CITROËN
AUTOMOBILES CITROËN
Société anonyme au capital de 800.000.000 F

CUSTOMER SERVICES
AFTER-SALES TECHNICAL DEPARTMENT

REPAIR MANUAL No. MAN 8161

VOLUME 1

OCTOBER 1983

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

ALL A VEHICLES

PRODUCED SINCE 1963

CHARACTERISTICS
ADJUSTMENTS
CHECKS

Manual 816-1

76-161

SIEGE SOCIAL : 62, BD. VICTOR HUGO — NEUILLY-SUR-SEINE (HAUTS DE SEINE) · R.C.S. NANTERRE B 642 050 199
TÉLÉPHONE : (1) 759.41.41 · TÉLÉGRAMME ET TÉLEX : CITR 614830 F · SIRET 642 050 199 00644 · APE 3111
ADRESSE POSTALE : 92208 NEUILLY SUR SEINE CEDEX

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 « MULTO » 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 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. OUEN - 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 Nm = 1 m.kg = 0.981 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 da Nm = 1 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 1963

Operation number	LIST OF OPERATIONS
	GENERAL ➧ 1
A. 000	General characteristics
A. 01	Protection of electrical components
A. 02	Operations on hydraulic system (brakes)
A. 03	Recommended products
	ENGINE - CARBURATION - IGNITION ➧ 2
A. 100-00	Characteristics and special features of the engines
A. 112-0	Adjusting the rockers
A. 120-0	Checking the valve timing
A. 142-00	Characteristics of carburettors
A. 142-0	Adjusting carburettors and controls
A. 173-0	Checking the fuel supply system
A. 210-00	Characteristics of the ignition system
A. 210-0	Checking and adjusting the ignition
A. 220-0	Checking and adjusting the oil pressure, checking the vacuum in the crankcase : - Checking oil pressure on vehicle - Checking vacuum in the crankcase
	CLUTCH ➧ 3
A. 300-0	Checking the alignment of the engine-gearbox assembly (M.R tool)
A. 300-0a	Checking the alignment of the engine-gearbox assembly (T tool)
A. 312-00	Characteristics and special features of the clutch
A. 314-00	Checking and adjusting the clutch control
	GEARBOX ➧ 4
A. 330-00	Characteristics and special features of gearboxes
A. 334-0	Adjusting the gear selection forks
	TRANSMISSION ➧ 5
A. 372-00	Characteristics and special features of drive-shafts
	FRONT AXLE ➧ 7
A. 410-00	Characteristics and special features of the front axle
A. 410-0	Checking and adjusting the front axle : - Checking the camber - Checking and adjusting the front wheel alignment - Adjusting the steering angle - Checking a dismantled front suspension arm
	REAR AXLE ➧ 8
A. 420-00	Characteristics and special features of the rear axle
A. 420-0	Checking the rear axle - Checking the rear arms on the vehicle - Checking a rear arm removed from the vehicle

1 2 3 4 5 7 8

LIST OF OPERATIONS IN VOLUME No. 1 OF MANUAL 816

« A » Vehicles produced since 1963

Operation number	LIST OF OPERATIONS
	SUSPENSION → 9
A. 430-00	Characteristics and special features of the suspension
A. 430-0	Checking and adjusting the suspension : - Checking the heights - Adjusting the heights - Adjusting the front bump stops
	STEERING → 10
A. 440-00	Characteristics and special features of the steering system
A. 440-0	Checking and adjusting the steering : - Checking and adjusting the front wheel toe-out - Adjusting the steering angle
	BRAKES → 11
A. 450-00	Characteristics and adjustments of the braking system
A. 451-0	Checking and adjusting the brakes : - 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	Checking and adjusting the brake control - Adjusting the brake pedal clearance
A. 454-0	Adjusting the handbrake (drum brakes - disc brakes)
	ELECTRICAL SYSTEM → 12
A. 530-0	Characteristics and checks of electrical components : - Dynamos and voltage regulators - Alternators and regulators (12 volts) - Starter motors - 24 volts equipment *(special for Mehari vehicles, Military type)*
A. 540-0	Adjusting the headlamps
	TOOLS → 14
	List of special tools mentioned in the Manual Manufacturing drawings for tools not on sale

IDENTIFICATION OF « A » VEHICLES, ALL TYPES

(Vehicles as of 1963)

Usual name	Official symbol	Factory guarantee symbol *	Commercial symbol	Engine plate identification mark	Engine type
2 CV	AZ (series A and AM) *3/63→2/70*	AZZ	2 CV AZL and 2 CV AZAM	AZ	A 53 (425 cc)
	AZ (series A 2) *2/70→9/75*	AZA	2 CV 4	AYA 2	A 79/1 (435 cc)
	AZ (series KB) *9/75→9/78*	KB	2 CV 4	AYA 2	A 79/1 (435 cc)
	AZ (series KB) *9/78→9/79*	KB	2 CV Spécial	AYA 2	A 79/1 (435 cc)
	AZ (series KA) *2/70→9/78*	KA	2 CV 6	AK 2	M 28/1 (602 cc)
	AZ (series KA) *9/78→7/79*	KA	2 CV 6	A 06/635	M 28/1 (602 cc)
	AZ (series KA) *7/79→7/81*	KA	2 CV 6 Spécial, Club	A 06/635	M 28/1 (602 cc)
	AZ (series KA) *7/81→*	KA	2 CV Spécial or Club or Spécial E or Charleston	A 06/635	M 28/1 (602 cc)
DYANE	AYA (series A and AM) *8/67→3/78*	AZZ	Dyane 4	AYA	A 79/0 (425 cc)
	AYA 2 (series A and AM) *3/68→2/70*	AZZ	Dyane 4	AYA 2	A 79/1 (435 cc)
	AYA3 (series A and AM) *1/68→10/68*	AZZ	Dyane 6	AM	M·4 (602 cc)
	AYB (series A and AM) *10/68→2/70*	AZZ	Dyane 6	AK 2	M 28/1 (602 cc)
	AYA2 (series A and AM) *2/70→9/75*	AYA		AYA 2	A 79/1 (435 cc)
	AY (series CB) *2/70→*	CB		AM 2	M 28 (602 cc)
MEHARI	AY (series CA) *10/68→7/78*	CA	Méhari	AK 2	M 28/1 (602 cc)
	AY (series CA) *7/78→*	CA	Méhari	A 06/635	M 28/1 (602 cc)
2 CV Van	AZU (series A) *3/63→8/72*	AZZ	AZU *1/63→8/67*	AZ	A 53 (425 cc)
			AZU *8/67→8/72*	AYA	A 79/0 (425 cc)
	AZU (series B) *8/72→9/75*	AZU	Citroën 250	AYA 2	A 79/1 (435 cc)
	AK series AP (AZU) *9/75→2/78*	AZU	Citroën 250	AYA 2	A 79/1 (435 cc)
3 CV Van	AK *1/63→5/68*	AZZ	AK	AM	M 4
	AK (series B) *5/68→8/70*	AZZ	AK	AK 2	M 28/1 (602 cc)
	AK (series AK) *8/70→2/78*	AK	Citroën 400	AK 2	M 28/1
	AY (series CD) *2/78→*	CD	Acadiane	AM 2 A	M 28/1 (602 cc)
	AY (series CD modified) *8/80→*	CD	Acadiane L.P.G.	AM 2 A L.P.G.	M 28/1 (602 cc)
3 CV Saloon and Estate	AM *→5/68*	AZZ	AMI 6	AM	M 4
	AMB - AMC - AMF	AZZ	AMI 6 Estate	AM	M 4
	AM 2 - AMC - AMF *5/68→3/69*	AZZ	AMI 6	AM 2	M 28
	AMB 2 *5/68→7/69*	AZZ	AMI 6 Estate	AM 2	M 28
	AM 3 *3/69→7/69*	AZZ	AMI 8	AM 2	M 28 (602 cc)
	AM (series JA)	JA	AMI 8	AM 2	M 28
	AM (series JB) *9/69→9/78*	JB	AMI 8 Estate/Commer.	AM 2	M 28
	AM (series JC)	JC	AMI 8 Service Estate	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 :			
Type : (tubeless) / (export with inner tube)	125 - 380 X 135 - 380 X	125 - 380 X	125 - 380 X
Pressure in bars : Front / Rear	See Owner's Manual		
General dimensions :			
Wheel base	2.400 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 (13 ft 1.1 in)	1.220 m (4.00 ft)
Overall length	3.830 m (12 ft 8.3 in)	3.870 m (5 ft)	3.991 m (13 ft 1.1 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 0.6 in)	1.540 m (4 ft 10.8 in)	AMI 6 : 1.485 m (4 ft 10.4 in) AMI 8 : 1.494 m (4 ft 10.8 in)
Ground clearance (loaded)	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)
Turning circle	10.700 m (35 ft 1.2 in)	10.700 m (35 ft 1.2 in)	11.400 m (35 ft 4.8 in)
Kerb weight	2 CV ⟶ *2/1970* 535 kg (1180 lbs) 2 CV *2/1970* ⟶ 560 kg (1235 lbs)	See table page four	AMI 6 : 670 kg (1477 lbs) AMI 8 : 725 kg (1598 lbs)
Gross vehicle weight	2 CV ⟶ *2/1970* 870 kg (1918 lbs) 2 CV *2/1970* ⟶ 895 kg (1973 lbs)	See table page four	AMI 6 : 980 kg (2160 lbs) AMI 8 : 1050 kg (2315 lbs)
Towing :			
Maximum weight on tow bar	2 CV AZL : 20 kg (44 lbs) 2 CV 4 and 6 : 35 kg (77 lbs)	Dyane ⟶ *3/1968* 20 kg (44 lbs) Dyane *3/1968* ⟶ 35 kg (77 lbs)	35 kg (77 lbs)
Maximum weight without brakes	2 CV AZL : 200 kg (441 lbs) 2 CV 4 and 6 : 270 kg (595 lbs)	Dyane ⟶ *3/1968* 200 kg (441 lbs) Dyane *3/1968* ⟶ 270 kg (595 lbs)	AMI 6 :340 kg (750 lbs) AMI 8 : 360 kg (794 lbs)
Maximum weight with inertia brakes	400 kg (882 lbs)	400 kg (882 lbs)	500 kg (1102 lbs)
Maximum gradient with a trailor	2 CV ⟶ *2/1970* 11 % (1 in 9) 2 CV *2/1970* ⟶ 12 % (1 in 8)	12 % (1 in 8)	11 % (1 in 9)
Maximum weight on roof rack	30 kg (66 lbs)	30 kg (66 lbs)	30 kg (66 lbs)
Capacities :			
Petrol tank	2 CV AZL / 2 CV 4 : 20 litres (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)	Dyane 4 : 2.3 litres (4 Imp.pts) Dyane 6 : 2.4 litres (4.2 Imp.pts)	2.4 litres (4.2 Imp. pts)
Gearbox	0.9 litres (1.6 Imp.pts)	0.9 litres (1.6 imp.pts)	0.9 litres (1.6 Imp.pts)

ESTATES and VANS

	3 CV Estate	« Mehari »	2 CV Van	3 CV Van	Acadiane 3 CV Van
Number of seats :					
Without rear bench-seat	Commercial Estate 2/3	2	2	2	2
With rear bench-seat	« Familial » Estate 4/5	4	4	4	
Tyres :					
Type { tubeless / with inner tube	125 - 380 or 135 - 380 X	135 - 380 X 135 - 380 XM + S	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	2.400 m (7 ft-10.4 in)	2.400 m (7 ft-10.4 in)	2.400 m (7-ft-10.4 in)	2.400 m (7 ft-10.4 in)	2.535 m (8 ft-3.8 in)
Front track	1.260 m (4 ft-1.6 in)	1.260 m (4 ft-1.6 in)	1.260 m (4 ft-1.6 in)	1.260 m (4 ft-1.6 in)	1.260 m (4 ft-1.6 in)
Rear track	1.220 m (4 ft)	1.260 m (4 ft-1.6 in)	1.260 m (4 ft-1.6 in)	1.260 m (4 ft-1.6 in)	1.260 m (4 ft-1.6 in)
Overall length	3.991 m (13 ft-1.1 in)	3.520 m (11 ft-6.5 in)	3.605 m (11 ft-9.9 in)	3.805 m (12 ft-5.8 in)	4.030 m (13 ft-2.6 in)
Overall height (empty)	1.520 m (4 ft-11 in)	1.530 m (5.00 ft)	1,723 m (5 ft-7.8 in)	AK and AKB :: 1.723 m (5 ft-7.8 in) AK series AK :: 1.840 m (6 ft-0.4 in)	1.825 m (5 ft-11.8 in)
Overall width	1.524 m (5.00 ft)	1.530 m (5.00 ft)	1.500 m (4 ft-11 in)	1.500 m (4 ft-11 in)	1.500 m (4 ft-11 in)
Ground clearance (loaded)	0.130 m (5.11 in)	0.177 m (6.96 in)	0.180 m (7.08 in)	0.160 m (6.29 in)	0.140 m (5.51 in)
Turning circle	11.400 m (37 ft-4.8 in)	10.700 m (35 ft-1.2 in)	10.700 m (35 ft-1.2 in)	10.700 m (35 ft-1.2 in)	11.44 m (37 ft-6.3 in)
Kerb weight	AMI 6 : 690 kg (1521 lbs) AMI 8 : 725 kg (1598 lbs)	555 kg (1224 lbs)	See table page 4	See table page 4	680 kg (1499 lbs)
Gross vehicle weight	AMI 6 : 1065 kg (2348 lbs) AMI 8 : 1100 kg (2425 lbs)	935 kg (2061 lbs)	See table page 4	See table page 4	1155 kg (2546 lbs)
Towing :					
Maximum weight on towbar	35 kg (77 lbs)	35 kg (77 lbs)	35 kg (77 lbs)	35 kg (77 lbs)	35 kg (77 lbs)
Maximum weight without brakes	AMI 6 : 340 kg (750 lbs) AMI 8 : 360 kg (794 lbs)	270 kg (595 lbs)	AZU → *2/1972* : 200 kg (441 lbs) AZU *2/1972* → : 270 kg (595 lbs)	AK → *5/1968* : 200 kg (441 lbs) AK *5/1968* → : 270 kg (595 lbs)	335 kg (738 lbs)
Maximum weight with inertia brakes	500 kg (1102 lbs)	400 kg (882 lbs)	400 kg (882 lbs)	500 kg (1102 lbs)	500 kg (1102 lbs)
Maximum gradient with a trailor	11 % (1 in 9)	11 % (1 in 9)	AZU → *2/1972* : 11 % (1 in 9) AZU *2/1972* → : 12 % (1 in 8)	12 % (1 in 8)	12 % (1 in 8)
Maximum weight on roof rack	30 kg (66 lbs)	30 kg (66 lbs)	30 kg (66 lbs)	30 kg (66 lbs)	40 kg (88 lbs)
Capacities :					
Petrol tank	AMI 6 : 25 litres (5.50 Imp.gal) AMI 8 : 30 litres (6.60 Imp.gal)	25 litres (5.50 Imp. gal)	20 litres → *7/1971* (4.40 Imp.gal) 25 litres *7/1971* → (5.50 Imp.gal)	25 litres (5.50 Imp.gal)	25 litres (5.50 Imp. gal)
Engine :					
Engine casing after draining	2.4 litres (4.2 Imp.gal)	2.4 litres (4.2 Imp.gal)	2.3 litres (4 Imp.gal)	2.4 litres (4.2 Imp.gal)	2.4 litres (4.2 Imp.gal)
Gearbox	0.9 litre (1.6 Imp.gal)	0.9 litre (1.6 Imp.gal)	0.9 litre (1.6 Imp.gal)	0.9 litre (1.6 Imp.gal)	0.9 litre (1.6 Imp.gal)

Supplement No. 1 to Manual 816-1 (CORR)

« DYANE »

(Vehicles produced until February 1970)

	AYA (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 6 AYA 3 *1/1968 → 10/1968* AYB *10/1968 → 2/1970*
Kerb weight	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)	AYA 2 series A and AM Saloon = 590 kg (1300 lbs) Commercial = 605 kg (1333 lbs)	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)

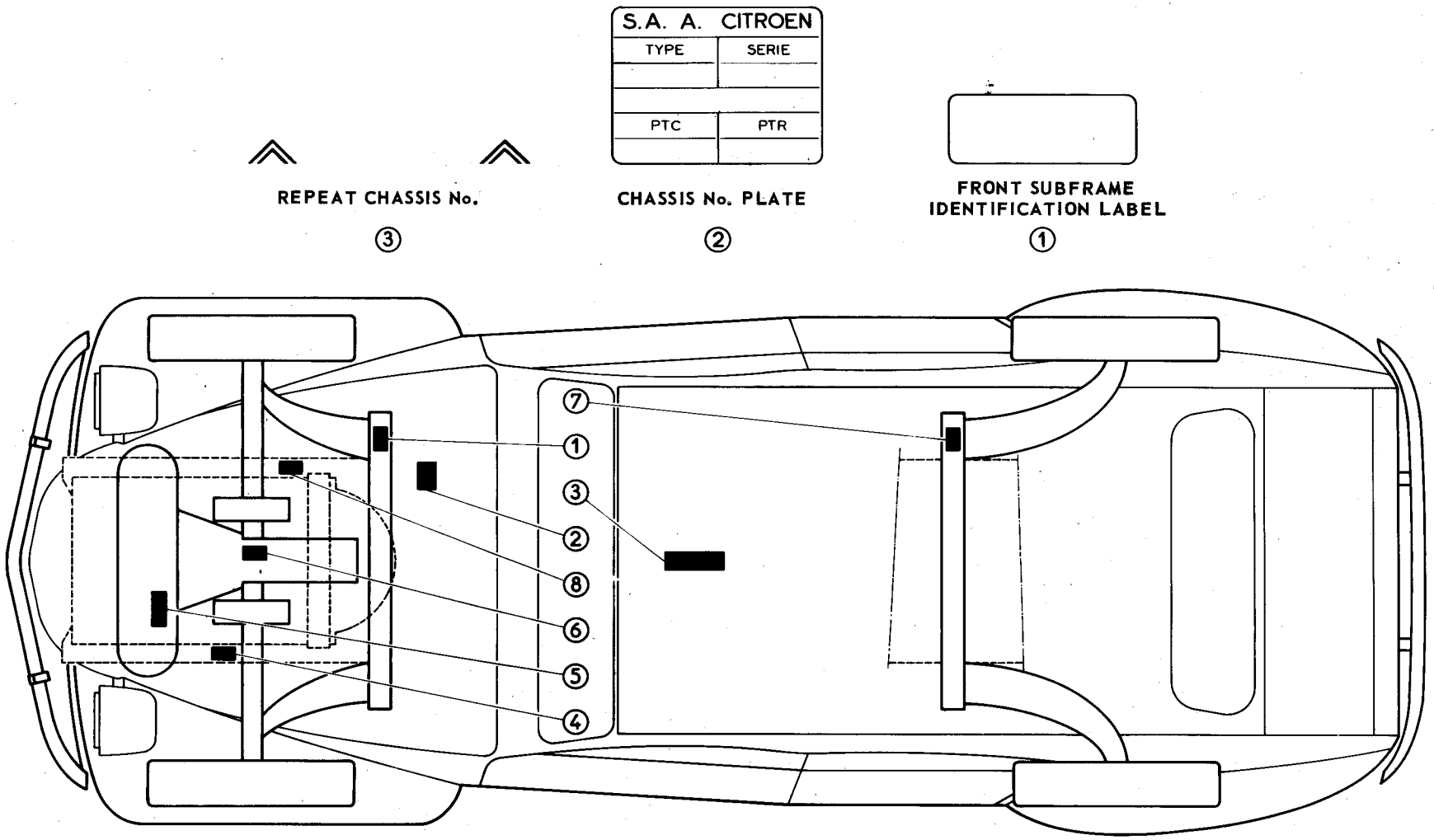
« 2CV and 3 CV VANS »

	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 *1/1963 → 5/1968* AK (Series B) *5/1968 → 8/1970* 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 (1366 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

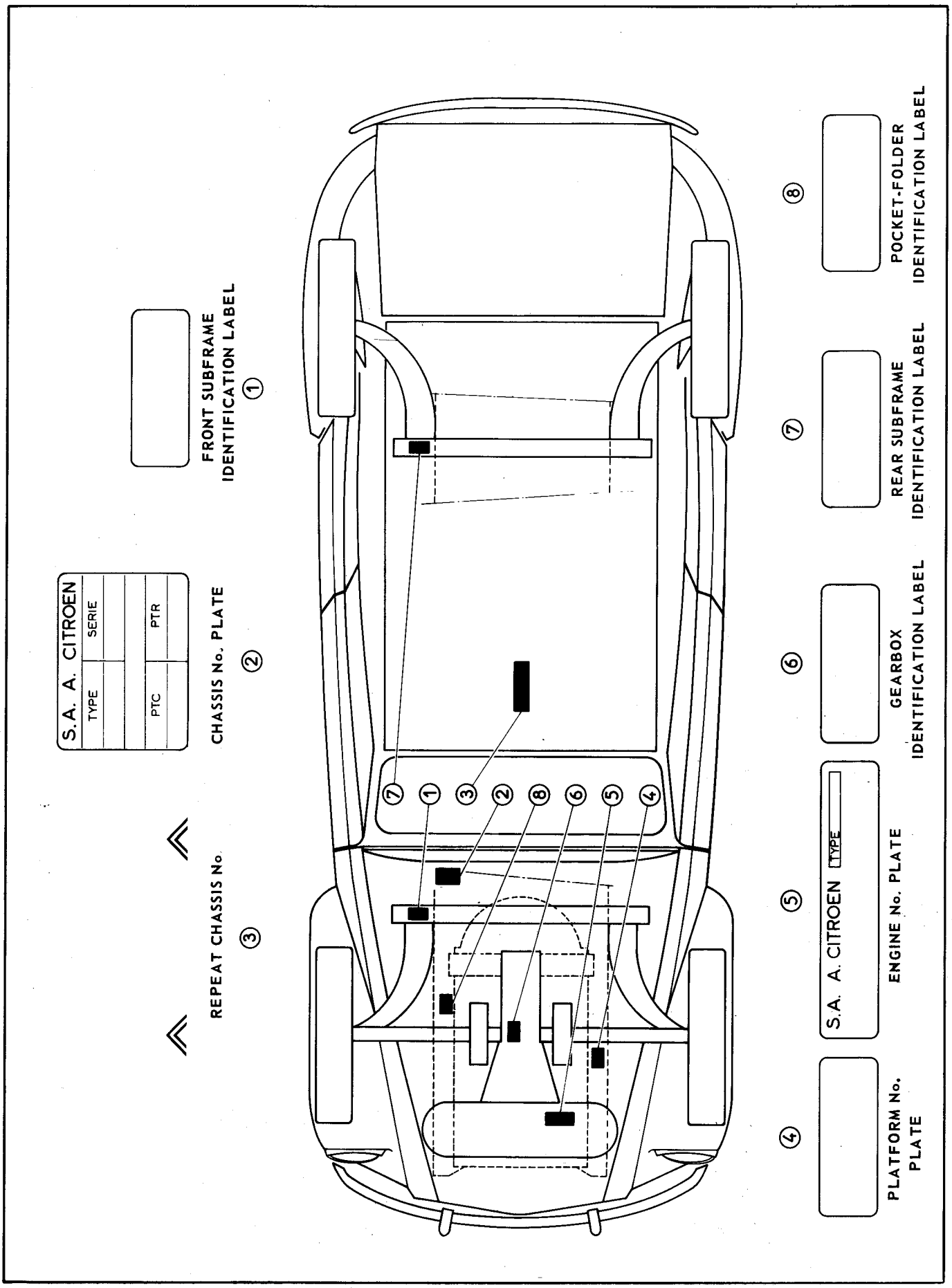


IDENTIFICATION OF VEHICLE COMPONENTS

(France)

DYANE

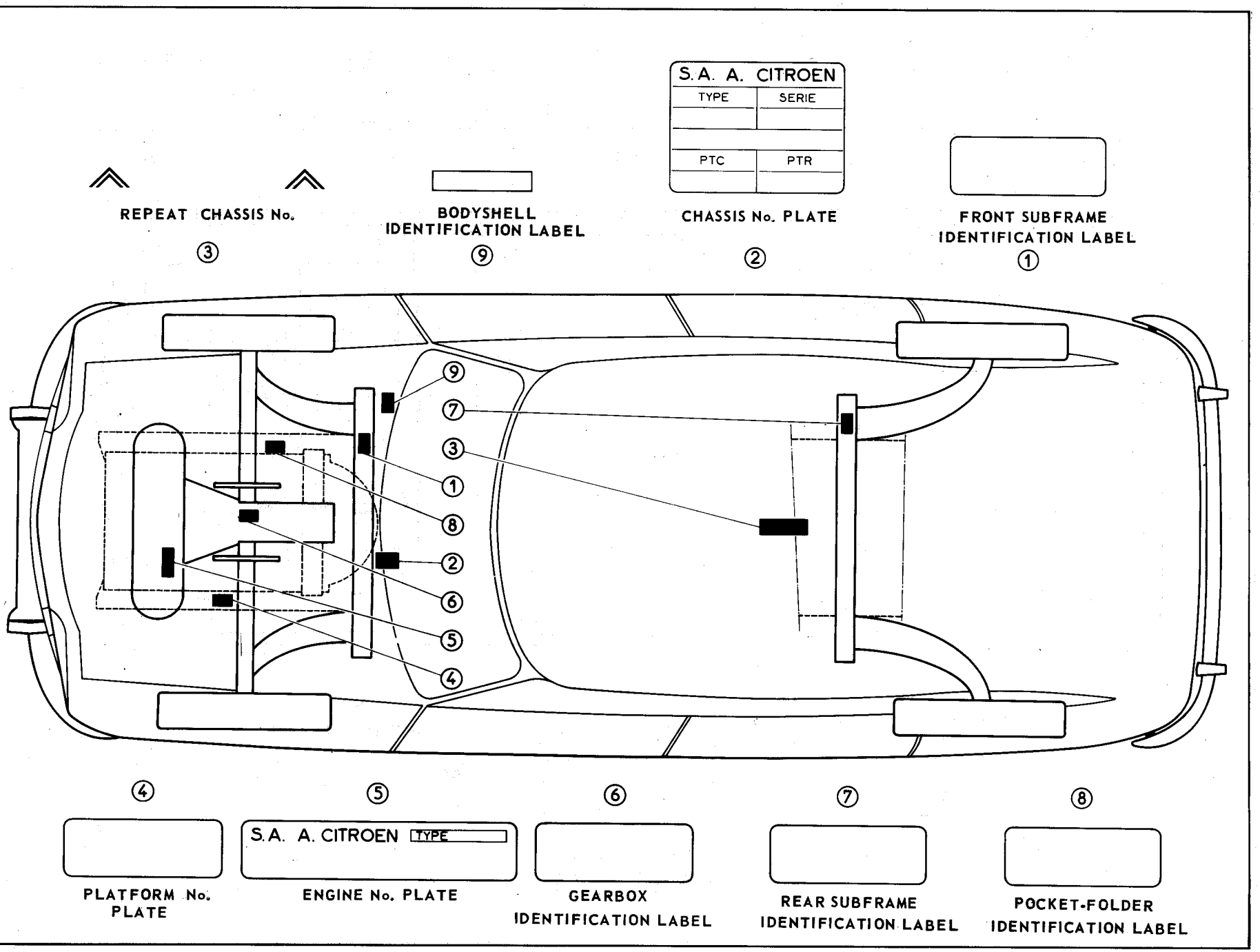
A 00-14



IDENTIFICATION OF VEHICLE COMPONENTS

(France)

AMI 8

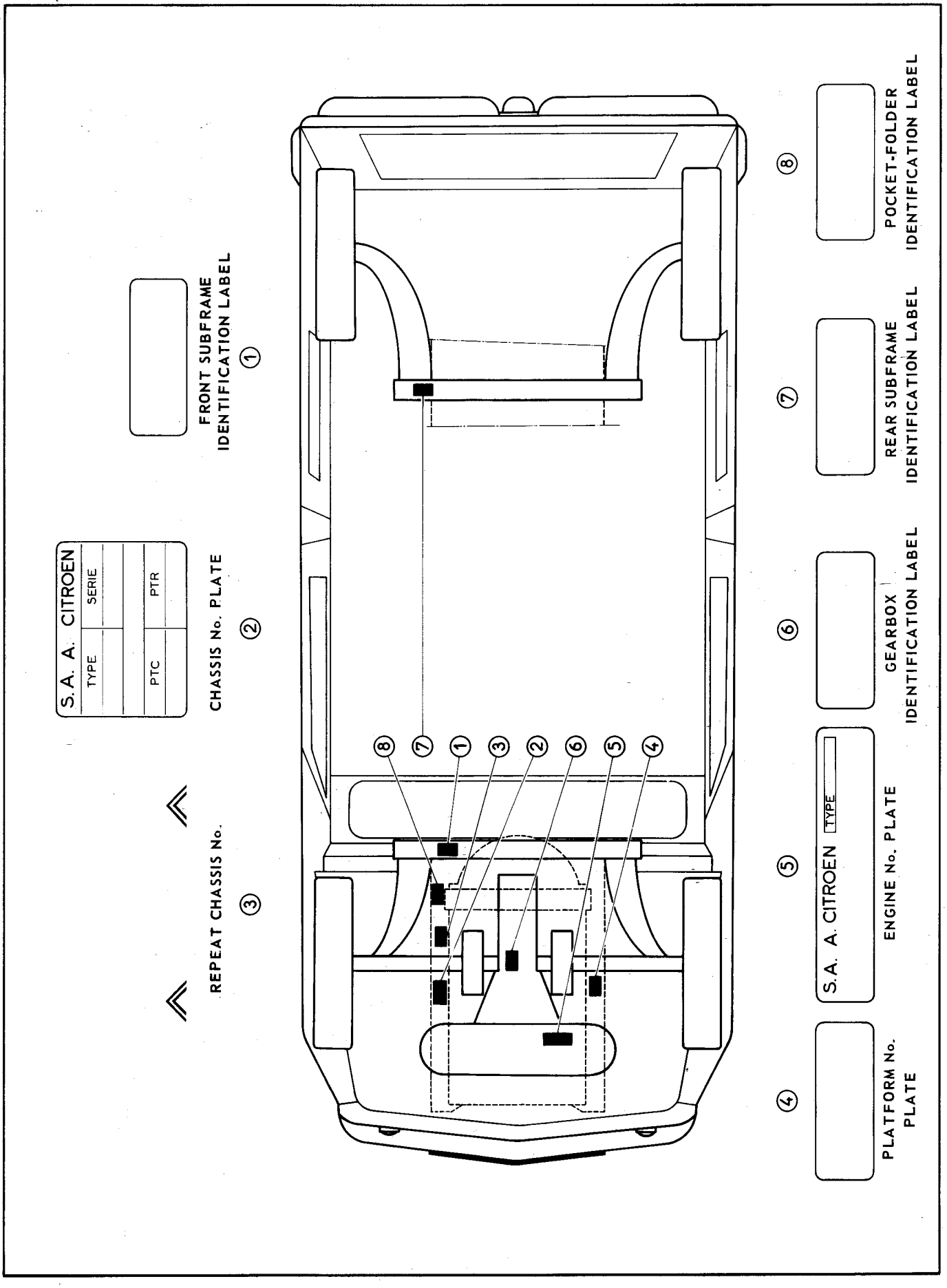


IDENTIFICATION OF VEHICLE COMPONENTS

(France)

MEHARI

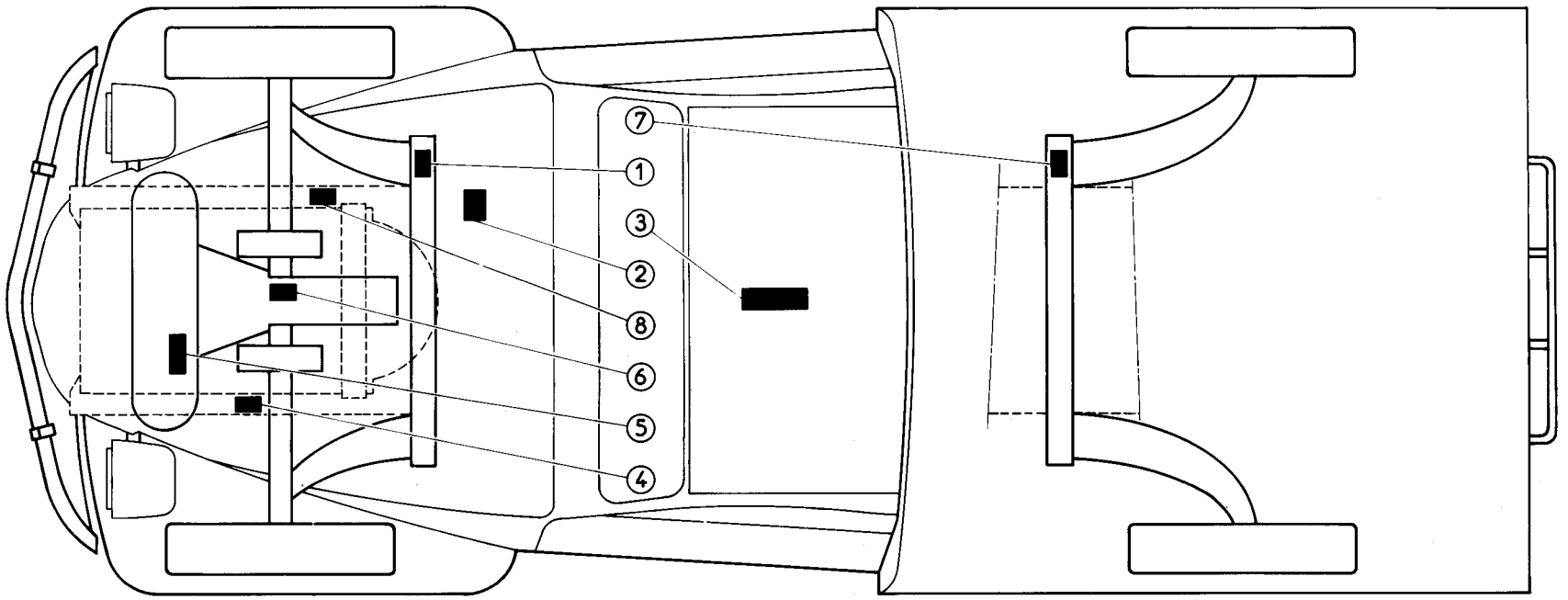
A 00-18



IDENTIFICATION OF VEHICLE COMPONENTS

(France)

VAN



REPEAT CHASSIS No.

③

S. A. A. CITROEN

TYPE	SERIE
PTC	PTR

CHASSIS No. PLATE

②

FRONT SUBFRAME IDENTIFICATION LABEL

①

④

PLATFORM No. PLATE

⑤

S.A. A. CITROEN TYPE

ENGINE No. PLATE

⑥

GEARBOX IDENTIFICATION LABEL

⑦

REAR SUBFRAME IDENTIFICATION LABEL

⑧

POCKET-FOLDER IDENTIFICATION LABEL

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. Dyanmo - 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 or 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.

Manual 816-1

3. Ignition coil :

Do not connect a radio suppressor capacitor to the « RUP » 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 manipilation.
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.

1. PRECAUTIONS.

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

USE SEA J 1703 TYPE BRAKE FLUID

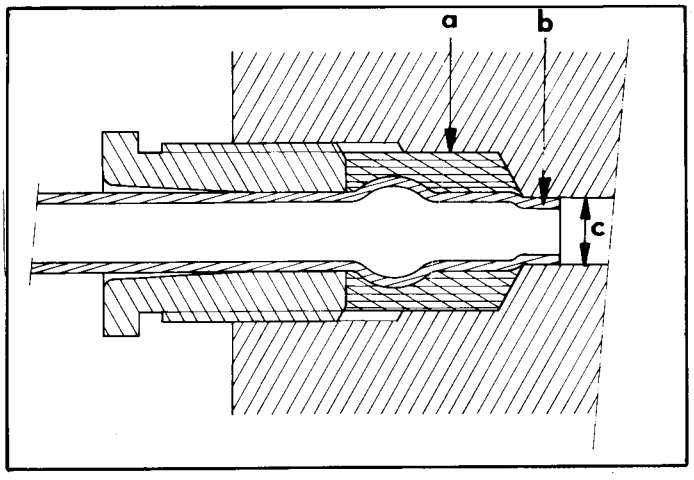
Only use seals, linings and flexible tubings corresponding to the special synthetic hydraulic brake fluid.
Clean parts with alcohol or hydraulic fluid of the same quality as that used in the brake circuit.
Use only alcohol for cleaning the hydraulic circuit.

B. Vehicles equipped with disc brakes at the front :

USE MINERAL HYDRAULIC FLUID (LHM) ON VEHICLES FITTED 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 :

TT. 00-5



Manual 816-1

- Install 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 offering it centrally in the hole and avoiding any stress. (Make sure that the end « b » of the tube penetrates into the small bore « c »).
- Screw the union 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. (.138 in) } 0.8 to 0.9 da Nm
- 4.5 mm tube dia. (.177 in) } (5.8 to 6.5 ft.lbs)

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

2. CHECKS TO BE COMPLETED AFTER WORKING ON HYDRAULIC SYSTEM

After working on the components or 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	Simili Rubber Finishing strip	Smearing of base Smearing of material Drying Fitting Polishing	Neoprene REST-AGRAF Ref. Choisyprene TEROSON Ref. Terokal 2444	Petrol F Trichlorethane 111
	Vinyl	Smearing of base Smearing of material Drying Fitting Polishing	Synthetic rubber glue MINNESOTA Ref. EC 1236 Acrylo-nitrite MIPLACOL Ref. HS 3688	Trichlorethane 111
Painted sheet metal Cardboard Felt	Cloth Felt	Smearing of base Drying Fitting Polishing	S.E.R. ONFROY 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	Expoxy TEROSON Ref. Terokal COLFIX Ref. Maticol	Lukewarm water before polymerization
	Rear-view mirror base	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 111
	Klegecel	Smearing of base Smearing of material Drying (3 to 8 minutes) Fitting Pressing the material	Neoprene BOSTIK Ref. 1400 MINNESOTA Ref. EC . 1099	Trichlorethane 111 S remover (P.C.A.S.)
Polyester	Polyurethane foam	Smearing of base Drying Fitting Polishing	Neoprene COLFIX Ref. 180 MINNESOTA Ref. Spray Pavillon 77.	Petrol F Trichlorethane

II. CLEANING PRODUCTS

USE	PRODUCTS	CHARACTERISTICS	SUPPLIERS
Rinsing out L.H.M. hydraulic pipings	TOTAL Hydrorincer	For complete rinsing, leave product in the circuit for 1000 km (620 mi)	TOTAL C.F.R.
Cold degreasing of mechanical assemblies	MAGNET 6	Insolvable in water, dries rapdily, has a high dielectrical potential	MAGNUS
	OIL & GREASE REMOVER	Allow product to act (pure or diluted with a solvent); rinse fully with water	MULLER & Co.
	PROTOLAN 3 D	Must be used pure and then rinsed with water	Ets. N. BREGER
	RAVITOL X		Ets. RAVICOLOR
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 carburettors	Carburettor cleaner	To be used pure Two types : - aerosol - liquid	SOFRALUS-BARDAHL
	P.D.R.		AGIR
	Carbuclin		REDEX - 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 Curty
	LOWAC	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	SILICOMET (black)		

SEALING GASKETS (Contd)

USE	PRODUCTS	CHARACTERISTICS	SUPPLIERS
Sealing casting porosities	DEVCON F	Aluminium base	COMET Dept. D.A.V.A.
	METALIT		DISIMPEX
	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 Ref. 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 arm 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.
Sparking plug thread lubricant	NO-BIND	Anti-bind lubricant, high temperature resistant	CEFILAC Dept. Joint Curty

LIST OF SUPPLIERS

SUPPLIERS	ADDRESS	TELEPHONE
AGIR	69360 SEREZIN du RHONE	(78) 49.80.27
BARTHELEMY	61, rue Defrance - 94300 VINCENNES	328.42.87
BOSTIK S.A.	5, route de St Leu - 95360 MONTMAGNY	964.64.12
BRASSART J	44, rue de la Boétie - 75008 PARIS	359.54.82
BREGER N	Le Pasty St Aubin de Luigne - 49190 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	(78) 20.08.94 797.01.49
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 Cazeau - 60300 Z.I. de SENLIS	453.13.20
COLFIX (SCHULTZ)	43, route de la Mertzau - 68100 MULHOUSE	(89) 42.10.84
DISIMPEX	1, rue Goethe - 75016 PARIS	727.89.59
DOW-CORNING S.A.R.L.	140, avenue Paul Doumer - 92500 RUEIL-MALMAISON	977.00.40
LAMBERT-RIVIERE	16, rue de Miromesnil - 75008 PARIS	265.16.50
MAGNUS	12, rue du Moulin de Cage - 92390 VILLENEUVE-LA-GARENNE	798.13.30
METROLUX S.A. FRANCE (Société Henri Lecocq)	167, 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 - 93270 SEVRAN	939.85.96
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 - 75010 PARIS	206.84.70
P.C.A.S.	23, rue Bossuet - 91160 LONGJUMEAU	909.77.85
RAVICOLOR	32, rue de Mulhouse - 68304 St LOUIS	(89) 67.13.37
REDEX - FRANCE	86, avenue de la République - 93300 AUBERVILLIERS	352.75.94
REST-AGRAF	6, place du Général Leclerc - 92300 LEVALLOIS	757.67.34
S.E.B.I.S.	3 à 5, rue de Metz - 75010 PARIS	770.13.08
SOFRALUS-BARDAHL	27, bld du Général Leclerc - BP 29 - 59051 ROUBAIX	(20) 70.02.12
TEROSON	175 à 179, avenue J. Jaurès - 75019 PARIS	202.50.72

I. GENERAL CHARACTERISTICS.

TYPE OF ENGINE	VEHICLES
A 53 (425 cc)	AZ (Series A and AM) *3/1963* ⟶ *2/1970* AZU *3/1963* ⟶ *8/1967*
A 79/0 (425 cc)	AZU *8/1967* ⟶ *8/1972* AYA (series A and AM) *8/1967* ⟶ *3/1968*
A 79/1 (435 cc)	AZ (series A 2) *2/1970* ⟶ *9/1975* AZ (serie KB) *9/1975* ⟶ *9/1979* AYA 2 (series A and AM) *3/1968* ⟶ *9/1975* AZU (series B) *8/1972* ⟶ *9/1975* AK (series AP) *9/1975* ⟶ *2/1978*
M 4 (602 cc)	AYA 3 (series A and AM) *1/1968* ⟶ *10/1968* AK ⟶ *5/1968* AM *10/1963* ⟶ *5/1968* AMB *10/1963* ⟶ *5/1968*
M 28/1 (602 cc)	AYB (series A and AM) *10/1968* ⟶ *2/1970* AZ (series KA) *2/1970* ⟶ AY (series CA) *10/1968* ⟶ AK (Série B) *5/1968* ⟶ *8/1970* AK (series AK) *8/1970* ⟶ *2/1978* AY (series CD) *2/1978* ⟶ AY (series CD modified) *8/1980* ⟶
M 28 (602 cc)	AY (series CB) *2/1970* ⟶ AM 2 *5/1968* ⟶ *3/1969* AMB 2 *5/1968* ⟶ *7/1969* AM 3 *3/1969* ⟶ *9/1969* AM (series JA) *9/1969* ⟶ *9/1978* AM (series JB and JC) *9/1969* ⟶ *9/1978*

Supplement No. 1 to Manual 816-1 (CORR)

Type of engine	**A 53**	**A 79/0**	**A 79/1**	**M 4**	
				AYA 3	**AK - AM**
Number of cylinders:	2 (flat twin)				
Fiscal rating :	2 CV			3 CV	
Cylinder capacity :	425 cc		435 cc	602 cc	
Bore :	66 mm		68.5 mm	74 mm	
Stroke:	62 mm		59 mm	70 mm	
Compression ratio :	7.5 : 1	7.75 : 1	8.5 : 1	7.75 : 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 6750 rpm	20.6 kW (28 CV SAE) at 5000 rpm	19.1 kW (26 CV SAE) at 4500 rpm
Maximum torque					
ISO :	2.9 m.daN (2.9 m.kg SAE) at 3500 rpm	3.1 m.daN (3 m.kg SAE) at 3500 rpm	2.9 m.daN (2.9 m.kg DIN) at 4500 rpm	4.5 m.daN (4.4 m.kg SAE) at 3500 rpm	4.1 m.daN (4 m.kg SAE) at 3500 rpm

Engine type	**M 28**	**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 twin)		
Fiscal rating			3 CV		
Cylinder capacity			602 cc		
Bore			74 mm		
Stroke			70 mm		
Compression ratio	9 : 1		8.5 : 1		
Effective power **ISO**	21.5 kW (30 CV DIN) at 5750 rpm	19.1 kW (26 CV DIN) at 5500 rpm	21 kW (29 CV DIN) at 5750 rpm		18 kW (25 CV DIN) at 5000 rpm
Maximum torque **ISO**	4.1 m.daN (4.2 m.kg DIN) at 4000 rpm	4.1 m.daN (4 m.kg DIN) at 3500 rpm	3.8 m.daN (4 m.kg DIN) at 3500 rpm		3.6 m.daN (3.7 m.kg DIN) at 2500 rpm

Cooling : Forced air.

Lubrification : 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. 142-00).

- Intake silencer : with dry interchangeable element.
- Fuel used { Super grade for M 28 engine / Ordinary grade for all other types of engines.

Ignition :

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

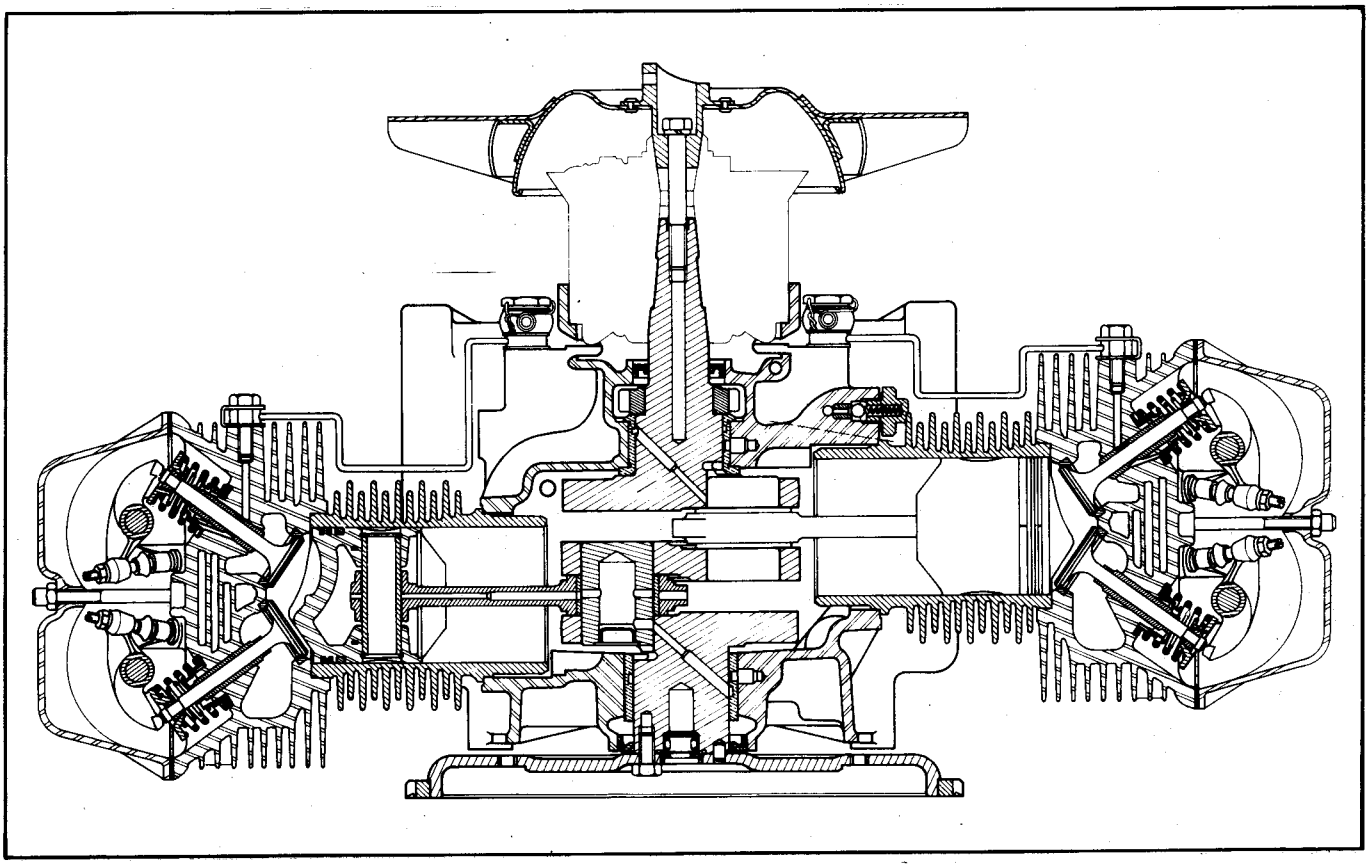
Distribution :

- Camshaft below crankshaft (timing gear with self adjusting device for wear).
- Maximum run-out of the spindle for distributor = 0.02 mm (.0008 in).

ENGINE A 53 and A 79/0

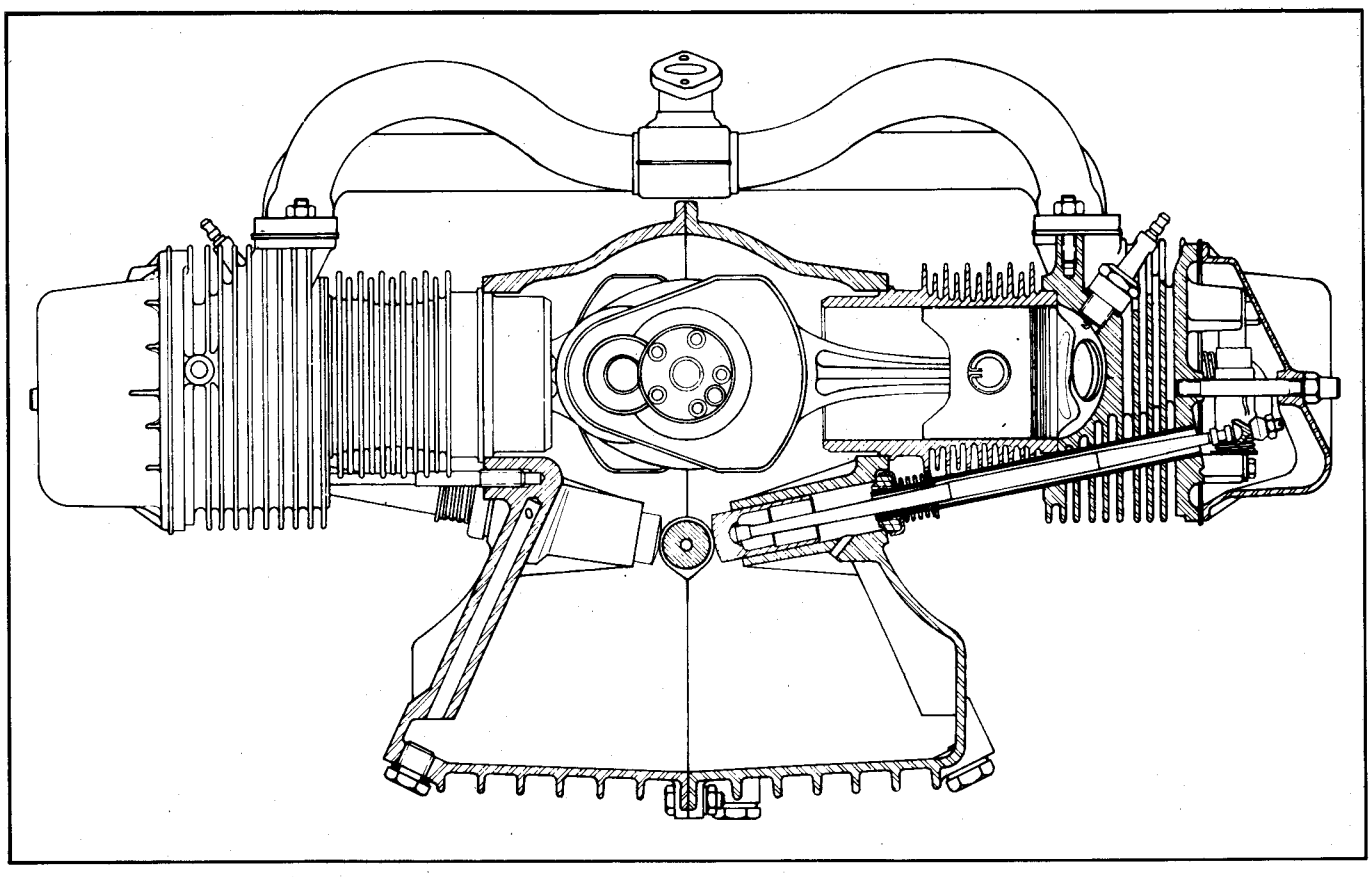
HORIZONTAL SECTION

A 10-4



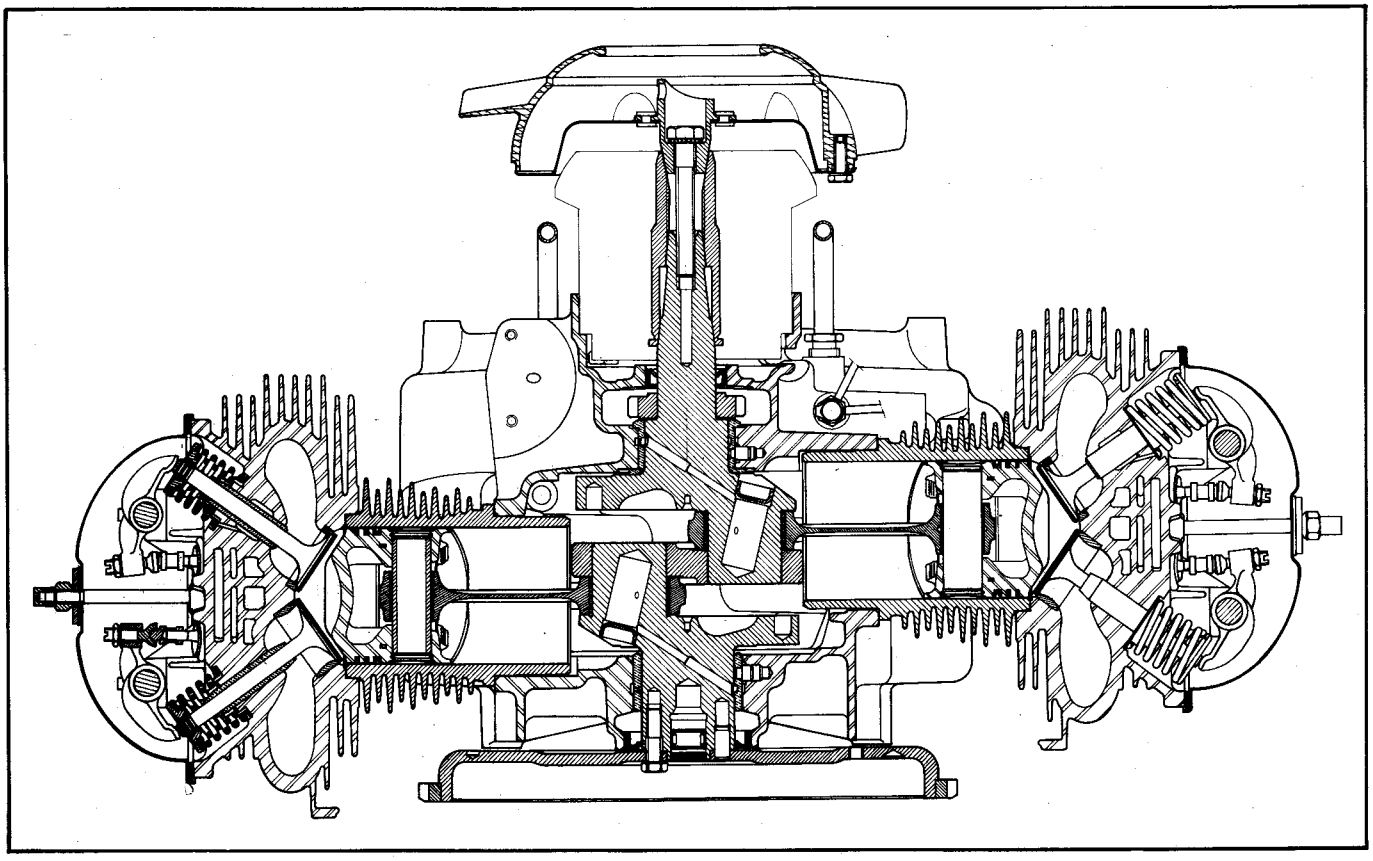
CROSS SECTION

A 10-5



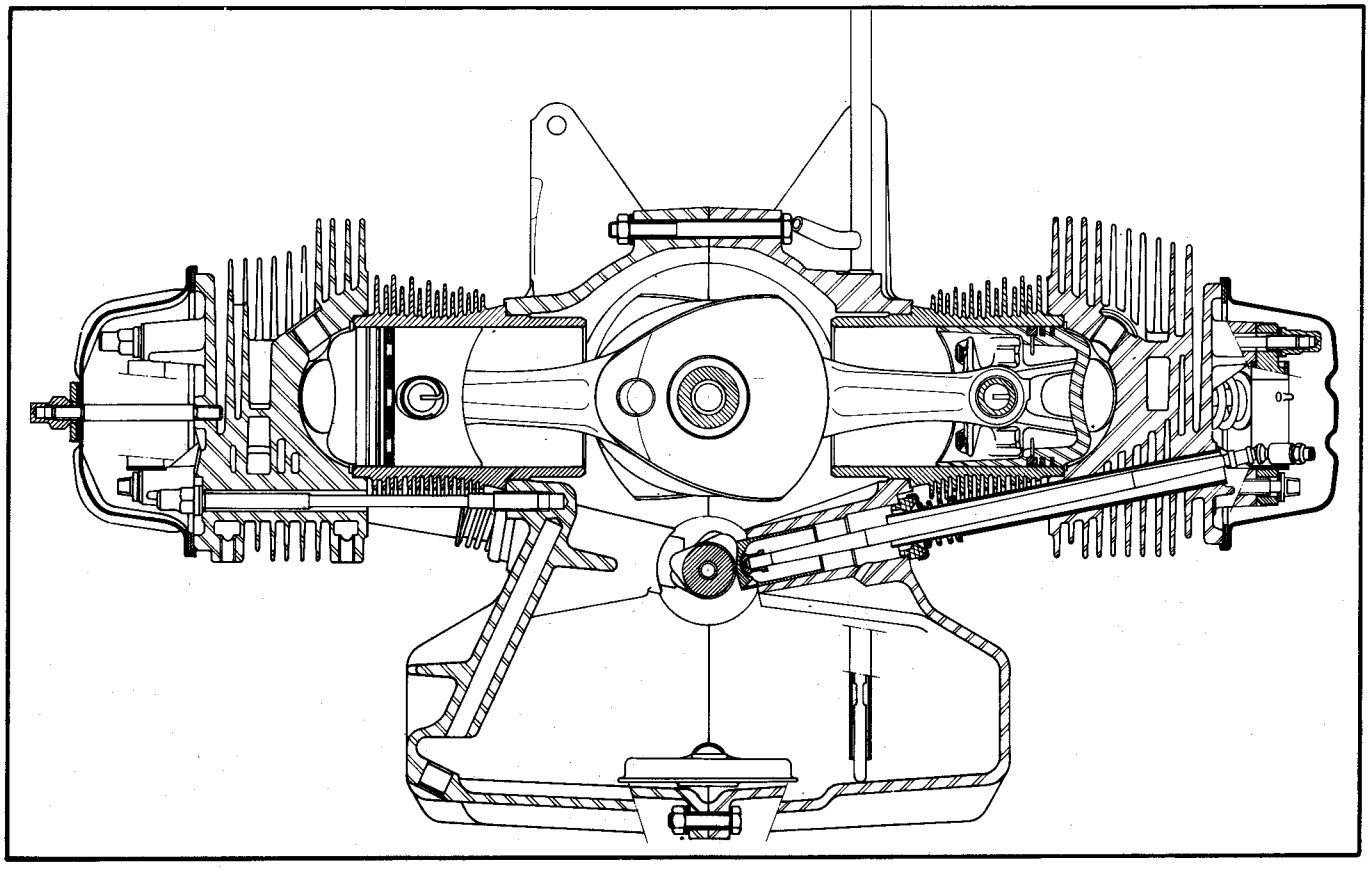
ENGINE A 79/1
HORIZONTAL SECTION

A 10-3



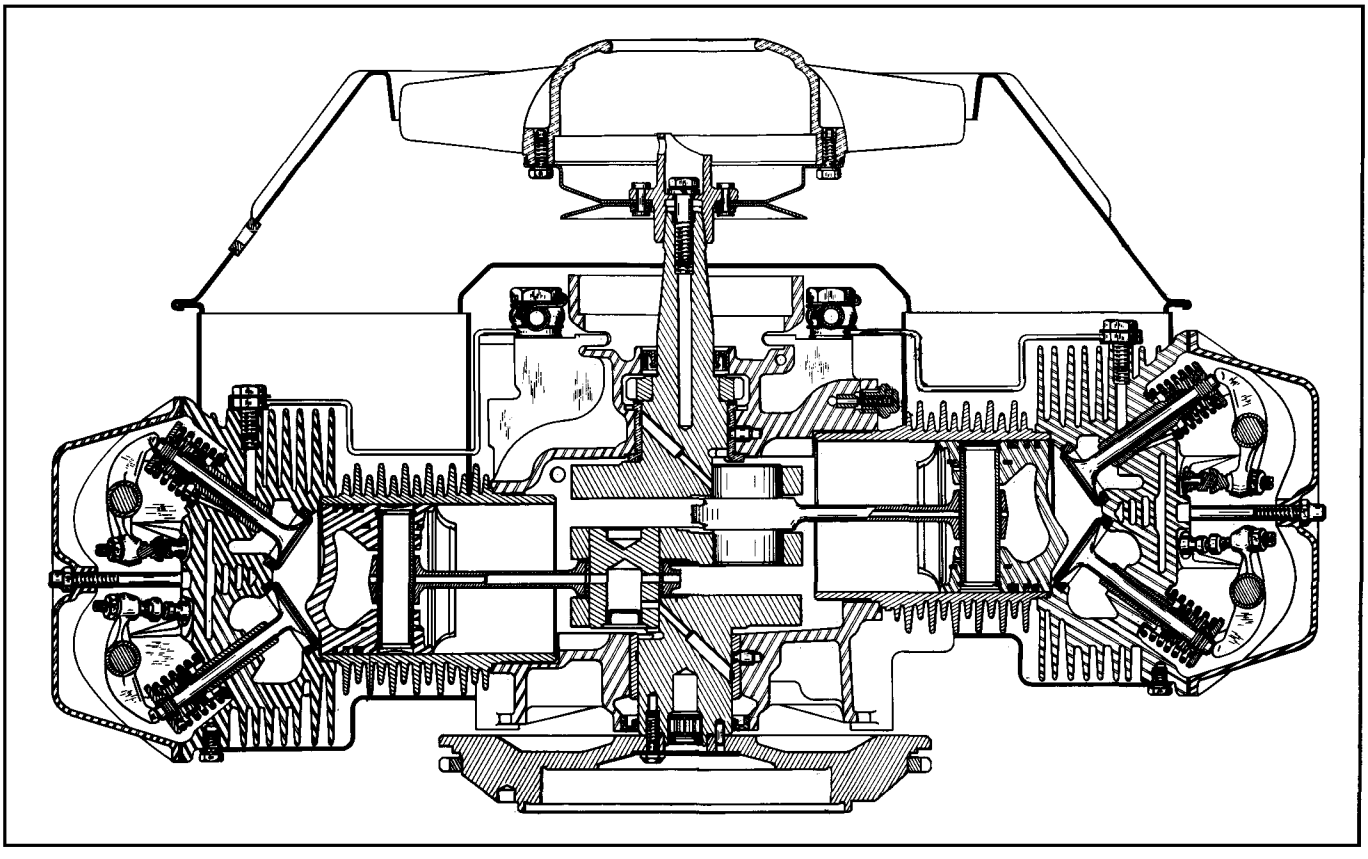
CROSS SECTION

A 10-1



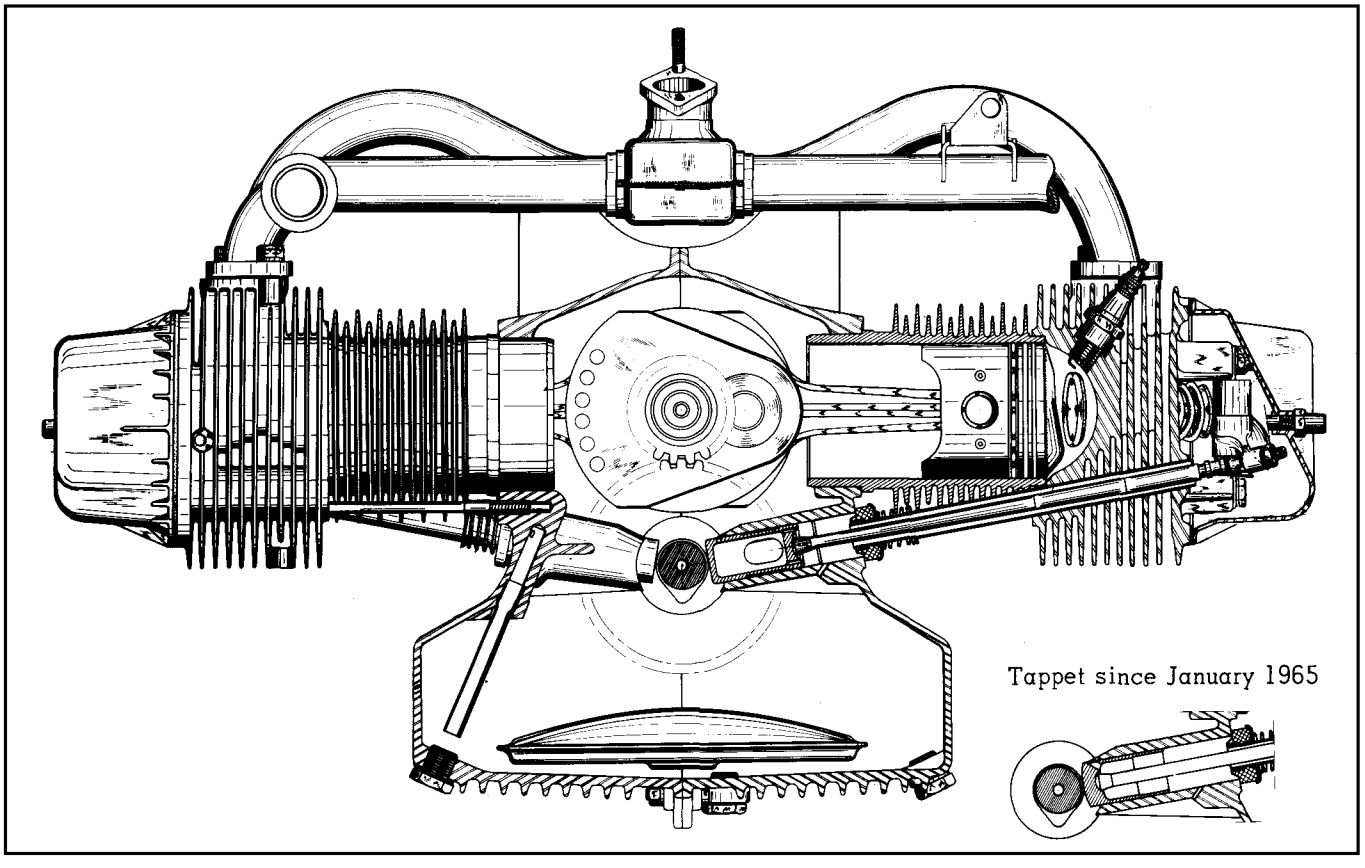
ENGINE M 4
HORIZONTAL SECTION

A 10-8



CROSS SECTION

A.10-9

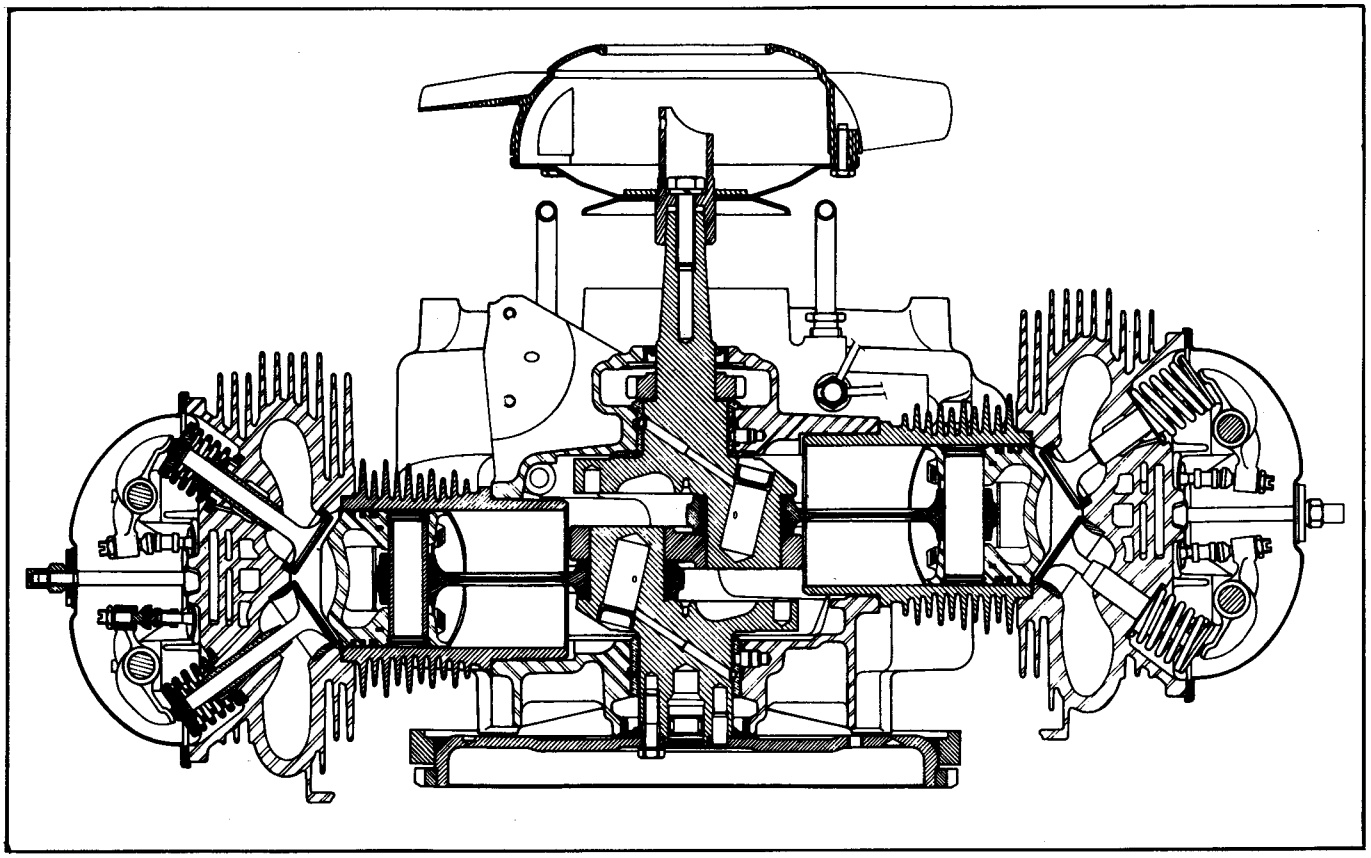


ENGINES M 28/1 and M 28

(Vehicles produced up to December 1969)

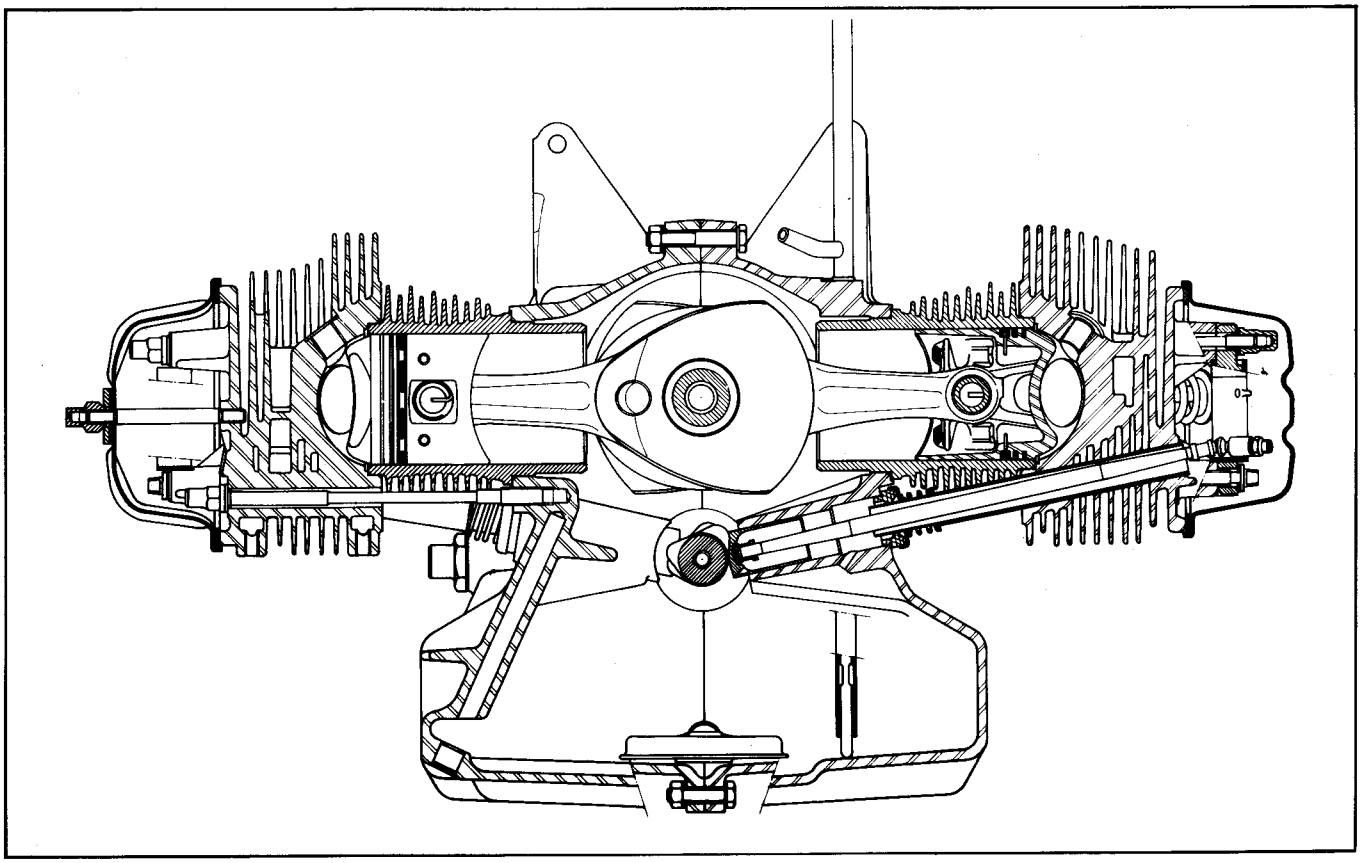
HORIZONTAL SECTION

A. 10-2



CROSS SECTION

A. 10-6



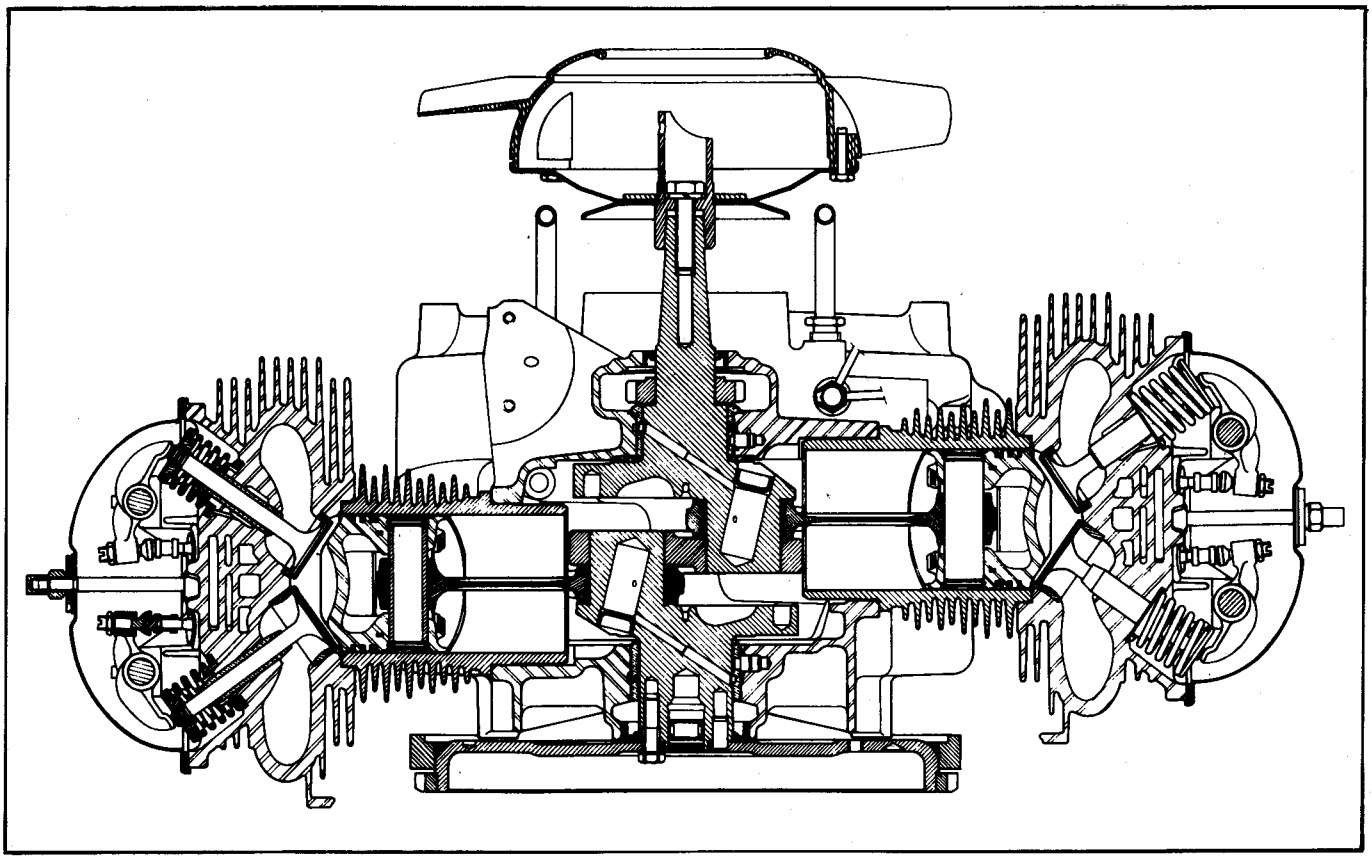
NOTE : The M 28 engine differs from the M 28/1 engine only in the compression ratio.

