CITROËN
AUTOMOBILES CITROËN
Société anonyme au capital de 800.000.000 F

REPAIR MANUAL No. MAN. 008111

VOLUME 1

MAY 1994

CUSTOMER SERVICES
AFTER-SALES TECHNICAL DEPARTMENT

. Supplement No. 1 : Included
. . No. 2 : Included (May 84)
. . . No. 3 :

GSA VEHICLES

MECHANICAL COMPONENTS

ELECTRICAL SYSTEM



Printed in France

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HOW TO USE THE MANUAL

The Repair Manual regarding this type of vehicle is made up of two volumes

Volume 1 is divided into four sections separated by index sheets, numbered from I to IV

I : CHARACTERISTICS - ADJUSTMENTS CHECKS
II : REMOVAL AND FITTING of units. sub-assemblies and accessories
III : RECONDITIONING of units, sub-assemblies and accessories
IV : ELECTRICAL SYSTEM - HEATING VENTILATION

Two other index sheets are to be found at the end of this volume, entitled TECHNICAL BULLETINS and INFORMATION BULLETINS. They are intended for classification of these bulletins.

Volume 2 deals with operations regarding BODYWORK.

Each volume is presented in a blue binder with « RING » type mechanism, in order to facilitate classification of supplements or take out an operation sheet needed in the workshop.

COMPOSITION OF VOLUME 1

It contains :
- the list of operations appearing in it,
- the operations, filed in numerical order.
-the summary list of all special tools that are not sold and which are mentioned in the operations; together with the manufacturing drawings of these tools which have to be made by the repairer himself.

UPDATES TO VOLUME 1

A roman numeral placed in brackets at the bottom right of each right-hand page indicates the section into which the sheet is to be inserted.
The number of the update is given by the number of dots located on the left of the roman number.

For example : 1 dot . update No. 1
2 dots .. update No. 2

OPERATIONS

The order of operations has been studied to obtain the best working quality in the shortest time.

The operation numbers are composed of.
a) the vehicle code « GX » or « GX.ea » *
b) a three-figure number designating the unit or the unit component
c) a figure indicating the kind of repair :
- Figures 0 0 0 indicate the characteristics of the vehicle
- Figures 0 0 indicate the characteristics of the unit
- Figure 0 indicates the checks and adjustments
- Figures 1, 4, 7 indicate removals and fittings
- Figures 2, 5, 8 indicate strippings and reassemblings
- Figures 3, 6, 9 indicate reconditionings

TOOLS

Special tools are indicated in the text by a number followed by the letter T.
Complementary tools are indicated in the text by a number preceded by the index MR.

TIGHTENING TORQUES

The torques are expressed in decaNewton metre(m.daN), statutory torque measuring unit :

0.981 **m.N** = **1 m.kg** (former measuring unit)

In practice: **1 m.daN = 1 m.kg**

NOTE : When the indication “torque wrench” is mentioned following the value of a tightening torque, the operation must be IMPERATIVELY carried out with a torque wrench.

IMPORTANT REMARKS

For all technical information regarding these vehicles, please contact :

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

DEPARTEMENT TECHNIQUE APRES-VENTE, ASSISTANCE TECHNIQUE - 163. avenue Georges Clémenceau - 92000 NANTERRE (FRANCE) Tel : 725-97-l0

* « GX.ea » : vehicle with automatic clutch

LIST OF OPERATIONS IN SECTION I

	Operation number	DESCRIPTION
		CHARACTERISTICS - ADJUSTMENTS - CHECKS
	GX. 000	General specifications ***(Saloons and Estates)***
	GX. 00	Vehicle jacking and towing points
	GX. 01	Protection of electrical equipment
	GX. 02	Work on the hydraulic system : - Precautions - Draining the hydraulic circuit
	GX 100-00	Characteristics and special features of the engine
	GX 112-0	Rocker arm adjustment
	GX 120-0	Checking the valve timing
	GX 142-000	General features of the carburation
	GX 142-00	Characteristics and special features of the carburettors (GSA 1300 → 7/1980)
	GX 142-00 a	Characteristics and special features of the carburettors (GSA 1300 7/80 - 7/81) GSA 1130 7/80 — 7/83)
◊	GX 142-00 b	Characteristics and special features of the carburettors (GSA 1300 7/81 →)
	GX 142-0	Carburettor adjustment (GSA 1300 → 7/1980)
	GX 142-0 a	Carburettor adjustment (GSA 1300 7/80 – 7/81 - GSA 1130 7/80 → 7/83)
◊	GX 142-0 b	Carburettor adjustment (GSA 1300 7/81 →)
	GX 172-0	Testing inlet air heating system thermostat probe
	GX 173-0	Characteristics and checks of the fuel supply system
	GX 210-00	Ignition system specifications
◊	GX 210-00 a	Characteristics of the transistorized ignition system
	GX 210-0	Checking and adjusting the ignition system
◊	GX 210-0 a	Checking the transistorized ignition
	GX 220-0	Checking the oil pressure
	GX 312-00	Characteristics and special features of the pedal-operated clutch mechanism Checking and adjusting pedal-operated clutch control system
	GX ea 320-00	Characteristics and special features of the torque converter
	GX ea. 320-0	Checking and adjusting the torque converter and its controls I. Checking and adjusting the contact gap of the solenoid valve control II. Checking the pressure of the converter oil feeding circuit
	GX 330-00	Characteristics and special features of gearbox with pedal-operated clutch
	GXea 330-00	Characteristics and special features of gearbox with torque converter
	GXea. 330-0	Draining and filling up the gearbox and the converter
	GX 372-00	Characteristics and special features of the drive shafts
	GX 390-00	Characteristics and special features of the source and reserve of pressure - Hydraulic system - Depressurization of the hydraulic system
	GX 390-0	Checking the source and reserve of pressure
	GX 410-00	Characteristics and special features of the front axle unit
	GX 410-0	Conditions for checking and adjusting the front and rear axle units using projection equipment
	GX 420-00	Characteristics and special features of the rear axle unit
	GX 420-0	Conditions for checking and adjusting the front and rear axle units using projection equipment (see Operation GX 410-0)

LIST OF OPERATIONS IN SECTION I

Operation number	DESCRIPTION
GX. 430-00	Characteristics and special features of the suspension
GX. 430-0	Checking and adjusting the suspension and its controls
	- Height preadjustment
	- Height adjustment
	- Checking and adjusting the manual height control
	- Anti-roll bar adjustment
GX. 440-00	Characteristics and special features of the steering
GX. 450-00	Characteristics and special features of the braking system
GX. 453-0	Checking and adjusting the hydraulic brake control
	- Bleeding the front brakes
	- Bleeding the rear brakes
	-Adjustment of brake pedal clearance
	-Adjustment of stoplamp switch
	- Check and adjustment of the handbrake

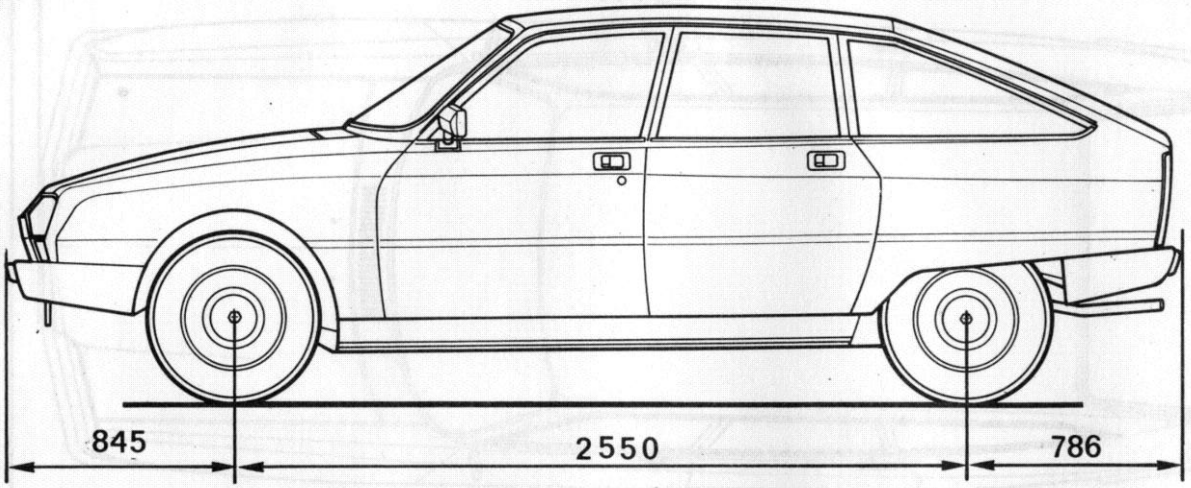
I. GENERAL SPECIFICATIONS.

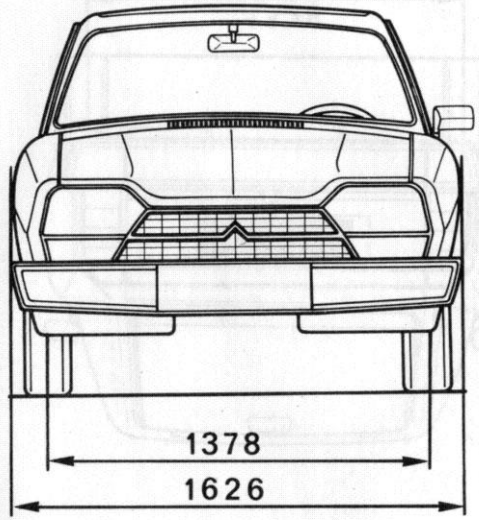
		SALOON	ESTATE	ESTATE Entreprise
Official symbol	Manual gearbox — 1130 cc engine	GX series YA	GX series YE	GX series YF
	Manual gearbox — 1300 cc engine	GX series YL	GX series YS	
	Manual gearbox — 1300 cc ECO engine	GX series YL	GX series YS	GX series YM
	Gearbox with converter — 1300 cc engine	GX series YR	GX series W	
	Gearbox with converter — 1300 cc ECO engine			
Commercial symbol :		GSA	GSA	GSA
Factory symbol (guarantee type)	Manual gearbox — 1130 cc engine	YA	YE	YF
	Manual gearbox — 1300 cc engine	YL	YS	
	Manual gearbox — 1300 cc ECO engine	YL	YS	YM
	Gearbox with converter — 1300 cc engine	YR	YV	
	Gearbox with converter — 1300 cc ECO engine			
Introduction date:	1130 cc engine	July 80	July 80	July 80
	1300 cc engine	September 79	September 79	
	1300 cc ECO engine	July 81	July 81	
French fiscal rating :				
GSA Spécial (1130 cc engine)	Manual gearbox. 4-speed	6 cv	6 CV	6 CV
	Manual gearbox 5-speed	5 cv	5 cv	
GSA Club, Pallas, X3 : (1300 cc engine)	Manual gearbox	7 cv	7 cv	
	Gearbox with converter	8 cv	8 CV	
Number of seats :		5	5	2

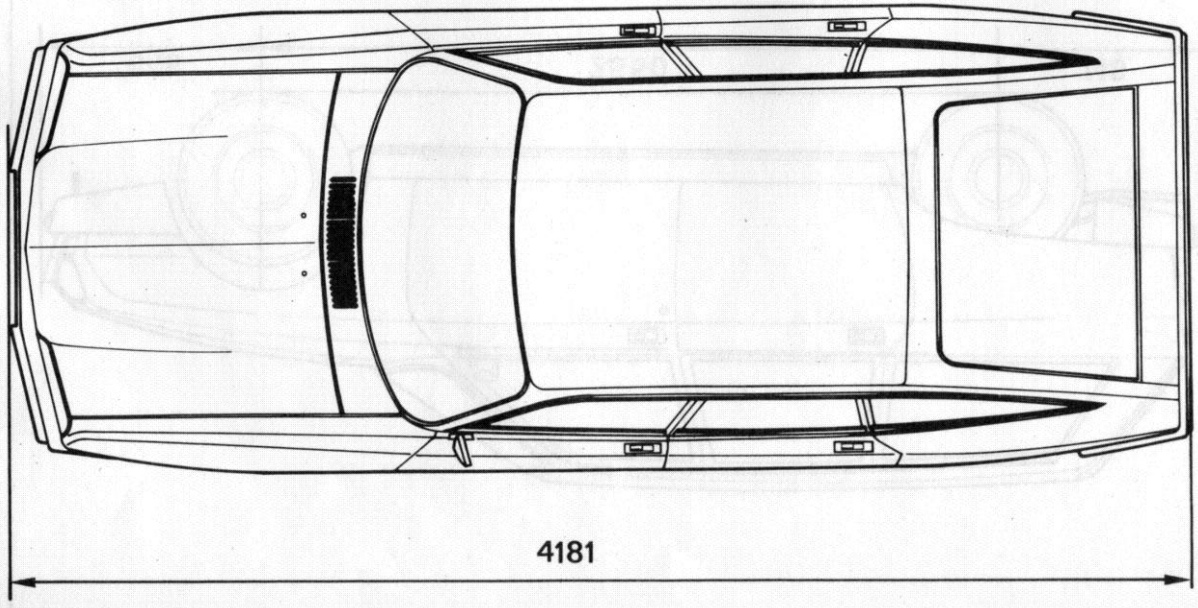
Standard fitting	Front	Rear	Spare
Pressed steel rim : 4 l/2 J 15 MICHELIN tyres Inflation pressure	145 SR 15 XZX 1.8 bars	145 SR 15 XZX 1.9 bars	
Optional fitting			145 SR 15 XZX 2.1 bars
Light-alloy rim: 4 l/2 J 15 MICHELIN tyres Inflation pressure	145 HR 15 XVS 1.7 bars	145 HR 15 XVS 1.8 bars	
GSA Entreprise	1.8 bars	2.1 bars	2.3 bars

