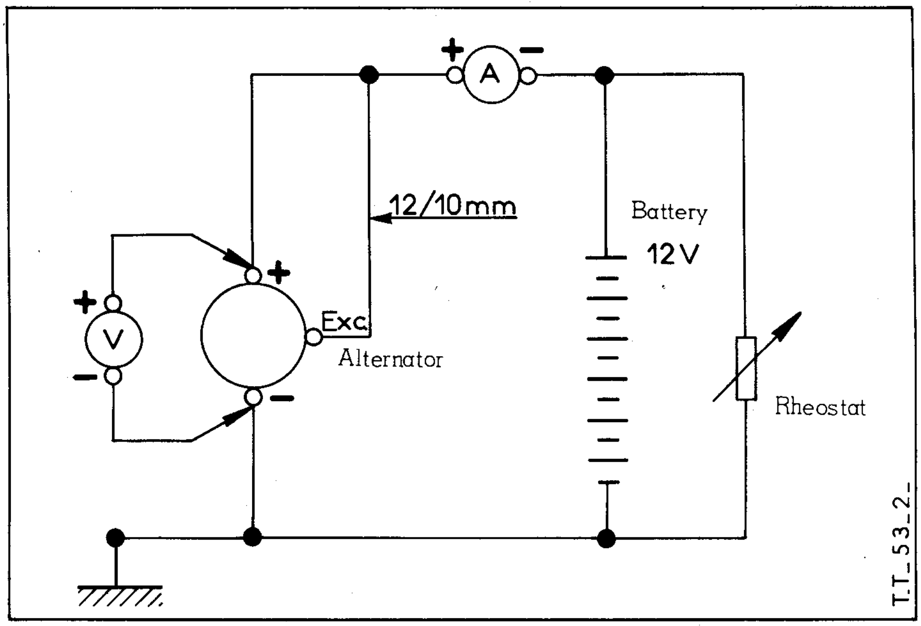
Solenoid C E D 509 :

- Reference .... 95 631 U
- Resistance of pull-in coil (1) .... 0.21 Ω
  (Heavy-gauge wire winding connected in series with field coils)
- Resistance of hold-in coil (2)........................ 1.3 Ω
  (Light-gauge wire winding connected in parallel)
- Starter pinion travel adjustment (measured in relation to fixing clamp) :
  Solenoid not energized : « Free »
  position A = 30.5 mm maxi
  Solenoid energized : « Engaged »
  position B = 43.7 mm



Supplement N° 1 to Manual 818-1 (CORR)

I. CHECKING THE OUTPUT OF THE ALTERNATORS



Supplement N° 1 to Manual 818-1 (CORR)

Checking the alternator output must be carried out with a fully charged battery.

Connect up as per diagram, using **voltmeter V, ammeter A and rheostat,** or, better still, using a combined « **voltmeter/ammeter/rheostat** ».

In order to measure the output of the alternator, progressively increase the engine speed, and actuate the rheostat to maintain the voltage at 14 V.

1. 12 V 80 Amp alternator : PARIS-RHONE : A 14 R 11

Cut-in speed under voltage of 14 V : **1100 rpm** (alternator speed)

Output, under voltage of 14 V :
40 Amps at 1500 rpm (alternator), **690 rpm** (engine)
69 Amps at 3000 rpm (alternator), **1375 rpm** (engine)
78 Amps at 6000 rpm (alternator), **2750 rpm** (engine)
80 Amps at 8000 rpm (alternator), **3670 rpm** (engine)

2. 12 V 53 Amp alternator : DUCELLIER 7584 and MOTOROLA 510-2

Cut-in speed under voltage of 14 V : **1100 rpm** (alternator speed)

Output, under voltage of 14 V :
21 Amps at 1480 rpm (alternator), **680 rpm** (engine)
46 Amps at 3300 rpm (alternator), **1510 rpm** (engine)
51 Amps at 6000 rpm (alternator), **2750 rpm** (engine)
53 Amps at 8000 rpm (alternator), **3670 rpm** (engine)

3. 12 V 72 Amp alternator : PARIS-RHONE A 14 R 3, and MOTOROLA 510-4

Cut-in speed under voltage of 14 V : **1100 rpm** (alternator speed)

Output, under voltage of 14 V :
33 Amps at 1480 rpm (alternator), **680 rpm** (engine)
62 Amps at 3300 rpm (alternator), **1510 rpm** (engine)
70 Amps at 6000 rpm (alternator), **2750 rpm** (engine)
72 Amps at 8000 rpm (alternator), **3670 rpm** (engine)

If these figures are not obtained, check alternator belt, and its tension. If these are correct, recondition alternator.

II. CHECKING THE REGULATED TENSION OF THE REGULATORS

CHARACTERISTICS

- **Two-stage voltage regulator** : Ref : DUCELLIER 8379 A, PARIS-RHONE AYC 2114 and AYC 2117.
SEV-MARCHAL F. 14 V 72717102

These voltage regulators determine the intensity of the current in the alternator inductor in order to maintain a constant regulated voltage at the battery terminals.

CHECKING THE REGULATED VOLTAGE

Checking the regulated voltage must be carried out with a fully charged battery.

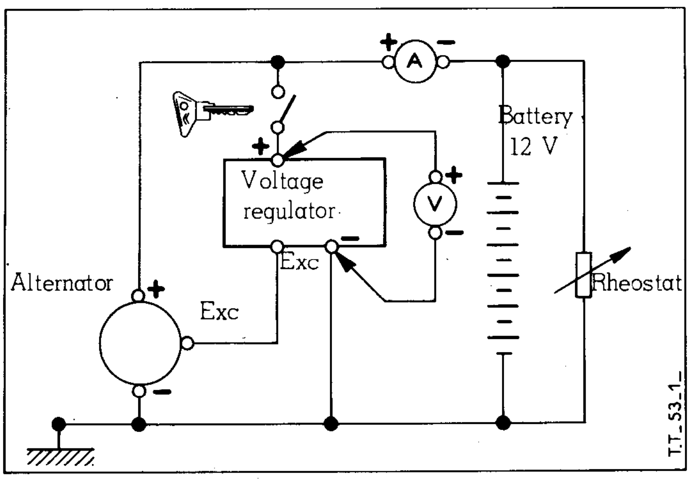
Connect up as per diagram below, using **a voltmeter V, an ammeter A and a rheostat,** or better still, using a combined « **voltmeter/ ammeter/ rheostat** ».

Start engine, and let it idle.

Switch off the ignition, and immediately switch it back on in **order to demagnetize** the voltage regulator.

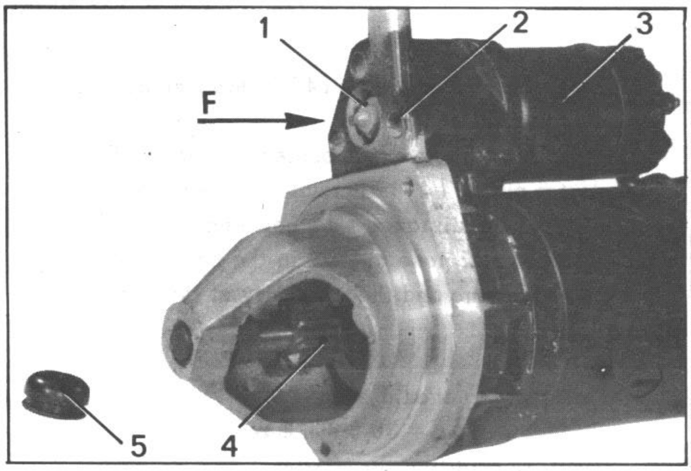
Accelerate the engine so as to reach the adjustment speed for the alternator. Actuate the rheostat, smoothly **without turning it back**, in order to increase the current supplied by the alternator, and read the corresponding voltage.

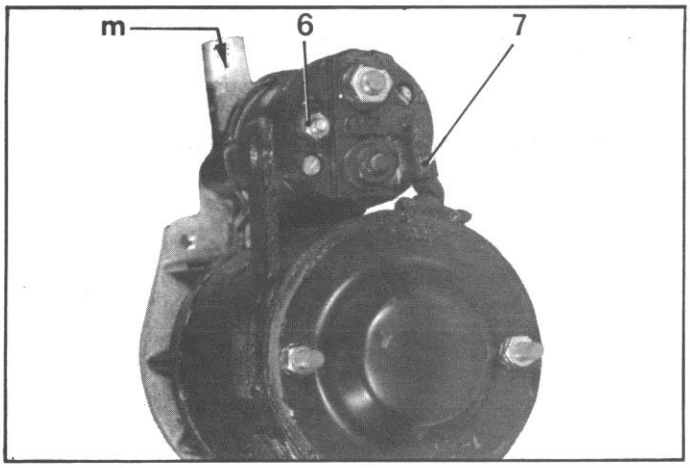
Take several measurements of regulated tension, and check that the values obtained are between 13 and 14.2 volts, taking into account the correction value due to the temperature. If the readings are not correct, replace voltage regulator.

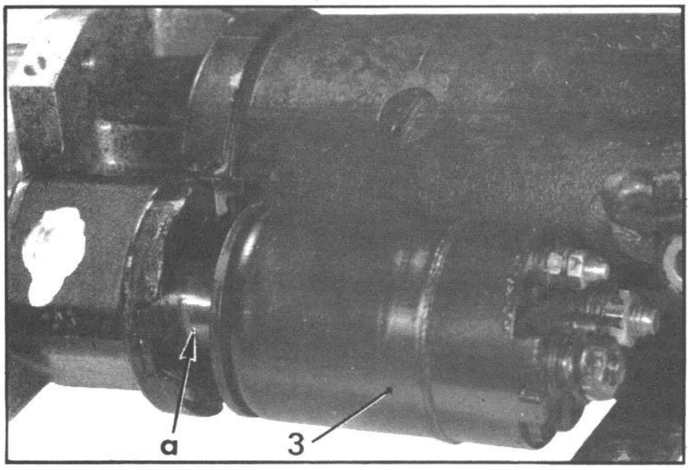


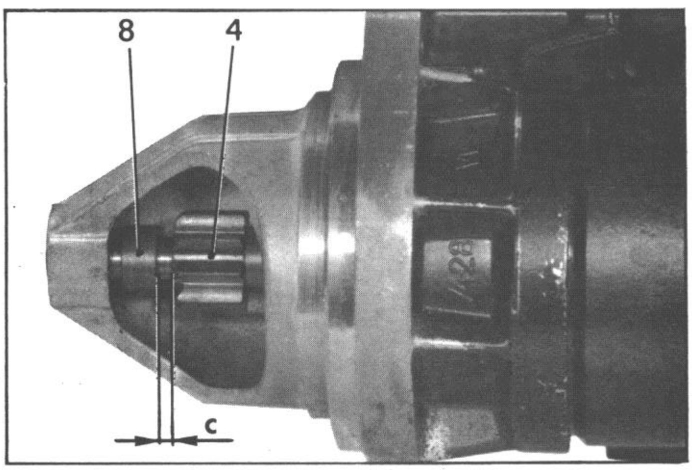
Voltage regulators :	DUCELLIER 8379 A PARIS-RHONE AYC 2114 - AYC 2117 SEV-MARCHAL F.14 V72717102
- Adjustment speed :	6000 rpm (alternator) 2750 rpm (engine)
- Regulated voltage adjustment :	between 13 and 14.2 V
- Correction :	*The voltage varies inversely to the temperature by an average of 0.15 volts for each 10° C.*

ALL ENGINES









III. ADJUSTMENT OF THE CONTROL PINION FOR A DUCELLIER 6236 A STARTER MOTOR.

(starter removed)

1. Remove plastic plug (5) from nut (1)

2. Disconnect inductor supply lead (7) from solenoid.

3. **Checking operation of starter pinion (4) in forward position :**
   There are two alternative methods :

   a) **Mechanically :**
   Push core of solenoid (3) inwards to fullest extent using a 10 mm box spanner against the shouldering of plastic nut (1) and in direction of *arrow F.*

   b) **Electrically :**
   This method has the advantage of checking solenoid hold-in winding.
   Connect the following :
   - positive terminal of a 12 volt battery to solenoid supply terminal (6),
   - negative terminal to an earthing point on the solenoid *(e.g. point « m »).*

   Using a 10 mm box spanner against the shouldering of plastic nut (1) as at F, push solenoid core until it is attracted by winding of solenoid (3).
   (In this case, the mechanical driving in of the solenoid core replaces the immediate action of the solenoid pull-in winding).

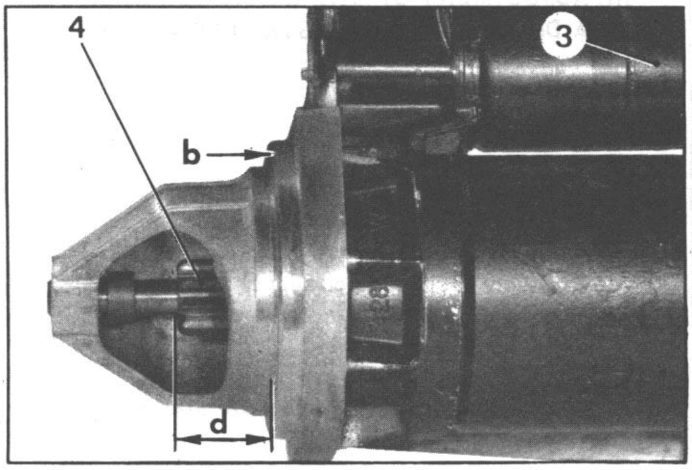
   c) With the starter pinion (4) in the forward position measure the distance « c » between the end of the pinion and the stop (8).
   This reading should equal :

   c = 0.5 to 1 mm

   If not reset adjusting nut (11).
   To do this :
   Remove the 3 fixing screws (2) of solenoid (3) and draw it backwards to its maximum extent in order to prevent the core from turning by means of a screwdriver set in notch « a ».
   Measure the distance « c » after fitting the solenoid (3), each time, using the 3 fixing screws (2).

   Disconnect battery from solenoid.

Supplement N° 1 to Manual 818-1 (CORR)



4. Checking starter pinion (4) in the free position :

With the solenoid (3) mounted on starter, the starter pinion (4) is normally in free position. Measure the distance « d » between the flange of the starter nose at « b » in the bore of the motor housing and the extremity of the starter pinion.

This reading should equal :

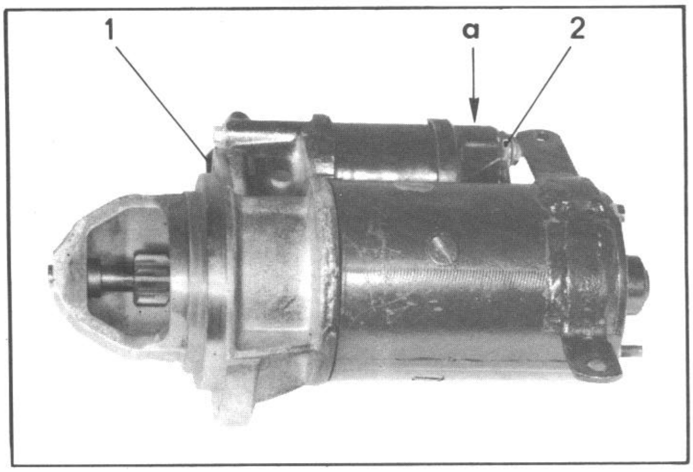
d = 30.5 mm maxi

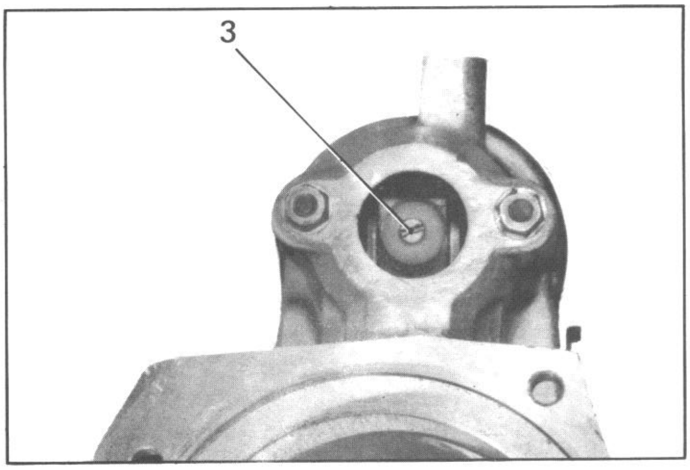
If not, recondition the starter.

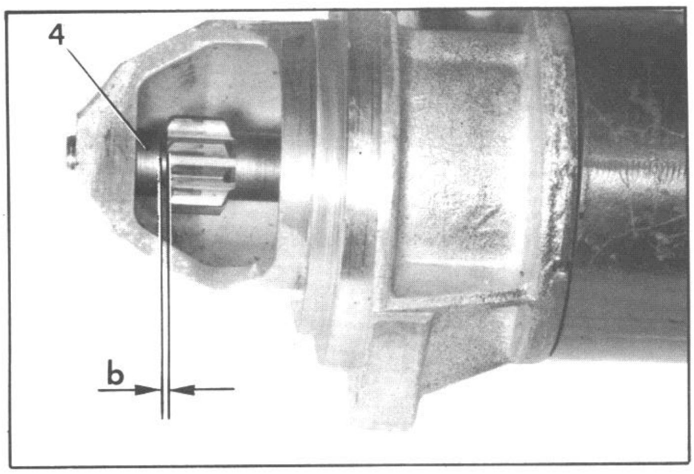
Connect the inductor supply wire (7).

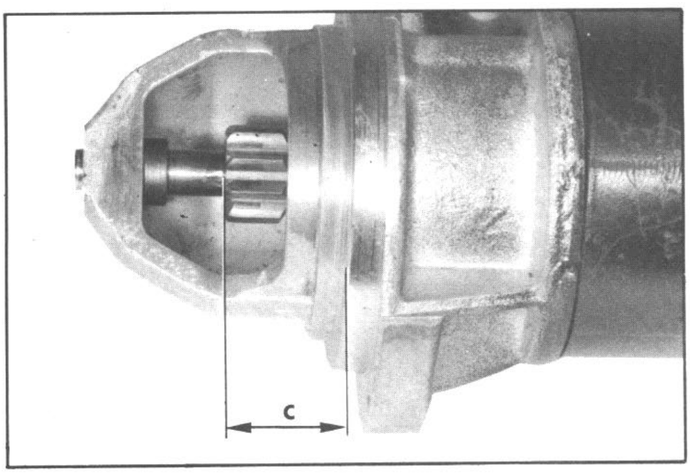
Refit plastic plug (5) (see page 3).

ALL ENGINES









IV. ADJUSTING THE PINION ON A PARIS-RHONE D 9 E 16 STARTER MOTOR.

(with starter removed)

1. Remove rubber plug (1).
Disconnect from terminal (2) supply lead to the inductors.

2. Checking the pinion in the forward position :

A. Energize the solenoid :

a) Connect the « + » terminal of a 12 V battery to energizing terminal of the solenoid, at « a ».

b) Connect the « - » terminal of the battery as follows :
- either to terminal (2) (energizing of the pull-in winding of the solenoid),
- or to the solenoid earth (energizing of the hold-in winding), which is preferable (smaller current) ; but in this case, the core of the solenoid has to be *pushed in manually* until it is *held in electrically*.

B. With the pinion in the forward position, *the gap* between the extremity of the pinion and the stop (4) must be :

« **b** » = **0.5 to 1 mm.**

If not, actuate screw (3) in order to obtain this condition.
Disconnect the battery from the solenoid.

3. Check the pinion in the free position.

Distance « c » must be 30.5 mm max.

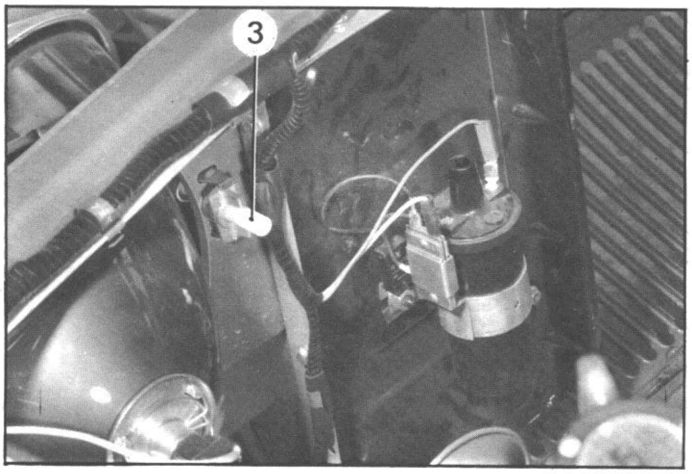
If not, recondition the starter motor.