ENGINES M 28/1 and M 28

(Vehicles produced from December 1969 to November 1970)

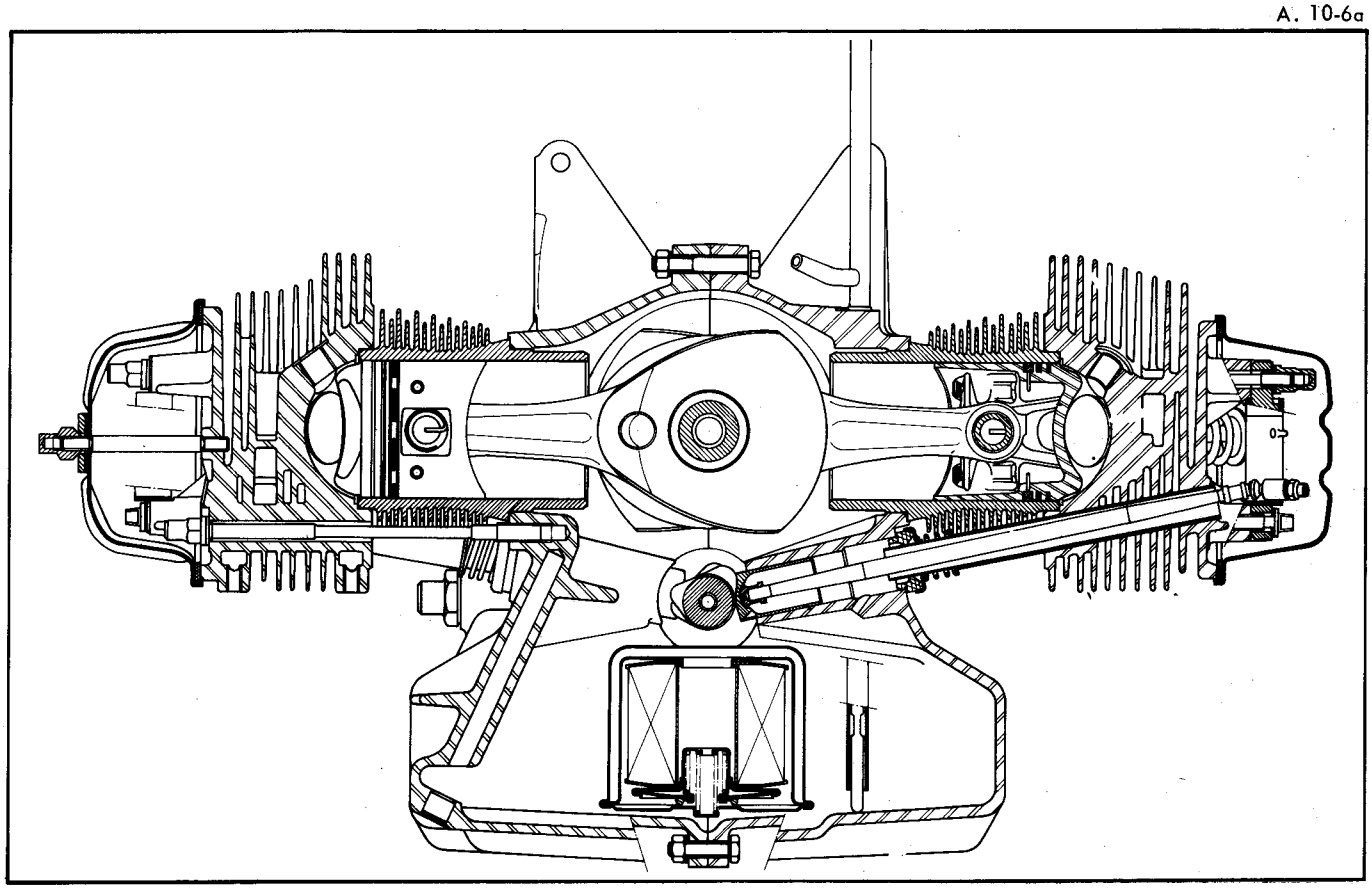
HORIZONTAL SECTION

A. 10-2



CROSS SECTION

A. 10-6a



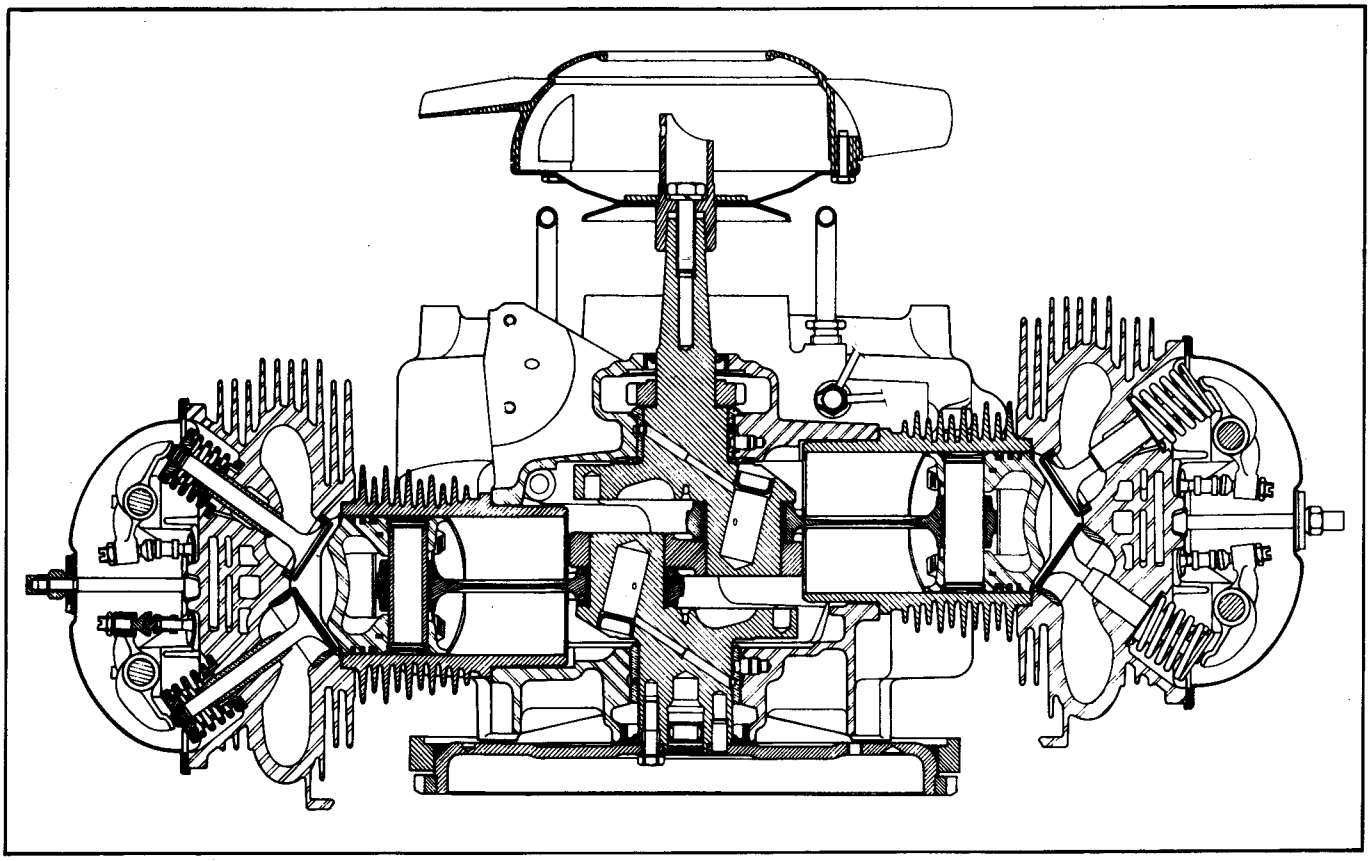
NOTE : The M 28 engine differs from the M 28/1 engine only in the compression ratio.

ENGINES M 28/1 and M 28

(Vehicles produced since December 1970)

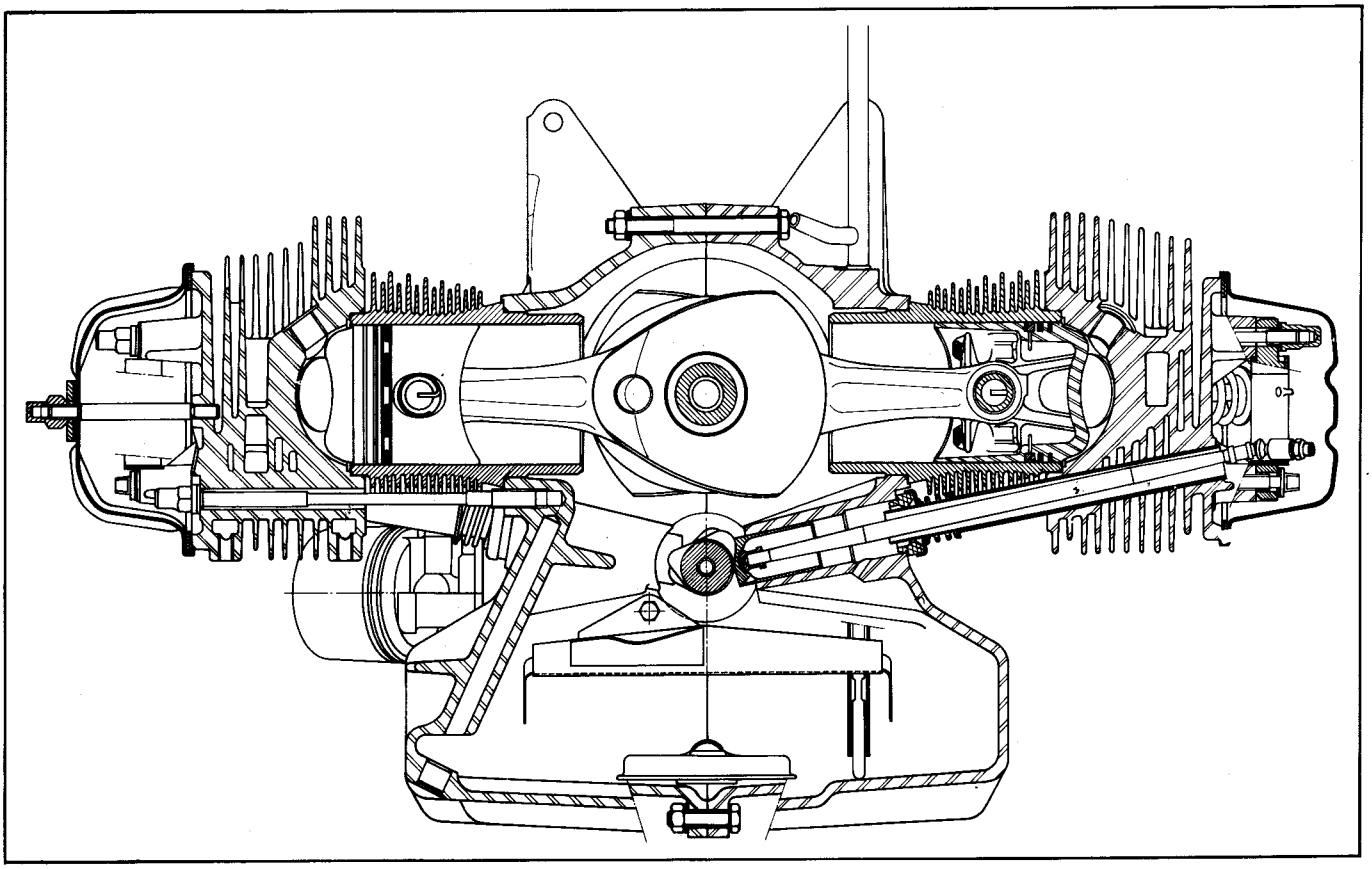
HORIZONTAL SECTION

A. 10-2



CROSS SECTION

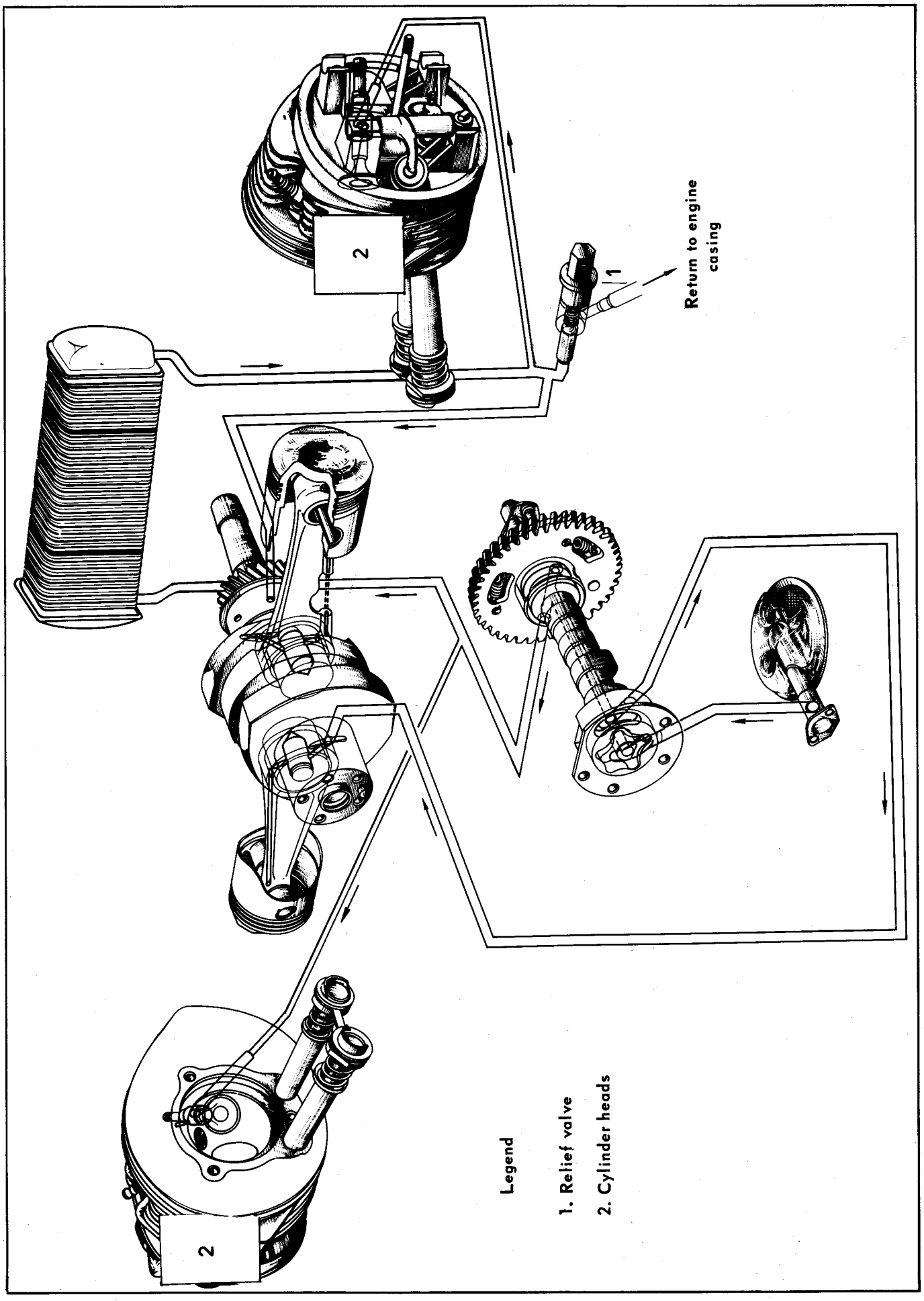
A. 10-7



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

DIAGRAM OF LUBRICATION SYSTEM
ENGINES A 53 - A 79/0 - M 4

A 22-2



Manual 816-1

DIAGRAM OF LUBRICATION SYSTEM

ENGINES A 79/1 (M 28/1) and M 28 *(up to November 1970)*

A. 22-3

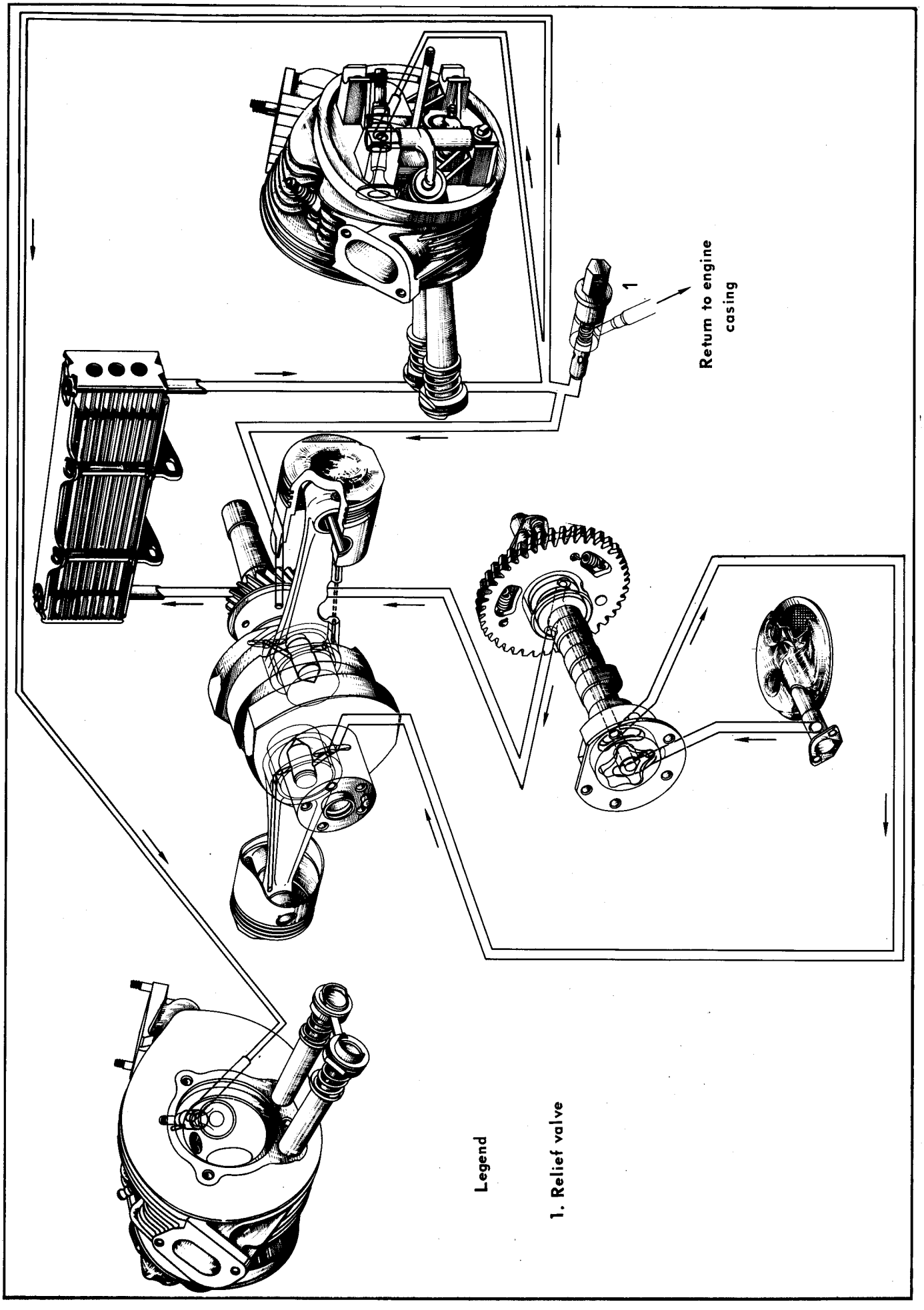
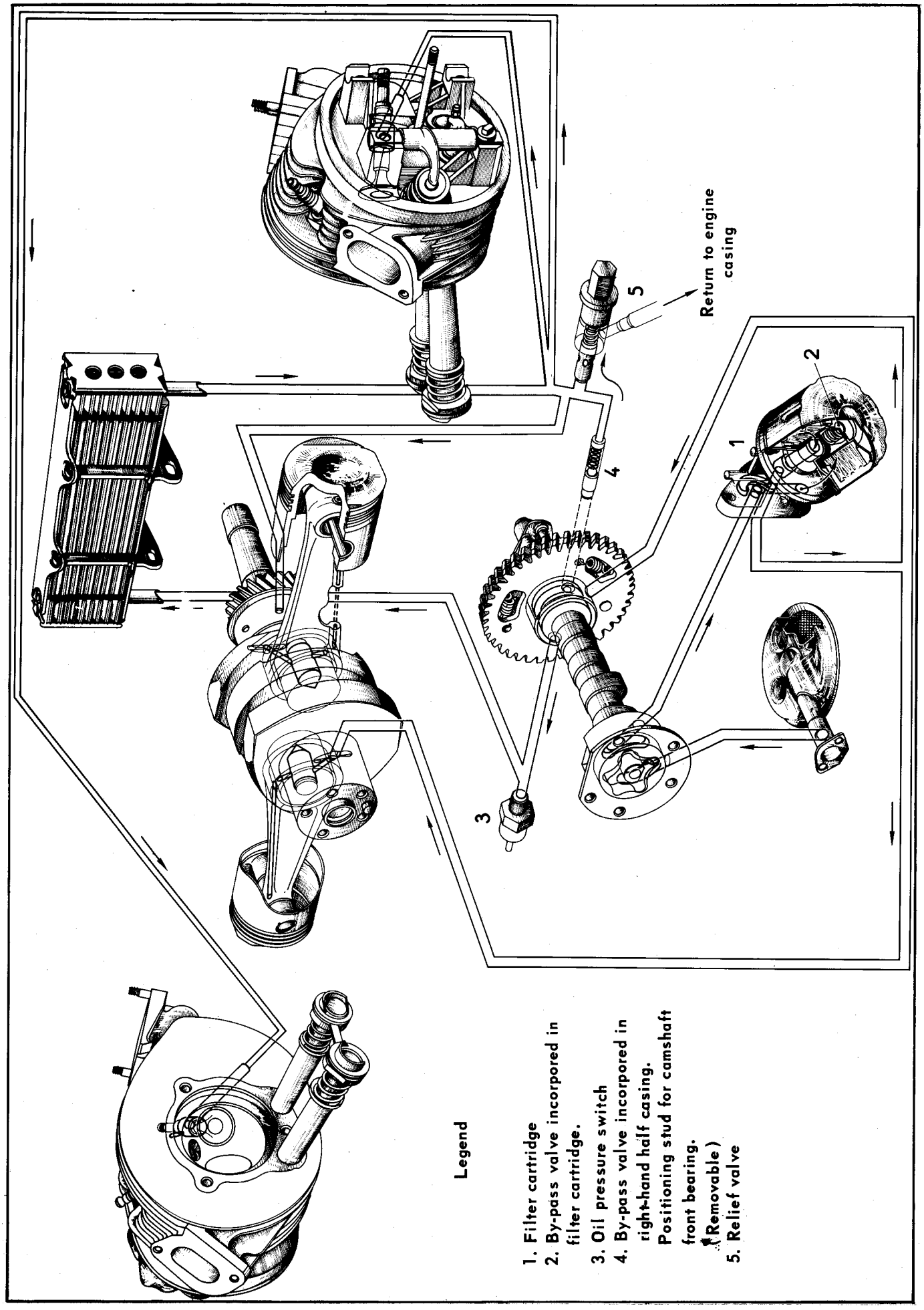


DIAGRAM OF LUBRICATION SYSTEM
ENGINES M 28/1 and M 28
(Engines produced since November 1970)

A. 22-1



Manual 816-1

Legend

1. Filter cartridge
2. By-pass valve incorpored in filter cartridge.
3. Oil pressure switch
4. By-pass valve incorpored in right-hand half casing. Positioning stud for camshaft front bearing. (Removable)
5. Relief valve

II. SPECIAL FEATURES.

Engine casing :

Tightening torques :

- Assembly bolts and nuts for crankcase halves : ..... 1.5 to 2 da Nm (10.83 to 14.44 ft.lbs)
- Bearing nuts : ..... 3.5 to 4.5 da Nm (25.27 to 32.54 ft.lbs)
- Oil strainer securing screw : ..... 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)
- Drain 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-turbine).

- Bore of small end bushes : ..... $20.005 \, ^{+\,0.011}_{-\,0.006}$ mm ($.787 \, ^{+\,.0004}_{-\,.0002}$ in)

- Lateral play of connecting rods : ..... 0.08 to 0.13 mm (.003 to .005 in)

Flywheel :

- Maximum run out of 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.

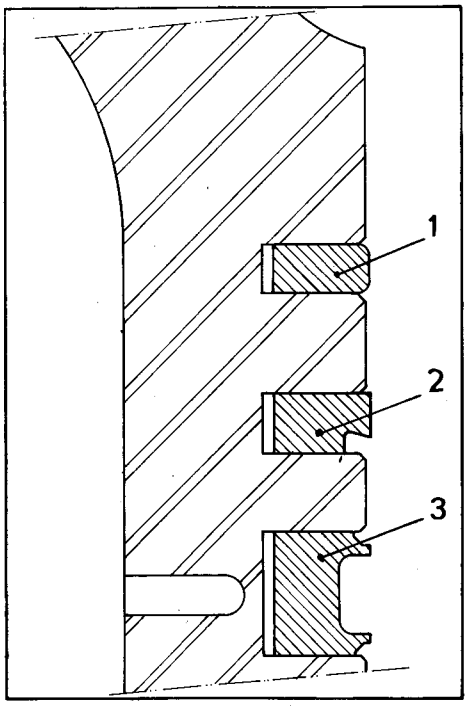
Pistons - Rings :

- 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

A. 12-50 a



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 « *cold* » : front upper nut - rear upper nut - lower nut).
  Lightly tighten the nuts in order to position the cylinder head :
  - 1 st 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 e intake-exhaust manifold : ..... 1.9 da Nm (13.71 ft.lbs)
- Cylinder-head studs on crankcase : ..... 0.4 to 0.6 da Nm (2.88 to 4.32 ft.lbs)
- Cylinder-head cover studs : ..... 0.4 to 0.6 da Nm (2.88 to 4.32 ft.lbs)
- Screws on exhaust collars : ..... 1.9 da Nm (13.71 ft.lbs)

Valves :

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

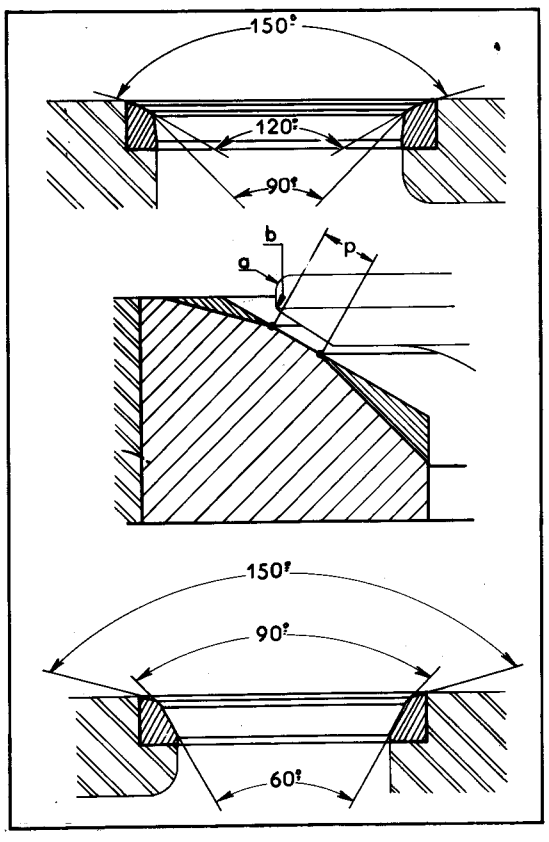
	Valves	Angle	Head dia.		Stem dia. below head		Length	
			mm	in	mm	in	mm	in
Engines A 53 - M 79/0	Intake	120°	39	1.54	$8^{-0.025}_{-0.040}$	$.315^{-.0010}_{-.0016}$	90.8 ± 0.25	3.57 ± .010
	Exhaust	90°	32	1.26	$8.5^{-0.035}_{-0.050}$	$.335^{-.0001}_{-.0020}$	88.65 ± 0.25	3.49 ± .010
Engines A 79/1	Intake	120°	39	1.54	$8^{-0.005}_{-0.035}$	$.315^{-.0002}_{-.0014}$	$89.57^{+0.45}_{-0.25}$	$3.53^{+.018}_{-.010}$
	Exhaust	90°	34	1.34	$8.5^{-0.020}_{-0.050}$	$.335^{-.0008}_{-.0020}$	$88.18^{+0.45}_{-0.25}$	$3.47^{+.018}_{-.010}$
Engine M 4	Intake	120°	39	1.54	$8^{-0.025}_{-0.040}$	$.315^{-.0010}_{-.0016}$	88.8 ± 0.25	3.50 ± .010
	Exhaust	90°	34	1.34	$8.5^{-0.035}_{-0.050}$	$.335^{-.0014}_{-.0020}$	86.5 ± 0.25	3.41 ± .010
Engines M 28/1 - M 28	Intake	120°	40	1.57	$8^{-0.020}_{-0.035}$	$.315^{-.0008}_{-.0014}$	$88.5^{+0.45}_{-0.25}$	$3.48^{+.018}_{-.010}$
	Exhaust	90°	34	1.34	$8.5^{-0.035}_{-0.050}$	$.335^{-.0014}_{-.0020}$	$86.95^{+0.45}_{-0.25}$	$3.42^{+.018}_{-.010}$

Valve springs :

Engines	Springs		Normal length	Length under load	Load	Length under load	Load
A 53 A 79/0 M 4	Up to September 1963	outer	38 mm (1.49 in)	24 mm (0.94 in)	38 to 42 kg (83 to 92 lbs)	31 mm (1.22 in)	18 to 21 kg (39 to 46 lbs)
		inner	28 mm (1.10 in)	14.5 mm (0.57 in)	7.4 to 8.3 kg (16 to 18 lbs)	21.5 mm (0.84 in)	3.6 to 4.4 kg (7.9 to 9.6 lbs)
	Since September 1963	outer	38.6 mm (1.51 in)	24.4 mm (0.96 in)	47.3 to 48.3 kg (104 to 105 lbs)	31.7 mm (1.24 in)	21.2 to 24.6 kg (46.6 to 54 lbs)
		inner	28.8 mm (1.13 in)	15 mm (0.59 in)	9 to 10 kg (19 to 22 lbs)	22.3 mm (0.87 in)	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 M 28/1 M 28	Outer	31.4 mm (1.23 in)	28 ± 1.5 kg (61 ± 3.3 lbs)	24.15 mm (0.95 in)	42.5 ± 2 kg (93 ± 4.4 lbs)	R.H.
	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.
	One spring only	31.4 mm (1.23 in)	37 ± 2.5 kg (79 ± 5.5 lbs)	24.15 mm (0.95 in)	66 ± 3.5 kg (145 ± 7.7 lbs)	Indifferent

Seats and guides :



Bore of valve guides :

Engines A 53 - A 79/0 :

- Inlet : dia. = 8 $^{+\ 0.025}_{\ 0}$ mm (.315 $^{+\ .0010}_{\ 0}$ in)
- Exhaust : dia. = 8.5 $^{+\ 0.025}_{\ 0}$ mm (.335 $^{+\ .0010}_{\ 0}$ in)

Engine A 79/1 :

- Inlet : dia. = 8 $^{+\ 0.020}_{+\ 0.005}$ mm (.315 $^{+\ .0009}_{+\ .0001}$ in)
- Exhaust : dia. = 8.5 $^{+\ 0.010}_{+\ 0.005}$ mm (.335 $^{+\ .0003}_{+\ .0001}$ in)

Engine M 4 :

- Inlet : dia. = 8 $^{+\ 0.040}_{+\ 0.025}$ mm (.315 $^{+\ .0016}_{+\ .0010}$ in)
- Exhaust : dia. = 8.5 $^{+\ 0.050}_{+\ 0.025}$ mm (.335 $^{+\ .0020}_{+\ .0010}$ in)

Engines M 28/1 - M 28 :

- Inlet : dia. = 8 $^{+\ 0.030}_{+\ 0.005}$ mm (.315 $^{+\ .0011}_{+\ .0001}$ in)
- Exhaust : dia. = 8.5 $^{+\ 0.015}_{-\ 0.010}$ mm (.335 $^{+\ .0005}_{-\ .0003}$ in)

Width of contact surface « p » :

- Inlet ..... 1.45 mm (.057 in) max.
- Exhaust ..... 1.80 mm (.070 in) max.
- Maximum out of straight of push rods..... 0.2 mm (.007 in) max.

Distribution :

Camshaft :

- 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 (0.021in) between rocker and intake valve and a clearance of 0.43 mm (0.017in) 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°
B.B.D.C. (Exhaust opens)	45°	55°
A.T.D.C. (Exhaust opens)	11°	21°

Theoritical setting with a clearance of 1 mm (0.039in) 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'

Manual 816-1

Cam/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)	2.3 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 cartridge *(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 28/1 *(from November 1969 to November 1970)*
- Intake strainer with built-in « by-pass » filter cartridge.

Engines M 28 and M 28/1 *(since November 1970)*
- New lubrication circuit with built-in (removable) « by-pass » in place of the front camshaft bearing positioning stud (right-hand engine casing).
- External filter cartridge with built-in « by-pass ».

Oil cooler :

Engines A 53 - A 79/0	7 elements
Engine M 4	9 elements
Engine A 79/1	6 elements (Aluminium)
Engines M 28/1 - M 28	9 elements (Aluminium)

Oil pump :

- Lateral play of pinions	0.1 mm maximum (.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 tight (LOCTITE FRENETANCH)
- Securing screw for oil strainer	0.3 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 10.8 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 :

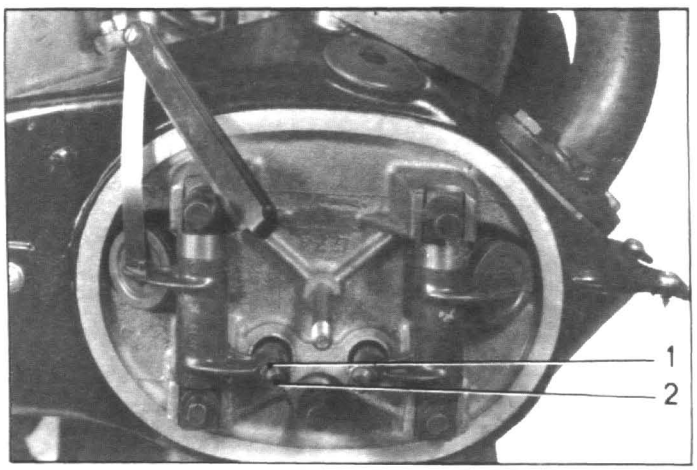
- Engine A 53	6 blades (metal fan)
- Engines A 79/0 - A 79/1 - M 4 - M 28/1 - M 28	8 blades (plastic fan)
- Engines M 28/1 - M 28	9 blades (plastic fan) *(since October 1970)*

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.

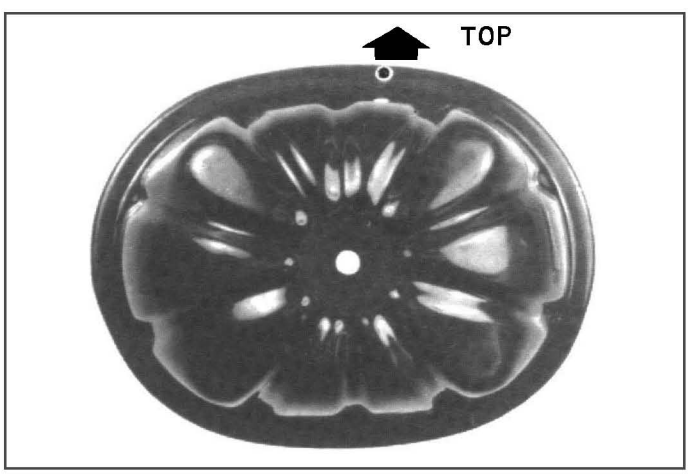
4112



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.

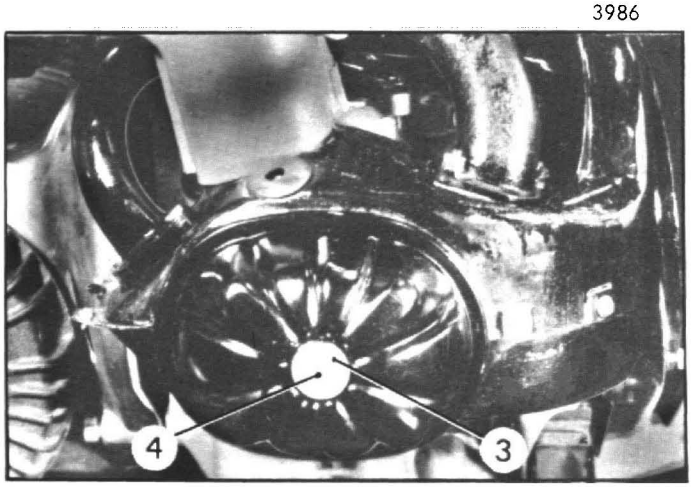
4278



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.

3986



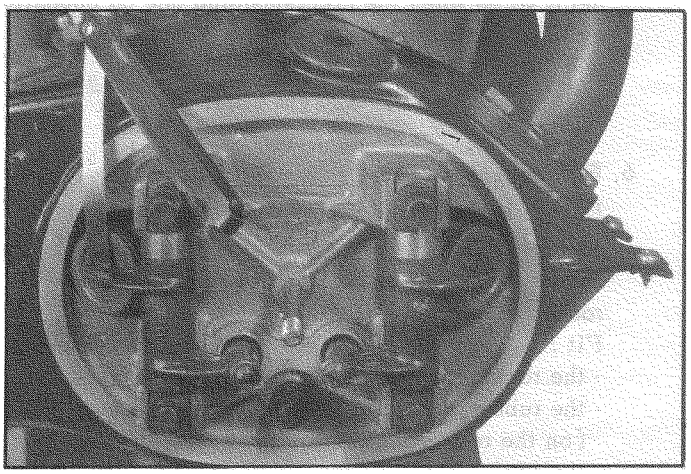
4. Start the engine and check the joints for leaks.

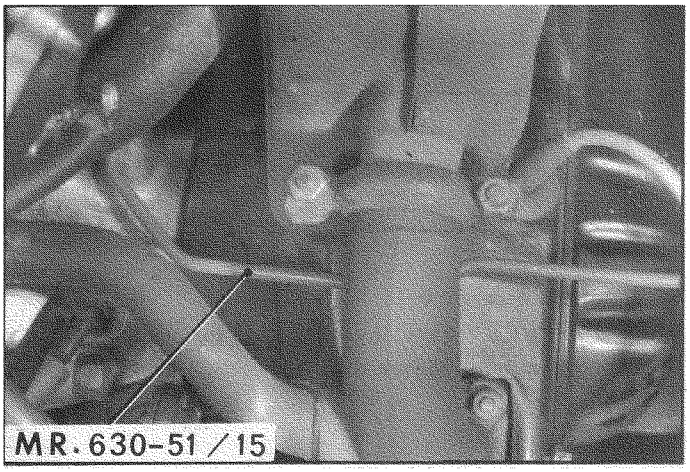
5. While the engine is warm, adjust the idling speed, if necessary (750 to 800 rpm).

6. When a centrifugal clutch has been fitted, check the the setting of the throttle closing dashpot. (The operation time must be between 1 and 2 seconds). Adjust if necessary.

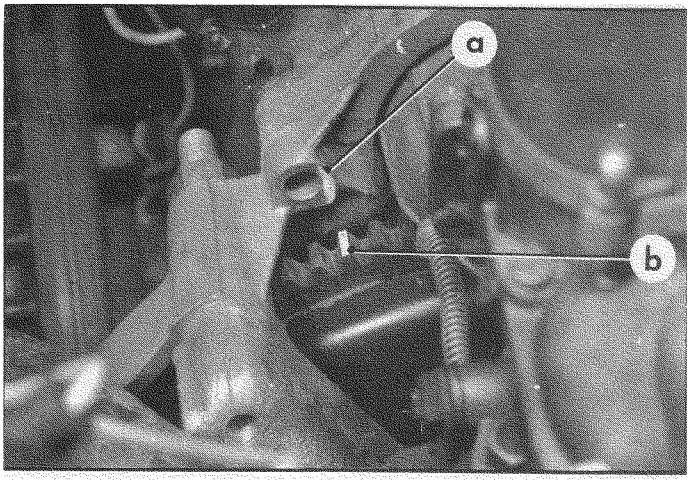
7. Top up with engine oil.

CHECKING THE VALVE TIMING

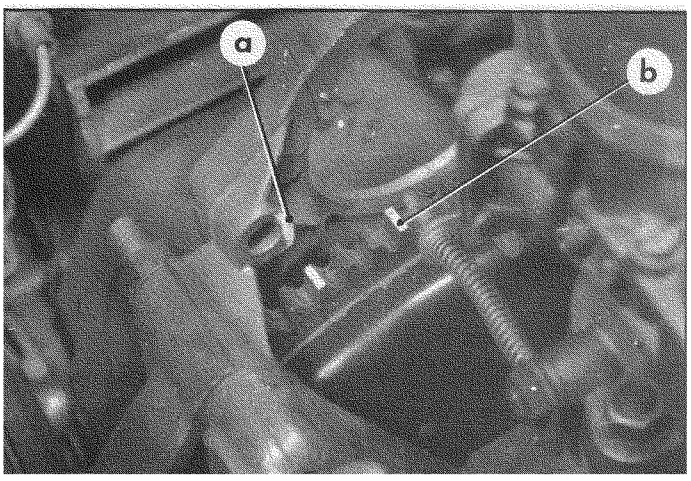

4112



4514



2 096



12 097

Manual 816.1

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

1. Place a container to collect the oil and remove the rocker cover of the left-hand cylinder.

2. 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 79/0 and M 4 : 2.40 mm (.095 in)
- Engines A 79/1 ..... : 2.40 mm (.095 in)
- Engines M 28/1 and M 28 : 2 mm (.078 in)

3. 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 of its normal rotation* until the rod penetrates into the hole of the flywheel

4. Measure the clearance between rocker and exhaust valve. If the timing is to be correct, the clearance should be *between :*
- Engine A 53 : 0.04 and 0.83 mm (.0015 and .032 in)
- Engines A 79/0 and M 4 : 0.06 and 0.80 mm (.0023 and .031 in)
- Engine A 79/1 : 0.09 and 0.88 mm (.0035 and .034 in)
- Engines M 28/1 and M 28 : 0.03 and 0.75 mm (.0011 and .029 in)

On certain A 79/1 (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 :*

a) Turn the engine in order to bring the inlet valve to its fully open position and adjust the exhaust valve-rocker clearance to 1.50 mm (.059 in).

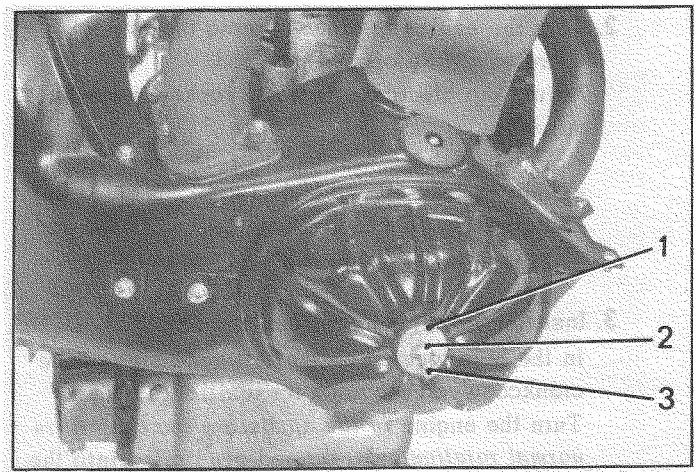
b) Insert the rod MR. 630-51/15 in the hole located on the left-hand side of the crankcase, provided for ignition timing.

c) Turn the engine *in the opposite direction of normal* until the rod penetrates into the flywheel hole.

d) With a piece of chalk mark a « b » on a tooth of the starter ring and another mark « a » on the crankcase directly opposite the « b ».
Remove the timing rod.

e) 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 0.65 mm (.0019 and .25 in)

4043



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 to 0.5 to 0.7 da Nm (3.6 to 4.9 ft.lbs).

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 (425 cc)	AZ (series A and AM)	*3/1963 → 2/1970*	SOLEX 28 IBC * SOLEX 28 CBI or ZENITH 28 IN * ZENITH 28 IN 4	32[1]	30[1]
	AZU (series A)	*3/1963 → 8/1967*		Z 32	Z 30
A 79/0 (425 cc)	AZU (series A)	*8/1967 → 8/1972*	SOLEX 32 PICS *	38	
	AYA (series A and AM)	*8/1967 → 3/1968*	SOLEX 32 PCIS	38	39
A 79/1 (435 cc)	AYA 2 (series A and AM)	*3/1968 → 2/1970*	SOLEX 34 PICS 4 * SOLEX 34 PCIS 4	101	102
	AYA 2 (series A and AM)	*2/1970 → 8/1972*	SOLEX 34 PICS 5 * SOLEX 34 PCIS 5	101[1]	102[1]
	AZ (series A 2)				
	AYA 2 (series A and AM)	*8/1972 → 10/1975*	SOLEX 34 PICS 6 *	121	122
	AZ (series A 2)				
	AZU (series B)			121	
	AK (series AP) (AZU)	*10/1975 → 7/1976*	SOLEX 34 PCIS 6	173	
	AZ (series KB)			173	174
	AK (series AP) (AZU)	*7/1976 → 7/1978*	SOLEX 34 PICS 10	191	
♦	AZ (series KB)	*7/1976 → 9/1979*	SOLEX 34 PCIS 10	191	192
M 4 (602 cc)	AYA 3 (series A and AM)	*1/1968 → 10/1968*	SOLEX 40 PICS 3 * SOLEX 40 PCIS 3	44[3]	45[3]
	AK	*→ 5/1968*	SOLEX 30 PICS		
	AM (AMI 6)	*9/1963 → 4/1964*	SOLEX 40 PICS * SOLEX 40 PCIS	44	45
		4/1964 → 4/1967	SOLEX 40 PICS 2 * SOLEX 40 PCIS 2	44[1]	45[1]
		4/1967 → 5/1968	SOLEX 40 PICS 3 * SOLEX 40 PCIS 3	44[2]	45[2]
M 28/1 (602 cc)	AYB (series A and AM)	*10/1968 → 1/1970*	SOLEX 34 PICS 4 * SOLEX 34 PCIS 4	103	104
	AY (series CA)			103	104
	AK (series B)	*5/1968 → 1/1970*		103	
	AYB (series A and AM)	*1/1970 → 2/1970*	SOLEX 34 PICS 5 * SOLEX 34 PCIS 5	103[1]	104[1]
	AY (series CA)	*1/1970 → 8/1972*		103[1]	104[1]
	AK (series B)	*1/1970 → 7/1970*		103[1]	
♦	AK (series AK)	*7/1970 → 8/1972*	SOLEX 34 PICS 5 * SOLEX 34 PCIS 5	103[1]	
♦	AZ (series KA)	*2/1970 → 8/1972*		103[1]	104[1]

Type of engine	Type of vehicle	Dates of production	Type of carburettor	Reference on carburettor	
				Conventional clutch	Centrifugal clutch
M 28/1 (602 cc) (continued)	AY (series CA)	*8/1972 → 2/1975*	SOLEX 36 PICS 6 *	123	124
	AK (series AK)			123	
	AZ (series KA)			123	124
	AY (series CA)	*2/1975 → 10/1975*		164	165
	AK (series AK)			164	
	AZ (series KA)		SOLEX 34 PCIS 6	164	165
	AY (series CA)	*10/1975 → 7/1976*		175	176
	AK (series AK)			175	
	AZ (series KA)			175	176
	AY (series CA)	*7/1976 → 7/1978*	SOLEX 34 PICS 10 * SOLEX 34 PCIS 10	193	194
	AK (series AK)			193	
	AZ (series KA)			193	194
♦	AZ (series KA)	*7/1978 → 7/1980*	SOLEX 26/35 CSIC * SOLEX 26/35 SCIC	197	198
♦	AZ (series KA)	*7/1980 →*		225	226
♦	AY (series CA)	*7/1978 → 7/1980*		197	198
♦	AY (series CA)	*7/1980 →*		225	226
M 28 (602 cc)	AY (series CB)	*2/1970 → 6/1970*	SOLEX 26/35 CSIC *	110[2]	111[2]
	AY (series CB)	*6/1970 → 8/1972*		113[1]	114[1]
	AY (series CB)	*8/1972 → 10/1975*		127	128
	AY (series CB	*10/1975 → 7/1976*		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)	*2/1978 → 7/1980*		197	
♦	AY (series CD)	*7/1980 →*		225	
	AM (AMI 6)	*5/1968 → 11/1968*	SOLEX 26/35 SCIC	110	111
		11/1968 → 3/1969		110[1]	111[1]
	AM 3 (AMI 8)	*3/1969 → 7/1969*		110[1]	111[1]
	AM (AMI 8) (Series JA - JB - JC)	*7/1969 → 8/1972*		110[1]	111[1]
		8/1972 → 10/1975		125	126
		10/1975 → 7/1976		177	178
♦		*7/1976 → 9/1978*		197	198

* Carburettor without throttle closing dashpot (conventional clutch);

CARBURETTORS	28 IBC (32[1]) **SOLEX** 28 CBI (30[1])	28 IN (Z 32) **ZENITH** 29 IN 4 (Z 30)	**SOLEX CARBURETTORS**	30 PICS	32 PICS (38) 32 PCIS (39)	40 PICS (44) 40 PCIS (45)	40 PICS 2 (44[1]) 40 PCIS 2 (45[1]) 40 PICS 3 (44[2-3]) 40 PCIS 3 (45[2-3])
Venturi bore	22	22	Venturi bore	26	28	32	32
Main jet	125	132	Main jet	140	150	165	170
Air correction jet	EI		Air correction jet	AB	215	AB	AC
Choke jet	80		Idling jet	475	55	55	50
Idling jet	42.5	45	Pump injector		40	40	40
Idling speed air jet		160	Needle valve seat	1.3	1.3	1.6	1.3
Needle valve seat	1.2	1.25	Float	5.7 g	5.7 g	5.7 g	5.7 g

SOLEX CARBURETTORS	34 PICS 4 (101) 34 PCIS 4 (102) 34 PICS 5 (101[1]) 34 PCIS 5 (102[1])	34 PICS 4 (103) 34 PCIS 4 (104) 34 PICS 5 (103[1]) 34 PCIS 5 (104[1])	34 PICS 6 (121) 34 PCIS 6 (122)	34 PICS 6 (123) 34 PCIS 6 (124) 34 PICS 6 (164) 34 PCIS 6 (165)	34 PICS 6 (173) 34 PCIS 6 (174) 34 PICS 10 (191) 34 PCIS 10 (192)	34 PICS 6 (175) 34 PCIS 6 (176) 34 PICS 10 (193) 34 PCIS 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	48	45
Pump injector	35	40	35	40	37.5	40
Needle valve seat	1,3	1.3	1.3	1.3	1.3	1.3
Float	5.7 g	5.7 g	5.7 g	5.7 g	5.7 g	5.7 g

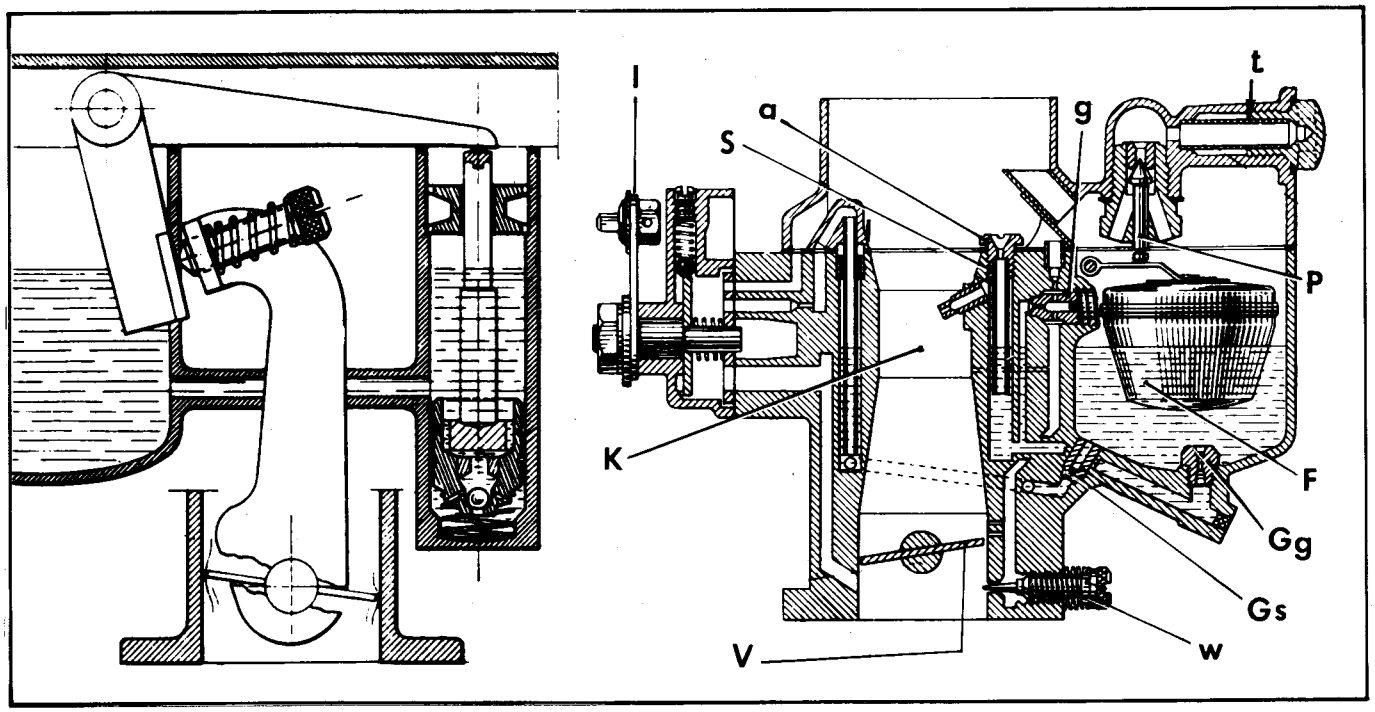
TWIN CHOKE SOLEX CARBURETTORS 26/35 CSIC * and SCIC	Identification 110 *-111		Identification 110[1] *-111[1] 110[2] *-111[2] 113[1] *-114[1]		Identification 125 *-126 127 *-128		Identification 177 * - 178 179 * - 180 197 * - 198 195 * - 196		Identification 225 * - 226	
	1st choke	2nd choke	1st choke	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	60	125	75	** 125 *(1/73→)*	82.5	120	70	102.5	87.5
Idling jet	50		50		40		40		39	
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	** 1.7 117.5 *1/73*	1.7	1.7 (ball type)		1.7 (ball type)	

* Carburettor without throttle closing dashpot (conventional clutch).