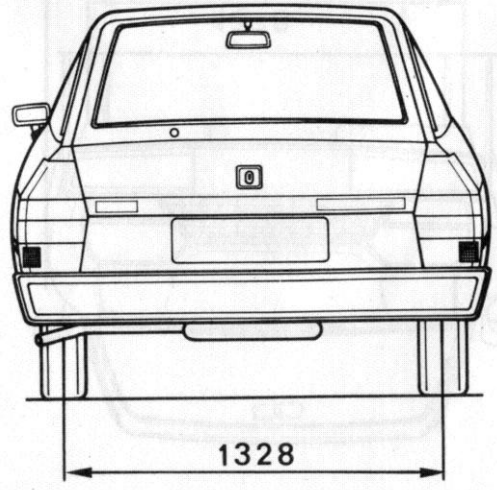
II. DIMENSIONS AND WEIGHTS:

Dimensions :	SALOON	ESTATE
Wheelbase :	2.550 m	2.550 m
Track, front:	1.378 m	1.378 m
Track, rear :	1.328 m	1.328 m
Length overall:	4.181 m	4.143 m
Width. overall :	1.626 m	1.626 m
Height, normal driving position :	1.349 m	1.349 m
Ground clearance. nil pressure :	0.070 m	0.070 m
Ground clearance, normal driving position	0.154 m	0.154 m
Ground clearance, max. raised position :	0.240 m	0.240 m
Turning circle - between walls :	10.40 m approx	10.40 m appro,
Turning circle - between kerbs :	9.66 m approx.	9.66 m appro:
Overhang, front :	0.845 m	0.845 m
Overhang rear :	0.786 m	0.748 m



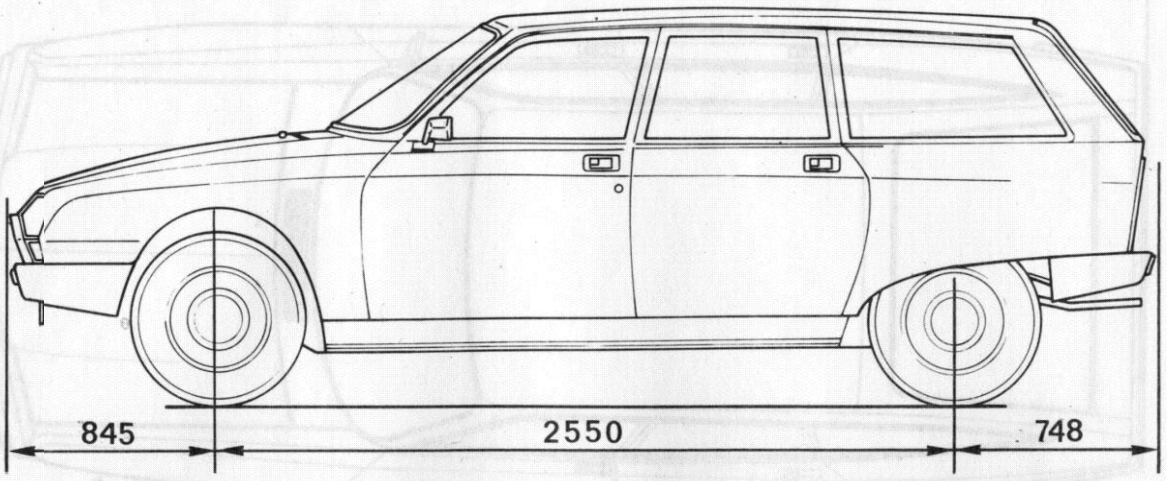


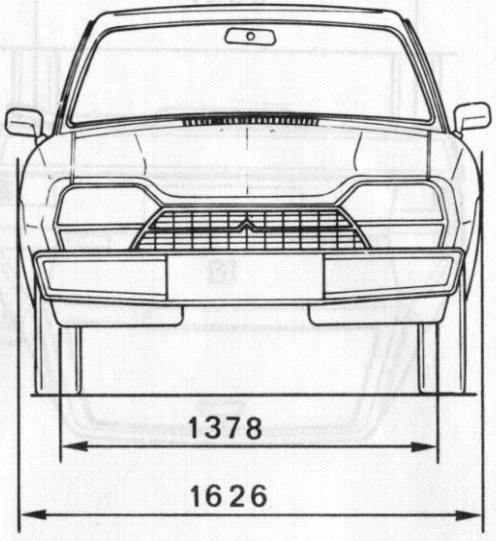


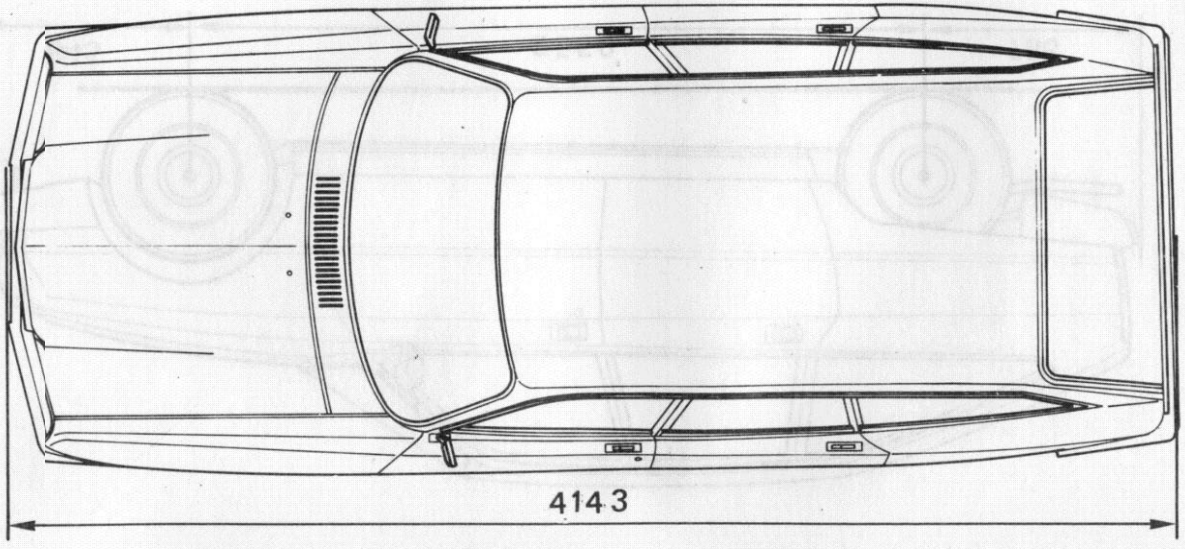


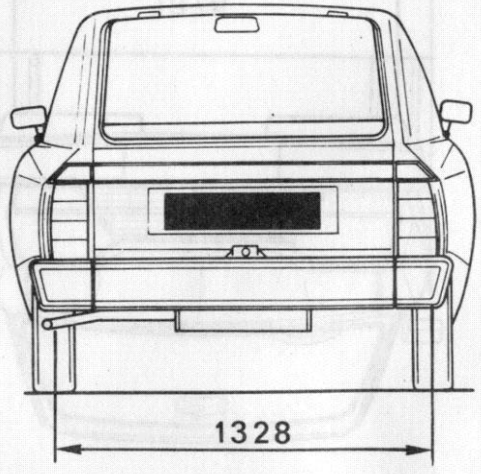
Dimensions in mm

GX. 80-5









Dimensions in mm

Weight (in kg)		SALOON	ESTATE	ESTATE Entreprise
Kerb weight :	MANUAL GEARBOX	955	965	925
	GEARBOX WITH CONVERTER	965	975	
Weight on front axle :	MANUAL GEARBOX	605	610	605
	GEARBOX WITH CONVERTER	615	620	
Weight on rear axle :	MANUAL GEARBOX	350	355	320
	GEARBOX WITH CONVERTER	350	355	
Gross vehicle weight :	MANUAL GEARBOX	1355	1365	1375
	GEARBOX WITH CONVERTER	1365	1375	
Max. authorized-weight on front axle :		745	745	745
Max. authorized weight on rear axle :		690	690	690
Max. roof-track load :		60	80	80
Towing details (in kg):				
Max. weight on tow-bar:		50	50	50
Gross train weight :				
- with a 475 kg trailer without brake :				
- 1130 cc engine:		1830	1840	1850
- 1300 cc engine :	MANUAL GEARBOX	1830	1840	
	GEARBOX WITH CONVERTER	1840	1850	
- with a 800 kg trailer with brake, 1130 cc engine :		2155	2165	2175
- with a 1000 kg trailer with brake :				
- 1300 cc engine	MANUAL GEARBOX	2355	2365	
	GEARBOX WITH CONVERTER	2365	2375	
Hill-start max. gradient at Gross Train Weight :		14%	14%	14%

III. MISCELLANEOUS INFORMATION.

Capacities :

Fuel tank : 43 litres

Engine oil :

- all seasons : TOTAL GOLD or TOTAL 20/50 (G.B) / TOTAL GTi Route et Villa 10 W 30 (FRANCE) / TOTAL GTS 20 W 50 (SPAIN) / TOTAL GTS 15 W 40 (EUROPE except G.B. and SPAIN)
- temperatures below −10 ° C : TOTAL HD 3-C 20 W 20 (G.B) / TOTAL GTi Route et Ville 10 W 30 (FRANCE) / TOTAL GTS 10 W 30 (other EUROPEAN countries)

Sump capacity after draining : 3 litres
Sump capacity after draining and removal of filter cartridge : 4 litres
Difference between min. and max. dipstick readings: 0.5 litres

Gearbox *(draining)*, approx. :
- 4-speed gearbox : ..... 1.4 litres
- 5-speed gearbox : ..... 1.5 litres
- 3-speed gearbox with a torque converter : ..... 1.4 litres

Hydraulic circuit *(including reservoir)* : ..... 4.2 litres

Boot capacity :

	SALOON	ESTATE	ESTATE Entreprise
- Rear seat up (below the rear shelf) :	435 sq.dm	645 sq.dm	
- Rear seat down (below the rear shelf) :	766 sq.dm	976 sq.dm	
- Rear total volume :	1400 sq.dm	1504 sq.dm	1660 sq.dm

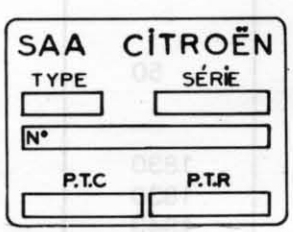
IV. VEHICLE IDENTIFICATION

1. Stamping of vehicles *(→ 7/80)* :

00070

Front subframe No.

①

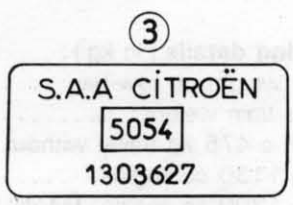


Chassis No. plate

②

38011797

Body shell No.



Body code number

≈00FB0001≈

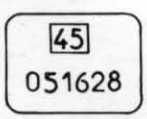
Repeat chassis No.

⑤

⑥ Engine plate : ④

a) Engine type
c) Engine production order No.
d) Engine/gearbox unit sequence No.
81 : Engine with a pedal-operated clutch
93 : Engine with a torque converter
e) Colour (background of data plate) according to type of gearbox :
Engine with a pedal-operated clutch : red background with green strip « b ».
Engine with a torque converter : blue background with yellow strip « b ».

⑦



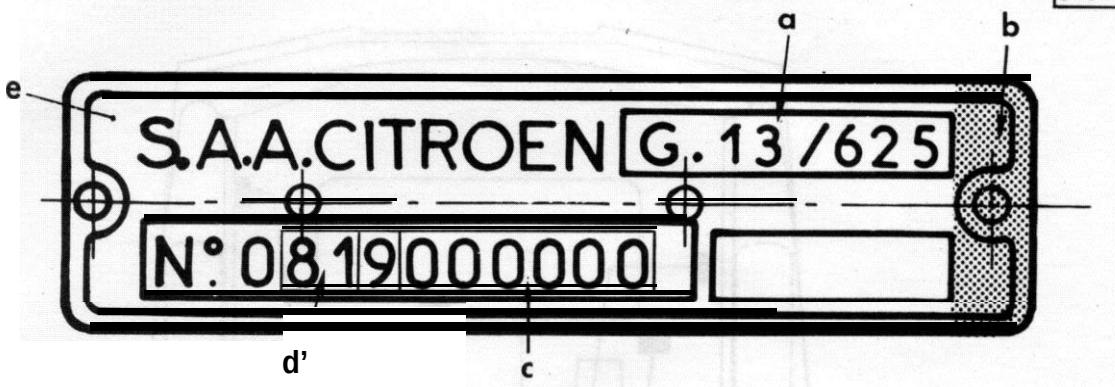
Gearbox No.

