

ALL A VEHICLES

PRODUCED SINCE 1963

Updating : No. 1 (September 1983) included
No. 2
No. 3

CHARACTERISTICS ADJUSTMENTS CHECKS

Manual 8161-1

78-161



USING THE MANUAL

PRESENTATION.

To facilitate the use of the Manual, operations have been grouped in two volumes :

- Volume 1 contains :

- CHARACTERISTICS - ADJUSTMENTS - CHECKS

This volume which is essential for carrying out adjustments and repairs should be available in all workshops.

- Volume 2 contains :

- REMOVAL and FITTING

- RECONDITIONING

- ELECTRICAL SYSTEM

The above volumes are sold separately.

Each volume is presented in a blue Fibrex binder, with a « MOLTO » type mechanism, which facilitates the filing of updated sheets or the removal of a particular operation needed by the workshop.

CONTENTS :

Each volume comprises :

- a list of operations contained in the volume

- a classification of operations in numerical order

- the list of all special tools mentioned in the operations and the manufacturing drawings of those which are not available on the market, but can be made by the repairer.

OPERATIONS.

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

The operation numbers are made up of

- a) the vehicle code letter - > A <
- b) a three figure number denoting the unit or unit element
- c) a figure denoting the type of operation :
 - the figures 0, 0, 0 denote the vehicle characteristics,
 - the figures 1, 0, 0 denote the unit characteristics,
 - the figure 0 denotes adjustments and checks
 - the figures 1, 4, 7 denote removal and fitting,
 - the figures 2, 5, 8 denote stripping and reassembly,
 - the figures 3, 6, 9 denote reconditioning

The thumb indexing corresponding to the list of operations allows in quickly finding a particular operation.

TOOLS.

The special tools are indicated in the text by a number followed by the letter T.

These tools are sold by :

- Etablissement FENWICK Department AMA 24, bd. Biron - 93404 St. OUEM - FRANCE - Tél. 252 82 85

Tools to be made are indicated in the text by a number preceded with the letters MR. Drawings of these tools, can be found at the end of the present volume.

TIGHTENING TORQUES.

Torques are expressed in the following units :

- in decanewton-metres (da Nm)

$$9.81 \text{ Nm} = 1 \text{ m.kg} = 0.981 \text{ da Nm}$$

For practical purposes the values expressed in da Nm are rounded off - so that 1 da Nm corresponds to 1 m.kg (the unit formerly used for measuring torques).

$$1 \text{ da Nm} = 1 \text{ m.kg}$$

NOTE - When a tightening torque figure is followed by the words > torque spanner < the operation must OF NECESSITY be carried out with a torque spanner

ADVISORY SERVICE.

For all technical information concerning these vehicles, please contact :

CITROEN CARS Limited
After-sales Department
Mill St.
Slough, Berks G.B.

OR : DEPARTEMENT TECHNIQUE APRES-VENTE
ASSISTANCE TECHNIQUE
163, avenue Georges Clemenceau
92000 NANTERRE
FRANCE

**LIST OF OPERATIONS IN
VOLUME No. 1 OF MANUAL 816**

(A) Vehicles produced since 1961

1



2



3



4



5










7








8



Operation number	LIST OF OPERATIONS
<p>GENERAL</p> <p>A. 000 A. 01 A. 02 A. 03</p>	<p>GENERAL  1</p> <p>General characteristics</p> <p>Protection of electrical components</p> <p>Operations on hydraulic system (brakes)</p> <p>Recommended products</p>
<p>ENGINE - CARBURATION - IGNITION</p> <p>A. 100-00 A. 112-0 A. 120-0 A. 140-00 A. 142-0 A. 173-0 A. 210-00 A. 210-0 A. 220-0</p>	<p>ENGINE - CARBURATION - IGNITION  2</p> <p>Characteristics and special features of the engines</p> <p>Adjusting the rockers</p> <p>Checking the valve timing</p> <p>Characteristics of carburetors</p> <p>Adjusting carburetors and controls</p> <p>Checking the fuel supply system</p> <p>Characteristics of the ignition system</p> <p>Checking and adjusting the ignition</p> <p>Checking and adjusting the oil pressure - checking the vacuum in the crankcase :</p> <ul style="list-style-type: none"> - Checking oil pressure on vehicle - Checking vacuum in the crankcase
<p>CLUTCH</p> <p>A. 300-0 A. 300-0a A. 312-00 A. 314-00</p>	<p>CLUTCH  3</p> <p>Checking the alignment of the engine-geatbox assembly (M 4 job)</p> <p>Checking the alignment of the engine-geatbox assembly (T 1 job)</p> <p>Characteristics and special features of the clutch</p> <p>Checking and adjusting the clutch control</p>
<p>GEARBOX</p> <p>A. 330-00 A. 334-0</p>	<p>GEARBOX  4</p> <p>Characteristics and special features of gearboxes</p> <p>Adjusting the gear selection forks</p>
<p>TRANSMISSION</p> <p>A. 372-00</p>	<p>TRANSMISSION  5</p> <p>Characteristics and special features of drive shafts</p>
<p>FRONT AXLE</p> <p>A. 410-00 A. 410-0</p>	<p>FRONT AXLE  7</p> <p>Characteristics and special features of the front axle</p> <p>Checking and adjusting the front axle</p> <ul style="list-style-type: none"> - Checking the camber - Checking and adjusting toe (at wheel alignment) - Adjusting the steering angle - Checking a dismantled front suspension arm
<p>REAR AXLE</p> <p>A. 420-00 A. 420-0</p>	<p>REAR AXLE  8</p> <p>Characteristics and special features of the rear axle</p> <p>Checking the rear axle</p> <ul style="list-style-type: none"> - Checking the rear arms on the vehicle - Checking a rear arm removed from the vehicle

**LIST OF OPERATIONS IN
VOLUME No. 1 OF MANUAL 816**
v. A. - Vehicles produced since 1963

Operation number	LIST OF OPERATIONS
	 9
A. 430-00 A. 430-0	<p>SUSPENSION</p> <p>Characteristics and special features of the suspension</p> <p>Checking and adjusting the suspension :</p> <ul style="list-style-type: none"> - Checking the heights - Adjusting the heights - Adjusting the front bump stops
	 10
A. 440-00 A. 440-0	<p>STEERING</p> <p>Characteristics and special features of the steering system</p> <p>Checking and adjusting the steering :</p> <ul style="list-style-type: none"> - Checking and adjusting the front wheel toe out - Adjusting the steering angle
	 11
A. 450-00 A. 451-C	<p>BRAKES</p> <p>Characteristics and adjustments of the braking system</p> <p>Checking and adjusting the brakes :</p> <ul style="list-style-type: none"> - Adjusting the eccentrics - Bleeding the braking system - Checking the hydraulic system and its components for leaks - Checking front disc lateral run out
A. 453-0	<p>Checking and adjusting the brake control</p> <ul style="list-style-type: none"> - Adjusting the brake pedal clearance
A. 454-0	<p>Adjusting the handbrake (drum brakes - disc brakes)</p>
	 12
A. 530-0	<p>ELECTRICAL SYSTEM</p> <p>Characteristics and checks of electrical components :</p> <ul style="list-style-type: none"> - Dynamos and voltage regulators - Alternators and regulators (12 volts) - Starter motors - 24 volts equipment (special for Medical vehicles, Military type)
A. 540-C	<p>Adjusting the headlamps</p>
	 14
	<p>TOOLS</p> <p>List of special tools mentioned in the Manual</p> <p>Manufacturing drawings for tools not on sale</p>

IDENTIFICATION OF « A » VEHICLES, ALL TYPES

(Vehicles as of 1953)

Usual name	Official symbol	Factory guarantee symbol *	Commercial symbol	Engine plate identification mark	Engine type
2 CV	AZ series A and AM	7/53 → 3/75	AZZ 2 CV AZL and 2 CV AZAM 2 CV 4 2 CV 4 2 CV Special 2 CV U 2 CV R 2 CV 6 Special Club 2 CV Special or Club or both A 1 or Character line	AZ	A 53 (425 ccl)
	AZ series A 21	2/70 → 3/75		AZA 2	A 79/1 (435 ccl)
	AZ series KB	3/75 → 3/78		AYA 2	A 79/1 (435 ccl)
	AZ series KR	3/78 → 3/79		AYA 7	A 79/1 (425 ccl)
	AZ series KA	2/70 → 3/75		AK 2	M 28/1 (602 ccl)
	AZ series KA	3/78 → 3/79		A 06/635	M 28/1 (602 ccl)
	AZ series KA	7/79 → 7/81		A 06/656	M 28/1 (602 ccl)
AZ series KA	1/81 →	A 06/635	M 28/1 (602 ccl)		
DYANE	AYA series A and AM	8/67 → 3/75	AZZ Dyane 4 Dyane 6 Dyane 6	AYA	A 79/0 (425 ccl)
	AYA 2 series A and AM	1/60 → 2/75		AYA 2	A 79/1 (435 ccl)
	AYA 3 series A and AM	1/58 → 10/68		AM	M 4 (602 ccl)
	AYB series A and AM	10/68 → 2/71		AK 2	M 28/1 (602 ccl)
	AYA 2 (series A and AM)	2/70 → 3/75		AYA 2	A 79/1 (435 ccl)
AY series CP	2/71 →	AM 7	M 28 (602 ccl)		
MEHARI	AY series CA	10/68 → 1/72	AZZ Mehari Mehari	AK 2	M 28/1 (602 ccl)
	AY series CA	7/73 →		A 05/635	M 28/1 (602 ccl)
2 CV Van	AZ series A1	3/53 → 3/72	AZZ AZL 1/53 → 3/67 AZL 9/67 → 3/72 Citroen 250 Citroen 250	AZ	A 53 (425 ccl)
	AZ series B1	8/72 → 3/75		AYA	A 79/0 (425 ccl)
	AK series AP (A71J)	3/75 → 3/78		AYA 7	A 79/1 (435 ccl)
3 CV Van	AK	7/53 → 3/68	AZZ AK AK Citroen 400 Academe Academe L.P.G.	AM	M 4
	AK series B1	5/63 → 3/70		AK 2	M 28/1 (602 ccl)
	AK series AK	8/70 → 2/78		AK 7	M 28/1
	AY series CD	2/78 →		AM 2 A	M 28/1 (602 ccl)
	AY series CD modified	8/80 →		AM 2 A L.P.G.	M 28/1 (602 ccl)
3 CV Saloon and Estate	AM	→ 3/68	AZZ AM B AM B Estate AM U AM B Estate AM B AM B AM B Estate/Commer. AM B Service Estate	AM	M 4
	AMB - AMC - AMF	→ 3/68		AM	M 4
	AM 2 - AMU - AMF	5/68 → 2/69		AM 2	M 28
	AMB 2	5/63 → 2/69		AM 2	M 28
	AM 1	3/69 → 2/69		AM 2	M 28
	AM (3000) JA	→ 3/69		AM 2	M 28
	AM series JB	8/69 → 3/71		AM 2	M 28
AM series JC	→ 3/71	AM 2	M 28		

* All vehicles produced before the 1972 motor show have the factory guarantee symbol : AZZ.

Vehicles which are no longer commercialized

SALOONS

	All 2 CV Saloons	All Dyane Saloons	All 3 CV Saloons
Number of seats	4	4	4
Tyres	125 - 380 X 135 - 380 X	125 - 380 X	125 - 380 X
TYRE { { Tubeless ; { Export with inner tube !			
Pressure in bars : { { Front { Rear	See Owner's Manual		
General dimensions :			
Wheel base	2.430 m (7 ft 10.4 in.)	2.400 m (7 ft 10.4 in.)	2.400 m (7 ft 10.4 in.)
Front track	1.260 m (4 ft 1.6 in.)	1.260 m (4 ft 2.6 in.)	1.260 m (4 ft 2.6 in.)
Rear track	1.260 m (4 ft 1.6 in.)	1.260 m (4 ft 1.3 in.)	1.220 m (4.00 ft)
Overall length	3.830 m (12 ft 6.3 in.)	3.870 m (12 ft 6.3 in.)	3.991 m (13 ft 1.2 in.)
Overall width	1.480 m (4 ft 11 in.)	1.500 m (4 ft 10.4 in.)	1.524 m (5 ft)
Overall height (empty)	1.600 m (5 ft 3.6 in.)	1.540 m (4 ft 10.6 in.)	AMI 6 : 1.485 m 1.4 ft 10.4 in. AMI 8 : 1.494 m 1.4 ft 10.6 in.
Ground clearance (front)	0.150 m (5 in.)	0.155 m (5.08 in.)	AMI 6 : 0.160 m (5.25 in.) AMI 8 : 0.130 m (4.26 in.) 11.400 m (35 ft 4.4 in.)
Turning circle	10.700 m (35 ft 1.2 in.)	10.700 m (35 ft 1.2 in.)	AMI 6 : 0.711 kg (1.577 lbs.)
Kerb weight	2 CV → 2.770 → 535 kg (1.180 lbs.) 2 CV → 2.770 → 560 kg (1.235 lbs.) 2 CV → 2.770 → 570 kg (1.255 lbs.) 2 CV → 2.770 → 605 kg (1.343 lbs.)	See table page four	AMI 8 : 725 kg (1.598 lbs.) AMI 6 : 880 kg (1.916 lbs.) AMI 8 : 1050 kg (2.315 lbs.)
Gross vehicle weight		See table page four	
Towing :			
Maximum weight on tow bar	2 CV AZL → 20 kg (44 lbs.) 2 CV 4 and 6 → 35 kg (77 lbs.)	Dyane → 4.790 → 20 kg (44 lbs.) Dyane → 4.790 → 35 kg (77 lbs.)	35 kg (77 lbs.)
Maximum weight without brakes	2 CV AZL → 200 kg (441 lbs.) 2 CV 4 and 6 → 200 kg (441 lbs.)	Dyane → 4.790 → 200 kg (441 lbs.) Dyane → 4.790 → 200 kg (441 lbs.)	AMI 6 → 340 kg (750 lbs.) AMI 8 → 350 kg (774 lbs.)
Maximum weight with inertia brakes	400 kg (882 lbs.)	400 kg (882 lbs.)	500 kg (1.102 lbs.)
Maximum gradient with a trailer	2 CV → 2.770 → 11.11 in 3.1 2 CV → 2.770 → 12.11 in 3.1	11.11 in 3.1 12.11 in 3.1	11.11 in 3.1 11.11 in 3.1
Maximum weight on rear rack	30 kg (66 lbs.)	30 kg (66 lbs.)	30 kg (66 lbs.)
Capacities :			
Petrol tank	2 CV AZL } 20 litres 2 CV 4 } (4.40 Imp. gal.) 2 CV 6 } 25 litres (5.50 Imp. gal.)	Dyane 4 : 20 litres Dyane 6 : 25 litres	AMI 6 : 25 litres (5.50 Imp. gal.) AMI 8 : 30 litres (6.60 Imp. gal.)
Engine :			
Engine casing after draining	2 CV 4 : 2.3 litres (4 Imp. pts.) 2 CV 6 : 2.4 litres (4.2 Imp. pts.) 0.3 litres (1.6 Imp. pts.)	Dyane 4 : 2.3 litres (4 Imp. pts.) Dyane 6 : 2.4 litres (4.2 Imp. pts.) 0.3 litres (1.6 Imp. pts.)	2.4 litres (4.2 Imp. pts.) 0.3 litres (1.6 Imp. pts.)
Gearbox			

ESTATES and VANS

	3 CV Estate	Mehari	2 CV Van	3 CV Van	Acadiane 3 CV Van
Number of seats : Without rear bench-seat With rear bench-seat	Commercial Estate 2/3 Familial Estate 4/5	2 4	2 4	2 4	2
Tyres : Type { tubeless with inner tube	125 - 380 or 135 - 380 X	135 - 380 X 135 - 380 XM 1.5	135 - 380 X authorized fitting 135 - 380 X	135 - 380 X	135 SR 15 ZX For authorized fittings see owner's manual.
Pressure in bars (psi) { front rear	See owner's manual				
General dimensions : Wheelbase Front track Rear track Overall length Overall height (empty) Overall width Ground clearance (loaded) Turning circle Kerb weight Gross vehicle weight Towing : Maximum weight on towbar Maximum weight without brakes Maximum weight with inertia brakes Maximum gradient with a trailer Maximum weight on roof rack Capacities : Petrol tank Engine : Engine casing after draining Gearbox	2,400 m (7 ft-10.4 in) 1,260 m (4 ft-1.6 in) 1,220 m (4 ft) 3,991 m (13 ft-1.1 in) 1,520 m (4 ft-11 in) 1,524 m (5.00 ft) 0,130 m (5.1 in) 11,400 m (37 ft-4.8 in) AMI 6 : 690 kg (1521 lbs) AMI 8 : 725 kg (1598 lbs) AMI 6 : 1065 kg (2345 lbs) AMI 8 : 1100 kg (2425 lbs) 35 kg (77 lbs) AMI 6 : 340 kg (750 lbs) AMI 8 : 360 kg (794 lbs) 500 kg (1102 lbs) 11 % (1 in 9) 30 kg (66 lbs) AMI 6 : 25 litres (5.50 Imp.gal) AMI 8 : 30 litres (6.60 Imp.gal) 2.4 litres (4.2 Imp.gal) 0.9 litre (1.6 Imp.gal)	2,400 m (7 ft-10.4 in) 1,260 m (4 ft-1.6 in) 1,260 m (4 ft-1.6 in) 3,520 m (11 ft-6.5 in) 1,530 m (5.00 ft) 1,530 m (5.00 ft) 0,177 m (6.96 in) 10,700 m (35 ft-1.2 in) 555 kg (1224 lbs) 935 kg (2061 lbs) 35 kg (77 lbs) 270 kg (595 lbs) 400 kg (882 lbs) 13 % (1 in 9) 30 kg (66 lbs) 25 litres (5.50 Imp. gal.) 2.4 litres (4.2 Imp.gal) 0.9 litre (1.6 Imp.gal)	2,400 m (7 ft-10.4 in) 1,250 m (4 ft-1.6 in) 1,260 m (4 ft-1.6 in) 3,605 m (11 ft-9.9 in) 1,720 m (5 ft-7.8 in) 1,500 m (4 ft-11 in) 0,180 m (7.08 in) 10,700 m (35 ft-1.2 in) See table page 4 See table page 4 35 kg (77 lbs) AZU → 2,197 : 200 kg (441 lbs) AZU 2,1972 → 270 kg (595 lbs) 400 kg (882 lbs) AZU → 2,1972 : 11 % (1 in 9) AZU 2,1972 → 12 % (1 in 8) 30 kg (66 lbs) 20 litres → 2,197 (4.40 Imp.gal) 25 litres → 2,197 (5.50 Imp.gal) 2.3 litres (4 Imp.gal) 0.9 litre (1.6 Imp.gal)	2,400 m (7 ft-10.4 in) 1,260 m (4 ft-1.6 in) 1,260 m (4 ft-1.6 in) 3,805 m (12 ft-5.8 in) AK and AKB : 1,723 m (5 ft-7.8 in) AK series AK : 1,640 m (5 ft-4.4 in) 1,500 m (4 ft-11 in) 0,160 m (6.29 in) 10,700 m (35 ft-1.2 in) See table page 4 See table page 4 35 kg (77 lbs) AK → 2,1968 : 200 kg (441 lbs) AK → 2,1968 → 270 kg (595 lbs) 500 kg (1102 lbs) 12 % (1 in 8) 30 kg (66 lbs) 25 litres (5.50 Imp.gal) 2.4 litres (4.2 Imp.gal) 0.9 litre (1.6 Imp.gal)	2,535 m (8 ft-3.8 in) 1,260 m (4 ft-1.6 in) 1,260 m (4 ft-1.6 in) 4,030 m (13 ft-2.6 in) 1,825 m (5 ft-11.8 in) 1,500 m (4 ft-11 in) 0,140 m (5.51 in) 11,44 m (37 ft-6.3 in) 680 kg (1499 lbs) 1155 kg (2546 lbs) 35 kg (77 lbs) 335 kg (738 lbs) 500 kg (1102 lbs) 12 % (1 in 8) 40 kg (88 lbs) 25 litres (5.50 Imp. gal.) 2.4 litres (4.2 Imp.gal) 0.9 litre (1.6 Imp.gal)

« DYANE »

(Vehicles produced until February 1970)

	AYA 1 (Series A and AM) Dyane 8/1967 → 3/1968	AYA 2 (Series A and AM) Dyane 4 3/1968 → 2/1970	AYA 3 (Series A and AM) AYB (Series A and AM) Dyane 5 AYA 3 / 1968 → 10/1968 AYB / 10/1968 → 2/1970
Kerb weight	<ul style="list-style-type: none"> AYA series A Saloon = 570 kg (1257 lbs) Commercial = 585 kg (1290 lbs) AYA series AM Saloon = 575 kg (1268 lbs) Commercial = 590 kg (1300 lbs) 	<ul style="list-style-type: none"> AYA 2 series A and AM Saloon = 590 kg (1300 lbs) Commercial = 605 kg (1333 lbs) 	<ul style="list-style-type: none"> AYA 3 series A Saloon = 585 kg (1290 lbs) Commercial = 600 kg (1323 lbs) AYA series AM Saloon = 590 kg (1300 lbs) Commercial = 605 kg (1333 lbs) AYB series A and AM Saloon = 600 kg (1323 lbs) Commercial = 605 kg (1333 lbs)
Gross vehicle weight	910 kg (2006 lbs)	925 kg (2039 lbs)	AYA 3 = 925 kg (2039 lbs) AYB = 930 kg (2050 lbs)

« DYANE »

(Vehicles produced since February 1970)

	AYA 2 (Series A and AM) Dyane 2/1970 → 9/1975	AY (Series CB) Dyane 6 2/1970 →
Kerb weight	590 kg (1300 lbs)	600 kg (1323 lbs)
Gross vehicle weight	925 kg (2039 lbs)	930 kg (2050 lbs)

« 2CV and 3 CV VANS »

	AZU (Series A) AZU (Series B) AZU (Series A) 1/1963 → 2/1972 CITROEN 250 2/1972 → 2/1978	AK AK (Series B) AK (Series AK) AK / 1963 → 3/1968 AK (Series B) 3/1968 → 5/1970 CITROEN 400 8/1970 → 2/1978
Kerb weight	530 kg → 2/1972 (1168 lbs) 560 kg 2/1972 → (1235 lbs)	AK and AKB = 620 kg (1365 lbs) AK (Series AK) = 640 kg (1410 lbs)
Gross vehicle weight	880 kg → 2/1972 (1940 lbs) 910 kg 2/1972 → (2006 lbs)	AK and AKB = 1055 kg (2325 lbs) AK (Series AK) = 1115 kg (2458 lbs)

IDENTIFICATION OF VEHICLE COMPONENTS

(France)

2 CV SALOON

4 (0-14

Model 815 1

S.A. A. CITROEN	
TYPE	SERIE
PTC	PTR



FRONT SUBFRAME IDENTIFICATION LABEL

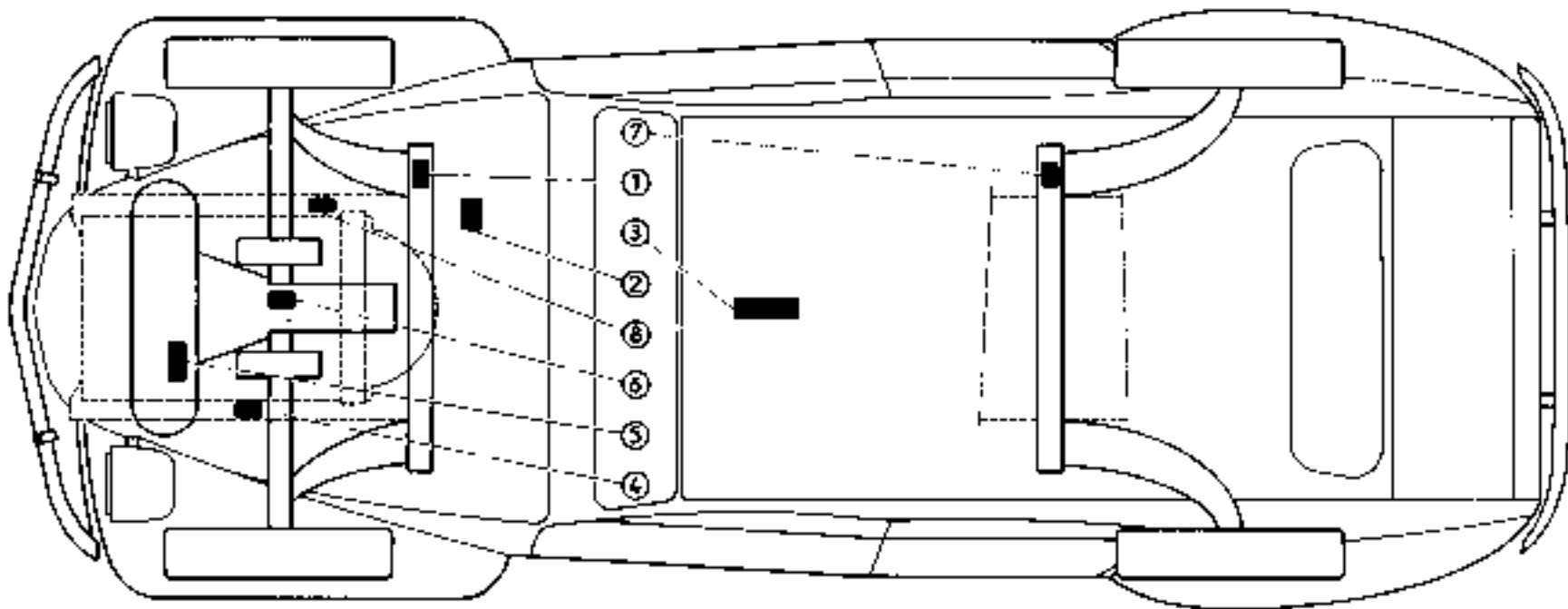
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CHASSIS No. PLATE

②

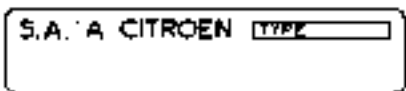
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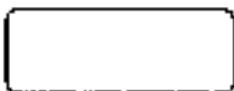
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ENGINE No. PLATE

⑤



GEARBOX IDENTIFICATION LABEL

⑥



REAR SUBFRAME IDENTIFICATION LABEL

⑦



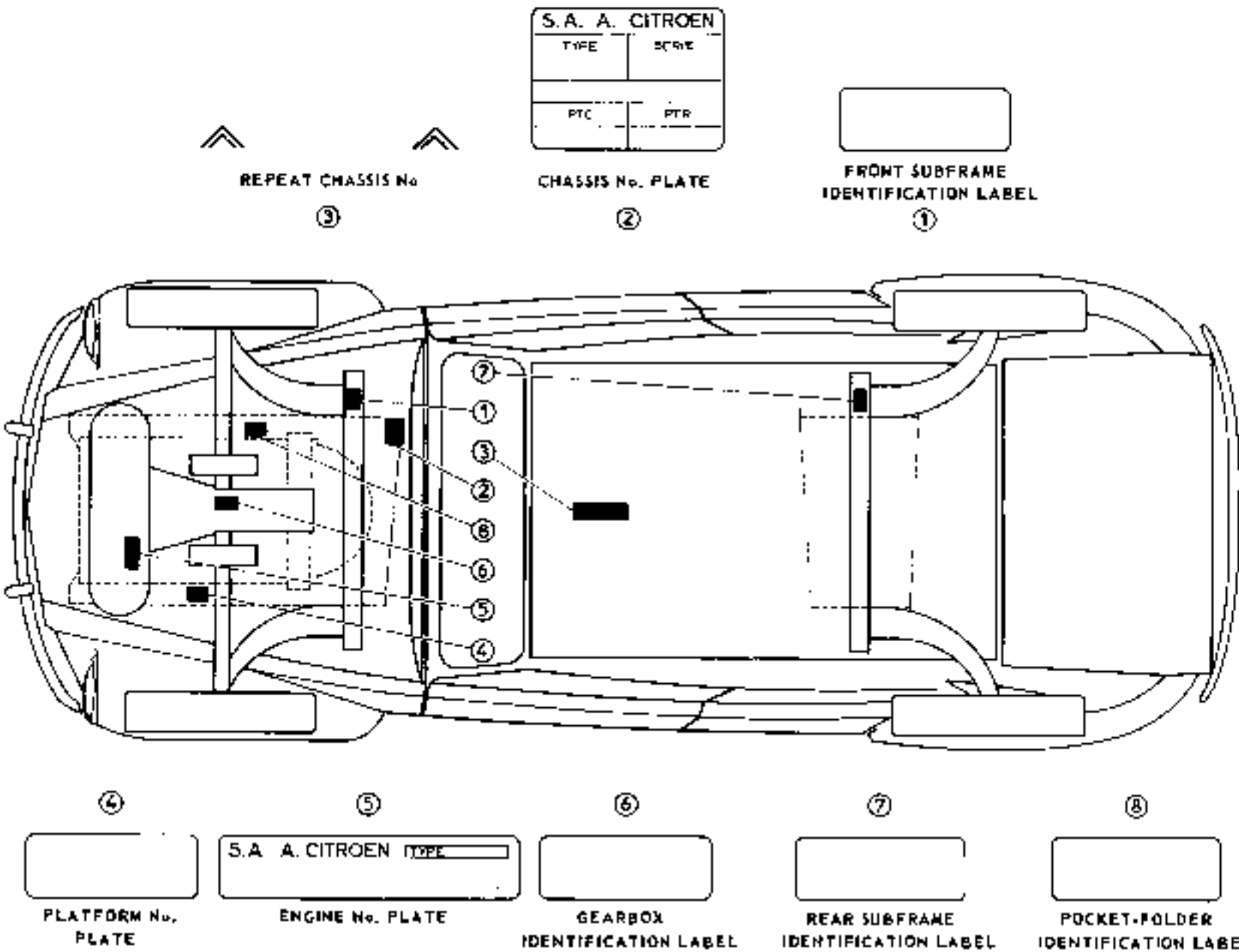
POCKET-FOLDER IDENTIFICATION LABEL

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IDENTIFICATION OF VEHICLE COMPONENTS

(France)
 DYANE

8-70-15

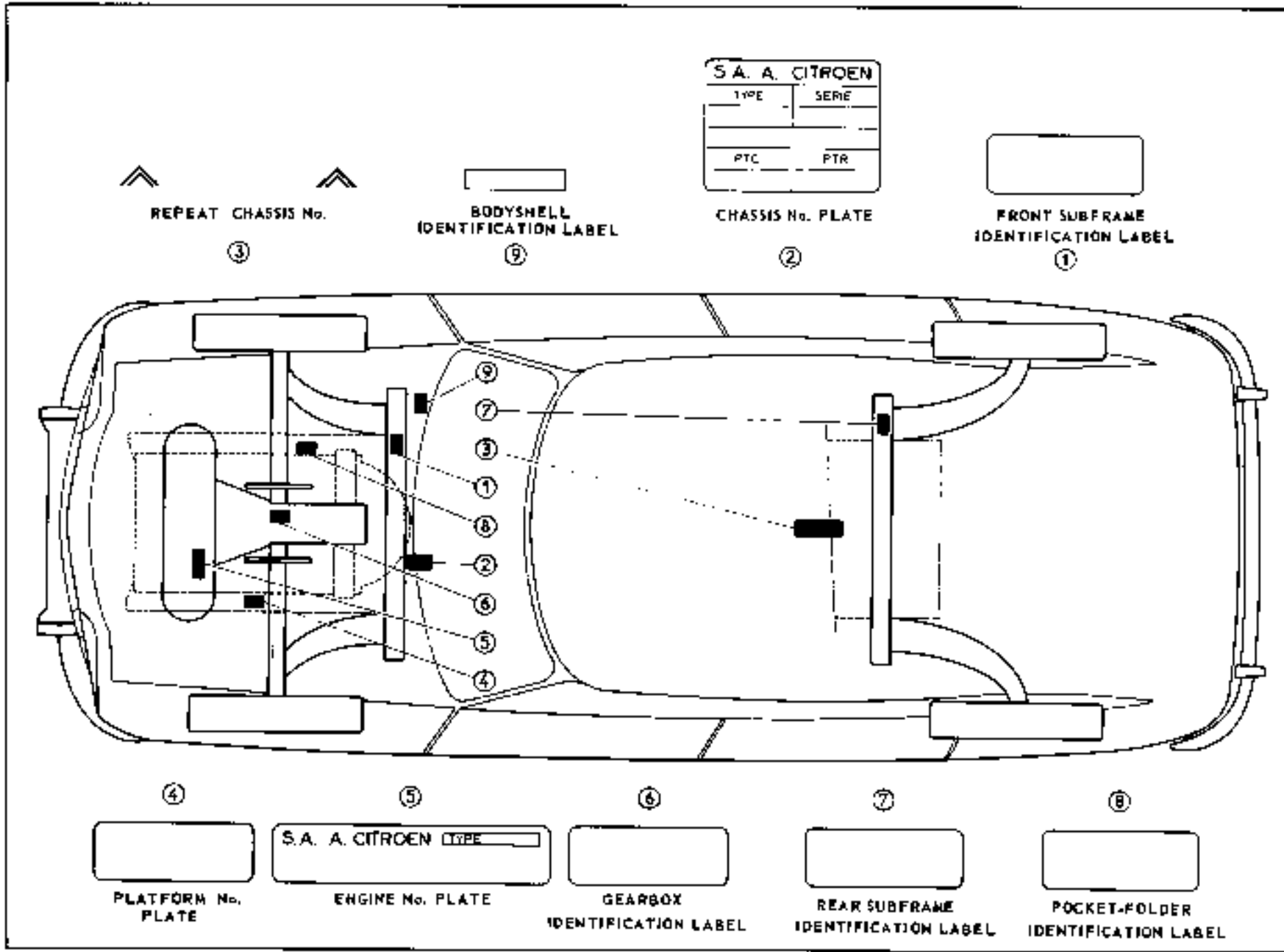


IDENTIFICATION OF VEHICLE COMPONENTS

(France)

AMI 8

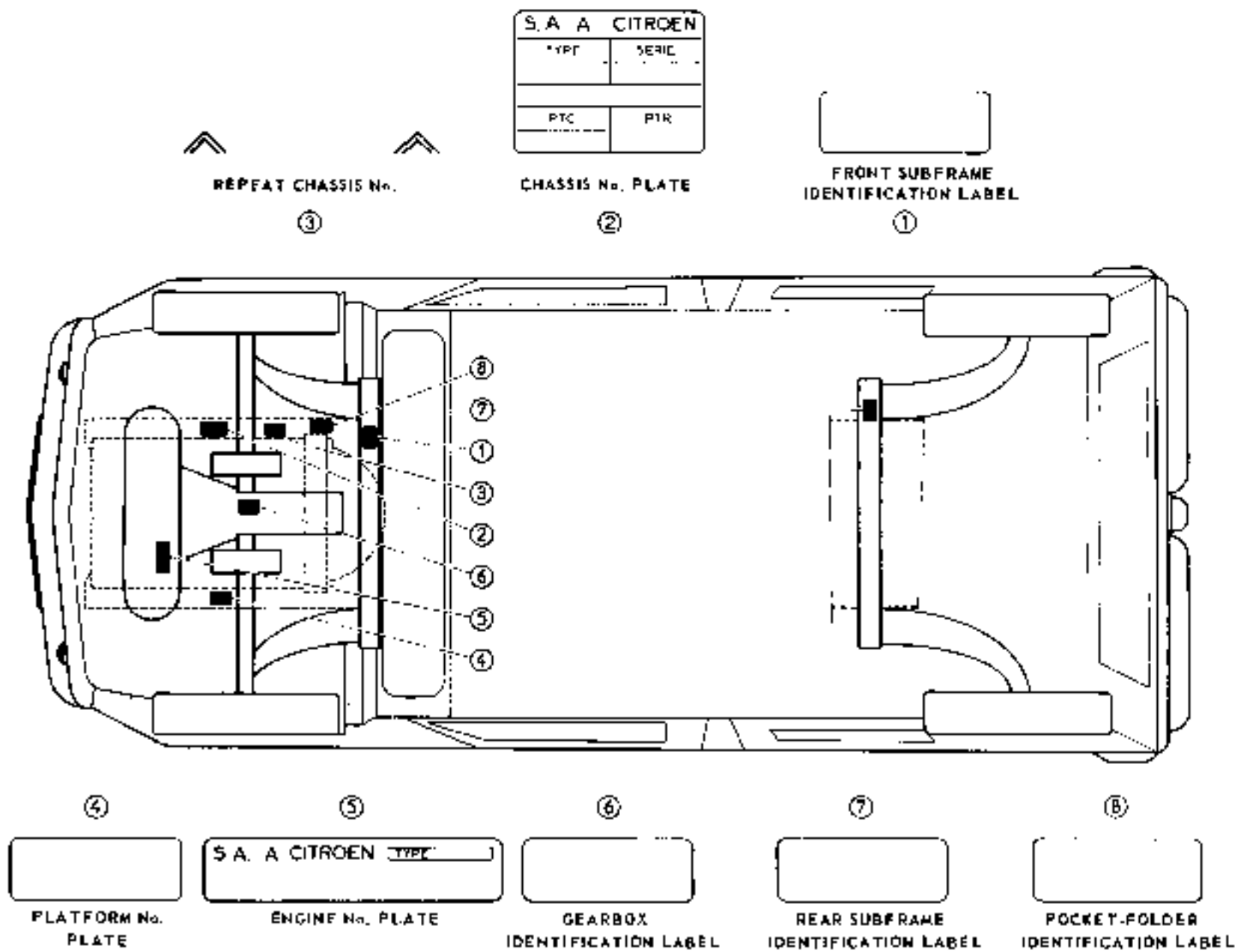
A 02 17



IDENTIFICATION OF VEHICLE COMPONENTS

(France)
MEHARI

A 00 13



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PLATFORM No.
PLATE

ENGINE No. PLATE

GEARBOX
IDENTIFICATION LABEL

REAR SUBFRAME
IDENTIFICATION LABEL

POCKET-FOLDER
IDENTIFICATION LABEL

S.A. A CITROEN TYPE

REPAT CHASSIS No.

CHASSIS No. PLATE

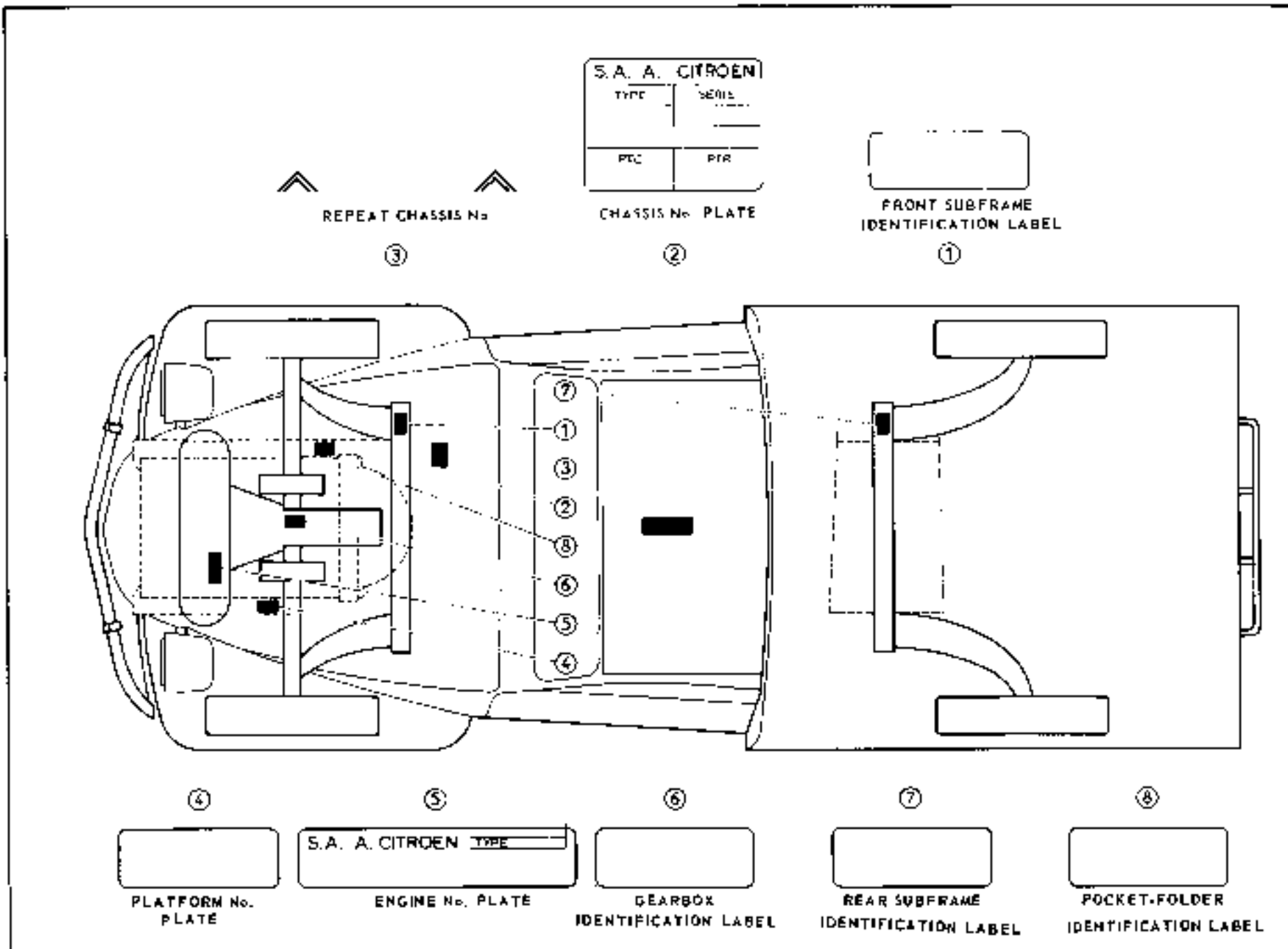
FRONT SUBFRAME
IDENTIFICATION LABEL

IDENTIFICATION OF VEHICLE COMPONENTS

(France)

VAN

A 30.15



PROTECTION OF ELECTRICAL COMPONENTS

PRECAUTIONS TO BE TAKEN WHEN WORKING ON THE VEHICLE

It is absolutely necessary to avoid errors which may cause deterioration to certain electrical components or provoke a short circuit (risk of fire or accident).

1. Battery :

- a) First, disconnect the negative lead from the battery, then disconnect the positive one.
- b) Carefully connect both leads to the battery terminals ; *the negative lead should be connected last.*
- c) Before connecting the negative lead, make sure that no current is flowing. This can be ensured by briefly touching the negative terminal with the lead end : there should be no sparks. Otherwise there is a short circuit in the electrical system which must be corrected.
- d) The battery must be connected correctly : the negative post should be connected to earth.
- e) Before operating the starter, make sure that the two leads are properly tightened to their respective post.

2. Dynamo - Alternator - Regulator :

- a) Never rotate the alternator unless it is connected to the battery.
- b) Before connecting the alternator, make sure that the battery is properly connected (negative terminal to earth).
- c) Do not check the operation of the alternator by short-circuiting the positive and earth terminals at the « EXC » and earth terminals.
- d) Do not interchange the leads connected to the regulator.
- e) Do not try to energize an alternator : this is never necessary and could damage the alternator and regulator.
- f) Do not connect a radio suppressor capacitor to the « EXC » terminal of the dynamo, alternator or regulator.
- g) Do not connect the battery terminals to a charger and never carry out arc-welding (or spot-welding) on the vehicle chassis, without first disconnecting the two cables, positive and negative, from the battery and isolating the positive cable from the chassis.

3. Ignition coil :

- Do not connect a radio suppressor capacitor to the « HUP » terminal of the coil.
- Fit the capacitor recommended by the factory to the « + » or « BAT » terminal of the coil.

4. Q.I. headlamp :

- a) Never replace a Q.I. bulb with the headlamps on. After use of the headlamps, it is safer to let them cool off five minutes before any manipulation.
- b) Never touch a Q.I. bulb with the hands. Any fingerprints on the bulb must be cleaned off with soapy water and the bulb dried with a lint-free cloth.

I. PRECAUTIONS.

A. Vehicles equipped with brake drums on all four wheels :

USE SEA J 1703 TYPE BRAKE FLUID

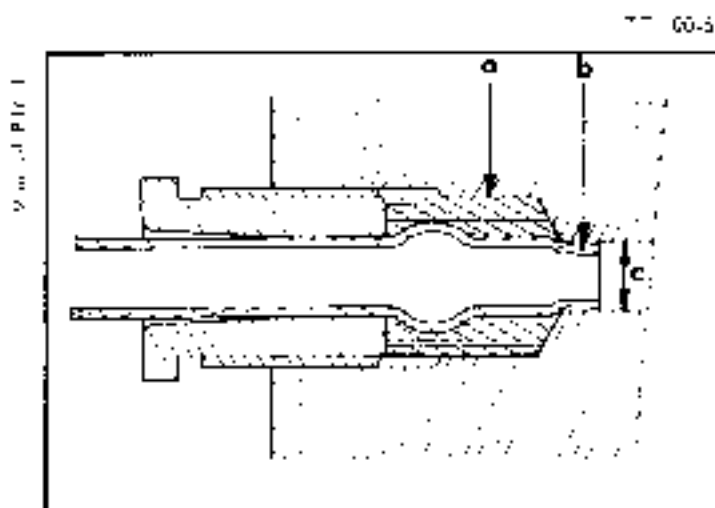
Only use seals, linings and flexible tubings corresponding to the special synthetic hydraulic brake fluid.
Clean parts with alcohol or hydraulic fluid of the same quality as that used in the brake circuit.
Use only alcohol for cleaning the hydraulic circuit.

B. Vehicles equipped with disc brakes at the front :

USE MINERAL HYDRAULIC FLUID (LHM) ON VEHICLES EQUIPPED WITH DISC BRAKES AT THE FRONT

Only use seals, linings and flexible tubings corresponding to the special synthetic hydraulic brake fluid (LHM).
They are marked with green paint.
Clean parts with petrol or lead free petrol and dry with compressed air blown about the parts.

To connect a union, proceed as follows:



Insert the lining (a), which has been smeared with hydraulic brake fluid, on the tube. The lining should not reach all the way to end (b) of the tube.

Centre the tube in the bore by pushing it normally in the hole and avoiding any excess. Make sure that the end (b) of the tube penetrates into the small bore (c).

Screw the caps nut in by hand.

Moderately tighten the nut. Excessive force might cause a leak by deforming the tube.

NOTE Tightening torques :

3.5 mm tube dia. (1.38 in.) : 0.8 to 0.9 da Nm
4.5 mm tube dia. (1.77 in.) : 1.5 to 1.5 da Nm

As pressure rises, the different seals are designed to be more leak proof. Thus, sealing is not improved by over-tightening the unions.

2. CHECKS TO BE COMPLETED AFTER WORKING ON HYDRAULIC SYSTEM

After working on the components of the hydraulic circuit, check the unions for leaks.

PRINCIPAL RECOMMENDED PRODUCTS

I. ADHESIVES.

BASE	MATERIAL TO BE ADHERED	METHOD OF APPLICATION	TYPES OF ADHESIVES (Examples)	RECOMMENDED REMOVERS
Painted sheet metal	Stainl. Rubber Finishing strip	Smearing of base Smearing of material Drying Fitting Polishing	Neoprene REST AGRAF Ref. Chiosyrene TEROSON Ref. Terakol 2444	Petrol F Trichlorethane III
	Vinyl	Smearing of base Smearing of material Drying Fitting Polishing	Synthetic rubber glue MINNESOTA Ref. EC 1206 Acrylo-nitrile MEPLACOL Ref. HS 3088	Trichlorethane III
Painted sheet metal Cardboard Felt	Cloth Felt	Smearing of base Drying Fitting Polishing	S.E.F. ONEROY Ref. 306 Natural rubber glue BOSTIK Ref. 1313	Petrol F
Glass	Aluminium (lower window trimming)	Preparation of adhesives Preparation of surfaces Smearing of both faces Pressing the material Adhesion period	Epoxy TEROSON Ref. Terakol COLFIX Ref. Maticol	Lukewarm water before polymerization
	Rear-view mirror case	Preparation of surfaces Smearing of base Fitting Pressing the material	Special COMET Ref. Glass/metal kit	Super clean
	Rilsan (runners)	Smearing of base Smearing of material Drying Fitting Pressing the material	Neoprene COLFIX Ref. 550 MINNESOTA Ref. EC.1099	Petrol F Trichlorethane III
	Klececel	Smearing of base Smearing of material Drying (3 to 8 minutes) Fitting Pressing the material	Neoprene BOSTIK Ref. 1400 MINNESOTA Ref. EC. 1099	Trichlorethane III S remover (P.C.A.S.)
Polyester	Polyurethane foam	Smearing of base Drying Fitting Polishing	Neoprene COLFIX Ref. 150 MINNESOTA Ref. Spray Pavilion ??	Petrol F Trichlorethane

II. CLEANING PRODUCTS

USE	PRODUCTS	CHARACTERISTICS	SUPPLIERS
Rinsing out L.H.M. hydraulic pipings	TOTAL Hydronacer	For complete rinsing, leave product in the circuit for 1000 km (620 mi)	TOTAL C.F.R.
Cold degreasing of mechanical assemblies	MAGNET 6	Insoluble in water, dries rapidly, has a high dielectric potential	MAGNUS
	OIL & GREASE REMOVER	Allow product to act (up to 1 hour) diluted with a solvent, then rinse fully with water	MULLER & Co.
	PROTOLAN 311	Must be used pure and then rinsed with water	Mrs. N. BREGER
	RAVITOL X		Mrs. RAYCOLORE
Cleaning unions and joint faces	MAGSTRIP	Gelatinous liquid for use in cleaning the liquid and non-metallic unions	MAGNUS
	SUPER CLEAN	Dry cleaner to be used before LOCTITE products	COMET Dept. D.A.V.A.
Cleaning of carburetors	Carburettor cleaner	To be used pure Two types aerosol liquid	SOPRALUS BARDANL
	P.D.R.		AGIB
	Caracolin		PEDEX FRANCE

III. SEALING GASKETS.

USE	PRODUCTS	CHARACTERISTICS	SUPPLIERS
Sealing of joint faces, screws, studs and nuts	PROTO JOINT	Resists mechanical strain and petroleum products	JEAN - BRASSART
	CURTYLON	Clean with alcohol	CEFILAC Dept. Joint Curry
	LOWAG	Hydrocarbon resistant	S.E.B.I.S.
	FRENETANCH	Sealing and locking threaded assemblies which must remain mobile	COMET Dept. D.A.V.A. NOTE : These five products, plus SCELBLO (for securing ball bearings, rings ...) and SUPER CLEAN (cleaning product) are sold in a kit-box.
	FRENBLOC	Sealing and locking studs, screws and nuts with maximum effectiveness	
	FORMETANCH	Sealing of unions and joint faces	
	FORMAJOINT	Sealing of joint faces in place of traditional joint gaskets	
Sealing of door trimmings and windscreen	SELCOMET (black)		

SEALING GASKETS (Contd)

USE	PRODUCTS	CHARACTERISTICS	SUPPLIERS
Sealing casting porosities	DEVCON F	Aluminium base	COMET Dept. D.A.V.A.
	METALIT		D'SIMPEX
	METROLUX A	Light metal base	METOLUX
	SILASTIC 732 R.T.V.	Remains pliable after drying	Dow CORNING S.A.R.L.
Sealing of the inlet chamber heater tubes	Mastic adhesive Rel. 1500 heat resistant (COLLAFEU)		Ets. BARTHELEMY

IV. ANTI-GRIP PRODUCTS

USE	PRODUCTS	CHARACTERISTICS	SUPPLIERS
Corroded or oxidized parts and seized assemblies	ANTI GRIP	Aerosol spray	MOLYDAL
	M.O. ANTI GRIP	Aerosol spray or 5 litre container	SOFRALUS-BARDAHL

V. GREASE AND LUBRICANTS.

USE	PRODUCTS	CHARACTERISTICS	SUPPLIERS
Greasing the suspension and flexible bushes	S.I. 33 RHONE-POULENC	Silicone grease	LAMBERT - RIVIERE
	GREASE 33 (MEDIUM)		DOW CORNING S.A.R.L.
Greasing the drive-shafts	GREASE 1495	Multifunctional highly adhesive	MOLYDAL
	MOLIKOTE LONGTERM 2	Extreme pressure grease, good adherence and water resistant	DOW CORNING S.A.R.L.
	TOTAL MULTIS MS	Multipurpose grease	TOTAL C.F.R.
Lubricant for rubber and plastic	REDEX SILICONE	Aerosol	REDEX - FRANCE
Parts operating under difficult conditions	HI-LUB-HTC	Aerosol lubricant, (fresh and salt) water resistant, withstanding high pressure and temperature.	COMET Dept. D.A.V.A.
Spark plug thread lubricant	NO-BIND	Anti-bind lubricant, high temperature resistant	CEFILAC Dept. Joint Curty

LIST OF SUPPLIERS

SUPPLIERS	ADDRESS	TELEPHONE
AGIR	69360 SÈREZIN du RHONE	(78) 49.80.27
BARTHELEMY	61, rue De France - 94300 VINCENNES	328.42.87
BOSTIK S.A.	5, route de St Leu - 95360 MONTMAGNY	964.64.22
BRASSART J	44, rue de la Boétie - 75008 PARIS	359.54.82
BREGER N	Le Pasty St Aubin de Luigne - 49120 ROCHEFORT LOIRE	(41) 41.73.03
CEFILAC (Dept Joint Curty)	25, rue Aristide Briand - 69800 SAINT PRIEST ou 7 à 11, rue de la Py - 75020 PARIS	178) 20.68.94 797.01.49
C.F.R. (TOTAL)	11, rue du Docteur Lancereaux - 75381 PARIS CEDEX 08	267.15.00
COMET (Dept. D.A.V.A.)	10, rue Eugène Cozeau - 60300 Z.I. de SENLIS	453.13.20
COLFIX (SCHULTZ)	43, route de la Mertzac - 68100 MULHOUSE	(89) 42.10.84
DISIMPEX	1, rue Gœlle - 75010 PARIS	727.89.59
DOW-CORNING S.A.F.L.	140, avenue Paul Doumer - 92500 RUEIL MALMAISON	977 00 40
LAMBERT-RIVIERE	16, rue de Mirmeasnil - 75008 PARIS	285.16.50
MAGNYS	12, rue du Moulin de Cage - 92300 VILLENEUVE LA GARENNE	798.11.30
METROLUX S.A. FRANCE (Société Henri Lecoq)	157, rue de Fontenay - 94300 VINCENNES	808.55.11
MINNESOTA DE FRANCE	135, boulevard Serurier - 75019 PARIS	202 80.80
MIPLACOL	52, avenue de la Concorde - 53270 SEVRAN	329.85.96
MOLYDAL	60, rue des Orteaux - 75020 PARIS	797.28.30
MULLER & Co.	28, avenue de l'Opéra - 75002 PARIS	742.58.36
ONFROY	35, rue L. Sampaix - 75013 PARIS	206.84.70
P.C.A.S.	23, rue Bossuet - 91160 LONGJUMEAU	909.77.85
FAVICOLOR	32, rue de Mulhouse - 68304 St LOUIS	(89) 67.13.37
REDEX FRANCE	88, 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
SCFRALUS-BARDAHL	27, bld du Général Leclerc - BP 29 - 59051 ROUBAIX	(20) 70 02.12
TEHOSON	175 à 179, avenue J. Jaurès - 75019 PARIS	202.53.72

I. GENERAL CHARACTERISTICS.

TYP. OF ENGIN	VARIANTS
A 53 (425 cc)	AZ I series A and AM 2/1969 → 2/1970 AZU 2/1963 → 2/1967
A 79/0 (425 cc)	AZ I 2/1967 → 2/1972 AYA series A and AM 2/1967 → 2/1968
A 79/1 (435 cc)	AZ I series A 2 2/1970 → 2/1975 AZ I series KB 2/1975 → 2/1979 AYA 2 series A and AM 2/1968 → 2/1975 AZU I series U 2/1977 → 2/1978 AK I series AF 2/1975 → 2/1978
M 4 (602 cc)	AYA 3 series A and AM 2/1966 → 2/1968 AY → 2/1968 AM 2/1963 → 2/1968 AYB 2/1963 → 2/1968
M 28/1 (602 cc)	AYU I series A and AM 2/1968 → 2/1970 AZ I series KA 2/1970 → 2/1970 AY I series LA 2/1968 → 2/1968 AK I Série B 2/1966 → 2/1970 AK I series AK 2/1970 → 2/1978 AY I series CD 2/1975 → 2/1975 AY I series LD (mod. 1971) 2/1968 → 2/1968
M 28 (602 cc)	AY I series CB 2/1970 → 2/1970 AM 2 2/1968 → 2/1969 AMU 2 2/1968 → 2/1969 AM 3 2/1969 → 2/1969 AM I series A 2/1969 → 2/1978 AM I series JB and JC 2/1969 → 2/1978

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Type of engine	A 53	A 79/0	A 79/1	M 4	
				AYA 3	AK - AM
Number of cylinders		3 CV	2 (167 cm ³)		3 CV
Displacement					602 cc
Cylinder capacity:	425 cc		435 cc		74 mm
Bore	66 mm		68.5 mm		70 mm
Stroke	62 mm		69 mm		75 : 1
Compression ratio	7.5 : 1	7.75 : 1	8.5 : 1		
Effective power:					
ISO:	13.2 kW (18 CV SAE) at 5000 rpm	15.5 kW (21 CV SAE) at 5450 rpm	17.7 kW (24 CV DIN) at 6730 rpm	20.5 kW (28 CV SAE) at 3000 rpm	19.1 kW (26 CV SAE) at 4500 rpm
Maximum torque:					
ISO:	2.0 m daN (2.9 m kg SAE) at 3500 rpm	3.1 m daN (4.3 m kg SAE) at 3500 rpm	2.4 m daN (3.3 m kg DIN) at 4500 rpm	4.3 m daN (6.4 m kg SAE) at 3500 rpm	4.0 m daN (5.6 m kg SAE) at 3500 rpm

Engine type	M 28/1				
Engine plate	AM 2	AK 2	A 06/635	AM 2 A	AM 2 L.P.G.
Number of cylinders			2 (flat type)		
Rated rating			3 CV		
Cylinder capacity			602 cc		
Bore			74 mm		
Stroke			70 mm		
Compression ratio	9 : 1			8.5 : 1	
Rated power ISO	21.5 kW (29 CV DIN) at 3750 rpm	19.1 kW (26 CV DIN) at 3500 rpm	21 kW (29 CV DIN) at 3750 rpm		18 kW (25 CV DIN) at 3000 rpm
Maximum torque ISO	4.1 mdaN (4.2 m.kg DIN) at 4000 rpm	4.1 mdaN (4 m.kg DIN) at 3500 rpm	3.8 mdaN (4 m.kg DIN) at 3500 rpm		3.6 mdaN (3.7 m.kg DIN) at 2100 rpm

Cooling : Forced air

Lubrication : pressurized system supplied by an oil pump of the **EATON** type mounted on the end of the camshaft.

- Built-in filter cartridge on M 28/1 and M 28 engines 11/1969 → 11/1970
- External filter cartridge on M 28/1 and M 28 engines 11/1970 →

Carburation : (See table of Operation A. 112-00)

- Intake silencer with dry interchangeable element.

Fuel used : $\left\{ \begin{array}{l} \text{Super grade for M 28 engine} \\ \text{Ordinary grade for all other types of engines} \end{array} \right.$

Ignition :

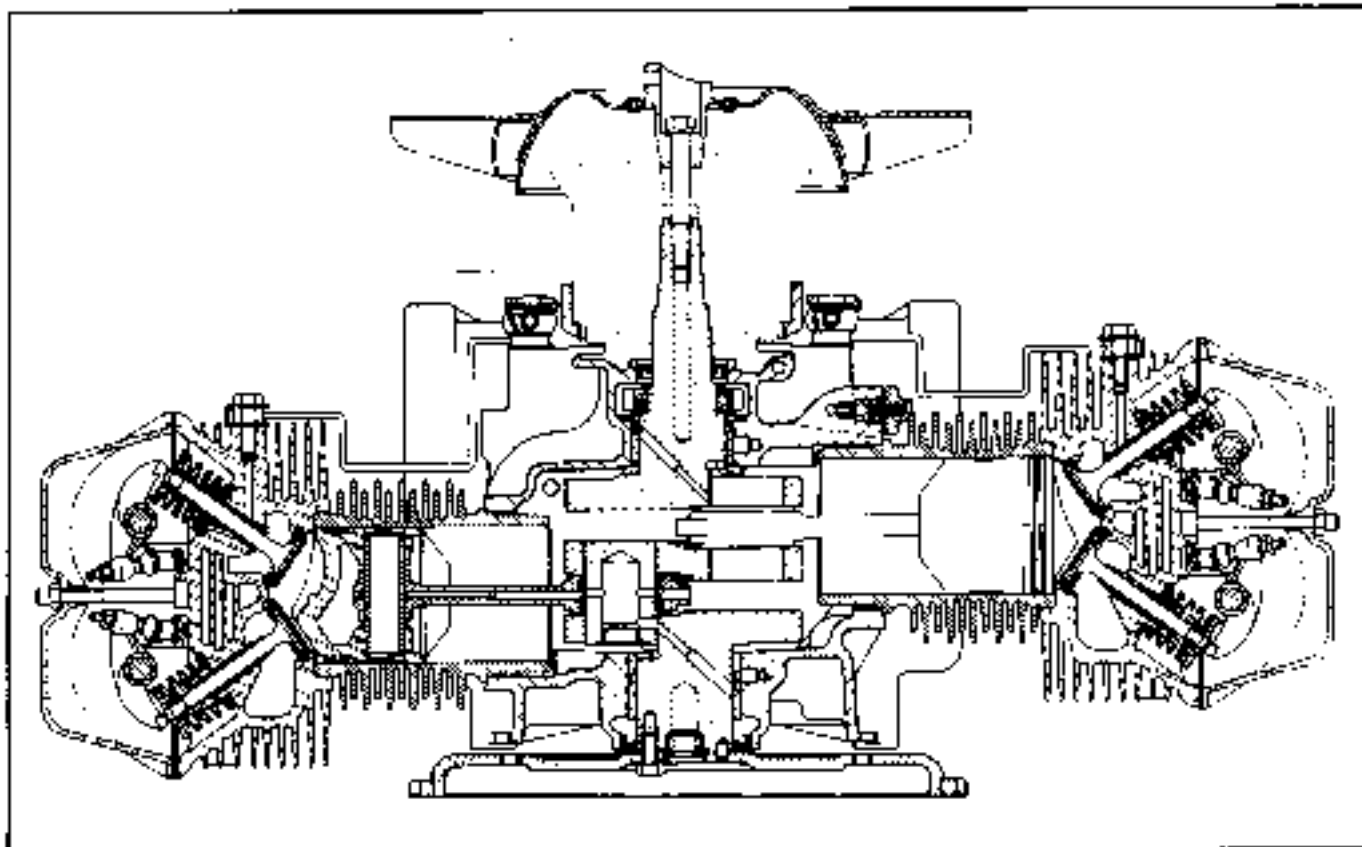
- Distributor on camshaft end, at the front of engine
- Manufacturer : **DUCELLER**
- Sparking plugs : *See appropriate Technical Bulletins*
- Timing order : 1 - 2

Distribution :

- Camshaft below crankshaft timing gear with self-adjusting device for wear
- Maximum run-out of the spindle for distributor = 0.02 mm (0.008 in)