SCHEMATIC DIAGRAMS

1. SOLEX CARBURETTORS 28 IBC (marked 32[1]) and 28 CBI (marked 30[1]).

A. 14-2



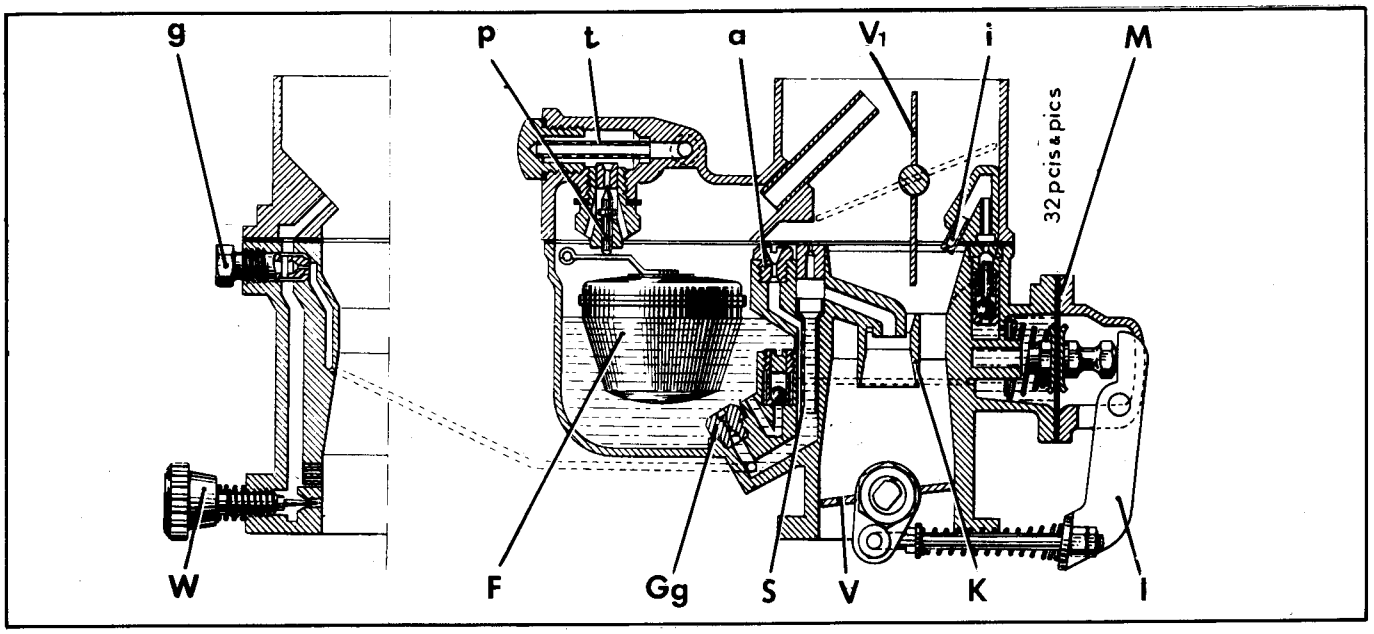
Manual 810-1

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

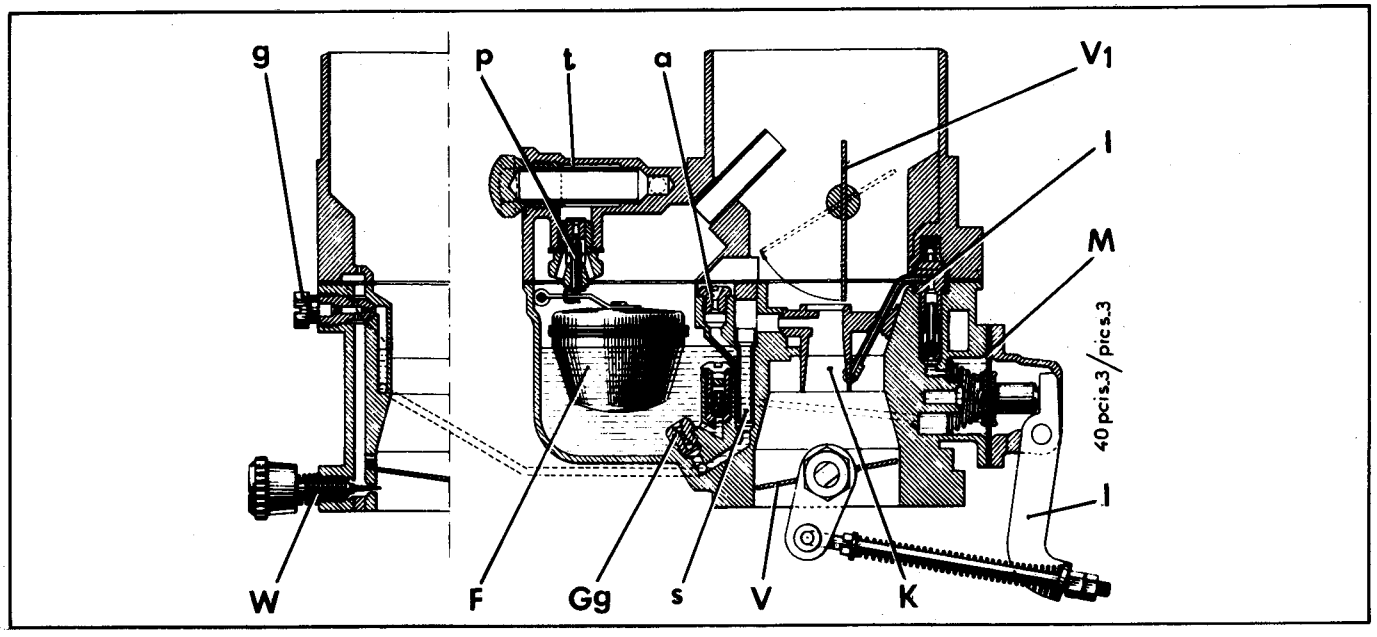
2. SOLEX CARBURETTORS 30 PICS - 32 PICS (marked 38) and 32 PCIS (marked 39)

A. 14-14



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

A. 14-12

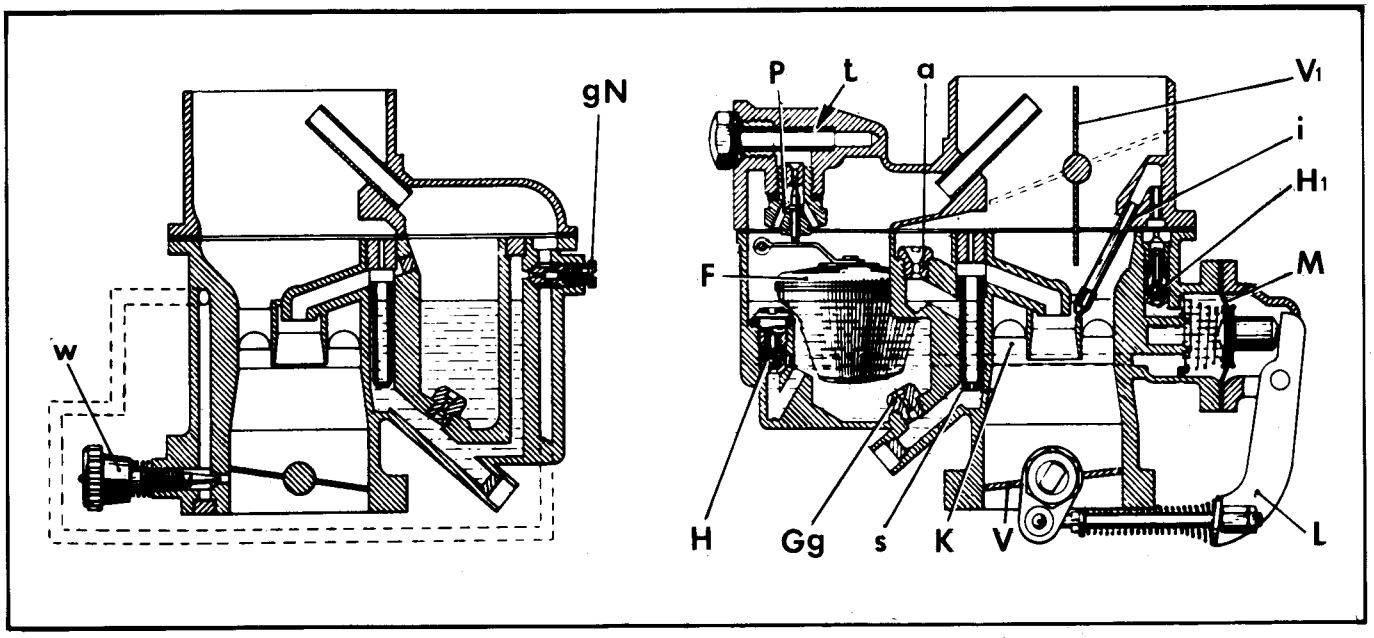


Legend :

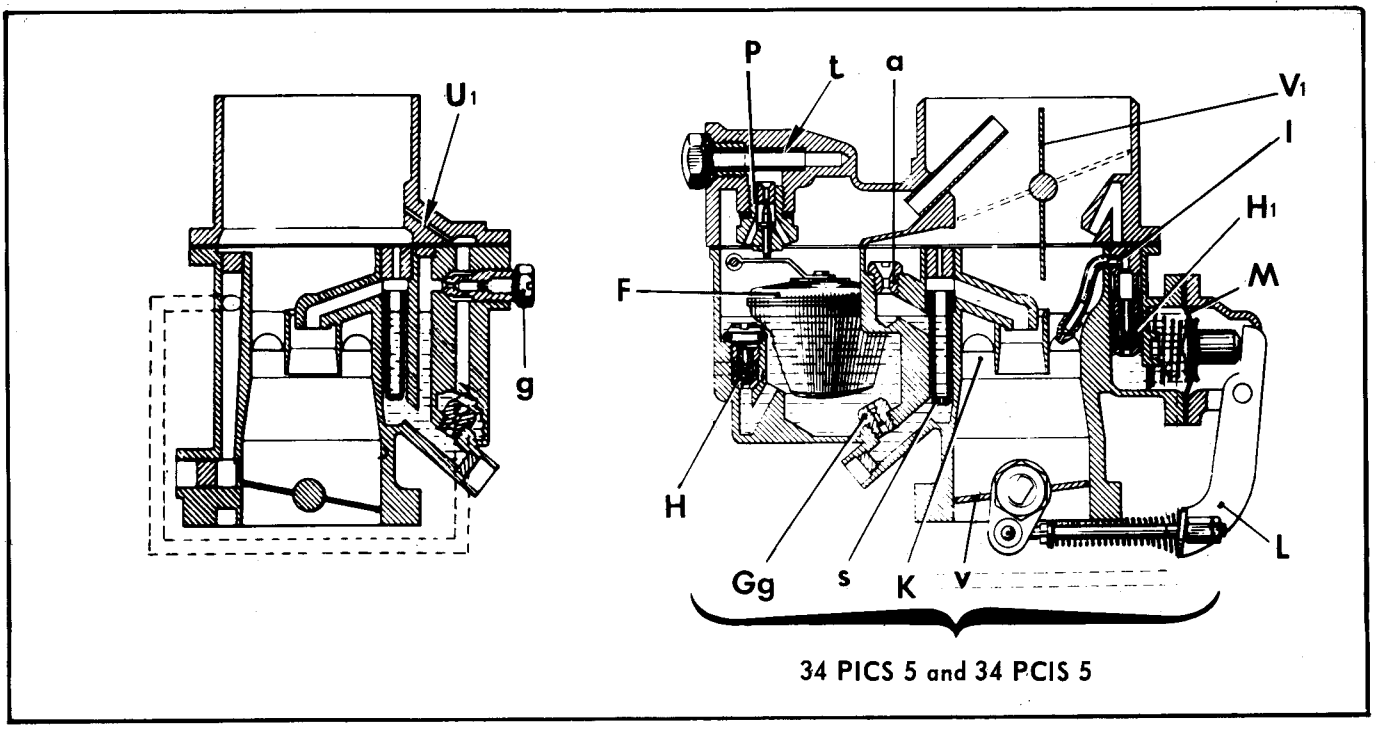
a : Air correction jet
F : Float
Gg : Main jet
g : Idling jet
i : Pump injector
K : Venturi bore
I : Pump lever
M : Pump diaphragm
P : Needle valve
S : Emulsion tube
t : Filter
V : Throttle
V1 : Strangler flap
W : Idling mixture control screw

4. SOLEX CARBURETTORS 34 PICS^4 - 34 PCIS^4 - 34 PICS^5 and 34 PCIS^5 (all markings)

A. 14-1



A. 14-4



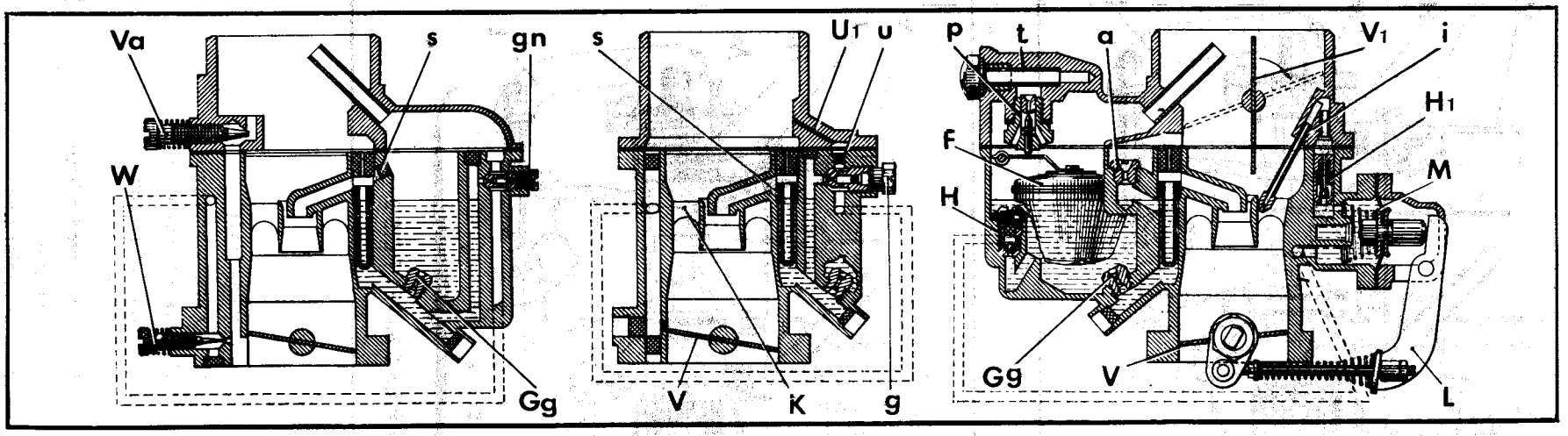
34 PICS 5 and 34 PCIS 5

Legend :

- a : Air correction jet
- F : Float
- Gg : Main jet
- g : By-pass jet
- gN : Idling jet
- H : Ball seat
- H 1 : Ball seat
- i : Pump injector
- K : Venturi bore
- L : Pump lever
- M : Pump diaphragm
- P : Needle valve
- s : Emulsion tube
- t. : Filter
- U 1 : Calibrated orifice
- V : Throttle
- V 1 : Strangler flap
- W : Idling mixture control screw

5. SOLEX CARBURETTORS 34 PICS 6 and 34 PCIS 6 (all markings)

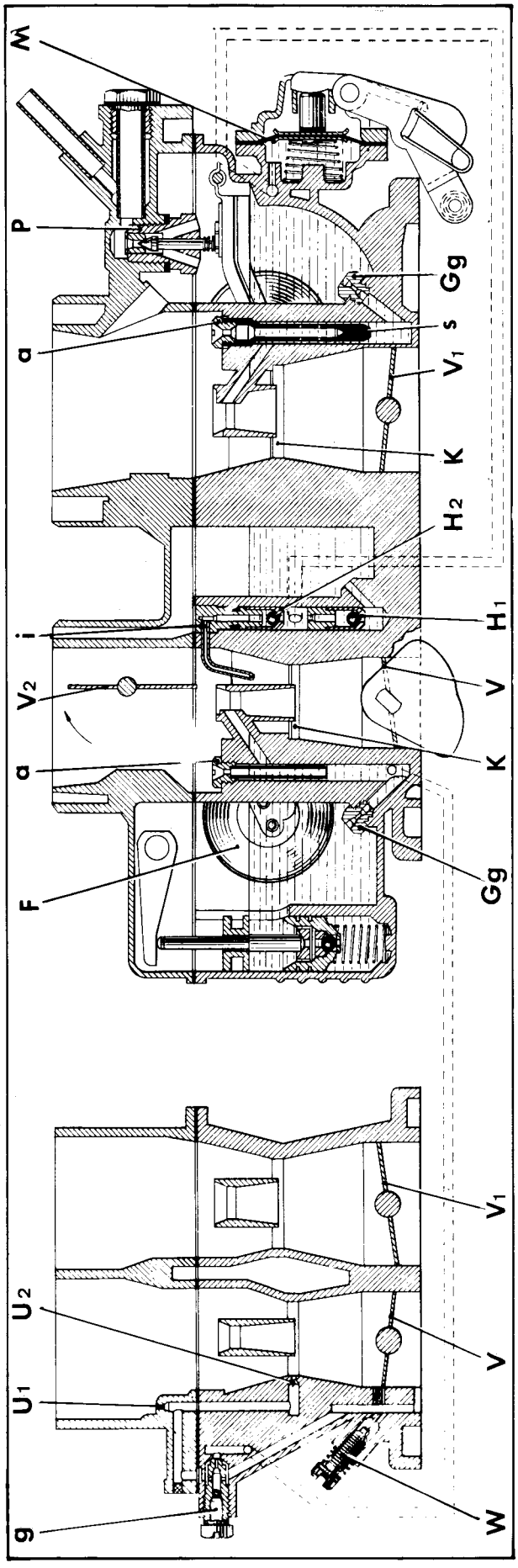
A 11-8



Legend :

- a : Air correction jet
- F : Float
- Gg : Main jet
- g : By-pass jet
- gN : Idling jet
- H, H1 : Ball seats
- i : Pump injector
- K : Venturi bore
- L : Pump lever
- M : Pump diaphragm
- P : Needle valve
- S : Emulsion tube
- t : 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) ⟶ *9/1972.*

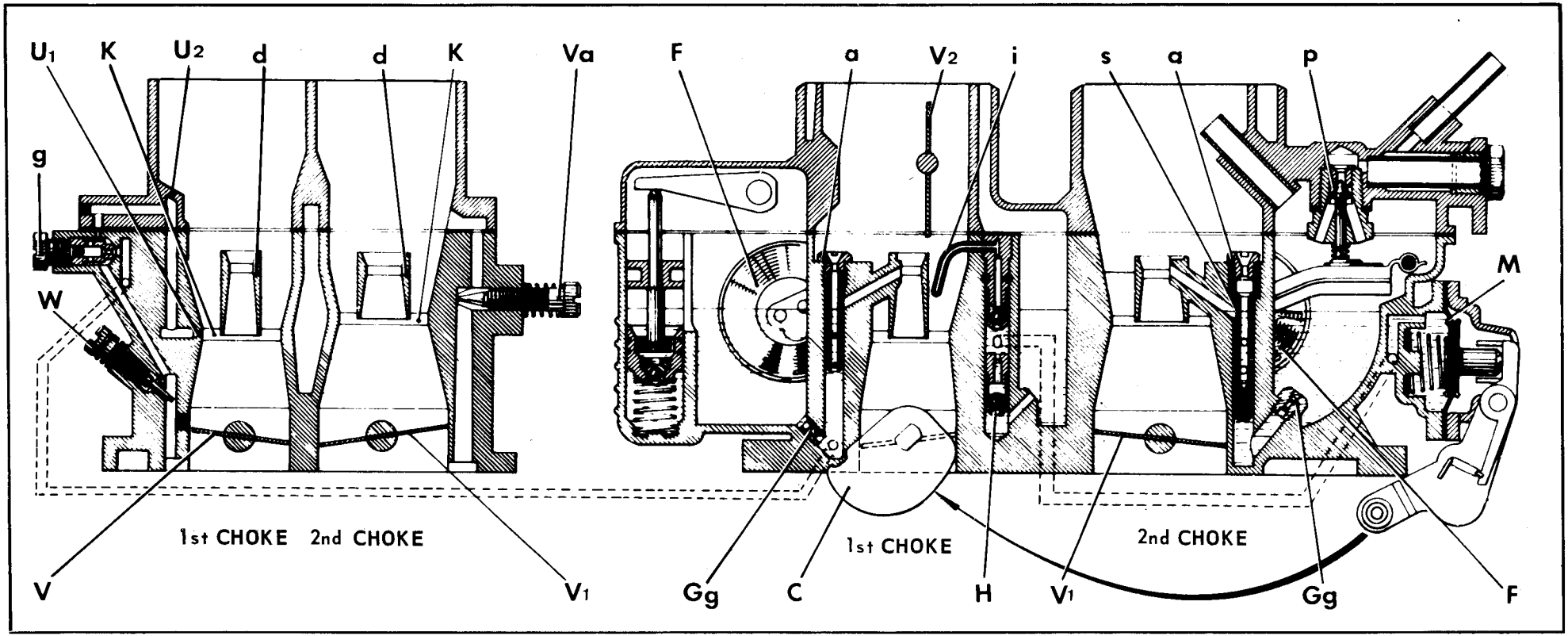


A. 14-3

Manual 816-1

Legend :

α : Air correction jets
F : Float
Gg : Main jets
g : Idling jet
H1 - H2 : Ball seats
i : Pump injector
K : Venturi bores
M : Pump diaphragm
P : Spring loaded needle valve
s : Emulsion tube
U1 - U2 : Calibrated orifices
V - V1 : Throttles
V2 : Strangler flap
W : Idling mixture control screw



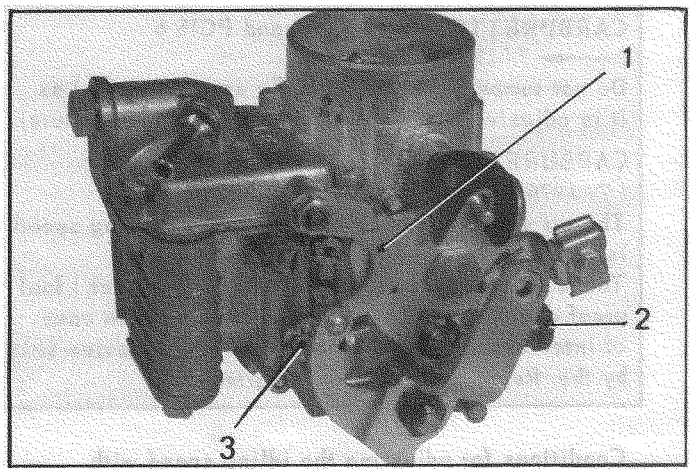
Legend :

a : Air correction jets
c : Pump cam
d : Sprayers
F : Float
g : Idling jet
Gg : Main jets
H : Ball seat
i : Pump injector
K : Venturi bores
M : Pump diaphragm
P : Spring loaded needle valve
s : Emulsion tube
U1, U2 : Calibrated orifices
V, V1 : Throttles
V2 : Strangler flap
Va : Idling air screw *(deleted 10/1975 ⟶)*
W : Idling mixture control screw

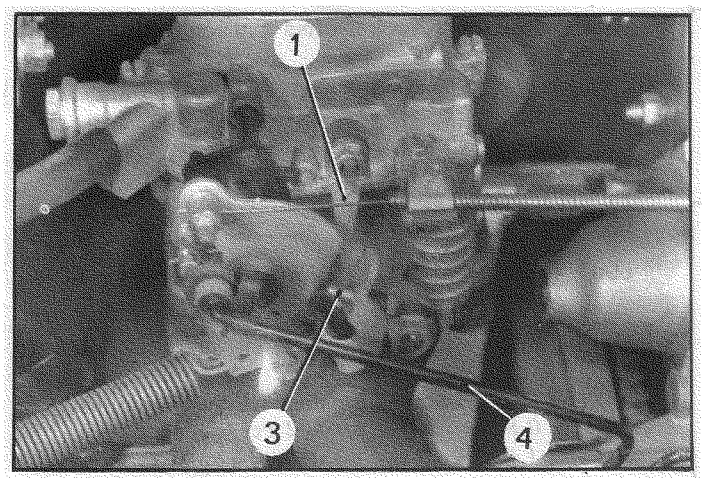
I. ADJUSTING CARBURETTORS.

(Vehicles produced up to August 1972)

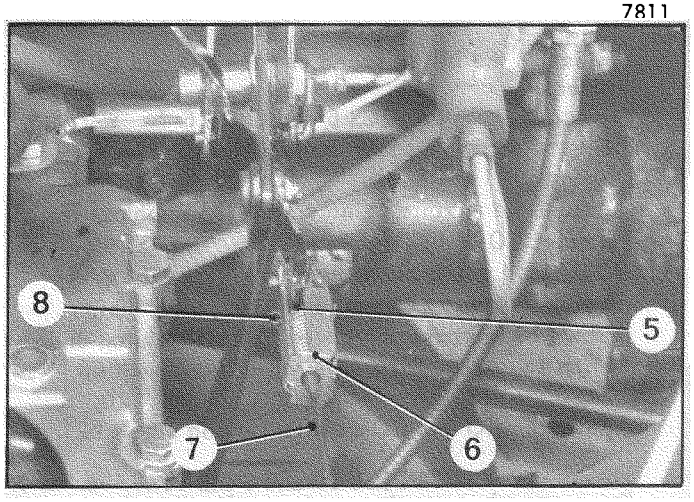
4128



7812



7811



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 : 800 to 850 rpm
Engine M 4 750 ± 50 rpm (AYA 3 and AM)
650 to 700 rpm (AK)
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 untighten 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.

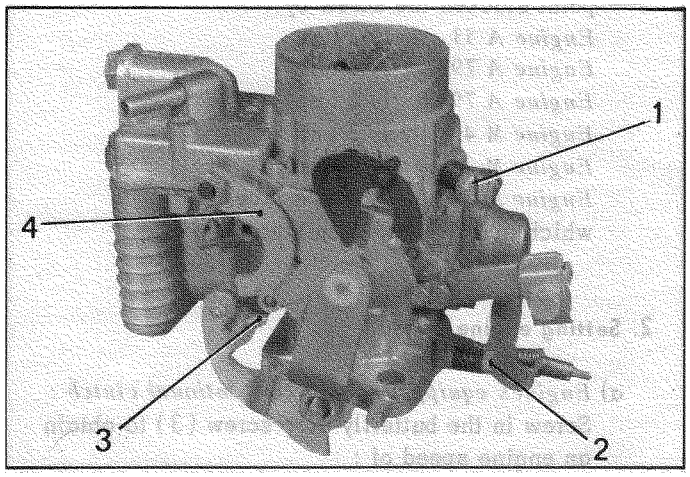
4. Adjusting the accelerator control :
(Engines M 28/1 and M 28 dual choke SOLEX carburettor 26/35).

Fully depress the accelerator pedal, with a 5 mm (0.19 in) spacer between pedal and floor covering. The throttles should be fully opened with a max. clearance of 1.5 mm (.099 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.

(Vehicles produced since August 1972)

10 252

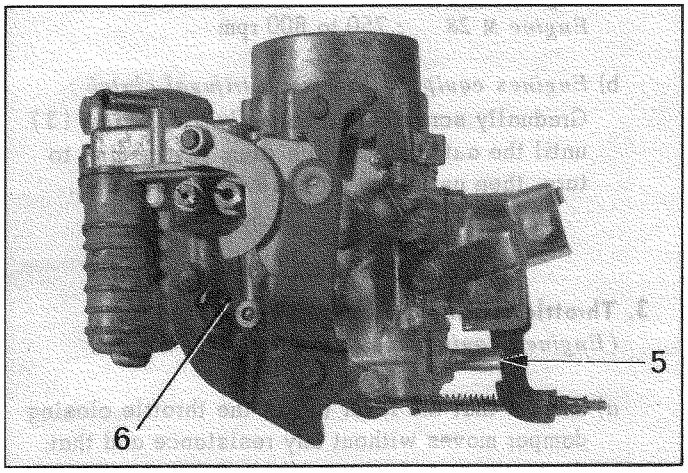


CARBURETTORS 34 PICS 6 and PCIS 6
(⟶ 7/1966)
Do not tamper with the butterfly stop screw (3) as it is adjusted with a micrometer by the manufacturer.

CARBURETTORS 34 PICS 10 and PCIS 10
(7/1976 ⟶)
The air screw has been deleted and the idling speed is adjusted with the butterfly stop screw.
These carburettors are equipped with a (black) fool 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 CO^2 content :
- Engine cleaned, rocker arms and ignition correctly adjusted.
- Engine oil between 70° and 80° C (158° and 176°F) during adjustment.

76-768



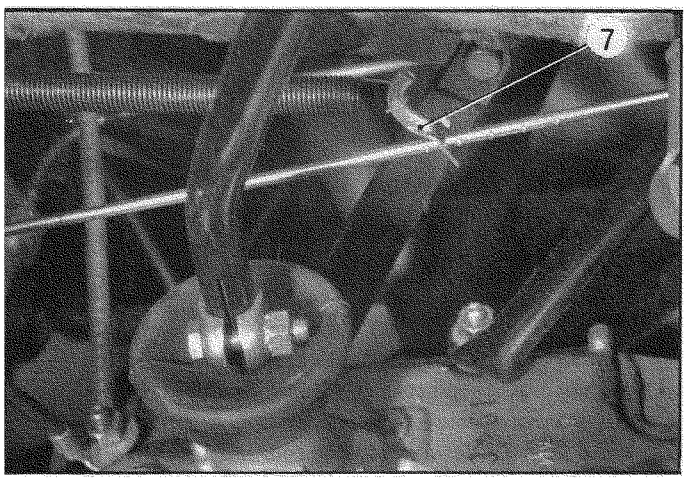
Idling speed :
Engines with conventional clutch :
800 ± 50 rpm 34 PICS 6 *(⟶ 7/1976)*
$800 \, {}^{+50}_{0}$ rpm 34 PICS 10 *(7/1976 ⟶)*
Engines with centrifugal clutch :
50 rpm below minimum rotation speed

CO and CO^2 contents for the following engines :
CO : - *0.8 % to 1.6 % for 602 cc engines*
- *1.8 % to 2.5 % for 435 cc engines*
CO^2 : ↘ *9 % for 602 cc and 435 cc engines*

Adjusting the idling speed and the CO and CO^2 content :
On carburettors 34 PICS 6 and PCIS 6 *(⟶ 7/76)*
- Set the screw (1) in order to obtain the idling speed.
  Adjust the mixture using screw (2) to obtain the correct CO and CO^2 content.

NOTE : *On carburettors 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 CO^2 content using screw (2).

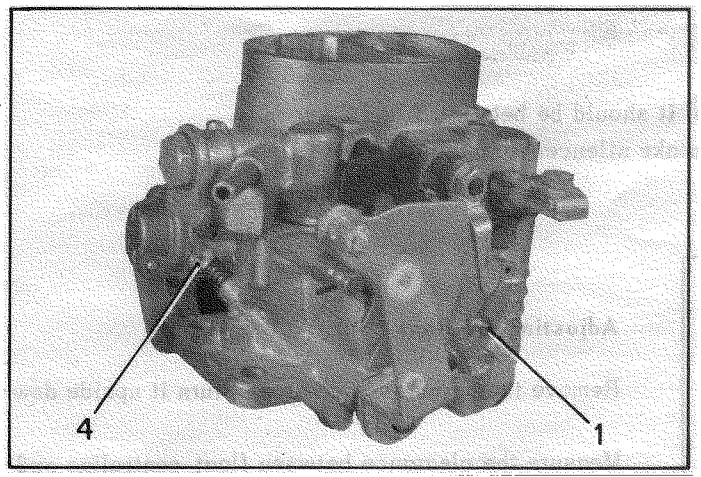
7829



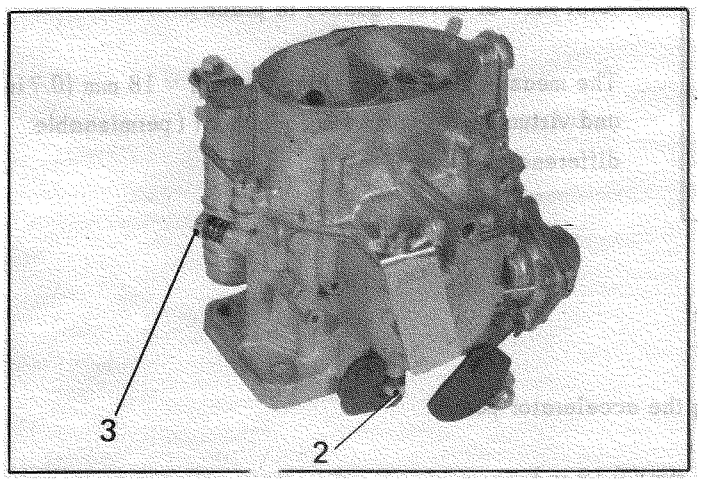
On carburettors 34 PICS 10 and PCIS 10 *(7/76 ⟶)*
Same procedure as above, except for the idling speed which is set by using the butterfly stop screw (5) (for CO and CO^2).

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 1/2 and 2 seconds. If not, adjust the securing hook lug (7) on the accelerator rod to obtain this condition.

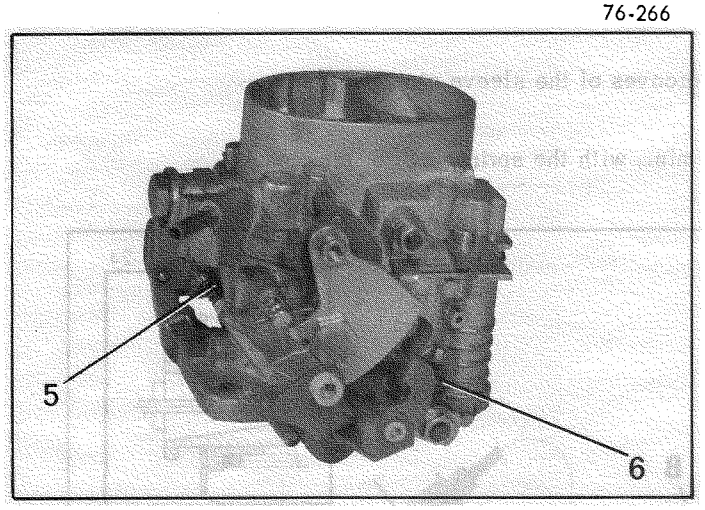
10 253



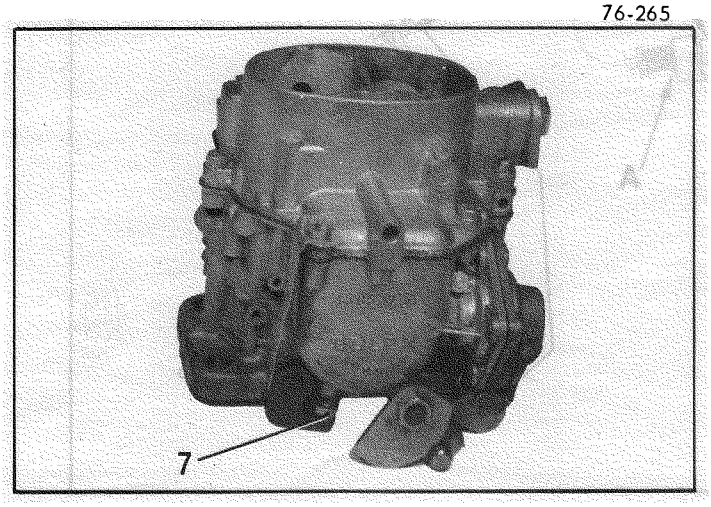
10 231



76-266



76-265



Manual 816-1

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 carburettors of the series CIT 195-196-197 and 198 are equipped with a (black) fool 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 CO^2 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 :
$750 \begin{smallmatrix}+50\\0\end{smallmatrix}$ rpm (carburettors fitted ⟶ 7/1976)
$800 \begin{smallmatrix}+50\\0\end{smallmatrix}$ rpm (carburettors fitted 7/1976 ⟶)
Engines with centrifugal clutch :
50 rpm below minimum rotation speed.

CO and CO^2 content for the above idling speeds :
Carbon monoxide content (CO) : 0.8 to 1.6 %
Carbon dioxide content (CO^2) : > 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 CO^2 content :
On carburettors (⟶ 10/1975)
Adjust the idling speed using screw (3).
Adjust mixture using screw (4) to obtain the correct CO and CO^2 content.
These two operations should be carried out simultaneously as many times as necessary.
NOTE : On carburettors 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 CO^2 content using screw (4).

On carburettors (10/1975 ⟶) :
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 CO^2).

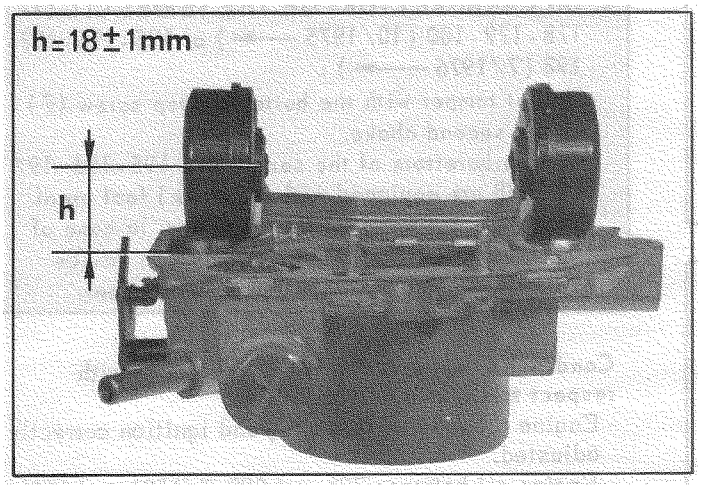
Adjusting the throttle closing damper *(centrifugal clutch) :*

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 intake silencer to obtain this condition.

4700



Adjusting the float :

Remove the carburettor cover and turn it upside down.

Measure the clearance between float centreline and joint face of cover (gasket in place).

The measured distance should be : h = 18 mm (0.7 in) and virtually the same for each float (permissable difference = 1 mm).

Adjusting the accelerator control *(cable control) :*

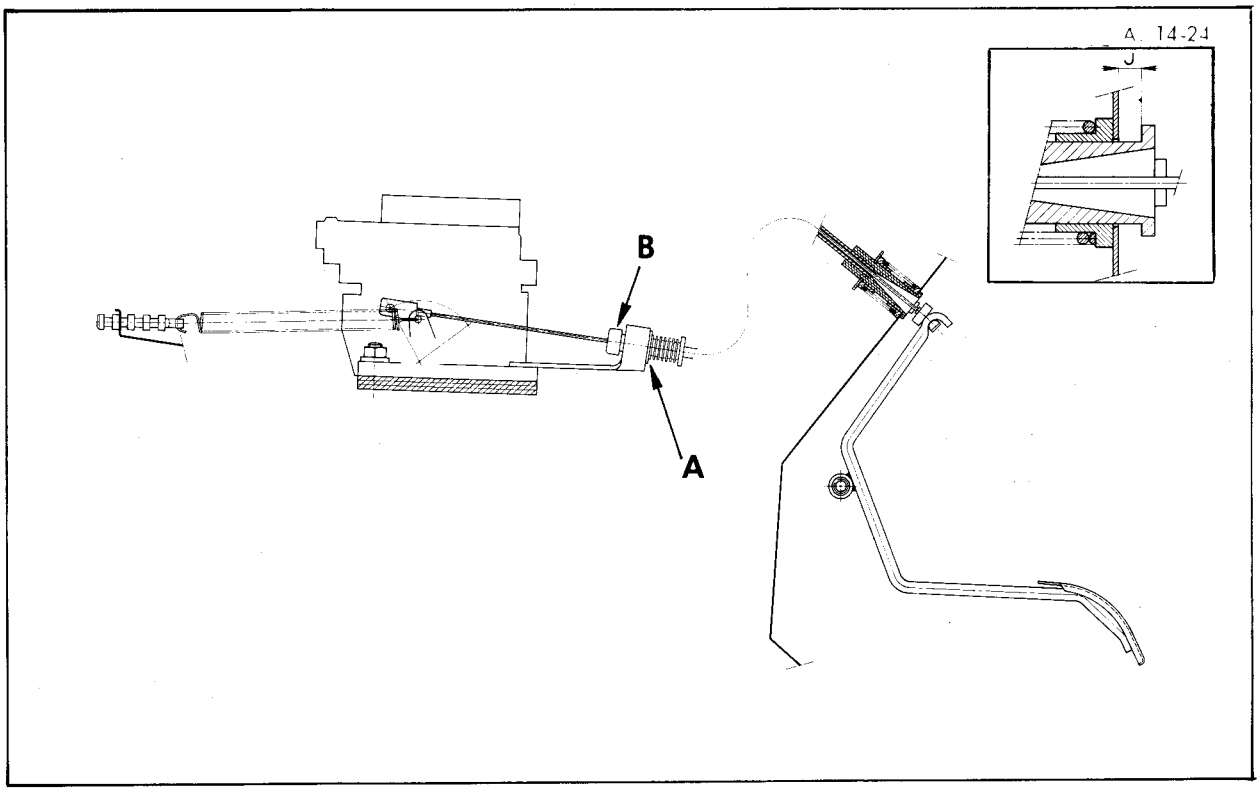
Keep the carburettor throttle (s) fully open by actuating the accelerator pedal.

The distance between the pedal and the floor should be 5 mm (0.19 in).

This measurement is obtained by displacing pin A in the grooves of the sleeve stop B.

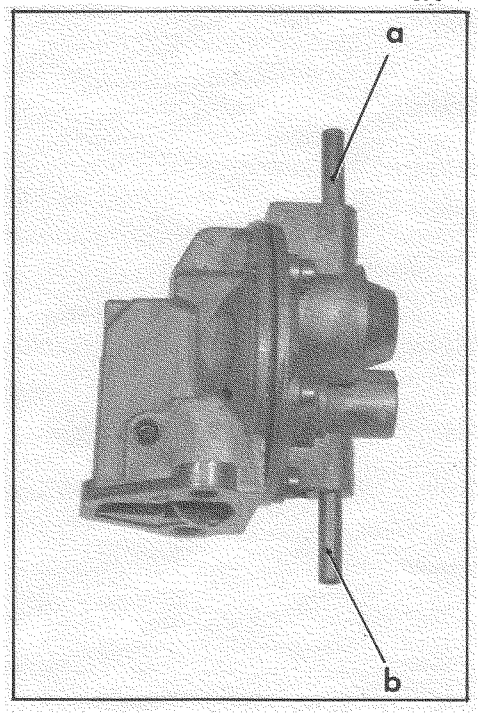
Then, check that there is a clearance J = 2 mm (.078 in) min., with the spring not compressed.

A. 14-23

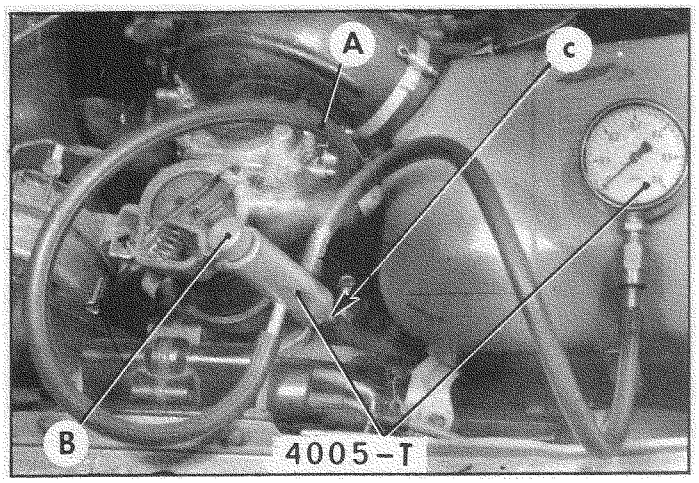


CHECKING PETROL SUPPLY.

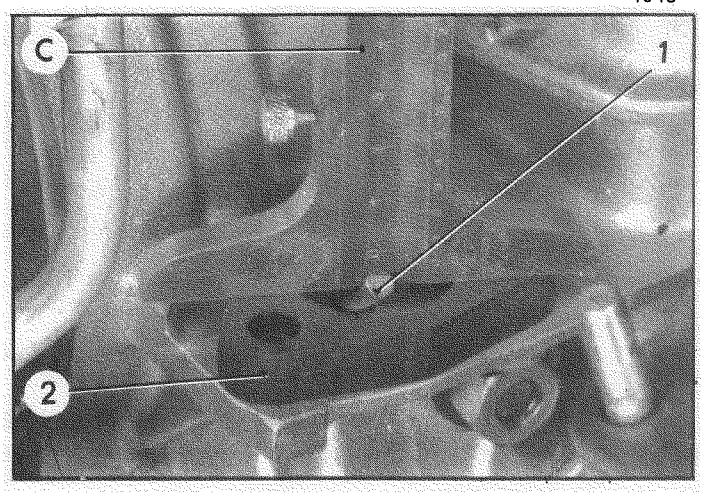
5235



11 733



4045



PETROL PUMP.

1. Characteristics :

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

Suppliers :

- SEV-MARCHAL,
- GUIOT.

2. Checking for leaks (pump removed) :

a) Block off 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) Submerge 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.

Unscrew the knurled knob B by approximately one turn and a half.

Start the engine.

a) *Pressure check at zero output :*

Screw the knurled knob B completely in.

Read on the pressure gauge the stabilized pressure which should be between *180 to 200 millibars maximum (2.6 to 2.9 psi).*

b) *Check the fuel tightness of the pump inlet valve :*

Stop the engine.

The pressure should not drop abruptly.

c) *Check the fuel 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 feed 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 (in relation to the upper face of the pump spacer (2)).

The extending portion should be :

- 1 mm (.039 in) { 425 cc Engines (A 53 and A 79/0) / 602 cc Engine (M 4)
- 1.2 mm (.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 79/0) / 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 (.044 in) (Engines A 53 - A 79/1 and M 4).
- $2.6\ ^{0}_{-0.16}$ mm ($.102\ ^{0}_{-.006}$ in) (Engines A 79/1 - M 28 and M 28/1)

CHARACTERISTICS

DISTRIBUTOR.
Make : DUCELLIER or FEMSA.

Type of engine	Type of vehicle	Date produced	Initial advance	Advance curve	Maximum centrifugal advance	Centrifugal advance check with device 1692-T *Needle in ZONE*
A 53 (425 cc)	AZ (series A and AM)	*3.1963 → 2.1970*	12°	A	6° to 8°	« AZB »
	AZU	*3.1963 → 8.1967*				
A 79/0 (425 cc)	AZU	*8.1967 → 3.1972*	12°	B	7°30' to 12°30'	Between « AZB » and « AZP »
	AYA (series A and AM)	*8.1967 → 3.1968*				
A 79/1 (435 cc)	AYA 2 (series A and AM)	*3.1968 → 2.1970*	12°	C	10° to 15°	« AZP »
	AZ (series A 2 and KB)	*2.1970 → 9.1978*				
	AZU	*8.1972 → 2.1978*				
M 4 (602 cc)	AYA 3 (series A and AM)	*1.1968 → 10.1968*	12°	A	6° to 8°	« AZB »
	AK and AMI 6	*→ 5.1968*				
M 28/1 (602 cc)	AYB (series A and AM)	*10.1968 → 2.1970*	8°	C	10° to 15°	« AZP »
	AZ (series KA)	*2.1970 →*				
	AY (series CA)	*10.1968 →*				
	AK (series B)	*5.1968 → 7.1970*				
	AK (series AK)	*7.1970 → 2.1978*				
	AY (series CD)	*2.1978 →*				
M 28 (602 cc)	AMI 6	*5.1968 → 3.1969*	8°	C	10° to 15°	« AZP »
	AY (series CB)	*2.1970 →*				
	AMI 8 All types	*3.1969 →*				

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 : 80 % ± 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.

Supplement No. 1 to Manual 816-1 (CORR)

SPARKING PLUGS.

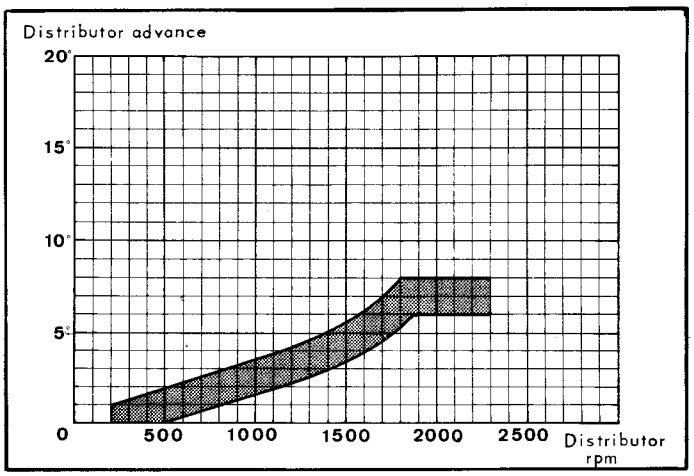
Refer to the Technical Bulletins, appearing periodically, for recommendations as to the type and make of sparking plugs to be used.

CONDENSER.

Capacity : 0.18 to 0.28 μ F.

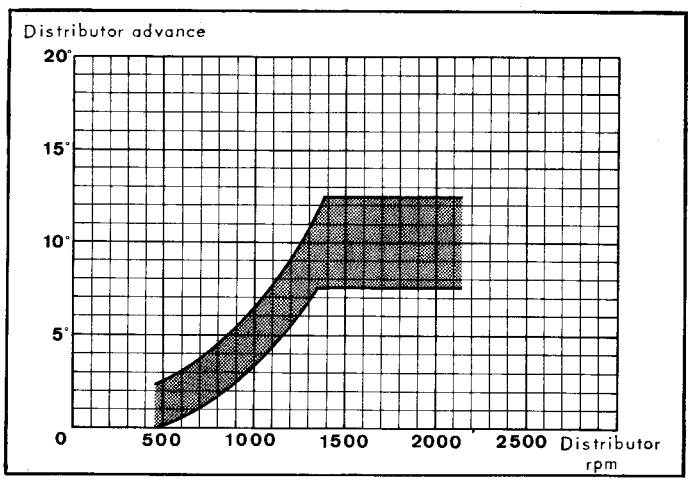
CENTRIFUGAL ADVANCE CURVES.

A. 21-54



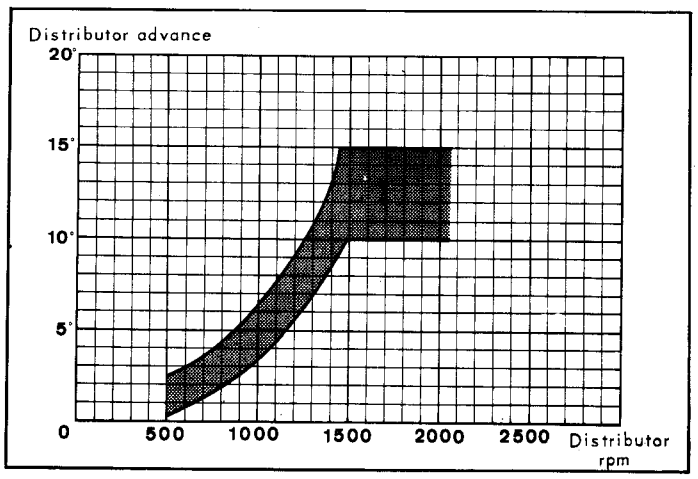
CURVE A

A. 21-52



CURVE B

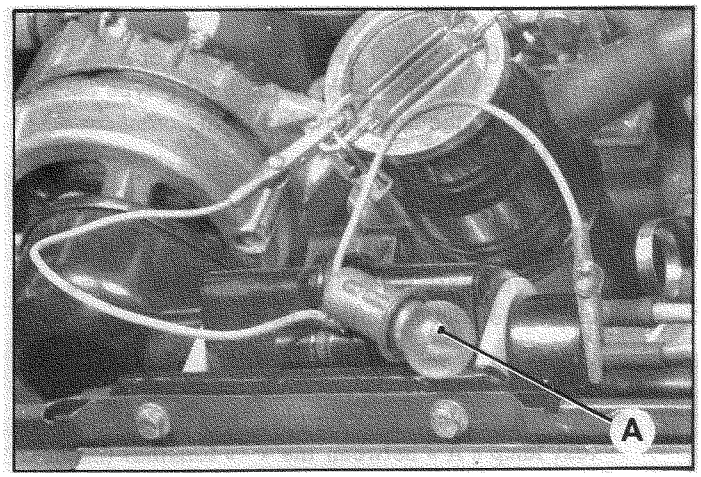
A. 21-53



CURVE C

I. CHECKING THE IGNITION TIMING.

5135



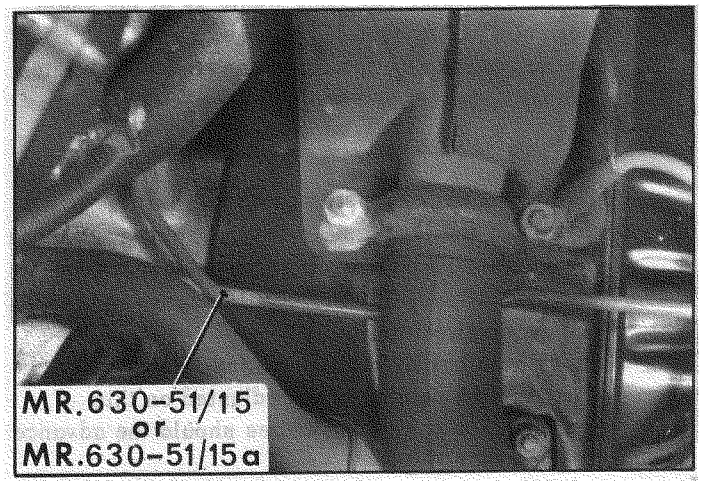
1. Connect a test lamp A between the « - » terminal (blue mark) of the ignition coil and the earth (the oil filler cap for example).
Disconnect the sparking plug leads.

2. Turn on the ignition switch.

3. Insert a 6 mm (0.23 in) diameter timing rod or a MR. 630-51/15 rod (for engines A 79/1, M 28/1 or M 28) 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.

4514

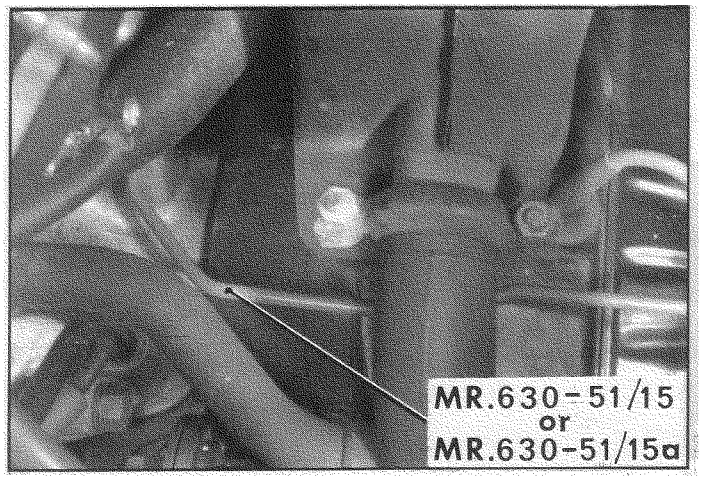


5. Carry out the same check for the other cylinder: turn the flyweel in the normal direction. At ignition point setting, make a mark on the flywheel, directly opposite to the one initially taken on the crankcase.
If there is a clearance of more than 3° (a tooth and a tooth space on the starter ring) 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.

II. ADJUSTING THE IGNITION TIMING.

4514

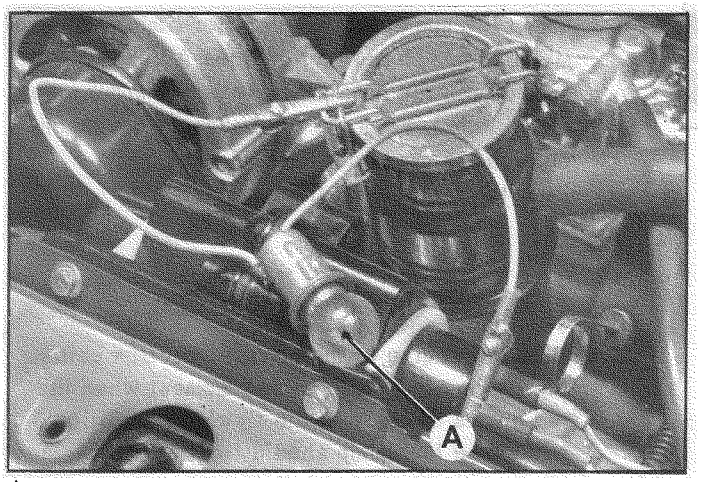


1. Remove the grill.
   Remove the fan (extractor 3006-T bis).

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.

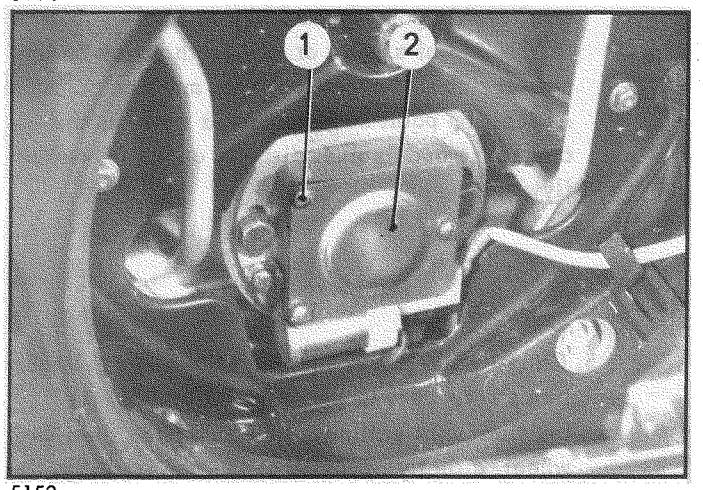
5135



4. Disconnect the sparking plug leads. Connect a test lamp « A » between the « - » 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.

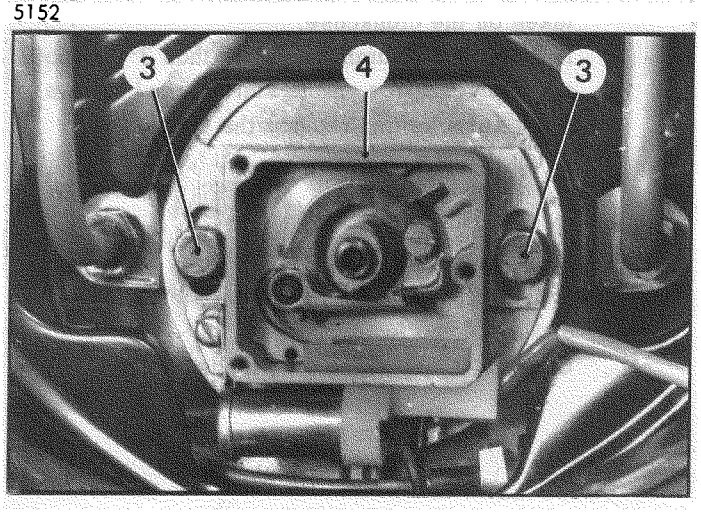
5114



6. Loosen the two securing screws (3) of the distributor.
   Slowly turn the casing (4) until the contact points seperate. The lamp lights up at the exact moment of seperation. Tighten screws (3). Fit the cover (2) with the three screws (1) (serrated 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 53 - A 79/0 - 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.

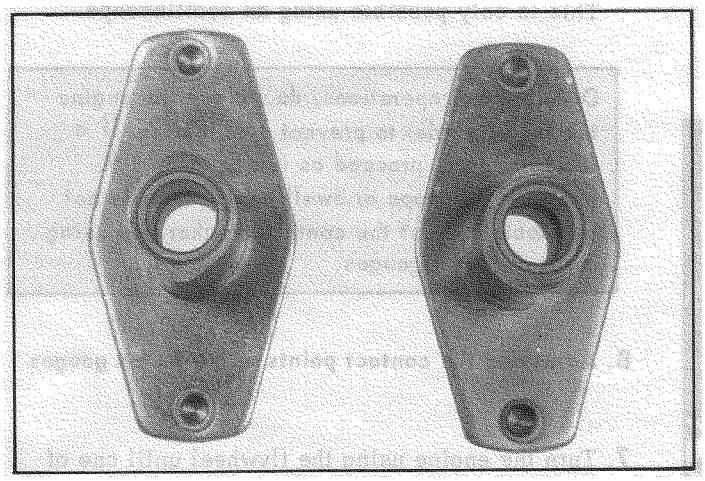
5152



8. *Remove the timing rod.*
   Fit the fan and grill.

III. CHECKING THE CONTACT POINT GAP.

8383



Former cam **New cam**

NOTE : The new cam is intercangeable 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, a Dwell-angle meter, or a Dwellmeter.

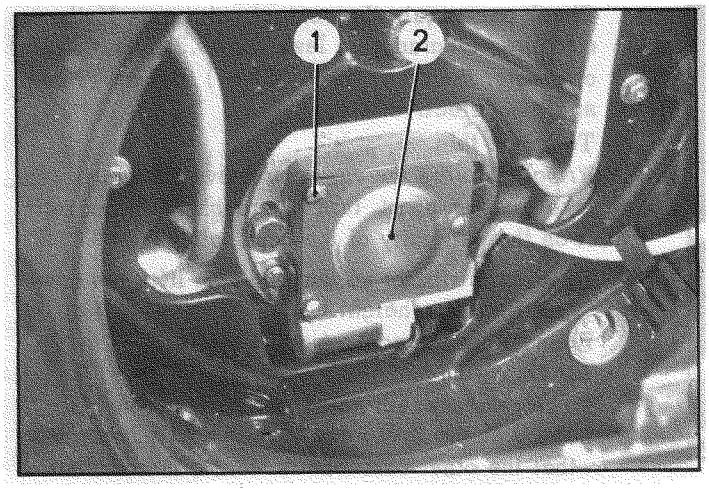
The dwell-angle of the contact breaker should be ;
- *144° ± 2° (Dwell ratio : 80 % ± 2 %)* ⟶ *2/70,*
- *109° ± 3° (Dwell ratio : 60 % ± 2 %) 2/70* ⟶ *and on vehicles produced before which have been fitted with the new cam.* The corresponding contact point gap is :

0.4 ± 0.05 mm (.015 ± .0019 in)

On the same distributor there should be no more than a 1° 30' difference between the dwell angles of the two cam bosses.

IV. ADJUSTING THE CONTACTS POINTS.

5114



Manual 816-1

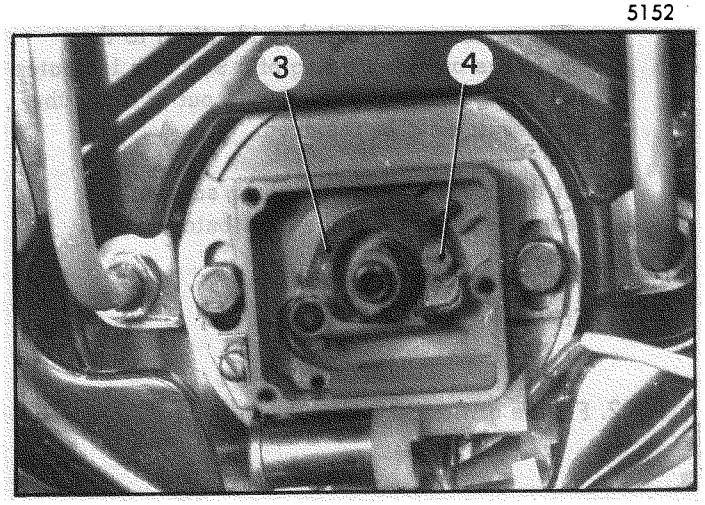
1. Remove the grill.

2. Remove the fan (extractor 3006-T bis).

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 :

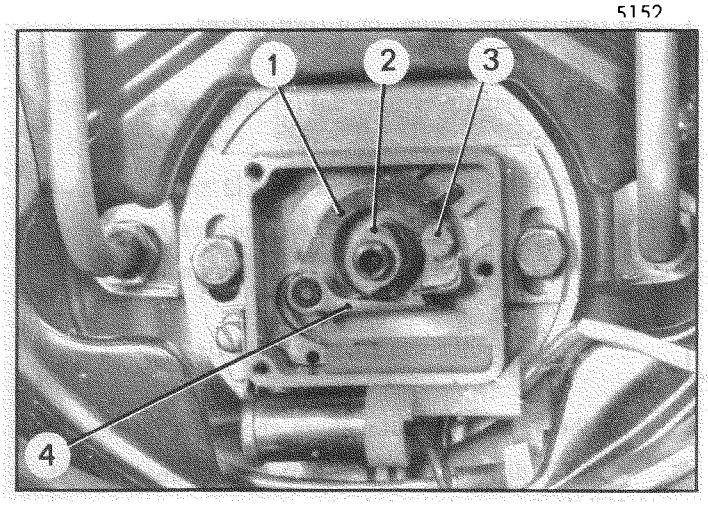
4. Connect an oscilloscope or a dwell angle meter.

5. Start the engine. Untighten screw (4) and move the fixed contact support (3) in the required direction to obtain a Dwell angle of *144° ± 2° (Dwell ratio : 80 % ± 2 %) or 109° ± 3° (Dwell ratio 60 % ± 2 %) depending on vehicle (see chapter III, above).*
Tighten screw (4).
Check again and adjust if necessary.

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.

5152

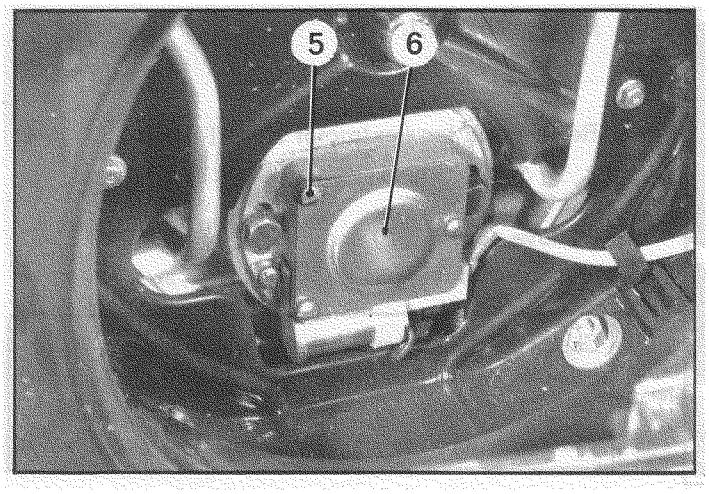


B. Adjusting the contact points using feeler gauges :

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, untighten screw (3) and move the fixed contact support (1) in the appropriate direction until the correct gap is obtained.

8. Moderately tighten screw (3).

5114



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.

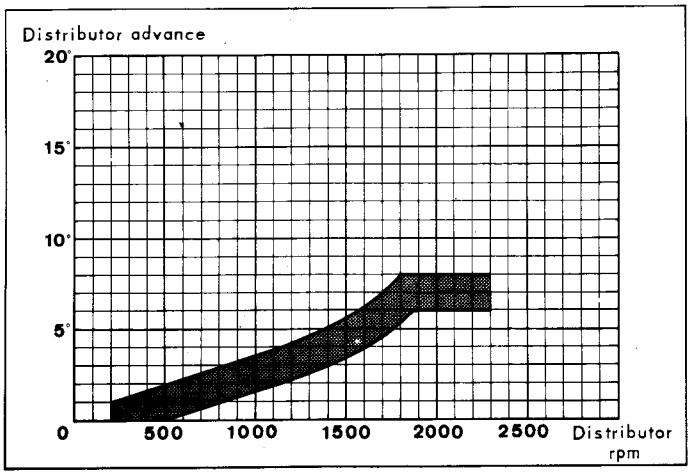
10. Fit the cover (6) and the three screws (5) (serrated washer) to the distributor casing.

11. Fit the fan.

12. Fit the grill.

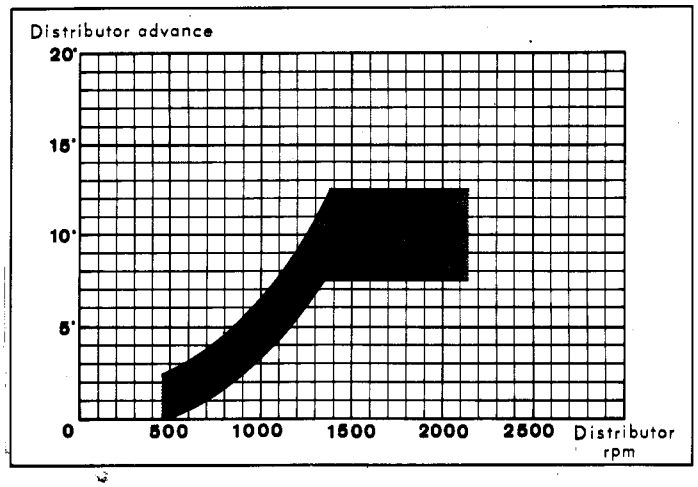
V. CHECKING THE CENTRIFUGAL ADVANCE CURVE.

A. 21-54



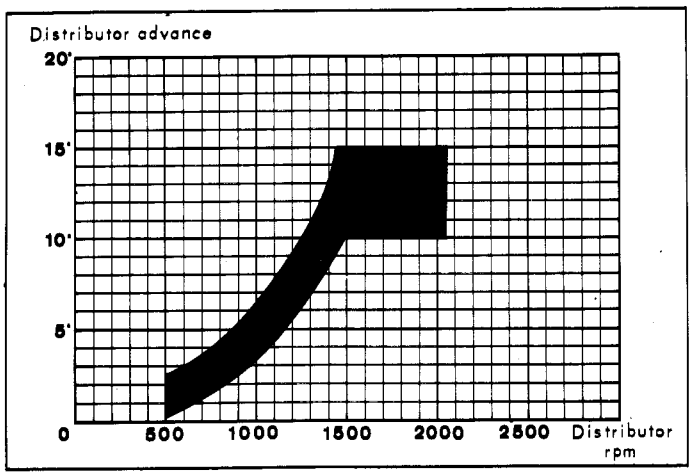
Curve A

A. 21-52



Curve B

A. 21-53



Curve C

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.

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.

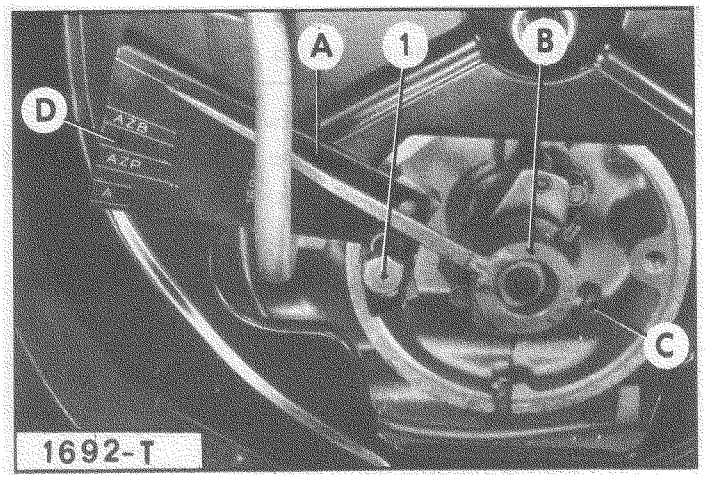
4. Start the engine and check the curve. If the curve is incorrect, adjust the centrifugal advance or replace the earths.

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

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

VI. CHECKING AND ADJUSTING THE MAXIMUM CENTRIFUGAL ADVANCE.

4263



1. Remove the grill.

2. Remove the fan (extractor 3006-T bis).

3. Remove the distributor.

4. Secure the graduated section A of the 1692-T device using the distributor securing screw (1).

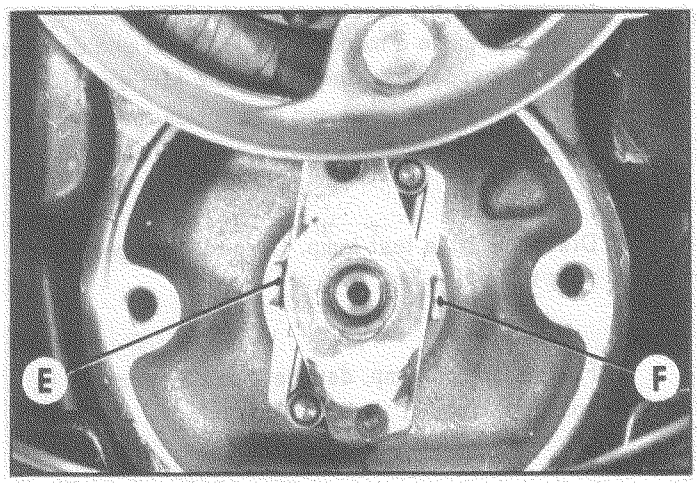
5. Fit the needle-holder B to the cam by pushing it right home and slightly tighten the securing screw C.

6. Turn the flywheel to bring needle across the reference point « O ».

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 79/0 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.

3991



8. Remove the 1692-T device.

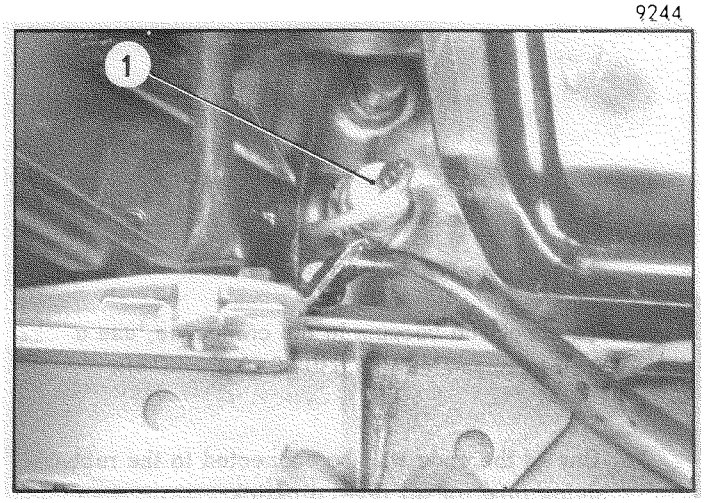
9. Fit the distributor, adjust the contact points and set the ignition point.

10. Fit the fan.

11. Fit the grill.

I. CHECKING THE OIL PRESSURE ON THE CAR.

9244

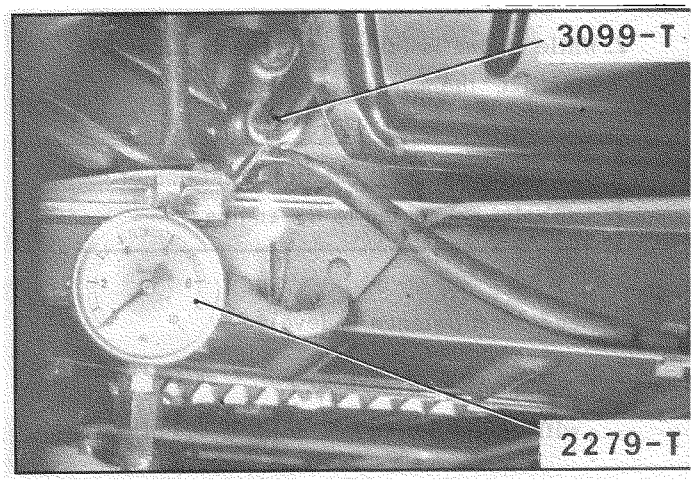


1. Run the engine until the oil temperature reaches 80° C (176° F) approximately.

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 2279-T pressure gauge, graduated from 9 to 10 bar (0 to 145 psi).