⑧

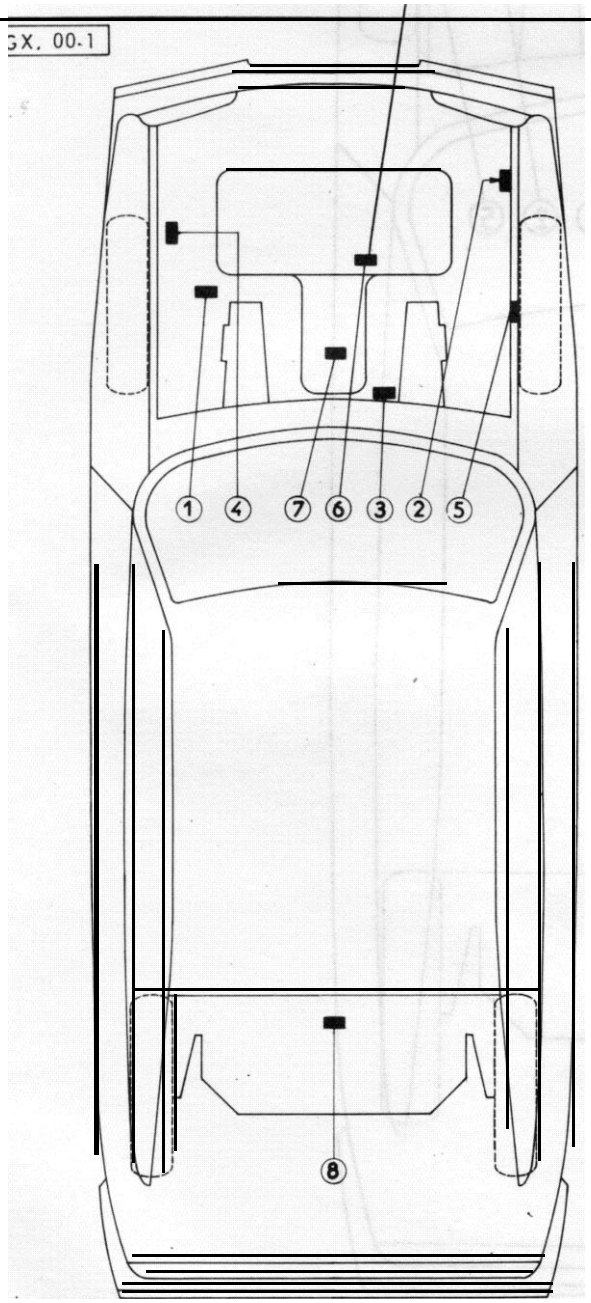
00050

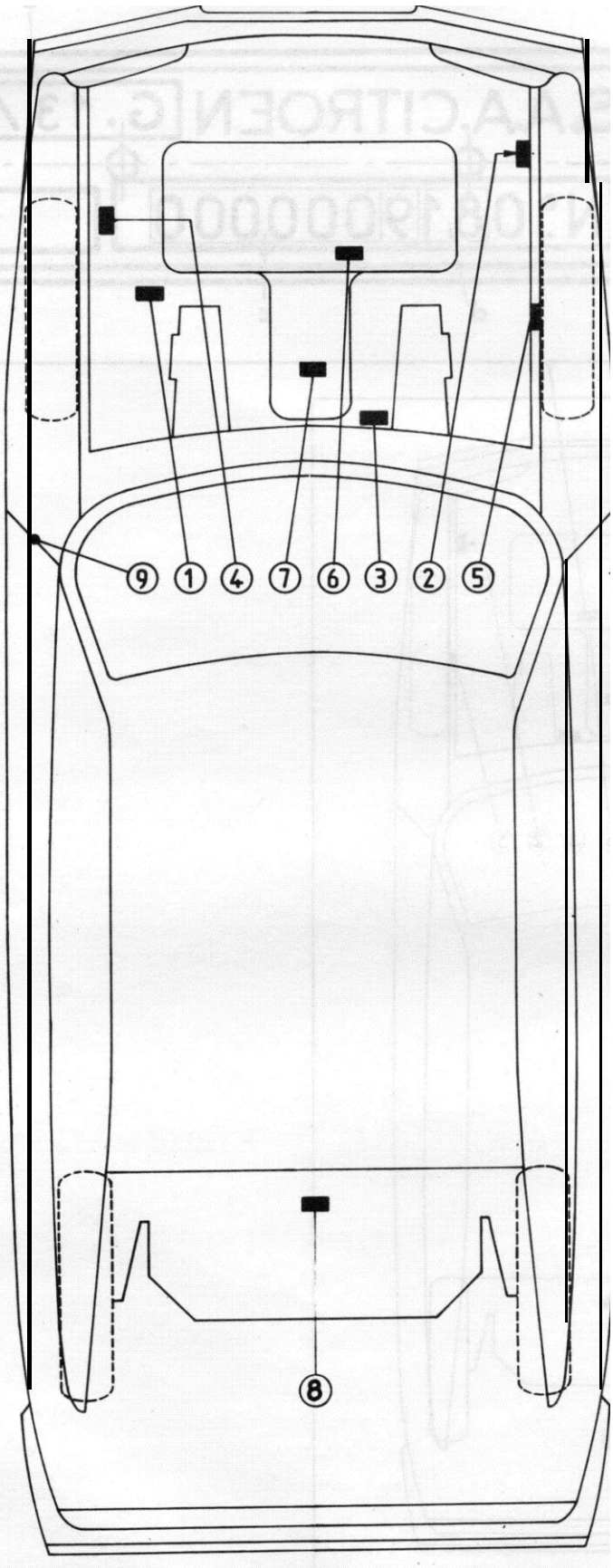
Rear subframe No.

GX. 80-



GX. 00-1





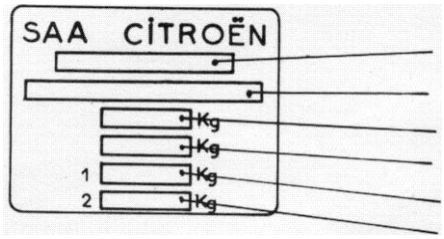
GX. 00-1a

2. Stamping of vehicles *(7/80 ⟶)*.

00070

Front subframe No.

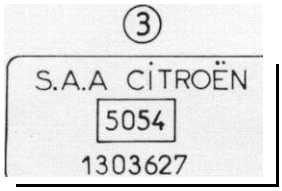
①



Chassis No. plate

②

③

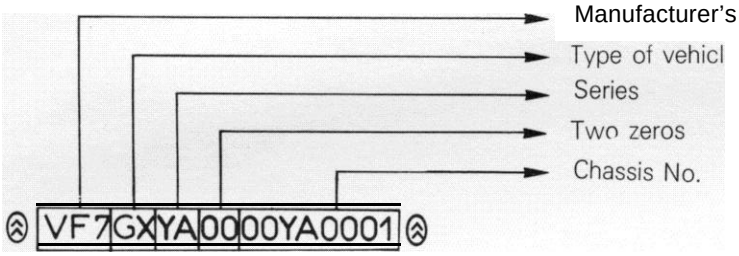


Body code No. and R.P. organisation No. *

38011797

Body shell No.

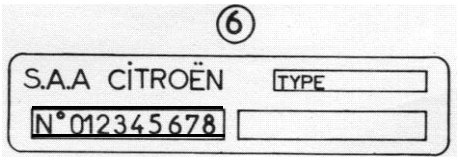
④



Repeat chassis No.

⑤

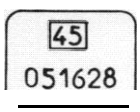
⑥



Engine plate

(see page 6)

⑦



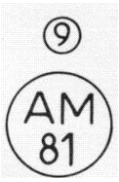
Gearbox No

⑧

00050

Rear subframe No

⑨



Ink-stamped model year

* R.P.organisation No. : 4 digits, ink stamped near body code No. plate ③ since *1/1981*

JACKING POINTS

A and C : Jacking points for trolley jack or wheel-free car lift

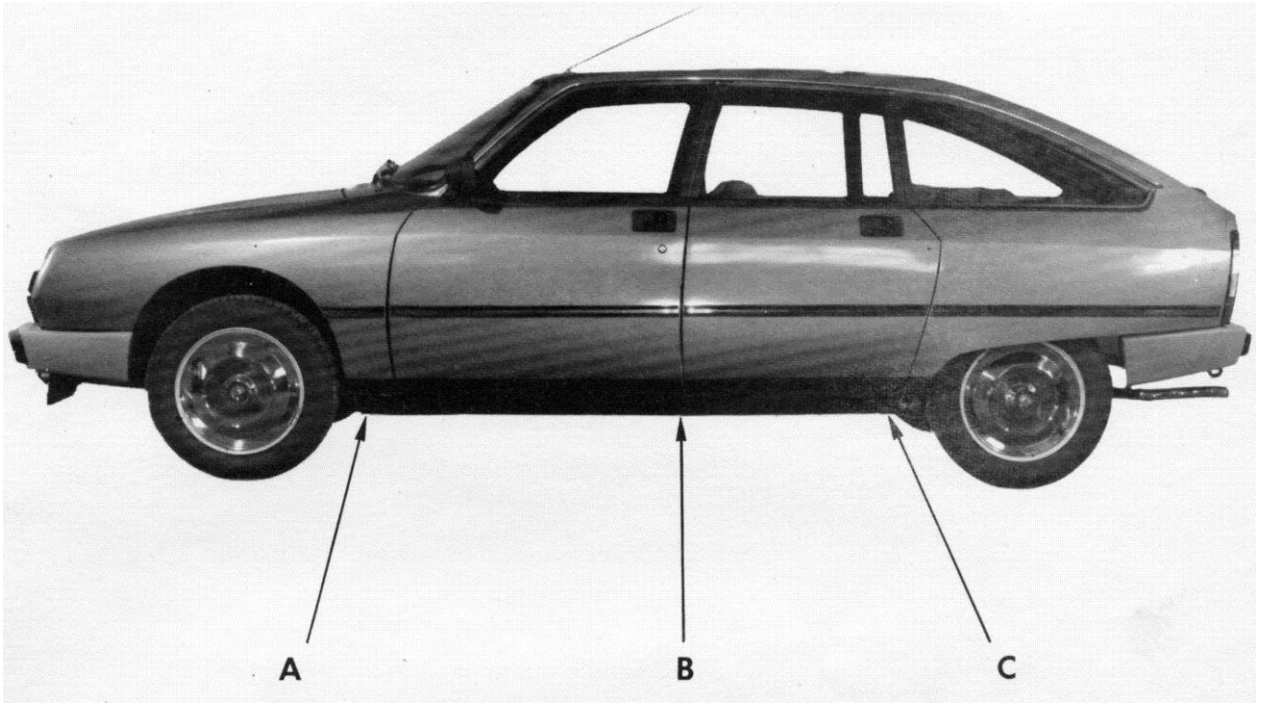
B : Jacking point for wheel-changing.

TOWING POINTS

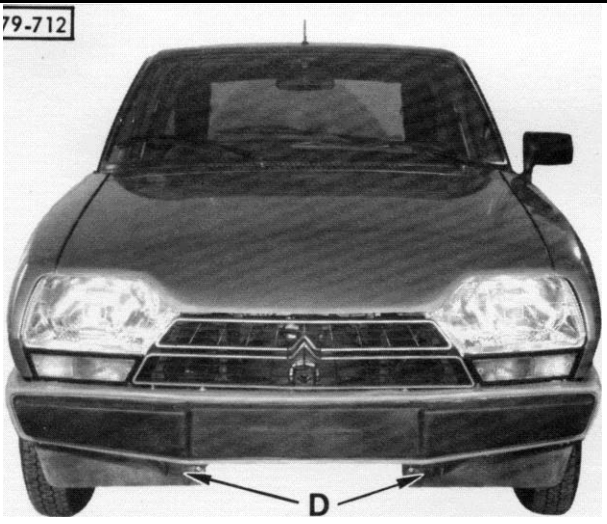
♦ **D** : Front towing points. wheels on the ground **(jacking forbidden)**

E : Rear towing points

79-710



79-712



79-705



PROTECTION OF ELECTRICAL EQUIPMENT
PRECAUTIONS TO BE TAKEN WHEN CARRYING OUT WORK ON THE VEHICLE

It is essential to avoid certain errors involving the risk of damage to electrical equipment, or to creation of a short circuit (fire or accident risk)

1. Battery :

a) Disconnect from the negative terminal of the battery first, followed by the positive terminal.

b) Reconnect to both terminals of the batten/ with care. connecting to the negative terminal in the last place.

c) Before connecting to the negative terminal, check the absence of current. For this purpose, make a series of intermittent contacts between the connector clamp and the negative terminal of the battery. No sparking should occur. otherwise a short-circuit is present in the electrical circuit, and must be eliminated.

d) The battery must be connected correctly. with the negative terminal earthed.

e) Before operating the starter. check that both connector clamps are properly tightened on their respective terminals.