ENGINE A 53 and A 79:0
HORIZONTAL SECTION

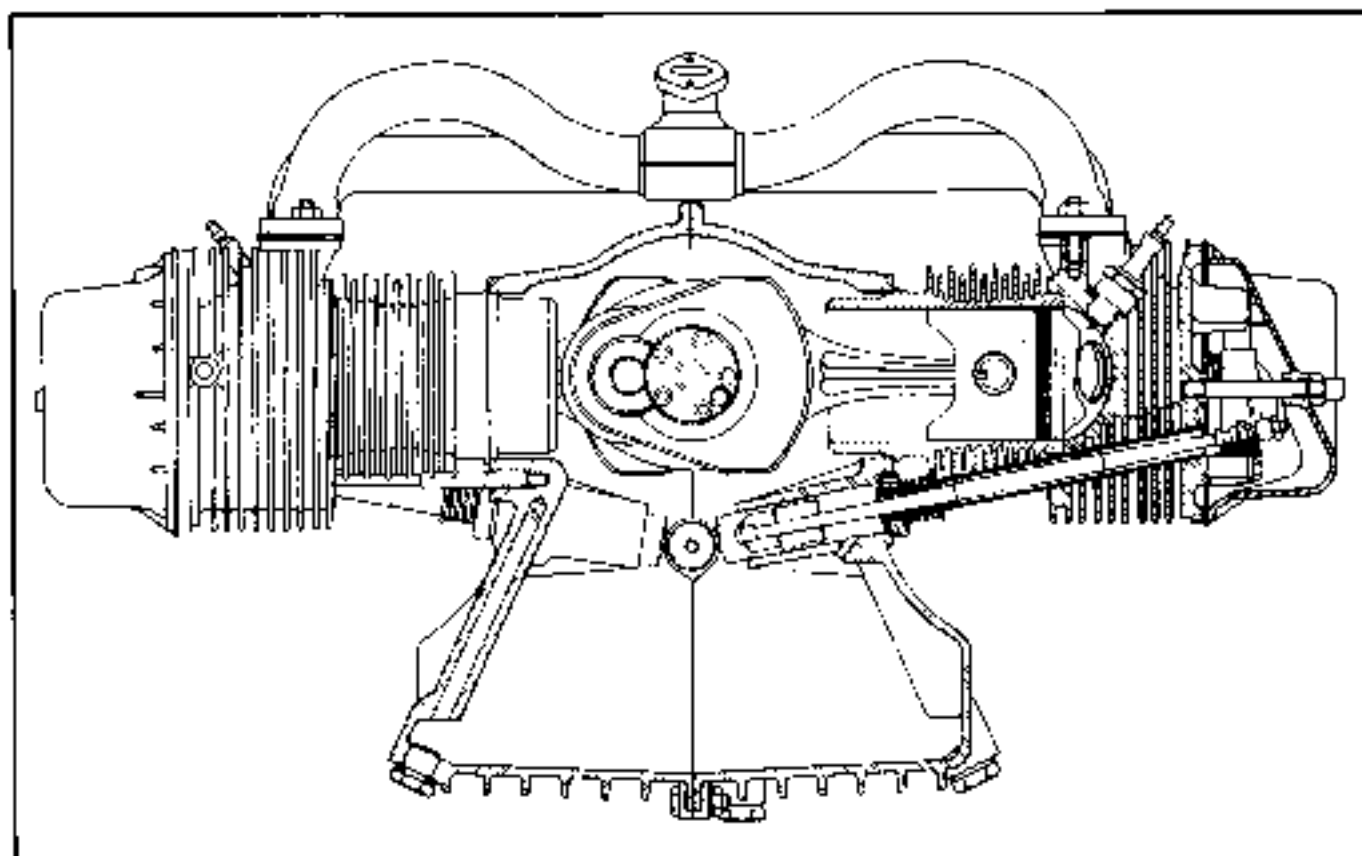
A 10 J



Manual 31 6-7

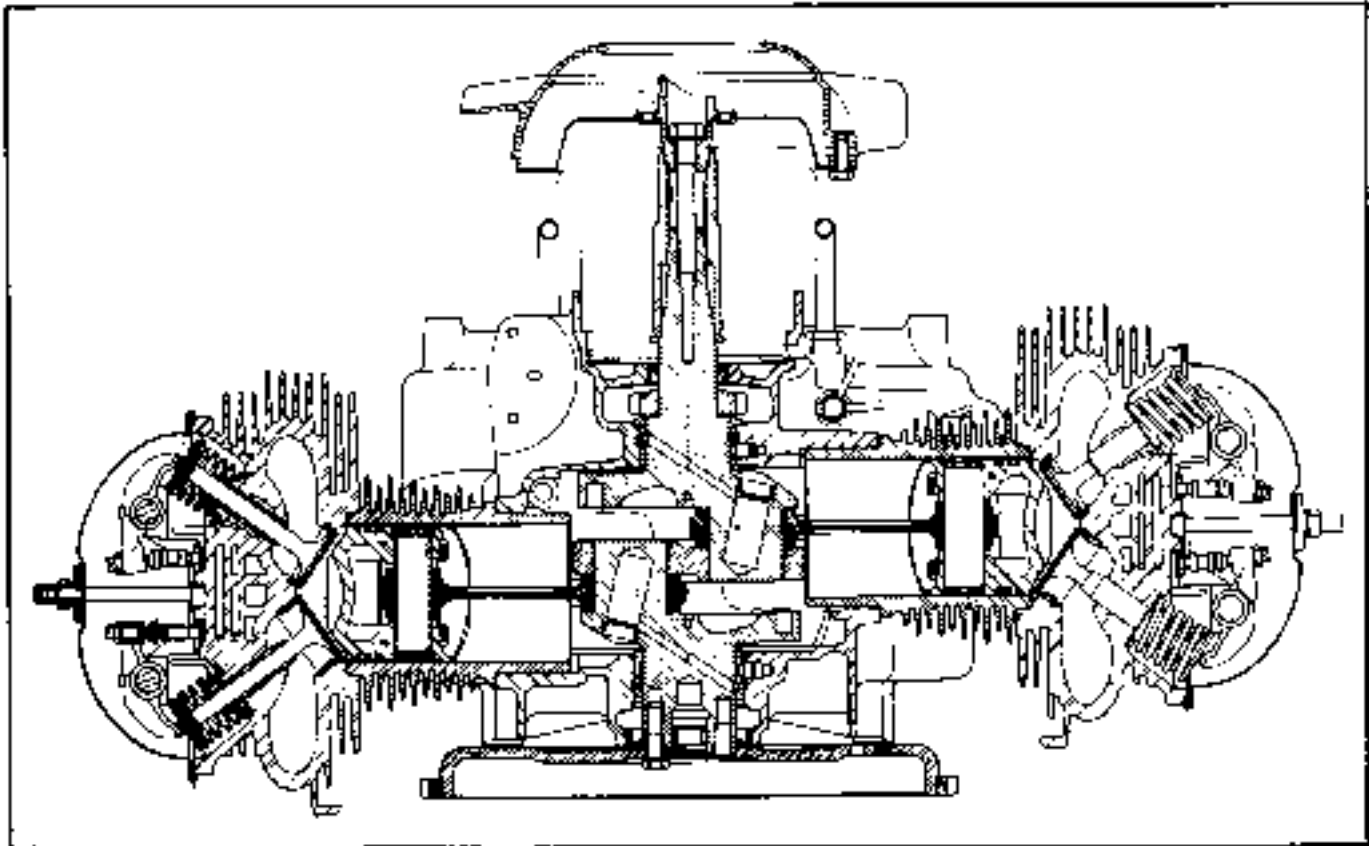
CROSS SECTION

A 10 S



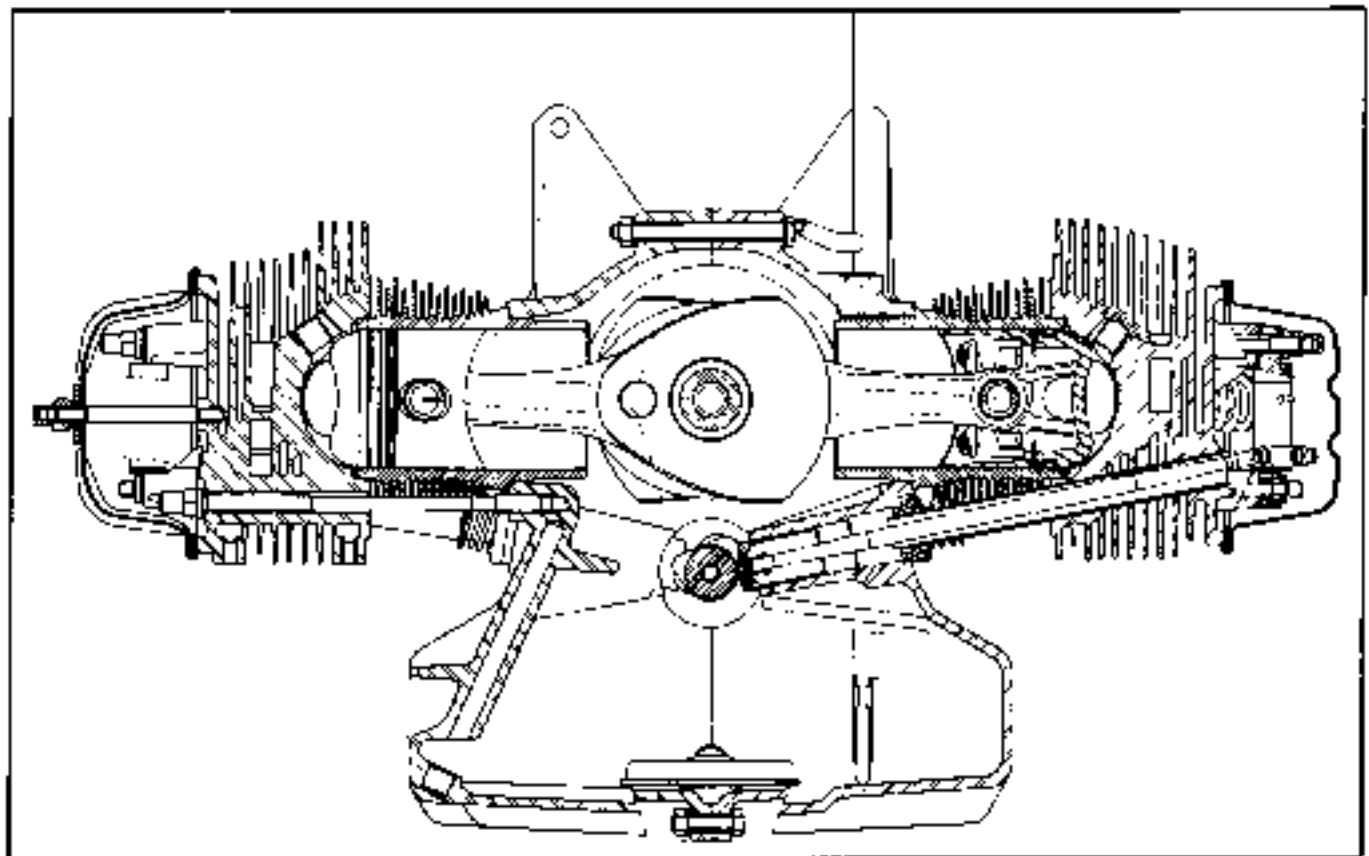
ENGINE A 79/1
HORIZONTAL SECTION

A 10.2



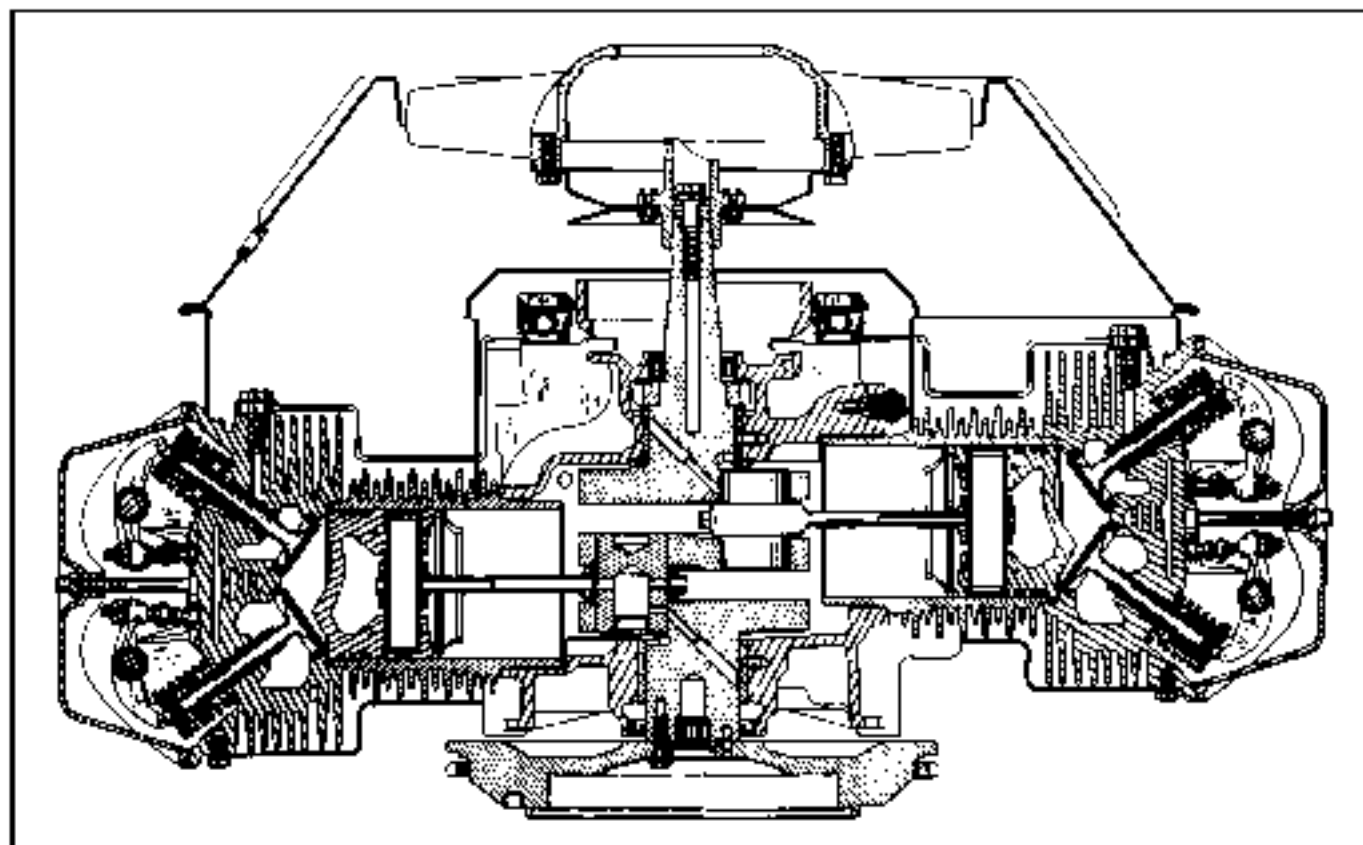
CROSS SECTION

A 10.1



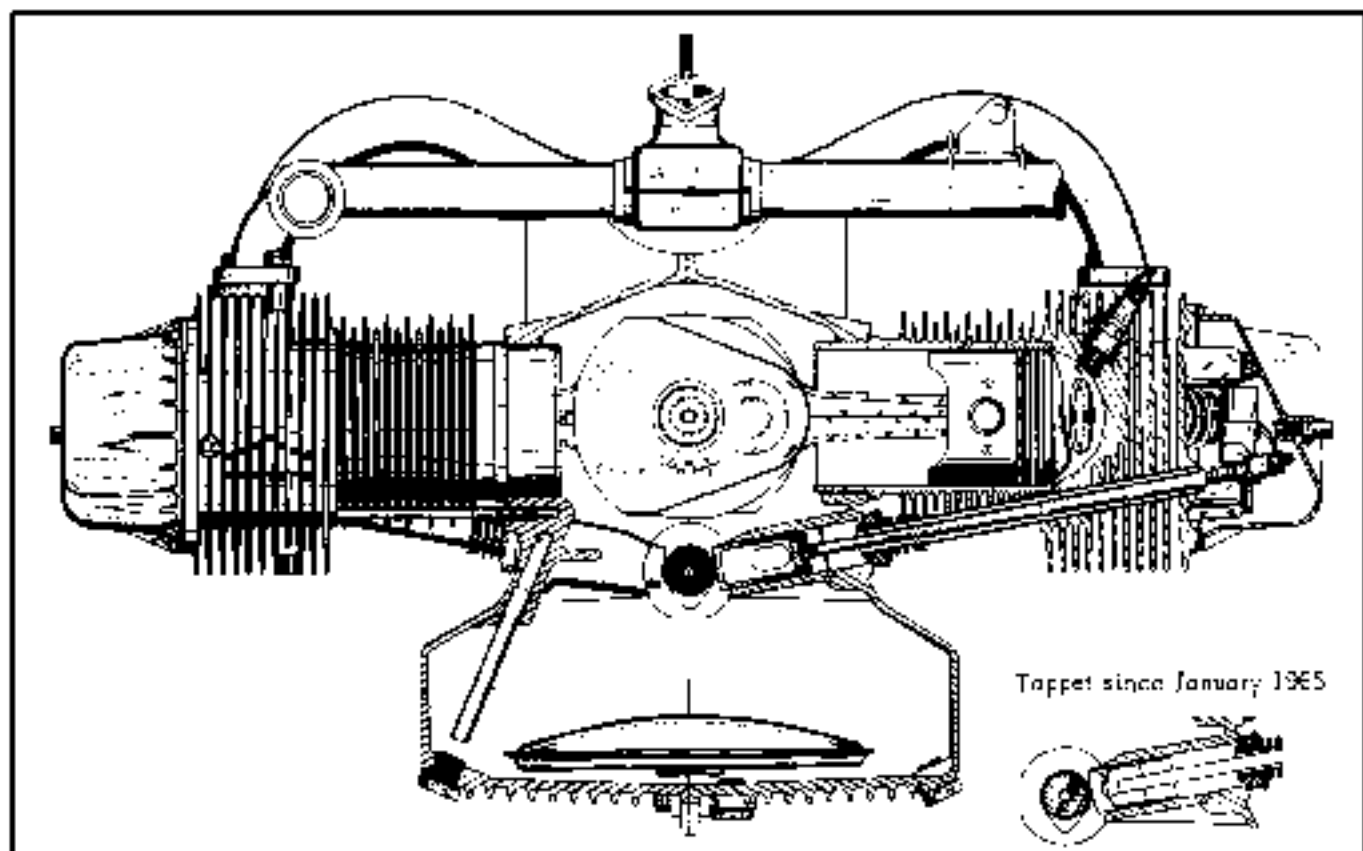
ENGINE M 4
HORIZONTAL SECTION

A 10-8



CROSS SECTION

A 10-9

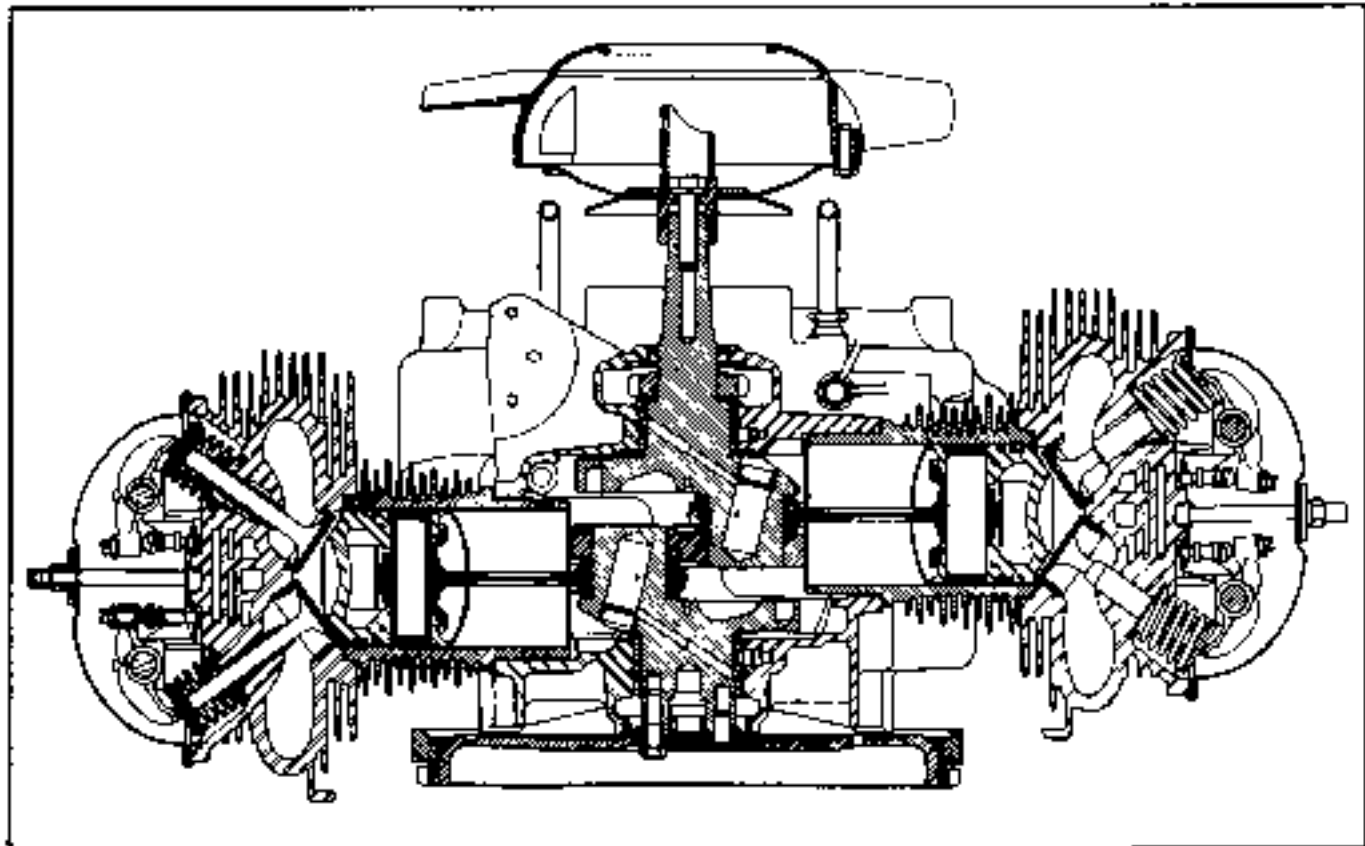


ENGINES M 28 1 and M 26

Vehicle's production up to December 1945

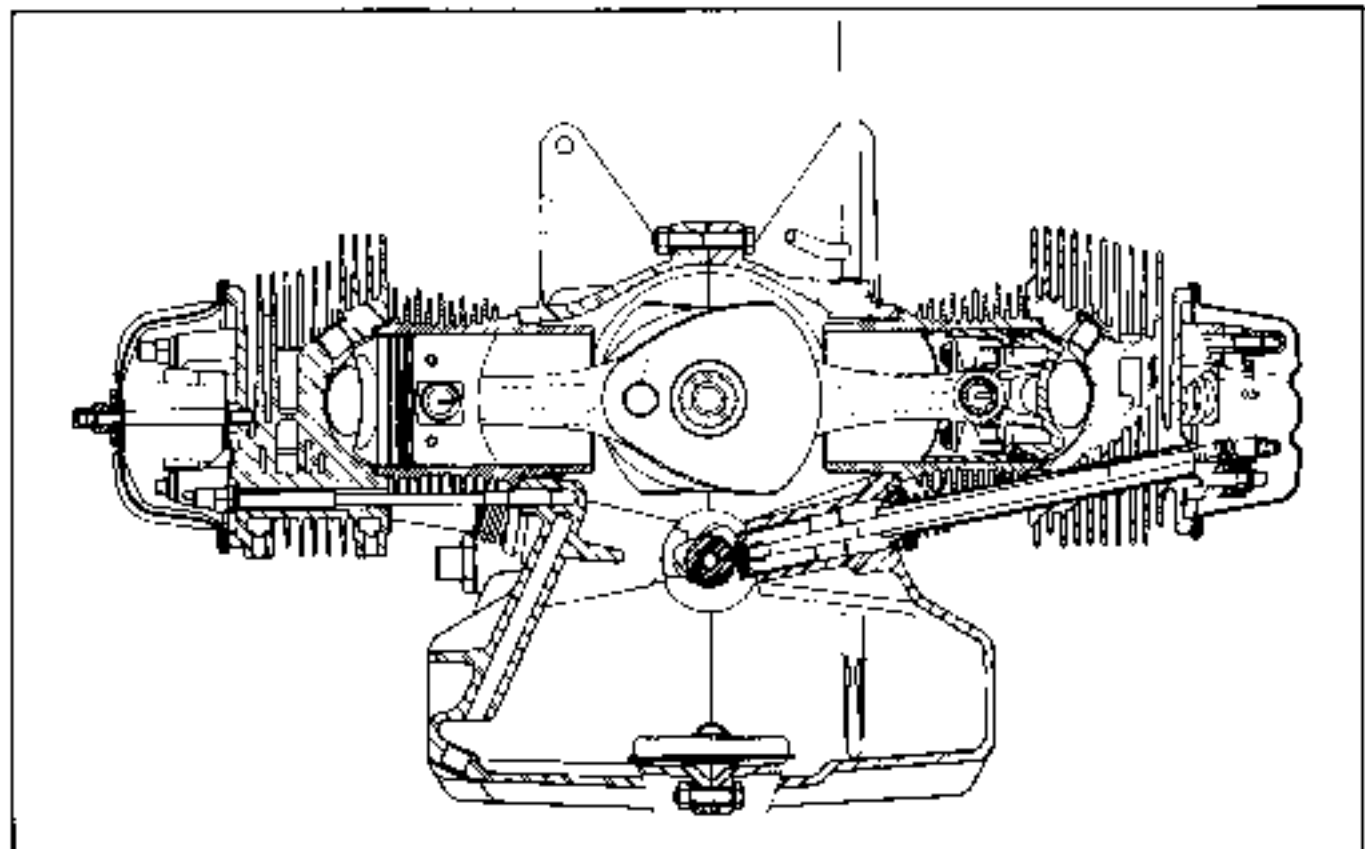
HORIZONTAL SECTION

A 107



CROSS SECTION

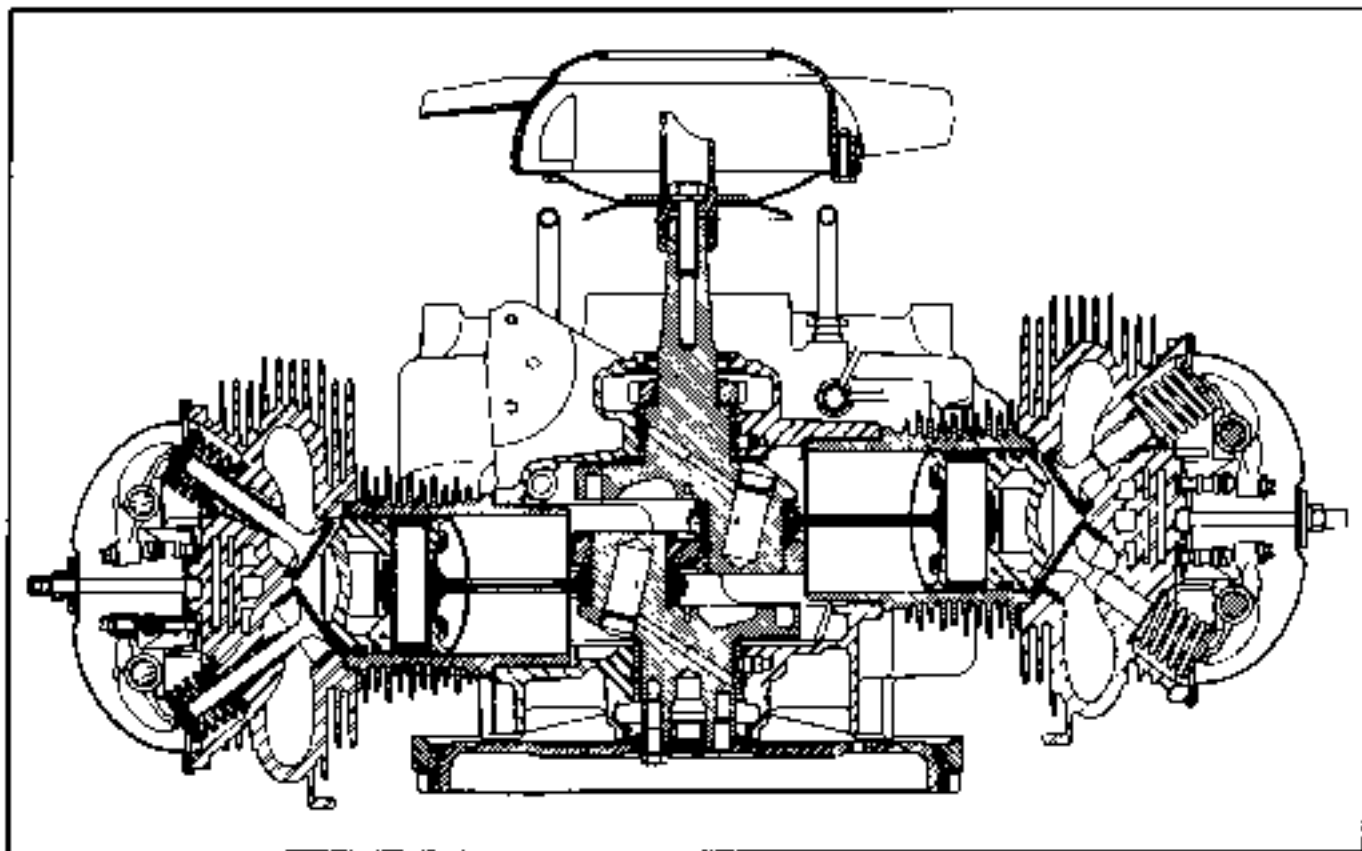
A 108



NOTE : The M 28 engine differs from the M 26 1 engine only in the compression ratio.

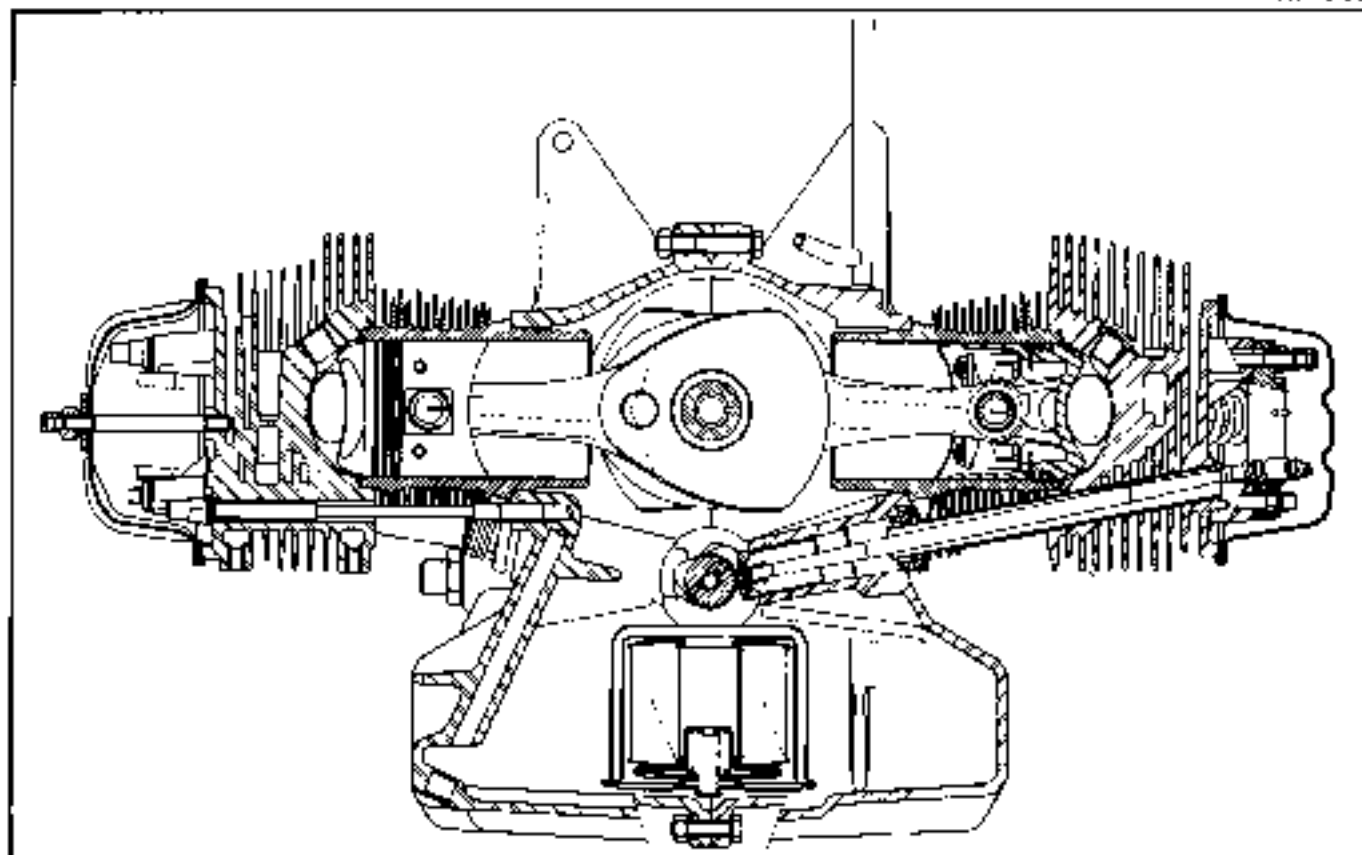
ENGINES M 28.1 and M 28
(Vehicles produced from December 1965 to November 1970)
HORIZONTAL SECTION

A. 10.2



CROSS SECTION

A. 10.6c



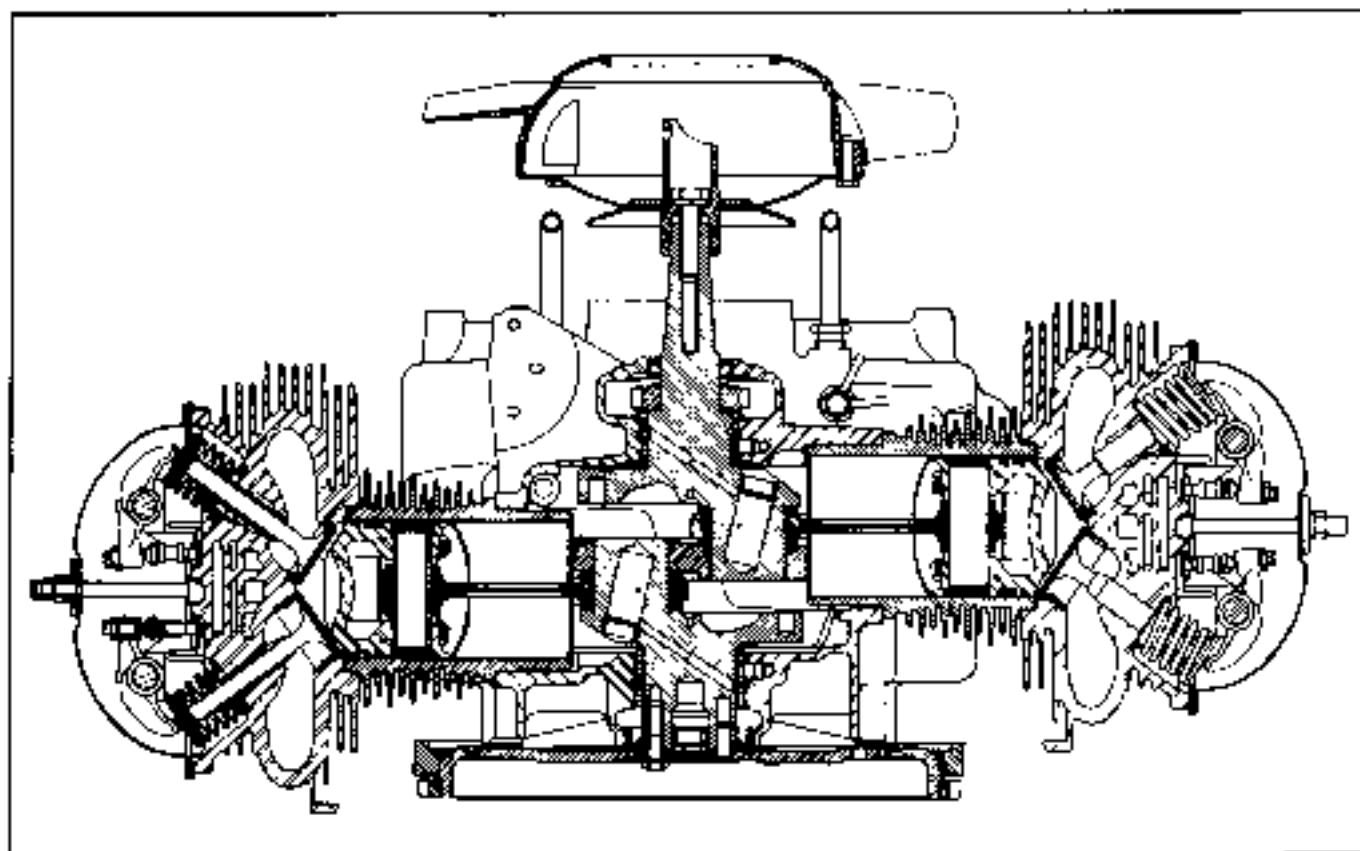
NOTE: The M 28 engine differs from the M 28.1 engine only in the compression ratio.

ENGINES M 28-1 and M 28

(Articles produced since December 1970)

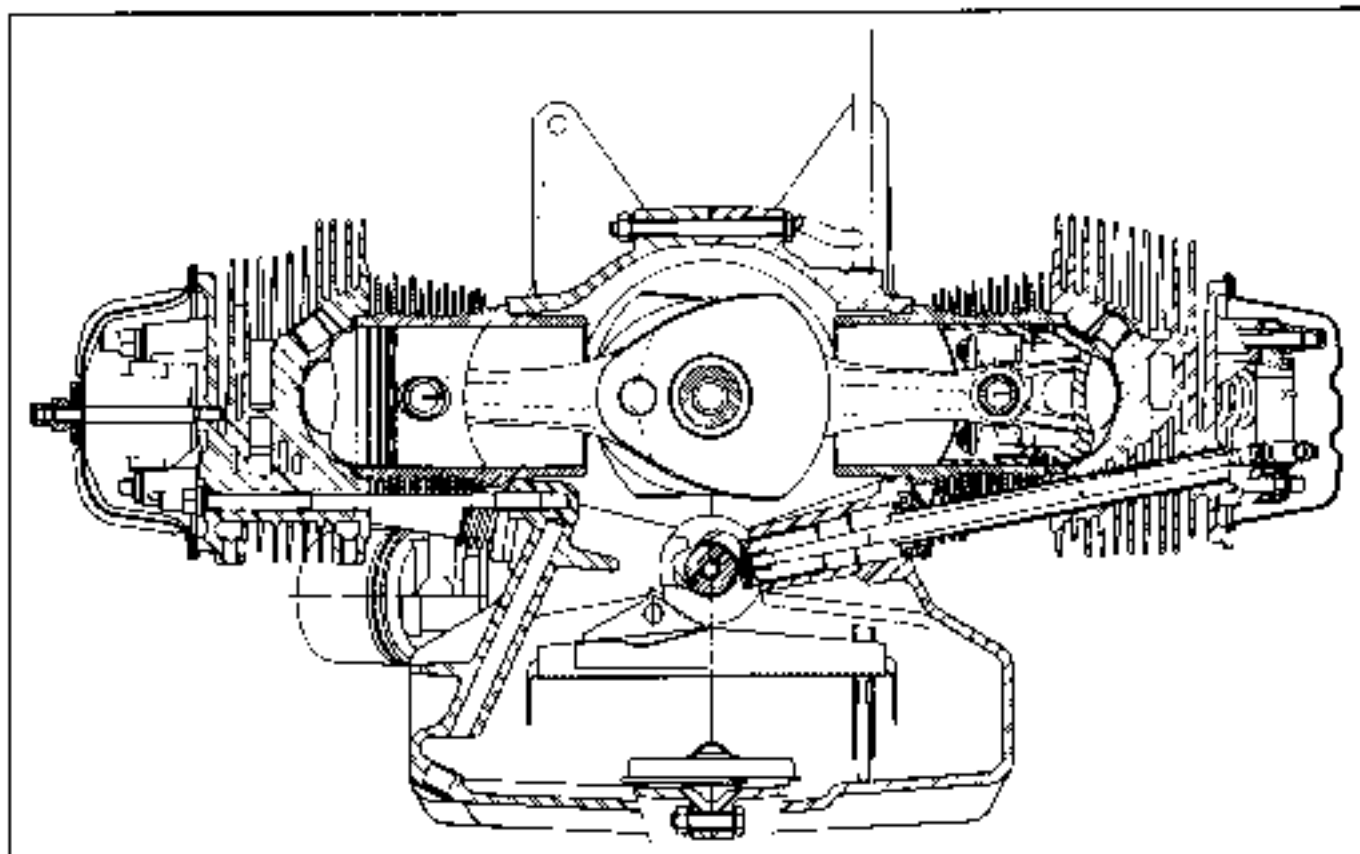
HORIZONTAL SECTION

A. 13.7



CROSS SECTION

A. 13.7



NOTE : The M 28 engine differs from the M 28-1 engine only in the compression ratio

DIAGRAM OF LUBRICATION SYSTEM
ENGINES A 50 - A 79 0 - M 4

A 22 2

Manual B16-1

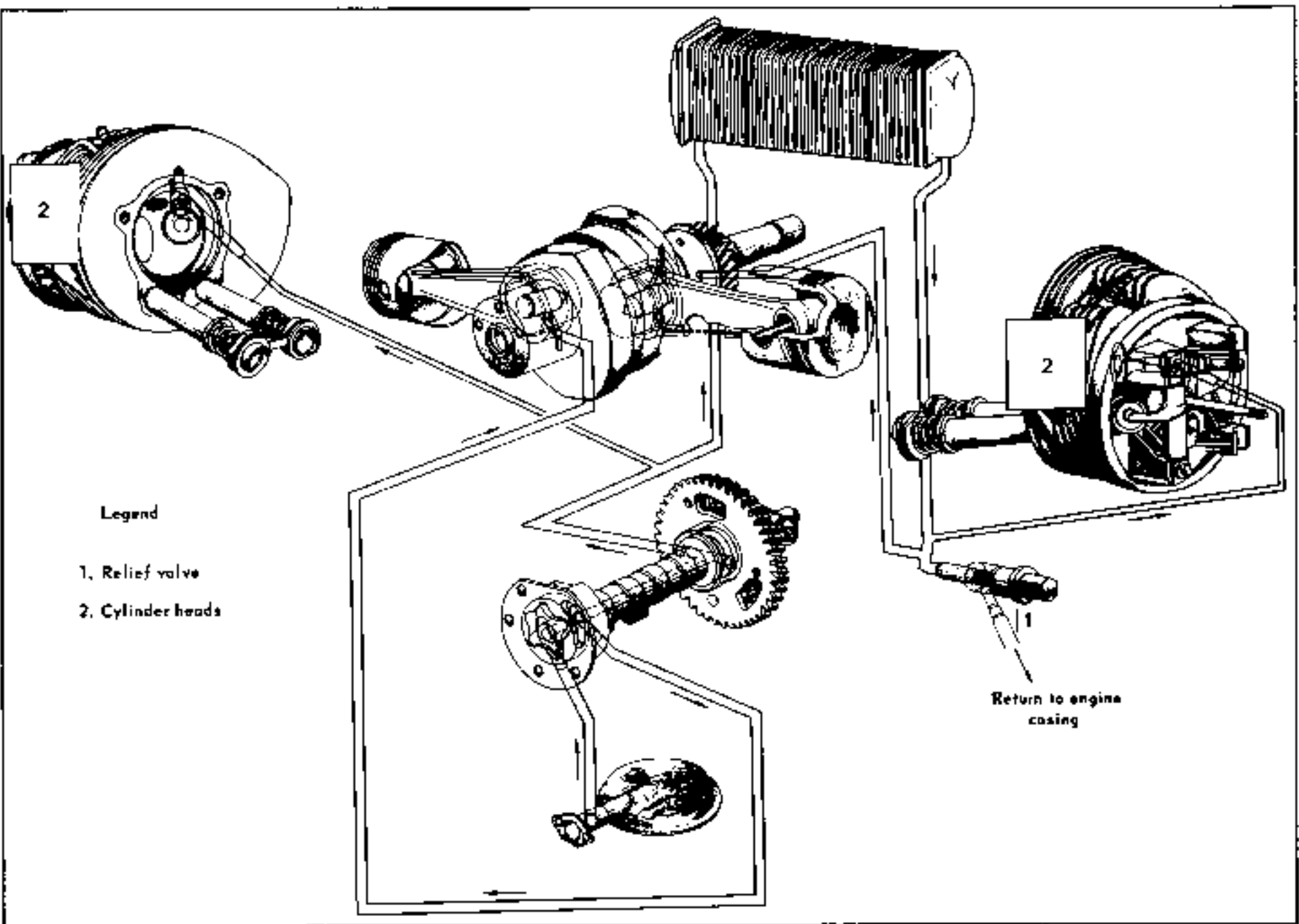


DIAGRAM OF LUBRICATION SYSTEM

ENGINES A 79:1 (M 28:1) and M 28:1 of the Series J¹⁰⁰1

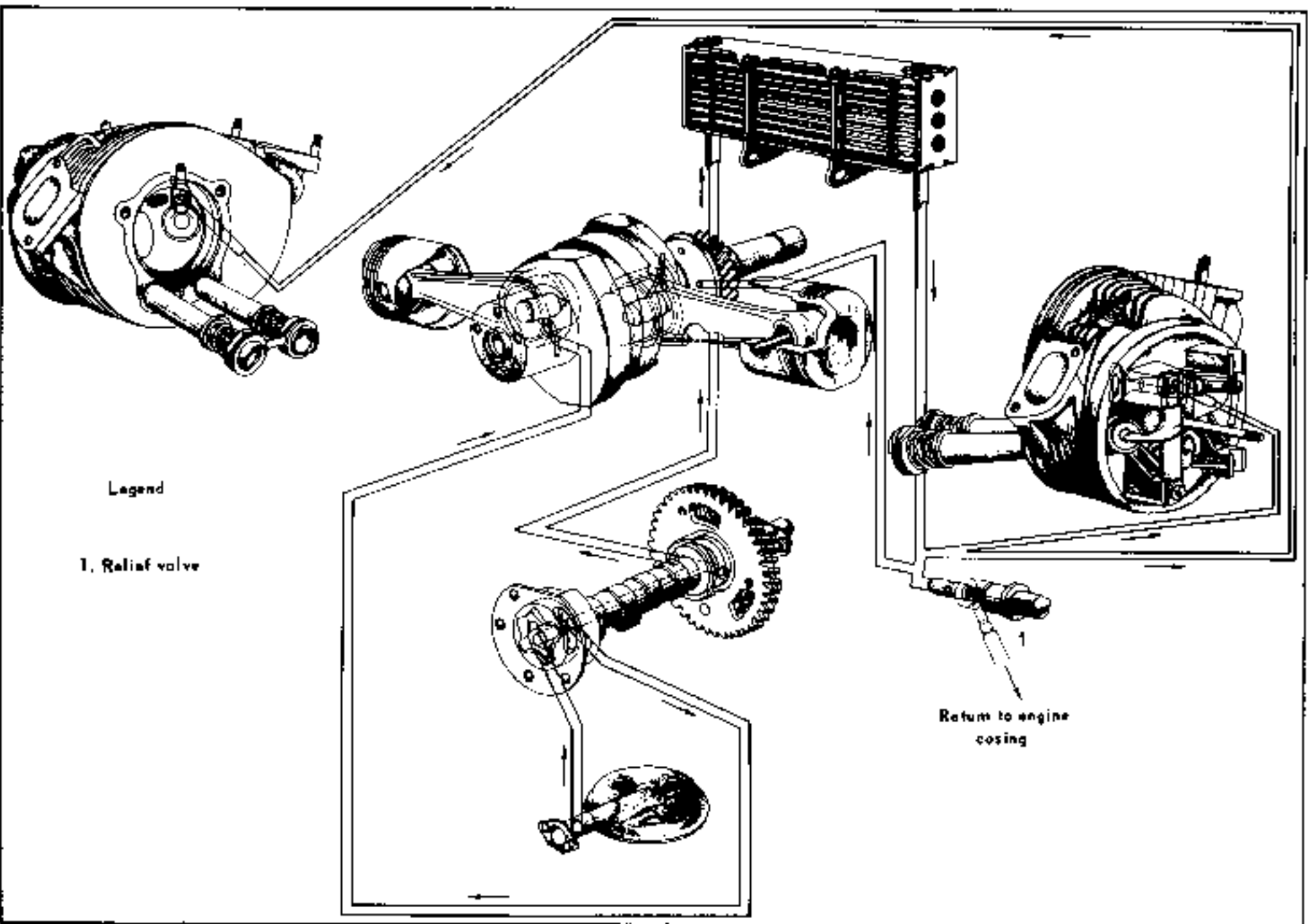
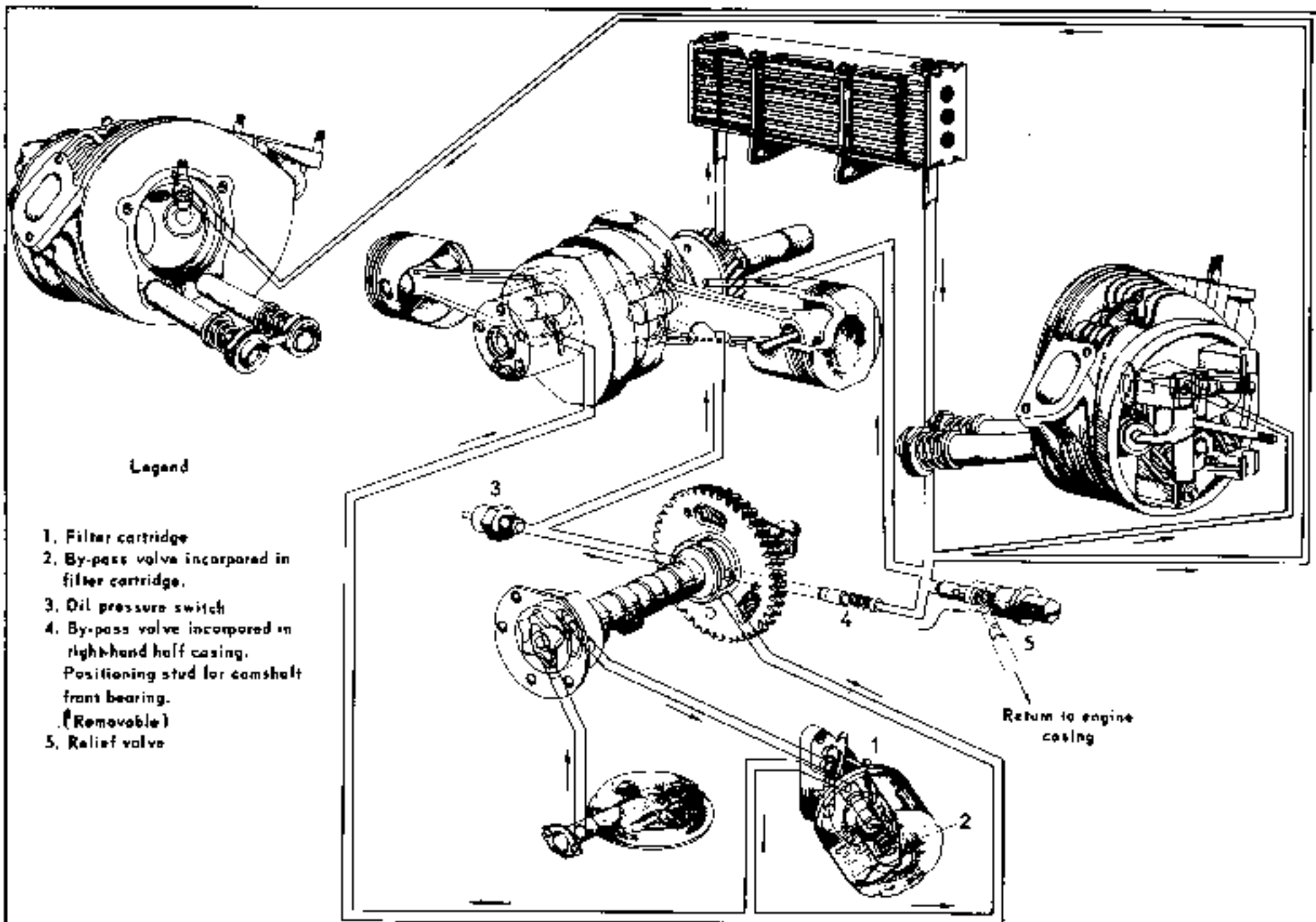


DIAGRAM OF LUBRICATION SYSTEM
 ENGINES M 28 1 and M 28
 (1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16) (17) (18) (19) (20) (21) (22) (23) (24) (25) (26) (27) (28) (29) (30) (31) (32) (33) (34) (35) (36) (37) (38) (39) (40) (41) (42) (43) (44) (45) (46) (47) (48) (49) (50) (51) (52) (53) (54) (55) (56) (57) (58) (59) (60) (61) (62) (63) (64) (65) (66) (67) (68) (69) (70) (71) (72) (73) (74) (75) (76) (77) (78) (79) (80) (81) (82) (83) (84) (85) (86) (87) (88) (89) (90) (91) (92) (93) (94) (95) (96) (97) (98) (99) (100)

A 22-1



II. SPECIAL FEATURES.

Engine casing :

Tightening torques

- Assembly bolts and nuts for crankcase halves	1,5 to 2 da Nm (110,63 to 14,44 ft.lbs)
- Bearing half	3,5 to 4,5 da Nm (25,27 to 32,54 ft.lbs)
- Oil sump mounting screws	0,3 to 0,5 da Nm (2,16 to 3,6 ft.lbs)
- Bolts fastening front supports to crankcase	6 da Nm (43,32 ft.lbs)
- Drip plug	3,5 to 4,5 da Nm (25,27 to 32,54 ft.lbs)
- Bearing studs on crankcase halves	0,6 to 0,8 da Nm (4,33 to 5,67 ft.lbs)
- Assembly studs for crankcase halves	0,3 to 0,5 da Nm (2,16 to 3,6 ft.lbs)

Crankshaft - Connecting rods :

Lateral play of crankshaft (not adjustable) : 0,07 to 0,14 mm (.003 to .006 in)

Do not interfere with the front and rear bearings of the crankshaft (micro-surfaces)

Bore of each rod bushes : $20,005 \begin{matrix} +0,011 \\ -0,005 \end{matrix}$ mm (1,787 $\begin{matrix} +,004 \\ -,0002 \end{matrix}$ in)

- Lateral play of connecting rods : 2,08 to 0,13 mm (.003 to .005 in)

Flywheel :

Maximum run out at starter ring : 0,3 mm (.011 in)

Fitting direction of starter ring : The non milled face of the starter ring oriented towards the flywheel shouldering

Tightening torque :

Flywheel securing screws (to be replaced when dismantling) : 4 to 4,5 da Nm (28,88 to 32,54 ft.lbs)

Cylinders :

- A single type of cylinders


Pistons - Rings

- The gudgeon pins are loose fitted

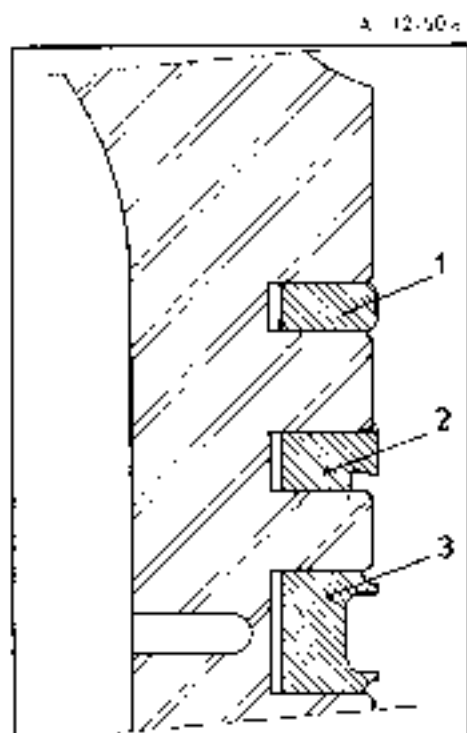
Fitting direction for pistons :

- Pistons without arrow on crown :

The fitting is indifferent

- Pistons with offset gudgeon pin and arrow or letters AV ( or AV) on crown :

The mark must point towards the timing belts



Rings

The identification mark (or manufacturer's mark) should be oriented towards the piston crown.

Fitting order : (starting from the crown of the piston)

- 1 - Compression ring
- 2 - Scraper ring
- 3 - Scraper - collector ring

REMARK :

Since June 1972, certain engines M 28 and M 28/1 are equipped with U-FLEX collector rings

Cylinder-heads :

Tightening torques

Cylinder-head nuts (tightening order with engine valves : front upper nut - rear upper nut - lower nut)

Lightly tighten the nuts in order to position the cylinder head :

- 1st tightening : 0.5 to 1 da Nm (3.6 to 7.22 ft.lbs)
- 2nd tightening : 2 to 2,3 da Nm (14.44 to 16.6 ft.lbs)
- Cylinder head cover nut : 0.5 to 0.7 da Nm (3.6 to 4.95 ft.lbs)
- Screws and nuts on intake-exhaust manifold 1.0 da Nm (7.37 ft.lbs)
- Cylinder head studs on crankcase 0.4 to 0.6 da Nm (3.88 to 4.32 ft.lbs)
- Cylinder head cover studs 0.4 to 0.6 da Nm (3.88 to 4.32 ft.lbs)
- Screws on exhaust valves : 1.0 da Nm (7.37 ft.lbs)

Valves :

Rotary valves (TEVUS) on A 79/0 - A 79/1 - M 28/1 - M 28 engines.

Engines	Valves	Angle	Head dia.		Stem dia. below head		Length	
			mm	in	mm	in	mm	in
A 53 - M 79/0	Intake	120°	39	1.54	8 - 0.025 0.640	.315 - .0010 .0016	90.8 ± 0.25	3.57 ± .010
	Exhaust	90°	32	1.26	8.5 - 0.035 0.650	.335 - .0001 .0020	86.65 ± 0.25	3.49 ± .010
Engines A 79/1	Intake	120°	39	1.54	8 - 0.005 0.635	.315 - .0002 .0014	89.57 ± 0.45 ± 0.25	3.53 ± .018 ± 0.010
	Exhaust	90°	34	1.34	8.5 - 0.020 0.650	.335 - .0008 .0020	88.18 ± 0.45 ± 0.25	3.47 ± .018 ± 0.010
Engine M 4	Intake	120°	39	1.54	8 - 0.025 0.640	.315 - .0010 .0016	88.8 ± 0.25	3.50 ± .010
	Exhaust	90°	34	1.34	8.5 - 0.035 0.650	.335 - .0014 .0020	86.5 ± 0.25	3.41 ± .010
Engines M 28/1 - M 28	Intake	120	40	1.57	8 - 0.020 0.635	.315 - .0008 .0014	88.5 ± 0.45 ± 0.25	3.48 ± .018 ± 0.010
	Exhaust	90°	34	1.34	8.5 - 0.035 0.650	.335 - .0014 .0020	86.35 ± 0.45 ± 0.25	3.42 ± .018 ± 0.010

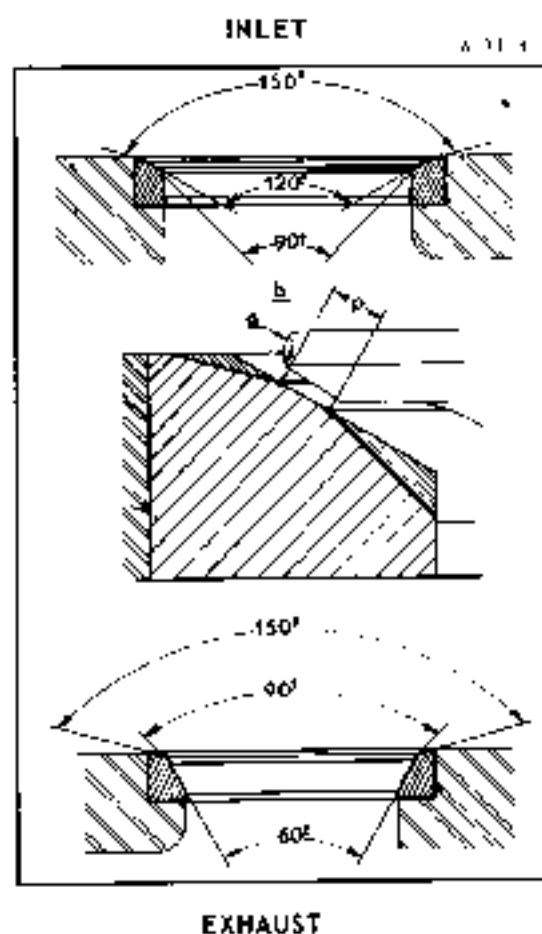
Manual 3146

Valve springs :

Engines	Springs		Normal length	Length under load	Load	Length under load	Load
	A 53 A 79/0	Up to September 1963	outer inner	35 mm (1.42 in.) 28 mm (1.10 in.)	24 mm (0.94 in.) 24.5 mm (0.97 in.)	33 to 45 kg (83 to 92 lbs) 7.4 to 9.3 kg (16 to 18 lbs)	31 mm (1.22 in.) 21.5 mm (0.84 in.)
M 4	Since September 1963	outer inner	39.6 mm (1.56 in.) 35.8 mm (1.41 in.)	24.4 mm (0.96 in.) 19 mm (0.75 in.)	47.3 to 45.3 kg (104 to 105 lbs) 9 to 10 kg (19 to 22 lbs)	31.7 mm (1.24 in.) 22.3 mm (0.87 in.)	21.2 to 24.6 kg (46.6 to 54 lbs) 3.7 to 4.7 kg (8.1 to 10.3 lbs)

Engines	Springs	Length under load	Load	Length under load	Load	Winding direction
A 79/1	Outer	31.4 mm (1.23 in.)	38 ± 1.5 kg (84 ± 3.3 lbs)	24.15 mm (0.95 in.)	42.5 ± 2 kg (93 ± 4.4 lbs)	R.H.
M 28-1	Inner	24.4 mm (0.96 in.)	12 ± 1 kg (26 ± 2.2 lbs)	17.15 mm (0.67 in.)	25 ± 1.5 kg (55 ± 3.3 lbs)	L.H.
M 28	One spring only	31.4 mm (1.23 in.)	37 ± 2.5 kg (79 ± 5.5 lbs)	24.15 mm (0.95 in.)	56 ± 3.5 kg (125 ± 7.7 lbs)	Judifferent

Seats and guides :



Bore of valve guides :

Engines A 53 - A 79/0 :

Inlet : dia. - 6 $\begin{matrix} +0.025 \\ -0 \end{matrix}$ mm (0.315 $\begin{matrix} +0.0010 \\ -0 \end{matrix}$ in.)

Exhaust : dia. - 6.5 $\begin{matrix} +0.025 \\ -0 \end{matrix}$ mm (0.335 $\begin{matrix} +0.0010 \\ -0 \end{matrix}$ in.)

Engine A 79/1 :

Inlet : dia. - 6 $\begin{matrix} +0.020 \\ -0.005 \end{matrix}$ mm (0.315 $\begin{matrix} +0.0009 \\ -0.0001 \end{matrix}$ in.)

Exhaust : dia. - 6.5 $\begin{matrix} +0.010 \\ -0.005 \end{matrix}$ mm (0.335 $\begin{matrix} +0.0003 \\ -0.0001 \end{matrix}$ in.)

Engine M 4 :

Inlet : dia. - 6 $\begin{matrix} +0.040 \\ -0.025 \end{matrix}$ mm (0.315 $\begin{matrix} +0.0016 \\ -0.0010 \end{matrix}$ in.)

Exhaust : dia. - 6.5 $\begin{matrix} +0.050 \\ -0.025 \end{matrix}$ mm (0.335 $\begin{matrix} +0.0020 \\ -0.0010 \end{matrix}$ in.)

Engines M 28/1 - M 28 :

Inlet : dia. - 8 $\begin{matrix} +0.030 \\ -0.005 \end{matrix}$ mm (0.315 $\begin{matrix} +0.0011 \\ -0.0001 \end{matrix}$ in.)

Exhaust : dia. - 8.5 $\begin{matrix} +0.015 \\ -0.010 \end{matrix}$ mm (0.335 $\begin{matrix} +0.0003 \\ -0.0003 \end{matrix}$ in.)

Width of contact surface - p - :

Inlet : 1.45 mm (0.057 in.) max.

Exhaust : 1.50 mm (0.070 in.) max.

Maximum out of straight
of push rods : 0.2 mm (0.007 in.) max.

Distribution :

Clearance:

- Lateral play (not adjustable) 0.04 to 0.09 mm (.0015 to .0035 in)

Theoretical setting of the timing :

Theoretical setting with a clearance of 0.53 mm (.021in) between rocker and intake valve and a clearance of 0.43 mm (.017in) between rocker and exhaust valve.		
	Engines A 53 and M 4	Engine A 79/0
B.T.D.C. (Inlet opens)	3°	12°
A.B.D.C. (Inlet closes)	45°	54°
H.H.D.C. (Exhaust opens)	45°	55°
A.T.D.C. (Exhaust opens)	11°	21°

Theoretical setting with a clearance of 1 mm (.039in) between the rocker and valve at intake and exhaust.		
	Engine A 79/1	Engines M 28/1 and M 28
A.T.D.C. (Inlet opens)	2° 5'	0° 5'
A.B.D.C. (Inlet closes)	41° 30'	49° 15'
B.T.D.C. (Exhaust opens)	35° 55'	35° 55'
A.T.D.C. (Exhaust closes)	3° 30'	3° 30'

Com/valve lift 6.3 / 7.3 mm

Tightening torques :

- Rocker adjusting nuts 1.4 to 1.9 da Nm (10 to 13.7 ft.lbs)

Lubrication circuits :

- Type and grade of oil : TOTAL GTS 20 W 50 (England and Spain)
 TOTAL GTS 15 W 50 (Europe except
 England, Spain and France)
 TOTAL GTS 15 W 40 (France)

Housing capacities :

	Type of engine and oil capacity				
	A 53	A 79/0	A 79/1	M 4	M 28/1 - M 28
After draining	2 litres (3.5 pints)	2.3 litres (4 pints)	2.5 litres (4 pints)	2.5 litres (4.3 pints)	2.4 litres (4.2 pints)
- After removing rocker covers	2.2 litres (3.8 pints)	2.5 litres (4.3 pints)	2.5 litres (4.3 pints)	2.85 litres (5 pints)	2.5 litres (4.3 pints)
- After removing rocker covers and outbridge (since November 1970)					2.7 litres (3.7 pints)
- Between min. and max.	0.5 litres (0.87 pints)	0.5 litres (0.87 pints)	0.5 litres (0.87 pints)	0.5 litres (0.87 pints)	0.5 litres (0.87 pints)

- Oil pressure at 80° :

Engines A 53 - A 79 0 - M 4 2.5 to 3.1 bars at 4000 rpm (36.2 to 44.9 psi)

Engine A 79/1 4 to 5 bars at 6000 rpm (58 to 72.5 psi)

Engines M 28/1 - M 28 5.5 to 6.5 bars at 6000 rpm (79.7 to 94.2 psi)

- Pressure switch setting 0.5 to 0.8 bars (7.2 to 11.6 psi)

Filter cartridge :

Engines M 28 and M 28 L (since November 1976 to November 1977)

- Intake strainer with 60 micron by pass - filter cartridge.

Engines M 28 and M 28 L (since November 1977)

- New lubrication circuit with no filter (removable) - by pass - in place of the front crankshaft bearing positioning stud (right-hand engine casing).

- External filter cartridge with 60 micron by pass -.

Oil cooler :

Engines A 53 - A 79 10	7 elements
Engine M 4	9 elements
Engine A 79 11	6 elements (Aluminium)
Engines M 26 1 - M 28	9 elements (Aluminium)

Oil pump :

- Lateral play of pistons 0.1 mm maximum (0.003 in.)

Tightening torques :

- Connecting screws on cylinder heads and crankcase	1 to 1.3 da Nm (7.22 to 9.3 ft.lbs)
- Connecting screws on oil-cooler (former model)	2.7 to 2.9 da Nm (19.4 to 20.9 ft.lbs)
- Connecting screws on oil-cooler (new model)	1 to 1.4 da Nm (7.22 to 10 ft.lbs)
- Securing screw for anti-emulsion plate	Moderately light : LOCTITE FRENATANCH
- Securing screw for oil strainer	0.1 to 0.5 da Nm (2.1 to 3.6 ft.lbs)
- Securing screw for oil pump cover	1.3 to 1.5 da Nm (9.3 to 10.6 ft.lbs)
- Securing screw for oil cooler	1.9 da Nm (13.7 ft.lbs)
- Plug for lubrication circuit	2.7 to 3 da Nm (19.4 to 21.6 ft.lbs)

Fans :

Number of blades

- Engine A 53	6 blades (metal fan)
- Engines A 79 0 - A 79 1 - M 4 - M 28 11 - M 28	8 blades (plastic fan)
- Engines M 28 1 - M 28	9 blades (plastic fan) (since October 1977)

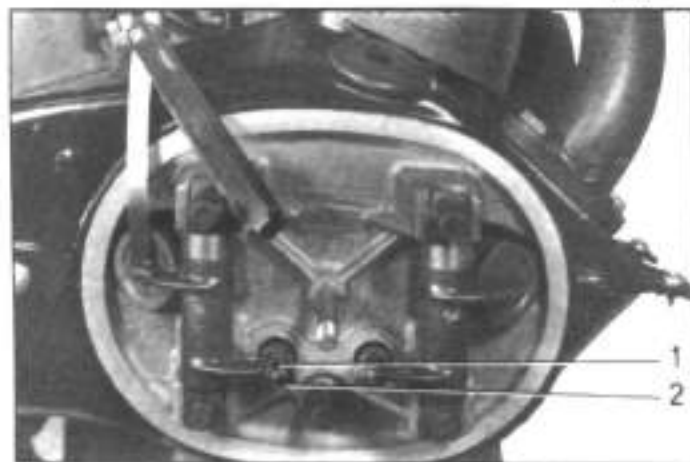
Positioning of fan

- At TDC, arrange the fan so that the starting handle notch is horizontal.

Tightening torque for fan securing screw 5 to 6 da Nm (36 to 43 ft.lbs)

ADJUSTING THE ROCKERS.

4112



1. Place a container under the cylinder heads to collect the oil, and remove the rocker covers.

2. **Set the valve-rocker clearances :**

This adjustment must be carried out with the engine cold.

Set a valve when the corresponding one, on opposite cylinder, is fully open.

Intake = 0.20 mm (.008 in)

Exhaust = 0.20 mm (.008 in)

Slacken the lock-nut (1) and adjust the clearance using the tappet screw (2). Tighten the lock-nut.

3. **Fit the rocker covers :**

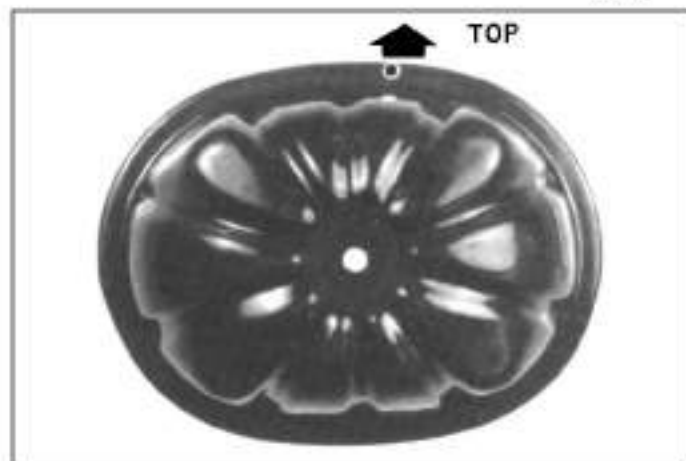
Make sure that there is no roughness on the joint surface. The contact faces must be dry.

Glue the gasket to the rocker cover (using Bostick 1400 or Minnesota F 19 glue).

On a certain number of engines, the rocker covers are marked with letter « O » for identification purposes. This mark should be directed towards the top.

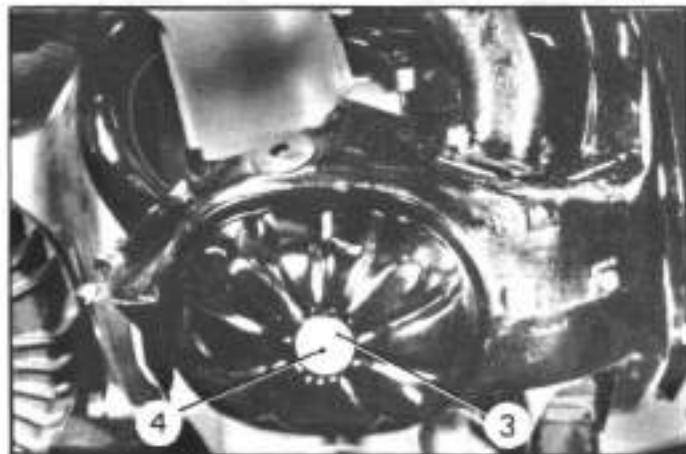
A poor fitting of the rocker covers and gaskets, as well as an insufficient tightening of the rocker cover securing screw can cause total loss of the oil. Tighten nut (4) from 0.5 to 0.7 da Nm (3.61 to 5.05 ft.lbs). Fit the rubber washer and plain washer (3), if need be.

427B



Manual 816-1

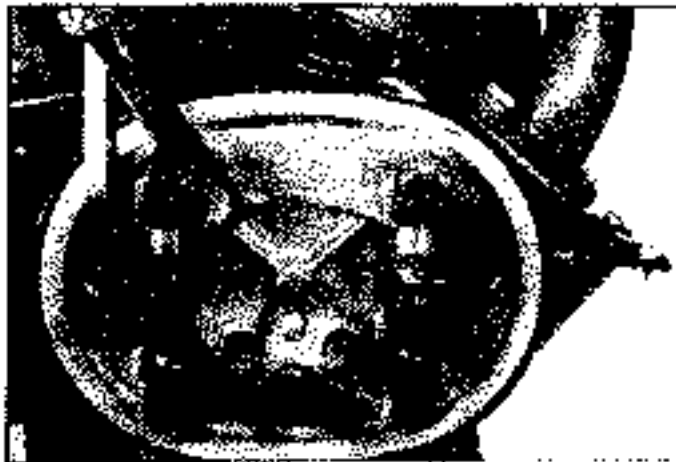
3986



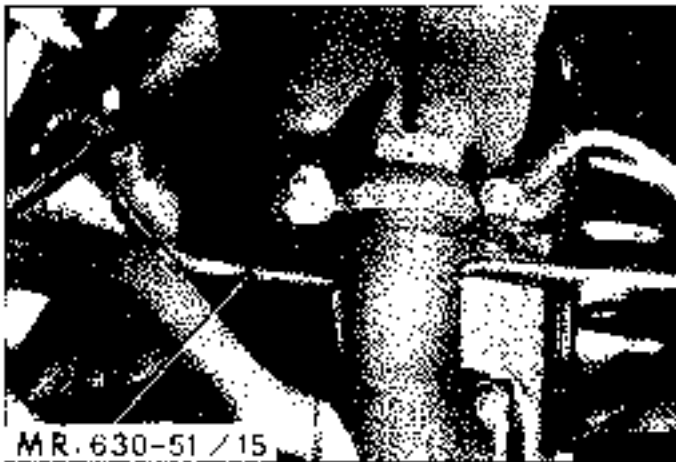
4. Start the engine and check the joints for leaks.
5. While the engine is warm, adjust the idling speed, if necessary (750 to 800 rpm).
6. When a centrifugal clutch has been fitted, check the setting of the throttle closing dashpot. (The operation time must be between 1 and 2 seconds). Adjust if necessary.
7. Top up with engine oil.

CHECKING THE VALVE TIMING

4112



4314

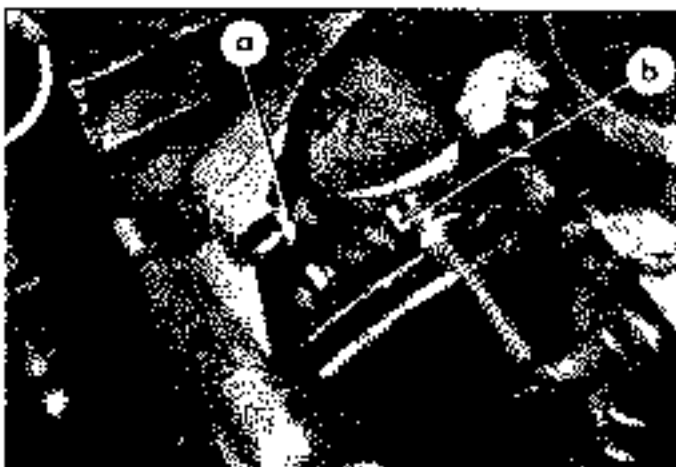


Manual B167

7 1977



12 097



To carry out this operation, the engine must be cold.

- Place a container to collect the oil and remove the rocker cover of the left-hand cylinder.
- Turn the engine in order to bring the intake valve to a fully opened position.
Adjust the clearance between rocker and exhaust valve to :
 - Engine A 53 : 1.95 mm (.076 in.)
 - Engines A 79-C and M 4 : 2.40 mm (.095 in.)
 - Engines A 79-I : 2.40 mm (.095 in.)
 - Engines M 28-I and M 28 : 2 mm (.076 in.)
- Insert a 6 mm (.236 in.) dia. rod (MR. 630-51 / 15) in the hole located on the left-hand side of the crankcase and provided for ignition timing.
Turn the engine *in the opposite direction to its normal rotation* until the rod penetrates into the hole of the flywheel.
- Measure the clearance between rocker and exhaust valve. If the timing is to be correct, the clearance should be between :
 - Engine A 53 : 0.14 and 0.63 mm (.0015 and .022 in.)
 - Engines A 79-C and M 4 : 0.06 and 0.60 mm (.0023 and .031 in.)
 - Engine A 79-I : 0.09 and 0.83 mm (.0035 and .034 in.)
 - Engines M 28-I and M 28 : 0.03 and 0.75 mm (.0011 and .029 in.)

On certain A 79-I (435 cc) engines, it is not possible to arrive at a clearance of 2.40 mm (.095 in.) between rocker and exhaust valve in that case, proceed as follows :

- Turn the engine in order to bring the inlet valve to its fully open position and adjust the exhaust valve-rocker clearance to 1.59 mm (.054 in.)
- Insert the rod MR. 630-51 / 15 in the hole located on the left hand side of the crankcase provided for ignition timing.
- Turn the engine *in the opposite direction to normal* until the rod penetrates into the flywheel hole.
- With a piece of chalk mark 'a' 'b' on a tooth of the starter ring and another mark 'a' 'b' on the crankcase directly opposite the 'a' 'b'.
Remove the timing rod.
- Turn the engine *in the normal direction* through a distance corresponding to three teeth of the starter ring.
Measure the exhaust valve clearance.
If the timing is correct, the clearance should be between : 0.05 and 0.60 mm (.0019 and .023 in.)

5. Set the rockers :

The adjustment is carried out with the engine cold.

Set a valve when the corresponding one on opposite cylinder is fully open :

Inlet 0.20 mm (.007 in)

Exhaust 0.20 mm (.007 in)

6. Fit the rocker covers :

Ensure that there is no roughness on the joint faces

Check the condition of the gasket glued to the rocker cover

Fit :

- the rocker-covers

- the rubber seals (1) and the plain washers (2)

on the rocker covers equipped with these).

- the cap nuts (3)

Tighten the nuts (3) from 0.5 to 0.7 *kg* Nm (1.3 to 4.0 *ft* lbs)

4043



Poor positioning of the gaskets or poor tightening of the nuts (3) can lead to total loss of the engine oil.

7. Start the engine

Check the rocker cover gaskets for leaks.