9243



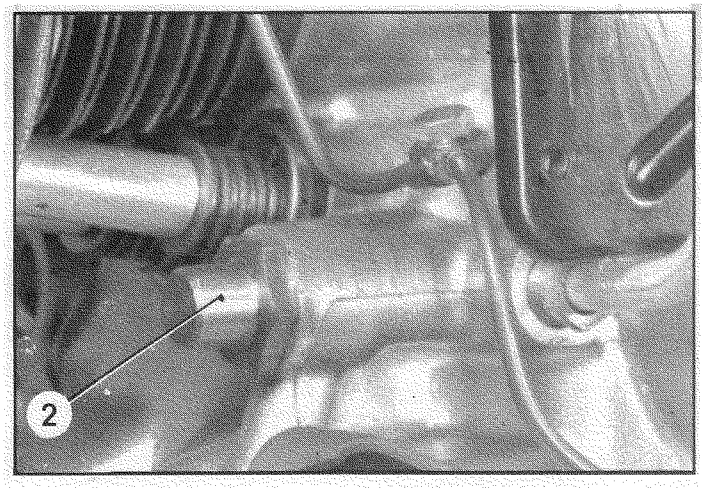
4. **Check the oil pressure :**

a) *Engines A 53 - A 79/0 and M 4 :*
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 79/1 :*
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 M 28/1 and M 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).

4239



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

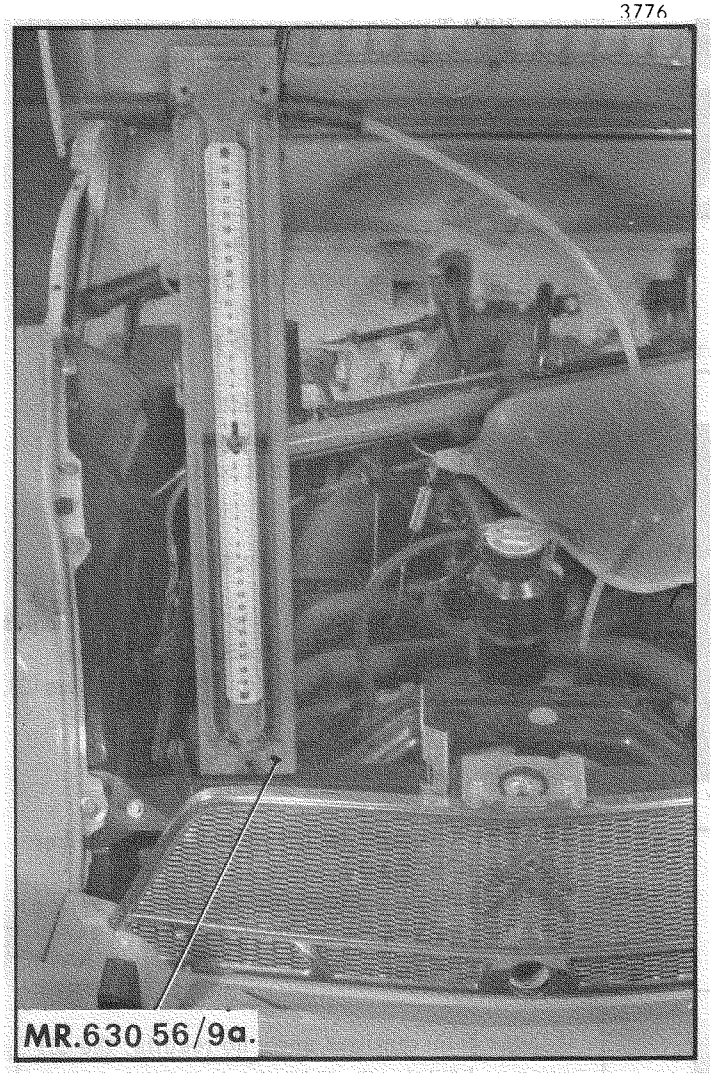
5. Remove the 2279-T pressure gauge, the 3099-T union and the tachometre.

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.

3776



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 manomter connected to the engine.

Read the difference in levels :

It should be :

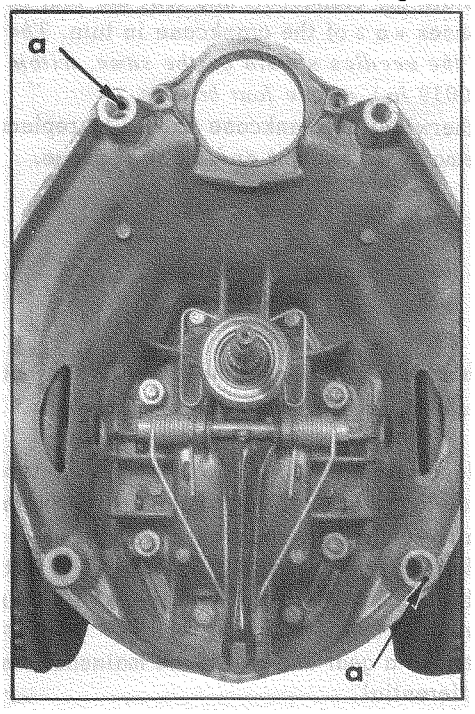
- with engine idling : 5 cm (1.96 in) of water min.

Otherwise, the breather must be replaced.

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

CHECKING THE ALIGNMENT OF THE ENGINE-GEARBOX ASSEMBLY.

3921



REMOVAL.

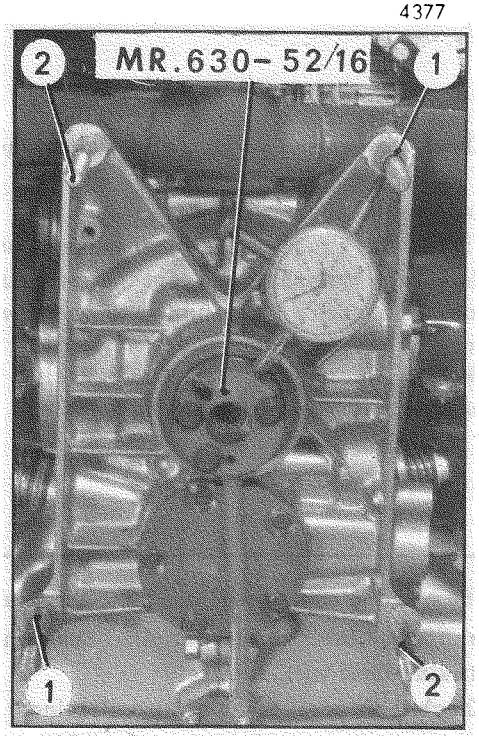
1. **Remove the engine-gearbox assembly.**
2. Remove the expension chamber.
   Place the engine-gearbox assembly on a workshop bench.
3. **Uncouple the engine from the gearbox.**
   Make sure while disengaging the gearbox that no stress is put on the mainshaft.
4. **Prepare the gearbox** *(in the case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

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

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

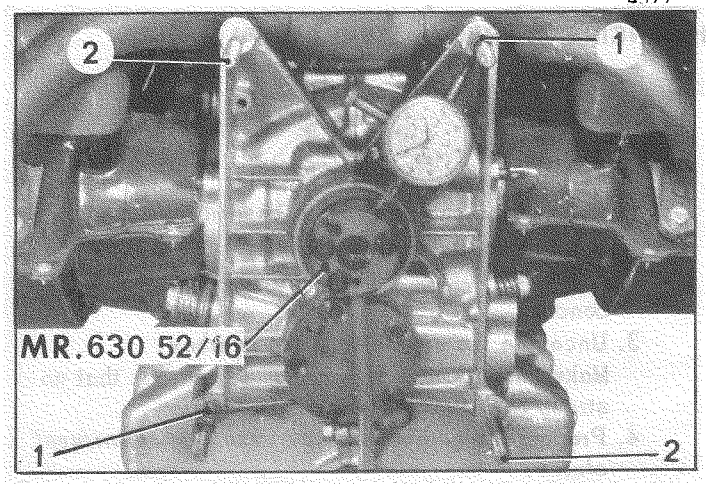
CHECKS.

4377



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 deterioated housing must be replaced.
7. **Checking the position of the studs and locating dowels on the crankcase :**
   Fit the MR. 630-52/16 support,equipped with a dial gauge (2437-T),to the crankshaft.
   NOTE : This is to compare the distances 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 needles turn 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 (.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 0.10 mm (.0039 in).*
   If the positions at which the needle changes direction are not within tolerance,the crankcase must be renewed.

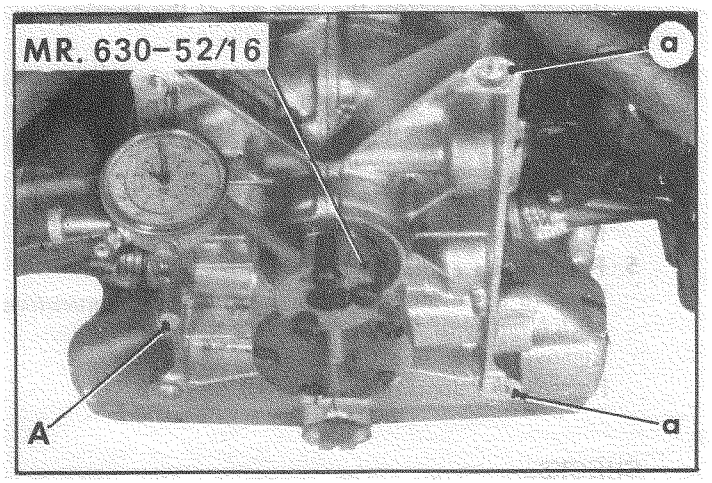
4377



8 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 (.0039 in), on the four bosses.*
Otherwise the crankcase should be replaced.
Remove the support and the dial gauge.

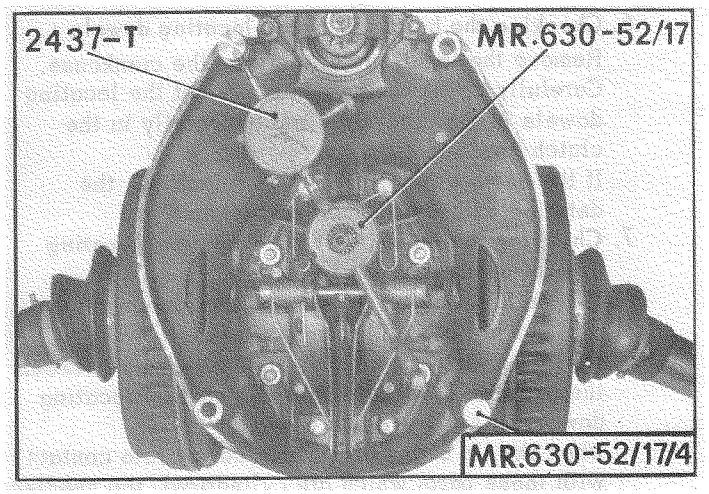
4378



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 = 150).
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 (.0039 in).

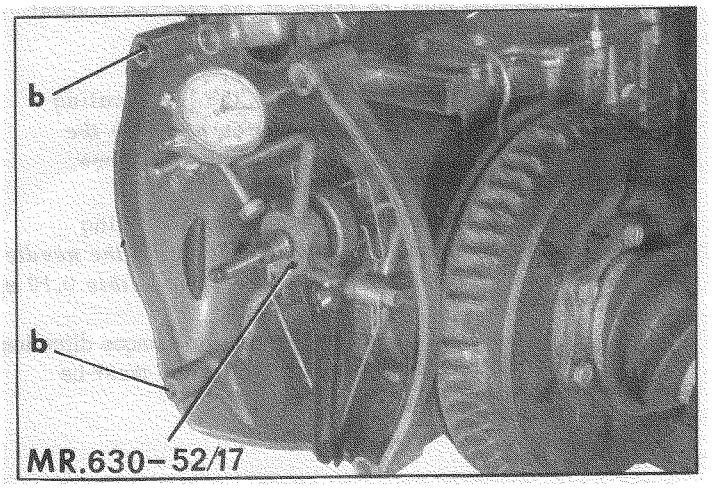
4375



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, .0039 in) on the 4 bosses. Otherwise, the housing must be realigned or replaced.*

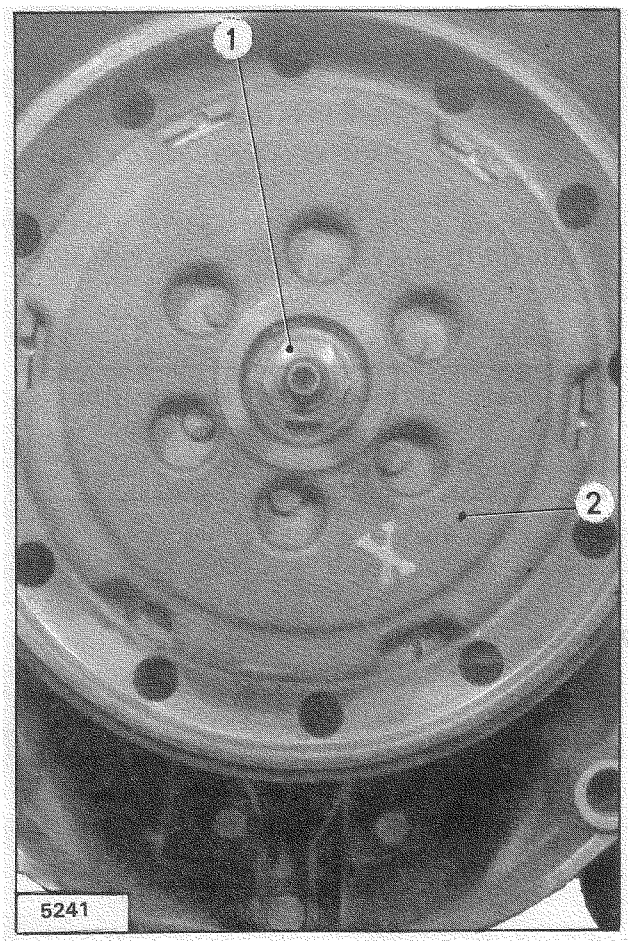
4376

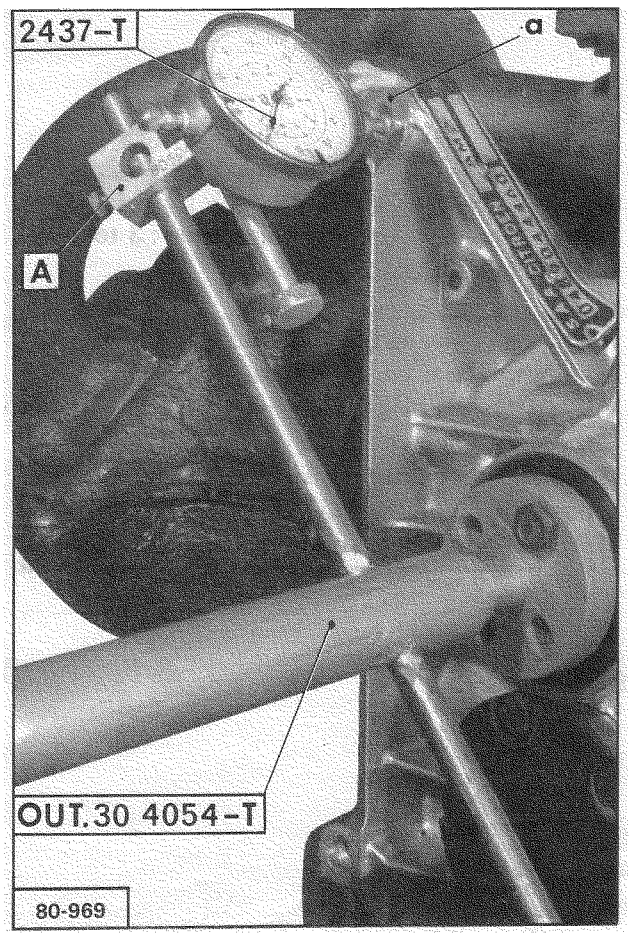


The housing can be realigned and the bosses returned to their correct, original positions, by striking them with a mallet.
Check their positioning after realigning.

Remove dial gauge and support.

CHECKING THE ALIGNMENT OF THE ENGINE-GEARBOX ASSEMBLY





REMOVAL.

1. Remove the engine.

2. Prepare the engine.
Remove :
- 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 unscrew 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.

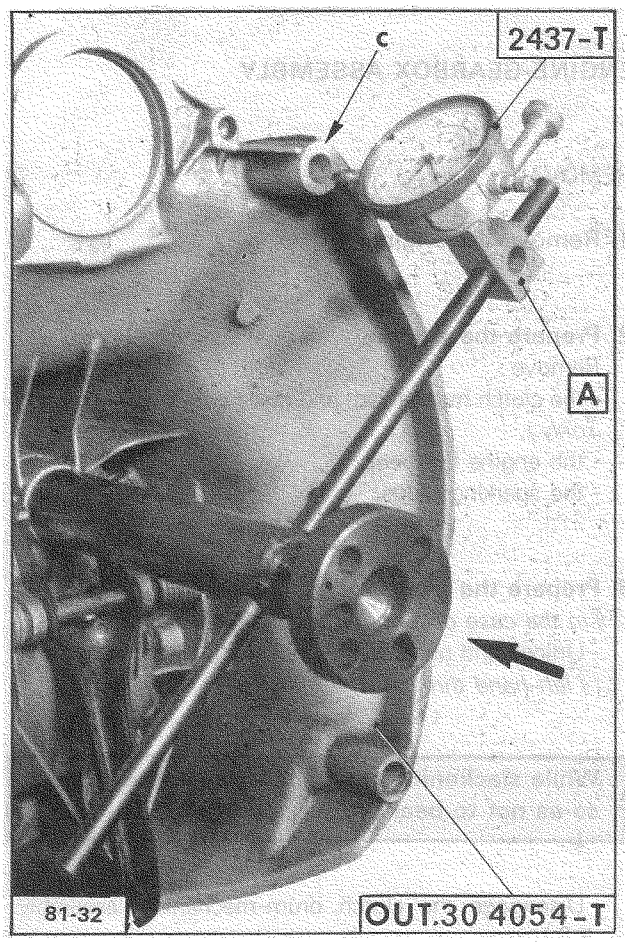
4. Checking the housings of the locating dowels :
Remove the locating dowels from the crankcase.
Carefully check the housings « b » of the locating dowels in the crankcase and especially in the clutch housing.
If the bores are not perfectly cylindrical, the deteriorated housing must be replaced.

5. Check the bearing surface of the crankcase :
Remove the studs *(note their position).*
Fit the 30 4054-T tool equipped with part **A** of support 5602-T 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 realigned and the bosses returned to their correct, original positions, by striking them with a mallet.

Remove dial gauge and support.

Supplement No. 1 to Manual 816-1 (ADD)



6. Check the bearing surface of the clutch housing :

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

Rotate the tool by holding it against the guide pin (→) 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, replace the housing.

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

Remove dial gauge and support.

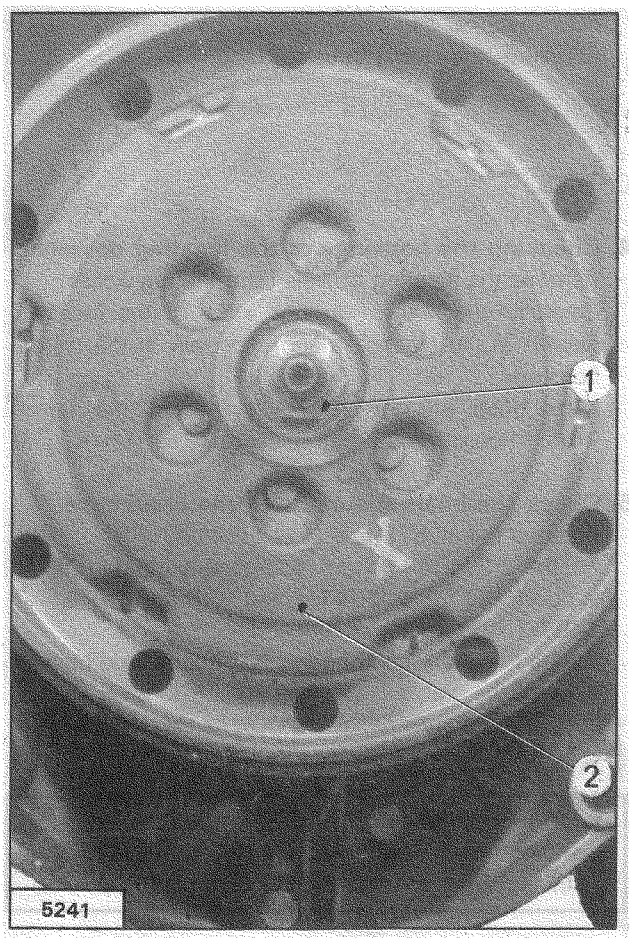
7. Prepare the engine.

Fit :
- engine flywheel : **screw tightening : 4 to 4.5 m.daN.**
- clutch mechanism and disc,
- sparking plugs.

8. Prepare the gearbox.

Fit :
- clutch thrust bearing,

Centrifugal clutch :
- clutch drum-mechanism assembly (2),
- securing 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.

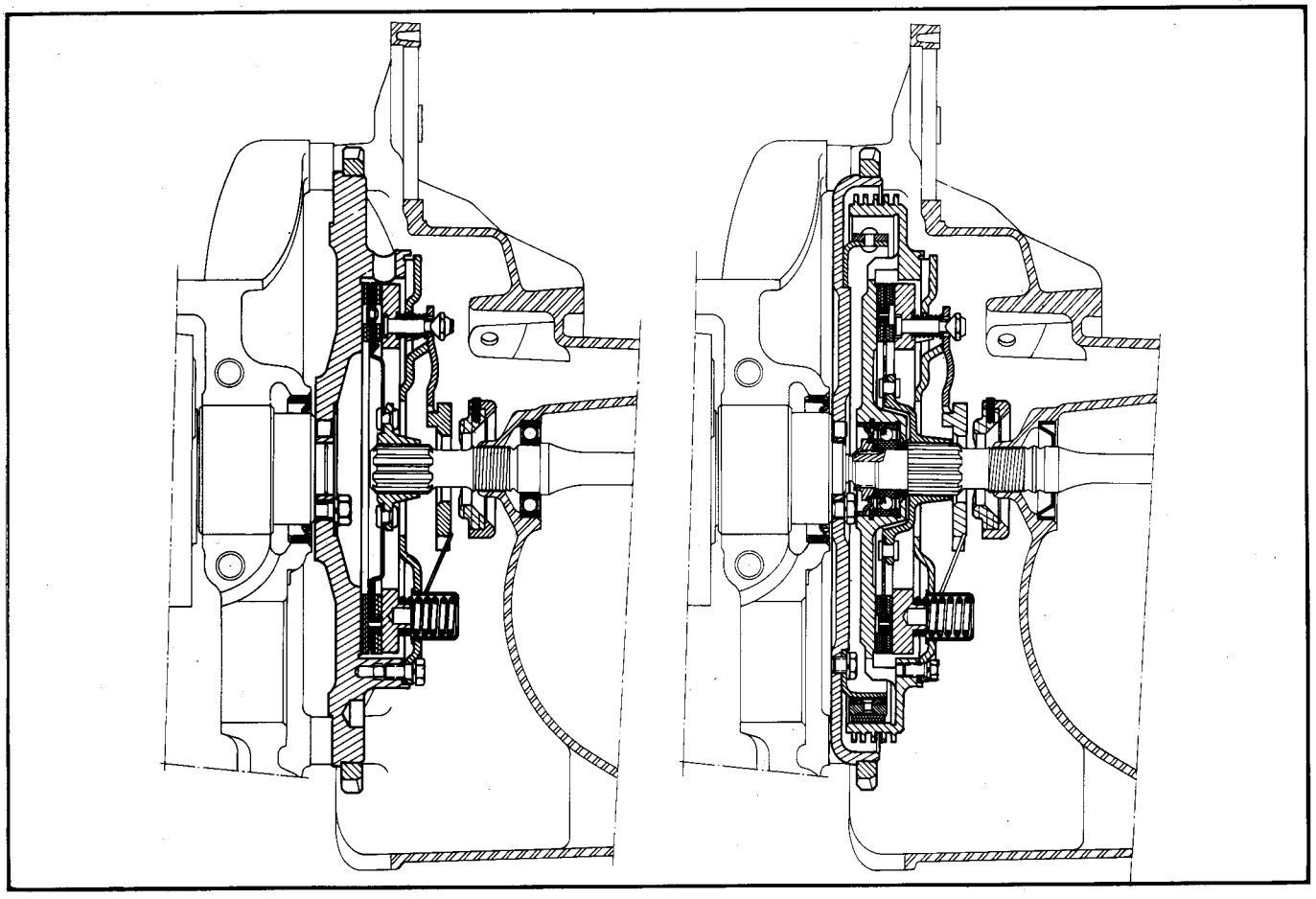
9. Fit the engine.

OPERATION No. A. 312-00 : *Characteristics and special features of the clutch.* **Op. A. 312-00** 1

CLUTCHES FITTED ON VEHICLES EQUIPPED WITH ENGINES :

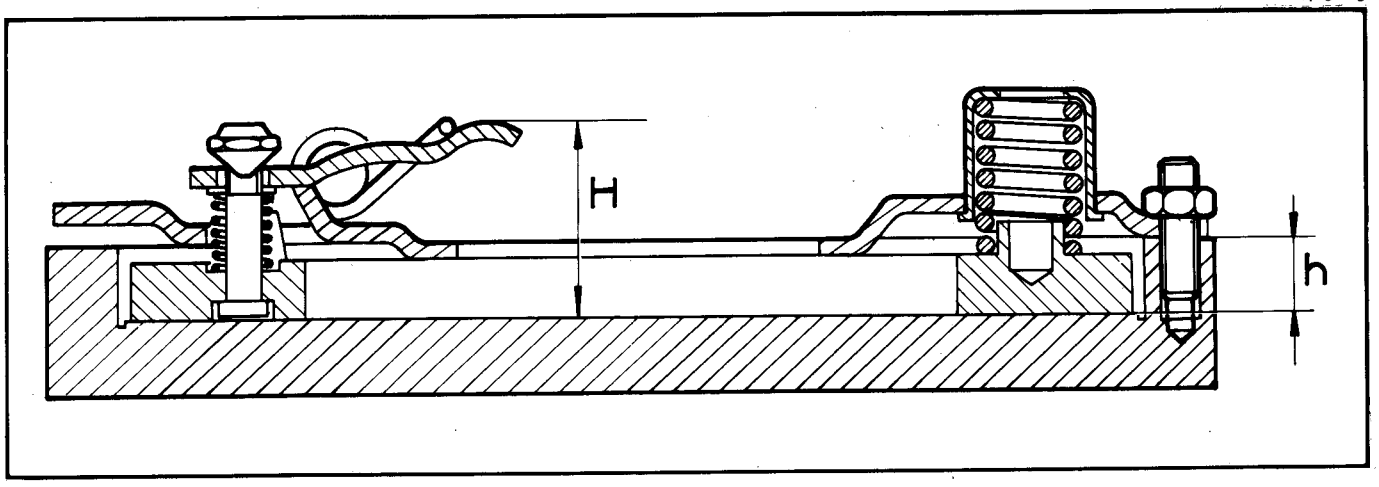
A 53 → *2/1970*
A 79/0 → *1/1972*
M 4 → *10/1968*

A. 31-7



Manual 816-1

A. 31-3



CHARACTERISTICS

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

Disc : ..... Progressive type ⟶ *10/1967* - « DENTEL » type *10/1967* ⟶

Disc hub : ..... 10 grooves ⟶ *4/1966* - 18 teeth *4/1966* ⟶

Lining : ..... « FERODO » M 8 or A 3 S

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 0.203 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 (6.49 to 10.1 ft.lbs)
- Screw securing clutch mechanism : ..... 1 to 1.3 da Nm (7.22 to 9.38 ft.lbs)

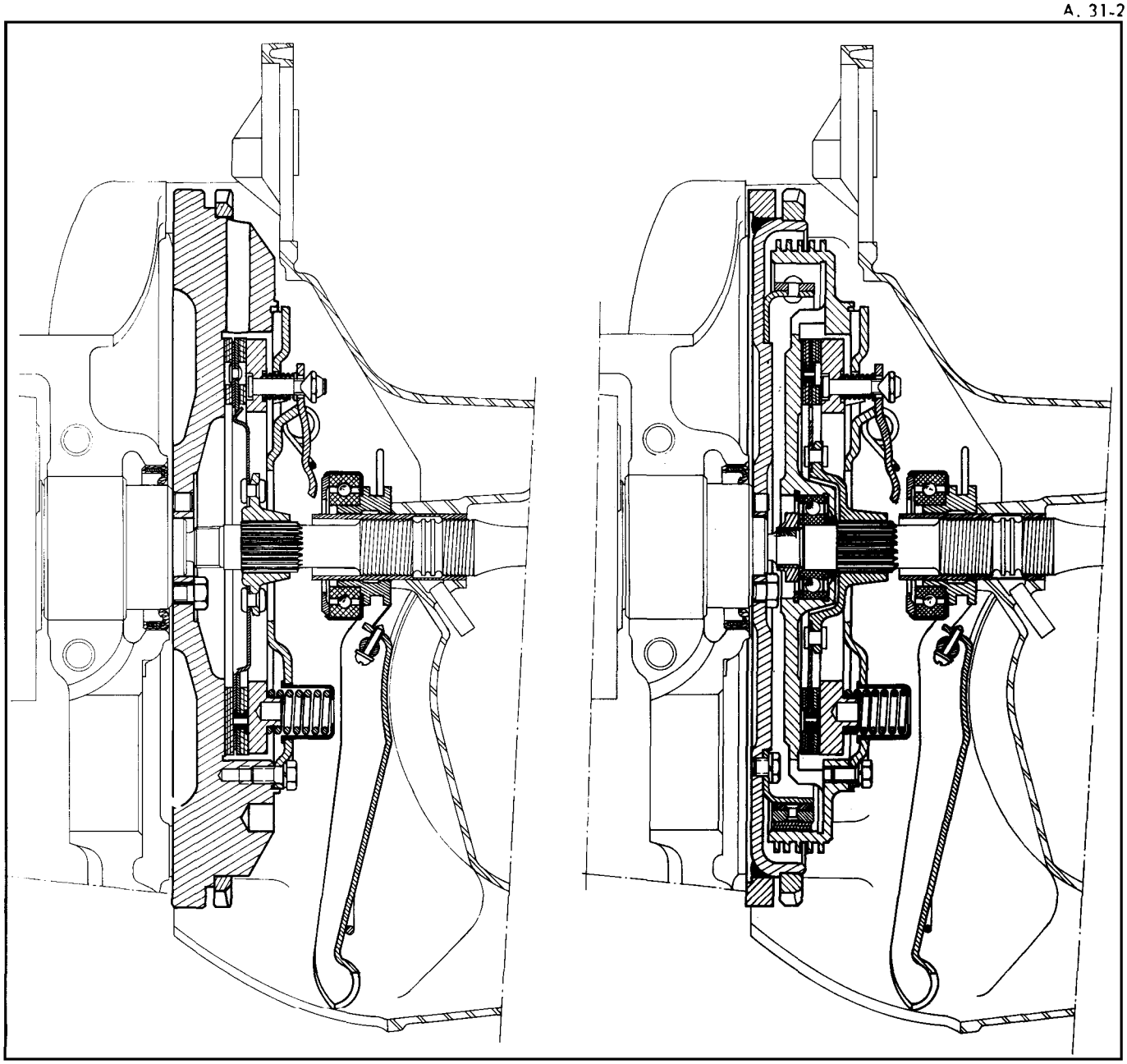
Clearance between thrust ring and toggles : ..... 0.5 to 1 mm ((.019 to 0.039 in)
Pedal free movement : ..... 10 to 15 mm (0.39 to 0.59 in)

Adjusting the toggles *(see diagram on page 1)* :
- Distance between top of toggles and thrust plate : ..... H = 26 to 27,5 mm (1.02 to 1.08 in)
- Distance between plate and housing for clutch mechanism : ..... h = 12 mm (0.47 in)

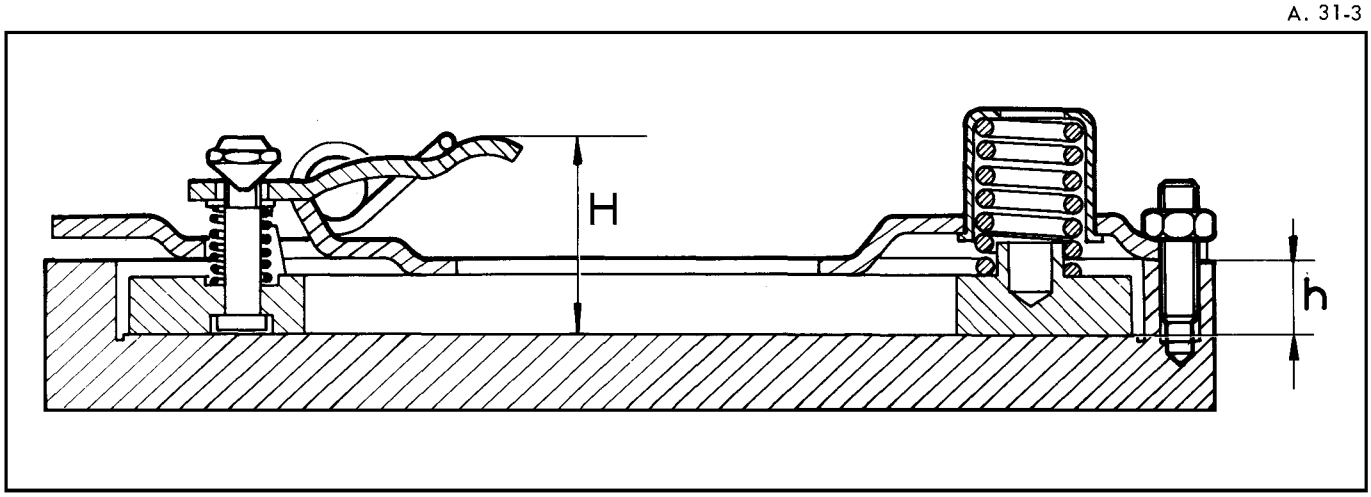
♦ SPRING CLUTCHES FITTED ON VEHICLES EQUIPPED WITH ENGINES :

A 79/0 *2/1972 → 8/1972*
A 79/1 *3/1968 → 9/1979*
M 28/1 *5/1968 → 2/1982*
M 28 *2/1970 → 2/1982*

A. 31-2



A. 31-3



Supplement No. 1 to Manual 816-1 (CORR)

CHARACTERISTICS *(→ 2/1982)*

Mechanism:	« FERODO » Type PKHB 4.5
Disc :	« DENTEL » Type
Disc hub :	18 grooves
Lining :	A 3 S quality or 813 engine side and A 3 S 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 0.203 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 (6.49 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 (.039 to .059 in)
Pedal free movement :	20 to 25 mm (0.78 to 0.98 in)

Adjusting the toggles *(see diagram page 3)* :

- 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

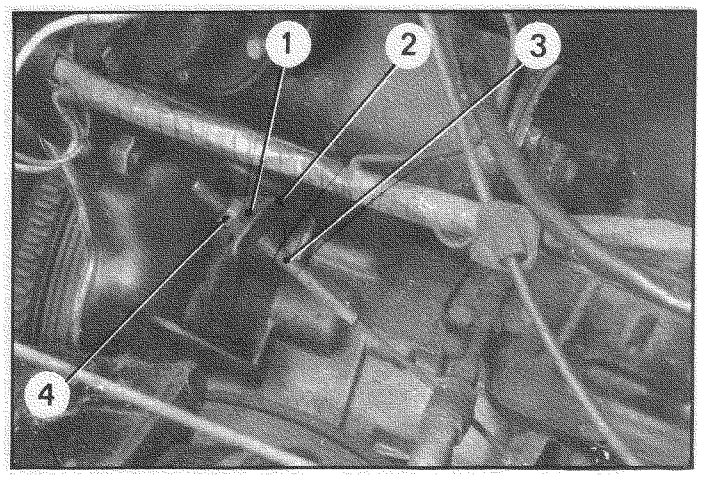
SPECIAL FEATURES *(2/1982 →)*

Will be dealt with in a further updating.

ADJUSTING THE CLUTCH CLEARANCE

A. *Vehicles AZ (2 CV)* ⟶ *February 1970.*
Vehicles AZU (2 CV) ⟶ *January 1972.*
Vehicles AK (3 CV) ⟶ *October 1967.*
Vehicles AM (3 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

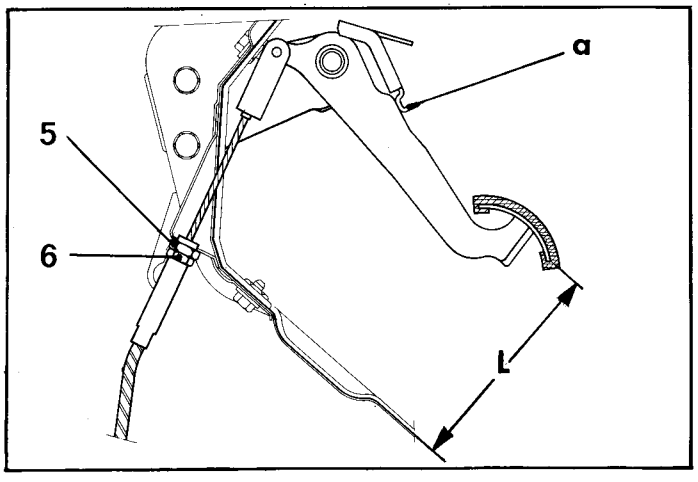
1. Adjust the clutch clearance :

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 graphited thrust bearing into contact with the toggles thrust ring. Tighten the lock-nut (4).

B. *Vehicles AY - AK - AZU - AZL and AM equipped with a pendant pedal gear*

Manual 816-1

A. 31-1



2. Check the pedal height :

With the pedal against the stop « a », the height of the pedal should be :

L = 130.5 ± 5 mm (5.13 ± 0.19 in)

measured from the lower corner of the pedal pad to the floor plating. If not, bend the support plate at « a » to obtain the correct height.

For vehicles AM *11/1971* ⟶ only :
pedal height :

L = 135 ± 2.5 mm (5.31 ± 0.098 in)

3. Adjust the clutch clearance :

Loosen the lock nut (6) 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).

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*
- *AM* ⟶ *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 (unadjustable) : 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 : 16 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 .0078 in)
- Backlash (pinion, crownwheel)	0.13 to 0.23 mm (.0051 to .009 in)
- Minimum play between planetary and satellite gears	0.1 mm (.0039 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 101.08 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 101.08 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)
- Clutch housing (securing) : Nut dia : 10 mm (0.39 in)	3.5 to 4.5 da Nm (25.27 to 32.49 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 :

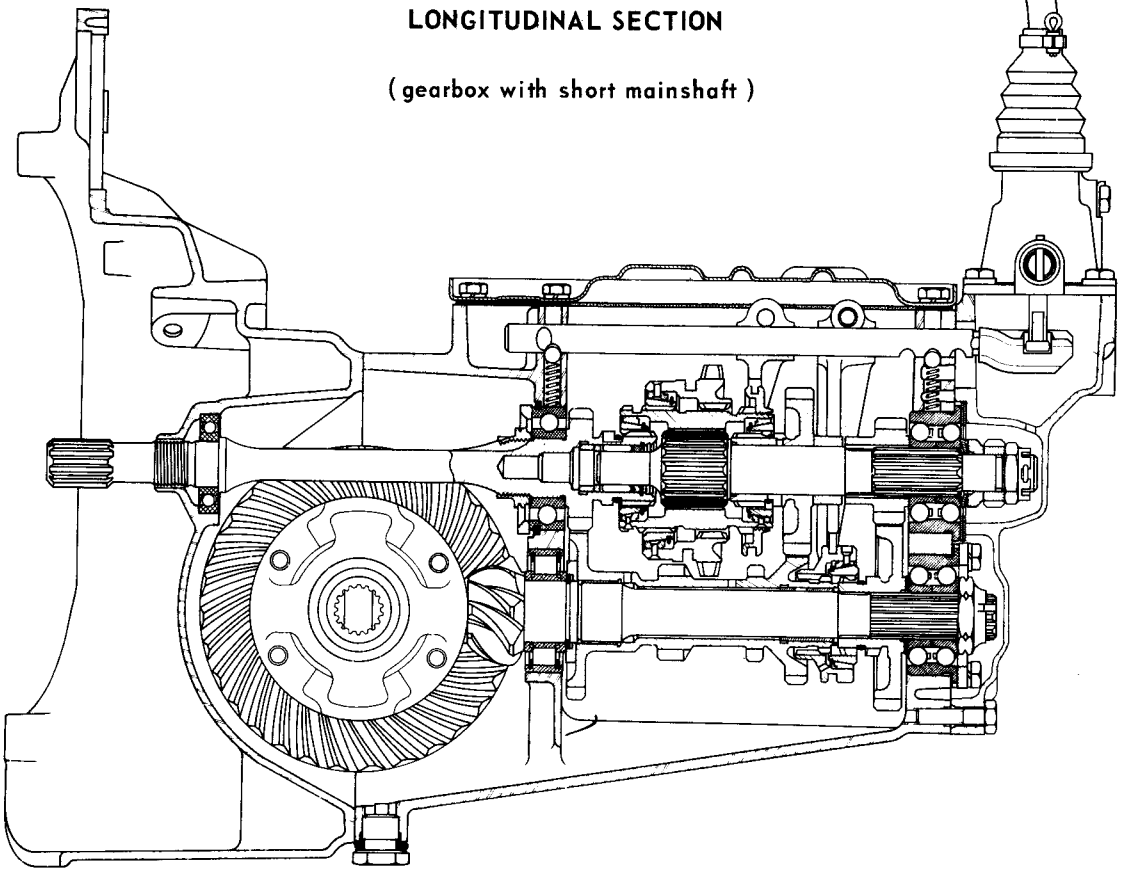
- Grade of oil	TOTAL EP 80
- Capacity	0.9 litres (1.58 Imp.pts)

Supplement No. 1 to Manual 816-1 (COR/R)

A. 33-1 a

LONGITUDINAL SECTION

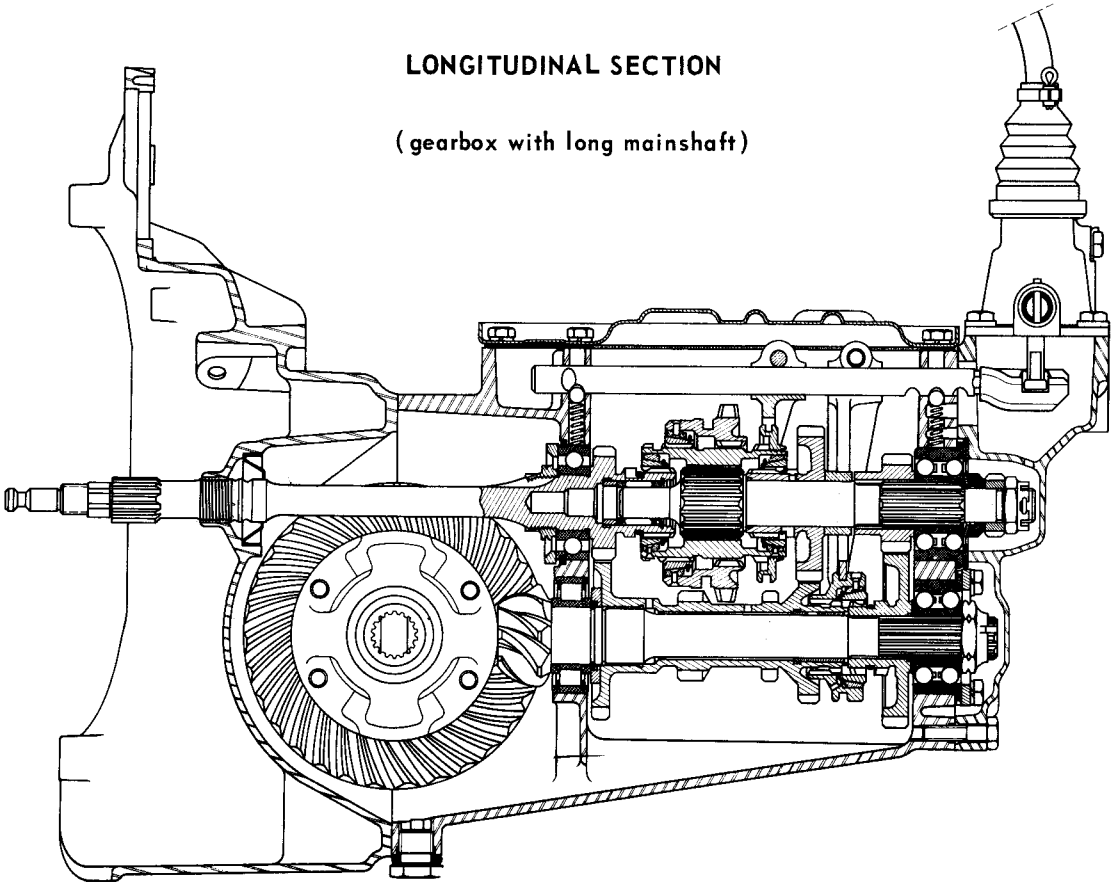
(gearbox with short mainshaft)



A. 33-1

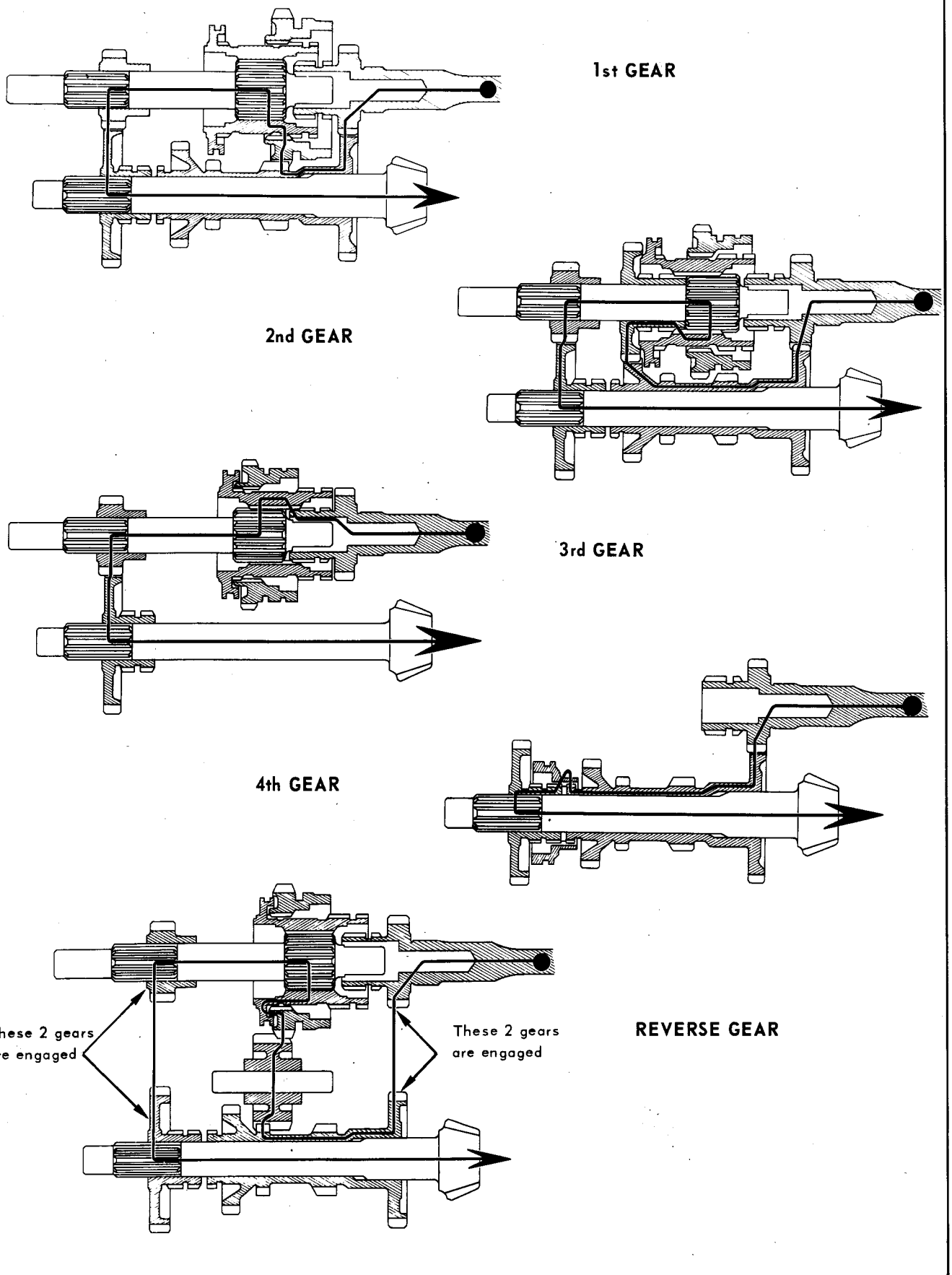
LONGITUDINAL SECTION

(gearbox with long mainshaft)



GEAR SEQUENCE

A. 33-5



Manual 816-1

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

Gearbox fitted *on* **AZ** *vehicles* *11/1964* ⟶ *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 (3.625 : 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 (12.635)
REV	19/28 × 13/33 × 15/32 (7.980 : 1)		28.929 : 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	13 067 (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)		30 922 : 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 × 24/26 × 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	17 919 (11 199)
REV	18/28 × 13/33 × 15/32 (8 423 : 1)		32 642 : 1	3 308 (2.06)
Speedometer drive ratio = 5/22				

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

Gearbox *fitted on* **AYA (DYANE)** *vehicles 8/1967 ⟶ 3/1968*

Gears	Gearbox ratios	Crownwheel and pinion	Overall ratios	Speed at 1000 rpm engine speed in kph (mph)
1	18/28 × 14/33 × 15/32 (822 : 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	8.287 (5.179)
3	15/32 (1.133 : 1)		7.733 : 1	13.966 (8.728)
4	18/28 (1.555 : 1)		5.638 : 1	19. 155 (11.971)
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)** *(1/1968 ⟶ 10/1968)*; **AM - AMB (AMI 6 Saloon and Estate)** *(10/1963 ⟶ 7/1965)*; **AMF (AMI 6 « Familial » Estate)** *(10/1963 ⟶ 7/1965)*; **AMC (AMI 6 « Commercial » Estate)** *(10/1963 ⟶ 7/1965)*

Gear ratios (with 125-380 X and 135-380 X tyres, 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 (9.68)	15.837 (9.89)
4	19/35 (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** *(⟶ 10/1967)*; **AMF (« Familial » Estate)** *(7/1965 ⟶ 2/1968)*; **AMC (« Commercial » Estate)** *(7/1965 ⟶ 2/1968)*

Gears	Gearbox ratios	Crownwheel and pinion	Overall ratios	Speed at 1000 rpm engine speed in kph (mph)
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 (13.39)
REV	19/27 × 14/31 × 13/25 (6.051 : 1)		21.935 : 1	5.033 (3.14)
Speedometer drive ratio = 4/15				

Supplement No. 1 to Manual 816-1 (CORR)

II. GEARBOXES.

Vehicles fitted with gear lever on upper cover

AZ 2/1970 → 9/1975
AY 10/1968 → (3/1968 → on DYANE 4)
AZU 1/1972 → 2/1978
AK 10/1967 → 2/1978
MEHARI 10/1968 →
AM 2/1968 → 9/1978
Acadiane 2/1978 →

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 :

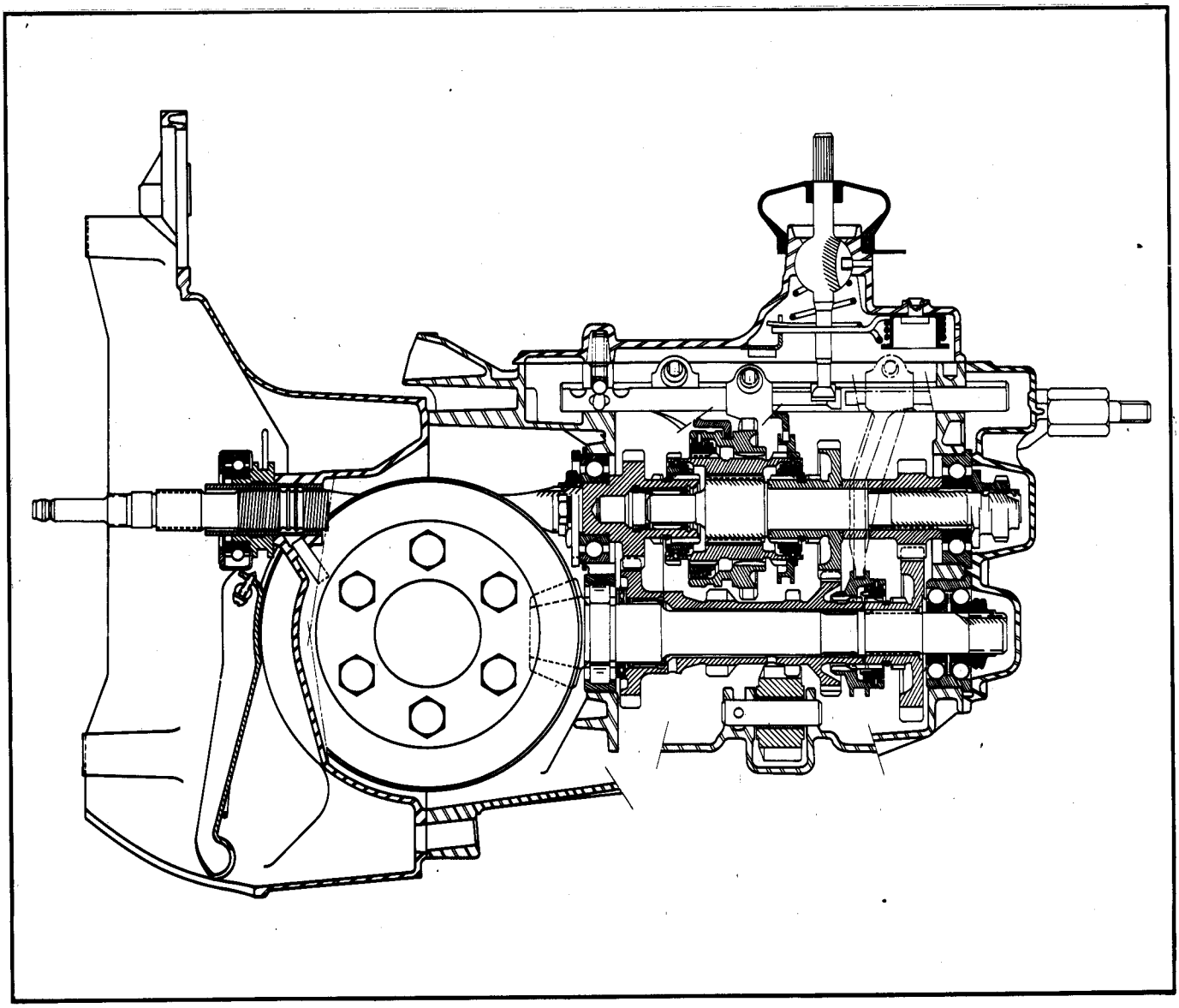
- Nut on primary shaft ..... 7 to 9 da Nm (50.54 to 64.98 ft.lbs)
- Nut on bevel pinion shaft ..... 7 to 8.5 da Nm (50.54 to 61.37 ft.lbs)
- Securing screw for flange retaining mainshaft bearing ..... 2.5 da Nm (18.08 ft.lbs)
- Nut securing mainshaft bearing ..... 12 to 14 da Nm (86.64 to 101.08 ft.lbs)
- Securing screw for differential crownwheel ..... 7 to 8 da Nm (50.54 to 64.98 ft.lbs)
- Clutch housing : bearing screw ..... 3.5 to 4.5 da Nm (25.27 to 32.49 ft.lbs)
  screw diameter = 7 mm (0.27 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 block ..... 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 rear cover (diameter = 7 mm, 0.27 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 (1.58 Imp.pts)

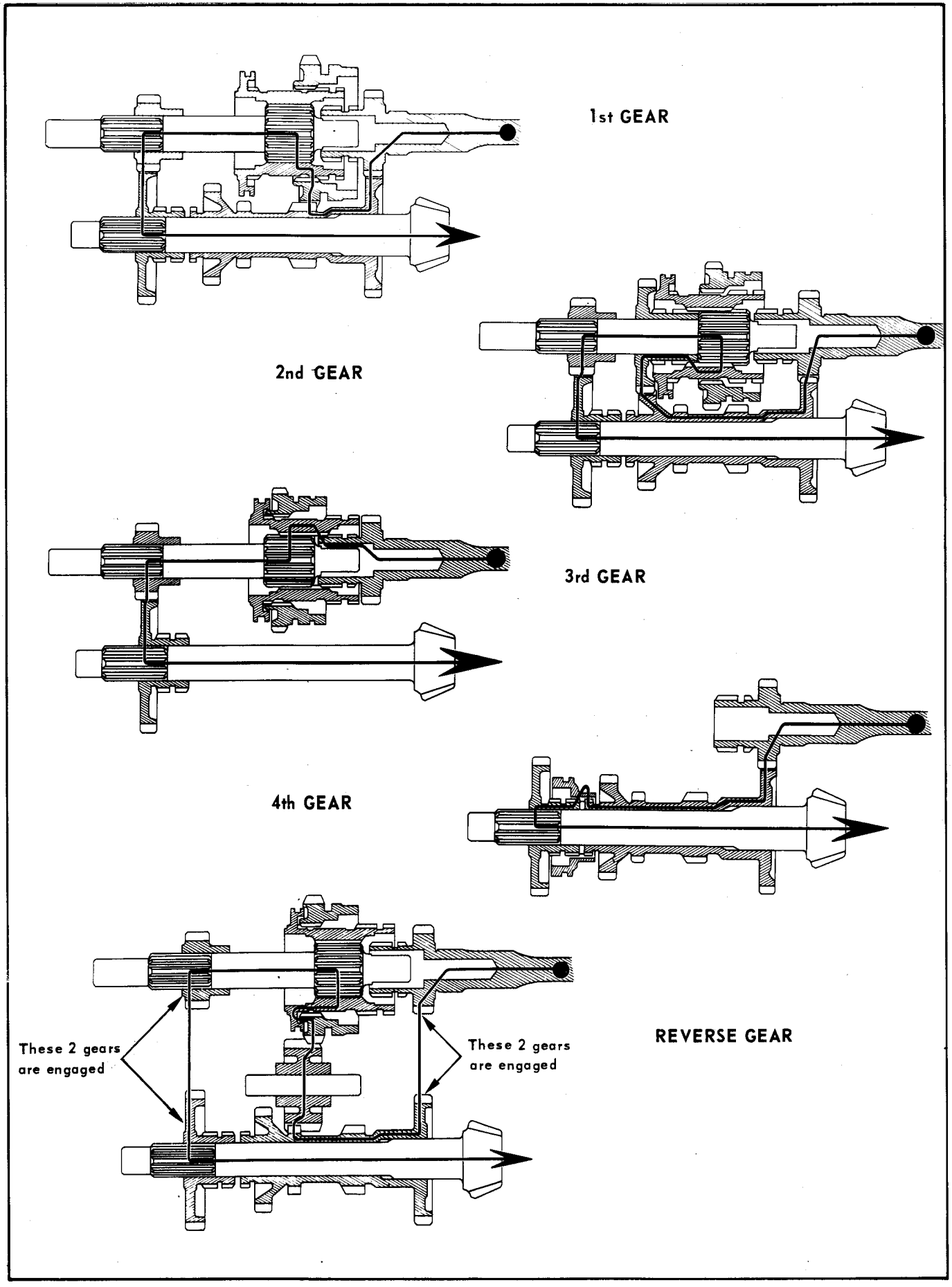
LONGITUDINAL SECTION

A. 33-2



GEAR SEQUENCE

A. 33-5



Gear ratios (with 125-380 X tyres whose rolling circumference under load is 1.800 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 (3.625 : 1)	20.307 : 1	5.318 (3.323)	5.436 (3.397)
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)		6.971 : 1	15.492 (9.682)	15.837 (9.898)
4	19/25 (1.315 : 1)		4.789 : 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** } *5/ 1968 ⟶ 3/ 1969*

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 (3.875 : 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)	9.962 (6.220)
3	13/25 (1.923 : 1)		7.451 : 1	14.494 (9.058)	14.816 (9.26)
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** *(10/ 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 (3.625 : 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 (9.683)	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					

Supplement No. 1 to Manual 816-1 (CORR)

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 engine)** *2/1970* → ; **AM 3 (AMI 8)** *3/1969* → *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 kph (mph)
1	20/27 × 14/31 × 13/25 (5.748 : 1)	8/31 (3.875 : 1)	22.275 : 1	4.848 (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)
REV	20/27 × 14/31 × 13/25 (5.748 : 1)		22.275 : 1	4.848 (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)** *9/1969* → *9/1978* ; **AY (series CD) ACADIANE** *2/1978* →

Gears	Gearbox ratios	Crownwheel	Overall ratios	Speed at 1000 rpm engine speed in kph. (mph)
1	20/27 × 14/31 × 13/25 (5.748 : 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)
	20/27 × 14/31 × 13/25 (5.748 : 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)** *10/1968* → ; **AK** *5/1968* → *2/1978*

Gears	Gearbox ratios	Crownwheel and pinion	Overall ratios	Speed in 1000 rpm engine speed in kph (mph)
1	19/27 × 14/31 × 13/25 (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)		11.970 : 1	9.223 (5.764)
3	13/25 (1.923 : 1)		7.451 : 1	14.816 (9.26)
4	19/27 (1.421 : 1)		5.506 : 1	20.059 (12.536)
REV	19/27 × 14/31 × 13/25 (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)** *3/1968 → 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)	8/33 (4.125 : 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)		8.799 : 1	12.274 (7.671)
4	19/28 (1.473 : 1)		6.078 : 1	17.769 (11.105)
REV	19/28 × 14/31 × 15/32 (6.961 : 1)		28.715 : 1	3.761 (2.350)

Speedometer drive ratio = 3/14

Supplement No. 1 to Manual 816-1 (CORR)

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

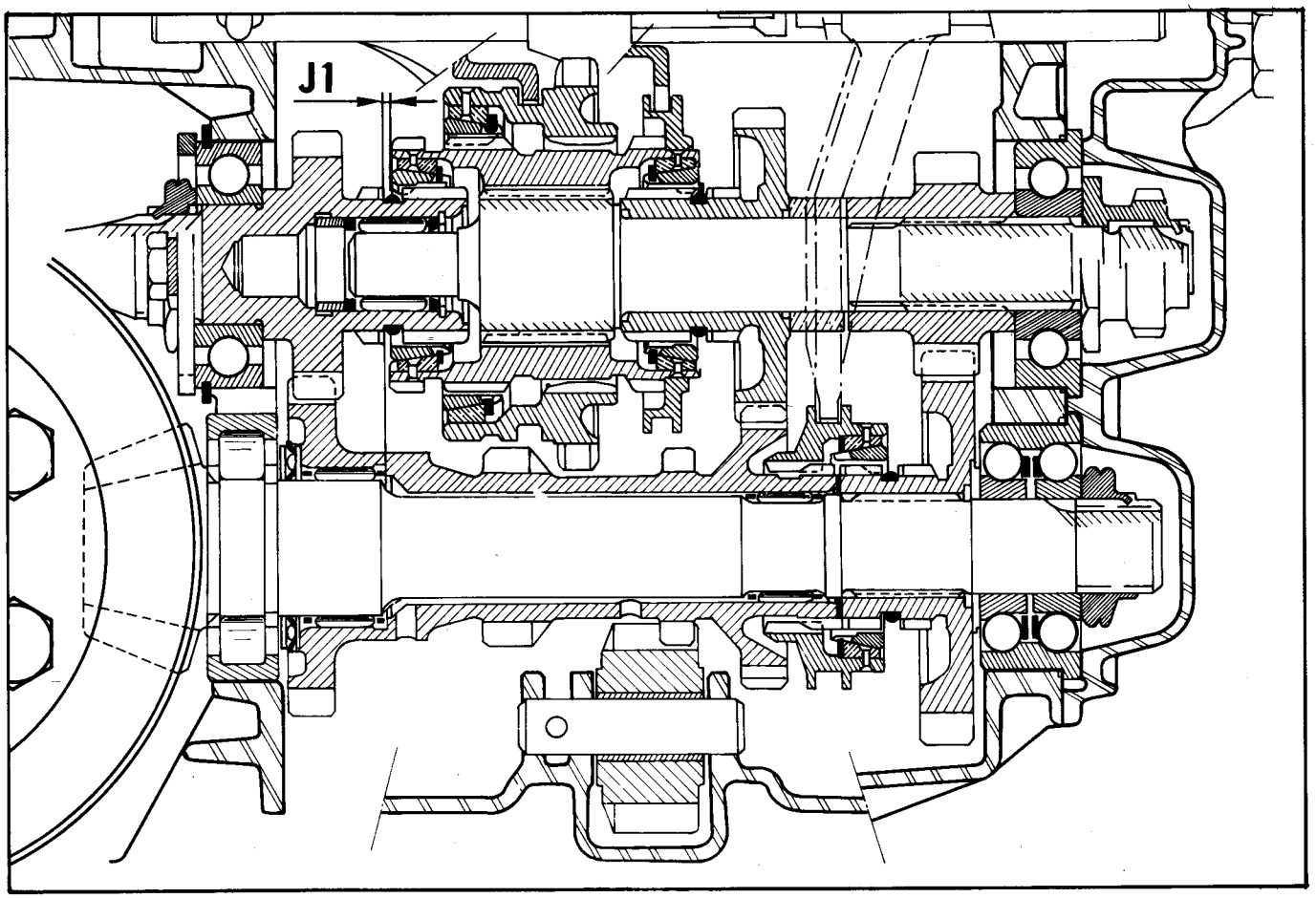
Gearbox *fitted on the following vehicles*
- **AYB (DYANE 6, M 28/1 engine)** *10/1968 → 2/1970*
- **AZ (2 CV 6)** *2/1970 →*

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)	8/33 (4.125 : 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	14.667 (9.166)
4	19/25 (1.315 : 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)

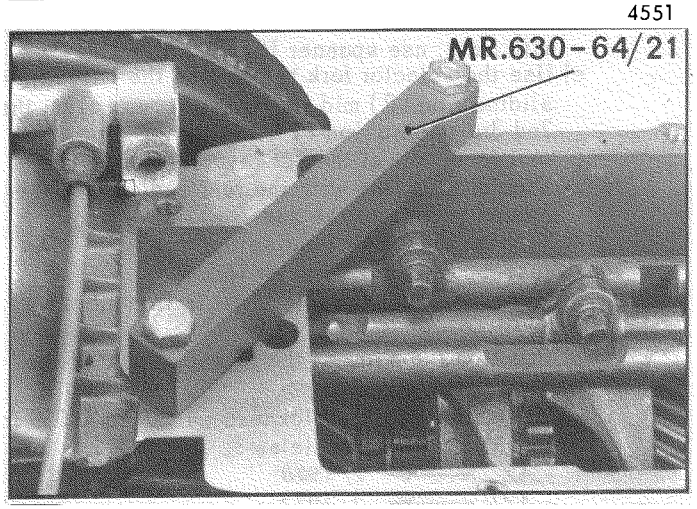
Speedometer drive ratio = 4/16

ADJUSTING THE FORKS

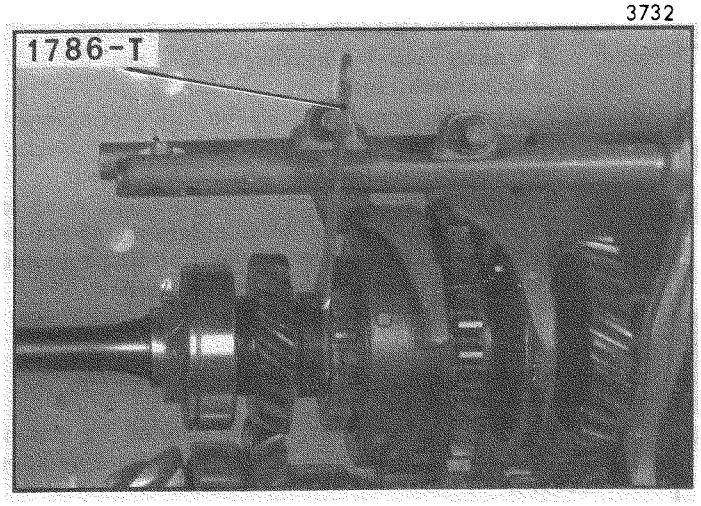
A. 33-3



4551



3732



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.

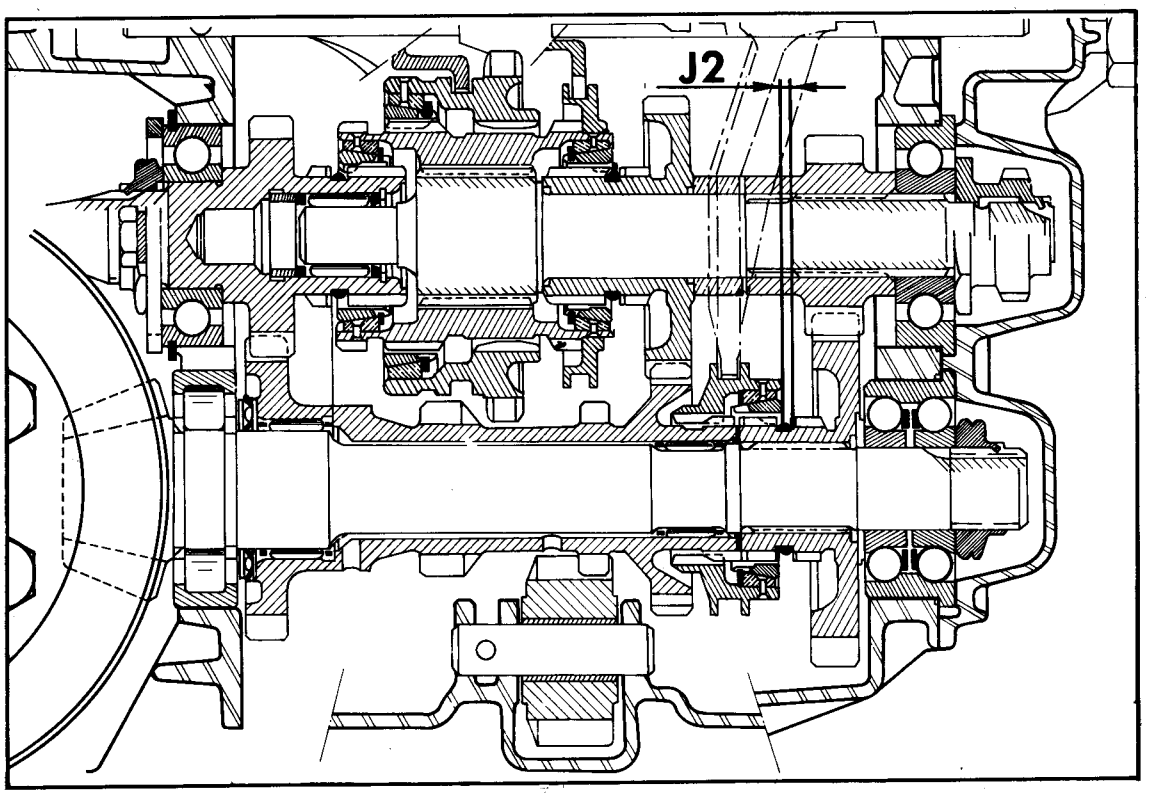
b) Position the shim 1786-T (thickness : 1.8 mm, 0.07 in) on the mainshaft retarding ring. Slacken the screw holding the fork (for screws with flats use spanner 1677-T).