4. Connect the inductor supply lead to terminal (2).
Fit rubber plug (1) onto the solenoid.

Supplement N° 1 to Manual 818-1 (ADD)

ADJUSTING THE HEADLAMPS USING A « REGLOSCOPE » OR « REGLOLUX » TYPE APPARATUS

13634



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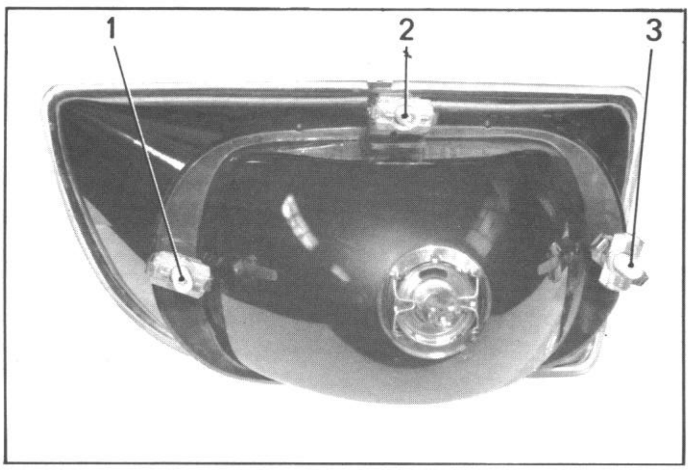

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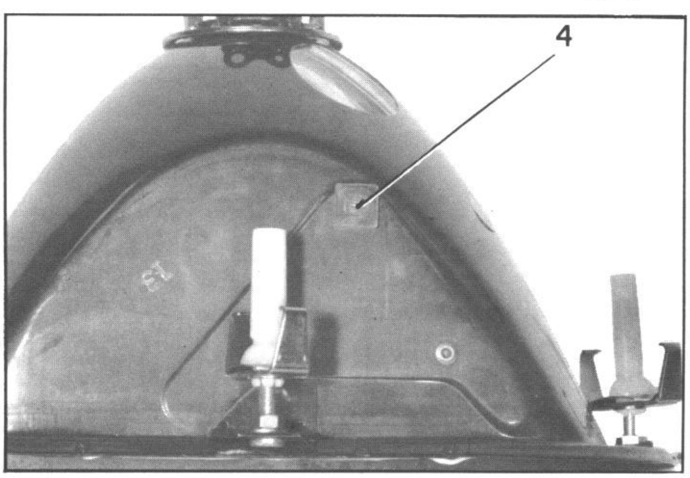

1. CONDITIONS FOR ADJUSTMENT

With the vehicle empty and in running order :

a) Ensure that the tyre are correctly inflated and heights correctly adjusted.

b) Place vehicle on a flat level surface.

c) Run the engine at idling speed and set manual height control to normal running position.

d) Place the instrument on the same level as that of the vehicle and opposite the headlamp to be adjusted.

2. ADJUSTMENT

Horizontal adjustment

Switch on the dipped headlamps.
The pattern of the beam projected on the screen of the testing apparatus is a broken line (European-dip type). Set the intersection point of this line on the vertical point of the screen by turning adjusting knobs (1) and (3).
Equalize adjustment, screwing and unscrewing knobs (1) and (3) by the same amount.

Vertical adjustment :

Switch on dipped headlamps
Turn the adjustment knob (2) so that the *broken line* coincides with the upper line of the shaded area on the screen (European-dip type) (Adjustment without tolerance).

3. Checking the setting :

Switch on the headlamp main beam.
The point of maximum illumination should coincide with the « headlamps » mark on the screen of the apparatus.

NOTE : *If dark patches appear in the beam, renew the bulb.*

The height of the main beam can be adjusted by means of adjusting screw (4) located under the headlamp unit.
After actuating this screw, it is essential to seal it, using sealing paste for example.

4. Adjust the other headlamp :

CHECKING AND ADJUSTING THE WINDSCREEN WIPER.

FRONT WINDSCREEN WIPER MOTOR.

CHARACTERISTICS.

		DUCELLIER	BOSCH
Manufacturer		DUCELLIER	BOSCH
Reference No.		4966 A	0390 346 127
Field coils		Ferrite	Ferrite
Armature :	Endfloat (adjustable by means of stop-screw) :	0.2 mm	0
	Nominal dia. of commutator :	24 mm	23.2 mm
	Min. dia. after machining :	23 mm	23 mm
Brushes :	Ref. No. :	CL 7239	1.394.320-058/059/062
	Minimum length after wear :	5.5 mm	7.5 mm
Ratio :		44 : 1	49 : 1

Connection and circuit diagram as in Op. MA. 510-00.

ELECTRICAL CHECK.

1. First speed :

Nominal power : 10 watts

- Speed, under no load, at 13.5 volts = 50 rpm - Corresponding current = 1.8 A
- Torque, motor locked, at 13.5 volts = 1,9 da Nm = 13.74 ft.lb min. - Corresponding current 18 A max.
- Torque at 40 rpm and 13.5 volts = 0.2 da Nm (1.45 ft.lb) - Corresponding current = 5.5 A max.
- Torque at 20 rpm and 13.5 volts = 1.07 da Nm (7.74 ft.lb) min - Corresponding current = 13.2 A max.

2. Second speed :

Nominal power : 15 watts

- Speed under no load at 13.5 volts = 70 rpm - Corresponding current = 2.3 A
- Torque motor locked at 13.5 volts = 1.5 da Nm (10.85 ft.lb) min - Corresponding current = 21 A max
- Torque at 60 rpm and 13.5 volts = 0.2 da Nm (1.45 ft.lb) min - Corresponding current = 7 A max.
- Torque at 30 rpm and 13.5 volts = 0.9 da Nm (6.51 ft.lb) min - Corresponding current = 14.7 A max.

Supplement N° 1 to Manual 818-1 (CORR)

ADJUSTMENT OF WINDSCREEN WIPER ARM.

With wiper motor in « automatic stop » position, adjust the wiper arm so that the distance measured between the link pin of the blade and the upper edge of the windscreen sealing strip is 75^{+10}_{0} mm. *Under this condition the sweeping angle of the blade will be symmetrically divided in relation to the axis of the windscreen.*

Tighten wiper arm securing nut from 0.8 to 1.2 da Nm (6 to 8 1/2 ft.lb).

REAR WINDSCREEN WIPER MOTOR *(Estates)*

CHARACTERISTICS.

Manufacturer	BOSCH
Reference No.	WXP 12 V. 0390 526 071
Field Coils	Ferrite
Armature :	
Endfloat (not adjustable)	from 0.05 to 1.2 mm
Nominal diameter of commutator	13 mm
Minimum diameter after machining	12 mm
Brushes :	
Reference No.	
Minimum length after wear	3 mm (wear of 5.5 mm)
Ratio :	1 : 90.7
Tightening torque of fixing nut of wiper motor	1 to 1.5 da Nm

Wiring and circuit diagrams as in Op. MA. 510-00 b (Diagram for Estate).

ADJUSTMENT OF REAR SCREEN WIPER ARM.

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With the wiper motor in the « automatic stop » position, position wiper arm so that its outer edge is at a distance of 40 $^{+10}_{0}$ mm from the rear screen rubber.

The rear screen wiper pattern, which is symetrically divided in relation to the longitudinal axis of the body shell, corresponds to an angle of 115° $^{0}_{-5°}$.

Tigten wiper arm nut to 0.6 da Nm (4 1/4 ft.lb).

A **CARTIER** timer, reference No. 25 630, located in the rear L.H. lamp cluster housing, allows the wiper to operate for 15 ± 2 seconds. Each actuation (of at least one second) on the wiper switch marks the start of a new cycle.

CHARACTERISTICS AND SPECIAL FEATURES OF THE AIR-CONDITIONING SYSTEM

The air-conditioning system includes the refrigeration and the heating of the air drawn into the passenger compartment.

REFRIGERATION

This allows the air in the passenger compartment to be cooled, while at the same time reducing its dampness (and therefore the misting up of the glass).

HEATING

It is of the « FROID - 15 » or « FROID - 20 » type
The air is blown around the channels of a radiator supplied by water from the engine cooling system.

REFRIGERATION

I. CHARACTERISTICS

Compressor	ASPERA FRIGO type HG 700 or SANKYO * type SD 508
De-watering tank	SINGER
Condenser	CHAUSSON
Evaporator-blower	SOFICA
Flexible hoses	STRATOFLEX and RANCO
Refrigerating fluid	R. 12
Weight of refrigerating fluid	1 kg (2.2 lbs)
Oil for lubricating compressor	TOTAL LUNARIA 25 or SUNISO No. 5 or TEXACO CAPELLA « E » grade 500
Quantity of oil for lubricating compressor	280 g i.e. a height of 21 to 29 mm *(except for SANKYO compressor)*

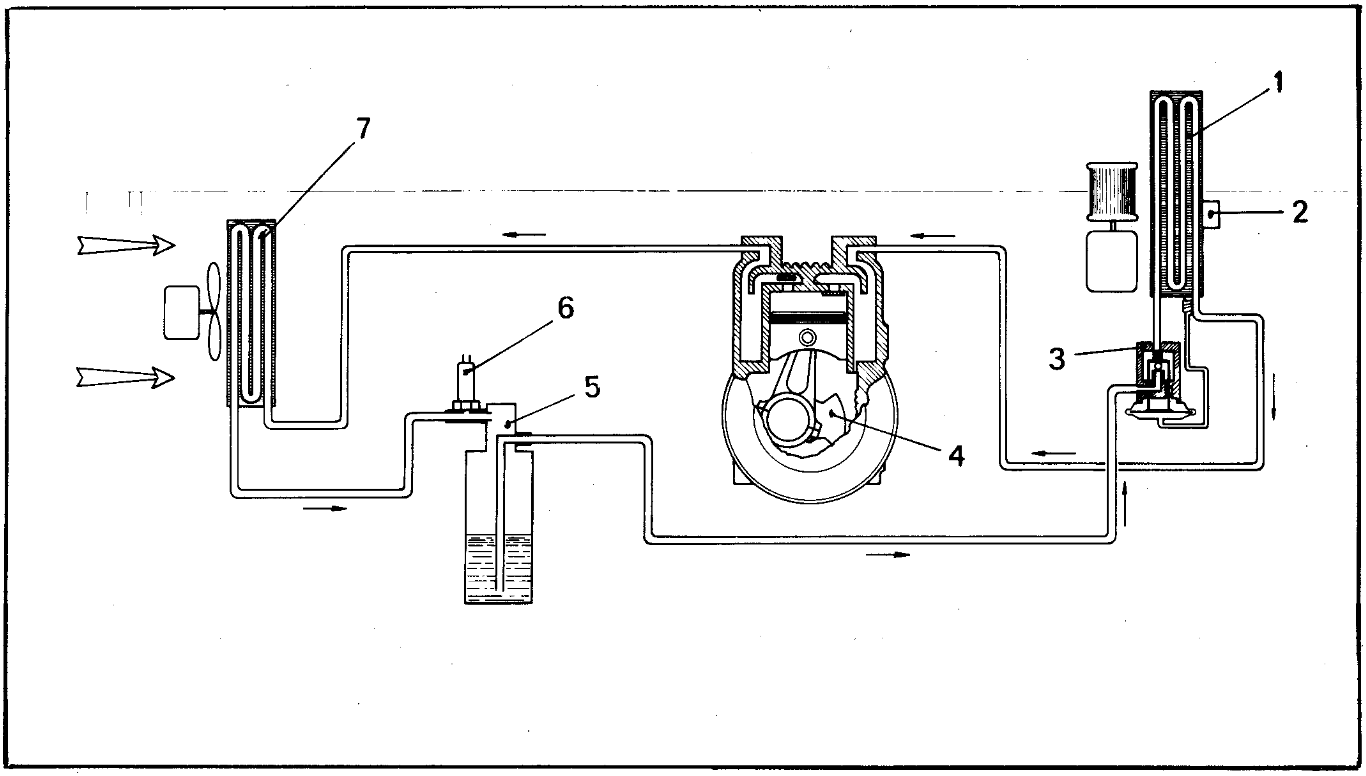
* Only fitted on vehicles fitted with converter and air-conditioning option.

II. OPERATING PRINCIPLE

The refrigerating system has four main components
- the compressor (4)
- the condenser (7)
- the pressure release valve (3)
- the evaporator (1)

The refrigerating fluid used is the R.12

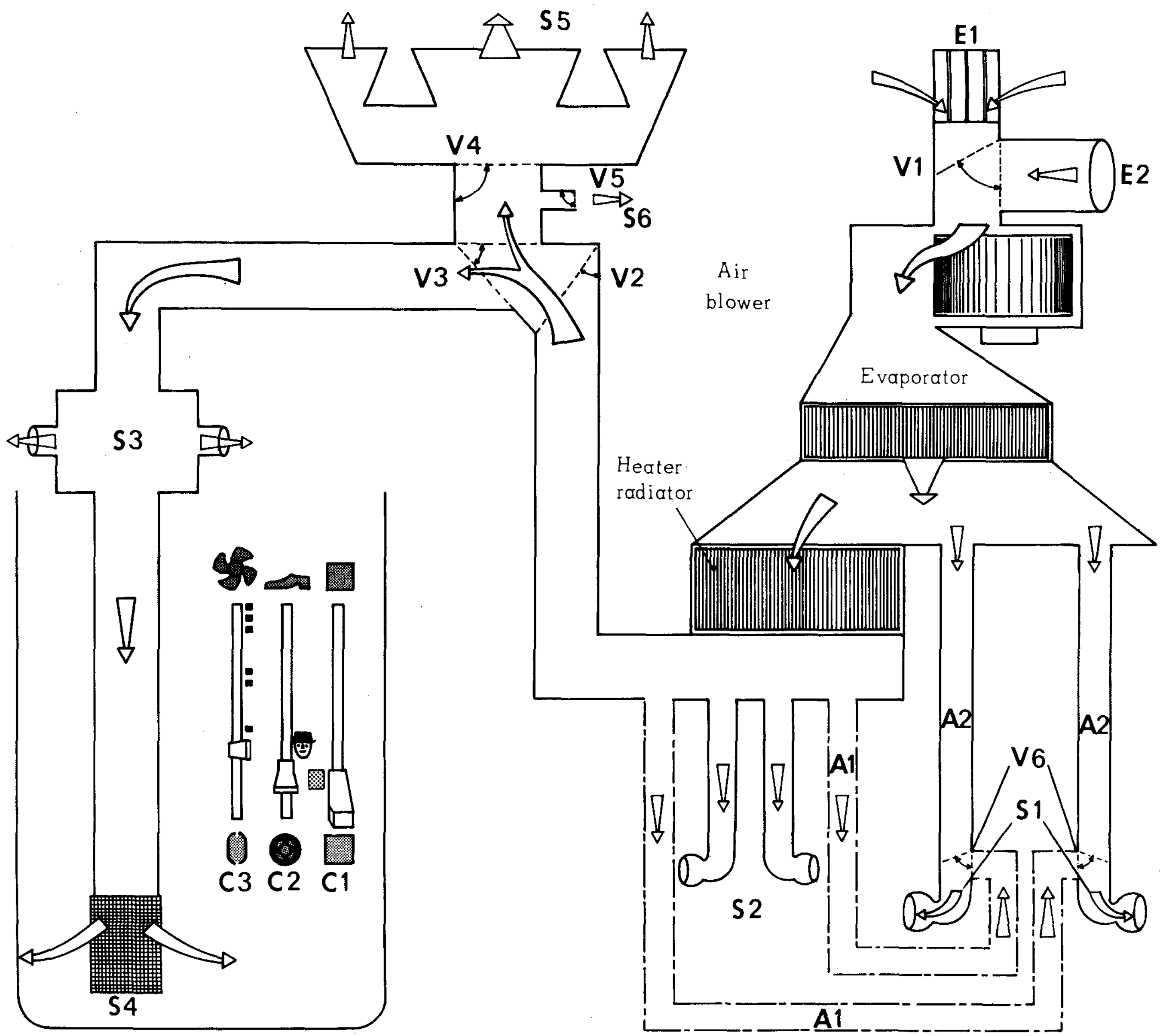
L.64-1 a



Compressor (4) - Manufacturer ASPERA FRIGO, type HG 700 (or SANKYO type SD 508 on EMBAUT CLIMAT)
ASPERA twin-cylinder or } Fitted onto the gearbox by means of a mounting bracket
SANKYO five-cylinder rotary }

The compressor circulates the refrigerating fluid draws in the fluid which is in a low-pressure vapour state, compresses it (which increases its temperature) and expels it into the condenser.
The condenser is driven by the engine via the water pump by two trapezoidal belts (ASPERA) or one trapezoidal belt (SANKYO).
An electro-magnetic clutch is fitted to the compressor pulley. Its operation controlled by a switch on the centre console is intermittent due to the presence of an ambient temperature thermostat (2) which is not adjustable, and which senses the temperature near the evaporator cooling fins.
In case of excessive pressure in the return circuit, a pressure switch (6) opens the supply circuit to the compressor clutch.
Condenser (7) - Manufacturer : CHAUSSON
It allows the fluid to condense and to release its latent heat to the outside air circulating around the fins. It is secured to the front L.H. side of the engine cooling radiator. At the condenser outlet, the fluid is in the high-pressure liquid state. The fluid flows through the tank (5) (which contains a dehydrating filter) and flows towards the pressure release valve.
A 5-blade electric fan accelerates the circulation of air around the condenser fins.
De-watering tank (5) - Manufacturer : SINGER
It contains a dehydrating filter element, and is fitted with a visible level indicator, which allows the amount and state of the fluid to be checked, and a high-pressure switch (6).
The de-watering tank is fitted on the front panel by means of a mounting bracket at the rear L.H. side of the engine cooling radiator.
Pressure-release valve (3) : It is incorporated in the heater unit, and regulates the output of fluid towards the evaporator.
Evaporator (1) - Manufacturer : SOFICA
The air flowing through the evaporator releases its calories, which will cause the low pressure fluid to be transformed into vapour.
It is incorporated in the heater unit, upstream from the heater radiator.

III. AIR CIRCUIT



FROID — 20

Air intakes for blower :

E1 : Exterior intake on bonnet
E2 : Air intake for recycling in passenger compartment, on RH side of scuttle panel.

Outlets for regulated air in the passenger compartment :

S1 : Dashboard air vents (LH and RH)
S2 : Air vents on centre console
S3 : Lower front heater unit outlets (LH and RH)
S4 : Rear outlet on centre console
S5 : De-misting and de-frosting of windscreen
S6 : Centre outlet on dashboard

Distribution of regulated air :

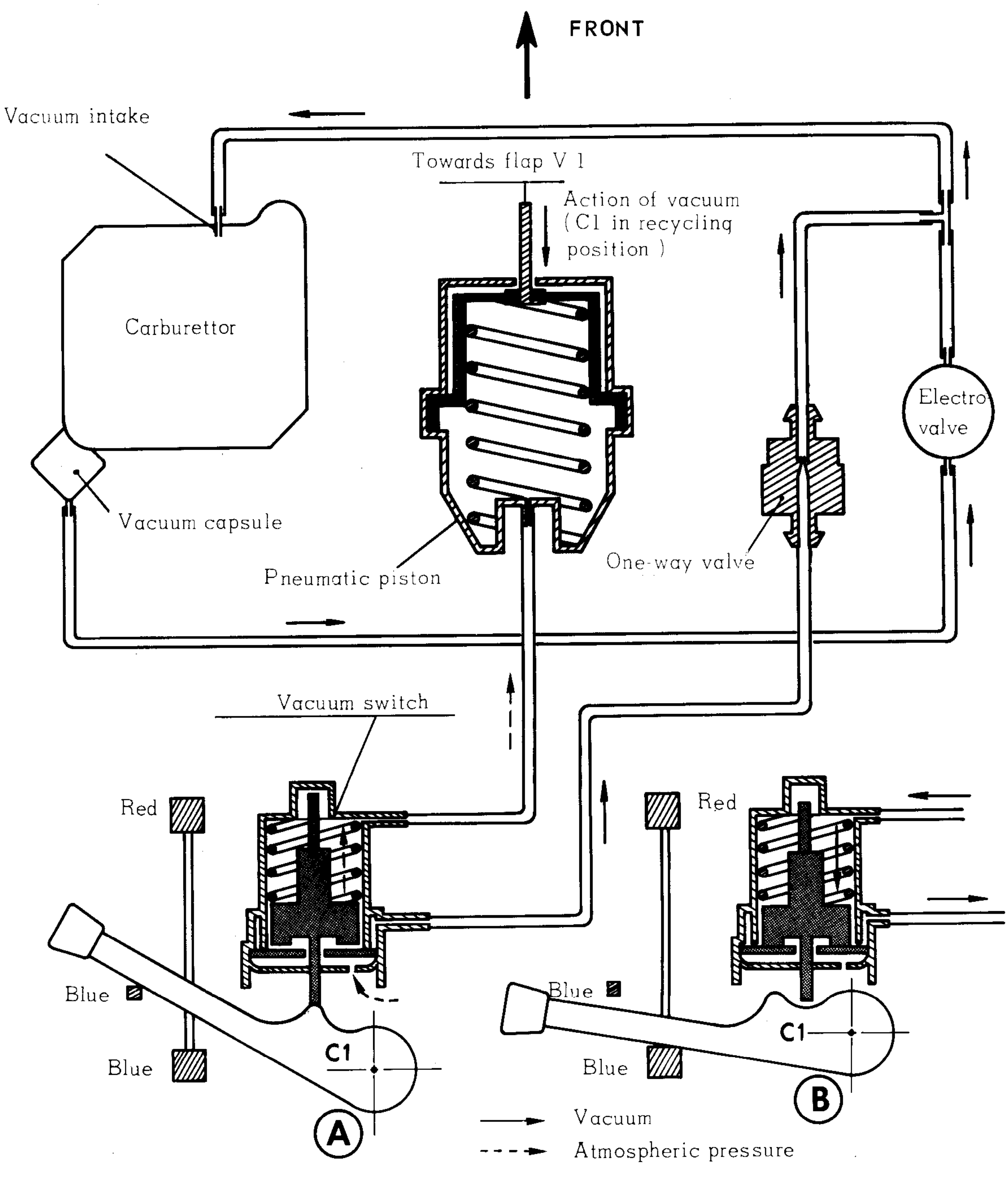
V1 : Distribution flap between outer and inner air-intakes (controlled by C 1)
V2 : Flap for cutting off outlets S3 - S 4 - S5 - S6 (controlled by C 2)
V3 : Distribution flap between outlets S3 - S4 and S5 - S6 (controlled by C 2)
V4 : Distribution flap between outlets S5 and S6 (controlled by a lever on the left of the centre outlet on the dashboard).
V5 : Cut-off flap for outlet S6 (controlled by a lever on the centre outlet on the dashboard)
V6 : On vehicles fitted with the « FROID - 20 » heater unit
Distribution flaps for outlets A1 and A2 at outlets S1 (controlled by a lever under the side vents).