2. Alternator - Regulator :

a) Do not run the alternator unless connected to the battery. Never disconnect the battery when the alternator is running.

b) Before connecting the alternator, check that the battery is itself correctly connected (negative terminal earthed), to avoid the instantaneous destruction of the electronic regulator.

c) Never invert the two leads connected to the regulator.

d) Never earth the power supply terminal of the regulator, incorporated in the alternator.

e) Do not attempt to re-energize an alternator. This is never necessary. and would result in damage to both alternator and regulator.

f) Never connect a radio suppressor capacitor to the power supply terminal of the regulator, on the alternator.

g) Never connect the battery terminals to a charger, and never use arc-welding equipment (or gun-welder) on the vehicle chassis, without first disconnecting and isolating the two battery connector clamps. Also disconnect the alternator wires, before undertaking any welding operations.

3. Ignition coil :

a) Connect the ignition coil power supply wire to the external resistor tab. and not to the «BAT» terminal on the ignition coil.

b) Never connect a suppressor capacitor to the « RUP » terminal on the coil.

c) Fit a factory-recommended suppressor capacitor (50 micro F) on the power supply tab on the external resistor on the ignition coil.

NOTE : This capacitor is fitted as standard on vehicles equipped with the « HAUPAR » (loudspeaker) option. and in all cases where the instrument panel includes a digital display clock.

4. Q.I. bulb :

a) Never replace a Q.I. bulb with the headlamp switched on. If the headlamps have been in use. allow to cool for five minutes before working on same.

b) Never touch a Q.I. bulb with the fingers. Any accidental fingermarks should be cleaned off with a little soapy water. Dry the lamp with a lintless cloth.

I. PRECAUTIONS TO BE TAKEN WHEN CARRYING OUT WORK ON THE HYDRAULIC CIRCUITS AND COMPONENTS OF THE VEHICLE

Correct operation of the complete hydraulic system requires the hydraulic components and fluid to be perfect/y clean. Meticulous care must therefore be taken during the work. and for the storage of hydraulic fluid and spares.

1. HYDRAULIC FLUID

Type LHM mineral hydraulic fluid is the only fluid suitable for the system, and **must** be used for the hydraulic circuit in this vehicle.
LHM fluid is green in colour, and is of the same nature as the engine oil.
The use of any other fluid would cause ***the complete deterioration*** of rubber components and seals.

2. COMPONENTS AND RUBBER PARTS

The appropriate components are painted or marked in green. and must only be replaced by original spares also painted or marked in green.

All rubber parts (seals, pipes, diaphragms etc.) are of ***special qua/ity for LHM fluid*** and are marked in green or white.

3. STORAGE

Components must be stored ***filled with liquid and plugged.*** In common with the pipes: they must be stored away from dust and protected from impact damage.
Rubber pipes and seals must be stored away from dust. air. light and heat.
LHM hydraulic fluid must be stored in original cans. carefully sealed. We recommend the use of one-litre cans (for topping up), or five-litre cans (fluid change) to avoid keeping half-empty cans.

4. INSPECTION BEFORE WORK

if trouble has been encountered with the hydraulic system. check as follows before any intervention

a) That there is no resistance in the controls. and mechanical articulations of the hydraulic components or group of components concerned,

b) *That the high pressure (HP) circuit is loaded.* Proceed as follows :
With the engine idling :
Undo the pressure regulator relief screw by one to one-and-a-half turn. A leaking noise should be heard in the pressure regulator.
Tighten up the pressure relief screw. Cut-out should then occur. corresponding to a fall-off in the operating noise of the HP pump.
In the contrary case, check, in the following order :
- that there is sufficient fluid in the tank.
- that the tank filter is perfectly clean and in good condition,
- that the HP pump is primed, and that no air has entered the pump suction circuit,
- that the pressure regulator relief screw is properly tightened.

5. PRECAUTIONS TO BE TAKEN BEFORE ANY WORK ON THE HYDRAULIC CIRCUIT

a) **Carefully** clean the working zone. unions and components to be removed.

- Disconnect the negative battery lead.
- Use petrol or lead-free petrol for cleaning. to the exclusion of any other product.

b) ***Reduce pressure in the circuits (see Op. GX. 390-00. page 9).***

6. PRECAUTIONS DURING REMOVAL

a) Blank off metal pipes using plugs and rubber pipes using cylindrical pins of appropriate diameter.

b) Blank off the orifices of components with appropriate plugs.

NOTE : All plugs and pins must be carefully cleaned before use.

7. TESTING HYDRAULIC EQUIPMENT

Use the 3654-T test bench designed for use with LHM fluid.

- The bench is painted green. and all bench accessories carry a green mark.

Never use the bench with an alternative fluid, or to check equipment operating with another fluid (such as equipment in a type « D » vehicle, using LHS 2 fluid).

NOTE : The « Le Bozec » pump used on test bench for Diesel engine injectors, can be employed. after appropriate cleaning, for testing equipment using LHM fluid.

8. PRECAUTIONS DURING REFITTING

a) Cleaning

- steel pipes must be blown through with compressed air.
- rubber pipes and seals must be washed in petrol or lead-free petrol and blown through with compressed air.
- hydraulic components must be cleaned with petrol or lead-free petrol and blown through with compressed air.

NOTE : Seals must be replaced following any intervention on the hydraulic circuit.

b) **Lubrication** :

- Follow the instructions given in the Repair Manual.

Seals and internal parts must be moistened before assembly (use LHM fluid only).

- If parts in contact with the hydraulic components require greasing, use a mineral grease only (Universal joint or bearing grease).

c) Fitting :

- Use seals designed for LHM fluid only.
- Proceed as follows for connecting a union :
  - Place sleeve-seal « a » on the pipe, moistening with LHM fluid. This sleeve-seal must be set back from pipe end.
  - Centre the pipe in the bore, presenting on the centreline of the orifice and avoiding forcing (check that pipe end « b » penetrates reduced bore « c ».
  - Start screwing the union-nut by hand.

Tighten the nut moderately. Overtightening will cause a leak. by distorting the pipe.

Tightening torques :

3.5 mm pipe
4.5 mm pipe } 0.8 to 0.9 m.daN

6 mm pipe 0.9 to 1.1 m.daN

By design, the thightness of the seals increases with pressure. Seal tightness cannot therefore be improved by tightening the unions.

To connect a rubber pipe, insert a rubber bush of appropriate diameter, between pipe and clamping collar.

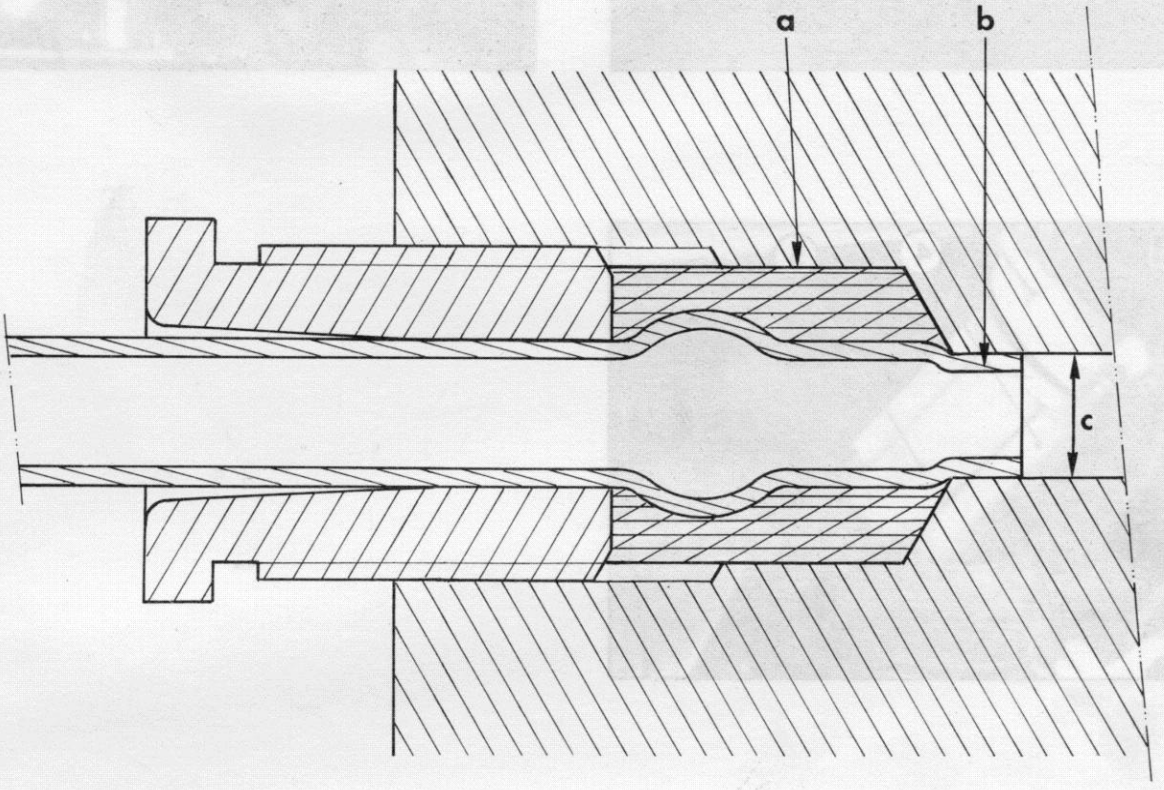
9. CHECKING ON COMPLETION OF THE WORK

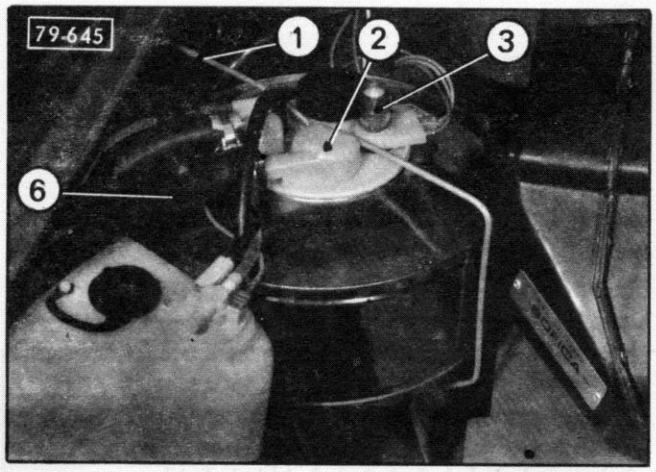
Following any work on the hydraulic components or circuit, check :

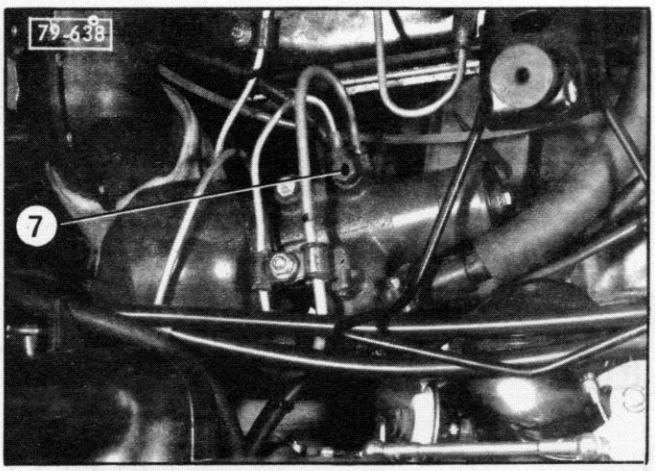
a) *seal-tightness of the unions,*

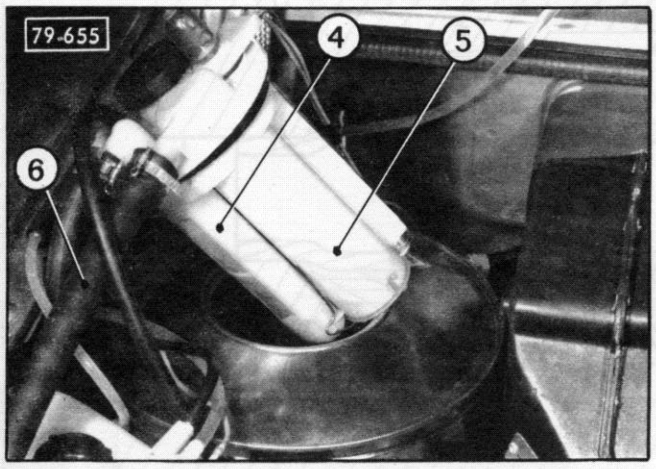
b) clearance *between pipes* : pipes must not touch each other, or any other fixed or mobile element, and connections to fixed or mobile elements must not be under strain.