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 J 1 = 1.8 mm (0.07 in) between the end of 2nd-3rd sliding ring and the mainshaft dogs.

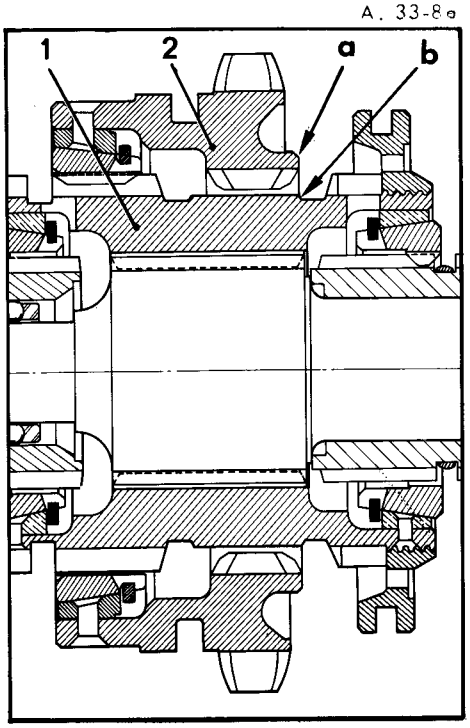
d) Tighten the bolt holding the fork.

e) Remove the shim.

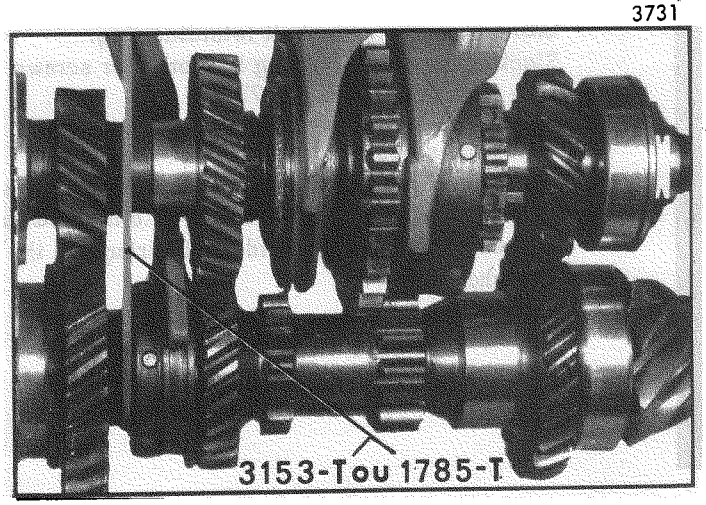
A. 33-3



A. 33-8a



3731



3. Adjust the 1st-reverse selector fork.

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

a) Make sure that the fork shaft is in neutral position.
b) Slacken the screws securing the fork (for screws with flats, use spanner 1677-T).
c) 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.
d) Tighten the screw holding the fork.

4. Adjust the 4th gear selector fork :

a) Make sure that the fork shaft is in neutral position.
b) 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 :
- *AZ* ⟶ *2/1970*
- *AZU* ⟶ *2/1972*
- *DYANE (AYA) 8/1967* ⟶ *3/1968*

Use shim 3153-T (thickness : 2.70 mm, 0.1 in) for other vehicles.
c) Slacken the screw holding the fork (for screws with flats use spanner 1677-T).
d) 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.
e) Tighten the bolt securing the fork.
f) Remove the shim.

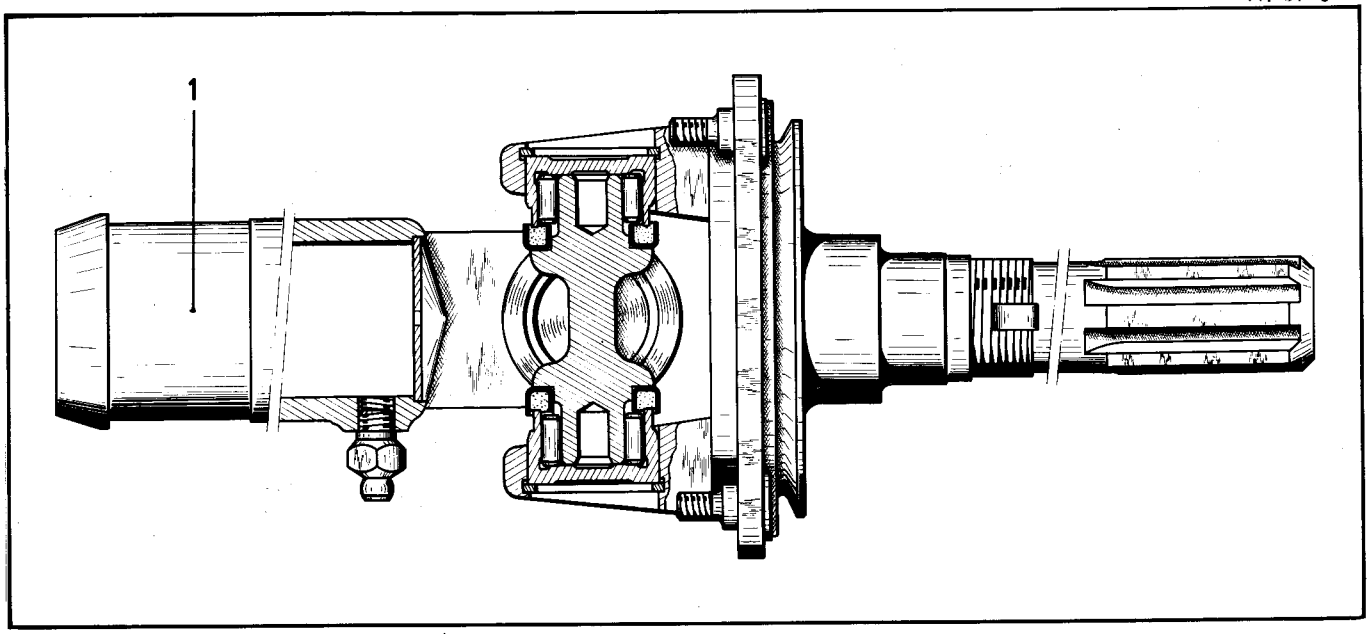
5. Select each gear in turn : Remove the clamp MR. 630-64/21.

6. Replace the upper cover, taking care of the locking springs *(for gearboxes with the gear lever on upper cover).*

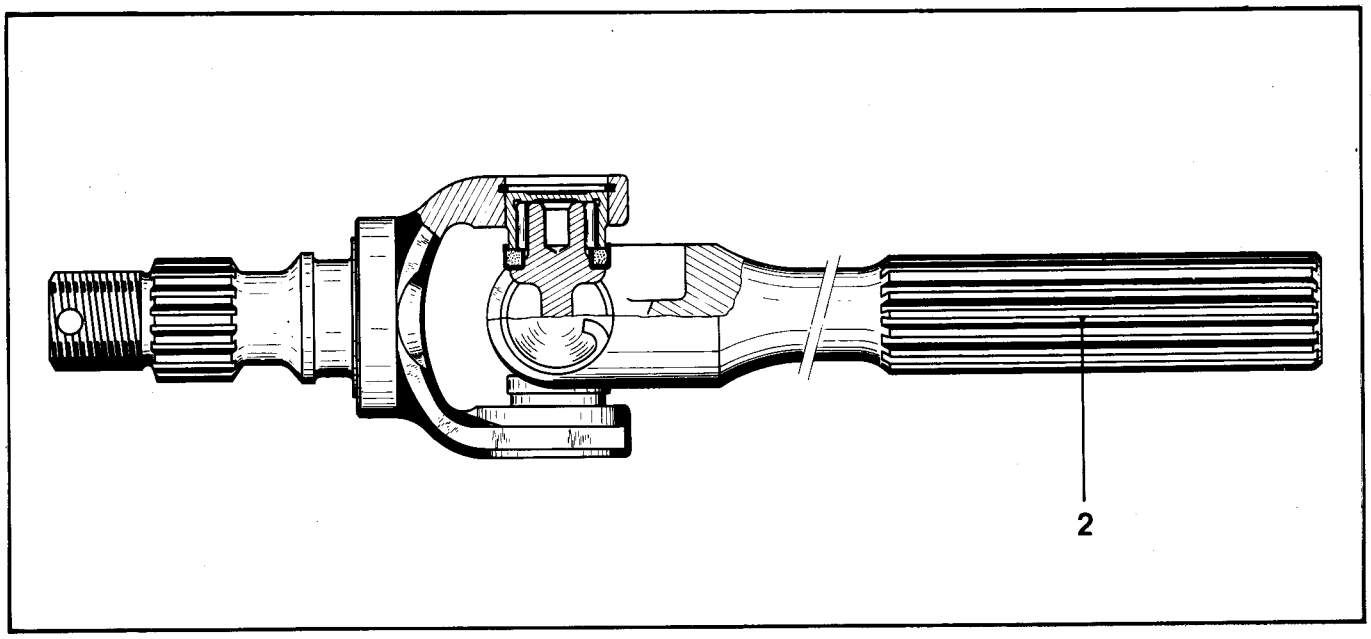
OPERATION No. A. 372-00 : *Characteristics and special features of drive shafts.* **Op. A. 372-00** 1

DRIVE SHAFT WITH SINGLE CROSSHEAD UNIVERSAL JOINT

A. 37-6



A. 37-7



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 :

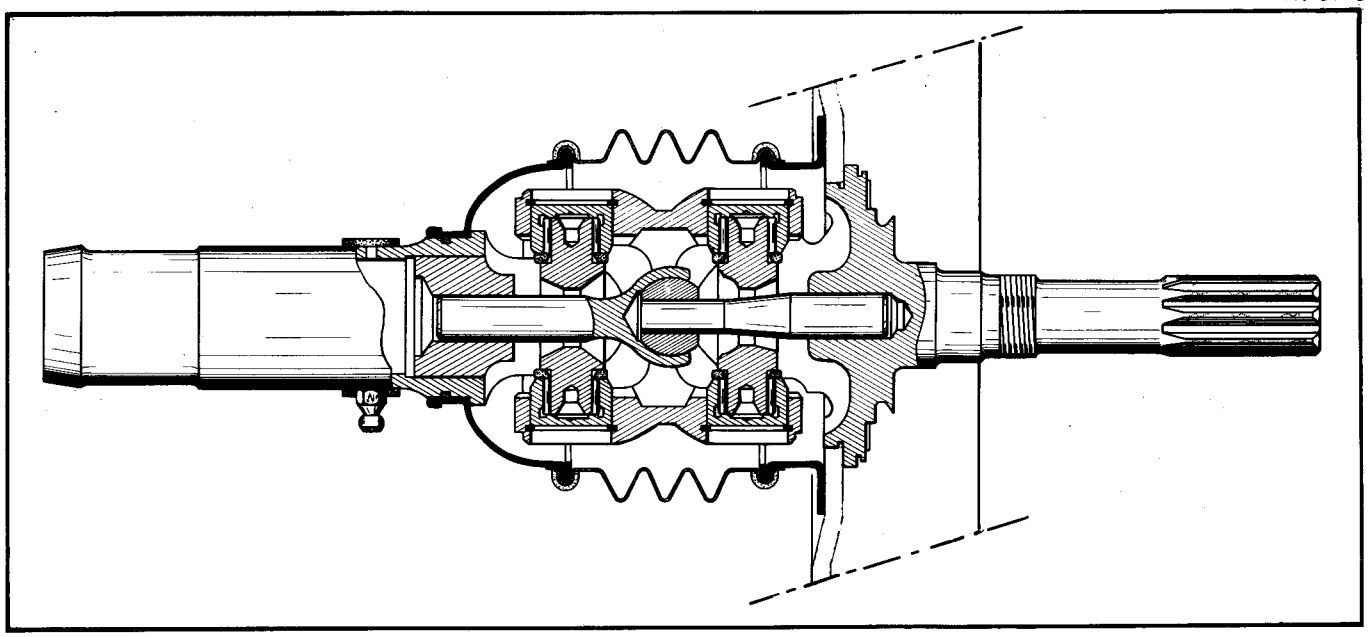
- Fixing nut on hub (face and threads greased) : ..... 35 to 40 da Nm (252 to 288 ft.lbs)

Lubrication :

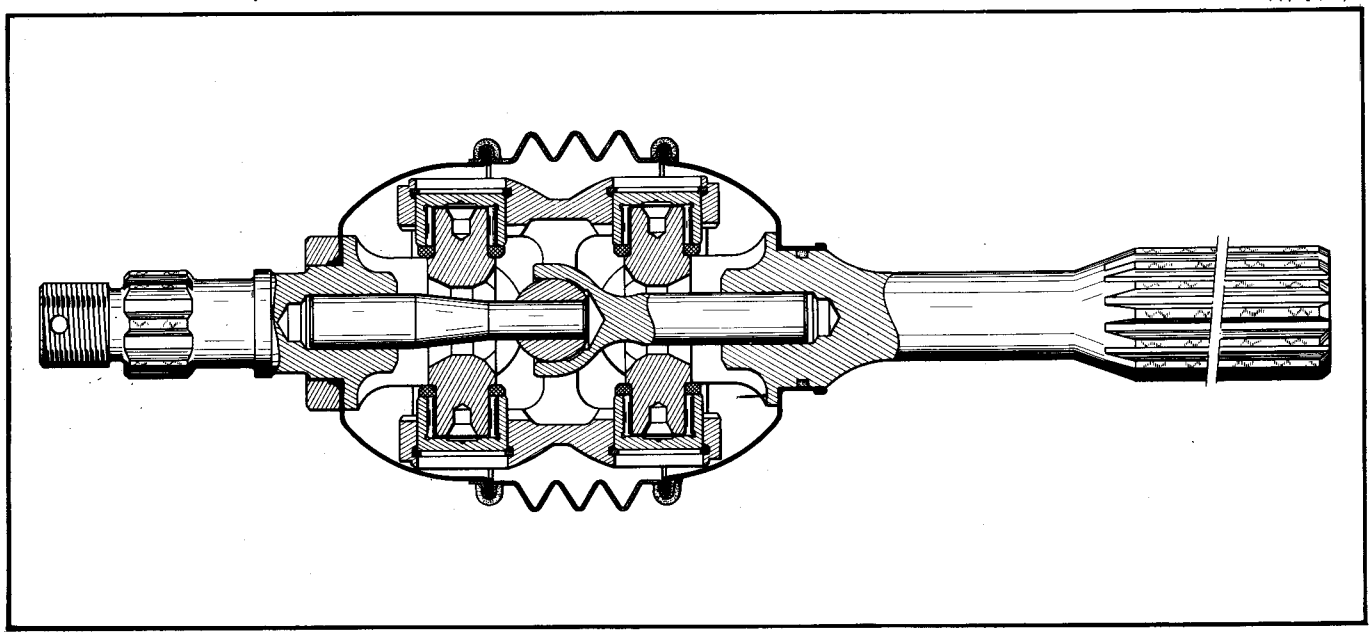
- Grease : ..... TOTAL MULTIS MS

DRIVE SHAFT WITH DOUBLE CROSSHEAD

A. 37-8



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 :

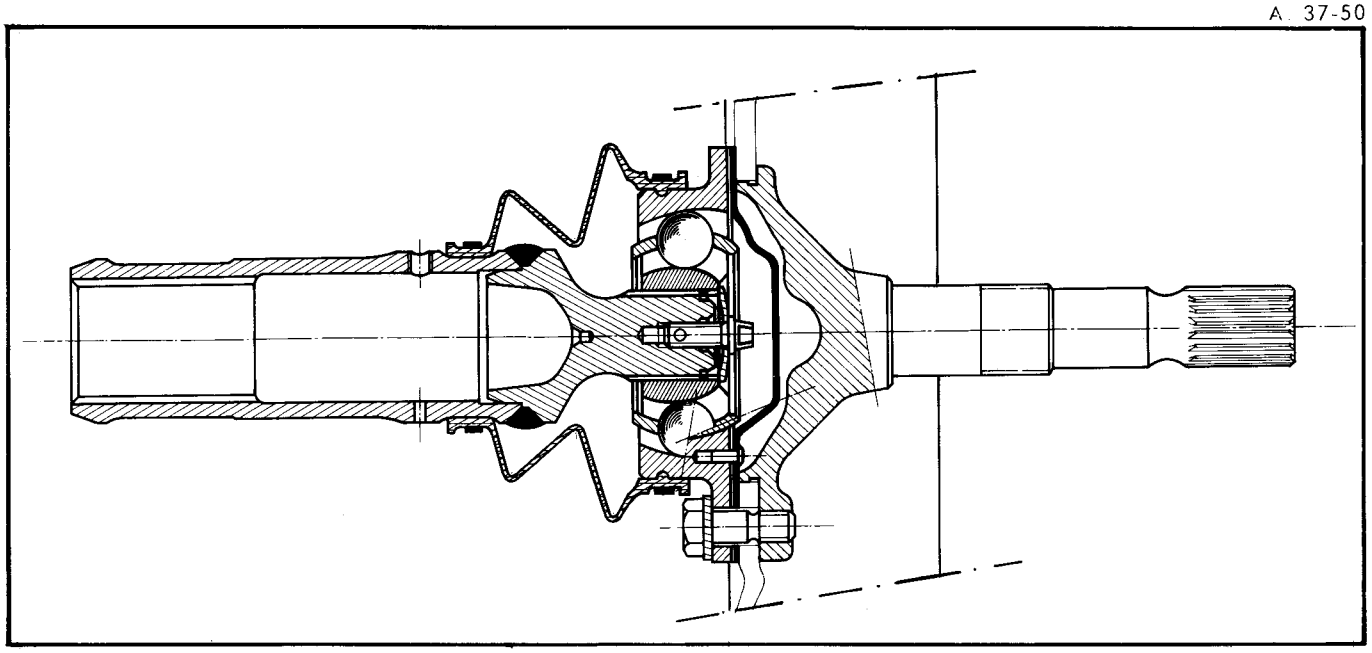
- Fxing nut on hub : ..... 35 to 40 da Nm (252 to 288 ft.lbs)

Lubrication :

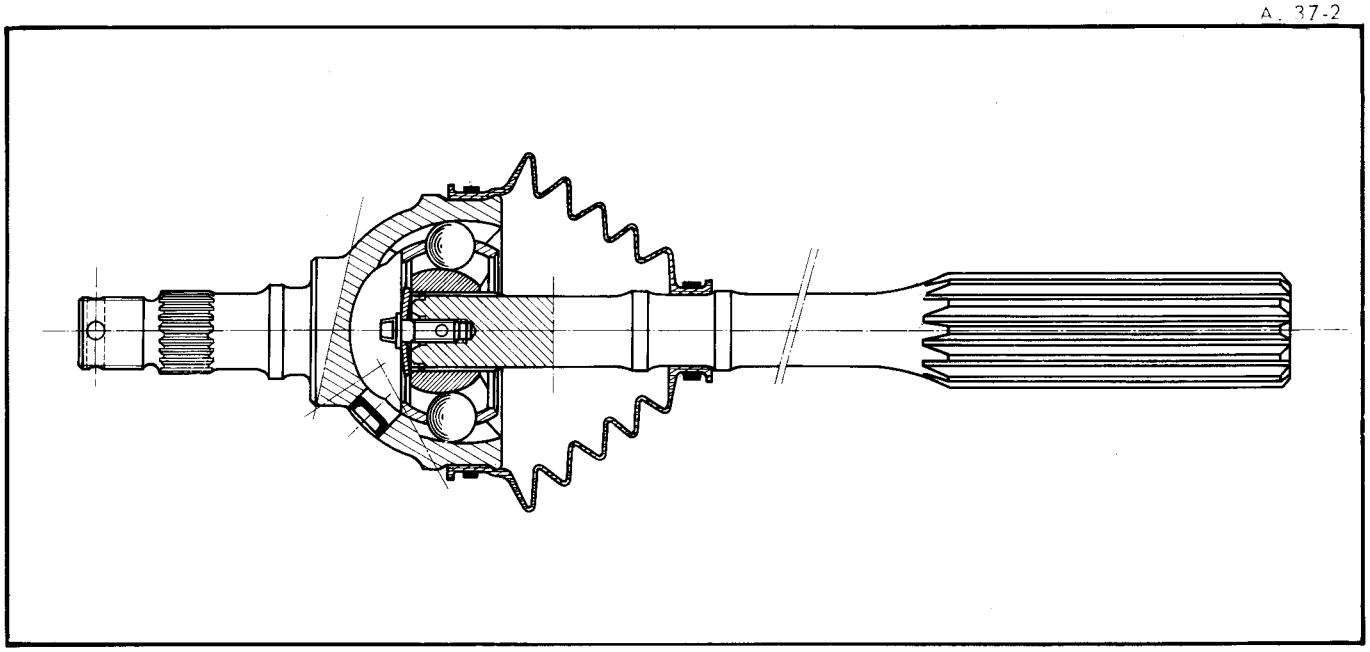
- Grease : ..... TOTAL MULTIS

DRIVE SHAFT WITH BALL TYPE UNIVERSALS

A. 37-50



A. 37-2



Manual 816-1

CHARACTERISTICS

- Ball type constant velocity joint, gearbox end.
- Ball type constant velocity joint, wheel end.
- Fitting : The sliding yoke may take up 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 288 ft.lbs)
- Bolt securing drive shaft to gearbox output shaft : ..... 4.5 to 5 da Nm (32.4 to 36.1 ft.lbs)

Lubrication :

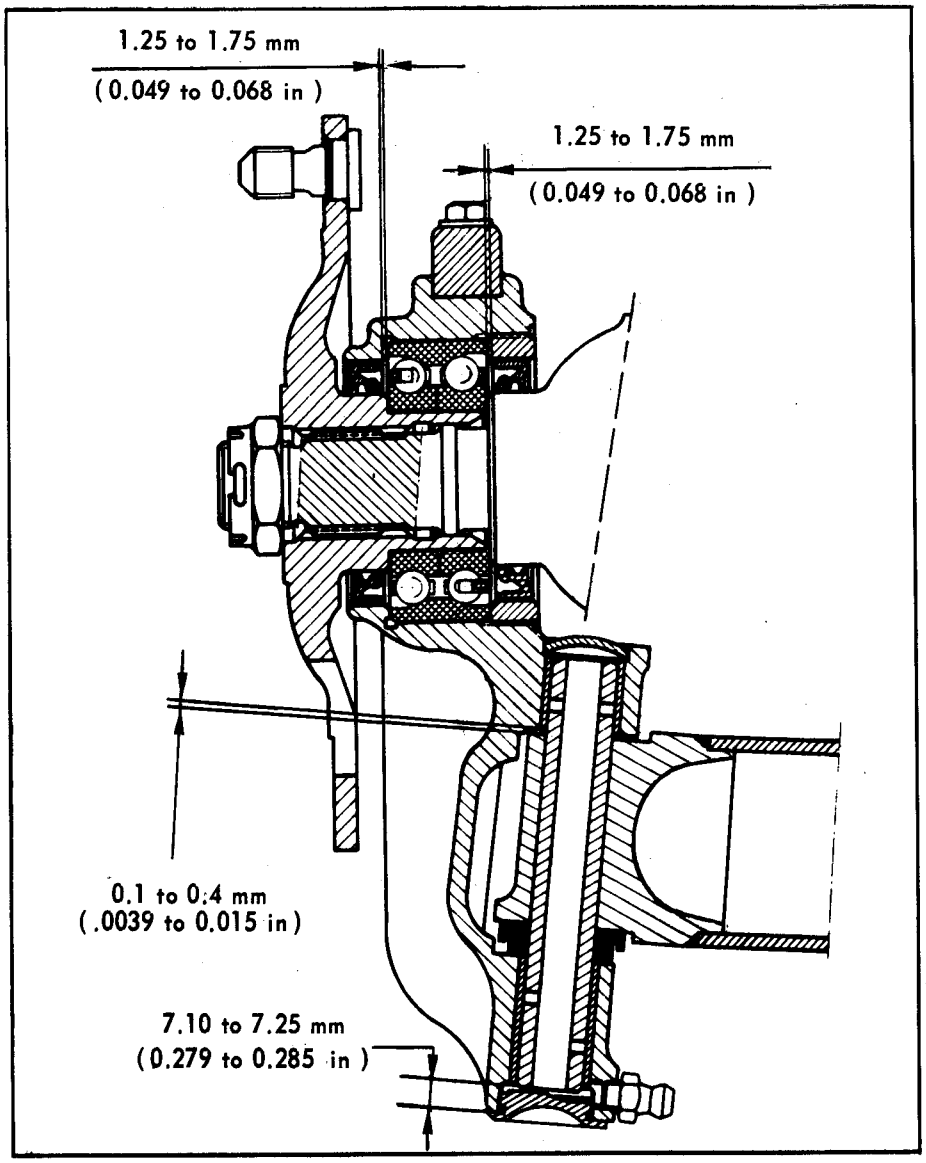
- Grease : ..... TOTAL MULTIS MS

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

OPERATION No. A. 410-00 : *Characteristics and special features of the front axle.* **Op. A. 410-00** 1

I. SWIVEL

A. 41-6



CHARACTERISTICS

- Camber
  - Wheels straight ahead : ..... $1^{\circ}\ ^{+\ 45'}_{-\ 25'}$
  - Wheels at full lock : ..... $9^{\circ}\ 30' \pm 1^{\circ}\ 20'$
- 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 nut : ..... 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 (.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 :

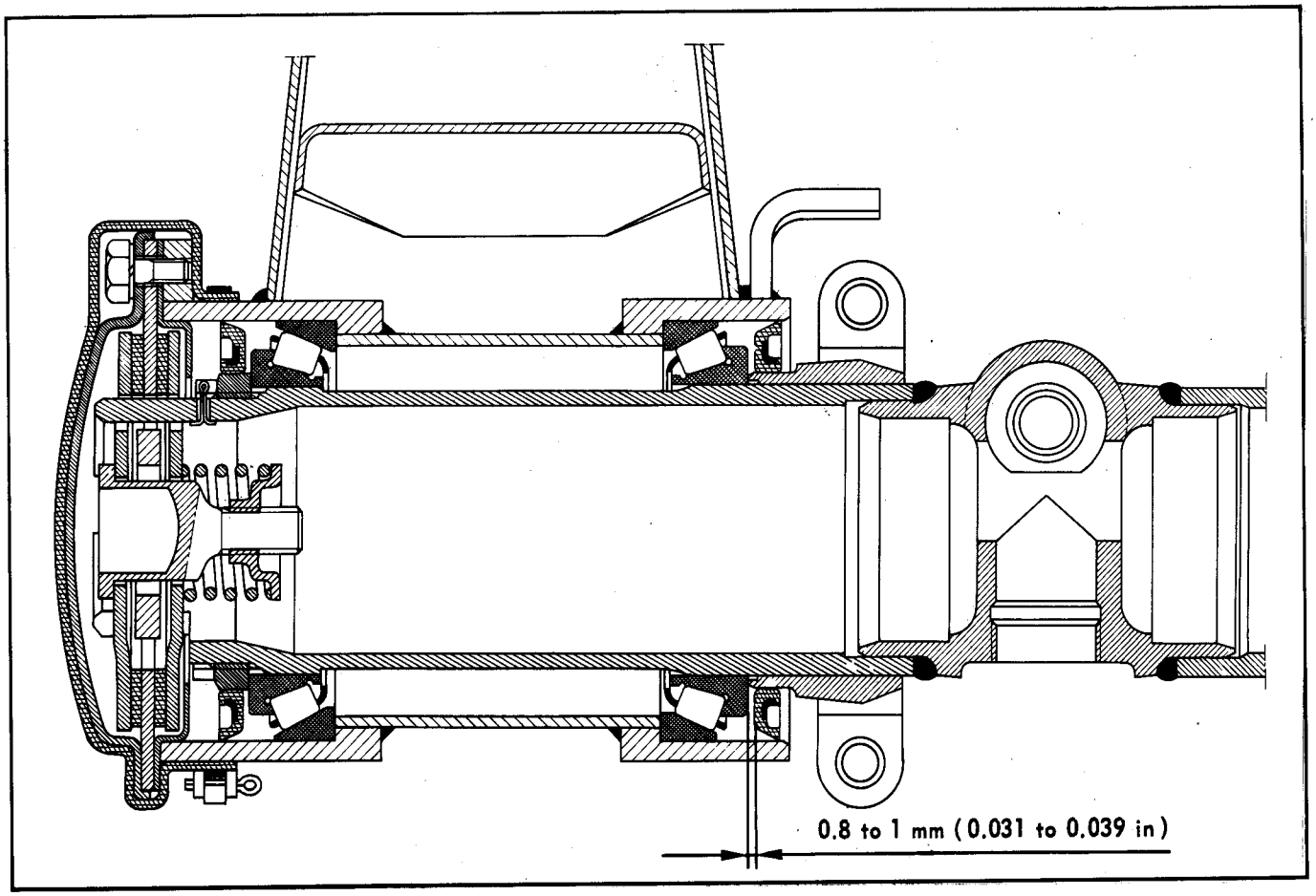
- Ring nut on hub bearing (face and threads greased) : ..... 35 to 40 da Nm (252 to 288 ft.lbs)
- Screw for swivel coupling lever : ..... 1.5 to 2 da Nm (10.83 to 14.44 ft.lbs)
- Nut locking drive shaft to hub (face and threads greased) : ..... 35 to 40 da Nm (252 to 288 ft.lbs)
- Nuts holding inertia dampers : ..... 6 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

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)

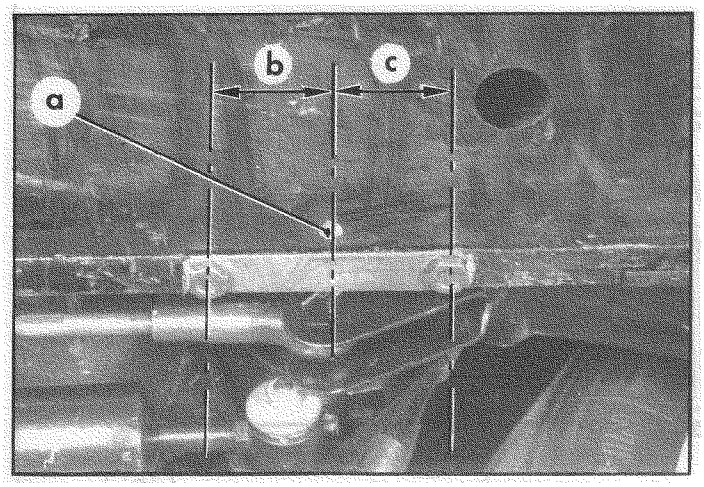
Tightening torques :

- Securing screws for crossmember : ..... 5 da Nm (36.10 ft.lbs)
- Castellated nuts holding suspension arms on crossmember : ..... 5 da Nm (36.10 ft.lbs)
- Wheel nuts : ..... 4 to 6 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.

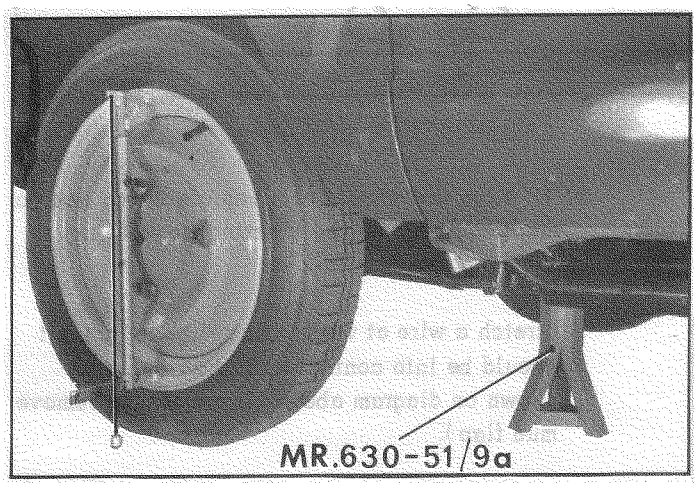
5249



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

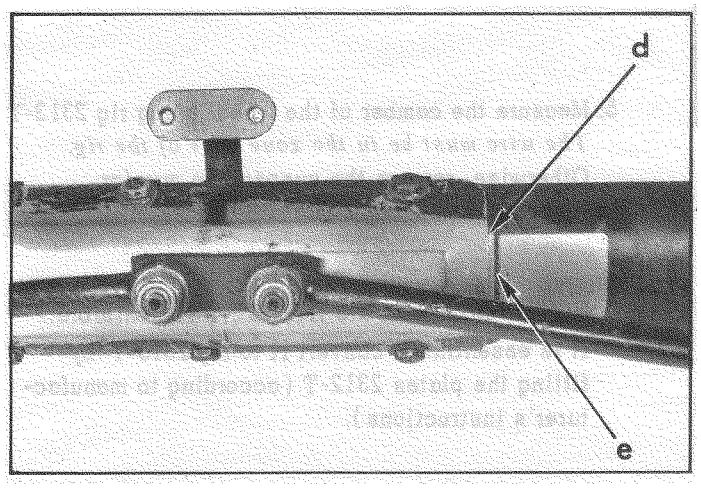


2. Put the vehicle on a flat horizontal ground.

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.

3. Chock 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).

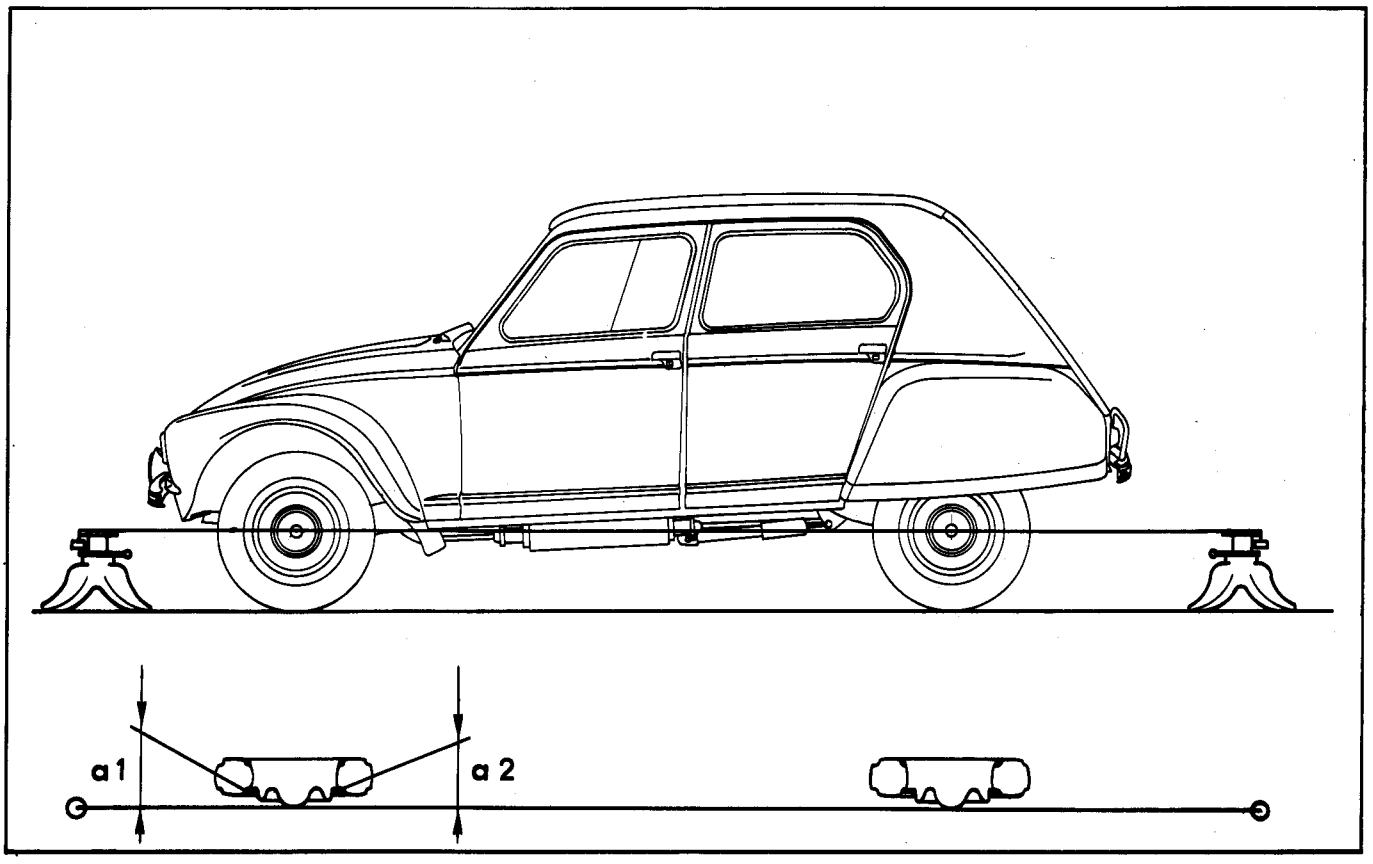
4863



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 ».

A. 41-8

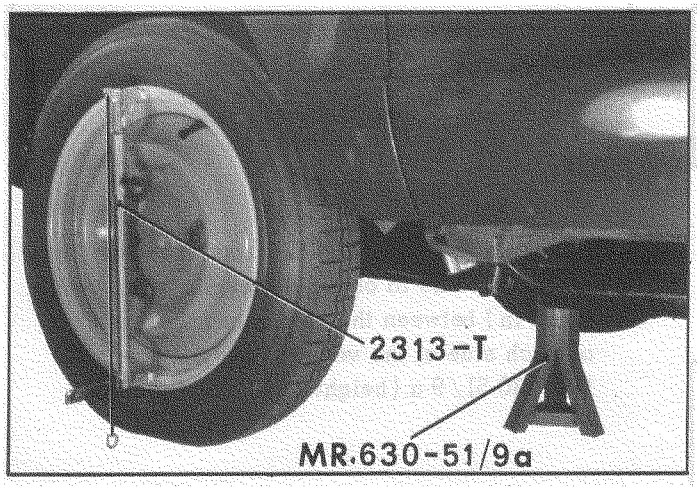


b) To align the wheels of a vehicle which has no mark engraved on the steering movable cover plate, proceed as follows :

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.

4861



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.

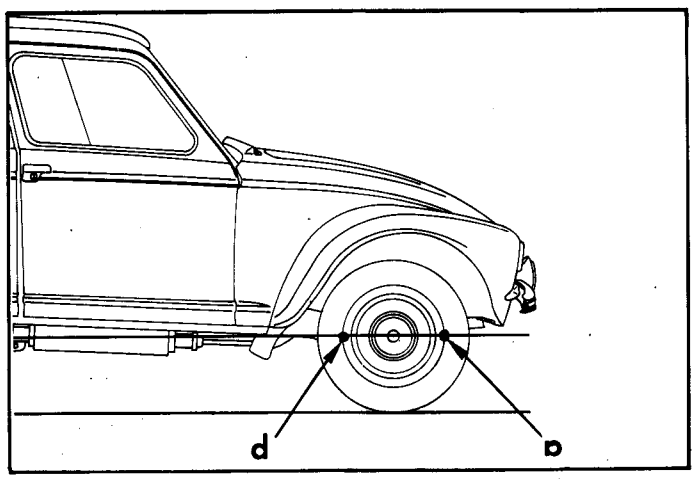
7. Measure the camber of the wheels using rig 2313-T. *The wire must be in zone « 2 » of the rig.*

Otherwise, remove suspension arm for inspection.

Manual 816-1

II. CHECKING AND ADJUSTING THE FRONT WHEEL PARALLELISM.

A. 41-8

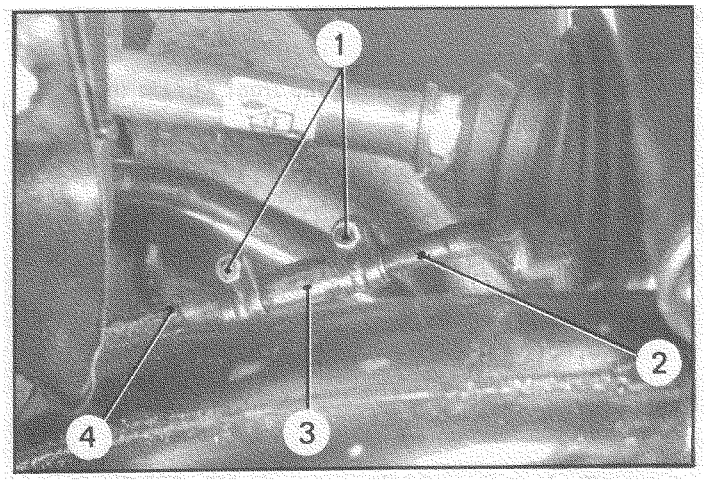


The wheels must toe-out. The difference between the front and the rear must be between 0 and 3 mm (0 and 0.11 in). To carry out this check, *the chassis heights at the front and at the rear must have been correctly adjusted.*

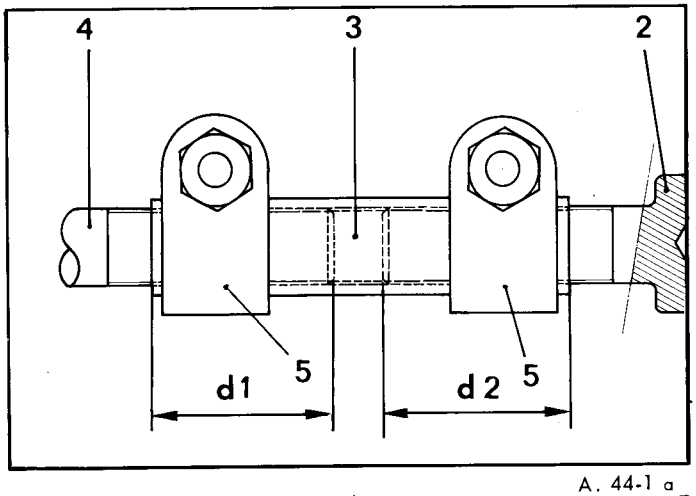
1. Place the wheels in straight ahead position (see chapter I, same operation).

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.

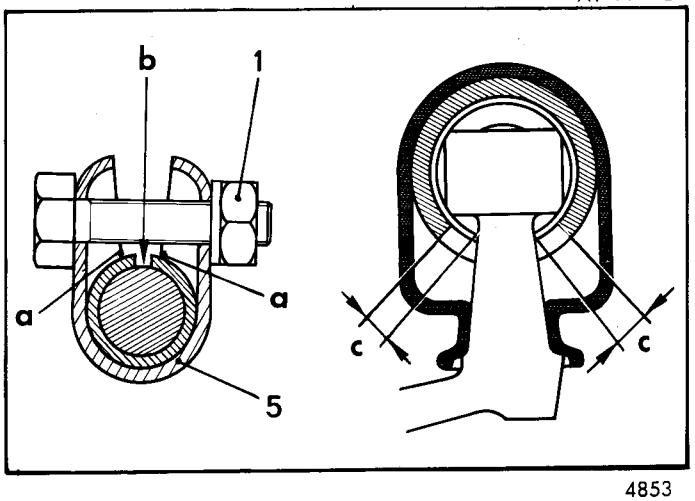
4855



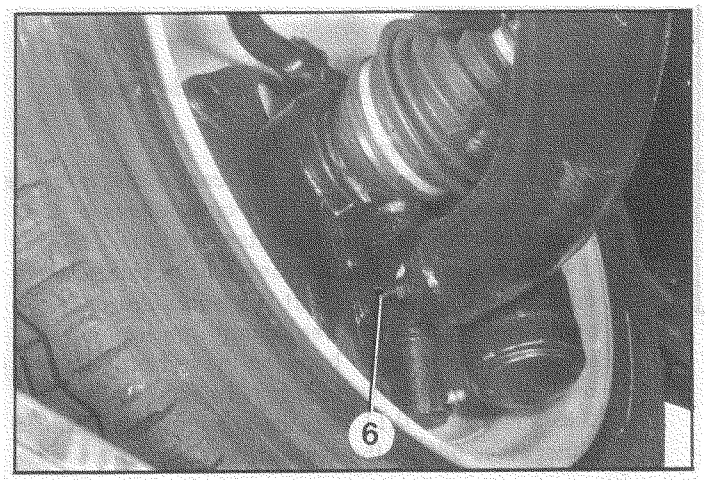
A. 44-1 a



A. 44-1 a



4853



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 sleeve (3) are equal (d1 = d2 ± 2 mm, 0 078 in).

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

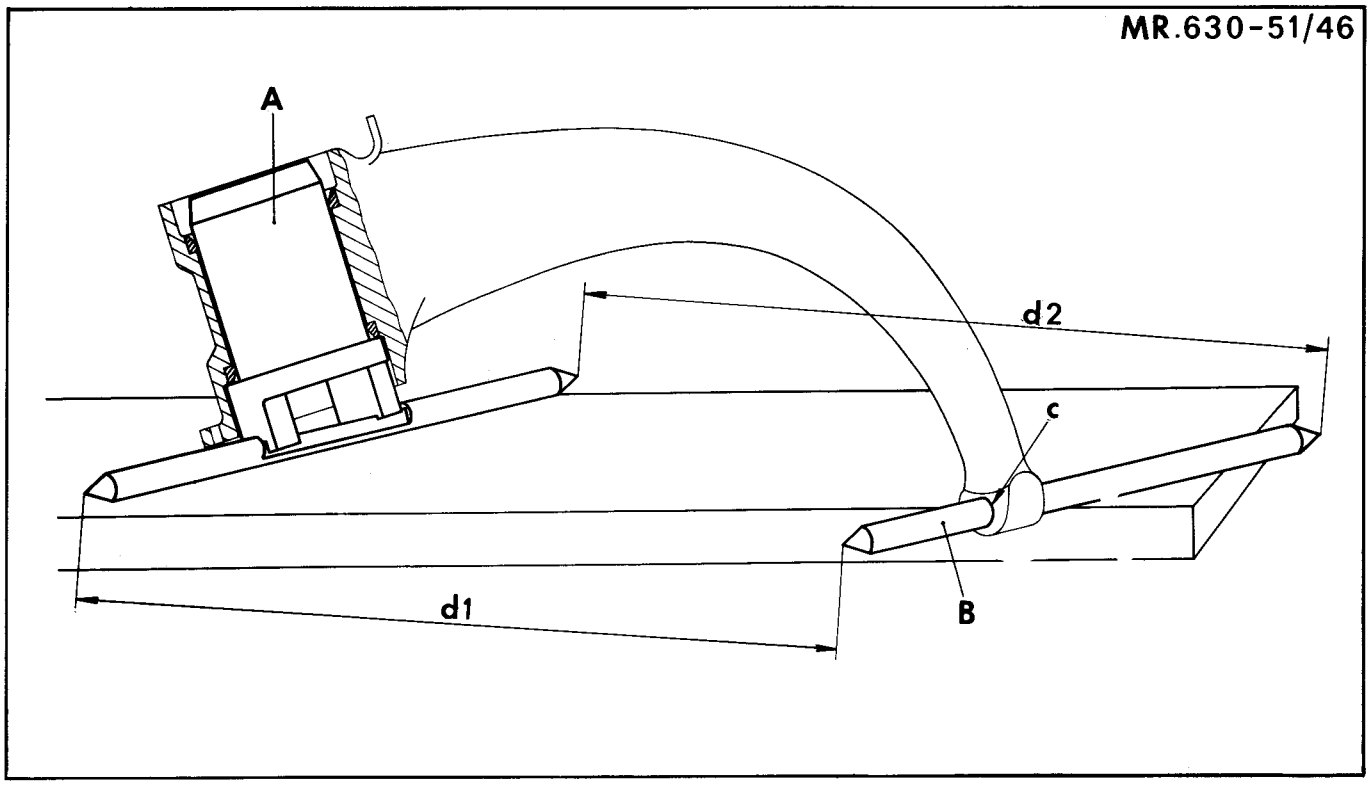
1. Put the vehicle on a flat and horizontal ground.

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) at least.
Otherwise, adjust the lock stop screw (6), located on the arm.

3. Check the steering lock of the other wheel.

IV. CHECKING A DISMANTLED FRONT SUSPENSION ARM.

A.41.5



Manual 816-1

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

2. Check the arm :

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

Insert peg B in the bore « c » of the swivel pin.

Insert mandrel A in the hub bore

Rotate mandrel A until both pegs *rest squarely on the surface plate.*

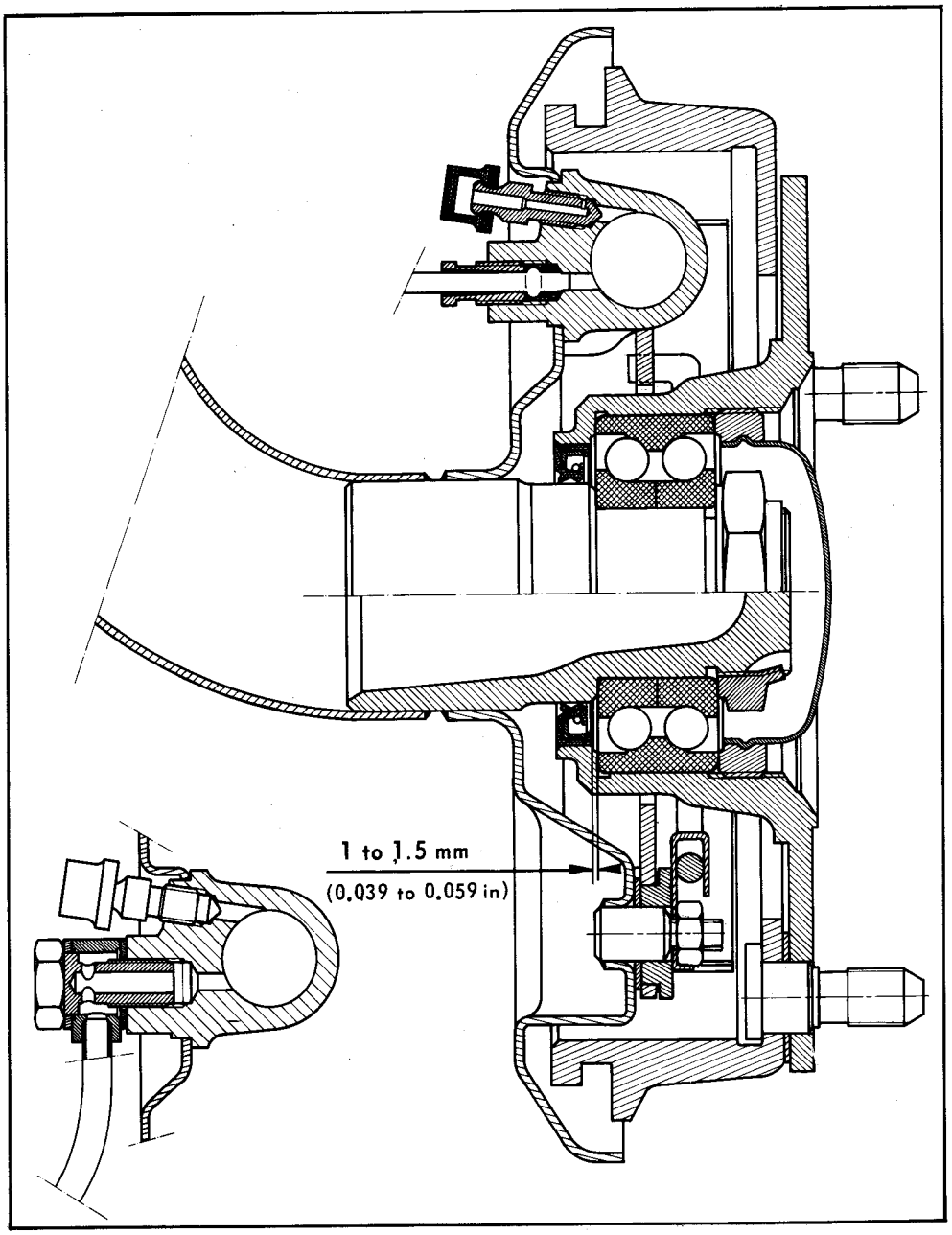
Measure the distance « d1 » between the points at one end and then the distance « d2 » at the other end.

These distances should be the same to within 10 mm (0.39 in). Otherwise replace the arm.

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

REAR HUB

A.45.50 a



Manual 816-1

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 mm)
- Camber (not adjustable) : ..... 0° to 0°30'

SPECIAL FEATURES

Adjustment :

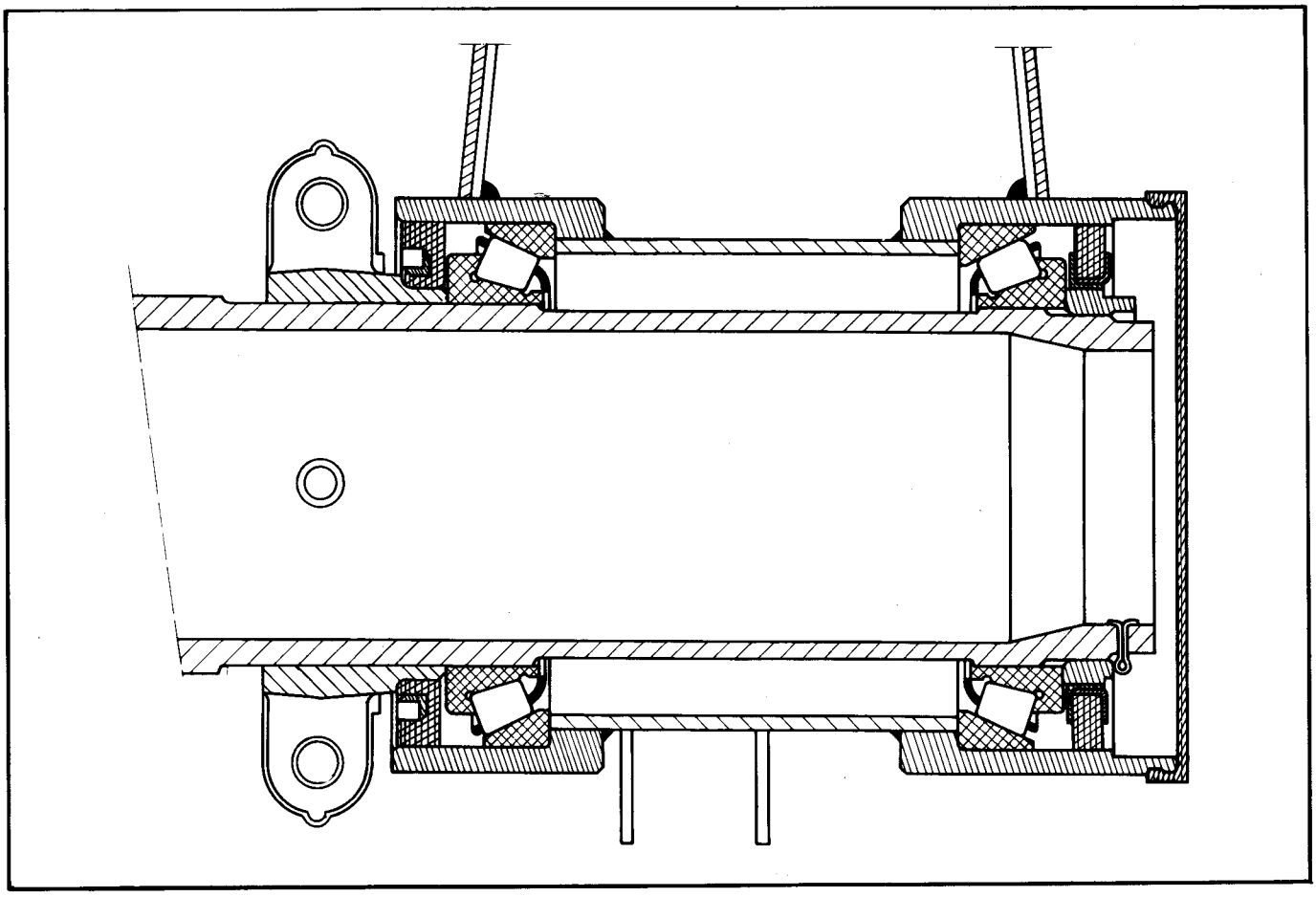
- Inset of hub sealing joint in relation to the bearing thrust collar : ..... $1^{+\,0.5}_{\ 0}$ mm ($.039^{+.019}_{\ 0}$ in)

Tightening torques :

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

ATTACHMENT OF ARMS TO CROSSMEMBER

A. 42-50



SPECIAL FEATURES

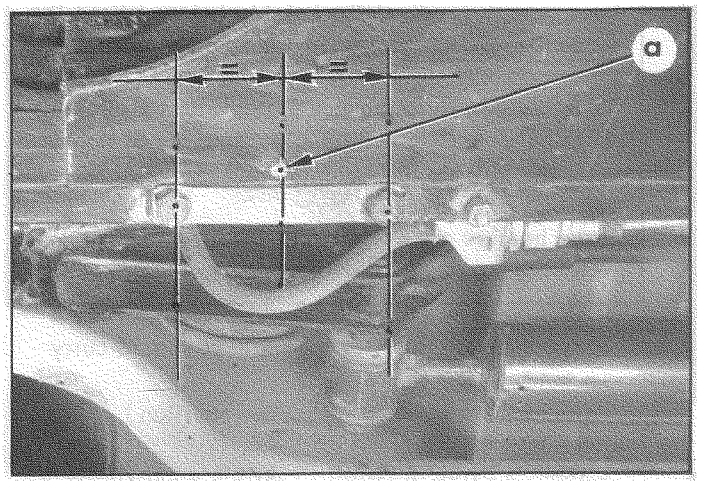
Tightening torques :

- 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)

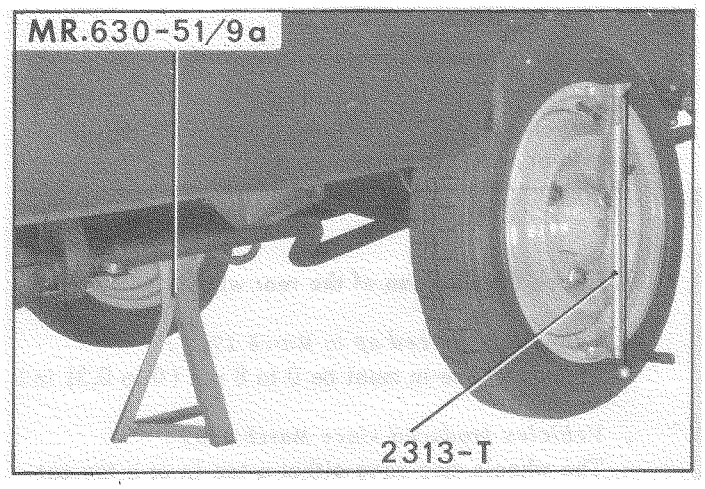
I. CHECKING THE REAR ARMS ON THE VEHICLE

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

4949



4938



Manual 816-1

1. Check the position of the rear wheels :

Vehicles produced up to March 1969 :
The wheel toe-in must be 0 to 8 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.

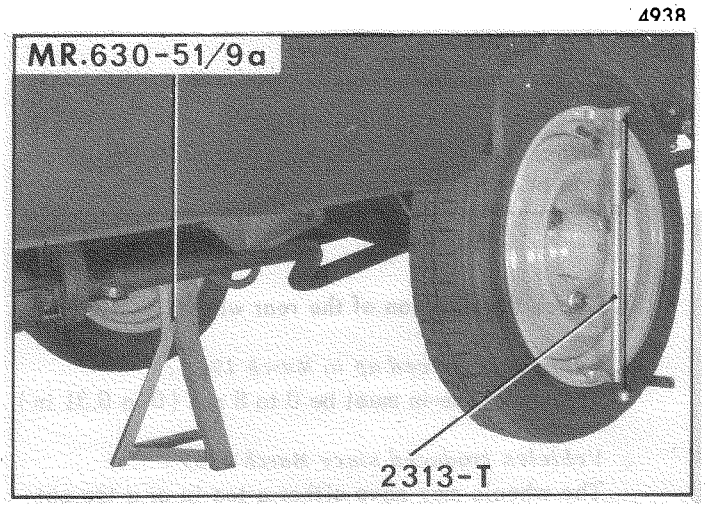
If the toe-in or toe-out is not within tolerance :
One arm or both arms are out of true. In this case :
- either check the position of the rear arms on the vehicle (see paragraphs 3 to 7 in this same operation)
- or remove the arm and check it on a surface plate (see chapter II, same operation).

If the toe-in or the toe-out is within tolerance :
It is necessary to check the camber.

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. MR. 630-51/9 a (height : 285 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 camber using rig 2313-T. *The wire should be in the zone « 3 » of the rig.*
Otherwise, remove the arm for inspection (see relevant operation).

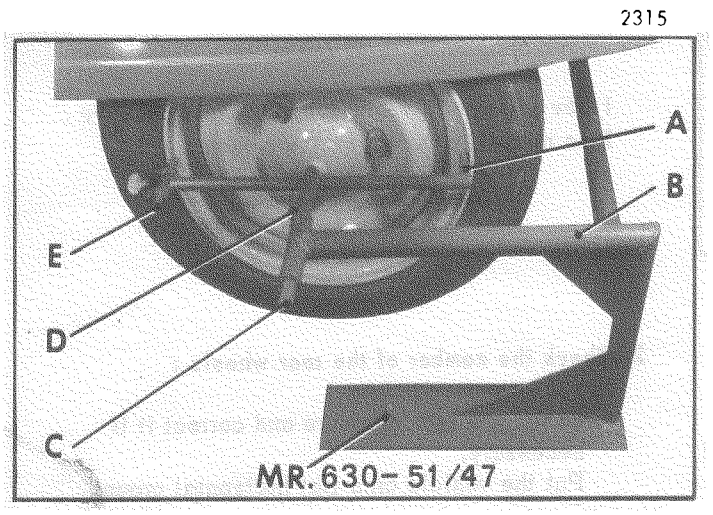
NOTE : A rig 2315-T can be converted into a rig 2313-T by fitting plates 2312-T. Follow the manufacturer's instructions.

Checking the position of rear arms.

NOTE : In case a tyre shows unsual 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 O1, for a toe-out,
- or P1, for a toe-in.

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

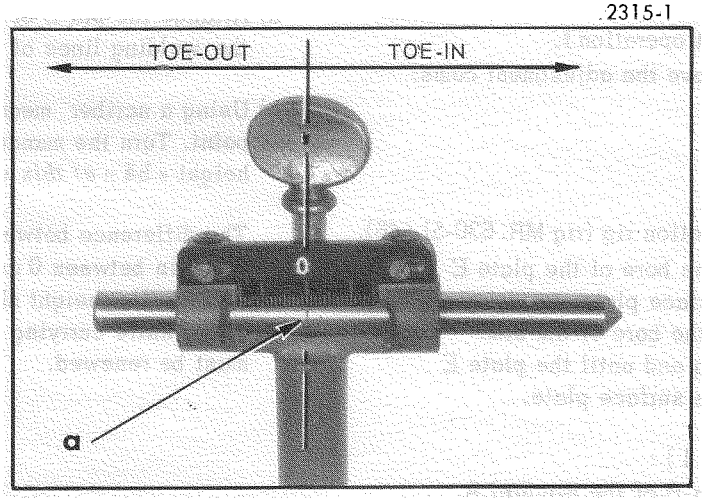
6. Repeat the operations described in paragraph 4. Note again the figures shown on the scales :
- either O2, for a toe-out,
- or P2, for a toe-in.

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 :

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

Manual 816-1

On vehicles produced *up to March 1969*, each wheel must have a *toe-in* lying between O and 4 mm (O and 0.15 in). On vehicles produced *since March 1969*, each wheel must have a *toe-out* or a *toe-in* lying between O and 2 mm (O 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 : 01 and 02 or O and P, taken in paragraph 7, *arise only from wheel run-out.*

The difference in values red 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 cams.

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.
Chock up the arm mounting end 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 1.2 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.

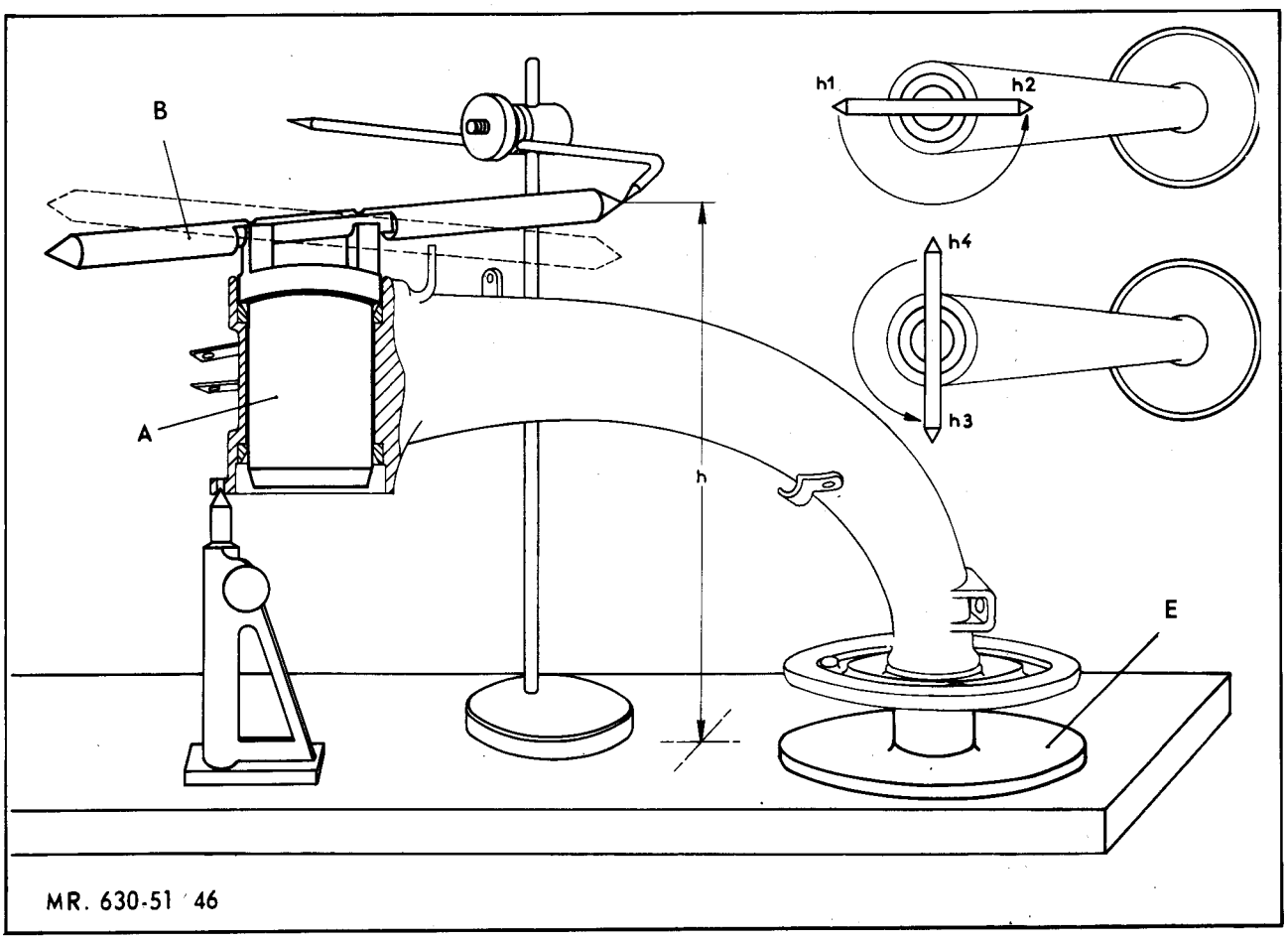
b) Using a scriber, measure height « h3 » at one point. Turn the mandrel half a turn and read the height « h4 » *at this same point.*

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



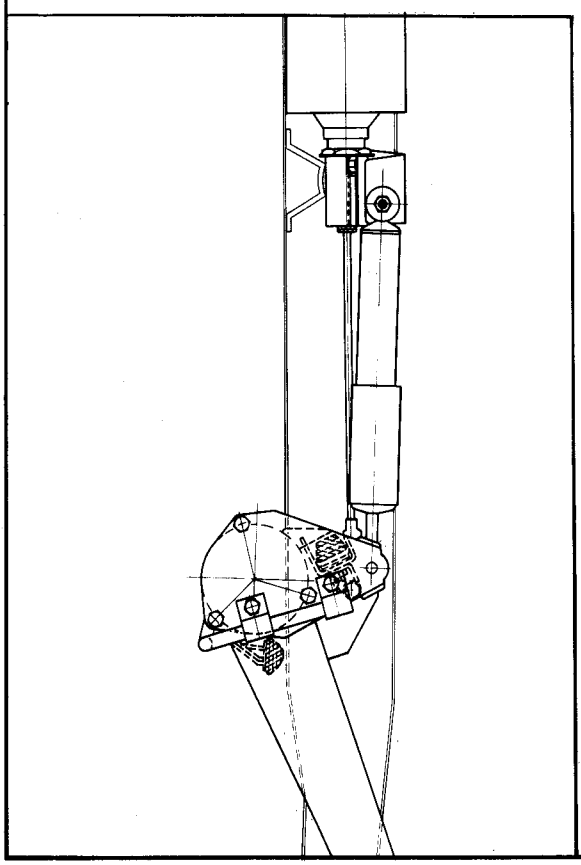
Supplement No. 1 to Manual 816-1 (CORR)

DIAGRAM OF THE SUSPENSION SYSTEM

A. 43-55

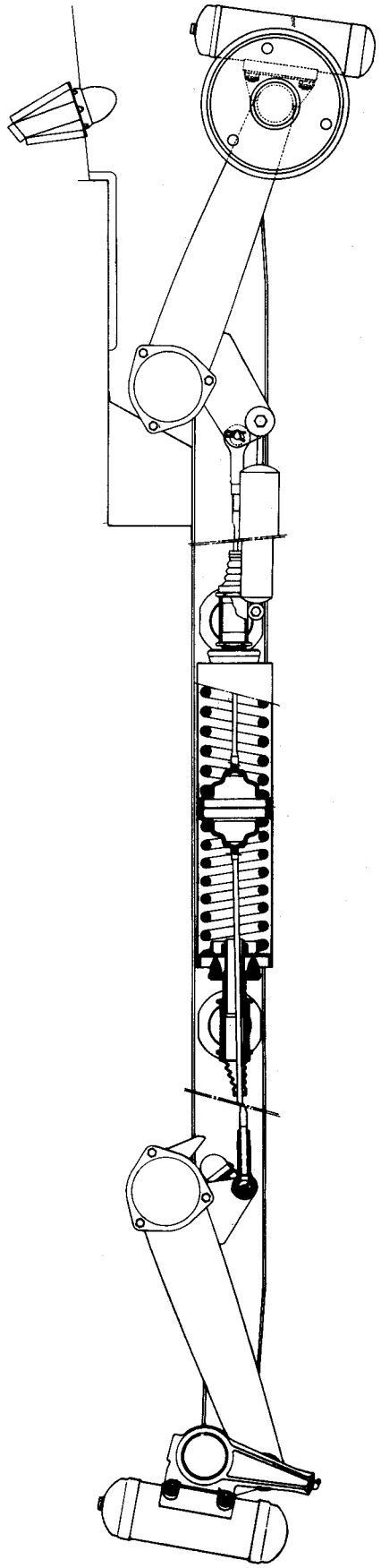
SUSPENSION SYSTEM ON : AM Véhicles ⟵ *September 1969*
Shock absorbers at the front and at the rear

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



A. 43-57

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



CHARACTERISTICS

Suspension : All A vehicles ⟶ *7/1976*
Interacting type (on each side of the vehicle, the suspension arms are connected through the suspension unit).
- AM 3 - AMF 3 - AMC 3 - AK : *7/1976* ⟶ *9/1978* } elimination of the interaction
- AY (series CD : *2/1978* ⟶
- AK (series AK : *7/1976* ⟶ *2/1978*

Shock absorbers :
- Hydraulic on all four wheels for all A vehicles *(9/1975* ⟶ *)*
- Hydraulic on rear wheels only for the following vehicles AZ - AY - AZU and AY - CA (MEHARI) ⟶ *9/1975.*

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

Inertia dampers :
- On all four wheels for all vehicles produced *up to November 1970.*
- On the front wheels for 2 CV 4, DYANE 4 and AZU vans produced *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 (MEHARI) vehicles and for AK vans produced *between September 1971 and September 1975.*
- On the front wheels for AM vehicles produced *between September 1971 and November 1973.*

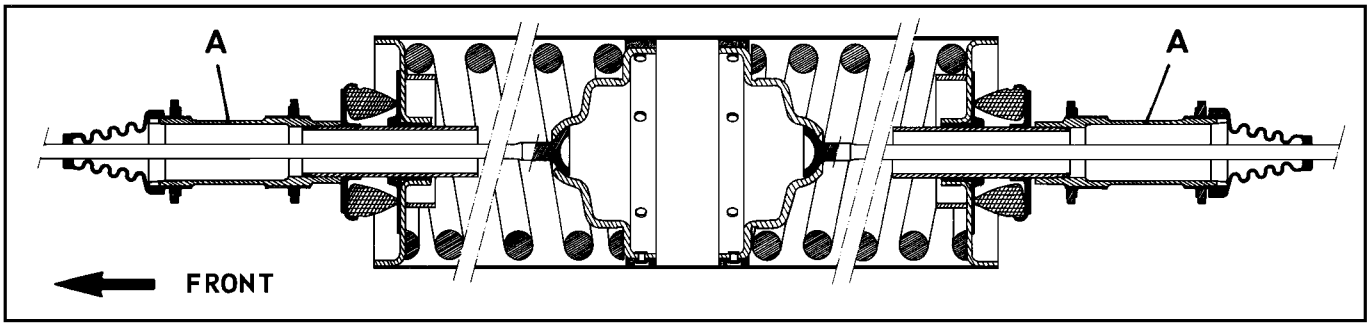
Since September 1975, all A vehicles have been fitted with hydraulic dampers on all four wheels. This has entailed the elimination of inertia dampers.