IV. DISTRIBUTION FLAP (V 1) CONTROL

Flap V 1 is controlled by C 1. It is controlled pneumatically by vacuum.
The vacuum intake is at the carburettor.
The flap is controlled by a pneumatic piston subjected to vacuum via a switch. When control C 1 is positioned between the small blue square and the red square the piston in the switch is lifted (fig. (A)) vacuum intake is cut off: the supply pipe to the pneumatic piston is at atmospheric pressure flap V 1 blanks off intake E 2, and air drawn into the intake on the bonnet comes from outside. With the engine running and control C 1 positioned between both blue squares (fig. (B)) the piston in the switch comes down under the action of its spring, supply pipe to the pneumatic piston is no longer under atmospheric pressure, but under the action of the vacuum, and flap V 1 via the pneumatic piston blanks off intake E 1: the air drawn in comes from the passenger compartment, (recycling position).
NOTE. Identification mark for fitting the one way valve: the outer diameter is reduced on the side of the 3-way union.

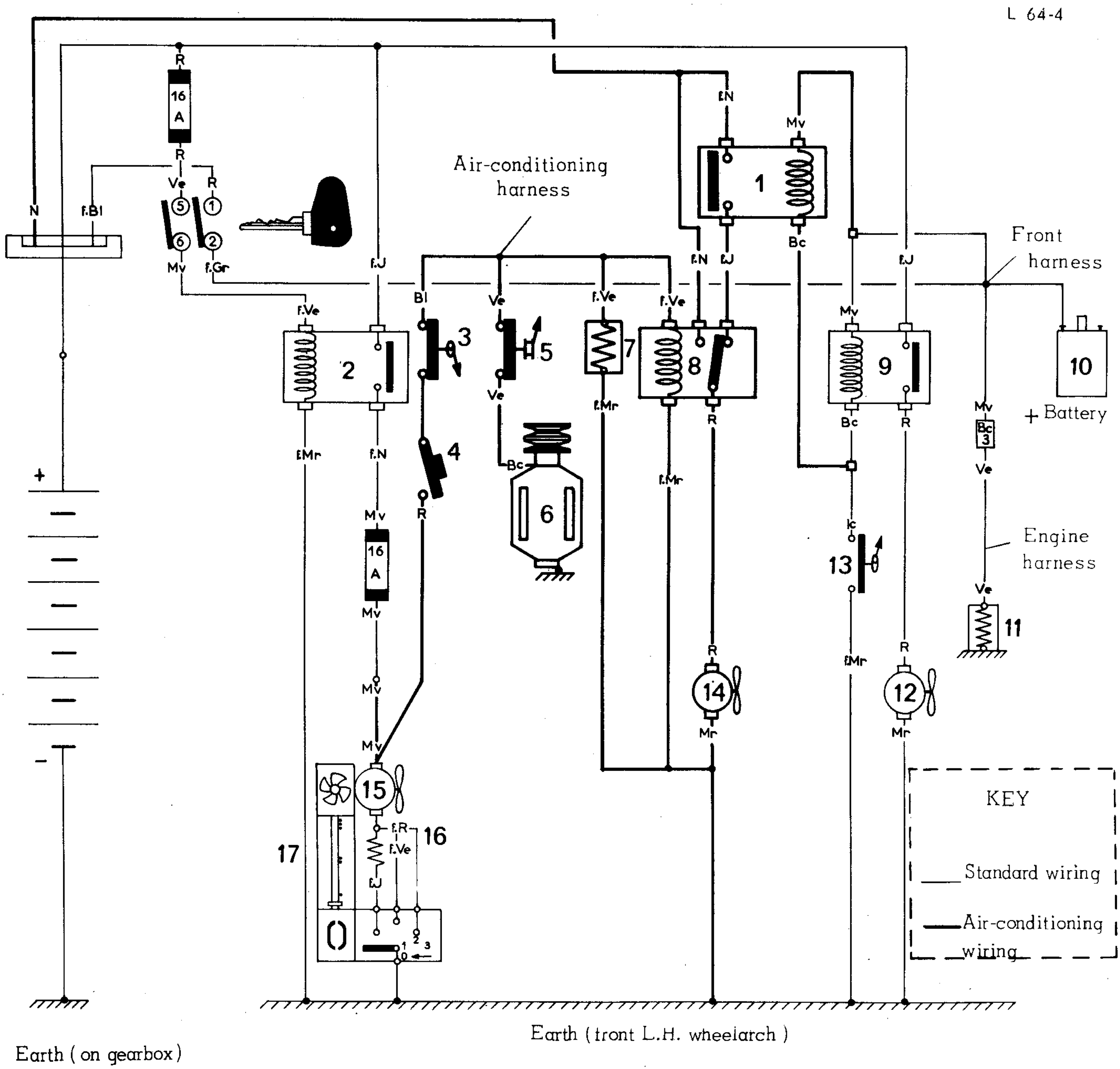
V. FAST IDLING SPEED CONTROL

This control allows for a faster idling speed when the compressor is operating.
A vacuum capsule incorporated in the carburettor slightly opens the first choke butterfly by means of a small rod.
The amount of opening is adjustable by means of a screw on top of the vacuum capsule.
An electro-valve fitted to the R.H. side of the front subframe and supplied at the same time as the electro-magnetic clutch for the compressor, controls the supply of vacuum to the capsule.



VI. CIRCUIT DIAGRAM FOR CONTROL OF ELECTRIC COOLING FANS AND AIR-CONDITIONING SYSTEM

(——► 7/1976)



1 - Control relay for supplementary electric cooling fan
2 - Control relay for air blower
3 - Ambient thermostat (located on evaporator)
4 - Air-conditioning switch (on centre console)
5 - High pressure switch (on de-watering tank)
6 - Electro-magnetic clutch for compressor
7 - Electro-valve controlling fast idling speed, and pneumatic recycling piston (WEBER electro-valve)
8 - Control relay for supplementary electric fan for air-conditioning
9 - Control relay for electric cooling fan
10.- Ignition coil
11 - Idling cut-out (on carburettor)
12 - Electric cooling fan
13 - Thermal switch for electric fan cut-in (on radiator)
14 - Supplementary electric cooling fan
15 - Air blower for air-conditioning
16 - Control resistors for air blower speeds
17 - Control for air blower (three-speed)

Operating principle :

Both electric fans (12) and (14) cool the engine coolant in the radiator. Electric fan (14) cools the condenser when the compressor expels the air-conditioning cooling fluid under pressure.

Simultaneous supply to fans (12) and (14) :

This is carried out by means of contacts in relays (1) and (9). The flow of current in the energizing winding of relays (1) and (9) therefore operates both electric fans simultaneously.
The relay windings are supplied when :
- ignition is switched on
- thermal switch (13) controlled by the coolant temperature in the radiator is off.

Supply to supplementary electric fan (14) alone :

This is carried out by contacts in relay (8) when its energizing winding is supplied.
The relay winding is supplied when
- ignition is on
- air-conditioning switch (4) is off
- contact on the ambient temperature thermostat (3) is closed.

Supply to the electro-magnetic clutch for the compressor :

The clutch supply is a function of the following :

- Air-conditioning switch (4)
- Ambient temperature thermostat (3)
- High pressure switch (5).

Supply to the blower (15) :

This is carried out by resistors (16) of the rheostat. This rheostat controls the speed of the blower (3-speed) and consequently, the volume of displaced air.

VII. WIRING DIAGRAMS FOR COOLING FAN AND AIR-CONDITIONING SYSTEM CONTROLS

7/1976 ⟶

Special features :

From 1977 models, the fast-idle electro-valve (9) is manufactured by « PIERBURG ».

When it is not energized, the electro-valve lets low pressure through towards the carburettor capsule (fast-idle), contrary to the « WEBER » electro-valve fitted previously.

Fitting the « PIERBURG » electro-valve necessitates fitting a relay (8) which is energized when the air-conditioning system is operating. This relay with its « open » contact cuts off supply to electro-valve (9) which therefore produces fast-idle.

The rest of the operation is identical to the preceding diagram.

DESCRIPTION OF COMPONENTS :

1 - Heater relay *(Standard)*
2 - Air blower *(Standard)*
3 - Speed control for blower *(Standard)*
4 - Regulating thermostat
5 - Air-conditioning switch
6 - Pressure switch *(on de-watering tank)*
7 - Compressor clutch
8 - Control relay for fast-idle electro-valve
9 - Fast-idle electro-valve
10 - Relay for L.H. supplementary electric fan *(air-conditioning)*
11 - Supplementary L.H. electric fan *(cooling)*
12 - Relay for L.H. supplementary electric fan *(cooling)*
13 - Control thermostat (on radiator) for electric fans *(Standard)*
14 - Relay for R.H. electric fan *(Standard)*
15 - Electric cooling fan *(Standard)*

P.T.O.

CIRCUIT DIAGRAM FOR COOLING FAN AND AIR-CONDITIONING SYSTEM CONTROL

7/1976 ⟶

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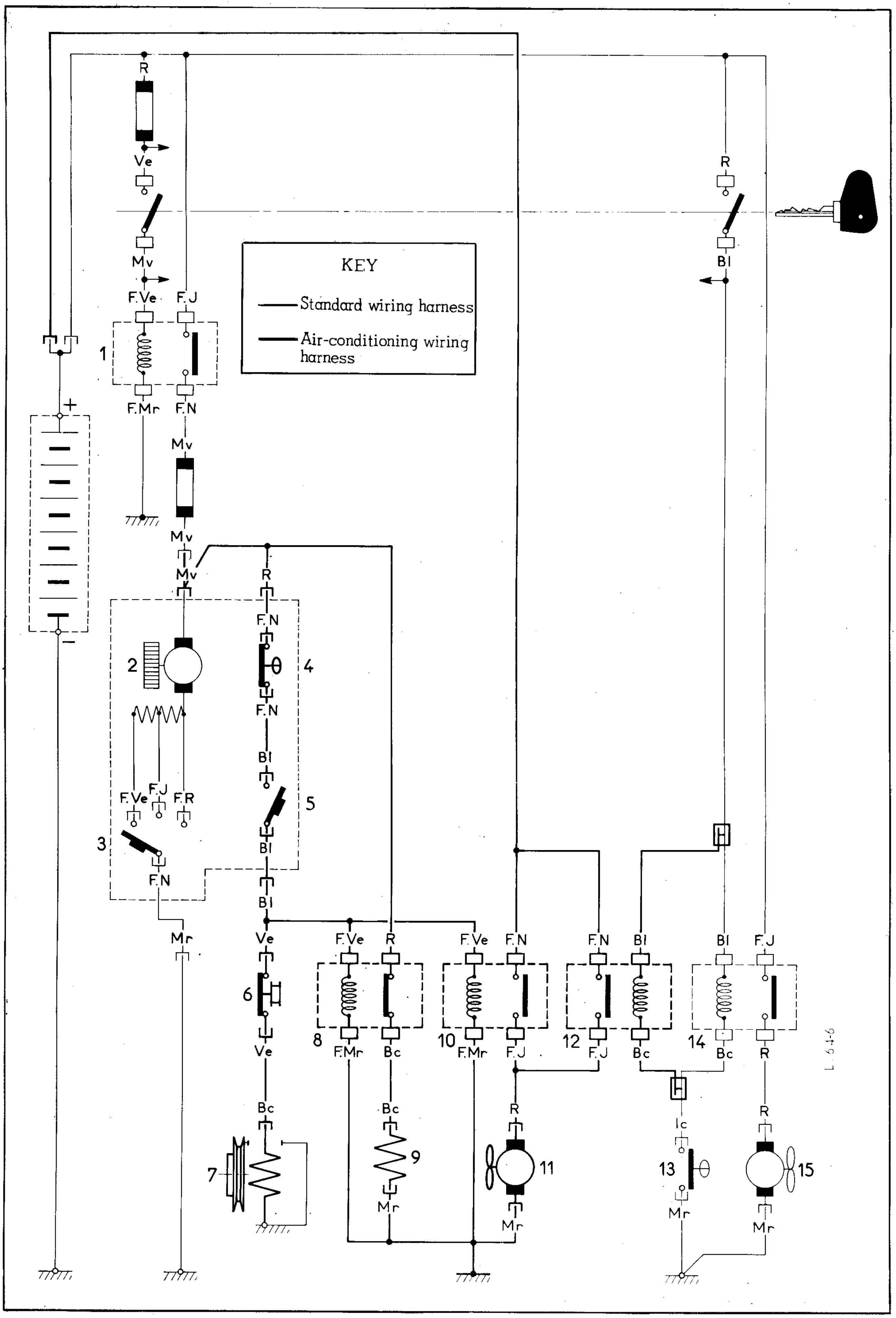
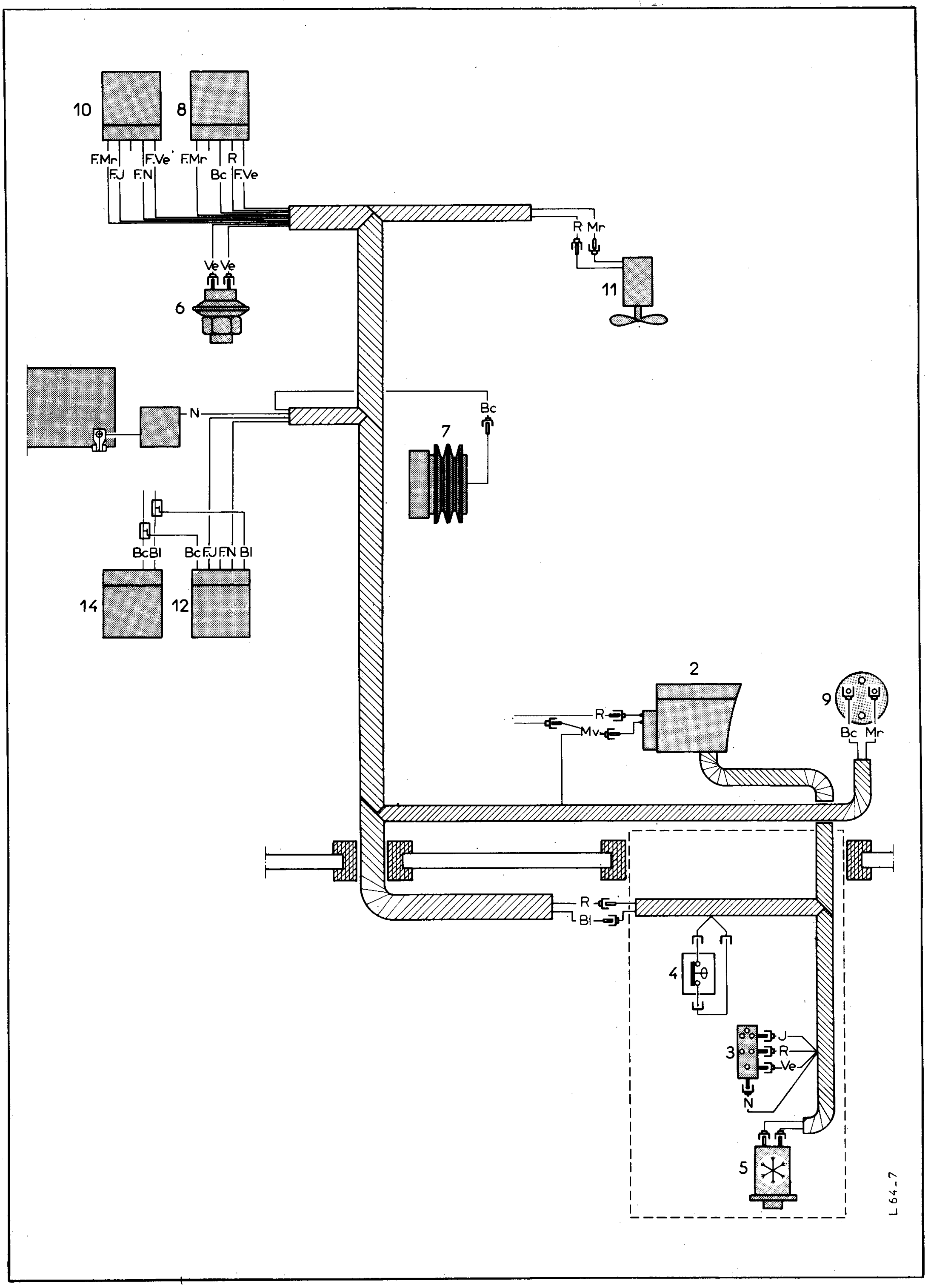


WIRING DIAGRAM FOR THE AIR-CONDITIONING SYSTEM

7/1976 →



I. CHECKING AND ADJUSTING :

1. Checking the operation of the air-conditioning :

Faulty operation may be due to the following :
- Insufficient quantity of R.12 fluid, caused by improper filling or a leak.
- Water in the system.

Insufficient quantity of fluid may be detected by examining the transparent index mark of the de-watering tank. This lack of fluid would be shown up by the appearance of air-bubbles during operation.
The presence of water is shown up by the formation of a small quantity of ice near the pressure release valve, which causes irregular functioning of the system.
In both cases, the system must be drained, the circuits must be put under vacuum (to eliminate any trace of water), and refilled with R.12 fluid.

2. Carburation : Adjusting the idling speeds (as soon as electric cooling fans cut out)

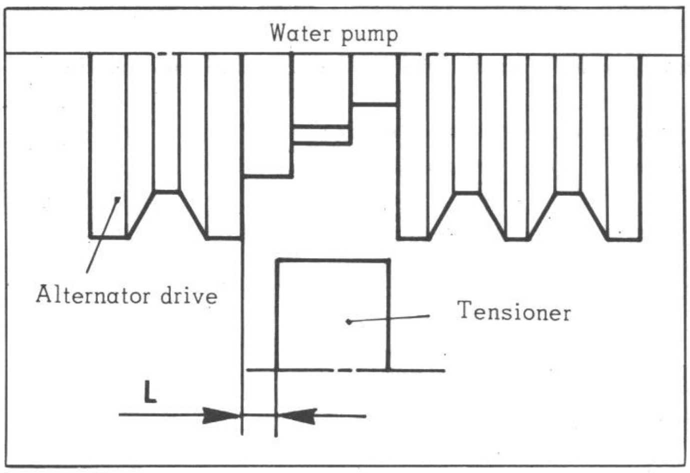
a) *Vehicles without torque converter :*
Engine idling speed : 850 to 900 rpm (compressor switched off)
Fast idling speed : 1000 to 1050 rpm (compressor in operation)

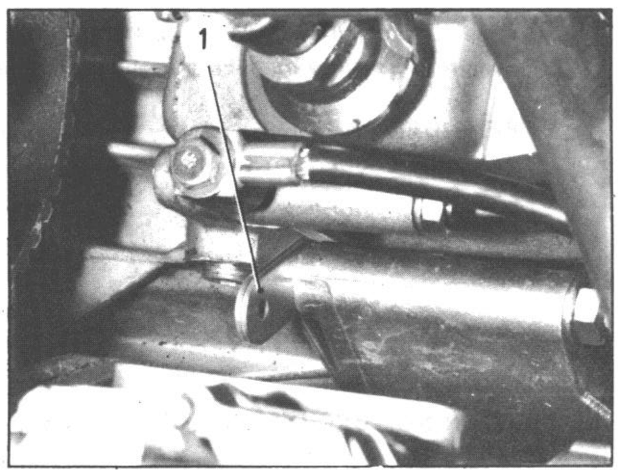
b) *Vehicles with torque converter*
Engine idling speed : 700 to 750 rpm (compressor switched off)
Fast idling speed : 725 to 775 rpm (handbrake on, vehicle immobilised, one gear engaged, and compressor switched off)

The fast idling speed is adjustable by means of adjusting screw located on top of the vacuum capsule on the carburettor.
NOTE : In case the fast idle is impossible to obtain, the vacuum capsule may be moved (slacken both fixing screws on carburettor), in order to reduce the clearance at the fixing point of the rod controlling the first choke butterfly opening.