Top up with engine oil

**CARBURETTOR TO VEHICLE REFERENCE
TABLE**

Type of engine	Type of vehicle	Dates of production	Type of carburettor	Reference on carburettor	
				Conventional clutch	Centrifugal clutch
A 53 1425 cc	AZ (series A and AM)	3/1963 → 2/1970	SOLEX 28 IBC * SOLEX 28 CSI	32 ¹	30 ¹
	AZJ (series A)	3/1963 → 8/1967	ZENITH 28 IN * ZENITH 28 IN 4	2 32	2 30
A 79/0 1425 cc	AZU (series A)	6/1967 → 8/1972	SOLEX 32 PICS *	36	
	AYA (series A and AM)	9/1967 → 3/1968	SOLEX 32 PICS	36	39
A 79/1 1435 cc	AYA 2 (series A and AM)	3/1968 → 2/1970	SOLEX 34 PICS 4 * SOLEX 34 PICS 4	101	102
	AYA 2 (series A and AM)	2/1970 → 8/1972	SOLEX 34 PICS 5 *	101 ¹	102 ¹
	AZ (series A 2)		SOLEX 34 PICS 5		
	AYA 2 (series A and AM)	8/1972 → 10/1975	SOLEX 34 PICS 5 *	121	122
	AZ (series A 2)			121	
	AZU (series B)			121	
	AK (series AP) (AZU)	10/1975 → 1/1976	SOLEX 34 PICS 6	173	
	AZ (series KB)			173	174
	AK (series AP) (AZU)	7/1976 → 7/1978	SOLEX 34 PICS 10	191	
	AK (series AP) (AZU)	7/1976 → 9/1979	SOLEX 34 PICS 10	191	192
M 4 1602 cc	AYA 3 (series A and AM)	1/1968 → 10/1968	SOLEX 40 PICS 3 * SOLEX 40 PICS 3	44 ³	45 ³
	AK	→ 6/1968	SOLEX 30 PICS		
	AM (AMI G)	5/1963 → 4/1964	SOLEX 40 PICS * SOLEX 40 PICS	44	45
		4/1964 → 4/1967	SOLEX 40 PICS 2 * SOLEX 40 PICS 2	44 ¹	45 ¹
4/1967 → 5/1968		SOLEX 40 PICS 3 * SOLEX 40 PICS 3	44 ²	45 ²	
M 28/1 1602 cc	AYB (series A and AM)	10/1968 → 1/1970	SOLEX 34 PICS 4 * SOLEX 34 PICS 4	103	104
	AY (series CA)			103	104
	AK (series B)			103	
	AYB (series A and AM)	1/1970 → 2/1972	SOLEX 34 PICS 5 * SOLEX 34 PICS 5	103 ¹	104
	AY (series CA)	1/1970 → 8/1972		103 ¹	104
	AK (series B)	1/1970 → 7/1970		103 ¹	
	AK (series AK)	1/1970 → 8/1972		103 ¹	
	AZ (series KA)	2/1970 → 6/1972		SOLEX 34 PICS 5 * SOLEX 34 PICS 5	103 ¹

Type of engine	Type of vehicle	Dates of production	Type of carburettor	Reference on carburettor	
				Conventional clutch	Centrifugal clutch
M 28/1 1602 cc (continued)	AY (series CA)	9/1970 → 2/1975	SOLEX 38 PICS 6 *	123	124
	AK (series AK)			123	
	AZ (series KA)			123	124
	AY (series CA)	2/1975 → 10/1975	SOLEX 34 PICS 6	164	165
	AK (series AK)			164	
	AZ (series KA)			164	165
	AY (series CA)			175	176
	AK (series AK)	10/1975 → 7/1976	SOLEX 34 PICS 6	175	
	AZ (series KA)			175	176
	AY (series CA)			175	176
	AK (series AK)	1/1976 → 7/1978	SOLEX 34 PICS 10 * SOLEX 34 PICS 10	193	194
	AZ (series KA)			193	
	AY (series CA)			193	
	AZ (series KA)	7/1976 → 1/1980	SOLEX 20/35 CSIC *	197	198
	AZ (series KA)	1/1980 →		225	226
AY (series CA)	1/1978 → 7/1980	197		198	
AY (series CA)	7/1980 →	SOLEX 20/35 SO.C	225	226	
M 28 1602 cc	AY (series CB)	7/1970 → 6/1970	SOLEX 26/35 CSIC *	110 ²	111 ²
	AY (series CB)	9/1970 → 8/1972		110 ¹	111 ¹
	AY (series CB)	8/1972 → 10/1975		127	128
	AY (series CB)	10/1975 → 1/1976		179	180
	AY (series CB)	7/1976 → 7/1977		195	196
	AY (series CB)	7/1977 → 7/1980		197	198
	AY (series CB)	7/1980 →		225	226
	AY (series CD)	2/1973 → 1/1981		197	
	AY (series CD)	7/1980 →		225	
	AM (AMI R)	5/1968 → 11/1968		110	111
	AM (AMI R)	11/1968 → 3/1969		110 ¹	111 ¹
	AM 3 (AMI B)	3/1969 → 7/1969		110 ¹	111 ¹
	AM (AMI B) (Series JA - JB - JC)	7/1969 → 5/1972		110	111
		8/1972 → 10/1975		125	126
		10/1975 → 7/1976		177	179
7/1976 → 9/1978		197	198		

* Carburettor without throttle closing device (conventional clutch)

CARBURETTORS	28 IN (Z 32)	28 IN (Z 32)	SOLEX CARBURETTORS	30 FICS	32 FICS (38)	40 FICS (44)	40 FICS (45)	40 FICS 2 (44)	40 FICS 2 (45)	40 FICS 3 (44)	40 FICS 3 (45)
	SOLEX 28 CH (30)	ZENITH 28 IN 4 (Z 30)		32 FICS (30)	40 FICS (45)	40 FICS 2 (45)	40 FICS 3 (45)				
Venturi bore	22	22	Venturi bore	26	28	32	32	32	32	32	32
Main jet	125	132	Main jet	140	150	165	165	170	170	170	170
Air correction jet	E1		Air correction jet	AD	215	AU	AU	AC	AC	AC	AC
Choke jet	30		Idling jet	475	55	55	55	50	50	50	50
Idling jet	42.5	46	Pump injector		40	40	40	40	40	40	40
Idling speed air jet		140	Needle valve seat	1.5	1.3	1.6	1.6	1.3	1.3	1.3	1.3
Needle valve seat	1.2	1.25	Filter	5.7 g	5.7 g	5.7 g	5.7 g	5.7 g	5.7 g	5.7 g	5.7 g

SOLEX CARBURETTORS	34 FICS 4 (10)	34 FICS 4 (10)	34 FICS E (121)	34 FICS 6 (125)	34 FICS 6 (131)	34 FICS 6 (175)
	34 FICS 4 (102)	34 FICS 4 (104)		34 FICS 6 (124)	34 FICS 6 (174)	34 FICS 6 (176)
	34 FICS 5 (101)	34 FICS 5 (103)	34 FICS 6 (122)	34 FICS 6 (164)	34 FICS 10 (191)	34 FICS 10 (193)
	34 FICS 5 (102)	34 FICS 5 (104)		34 FICS 6 (165)	34 FICS 10 (192)	34 FICS 10 (194)
Venturi bore	28	28	28	28	28	28
Main jet	155	160	155	165	155	165
Air correction jet	AB	AB	AB	AC	AB	AC
Idling jet	40	42.5	40	42.5	35	40
Progression jet	55	55	50	52.5	46	40
Pump injector	35	40	35	40	37.5	40
Needle valve seat	1.2	1.3	1.3	1.3	1.3	1.3
Filter	5.7 g	5.7 g	5.7 g	5.7 g	5.7 g	5.7 g

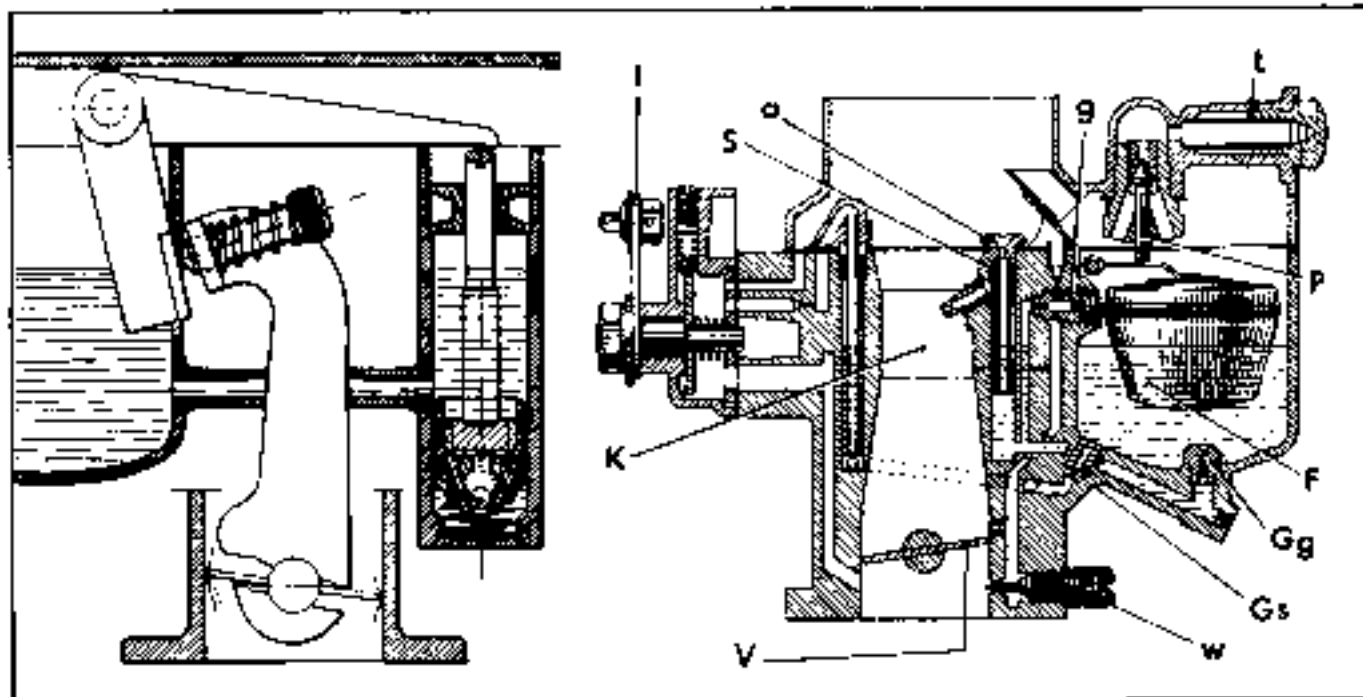
TWIN CHOKE SOLEX CARBURETTORS	Identification 110* - 111*		Identification 110 ² * - 111 ² * 111 ¹ * - 114 ¹ *		Identification 120* - 126*		Identification 177* - 178* 179* - 190* 197* - 198* 195* - 196*		Identification 225* - 226*	
	26/35 CSIC* and SCC		1st choke	2nd choke	1st choke	2nd choke	1st choke	2nd choke	1st choke	2nd choke
	1st choke	2nd choke	1st choke	2nd choke	1st choke	2nd choke	1st choke	2nd choke	1st choke	2nd choke
Venturi bore	21	24	21	24	21	24	21	24	18	26
Main jet	120	90	125	75	** 120 (1173 →)	82.5	120	70	102.5	87.5
Idling jet	50		50		40		40		38	
Air correction jet	1 F 1	2 H 1	1 F 1	2 AA	1 F 1	2 AA	1 F 2	2 AA	1 F 2	2 AA
Pump injector	40		40		40		40		35	
Needle valve seat (springs)	1.7	1.7	1.7	1.7	** 1.7 1.7 (ball type)	1.7	1.7 (ball type)		1.7 (ball type)	

* Carburetor with 1 choke (long display) : conventional carburetor

SCHEMATIC DIAGRAMS

1. SOLEX CARBURETTORS 28 IBC (marked 32¹) and 28 CBI (marked 30¹).

A. 14-2



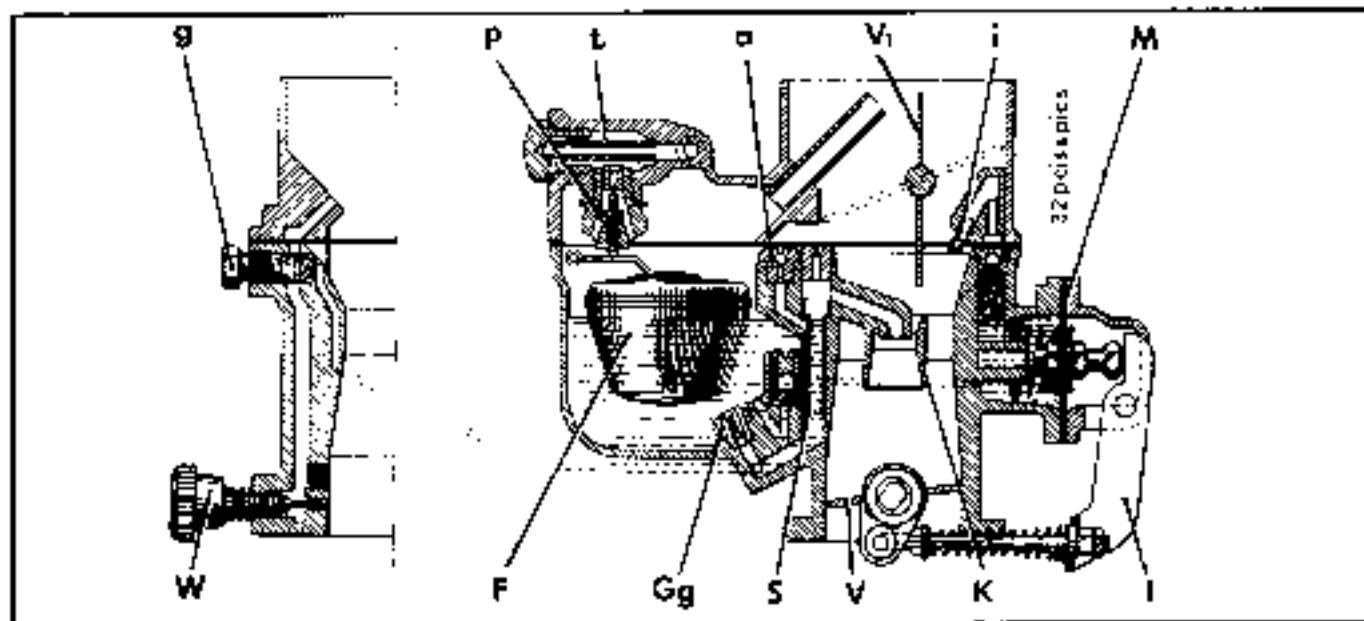
Legend :

a : Air correction jet
 P : Float
 Gg : Main jet
 Gs : Choke jet
 g : Idling jet
 K : Venturi bore

I : Choke lever
 P : Needle valve
 S : Emulsion tube
 t : Filter
 V : Throttle
 W : Idling mixture control screw

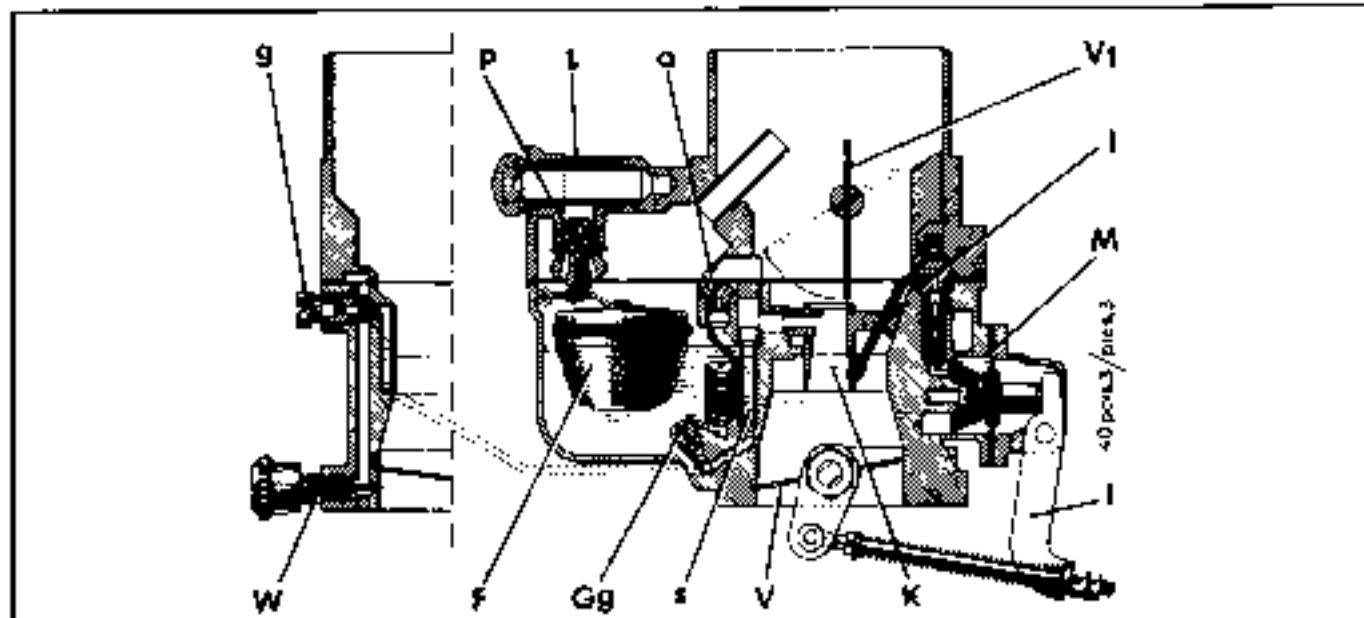
2 SOLEX CARBURETTORS 30 PICS - 32 PICS (marked 38) and 32 PCIS (marked 39)

A. 14-11



3. SOLEX CARBURETTORS 40 PICS - 40 PCIS (all markings)

A. 14-12

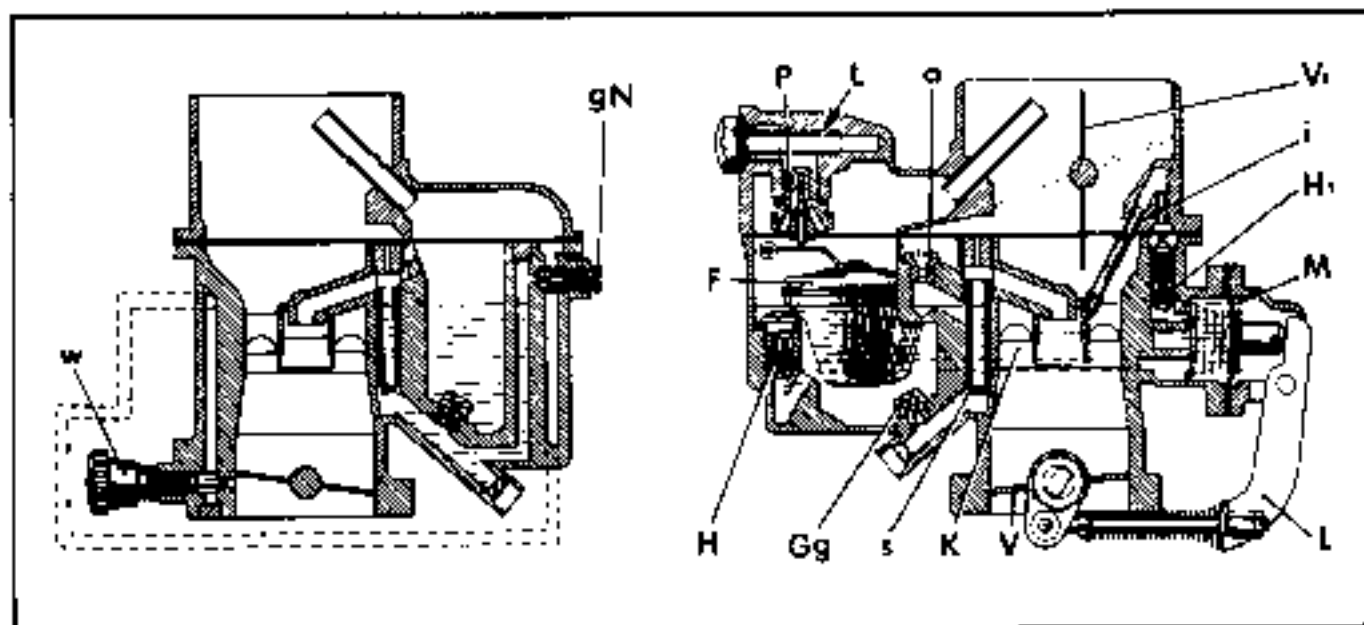


Legend .

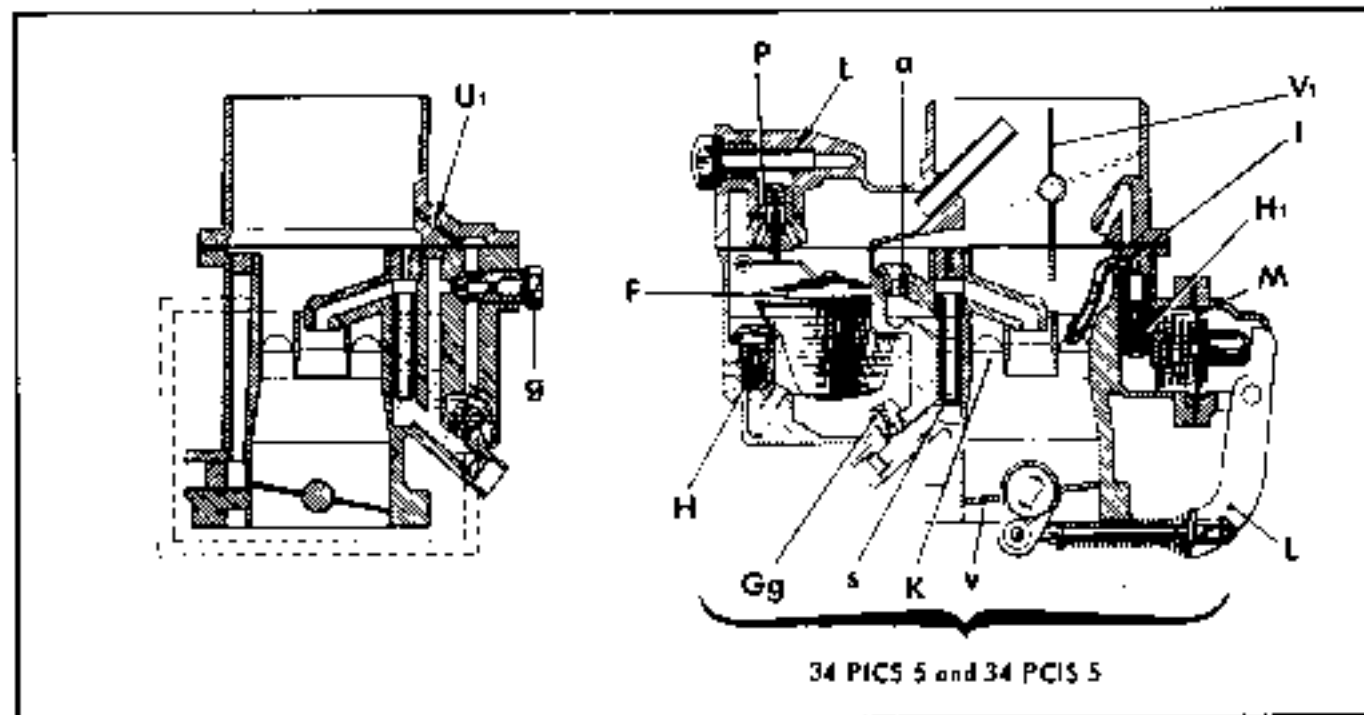
- | | |
|-------------------------|----------------------------------|
| a : Aux. collection jet | M : Pump diaphragm |
| F : Float | P : Needle valve |
| Gg : Main jet | S : Emulsion tube |
| g : Idling jet | L : Filter |
| i : Pump injector | V : Throttle |
| K : Venturi bore | V1 : Strangler flap |
| I : Pump lever | W : Idling mixture control screw |

4. SOLEX CARBURETTORS 34 PIC⁴ - 34 PCIS⁴ - 34 PIC⁵ and 34 PCIS⁵ (all markings)

A 14-1



A 14-4



34 PIC 5 and 34 PCIS 5

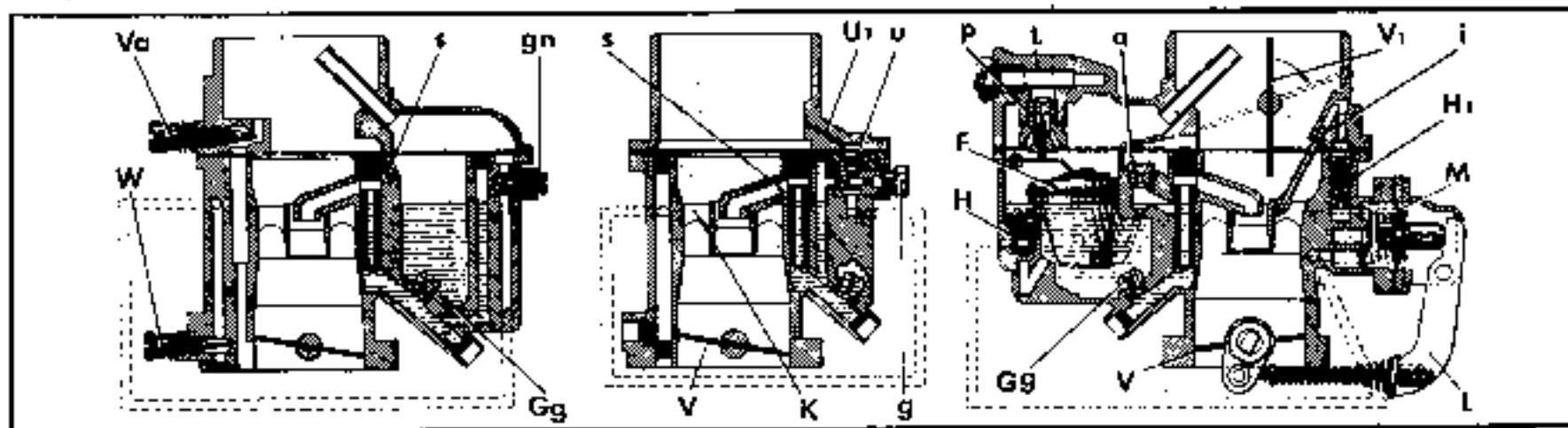
Legend :

- α : Air correction jet
- F : Float
- Gg : Main jet
- g : By pass jet
- qN : Idling jet
- H : Ball seal
- U' : Ball seal
- ∩ : Pump injector
- K : Venturi bore

- L : Pump lever
- M : Pump diaphragm
- P : Needle valve
- s : Emulsion tube
- ∩ : Filter
- U : Calibrated orifice
- V : Throttle
- V' : Strangler flap
- W : Idling mixture control screw

Manual C16-1

5. SOLEX CARBURETTORS 34 PIC 6 and 34 PIC 6 (all markings)



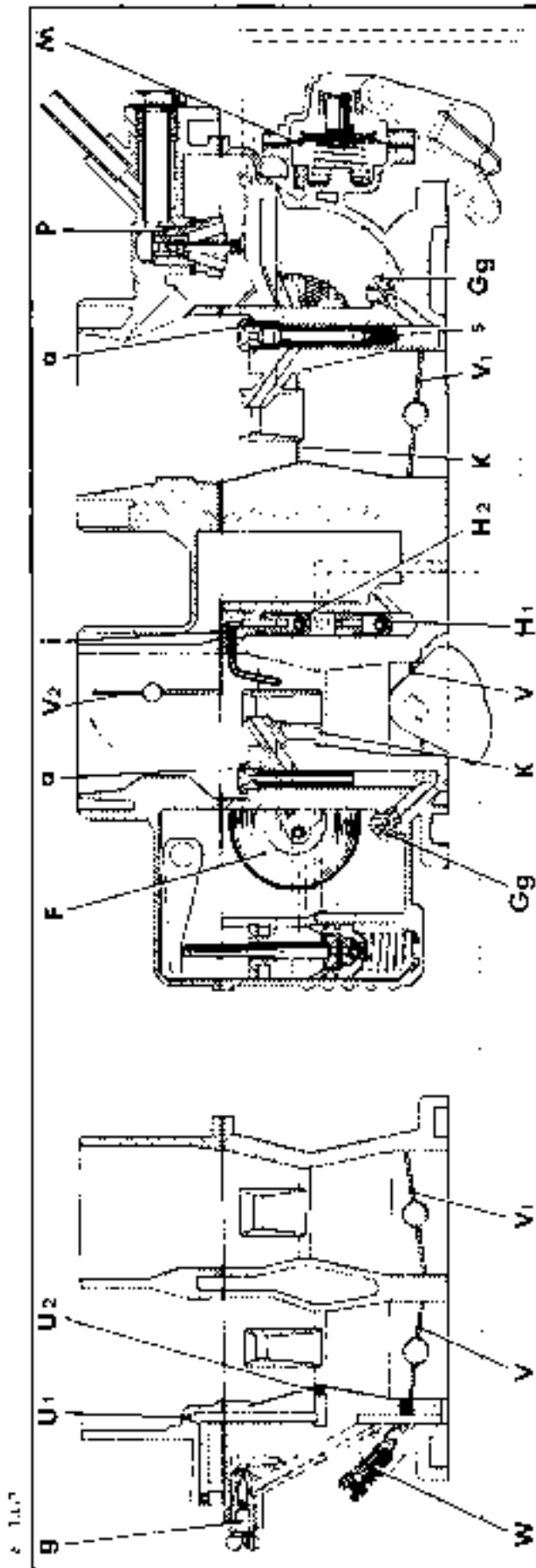
Legend :

a : Air correction jet
 F : Float
 Ga : Main jet
 g : By pass jet
 gN : Idling jet
 H /
 H1 / Bal. seals
 - : Pump injector
 K : Venturi bore
 L : Pump lever

M : Pump diaphragm
 P : Needle valve
 S : Emission tube
 r : Filter
 U /
 U1 / Calibrated orifices
 V : Throttle
 V1 : Strangler flap
 W : Idling mixture control screw
 Va : Idling air screw

6 SOLEX CARBURETTORS 26-35 CSIC and 26-35 SCIC (all markings) → 1972

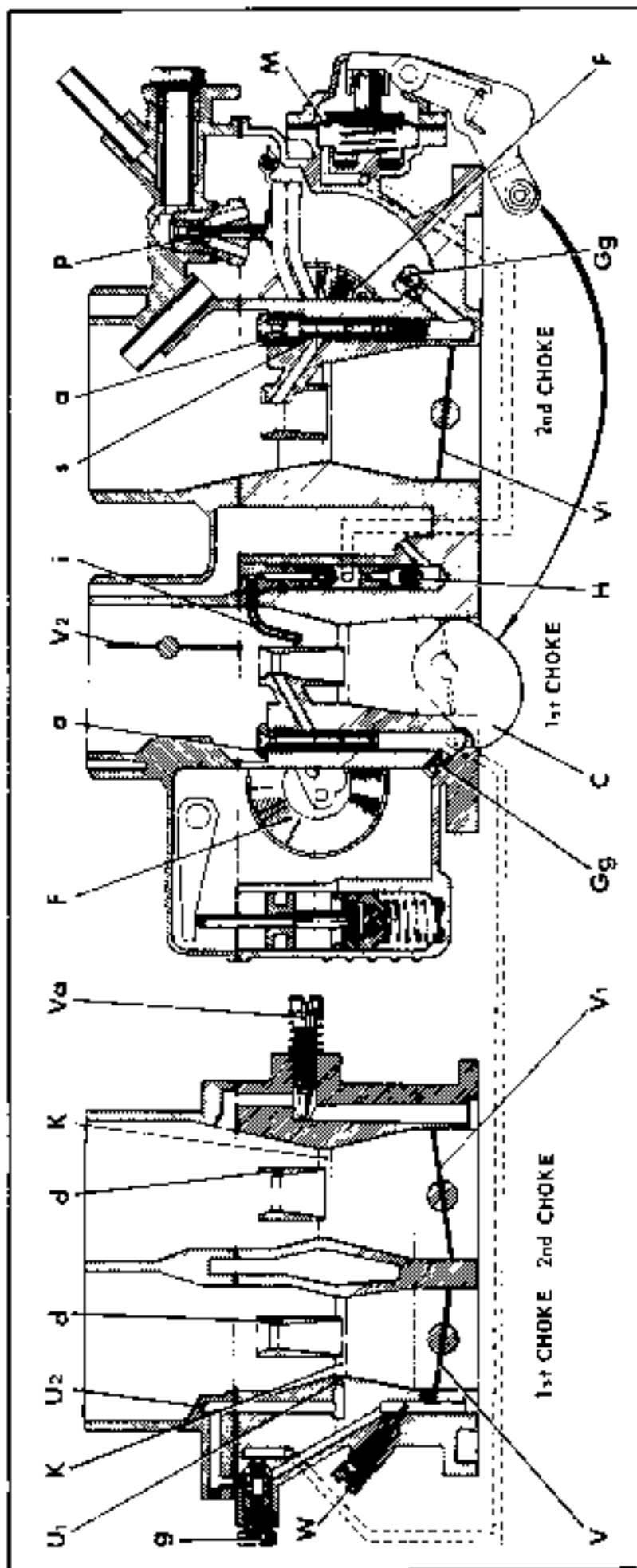
Manual B15 1



Legend :

- | | | | |
|-------|----------------------|--------|------------------------------|
| A | Air restriction jets | M | Film diaphragm |
| F | Float | P | Spring loaded needle valve |
| Gg | Main jets | s | Emulsion tube |
| I | Idling jet | U1 U2 | Calibrated orifices |
| U1 U2 | Main jets | V - V1 | Throttles |
| V | Fuel injector | V2 | Strangler jet |
| K | Venturi bores | W | Idling mixture control screw |

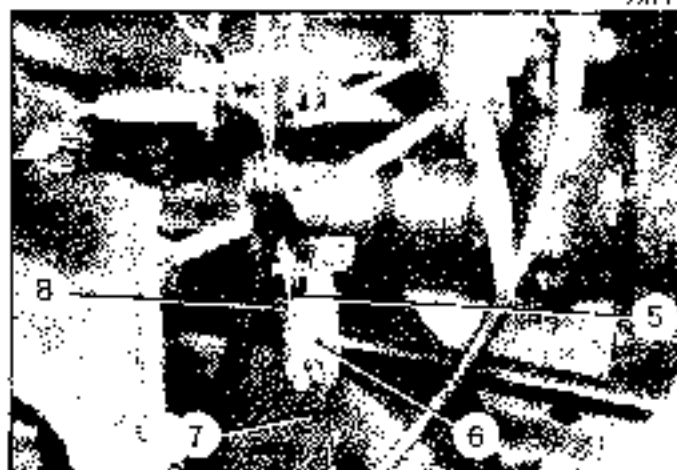
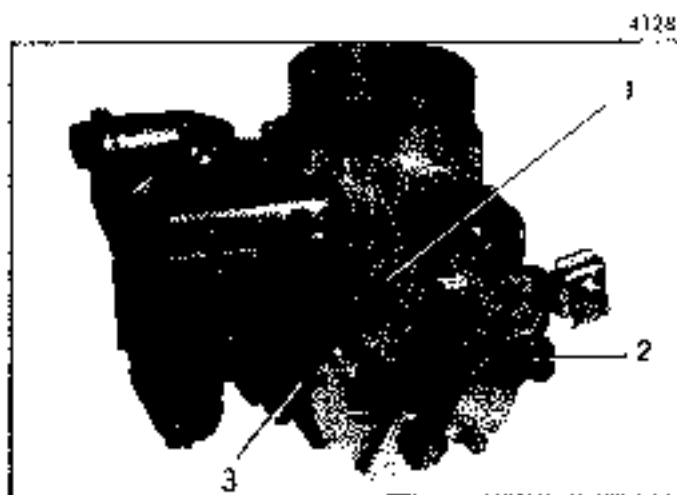
7 SOLEX CARBURETTORS 26-35 CSIC and 26-35 SCIC (all markings) V 1572



Legend :

- a : Air correction jets
- v : Pump cam
- d : Sprayers
- F : Float
- g : Idling jet
- Gg : Main jets
- L : Ball seat
- J : Pump injector
- K : Venturi cones
- M : Pump diaphragm

- P : Spring loaded needle valve
- s : Emulsion tube
- U1 } Calibrated orifices
- U2 }
- V } Throttles
- V1 }
- V2 } Stronger flap
- Vg } Idling air screw (26, 35 CSIC 1972)
- K } Idling mixture control screw

I. ADJUSTING CARBURETTORS.*(Vehicles produced up to August 1972)***SETTING IDLING SPEED.****1. Adjusting mixture screw :**

- a) When the engine has reached its operating temperature adjust the butterfly stop screw (3) to obtain an engine speed of :
- Engine A 53 : 500 to 550 rpm
 - Engine A 79 0 : 650 rpm
 - Engine A 79 1 : 650 rpm
 - Engine M 4 : 500 to 600 rpm
 - Engine M 28 1 : 650 rpm
 - Engine M 28 : 750 rpm

- b) Slowly screw in the mixture screw (2) until the engine runs irregularly (about to stall). At this point slacken the screw by :
- Engine A 53 : 1/2 turn
 - Engine A 79 0 : 1/4 turn
 - Engine A 79 1 : 1/4 turn
 - Engine M 4 : 1/2 turn
 - Engine M 28 1 : 1/2 turn
 - Engine M 28 : 1/3 of a turn
- which gives a correct mixture

2. Setting engine speed :

- a) *Engines equipped with a conventional clutch*
Screw in the butterfly stop screw (3) to obtain an engine speed of :
- Engine A 53 : 600 to 650 rpm
 - Engine A 79 0 : 800 to 850 rpm
 - Engine A 79 1 : 600 to 650 rpm
 - Engine M 4 : 750 + 50 rpm (AYA 3 and AM) : 650 to 700 rpm (AKI)
 - Engine M 28 1 : 750 to 800 rpm
 - Engine M 28 : 750 to 800 rpm

- b) *Engines equipped with a centrifugal clutch*
Gradually screw in the butterfly stop screw (3) until the automatic clutch drum just begins to turn, then unscrew the screw 1/8 of a turn

3. Throttle closing damper :

- (Engines equipped with a centrifugal clutch)*
- a) Ensure that the lever (1) of the throttle closing damper moves without any resistance and that during its travel, the rod (4) of the accelerator control does not come into contact with any part of the engine.
- b) Accelerate briskly and release the accelerator. Note the time during which the lever of the damper moves. This time should be between 1 and 2 seconds. If not, adjust the accelerator control return spring to obtain this condition.

4. Adjusting the accelerator control :

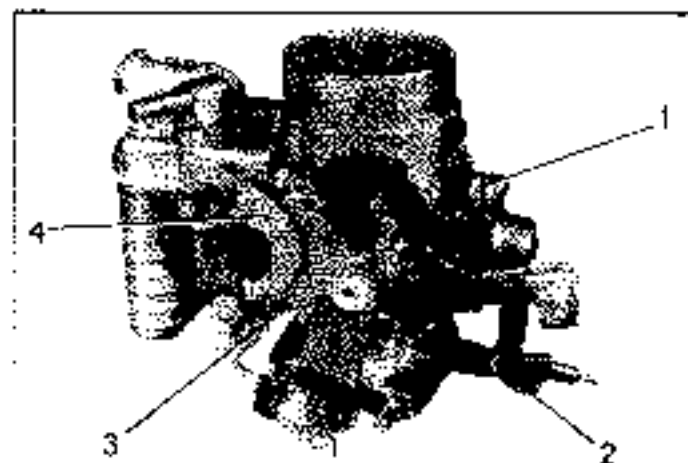
(Engines M 29 1 and M 28 dual choke STOLEN carburettor 26/35)

Fully depress the accelerator pedal, with a 5 mm (0.19 in) spacer between pedal and floor covering. The throttle should be fully opened with a max. clearance of 1.5 mm (.059 in) between the end (5) of the accelerator rod and the pin (8). Screw or unscrew the rod (7) in the tension limiter (6) to obtain these conditions.

II. ADJUSTING CARBURETTORS.

(Carburetors produced since August 1972)

10-252


CARBURETTORS 34 PICS 6 and PICS 6

(\rightarrow 7% \rightarrow 1976)

Do not tamper with the butterfly stop screw (3) as it is adjusted with a micrometer by the manufacturer.

CARBURETTORS 34 PICS 10 and PICS 10

(\rightarrow 1976 \rightarrow)

The air screw has been deleted and the idling speed is adjusted with the butterfly stop screw.

These carburetors are equipped with a (black) foot proof device on the mixture control screw. In case of intervention, fit a (white) obstruction device sold by the Replacement Parts Department.

Conditions for adjusting the idling speed with respect to CO and CO² content

Engine cleaned, rocker arms and ignition correctly adjusted.

Engine oil between 70° and 80° C (158° and 176° F) during adjustment.

Idling speed:

Engines with conventional clutch:

300 \pm 50 rpm 34 PICS 6 (\rightarrow 7% 1976)

300 \pm 50 rpm 34 PICS 10 (\rightarrow 1976 \rightarrow)

Engines with centrifugal clutch

50 rpm below minimum rotation speed

CO and CO² contents for the following engines:

CO : 0.8 to 1.6 for 402 cc engines

CO : 1.6 to 2.5 for 415 cc engines

CO² : 12 to 10% for 402 cc and 415 cc engines

Adjusting the idling speed and the CO and CO² content:

On carburetors 34 PICS 6 and PICS 6 (\rightarrow 7%):

Set the screw (1) in order to obtain the idling speed.

Adjust the mixture using screw (2) to obtain the correct CO and CO² content.

NOTE: On carburetors equipped with throttle closing damper: Proceed as above; then, using screw (1) increase the speed until the clutch drum begins to rotate. Then drop the idling speed by 50 rpm.

Adjust the CO and CO² content using screw (2).

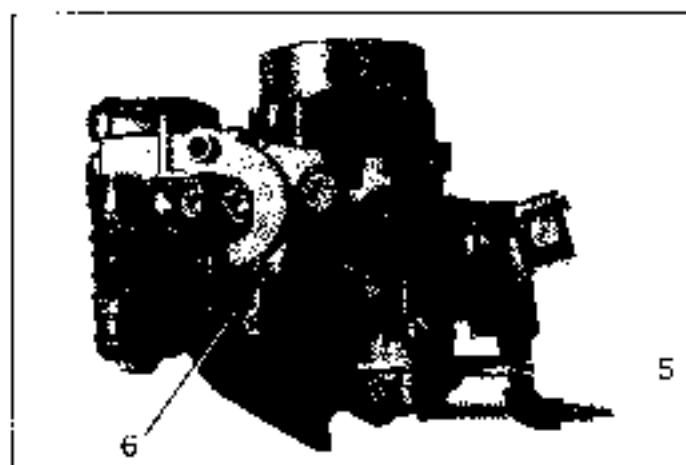
On carburetors 34 PICS 10 and PICS 10 (\rightarrow 1976 \rightarrow):

Same procedure as above, except for the idling speed which is set by using the butterfly stop screw (3) for CO and CO².

Adjusting the throttle closing damper (centrifugal clutch):

Accelerate briskly, then release the accelerator. Note the time during which the damper lever (4) moves. The period should be between 1/2 and 2 seconds. If not, adjust the securing hook lug (?) on the accelerator rod to obtain this condition.

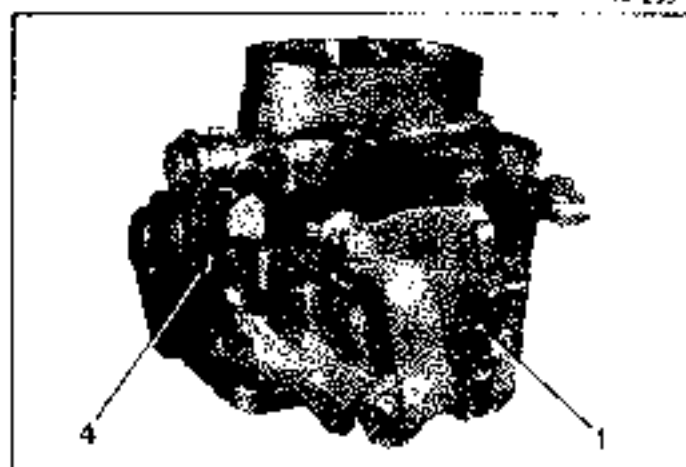
75-768



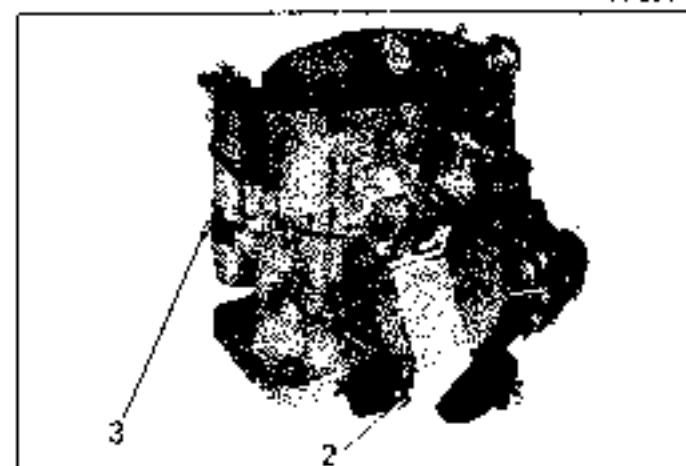
7829



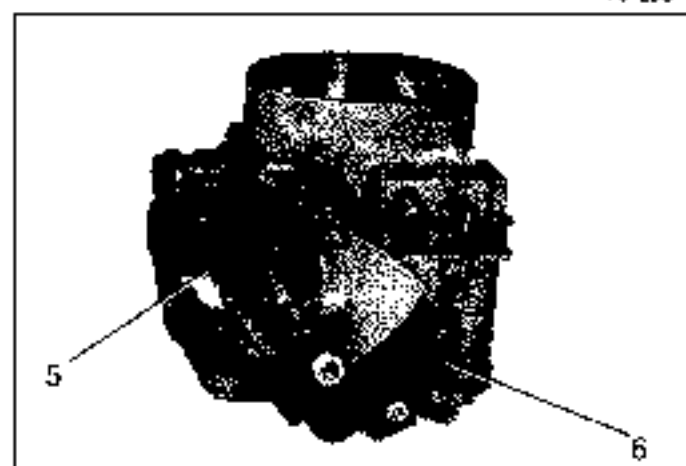
10-253



10-231



76-265



76-265



CARBURETTORS 26, 35 CSIC and SCI.

1. ON CARBURETTORS OF THE SERIES CIT 110-111-113-114-125-126-127-128 (—→ 10/1975)
Do not tamper with the butterfly stop screws (1) and (2) of the first and second choke.

2. ON CARBURETTORS OF THE SERIES CIT 177-178-179-180 (10/1975 —→) or 195-196-197-198 (7/1976 —→) :
Do not tamper with the butterfly stop screw (7) of the second choke.
The carburetors of the series CIT 195-196-197 and 198 are equipped with a (black) fuel proof device on the mixture control screw. In case of intervention, fit a (white) obstruction device sold by the Replacement Parts Department.

Conditions for adjusting the idling speed with respect to CO and CO² content :

- Engine cleaned, rocker arm and ignition correctly adjusted.

Engine oil between 70° and 80° C (158° and 176° F) during adjustment.

Idling speed :

Engines with conventional clutch :

750 $\frac{1}{2}$ rpm (carburetors fitted —→ 1975)

600 $\frac{1}{2}$ rpm (carburetors fitted —→ 1976)

Engines with constant clutch :

50 rpm below minimum rotation speed.

CO and CO² content for the above idling speeds :

With constant clutch (C) (1) : CO = 10 to 12

With variable clutch (C) (2) : CO = 9

The contents are given for an ambient temperature between 15° and 30° C (61° and 86° F).

Adjusting the idling speed and the CO and CO² content :

On carburetors —→ (10/1975)

Adjust the idling speed using screw (3).

Adjust mixture using screw (4) to obtain the correct CO and CO² content.

These two operations should be carried out simultaneously as many times as necessary.

NOTE : On carburetors equipped with a throttle closing damper, proceed as above then using screw (3) increase the speed until the clutch drum begins to rotate. Then drop the idling speed by 50 rpm.

Adjust the CO and CO² content using screw (4).

On carburetors (195-1975 —→) :

Same procedure as above, except for the idling speed adjustment which is carried out by means of the primary butterfly stop screw (6).

Mixture is adjusted by means of screw (5) ; CO and CO² :

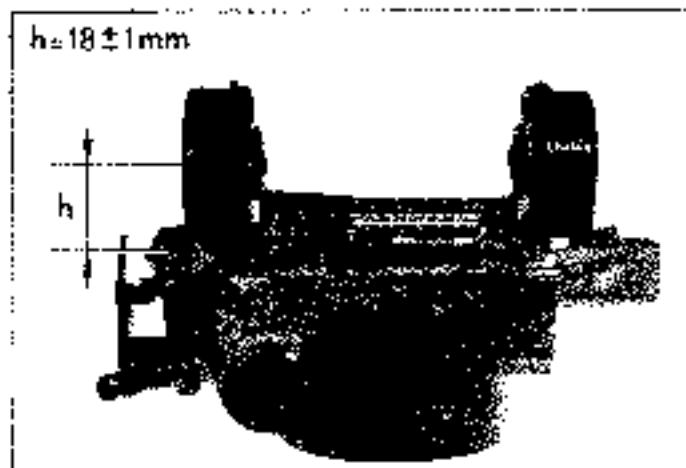
Adjusting the throttle closing damper (closing) (butler)

Accelerate briskly, then release accelerator.

Note the time during which the lever of the damper moves. It should be between 1 and 2 seconds.

Select the appropriate notch on the adjusting rod of the cruise adjuster to obtain this condition.

A. 14-21

**Adjusting the float :**

Turn over the carburettor cover and turn it upside down.

Measure the clearance between the float needle and float bowl of cover (float in place).

The measured distance should be $h = 18 \text{ mm}$ (0.7 in) and virtually the same for each float (allowable difference = 1 mm).

Adjusting the accelerator control (cable control)

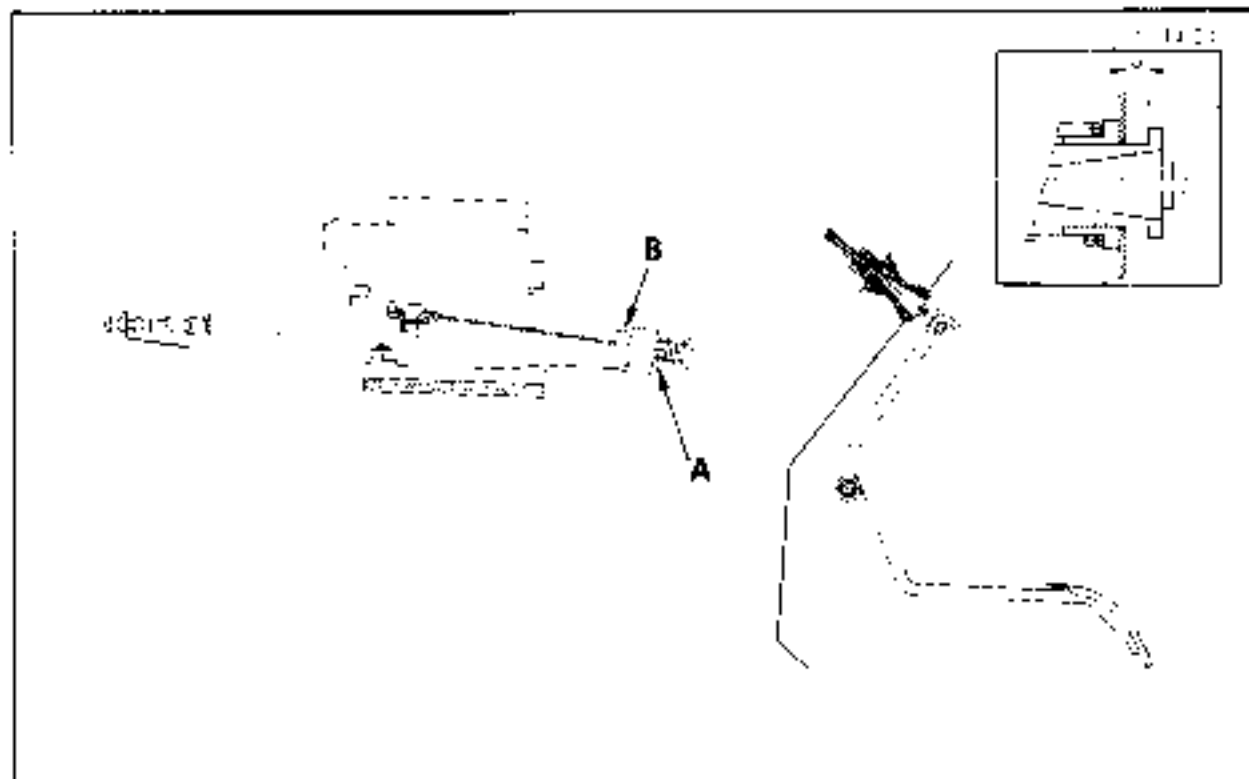
Keep the carburettor throttle (set fully open by actuating the accelerator pedal.

The distance between the pedal and the floor should be 50 to 100 mm.

This measurement is obtained by displacing pin A in the groove of the wire stop B.

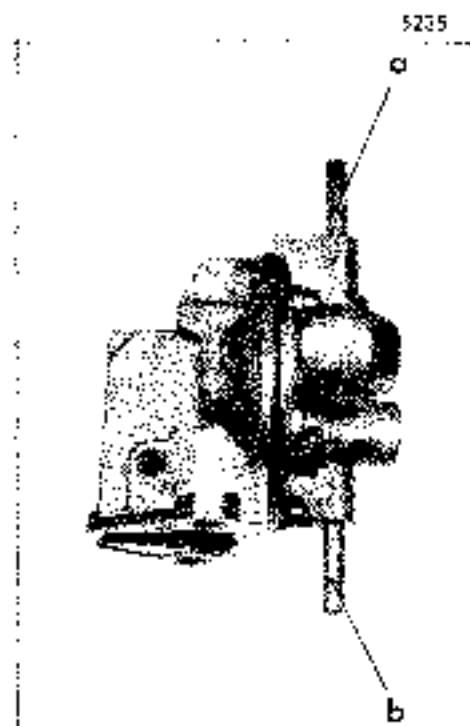
Then, check that there is a clearance $J = 2 \text{ mm}$ (0.08 in) with the cable not compressed.

A. 14-22



CHECKING PETROL SUPPLY.

PETROL PUMP.



1. Characteristics :

Suction and pressure pump of the diaphragm type actuated by an eccentric.

Suppliers :

SEV MARCHAL
GUILLOT.

2. Checking for leaks (pump removed) :

- a) Block all the return tube - a - .
 - b) Blow compressed air at a pressure of 800 millibars (11.6 psi) into the intake tube - b - of the pump.
 - c) Immerse the pump into a container with clean petrol.
- There should be no leakage.

3. Checking the pressure using test device 4005-T :

Position the device as shown on the figure to the left.
Disconnect the petrol intake tube from the carburettor and connect it in - c - to the test device.
Connect tube A to the carburettor.
Tighten the knurled knob B by approximately one turn and a half.
Start the engine.

a) *Pressure check at gear output :*

Screw the knurled knob B completely in.
Read on the pressure gauge the stabilized pressure which should be between 1.5 to 2.0 millibars maximum (2.0 to 2.9 psi).

b) *Check the seal tightness of the pump inlet valve :*
Stop the engine.

The pressure should not drop abruptly.

c) *Check the seal tightness of the carburettor needle valve :*

Loosen the knurled knob B.

Start the engine and let it run a while.

Stop the engine.

The pressure should not drop abruptly.

Remove testing device 4005-T and connect the petrol lead pipe back to the carburettor.

4. Checking the travel of the pump push-rod :

Bring the control rod (1) to its lowest position by rotating the crankshaft.

Using a depth gauge C, measure the extending end of the rod (2) in relation to the upper face of the pump spacer (20).

The extending portion should be :

- 1 mm (0.039 in) : 425 cc Engines (A 53 and A 79 01)
- 1.039 in (26.39 mm) : 602 cc Engine (M 4)
- 1.2 mm (0.047 in) : Engines A 79 1-M28 and M28-1

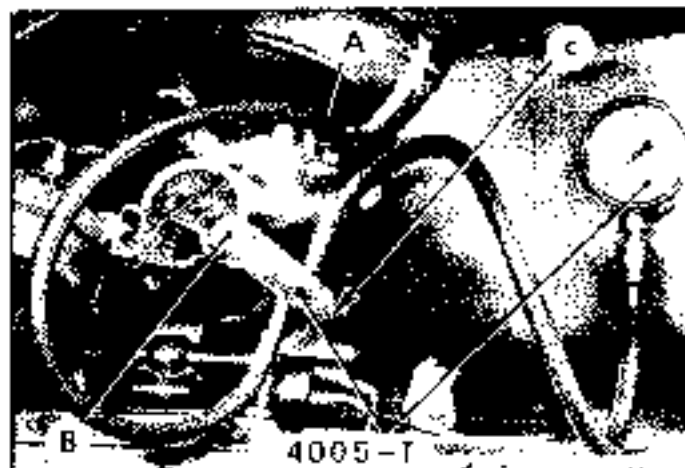
Measure the length of the rod which should be :

- 144.3 mm (5.68 in) : 425 cc Engines (A 53 and A 79 01)
- 15.86 in (402.8 mm) : 602 cc Engine (M 4)
- 110.6 to 110.7 mm (4.35 to 4.36 in) : Engines A 79 1-M 28 and M 28-1.

The stroke of the rod should be :

- 1.12 mm (0.044 in) : Engines A 53, A 79-1 and M 4.
- 2.6⁰/₁₀₀ mm (0.102⁰/₁₀₀ in) : (Engines A 79-1
- M 28 and M 28-1)

31 733



4045



CHARACTERISTICS

DISTRIBUTOR.

Make : DUCELF, IFR or FEMSA.

Type of engine	Type of vehicle	Date produced	Initial advance	Advance curve	Maximum centrifugal advance	Centrifugal advance check with device 1692-T <i>Visible to ZONE</i>
A 53 (125 cc)	AZ (series A and AM)	1.1967 → 2.1970	12°	A	6° to 8°	"AZB"
	AZU	3.1967 → 8.1967				
A 79-D (125 cc)	AZU	2.1967 → 1.1971	12°	B	7°30' to 12°30'	Between "AZB" and "AZP"
	AYA (series A and AM)	8.1967 → 1.1968				
A 79-L (135 cc)	AYA 2 (series A and AM)	3.1959 → 2.1970	12°	C	10° to 15°	"AZP"
	AZ (series A 2 and KE)	2.1970 → 9.1970				
	AZU	8.1970 → 2.1976				
M 4 (160 cc)	AYA 3 (series A and AM)	1.1968 → 10.1968	12°	A	6° to 8°	"AZB"
	AK and AM 6	→ 1.1968				
M 25-D (160 cc)	AYB (series A and AM)	10.1968 → 2.1970	5°	C	10° to 15°	"AZP"
	AZ (series KA)	2.1970 →				
	AY (series CA)	16.1968 →				
	AK (series B1)	3.1968 → 7.1970				
	AK (series AK)	1.1970 → 1.1975				
	AY (series CD)	2.1978 →				
M 26 (160 cc)	AM 6	3.1968 → 3.1969	6°	C	10° to 15°	"AZP"
	AY (series CB)	2.1970 →				
	AM 8 All types	1.1969 →				

Contact breaker gap : 0.35 to 0.45 mm (.014 to .018 in)

Dwell angle :

- Distributors fitted up to February 1970 : 144° ± 2° ; Dwell ratio : 30 % ± 2 %
- Distributors fitted since February 1970 : 109° ± 3° ; Dwell ratio : 60 % ± 2 %

COILS :

Make : DUCELLIER

- 6 Volt circuit : Reference 2768

12 Volt circuit : Reference 2769

Make : FEMSA

- 12 Volt circuit : Reference BC 12-4.

SPARKING PLUGS.

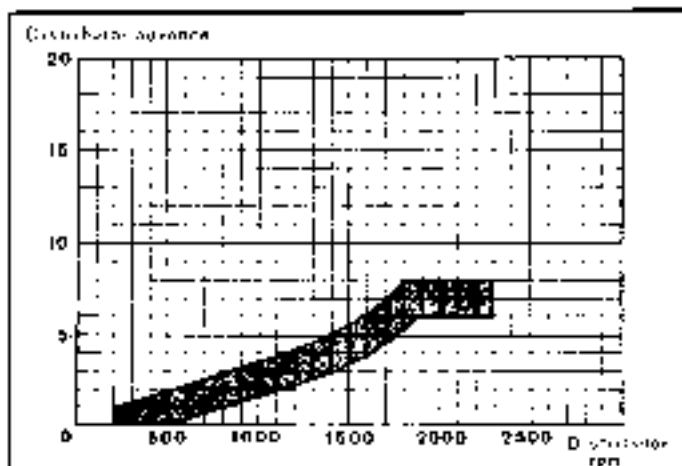
Refer to the Technical Bulletins, appearing periodically, for recommendations as to the type and make of sparking plugs to be used.

CONDENSER.

Capacity : 0.18 to 0.25 μ F.

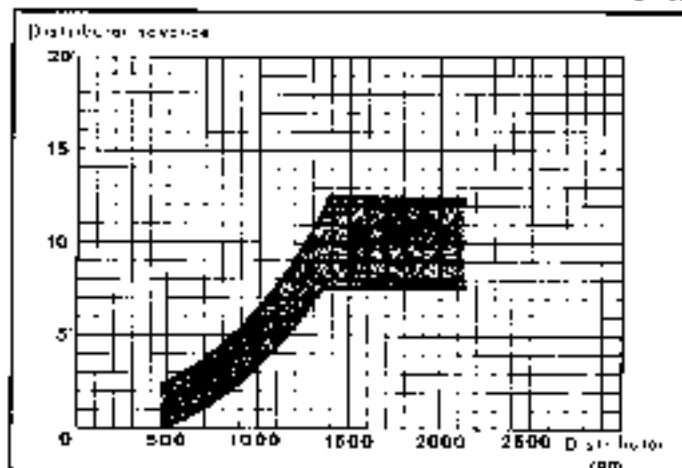
CENTRIFUGAL ADVANCE CURVES.

A. 21-54



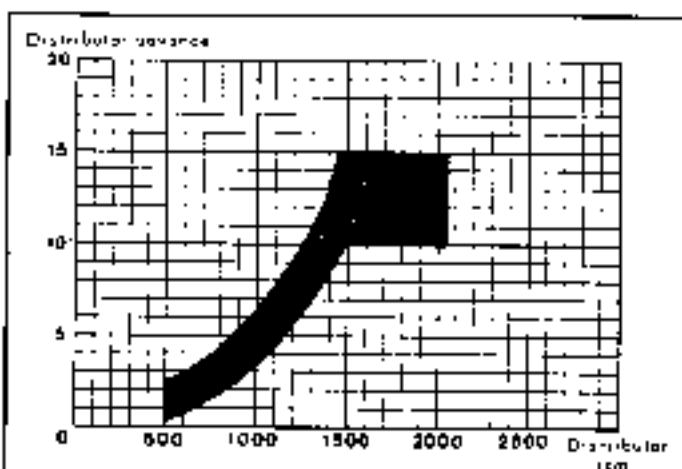
← CURVE A

A. 21-52



← CURVE B

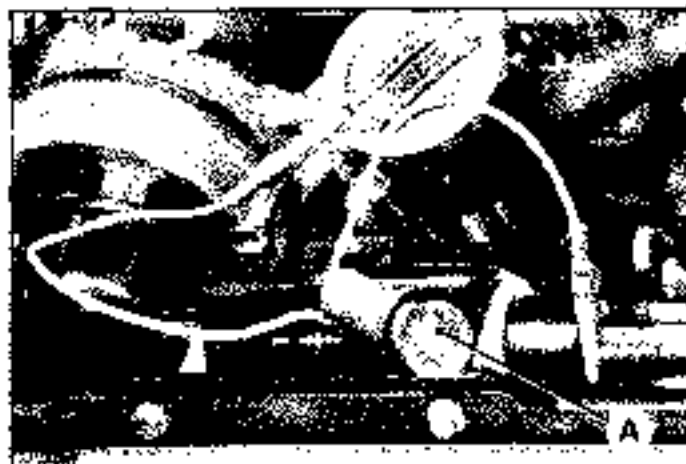
A. 21-53



← CURVE C

I. CHECKING THE IGNITION TIMING.

5135



1. Connect a test lamp A between the + terminal (blue mark) of the ignition coil and the earth (the oil filler cap for example). Disconnect the sparking plug leads.

2. Turn on the ignition switch.

3. Insert a 6 mm (0.25 in.) diameter timing rod or a MH. 630-51/15 rod (for engines A 79/1, M 26/2 or M 281 in the hole provided in the crankcase (L.H. side). Pass the rod between the exhaust pipe and the cylinder head. Bear the rod against the flywheel.

4. Turn the engine in the normal direction using the flywheel. At the precise moment when the rod enters the hole in the flywheel (ignition point) the test lamp should light up. If the lamp lights up before the ignition point (advance) or after this point (retard) by an angle superior to 1° (2/3 of a tooth or of a tooth space on the starter ring), the ignition point must be adjusted. At ignition point setting make a mark on the crankcase and another directly opposite, on the flywheel.

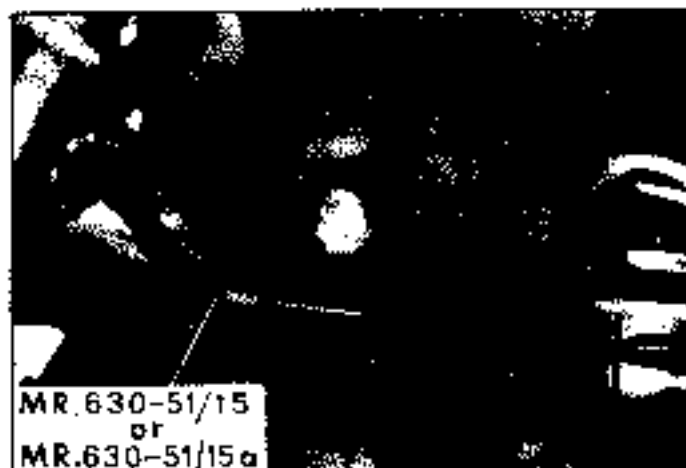
5. Carry out the same check for the other cylinder: turn the flywheel in the normal direction. At ignition point setting, make a mark on the flywheel, directly opposite to the one initially taken on the crankcase.

If there is a clearance of more than 3° (a tooth and a tooth space on the starter ring) remove the distributor and replace the cam.

6. Switch off the ignition, remove the timing rod and test lamp A. Connect the sparking plug leads.

Manual H16-1

451a

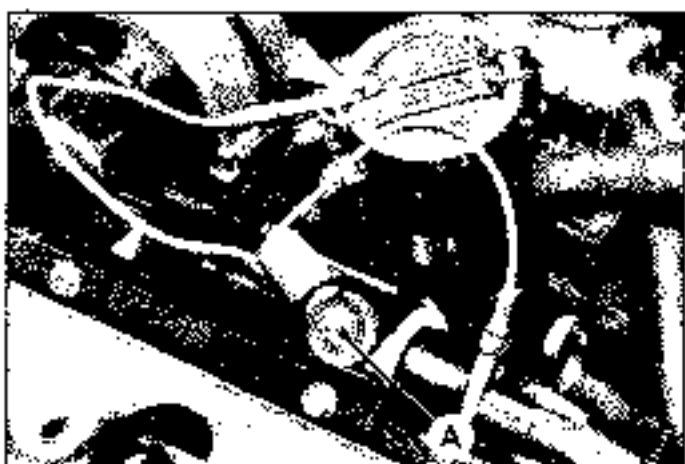


II. ADJUSTING THE IGNITION TIMING

451a



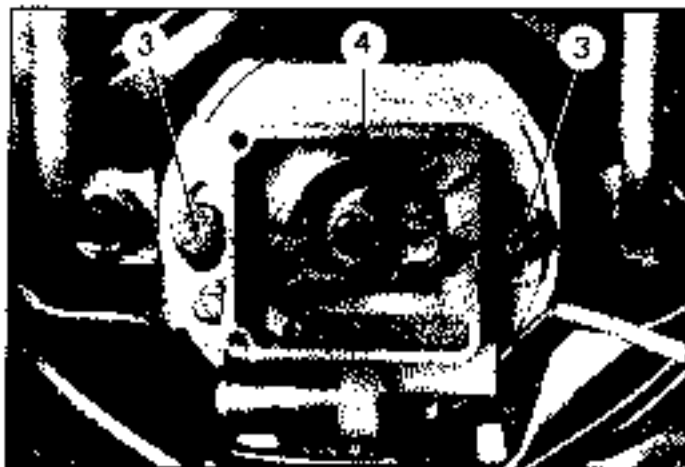
5113



5114



5115



1. Remove the grill.
Remove the fan (extractor 3006-T bis).
 2. Insert a 6 mm (0.23 in) diameter rod or a MR. 630-51/15 rod, depending on the type of vehicle, in the hole provided in the crankcase (L.H. side).
 3. Turn the engine using the flywheel until the rod penetrates into the hole of the flywheel. The engine is now at ignition point.
 4. Disconnect the sparking plug leads. Connect a test lamp (A) between the blue terminal (marked blue) of the ignition coil and the earth (the oil filler cap for example). Switch on the ignition.
 5. Remove the three screws (1) and the cover (2) from the distributor. Check that the advance weights are in their "rest" position.
 6. Loosen the two securing screws (3) of the distributor.
Slowly turn the casing (4) until the contact points separate. The lamp lights up at the exact moment of separation. Tighten screws (3). Fill the cover (2) with the three screws (1) (secured washer under screw head). *Remove the timing rod.*
 7. Rotate the engine (using flywheel) in the normal direction. The lamp goes out. Stop rotating as soon as the lamp lights up again (the motor has completed one revolution). The rod should engage in the engine flywheel hole.
If the hole has by-passed the rod, there is *retard*. The ignition point must be adjusted on this cylinder: In no circumstances should the advance be less than :
 - 12° (engines A 50 - A 79/11 - A 79/1 - M 4)
 - 8° (engines M 28-1 and M 28)
 There should be no more than a 3° clearance (a tooth plus a tooth space on the starter ring) between the ignition points of both cylinders. Otherwise, replace the cam.
- B. *Remove the timing rod.*
Fit the fan and grill.

III CHECKING THE CONTACT POINT GAP.

8393



Former cam

New cam

NOTE : The new cam is interchangeable with the old one.
The Replacement Parts Department only supplies the new model.

This check cannot be carried out without disassembling except by utilizing a large screen oscilloscope or a Dwell-angle meter, or a Dwellmeter.

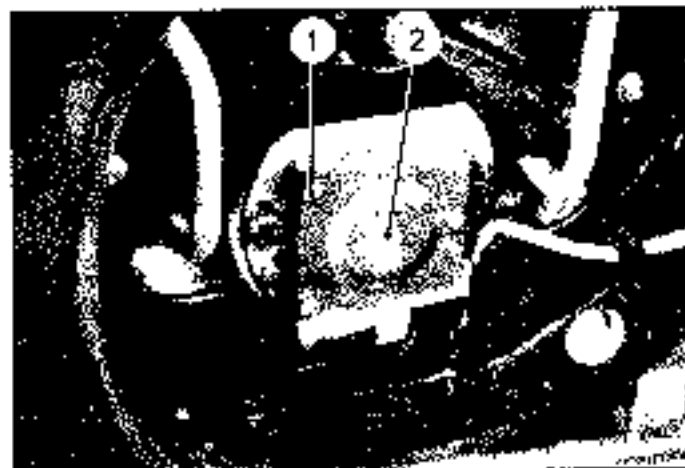
The dwell-angle of the contact breaker should be :
- $144^{\circ} \pm 2^{\circ}$ (Dwell ratio : 80 % ± 2) \longrightarrow 2 70.
- $109^{\circ} \pm 1^{\circ}$ (Dwell ratio : 60 % ± 3) \longrightarrow 2 70 \longrightarrow
and on vehicles produced before a new cam has been fitted with the new cam. The corresponding contact point gap is :

$$0.4 \pm 0.05 \text{ mm. } (0.015 \pm .0010 \text{ in.})$$

On the same distributor there should be no more than a $1^{\circ} 30'$ difference between the dwell-angles of the two cam bases.

IV. ADJUSTING THE CONTACTS POINTS.

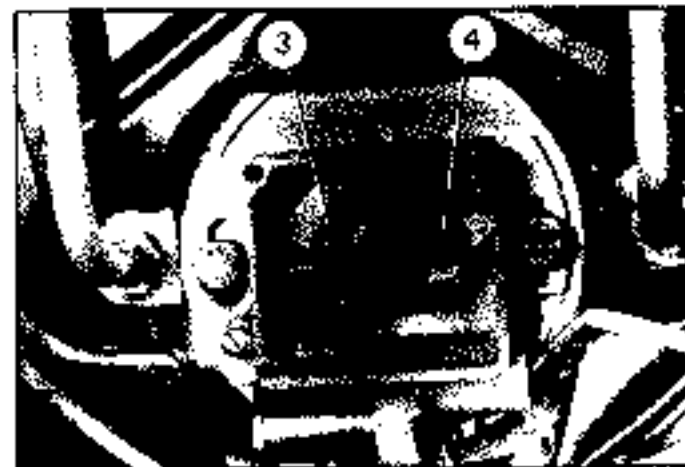
5114



1. Remove the grill
2. Remove the fan extractor 3006-T bus I.
3. Remove screws (1) and cover (2) from the distributor casing.

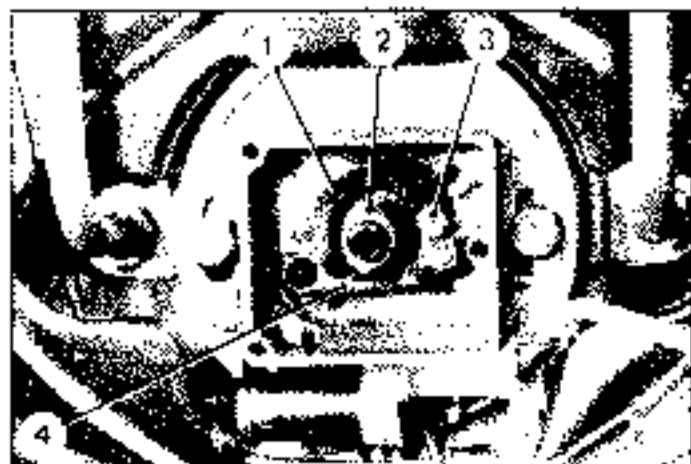
Check the condition of the contact points : if there is crater formation, the points must be replaced (see corresponding operation) and the condenser must be checked.

5152



- A. Adjusting the contact points using checking devices :
 4. Connect an oscilloscope or a dwell angle meter.
 5. Start the engine. Unsighten screw (4) and move the fixed contact support (3) in the required direction to obtain a Dwell angle of $144^{\circ} \pm 2^{\circ}$ (Dwell ratio : 80 % ± 2) or $109^{\circ} \pm 1^{\circ}$ (Dwell ratio of 60 % ± 3) depending on vehicle (see chapter III, above).
Tighten screw (4).
Check again and adjust if necessary

S133



6. Check the dwell angle on both bosses of the cam. This is only possible using an oscilloscope.

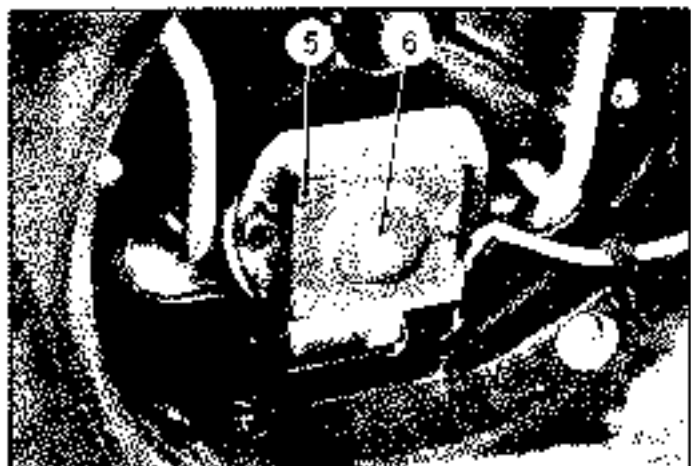
During these operations, do not run the engine too long in order to prevent overheating. If a fault is noted, proceed as indicated in § 9. If an oscilloscope or dwell-angle meter is not available, adjust the contact breaker gap using a set of feeler gauges.

B. Adjusting the contact points using feeler gauges :

7. Turn the engine using the flywheel until one of the bosses of cam (2) lifts arm (4) to its maximum height.
At this point the contact point gap should be 0.4 mm (.015 in.) If not, tighten screw (3) and move the fixed contact support (1) in the appropriate direction until the correct gap is obtained.

8. Moderately tighten screw (3)

S134



9. Turn the engine so that the second boss of cam (2) lifts arm (4) to its maximum height.

Check once again the contact point gap. If the measured clearance is less than 0.35 mm (.013 in.) or greater than 0.45 mm (.017 in.) the cam or camshaft is defective.

To check this :

Without turning the engine, remove the distributor, take the cam apart (turn it through 180° and refit it on the extremity of the camshaft).

Fit the distributor so that the cam lifts the arm to its maximum height.

Re-measure the contact point gap.

1st case :

The measurement noted is now between 0.35 and 0.45 mm (.013 and .017 in.) : this indicates that the other cam lobe is worn : the cam has to be replaced.

2nd case :

The measurement noted is identical to the previous one (beginning of § 9) : this indicates that the camshaft extremity is out of true : the camshaft must be replaced.

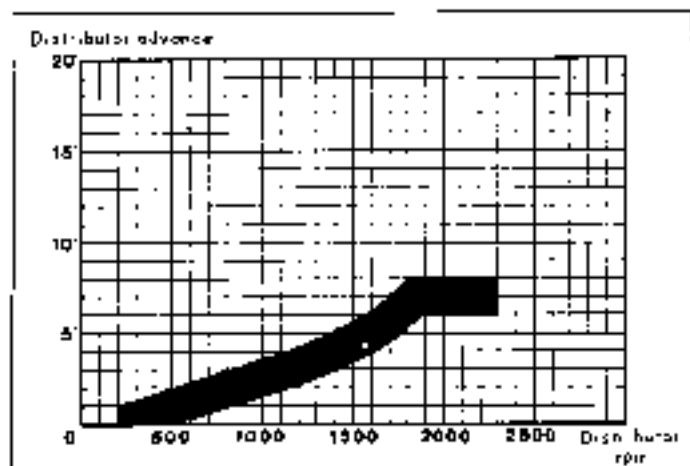
10. Fit the cover (6) and the three screws (5) (serrated washer) to the distributor casing.

11. Fit the fan.

12. Fit the grill.

V. CHECKING THE CENTRIFUGAL ADVANCE CURVE.

A. 21-54



Curve A

Without disassembling, this check can only be carried out with a strobe lamp, an angle dephaser and a tachometer.

A mark should first be made on the flywheel and on the crankcase at ignition point.

For the correspondance between engines and vehicles see the table given in *Operation A. 210-00*

Curve A :

- Engines A 53 and M 4

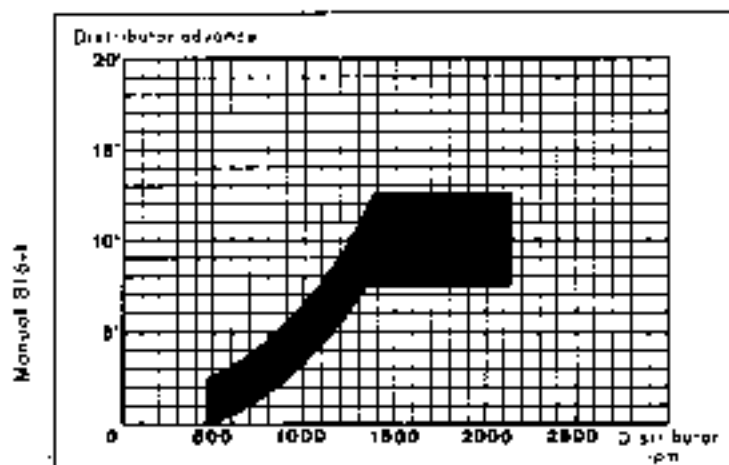
Curve B :

- Engine A 79/0

Curve C :

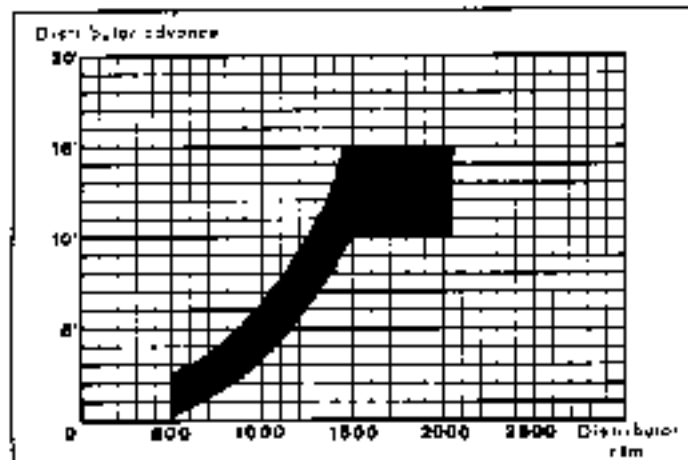
Engines A 79/1 - M 28/1 and M 28.

A. 21-52



Curve B

A. 21-53



Curve C

1. Find the ignition point position :

Connect a test lamp between the + terminal (blue mark) of the ignition coil and the earth (oil filler cover for example).

Disconnect the sparking plug leads

Turn the ignition on.

Run the engine in the normal direction using the flywheel. At the precise moment when the lamp lights up, make a mark on the flywheel and another directly opposite on the crankcase (for example : draw a line on a label and stick it on the coupling bracket to the gearbox).

2. Disconnect the test lamp. Connect the sparking plug wires.

3. Fix the strobe lamp, dephaser and tachometer in position.

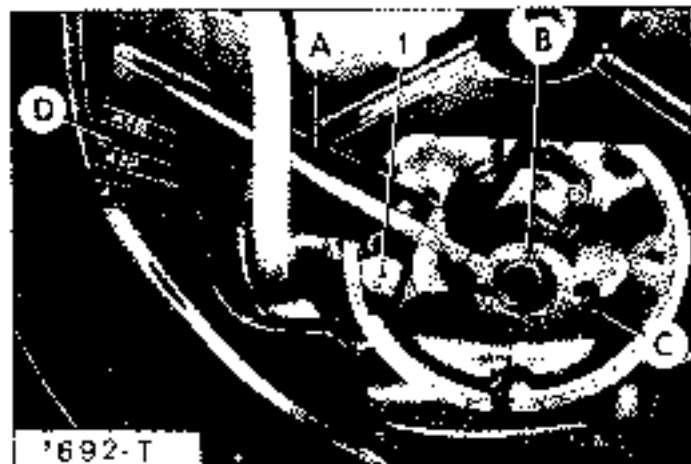
4. Start the engine and check the curve. If the curve is incorrect, adjust the centrifugal advance or replace the earths.

5. Stop the engine. Remove the strobe lamp, dephaser and tachometer.

If a strobe lamp or dephaser is not available, it is possible to check the maximum centrifugal advance (see chapter VI, same operation).

VI CHECKING AND ADJUSTING THE MAXIMUM CENTRIFUGAL ADVANCE.

4753



1. Remove the grill.
2. Remove the fan (extractor 3005-T axis).
3. Remove the distributor.
4. Secure the graduated section A of the 1692-T device using the distributor securing screw (2).
5. Fit the needle-holder B to the cam by pushing it right home and slightly tighten the securing screw C.
6. Turn the flywheel to bring needle across the reference point > O <.

3091



7. Turn the needle holder, without forcing, from right to left.
At the end of its travel the needle should face the
 - a) - AZB - zone, for distributors fitted on A 53 and M 4 engines.
 - b) - D - zone for distributors fitted on A 79/D engines.
 - c) - AZP - zone for distributors fitted on A 75/1, M 28/1 and M 28 engines.