TT. 00-5




79-645
1
2
3
6


79-638
7


79-655
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II. DRAINING THE HYDRAULIC CIRCUIT

DRAINING

a) Depressurize the circuits.
(See Op. GX. 390-00, page 9)

b) Remove reservoir spring retainer

c) Disengage central unit (2).

d) Remove :
- return line filter (4),
- suction filter (5).

e) Remove the reservoir and drain, and disengage the deflector (reservoir bottom separator partition).

f) Clean filters (4) and (5), and the reservoir and deflector, using petrol and blow through with compressed air.

g) Reassemble the unit.

FILLING

a) Fill the reservoir with approx. 2.5 litres of LHM hydraulic fluid.

b) **Prime the HP pump :**

- Fill the pump with hydraulic fluid via suction hose (6).
- Start the engine, and move the manual height control to the « high » position.
- Tighten pressure relief screw (7) on pressure regulator.
- When the vehicle has stabilized, top up the reservoir with fluid until the mobile pointer on level indicator (3) is opposite the upper red mark.

OPERATION
GX. 100-00

CHARACTERISTICS AND SPECIAL FEATURES OF THE ENGINE

I. GENERAL CHARACTERISTICS.

Engine :			
- Type *(marked on engine plate)* : . . .	G 11/631	G 13/625	G 16/646
- French fiscal rating :			
Manual gearbox { 4-speed : . . .	6 CV	7 CV	7 CV
Manual gearbox { 5-speed : . . .	5 CV	7 CV	7 CV
Gearbox with converter :		8 CV	8 CV
- Number of cylinders :		4 (flat opposed)	
- Cubic capacity :	1129 cc	1299 cc	1299 cc
- Bore :	74 mm	79.4 mm	79.4 mm
- Stroke :		65.6 mm	
- Compression ratio :	9/1	8.7/1	8.7/1
- Power output :	41 kW (ISO) 56.5 CV (DIN) at 5750 rpm	47.8 kW (ISO) 65 CV (DIN) at 5500 rpm	47 kW (ISO) 63.8 CV (DIN) at 5500 rpm
- Max. torque :	7.9 m.daN (ISO) 8.1 m.kg (DIN) at 3500 rpm	9.8 m.daN (ISO) 10 m.kg (DIN) at 3500 rpm	9.4 m.daN (ISO) 9.5 m.kg (DIN) at 3500 rpm
	(Fig. 1 and 2)		(Fig. 3)

Cooling : Blown air.

Lubrication : Under pressure, fed by an « EATON » type oil pump driven by one of the timing gear belts.
Oil filter cartridge with a built-in by-pass.

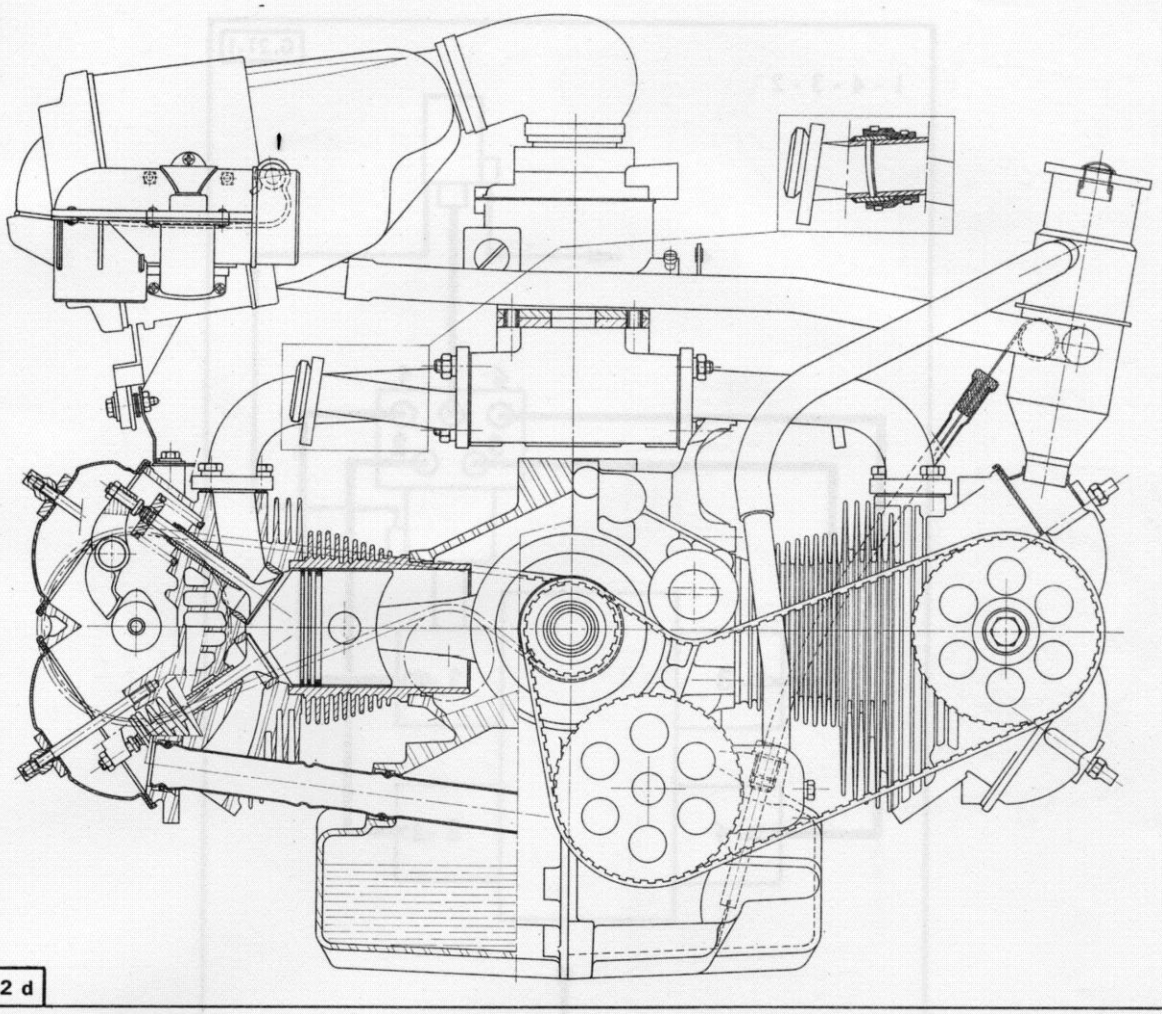
Fuel supply :
- Mechanical petrol pump, driven by an eccentric on end of right camshaft.
- Dual-choke « COMPOUND » type carburettor.

Carburettors :

GSA 1130	SOLEX 28 CIC 4 CIT **229** *(7/80 ⟶)*	WEBER 30 DGS 17/250-**W 97-50** *(7/80 ⟶)*
GSA 1300 *(except C-Matic)*	SOLEX 28 CIC 4 CIT **185** *(7/78 ⟶ 3/80)* SOLEX 28 CIC 4 CIT **230** *(3/80 ⟶ 7/81)* SOLEX 28 CIC 5 CIT **247** *(7/81 ⟶)*	WEBER 30 DGS 12/250-**W 92-50** *(7/80 ⟶)* WEBER 30 DGS 16/250-**W 96-50** *(7/80 ⟶ 7/81)* WEBER 30 DGS 25/250-**W 115-50** *(7/81 ⟶)*
GSA 1300 *(C-Matic)*		WEBER 30 DGS 19/250-**W 99-50** *(7/79 ⟶ 7/80)* WEBER 30 DGS 18/250-**W 98-50** *(7/80 ⟶ 7/81)* WEBER 30 DGS 26/250-**W 116-50** *(7/81 ⟶)*

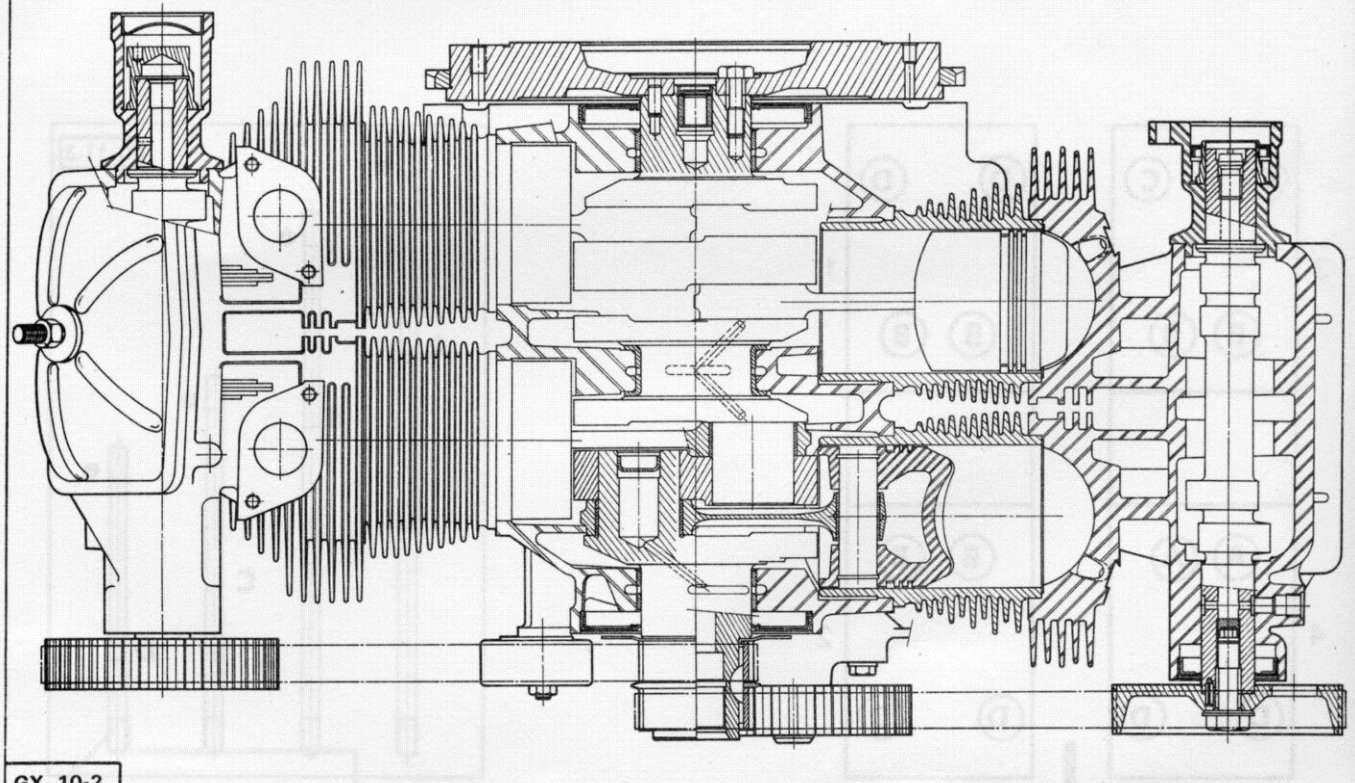
Inlet manifolds are rigid *(7/81 ⟶)*.