3. Adjusting the pulleys :

Camshaft pulley-water pump pulley : no aligning to be carried out :
Toothed belt tensioner-water pump pulley : L = 2° - 0.5 mm, this value to be obtained by placing shims between the tensioner and its mounting plate.





Compressor-water pump : alignment to within 0.5 mm by placing shims (1) between the compressor mounting plate and the clutch housing.
Tensioner - compressor : alignment to within 0.5 mm by movement of the tensioner mounting plate in its slots.

4. Tensioning the belts :

Trapezoidal belts for compressor :
- Fitting tension : 40 to 50 daN (40 to 45 kg) (88 to 99 lb)
- Operating tension : 25 daN (25 kg) (55 lb)
- Toothed belt driving water-pump : 15 to 18 daN (15 to 18 kg) (33 to 40 lb)

NOTE : Insufficient tension will considerably reduce the reliability of the toothed belt.
A tension stronger than 18 daN (18 kg) (40 lb) will cause the belt to whistle.
Consequently, adjust the belt at the limit of the noise : tension it until it whistles while running, then reduce tension until the noise disappears.

Supplement N° 1 to Manual 818-1 (ADD)

II. PRECAUTIONS TO BE TAKEN WHEN WORKING ON THE AIR-CONDITIONING SYSTEM

a) It is **imperative** to wear goggles
b) Do not smoke : R 12 fluid, in the presence of a flame turns into a toxic gas.
c) Never heat any section of the refrigerating system.
d) Never switch on the refrigerating system if both electric cooling fans are not connected
e) Never check the compressor oil level without first having drained the refrigerating circuit.
f) Never use any oil other than TOTAL « LUNARIA 25 », SUNISO No 5 or TEXACO CAPELLA « E » grade 500
g) Never use refrigerating fluid other than R.12.
NOTE : Refrigerating fluid may be sold under different names : FORANE « 12 », FLUGENE « 12 », FREON «12» (the most important feature is the number « 12 » which defines the fluid's properties).

IMPORTANT NOTES :

A. The compressor **MUST NEVER** be switched on when the circuit has been drained of its refrigerating fluid, during work being carried out in the workshop, for example,. Indeed, in these conditions, **the compressor** would be functioning in air, and would **deteriorate rapidly.**
Consequently, in case of an exchange of compressor necessitating draining the system of its refrigerating fluid, in a workshop not equipped with the necessary equipment for refilling (SOGEV equipment) **IT IS IMPERATIVE**, before driving the vehicle to another workshop equipped with the special equipment, to carry out the following :

- **To leave the blanking plugs on the compressor**, in order to avoid ingress of air (the new compressor contains refrigerating fluid).
- **To blank the intake and outlet hoses and to fix them temporarily.**
- **To disconnect the supply lead to the electro-magnetic compressor clutch** (lead with white sleeve).

NOTE : We remind you that if the circuit has been in contact with the atmosphere, it is necessary to replace the de-watering tank, and the compressor oil.

B. Slight oil seepage is permissible at the front bearing of the air-conditioning compressor.
Compressors showing such a seepage, and being replaced as a result, will not be accepted under warranty.

REMINDER : *It is necessary, in particular, for the proper oil-tightness of the front bearing seal of the compressor, to use the air-conditioning system from time to time (once a week for example).*

III. TIGHTENING TORQUES FOR THE UNIONS IN THE CIRCUIT :

(Oil the union threads with TOTAL LUNARIA 25 before fitting)

On the compressor	Intake union	5/8"	3.45 to 4.3 daNm (25 to 31 ft.lb)
	Outlet union	1/2"	2.9 to 3.75 daNm (21 to 27 ft.lb)
On the condenser	Input union	1/2"	4.85 to 5.5 daNm (35 to 39 3/4 ft.lb)
	Output union	3/8"	2.7 to 3.3 daNm (19 1/2 to 23 3/4 ft.lb)
On de-watering tank	Unions	3/8"	2.1 to 2.5 daNm (15 1/4 to 18 ft.lb)
On evaporator	Input union	3/8"	2.1 to 2.5 daNm (15 1/4 to 18 ft.lb)
	Output union	5/8"	3.45 to 4.3 daNm (25 to 31 ft.lb)

IV. FILLING THE REFRIGERATING CIRCUIT

using **SOGEV** equipment and a
PRESTOGAZ refill of R. 12

A. VEHICLES FITTED WITH A « ASPERA-FRIGO » COMPRESSOR

NOTE :

Equipment used for this operation :

a) *SOGEV material :* - Manufacturer : Ets S.O.G.E.V.
Avenue de l'Atlantique. Z.I. 91401 ORSAY - Tel. 907-64-00

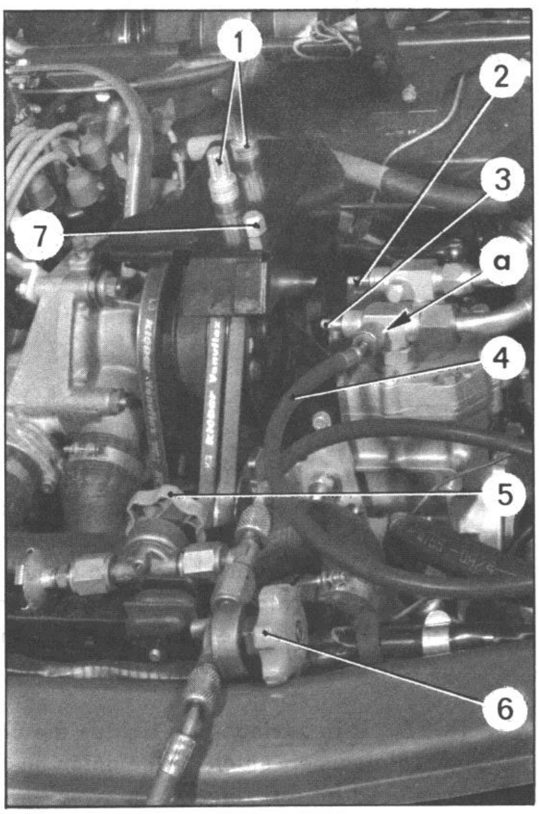
b) *PRESTOGAZ refill of R. 12 :* 1 kg refill supplied by the Replacement Parts Department under ref. No.ZC 9 857 108 U.

IMPORTANT :

Precautions to be taken during this operation :

a) It is IMPERATIVE to wear goggles.
b) Never smoke during the operation : R. 12 fluid turns into a toxic gas in the presence of a flame
c) Never heat any part of the refrigerating circuit.
d) Never switch on the air-conditioning system if either of the cooling fans are disconnected.

Supplement N° 1 to Manual 818-1 (ADD)



1. Drain the circuit :

NOTE :
- This operation must be carried out in a well-ventilated room.
- The refrigerating circuit must be drained before any work can be carried out on it.

a) Remove plug (7) from compressor intake valve and connect in its place (at « a ») flexible pipe (4).

b) Remove plugs (1) protecting adjustment screws (2) and (3) for the valves.

c) Check taps (5) and (6) are properly closed, and screw in screw (3) two turns.

d) Place taps (5) and (6) in an open container in order to contain the fluid, and to avoid it turning into mist. Open the taps. Close them when draining is complete (when the hissing produced by the escaping gas has stopped).

e) Proceed in the same manner once flexible pipe (4) is connected to the outlet valve, and screw (2) is screwed in two turns.

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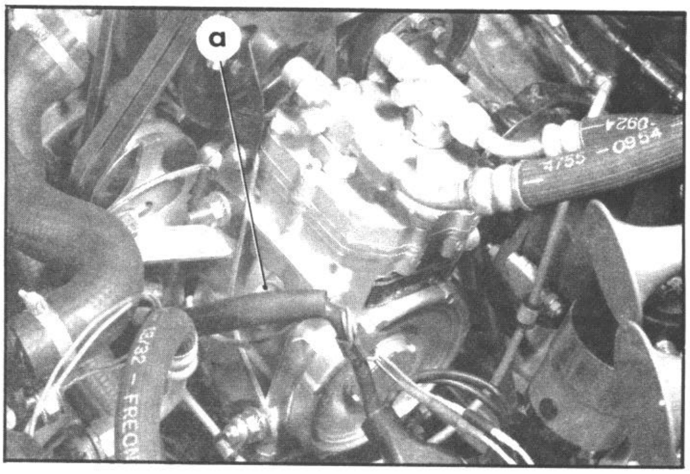

2. Check the compressor oil level :

NOTE : **This check can only be carried out after having drained the circuit. If not, dangerous splashing of oil and refrigerating fluid occur.** *Once removed, the compressor housing must be on a horizontal plane.*

a) Remove oil filler plug at « a » and insert into orifice gauge MR. 630-73/15 until it reaches the bottom of the casing (rotate crankshaft if necessary). The oil level must be between the min. and max. marks on the gauge (which correspond to a depth of oil of 21 to 29 mm).

b) If necessary, top up using TOTAL « LUNARIA 25 » or SUNISO No.5, or TEXACO CAPELLA « E » grade 500.

c) Remove gauge MR. 630-73/15 and position the plug with its seal.

NOTE : *On the vehicle, the depth of oil is 17 to 25 mm approximately.*

3. Create a vacuum in the circuit :

NOTE : This consists in creating a vacuum as complete as possible in the circuit, to eliminate (by evaporation) any trace of water which would hinder the operation of the refrigerating system.

- In the case of replacing the compressor, fully unscrew screws (2) and (3), then screw in screw (2) two turns after having connected flexible pipe (4) to the intake valve.
- In other cases, see paras. 1 and 2 :

a) Connect flexible pipe (4) to the intake valve and flexible pipe (6) from the vacuum pump to tap (5).

b) Fully unscrew screw (3).

c) Open tap (5) and switch on vacuum pump, following the instructions on the S.O.G.E.V. instruction sheet.

d) Run pump for a minimum of 45 mins. Close tap (5) and disconnect pipe (6) from it.

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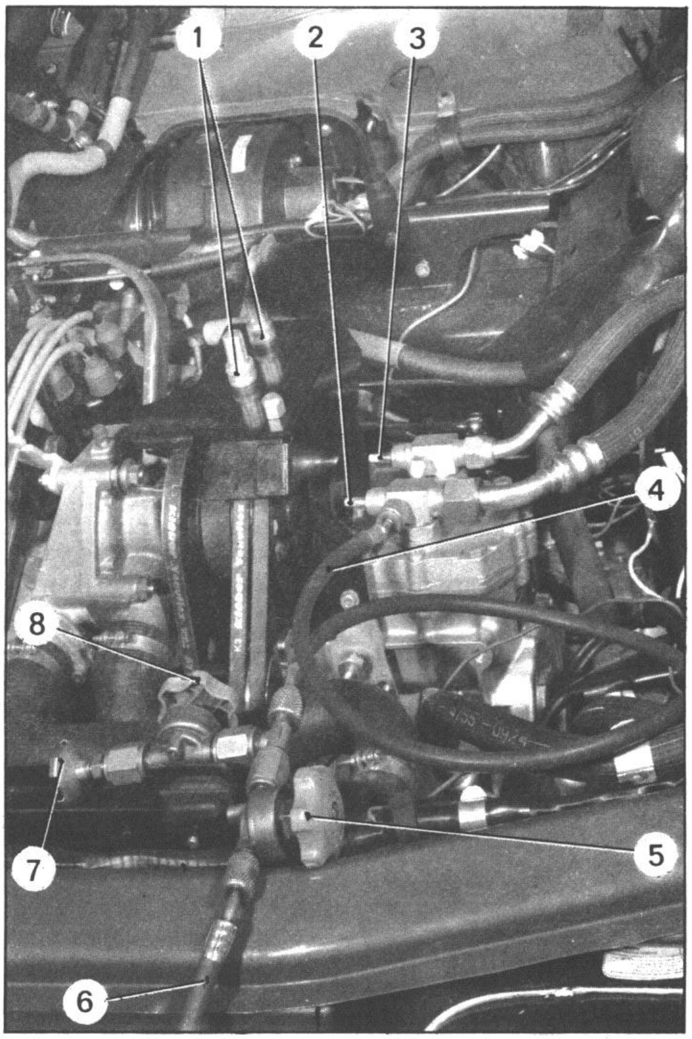
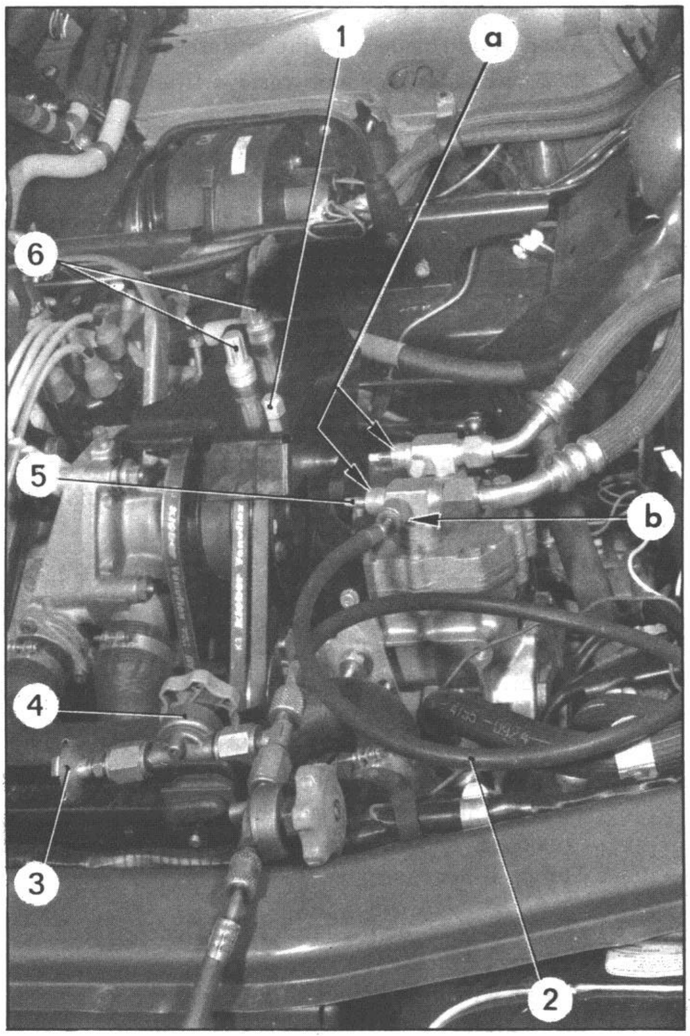


4. Refill the circuit :

a) Prepare the « PRESTOGAZ » refill.
Unscrew « Presto-vanne » union (7) from tap (8) and connect it to the refill : for this, make sure (forcing if necessary) that clip on union (7) is fully clipped onto ridge of refill. The threaded hole of the « Presto-vanne » union must be in line with the refill valve.

NOTE : It is advisable to tighten the clip on the « Presto-vanne » union, if the union has already been used for refilling.



b) Connect the refill.
Screw in refill with « Presto-vanne » union (3) onto tap (4).

c) Fit the refrigerating circuit :
With the vehicle cold (as cold as possible) place refill « upside down » and hold it with the palm of both hands : this allows its temperature to increase sufficiently to fill the circuit with refrigerating fluid in the liquid state. Open tap (4). The flow of fluid past the refill valve can be heard by placing one's ear against the bottom of the refill, the noise stops when the refill is empty; (this can be confirmed by shaking the refill).

NOTE : In certain cases, heating the refill with one's palms may be insufficient. The operation must then be completed by using refrigerating fluid in a gaseous state.
The procedure is the following :
- Hold refill the right way up.
- Set air-conditioning levers to the « cold » and « maximum ventilation » positions.
- Switch on the engine, actuate the air-conditioning switch, and gently accelerate until the refill is empty.
- Stop the engine.

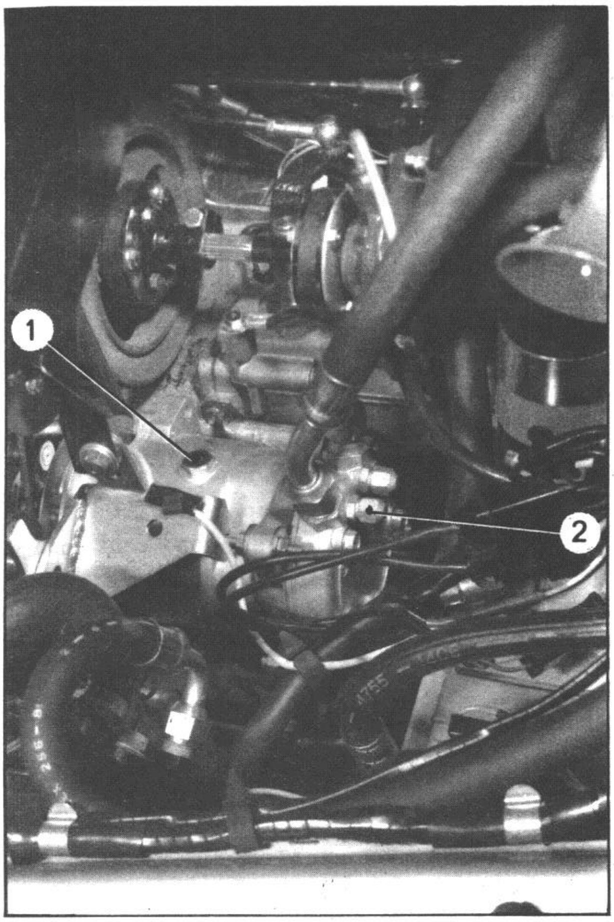
d) Fully unscrew adjustment screw (5).

e) Position plugs (6) at « a ».

f) Unscrew refill from tap (4) and keep « Presto-vanne » union. Disconnect pipe (2).
Screw plug (1) at « b » onto the compressor intake valve.

B. VEHICLES FITTED WITH A SANKYO COMPRESSOR

NOTE : Filling operations on a vehicle fitted with a « SANKYO » or « YORK » compressor are identical to each other and differ from the « ASPERA-FRIGO » compressor only in as much as there are no screws for opening and closing the valves.
The act of connecting a flexible pipe onto the intake valve (2) of the compressor automatically opens the valve.



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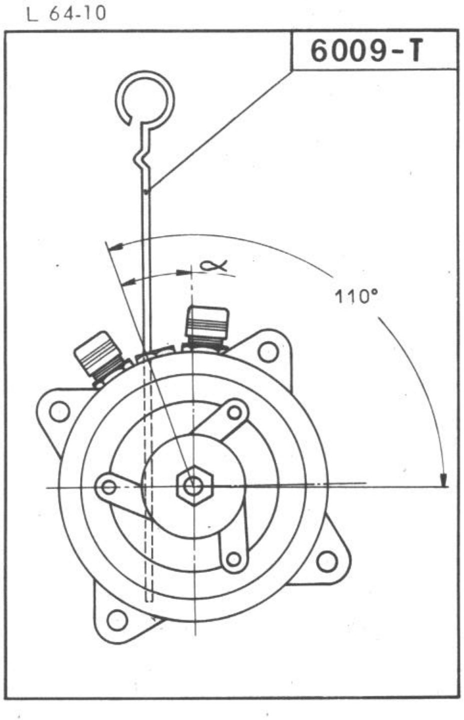


Checking the oil level on the « SANKYO » compressor

a) After having made sure the compressor contains no R. 12 under pressure, remove filler plug (1).

b) Slacken compressor belt.

c) Disconnect the supply lead to the clutch, from the wiring harness, and connect it to the battery « + » terminal.