If the needle is outside the zone corresponding to the distributor type the weight travel must be adjusted by bending the lugs of stops E and F.

8. Remove the 1692-T device.
9. Fit the distributor, adjust the contact points and set the ignition point.
10. Fit the fan.
11. Fit the grill.

I. CHECKING THE OIL PRESSURE ON THE CAR.

9214



1. Run the engine until the oil temperature reaches 80° C (176° F) approximately.

2. Stop the engine.
Remove (on left hand side of engine) the engine oil pressure switch (1) or the plug if the engine is not equipped with a pressure switch.

3. Fit the 3099-T union (copper joint) equipped with a 2274 T pressure gauge graduated from 0 to 10 bar (0 to 145 psi).

4. Check the oil pressure :

a) Engines A 31 - A 79 - D and H + :

Start the engine bringing the speed up to 4000 rpm.

The pressure should be : 2.5 to 3.1 bar (34.9 to 38.2 psi).

If the oil pressure is incorrect, change the number of washers placed under the relief valve spring (be careful not to drop the ball).

b) Engine A 79 J :

Start the engine bringing the speed up to 6000 rpm.

The pressure should be : 4 to 5 bar (50 to 72 psi).

If the oil pressure is incorrect, replace the spring for relief valve piston, located in plug (2).

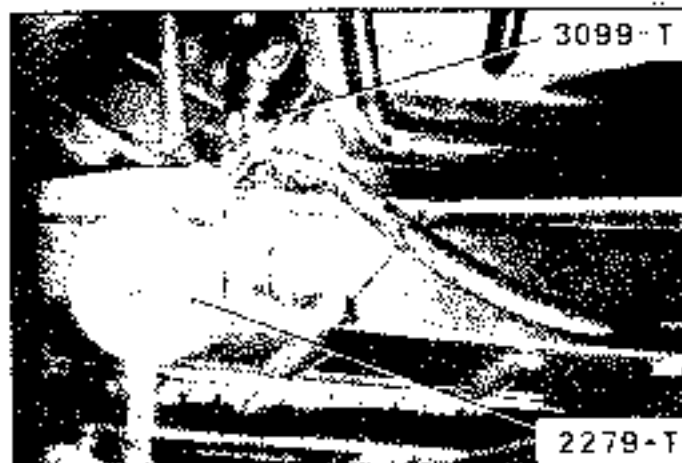
c) Engines D 28 - T and G 28 :

Start the engine, bringing the speed up to 6000 rpm.

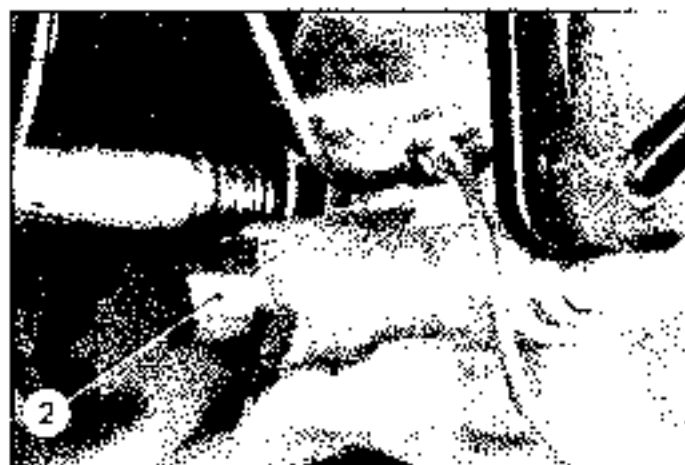
The pressure must be between 5.5 and 6.5 bar (79.7 and 94.2 psi).

If the pressure is incorrect, replace the spring for relief valve piston, located in plug (2).

9215



4239



If these interventions show no results, the oil pump and lubricating circuit, must be checked.

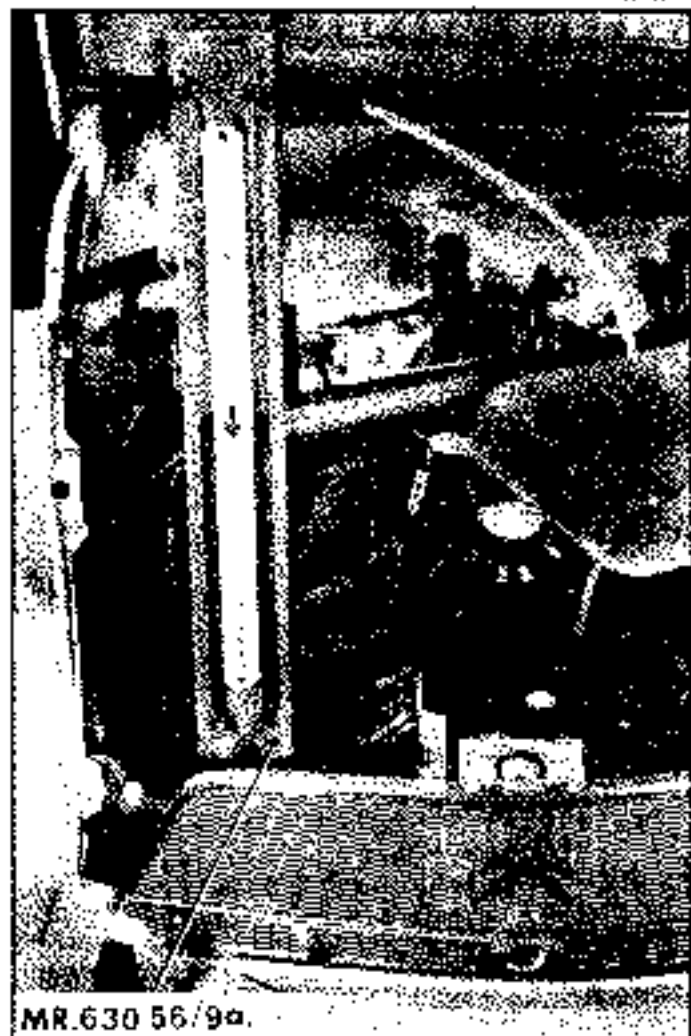
5. Remove the 2274-T pressure gauge, the 3099 T union and the tachometre.

6. Fit the oil pressure switch (1) or the plug (copper joint).
Connect the oil pressure switch lead.

7. Check the oil level and top up if necessary.

II. CHECKING THE VACUUM IN THE CRANKCASE

375A



1. To check the vacuum in the crankcase, use a water manometer MR. 630 56/9 a.

One of the ends will be connected to the rubber guide tube for oil level dipstick.

2. While engine is idling, accelerate slightly to stabilize the manometer levels.

The liquid should climb in the section of the manometer connected to the engine.

Read the difference in levels :

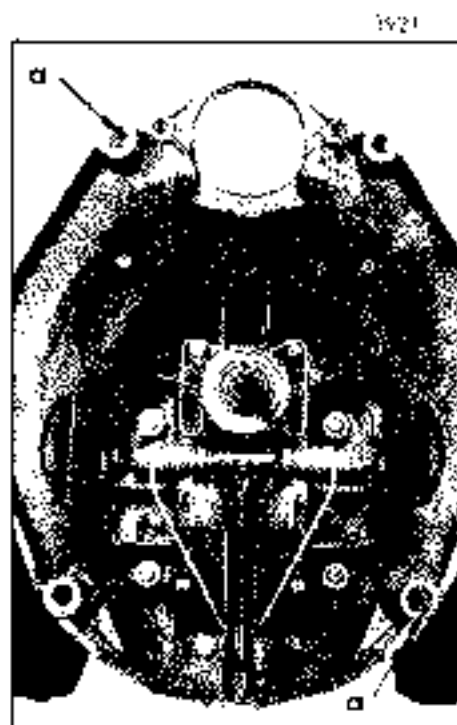
It should be :

with engine idling : 5 cm (1.96 in) of water and.

Otherwise, the breather must be replaced.

The vacuum should never fall to zero, no matter the engine speed.

MR.630 56/9a.

CHECKING THE ALIGNMENT OF THE ENGINE-GEARBOX ASSEMBLY.**REMOVAL.**

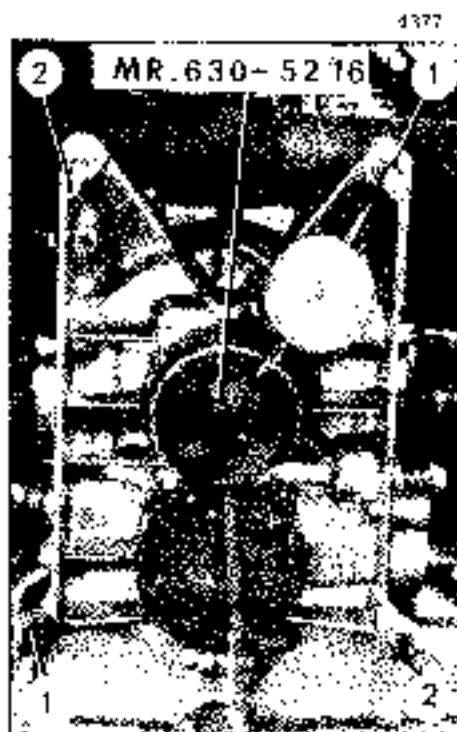
1. Remove the engine-gearbox assembly.
2. Remove the expansion chamber.
Place the engine-gearbox assembly on a workshop bench.
3. Uncouple the engine from the gearbox.
Make sure while disengaging the gearbox that no stress is put on the mainshaft.
4. Prepare the gearbox (in the case of a centrifugal clutch):
Remove the clutch disc.
Unlock and unscrew the lock nut of the bearing (left hand thread).

While slackening the nut, hold the spanner so as not to beat on the mainshaft.

- Disengage the clutch drum-mechanism assembly.
5. Prepare the engine :
Remove the clutch mechanism and disc (centrifugal clutch only).
Remove the engine flywheel.
Remove the sparking plugs.

CHECKS

6. Checking the housings of the locating dowels :
Remove the locating dowels from the crankcase.
Carefully check the housings (a) of the locating dowels in the crankcase and especially in the clutch housing.
If the bores are not perfectly cylindrical, the deteriorated housing must be replaced.
7. Checking the position of the studs and locating dowels on the crankcase :
Fit the MR. 630-52 16 spanner, equipped with a dial gauge (2437-T) to the crankshaft.
NOTE: This is to compare the distance between the centreline of the crankshaft and the locating dowels (1) or the studs (2).
When the tip of the dial gauge comes into contact with these parts (which are cylindrical) the needle turns first in one direction and then in another. The reading must be taken at the precise moment the direction changes.
Fit the locating dowels.
Rotate the crankshaft and test the two locating dowels (1) in turn. The position at which the needle changes direction should be the same within 0,10 mm (0,0039 in).
Rotate the crankshaft and test the two fixing studs (2) in turn. The position at which the needle changes direction should be the same within 0,16 mm (0,0063 in).
If the positions at which the needle changes direction are not within tolerance, the crankcase must be renewed.



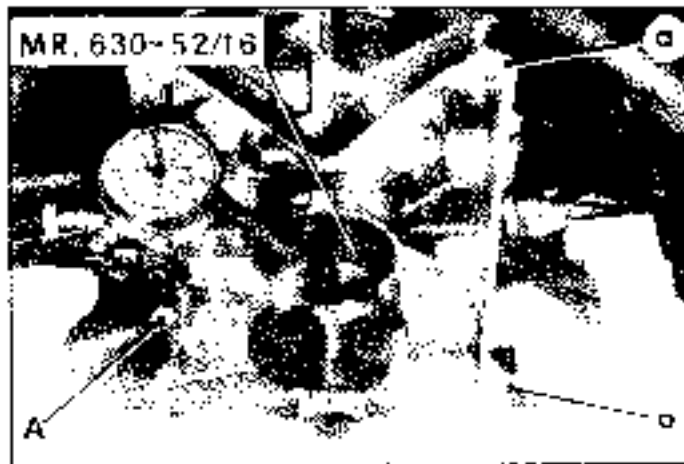
4377



B Check the bearing surface of the crankcase :

Remove the locating dowels (1) and the studs (2) (note the positions of the studs).
Fit the dial gauge on the support rod A (see figure).
Rotate the crankshaft and test the four bearing bosses (a) of the crankcase in turn. *The positions of the needles should be the same within 0,10 mm (0,004 in.) on the 4 bosses.*
Otherwise the crankcase should be replaced.
Remove the support and the dial gauge.

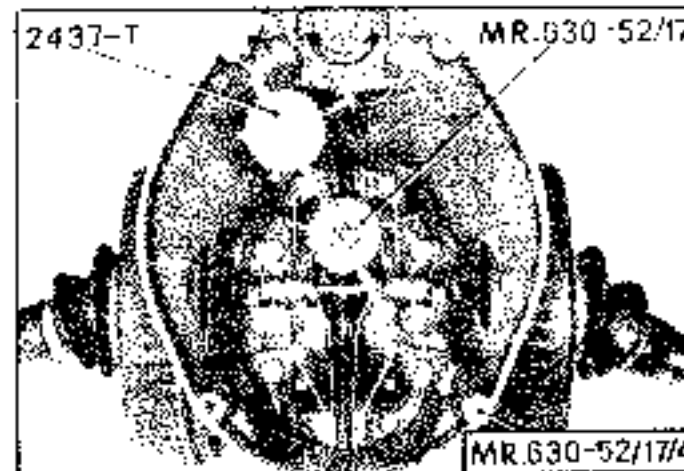
4378



9. Check the position of the bores which house the locating dowels on the clutch housing :

Place the MR. 630-52/17 support (equipped with the dial gauge 2437-T, secured to its shortest rod) on the mainshaft and tighten the securing screw.
Place the two pegs MR. 630-52/17-4 in the bores which house the locating dowels - fix them with two nuts (dia = 10 mm, 0,39 in - pitch = 1,52).
Engage a gear and rotate the mainshaft using the differential.
Test the two pegs. The position at which the needle changes direction should be the same within 0,10 mm (0,004 in.)

4379



10. Check the bearing surface of the clutch housing :

Remove the pegs.
Fit the dial gauge on the other support rod.
Rotate the mainshaft and test the four clutch housing bosses (b) in turn. *The position of the needles should be the same (within 0,10 mm, 0,004 in.) on the 4 bosses. Otherwise, the housing must be realigned or replaced.*

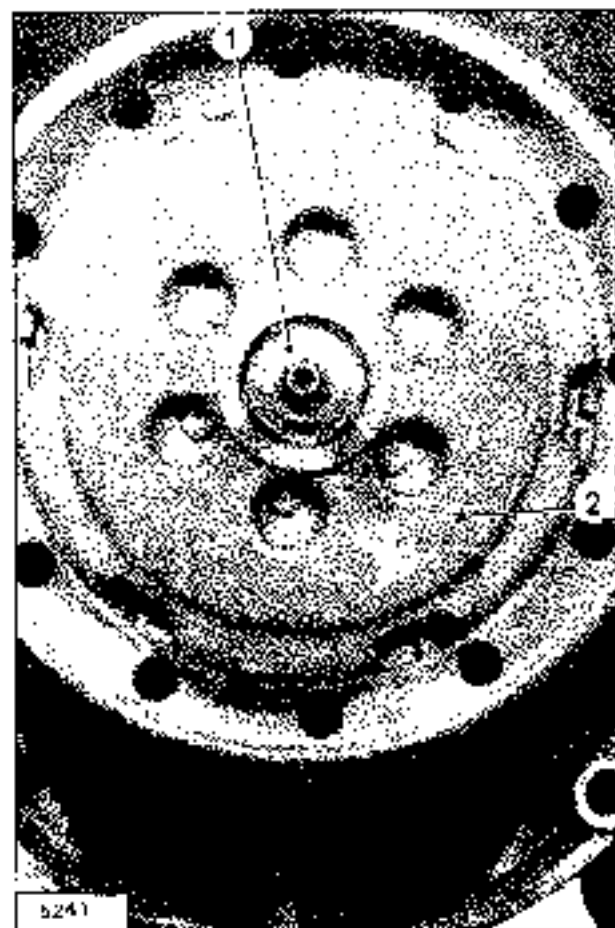
4376



The housing can be realigned and the bosses returned to their correct, original positions, by striking them with a mallet.
Check their positioning after realigning.

Remove dial gauge and support.

CHECKING THE ALIGNMENT OF THE ENGINE-GEARBOX ASSEMBLY



REMOVAL

1. Remove the engine.

2. Prepare the engine.

Turnover :

- the clutch mechanism and disc (conventional clutch only)
- the engine flywheel
- the sparking plugs

3. Prepare the gearbox :

(in the case of a centrifugal clutch) :

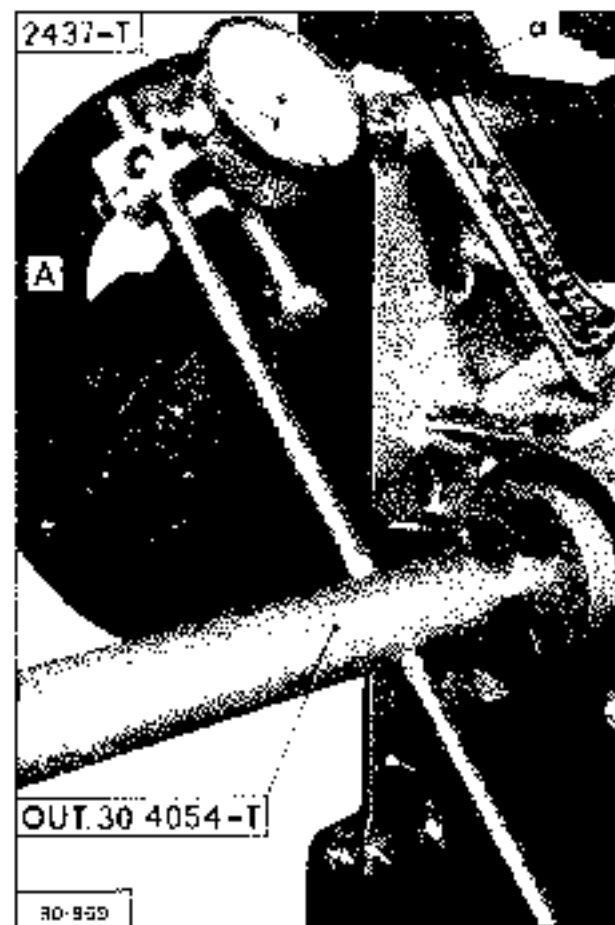
- Unlock and remove the lock nut (1) of the bearing (left hand thread)

While slackening the nut (1), hold the spanner so as not to bear on the mainshaft.

- Disengage the clutch drum-mechanism assembly (2).

(Conventional and centrifugal clutch).

- Remove the clutch thrust bearing.



CHECKS

4. Checking the housings of the locating dowels :

Remove the locating dowels from the crankcase. Carefully check the housings « a » of the locating dowels in the crankcase and especially in the clutch housing.

If the bores are not perfectly cylindrical, the deteriorated housing must be replaced.

5. Check the bearing surface of the crankcase :

Remove the studs (note their position)

Fit the 30 4054-T tool equipped with pan A of support 5602-1 or 2041-T and with dial gauge 2437-T, to the crankshaft.

Rotate the crankshaft and test the four bearing bosses « a » of the crankcase in turn.

The position of the needles should be the same, within 0.10 mm, on the four bosses.


The housing can be re-aligned and the bosses returned to their correct, original positions, by striking them with a mallet.

Remove dial gauge and support.



6 Check the bearing surface of the clutch housing :

Fit the tool on the guide unit for thrust ball bearing.

Rotate the tool by holding it against the guide unit  and test the four clutch housing bosses (c) in turn.

The position of the needles should be the same (within 0.10 mm) on the four bosses. Otherwise, rotate the housing.

The housing can be realigned and the bosses returned to their correct, original positions by striking them with a mallet.

Remove the gauge and so start.

7 Prepare the engine.

Fit

engine fuel cell **screw tightening :**

- 4 to 4.6 m.daN.
- clutch mechanism and etc.
- squeaking plugs.

8 Prepare the gearbox.

Fit

- clutch thrust bearing

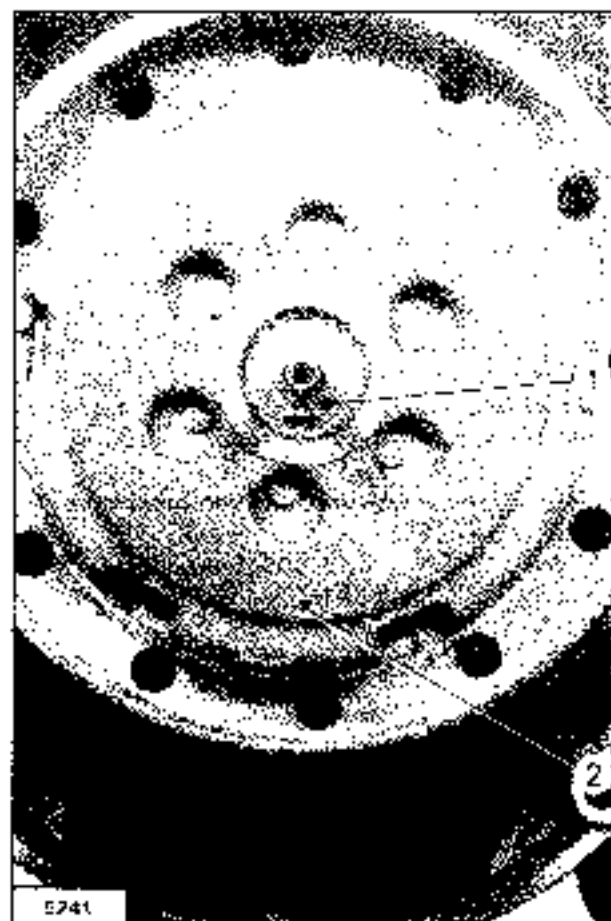
Conical clutch :

- clutch drum-mechanism assembly (2).
- screwing nut (1) **tightening torque : 3 to 4 m.daN (left-hand thread)**

While slackening the nut, hold the spanner so as not to bear on the mainshaft.

Lock the nut by peening over the metal into the drive-shaft milling.

During this operation, support the nut so as not to damage the drive-shaft threads for oil return.

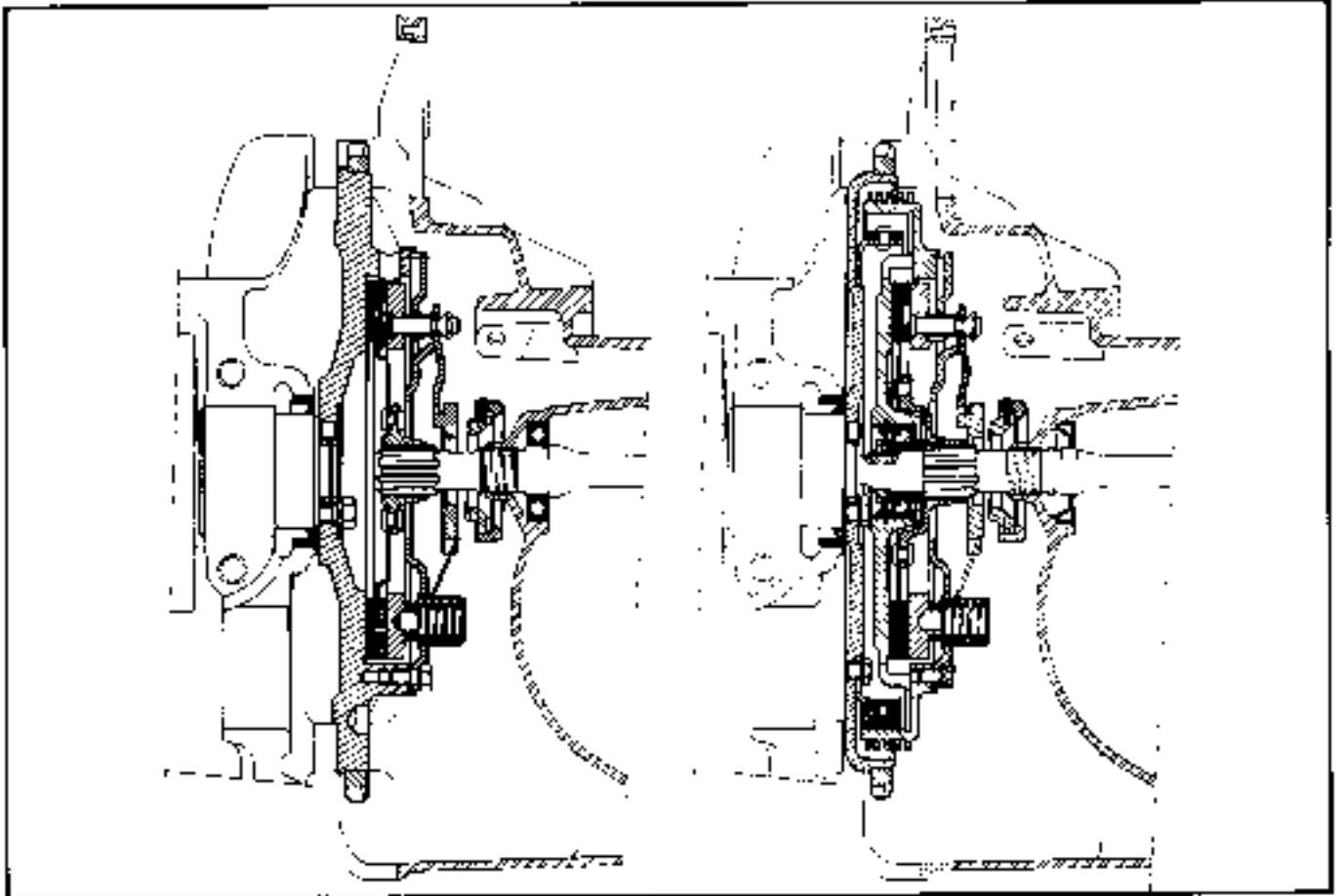


9. Fit the engine.

CLUTCHES FITTED ON VEHICLES EQUIPPED WITH ENGINES :

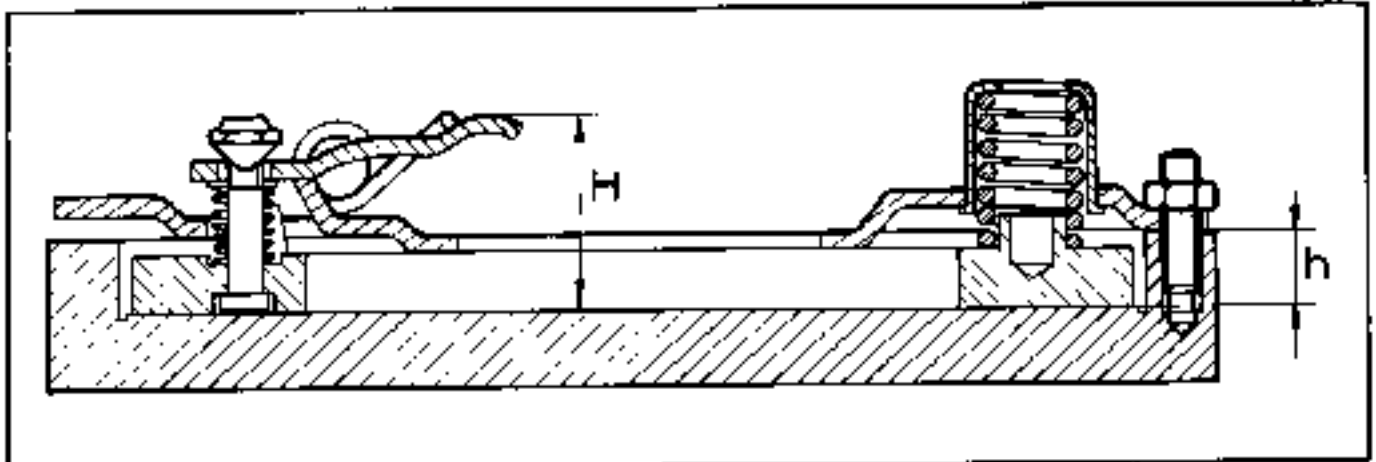
- A 53 → 2 1970
- A 79/0 → 1 1972
- M 4 → 10 1968

A. 71-7



Manuel DMs.1

A. 71-3



CHARACTERISTICS

Mechanism : « FERODO » type PKH 3 (engines A 53 and A 79/0)
 « FERODO » type PKH 4 (engine M 4)

Disc : Progressive type \longrightarrow 10: 196" « DENIEL » type 10: 196" \longrightarrow
 Disc hub : 10 grooves \longrightarrow 4: 1966 (8 teeth) \longrightarrow 1966 \longrightarrow
 Lining : « FERODO » M 6 or A 33
 Thrust bearing : Graphite ring

SPECIAL FEATURES

Clutch springs : (engine A 53 and A 79/0)
 - 3 springs (pink mark).
 - 3 springs (orange mark).

Clutch springs (engine M 4)
 - 6 springs (ruby mark)

Distance between the engine-gearbox joint face and the surface of the boss receiving the bearing in the drum.
 (centrifugal clutch) = 5.12 to 5.42 mm (0.201 to 0.213 in).

Tightening torques :

- Nut securing clutch drum to mainshaft : 3 to 4 da Nm (21.66 to 28.88 ft.lbs)
 - Screw securing weight carrying ring on flywheel : 0.9 to 1.4 da Nm (6.48 to 10.1 ft.lbs)
 - Screw securing clutch mechanism : 1 to 1.3 da Nm (7.22 to 9.38 ft.lbs)

Clearance between thrust ring and toggles : 0.5 to 1 mm (0.019 to 0.039 in)
 Pedal free movement : 10 to 15 mm (0.39 to 0.59 in)

Adjusting the toggles (see diagram on page 1) :

- Distance between top of toggles and thrust plate H = 25 to 27,5 mm (1.02 to 1.08 in)
 - Distance between plate and housing for clutch mechanism : h = 12 mm (0.47 in)

♦ **SPRING CLUTCHES FITTED ON VEHICLES EQUIPPED WITH ENGINES :**

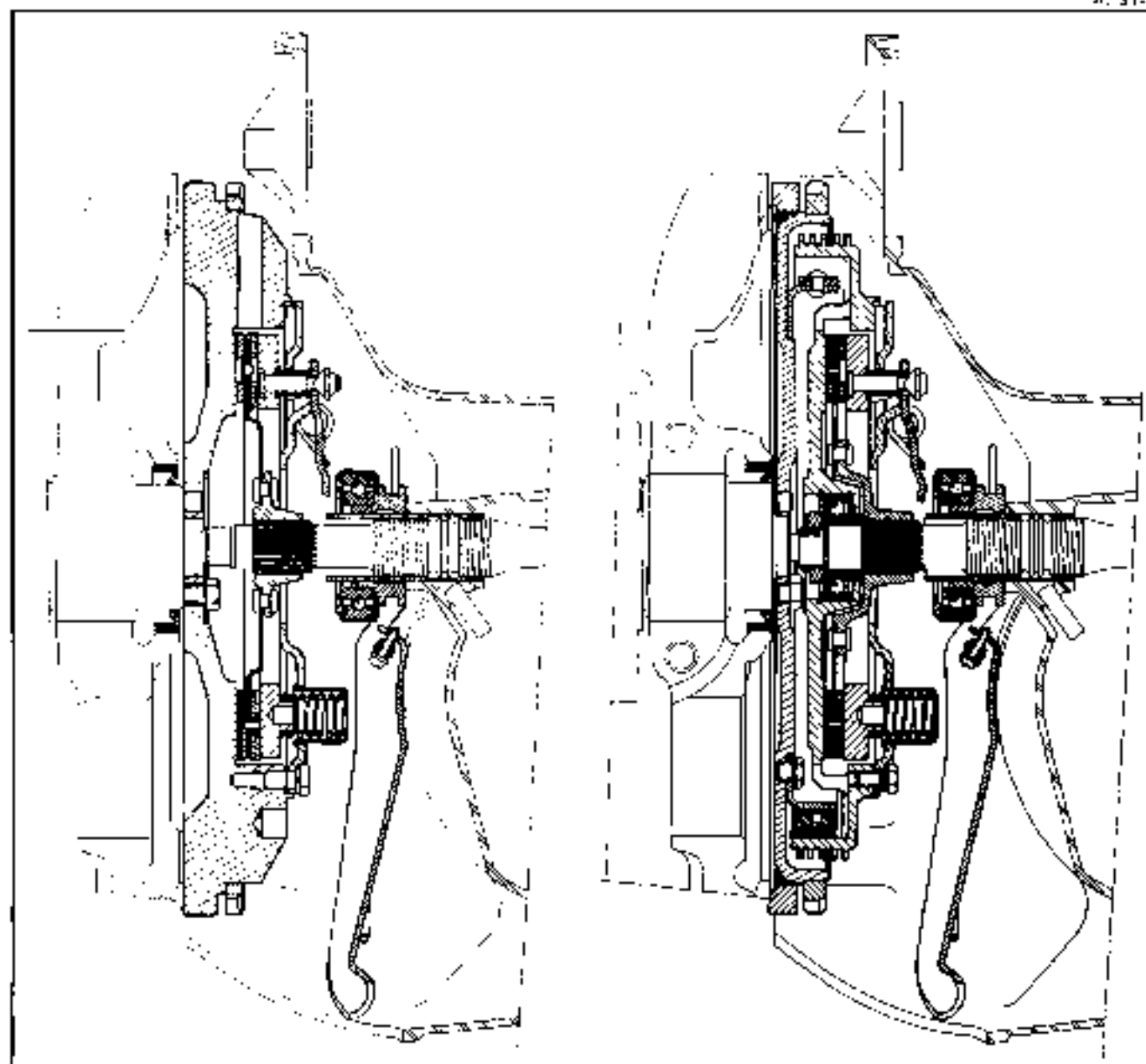
A 79/0 2/1972 → 8/1977

A 79/1 3/1968 → 9/1974

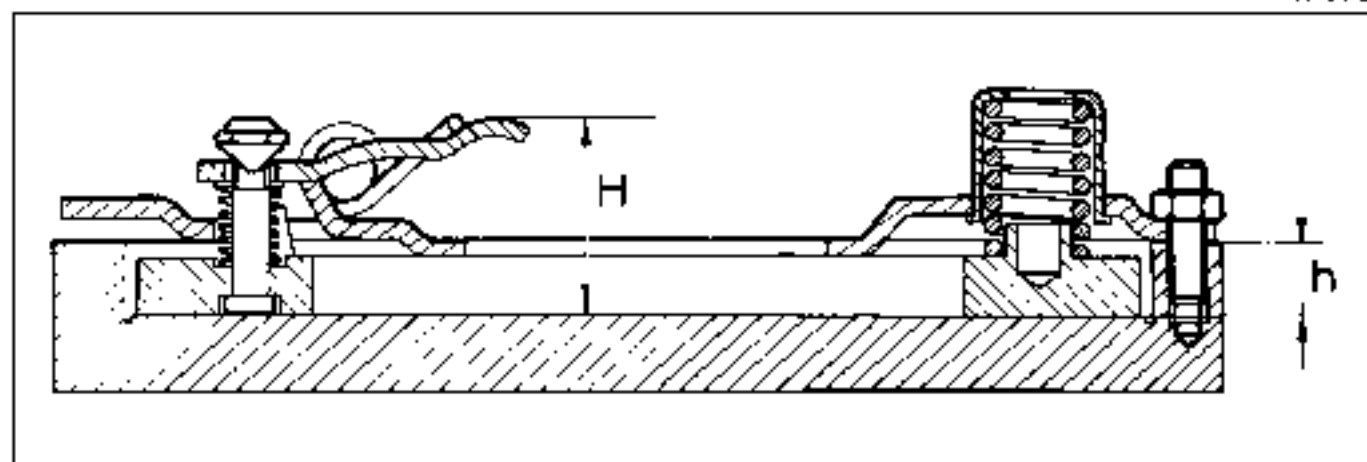
M 28/1 5/1958 → 2/1992

M 28 2/1970 → 2/1982

A. 31-2



A. 31-3



CHARACTERISTICS (2/1982)

Mechanism	• FÉROD® - Type PKHB 4.5
Disc	• DENTEL® - Type
Disc hub	18 grooves
Lining	A 35 quality on B13 engine side and A J 8 gearbox side
Thrust bearing	Ball type

SPECIAL FEATURES

Clutch springs :

- 6 springs (> light grey > mark)

Distance between the engine gearbox joint face and the surface of the boss receiving the bearing in the drum (centrifugal clutch) : 5.12 to 5.42 mm (0.201 to 0.213 in).

Tightening torques :

- Nut securing clutch drum to mainshaft : 3 to 4 da Nm (21.66 to 28.85 ft.lbs)
- Screw securing weight carrying ring on flywheel : 0.9 to 1.4 da Nm (6.49 to 10.1 ft.lbs)
- Screw securing clutch mechanism : 1 to 1.3 da Nm (7.22 to 9.38 ft.lbs)

Clearance between stop and toggles : 1 to 1.5 mm (0.039 to 0.059 in)

Pedal free movement : 20 to 25 mm (0.78 to 0.98 in)

Adjusting the toggles (see *diagram page 10*) :

- Distance between top of toggles and thrust plate : H 25.6 to 26.3 mm (1.007 to 1.047 in)
- Distance between plate and housing for clutch mechanism : h 12 mm (0.47 in)

◆ CHARACTERISTICS (2/1982)

Diaphragm type mechanism	VERTO 160 DBR 210
Disc	Dia. 160 mm
Disc hub	Fixed, 18 grooves
Lining	A 35 quality
Thrust bearing	Ball-type

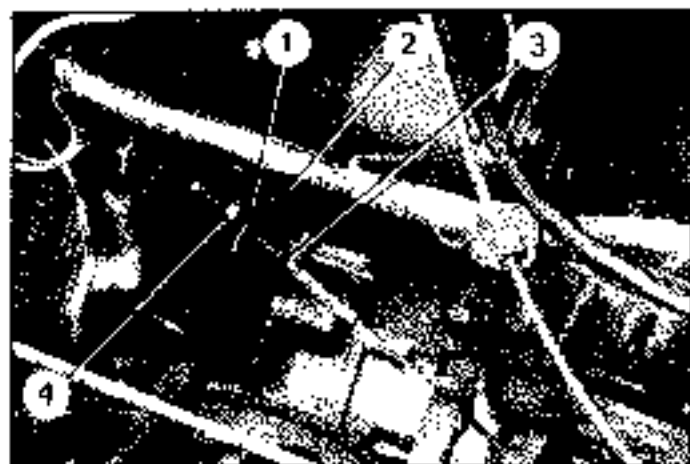
SPECIAL FEATURES (2/1982)

Will be dealt with in a further updating

ADJUSTING THE CLUTCH CLEARANCE

- A. Vehicles VZ (24 CV) → February 1970,
 Vehicles VZ (24 CV) → January 1973,
 Vehicles XK (1 CV) → October 1967,
 Vehicles XM (1 CV) → December 1963.

10 655



The pad of the clutch pedal should be at the same height as that of the brake pedal. The height is adjusted by moving the stop pin located in one of the holes of the brake pedal shaft.

1. **Adjust the clutch clearance :**
 Untighten the lock nut, then tighten or loosen the adjustment nut (1) to obtain a clearance of 0.5 to 1 mm (0.019 to 0.039 in.) between the nut (1) and the fork (2).
 This check should be carried out by holding the clutch cable (3) taut by its free end and slightly pressing on the clutch fork (2) to bring the quipined thrust bearing into contact with the tapered thrust ring. Tighten the lock nut (4).

- B. Vehicles VJ - XK - VZ - VZ and XM equipped with a pusher pedal gear.

2. **Check the pedal height :**
 With the pedal against the stop pin, the height of the pedal should be
 $L = 130.5 \pm 5 \text{ mm} (5.13 \pm 0.19 \text{ in.})$
 measured from the lower corner of the pedal pad to the floor plate. If not, bend the support plate of (a) to obtain the correct height.

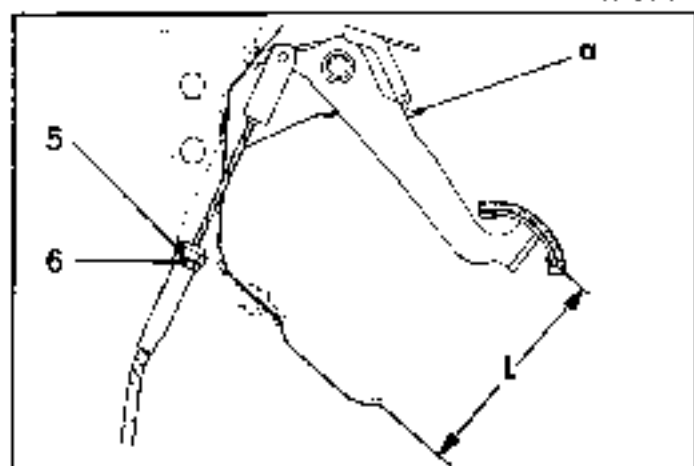
For vehicles AM (1971) → only
 pedal height :

$$L = 135 \pm 2.5 \text{ mm} (5.31 \pm 0.098 \text{ in.})$$

3. **Adjust the clutch clearance :**
 Loosen the lock nut (b) and turn nut (5) to obtain a clearance of 1 to 1.5 mm (0.039 to 0.059 in.) between the ball thrust bearing and the levers. The clutch pedal free movement should then be 20 to 25 mm (0.78 to 0.98 in.).
 Tighten the lock nut (6).

Model K16.1

A. 31-1



I. GEARBOXES :

Vehicles fitted with gear ⬇ lever on rear cover	}	AZ → February 1970
		AY → October 1968 (→ March 1969 on AYA DYANE)
		AZU → January 1972
		AK → October 1967
		AMA → February 19, 1968

SPECIAL FEATURES.

Adjustments :

- Lateral play of second gear loose pinion 0.05 to 0.35 mm (.0019 to 0.013 in.)
- Lateral play of intermediate gear train
 2 CV (adjustable) : old torque (*width of bearing* : 18 mm, 0.70 in.)
 0.05 to 0.35 mm (.0019 to 0.13 in.)
 new torque (*width of bearing* : 19 mm, 0.62 in.)
 0.45 to 1 mm (0.17 to 0.039 in.)
- 3 CV (adjustable) : 0.10 to 0.20 mm (.0039 to .0079 in.)
- Backlash (pinion crownwheel) : 0.13 to 0.23 mm (.0051 to .009 in.)
- Minimum play between planetary and satellite gears 0.1 mm ; 0.039 in.

Tightening torques :

- Primary shaft nut 7 to 9 da Nm (50.54 to 64.98 ft.lbs.)
- Bevel pinion shaft nut 7 to 8.5 da Nm (50.54 to 61.37 ft.lbs.)
- Securing screw for flange retaining mainshaft bearing 2.5 da Nm (18.05 ft.lbs.)
- Securing screw for flange retaining rear bearing on bevel pinion shaft 2.5 to 3 da Nm (18.05 to 21.66 ft.lbs.)
- Bearing nut on mainshaft 12 to 14 da Nm (86.64 to 102.08 ft.lbs.)
- Securing screw for differential crownwheel 7 to 8 da Nm (50.54 to 64.98 ft.lbs.)
- Nut holding differential shaft and ball bearing 10 to 12 da Nm (72.2 to 86.64 ft.lbs.)
- Ring nut for locking ball bearing in bearing block 10 to 14 da Nm (72.2 to 102.08 ft.lbs.)
- Drain plug 3.5 to 4.5 da Nm (25.27 to 32.43 ft.lbs.)
- Level plug 1 to 1.5 da Nm (7.22 to 10.83 ft.lbs.)
- Clutch housing (securing) : Nut dia. = 10 mm (0.39 in.) 3.5 to 4.5 da Nm (25.27 to 32.43 ft.lbs.)
 Screw dia. = 7 mm (0.27 in.) 1.5 to 2 da Nm (10.83 to 14.44 ft.lbs.)
- Rear cover (screw dia. = 7 mm, 0.27 in.) 1.5 to 2 da Nm (10.83 to 14.44 ft.lbs.)
- Nuts securing differential shaft bearing (dia. = 9 mm, 0.35 in.) 3.8 to 4.2 da Nm (27.43 to 30.32 ft.lbs.)

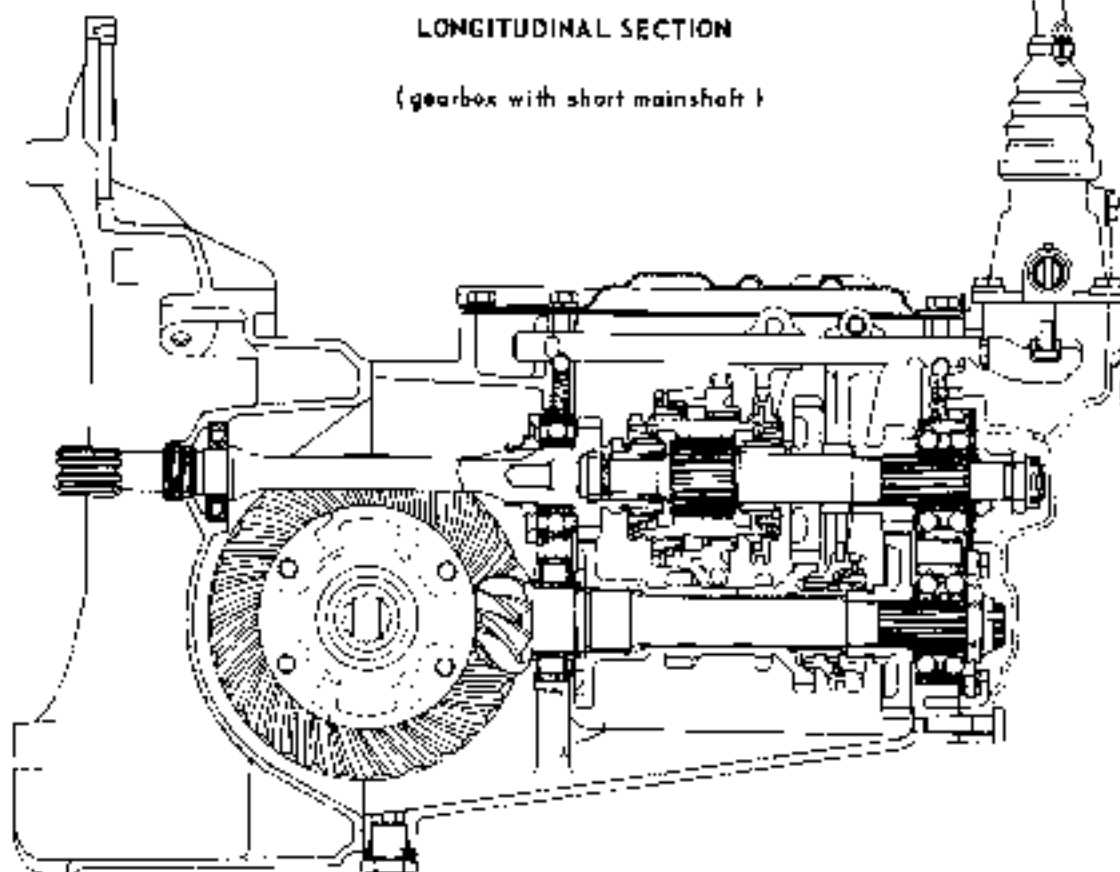
Lubrication :

- Grade of oil TOTAL EP 80
- Capacity 0.9 litres (1.58 imp.pt.)

A 33-1 a

LONGITUDINAL SECTION

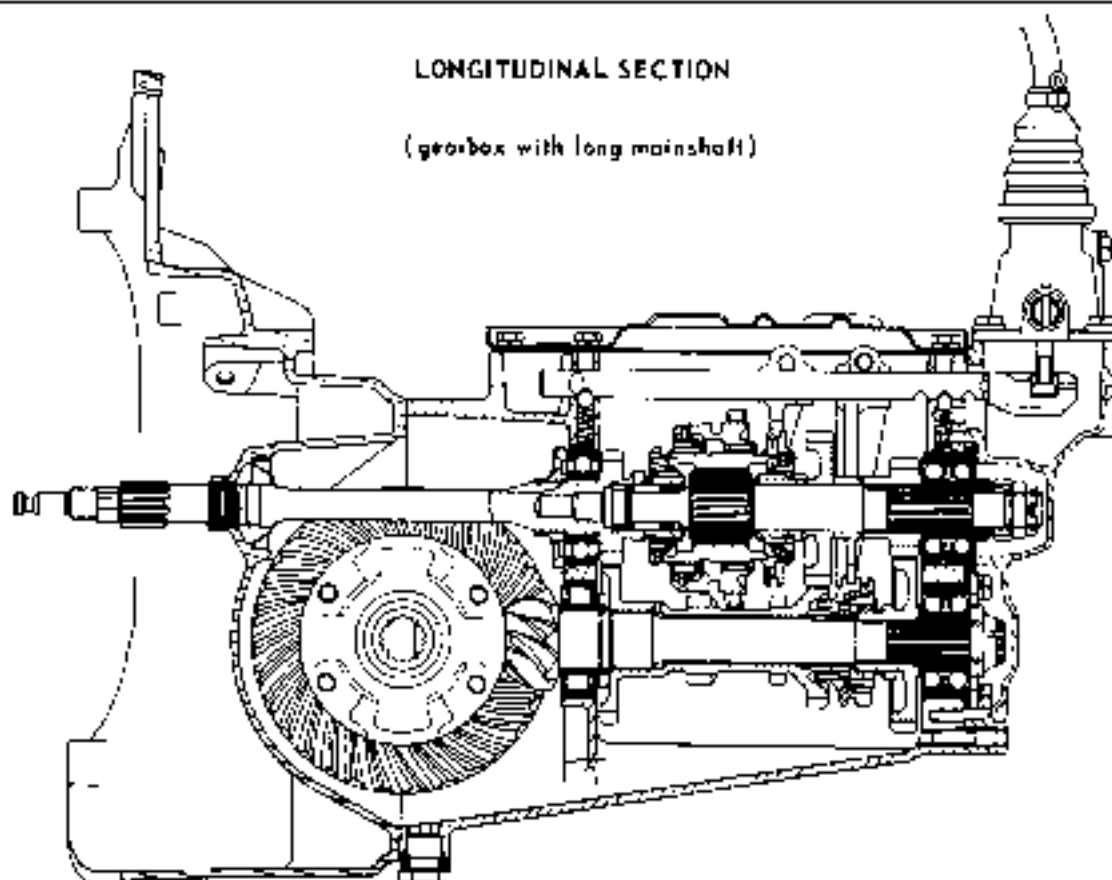
(gearbox with short mainshaft)



A 33-1

LONGITUDINAL SECTION

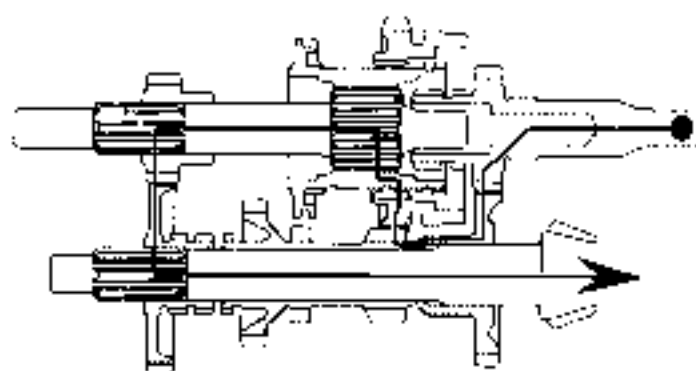
(gearbox with long mainshaft)



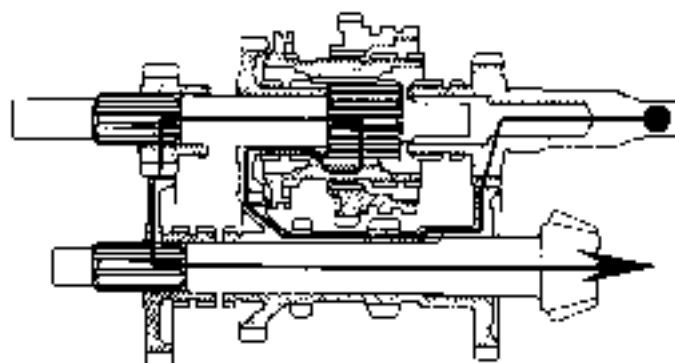
GEAR SEQUENCE

A. 33-8

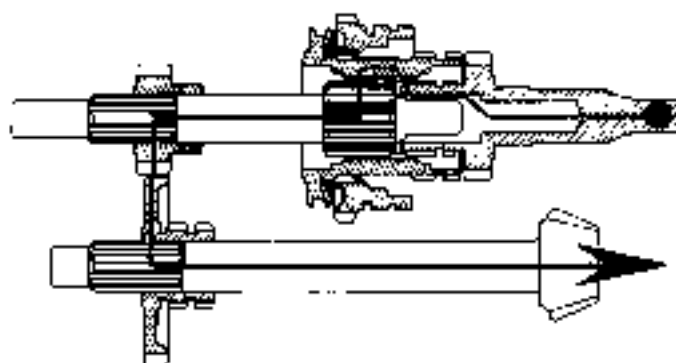
Manual 816-1



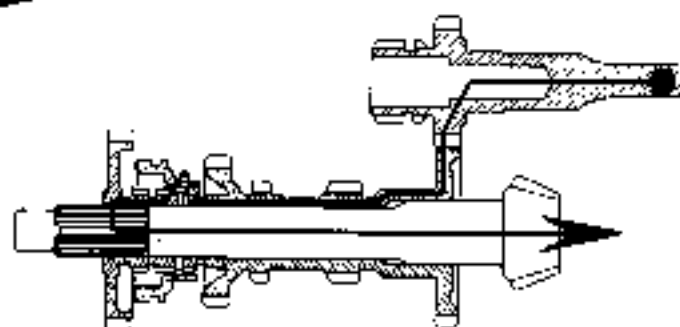
1st GEAR



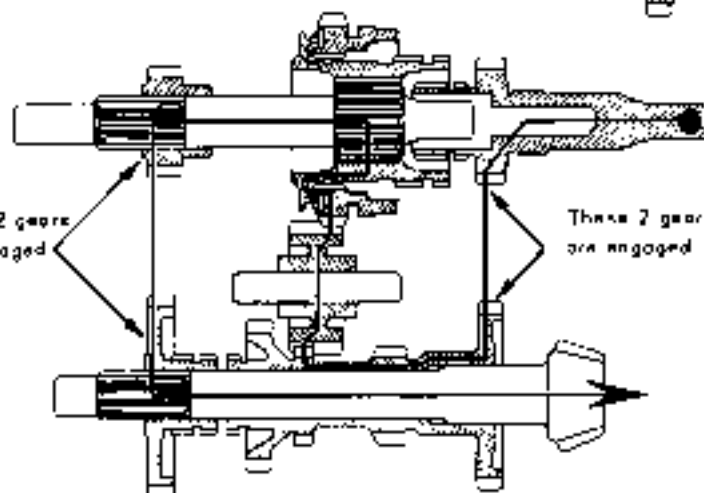
2nd GEAR



3rd GEAR



4th GEAR



These 2 gears are engaged

These 2 gears are engaged

REVERSE GEAR

Gear ratios 1 with 125 - 380 X tyres whose rolling circumference under load is 1 800 meters, 5 ft 10 in :

Gearbox fitted on AZ vehicles 1 - 1964 → 2 - 1970				
Gears	Gearbox ratios	Crownwheel and pinion	Overall ratios	Speed at 1000 rpm engine speed in kph (mph)
1	19/28 × 14/33 × 15/32 (7.410 : 1)	8/29 (3.825 : 1)	26.863 : 1	4.020 (2.512)
2	19/28 × 22/25 × 15/32 (3.572 : 1)		12.950 : 1	8.339 (5.211)
3	15/32 (2.133 : 1)		7.733 : 1	13.966 (8.728)
4	19/28 (1.473 : 1)		5.342 : 1	20.217 (12.625)
REV	19/28 × 13/33 × 15/32 (7.980 : 1)		28.920 : 1	3.733 (2.333)
Speedometer drive ratio : 6/25				

Gearbox fitted on AZU vehicles 11 - 1964 → 3 - 1968				
Gears	Gearbox ratios	Crownwheel and pinion	Overall ratios	Speed at 1000 rpm engine speed in kph (mph)
1	19/28 × 14/33 × 15/32 (7.410 : 1)	8/32 (3.875 : 1)	28.713 : 1	3.761 (2.350)
2	19/28 × 22/25 × 15/32 (3.572 : 1)		13.841 : 1	7.802 (4.876)
3	15/32 (2.133 : 1)		8.265 : 1	12.067 (8.166)
4	19/28 (1.473 : 1)		5.707 : 1	18.924 (11.827)
REV	19/28 × 13/33 × 15/32 (7.980 : 1)		30.932 : 1	3.926 (2.453)
Speedometer drive ratio : 5/22				

Gearbox fitted on AZU vehicles 3 - 1968 → 1 - 1972				
Gears	Gearbox ratios	Crownwheel and pinion	Overall ratios	Speed at 1000 rpm engine speed in kph (mph)
1	18/28 × 14/33 × 15/32 (7.822 : 1)	8/31 (3.875 : 1)	30.311 : 1	3.563 (2.226)
2	18/28 × 24/25 × 15/32 (3.595 : 1)		13.930 : 1	7.753 (4.845)
3	15/32 (2.133 : 1)		8.266 : 1	13.065 (8.165)
4	18/28 (1.555 : 1)		6.027 : 1	17.913 (11.139)
REV	18/28 × 13/33 × 15/32 (8.423 : 1)		32.642 : 1	3.308 (2.06)
Speedometer drive ratio : 5/22				

Gear ratios (with 125-380 X tyres whose rolling circumference under load is 1.800 meters, 5 ft 10 in.).

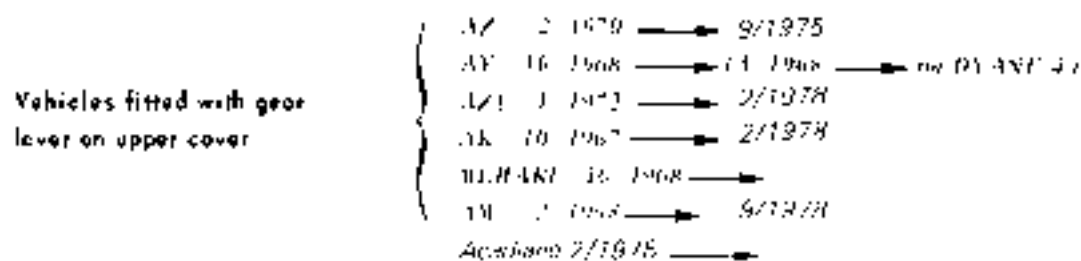
Gearbox fitted on AYA (DYANE) vehicles (1967 → 1968)				
Gears	Gearbox ratios	Crownwheel and pinion	Overall ratios	Speed at 1000 rpm engine speed in kph (mph)
1	18/28 × 14/33 × 15/32 (3.22 : 1)	8/29 (3.625 : 1)	28.355 : 1	3.808 (2.38)
2	18/28 × 24/26 × 15/32 (3.595 : 1)		13.032 : 1	8.267 (5.179)
3	15/32 (1.133 : 1)		7.733 : 1	13.966 (8.726)
4	18/28 (1.556 : 1)		5.638 : 1	19.155 (11.97) : 1
REV	18/28 × 13/33 × 15/32 (8.428 : 1)		30.536 : 1	3.536 (2.21)
Speedometer drive ratio = 6/25				

Gearbox fitted on the following vehicles					
		AYA 3 (DYANE 6) (1968 → 1968) AM - AMB (AMI 6 Saloon and Estate) (1964 → 1965) AMF (AMI 6 - Familial - Estate) (1961 → 1965) AMC (AMI 6 - Commercial - Estate) (1963 → 1965)			
Gear ratios (with 125-380 X and 135-380 X types whose rolling circumference under load is 1.800 (5 ft 10 in.) and 1.840 meters (6 ft 0.4 in.) respectively)					
Gears	Gearbox ratios	Crownwheel and pinion	Overall ratios	Speed at 1000 rpm engine speed in kph (mph)	
				125-380 X	135-380 X
1	19/25 × 14/31 × 13/25 (5.602 : 1)	8/29 (3.625 : 1)	20.310 : 1	5.317 (3.32)	5.435 (3.39)
2	19/25 × 23/26 × 13/25 (2.860 : 1)		10.367 : 1	10.417 (6.51)	10.649 (6.65)
3	13/25 (1.923 : 1)		6.971 : 1	15.494 (9.62)	15.337 (9.52)
4	19/25 (1.315 : 1)		4.766 : 1	22.660 (14.16)	23.115 (14.44)
REV	19/25 × 14/31 × 13/25 (5.602 : 1)		20.310 : 1	5.317 (3.32)	5.435 (3.39)
Speedometer drive ratio = 4/15					

Gear ratios (with 135-380 X tyres whose rolling circumference under load is 1.840 meters, 6 ft 0.4 in.)

Gearbox fitted on the following vehicles					
		AK 1 (1967) AMF (- Familial - Estate) (1965 → 1968) AMC (- Commercial - Estate) (1965 → 1968)			
Gears	Gearbox ratios	Crownwheel and pinion	Overall ratios	Speed at 1000 rpm engine speed in kph (mph)	
				125-380 X	135-380 X
1	19/27 × 14/31 × 13/25 (6.051 : 1)	8/29 (3.625 : 1)	21.935 : 1	5.033 (3.14)	
2	19/27 × 23/26 × 13/25 (3.089 : 1)		11.198 : 1	9.250 (5.77)	
3	13/25 (1.923 : 1)		6.971 : 1	15.837 (9.89)	
4	19/27 (1.421 : 1)		5.151 : 1	21.432 (13.33)	
REV	19/27 × 14/31 × 13/25 (6.051 : 1)		21.935 : 1	5.033 (3.14)	
Speedometer drive ratio = 4/15					

H. GEARBOXES.



SPECIAL FEATURES

Adjustments :

Lateral play of second gear loose pinion	0.05 to 0.35 mm (.0019 to 0.013 in.)
Lateral play of intermediate gear train	0.10 to 0.20 mm (.0039 to .0078 in.)
Minimum play between planetary gears and satellite	0.1 mm (.0039 in.)
Backlash (pinion-crownwheel)	
Gearbox with lever on upper cover	0.14 to 0.18 mm (.0055 to .0070 in.)

Tightening torques :

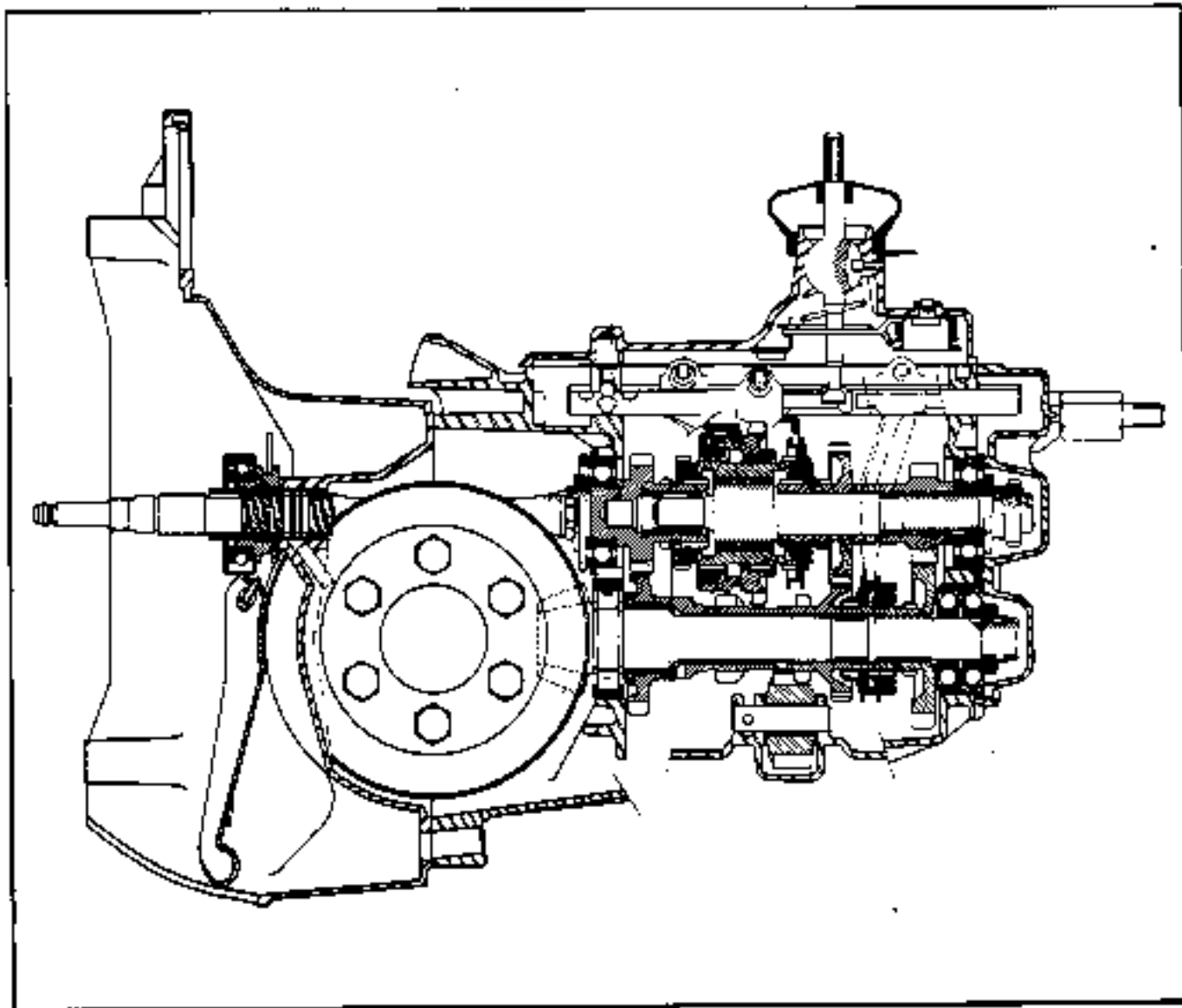
Nut on primary shaft	7 to 9 da Nm (50.54 to 64.98 ft.lbs)
Nut on bevel pinion shaft	7 to 8.5 da Nm (50.54 to 61.37 ft.lbs)
Securing screw for flange retaining mainshaft bearing	2.5 da Nm (18.06 ft.lbs)
Nut securing mainshaft bearing	12 to 14 da Nm (86.64 to 101.08 ft.lbs)
Securing screw for differential crownwheel	7 to 8 da Nm (50.54 to 64.98 ft.lbs)
Clutch loading : securing screw	3.5 to 4.5 da Nm (25.27 to 32.49 ft.lbs)
screw diameter = 7 mm (.27 in.)	1.5 to 2 da Nm (10.83 to 14.44 ft.lbs)
Nut holding differential shaft and ball bearing	10 to 20 da Nm (72.2 to 144.4 ft.lbs)
Ring nut for locking ball bearing on bearing blank	6 to 10 da Nm (43.32 to 72.2 ft.lbs)
Nuts securing differential shaft bearing	3.8 to 4.2 da Nm (27.43 to 30.32 ft.lbs)
Screw securing gear cover (diameter = 7 mm .27 in.)	1.5 to 2 da Nm (10.83 to 14.44 ft.lbs)
Drain plug	3.5 to 4.5 da Nm (25.27 to 32.49 ft.lbs)
Level plug	1 to 1.5 da Nm (7.22 to 10.83 ft.lbs)

Lubrication :

Grade of oil	TOTAL EP 80
Capacity	0.9 litre (.23 Imp.pts)

LONGITUDINAL SECTION

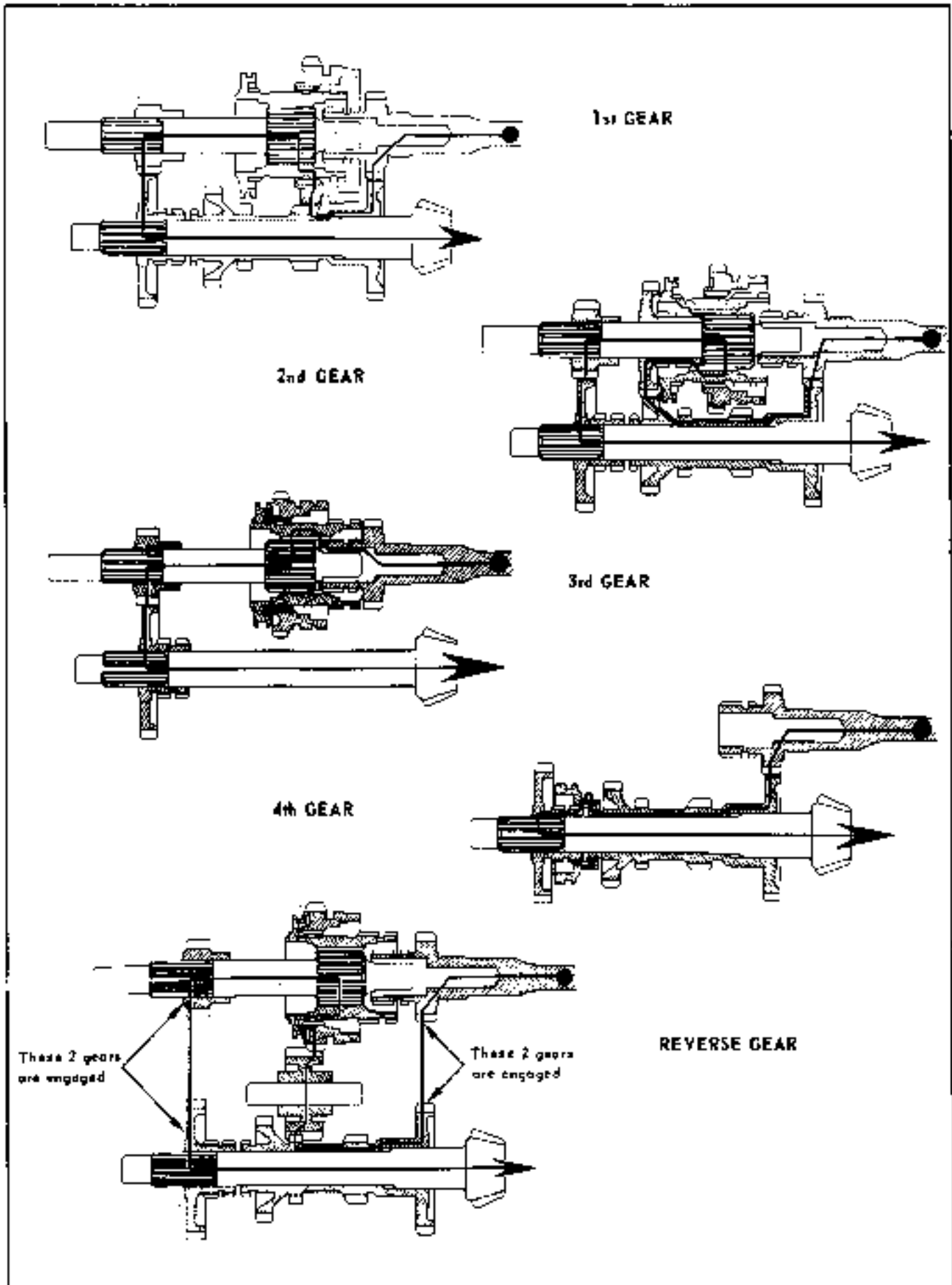
A. 33-2



PROJECTIONS: M. 1/1

GEAR SEQUENCE

A 3315



Gear ratios (with 125 380 X tyres whose rolling circumference under load is 1.600 meters, 5 ft 10 in.)
 (with 135 380 X tyres whose rolling circumference under load is 1.840 meters, 6 ft 0.4 in.)

Gearbox fitted on the following vehicles					
{ AYA 3 (DYANE 6) (1) 1968 → 10 1968 } { AM (AMI 6) (2) 1968 → 5 1968 } { AMB (AMI 6, Estate) (2) 1968 → 5 1968 }					
Gears	Gearbox ratios	Crownwheel and pinion	Overall ratios	Speed at 1000 rpm engine speed in kph (mph)	
				125 380 X	135 380 X
1	19.25 × 14/31 × 13.25 (5.602 : 1)	8-29 (13.625 : 1)	20.307 : 1	5.318 (3.323)	5.436 (3.357)
2	19.25 × 23/26 × 13.25 (2.860 : 1)		10.368 : 1	10.461 (6.538)	10.648 (6.655)
3	13.25 (1.923 : 1)		6.571 : 1	15.492 (9.652)	15.837 (9.898)
4	19.25 (1.315 : 1)		4.729 : 1	22.646 (14.153)	23.052 (14.407)
REV	19.25 × 14/31 × 13.25 (5.602 : 1)		20.307 : 1	5.318 (3.323)	5.318 (3.323)
Speedometer drive ratio 4/15					

Gearbox fitted on the following vehicles					
{ AM 2 } { AMB 2 (AMI 6, M 28 engine) } { AMF } { AMC }					
(1) 1968 → (3) 1968					
Gears	Gearbox ratios	Crownwheel and pinion	Overall ratios	Speed at 1000 rpm engine speed in kph (mph)	
				125 380 X	135 380 X
1	19.25 × 14/31 × 13.25 (5.602 : 1)	8-31 (13.875 : 1)	21.707 : 1	4.975 (3.109)	5.085 (3.803)
2	19.25 × 23/26 × 13.25 (2.860 : 1)		11.082 : 1	9.745 (6.090)	9.952 (6.220)
3	13.25 (1.923 : 1)		7.451 : 1	14.494 (9.058)	14.816 (9.281)
4	19.25		5.095 : 1	21.197 (13.248)	21.668 (13.542)
REV	19.25 × 14/31 × 13.25 (5.602 : 1)		21.707 : 1	4.975 (3.109)	5.085 (3.803)
Speedometer drive ratio 4/15					

Gearbox fitted on the following vehicles					
{ AK (16) 1967 → 5 1968 } { AMF (AMI 6 « Familial ») (2) 1968 → 5 1968 } { AMC (AMI 6 « Commercial « Estate ») (2) 1968 → 5 1968 }					
Gears	Gearbox ratios	Crownwheel and pinion	Overall ratios	Speed at 1000 rpm engine speed in kph (mph)	
				125 380 X	135 380 X
1	19.27 × 14/31 × 13.25 (6.051 : 1)	8-29 (13.625 : 1)	21.934 : 1	4.923 (3.076)	5.033 (3.145)
2	19.27 × 23/26 × 13.25 (3.089 : 1)		11.197 : 1	9.645 (6.028)	9.859 (6.161)
3	13.25 (1.923 : 1)		6.970 : 1	15.494 (9.633)	15.839 (9.899)
4	19.27 (1.421 : 1)		5.151 : 1	21.197 (13.248)	21.668 (13.537)
REV	19.27 × 14/31 × 13.25 (6.051 : 1)		21.934 : 1	4.923 (3.076)	5.033 (3.145)
Speedometer drive ratio 4/15					

Fig. 1000016 1 - 10 March 1968 - 1000016-008

Gear ratios (with 125 380 X tyres whose rolling circumference under load is 1.600 meters, 5 ft 10 in.)

Gearbox fitted on the following vehicles				
{ AY6 (DYANE 6, M 28 engine) 2-1976 → AM 3 (AMI 8) 5-1968 → 7/1969 AMF 3 (AMI 8 Estate) 9-1969 → 9/1978				
Gears	Gearbox ratios	Crownwheel and pinion	Overall ratios	Speed at 1000 rpm engine speed in km/h (mph)
1	20/27 × 14/31 × 13/25 (5.746 : 1)	8/31 (3.875 : 1)	22.275 : 1	4.846 (3.03)
2	20/27 × 23/26 × 13/25 (2.934 : 1)		11.372 : 1	9.497 (5.935)
3	13/25 (1.923 : 1)		7.451 : 1	14.494 (9.058)
4	20/27 (1.350 : 1)		5.231 : 1	20.646 (12.903)
RLV	20/27 × 14/31 × 13/25 (5.746 : 1)		22.275 : 1	4.846 (3.03)
Speedometer drive ratio : 4 : 16				

Gear ratios (with 135 380 X tyres whose rolling circumference under load is 1.840 meters, 6 ft 0.4 in.)