1

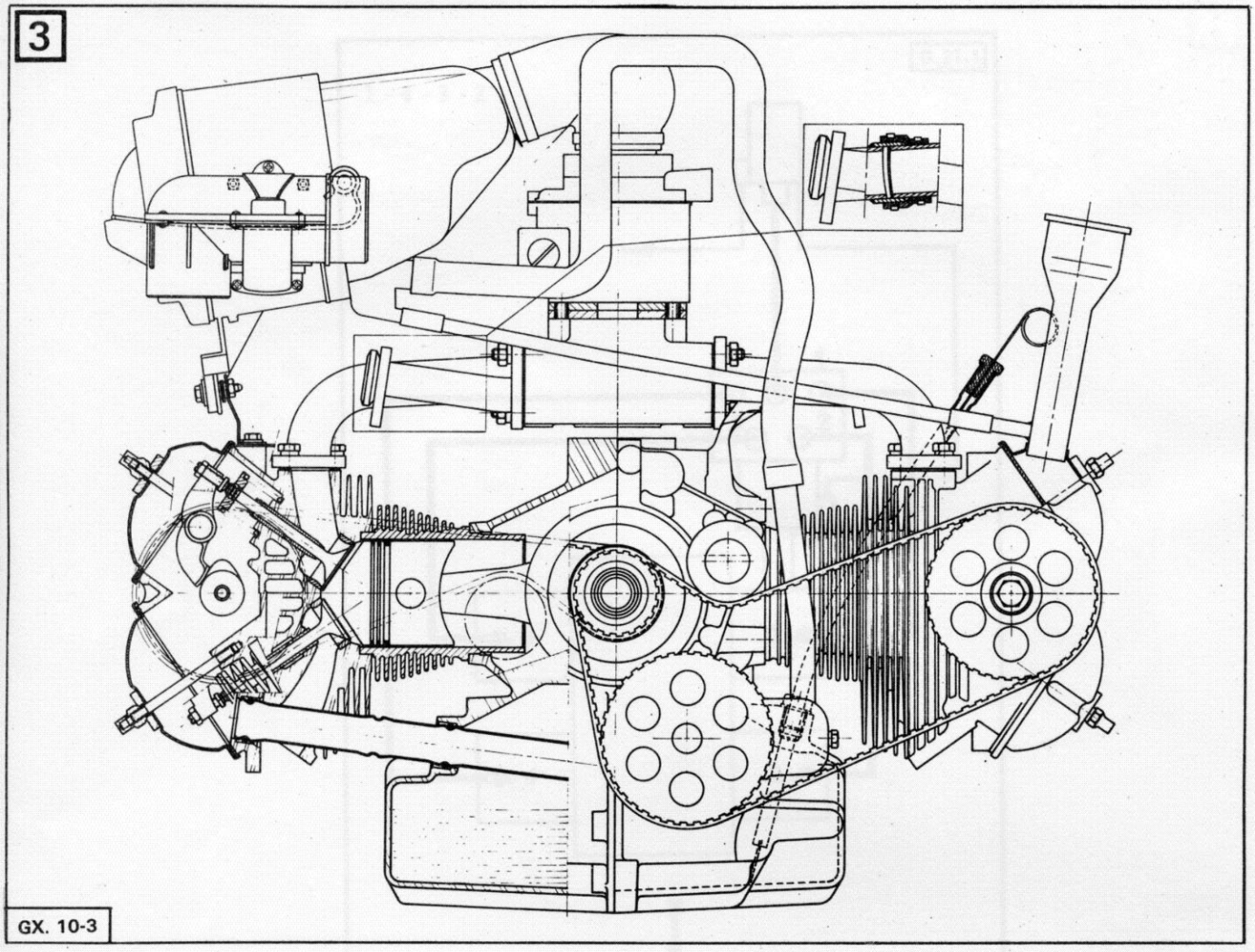


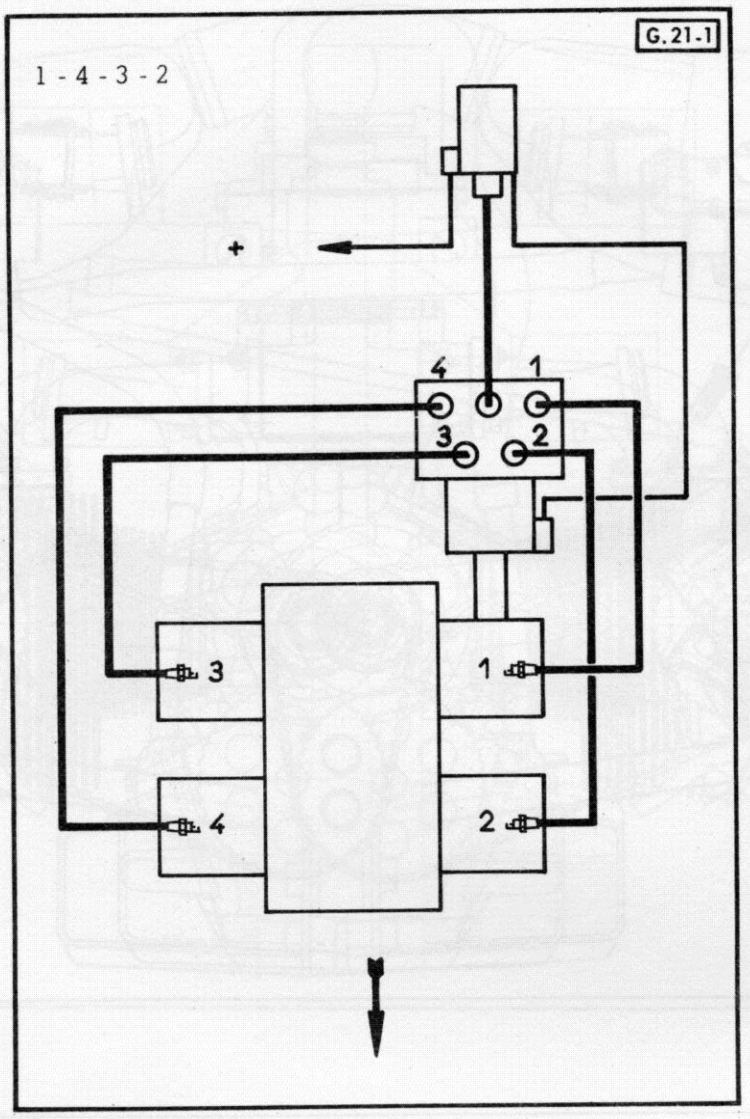
G. 10-2 d

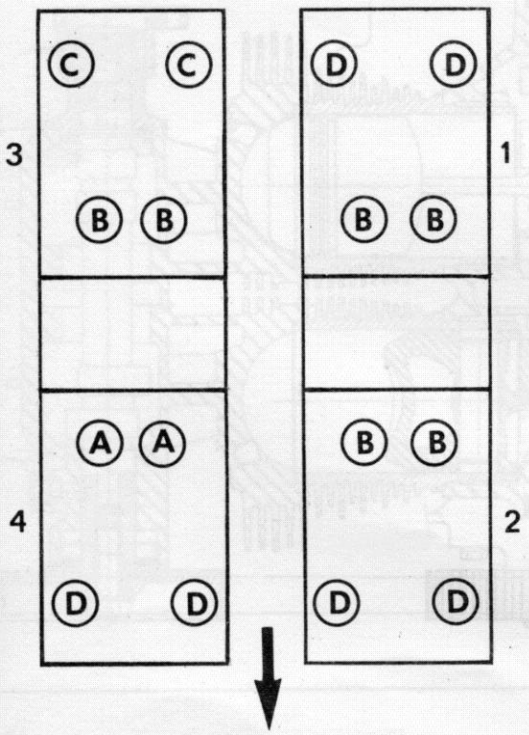
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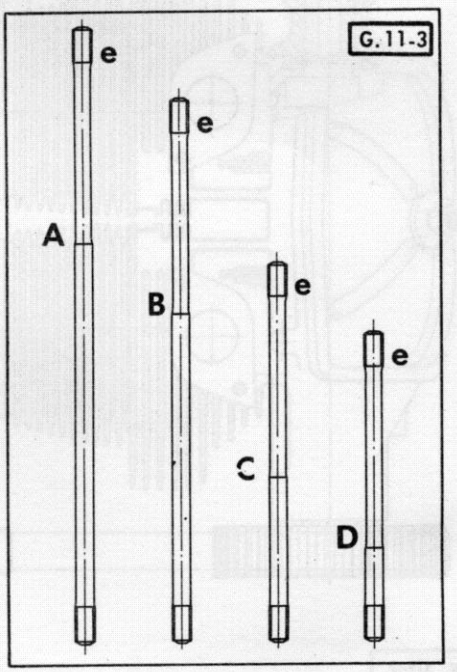


GX. 10-2


3
GX. 10-3


G.21-1
1 - 4 - 3 - 2
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1
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C
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2
D
D
D
D


G.11-3
e
e
A
B
e
C
e
D

- Dry air filter with cartridge element.
- Intake air temperature regulated by a thermostatic shutter.
- Recommended fuel grade : R 99 octane rating *(Premium, 4-star).*

Timing :

- Overhead camshaft for each group of two cylinders.
- Camshafts driven by two toothed belts (with adjustable tension).

Ignition :

- Distributor driven by left camshaft.
- Make : SEV-MARCHAL or DUCELLIER.
- Spark-plugs.

	1130 cc	1300 cc
AC	42 XLS	41.4 XLS
BOSCH	W 6 D	W 6 D
CHAMPION	N 7 Y	N 7 Y
EYQUEM	755 LS	800 LS
SEV-MARCHAL	GT 34-2 H	GT 34-2 H
MARELLI	CW 78 LP	CW 8 LP

- Firing order : 1 - 4 - 3 - 2

- Transistorized ignition system on 1300 cc *(7/81 ⟶).*

II. SPECIAL FEATURES.

Engine crankcase :

- Tightness of half-crankcases : LOCTITE FORMETANCH.

Cylinder head studs : the head studs are of four different lengths.
End « e » (shorter threaded portion) should be on crankcase side *(see figure opposite).*

Crankshaft :

- *Centre collared half-bearing :*
  - Inner diameter :
    1st possibility : ..... 57.5 mm (no mark)
    2nd possibility : ..... 57.4 mm (red paint mark)
  - Total width : ..... 25.9 mm
  - Bearing width : ..... 15.3 mm

Front and rear half-bearings :

- Inner diameter :
  1st possibility : ..... 57.5 mm (no mark)
  2nd possibility : ..... 57.4 mm (red paint mark)
- Total width : ..... 20.8 mm
- Bearing width : ..... 16.05 mm

- Crankshaft end-float at central bearing *(not adjustable)* : ..... 0.09 to 0.20 mm

Do not regrind the front and rear bearing surfaces of camshaft (microturbines).

Con-rods :

- Con-rod ring bore : ..... $22.005 \begin{smallmatrix}+0.011\\-0.006\end{smallmatrix}$ mm
- Con-rod end-float : ..... 0.13 to 0.18 mm

Flywheel :

When fitting, place three spots of LOCTITE FORMETANCH between the flywheel and the crankshaft. New mounting screws must be fitted each time the engine is removed.

- Max. starter ring run-out : ..... 0.3 mm
- Fitting direction of the ring : machined face directed towards the flywheel shoulder.

Cylinders :

- Two types of cylinders, according to their height :
  Red mark : ..... 86.88 to 86.90 mm
  Green mark : ..... 86.90 to 86.92 mm

The two cylinders which are on the same side of the engine must be of identical type.

Pistons :

- The gudgeon pins are of the floating type.
- *Fitting direction :* (fitting marks : arrows and marks « D » for **right** or « G » for **left**).
  After fitting the pistons in their right or left sleeves, the arrow of each piston must be pointing towards the timing gear. The scraper ring splined stop-pin should always be pointing upwards.
  1300 cc ECO engine (R.P. No. 1974 ⟶) offset pistons are no longer fitted.
  The stop-pin for piston ring No. 2 should point upwards; the marking 8.7 should be visible on the upper part of the piston.

NOTE : For repairs : Fitting of non-offset pistons on all 1300 cc.

Piston-rings :

- The identification and the manufacturer's mark, must be pointing towards the piston crown.
- Fitting order *(starting from the piston crown) :*

1-Compression ring	Gap clearance (as an indication)	0.10 to 0.25 mm
2-Scraper-ring		0.10 to 0.25 mm
3-Scraper-collector ring		0.10 to 0.25 mm *except for U-FLEX (4) which, when free, has a bigger dia. than that of the piston.*

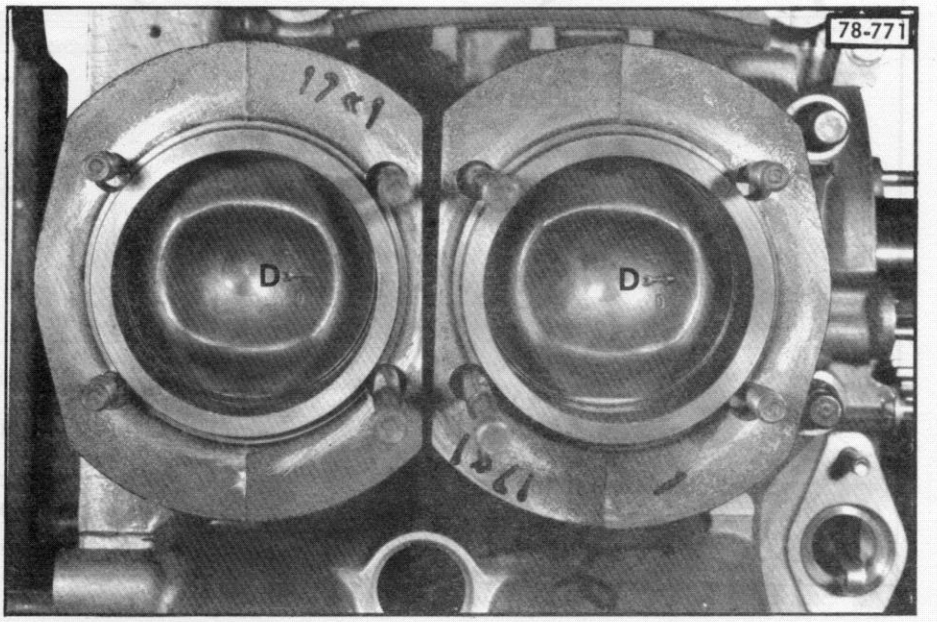
NOTE : All gudgeon pins are already adjusted when supplied. Do not readjust them.