Anti-roll bars :
- Anti-roll bars have been fitted at the front on the following vehicles :
  AM *9/1969* ⟶ *9/1978*
  AMB *9/1969* ⟶ *9/1978*

Heights :
CAUTION : The vehicle heights are measured on both L.H. and R.H. sides, at the front and at the rear, between the ground and the vehicle platform, at a point equidistant from the two screws holding the crossmember and near the stop plate.

Type of vehicles	Tyres	Front heights in mm (in)	Rear heights in mm (in)
♦ AZ ⟶ *7/1969*	125 - 380 X	195 ± 2.5 (7.67 ± 0.09)	280 ± 2.5 (11.02 ± 0.09)
	135 - 380 X	208 ± 2.5 (8.18 ± 0.09)	291 ± 2.5 (11.45 ± 0.09)
AZ (2 CV 4 and 2 CV 6)	125 - 380 X	195 ± 2.5 (7.67 ± 0.09)	280 ± 2.5 (11.02 ± 0.09)
AY (Dyane)	125 - 380 X	195 ± 2.5 (7.67 ± 0.09)	280 ± 2.5 (11.02 ± 0.09)
AY - CA (Méhari)	135 - 380 X 135 - 380 XM + S	236 ± 5 (9.29 ± 0.19)	346 ± 5 (13.62 ± 0.19)
AZU	125 - 380 X	205 ± 2.5 (8.07 ± 0.09)	335 ± 2.5 (13.18 ± 0.09)
AK	135 - 380 X	212 ± 2.5 (8.34 ± 0.09)	347 ± 2.5 (13.66 ± 0.09)
♦ AY (series CD)	135 SR 15 ZX	212 ± 5 (7.48 ± 0.19)	317 ± 5 (12.48 ± 0.19)
AM	125 - 380 X	190 ± 2.5 (7.48 ± 0.09)	280 ± 2.5 (11.02 ± 0.09)
AMB	135 - 380 X	195 ± 2.5 (7.67 ± 0.09)	290 ± 2.5 (11.41 ± 0.09)

A.43-50



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 → 3/1963* AZU *6/1955 → 3/1963*	185 (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 AZU } *3/1963 → 9/1965*	185 (7.28) 14.8 (0.58)	170 (6.69) 15.25 (0.6)	600 (23.62)	644 (25.35)	173 (6.81)	173 (6.81)
AZ *9/1965 → 2/1970* AZU *9/1965 → 9/1972* AZ (2 CV 4) AZ (2 CV 6) } *2/1970 → 10/1971*	18.5 (7.28) 14.8 (0.58)	170 (6.69) 15.25 (0.6)	600 (23.62)	642 (25.27)	173 (6.81)	182 (7.16)
AZ (2 CV 4) 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)	182 (7.16)
AZU *9/1972 → 2/1978*	193 (7.59) 15.25 (0.6)	170 (6.69) 15.25 (0.6)	593 (23.34)	611 (24.05)	173 (6 81)	182 (7.16)
AZ (2 CV 4) 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)	182 (7.16)

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

AYA *8/1967 → 3/1968* AYA 2 *3/1968 → 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)	182 (7.16)
AYA 2 *10/1968 → 9/1975* AYB *12/1968 → 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)	182 (7.16)
AYA AYB } *9/1972 →*	193 (7.59) 15.25 (0.6)	170 (6.69) 15.25 (0.6)	593 (23.34)	632 (22.88)	173 (6.81)	182 (7.16)

Suspension units fitted on AK vehicles :

AK All Types *9/1962 → 5/1968* ..... *5/1968 → 7/1976*	225 (8.85) 192 (7.55) 17.15 (0.67)	238 (9.37) 17.95 (0.7)	642 (25.27)	618 600 (23.62)	197 (7.75)	197 (7.75)

Suspension units fitted on AM vehicles :

AM *→ 3/1969*	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 *3/1969 → 6/1972*	160 (6.29) 18.2 (0.71)	222 (8.7) 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)

Supplement No. 1 to Manual 816-1 (CORR)

SPECIAL FEATURES

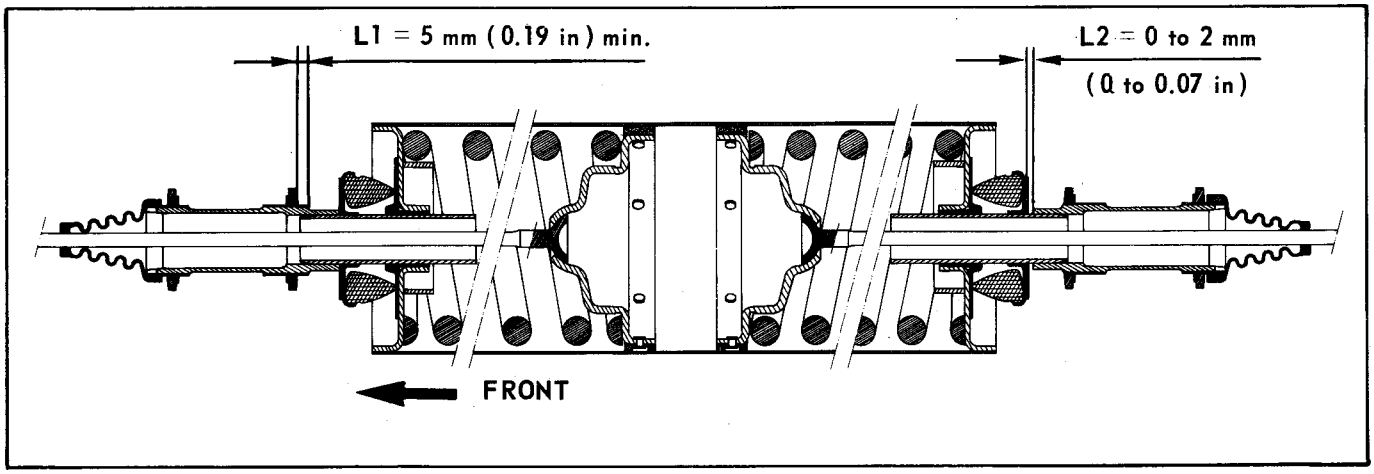
Shock absorbers :

- Fitting : **BOGE** shock absorbers : shock absorber body towards suspension unit, ball imprint directed upwards and drain holes downwards.
  ALLINQUANT or **LIPMESA** : shock absorber body towards suspension arm, mark directed upwards.
- Length (between mounting points) of a compressed rear shock absorber :
  - *AZ - AY - AY-CA (MEHARI) - AZU vehicles :* ..... 450 mm (17.71 in)
  - *AK vehicles :* ..... 349 mm (13.74 in)
  - *AM 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.

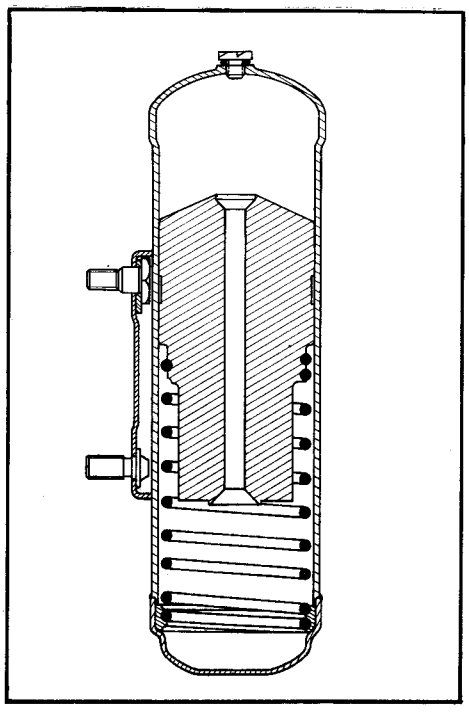
A. 43-50



- 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 : ..... L 1 = 5 mm (0.19 in) min.
- Position of the suspension unit rear end-piece : Adjust it so as to obtain a clearance : L 2 = 0 to 2 mm (0 to 0.07 in) between the end-piece and the anti-pitch stop.
- Clearance between the bump stop and the suspension arm : ..... 3 to 6 mm (0.11 to 0.23 in)

Anti-roll bars : 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. 43-53

Friction damper :

- Calibration : ..... 2.3 to 2.7 da Nm (16.6 to 19.49 ftlbs)

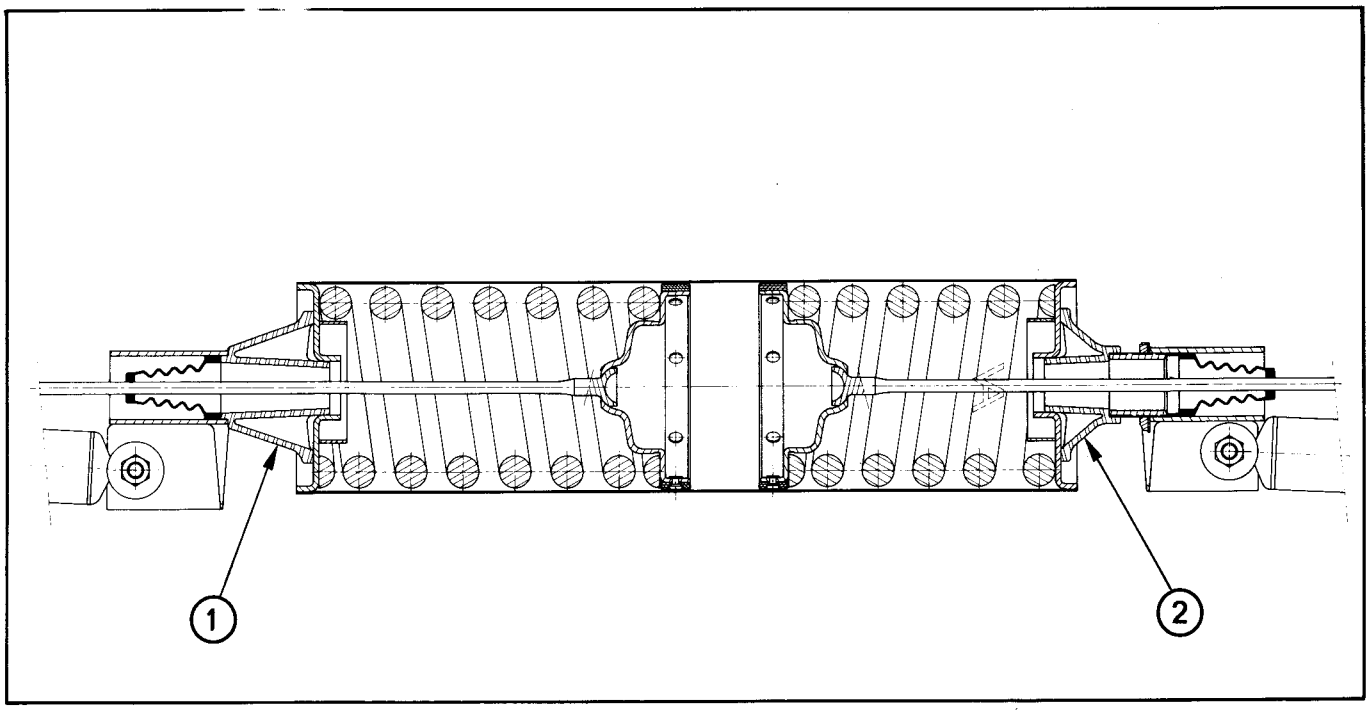
Tightening torques :

- 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 155.23 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) FRONT	REAR	Length of tie-rods in mm (in) FRONT	REAR
Suspension units fitted on AM vehicle				
AM 3 *7/1976 ⟶ 9/1978*	172 (6.77) 18 (0.7)	210.45 (8.86) 17.95 (0.7)	590 (23.22)	608 (23.93)
AMF 3 AMC 3 *7/1976 ⟶ 9/1978*	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 *7/1976 ⟶ 2/1978*	168 (6.61) 17.15 (0.67)	260 (10.23) 17.15 (0.67)	575 (22.63)	608 (23.93)
Suspension units fitted on AY - CD (ACADIANE) vehicle				
AY (series CD) *2/1978 ⟶*	168 (6.61) 17.15 (0.67)	260 (10.23) 17.15 (0.67)	520 (20.47)	792 (31.18)

A. 43-56

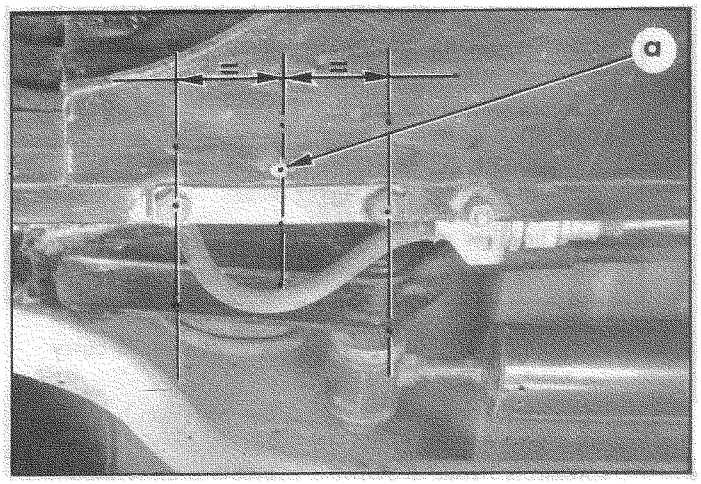


The suspension unit is now fixed : two spacers (1) and (2) have been added between the suspension unit itself and the sidemember supports.

Supplement No. 1 to Manual 816-1 (CORR.)

I. CHECKING THE HEIGHTS.

4949

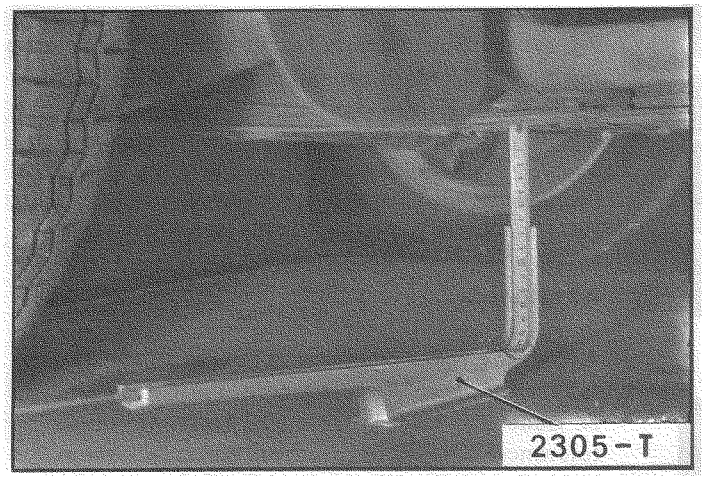


The vehicle heights must be measured at the front and at the rear, between the ground and the underside of the platform, at a point « a », equidistant from the two screws holding the crossmember, and near the stop plate.

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 gallon) of petrol in the tank.

FRONT

12124



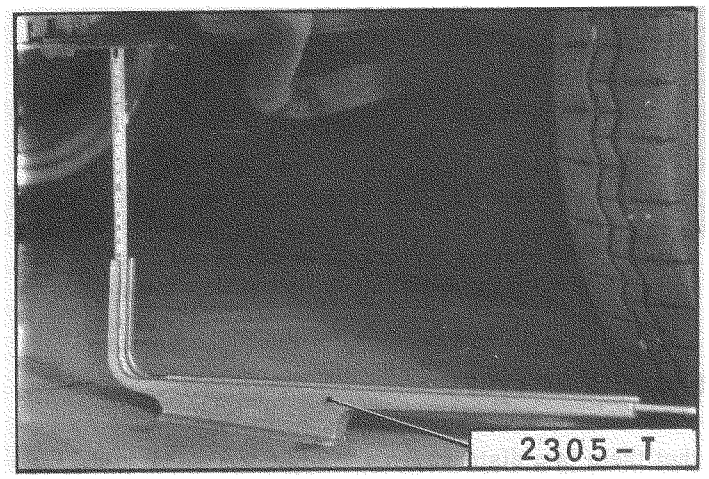
2. Check the tyre pressures and correct them if necessary (see relevant Technical Bulletins).

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.

REAR

12123



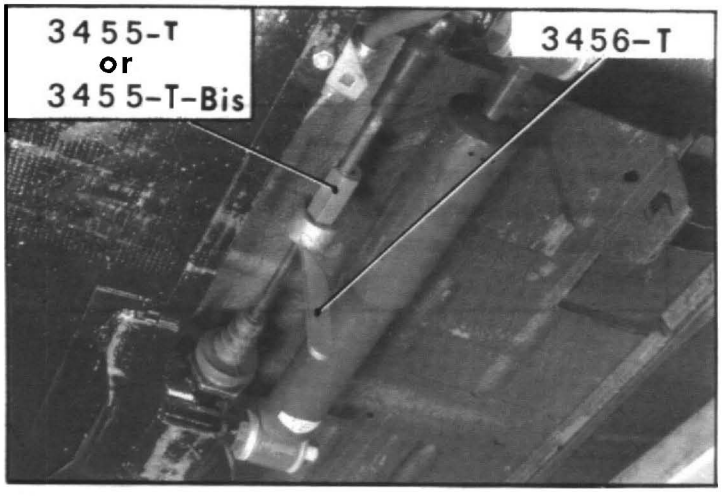
4. Measure the heights :

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

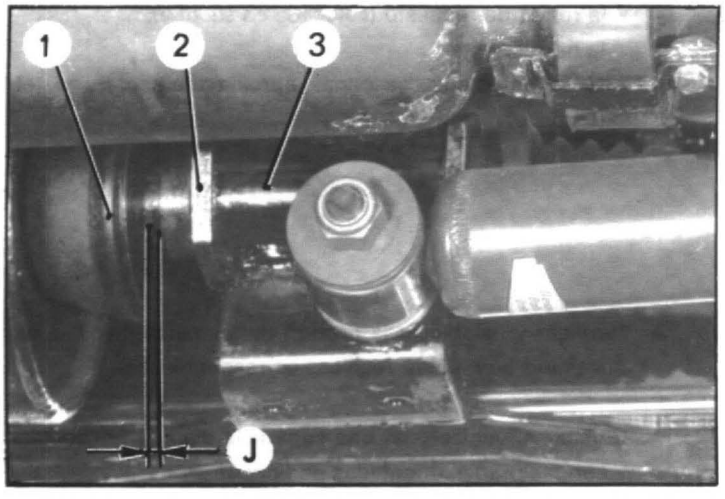
4939



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.

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.

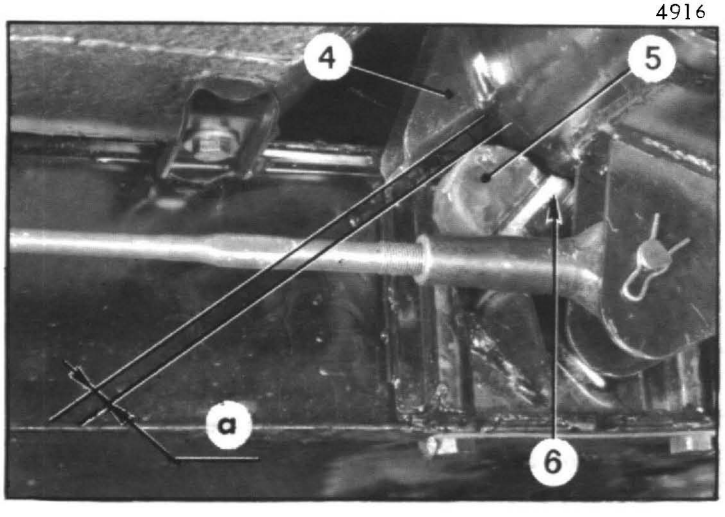
4857



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-T bis (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.

4916



4. **Adjust the rear heights** by screwing or unscrewing the rear tie-rods. If substancial 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.

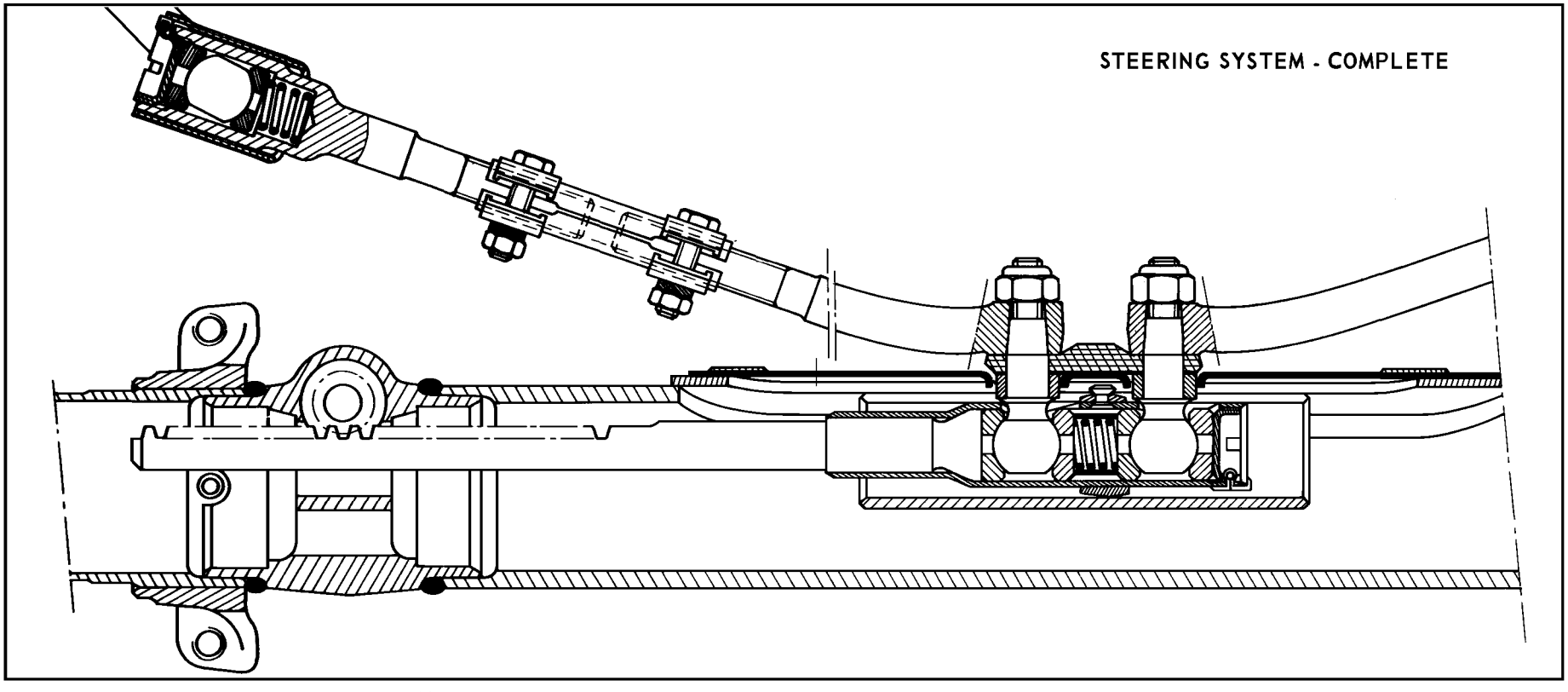
5. Check the front and rear heights after each adjustment.

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.

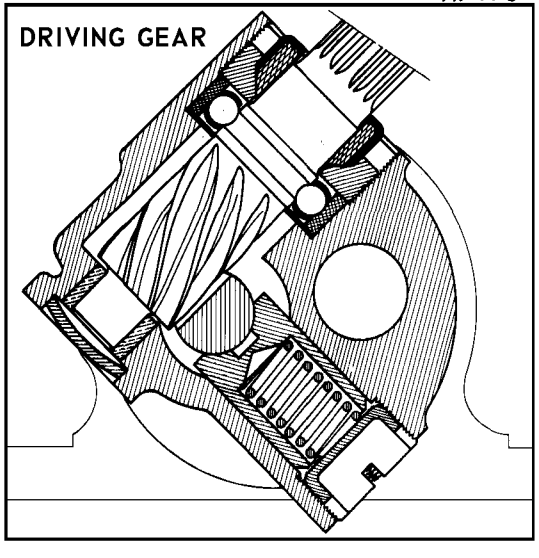
III. ADJUSTING THE FRONT BUMP STOPS.

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.

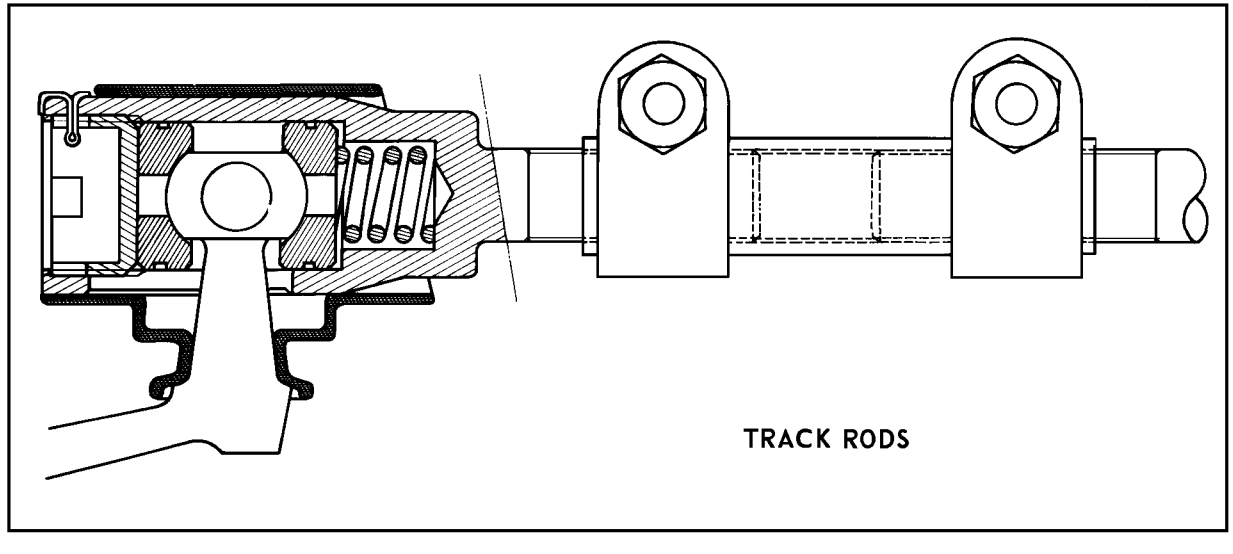
A. 41-9



A. 44-5



A. 44-1



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 : .....
  - All AM vehicles : .....

  } 1/17

Adjustments :

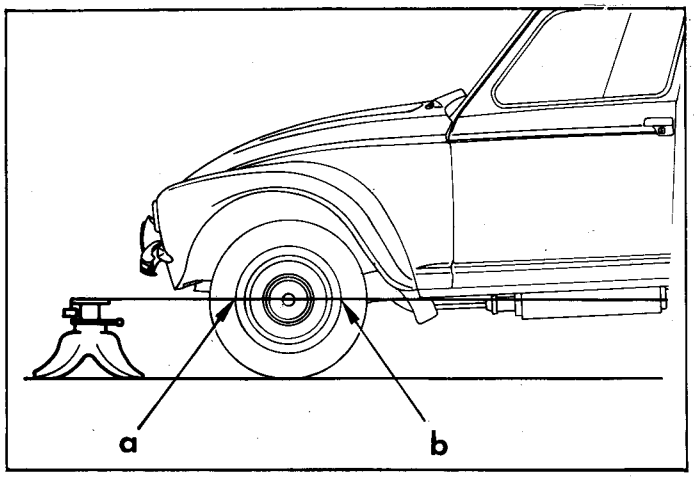
- Clearance at rack plunger (at hardest point) : ..... 0.1 to 0.25 mm (.0039 to .0098 in)
- Clearance at the level of the steering ball pins (lever side and rack side : screw the nut fully in, then slacken it by 1/6 of a turn and lock it with a split pin).

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.

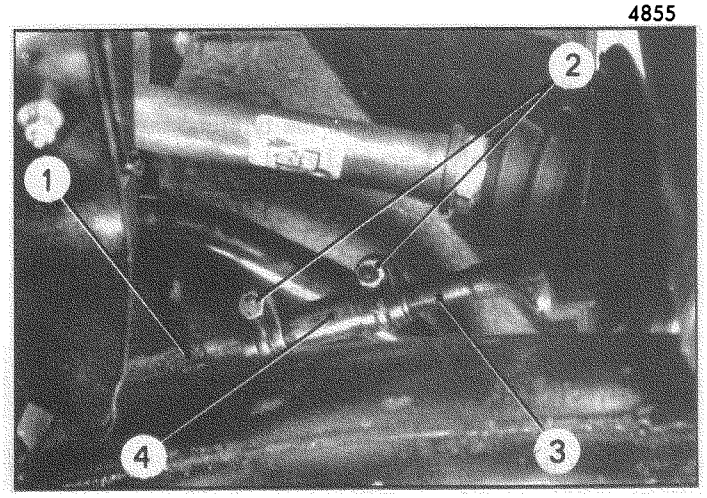
A. 41-8



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

1. Place the vehicle in straight ahead position.

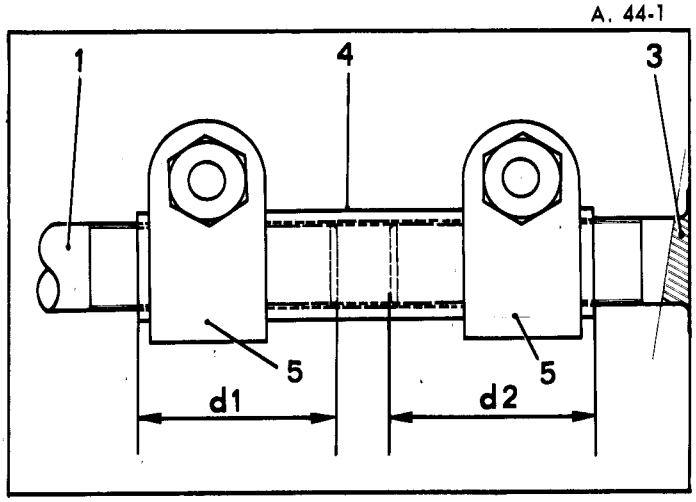
4855



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

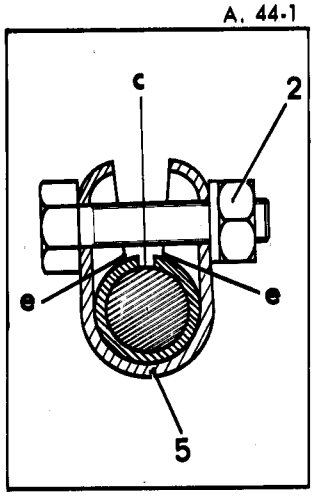


3. Adjusting the front wheel toe-out :

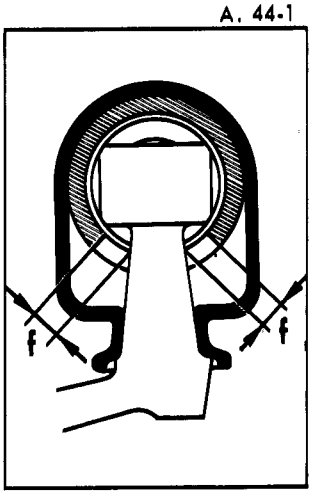
Without removing the wings, slacken the nuts (2) on the bolts holding the right-hand and left-hand sleeves (4). Rotate each sleeve by the same amount to obtain the correct setting.

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

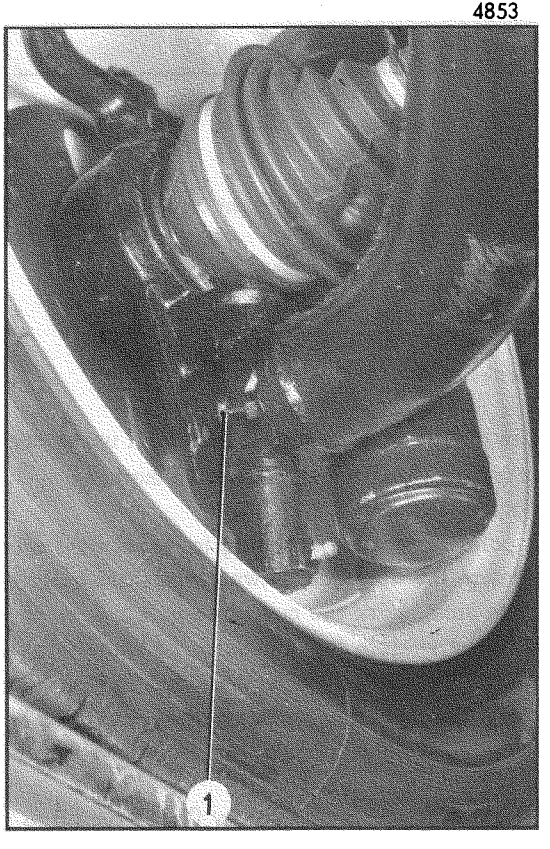


Make sure that the amounts by which the track rod (1) and the end-piece (3) are screwed into sleeve (4) are equal (d1 = d2 ± 2 mm, 0.07 in).

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).

Manual a16-1

II. ADJUSTING THE STEERING ANGLE.



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.

A. 45-62 b

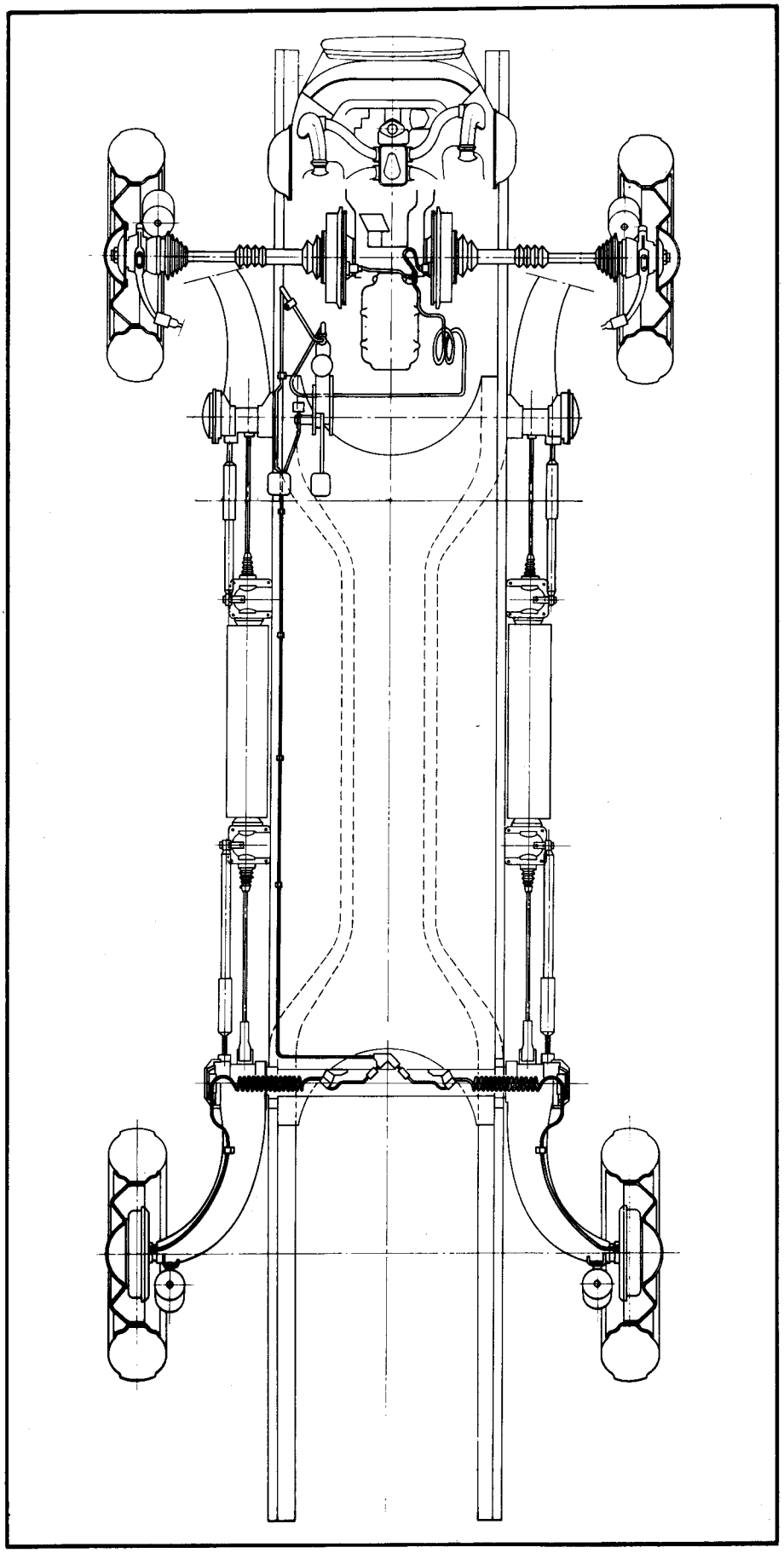


DIAGRAM OF THE BRAKING SYSTEM

Supplement No. 1 to Manual 816-1 (CORR₁)

CHARACTERISTICS

Master cylinder - Wheel cylinders :

Master cylinder and wheel cylinders fitted to **AZ** *and* **AZU** *vehicles :*

Type of vehicle	Diameter of master cylinder in mm (in)	Diameter of wheel cylinders in mm (in)	
		Front	Rear
AZ ⟶ *2/1970*	22 (0.86)	25.5 (1.00)	19 (0.74)
AZ (2 CV 4) AZ (2 CV 6) *7/1970 ⟶ 6/1973*	20.6 (0.81)	28.57 (1.12)	17.5 (0.68)
AZ (2 CV 4) AZ (2 CV 6) *7/1973 ⟶ 10/1976*	19 (0.74)	28.57 (1.12)	17.5 (0.68)
AZU ⟶ *1/1972*	22 (0.86)	28.57 (1.12)	19 (0.74)
AZU *2/1972 ⟶ 6/1973*	20.6 (0.81)	28.57 (1.12)	17.5 (0.68)
AZU *7/1973 ⟶ 10/1976*	19 (0.74)	28.57 (1.12)	17.5 (0.68)
AZ and AZU *10/1976 ⟶ 9/1978* *	20.6 (0.81)	28.57 (1.12)	17.5 (0.68)

Master cylinder and wheel cylinders fitted to **DYANE** *vehicles :*

AYA *8/1967 ⟶ 3/1968* AYA 3 *1/1968 ⟶ 10/1968* AYA 2 *3/1968 ⟶ 2/1970*	20.6 (0.81)	28.57 (1.12)	19 (0.74)
AYA 2 *2/1970 ⟶ 6/1973* AYB *10/1968 ⟶ 6/1973* MEHARI *9/1968 ⟶ 6/1973*	20.6 (0,81)	28.57 (1.12)	17.5 (0.68)
AYA 2 AY-CB MEHARI *7/1973 ⟶ 10/1976*	19 (0.81)	28.57 (1.12)	17.5 (0.68)
AYA 2 AY-CB MEHARI *10/1976 ⟶ 7/1977* *	20.6 (0.81)	28.57 (1.12)	17.5 (0.68)

Master cylinder and wheel cylinders fitted to **AK** *vehicles :*

AK ⟶ *5/1968*	22 (0.86)	28.57 (1.12)	19 (0.74)
AK *5/1968 ⟶ 6/1973*	20.6 (0.81)	28.57 (1.12)	19 (0.74)
AK *7/1973 ⟶ 10/1976* AK *10/1976 ⟶ 2/1978* *	19 (0.74) 20.6 (0.81)	28.57 (1.12) 28.57 (1.12)	17.5 (0.68) 17.5 (0.68)

Master cylinder and wheel cylinders fitted to **AM** *vehicles :*

AM ⟶ *9/1969*	20.6 (0.81)	28.57 (1.12)	17.5 (0.68)
AMB ⟶ *9/1969*	20.6 (0.81)	28.57 (1.12)	19 (0.74)

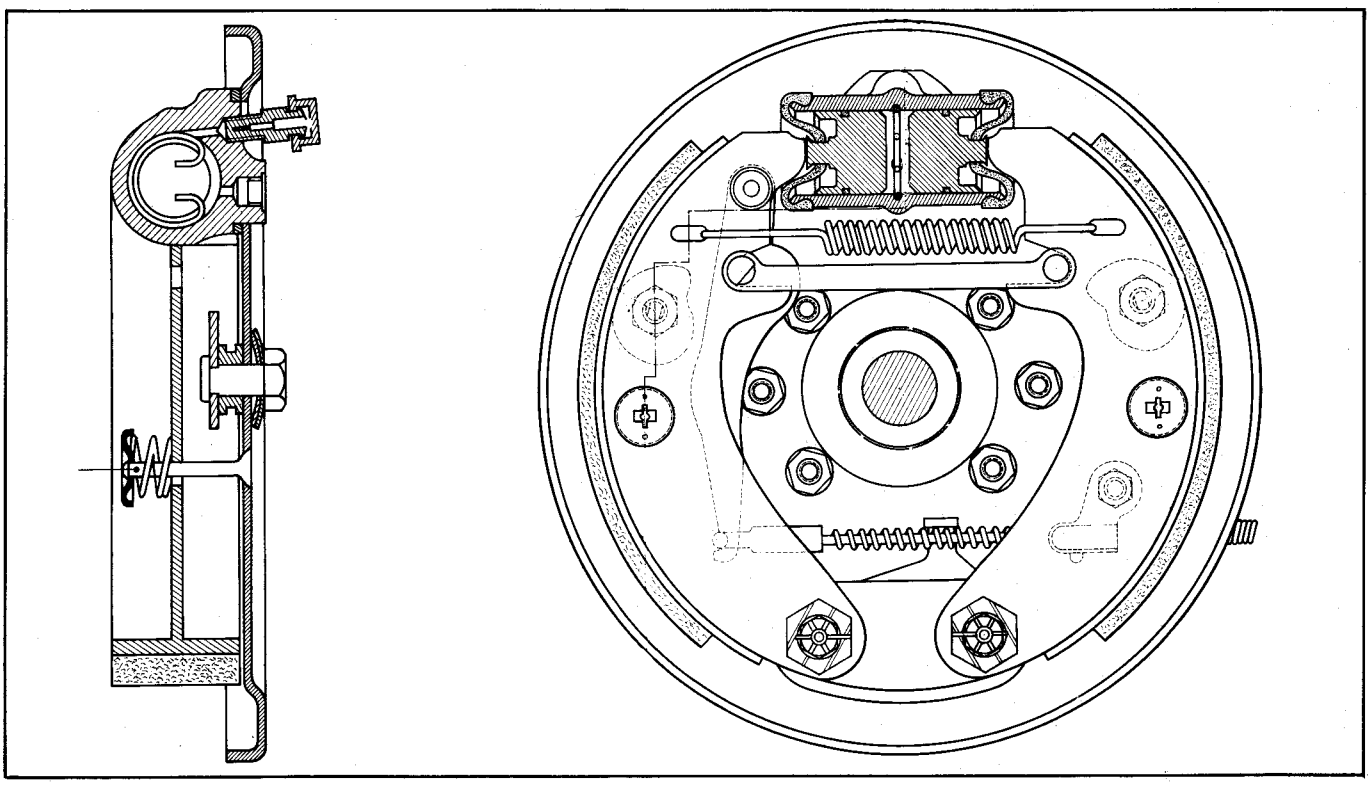
Master cylinder, calliper piston and wheel cylinders fitted on **AM, AY and AZ vehicles with disc brakes at the front :** *(LHM green fluid) :*

Type of vehicle	Diameter of master cylinder in mm (in)	Dia. of front calliper piston in mm (in)	Dia. of rear wheel cylinder in mm (in)
All AM Saloons *9/1969 ⟶ 10/1976* *10/1976 ⟶ 9/1978* *	17.5 (0.68)	42 (1.65)	16 (0.62)
All 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) AY CA (MEHARI) *7/1977 ⟶ ** AY CD (ACADIANE) *2/1978 ⟶ 10/1979* * AY CD (ACADIANE) with brake limiter *10/1979 ⟶ **	20.6 (0.81)	42 (1.65)	17.5 (0.68) 19 (0.74)
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



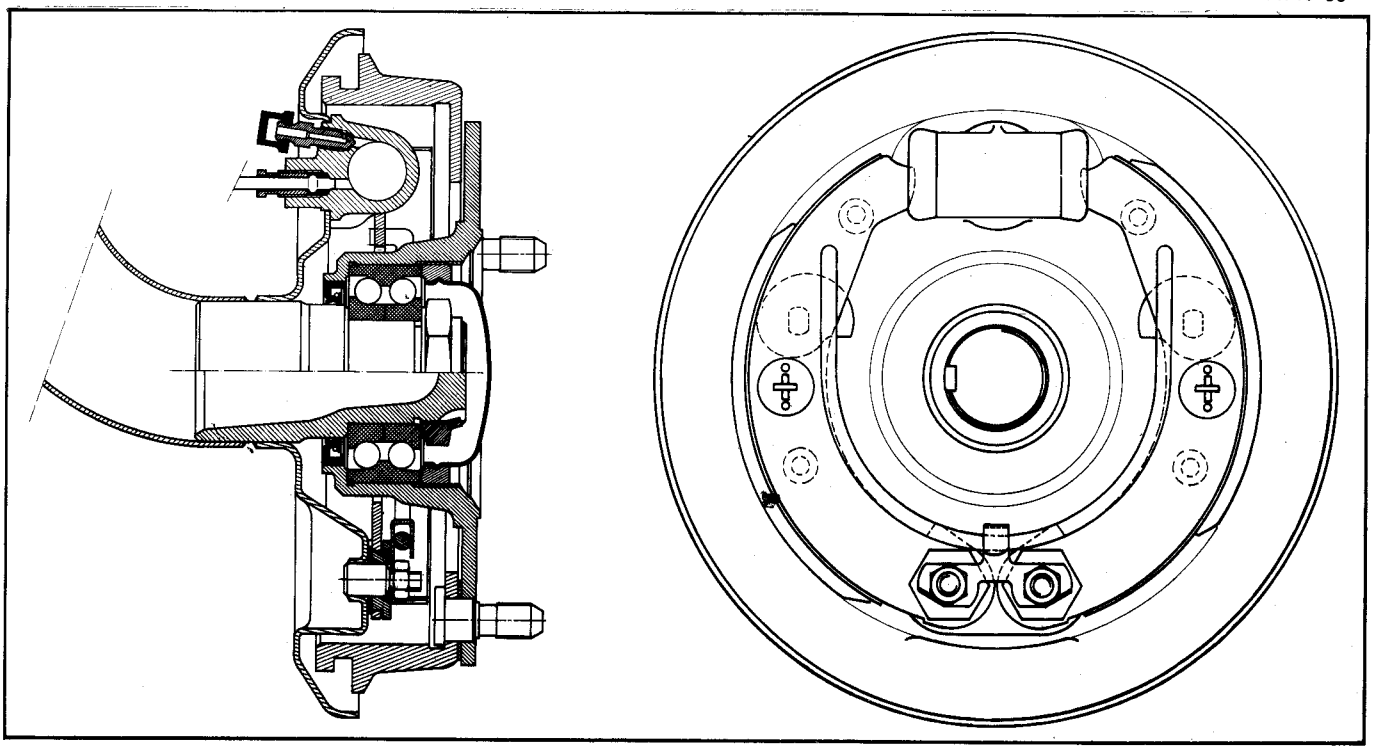
Drums :

Type of vehicle	Drum diameter in mm (in) Front	Drum diameter in mm (in) Rear	Braking surface in mm (in) Front	Braking surface in mm (in) Rear
AZ - 2 CV 4 - 2 CV 6 - AZU - AYA - AYA 2 - AYA 3	200 (7.87)	180 (7.08)	195.5 (30.3)	193.2 (29.92)
AK - AYB - MEHARI - AM - AM 2 - AM 3	220 (8.66)	180 (7.08)	354.6 (54.9)	193.2 (29.92)
◆ ACADIANE		180 (7.08)		193.2 (29.92)

- Maximum grinding of drums : . . . . . 2 mm (0.07 in)
- Maximum out of round : . . . . . 0.10 mm (.003 in)
- Thickness of linings : . . . . . 4.8 to 5.3 mm (0.18 to 0.2 in)

REAR BRAKES

A.45-53



Supplement No. 1 to Manual 816-1 (CORR)

Tightening torques :

- Nuts securing the brake backplates : ..... 3.8 to 4.2 da Nm (27.43 to 30.32 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 288.8 ft.lbs)
- Cap nut for rear hub bearing (face and threads greased) : ..... 35 to 40 da Nm (252.7 to 288.8 ft.lbs)
- Screwed unions on brake feed pipes : ..... 0.6 to 0.8 da Nm (4.33 to 5.77 ft.lbs)

PEDAL GEARS

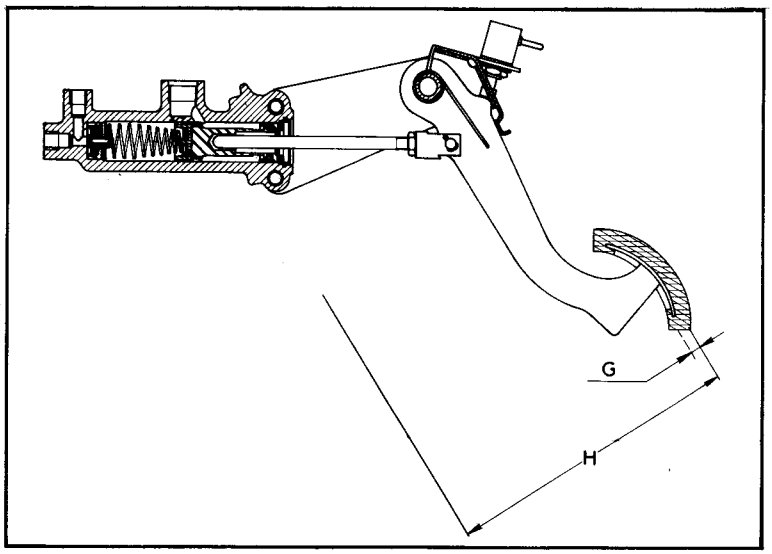
Adjustments :

- Safety clearance at master cylinder : ..... **J = 0.5 to 1 mm** (.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 fitted on : AZ - AY - MEHARI - AK vehicles ⟶ *6/1973,* and on AM vehicles ⟶ *9/1969.*

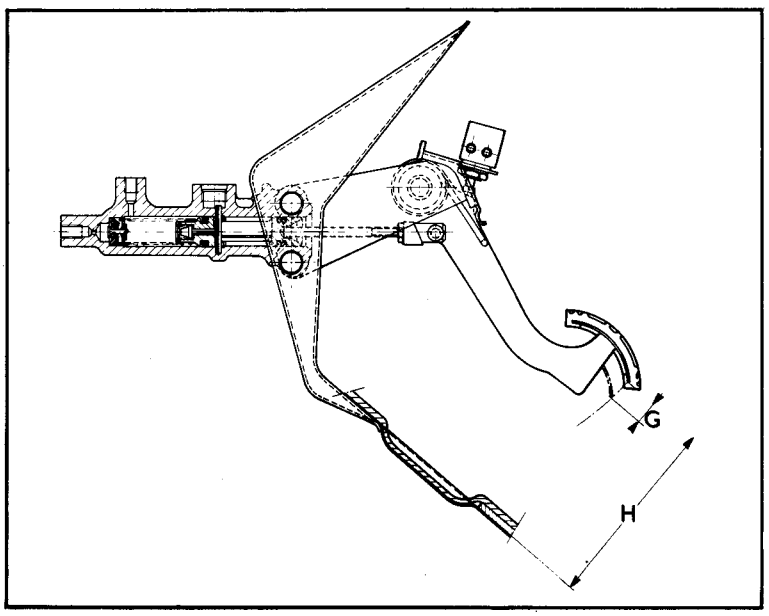
A.45-8 a



Pedal height : H = 130 ± 5 mm (5.11 ± 0.19 in) (measured between the upper part of the pedal pad and the floor « without carpet »).

♦ - Pedal gear fitted on : AZ - AY - MEHARI - AZU - AK *7/1973* ⟶ *10/1976.*

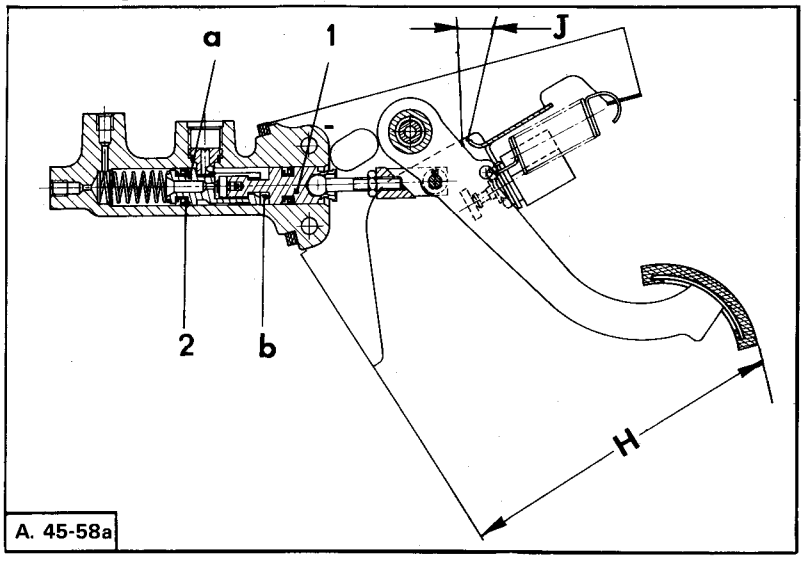
A.45-73



Pedal height : H = 130 ± 5 mm (5.11 ± 0.19 in) (measured between the upper part of the pedal pad and the floor « without carpet »).

PEDAL GEARS

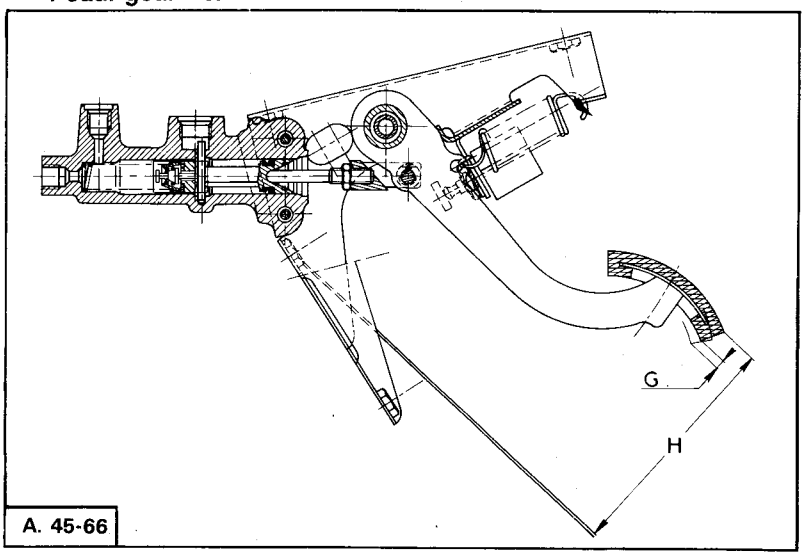
Pedal gear fitted on AM vehicles with disc brakes : *9/1969 ⟶ 10/1971.*



Provided that :
- piŝton 2 is resting on « a »,
- piston 1 is resting on « b »,
- and J = 2 mm (0.078 in),

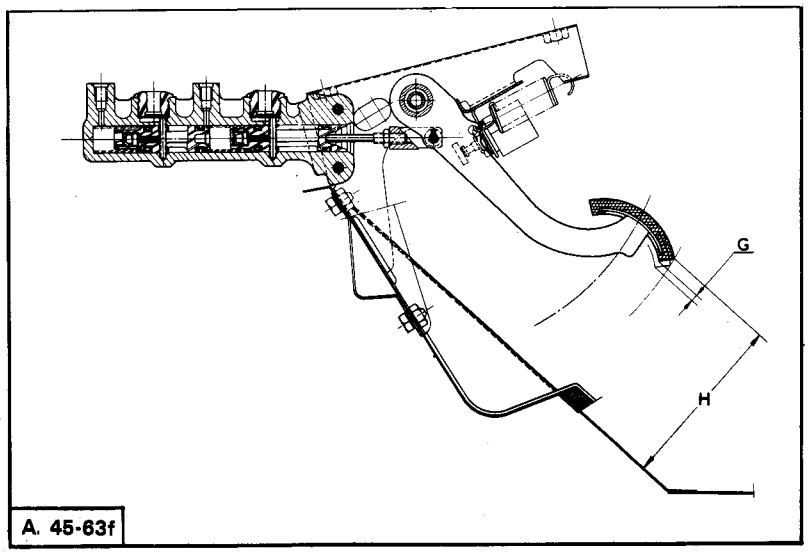
the height of the pedal, measured between the upper corner of the pad and the floor « without carpet », must be :
H = 125 ± 2.5 mm (4.92 ± 0.09 in)

Pedal gear fitted on AM vehicles with disc brakes : *11/1971 ⟶ 10/1976*



The height of the pedal, measured between the upper corner of the pad and the floor « without carpet » must be :
H = 135 ± 2.5 mm (5.31 ± 0.09 in)

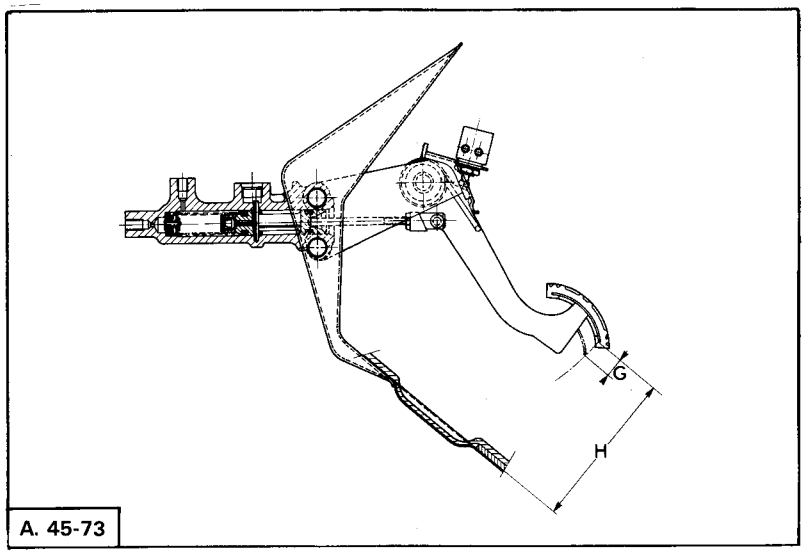
Pedal gear fitted on AM vehicles with disc brakes and dual circuit : *10/1976 ⟶ 9/1978 :*



The height of the pedal, measured between the upper corner of the pedal and the floor, «without carpet » must be :
H = 140 ± 5 mm (5.51 ± 0.19 in)

Supplement No. 1 to Manual 816-1 (CORR.)

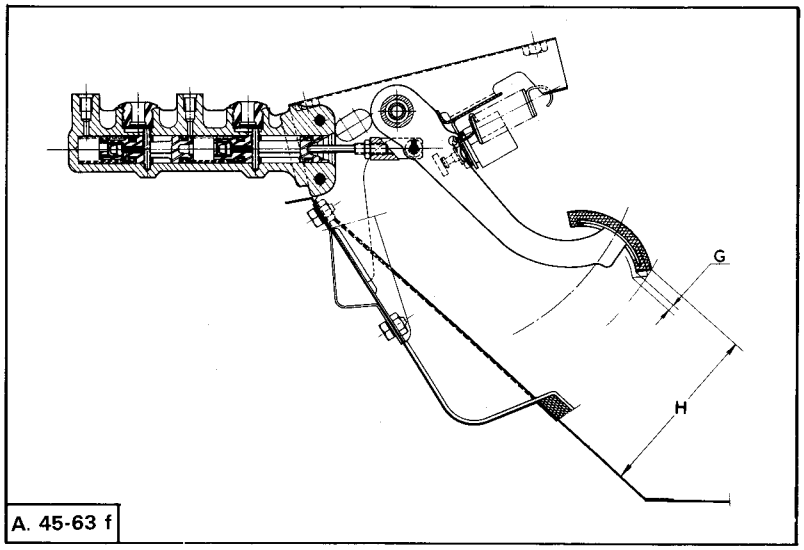
Pedal gear fitted on vehicles : AZ, AY MEHARI AZU and AK : *7/1973 ⟶ 10/1976*



A. 45-73

The height of the pedal, measured between the upper corner of the pad and the floor « without carpet », must be :
H = 130 ± 5 mm (5.11 ± 0.19 in)

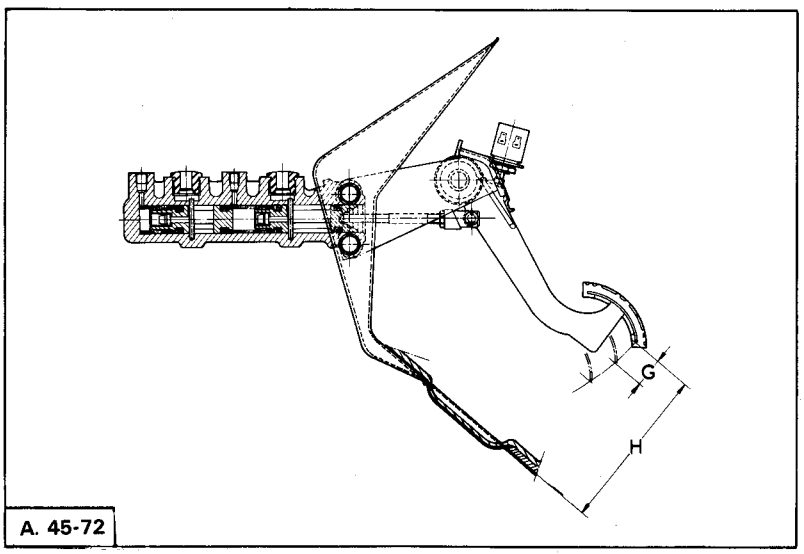
Pedal gear fitted on vehicles : AZ, *10/1976 ⟶ 7/1981* **- AY and MEHARI,** *10/1976 ⟶ 7/1977,* **AZU and AK,** *10/1976 ⟶ 2/1978*



A. 45-63 f

The height of the pedal, measured between the upper corner of the pad and the floor « without carpet », must be :
H = 131.5 ± 2.5 mm (5.17 ± 0.09 in)

Pedal gear fitted on vehicles : AY and MEHARI, *7/1977 ⟶* **- AY-CD,** *2/1978 ⟶* **- AZ,** *7/1981 ⟶*



A. 45-72

The height between the pedal and the floor must be :
H = 143 ± 4 mm (5.62 ± 0.15 in)

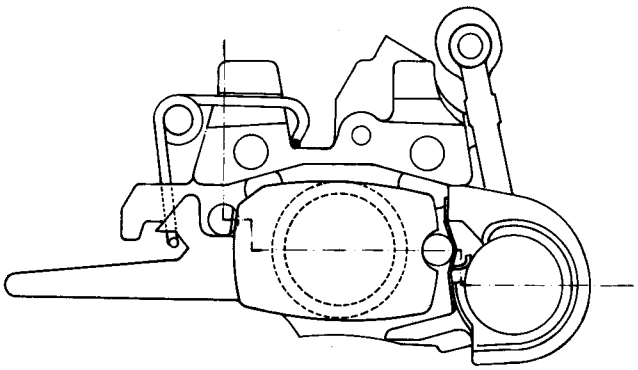
Tightening torques :

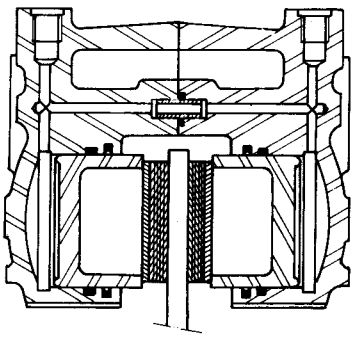
- Brake fluid reservoir : ..... 3.5 to 4.5 m.daN
- Nut for thrust rod : ..... 1 to 2.5 m.daN
- Master cylinder securing screw : ..... 1 m.daN

FRONT DISC BRAKE UNIT

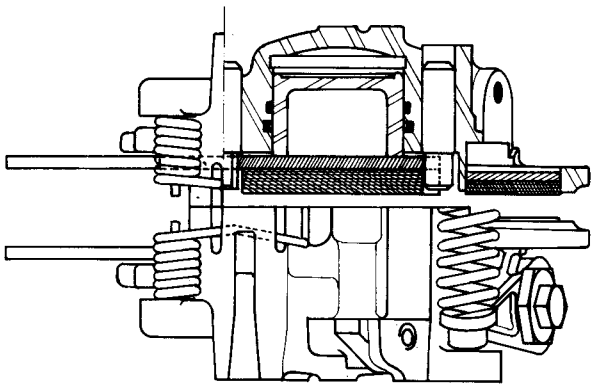
G.45-2

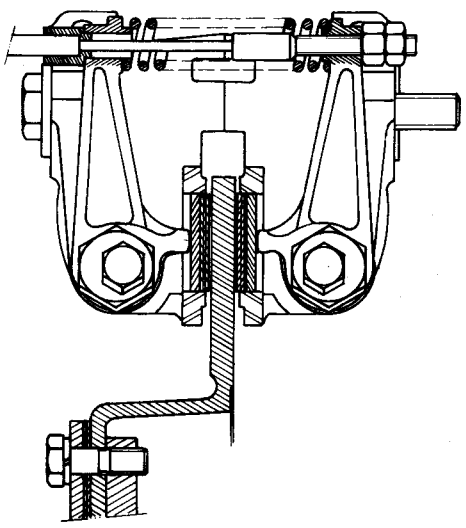
HYDRAULIC BRAKING SYSTEM





MECHANICAL BRAKING SYSTEM
(Handbrake)





Supplement No. 1 to Manual 816-1 (CORR.)