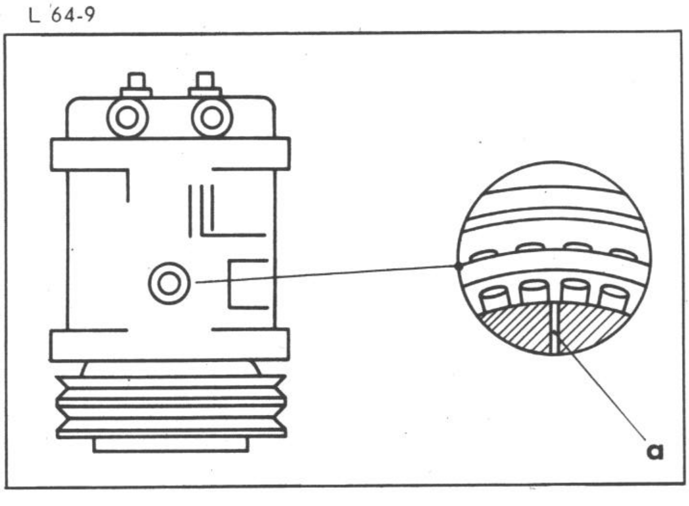
d) Rotate the clutch in order to line up mark « a » (*visible through the filler opening, and located on the cam plate*) with the axis of the filler opening. Then make a mark on the clutch and the compressor casing, and then rotate the clutch by approximately 110° (clockwise seen from pulley end).
Disconnect the supply lead from the battery « + » terminal.

e) Insert gauge 6009-T into the freed off passage
The oil level must be between :
- the 8th and the 12th graduation (on vehicle)
(defined by angle ∝ , = 19° on a CX in the normal driving position).
- the 6th and the 10th graduation (compressor removed, and on a horizontal plane).
Top up if necessary.

f) Fit filler plug, and tension belt. Connect lead from wiring harness to clutch.
Fill up with R. 12 fluid if the compressor is on the vehicle.

g) If the compressor is to be put into store, rechange with R. 12 fluid at a pressure of 0.5 bar (7.25 psi).

L 64-9



« FROID - 20 » HEATING SYSTEM

This heating system consists of the following :

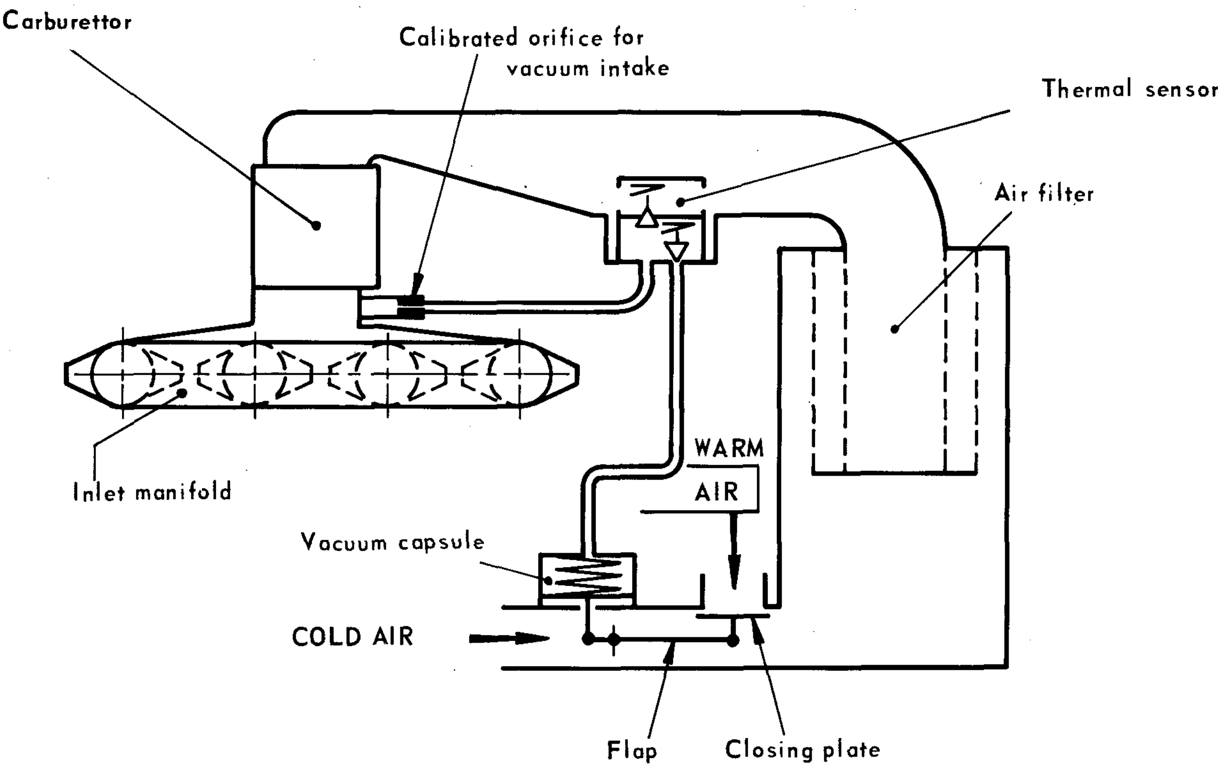
- A device to heat the inlet air
- A device to increase the heating in the passenger compartment
- A water temperature gauge
- The crankcase has a plug which can be removed to allow a heating element to be inserted in order to heat the engine coolant

DEVICE FOR HEATING THE INLET AIR

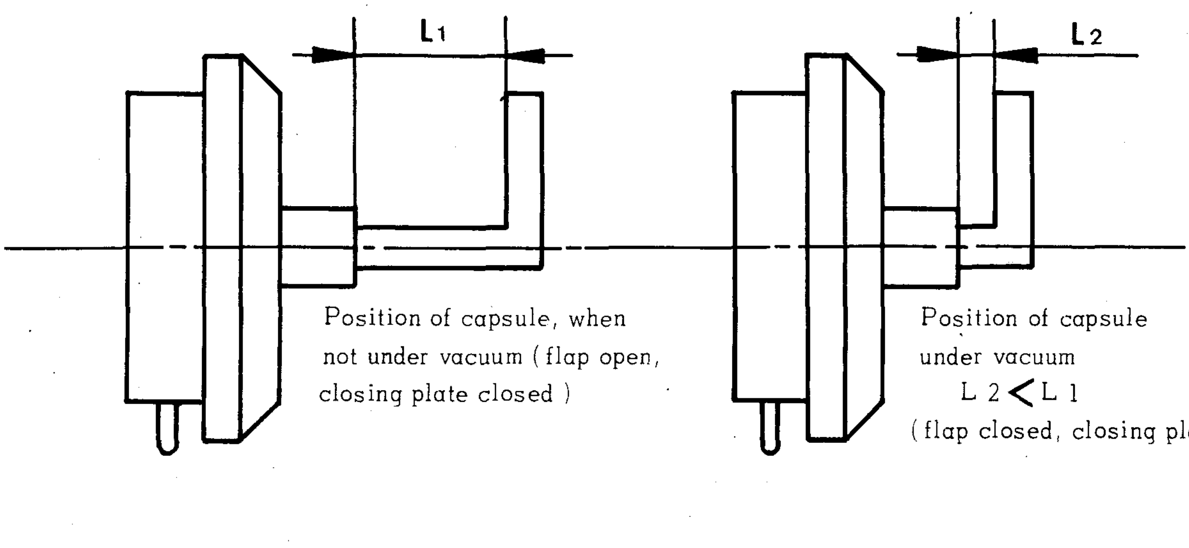
It consists of the following :

A - A vacuum capsule situated at the air-filter intake
B - A thermal sensor, situated in the duct linking the air-filter to the carburettor
C - A device for heating the inlet air, by means of the exhaust (by having a take-off on the exhaust manifold shield).

ASSEMBLY DIAGRAM



A. VACUUM CAPSULE



Position of capsule, when not under vacuum (flap open, closing plate closed)

Position of capsule under vacuum
$L2 < L1$
(flap closed, closing plate open)

When starting : capsule is subjected to vacuum

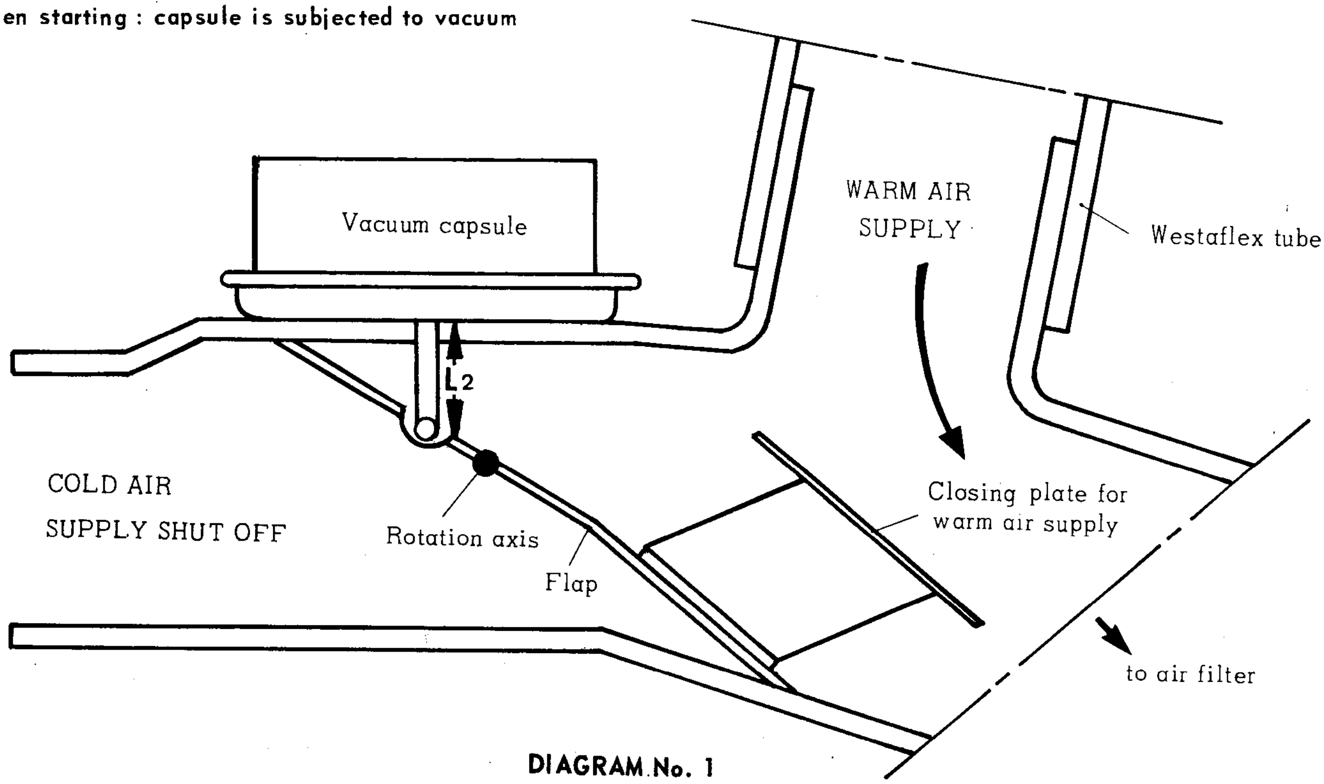


DIAGRAM No. 1

Vacuum capsule not under vacuum

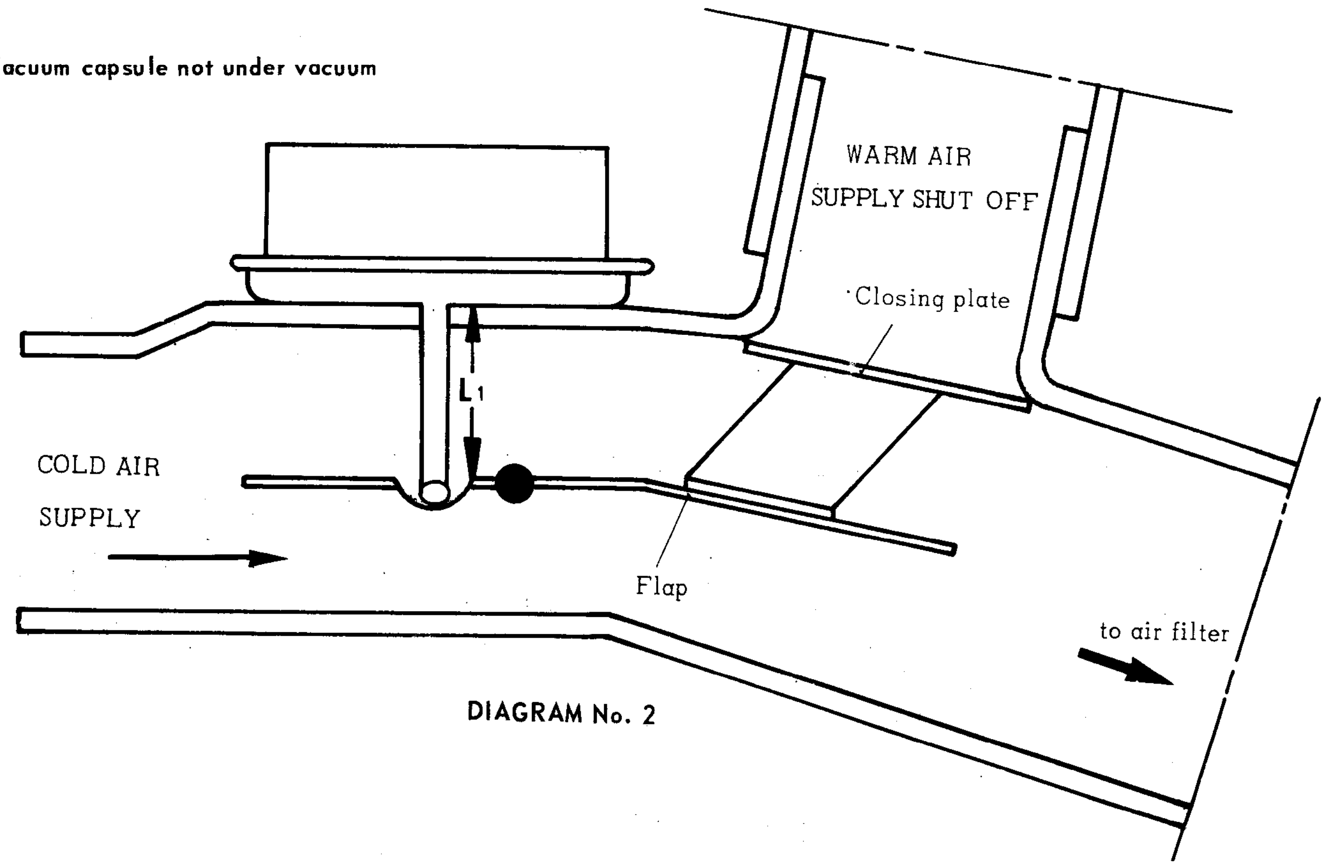


DIAGRAM No. 2

Situated at the air-filter inlet, the vacuum capsule controls a flap and a closing plate allowing simultaneously supply or no supply of warm air and no supply or supply of cold air. When starting (Diagram 1) the capsule is subjected to vacuum, the flap stops the supply of cold air, and the closing plate allows the supply of warm air to the air filter. When the effect of the vacuum ceases, the capsule returns to length L1 (Diagram 2) : the flap opens, allowing supply of cold air and the closing plate stops the supply of warm air.

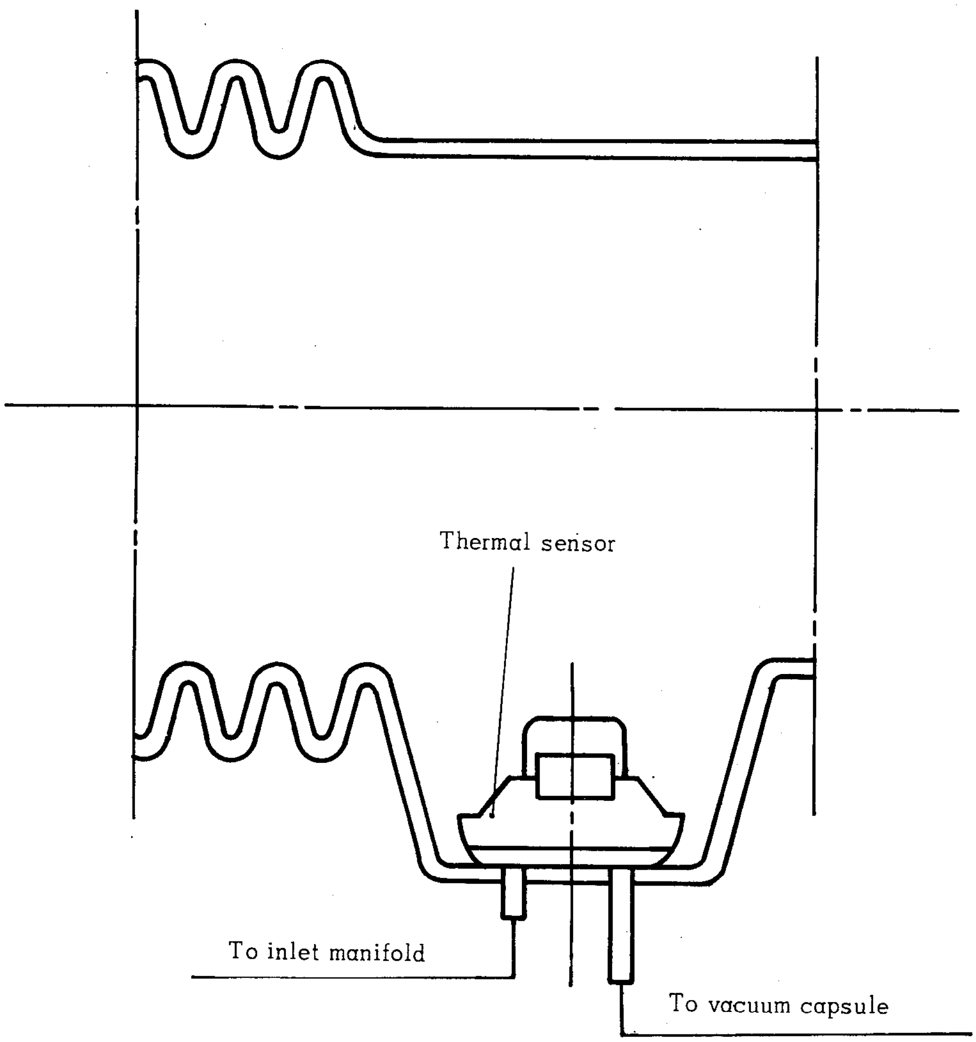
The vacuum capsule operates via a thermal sensor.

B. THERMAL SENSOR

This is situated in the duct linking the air filter to the carburettor (see diagram below).

Depending on the temperature of the inlet air, it allows or not vacuum to reach the control capsule for the flap and the closing plate.

It consists of a number of valves and bi-metallic strips.



Operating principle :

For an inlet air temperature below 6° C, the position of the bi-metallic strips and the valves is such that vacuum in the inlet manifold is communicated to the capsule (see para. A, diagram No. 1)

For an inlet air temperature above 19° C, the bi-metallic strips change shape, and the position of the valves stops the vacuum from reaching the capsule (see para A. diagram No. 2).

For an inlet air temperature between 6 and 19° C, the positions of valves and bi-metallic strips allow the action of the vacuum on the capsule to be regulated. In this case, the flap and the closing plate are in an intermediate position, allowing simultaneous supply of warm and cold air.