Gearbox fitted on the following vehicles				
{ AMC 3 (Commercial + Estate) 9-1968 → 9/1976 AY (series CD) ACADIANE 2-1978 →				
Gears	Gearbox ratios	Crownwheel	Overall ratios	Speed at 1000 rpm engine speed in km/h (mph)
1	20/27 × 14/31 × 13/25 (5.746 : 1)	8/31 (3.875 : 1)	22.275 : 1	4.956 (3.097)
2	20/27 × 23/26 × 13/25 (2.934 : 1)		11.372 : 1	9.705 (6.067)
3	13/25 (1.923 : 1)		7.451 : 1	14.816 (9.26)
4	20/27 (1.350 : 1)		5.231 : 1	21.104 (13.19)
RLV	20/27 × 14/31 × 13/25 (5.746 : 1)		22.275 : 1	4.956 (3.097)
Speedometer drive ratio : 4 : 16				

Gear ratios (with 135 380 X tyres whose rolling circumference under load is 1.840 meters, 6 ft 0.4 in.)

Gearbox fitted on the following vehicles				
{ AY series CA (MEHARI) 12-1968 → AK 5-1968 → 2/1978				
Gears	Gearbox ratios	Crownwheel and pinion	Overall ratios	Speed in 1000 rpm engine speed in km/h (mph)
1	19/27 × 14/31 × 10/25 (6.051 : 1)	8/31 (3.875 : 1)	23.448 : 1	4.708 (2.942)
2	19/27 × 23/26 × 13/25 (3.089 : 1)		11.470 : 1	9.223 (5.764)
3	13/25 (1.923 : 1)		7.451 : 1	14.816 (9.26)
4	19/27 (1.421 : 1)		5.508 : 1	20.059 (12.536)
RLV	19/27 × 14/31 × 10/25 (6.051 : 1)		23.448 : 1	4.708 (2.924)
Speedometer drive ratio : 4 : 16				

Gear ratios (with 125 - 380 X tyres whose rolling circumference under load is 1,800 meters, 5 ft 10 in)

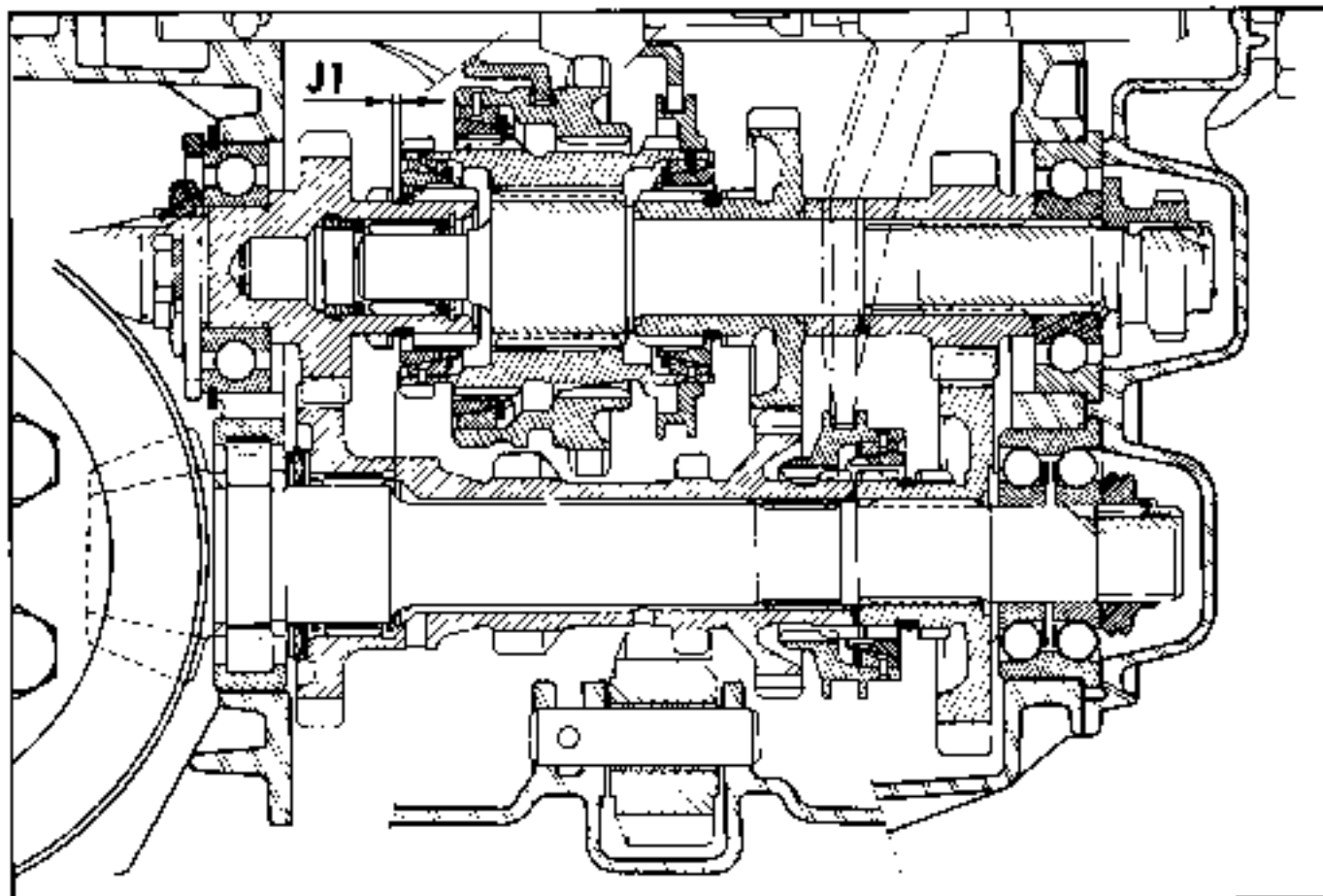
Gearbox fitted on the following vehicles {				
AYA 2 (DYANE 4) 1 1968 → 9/1975				
AZ (2 CV 4) 2 1970 → 9/1979				
AZU (2 CV van) 1 1972 → 2/1978				
Gears	Gearbox ratios	Crownwheel and pinion	Overall ratios	Speed at 1000 rpm: engine speed in kph (mph)
1	19/28 × 14/31 × 15/32 (6.961 : 1)	8/35 14/125 : 1	28.715 : 1	3.761 (2.350)
2	19/28 × 23/26 × 15/32 (3.553 : 1)		14.659 : 1	7.367 (4.604)
3	15/32 (2.133 : 1)		8.749 : 1	12.374 (7.677)
4	19/28 (1.473 : 1)		6.278 : 1	17.769 (11.051)
REV	19/28 × 14/31 × 15/32 (6.961 : 1)		28.715 : 1	3.761 (2.350)
Speedometer drive ratio 3/14				

Gear ratios (with 125 - 380 X tyres whose rolling circumference under load is 1,800 meters, 5 ft 10 in)

Gearbox fitted on the following vehicles {				
AYB (DYANE 6, M 28-1 engine) 15 1968 → 2 1970				
AZ (2 CV 6) 2 1970 →				
Gears	Gearbox ratios	Crownwheel and pinion	Overall ratios	Speed at 1000 rpm: engine speed in kph (mph)
1	19/25 × 14/31 × 14/25 (5.202 : 1)	8/32 14/125 : 1	21.458 : 1	5.033 (3.145)
2	19/25 × 23/26 × 14/25 (2.656 : 1)		10.956 : 1	9.857 (6.160)
3	14/25 (1.785 : 1)		7.363 : 1	14.657 (9.165)
4	19/25 (1.314 : 1)		5.424 : 1	19.911 (12.444)
REV	19/25 × 14/31 × 14/25 (5.202 : 1)		21.458 : 1	5.033 (3.145)
Speedometer drive ratio 4/16				

ADJUSTING THE FORKS

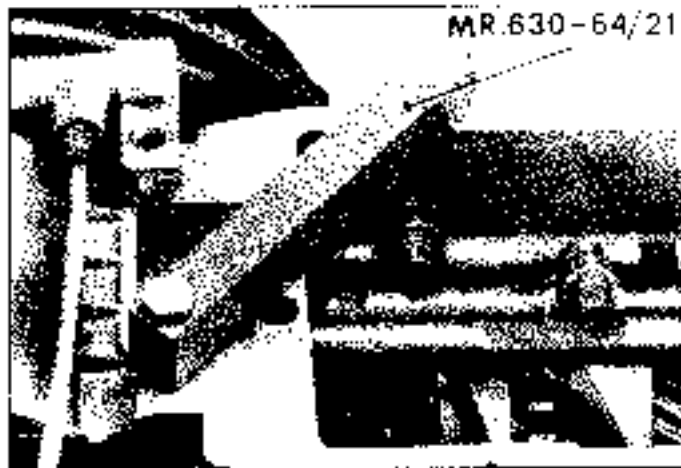
4. 32-1



Manuel 9 6.

4551

MR. 630-64/21



1. Remove the upper cover from the gearbox.

2. Adjust the 2nd-3rd selector fork :

a) Position the fork shaft in neutral position.

In the case the gearbox control lever is fitted on the upper cover, the operation is simplified by using clamp MR. 630-64/21 to maintain the locking spring in position.

3732

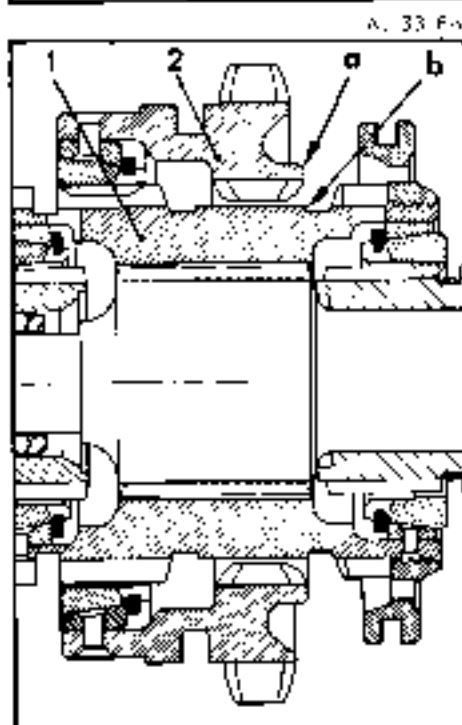
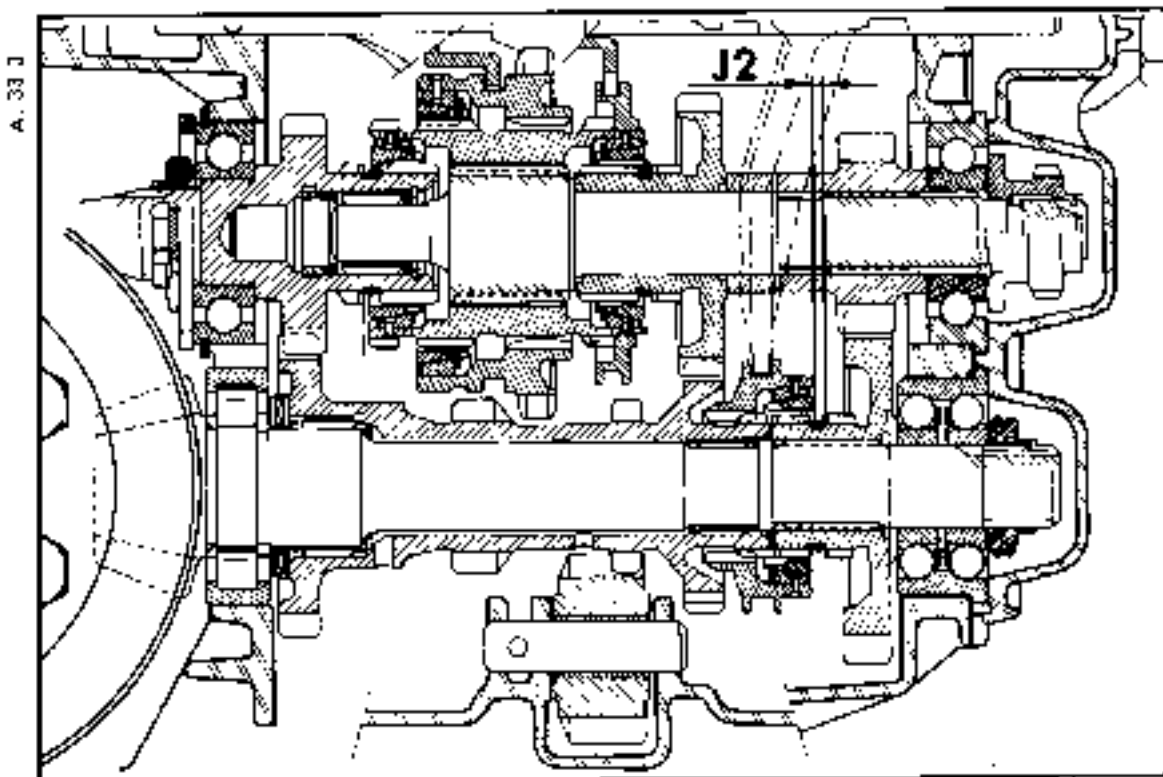


b) Position the shim 1786-T (thickness : 1.8 mm, 0.07 in.) on the mainshaft retarding ring. Slacken the screw holding the fork (for screws with flats use spanner 2677-T).

c) Using the selector fork, bring the sliding ring for 2nd and 3rd gears into contact with the shim so as to obtain a clearance $\Delta L = 1.8 \text{ mm (0.07 in.)}$ between the end of 2nd-3rd sliding ring and the mainshaft dogs.

d) Tighten the bolt holding the fork.

e) Remove the shim.



3731



3. Adjust the 1st-reverse selector fork.

Before carrying out this adjustment, the 2nd-3rd selector fork must without fail be correctly adjusted.

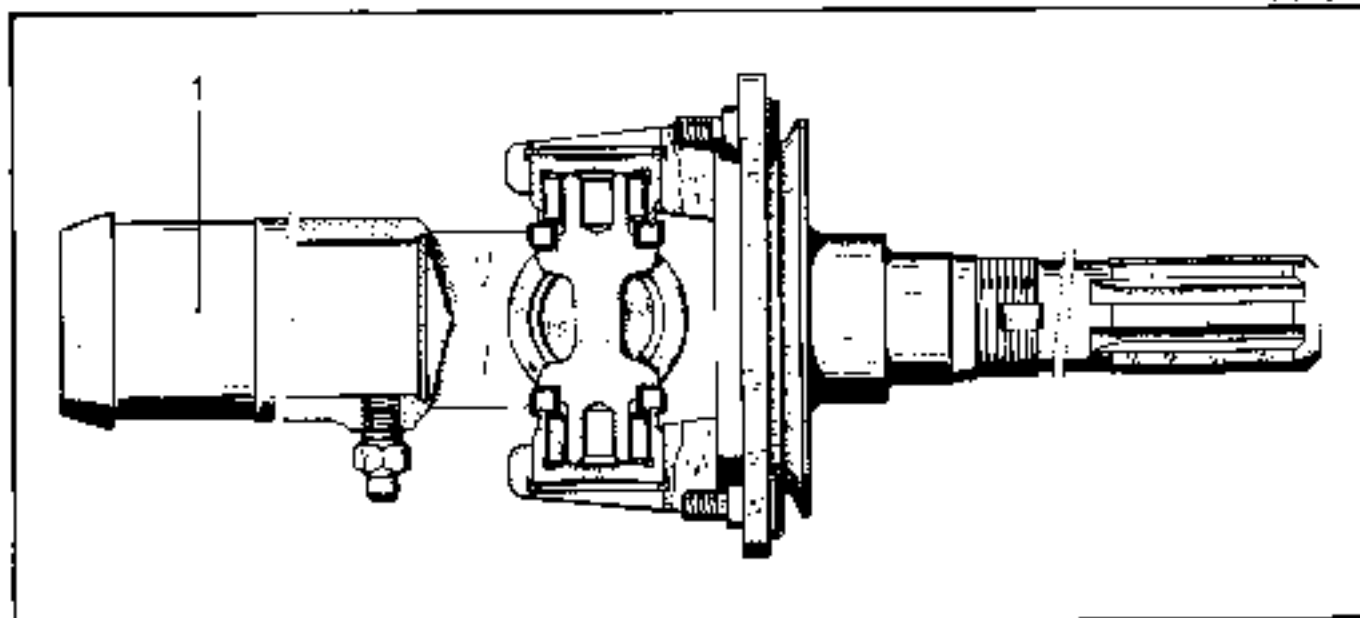
- Make sure that the fork shaft is in neutral position.
- Slacken the screws securing the fork (for screws with flats, use spanner 1677-T).
- Use the selector fork to position the 1st-reverse sliding ring (2) mid-way along its travel on the 2nd-3rd sliding ring (1). In this position, the rear face (a) of the 1st-reverse sliding ring should be in line with the rear end (b) of the ground portion of the 2nd-3rd sliding ring.
- Tighten the screw holding the fork.

4. Adjust the 4th gear selector fork :

- Make sure that the fork shaft is in neutral position.
 - Position the shim on the retarding ring of the step-down gear :
Use shim 1785-T (thickness : 1.50 mm, 0.059 in) for the following vehicles :
- 4/2 → 2-1970
- 4/2 → 2-1972
- DYNAF (1) 4/2 R. 1967 → 3-1968
Use shim 3153-T (thickness : 2.70 mm, 0.1 in) for other vehicles.
 - Slacken the screw holding the fork (for screws with flats use spanner 1677-T).
 - Use the selector fork to bring the 4th gear sliding ring into contact with the shim, so as to obtain a clearance J2 (value determined above) between the end of the 4th gear sliding ring and the driving dogs of the step-down gear.
 - Tighten the bolt securing the fork.
 - Remove the shim.
5. Select each gear in turn : Remove the clamp MR. 630-64-21.
6. Replace the upper cover, taking care of the locking springs (for gearboxes with the gear lever on upper cover).

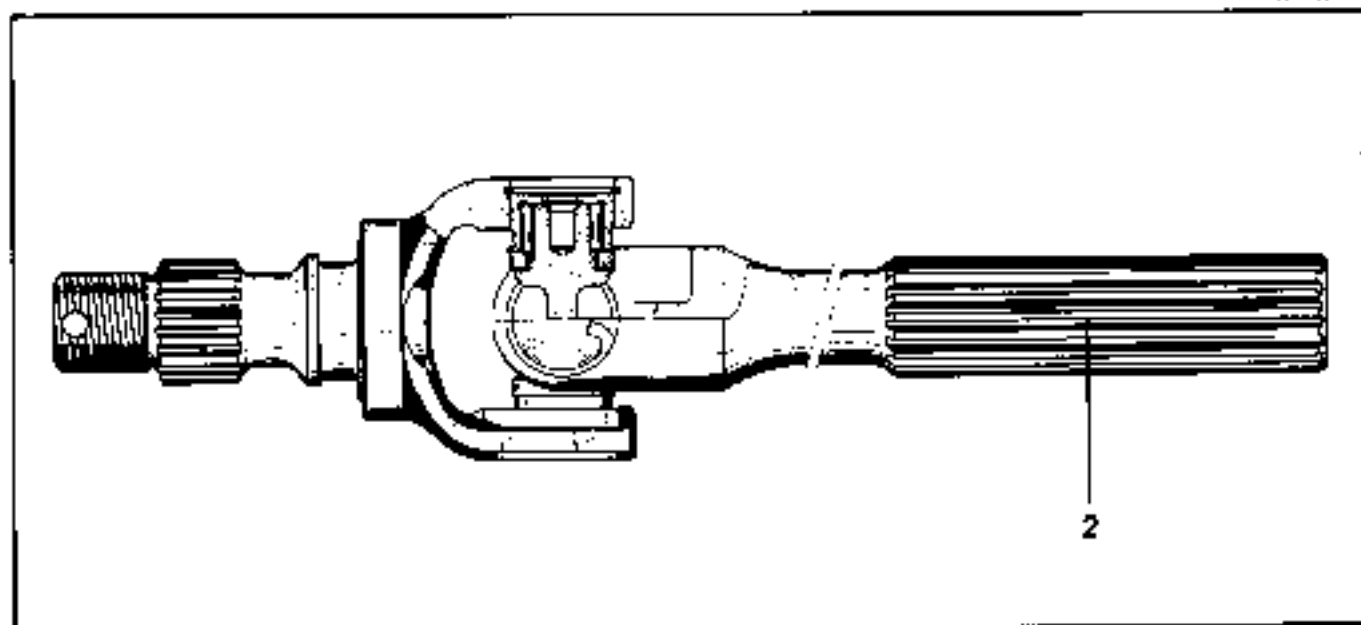
DRIVE SHAFT WITH SINGLE CROSSHEAD UNIVERSAL JOINT

A. 37.6



A. 37.7

Manual B.10.11



CHARACTERISTICS

- Simple crosshead joint, gearbox end.
- Simple crosshead joint, wheel end.
- Fitting : The fork of the sliding yoke (1) must be in line with the fork of the splined shaft (2).

SPECIAL FEATURES

Tightening torque :

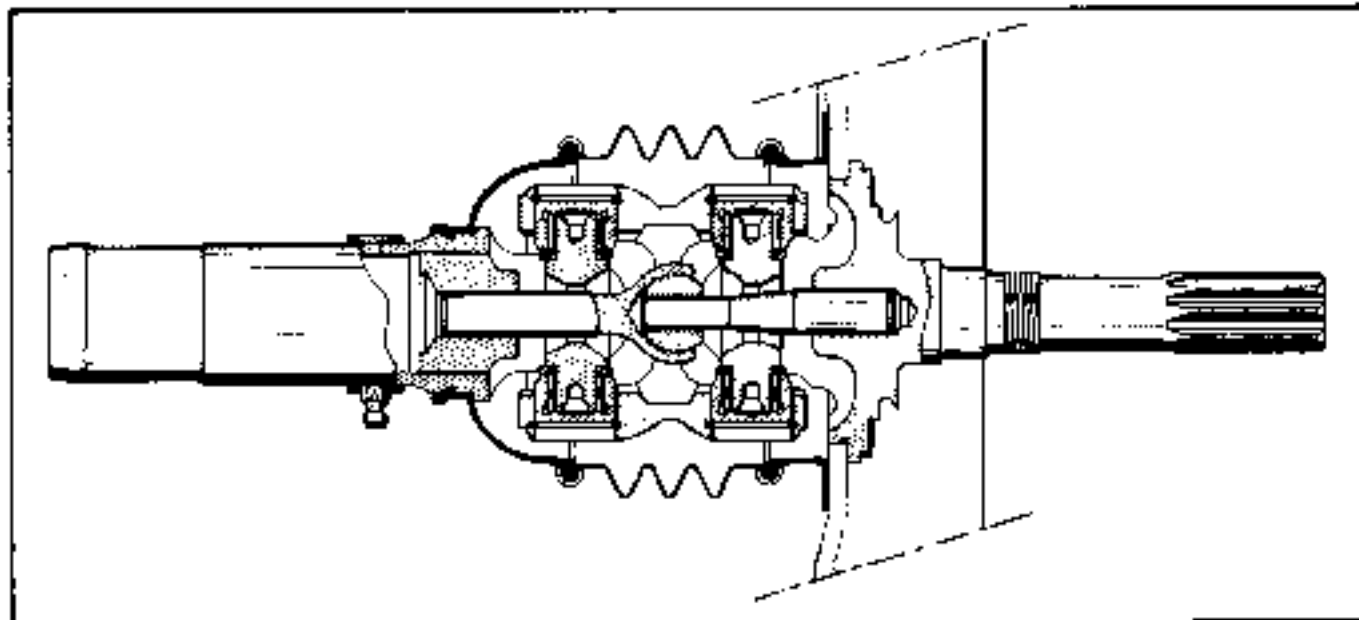
- Fixing nut on hub (face and threads greased) : 35 to 40 dx Nm (252 to 288 ft.lbs)

Lubrication :

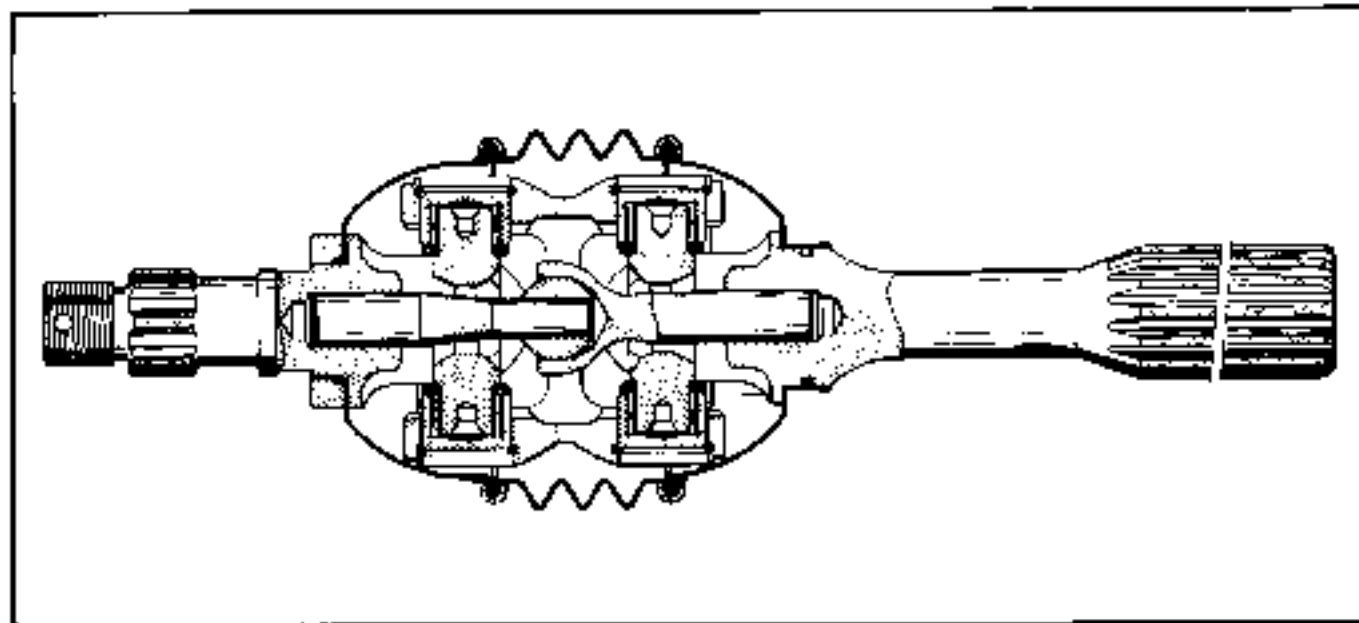
- Grease TOTAL POINTS MS

DRIVE SHAFT WITH DOUBLE CROSSHEAD

A. 37.9



A. 37.9



CHARACTERISTICS

- Constant velocity joint with double crosshead, gearbox end.
- Constant velocity joint with double crosshead, wheel end.
- Fitting - The sliding yoke may take up any position in relation to the splined shaft.

SPECIAL FEATURES

Tightening torque :

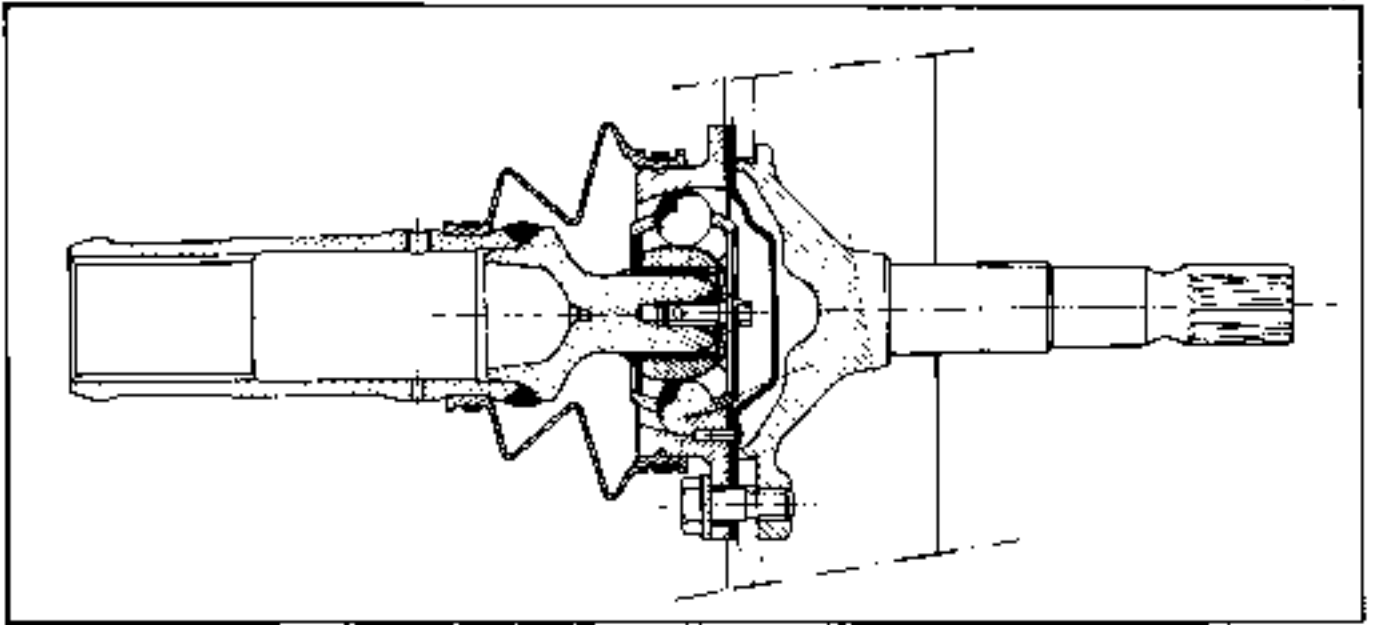
- Fixing nut on hub' 35 to 40 da Nm (257 to 288 ll.lbs)

Lubrication :

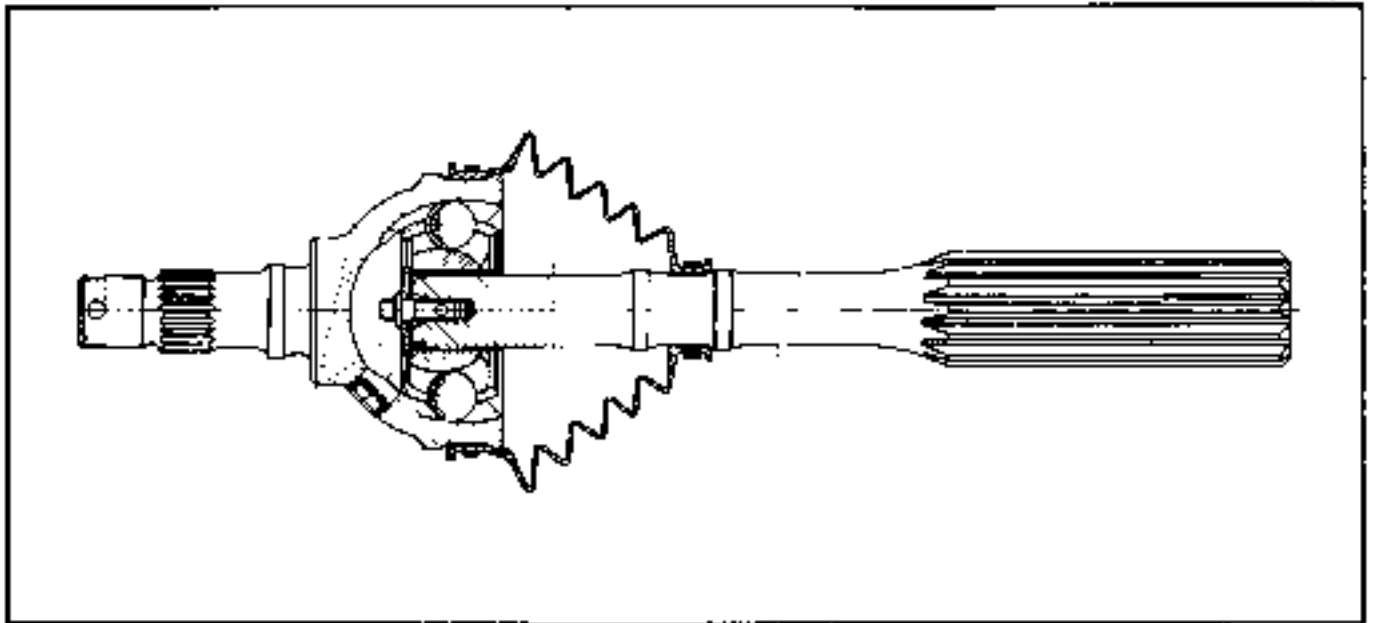
- Grease : TOTAL MULTIS

DRIVE SHAFT WITH BALL TYPE UNIVERSALS

A 37 5P



A 37 2



Manual 315-1

CHARACTERISTICS

Ball type constant velocity joint, gearbox end.

Ball type constant velocity joint, wheel end.

Fitting : The sliding yoke may take to any position in relation to the splined shaft.

SPECIAL FEATURES

Tightening torques

Fixing nut on hub (face and threads greased) : 35 to 40 da Nm (252 to 289 ft.lbs.)

Bolt securing drive shaft to gearbox output shaft : 4.5 to 5 da Nm (32.4 to 36.1 ft.lbs.)

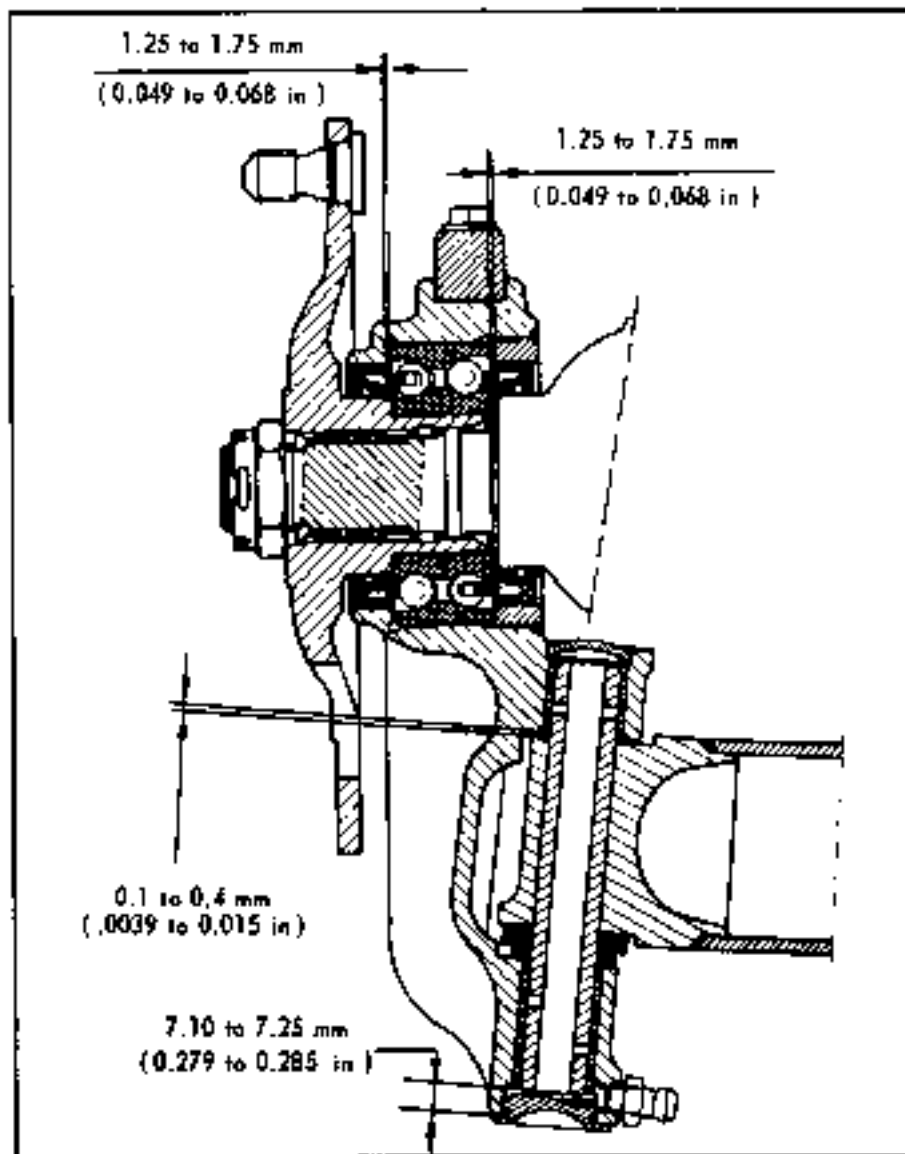
Lubrication :

Grease : TOTAL MULTIGRIP TOTAL MULTIGRIP M2

NOTE : Since October 1971, some vehicles have been fitted with three joints which have a double constant velocity joint at gearbox end and a ball type constant velocity joint at wheel end.

I. SWIVEL

4 J1.6



CHARACTERISTICS

- Carber	} Wheels straight ahead :	1° - 45°
		1° - 25°
	Wheels at full lock :	9° 30' - 20°
- Caster angle (not adjustable) :		15°
- Wheel alignment : toe out :		0 to 3 mm (0 to 0.11 in)

SPECIAL FEATURES

Adjustments :

- Inset of sealing ring in hub ring out :	1.25 to 1.75 mm (0.049 to 0.068 in)
- Inset of sealing ring in relation to bearing thrust face :	1.25 to 1.75 mm (0.049 to 0.068 in)
- Clearance between swivel and arm :	0.1 to 0.4 mm (0.0039 to 0.015 in)
- Inset of lower part of pin in relation to swivel :	7.10 to 7.25 mm (0.279 to 0.285 in)

Tightening torques :

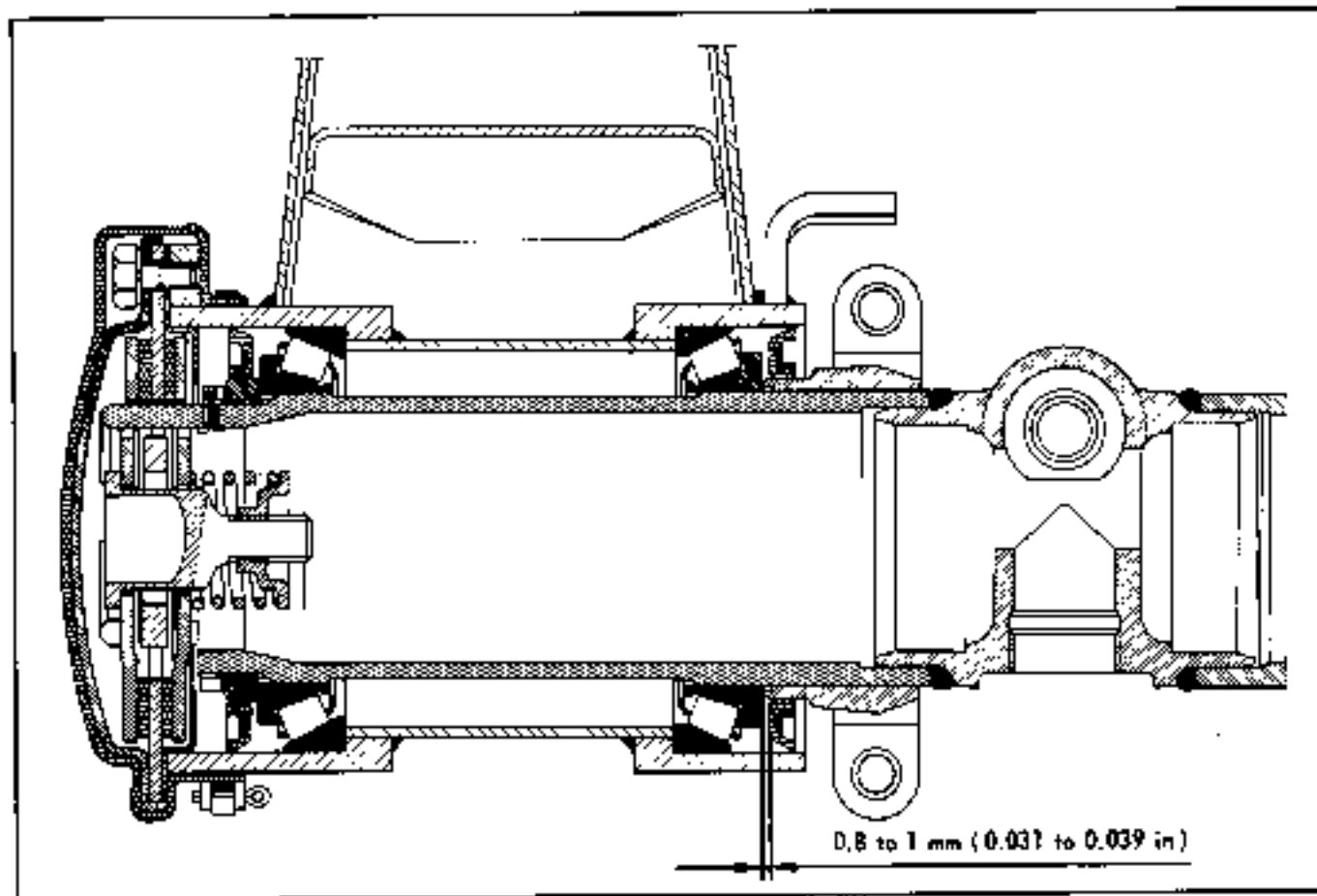
Ring nut on hub bearing (face and threads greased) :	35 to 40 da Nm (252 to 288 ft.lbs)
Screw for swivel coupling lever :	1,5 to 2 da Nm (10,83 to 14,44 ft.lbs)
- Nut locking drive shaft to hub (face and threads greased) :	35 to 40 da Nm (252 to 288 ft.lbs)
- Nuts holding inertia dampers	5 da Nm (43,32 ft.lbs)
Lower plug on swivel pin	2 da Nm (14,22 ft.lbs)

Lubrication :

- Swivel pin :	TOTAL MULTIS MS grease
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II. ATTACHMENT OF ARMS TO CROSSMEMBER.

A. 41.3

**SPECIAL FEATURES**

- Inset of sealing ring in relation to bearing thrust face :	0,8 to 1 mm (0,031 to 0,039 in)
--	---------------------------------

Tightening torques :

- Securing screws for crossmember :	5 da Nm (36,10 ft.lbs)
- Crystallized nuts holding suspension arms on crossmember :	5 da Nm (36,10 ft.lbs)
- Wheel nuts :	4 to 5 da Nm (28,88 to 43,32 ft.lbs)

The friction dampers have been eliminated on vehicles fitted with front shock absorbers

I. CHECKING THE CAMBER.

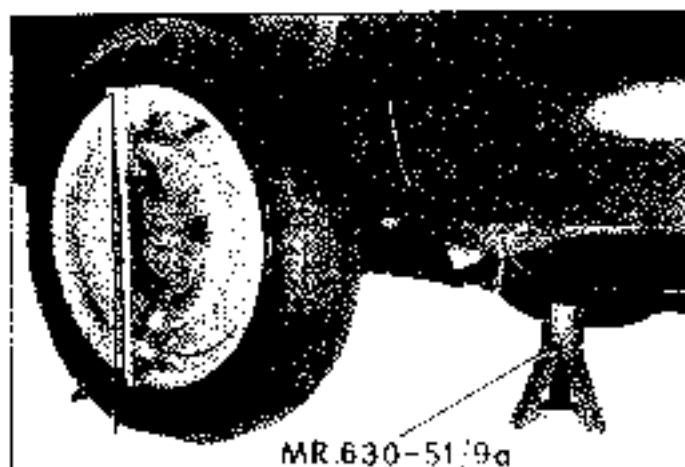
5249



This operation should be carried out after an impact affecting the suspension arms. However, if there is excessive play in the swivel pin, no measurement can be made.

1. Check that the front wheel (on impact side) is not out of true.

4861



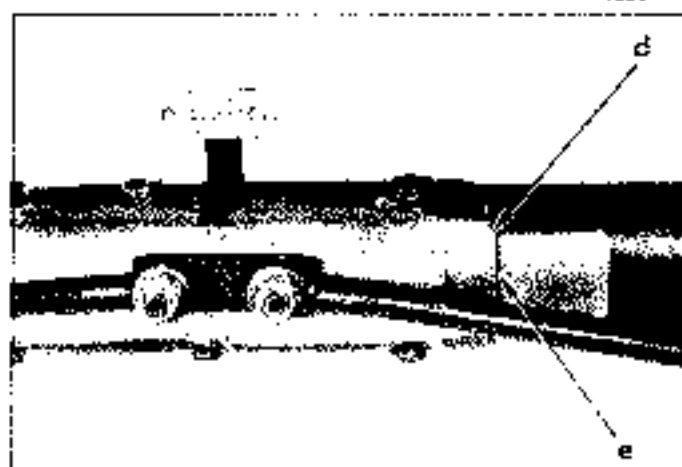
2. Put the vehicle on a flat horizontal ground.

The vehicle height is measured at the front and at the rear between the ground and the platform, at a point « a » equidistant from the two screws holding the crossmember (b - c) and near the stop plate.

Manual B16-7

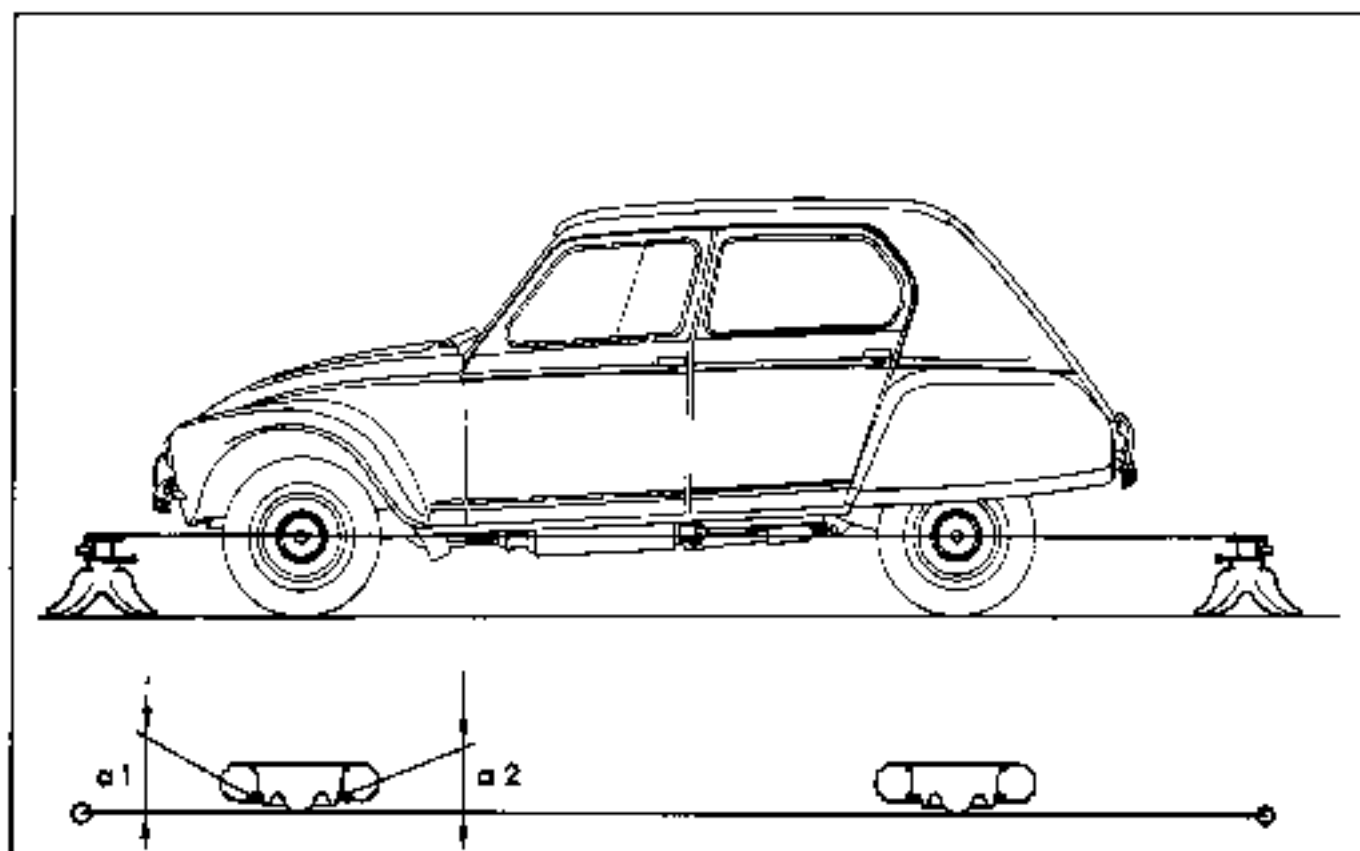
3. Chuck up the vehicle at the front under the platform, so as to obtain a distance of 207 mm (8.14 in.) between the ground and the point « a » on each side of the vehicle. Use stands MR. 630-51/9 a (height = 207 mm, 8.14 in.).

4863



4. Align the front wheels :

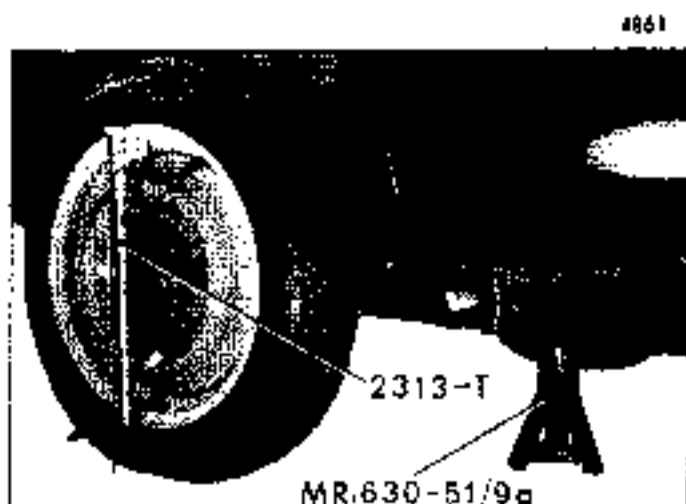
- a) Bring the mark « e » engraved on the steering movable cover plate up to the ball pin guide, left-hand side, at point « d ».



b) To align the wheels of a vehicle which has no mark engraved on the steering movable cover plate, proceed as follows :

Stretch a wire at wheel centreline height : it should be into contact with the wheels as shown on diagram above (if necessary, remove mud flap).

Put the front wheel parallel to the wire by turning the steering wheel until the distances « a1 » and « a2 » are equal.



5. Measure the camber of the wheel using rig 2313-T. The wire must be in the zone « 1 » of the rig. Otherwise, remove the suspension arm for inspection.

NOTE : If only an old rig 2315-T is available, it is essential to convert it to rig 2313-T by fitting the plates 2312-T (according to manufacturer's instructions).

4862



6. Raise the vehicle until the front wheels leave the ground.

Turn the wheel to full lock, the swivel must be in contact with the lock screw. When working on the right-hand wheel, lock fully to the right, and vice-versa.

Replace the vehicle on stands MR. 630-51/9 a (height : 207 mm, 8.14 in) or on chocks

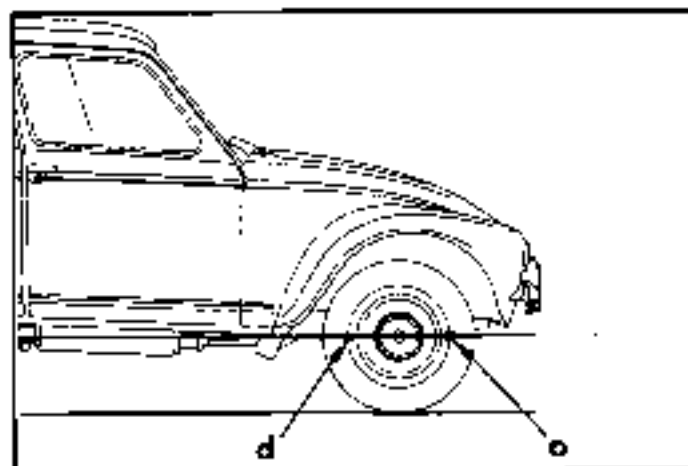
7. Measure the camber of the wheels using fig 2313-C
The camber must be in gear ± 2 on the fig.

Otherwise, remove suspension arm for inspection.

Manual B16.1

II. CHECKING AND ADJUSTING THE FRONT WHEEL PARALLELISM.

A. 41-8



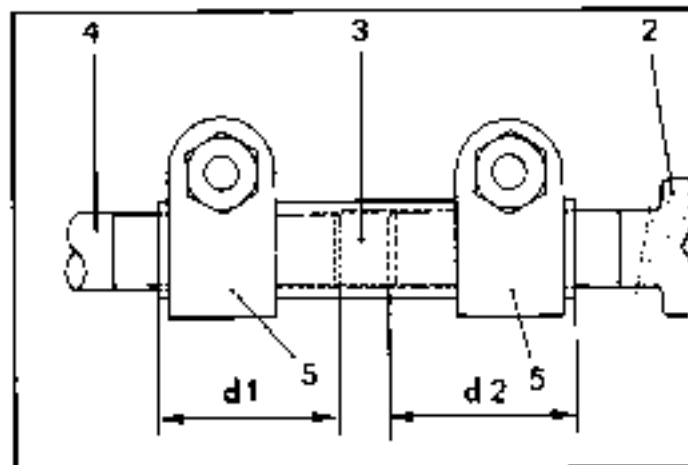
The wheels must toe-out. The difference between the front and the rear must be between 0 and 3 mm (0 and 0.11 in). To carry out this check, the chassis heights at the front and at the rear must have been correctly adjusted.

1. Place the wheels in straight ahead position (see chapter I, same operation).
2. **Checking the front wheel toe-out :**
Use a gauge existing in several models on the market.
Proceed as follows :
At point « a », level with wheel centreline measure the distance between the front outer edges of the rims. Mark the measured points with chalk. Move the car forward until the wheels have rotated through half a turn, so that the marks are once again level with the wheel centreline, in « b ». Measure the distance between these marks (now behind the wheel centre). If it is smaller by 0 to 3 mm (0 to 0.11 in), the setting is correct. Otherwise adjust the toe-out.

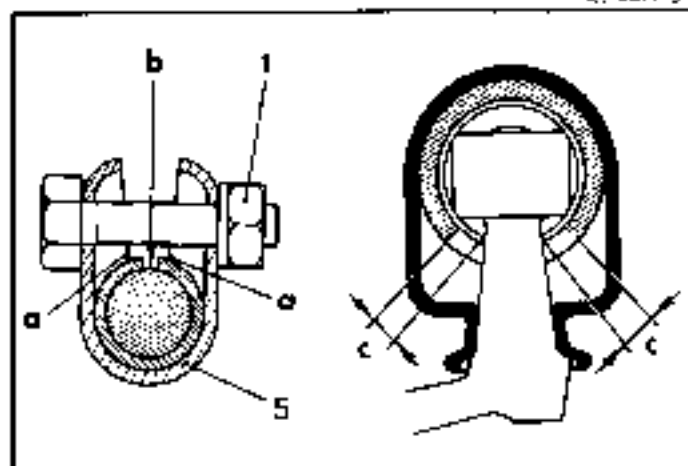
4855



A. 44-1 u



A. 44-1 v



4857



3 Adjusting the front wheel toe-out :

Without removing the wings, slacken the nuts (1) on the bolts holding the right-hand and left-hand sleeves (3). Rotate each sleeve by the same amount to obtain the correct setting.

One complete turn of the sleeve alters the wheel position by 6 to 7 mm (0.23 to 0.27 in.).

Make sure that the amounts by which the track (4) and the end-piece (2) are screwed into the sleeves (3) are equal ($d1 = d2 \pm 2 \text{ mm}$, 0.078 in).

The locking collars (5) holding the sleeves (3) should be arranged vertically, the balls being located at the top. The position of slot (b) is not important, so long as it is not opposite to points (c).

The clearance (c) for steering ball pin movement should be evenly distributed. Tighten the nuts (1) on the bolts holding the sleeves to a torque of 1 da Nm (7.22 ft.lbs.).

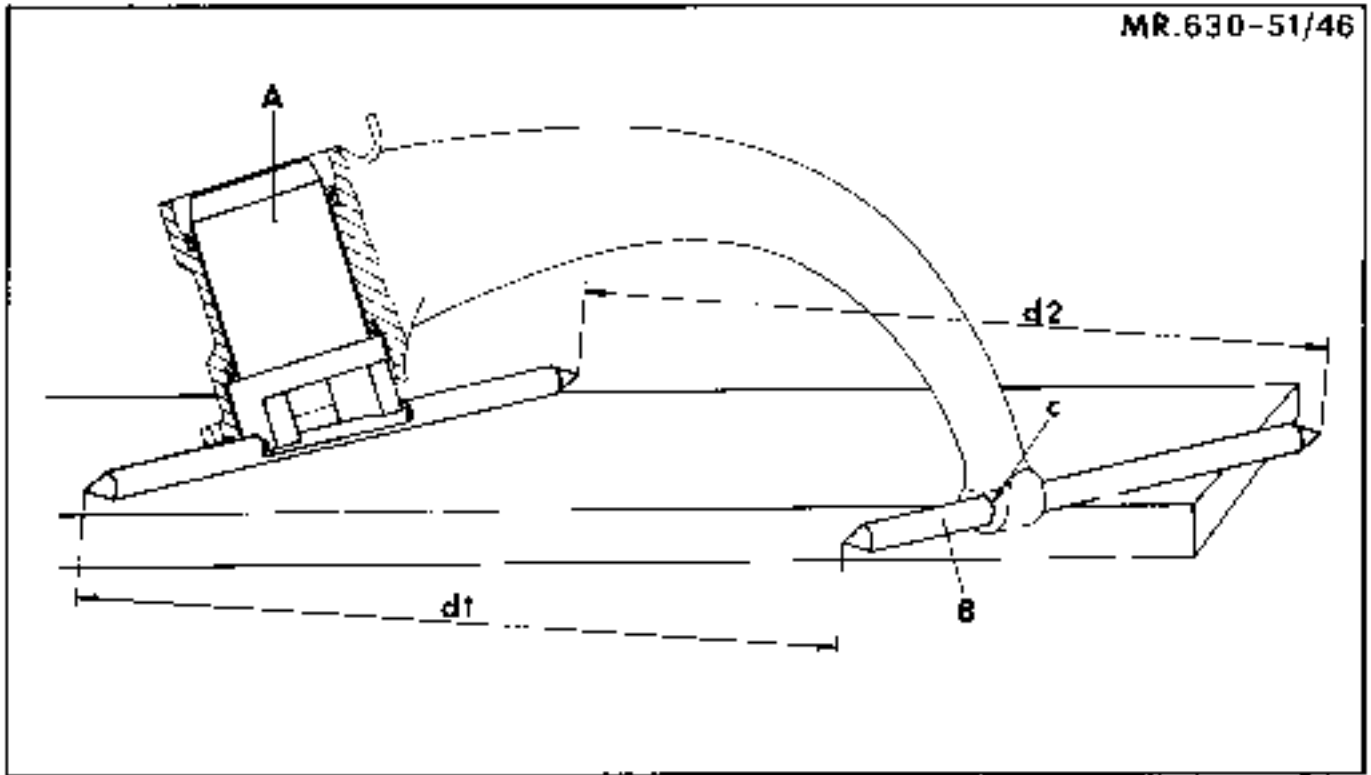
III. ADJUSTING THE STEERING ANGLE.

To carry out this operation, the chassis heights at the front and at the rear must have been correctly set (see relevant operation).

- Put the vehicle on a flat and horizontal ground.
- Turn the steering wheel to full lock. Make sure that the clearance between the tyre and the arm is approximately 5 mm (0.19 in.) and that the clearance between the inertia damper and the arm, on opposite side, is 1 mm (0.039 in.) at least. Otherwise, adjust the lock stop screw (6) located on the arm.
- Check the steering lock of the other wheel.

IV. CHECKING A DISMANTLED FRONT SUSPENSION ARM.

MR.630-51/46



Manual RT6-1

1. Remove the suspension arm and strip it down :
(See relevant operation).

Rotate mandrel A until both legs rest *symmetrically* on the swivel plate.

Measure the distance « d1 » between the points at one end and then the distance « d2 » at the other end.

2. Check the arm :

Place the arm on an inspection rig.
(MR. 630-51-46).

These distances should be the same to within 10 mm (0,39 in). Otherwise replace the arm.

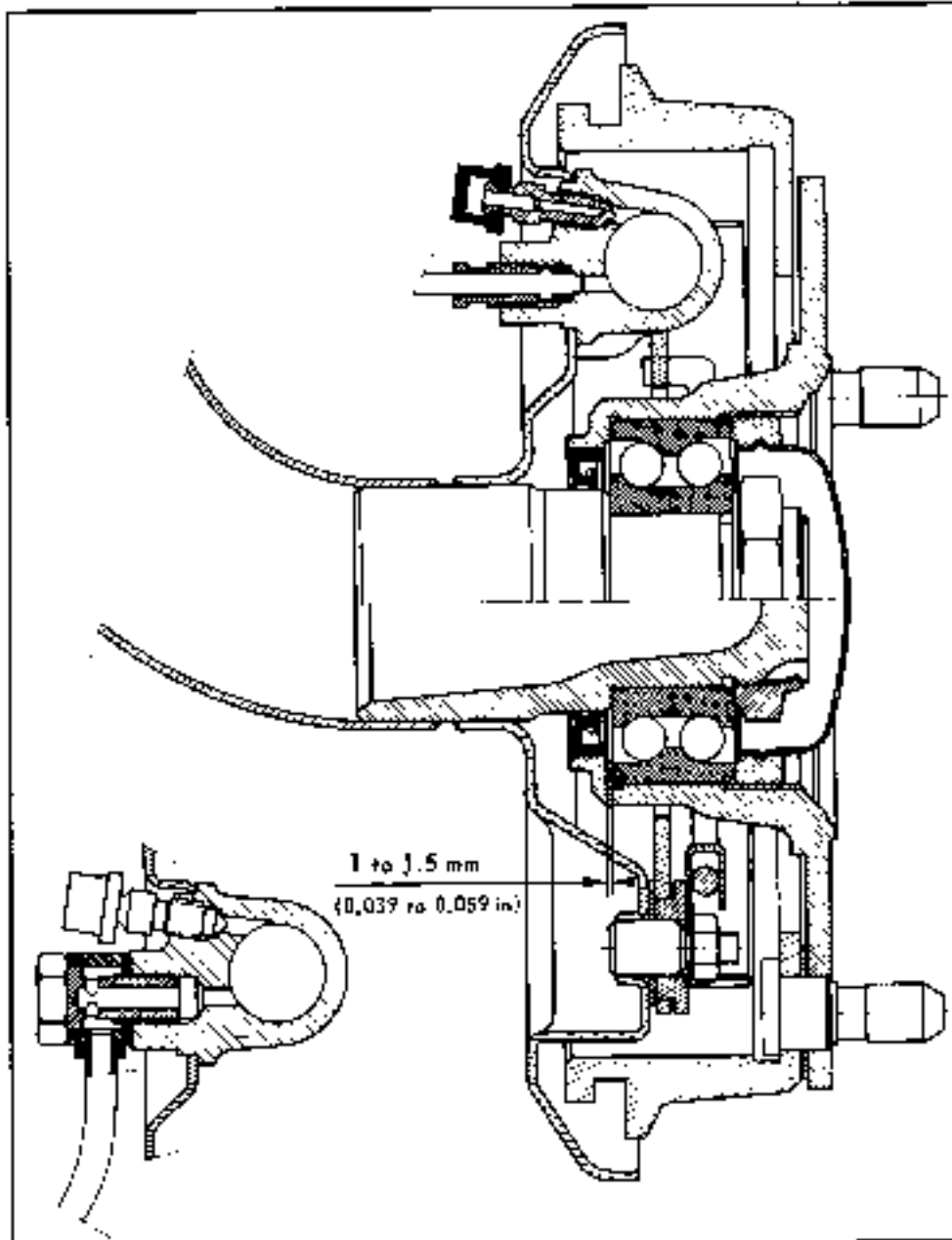
Insert pin B in the base « c » of the swivel arm.

Insert mandrel A in the hub axle

3. Refit the accessories and re-install the arm :
(See relevant operation).

REAR HUB

A.45450 a



CHARACTERISTICS

Wheel alignment (not adjustable) :

- Vehicles produced before March 1969 (toe-in) : 0 to 8 mm (0 to 0.31 in.)
- Vehicles produced since March 1969 (toe-in or toe-out) : 0 ± 4 mm (0 ± 0.15 in.)
- Camber (not adjustable) : 0° to $0^\circ 30'$

SPECIAL FEATURES

Adjustment :

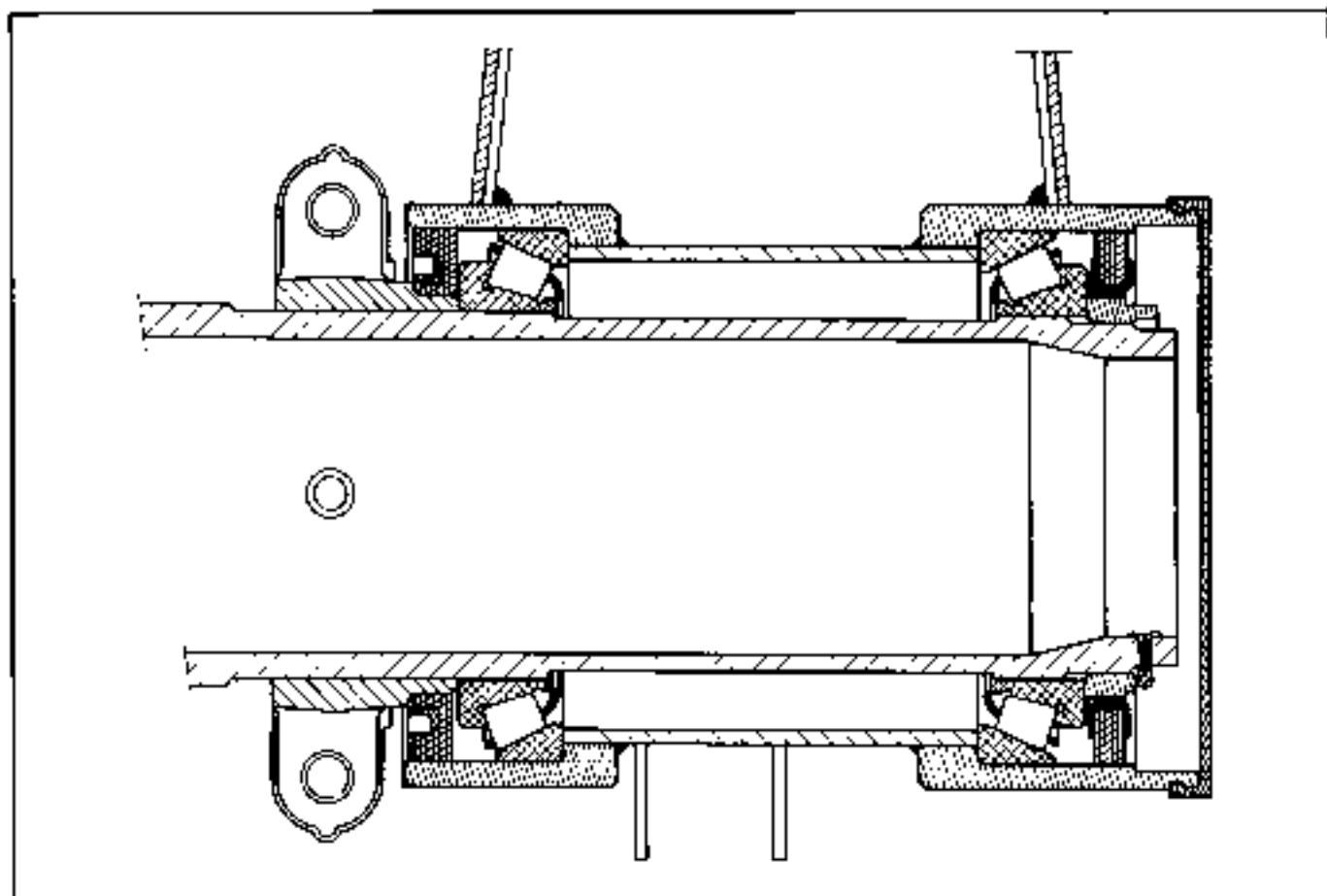
- Inset of hub sealing joint in relation to the bearing thrust collar : $1^{+0.3}$ mm ($0.039^{+0.012}$ in.)

Tightening torques :

- Nut locking hub bearing (face and threads greased) : 35 to 40 da Nm (252.7 to 288.8 ft.lbs)
- Cap nut (ax hub (face and threads greased) : 35 to 40 da Nm (252.7 to 288.8 ft.lbs)

ATTACHMENT OF ARMS TO CROSSMEMBER

A 42-S0



SPECIAL FEATURES

Tightening torques :

- Securing screws for crossmember 4 to 5 da Nm (28.88 to 36.10 ft.lbs) ;
- Castellated nuts holding arms on crossmember 5 da Nm ; 36.10 ft.lbs ;
- Wheel nuts : 4 to 5 da Nm (28.88 to 43.32 ft.lbs) ;

I. CHECKING THE REAR ARMS ON THE VEHICLE

These tests must be carried out if, after an impact, the vehicle behaves abnormally on the road or shows unusual tyre wear.



4949

1. Check the position of the rear wheels :

Vehicles produced up to March 1969 :

The wheel toe-in must be 0 to 2 mm (0 to 0.31 in).

Vehicles produced since March 1969 :

The wheels may have either a toe-in or a toe-out between 0 and 4 mm (0 to 0.15 in).

The front and rear heights must have been correctly set before carrying out this check (see relevant operation).

At the level of the wheel centreline, measure the distance between the front outer edges of the rims. Mark the measured points with chalk. Move the car forward until the wheels have rotated through half a turn so that the marks are once again level with the wheel centreline. Measure the distance between these marks (now behind the wheel centre). Use a gauge available in several models on the market.

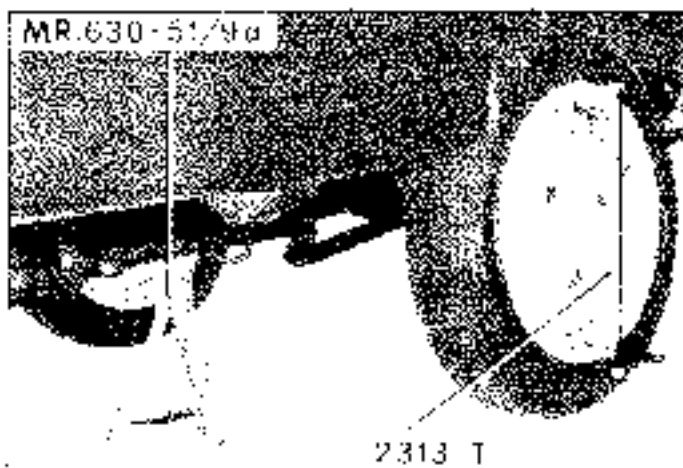
If the toe-in or toe-out is not within tolerance :

One arm or both arms are out of true. In this case :
- either check the position of the rear arms on the vehicle (see paragraphs 3 to 7 in this same operation);

- or remove the arm and check it on a surface plate (see chapter II, same operation).

If the toe-in or the toe-out is within tolerance :

It is necessary to check the camber.



4938

2. Check the camber of the rear wheels :

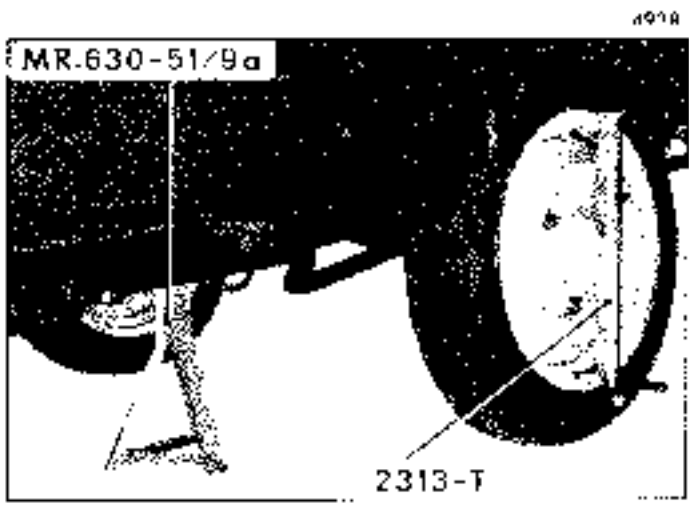
a) Check the tyre pressure and correct it if necessary.

Put the vehicle on a flat horizontal ground.

b) Raise the vehicle until the point 'a' is 295 mm (11.61 in) off the ground.

This point is halfway between the two bolts holding the crossmember, and near the stop plate.

To carry out this operation, use stands MR. 630-51/9 a (height = 295 mm, 11.22 in) fitted with packing pieces 10 mm (0.39 in) thick.



c) Remove the rear wing, on the side to be checked (if necessary).

d) Check the contact using rig 2313-T. *The arrow should be in the zone 1/3 of the rig.* Otherwise, remove the arm for inspection (see relevant operation).

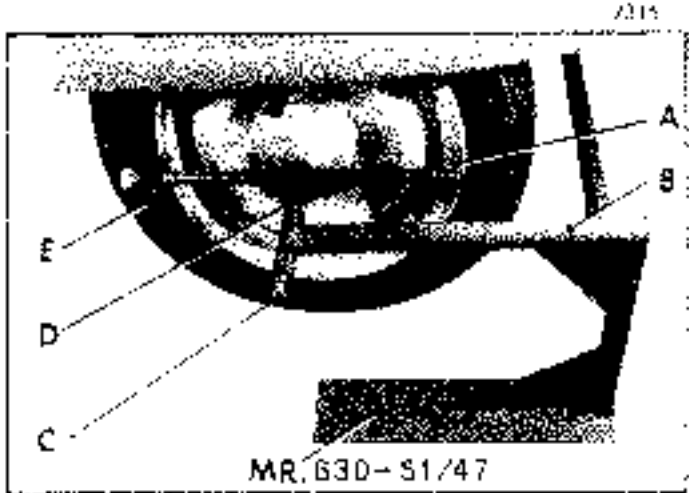
NOTE : A rig 2315-T can be converted into a rig 2313-T by fitting plates 2312 T. Follow the manufacturer's instructions.

Checking the position of rear arms.

NOTE : In case a tyre shows unusual wear, it may be necessary to check the toe in of each rear wheel.

3. Put the vehicle on a flat horizontal ground. The front and rear heights must be correctly adjusted (see relevant operation)

4. Arrange rig MR. 630-51/47 as indicated on the picture.



Slacken movable gauge E and move it away from the rim. Bring the pointer A into contact with the rim at the height of the stub axle centreline by sliding the fork C in the support B. Lock the fork by tightening screw D.

Repeat this operation on the other wheel with the other side of the rig

At each side, bring the movable gauge E into contact with the rim. On each scale, read the number opposite the mark - a - (see diagram on following page).

This figure will be noted as :
 - either Q1, for a toe-out,
 - or P1 for a toe-in.

5. Release fork C and move the vehicle forward until the wheels have rotated through half a turn

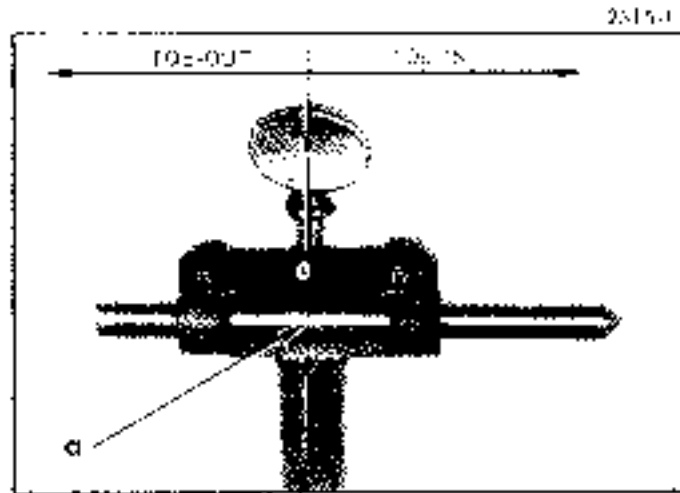
6. Repeat the operations described in paragraph 4. Note again the figures shown on the scales :
 - either Q2, for a toe-out,
 - or P2 for a toe-in.