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 (.0078 in)

Brake unit :

- Piston diameter : ..... 42 mm (1.6 in)
- Position of brake unit in relation to the disc :
  - The joint faces of the half brake units 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 hand brake pad : ..... 7 sq. in. (1.08 sq. in)
- Clearance between hand brake pads and disc : ..... 0.1 mm (.0039 in) (with max. run out of disc)

ADJUSTMENTS.

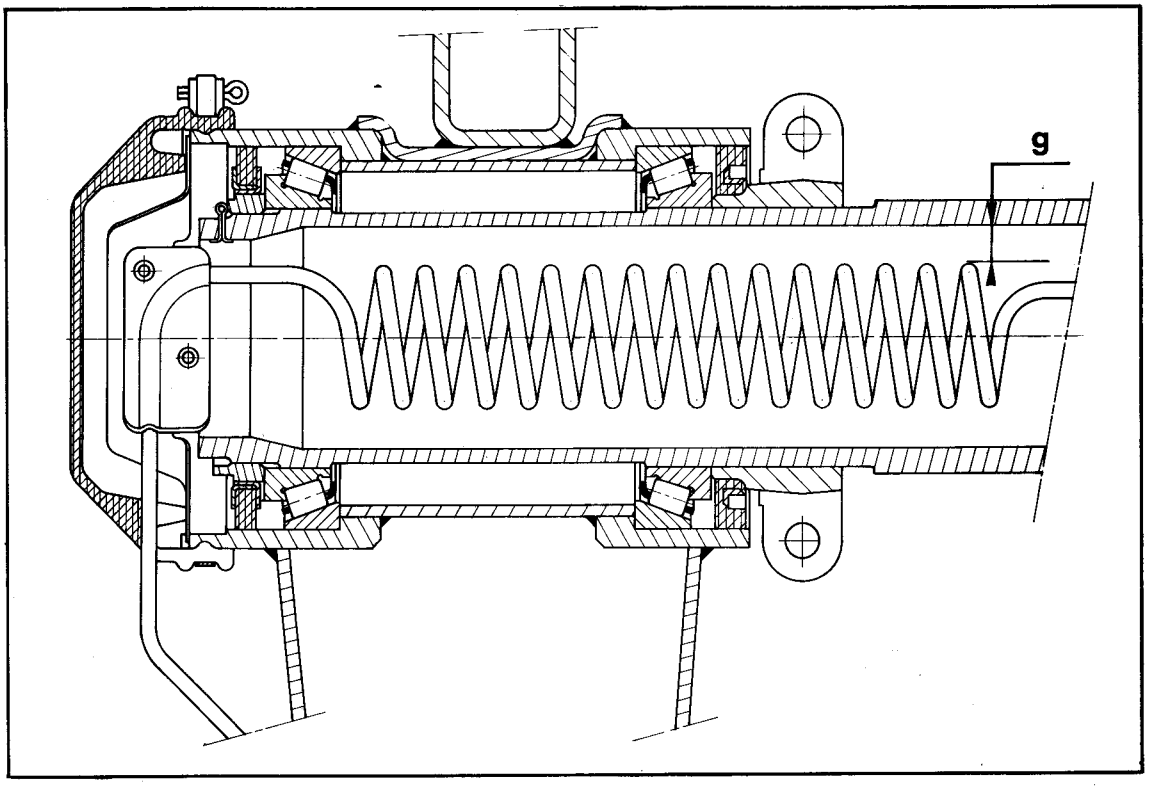
Tightening torques :

- Brake unit securing screws : ..... 4.5 to 5 da Nm (32.4 to 36.1 ft.lbs)
- Eccentric securing screws : ..... 4 da Nm (28.88 ft.lbs)
- Disc securing screws : ..... 4.5 to 5 da Nm (32.4 to 36.1 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)

A. 42-51



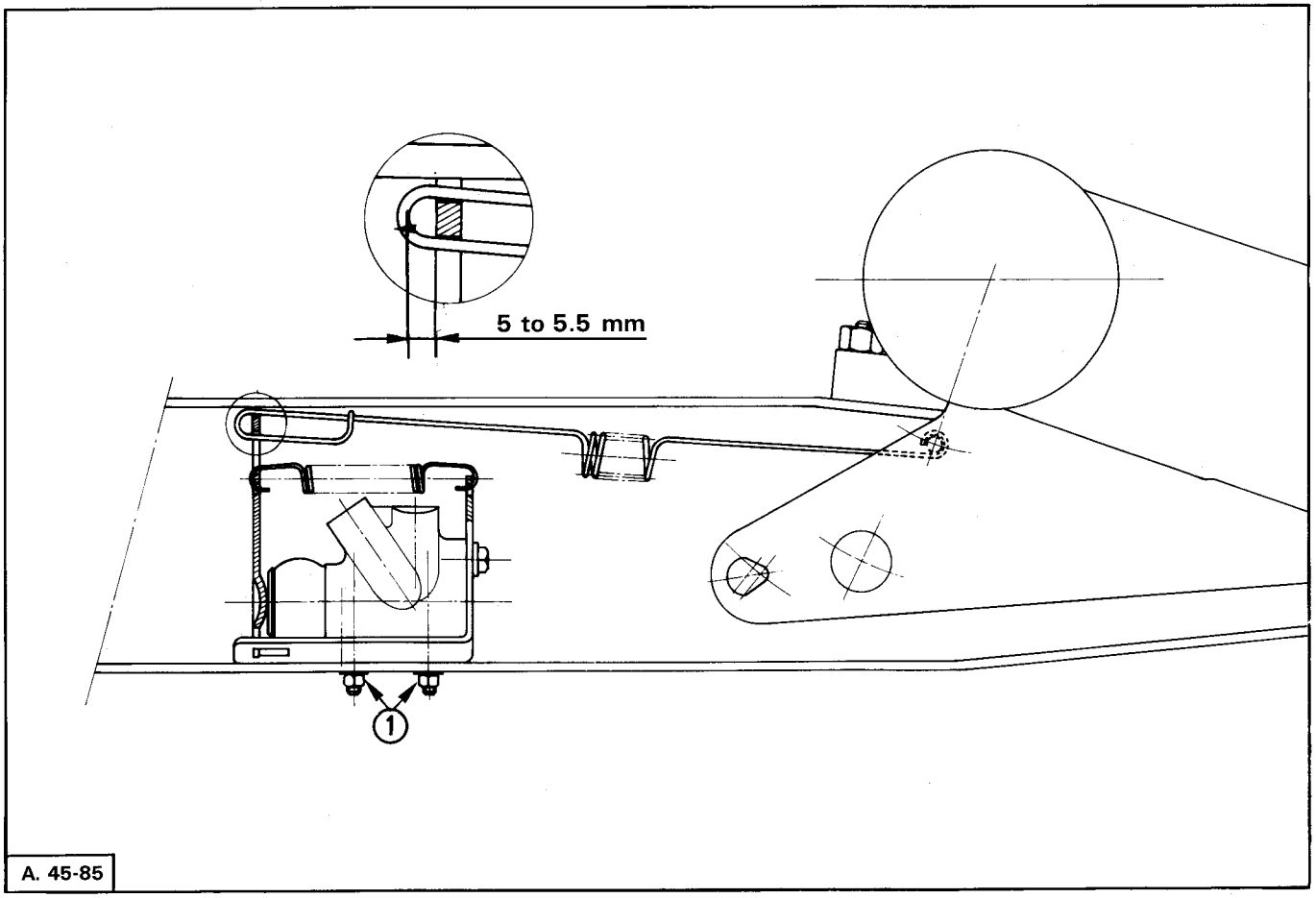
Supplement No. 1 to Manual 816-1 (CORR)

- 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)

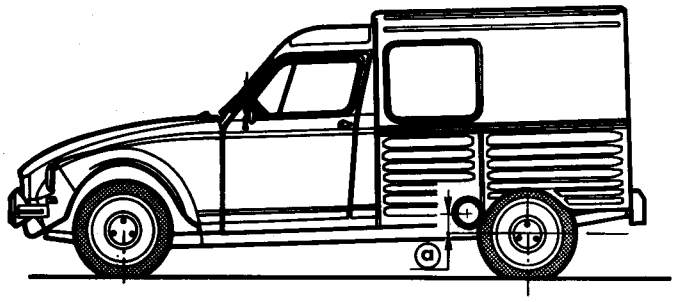
Tightening torques :

- 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 : ..... 0.8 to 0.9 da Nm (5.77 to 6.49 ft.lbs)

BRAKE PRESSURE LIMITER
ACADIANE Vehicle (AY series CD) *10/1979* ⟶



A. 45-85



Adjustment of the brake pressure limiter :

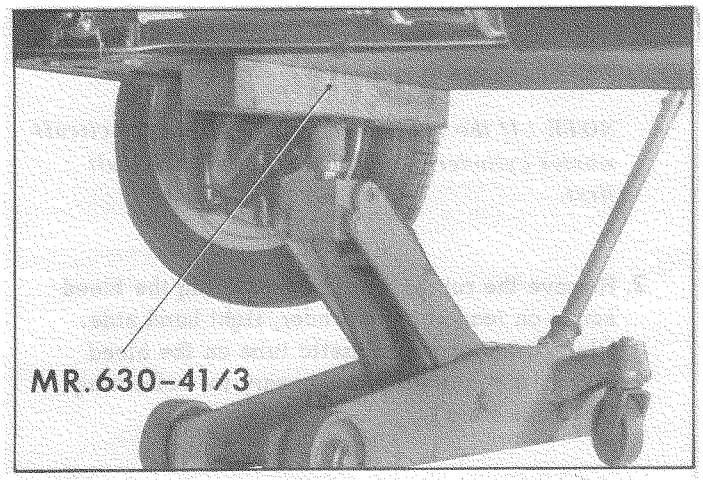
This adjustment is to be carried out after any operation modifying the vehicle heights.

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 = 143.5 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 limiter/support assembly to obtain a distance **b = 5 to 5.5 mm** between the control lever and the control spring loop.

I. ADJUSTING THE ECCENTRICS.

PL. 478



Adjusting the front brake eccentrics :

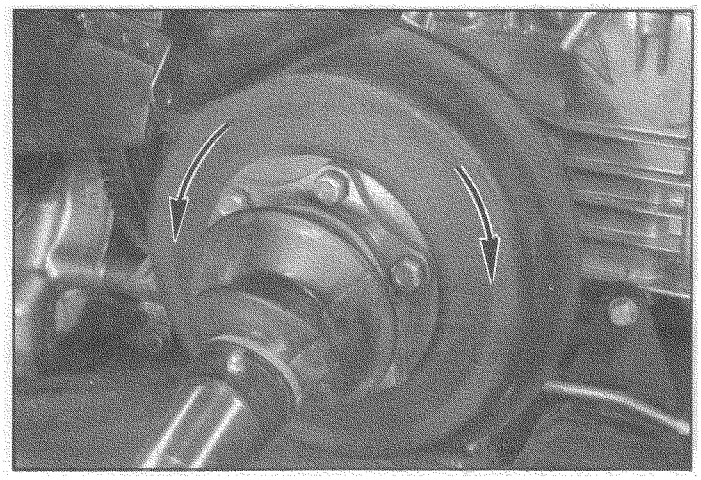
1. Lift the front part of the vehicle (using support MR. 630-41/3 on a mobile jack).

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 backwards 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 never end with a releasing motion.

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

3352

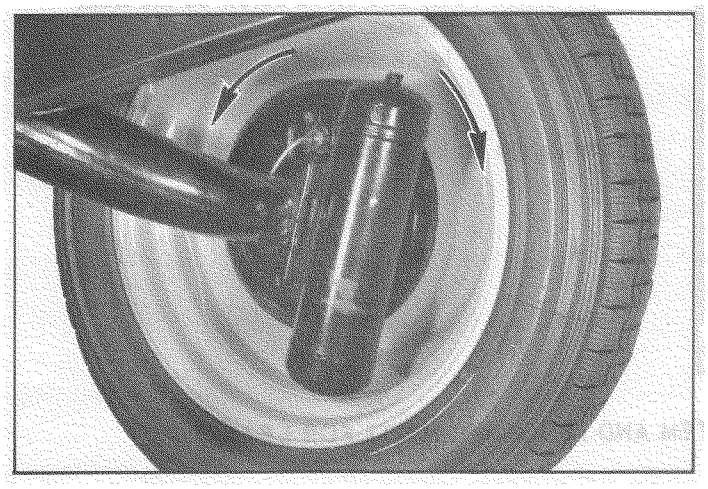


3. Repeat the operation for the other wheel.

4. Lower the vehicle to the ground.

Manual 816-1

PL. 515



Adjusting the rear brake eccentrics :

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.

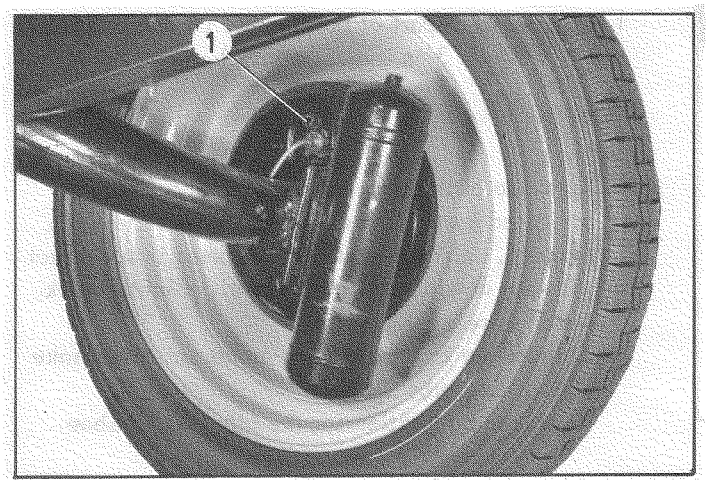
7. Repeat the operation on the other wheel.

8. Lower the vehicle to the ground.

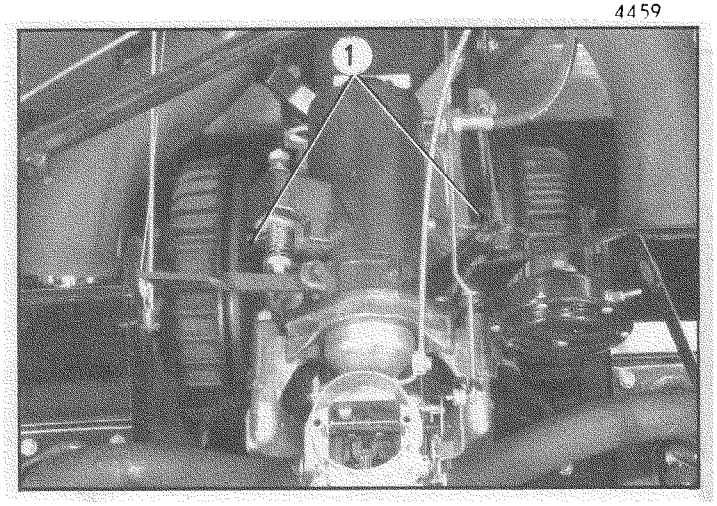
II. BLEEDING THE BRAKING SYSTEM.

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.

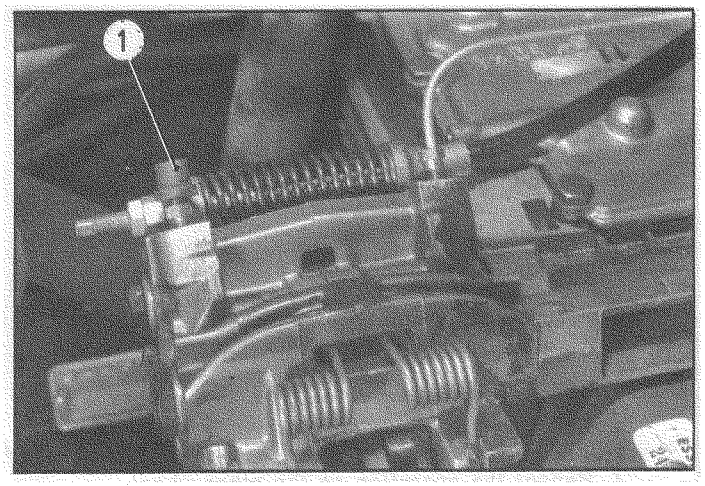
PL. 515



4459



5521



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

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 approximalely 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.

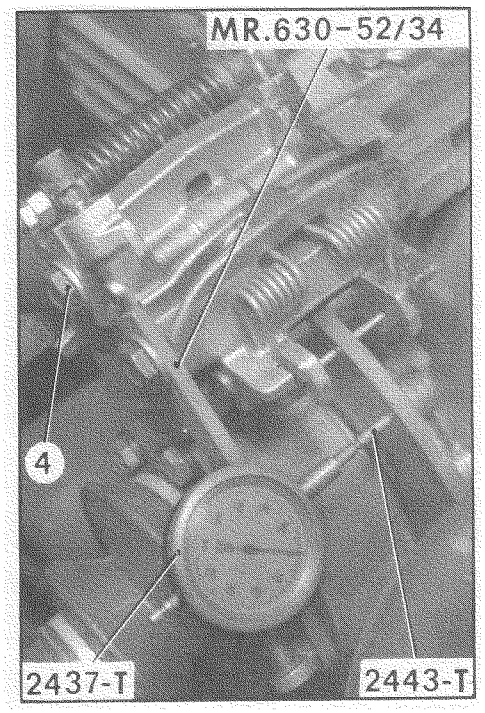
6. Top up the brake fluid reservoir.

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 cup of the master cylinder is not leak-tight and the unit must be repaired.

IV. CHECKING THE FRONT DISC LATERAL RUN-OUT.

5588



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

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

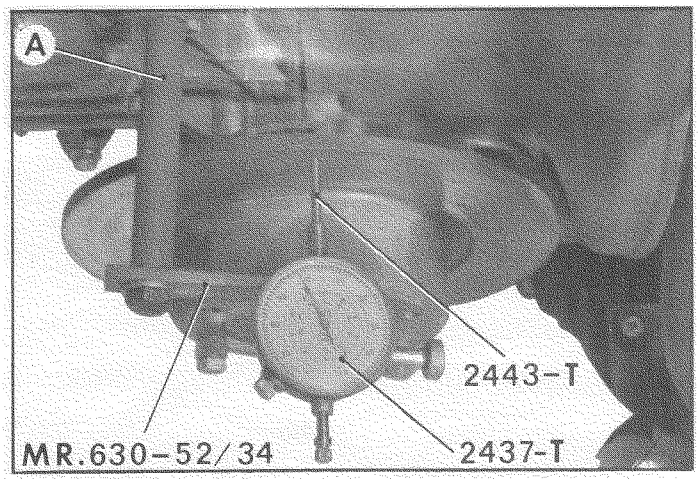
Fix the square support using the screw (4), which secures the front part of the calliper.

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

Fit a spacing tube (A) (length = 110 mm, 4.33 in ; interior diameter = 10 mm, 0.39 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 (.0078 in).

5605

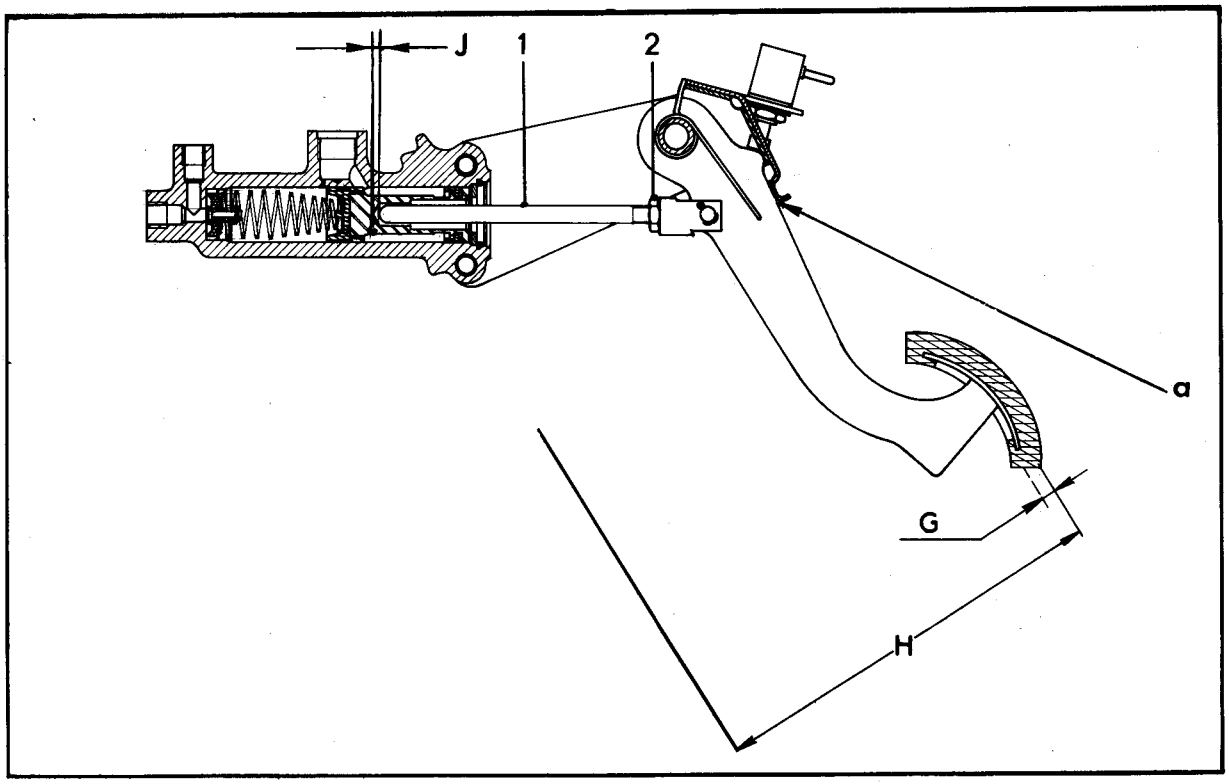


NOTE : This measurement corresponds to the sum of both disc run-out and gearbox outlet shaft run-out. In the case it exceeds 0.2 mm (.0078 in) it is necessary to test the six possible positions for disc and gearbox assembly.

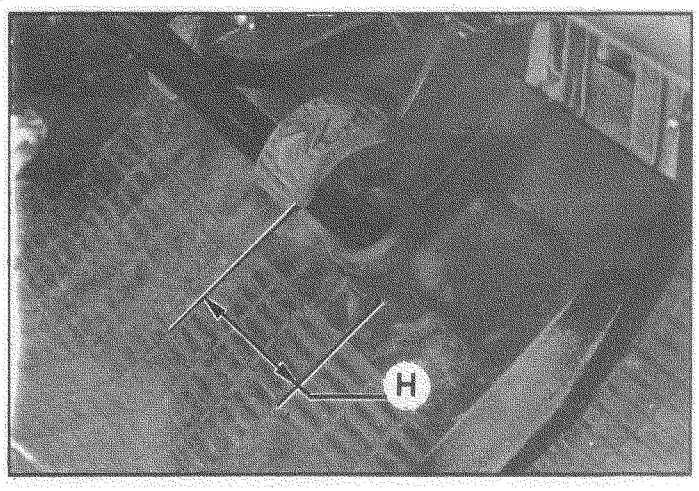
If this cannot be achieved, change either the disc or the gearbox outlet shaft and repeat the check.

I. ADJUSTING THE BRAKE PEDAL CLEARANCE.

A. 45-8 a



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 J = 0.5 to 1 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 (« **G** » = **5 mm, 0.19 in**).

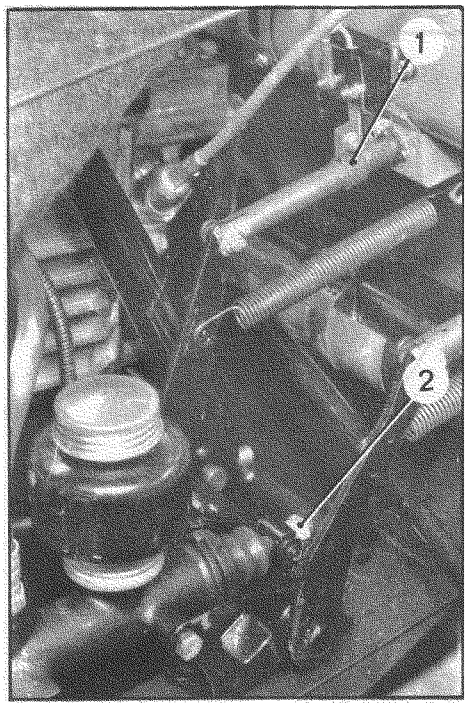
3. Adjusting the stoplamp switch :

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.

481



Adjusting the pedal clearance :
(on an old pedal gear).

Slacken 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 :

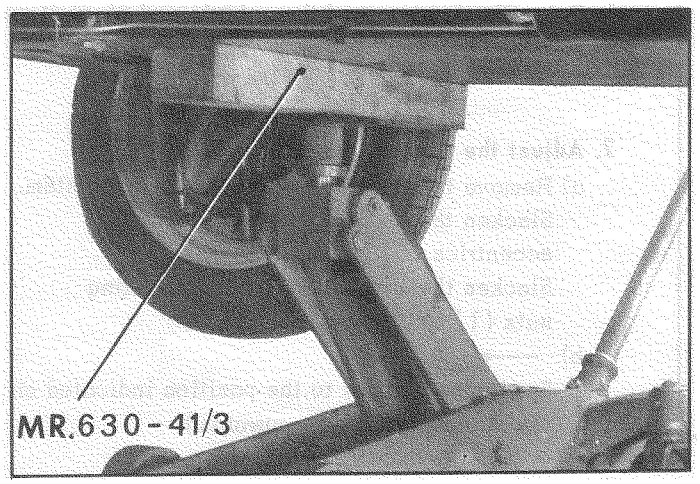
For a pedal **travel** of **1.5 mm (0.059 in)** the stoplamps should not come on.

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 those conditions have been met.

ADJUSTING THE HANDBRAKE

PL. 478

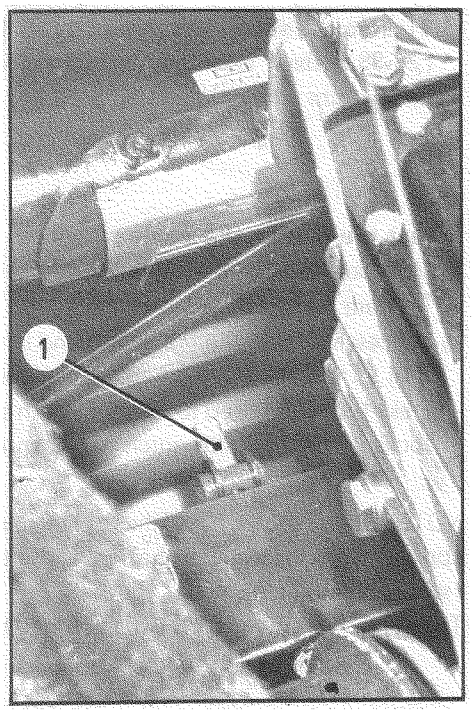


NOTE : The handbrake operates the front brake drums only.

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

Supplement No. 1 to Manual 816-1 (CORR)

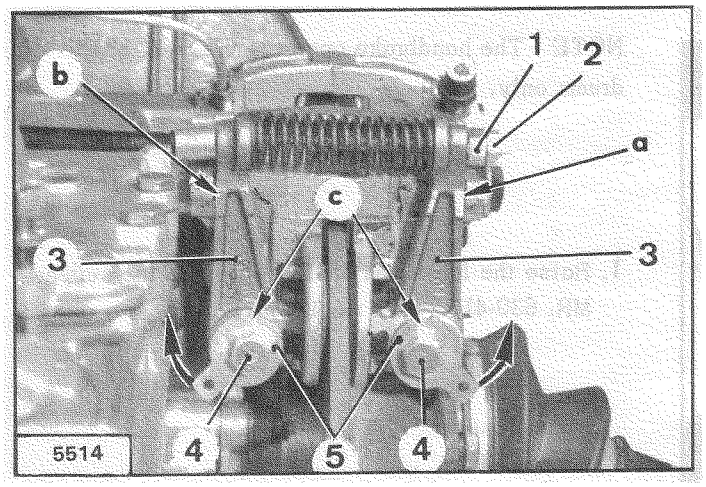
PL. 518

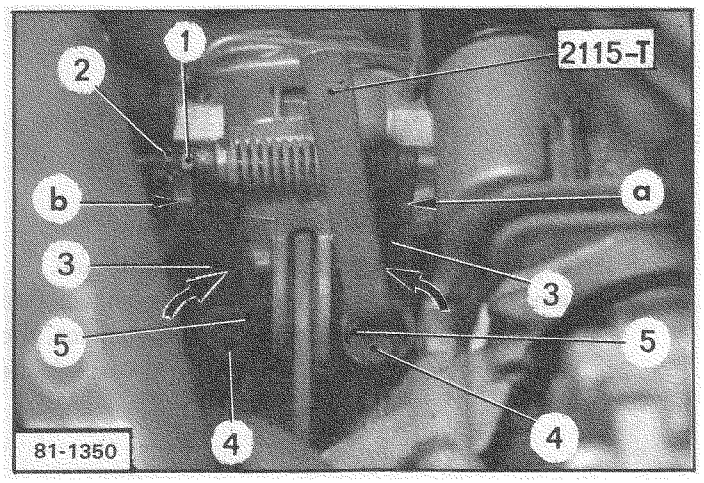


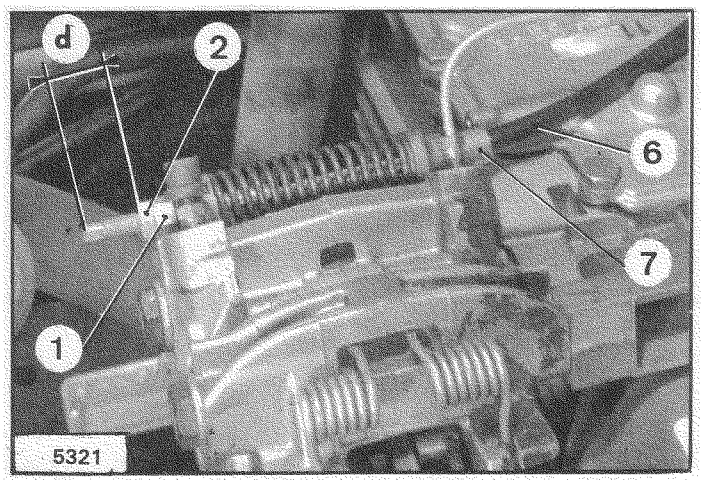
2. Adjust the tension of both brake cables in turn, using the nuts (1) so that the wheels begin to tighten when the brake handle is raised to the third notch, and when it has reached the fifth notch, the wheels are locked.

ADJUSTING THE HANDBRAKE

The handbrake controls four pads which act upon the front brake discs. It is completely independant 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 :**
   a) Remove the flexible ducts for heating system. Slacken the securing screws (4) of the eccentrics (5).
   Slacken the lock nuts (2) and adjusting nuts (1).
   b) ⟶ *6/71 :*
   Set the eccentrics to the position indicated on the photo (slots « c » upwards).
   6/71 ⟶ *:*
   Set the eccentrics to the position allowing maximum clearance (spanner 2115-T).
   Make sure that the arms (3) are on their stops at « a » and « b ».
   c) 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 actuating the corresponding wheel).
   d) 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 :**
   a) Make sure that the sheath ends (7) and the sheaths (6) are correctly positioned.
   b) 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 « d » 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.

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

Manual 816-1

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 1600 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 2200 rpm 33 A at 3000 rpm

TESTING VOLTAGE REGULATORS ON A BENCH.

A - 8325 A regulator :

Pull in voltage : 6 to 6.5 volts *(when cold).*
Drop out voltage : at least 1 volt less than the pull in voltage.
Return current : 5 amperes at 6 volts *(when 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 *(when cold).*
Drop out voltage : at least 1 volt less than pull in voltage.
Return current : 3 to 7 amperes at 6 volts *(when 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 1 8 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 13.6 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 limting 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 « EXC » 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 (3/1966 ⟶ 5/1968) and on AM « AMI 6 » vehicles (7/1966 ⟶ 5/1968).

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

On AYA 3 « Dyane 6 » vehicles (1/1968 ⟶ 9/1968)
On AYM « 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 « FROID -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 «J» type) for above mentioned alternators.

B. DUCELLIER 7534 A alternator :

PARIS-RHONE A 11 M 4 alternator :

On following vehicles
- *AY CA « Mehari » (7/1969 ⟶ 9/1973)*
- *AK (5/1968 ⟶ 7/1970)*
- *AY « Dyane 4 » (3/1968 ⟶ 2/1970)*
- *AYB « Dyane 6 » (9/1968 ⟶ 2/1970)*

PARIS-RHONE A 11 M 11 alternator :

On AY CA « 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.

On following vehicles
- *AY « Dyane 4 » (2/1970 ⟶)*
- *AY CB « Dyane 6 » (2/1970 ⟶)*
- *AK (7/1970 ⟶)*
- *AZA 2 « 2 CV 4 » and AZ KA « 2 CV 6 » (2/1970 ⟶)*
- *AZU (7/1972 ⟶)*
- *AM « AMI 6 » (5/1968 ⟶ 3/1969) and AM 3 « AMI 8 » (3/1969 ⟶)*
- *AY CA « Mehari » (9/1974 ⟶)*

FEMSA ALN 12-1 alternators on all A vehicles *(2/1975 ⟶)*

Output	: 400 watts
Voltage	: 14 volts
Nominal current	: 28 amp. at 8000 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

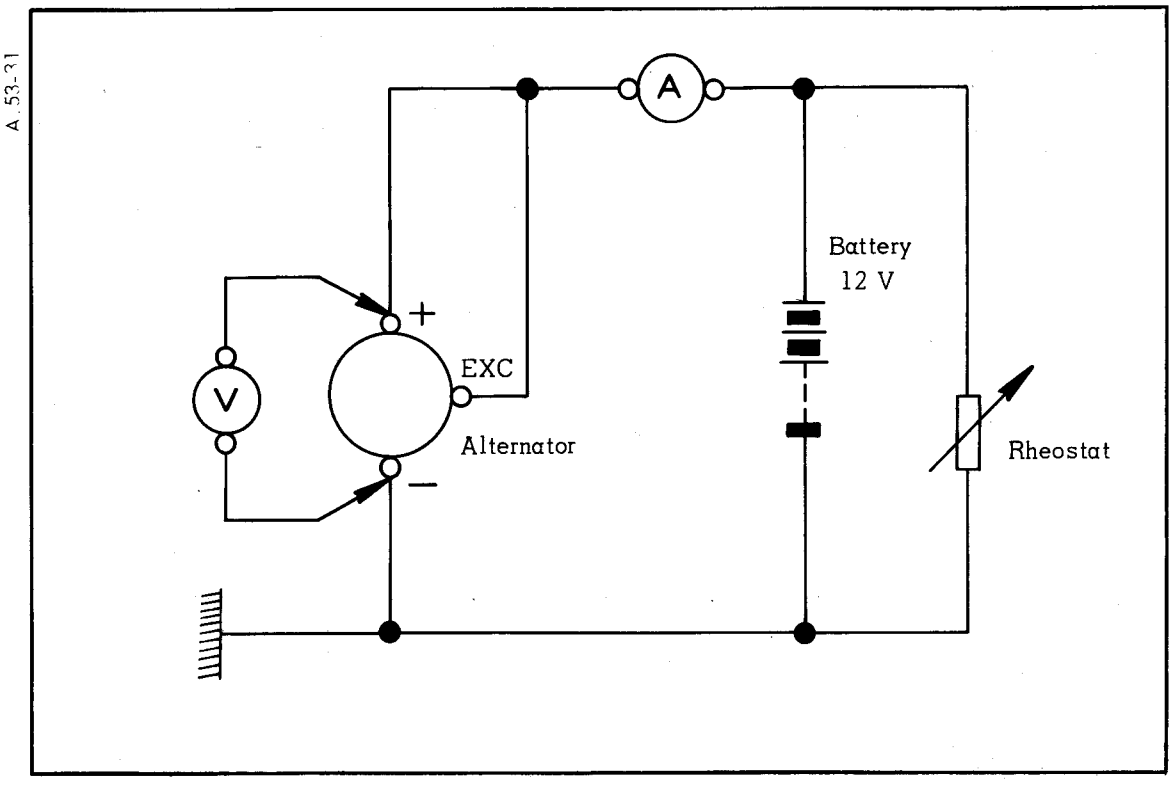
DUCELLIER 8347 C regulator
PARIS-RHONE AYA 213 regulator

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)

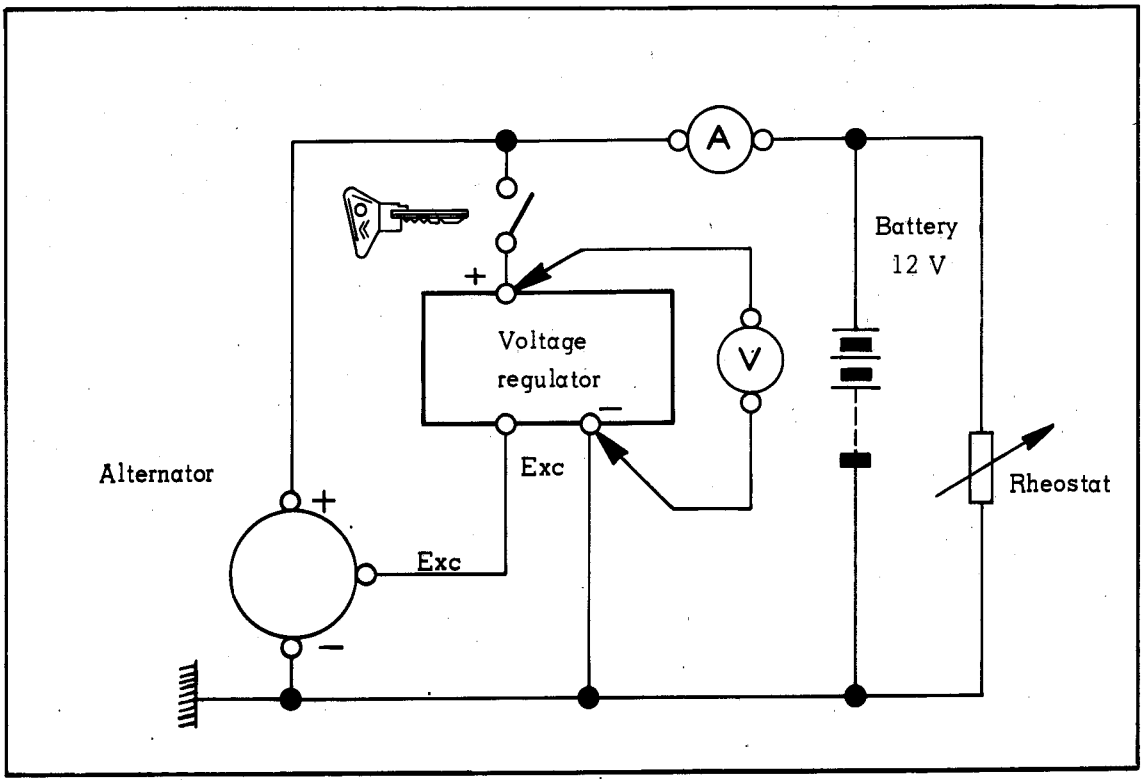
a) 7522 B and 7542 A alternators :
In order to measure the output of the alternator, **progressively increase** the alternator speed and actuate the rheostat to *maintain the voltage at 13 volts.*
Output : 5 amperes at 900 rpm engine speed (1900 rpm alternator speed) and at 13 volts.
17 amperes at 1800 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.

A. 53-30



Manual 816-1

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 – ALN 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.

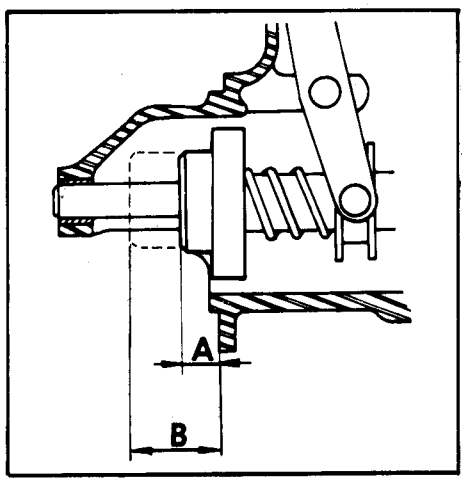
6 volt starter motors (operated by pull knob) :

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 (→ 2/1970) AK (→ 2/1966) AY (→ 3/1968) AZU (→ 7/1972)
PARIS-RHONE D 8 L 38	34.5 mm (1.35 in)	30 to 35 A	70 to 90 A	
ISKRA-KRANJ ZC 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	AY (3/1968 → 2/1970)
PARIS-RHONE D 8 L 79	34.5 mm (1.35 in)	30 to 35 A	70 to 90 A	

12 volt starter motors (operated by pull knob) :

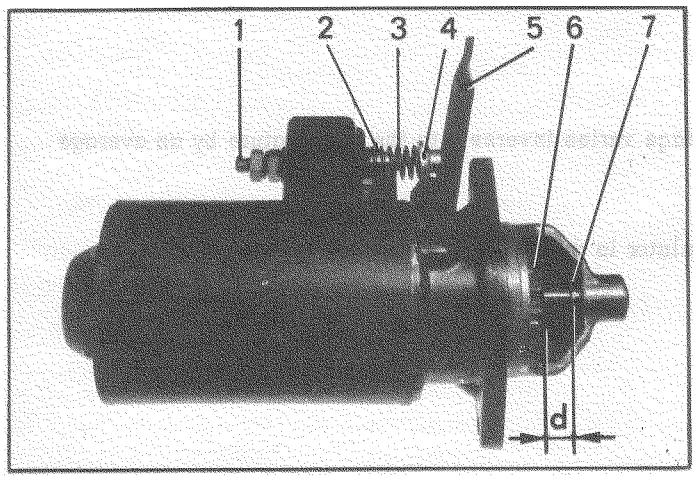
Make and type	Min. dia. of commutateur after skimming	Current taken		Fitted on vehicles
		off load	when starting	
DUCELLIER 6134	31.5 mm (1.24 in)	25 to 30 A	45 to 60 A	AY (12 volts) (→ 2/1970) AK (2/1966 → 7/1973) AYA 3 « Dyane 6 » (→ 10/1968) AM (7/1966 → 5/1968) DUC AM (7/1966 → 3/1969) P.R.
PARIS-RHONE 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) (→ 2/1970) AYA 2 (12 volts) (3/1968 → 2/1970) AYB (→ 9/1969) AY CA «Mehari» (→ 12/1971)
PARIS-RHONE D 8 L 80	34.5 mm (1.35 in)	25 to 30 A	45 to 60 A	
DUCELLIER 6195 A	32 mm (1.25 in)	25 to 30 A	45 to 60 A	AM (5/1968 → 3/1969)

Adjustment of starter drive :



A 53-27

6 Volts		12 Volts	
DUCELLIER	PARIS-RHONE	DUCELLIER	PARIS-RHONE
6112 6188	D 8 L 38 D 8 L 79	6134 6195 A	D 8 L 67 D 8 L 80
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 = 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)



2953

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 ± .0078 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 →)* AZU → *(7/1972 →)* AYB *(9/1969 → 2/1970)* AY-CB *(2/1970 →)* AY-CA *(12/1971 →)* AK *(7/1973 →)* AM 3 *(3/1969 →)*
PARIS-RHONE D 8 E 99 or D 8 E 116 *(6/78 → 11/78)* D 8 E 148 *(11/78 →)*	34.5 mm (1.35 in)	30 to 40 A	150 A	
ISKRA ZB 4 *(11/71 → 9/76)* ISKRA AZE 0305 *(9/76 →)*	31 mm (1.22 in)	30 to 40 A	150 A	
FEMSA MTA 12-30 *(7/73 →)*		30 to 40 A	150 A	
DUCELLIER 6202 C	(flat commutator)	30 to 40 A	150 A	All A vehicles *(12/1974 →)*

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

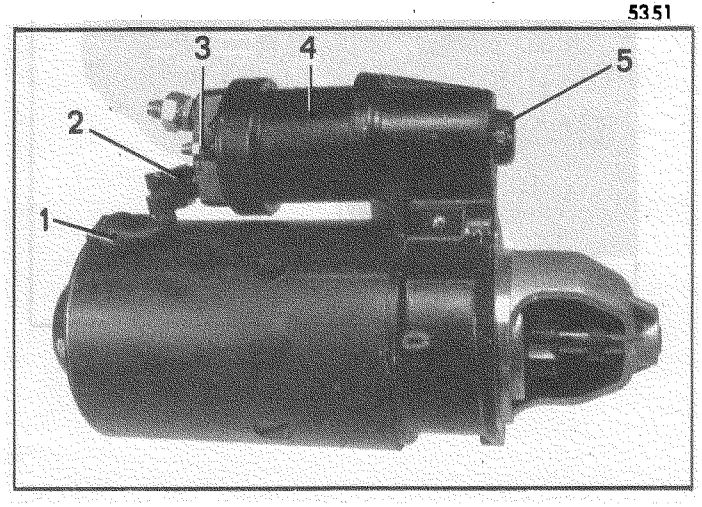
b) Remove the starter motor and measure :
- the current taken off load : ..... 30 to 40 amperes

2. Bench test :

a) Average torque at 1000 rpm : ..... 0.4 da Nm
Current taken at this torque : ..... 215 amperes

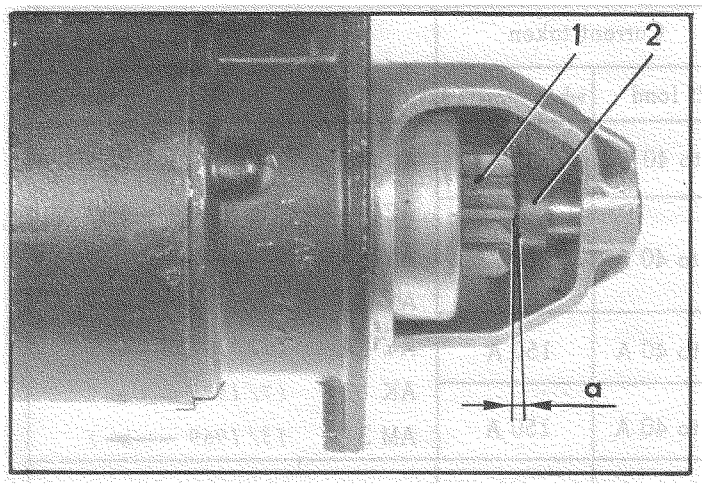
b) Maximum power : ..... 589 watts
Corresponding torque : ..... 0.25 watts
Current taken at this torque : ..... 150 amperes

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 solenoïd (4).
4. Disconnect the inductor supply wire (1) from the terminal (2) (marked « DEM ») of the solenoïd.
5. Energize the solenoïd (4). For that purpose, connect :
   a) a battery positive terminal to the solenoïd supply terminal (3).
   b) the battery negative terminal to the terminal (2) (marked « DEM ») of the solenoïd.

5370

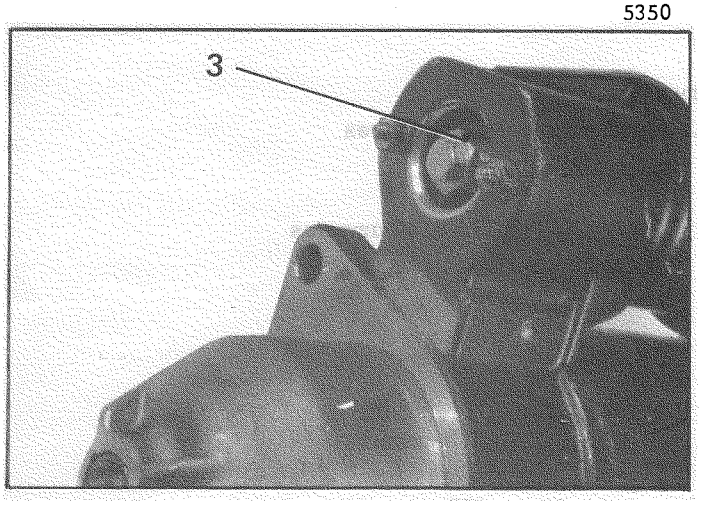


With control pinion (1) in forward position, measure the distance « a » between the end of pinion (1) and stop (2).

This distance should be : « a » = 1 mm (0.039 in).
Otherwise reset the adjusting screw (3).

6. Disconnect the battery from the solenoid supply terminals (6) 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 (0.82 in).
Otherwise recondition the starter motor.

5350



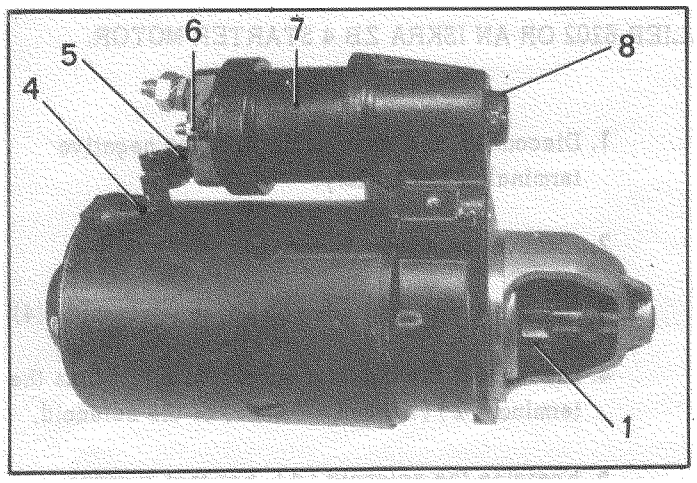
7. Connect the inductor supply wire (4) to the terminal (5) (marked « DEM ») of the solenoid (7).

8. Fit the plastic plug (8).

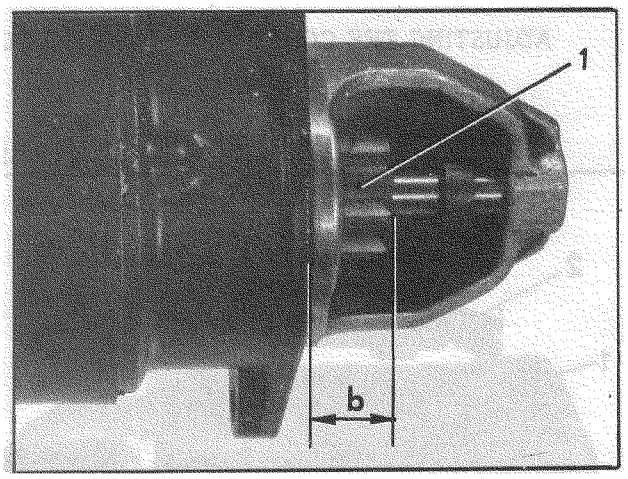
9. Refit the starter motor on the vehicle.

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

5351



5348

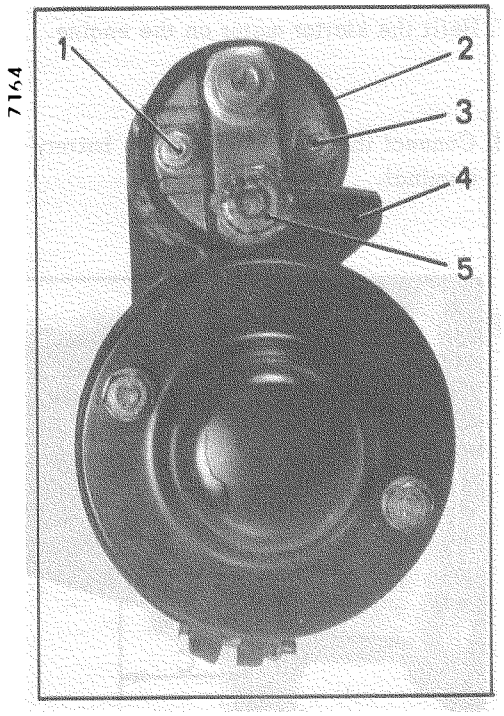


CHECKING A PARIS-RHONE D 8 E 99 (or D 8 E 116 *Juin 1972* ⟶) STARTER MOTOR.

	D 8 E 99	D 8 E 116
1. Test on vehicle :		
a) Make sure that the battery is correctly charged and measure : - the current taken with pinion locked	330 to 340 A	360 A
b) Remove the starter motor and measure : - the current taken off load :	30 to 40 A	30 to 40 A
2. Bench test :		
a) Average torque at 1000 rpm	0.6 da Nm (0 023 ft.lbs)	0.5 da Nm (0.019 ft.lbs)
- Current taken at this torque	220 A	220 A
b) Maximum power :	736 W	662 W
- Corresponding torque	0.38 da Nm (0.011 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.

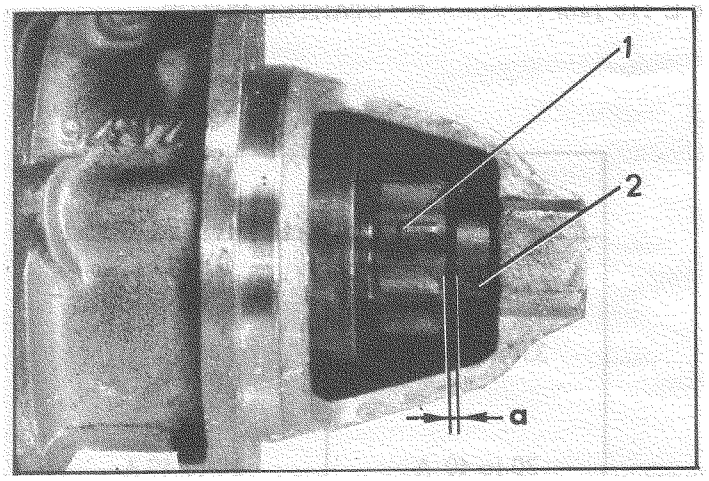
2. Remove the starter motor.

3. Disconnect the inductor supply lead (4) from the solenoïd terminal (5).

4. Energize the solenoïd. For that purpose, connect :

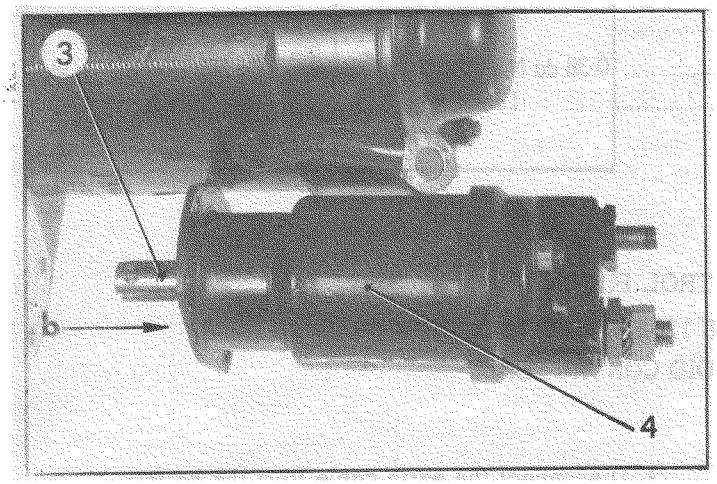
   a) the positive terminal of a battery to the solenoïd supply terminal (1)

   b) the negative terminal of the battery to the solenoïd terminal (3).



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

This distance should be : « a » = 1 mm (0.039 in).
If it is not, proceed as follows :
- Remove the solenoïd from the starter motor.
- Press in the spring cup (in the direction indicated by arrow « b ») and hold the yoke (3). Screw it in or out on the solenoïd spindle so as to obtain the distance « a ».
  If « a » > 1 mm (0.039 in) : screw the yoke in.
  If « a » < 1 mm (0.039 in) : screw the yoke out.
  (Screw it in or out by half a turn at a time).
  Connect the solenoïd and the starter motor.

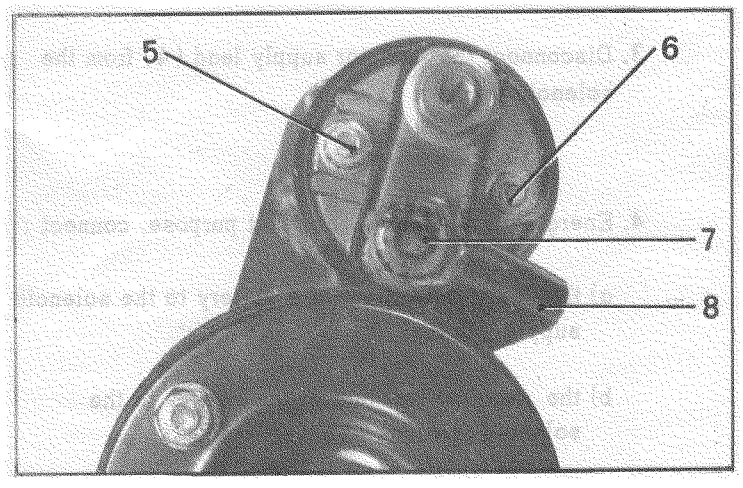


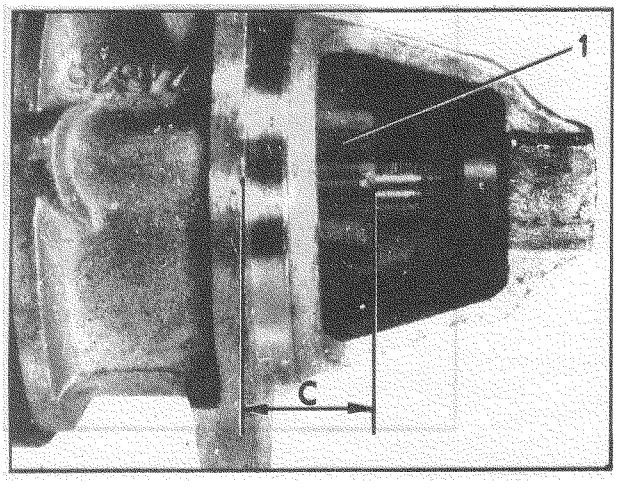
5. Disconnect the battery from the solenoïd terminals (5) and (6).
The control pinion (1) will return to its free position. Measure the distance « c » between the thrust face of the starter motor flange bearing on clutch housing and the end of the control pinion (1).
The distance should be : « c » = 21 mm (0.82 in) max. (D 8 E 99 starter motor) *or « c » = 21.6 mm (0.85 in)* (D 8 E 116 starter motor).
Otherwise recondition the starter motor.

6. Connect the inductor supply wire (8) to the terminal (7) of the solenoïd (4).

7. Refit the starter motor on the engine.

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





7167

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).

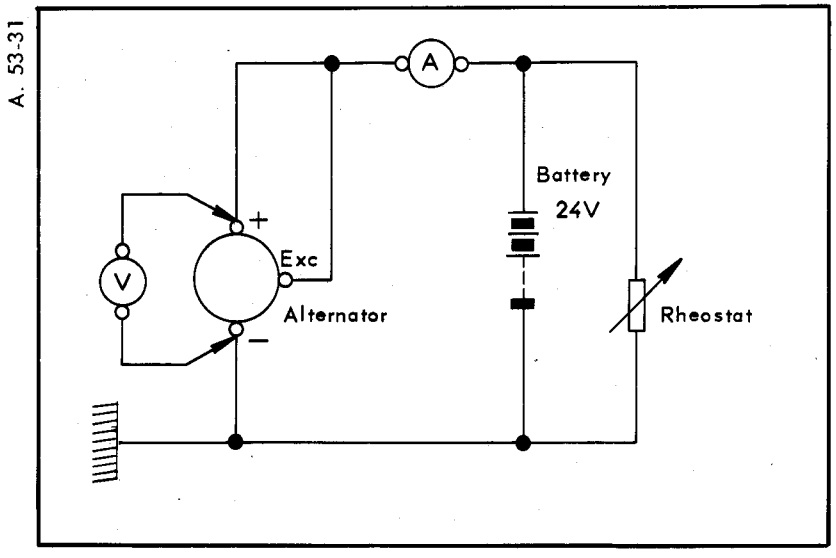
BATTERIES.

Two 12 volt batteries connected in series.
Make : STECO, 12 volts, 43 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 Ro 80 A 1 type DUCELLIER 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 (⟶ *3/1974*) or A 11 M 13 (*3/1974* ⟶).
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 strings 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

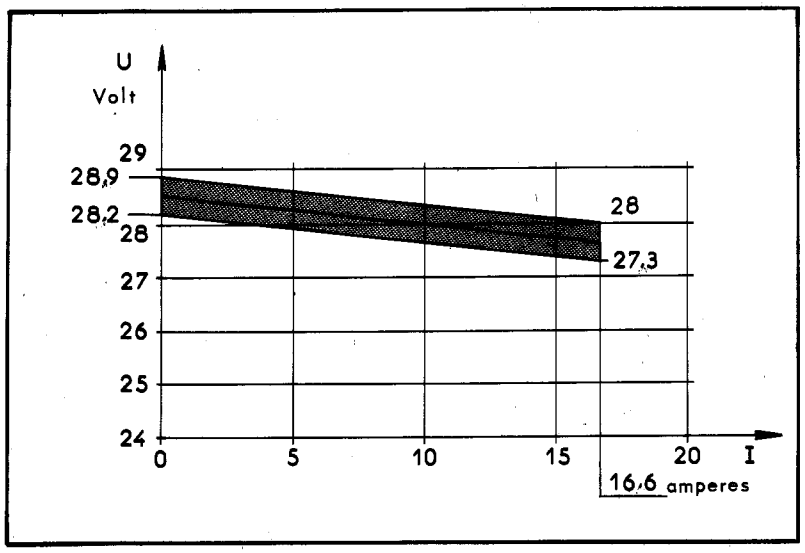
VOLTAGE REGULATOR.

PARIS-RHONE electronic voltage regulator, 24 volts, L 21 type, reference ZL 210.

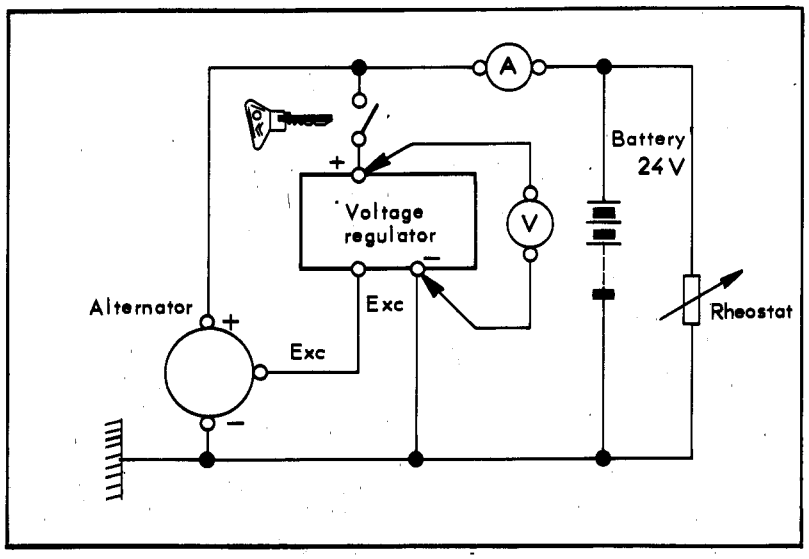
NOTE :
It is most essential to avoid certain mishandlings which would damage the voltage regulator :
a) Make sure that the earth lead is connected to the earth shunt (securing screw) of the regulator.
b) Avoid connecting the energizing circuit to earth.
c) Never interchange the leads connected to the « + » 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.

A.53-30



A.53-29



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 red at a temperature of 20° C.
If the ambiant 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 :

$$U\ (\text{volts}) = \frac{20° - t}{10} \times 0.18$$

STARTER MOTOR.

PARIS-RHONE electromagnetically triggered starter motor, with positive control, 24 volts, reference : D 8 E 110.

Brushes : minimum length after wear ..... 7 mm (0.27 in)
Inductor resistance ..... 0.034 Ω
Armature : - minimum diameter of commutator after skimming ..... 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 pinion. 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 pinion 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 816-1

IGNITION

DISTRIBUTOR.

Screened DUCELLIER 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 cowl (the hole for passage of the screened supply lead to the distributor has been enlarged and the cut-out has been eliminated).

IGNITION COIL.

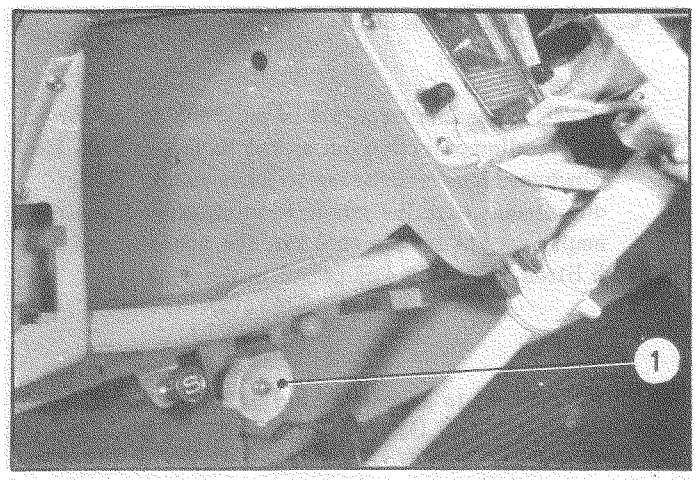
Screened A.B.G. ignition coil - 24 volts - reference : 177 267
Two screened high tension leads :
- left-hand lead : A.B.G. ; reference : 177 264
- right-hand lead : A.B.G. ; reference : 177 263
Tightening torque for screened lead unions on to coil and sparking plugs ..... 0.6 to 0.8 da Nm (4.32 to 5.77 ft.lbs)
Filter on primary circuit of A.B.G. ; reference : 177 265.

SPARK PLUGS.

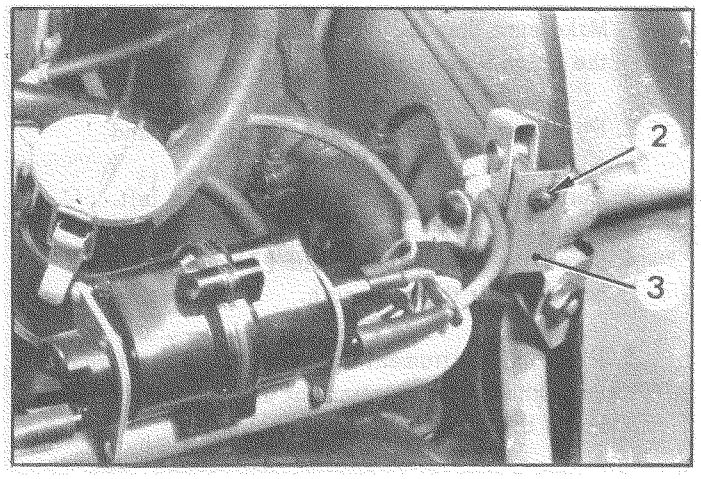
Two screened A.B.G. spark plugs, reference : M C Y 78 L
Electrode gap ..... 0.5 to 0.6 da Nm (0.019 to 0.023 ft.lbs)
Tightening torque when cold ..... 2 to 2.5 da Nm (14 to 18.05 ft.lbs)

ADJUSTING THE HEADLAMPS.

4025

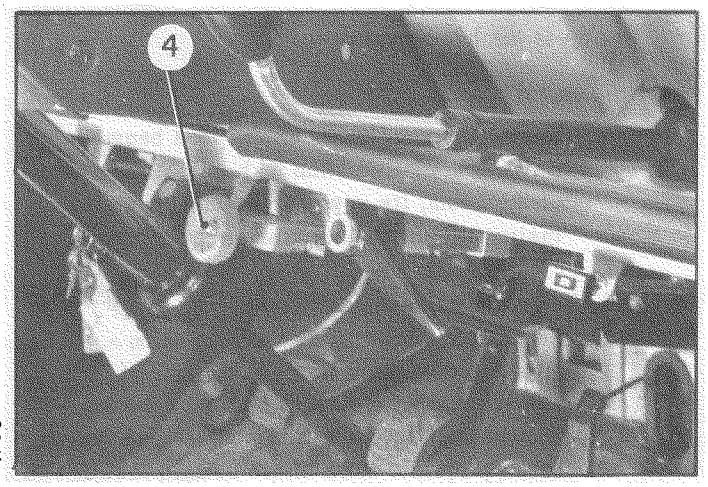


4405

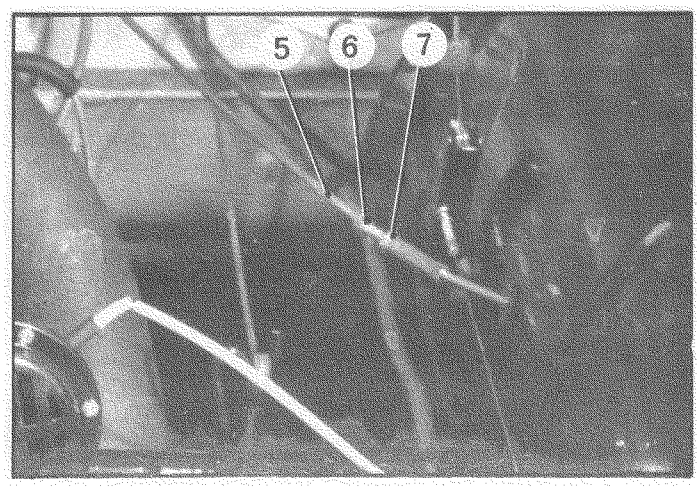


Manual 816-1

4735



3928



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).
(AZ 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).