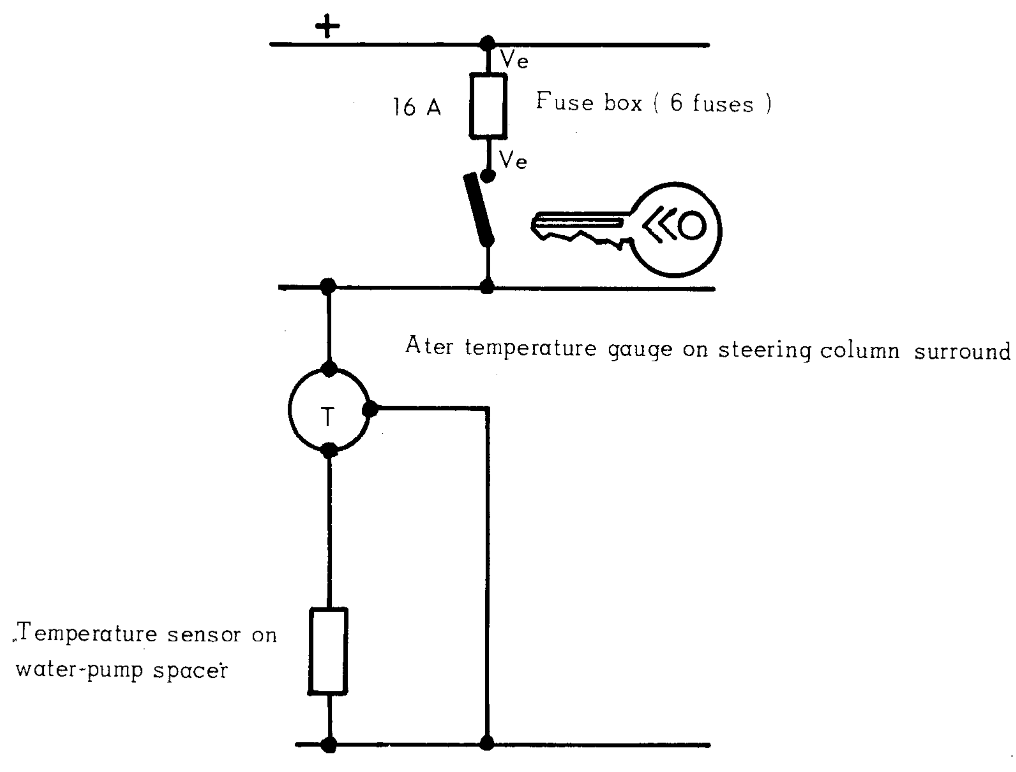
II. DEVICE FOR INCREASING THE HEATING OF THE PASSENGER COMPARTMENT

This device entails modifying the following components :
- Heater distribution box (outlets towards side vents unplugged, different radiator)
- Side vents with twin outlets (ambient or heated air)
- Addition of Westaflex ducts (link from heater distribution box to side vents).

III. WATER TEMPERATURE GAUGE

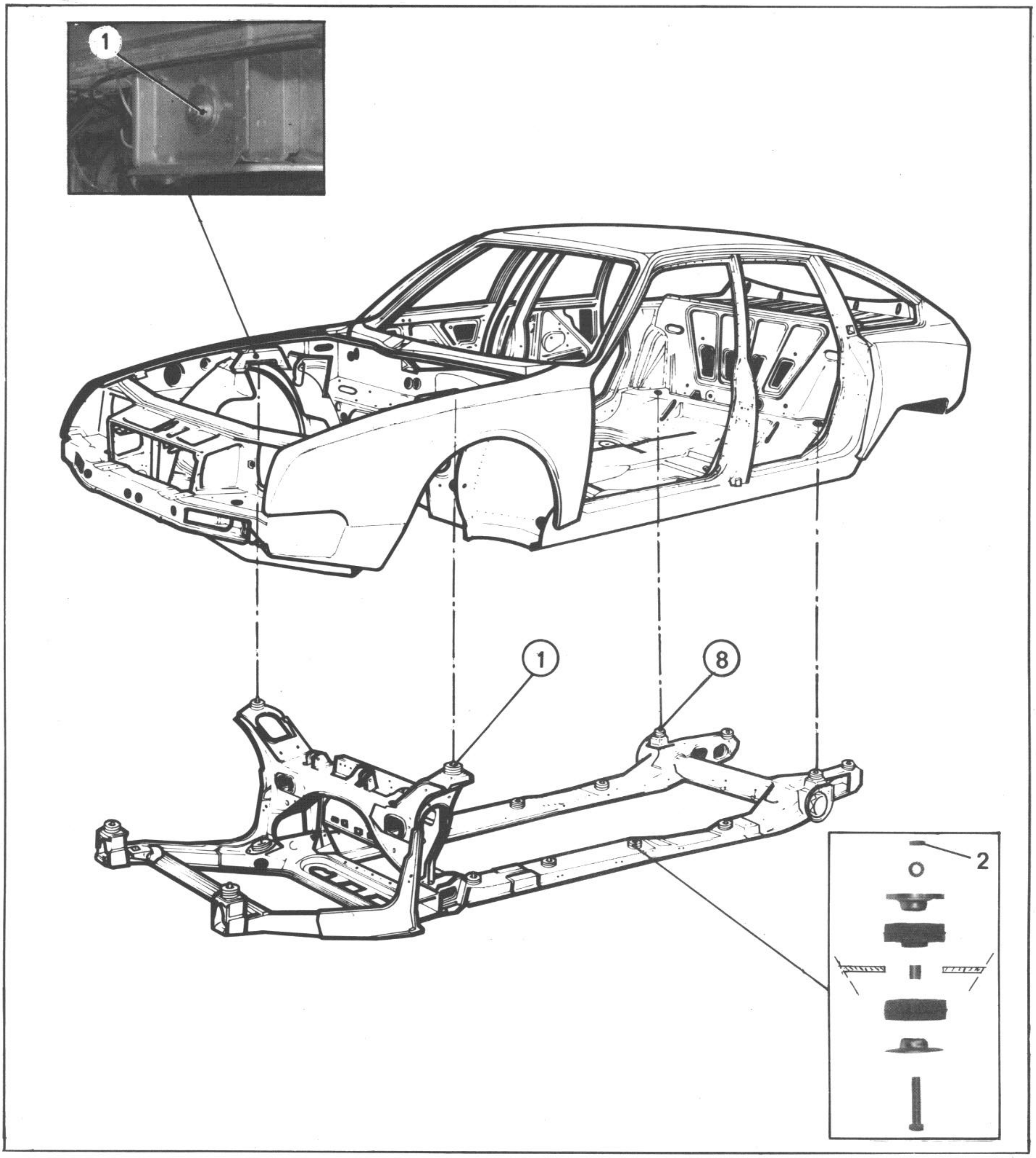
The presence of a water temperature gauge entails modifying the following components :

- water pump spacer (addition of a temperature sensor)
- steering column surround (location of temperature gauge)
- engine harness for warning lamp senders (addition of lead from temperature sensor to front wiring harness)
- addition of a temperature sensor and a temperature gauge.



MOUNTING OF BODY-SHELL TO UNDERFRAME

L. 71-1



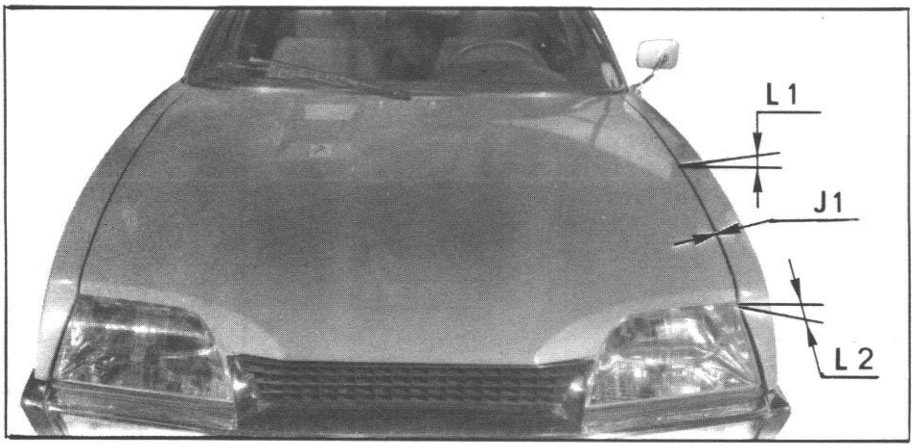
SPECIAL FEATURES :

Points 1 and 8 are guide holes,

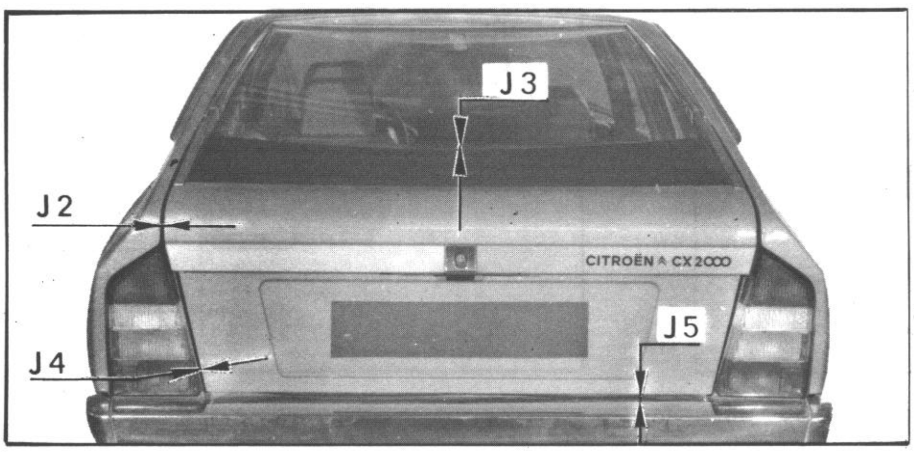
Tightening torques :

- Body-shell fixing nuts (1) on rubber pads .... 2.5 daNm (18 ft.lb)
- Rubber pad fixing screws (2) on sidemembers .... 3 daNm (21 1/2 ft.lb)

ADJUSTING THE BODY-SHELL COMPONENTS



- Clearance between wings and bonnet .... $J1 = 6 {}^{+2.5}_{-1}$ mm
  - Difference between left and right-hand sides .... 2.5mm max.
  - Difference in level between wings and bonnet .... 2 mm max.
- Flush fit tolerance between wings and bonnet .... L1 = 2 mm max.
- Longitudinal adjustment of bonnet : measurement between front end of bonnet and front end of wings .... L2 = 0 ± 3 mm



- Clearance between rear wings and boot lid .... $J2 = 6 {}^{+2.5}_{-1}$ mm
  - Difference in level between the left and right-hand sides .... 2 mm max
  - Difference in level between wings and boot lid .... 1.5 mm max
- Clearance between upper edge of boot lid and rear window .... J3 = 6.5 ± 4 mm
  - Difference in level between boot lid and rear window .... 3 mm max
- Clearance between boot lid and rear lamp cluster .... $J4 = 6 {}^{+2.5}_{-1}$ mm
- Clearance between rear bumper and lower edge of boot lid .... J5 = 10 mm

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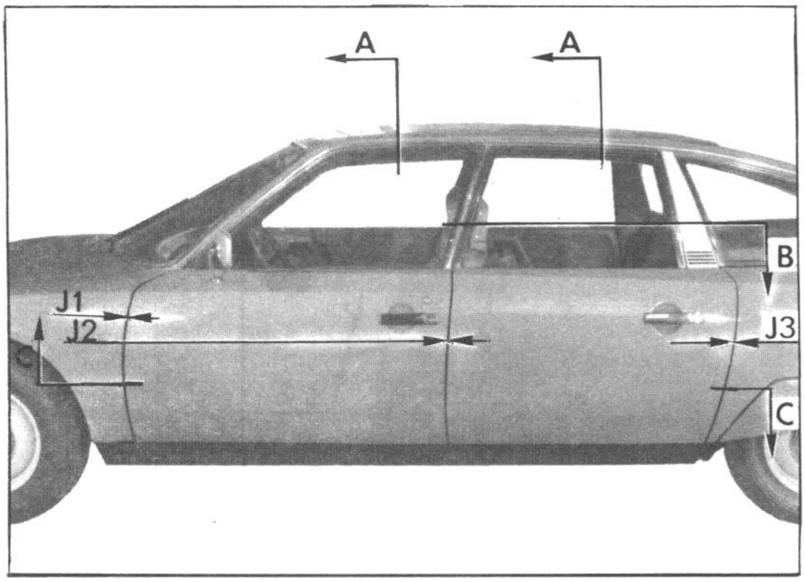
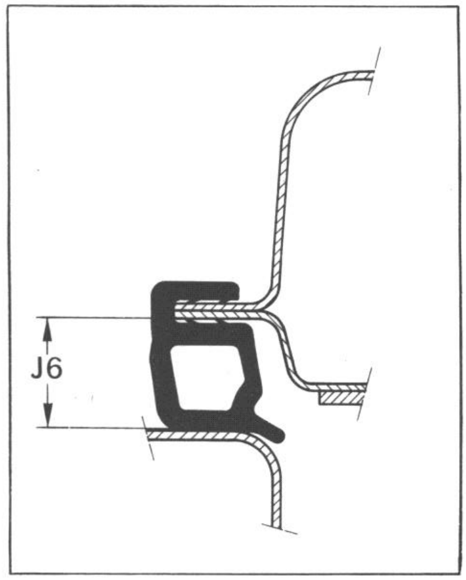
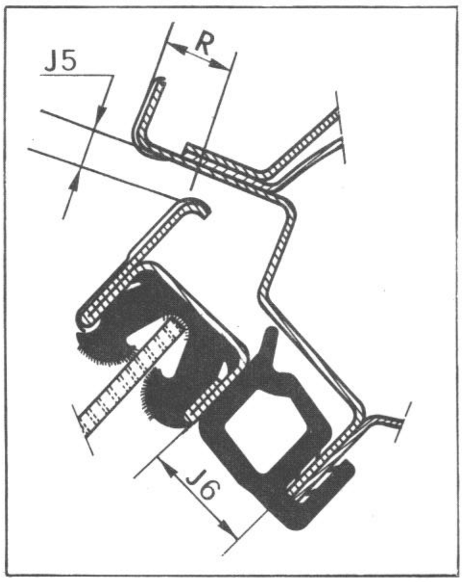
Section C

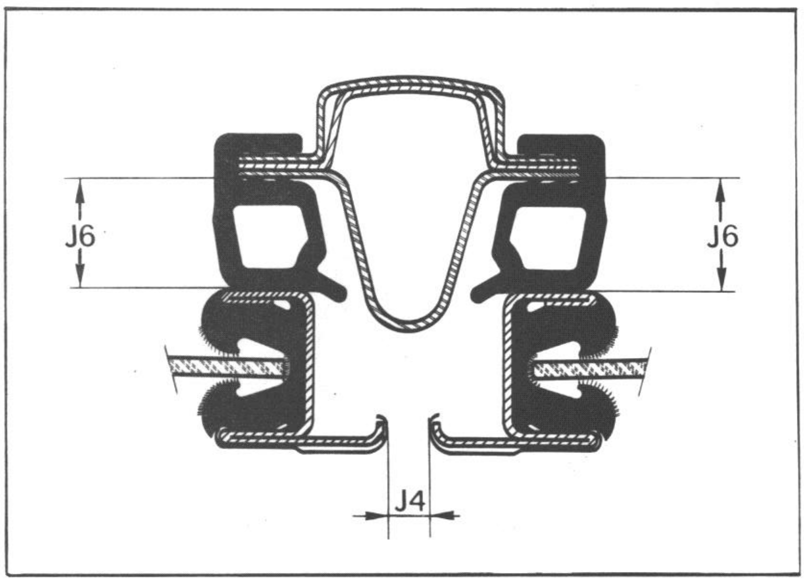




Section A



Section B



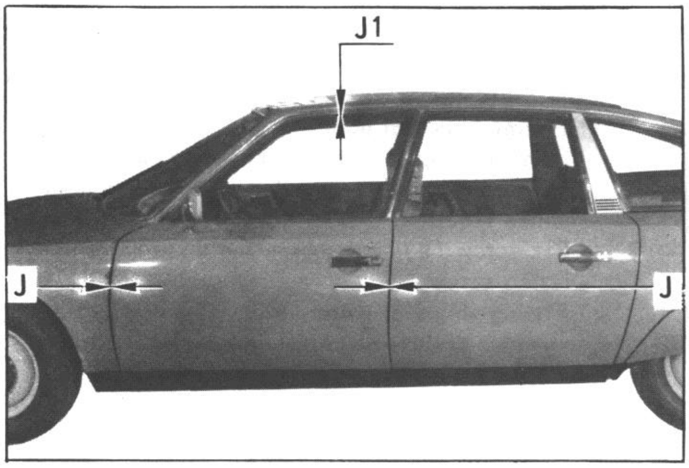
Clearance between side panels :

- Clearance between panels	J1 = J2 = J3 = 6 ± 3 mm
- Difference in level between edges of panels	2 mm max.
- Clearance between window frames of the front and rear doors	J4 = 10 ± 2 mm
- Difference in level (between window frames)	2 mm max.
- Clearance between side window frames and roof edge	J5 = 7 ± 2 mm
- Difference in level (between window frames and roof)	2 mm max
- Clearance between door and rubber seal fixings	J6 = 14 $^{+2}_{-4}$ mm

Flush-fit tolerances :

- Protrusion of each component in relation to the one immediately behind it	0 to 2 mm max
- Continuity of the « light line ». Difference	2 mm max
- Recess of side door window frames in relation to roof gutter	R = 7 $^{+4}_{-2}$ mm

I. ADJUSTING A FRONT DOOR



1. Longitudinal adjustment :

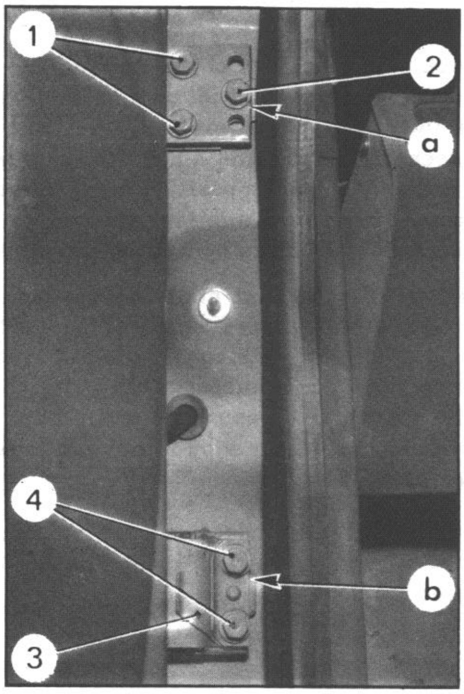
Check the clearance of the front door with the front wing and the rear door :

J = 6 ± 3 mm

If necessary, add or withdraw the adjustment shims (thickness 1 or 2 mm) at « a » and « b ».

a) **Fitting shims at « a » :**
Remove screw (2) and loosen the 2 screws (1).
Slide the shims between body and hinge.
Fit screw (2) and tighten the three fixing nuts of upper hinge.

b) **Fitting shims at « b » :**
Remove the two fixing screws (4) for distance strap (3) and tilt it.
Loosen the two screws (5).
Slide the shims between body and hinge and retighten fixing screws (5).



2. Transversal and height adjustments :

Loosen hinge fixing screws.
Move the door vertically in order to obtain a clearance of :

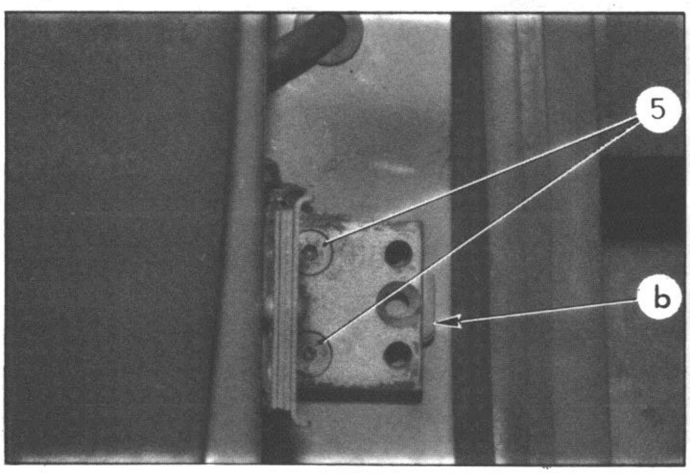
J1 = 7 ± 2 mm

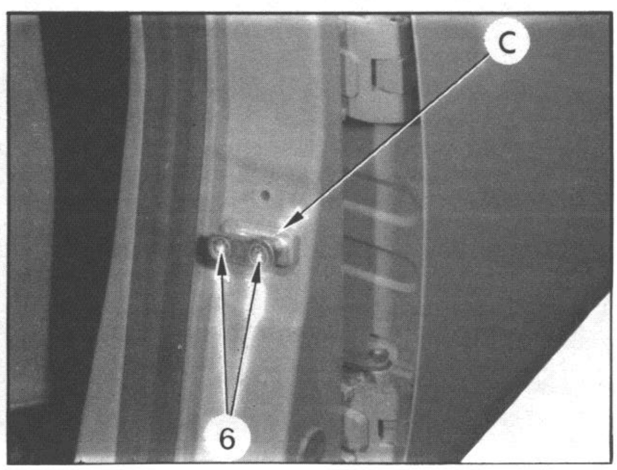
between the upper part of the window frame and the roof edging.
Check the continuity of the « light line » and the difference in alignment between door and front wing. **Inset of front door in relation to front wing = maximum of 2 mm.**
Tighten the hinge fixing screws and fix door check (3) using screws (4).

3. Adjustment of door striking plate engagement :

Loosen the two door striking plate fixing screws and adjust the plate so that correct locking and sufficient compression of the door rubber sealing strips is obtained.

If necessary, fit shims at « c ».
The rear edge of the front door must not stand proud by more than 2 mm with respect to the front edge of the rear door.
Tighten the screws (6).