7. Measure the parallelism for each wheel :

Several cases may arise

- a) Both measurements indicate toe-out :
Take the average of the two readings

$$\frac{O1 + O2}{2}$$



- Both measurements indicate toe-in :
Take the average of the two readings .

$$\frac{P1 + P2}{2}$$

- b) One of the measurements indicates toe-out and the other toe-in :

Two cases may arise :

- O is greater than P :

The position of the arm will be

$$\frac{O - P}{2}$$

- P is greater than O :

The position of the arm will be :

$$\frac{P - O}{2}$$

On vehicles produced up to March 1969, each wheel must have a toe-in lying between 0 and 4 mm (0 and 0.15 in).
On vehicles produced since March 1969, each wheel must have a toe-out or a toe-in lying between 0 and 2 mm (0 and 0.078 in).

The arms must be replaced if the average :

$$\frac{O1 + O2}{2} \quad \text{or} \quad \frac{P1 + P2}{2} \quad \text{or} \quad \frac{O - P}{2} \quad \text{or} \quad \frac{P - O}{2}$$

does not lie between : 0 and 4 mm (0 and 0.15 in) (Vehicles produced up to March 1969)
or between : 0 and 2 mm (0 and 0.078 in) (Vehicles produced since March 1969)

NOTE :

The differences between the measurements : O1 and O2 or O and P, taken in paragraph 7, arise only from wheel run-out.

The difference in values read on the scale is double the actual run-out of the rim at the points taken. If it is greater than 4 mm (0.15 in) (which corresponds to a measured run-out of $\frac{4}{2} = 2$ mm (0.078 in)) the wheel must be checked, provided that the actual run-out of a rim must not exceed 2 mm (0.078 in).

II. CHECKING A REAR AXLE ARM, REMOVED.

1. Remove the arm (see relevant operation).

2. Strip the arm (see relevant operation).

It is not necessary to remove the adjustment coils.

3. Check the arm :

Place the arm on an inspection rig (rig MR. 630-51) (46).

Insert the stub axle into the bore of the plate E and rest the plate on a surface plate.

Insert the mandrel A into the bore of the arm. Check up the arm mounting and until the plate E is fully in contact with the surface plate.

Check the toe-in (see fig. 1) :

a) Arrange the inclined pin B of the mandrel A parallel to the welding lines of the arm.

b) Using a scriber, measure the height $h1$ at one point. Turn the mandrel half a turn and read the height $h2$ at this same point.

The difference between the two measurements must lie between 0 and 1.7 mm (0 and 0.047 in.). The smaller of these two heights can correspond to either end of the arm.

Check the camber (see fig. 2) :

a) Arrange the pin B of mandrel A perpendicular to the welding lines of the arm.

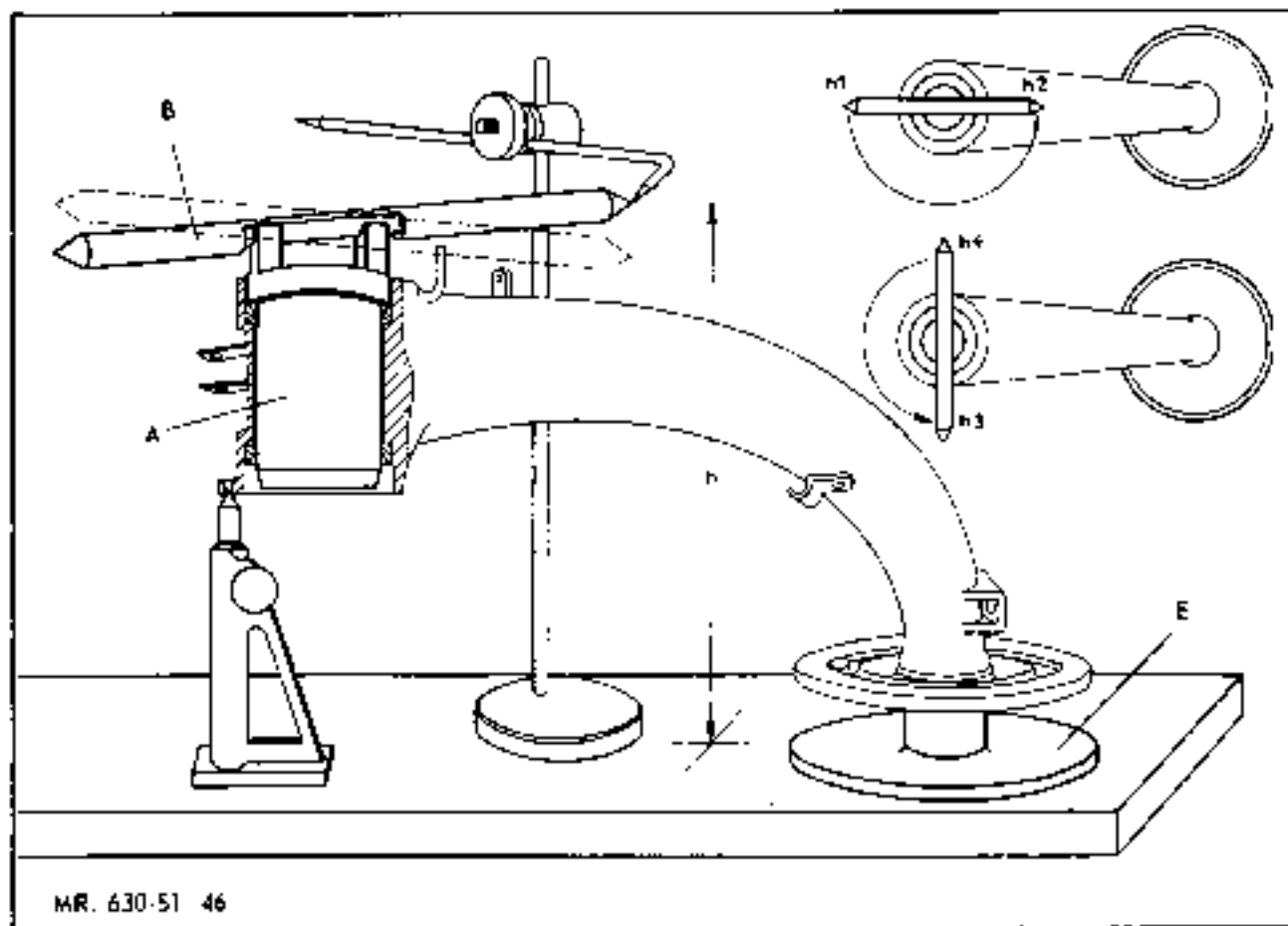
b) Using a scriber, measure height $h3$ at one point. Turn the mandrel half a turn and read the height $h4$ at this same point.

The difference between the two measurements must lie between 0 and 3.5 mm (0 and 0.13 in.). The smaller height should always be on the side of the knife carrying plate. Otherwise the arm must be renewed.

4. Replace accessories on the arm : (see relevant operation).

5. Refit the arm : (see relevant operation).

A. 42-3





Supplément No. 1 à l'opération No. 1 - 00001

DIAGRAM OF THE SUSPENSION SYSTEM

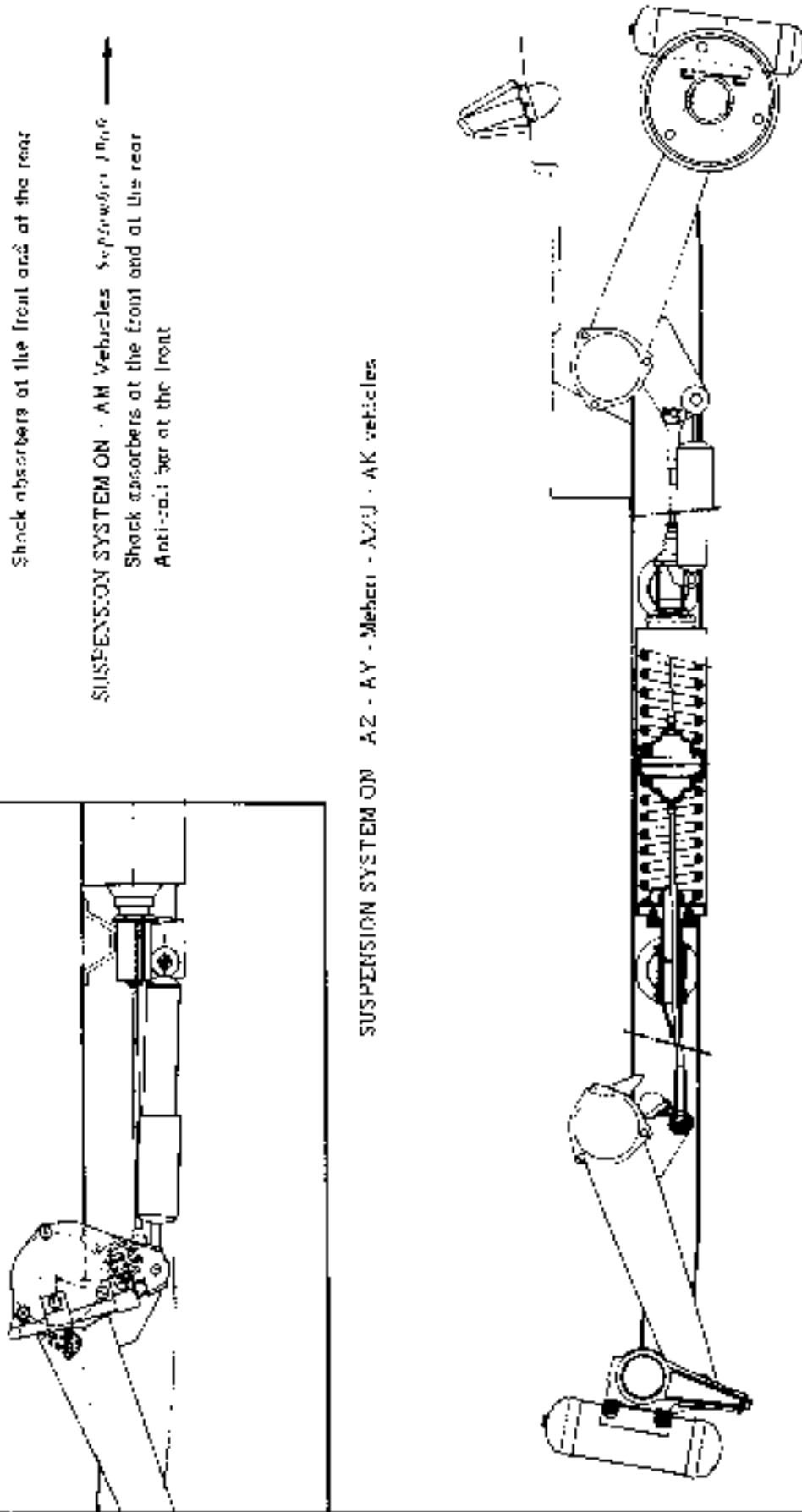
A. 43-55

A. 43-57

SUSPENSION SYSTEM ON : AM Vehicles  September 1969
Shock absorbers at the front and at the rear

SUSPENSION SYSTEM ON : AM Vehicles  September 1969
Shock absorbers at the front and at the rear
Anti-roll bar at the front

SUSPENSION SYSTEM ON : AZ - AY - Meben - AZU - AK vehicles



CHARACTERISTICS

Suspension : A - A vehicles \longrightarrow 7/1976

Interacting type I on each side of the vehicle, the suspension arms are connected through the suspension unit.

- AM 3 - AMF 3 - AVC 3 - AK : 7/1976 \longrightarrow 9/1978
 - AY (series CD) : 2/1978 \longrightarrow 2/1978
 - AK (series AK) : 7/1975 \longrightarrow 2/1978
- } (date of introduction)

Shock absorbers :

- Hydraulic on all four wheels for all A - A vehicles (5/1975 \longrightarrow)
- Hydraulic on rear wheels only for the following vehicles AZ - AY - AZL and AY - CA (Métaria) \longrightarrow 9/1975

Friction dampers :

Friction dampers on the front wheels of A - A vehicles which are not fitted with hydraulic shock absorbers.

Inertia dampers :

- On all four wheels for all vehicles produced up to November 1975.
- On the front wheels for 2 CV 4, DYANE 4 and AZU (4 x 4) and between November 1970 and September 1975.
- On the front wheels for 2 CV 6 and DYANE 6 produced between May 1971 and September 1975.
- On the front wheels for AY - CA (Métaria) series and for AK (4 x 4) and between September 1971 and September 1975.
- On the front wheels for AM series produced between September 1971 and November 1975.

Since September 1975, all A - A vehicles have been fitted with hydraulic dampers on all four wheels. This has given rise to the elimination of inertia dampers.

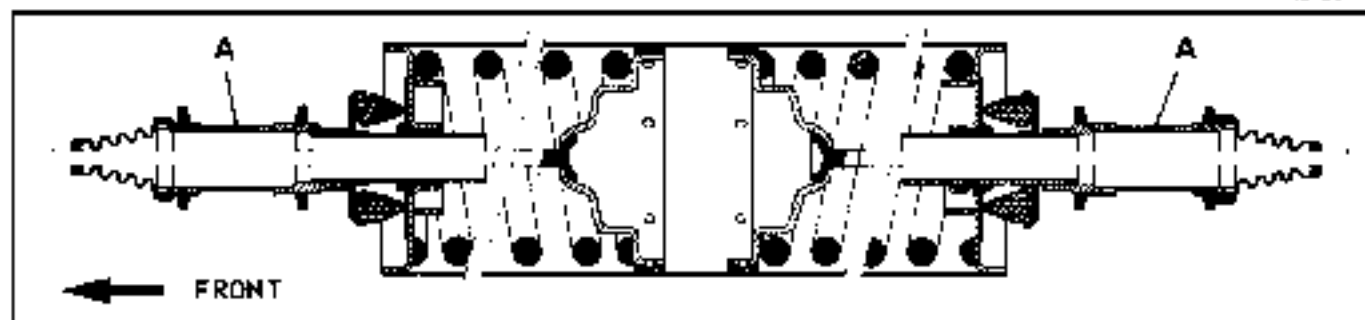
Anti-roll bars :

- Anti-roll bars have been fitted at the front on the following vehicles :
 - AM : 2/1969 \longrightarrow 9/1976
 - AMB : 2/1969 \longrightarrow 9/1976

Heights :

CAUTION : The vehicle heights are measured on both H and R.H.s. (i.e.) at the front and at the rear, between the ground and the vehicle platform at a point equidistant from the two wheels (including the 1st frame member and near the 300 mm).

Type of vehicles	Type	Front heights (mm ± 0.1)	Rear heights (mm ± 0.1)
AZ \longrightarrow 7/1969	125 - 380 X	178 ± 2.5 ; 167 ± 0.09	280 ± 2.5 ; 11.02 ± 0.09
	135 - 380 X	198 ± 2.5 ; 181 ± 0.09	291 ± 2.5 ; 11.45 ± 0.09
AZ (2 CV 4 and 2 CV 6)	125 - 380 X	190 ± 2.5 ; 167 ± 0.09	290 ± 2.5 ; 11.02 ± 0.09
AY (Dyane)	125 - 380 X	188 ± 2.5 ; 167 ± 0.09	280 ± 2.5 ; 11.02 ± 0.09
AY - CA (Métaria)	135 - 380 X 135 - 380 X4 + S	234 ± 5 ; 192 ± 0.19	348 ± 5 ; 13.62 ± 0.19
AZU	125 - 380 X	195 ± 2.5 ; 167 ± 0.09	335 ± 2.5 ; 13.19 ± 0.09
AK	135 - 380 X	172 ± 2.5 ; 164 ± 0.09	317 ± 2.5 ; 11.68 ± 0.09
AY (series CD)	135 SR 15 ZX	212 ± 5 ; 178 ± 0.19	317 ± 5 ; 12.48 ± 0.19
AM	125 - 380 X	190 ± 2.5 ; 168 ± 0.09	280 ± 2.5 ; 11.02 ± 0.09
AMB	135 - 380 X	195 ± 2.5 ; 167 ± 0.09	290 ± 2.5 ; 11.45 ± 0.09



Suspension units fitted on AZ and AZU vehicles :

TYPE OF VEHICLE	Free length of springs and dia. of wire in mm (in)		Length of tie-rods in mm (in)		Length of end pieces in mm (in)	
	FRONT	REAR	FRONT	REAR	FRONT	REAR
AZ 9/1962 → F 1963 AZU 6/1955 → 3/1963	165 (7.28) 14.35 (0.56)	170 (6.69) 15.25 (0.6)	623 (24.52)	644 (25.35)	191 (7.51)	173 (6.81)
AZ 1/1961 → 4/1965 AZU 5/1961 → 4/1965	165 (7.28) 14.3 (0.58)	170 (6.69) 15.25 (0.6)	600 (23.62)	644 (25.35)	173 (6.81)	173 (6.81)
AZ 4/1965 → 2/1970 AZU 4/1965 → 4/1972 AZ (2 CV 4) 1/2/1970 → 10/1971 AZ (2 CV 6) 1/2/1970 → 10/1971	185 (7.28) 14.8 (0.58)	170 (6.69) 15.25 (0.6)	600 (23.62)	642 (25.27)	173 (6.81)	162 (7.16)
AZ (2 CV 4) 10/1971 → 9/1972 AZ (2 CV 6) 10/1971 → 9/1972	193 (7.59) 15.25 (0.6)	170 (6.69) 15.25 (0.6)	600 (23.62)	642 (25.27)	173 (6.81)	162 (7.16)
AZU 4/1972 → 2/1976	190 (7.59) 15.25 (0.6)	170 (6.69) 15.25 (0.6)	593 (23.34)	611 (24.05)	173 (6.81)	162 (7.16)
AZ (2 CV 4) 9/1972 → AZ (2 CV 6) 9/1972 →	193 (7.59) 15.25 (0.6)	170 (6.69) 15.25 (0.6)	593 (23.34)	632 (24.88)	173 (6.81)	162 (7.16)

Suspension units fitted on DYANE - DYANE 4 and DYANE 6 :

AYA 8/1967 → 1/1968 AYA 2 1/1968 → 10/1968 AYA 3 1/1968 → 10/1968 AYB 10/1968 → 12/1968	193 (7.59) 14.8 (0.58)	170 (6.69) 15.25 (0.6)	600 (23.62)	642 (25.27)	173 (6.81)	162 (7.16)
AYA 2 10/1968 → 9/1975 AYB 12/1968 → 4/1972	193 (7.59) 15.25 (0.6)	170 (6.69) 15.25 (0.6)	600 (23.62)	642 (25.27)	173 (6.81)	162 (7.16)
AYA 1 9/1972 → AYB 5/1972 →	193 (7.59) 15.25 (0.6)	170 (6.69) 15.25 (0.6)	593 (23.34)	632 (24.88)	173 (6.81)	162 (7.16)

Suspension units fitted on AK vehicles

AK All Types 9/1962 → 1/1968 5/1968 → 7/1976	225 (8.85) 192 (7.55) 17.15 (0.67)	238 (9.37) 17.95 (0.7) 17.15 (0.67)	642 (25.27)	615 600 (23.62)	197 (7.75)	197 (7.75)
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Suspension units fitted on AM vehicles :

AM → 1/1969	192 (7.55) 17.15 (0.67)	205 (8.07) 17.95 (0.7)	623 (24.52)	623 (24.52)	197 (7.75)	197 (7.75)
AMB → 6/1972	195 (7.67) 18.2 (0.71)	243 (9.50) 19 (0.74)	623 (24.52)	644 (25.35)	197 (7.75)	197 (7.75)
AM 1/1969 → 6/1972	160 (6.29) 18.2 (0.71)	222 (8.71) 18.65 (0.73)	605 (23.81)	623 (24.52)	197 (7.75)	197 (7.75)
AM 6/1972 → 7/1976	160 (6.29) 18.2 (0.71)	222 (8.7) 18.65 (0.73)	575 (22.63)	611 (24.05)	197 (7.75)	197 (7.75)
AMB 6/1972 → 7/1976	160 (6.29) 18.2 (0.71)	222 (8.7) 18.65 (0.73)	611 (24.05)	632 (24.88)	197 (7.75)	197 (7.75)

SPECIAL FEATURES

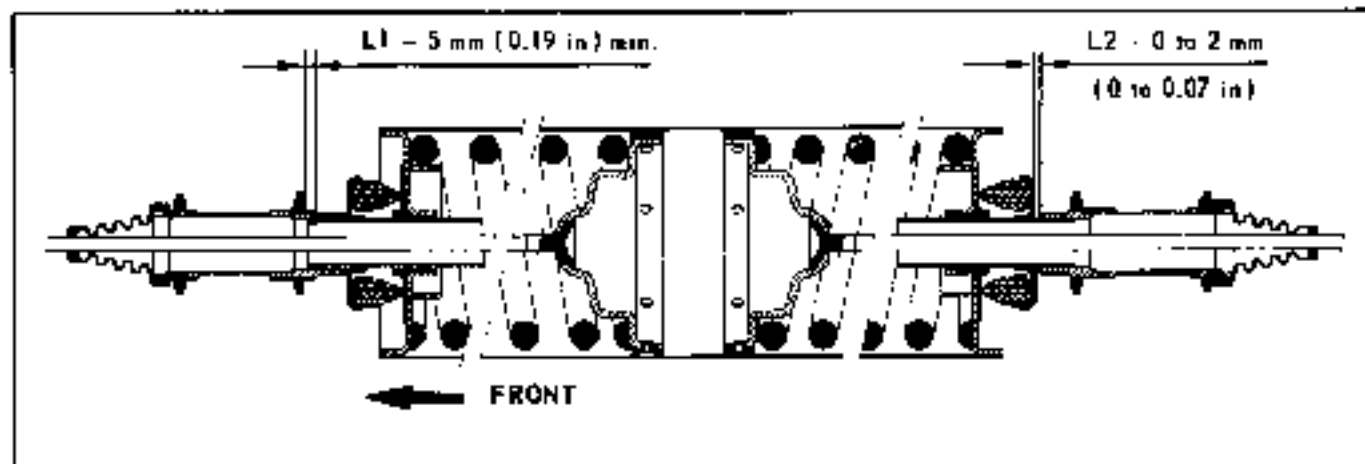
Shock absorbers :

- Fitting : **BOGE** shock absorbers : shock absorber body towards suspension unit, ball imprint directed upwards and drain holes downwards.
- ALLIQUANT** or **LIPMESA** : shock absorber body towards suspension arm, mark directed upwards.
- Length (between mounting points) of a compressed rear shock absorber :
 - AZ - AY - AY-CADAPLANE (AZL) vehicles : 450 mm (17.71 in)
 - AK vehicles : 349 mm (13.74 in)
 - AJ vehicles : 375 mm (14.76 in)
 - AY (ACADIANE) vehicles : 526 mm (20.7 in)
- Length (between mounting points) of a compressed front shock absorber :
 - All A vehicles (ACADIANE excepted) : 349 mm (13.74 in)
 - AY (ACADIANE) vehicles : 354 mm (13.93 in)

Suspension units :

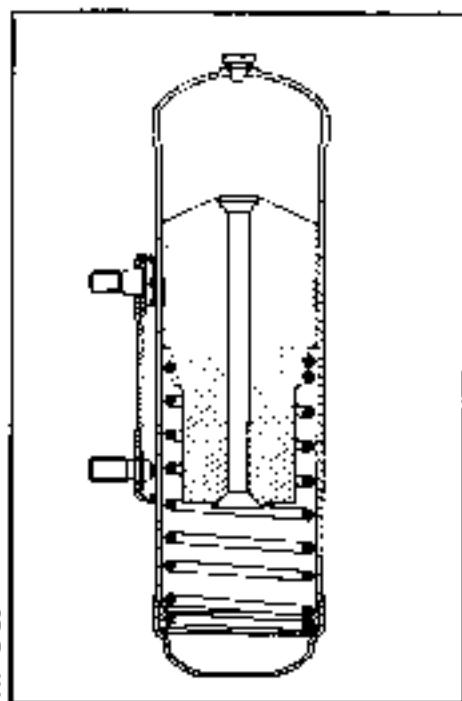
Fitting : The marking "AV" on the casing must be directed towards the front

A. 430



- Adjustment : The vehicle must be unladen, in running order, placed on a flat, horizontal ground with tyres correctly inflated (see relevant Technical Bulletin for correct pressures)
- Position of the suspension unit front end-piece : L1 = 5 mm (0.19 in) min.
- Position of the suspension unit rear end-piece : Adjust it so as to obtain a clearance : L2 = 0 to 2 mm (0 to 0.07 in) between the end-piece and the anti-ditch stop.
- Clearance between the bump stop and the suspension arm : 3 to 6 mm (0.11 to 0.23 in)
- Clearance between anti-roll bar and arm : 6 mm (0.23 in)
- Endfloat of the anti-roll bar before tightening the collars : 0 + 0.5 mm (0 + 0.019 in)

INERTIA DAMPER



A. 4303

Friction damper :

- Calibration : 2.3 to 2.7 da Nm (16.6 to 19.40 ft.lbs)

Tightening torques :

- Nuts holding inertia dampers : 6 da Nm (43.32 ft.lbs)
- Nuts holding front bump stops : 4 to 5 da Nm (28.88 to 36.10 ft.lbs)
- Nuts securing front shock absorber supports : 4 da Nm (28.88 ft.lbs)
- Shock absorber spindles : 20 da Nm (144.4 ft.lbs)
- Shock absorber securing nuts : 3.5 to 4 da Nm (25.27 to 28.88 ft.lbs)
- Nuts holding suspension units : 17.5 to 21.5 da Nm (126.35 to 156.23 ft.lbs)
- Screws securing anti-roll bar collars : 6 da Nm (43.32 ft.lbs)

Suspension without interaction :

TYPE OF VEHICLE	Free length of springs and dia. of wire in mm (in)		Length of tie-rods in mm (in)	
	FRONT	REAR	FRONT	REAR

Suspension units fitted on AM vehicle

AM 3 - 1976 → 2/1978	172 (6.77) 18 (0.7)	210.45 (8.28) 17.95 (0.7)	590 (23.22)	508 (20.00)
AMF 3 AMC 3 - 1976 → 3/1978	172 (6.77) 18 (0.7)	239.7 (94.36) 18.65 (0.73)	575 (22.63)	629 (24.76)

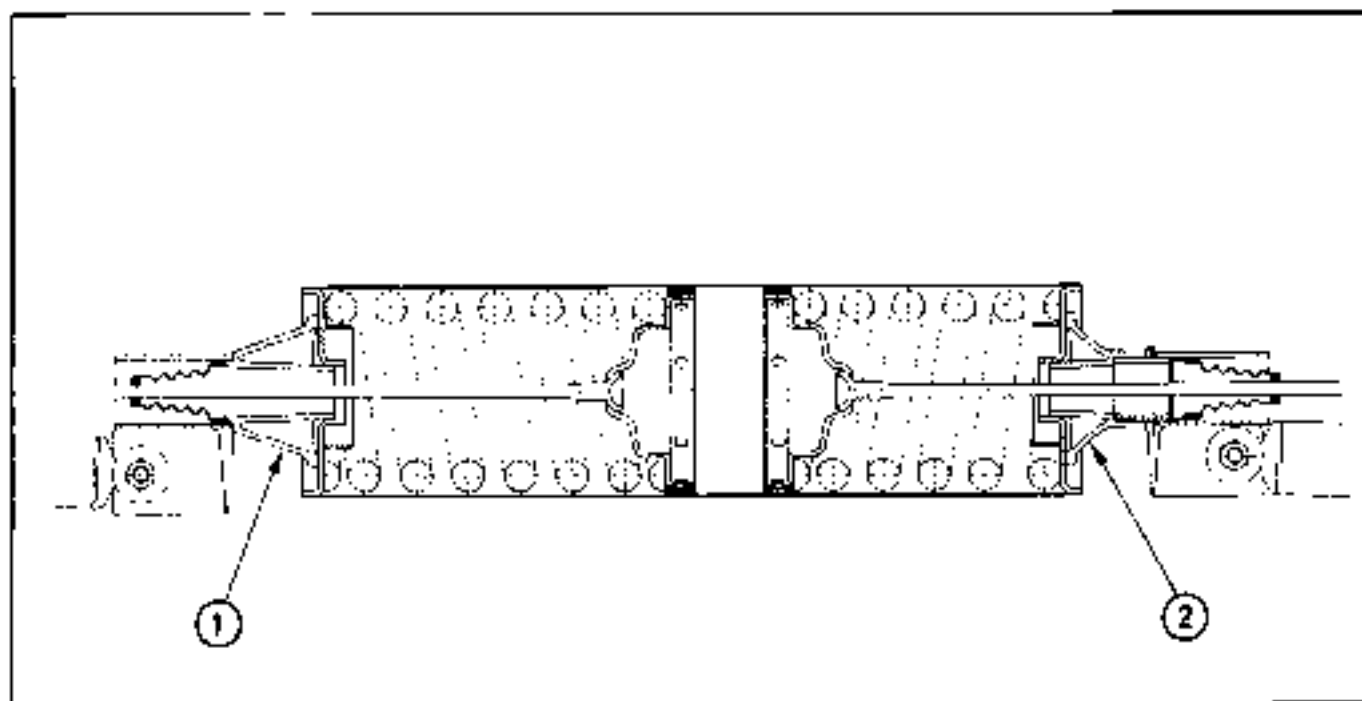
Suspension units fitted on AK vehicle

AK - 1976 → 2/1977	168 (6.61) 17.15 (0.67)	360 (10.23) 17.15 (0.67)	575 (22.63)	608 (23.93)
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Suspension units fitted on AY - CD (ACADIANE) vehicle

AY (series CD) 2/1977 →	168 (6.61) 17.15 (0.67)	280 (10.23) 17.15 (0.67)	620 (20.47)	792 (31.18)
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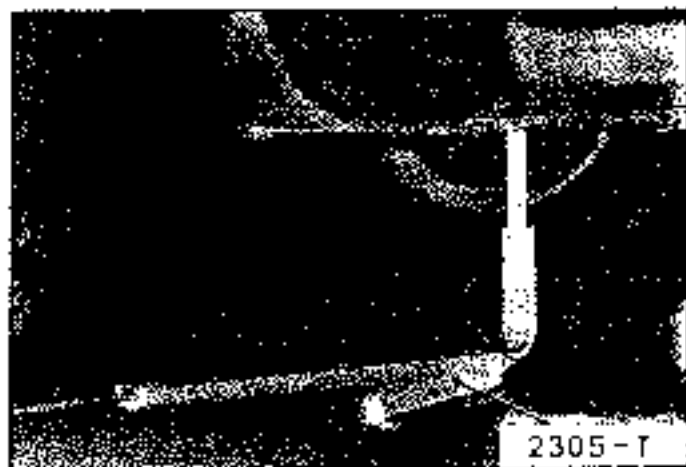
A. 43-56



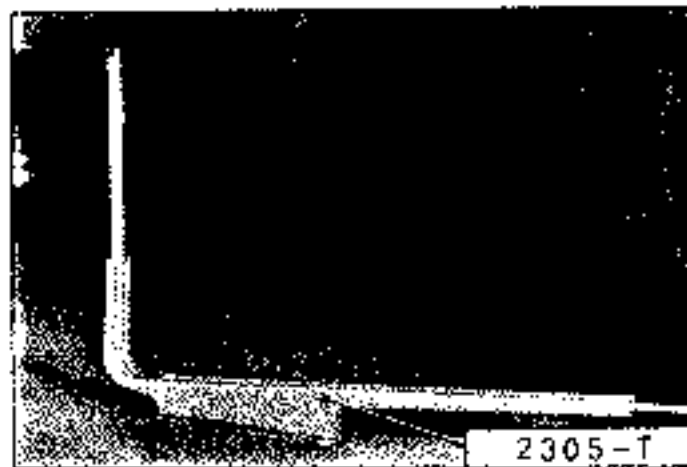
The suspension unit is now fixed : two spacers ① and ② have been added between the suspension unit itself and the sidemember supports.

I. CHECKING THE HEIGHTS.

FRONT



REAR



The vehicle heights must be measured at the front and at the rear, between the ground and the underside of the platform, at a point « a », equidistant from the two screws holding the crossmember, and near the stop plate.

1. Prepare the vehicle for the road. It should carry no load except :
 - the spare wheel (in its proper position),
 - the tool kit,
 - about 5 litres (1.3 gallon) of petrol in the tank.

2. Check the tyre pressures and correct them if necessary (see relevant Technical Bulletins).

Place the vehicle on flat (horizontal) ground with the wheels in straight ahead position.

3. Move the vehicle up and down by pressing the bumpers and then let it stabilize.

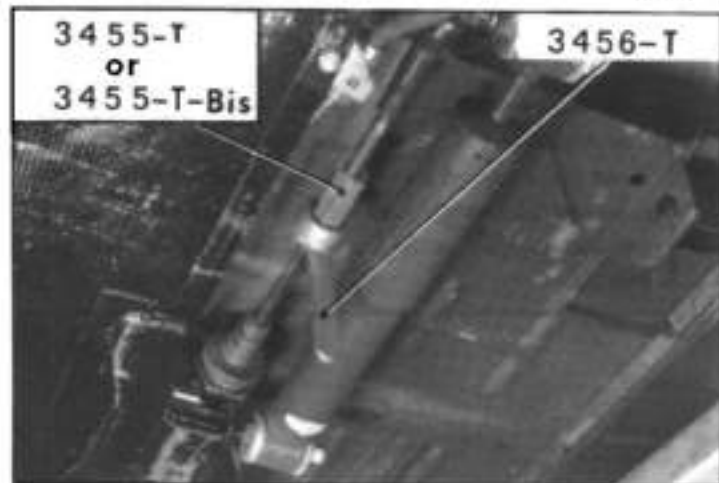
4. Measure the heights :

Measure the heights at the front and at the rear, between the ground and the underside of the platform, at a point « a », equidistant from the two screws holding the crossmember, and near the stop plate.

Use the gage 2305-T, as shown on the figures opposite.

II. ADJUSTING THE HEIGHTS

4939

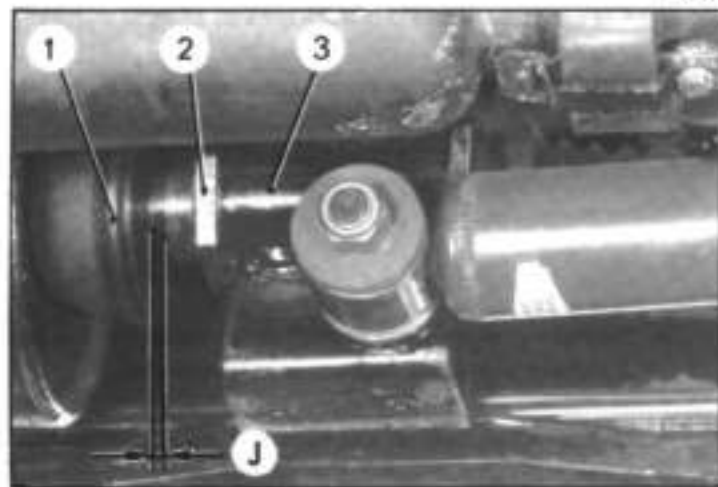


If the friction dampers or the shock absorbers have been removed, adjust the heights before fitting the screws securing the friction damper protective covers or installing the shock absorbers.

To avoid deteriorating the « silentblocs », the nuts on the shock absorber spindles must not be tightened until the heights are adjusted and the vehicle is resting on the ground.

If the heights are adjusted as indicated below, the weight distribution is correct.

4857



1. Prepare the vehicle for the road. It should carry no load except :
 - the spare wheel (in its proper position),
 - the tool kit,
 - about 5 litres of petrol (1 gallon approximately) in the tank.
2. Check the tyre pressures and adjust them if necessary (see relevant Technical Bulletins).
3. **Adjust the front heights** by screwing or unscrewing the front tie-rods. Use end-piece 3455-T or 3455-Tbis (both fit on tie-rod flat) and spanner 3456-T. Avoid using any other tool, specially claw spanners which scratch surfaces and create a tendency to rupture.

Hold the suspension unit with the hand for its rotation may interfere with the adjustment of the rear tie-rods.

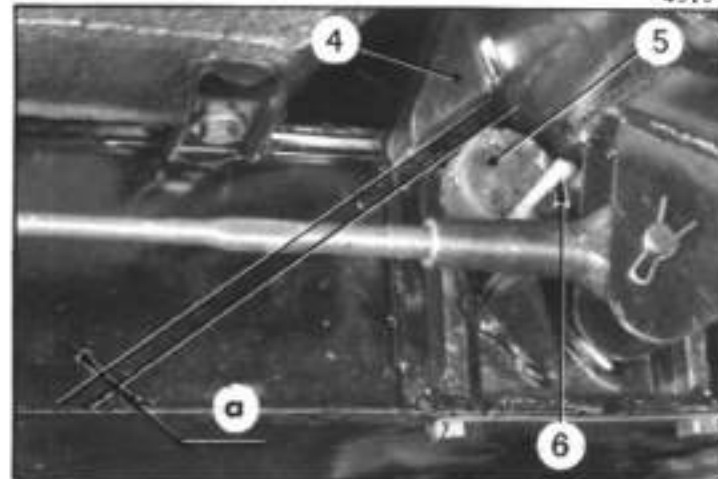
4. **Adjust the rear heights** by screwing or unscrewing the rear tie-rods. If substantial correction has to be made, the front heights will be outside their tolerance. Therefore, the front tie-rods must be readjusted before the setting procedure is over. Use end-piece 3455-T or 3455-T bis and spanner 3456-T.

Hold the suspension unit with the hand for its rotation may interfere with the adjustment of the front tie-rods.

5. Check the front and rear heights after each adjustment.
6. Check the clearance « j » between the adjusting end-piece (3) and the rear flexible stop (1) which should be : 0 to 2 mm (0 to 0.07 in).

If necessary, adjust the position of end-piece (3) by means of nuts (2) to obtain this clearance.

4916

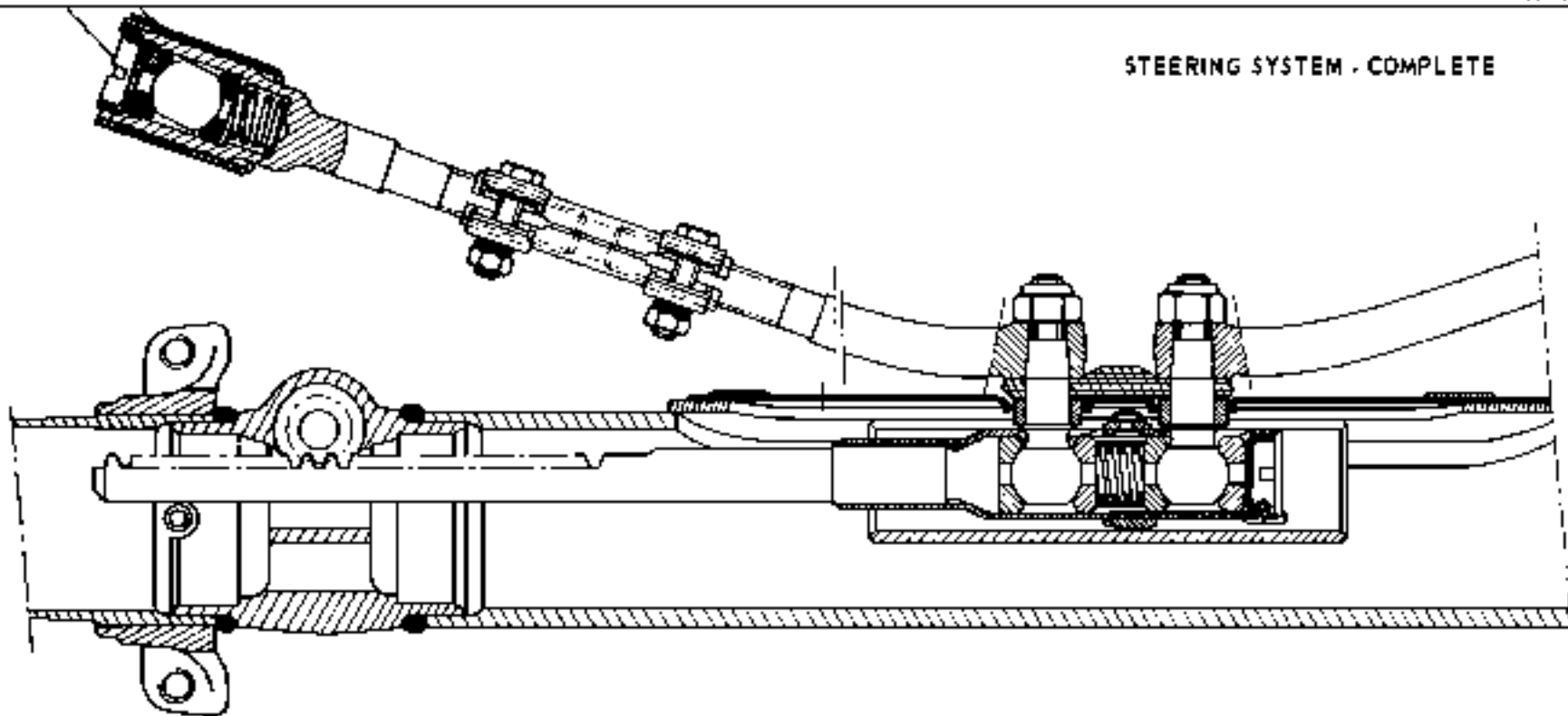


III. ADJUSTING THE FRONT BUMP STOPS.

7. Once the platform heights have been adjusted, check that there is a distance « a » = 3 to 6 mm (0.11 to 0.23 in) between the rubber stops (5) and arm bump stops (4).

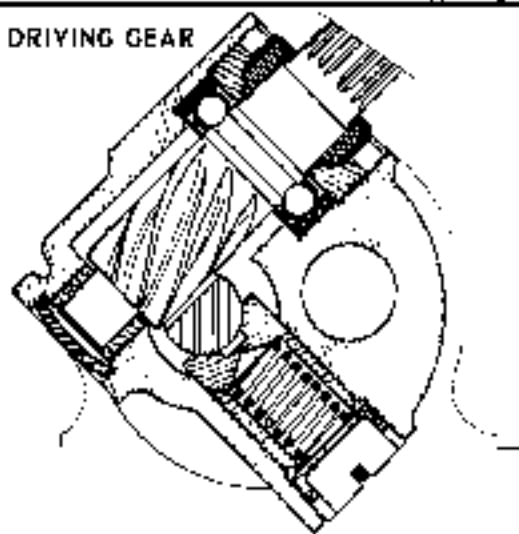
This condition can be met by adding shims (6) of suitable thickness between the rubber stop and the bracket on chassis.

STEERING SYSTEM - COMPLETE



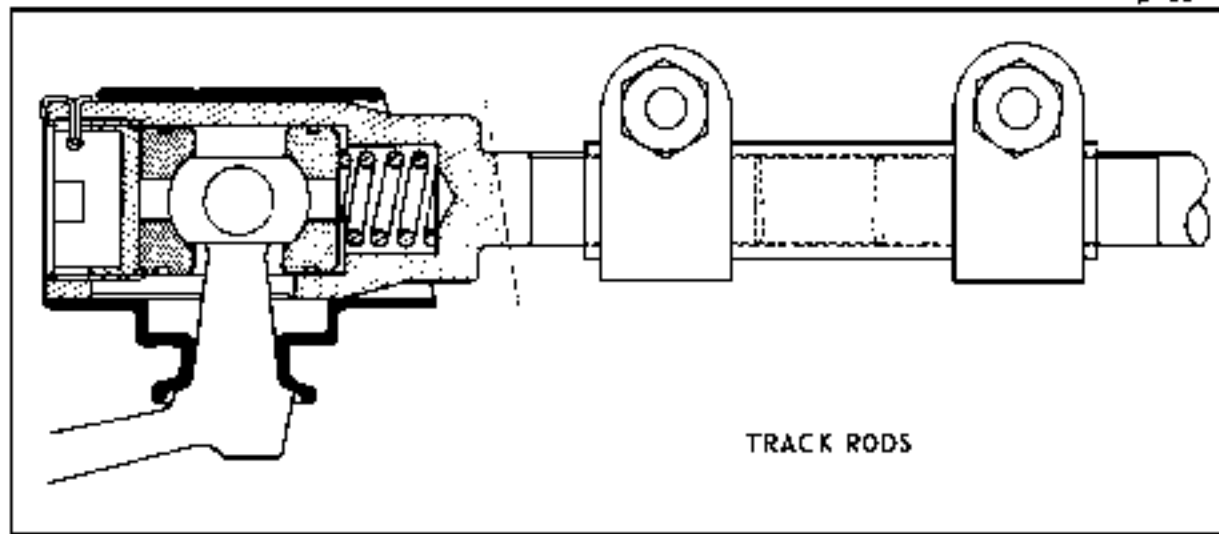
A 44.5

DRIVING GEAR



A 44.7

TRACK RODS



CHARACTERISTICS

Rack and pinion steering :

- Parallelism : Toe-out : 0 to 3 mm (0 to 0.11 in)
 - Lock angle (adjustable) : 34° to 35°
 - Clearance between tyre and arm (inner side of turn) : 5 mm (0.19 in)
 - Clearance between arm and inertia damper (outer side of turn) : 1 mm (0.039 in)
 - Turning circle between walls (approximately) : 10.70 m (0.42 in)
- Steering ratios with a 430 mm (16.92 in) dia. steering wheel

}	- 2 CV Saloon : .. 1/13 → 2.1970 - 1/14 2.1970 →	
	- 2 CV van : .. 1/13	
	- All types of vehicles (except 2 CV van) : .. 1/14	
 - Steering ratio with a 390 mm (15.35 in) dia. steering wheel

}	- 2 CV Saloon and all Dyane vehicles :	}	
	- 2 CV and 3 CV vans : ..		1/17
	- All AM vehicles : ..		

Adjustments :

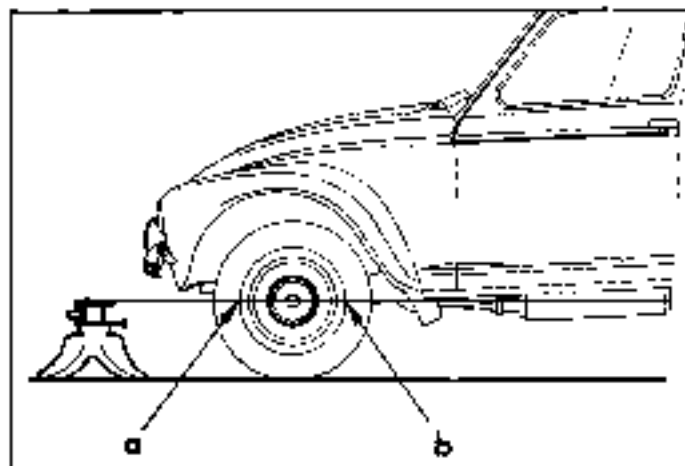
- Clearance at rack plunger (at hardest point) : 0.1 to 0.25 mm (0.039 to 0.098 in)
- Clearance at the level of the steering ball pins (lever side and rack side) : screw the nut fully in, then slacken it by 1/5 of a turn and lock it with a split pin)

Tightening torques :

- Steering pinion nut : 10 to 14 da Nm (72.2 to 101 ft.lbs)
- Nylstop nuts (fixing the track rods to the ball pins) : 4 da Nm (28.88 ft.lbs)

I. CHECKING AND ADJUSTING THE FRONT WHEEL TOE-OUT.

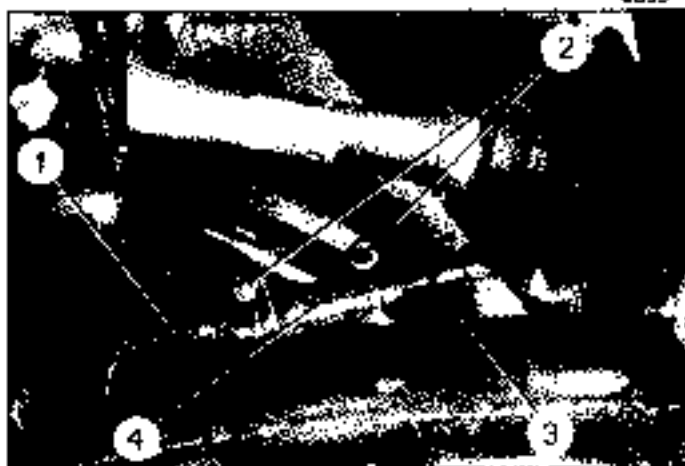
A. 41-8



The wheels should have a toe-out of 0 to 3 mm (0 to 0.11 in). To carry out this check, the distances 'a' and 'b' at the front and at the rear must have been correctly set (See relevant operation).

1. Place the vehicle in straight ahead position.

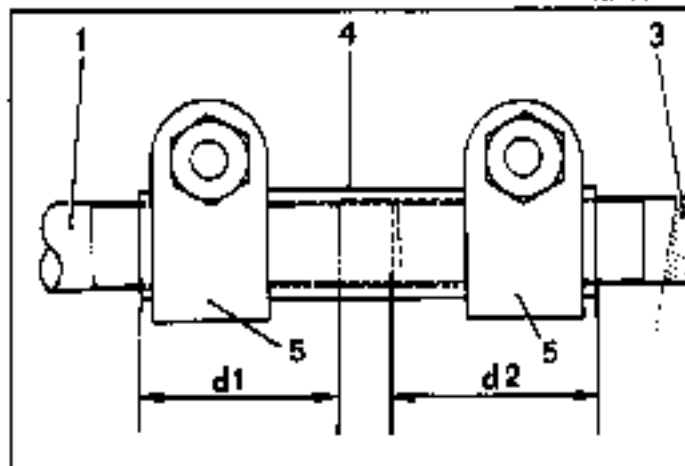
4855



2. Checking the front wheel toe-out :

This operation should be carried out using one of the gauge types available on the market.
 Proceed as follows :
 At point « a », corresponding to wheel centreline, measure the distance between the front outer edges of the rims. Mark the measured points with chalk. Move the vehicle forward until the wheels have rotated through half a turn, so that the marks are once again levelled with the wheel centreline. Measure between these marks (now behind the wheel) centre | at « b ».
 If this distance is smaller by 0 to 3 mm (0 to 0.11 in), the setting is correct. Otherwise, adjust the toe-out.

A. 44-1

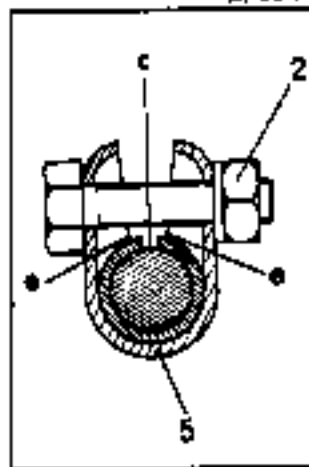


3. Adjusting the front wheel toe-out :

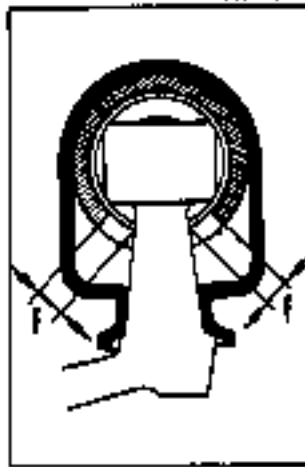
Without removing the wings, blocked the nuts (2) on the bolts holding the right hand and left hand sleeves (4). Rotate each sleeve by the same amount to obtain the correct setting.

NOTE : One complete turn of the sleeve alters the wheel position by 6 to 7 mm (0.23 to 0.27 in).

A. 44-1



A. 44-1



Make sure that the amounts by which the track rod (1) and the end-piece (3) are screwed into sleeve (4) are equal ($d1 = d2 \pm 2 \text{ mm}, 0.07 \text{ in}$).

The locking collars (5) holding the sleeves (4) should be arranged vertically, the securing screws being located at the top.
 The position of slot « c » is not important, so long as it is not opposite to points « e ». The clearance « f » for steering ball pin movement should be evenly distributed. Tighten the nuts (2) on the bolts securing the sleeves to a torque of 1 da Nm (7.22 ft.lbs).

II. ADJUSTING THE STEERING ANGLE.

4853



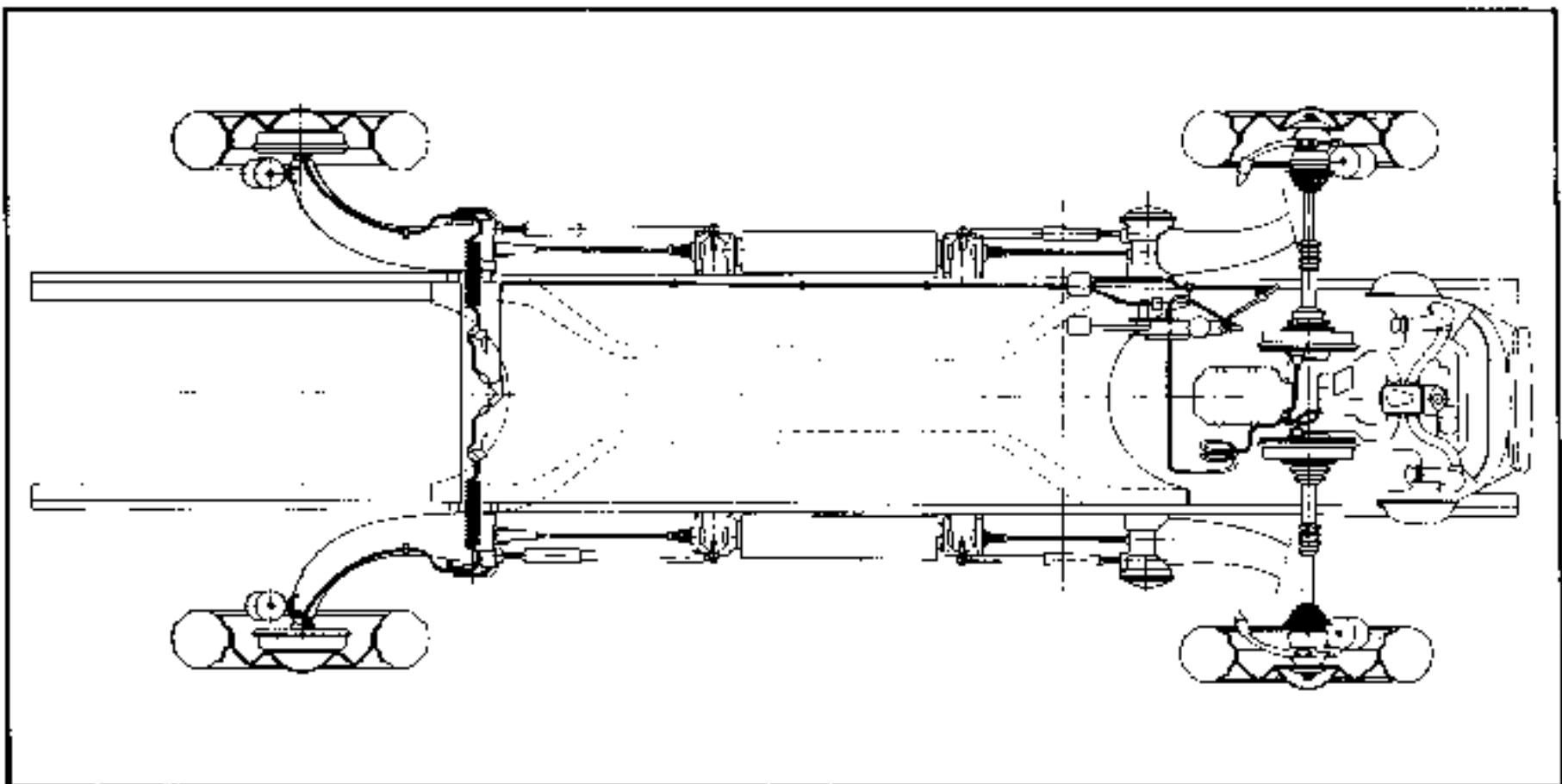
NOTE : To carry out this operation, the chassis heights at the front and at the rear must have been correctly set (See relevant operation).

1. Put the vehicle on a flat horizontal ground.
2. Turn the steering wheel to full lock. Make sure that the clearance between the tyre and the arm is approximately 5 mm (0.19 in.) and that the clearance between the inertia damper and the arm, on opposite side, is 1 mm (0.039 in.) min.

Otherwise, adjust the lock stop screw (1), located on the arm.

3. Check the lock angle of the other wheel.

DIAGRAM OF THE BRAKING SYSTEM



A 45-62 B

CHARACTERISTICS

Master cylinder - Wheel cylinders :

Master cylinder and wheel cylinders fitted to AZ and AZU vehicles

Type of vehicle	Manufacturing date (calendar months)	Diameter of wheel cylinders (mm) (in)	
		Front	Rear
AZ → 2/1970	27 (0.98)	25.5 (1.00)	19 (0.74)
AZ (2 CV 4) 7/1970 → 4/1973 AZ (2 CV 9) 7/1970 → 4/1973	27 (0.98)	28.5 (1.12)	17.5 (0.68)
AZ (2 CV 4) 7/1973 → 10/1976 AZ (2 CV 9) 7/1973 → 10/1976	27 (0.98)	28.5 (1.12)	17.5 (0.68)
AZJ → 1/1972	22 (0.86)	28.5 (1.12)	19 (0.74)
AZJ 7/1972 → 4/1973	27 (0.98)	28.5 (1.12)	17.5 (0.68)
AZJ 7/1972 → 10/1976	27 (0.98)	28.5 (1.12)	17.5 (0.68)
AZ and AZJ 10/1976 → 9/1978*	27 (0.98)	28.5 (1.12)	17.5 (0.68)

Master cylinder and wheel cylinders fitted to DYANE vehicles

AYA 3/1967 → 2/1968 AYA 3 1/1968 → 10/1969 AYA 2 3/1968 → 2/1970	27 (0.98)	28.5 (1.12)	19 (0.74)
AYA 7 2/1970 → 8/1973 AYR 10/1968 → 5/1974 MEHARI 10/1968 → 1/1973	20.6 (0.81)	28.5 (1.12)	17.5 (0.68)
AYA 7 7/1973 → 10/1976 AY-C2 10/1976 → 2/1977* MEHARI	27 (0.98)	28.5 (1.12)	17.5 (0.68)

Master cylinder and wheel cylinders fitted to AK vehicles

AK → 5/1968	27 (0.98)	28.5 (1.12)	19 (0.74)
AK 5/1968 → 6/1972	27 (0.98)	28.5 (1.12)	19 (0.74)
AK 1/1973 → 10/1976 AK 10/1976 → 2/1978*	27 (0.98)	28.5 (1.12)	17.5 (0.68)

Master cylinder and wheel cylinders fitted to AM vehicles

AM → 9/1969	27 (0.98)	28.5 (1.12)	17.5 (0.68)
AM3 → 5/1969	8	28.5 (1.12)	17 (0.67)

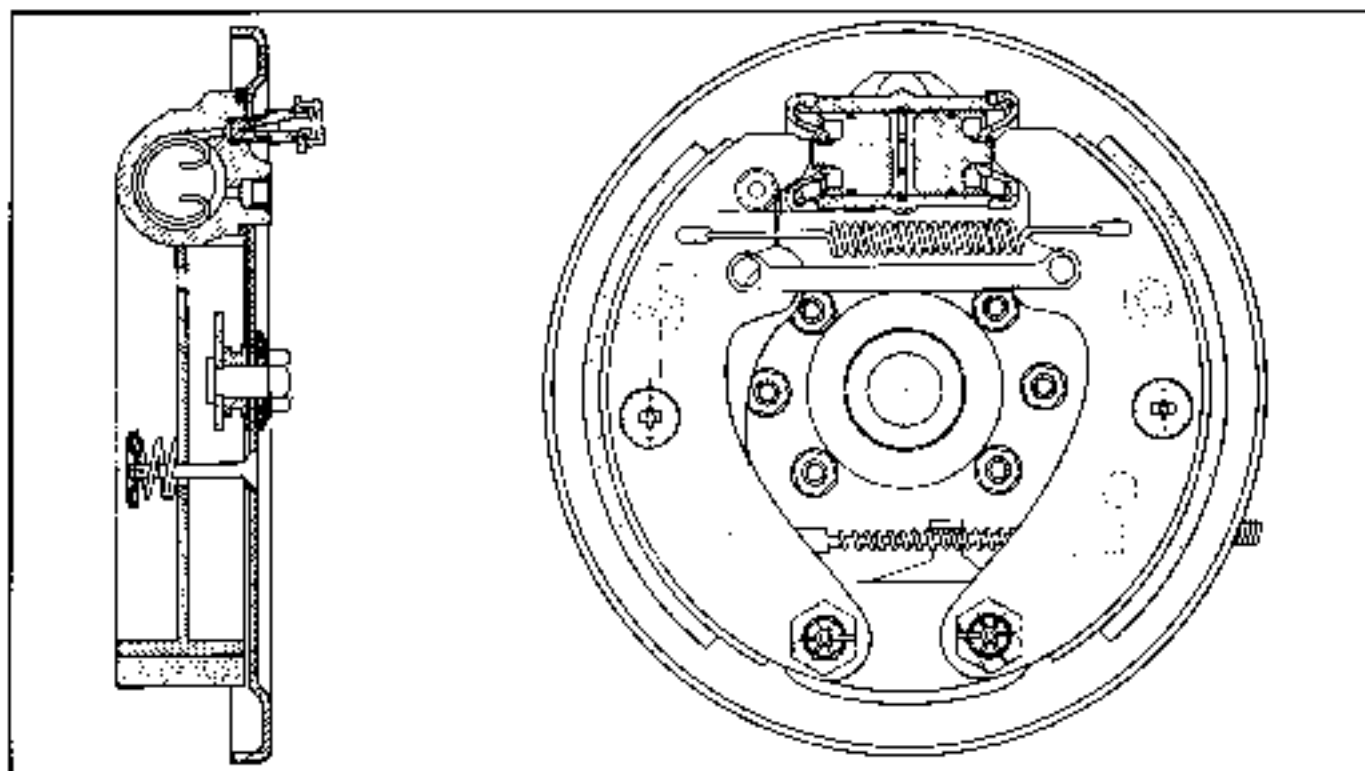
Master cylinder, caliper piston and wheel cylinders fitted to AM, AY and AZ vehicles with disc brakes at the front : (LHM green fluid)

Type of vehicle	Diameter of master cylinder (mm) (in)	Dia. of front caliper piston (mm) (in)	Dia. of rear wheel cylinder (mm) (in)
AI AM Saloons 9/1969 → 10/1976 10/1976 → 9/1978*	17.5 (0.68)	42 (1.65)	16 (0.62)
AJ AM Estates 9/1969 → 10/1976 10/1976 → 9/1978*	17.5 (0.68)	42 (1.65)	17.5 (0.68)
AY CB (DYANE 6) 7/1977 → * AY CA (MEHARI) 7/1977 → * AY CD (ACADIANE) 2/1978 → 10/1979* AY CD (ACADIANE) with brake lamp 10/1979 → *	20.6 (0.81)	42 (1.65)	17.5 (0.68) 16 (0.62)
AZ KA (2 CV) 7/1981 → *	17.5 (0.68)	42 (1.65)	16 (0.62)

* Vehicles fitted with dual circuit master cylinder.

FRONT BRAKES

A.45-54



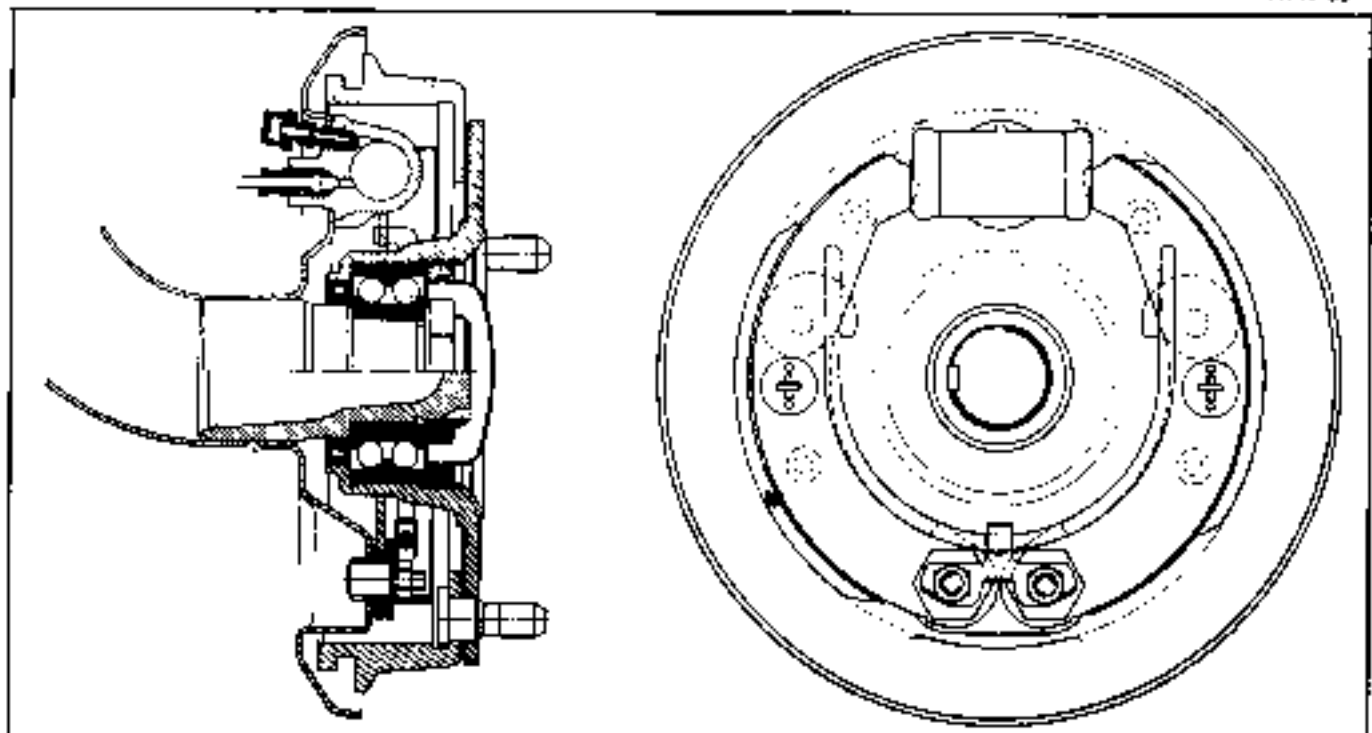
Drums :

Type of vehicle	Drum diameter in mm (in)		Slaking surface in mm (in)	
	Front	Rear	Front	Rear
A7 - 2 (V 4 - 2 CV 6 - A7J - A7A AYA 2 - AYA 3)	200 (7.87)	180 (7.08)	195.5 (7.73)	193.2 (7.61)
AK - AYB - MFHAB - AM - AM 2 - AM 3	220 (8.66)	180 (7.08)	354.6 (13.96)	193.2 (7.61)
ACADIANE		160 (6.3)		193.2 (7.61)

- Maximum grinding of drums
 - Maximum out of round
 - Thickness of linings
- 2 mm (0.077 in)
 0.10 mm (0.0039 in)
 4.8 to 5.3 mm (0.19 to 0.21 in)

REAR BRAKES

A.45-53



Tightening torques :

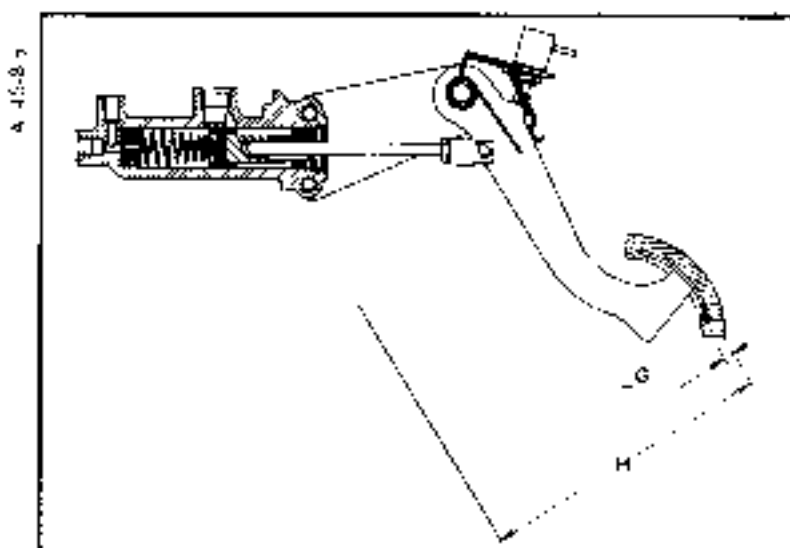
- Nuts securing the brake backplates : 3.0 to 4.2 da Nm (27.43 to 50.32 ft lbs)
- Nuts securing the front brake drums (dia. = 7 mm (0.27 in.) : 2.5 da Nm (18.05 ft lbs)
- Screws securing the front brake drums (dia. = 9 mm (0.35 in.) : 4.5 to 5 da Nm (32.4 to 36.1 ft lbs)
- Nut securing the differential shaft ball bearing : 12 to 14 da Nm (86.64 to 91.08 ft lbs)
- Ring nut securing ball bearing in bearing block :
 - Old system (ring nut in bearing block) : 10 to 12 da Nm (72.2 to 86.64 ft lbs)
 - New system (ring nut on bearing block) : 6 to 10 da Nm (43.32 to 72.2 ft lbs)
- Nut for rear stub axle (face and threads greased) : 35 to 40 da Nm (252.7 to 285.8 ft lbs)
- Cap nut for rear hub bearing (face and threads greased) : 35 to 40 da Nm (252.7 to 285.8 ft lbs)
- Screwed unions on brake feed pipes : 11.6 to 0.8 da Nm (4.33 to 5.47 ft lbs)

PEDAL GEARS**Adjustments :**

- Safety clearance at master cylinder : J 0.5 to 1 mm (0.019 to 0.039 in.)
- Brake pedal clearance : G 5 mm (0.19 in.)
- Stop lamp switch : the stop lamps should come on as soon as the master cylinder piston starts moving

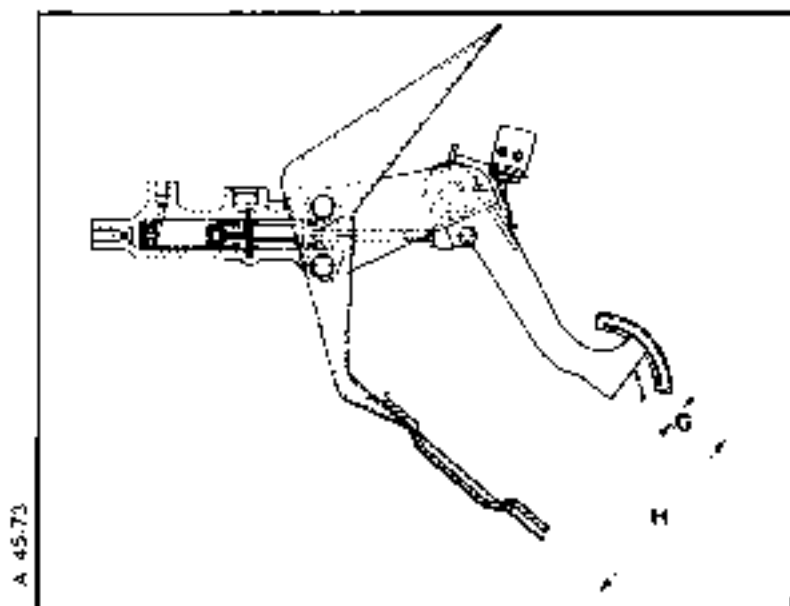
Height of pedals :

- ◆ - Pedal gear (ball on AZ - AY - MEH4PI - AK vehicles → 5/1973 and on AM vehicles → 9/1969.



Pedal height = $H - 130 + 5 \text{ mm (5.11 + 0.19 in)}$
 (measured between the upper part of the pedal pad and the floor - without carpet -).

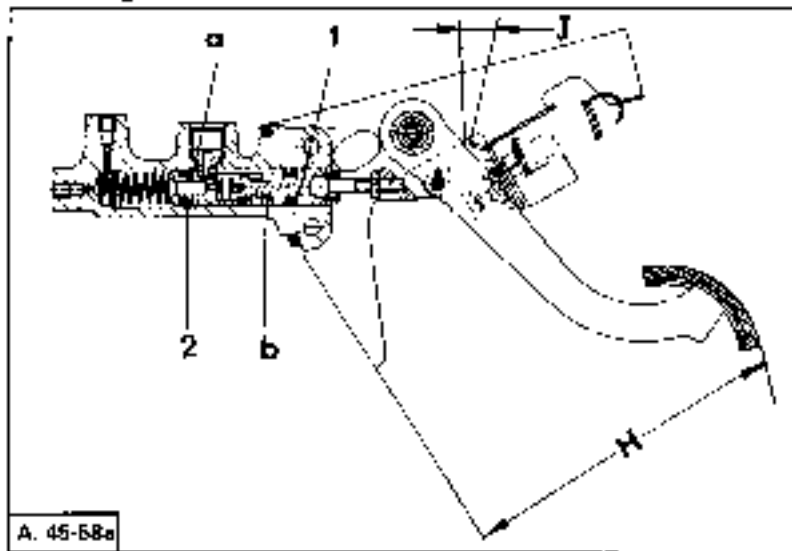
- ◆ - Pedal gear (HUB on AZ - AY - MEHAR - A7C - AK 7/1972 → 10/1973.



Pedal height = $H - 130 + 5 \text{ mm (5.11 + 0.19 in)}$
 (measured between the upper part of the pedal pad and the floor - without carpet -).