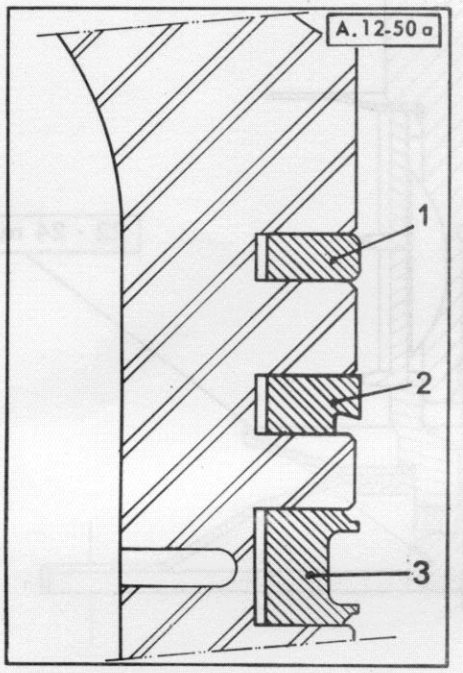
Cylinder heads :

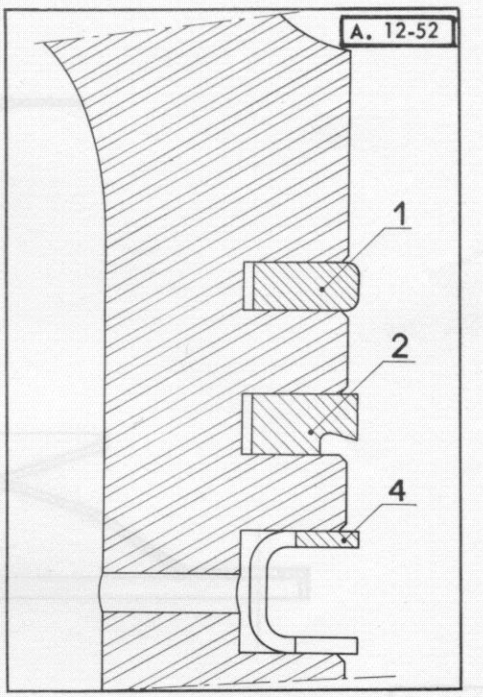
- Tightening sequence : see photograph opposite.
- *Tightening torques :*
  Stage 1 : ..... **0.8 to 1 m.daN**
  Stage 2 : ..... **2 to 2.5 m.daN**

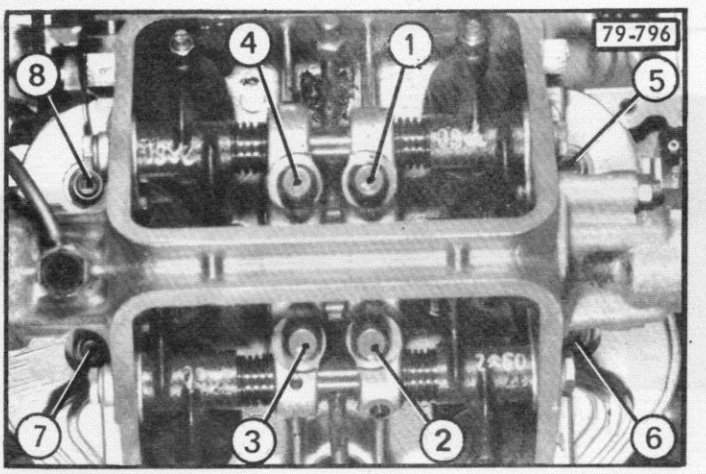
1300 cc ECO engine :

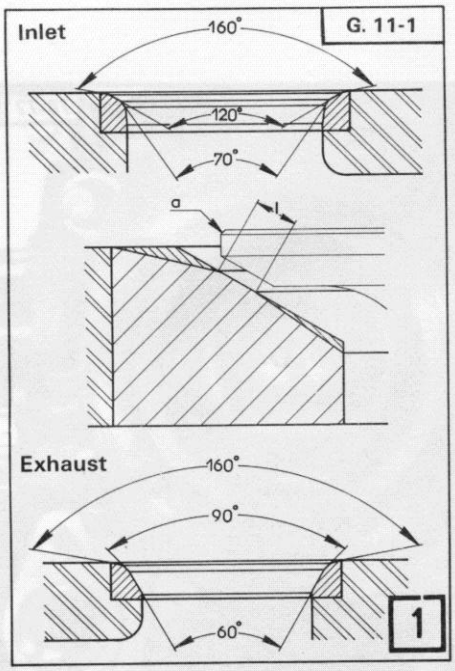
(R.P. No. 1794 ⟶) modified cylinder allowing for the fitting of rockers with trapezoid-shaped contact pads.

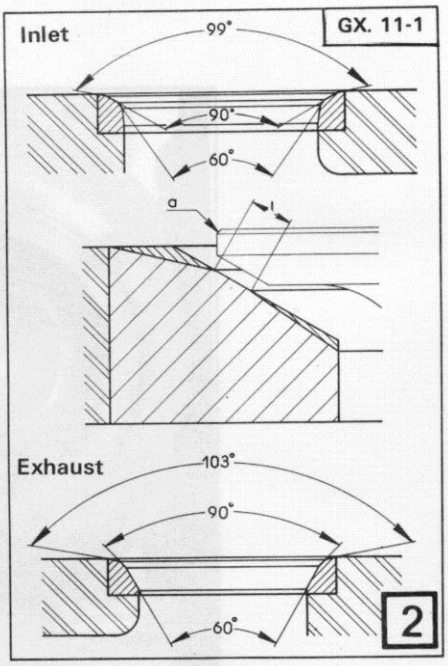

78-771
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D

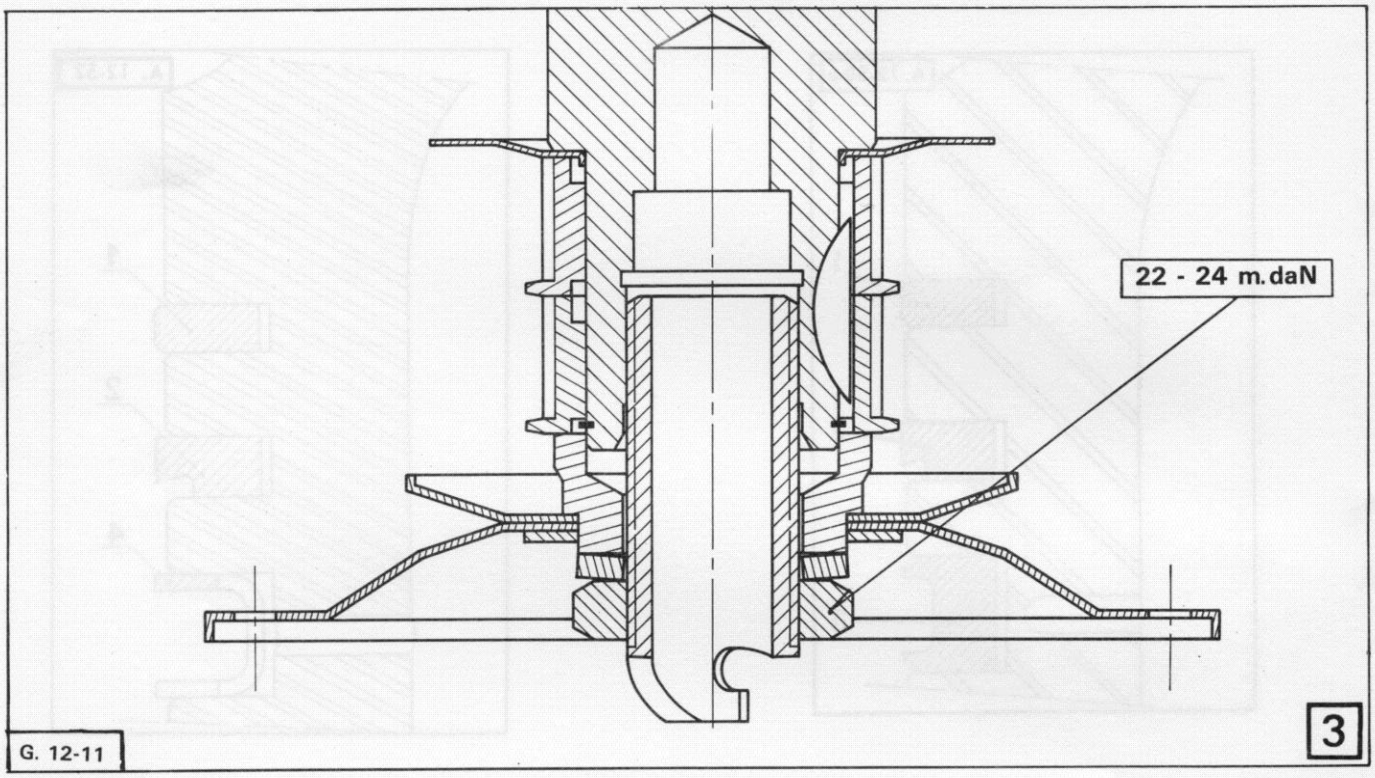

A.12-50 a
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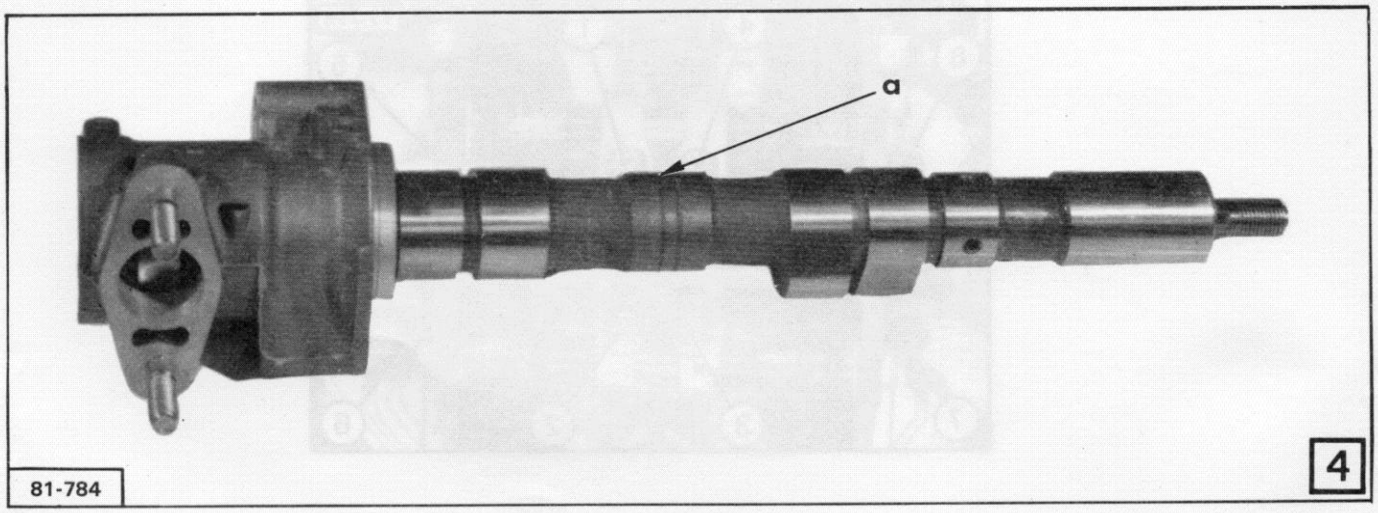

A. 12-52
1
2
4


79-796
8
4
1
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6


Inlet
160°
G. 11-1
120°
70°
a
l
Exhaust
160°
90°
60°
1


Inlet
99°
GX. 11-1
90°
60°
a
l
Exhaust
103°
90°
60°
2


22 - 24 m.daN
G. 12-11
3


a
81-784
4

- *Valves :*

« TEVES » rotary valves

		Angle (°)	Head diameter (mm)	Stem diameter (mm)	Length (mm)
Inlet	1130 cc	120	39	$8\ ^{-0.005}_{-0.02}$	97.4
	1300 cc	90	38		94.6
Exhaust	1130 cc	90	34	$8.5\ ^{-0.021}_{-0.036}$	96.3
	1300 cc		35.7		93.8

Fig. 1 : 1130 cc engine - **Fig. 2 :** 1300 cc engine

- *Valve springs :*

Single spring : identical for inlet and exhaust

Length under load (mm)	Load (kg)	Length under load (mm)	Load (kg)	Direction of winding
32	25.4 ± 2.5	24	59.6 ± 2	Left-hand

- *Valve seats :*

Width of contact surface :

- Inlet : ..... 1 to 1.4 mm
- Exhaust : ..... 1.4 to 1.8 mm

- *Valve guides :*

Valve guide bore :

- Inlet : ..... $8\ ^{+0.03}_{+0.005}$ mm
- Exhaust : ..... $8.5\ ^{+0.015}_{+0.01}$ mm

Valve timing :

a) Camshaft identification :