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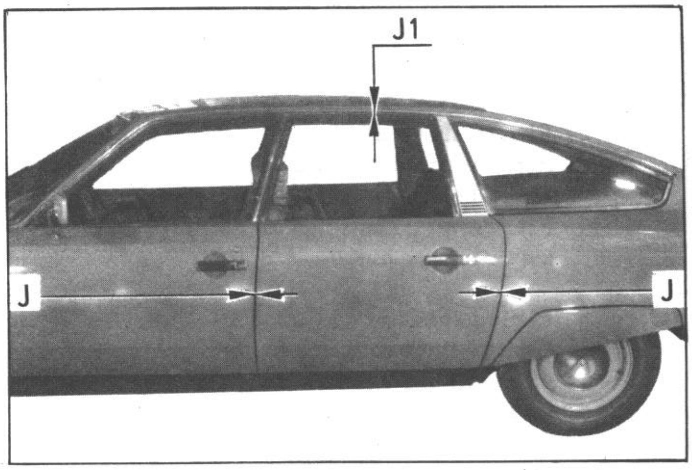
II. ADJUSTING A REAR DOOR



1. Longitudinal adjustment :

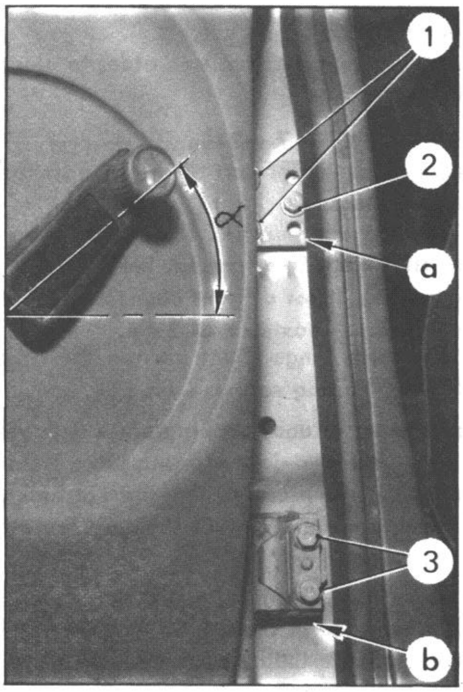
Check the clearance of the rear door with the rear wing and with the front door :

J = 6 ± 3 mm

If necessary, fit suitable shims (of thickness 1 or 2 mm) at points « a » and « b ».

a) **Fitting shims at point « a » :**
Remove screw (1) and loosen screws (2).
Slide in at point « a » under hinge the shim or shims required.
Fix screw (2) and tighten the three hinge fixing screws.

b) **Fitting shims at point « b » :**
Remove distance strap fixing screws and pivot it, around its axis.
Loosen the two hinge fixing screws (4).
Slide shims under hinge at point « b ».
Re-tighten fixing screws (4).



2. Transversal and height adjustments :

Check clearance between upper edge of window frame and edge of roof :

J1 = 7 ± 2 mm

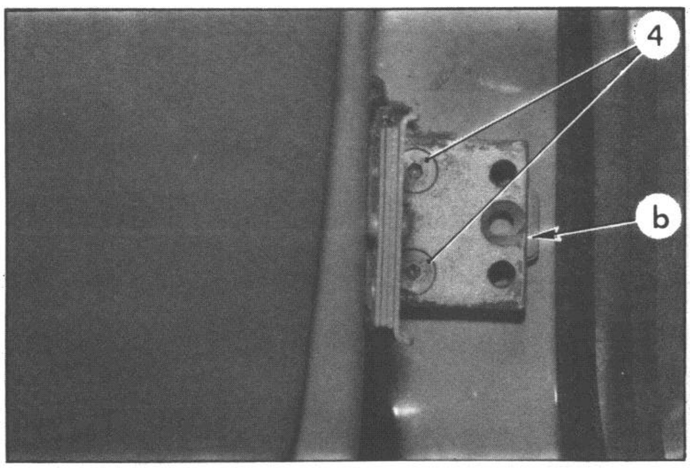
Check also continuity of the « light line » and the **recess of the rear door in relation to the front door : 2 mm max.**

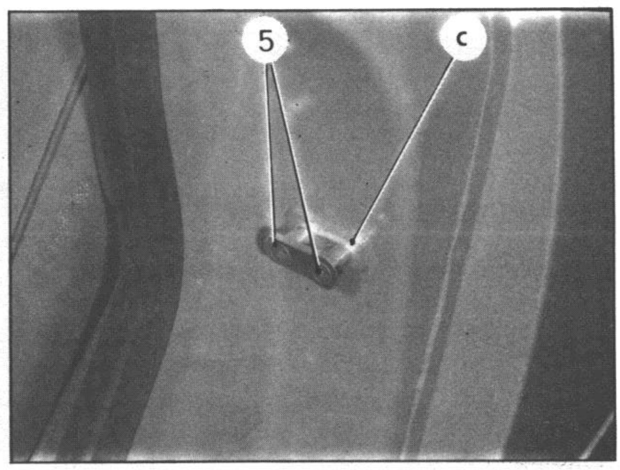
Loosen upper and lower hinge fixing screws.
Adjust door to obtain positioning as above.
Tighten fixing screws of these hinges.
Secure distance strap by its two screws (3)

3. Adjustment of striking plate engagement :

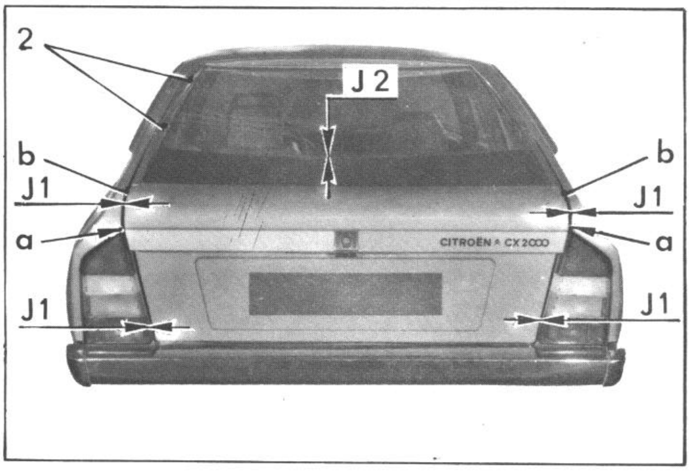
Loosen striking plate fixing screws (5) and adjust so as to obtain correct locking of door and sufficient compression of the rubber sealing strips.
If necessary, fit adjustment spacers at point « c ».
Check **recess of rear wing in relation to rear door : 2 mm max.**

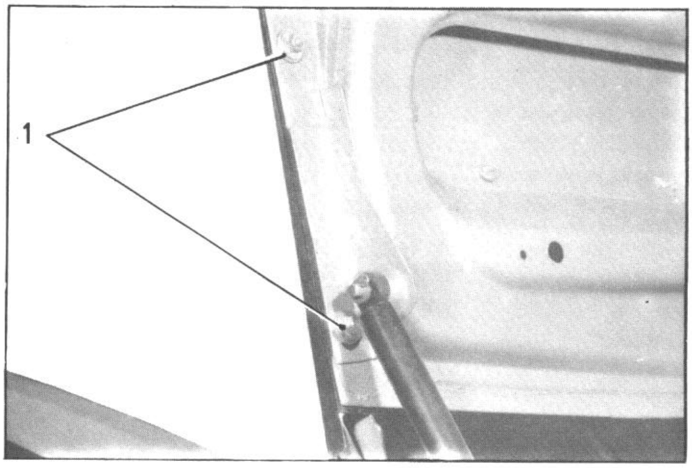
4. Position window-winder handle to obtain an angle of α = approximately **30°** when the window is closed.

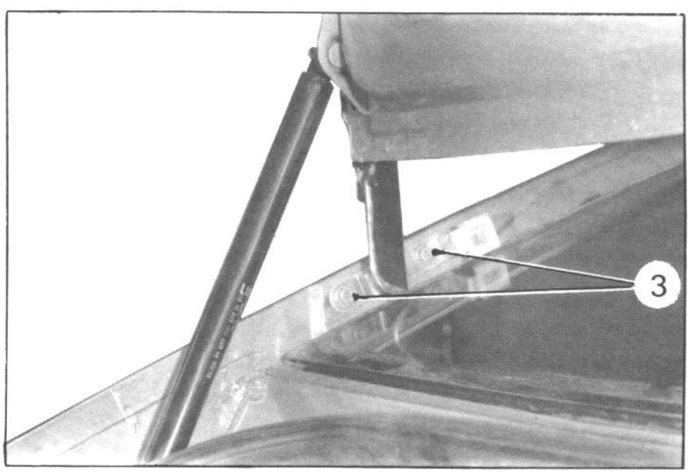




ADJUSTING THE BOOT LID







1. Transversal and longitudinal adjustment :

Slacken screws (1) to obtain a correct centralized position of the boot lid.

$$J1 = 6 \,^{+2.5}_{-1} \text{ mm}$$

with a difference between the two measurements of no more than 2 mm. and a clearance at « a » **of 0 ± 3 mm.**

Tighten screws (1).

2. Height adjustment :

Remove screws (2) and the side trim of rear window *(on either side).*
Slacken screws (3) and adjust boot lid in order to obtain :
- at « b » **a clearance of 0 ± 3 mm,**
- clearance between rear window and boot lid :

$$J2 = 6.5 \pm 4 \text{ mm}$$

- clearance between boot lid and rear bumper : 10 mm (by way of indication)

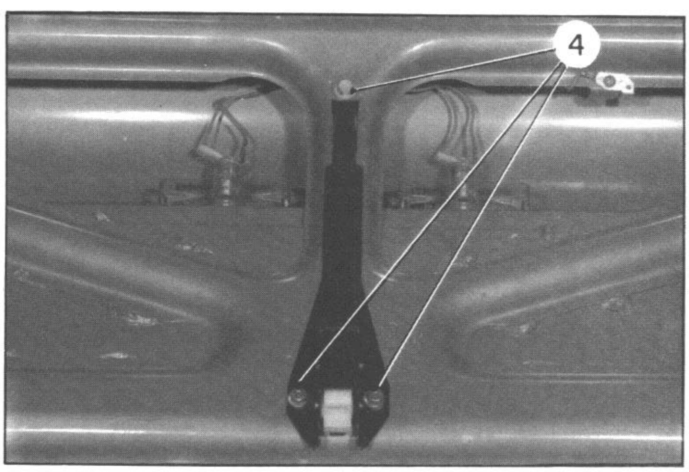
Tighten screws (3).
Fix trim and trim fixing screws (2) *(on either side).*

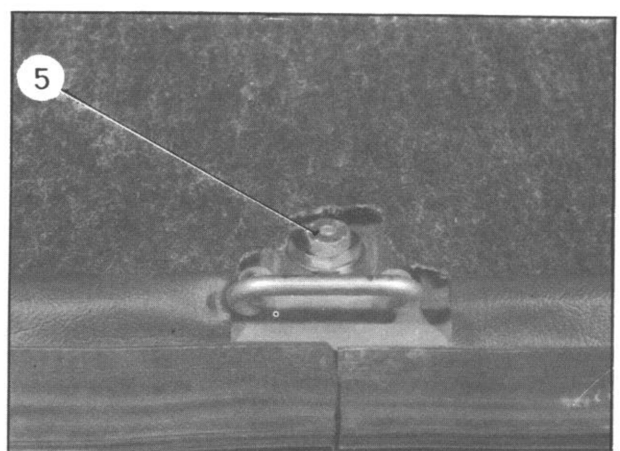
3. Adjustment of lock :

Loosen screws (4) and make vertical adjustment to lock in order to obtain correct engagement with striking plate.

4. Adjustment of striking plate :

Loosen screw (5) and adjust plate so that boot lid bears adequately on sealing rubbers.





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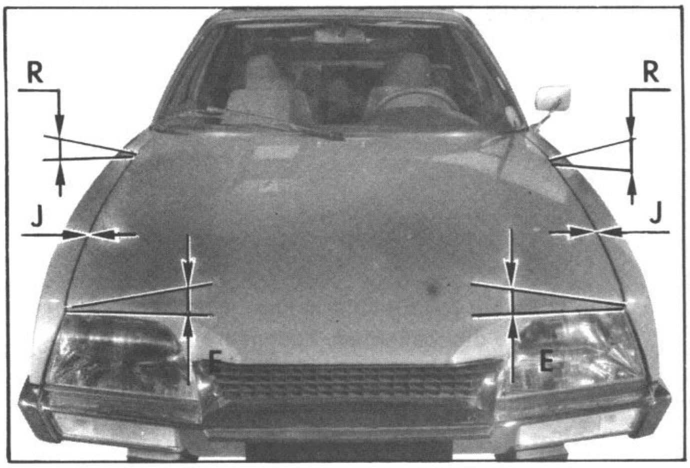
I. ADJUSTING THE BONNET



1. Height adjustment :

Remove screws (2) securing bonnet hinge to the body.
Position suitable shims at « a » to ensure the recess of bonnet in relation to front wings :

R = 2 mm max.

Fit and tighten screws (2).

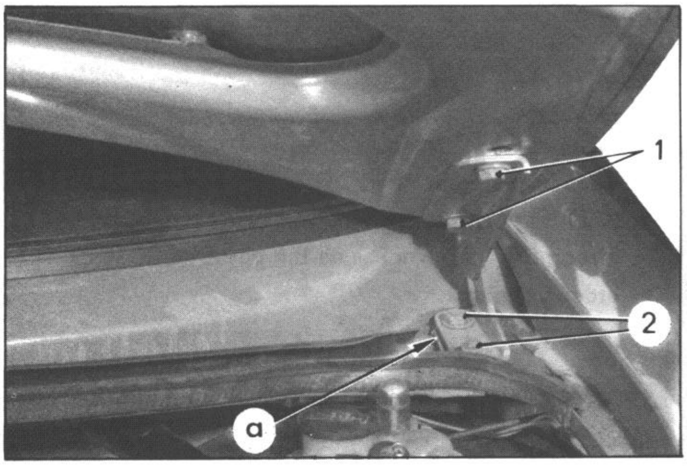
2. Transversal and longitudinal adjustment :

Loosen hinge fixing screws (1) on bonnet.
Adjust them in order to obtain a clearance between bonnet and wings :

$$J = 6 \, {}^{+2.5}_{-1} \text{ mm}$$

- with a maximum difference of 2.5 mm between left and right-hand sides and a maximum difference in level of 2 mm,
- adjust also to obtain clearance between front edge of wings and bonnet :

E = 0 ± 3 mm

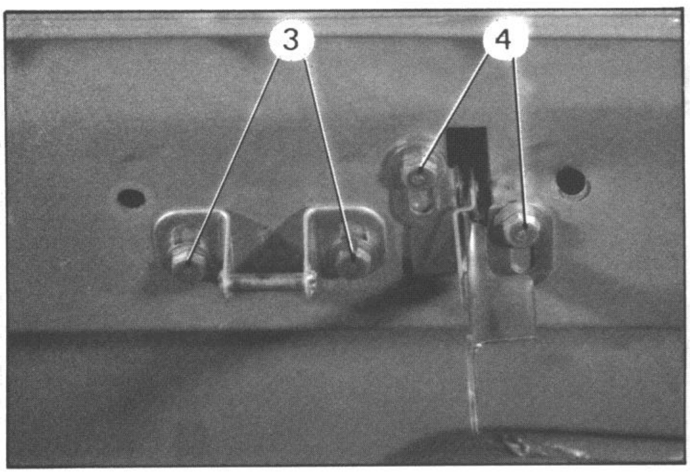


3. Adjusting the striking plate :

Loosen screws (3)
Centre striking plate in relation to lock.
Tighten screws (3).

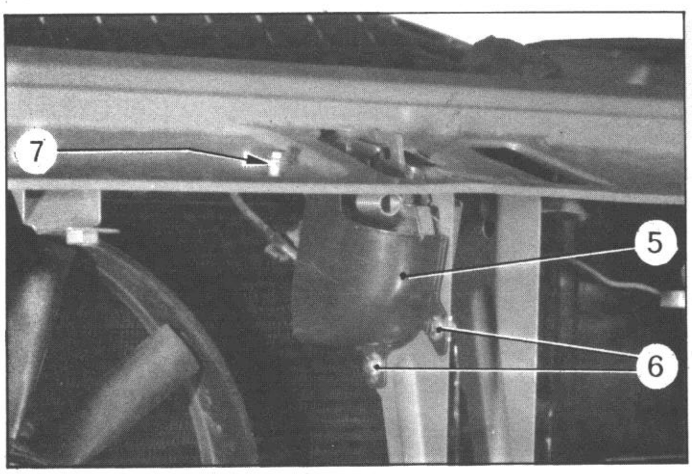
4. Adjusting the safety catch :

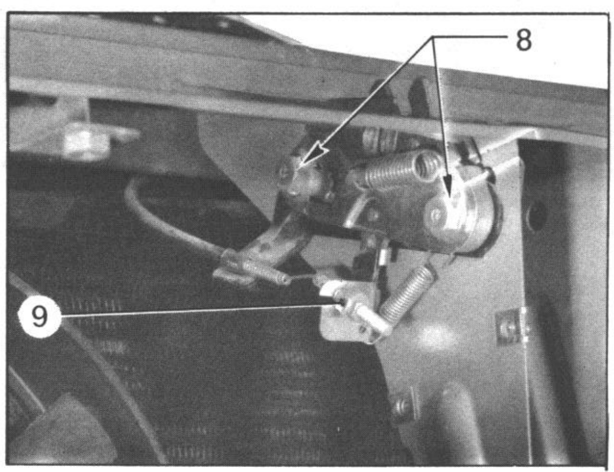
Loosen screws (4).
Adjust safety catch so that :
With bonnet resting on catch, the latter must engage under weight of bonnet alone.
Tighten screws (4).



5. Adjusting the lock and lock control cable :

Remove screws (6) and (7) and protective plate (5).
Loosen screws (8) and adjust height of lock in order to ensure, recess R, at the front.
Tension lock control cable by screwing nut (9) to eliminate any clearance on bonnet opening lever.
Bonnet should lock correctly when dropped from a height of 250 mm.





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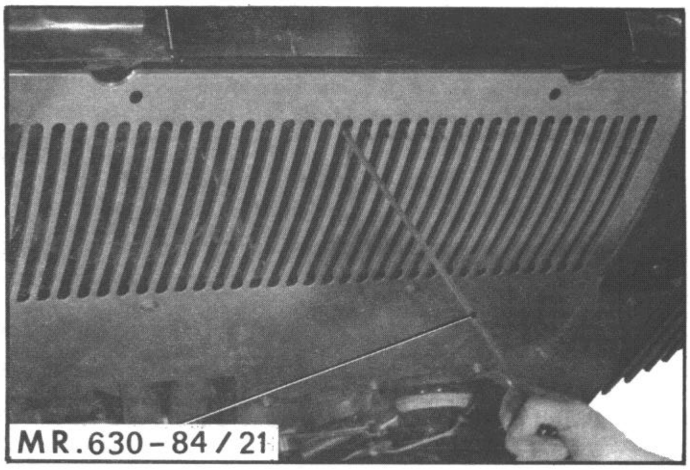
II. UNLOCKING A BONNET

(when interior control is disconnected)



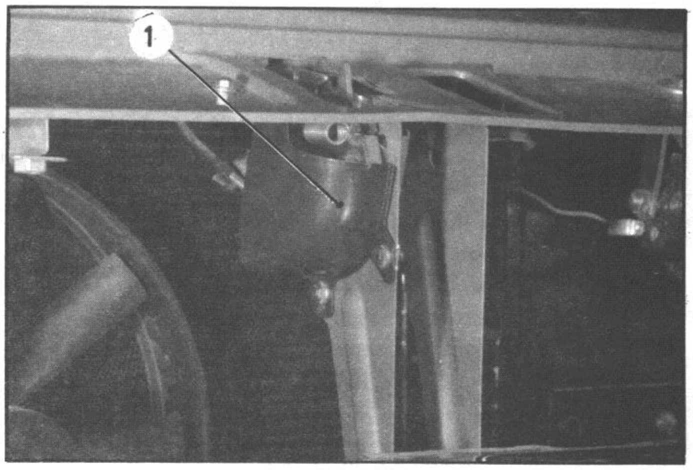
NOTE :

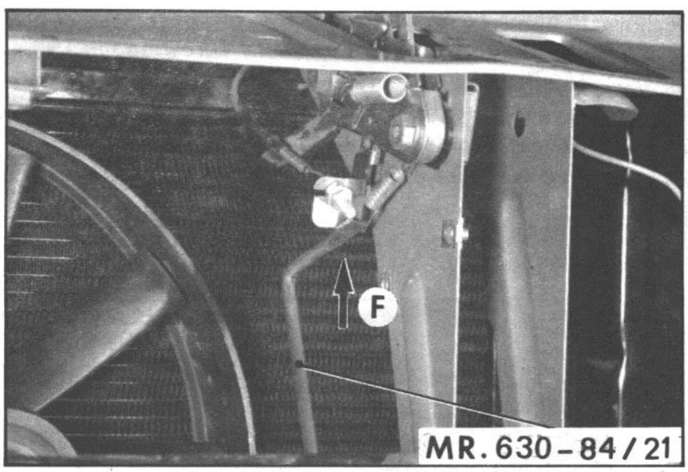
It is possible to unlock a bonnet when the control has become disconnected, because either :
- the control cable is not attached to the catch,
- or the cable is broken.