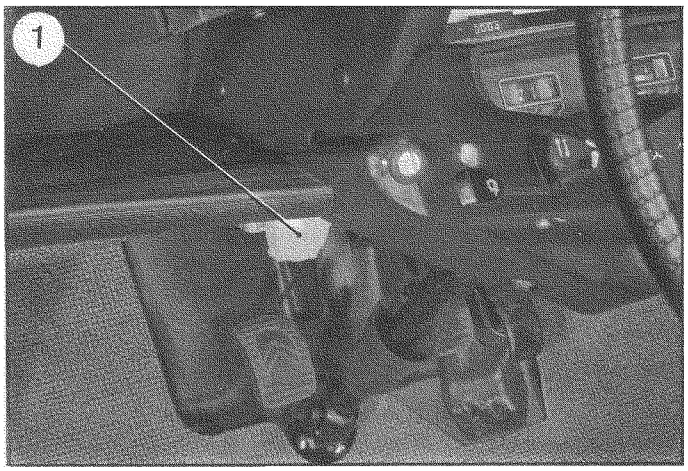
2. Adjust the headlamps :
a) Put the vehicle on a flat horizontal ground.
b) Turn the control knob (1) from left to right as far as it will go.
Turn the knob from right to left by two and a half turns.
c) Make sure that the tyres are correctly inflated and the heights are correctly adjusted. The headlamp 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.

B. HEADLAMP CONTROL (CABLES).
(AY Vehicles)

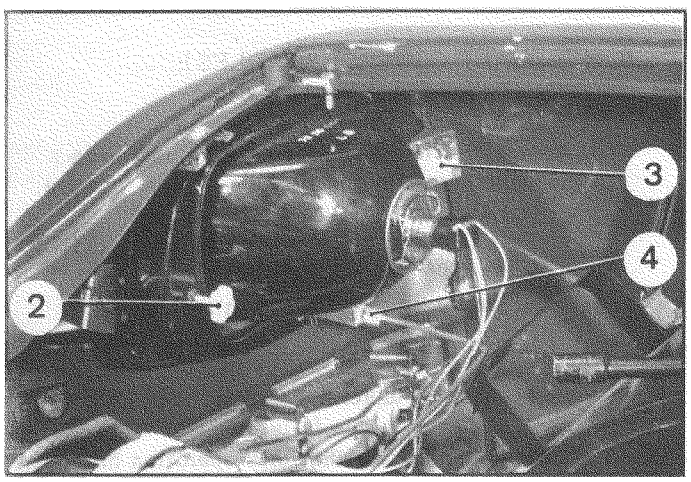
3. Adjust the flexible cable of each headlamp :
a) Make sure that the flexible cables (5) are not kinked.
b) Turn the control knob (4) clockwise until it locks.
c) Place the headlamp unit on its stop.
For that matter :
- Slacken the lock nut (7).
- Gradually unscrew tensioner (6) until the headlamp unit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

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



5134



C. HEADLAMP CONTROL :

(AM 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).

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.

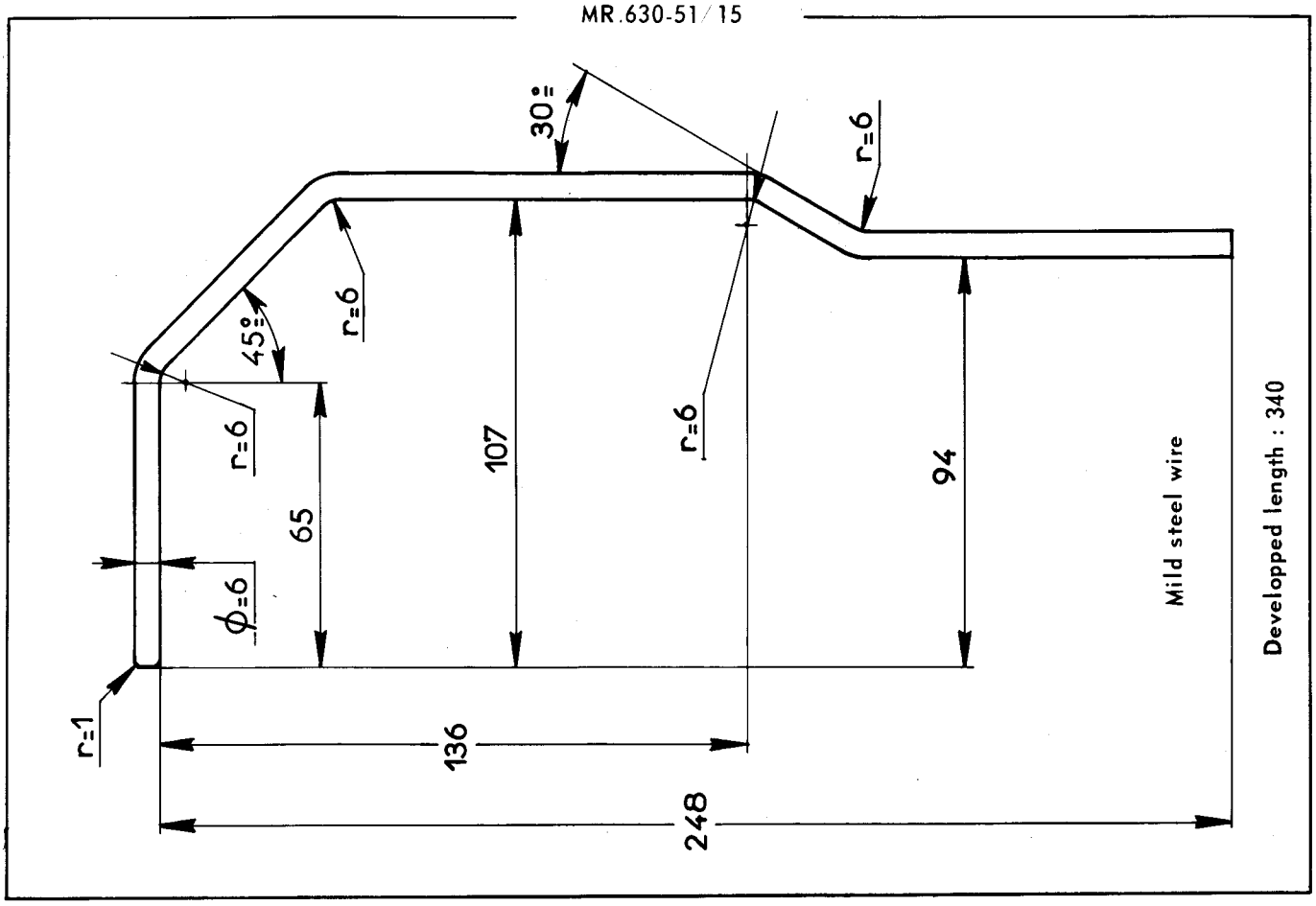
NOTE : In case there is a dark area in the middle of the beam, replace the bulb.

LIST OF SPECIAL TOOLS GIVEN IN VOLUME I OF MANUAL 816

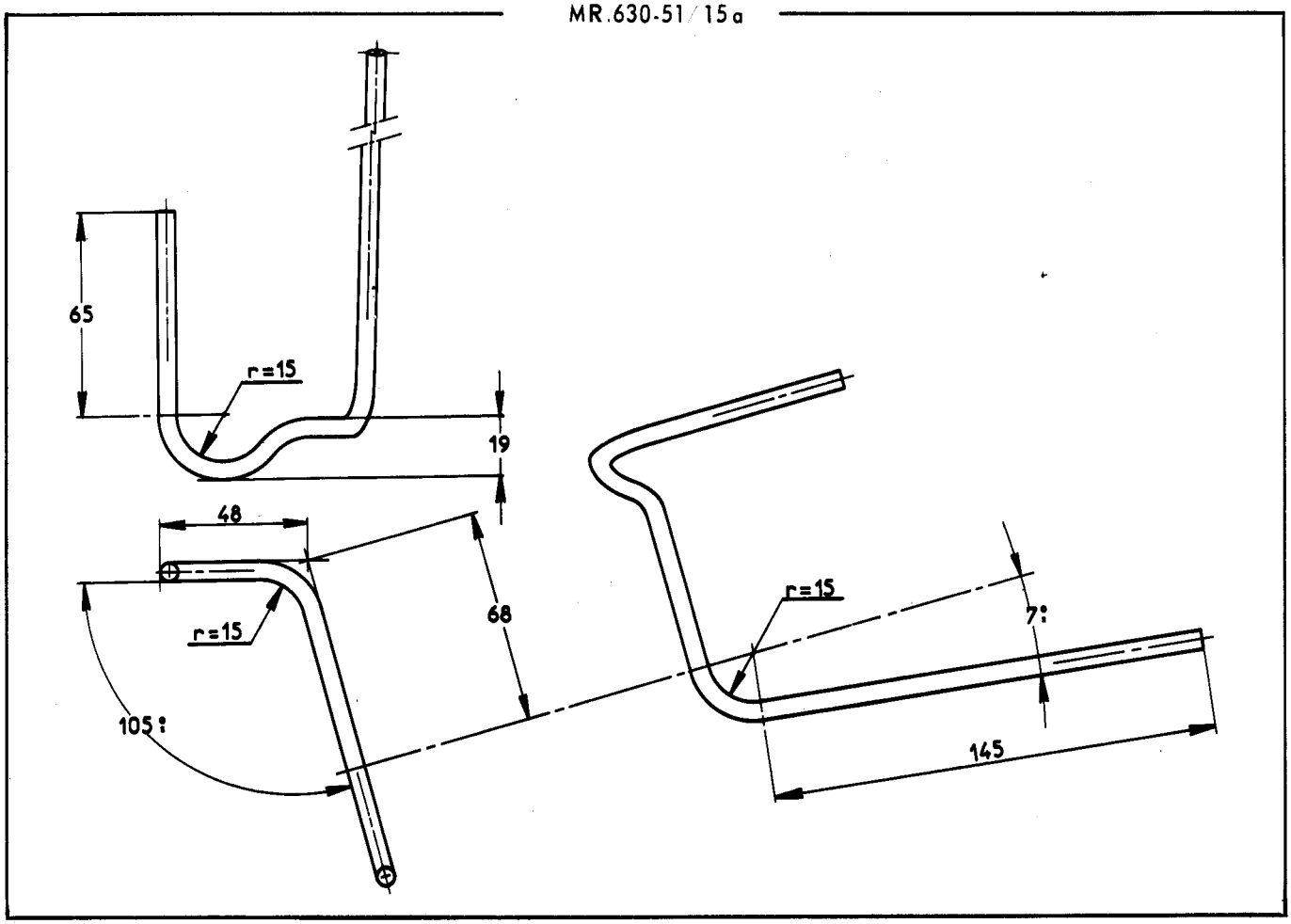
LIST OF ITEMS	M.R. NUMBERS Old	M.R. NUMBERS New	REFERENCE of tools sold
(2) ENGINE			
Extractor for fan			3006-T bis
Gauge pin for static ignition setting		MR. 630-51/15 or MR. 630-51/15 a	
Instrument for checking petrol pressure			4005-T
Union for checking engine oil pressure			3099-T
Pressure gauge (0 to 10 bars, ie. 0 to 145 psi)			2279-T
Instrument for checking crankcase vacuum		MR. 630-56/9 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	
Pegs (to be used with support MR. 630-52/17)	MR. 3365-304	MR. 630-52/17/4	
Dial gauge			2437-T
Instrument for checking centrifugal advance			1692-T
Instrument for checking the engine-gearbox 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 (2.7 mm, 0.1 in thick)			3153-T
Clamp securing the locking spring of the fork shaft for 2nd and 3rd speeds		MR. 630-64/21	
Spanner for screws with flats (length of flats = 9 × 6 A/F)			1677-T
(7) (8) FRONT AND REAR AXLES			
Instrument for checking camber			2313-T
Struts for checking front and rear axles		MR. 630-51/9 a	
Fixture for checking axle arms	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
Spanner (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. 630-52/34	

Supplement No. 1 to Manual 816-1 (CORR)

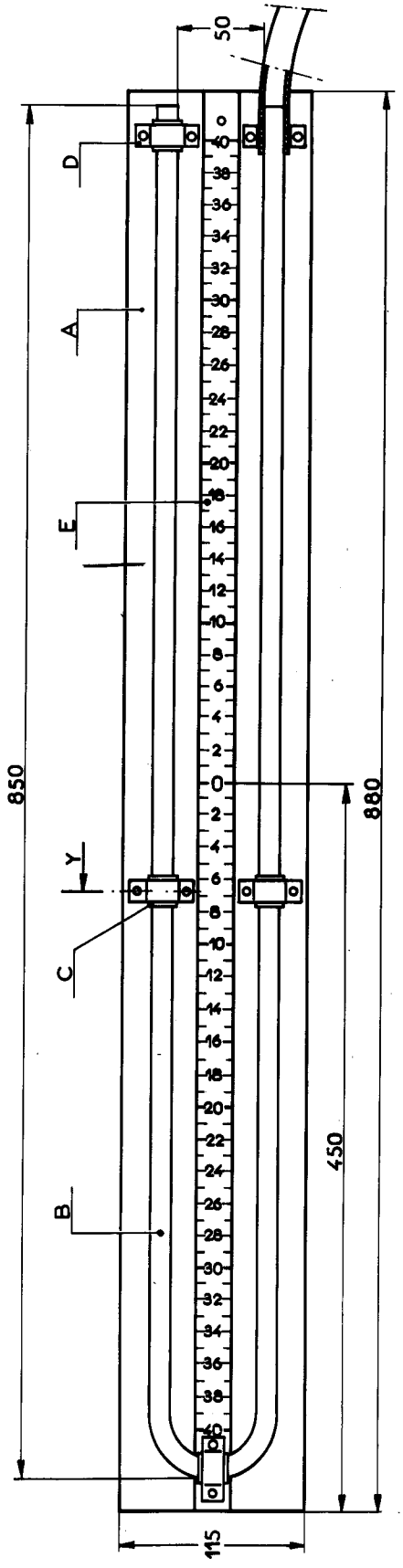
MR.630-51/15

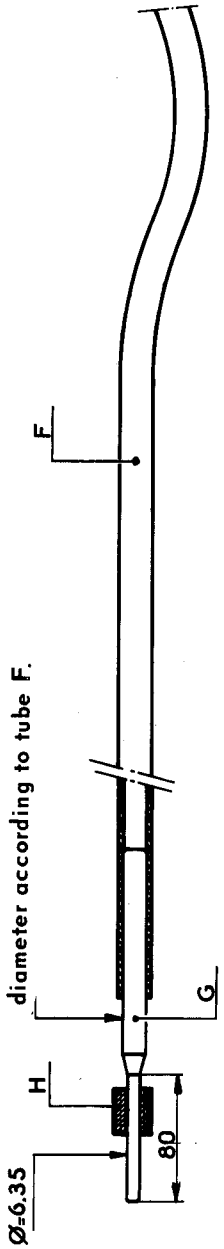


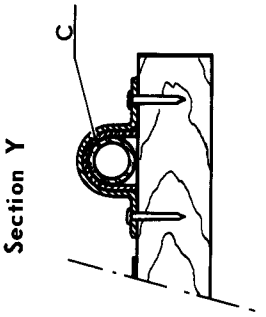
MR.630-51/15a



MR. 630-56 9 a







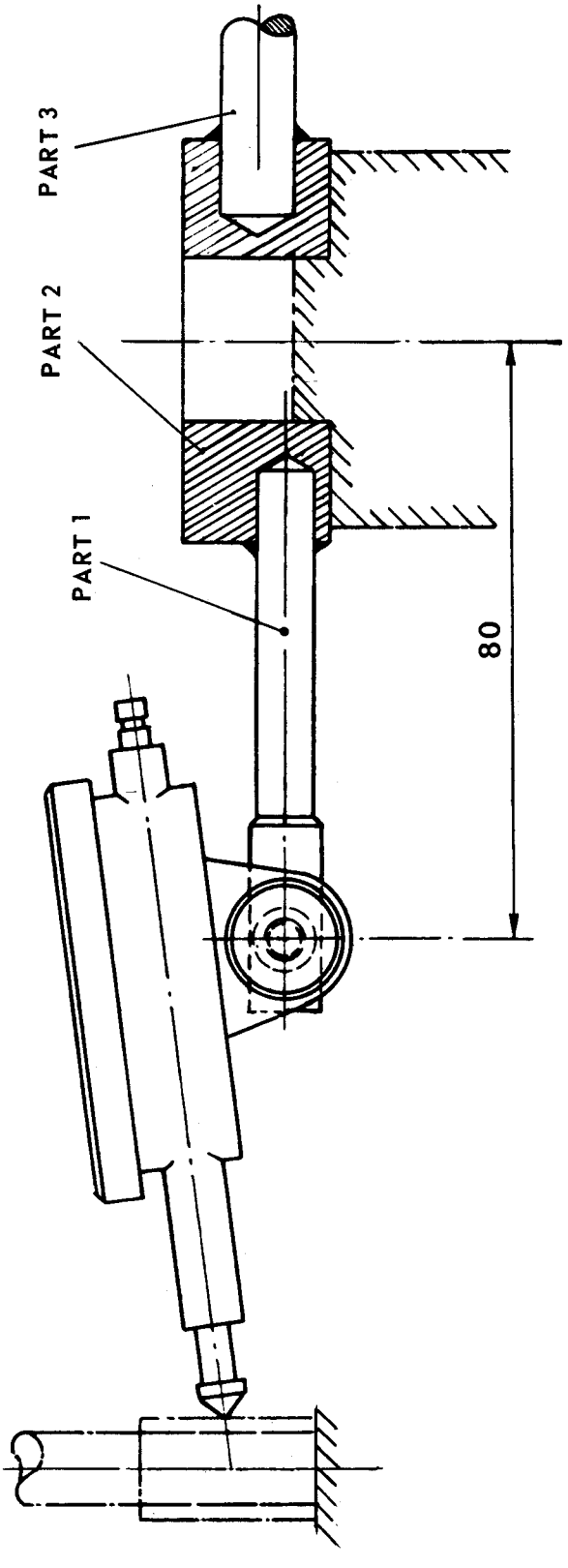
Ref	Qty	Description
A	1	Back plate - thickness : 20
B	1	Glass or plastic tube
C	4	Protective rubber
D	5	Collar
E	1	Scale
F	1	Flexible tube according to dia of B
G	1	Tubular end-piece
H	1	Sleeve seal NN 394.87

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

Fig. 1

SUPPORT FOR DIAL GAUGE USED FOR CHECKING THE CRANKCASE

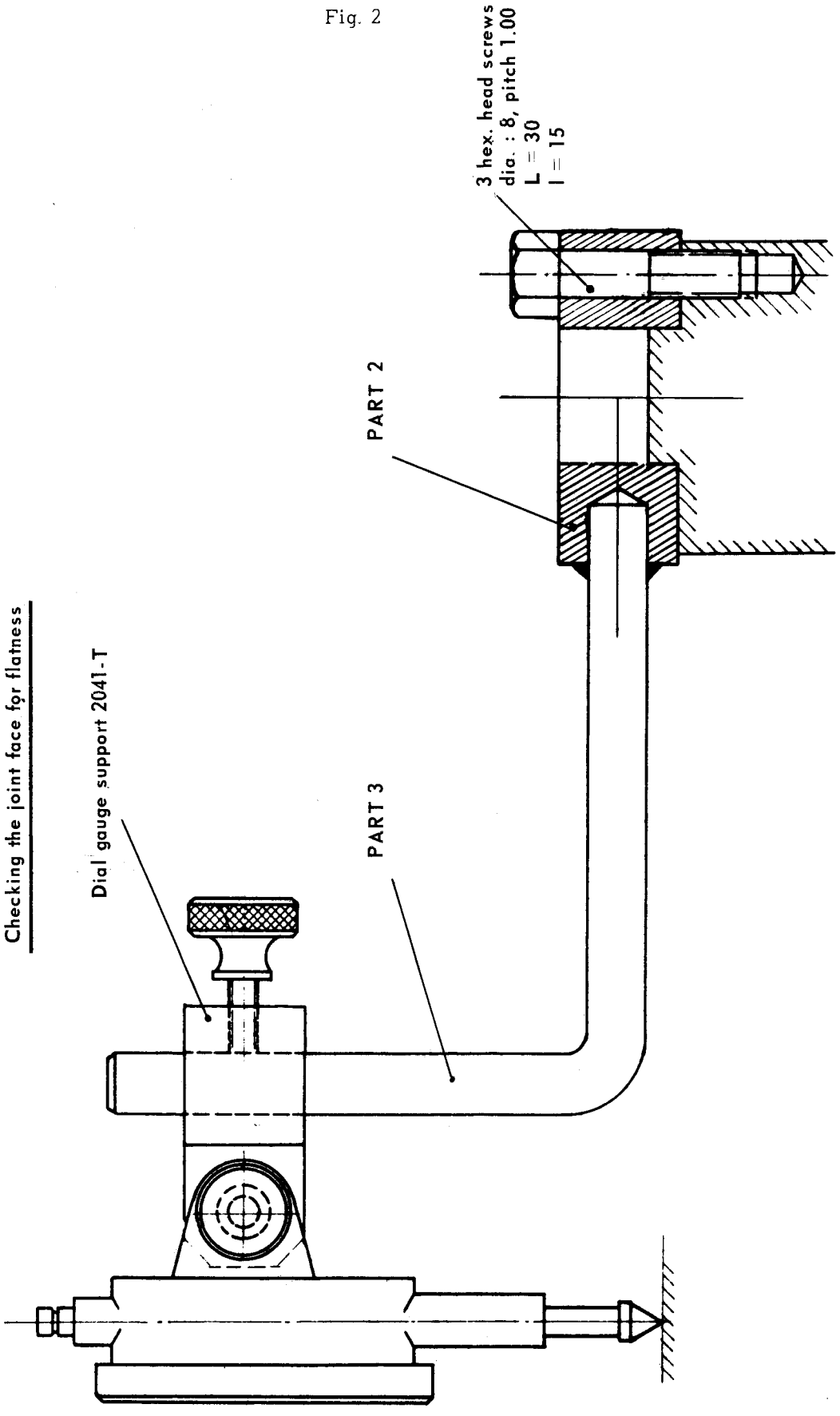
Checking the position of the crankcase studs



MR. 639-52/16
ex MR. 3365-290

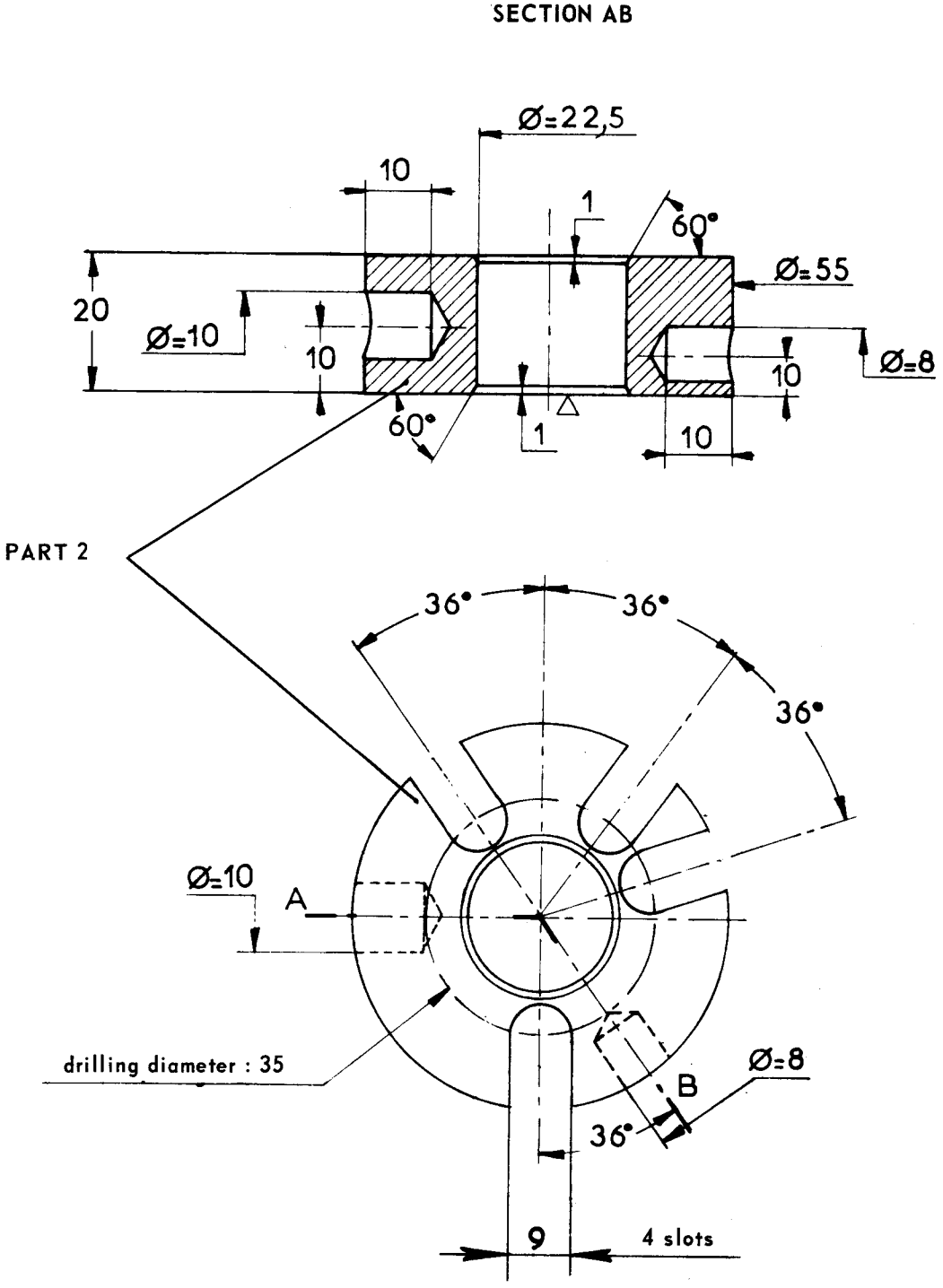
Fig. 2

SUPPORT FOR DIAL GAUGE USED FOR CHECKING THE CRANKCASE



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

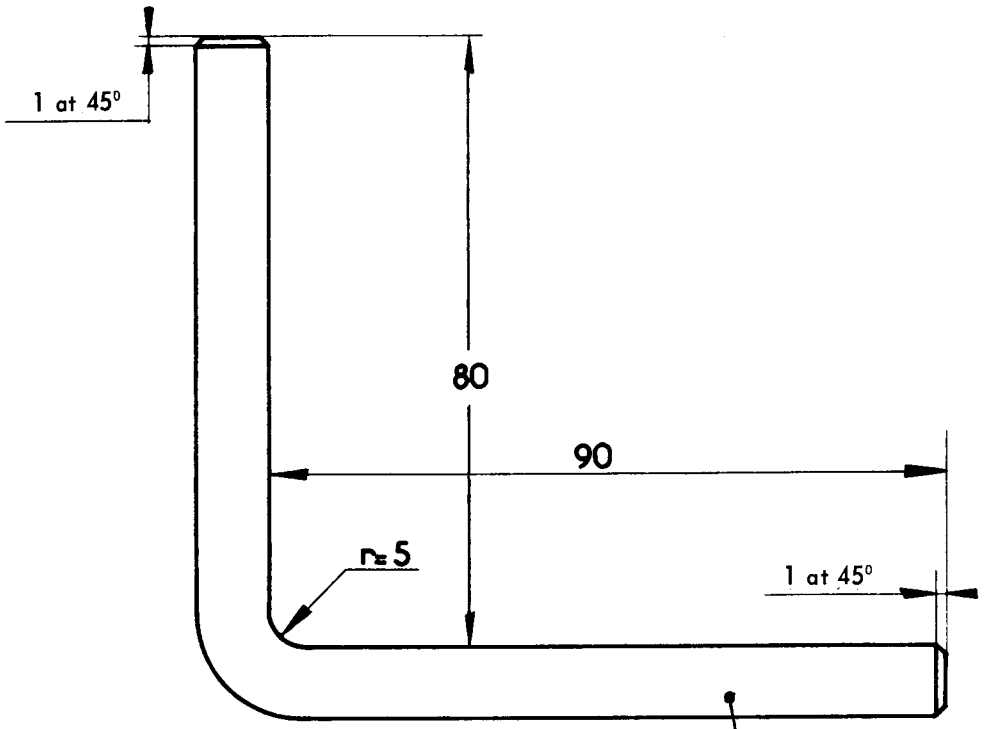
Fig. 3



Material : semi-hard steel

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

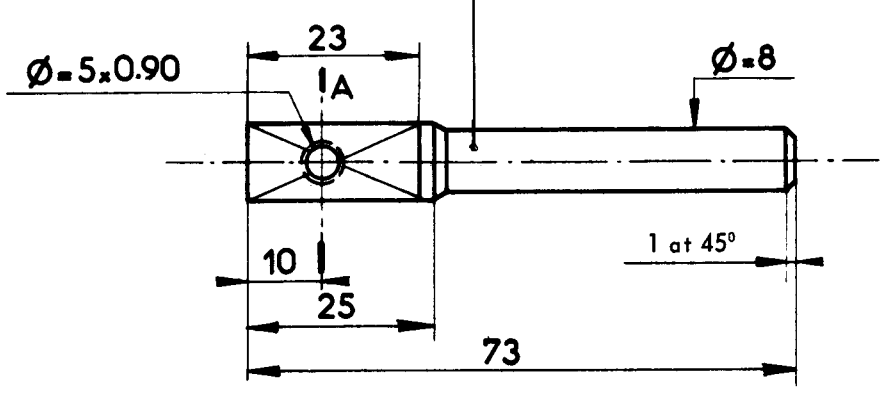
Fig. 4



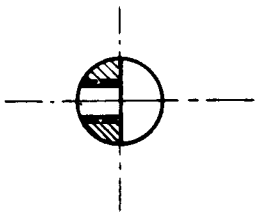
Material : stub steel - diameter : 10

PART 3

PART 1



SECTION A



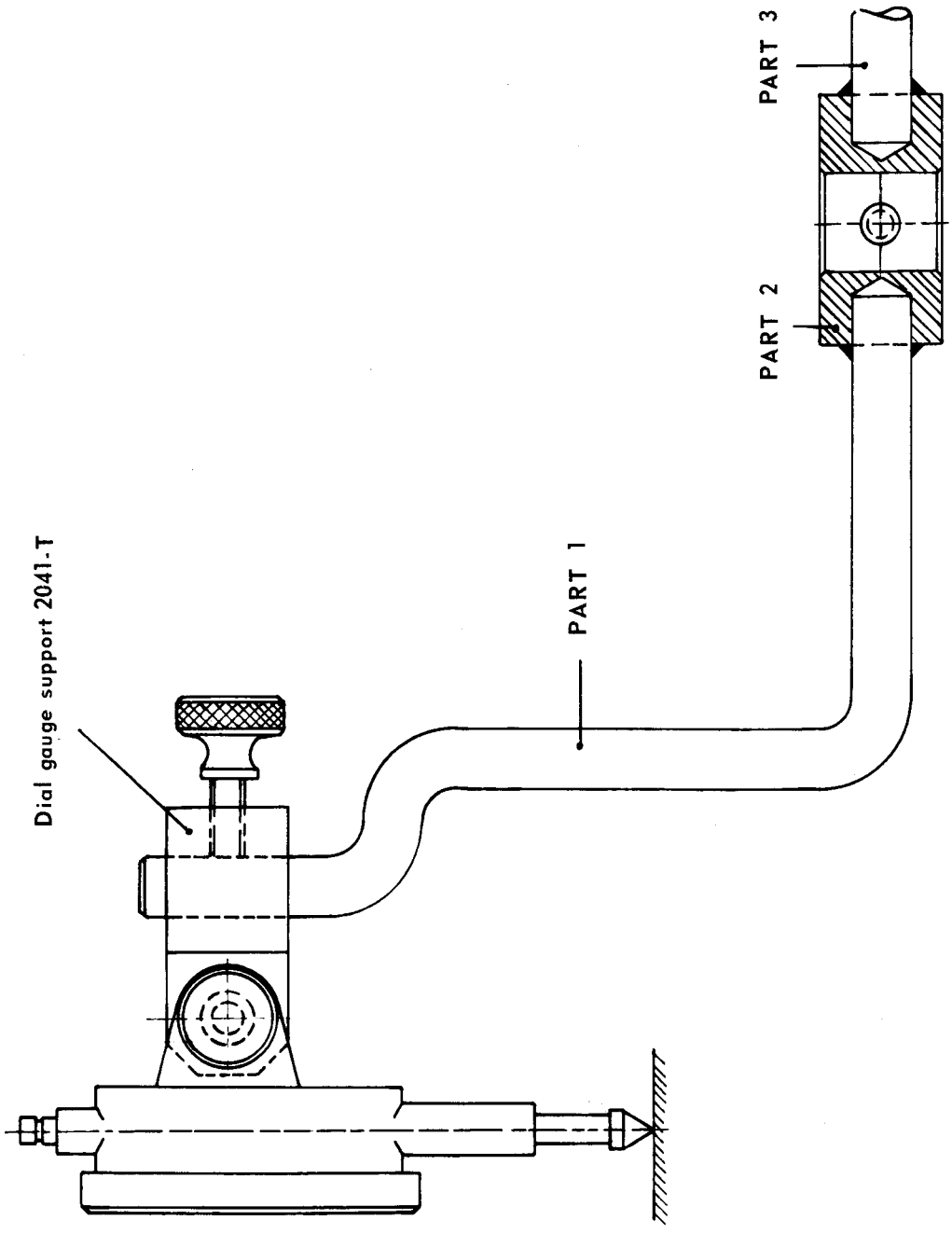
Material : stub steel - diameter : 10

MR. 630-52/17
ex MR. 3365-300

Fig. 2

SUPPORT FOR DIAL GAUGE USED FOR CHECKING THE CLUTCH CASING

Checking the joint flange for flatness



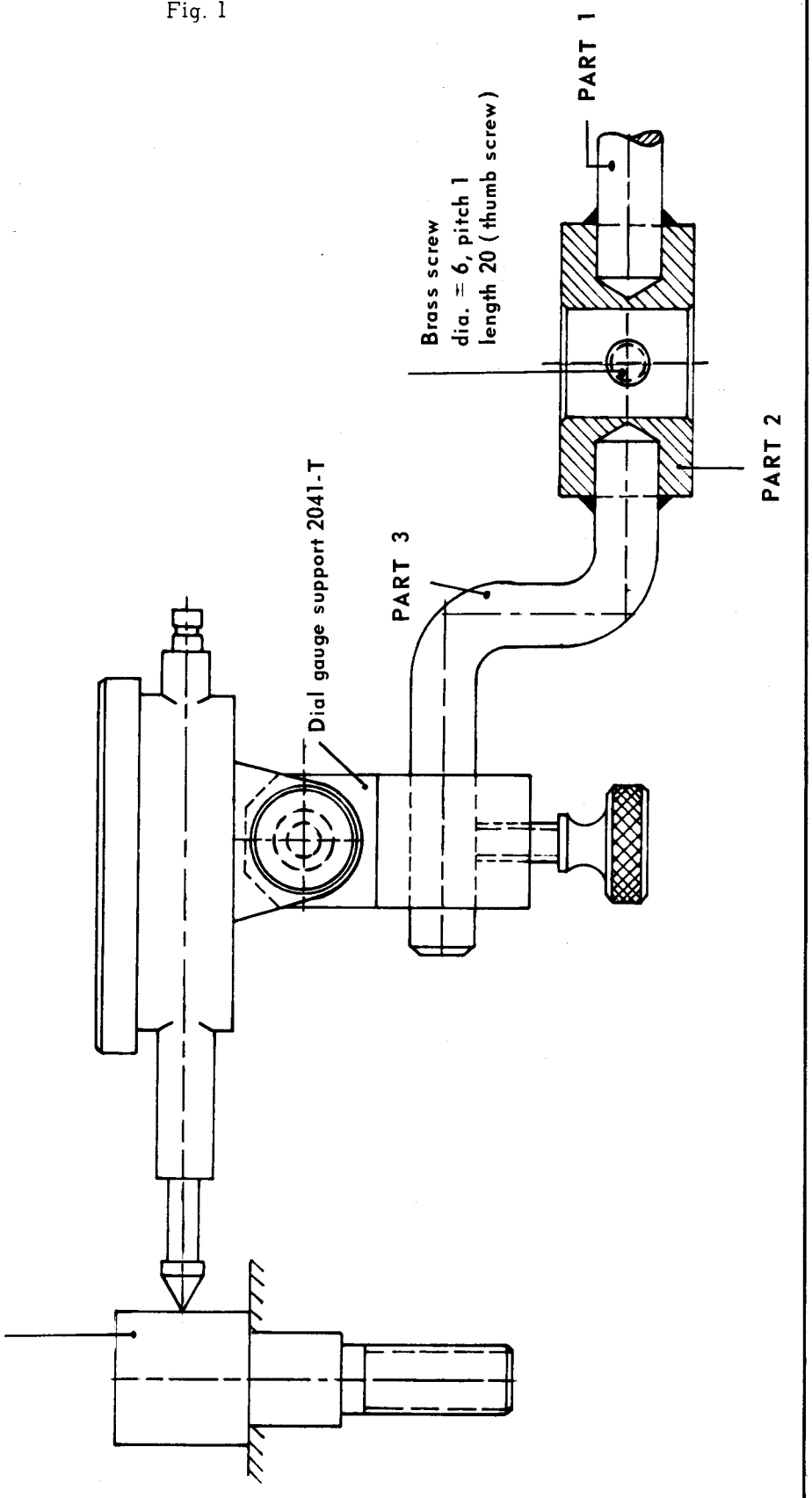
MR. 630-52/17

ex MR. 3365-300

Fig. 1

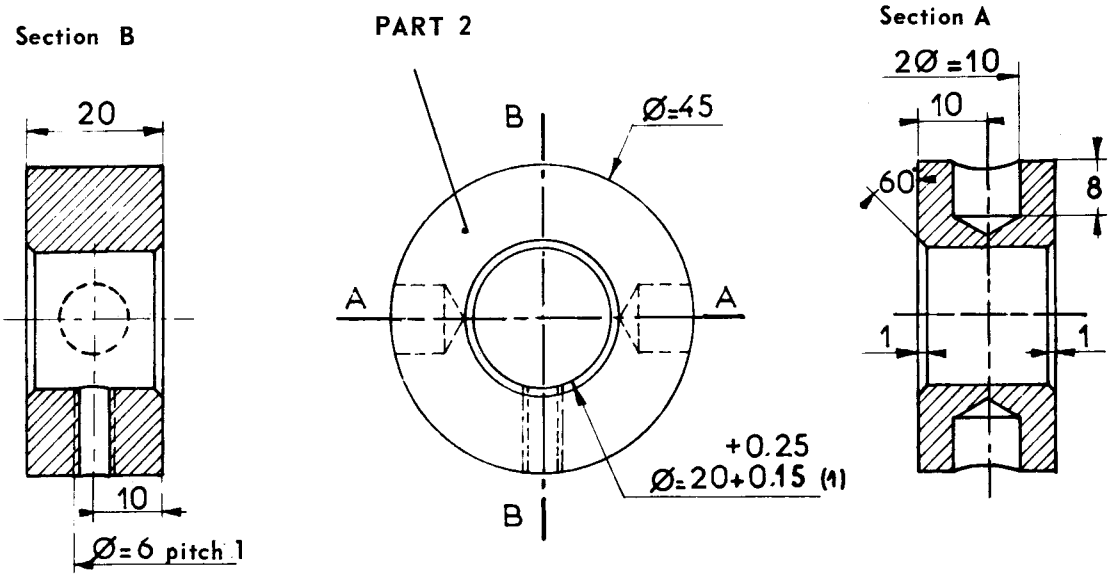
SUPPORT FOR DIAL GAUGE USED FOR CHECKING THE CLUTCH CASING

Checking the position of the bores for locating dowels

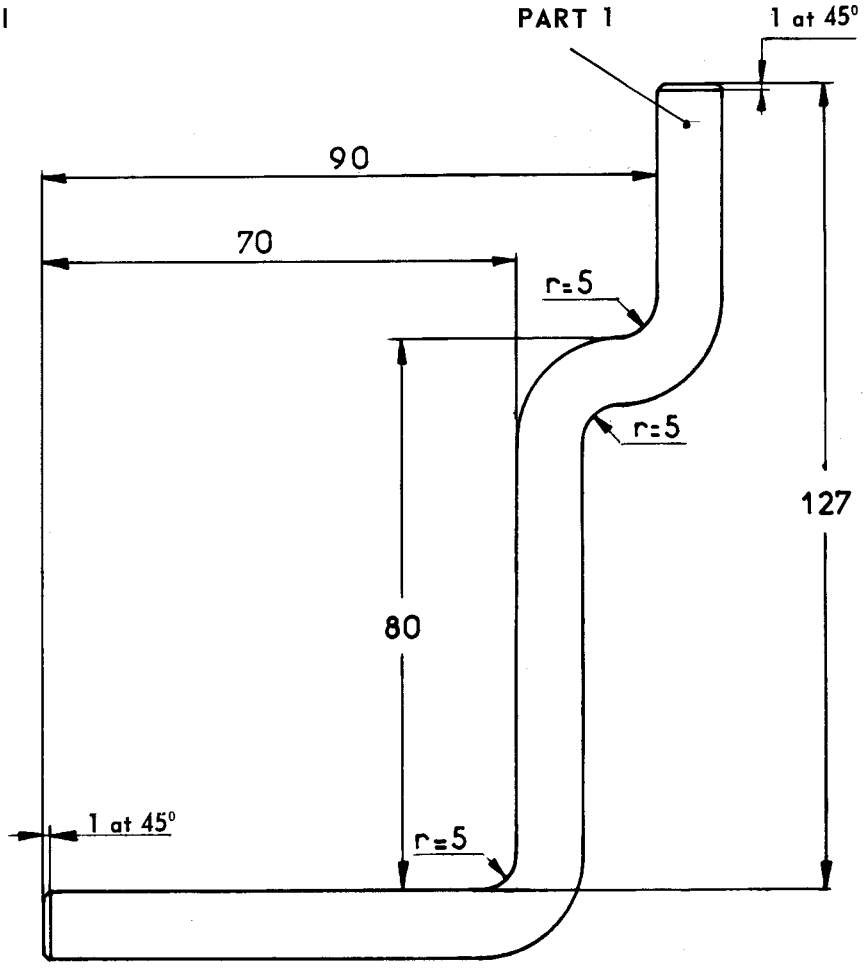


MR.630-52/17
ex MR. 3365-300

Fig. 3



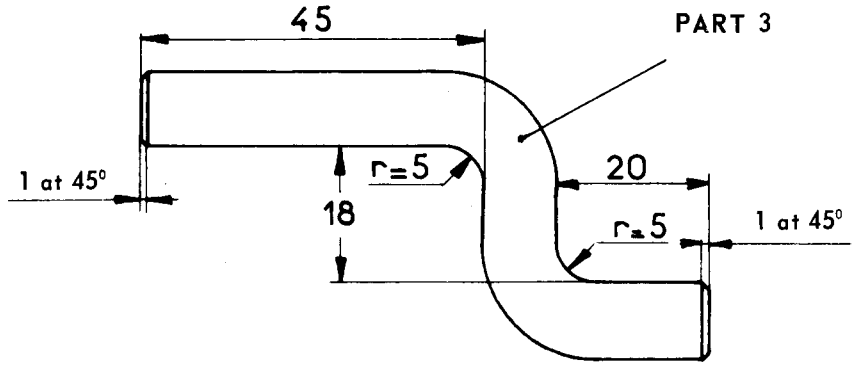
Material : semi hard steel



Material : stub steel dia. 10 mm

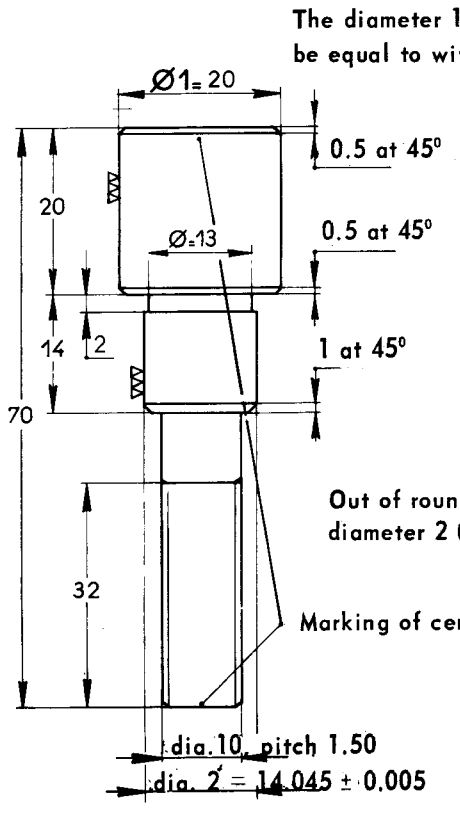
MR. 630-52/17
ex MR. 3365-300

Fig. 4



Material : stub steel diameter 10

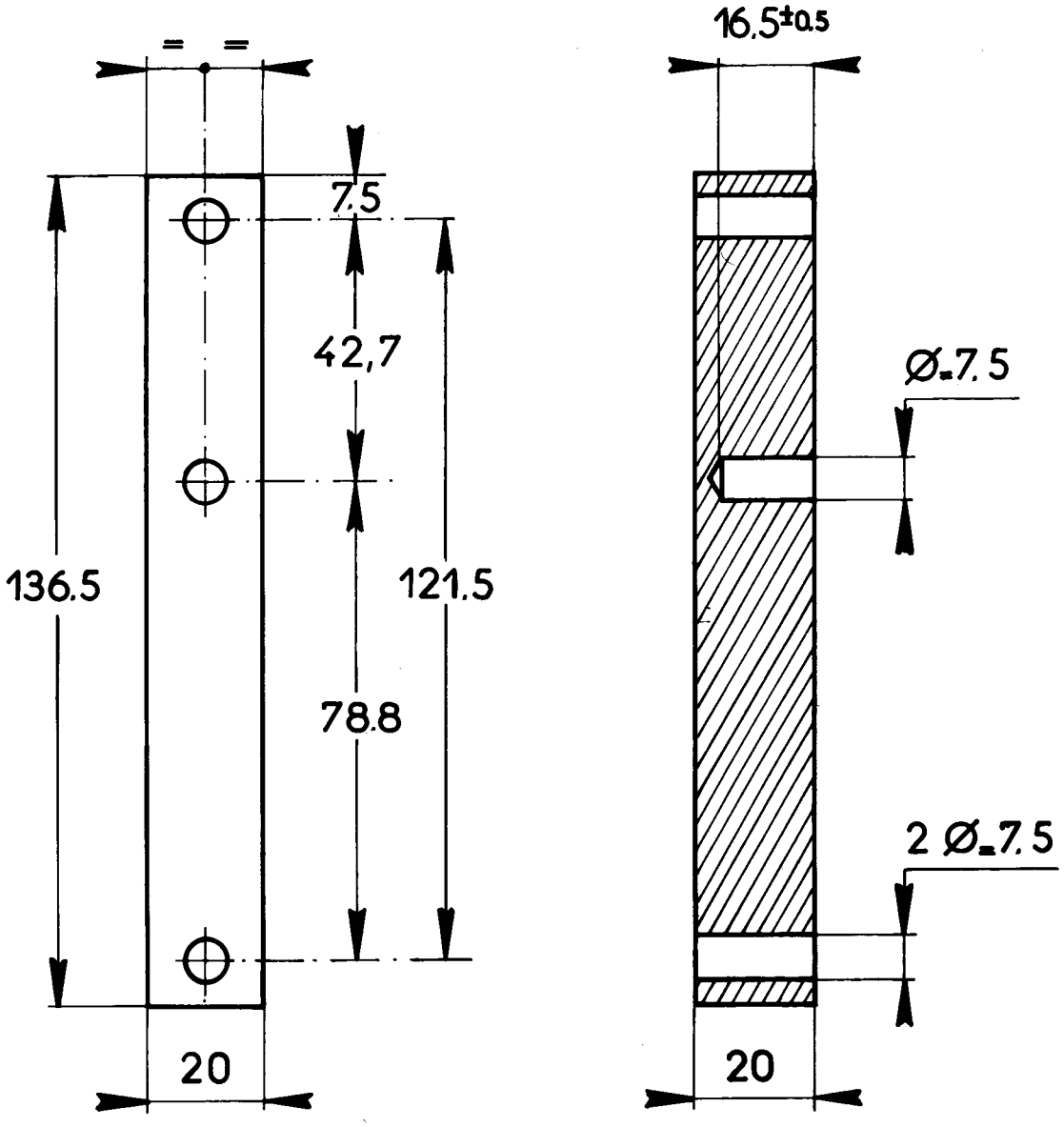
MR. 630-52/17/4
ex MR. 3365-304



Semi hard steel

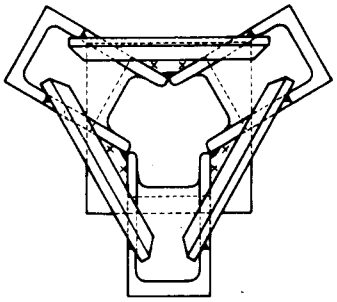
2 parts

MR. 630-64/21



Material : mild steel
or other hard material

MR. 630.51/9a

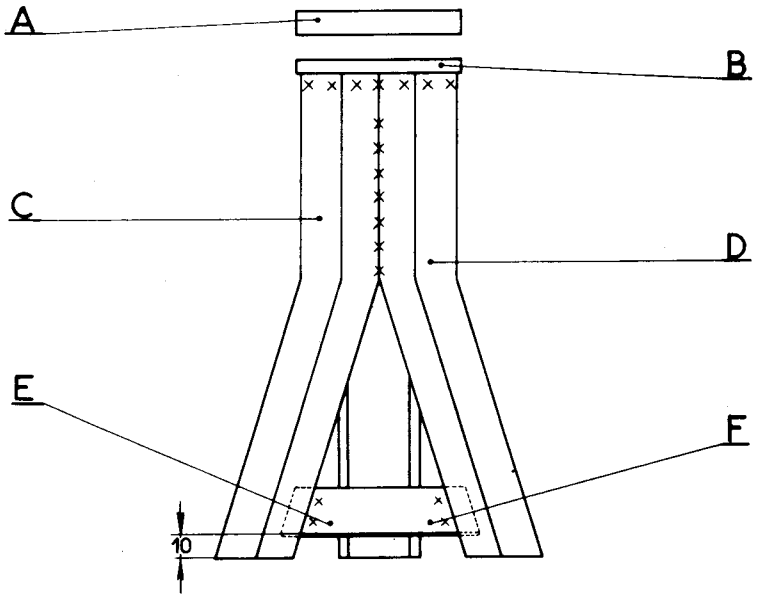


Rear strut : B + C + E + plate A

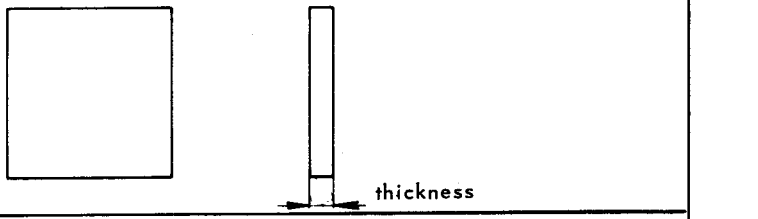
height = 284 ± 1 + 10 mm

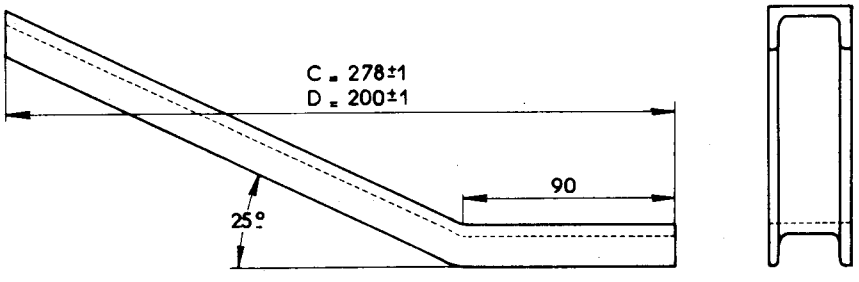
Front strut : B + D + F

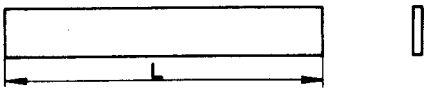
height = 206 ± 1 mm



Ref	Qty	Material	Dimensions
A	1	Semi hard steel	70 × 70 thickness 10
B	1	Mild steel	70 × 70 thickness 6
C	3	Rear plate U iron 35 × 17.5	dev. length 298
D	3	Front plate U iron 35 × 17.5	dev. length 212
E	3	Rear plate iron strip 20 × 4	length = 135
F	3	Front plate iron strip 20 × 4	length = 85

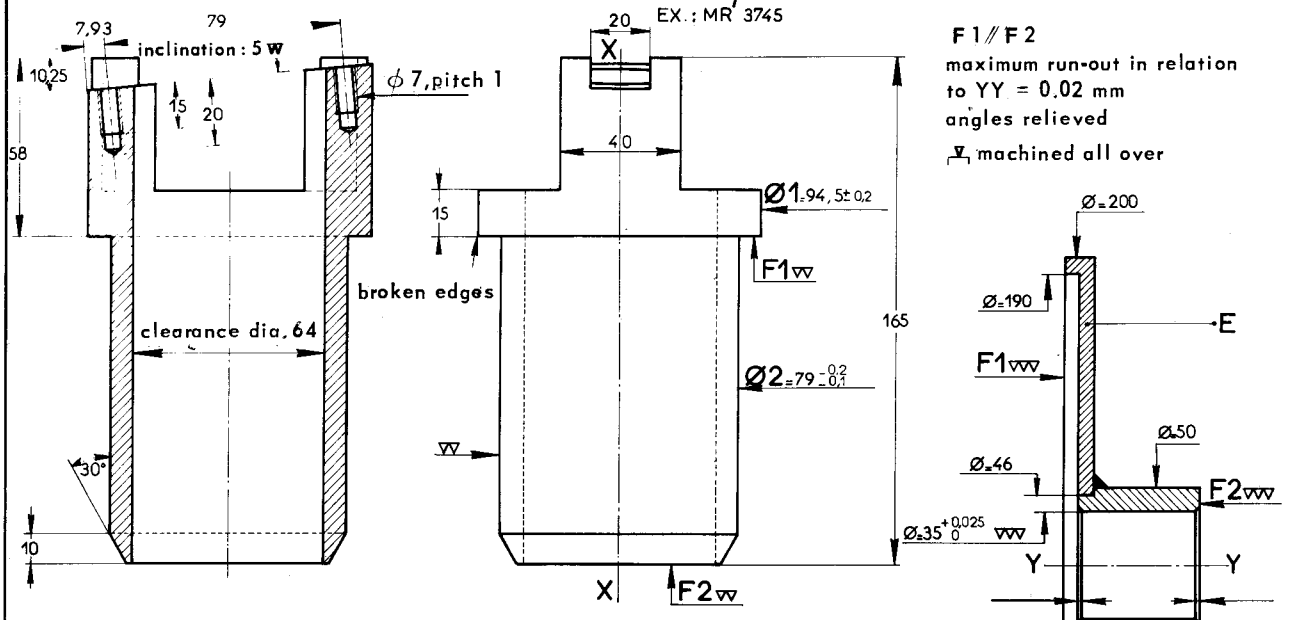


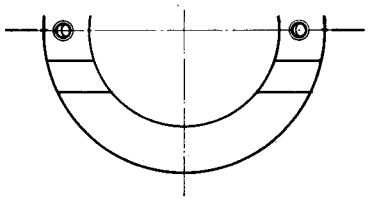




MR 630-51/46

EX.: MR 3745

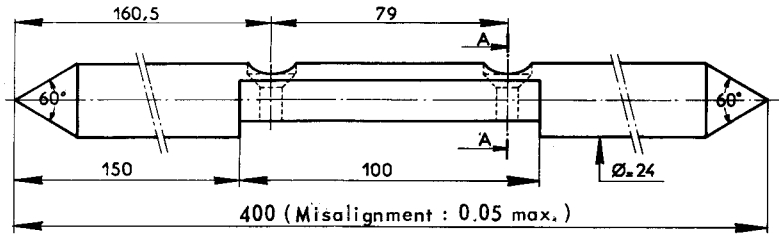




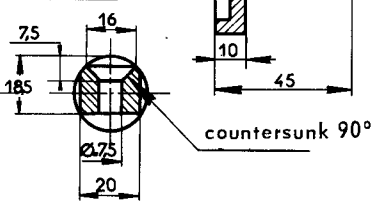
ϕ 1 and ϕ 2 concentric to within 0.02 mm

F 1 // F 2 Maximum run-out in relation to YY : 0.02 mm

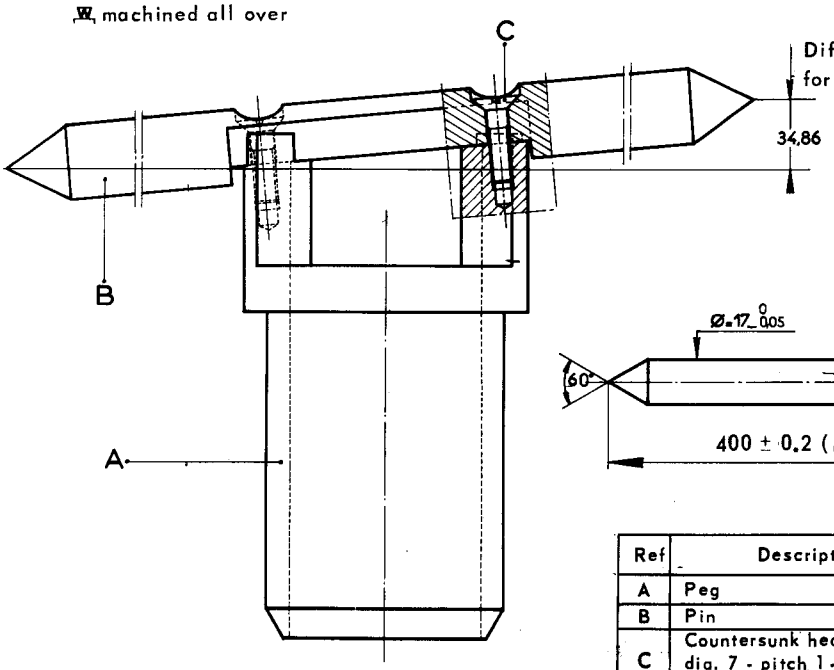
machined all over



Section A

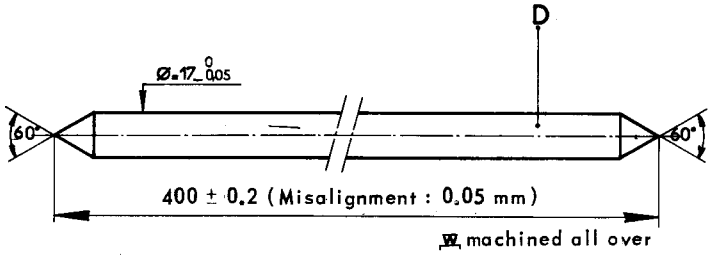


machined all over



Difference in height of points for an inclination of pin of 5°

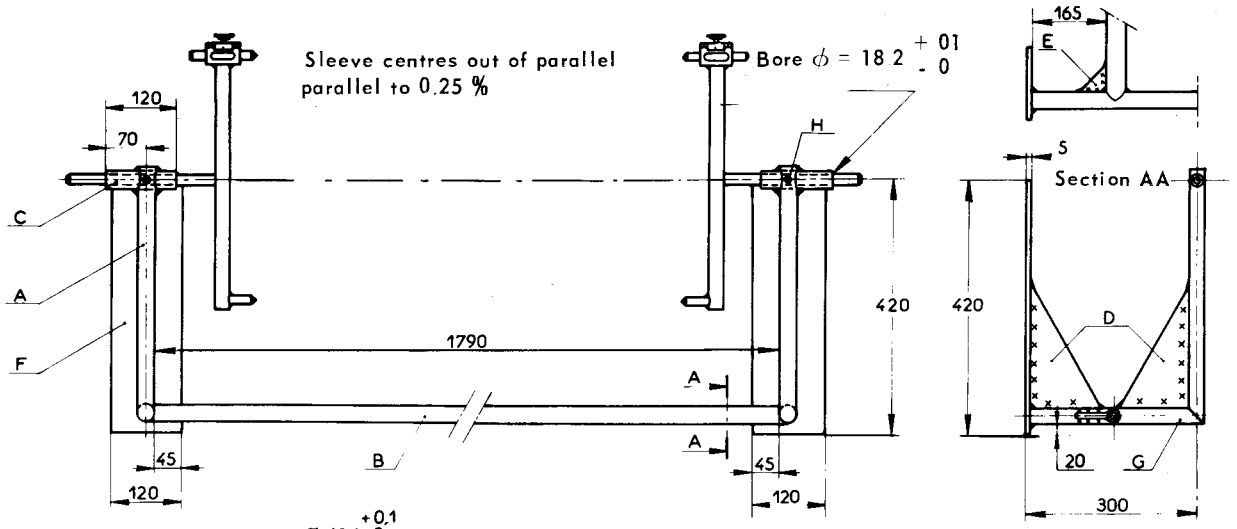
34,86

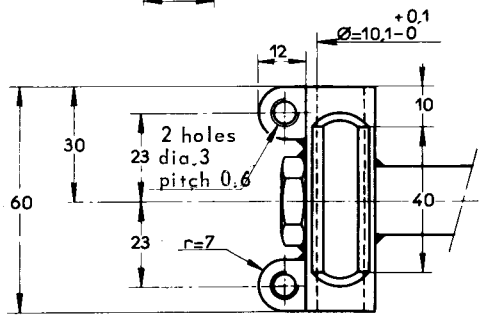


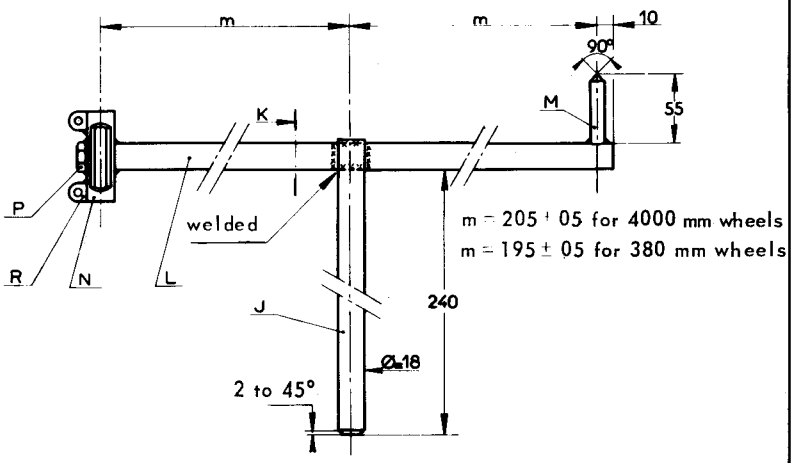
machined all over

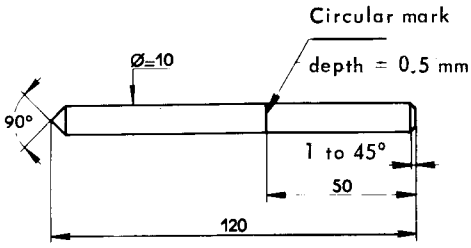
Ref	Description	Material	Quantity
A	Peg	Semi-hard steel	1
B	Pin	Semi-hard steel	1
C	Countersunk head screw dia. 7 - pitch 1 - length 25		2
D	Pin	Semi-hard steel	1
E	Plate	Semi-hard steel plate 10	1

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



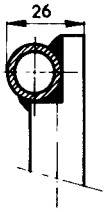




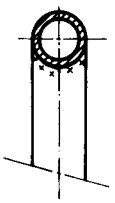


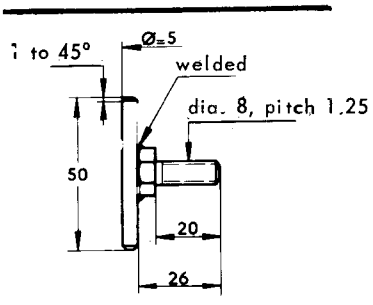
Stub steel dia. 10

Section K
for 380 mm wheels



Section K
for 4000 mm wheels





Drawn steel - dia. 5
Semi-hard

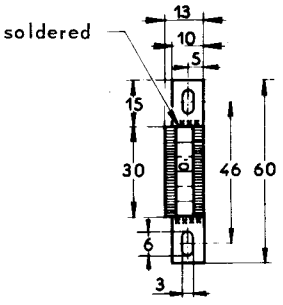
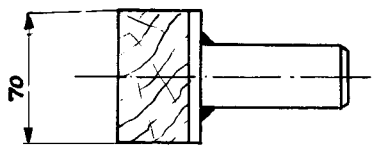
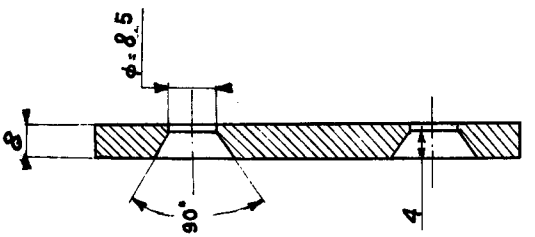


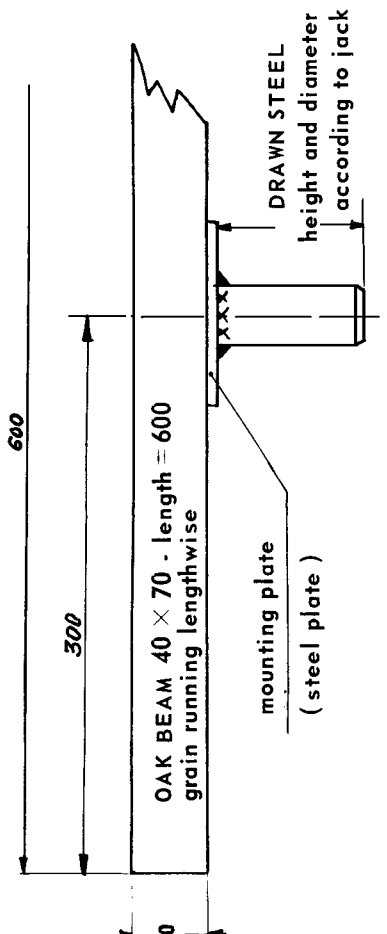
plate (0.5 mm thick)
+ solenoïd scale

Ref	Description	Material	Q ty
A	Fork support length = 420	tube ϕ 26 × 30	2
B	Spacer length = 1820	tube ϕ 26 × 30	1
C	Sleeve length = 140	tube ϕ 18 × 26	2
D	Gusset 200 × 120	5 mm plate	4
E	Gusset 50 × 50	5 mm plate	2
F	Plate length : 420-width:120	5 mm plate	2
G	Support length = 310	tube ϕ 26 × 30	2
H	Nut-dia.8,pitch1.25,h = 6		2
J	Rod welded to L	semi-hard steel	4
L	Support bar	tube ϕ 13 × 18	4
M	Fixed pin	stud dia. = 10	4
N	Vernier	tube ϕ 10 × 18	4
P	Nut-dia. 8, pitch 1.25, h = 6		4
R	Lugs	3 mm plate	8

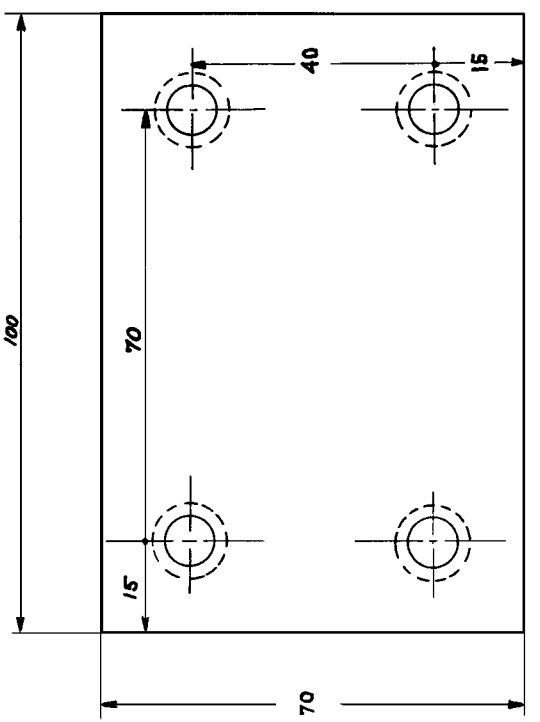
MR. 630 – 41 / 3
ex MR. 3300 -70





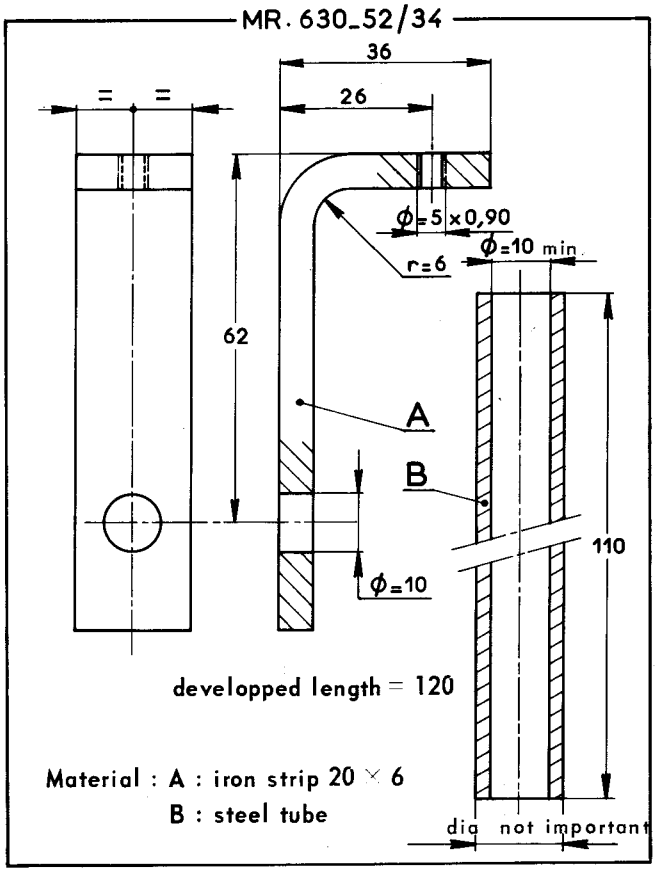


DETAIL OF PLATE



Securing : 4 countersunk head screws
dia. = 8 - length = 40

manual 016.91 1


MR. 630_52/34
36
26
62
Ø=5 x 0,90
Ø=10 min.
r=6
A
B
110
Ø=10
developped length = 120
Material : A : iron strip 20 x 6
B : steel tube
dia not important