PEDAL GEARS

Pedal gear fitted on AM vehicles with disc brakes : 9/1966 → 10/1971



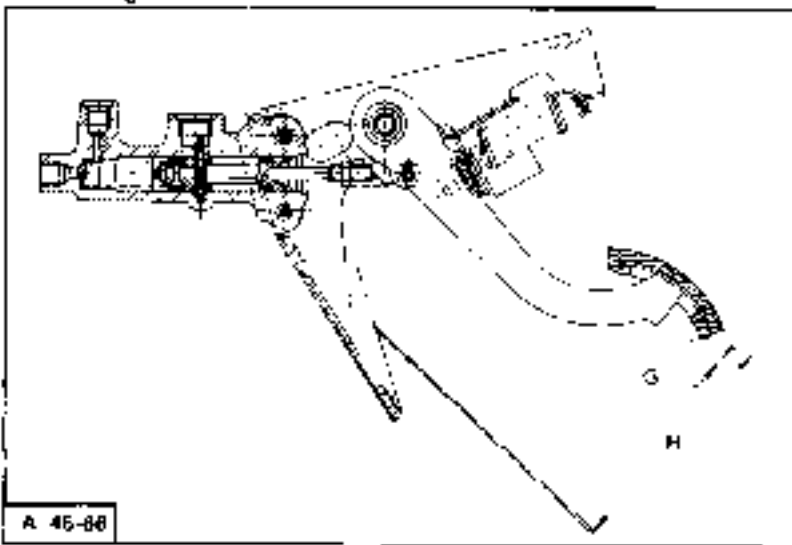
Provided that

- piston 2 is resting on « a ».
- piston 1 is resting on « b ».
- and J = 2 mm (0.078 in).

the height of the pedal, measured between the upper corner of the pad and the floor « without carpet » must be :

$H = 125 \pm 2.5 \text{ mm} (4.92 \pm 0.09 \text{ in})$

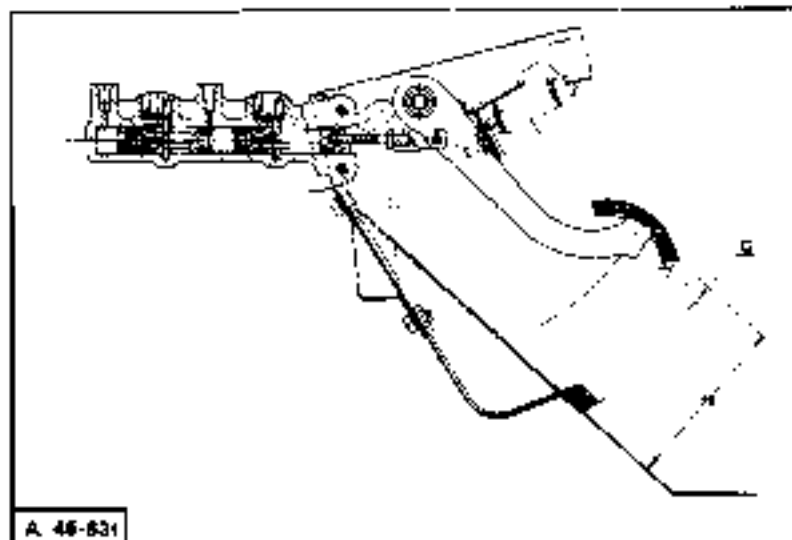
Pedal gear fitted on AM vehicles with disc brakes : 11/1971 → 10/1978



The height of the pedal, measured between the upper corner of the pad and the floor « without carpet » must be :

$H = 135 \pm 2.5 \text{ mm} (5.31 \pm 0.09 \text{ in})$

Pedal gear fitted on AM vehicles with disc brakes and dual circuit : 10/1976 → 9/1978

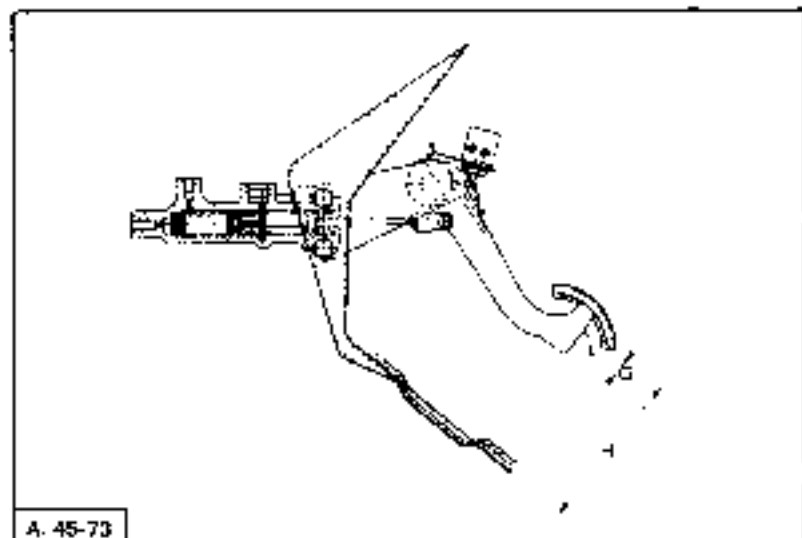


The height of the pedal, measured between the upper corner of the pedal and the floor « without carpet » must be :

$H = 140 \pm 6 \text{ mm} (5.51 \pm 0.19 \text{ in})$

SUBSTITUTION No. 1 to 10/1971 (see 11/1971)

Pedal gear fitted on vehicles : AZ, AY MEHARI AZU and AK : 7/1973 → 10/1976

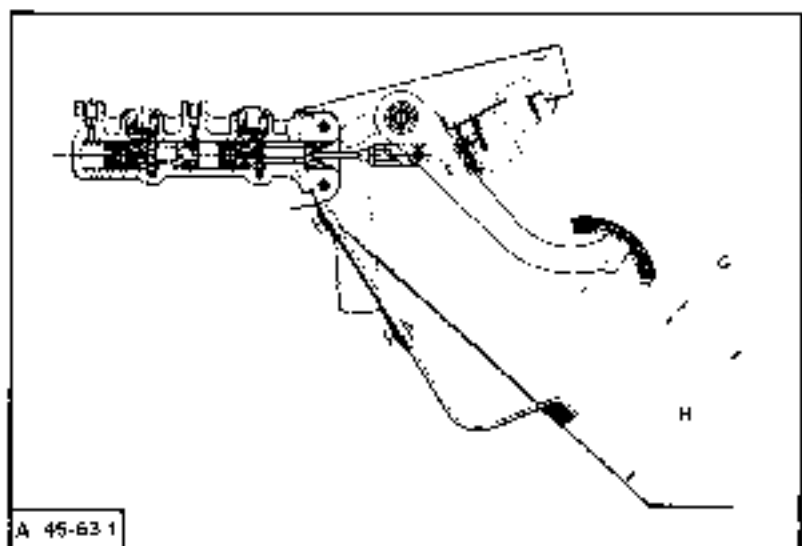


A. 45-73

The height of the pedal, measured between the upper corner of the ped and the floor without carpet, must be :

$$H = 130 \pm 5 \text{ mm } (5.11 \pm 0.19 \text{ in.})$$

Pedal gear fitted on vehicles : AZ, 10/1976 → 7/1981 - AY and MEHARI, 10/1976 → 7/1977 - AZU and AK, 10/1976 → 2/1976

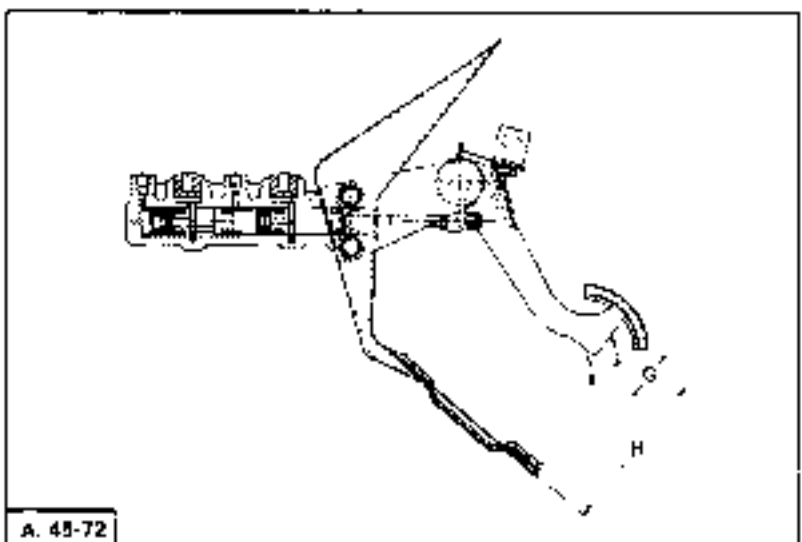


A. 45-63.1

The height of the pedal, measured between the upper corner of the ped and the floor without carpet, must be :

$$H = 131.5 \pm 2.5 \text{ mm } (5.17 \pm 0.09 \text{ in.})$$

Pedal gear fitted on vehicles : AY and MEHARI, 7/1977 → AY-CD, 7/1976 → - AZ, 7/1981 →



A. 45-72

The height between the pedal and the floor must be :

$$H = 143 \pm 4 \text{ mm } (5.62 \pm 0.15 \text{ in.})$$

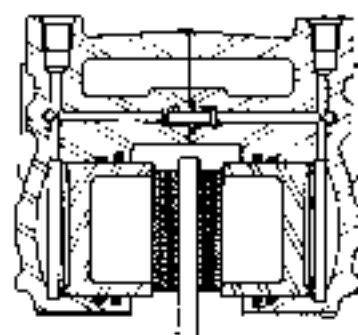
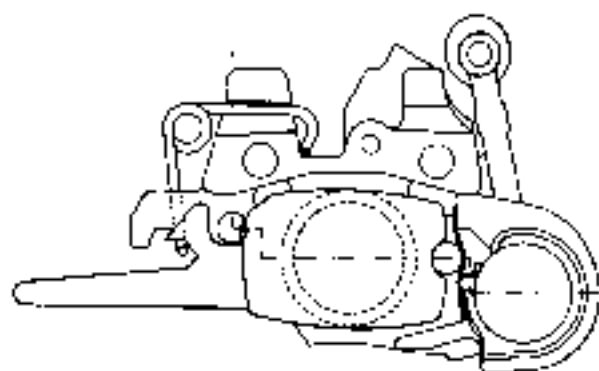
Tightening torques :

- Brake fluid reservoir : 3.5 to 4.5 m.daN
- Nut for thrust rod : 1 to 2.5 m.daN
- Master cylinder securing screw : 1 m.daN

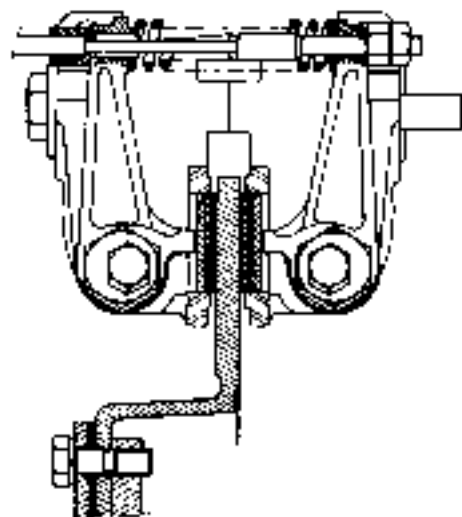
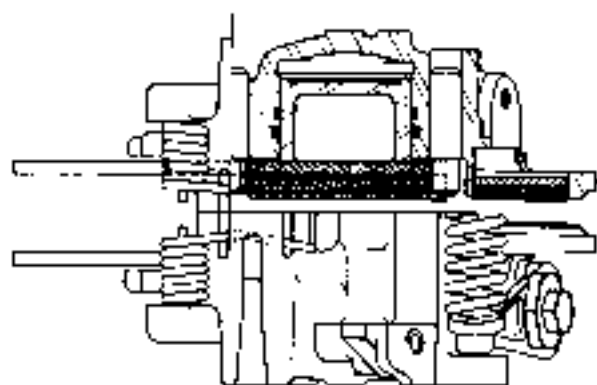
FRONT DISC BRAKE UNIT

G 45-2

HYDRAULIC BRAKING SYSTEM



MECHANICAL BRAKING SYSTEM
(Handbrake)



Supplement No. 1 to Manual R 6 1 0 C 1994

THE SPECIAL GREEN COLOURED LHM FLUID USED IN THE BRAKING CIRCUIT OF THIS VEHICLE IS, LIKE ENGINE OIL, A MINERAL-BASED FLUID.

THE USE OF ANY OTHER FLUID WOULD CAUSE COMPLETE DETERIORATION OF SEALING JOINTS AND RUBBERS.

THE APPROPRIATE PARTS FOR THIS VEHICLE ARE PAINTED OR MARKED WITH GREEN AND MUST WITHOUT FAIL BE REPLACED BY SIMILAR PARTS ALSO PAINTED OR MARKED WITH GREEN.

THESE PARTS ARE TO BE USED ON VEHICLES FITTED WITH DISC BRAKES ONLY.

CLEANING MAY BE CARRIED OUT WITH PETROL OR LEAD FREE PETROL. COMPRESSED AIR JETS MAY BE USED FOR DRYING. DO NOT USE ALCOHOL.

FRONT DISC BRAKES

CHARACTERISTICS

Brake disc :

Disc diameter :	244 mm (9.6 in.)
Original thickness :	7 mm (0.27 in.)
Minimum thickness :	4 mm (0.15 in.)
Maximum run out :	0.2 mm (0.008 in.)

Brake unit :

- Piston diameter :	42 mm (1.6 in.)
---------------------------	-----------------

Position of brake unit in relation to the disc

The joint faces of the ball brake nuts must be in line with the centre plane of the disc face to within 0.5 mm (0.019 in.).

Pads :

- Area of the main brake pad :	22 sq. in. (3.41 sq. in.)
- Area of a lead brake pad :	7 sq. in. (1.08 sq. in.)
- Clearance between hand brake pads and disc :	0.1 mm (0.0039 in.) (with max. run out of disc)

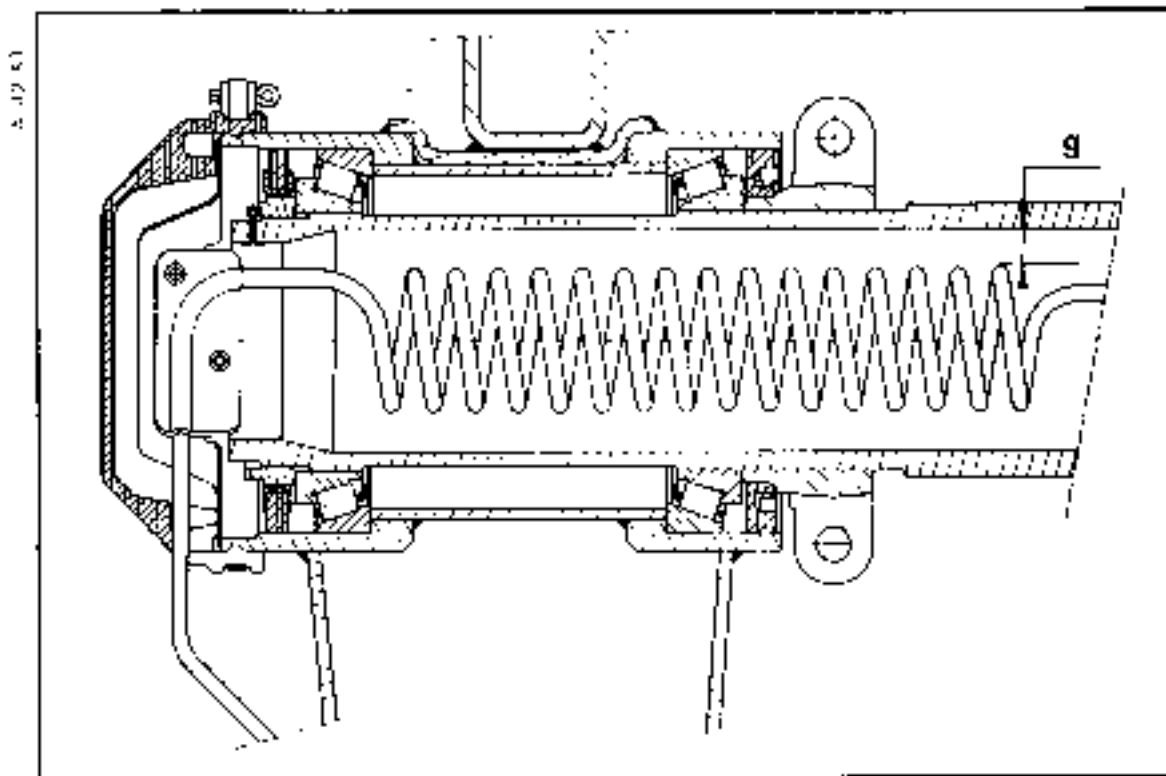
ADJUSTMENTS.

Tightening torques :

- Brake unit securing screws :	4.5 to 5 da Nm (32.4 to 36.3 ft. lbs.)
- Eccentric securing screws :	4 da Nm (28.88 ft. lbs.)
- Disc securing screws :	4.5 to 5 da Nm (32.4 to 36.3 ft. lbs.)
- Connecting nut for hydraulic pipes :	0.8 to 0.9 da Nm (5.77 to 6.49 ft. lbs.)
- Lock nut for hand brake cable :	1.5 da Nm (10.83 ft. lbs.)

REAR BRAKE FEED PIPE

(New fitting)




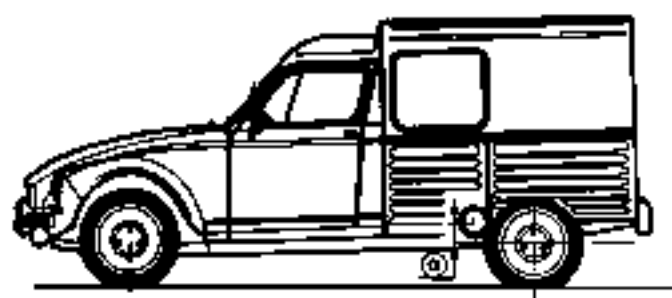
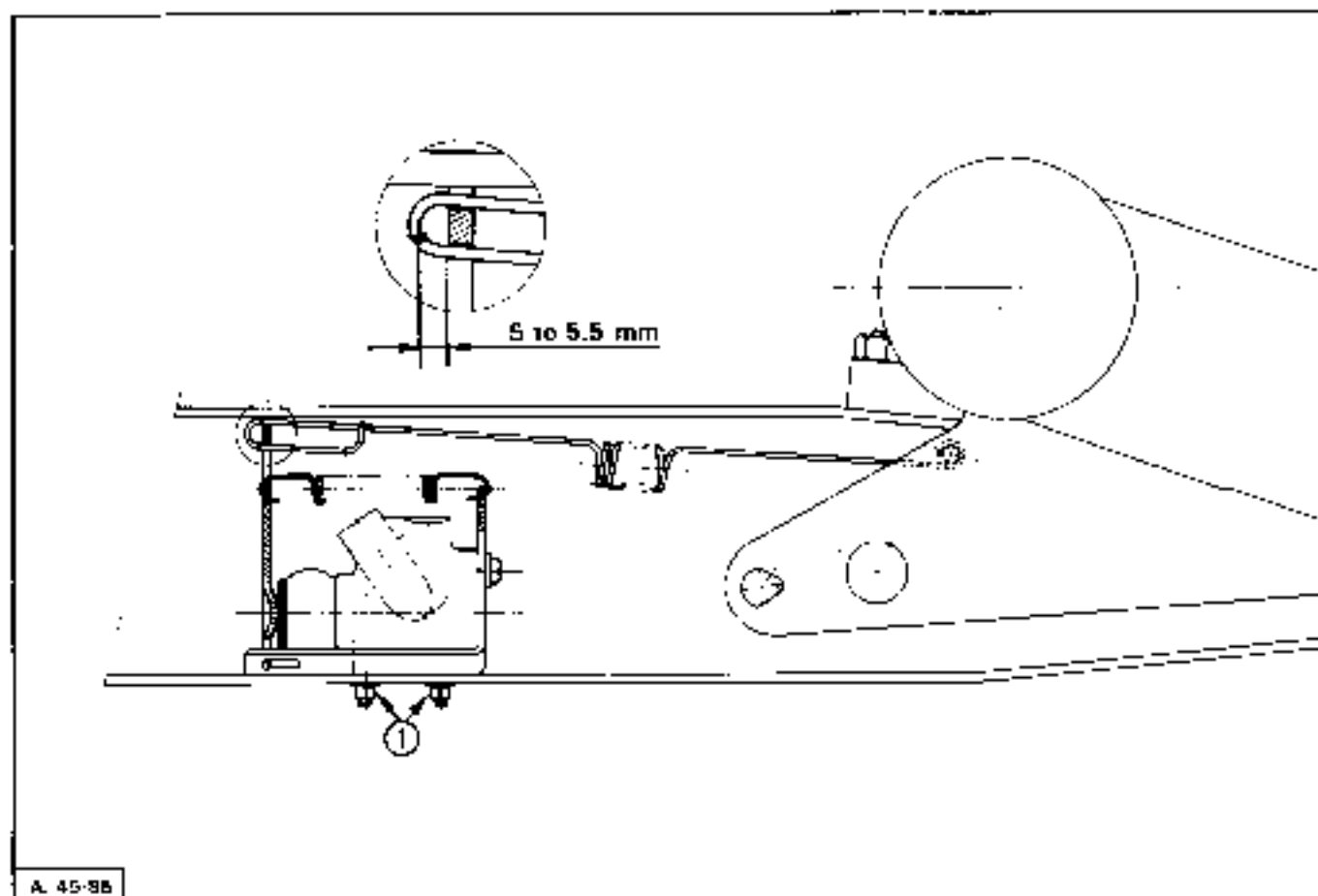
Système de freinage à disque à commande hydraulique (D-11-0001)

- Clearance between the feed pipe spirals and the tube g - 6 mm maxi (0.23 in)
- Outside diameter of brake pipes : 3.5 mm (0.13 in)
- Inside diameter of seals 3.5 mm (0.13 in)
- Diameter of pipe unions : 8 mm (0.31 in) ; pitch : 1.25

Tightening torques :

- Nuts holding the feed pipe securing clips : 1 da Nm (7.22 ft. lbs)
- Bolt holding the three way union : 2 da Nm (14.44 ft. lbs)
- Brake pipe unions 0,6 to 0.9 da Nm (5.77 to 6.49 ft. lbs)

BRAKE PRESSURE LIMITER
 ACADIANE Vehicle (AY series 00) 



Adjustment of the brake pressure limiter :

This adjustment is to be carried out after any operation modifying the vehicle heights.

Conditions of adjustment :

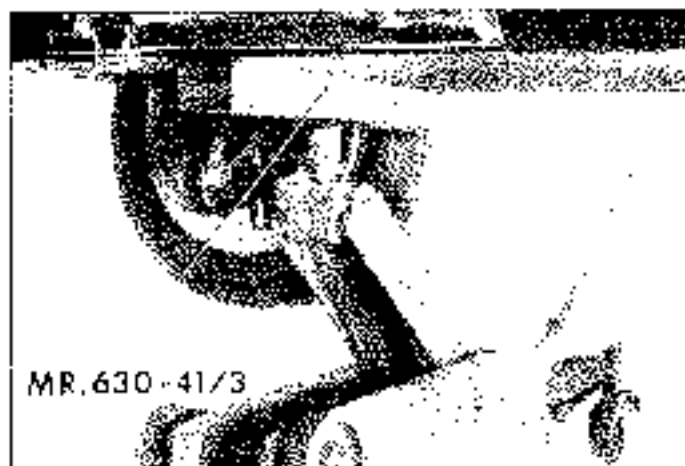
- vehicle unladen
- fuel tank filled up
- a 70 kg load in place of the driver's seat. It corresponds to a distance **a = 1435 mm** measured between the axis of the wheels and the axis of the rear axle crossmember.

Adjustment :

Depress the brake pedal, keep it in this position to close the brake pressure limiter. Slacken the nuts (1) and move the lever/support assembly to obtain a distance **b = 5 to 5.5 mm** between the control lever and the control spring stop.

I. ADJUSTING THE ECCENTRICS.

PL 479

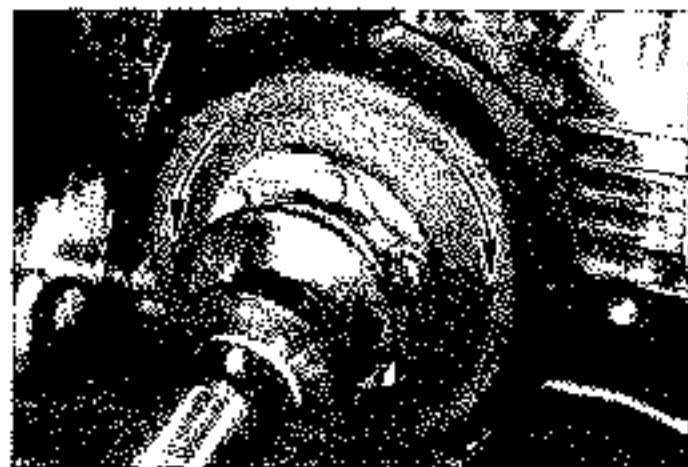
**Adjusting the front brake eccentrics :**

1. Lift the front part of the vehicle (using support MR. 630-41 : 3 on a mobile jack).
2. Turn one of the eccentrics in the direction indicated by the arrow, while rotating the drum by hand, until the brake shoe comes into contact with the drum. Turn the eccentric slightly back wards to release the drum. Tighten the eccentric once again until the brake shoe lining rubs slightly. Repeat the operation for the other brake shoe.

NOTE : This operation should be carried out on a releasing system.

The brake shoes should be adjusted as near the drum as possible to ensure a short pedal travel.

PL 480



Manuel 816-4

3. Repeat the operation for the other wheel.
4. Lower the vehicle to the ground.

Adjusting the rear brake eccentrics :

PL 481



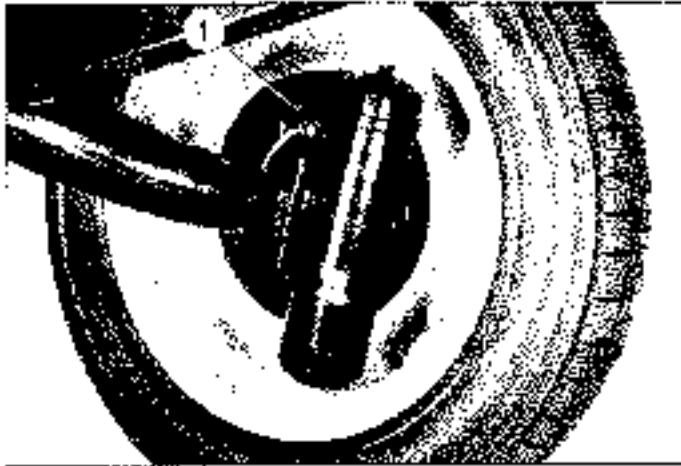
5. Lift the rear part of the vehicle (using support MR. 630-41 : 3 on a mobile jack).
6. Proceed as in paragraph 2 above. Turn the eccentrics as indicated by the arrows.
7. Repeat the operation on the other wheel.
8. Lower the vehicle to the ground.

II BLEEDING THE BRAKING SYSTEM.

Hydraulic fluids :

Vehicles fitted with drum brakes on all four wheels : Use hydraulic fluid corresponding to norm SAE J 1703 only.
Vehicles fitted with disc brakes at the front : Use green LHM fluid exclusively.

Pl. 515



1. Top up the brake fluid reservoir (s.l).

NOTE : If the vehicle is fitted with a dual circuit master cylinder, bleed the front wheel circuit first.

2. Remove the rubber cap (1) protecting the bleed screw on rear wheel cylinder (right hand side). Place a transparent plastic tube on the bleed screw (a container is necessary for collecting the brake fluid)

3. Bleed the braking system :

Slacken the bleed screw by approximately half a turn. Have an assistant depress the brake pedal. When the brake pedal is fully depressed tighten the bleed screw. Release the pedal.

Repeat the operation until air bubbles no longer appear in the transparent tube

Check the level in the brake fluid reservoir and top up as required

Take care to tighten the bleed screw only when the pedal is being depressed.

4. Remove the plastic tube. Replace the rubber cap on the bleed screw.

5. Repeat these operations for each wheel, in the following order :

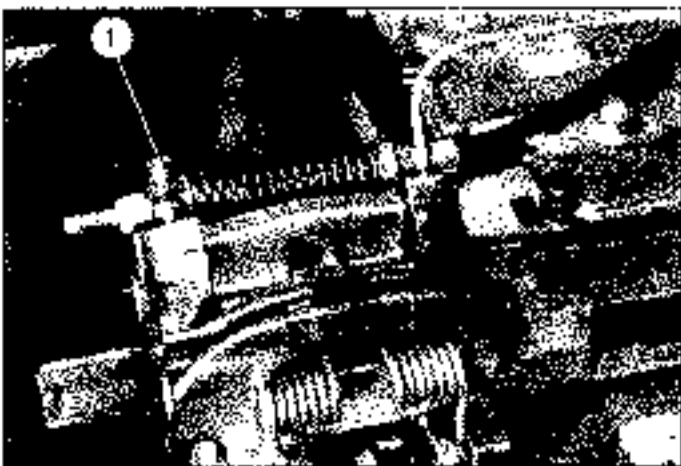
- rear wheel, right hand side,
- rear wheel, left-hand side,
- front wheel (right-hand side [when disc brakes are fitted : only one bleed screw on the front right-hand calliper],
- front wheel, left hand side.

6. Top up the brake fluid reservoir.

1156



5501



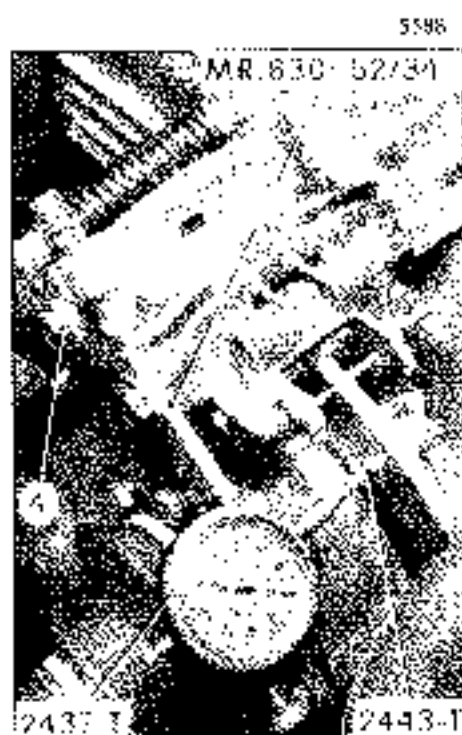
III. CHECKING THE HYDRAULIC SYSTEM AND ITS COMPONENTS FOR LEAKS.

Depress the brake pedal as firmly as possible for 30 seconds to 1 minute

When resistance is felt in the pedal, the sealing is good. If the pedal keeps going down more or less quickly, there is a leak.

Watch the fluid level in the reservoir at the same time. If the fluid is forced back, the cap of the master cylinder is not leak-tight and the unit must be repaired.

IV. CHECKING THE FRONT DISC LATERAL RUN-OUT.



Use dial gauge 2437-T with bracket MR. 630-52/34, fitted with adaptor 2443-T.

a) Checking the lateral run-out, caliper in position :

Fix the square support using the screw (4) which secures the front part of the caliper.

b) Checking the lateral run-out, caliper removed :

Fit a spacing tube (A) (length = 110 mm, 4.33 in - interior diameter = 20 mm, 0.79 in) between the support and the gearbox to enable the positioning of the necessary instruments.

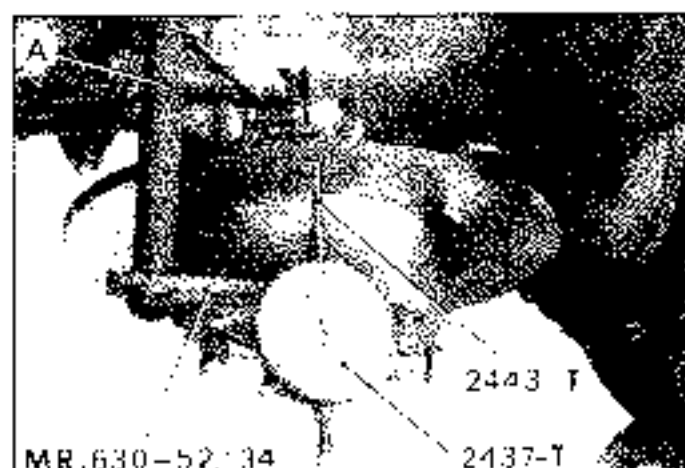
The lateral run-out thus measured should not exceed 0,2 mm (0.0078 in).

NOTE: This measurement corresponds to the sum of both disc run-out and gearbox outlet shaft run-out. In the case it exceeds 0,2 mm (0.0078 in) it is necessary to test the six possible positions for disc and gearbox assembly.

If this cannot be achieved, change either the disc or the gearbox outlet shaft and repeat the check.

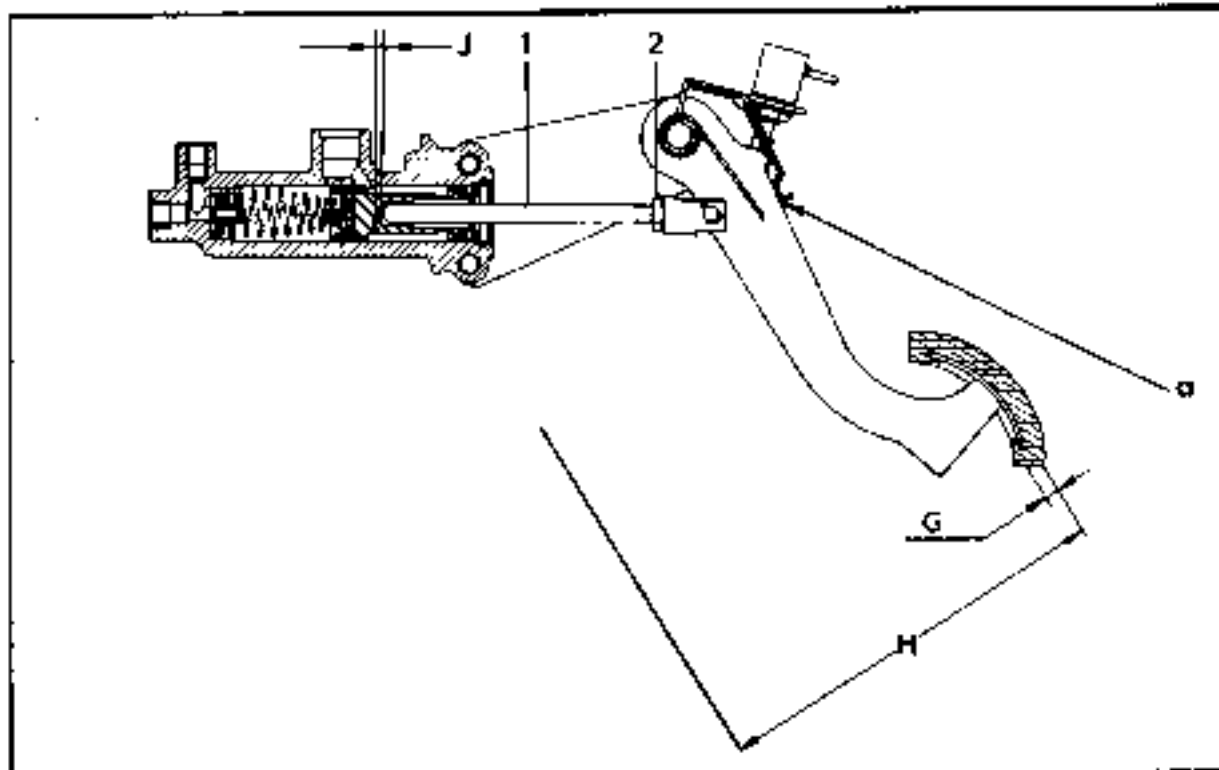
Manual B14-1

5509



I. ADJUSTING THE BRAKE PEDAL CLEARANCE.

A. 45-8 3



10 741



1. Checking the pedal height :

In order to check the height H of the pedal according to the type of vehicle considered see Operation A. 450-00. This check must be carried out with the pedal on stop « a ». In the case the height H is not conformable bend the support plate at « a » to obtain the desired clearance.

2. Adjusting the pedal clearance :

Slacken the lock nut (2). Turn the push rod (1) to obtain a clearance $\delta = 0.5$ to 2 mm (0.019 to 0.039 in.) between the push rod and the master cylinder piston which corresponds to a pedal clearance of 5 mm ($\delta + G = 5$ mm, 0.19 in.)

3. Adjusting the stoplamp switch :

a) Check that the brake pedal is correctly adjusted in rest position (see paragraphs 1 and 2 above).

b) Depress the brake pedal with the hand. The stoplamps should come on as soon as the pedal clearance has been taken up and the master cylinder piston has begun to move.

If necessary, bend the stoplamp support plate to obtain this condition.

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**Adjusting the pedal clearance :**
For an old pedal gear.

Tighten nut (2) locking the push rod.
Turn the rod so as to obtain a clearance of 0.5 to 1 mm (0.012 to 0.039 in) between the push rod and the master cylinder piston.

Adjusting the stoplamp switch

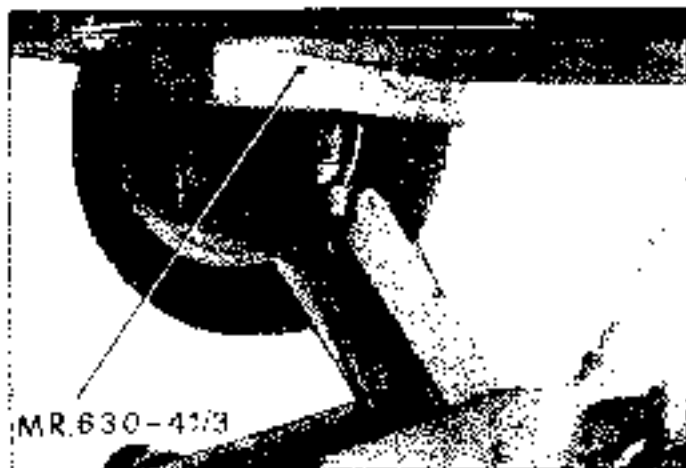
For a pedal travel of 1.5 mm (0.059 in) the stoplamps should not come on.

For a pedal travel of 10 mm max (0.039 in), the stoplamps should come on.

Otherwise, move the locking collar (1) on the pedal until these conditions have been met.

ADJUSTING THE HANDBRAKE

PL 478



NOTE The handbrake operates the front brake drums only.

1. Raise the front part of the vehicle using support MR. 630-41/3 on a mobile jack.

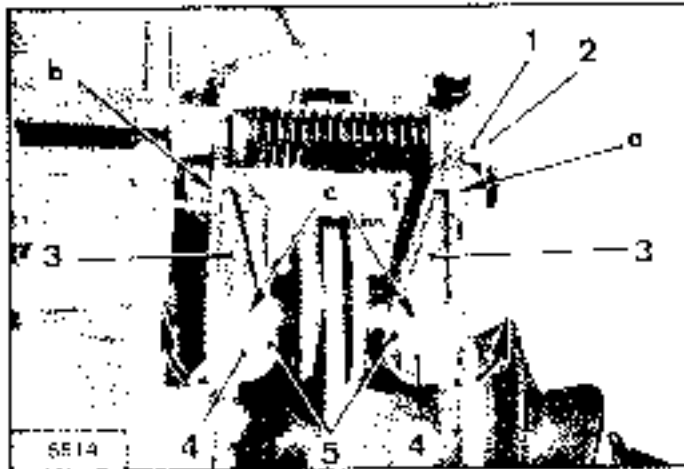
FL 518



2. Adjust the tension of both brake cables in turn, using the nuts (1) so that the wheels begin to tighten when the brake handle is raised to the third notch, and when it has reached the fifth notch, the wheels are locked.

ADJUSTING THE HANDBRAKE

The handbrake controls four pads which act upon the front brake discs. It is completely independent from the main brake.



1. Raise the front part of the vehicle and place it on stands. Push the parking brake handle fully in.

2. Adjust the eccentrics :

- Remove the flexible ducts for heating system. Slacken the securing screws (4) of the eccentrics (5). Slacken the lock nuts (2) and adjusting nuts (3).
- Set the eccentrics to the position indicated on the photo (slot 'a' pointing upwards).
 - Set the eccentrics to the position allowing maximum clearance (spanner 2115-T). Make sure that the pins (1) are on their stops at 'a' and 'b'.
 - Turn eccentric (5) in the direction indicated by the arrow until the pads just come in touch with the disc. This adjustment must be carried out at the point of maximum run-out (turn the disc by rotating the corresponding wheel).
 - Tighten the securing screws (4) to 4 da Nm (28.88 ft.lbs.), making sure that the eccentrics do not turn while tightening.

3. Adjust the handbrake cable :

- Make sure that the sheath ends (7) and the sheaths (6) are correctly positioned.
- Successively turn the right-hand and left-hand nuts (1) so that the wheels begin to tighten when the brake handle is raised to the third notch and they are locked when the fifth notch has been reached.

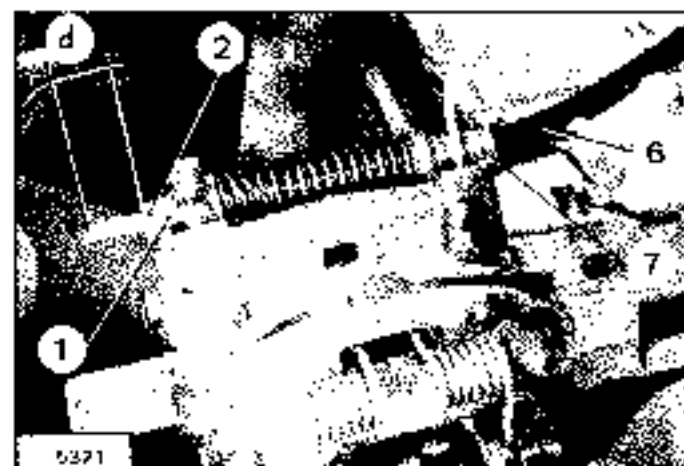
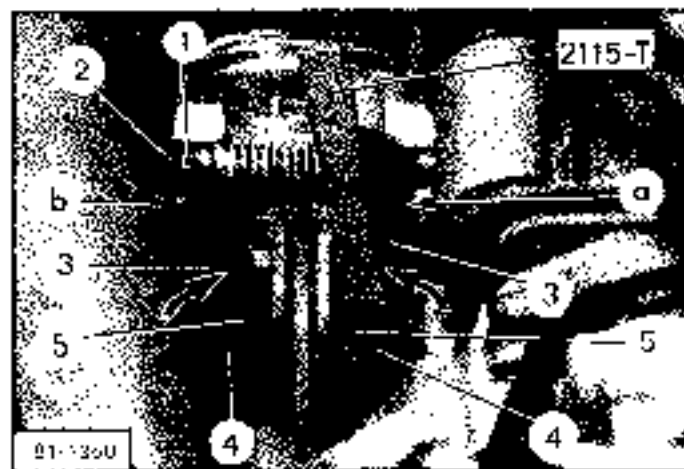
NOTE : The lengths of the cable threads must be approximately the same on the right and left hand sides (within 5 mm (0.19 in)).

Tighten the lock nuts (2) to 1.5 daNm (10.83 ft.lbs.)

4. Check the hand brake :

- Make sure that the handbrake does not work loose when raised to locking position. Operate the control lever several times, ensuring that the adjustment does not vary.

5. Lower the car to the ground



ELECTRICAL SYSTEM

OPERATION No. A. 530-0 : Characteristics and checks of electrical components.

Op. A. 530-0

CHARACTERISTICS.

I. DYNAMOS AND VOLTAGE REGULATORS.

6 volt equipment :

Make	AZ and AY vehicles		AM and AK vehicles	
	Dynamo	Voltage regulator	Dynamo	Voltage regulator
DUCELLIER	7276 G	8325 A	7301 G	8308 A
PARIS-RHONE	G 11 R 111	XT 212	G 10 C 26	XD 213

12 volt equipment :

Make	Dynamo	Voltage regulator
DUCELLIER	7302 G	8243 F
PARIS-RHONE	G 10 C 51	YT 2116

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Skimming the commutator :

Type of dynamo	7276 G	G 11 R 111	7301 G	G 10 C 26	7302 G	G 10 C 51
min. diameter of commutator after skimming	52.5 mm (2.06 in.)	51 mm (2 in.)	35 mm (1.37 in.)	35.5 mm (1.39 in.)	35 mm (1.37 in.)	35 mm (1.37 in.)

Testing the dynamos on a bench or on the vehicle :

(Dynamo without regulator : « DYN » terminal connected to « EXC » terminal and body of dynamo to earth.)

Type of dynamo	7276 G	G 11 R 111	7301 G G 10 C 26	7302 G	G 10 C 51
Cut-in speed at 6.5 V (when cold)	1350 rpm	1200 rpm	950 rpm		
Flow at 6.5 V (when cold)	12 A at 1800 rpm 21 A at 2200 rpm	13 A at 1800 rpm 25 A at 2200 rpm	8 A at 1500 rpm 22 A at 2000 rpm		
Cut-in speed at 13 V (when cold)				1520 rpm	1700 rpm
Flow at 13 V (when cold)				12 A at 2000 rpm 25 A at 3000 rpm	19 A at 2250 rpm 33 A at 3000 rpm

TESTING VOLTAGE REGULATORS ON A BENCH.

A - 8325 A regulator :

Pull in voltage : 6 to 6.5 volts (taken cold).
 Drop out voltage : at least 1 volt less than the pull in voltage.
 Return current : 5 amperes at 6 volts (taken cold).
 REGULATION : (with the dynamo turning at 3500 rpm) :

a) Current limiting section :

Set the voltage to 6.6 volts, the current should be 23 to 25 amperes

b) Voltage regulating section :

Set the current to 4 amperes, the voltage should be 7.1 to 7.5 volts.
 Set the current to 18 amperes, the voltage should be 6.9 to 7.3 volts.

B - XT 212 regulator :

Pull in voltage : 6 to 6.5 volts (taken cold).
 Drop out voltage : at least 1 volt less than pull in voltage.
 Return current : 3 to 7 amperes at 6 volts (taken cold).
 REGULATION : (with dynamo turning at 3500 rpm) :

a) Current limiting section :

Set the voltage to 6.6 volts, the current should be 23 to 25 amperes.

b) Voltage regulating section :

Set the current to 5 amperes, the voltage should be 7.3 to 7.7 volts.
 Set the current to 18 amperes, the voltage should be 7.1 to 7.5 volts.

C - 8308 A and XD 213 regulators :

Pull in voltage : 6 to 6.5 volts.
 Drop out voltage : at least 1 volt less than the pull in voltage.
 REGULATION : (with dynamo turning to 3500 rpm) :

a) Current limiting section :

Set the voltage to 6.5 volts, the current should be 25 to 32 amperes.

b) Voltage regulating section :

Set the current to 5 amperes, the voltage should be 7.5 to 8.3 volts.
 Set the current to 25 amperes, the voltage should be 6.6 to 7.2 volts.

D - 8343 F and YT 2116 regulators :

Pull in voltage : 12 to 15.6 volts.
 Drop out voltage : at least 1 volt less than the pull in voltage.
 Return current : 5 amperes max. at 13 volts.
 REGULATION : (Dynamo turning at 3500 rpm) :

8343 F regulator :

a) Current limiting section :

Set the voltage to 13.2 volts, the current should be 20 to 22 amperes.

b) Voltage regulating section :

Set the current to 2 amperes, the voltage should be 14 to 14.4 volts.
 Set the current to 17 amperes, the voltage should be 13.5 to 14.4 volts.

YT 2116 regulator :

Set the voltage to 12.5 volts, the current should be 30 to 33 amperes.
 Set the voltage to 13.5 volts, the current should be 18 to 33 amperes
 Set the voltage to 14 volts, the current should be 5 to 28 amperes.

II. ALTERNATORS AND REGULATORS (12 volts).

IMPORTANT :

- Never rotate the alternator unless it is connected to the battery.
- Never connect the alternator to a battery with reversed posts.
- Never check the operation of the alternator by short circuiting the + (terminal) and the earth or the - (XC - terminal) and the earth.
- Never recharge the battery and never use an arc welder on the chassis unless both cables (positive and negative) have been disconnected and the earth positive cable has been insulated.

A. DUCELLIER 7522 B alternator :

On AK vehicles (3 1968 → 5 1968) and on AM 4 - AM 6 vehicles (7 1968 → 5 1969)

DUCELLIER 7542 A alternator (identical to the preceding one, except for the alternative outlet terminals to the transistorized relay for charging warning lamp).

On AYA 3 - Dyane 6 vehicles (1 1968 → 2 1968)

On AYA - Mehari vehicles (8 1968 → 7 1969)

Nominal rating : 260 watts.

Nominal current at 13 volts : 20 amperes at 5000 rpm (alternator speed)

Resistance of rotor : 7.4 Ω

Pull in speed : 1500 rpm (alternator speed).

Ratio of alternator rotating speed/ engine rotating speed : 2.1 : 1.

DUCELLIER 7542 G alternator :

On AYA 3 - Dyane 6 vehicles fitted with the - PROJO - 20° - heating system.

Nominal rating : 320 watts.

Nominal current at 13 volts : 25 amperes at 6000 rpm (alternator speed).

DUCELLIER 8347 B alternator (single stage u) - type I for above mentioned alternators.

B. DUCELLIER 7534 A alternator :

PARIS-RHONE A 11 M 4 alternator :

the following vehicles

- AY C 4 - Mehari	(7 1969 → 9 1973)
- AK (3)	(1968 → 7 1970)
- AY - Dyane 4	(13 1968 → 2 1970)
- AYB - Dyane 6	(15 1968 → 2 1970)

PARIS-RHONE A 11 M 11 alternator :

On AY C 4 - Mehari vehicles (9 1973 → 9 1974)

DUCELLIER 7532 alternator

PARIS-RHONE A 11 M 6 alternator (9 1973 →)

PARIS-RHONE A 11 M 12 alternator (9 1973 →)

Identical to the three preceding ones, but without alternative output connections for charging warning lamp.

the following vehicles

- AY - Dyane 4	(12 1970 →)	
- AY A B - Dyane 6	(12 1970 →)	
- AK (7)	(1970 →)	
- AYA 2 - 2 CV 4 - and AY KA - 2 CV 6	(12 1970 →)	
- AY C (7)	(1972 →)	
- AY - AM 6	(13 1968 → 3 1969) and AM 3 - AM 6	(13 1969 →)
- AY C 4 - Mehari	(10 1974 →)	

FEMSA ALN 12-1 alternators on all A vehicles (2 1978 →)

Output : 400 watts

Voltage : 14 volts

Nominal current : 28 amp. at 6000 rpm (alternator speed)

Resistance of rotor : 7 Ω

Pull in speed : 1450 rpm (alternator speed)

Ratio of alternator rotating speed/ engine rotating speed : 1.8 : 1

DUCELLIER 8347 C regulator

PARIS-RHONE AYA 213 regulator

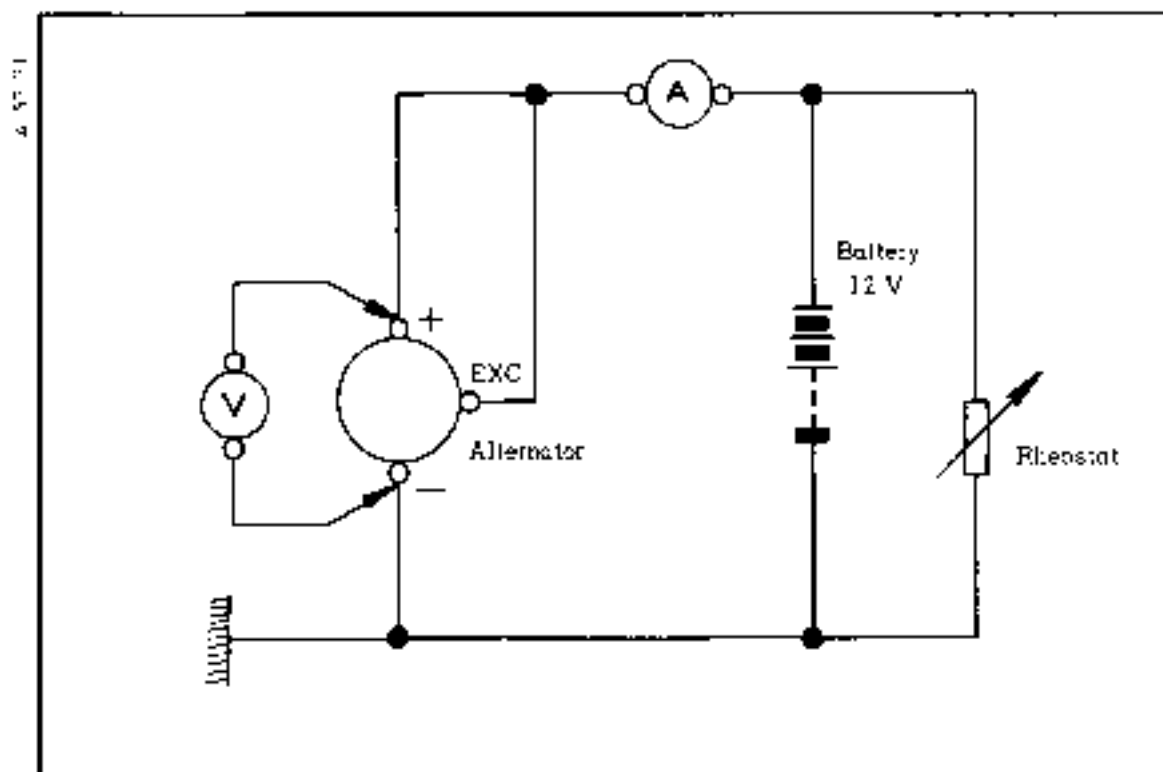
Suitable for all seven alternators mentioned above.

C. DUCELLIER 8363 transistorized relay :

Fitted on vehicles equipped with alternators having alternative output connections : alternator 7542 A - 7542 G - 7534 A - A 11 M 4 - A 11 M 11 .

This relay switches off the charging warning lamp when the alternator is delivering the normal current.

CHECKING THE OUTPUT OF AN ALTERNATOR.



Connect up as per diagram. Using a voltmeter **V**, an ammeter **A** and a rheostat, or better still, using a combined « Voltmeter - ammeter - rheostat » now available commercially.

Checking the output : (with a fully charged battery)

a) 7522 B and 7542 A alternators :

In order to measure the output of the alternator, progressively increase the alternator speed and actuate the rheostat to maintain the voltage at 13 volts.

Output : 5 amperes at 900 rpm engine speed (1900 rpm alternator speed) and at 13 volts.
17 amperes at 1800 rpm engine speed (3800 rpm alternator speed) and at 13 volts.
20 amperes at 2400 rpm engine speed (5000 rpm alternator speed) and at 13 volts.

b) 7542 G alternator :

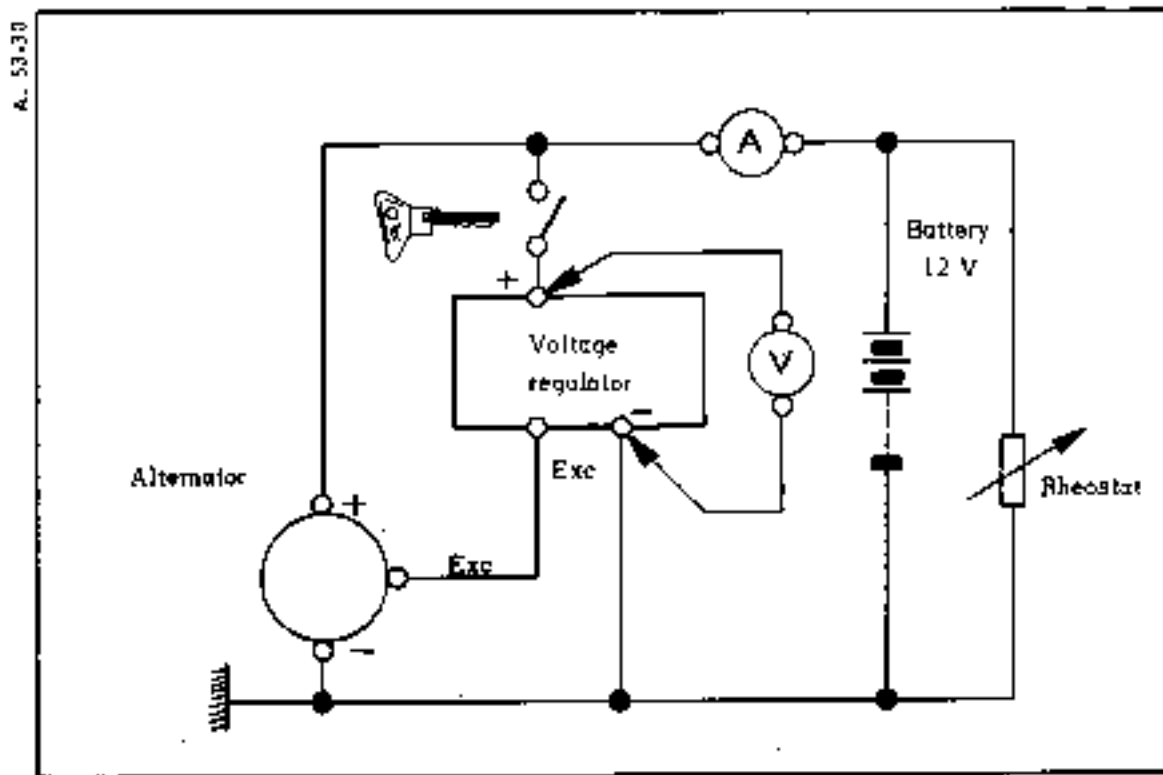
Output : 7.5 amperes at 1300 rpm engine speed (2700 rpm alternator speed) and at 13 volts.
24 amperes at 2900 rpm engine speed (6000 rpm alternator speed) and at 13 volts.

c) 7542 A - 7532 A - A 11 M 4 - A 11 M 6 - A 11 M 11 - A 11 M 12 - ALN 12-1 alternators :

In order to measure the output progressively increase the alternator speed and actuate the rheostat to keep the voltage at 14 volts.

Output : 6 amperes at 1050 rpm engine speed (1900 rpm alternator speed) and at 14 volts.
22 amperes at 2350 rpm engine speed (4200 rpm alternator speed) and at 14 volts.
28 amperes at 4450 rpm engine speed (8000 rpm alternator speed) and at 14 volts.

CHECKING A 8347 OR AYA 213 TYPE VOLTAGE REGULATOR.



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Connect up as per diagram, using an ammeter A, a voltmeter V and a rheostat, or, better still, using a combined « voltmeter - ammeter - rheostat », now available commercially.

Run the engine so as to obtain an alternator speed of 5000 rpm, ie :

- 2400 rpm engine speed for vehicles fitted with the following types of alternators : 7522 B - 7542 A - 7542 G
- 2800 rpm engine speed for vehicles fitted with the following types of alternators : 7534 A - 7532 A - A 11 M 4
A 11 M 6 - A 11 M 11 - A 11 M 12 -- A 11 M 12-1

Actuate the rheostat so as to obtain an output of 15 amperes.

Cut off the output by switching off the ignition for a very short time in order demagnetize the voltage regulator.

Wait until the engine has regained its speed. The voltmeter should then indicate a voltage lying between :

- 14 and 14.6 volts at 20° C (———→ 11/1975)
- 13.6 and 14.2 volts at 22° C (11/1975 ———→)

NOTE : These figures depend on temperature. The voltage varies inversely to the temperature by an average of 0,2 volts for each 10° C.

If the voltage measured is not within tolerance, the regulator is defective.

III. STARTER MOTORS.

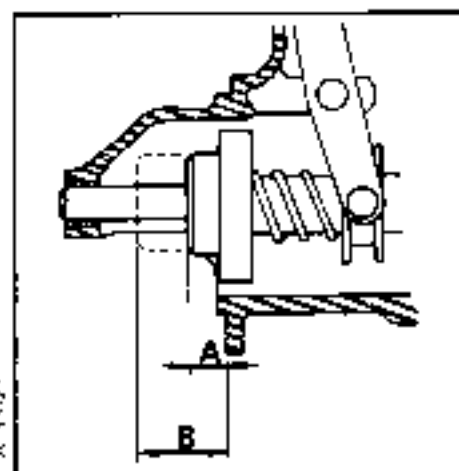
6 volt starter motors (operated by pull knob) :

Make and type	Minimum dia. of commutateur after skimming	Current taken		Fitted on vehicles
		off load	when starting	
DUCELLIER 6112 A	31.5 mm (1.24 in)	30 to 35 A	70 to 90 A	AM 7 → 1966 AZ 7 → 1970
PARIS RHONE D 8 L 36	34.5 mm (1.35 in)	30 to 35 A	70 to 90 A	AK 7 → 1966 AY 7 → 1968 AZU 7 → 1972
ISKRA KRANJ 2C 4	32 mm (1.25 in)	30 to 35 A	70 to 90 A	
DUCELLIER 6188 A	31.5 mm (1.24 in)	30 to 35 A	70 to 90 A	
PARIS-RHONE D 8 L 79	34.5 mm (1.35 in)	30 to 35 A	70 to 90 A	AY 13 1968 → 1970

12 volt starter motors (operated by pull knob) :

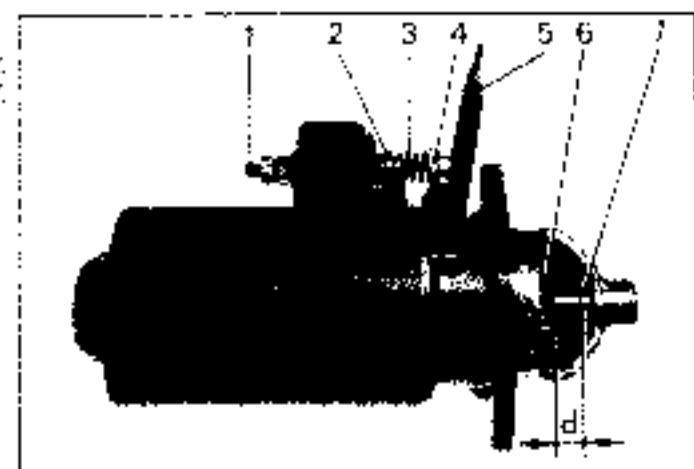
Make and type	Min dia. of commutateur after skimming	Current taken		Fitted on vehicles
		off load	when starting	
DUCELLIER 6134	31.5 mm (1.24 in)	25 to 30 A	45 to 60 A	AY (12 volts) 17 → 2 1970 AK (2 1966 → 1972) AYA 3 x Dyane 6 → 10 1958 AM 7 1966 → 3 1968 DUC AM 7 1966 → 3 1969 P.R.
PARIS RHONE D 8 L 67	34.5 mm (1.35 in)	25 to 30 A	45 to 60 A	
DUCELLIER 6174	30.5 mm (1.26 in)	25 to 30 A	45 to 60 A	AZ (12 volts) 1 → 2 1970 AYA 2 (12 volts) 13 1968 → 2 1970
PARIS RHONE D 8 L 80	34.5 mm (1.35 in)	25 to 30 A	45 to 60 A	AYB → 9 1969 AY CA - Meharvi → 12 1971
DUCELLIER 6195 A	32 mm (1.25 in)	25 to 30 A	45 to 60 A	AM 15 1968 → 1 1969

Adjustment of starter drive :



A 5327

6 Volts		12 Volts	
DUCELLIER	PARIS-RHONE	DUCELLIER	PARIS RHONE
6112 6188	D 8 L 36 D 8 L 79	6134 6195 A	D 8 L 67 D 8 L 80
A = 13.7 mm (0.77 in) B = 31.7 mm (1.24 in)	A = 21 mm (0.82 in) B = 31.7 mm (1.24 in)	A = 19.7 mm (0.77 in) B = 31.7 mm (1.24 in)	A = 21 mm (0.82 in) B = 31.7 mm (1.24 in)



A 5328

Adjusting a 6134 D and D 8 L 67 starter switch :

1. Connect a 12 volt supply between the supply terminal (1) and the frame, while switching in a test lamp in series.
2. Operate lever (5) until the lamp comes on. At this point, the front face of the central pinion (6) should be located at a distance $d = 1 - 0.2$ mm (0.39 ± 0.078 in.) from the thrust washer (7).
NOTE : The thrust washer (7) has been fitted on these types of starter motor since January 1967.
3. Otherwise adjust the travel of the push rod (2) by turning the thrust stop (4) of the lever (5). Compress the spring (3) to release the slot of the stop (4) from the lever (5).

12 volt starter motors with solenoid :

Make and type	Min. dia. of commutator after skimming	Current taken		Fitted on vehicles
		off load	when starting	
DUCELLIER 6202 A or B	31 mm (1.22 in.)	30 to 40 A	150 A	AZ AYA 2 (2 1970) → 1 AZU → 17 1972 → 1
PARIS-ROHNE D 8 E 99 or D 8 E 116 (to 78 → 11 78) D 8 L 148 (11 78 → 1)	34,5 mm (1.35 in.)	30 to 40 A	150 A	AYB (11 1969) → 2 (1970) AY-CB (12 1970) → 1
ISKRA ZB 4 (11 77 → 11 76) ISKRA AZH 0005 (9 76 → 1)	31 mm (1.22 in.)	30 to 40 A	150 A	AY-CA (12 1971) → 1 AK (17 1973) → 1
FEMSA MTA (2-30 (7 71) → 1)		30 to 40 A	150 A	AM 3 (13 1969) → 1
DUCELLIER 6202 C	(flat commutator)	30 to 40 A	150 A	All A vehicles (12 1974) → 1

CHECKING A DUCELLIER 6202 OR AN ISKRA ZB 4 STARTER MOTOR.

1. Test on vehicle :

a) Make sure that the battery is correctly charged and measure :

- the current taken with pinion locked : 280 amperes

b) Remove the starter motor and measure :

- the current taken off load : 30 to 40 amperes

2. Bench test :

a) Average torque at 1000 rpm : 0.4 da Nm

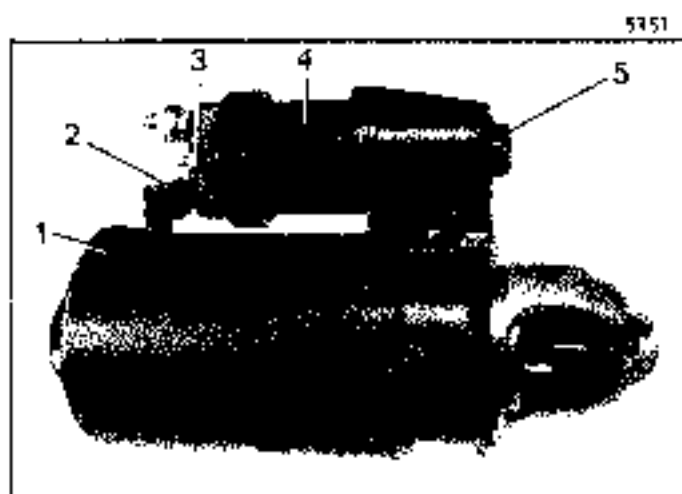
Current taken at this torque : 215 amperes

b) Maximum power : 589 watts

Corresponding torque : 0.25 watts

Current taken at this torque : 150 amperes

ADJUSTING THE CONTROL PINION OF A DUCELLIER 6202 OR AN ISKRA ZB 4 STARTER MOTOR.



1. Disconnect the earth cable from the negative terminal of the battery.

2. Remove the starter motor.

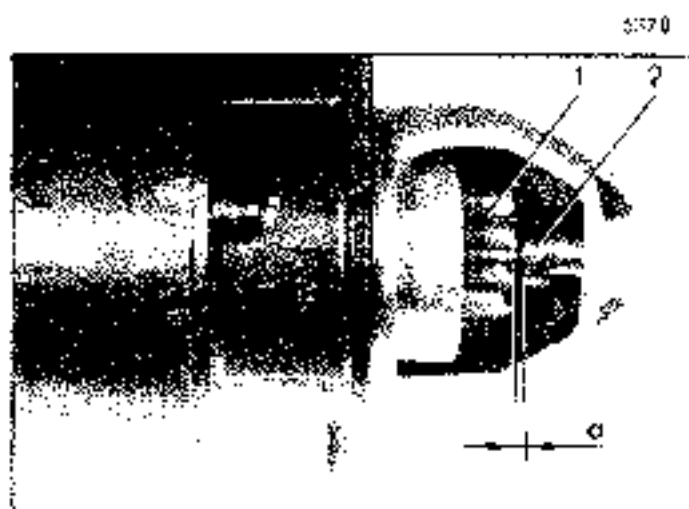
3. Remove the plastic plug (5) of the solenoid (4).

4. Disconnect the inductor supply wire (1) from the terminal (2) (marked « DEM ») of the solenoid.

5. Energize the solenoid (4). For that purpose, connect :

a) a battery positive terminal to the solenoid supply terminal (3).

b) the battery negative terminal to the terminal (2) (marked « DEM ») of the solenoid.



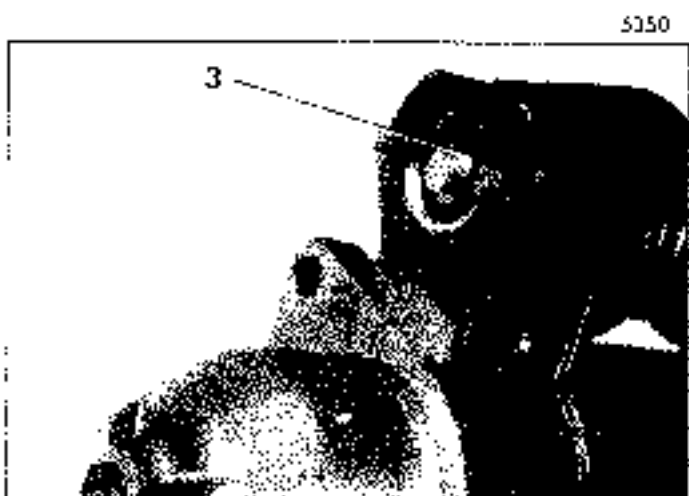
With control pinion (1) in forward position, measure the distance « a » between the end of pinion (1) and stop (2).

This distance should be : a = 1 mm (± 0.02 mm).
Otherwise reset the adjusting screw (3).

6. Disconnect the battery from the solenoid supply terminals (4) and from the inductor supply terminals (5).

The control pinion (1) will return to its free position. Measure the distance « b » between the thrust face of the flange for starter motor which bears on the clutch housing and the end of the control pinion (1).

This distance should be : b = 21 mm (± 0.02 mm).
Otherwise recondition the starter motor.

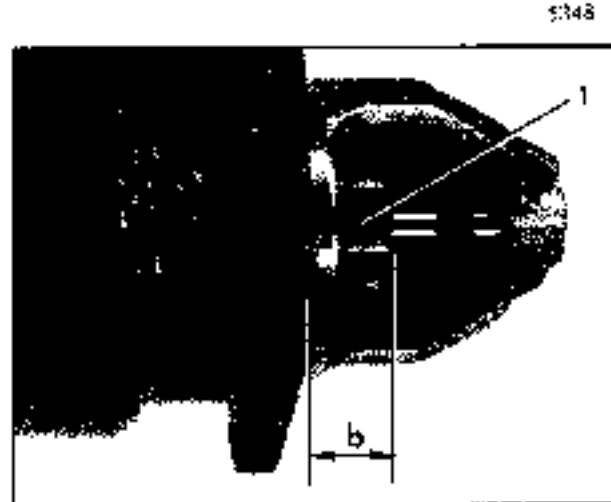
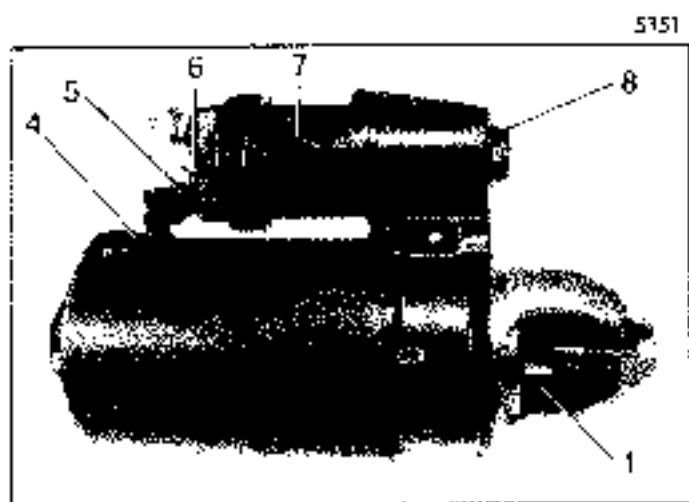


7. Connect the inductor supply wire (4) to the terminal (5) (marked « DEM ») of the solenoid (7).

8. Fit the plastic plug (6).

9. Refit the starter motor on the vehicle.

10. Connect the earth cable to the battery negative terminal.



CHECKING A PARIS RHONE D 8 E 99 or D 8 E 116 from 1972 → STARTER MOTOR.

1. Test on vehicle :

- a) Make sure that the battery is correctly charged and measure :
the current taken with pinion locked
- b) Remove the starter motor and measure :
the current taken off load :

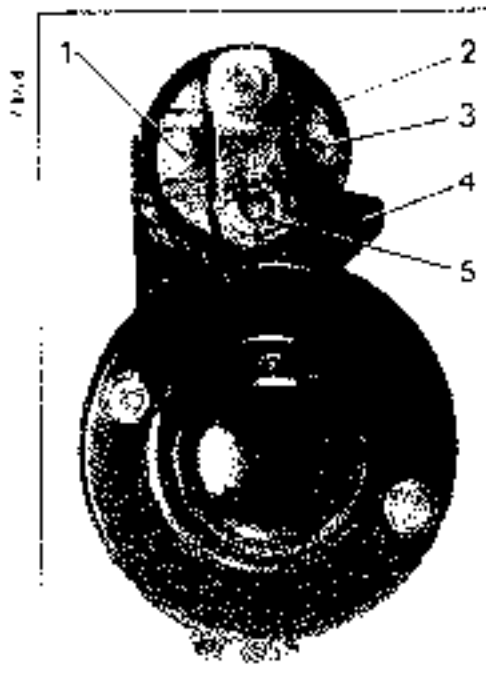
2. Bench test :

- a) Average torque at 1000 rpm
- Current taken at this torque
- b) Maximum power :
- Corresponding torque
- Current taken at this torque

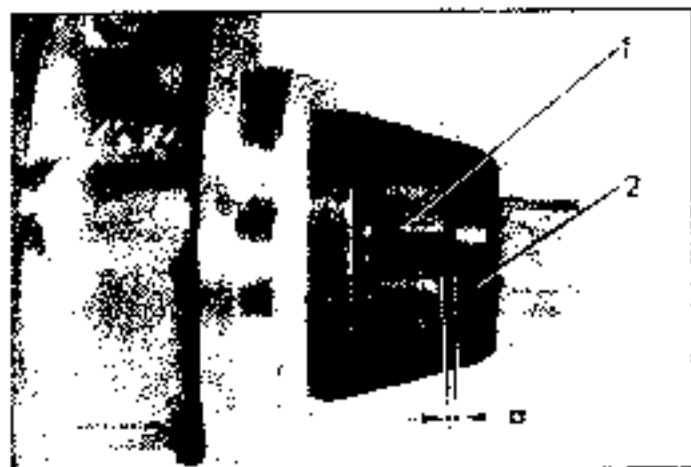
	D 8 E 99	D 8 E 116
	330 to 340 A	360 A
	30 to 40 A	30 to 40 A
a) Average torque at 1000 rpm	0.6 da Nm (0.023 ft.lbs)	0.5 da Nm (0.018 ft.lbs)
- Current taken at this torque	220 A	220 A
b) Maximum power	736 W	662 W
- Corresponding torque	0.38 da Nm (0.014 ft.lbs)	0.35 da Nm (0.013 ft.lbs)
- Current taken at this torque	180 A	175 A

Manual 816.1

ADJUSTING THE CONTROL PINION ON A
PARIS RHONE D 8 E 99 or D 8 E 116 STARTER MOTOR WITH A
CED 402 SOLENOID CONTACTER.



1. Disconnect the earth cable from the battery negative terminal.
2. Remove the starter motor.
3. Disconnect the inductor supply lead (4) from the solenoid terminal (5).
4. Energize the solenoid. For that purpose, connect :
 - a) the positive terminal of a battery to the solenoid supply terminal (1)
 - b) the negative terminal of the battery to the solenoid terminal (3).



With the control pinon (1) in forward position, measure the distance "a" between the end of the control pinon (1) and the stop (2).

This distance should be : a = 1 mm (0.039 in) for 1015 starter motor. If it is not, proceed as follows :

Remove the solenoid from the starter motor.
Press in the spring cup (in the direction indicated by arrow : b-c) and hold the yoke (3). Screw it in or out on the solenoid spindle so as to obtain the distance "a".

If a = 1 mm (0.039 in) : screw the yoke in.

If a = 2 mm (0.079 in) : screw the yoke out.

(Screw it in or out by half a turn at a time).

Connect the solenoid and the starter motor.



5. Disconnect the battery from the solenoid terminals (a) and (b).

The control pinon (1) will return to its free position. Measure the distance "c" between the thrust face of the starter motor (clutch bearing on clutch housing) and the end of the control pinon (1).

This distance should be : c = 21 mm (0.82 in)

for 1015 and 99 starter motor (c = 21 mm)

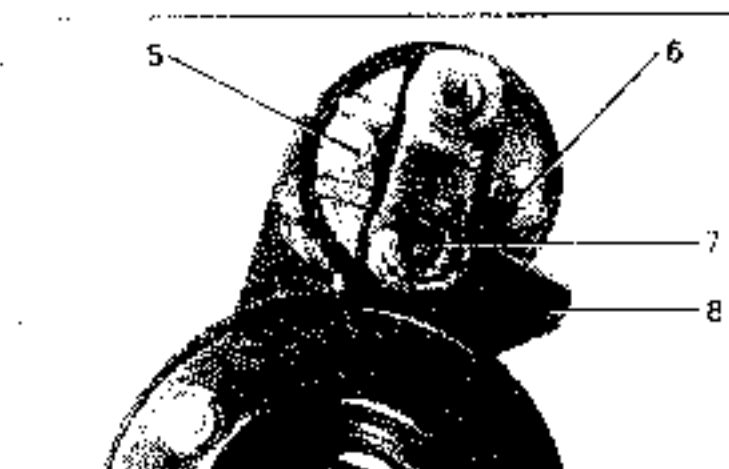
for 108 and 116 starter motor).