Introduce tool MR. 630-84/21 into the lower front ventilation grille.

Shine a light on the bonnet lock through the radiator grille.

Engage the point of the tool into the lock protection housing (1) from the rear and exert pressure in the direction of arrow « F » on the catch of the lock in order to unlock.





I. CHECKING

Power of heating resistance :

Saloons .... 140 to 160 watts at 13.5 ± 0.2 volts
Estates .... 130 to 150 watts at 13.5 ± 0.2 volts

To check the heating resistance of a rear window, measure

1. Either the current flowing in the resistance, using an ammeter connected in series to the supply lead of the element. The current should be :

   Saloons .... 9.2 to 10.6 amps at 12 volts
   Estates .... 8.5 to 9.8 amps at 12 volts

2. Or the resistance using an ohmmeter. Resistance should be :

   Saloons .... 1.1 to 1.3 Ω
   Estates .... 1.2 to 1.4 Ω

II. REPAIRING

1. Replacement of terminals :

Tin that part of the terminal to be soldered. Solder it in the required location (soldering iron).

2. Repairing a section of the heating element :

a) Obtain from the Replacement Parts Department :

- 1 Repair kit .... ZC. 9 855 128 U

This « SECURIGLACE » outfit includes :

- 1 Bottle of abrasive cleaning powder
- 1 Small bottle of conductive enamel
- 1 Tube of adhesive
- 1 Tube of hardener for adhesive
- 1 Small bottle of metallic powder
- 1 Roll of thick self-adhesive tape
- 1 Warning lamp for detecting cuts
- 1 Roll of self-adhesive tape for detecting cuts (thermopaper)
- 1 Plastic spatula
- 1 Small glass plate (for preparation of mixtures)

b) **Locating the cut :**

With the resistance fed as normal :

- Locate the defective resistance wire by sticking the adhesive detection tape at the centre of the rear window (interior side) and on all resistance wires so that the tape is perpendicular to the latter. The unbroken wires will turn the thermo-paper blue when they increase in temperature.
- Slide the two pointed probes of the warning lamp support on the cut wire. When the lamp lights up, the pointed probes are on both sides of the break in the wire. By slightly moving the probes along the length of the wire, the exact extent of the cut can be determined.

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c) **Preparing the rear window :**
With the resistance switched off, clean the area to be treated with the powder contained in the bottle marked « Bimspulver ».

Spread this product on a small piece of cloth and rub.
Wipe off with a second clean cloth.

Place a strip, 25 mm long, of thick adhesive tape on each side of the resistance to mark out the width of the resistance. The edges of the strip must be perfectly straight and clean so as to avoid the possibility of a cut during repair.

d) **Repair operation :**

1st part.

Empty the complete contents of the bottle of conductor enamel onto the glass plate. Mix thoroughly with the spatula.

Apply the paste thus obtained on the area required,,filling the space between the two adhesive tapes.

Restrict the application of paste to the cut area.
Allow to dry at ambient temperature for approximately 15 minutes.

2nd Part

On the glass plate, prepare a small quantity of mixture composed of equal parts of UHV hardener and binding agent.

Add to this paste an equal quantity of the metallic powder contained in the bottle marked « Metallpulver ».
Mix well, using the spatula.

Apply the resulting paste on the conductor enamel deposit, overlapping on both sides by 10 mm, but with the width still restricted by the strips of adhesive tape.
Thickness of the mixture should be equalized with the spatula, using the tape as a support.

Allow to dry for 1 1/2 hours at ambient temperature before removing the strips of adhesive tape.Move them aside in a parallel direction to the surface of the rear window to avoid removing the applied film. Drying time can be reduced by passing electric current through the resistance for half an hour.

NOTE : Wait for 24 to 48 hours before cleaning the inside of the rear window.

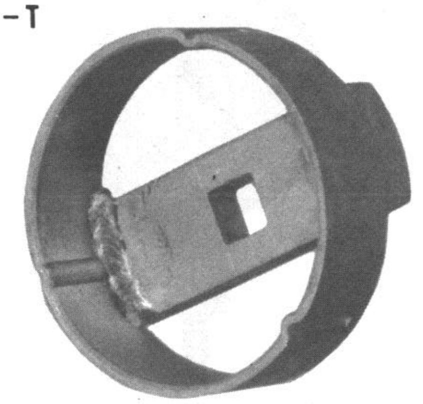
e) **Checking :**

The check can be carried out using the self-adhesive detecting tape.
Proceed as when locating the cut.

SPECIAL « T » TOOLS

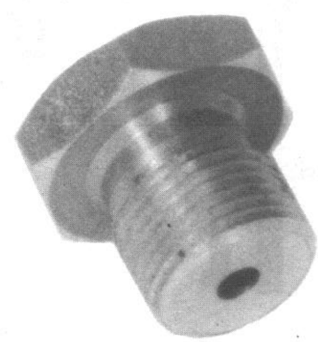
MENTIONED IN VOLUME I OF MANUAL 818

6002-T



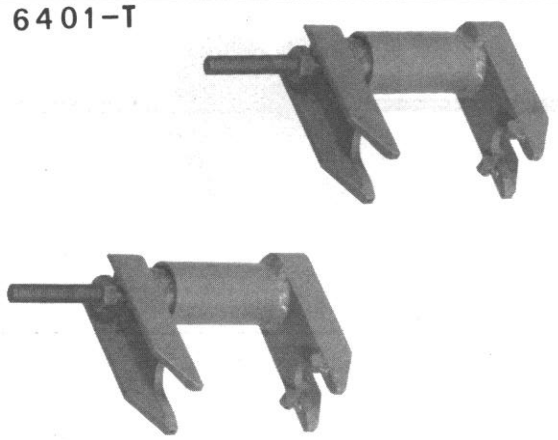
Tool for removing and fitting the oil filter cartridge

6004-T



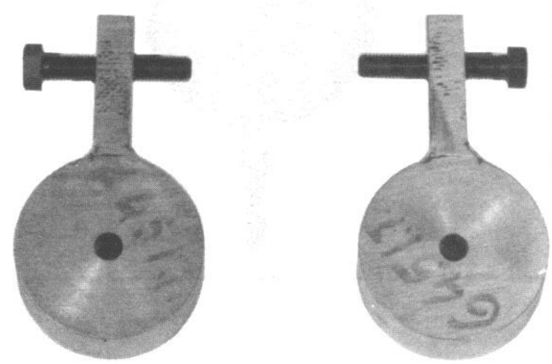
Union for checking oil pressure

6401-T



Set of 2 grips for adjusting anti-roll bar

6451-T



Set of 2 tools for positioning steering crossmember

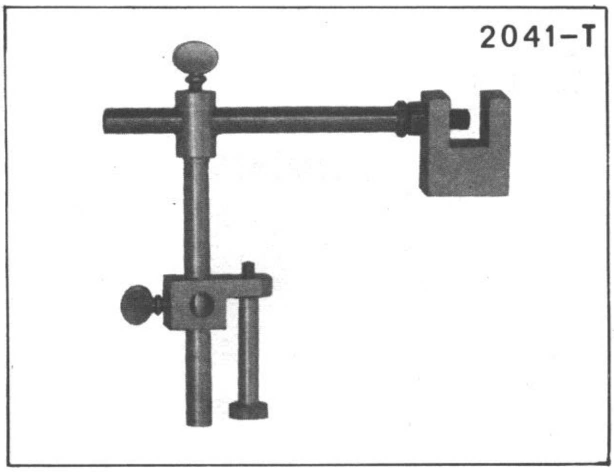
6501-T

Tool for handbrake eccentric nut

6009-T

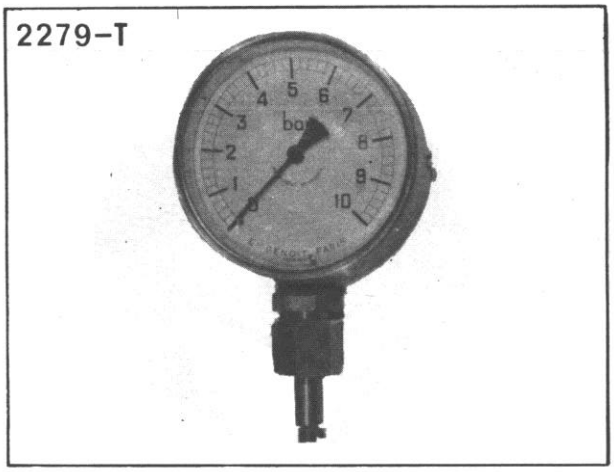
Dipstick for checking oil-level on « SANKYO » compressor

13 440

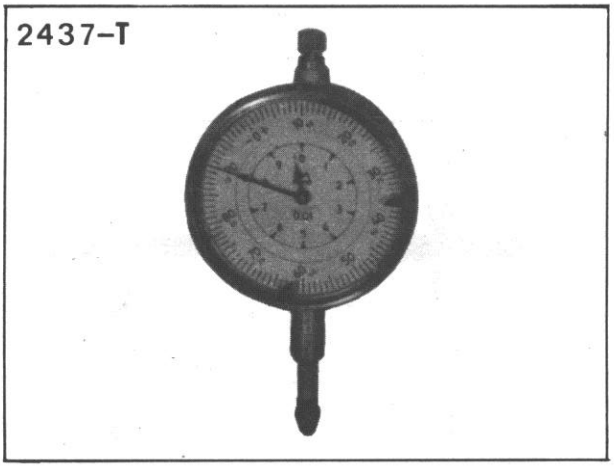


Dial-gauge mounting

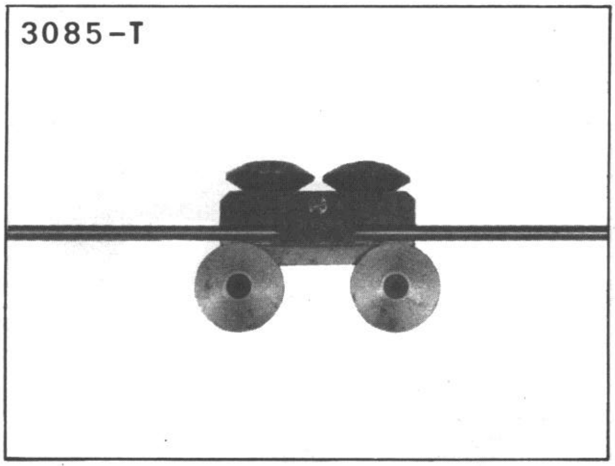
13 462



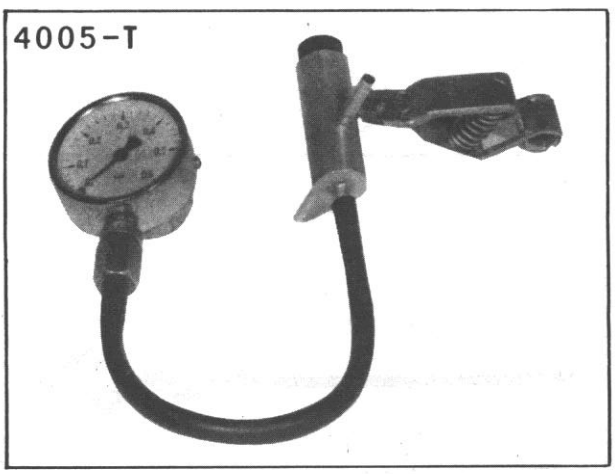
0 - 10 bar (0 - 145 psi) Pressure gauge



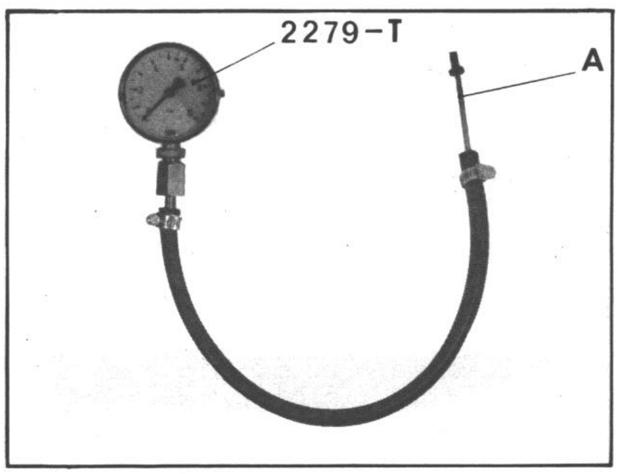
Dial gauge



Pulley alignement rod



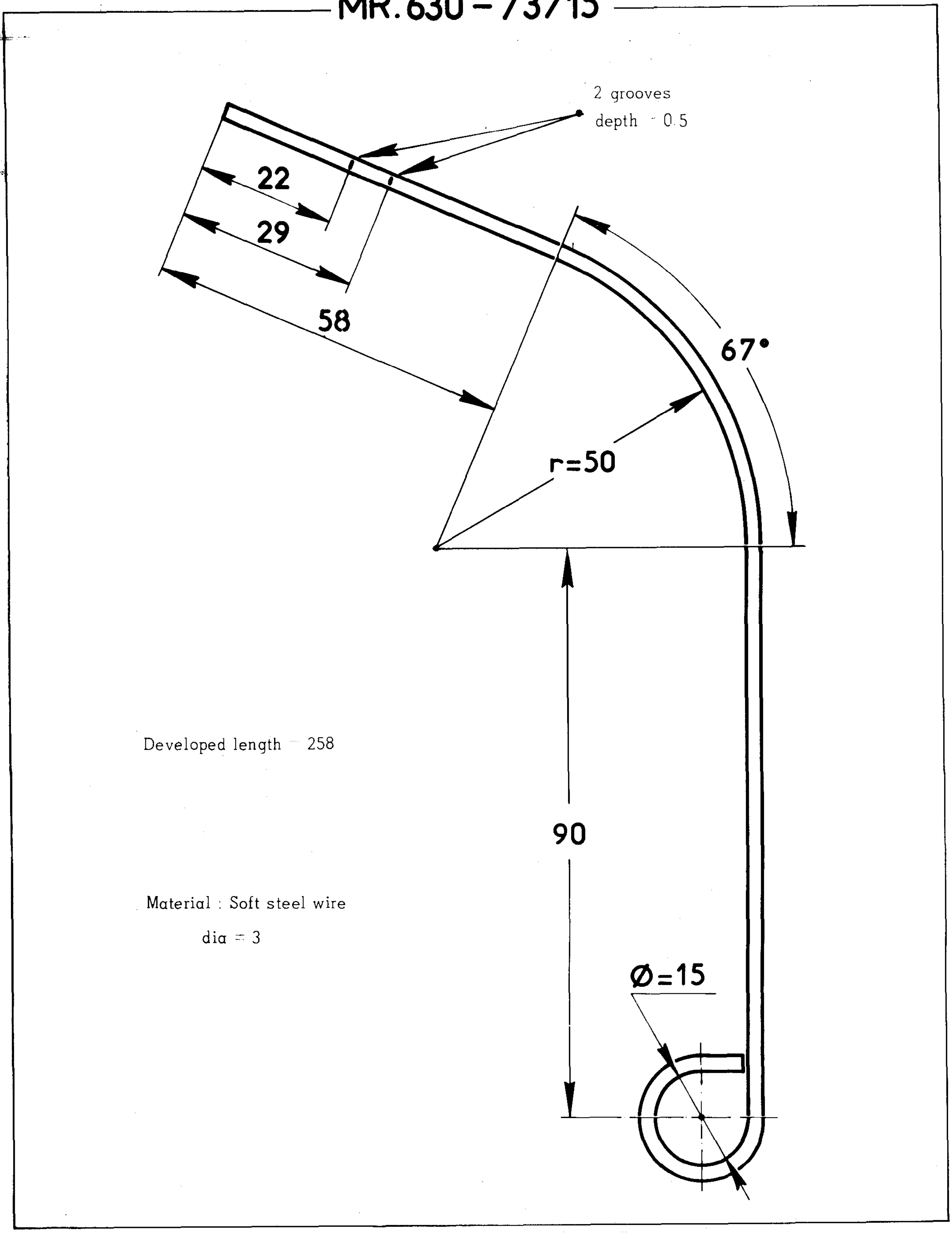
Assembly for checking petrol-pressure



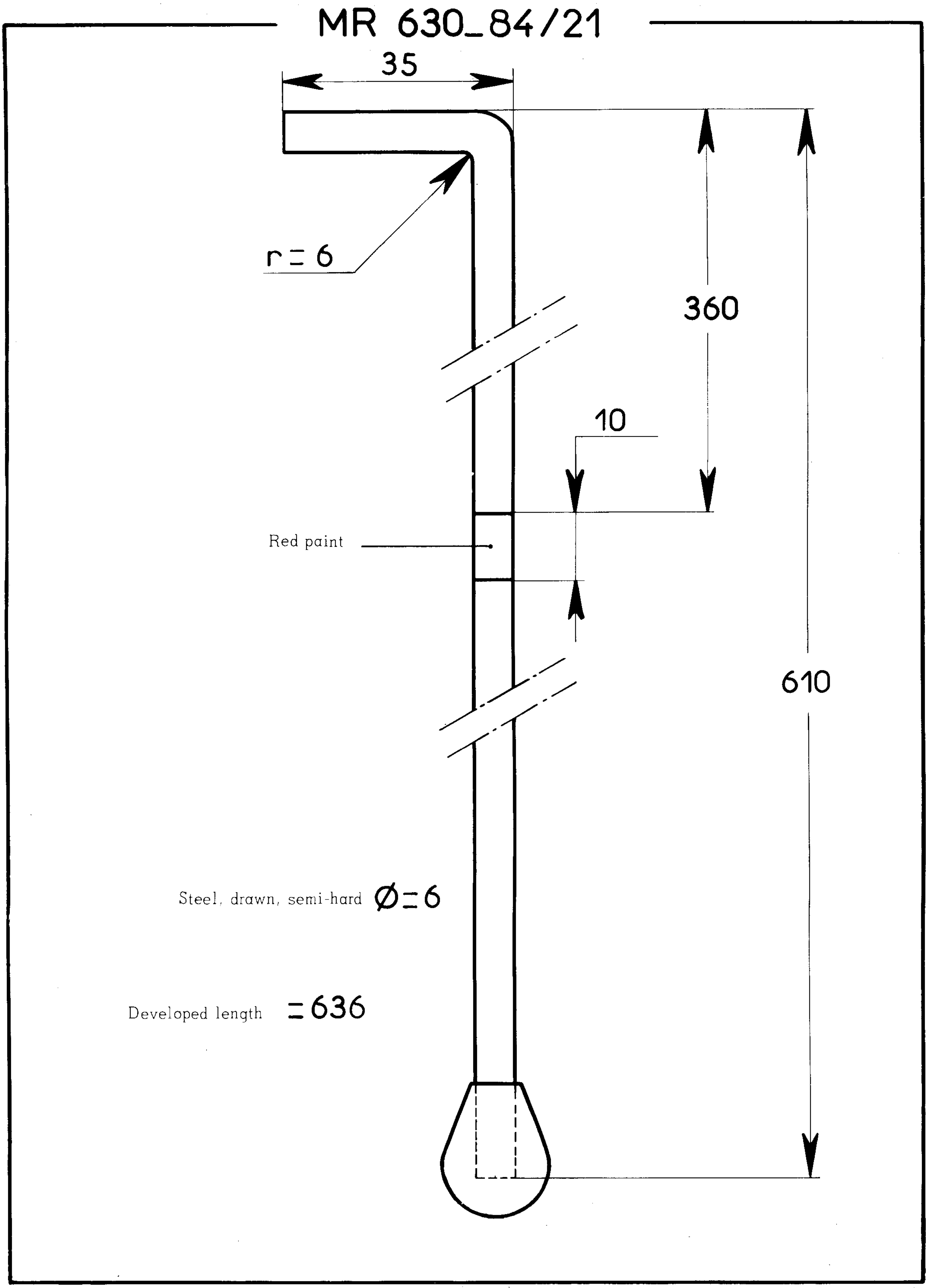
Assembly for checking converter oil pressure, consisting of the following :

- a 2279-T pressure gauge
- a metal union A, dia = 6 mm taken from kit 3112-T

MR.630 - 73/15



Supplement N° 1 to Manual 818-1 (ADD)



Supplement N° 1 to Manual 818-1 (CORR)