Otherwise recondition the starter motor.

6. Connect the inductor supply wire (5) to the terminal (7) of the solenoid (4).

7. Re-fit the starter motor on the engine.

8. Connect the earth cable to the battery negative terminal.



IV. 24 volt EQUIPMENT

(Special for MEHARI vehicles - MILITARY type)

This vehicle differs from the standard version in a 24 volt system designed to operate a special radio equipment (transceiver).

BATTERIES.

Two 12 volt batteries connected in series.

Make : STECO 12 volts, 41 Ah (200/40 Ah).

Type : 2 HN military.

Reference : 6140 - 14 - 238 - 9715.

An ARELCO terminal provided on the positive terminal enables the connection of the supply cables from the starter motor and the junction box.

ARELCO reference : P 1 M 64.

Tightening torque of the upper nut : 0.35 da Nm (2.52 ft.lbs.).

A R60 A 1 type DISCELLIER battery switch has been fitted on the scuttle panel (Reference : 1034 A).

NOTE One of the batteries is in the standard position. The fitting of the second one against the dashboard panel, on passenger side has entailed :

- The fitting of a dashboard panel support.
- The modification of the dashboard panel (a glove compartment has been added).
- The fitting of a battery inspection plate
- The fitting of a support and of a cover for this new battery.

ALTERNATOR.

PARIS-RHONE single phase alternator - 24 volts - 20 A

Reference : A 11 M 9 / → ? (1974) or A 11 M 13 / → ? (1974) → .

Maximum power as from 8000 rpm : 580 watts.

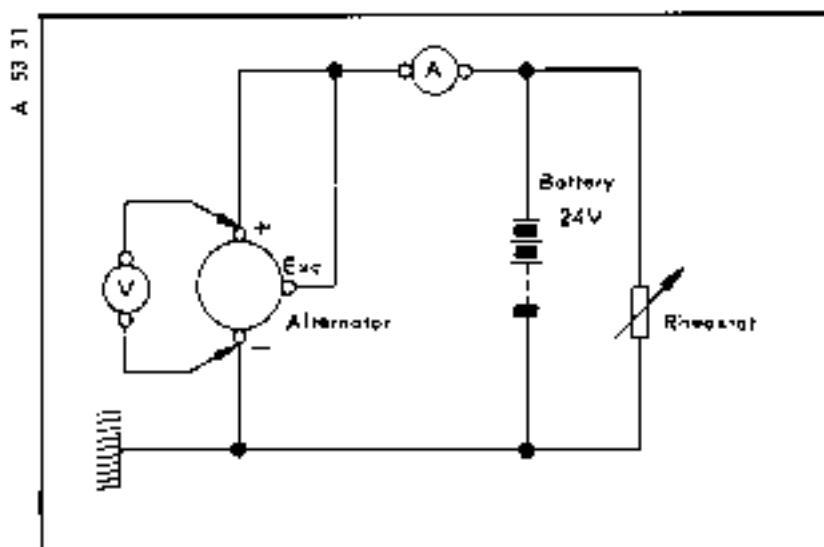
Resistance of inductors : 21 ± 5 Ω.

Brushes : minimum length after wear : 13 mm (0.51 in)

Strength of springs on new brushes : 2.85 - 10 N.

Ratio alternator speed / engine speed : 1.8/1.

CHECKING THE ALTERNATOR (with fully charged batteries :



Connect up as per diagram, using a voltmeter V, an ammeter A, and a rheostat.

In order to measure the output of the alternator, progressively increase the alternator speed and actuate the rheostat to maintain the voltage at 28 volts.

Cut-in speed : 1030 rpm engine speed (1850 rpm alternator speed) at 28 volts

Alternator output : 7.5 amperes at 1670 rpm engine speed ; 3000 rpm alternator speed ; at 28 volts

15.5 amperes at 2830 rpm engine speed ; 5100 rpm alternator speed ; at 28 volts

18.5 amperes at 4440 rpm engine speed ; 8000 rpm alternator speed ; at 28 volts

VOLTAGE REGULATOR.

PARIS-RHONE electronic voltage regulator, 24 volts, L. 21 type, reference ZL 2111

NOTE .

It is most essential to avoid certain mishandlings which would damage the voltage regulator :

- a) Make sure that the earth lead is connected to the earth shunt (securing screw) of the regulator.
- b) Avoid connecting the energizing circuit to earth.
- c) Never interchange the leads connected to the + and - EXC terminals of the regulator.
- d) Never stop the engine by means of the battery switch.

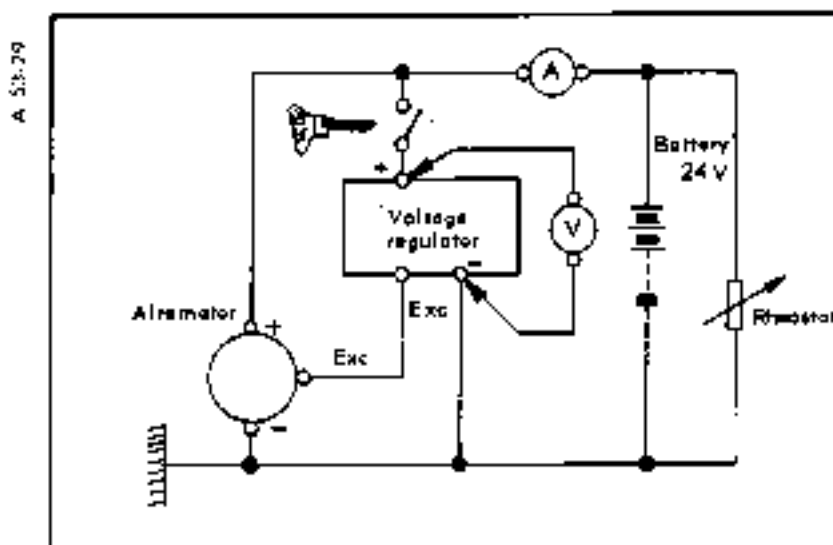
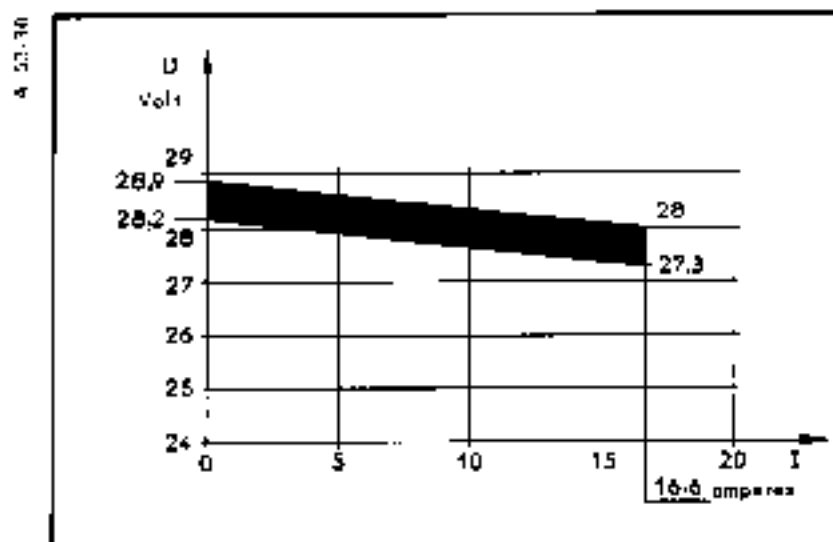
The battery switch should be turned off only when the engine is stopped.

Checking the voltage regulator :

Connect up as per diagram below using an ammeter A, a voltmeter V and a rheostat.

Run the engine at a speed of 3330 rpm (corresponding to 6000 rpm alternator speed).

Actuate the rheostat, without turning it back in order to increase the current supplied by the alternator and read the corresponding voltage.



Take several measurements and mark them on the graph represented above. They should fall within the shaded area. Otherwise, the regulator is defective.

NOTE : For this graph, the measurements have been read at a temperature of 20° C.

If the ambient temperature (t) is different, the values indicated on the graph must be modified.

The voltage varies inversely to temperature (t). The voltage correction to be applied is given by the formula :

$$U \text{ (volts)} = \frac{20^\circ - t}{10} \times 0.10$$

STARTER MOTOR.

PARIS-RHONE electromagnetically triggered starter motor, with positive control, 24 volts, reference : D B E 110.

Brushes : minimum length after wear	7 mm (0.27 in.)
Inductor resistance	0,034 Ω
Armature : - minimum diameter of commutator after skinning	35.5 mm (1.39 in.)
lateral play	0.5 to 1 mm (0.023 to 0.039 in.)

Starter drive (adjustment)

With starter motor removed : disconnect the inductor supply lead from the solenoid. Energize the solenoid and measure the distance between the stop washer and the end of the control piston. This distance should lie between 0.5 and 1.5 mm (0.019 to 0.059 in.). Otherwise turn the solenoid adjustment screw.

Solenoid :

Resistance of pull-in coil	1.16 Ω
(Heavy-gauge wire winding connected in series with the starter motor inductors)	
Resistance of hold-in coil	3.5 Ω
(Light-gauge wire winding connected in parallel)	

CHECKING THE STARTER MOTOR.**1°) Test on vehicle :**

Make sure that the batteries are correctly charged and measure

- The current taken with button locked	300 amp
- The current taken when starting	150 amp, approximately at 20° C
- The current taken off load, with starter motor removed	less than 50 amp.

2°) Test bench

a) Minimum torque at 1000 rpm	0.55 da Nm (3.97 ft.lbs.)
Current taken at this torque	220 amp.
b) Minimum power at 20.2 volts	1000 watts
Corresponding torque	0.35 da Nm (2.52 ft.lbs.)
Current taken at this torque	180 amp.

Manual B16v1

IGNITION**DISTRIBUTOR.**

Screened DUCLILIER distributor, 24 volts, reference : 4407 A.

Centrifugal advance curve and contact breaker setting identical with those of standard vehicles.

The fitting of this type of distributor entails the modification of the air intake cowling (the hole for passage of the screened supply lead to the distributor has been enlarged and the cut-out has been eliminated).

IGNITION COIL.

Screened A.B.G. ignition coil - 24 volts - reference : 177 267

Two screened high tension leads :

- left-hand lead : A.B.G. - reference : 177 264

- right-hand lead : A.B.G. - reference : 177 263

Tightening torque for screened lead unions on to coil and sparking plugs : 0.6 to 0.8 da Nm (4.32 to 5.77 ft.lbs.)

Filter on primary circuit of A.B.G. : reference : 177 205.

SPARK PLUGS.

Two screened A.B.G. spark plugs, reference : M C Y 78 I.

Electrode gap : 0.5 to 0.6 da Nm (0.019 to 0.023 ft.lbs.)

Tightening torque when cold : 2 to 2.5 da Nm (14 to 18.05 ft.lbs.)

ADJUSTING THE HEADLAMPS.

1025



NOTE : A manual control is provided for correcting the headlamp setting according to the vehicle load. However, it is necessary to carry out an initial adjustment with the car in running order (vehicle empty except for the tool kit, the spare wheel and 5 litres (1) gallon) of petrol in the tank).

A. HEADLAMP CONTROL (RODS).

(A) Vehicles.

1. Check the lateral play of the manual control :
If necessary, insert washers (2) until the clearance between the control lug (3) for headlamp bracket and the first washer is 0.5 mm (0.019 in).

4405



2. Adjust the headlamps :
 - a) Put the vehicle on a flat horizontal ground.
 - b) Turn the control knob (1) from left to right as far as it will go.
Turn the knob from right to left by two and a half turns.
 - c) Make sure that the tyres are correctly inflated and the heights are correctly adjusted. The headlamp setting must be carried out using a «REGLOSCOPE» «REGLOLUX» or similar instrument.
Tighten nut with ball-joint of the headlamp bracket.
Check that the instrument and the vehicle are on the same level.

Manual RT 3

4735



B. HEADLAMP CONTROL (CABLES).

(A) Vehicles.

3. Adjust the flexible cable of each headlamp :
 - a) Make sure that the flexible cables (5) are not kinked.
 - b) Turn the control knob (4) clockwise until it locks.
 - c) Place the headlamp unit on its stop.
For that matter :
Slacken the lock nut (7).
Gradually unscrew tensioner (6) until the headlamp unit is fully in.
(To make sure that this operation has been correctly carried out, press the top of the headlamp unit).

5926



4. Adjust the headlamps :
 - a) Place the vehicle on a flat horizontal ground, and make sure that the tyres are correctly inflated and the heights are correctly adjusted.
 - b) Make sure that the control knob (4) has been screwed fully in.
 - c) The headlamp setting must be carried out with an instrument like «REGLOSCOPE» or «REGLOLUX» by tightening the screws located under the headlamp flange :
upper screw for height adjustment,
lower screw for direction adjustment.



5151

C. HEADLAMP CONTROL :

(All vehicles)

NOTE : A manual control is provided for correcting the headlamp setting according to the vehicle load. However, it is necessary to carry out an initial adjustment with the car in running order (vehicle empty except for the tool kit, the spare wheel and 5 litres (1 gallon) of petrol in the tank)

Adjustment to be carried out using an instrument like « REGLOLUX » or « REGLOSCOPE ».

1. Make sure that the tyres are correctly inflated and the heights correctly adjusted.
2. Put the vehicle on a flat horizontal ground.
3. Turn the control knob (1) fully to the left.
4. Screw the adjustment knobs (2) and (3) in by half of their thread length.
5. Place the instrument opposite to the headlamp unit (the setting instrument and the vehicle must be on the same level)



5134

6. Adjust the headlamps :**a) Height adjustment :**

- Switch the headlamps on « dipped beam ».
- Using the knurled knob (4), adjust the height of the beam. Its upper limit must reach the instrument in the indicated area.

b) Direction adjustment

- Switch the headlamps on « main beam ».
- By simultaneously turning the knobs (2) and (3) (in opposite direction, but by the same amount), bring the centre of the light spot on the appropriate mark of the setting instrument.

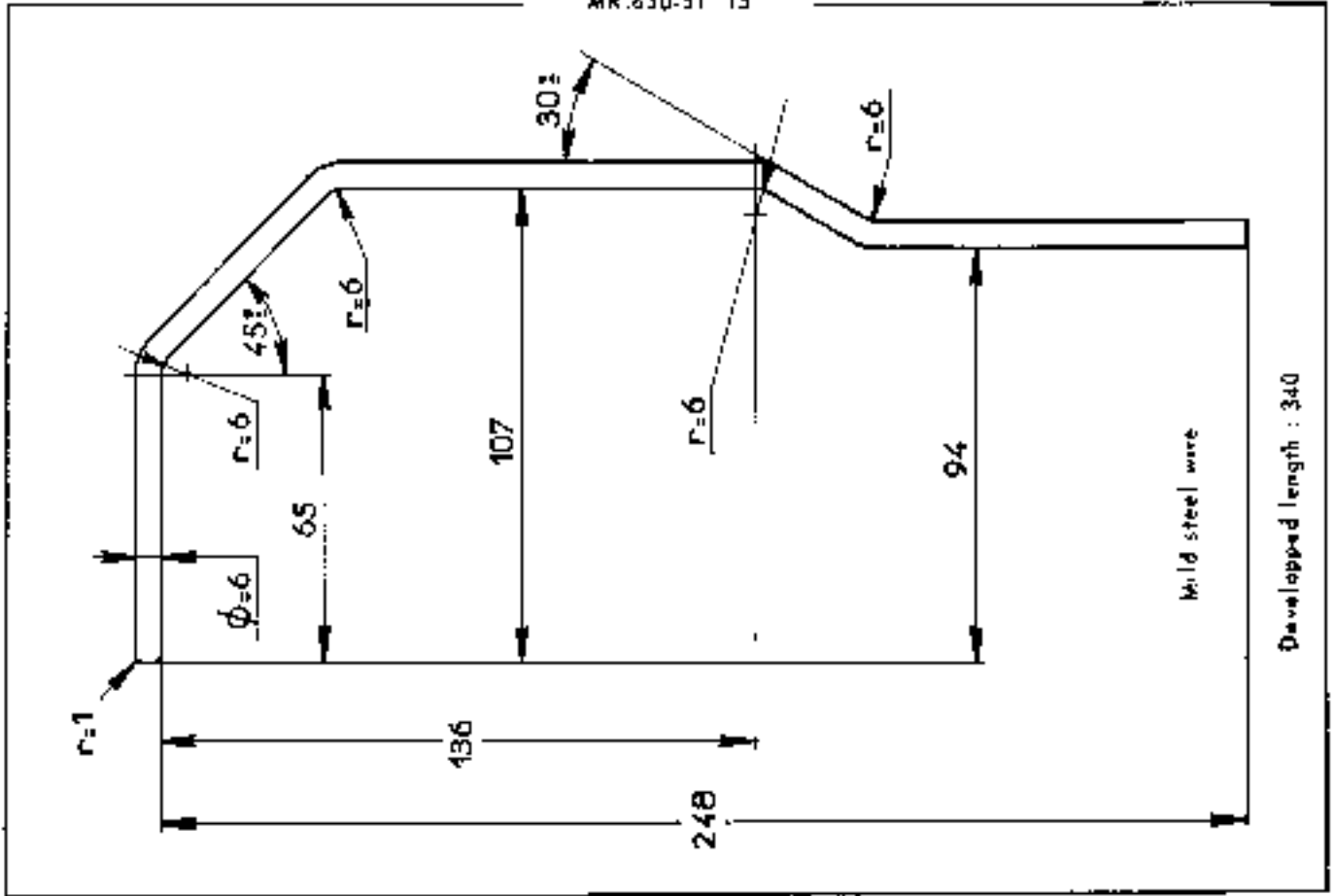
7. Adjust the other headlamp.

NOTE : In case there is a dark area in the middle of the beam, replace the bulb.

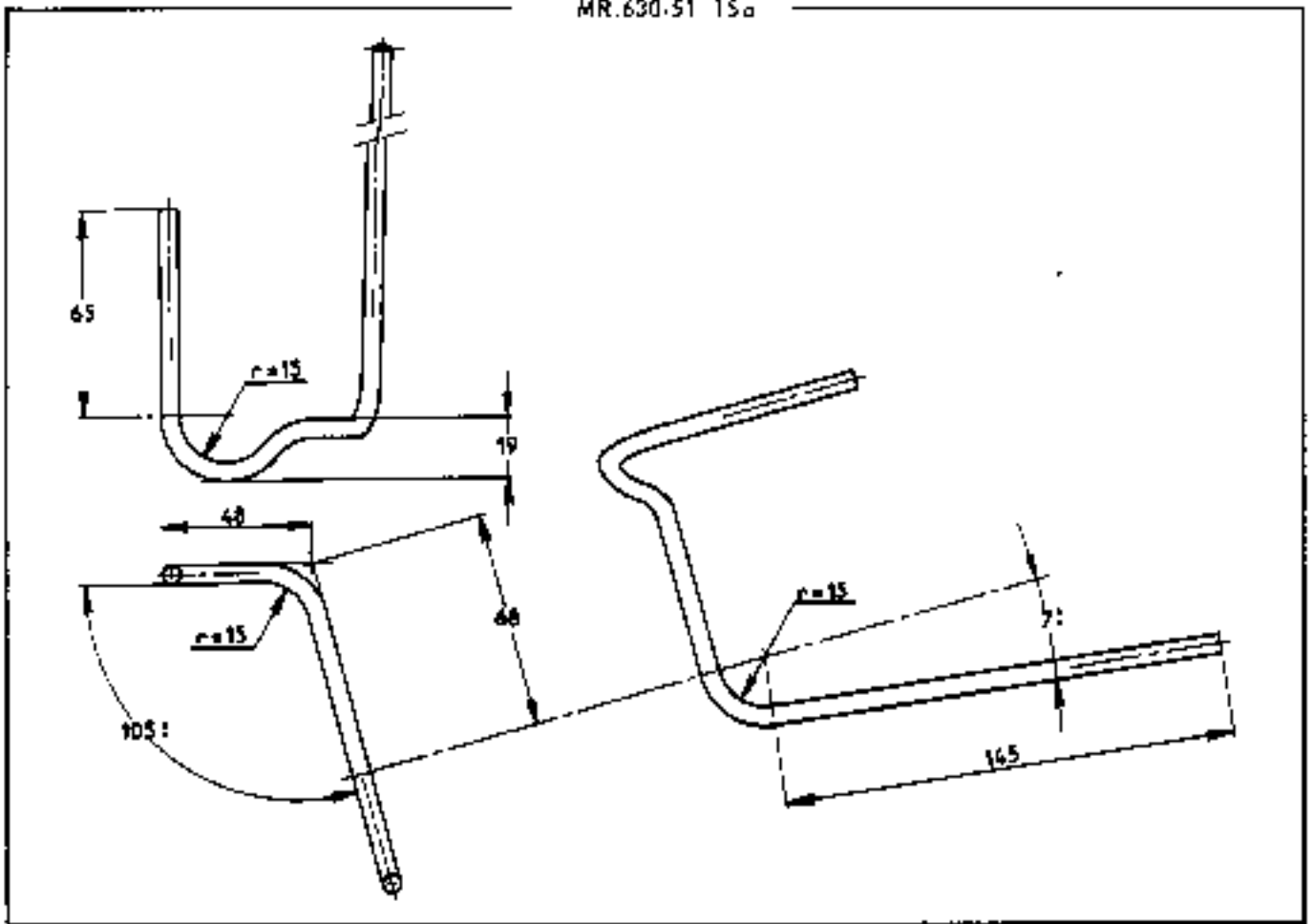
**LIST OF SPECIAL TOOLS GIVEN IN
VOLUME I OF MANUAL B16**

LIST OF ITEMS	M.P. NUMBERS		REFERENCE of tools used
	Old	New	
2 ENGINE			
Extractor for fan			3006-T bis
Gauge pin for static ignition setting		MR 630 51 15 or MR 630 52 15 a	
Instrument for checking belt pressure			4005-T
Union for checking engine oil pressure			3089-T
Pressure gauge (0 to 10 bars, i.e. 0 to 145 psi)			2275 T
Instrument for checking crankcase vacuum		MR 630 50 0 a	
Support for checking crankcase alignment	MR 3365 290	MR 630 52 16	
Support for checking gearbox casing alignment	MR 3365 300	MR 630 52 17	
Peas (to be used with support MR 630 52 17)	MP 3305 004	MR 630 52 17 a	
Dial gauge			2437-T
Instrument for checking centrifugal advance			1692-T
Instrument for checking timing gear alignment			30 4054-T
4 GEARBOX			
Shim for fork (1.5 mm, 0.059 in. thick)			1785 T
Shim for fork (1.8 mm, 0.07 in. thick)			1786 T
Shim for fork (2.2 mm, 0.1 in. thick)			3153 T
Clamp securing the locking spring of the fork sholt for 2nd and 3rd speeds		MR. 630-64-21	
Spacer for screws with flats (length of flats 9 - 6 A. D.)			1677 T
7 8 FRONT AND REAR AXLES			
Instrument for checking camber			2213 T
Struts for checking front and rear axles		MR 630-51 9 a	
Fixture for checking axle gears	MR. 3745	MR 630 51 46	
Instrument for checking rear axle parallelism	MR. 3756 20 28	MR. 630-51 47	
9 SUSPENSION			
Height gauge			2305 T
End-piece for height adjustment			3455 T or 3455 T bis
Stasher (to be used with end-piece 3455 T)			3456 T
11 BRAKES			
Dial gauge pointer			2443-T
Support for raising a vehicle	MR 3300 70	MR 630 41 3	
Dial gauge support		MR 630-52 24	

MR.630.51 15

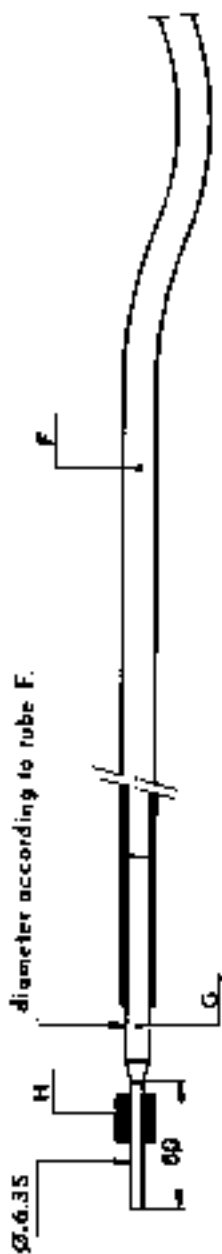
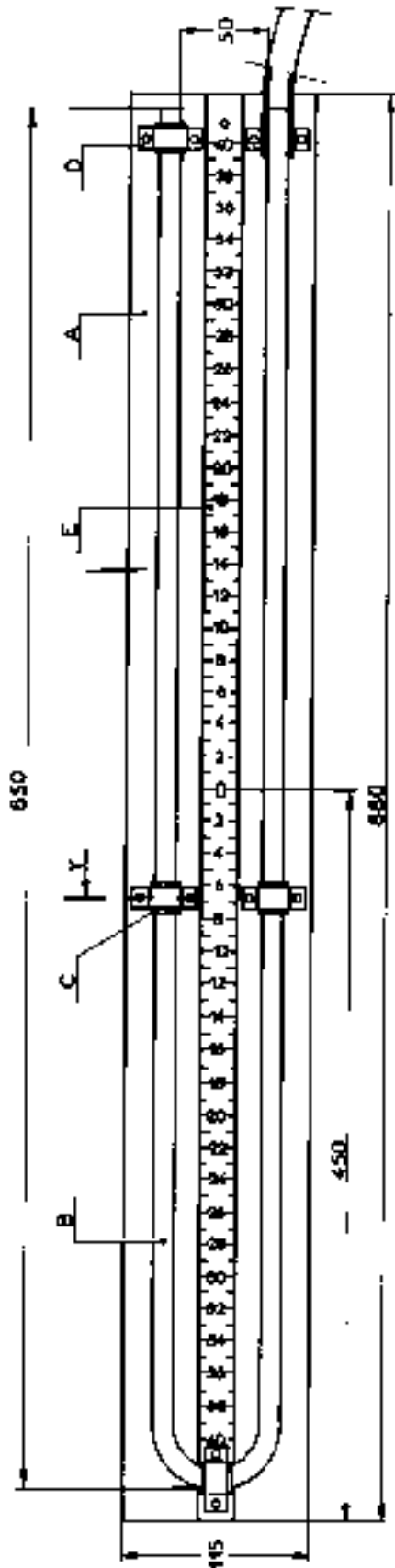


MR.630.51 15a

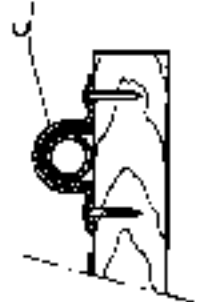


Manual HT6 1

MR 630.55 7 a



Section Y

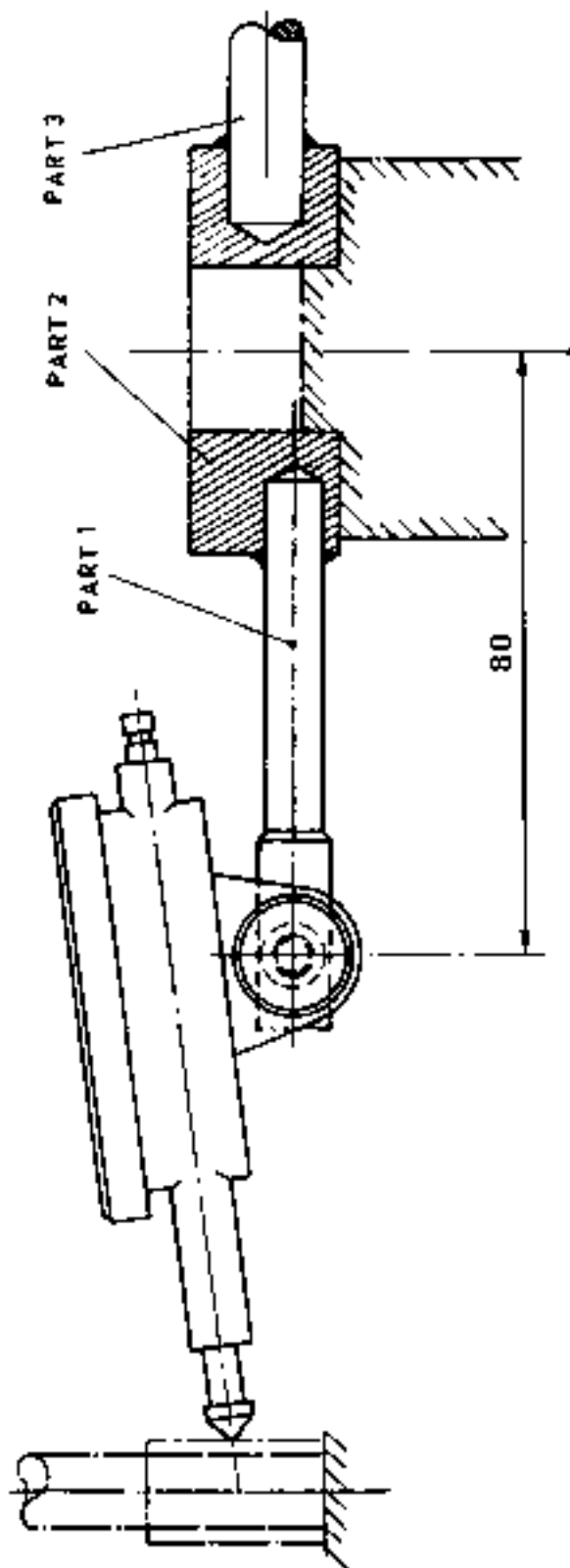


Ref	Qty	Description
A	1	Back plate - thickness : 20
B	1	Glass or plastic tube
C	4	Protective rubber
D	5	Collar
E	1	Scale
F	1	Flexible tube according to dia of B
G	1	Tubular end piece
H	1	Sleeve seal MN 394 87

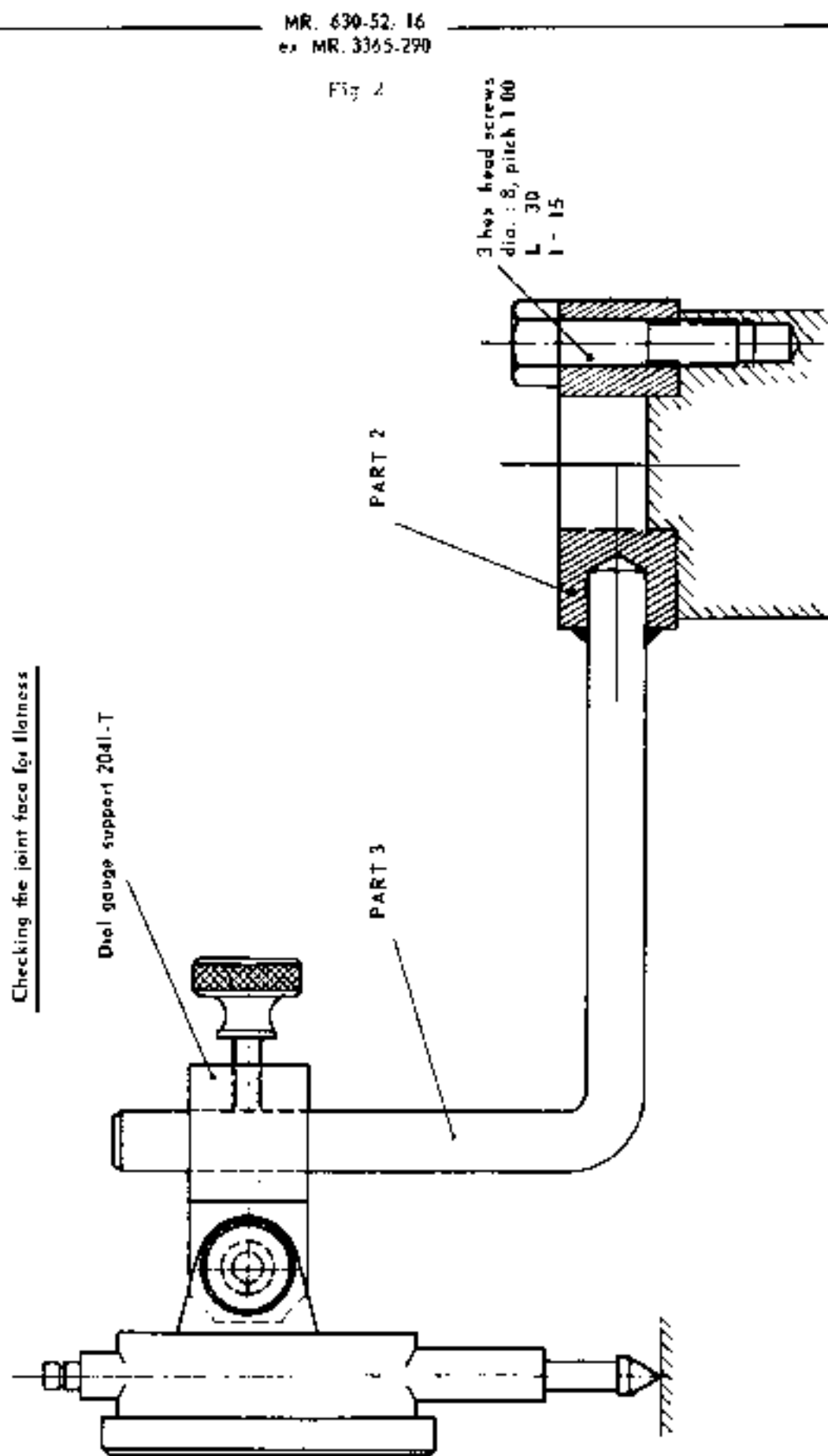
Manual B16-1

SUPPORT FOR DIAL GAUGE USED FOR CHECKING THE CRANKCASEChecking the position of the crankcase studsMR 630-52-16
MR 3365-290

Fig 1



SUPPORT FOR DIAL GAUGE USED FOR CHECKING THE CRANKCASE

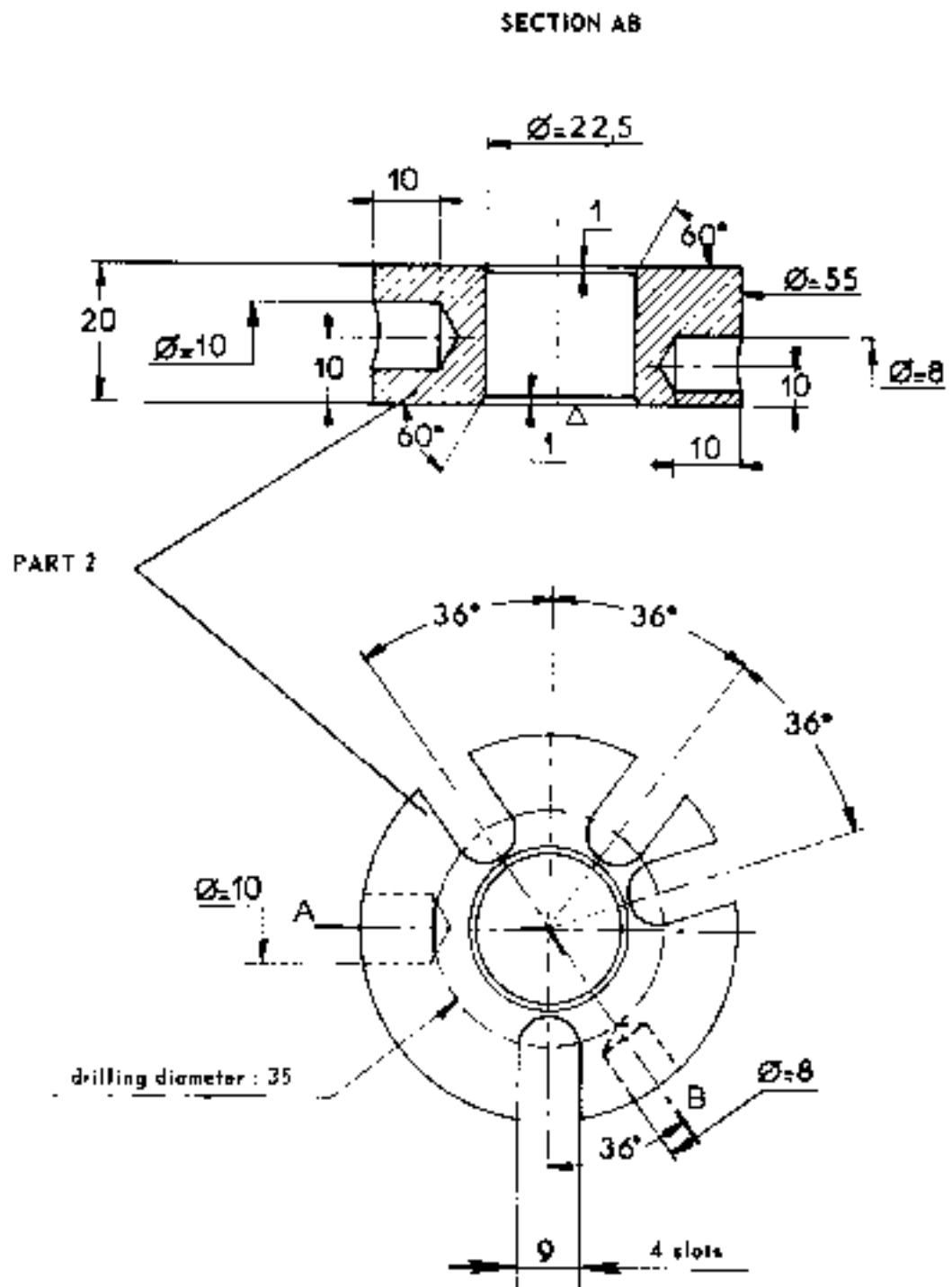


MR. 630-52. 16
ex MR. 3365-290

Fig. 2

MR. 630-52-16
 ex MR.3365-290

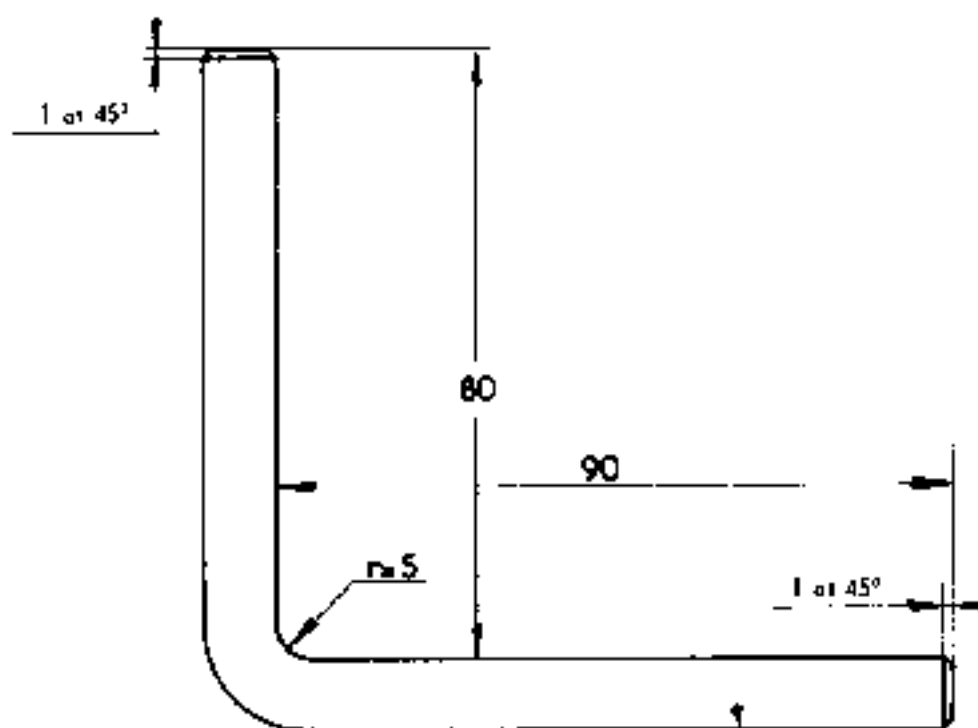
Fig 3



Material : semi-hard steel

MR. 630.52 16
ex MR 3365.290

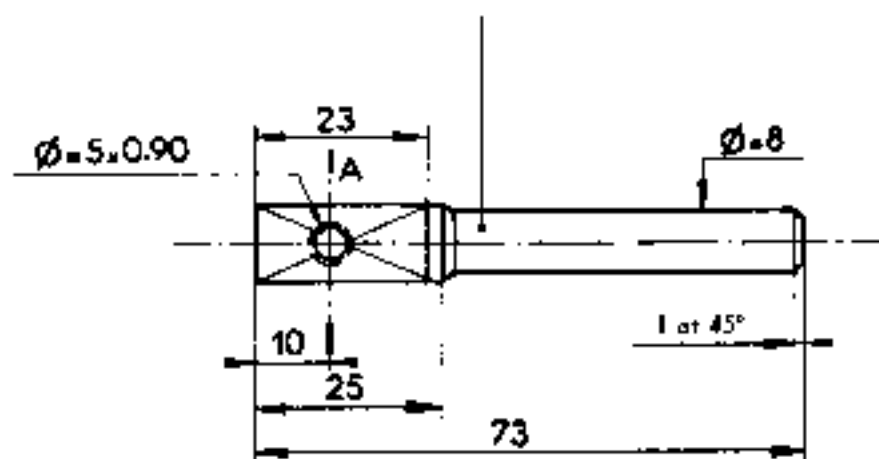
Fig 4



Material : stub steel - diameter : 10

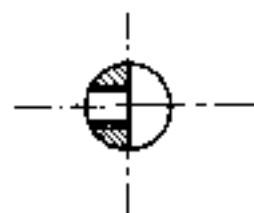
PART 3

PART 1



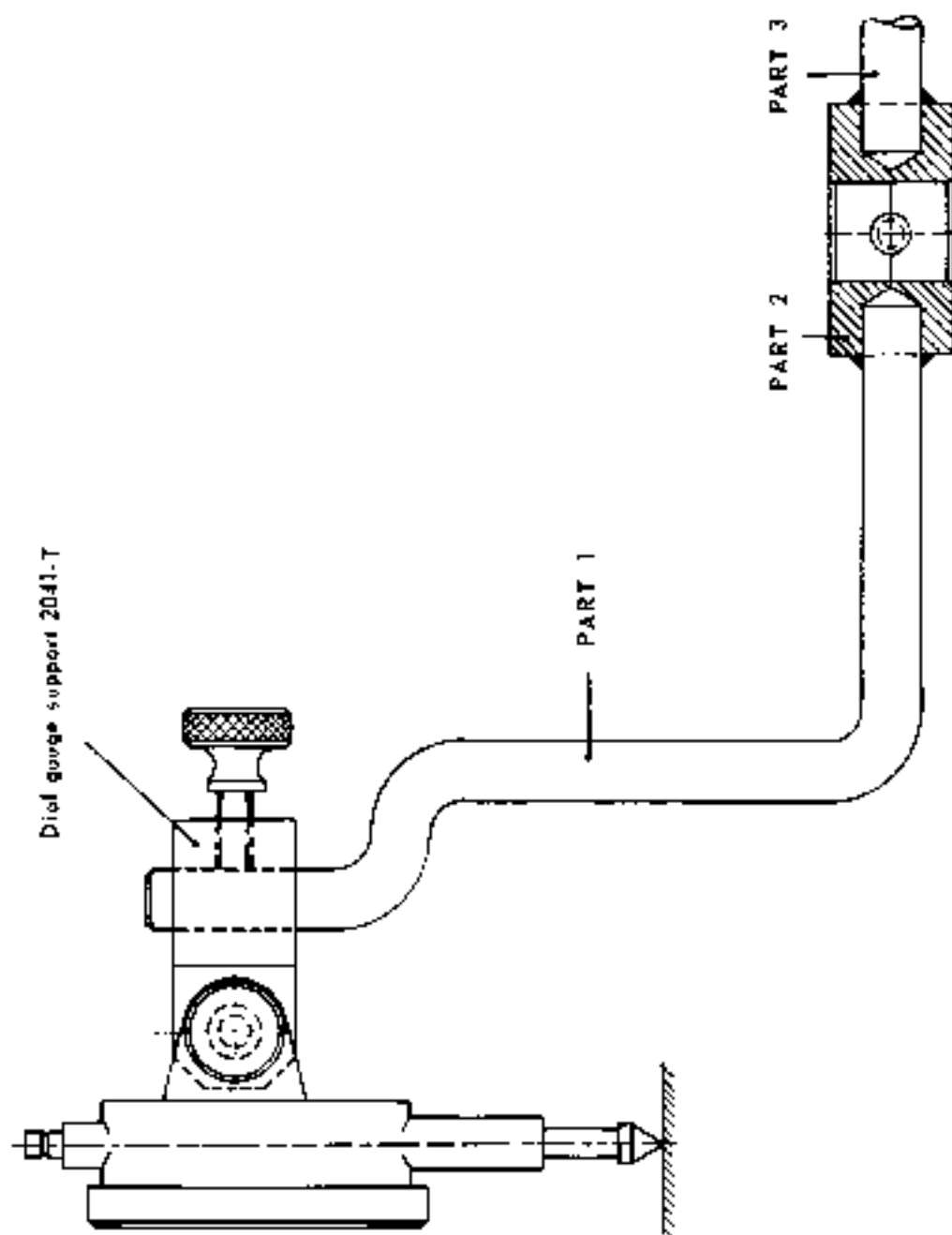
Material : stub steel - diameter : 10

SECTION A



SUPPORT FOR DIAL GAUGE USED FOR CHECKING THE CLUTCH CASING

Checking the joint flange for flatness



Manual H 4-

SUPPORT FOR DIAL GAUGE USED FOR CHECKING THE CLUTCH CASING

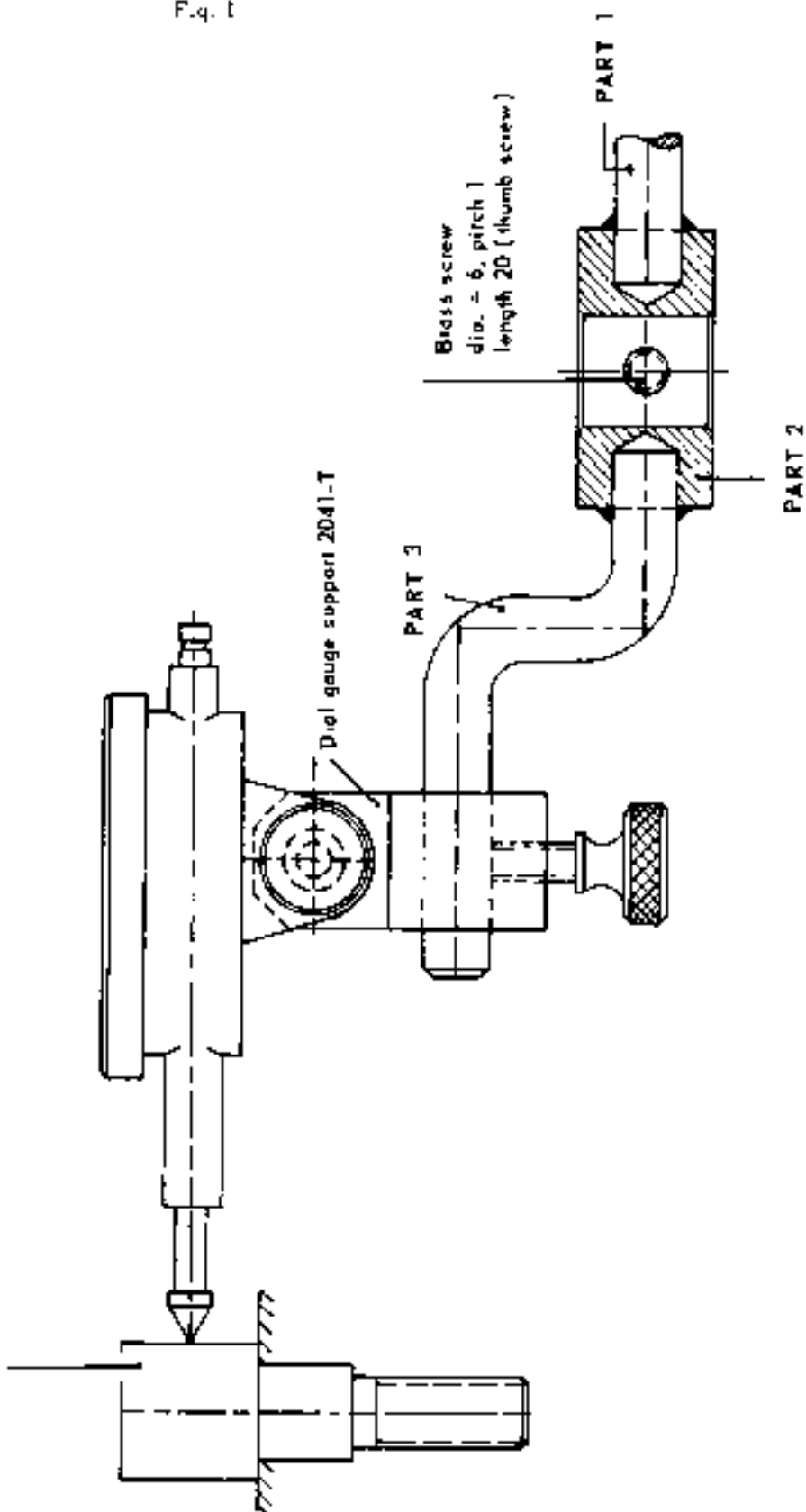
Checking the position of the bores for locating dowels

Peg MR. 630.52/17/4

MR. 630.52/17

ex. MR. 3365.300

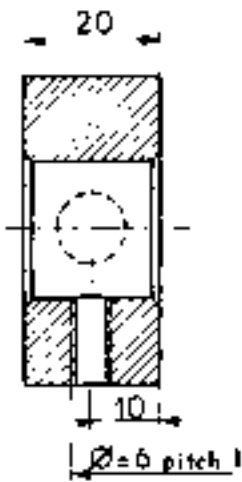
Fig. 1



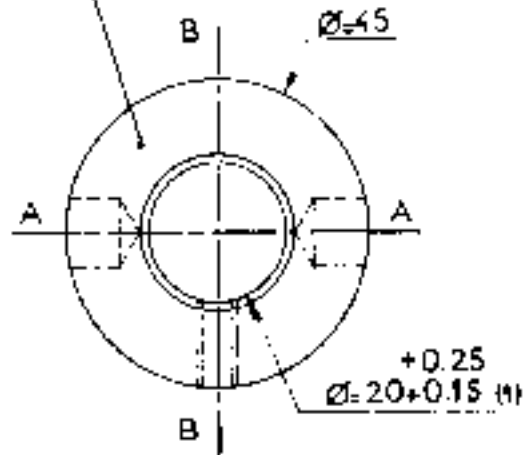
MR. 630.52 17
 ex MR 3365.300

Fig. 3

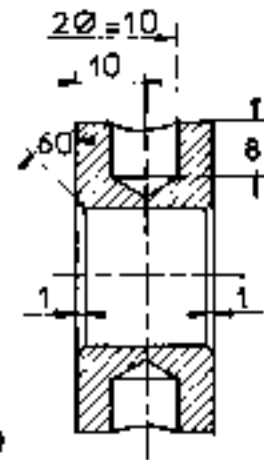
Section B



PART 2

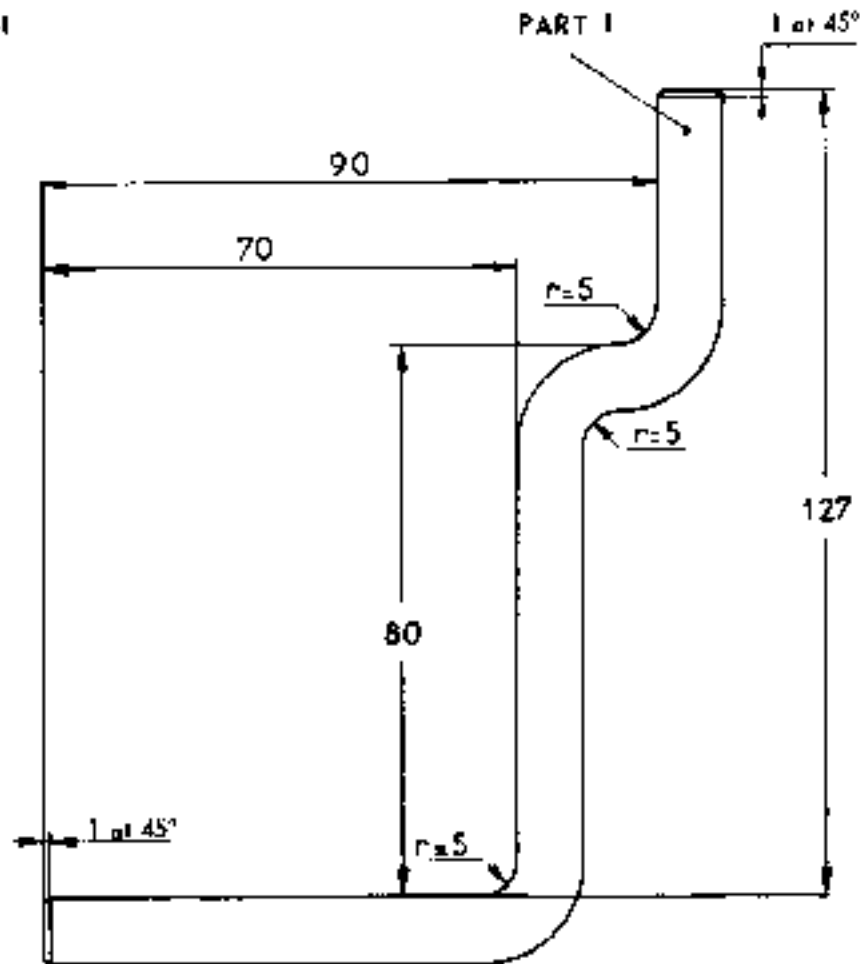


Section A



Material : semi hard steel

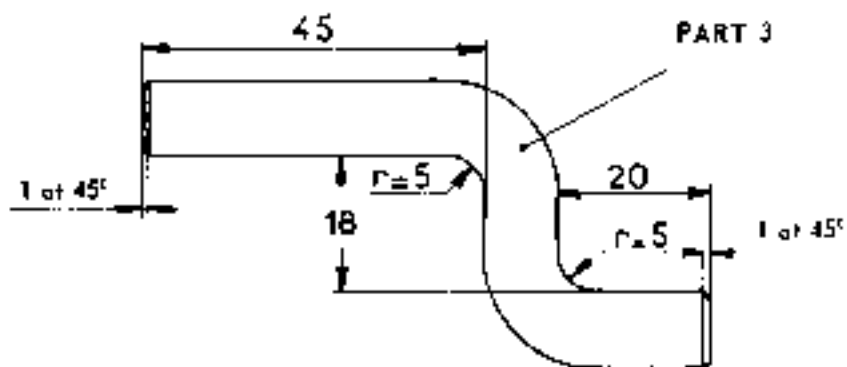
PART I



Material : stub steel dia. 10 mm

MR. 630-52 17
ex MR 3365-300

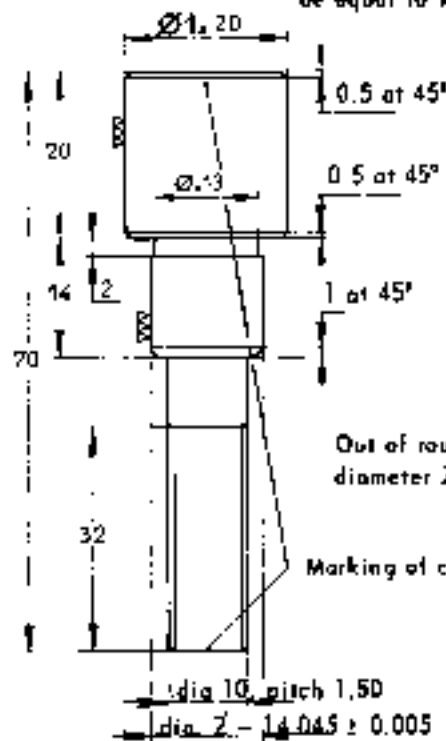
Fig. 4



Material : stub steel diameter 10

MR. 630-52 17 d
ex MR. 3365-304

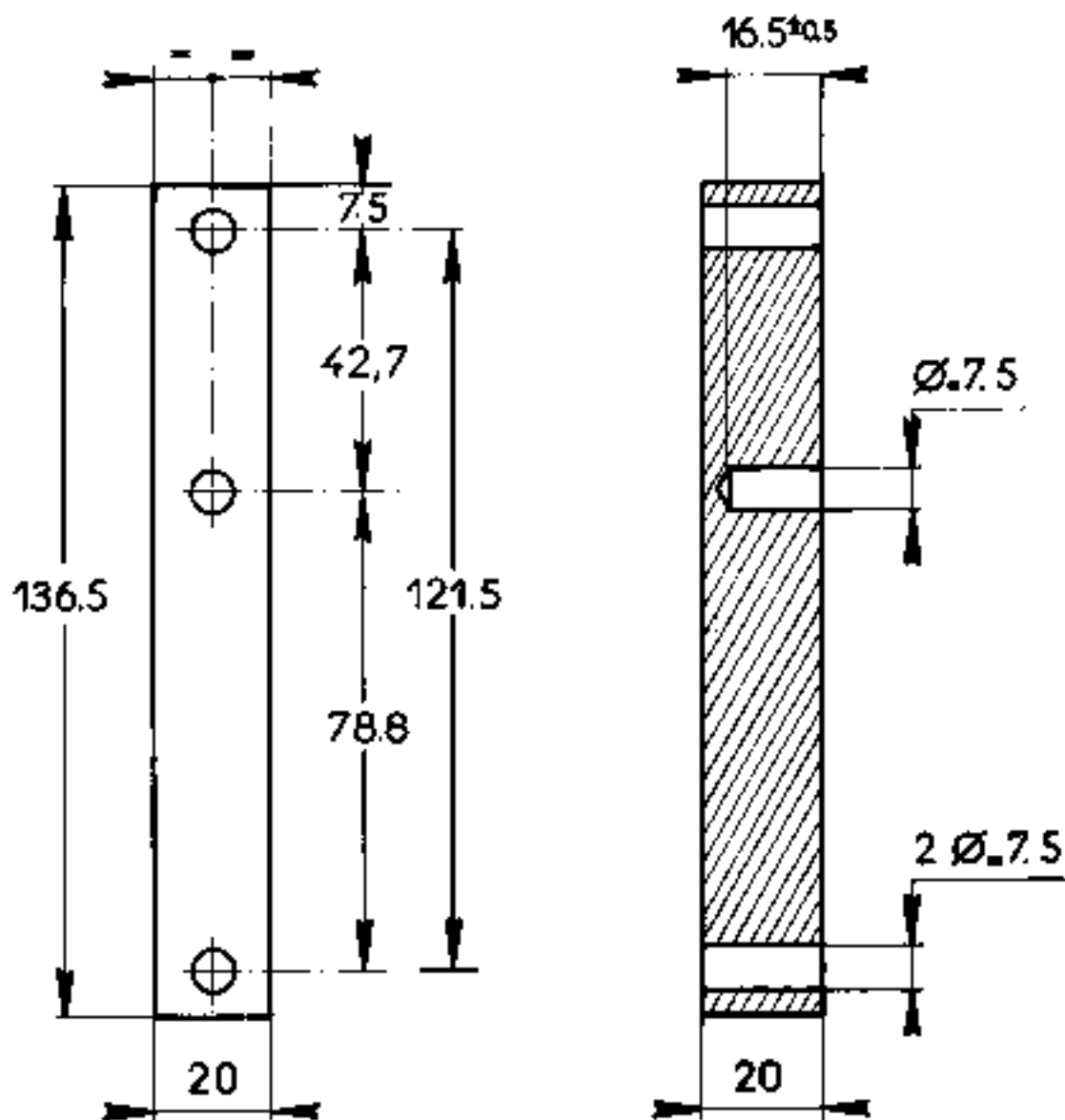
The diameter 1 ($\phi 1$) of the two parts must be equal to within 0.01 mm



Semi hard steel

2 parts

MR. 630-64/21



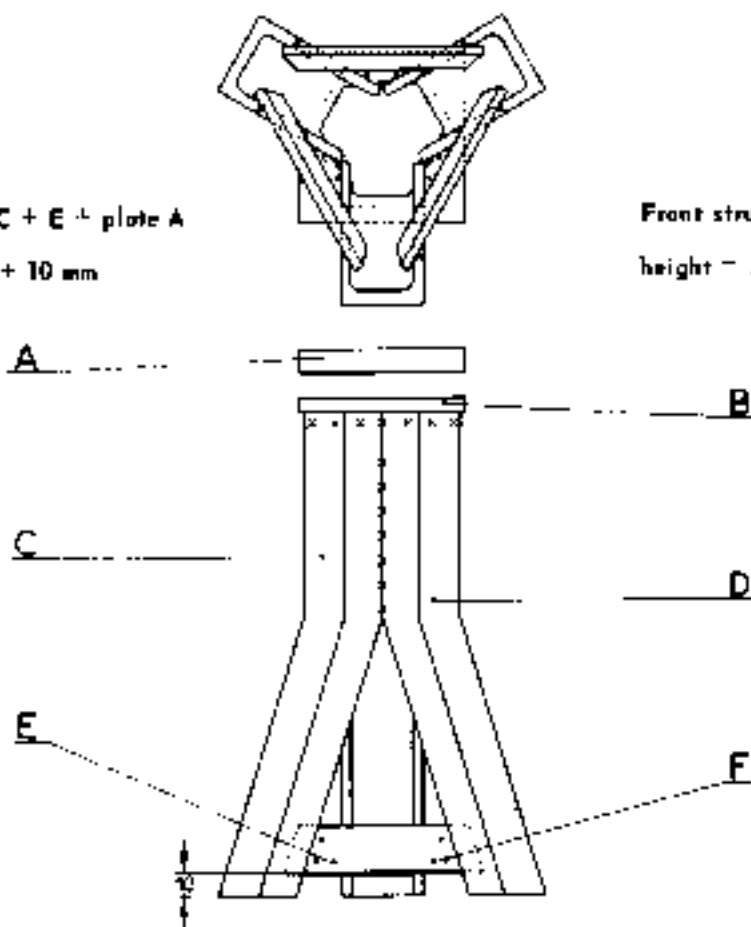
Material : mild steel
or other hard material

M. 1001/11/5

MR 630.51/9a

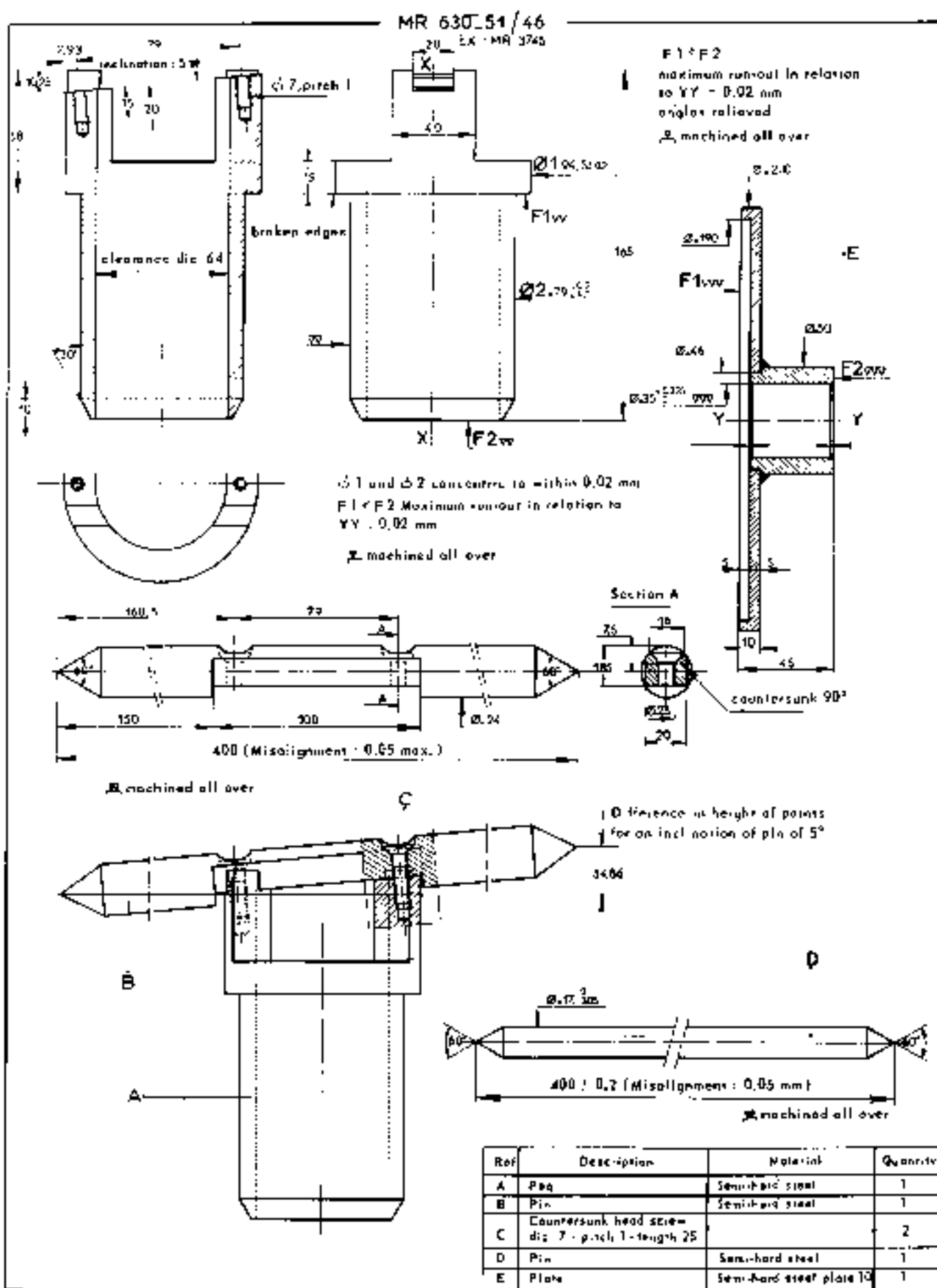
Rear strut : $B + C + E$ + plate A
height = $264 \pm 1 + 10$ mm

Front strut : $B + D + F$
height = 206 ± 1 mm

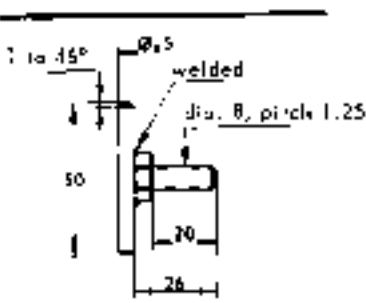
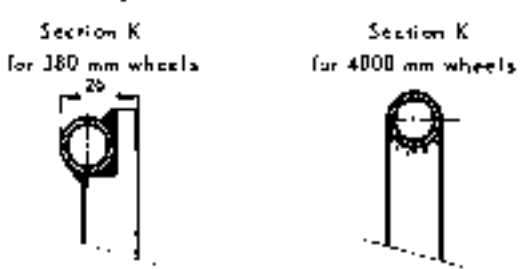
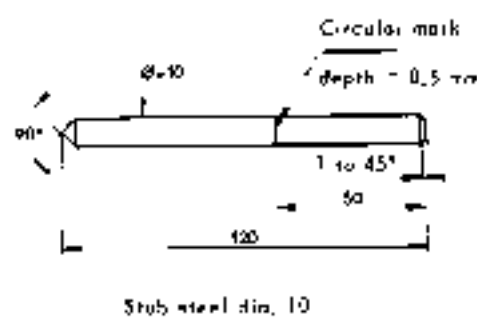
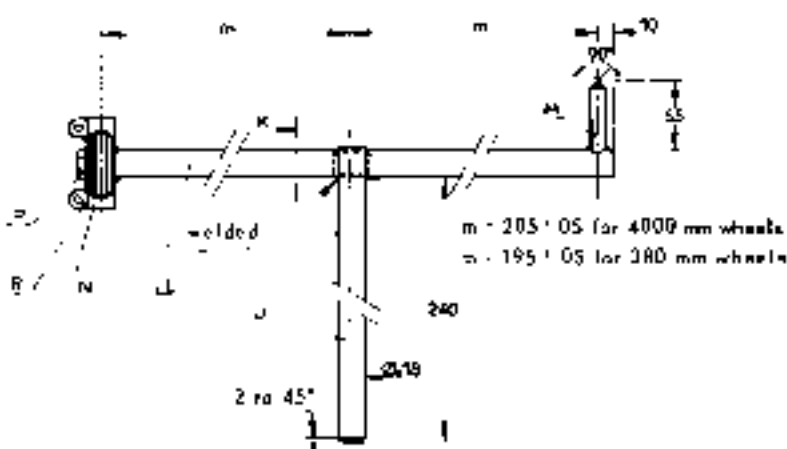
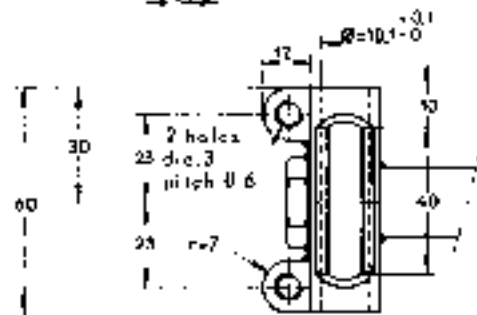
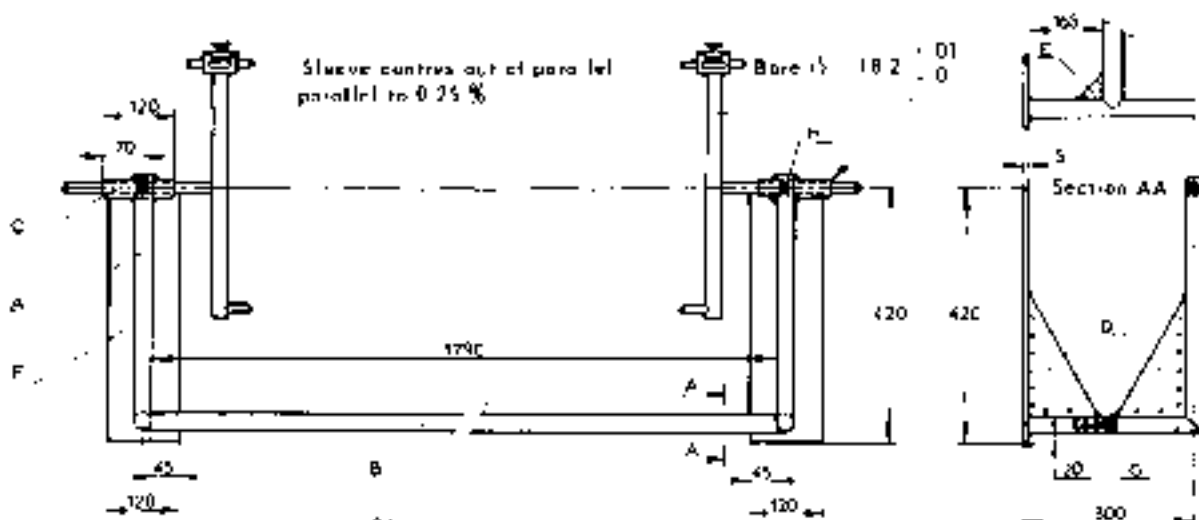


Manuel 816-1

Ref	Qty	Material	Dimensions	
A	1	Semi hard steel	70 x 70 thickness 10	
B	1	Mild steel	70 x 70 thickness 6	
C	3	Rear plate U iron 35 x 17,5	dev. length 298	
D	3	Front plate U iron 35 x 17,5	dev. length 212	
E	3	Rear plate iron strip 20 x 4	length = 135	
F	3	Front plate iron strip 20 x 4	length = 85	



MR 630-51/47
ex: MR 3756-20



Drawn steel - dia. 5
Semi-hard

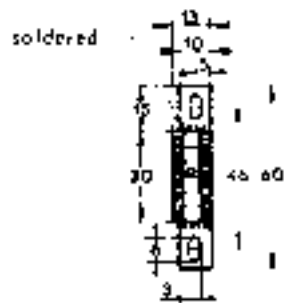
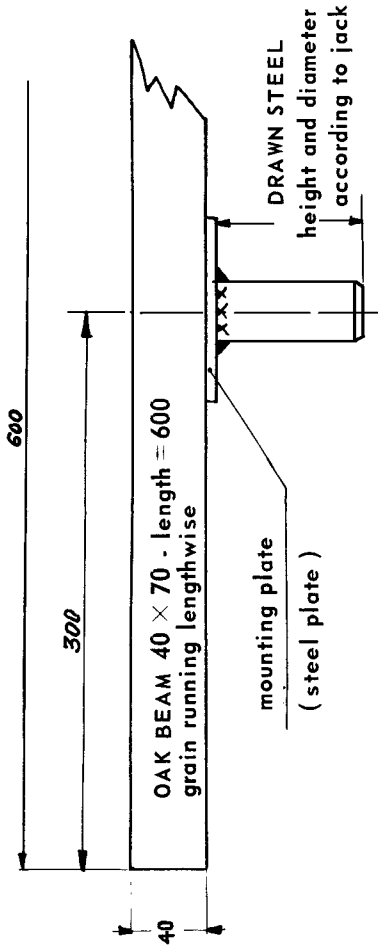


plate 1.0.5 mm thick
1 solenoid scale

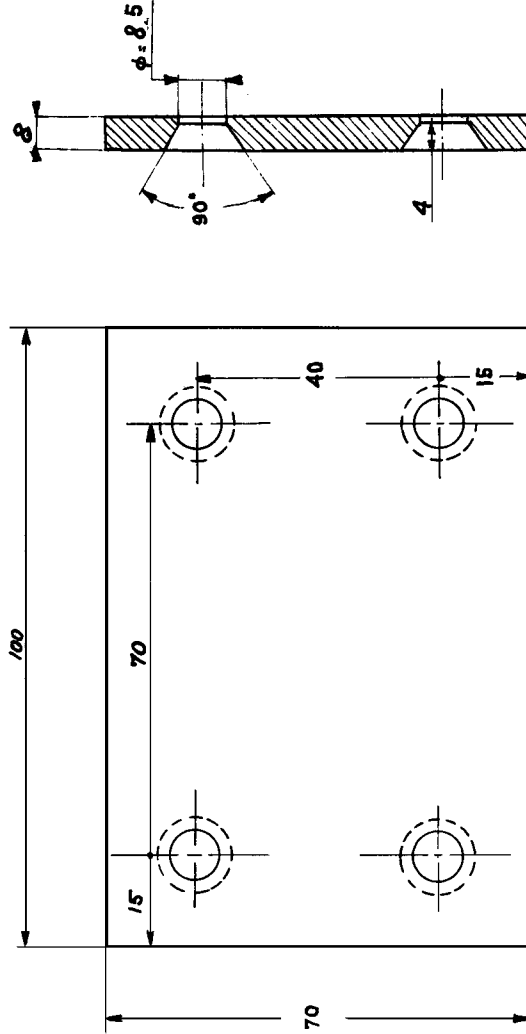
Ref	Description	Material	Qty
A	Fork support length 420	tube ϕ 26 - 30	2
B	Spans length 1820	tube ϕ 26 - 30	1
C	Sleeve length 180	tube ϕ 18 - 26	2
D	Gusset 290 - 120	5 mm plate	4
E	Gusset 50 - 50	5 mm plate	2
F	Plate length 430-width 120	5 mm plate	2
G	Support length 310	tube ϕ 26 - 30	2
H	Nut dia. 8, pitch 1.25, l. 6		2
J	Red welded to L	semi-hard steel	4
L	Support bar	tube ϕ 12 - 18	4
M	Fixed pin	stud dia. 10	4
N	Washer	tube ϕ 10 - 18	4
P	Nut dia. 8, pitch 1.25, l. 6		4
R	Lugs	3 mm plate	8

1118 1116

MR. 630 - 41 / 3
ex MR. 3300 -70



DETAIL OF PLATE



Securing : 4 countersunk head screws
dia. = 8 - length = 40

mandai o i d . 9 7 2 1