- G 11/631 (1130) engine : no mark
- G 13/625 (1300) engine : - right : ..... A 58 E 60
  - left : ..... A 57 E 59
- G 13/646 (1300) ECO : 2 circular grooves at « a » (Fig. 4)

- Camshaft end-float *(non-adjustable)* : ..... 0.05 to 0.15 mm

b) Theoretical timing gear setting *(with a 1 mm clearance between the rocker arm and the valve stem for inlet and exhaust).*

	1130 cc	1300 cc	1300 cc ECO
Inlet valve opens BTDC :	2°	5° 30'	0°
Inlet valve closes ABDC :	34°	34° 30'	33°
Exhaust valves opens BBDC :	34°	32°	38°
Exhaust valve closes BTDC :			5°
Exhaust valve closes ATDC :	2°	4° 30'	

c) Belt identification :

-Right belt :

- Total length : ..... 885.8 mm
- F pitch number (number of teeth) : 93
- Two white marks : A = 43 teeth and D = 50 teeth

- Left belt :

- Total length : ..... 1000.1 mm
- Number of teeth : 105
- Two white marks B = 33 teeth
- One yellow mark C = 25 teeth } ..... E = 47 teeth

d) Rocker arms :

- Effective clearance *(engine cold) :*

Inlet and exhaust : ..... **0.20 to 0.25 mm**

e) Rocker shaft identification :

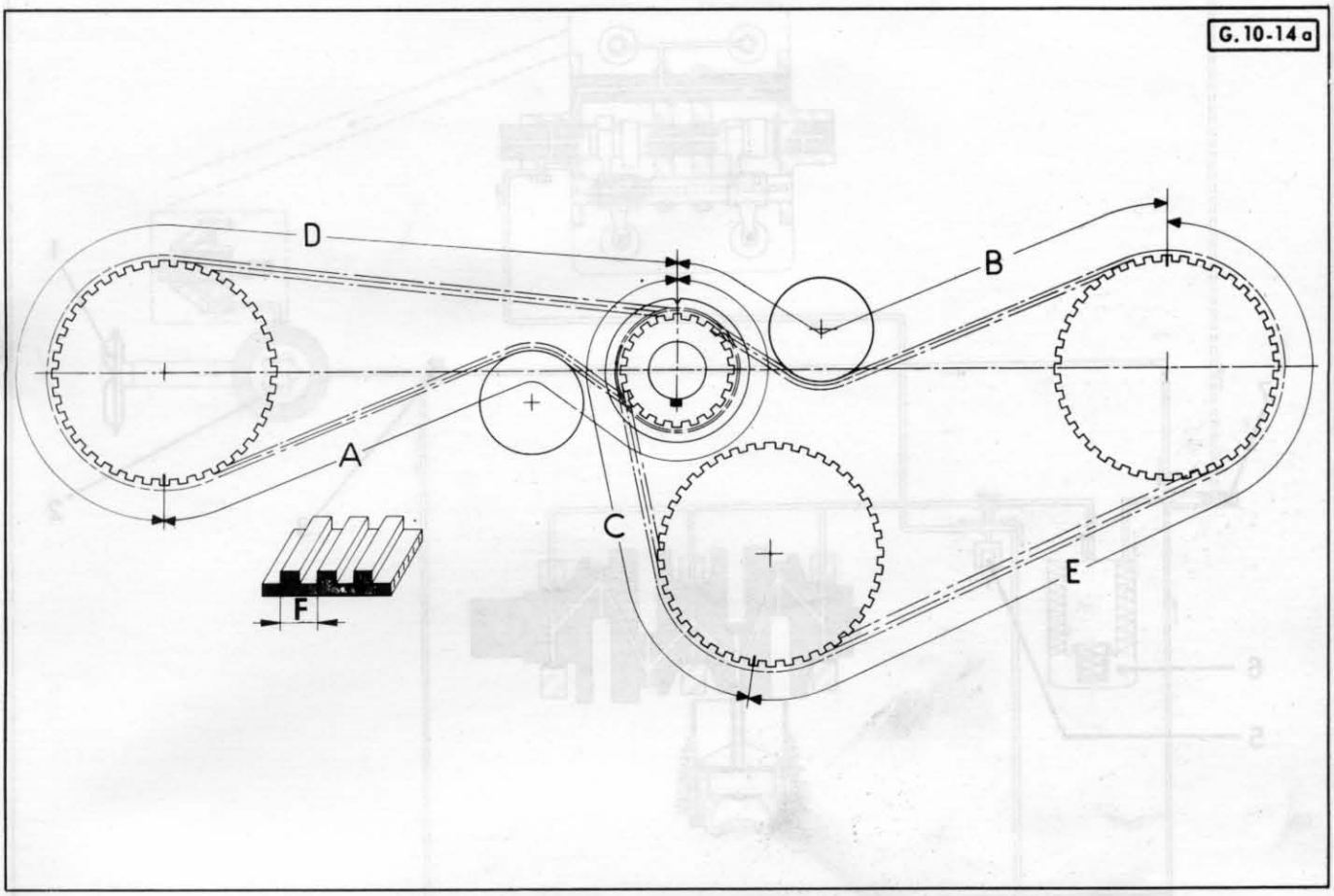
- Left inlet shaft identical to right exhaust shaft : ..... no mark
- Right inlet shaft identical to left exhaust shaft : ..... blind hole in centre of shaft

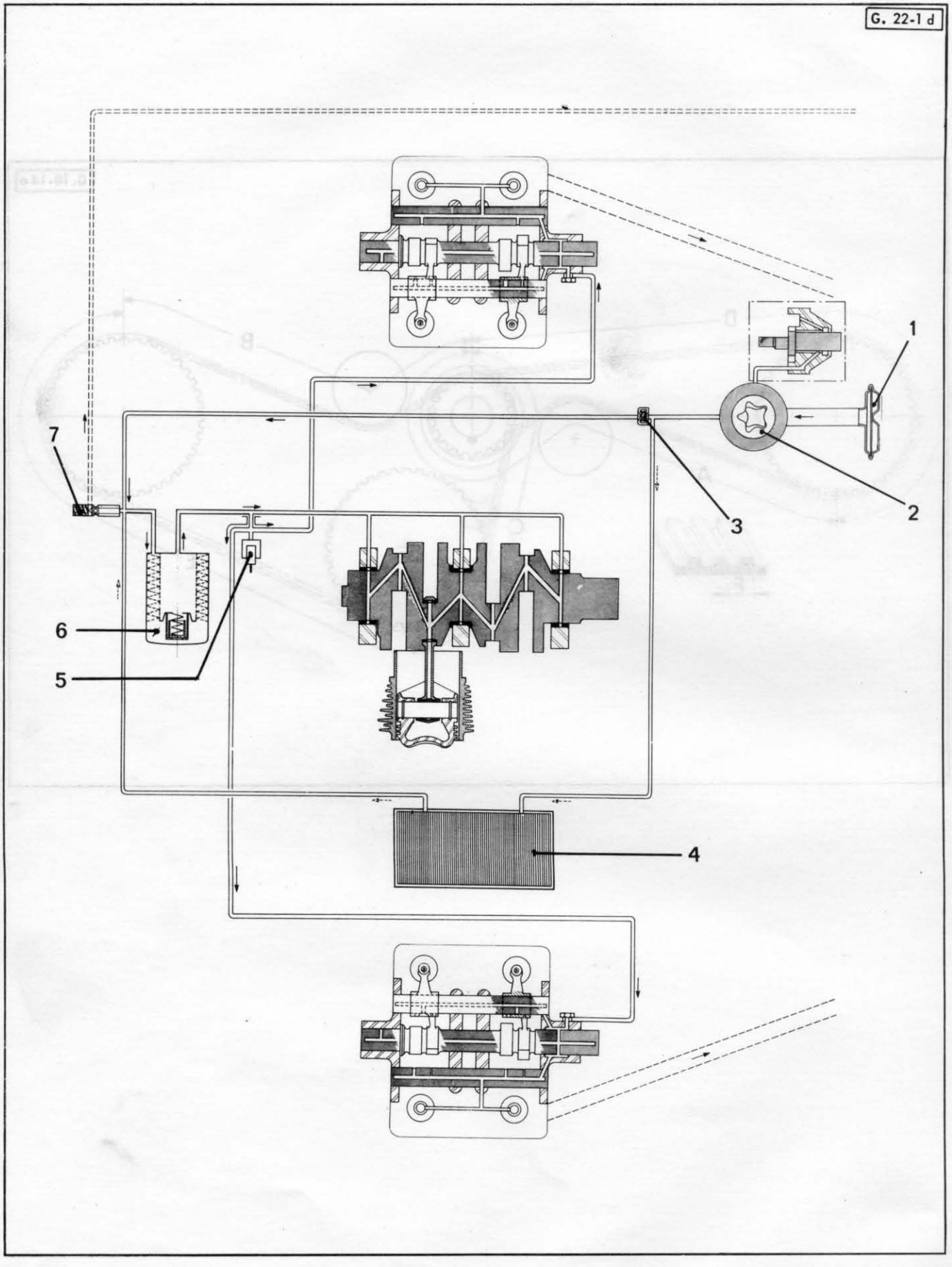
Inlet manifolds :

The inlet manifolds (right side) are in two parts (⟶ R.P. No. 1710).
The inlet manifolds are rigid (R.P. No. 1710 ⟶).

Fan :

- Outside diameter : ..... 290 mm
- Number of blades : 9
- Dog adjustment :
  - position the starter dog horizontally, at top dead centre
  - dog extension beyond lock-nut : ..... 5 mm of threading
- Lock-nut assembly direction : ..... shoulder on pulley side


G.10-14a
D
B
A
C
E
F


G. 22-1 d
1
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7

Lubrication circuit :

- Oil grade : - All seasons : ..... France { TOTAL GTS 15 W 40 / TOTAL GTi Route et Ville 10 W 30
  G.B. : TOTAL 20/50 or TOTAL GOLD
  - Temperatures below − 10° C : ..... France : TOTAL GTi Route et Ville 10 W 30
  G.B. : TOTAL HD 3-C 20 W 20
- Sump capacity :
  - after dismantling : ..... 4 litres
  - after draining : ..... 3.3 litres
  - after draining + filter cartridge replacement : ..... 3.7 litres
  - between min. and max. on dipstick : ..... 0.5 litres
- Oil pressure at 80° C ± 5° C :
  - at 2000 rpm : ..... 4.7 bars min.
  - at 6000 rpm : ..... 6.2 to 7 bars
- Oil pressure switch setting : ..... 0.5 to 0.8 bars
- Oil temperature switch setting *(G 13/625 engine)* : ..... 130° ± 1.5° C
- Relief valve setting :
  - free length : ..... 51.6 mm (13 coils)
  - length under a 9 kg ± 0.5 kg load : ..... 33 mm
- Setting of cooler by-pass valve : ..... 1.8 to 2.5 bars

The filter cartridge is fitted with a built-in by-pass valve.

NOTE : When replacing the filter cartridge, make sure the seal and the contact surface on the crankcase (oil seal) are clean. Fit the suction pipe in the crankcase using LOCTITE FORMETANCH.

Key :

1 : Suction strain

2 : Oil pump

3 : Cooler by-pass valve

4 : Cooler

5 : Pressure switch

6 : Filter cartridge with built-in by-pass valve

7 : Relief valve

TIGHTENING TORQUE VALUES

Crankcase :

- Half-crankcase nuts : ..... **1.2 to 1.5 m.daN**
- Bearing nuts : ..... **4 to 4.5 m.daN**
- Engine supports on crankcase *(must bear the same manufacturer's mark)* : ..... **5 to 6 m.daN**
- Dipstick guide tube nut : ..... **1.8 to 2.5 m.daN**
- Drain plug : ..... **3.5 to 4.5 m.daN**
- Temperature switch : ..... **2.5 to 3 m.daN**
- Oil pump bearing screw : ..... **1.5 to 1.8 m.daN**
- Inlet housing attachment screws or nuts : ..... **1.8 m.daN**
- Cylinder head studs (LOCTITE FORMETANCH) : ..... **0.8 to 1 m.daN**
- Oil strainer screw : ..... **1.4 m.daN**

Flywheel :

- Attachment screws *(grease contact surfaces and threads)*, **must be replaced on each refitting** : ..... **6.4 to 6.9 m.daN**

Cylinder heads :

- Cylinder head nuts (see photo opposite) :
  - *Stage 1* : ..... **0.8 to 1 m.daN**
  - *Stage 2* : ..... **2 to 2.5 m.daN**
- Cylinder head cover nut : ..... **0.8 to 1 m.daN**
- Rocker shaft plug : ..... **1.4 to 1.6 m.daN**
- Exhaust flange nut : ..... **1.5 m.daN**
- Cylinder head cover studs : ..... **0.3 to 0.5 m.daN**
- Oil coupling screw : ..... **1.8 to 2 m.daN**
- Inlet flange screw : ..... **1.8 m.daN**
- Camshaft bearing nuts : ..... **1.5 to 1.8 m.daN**

Timing gear :

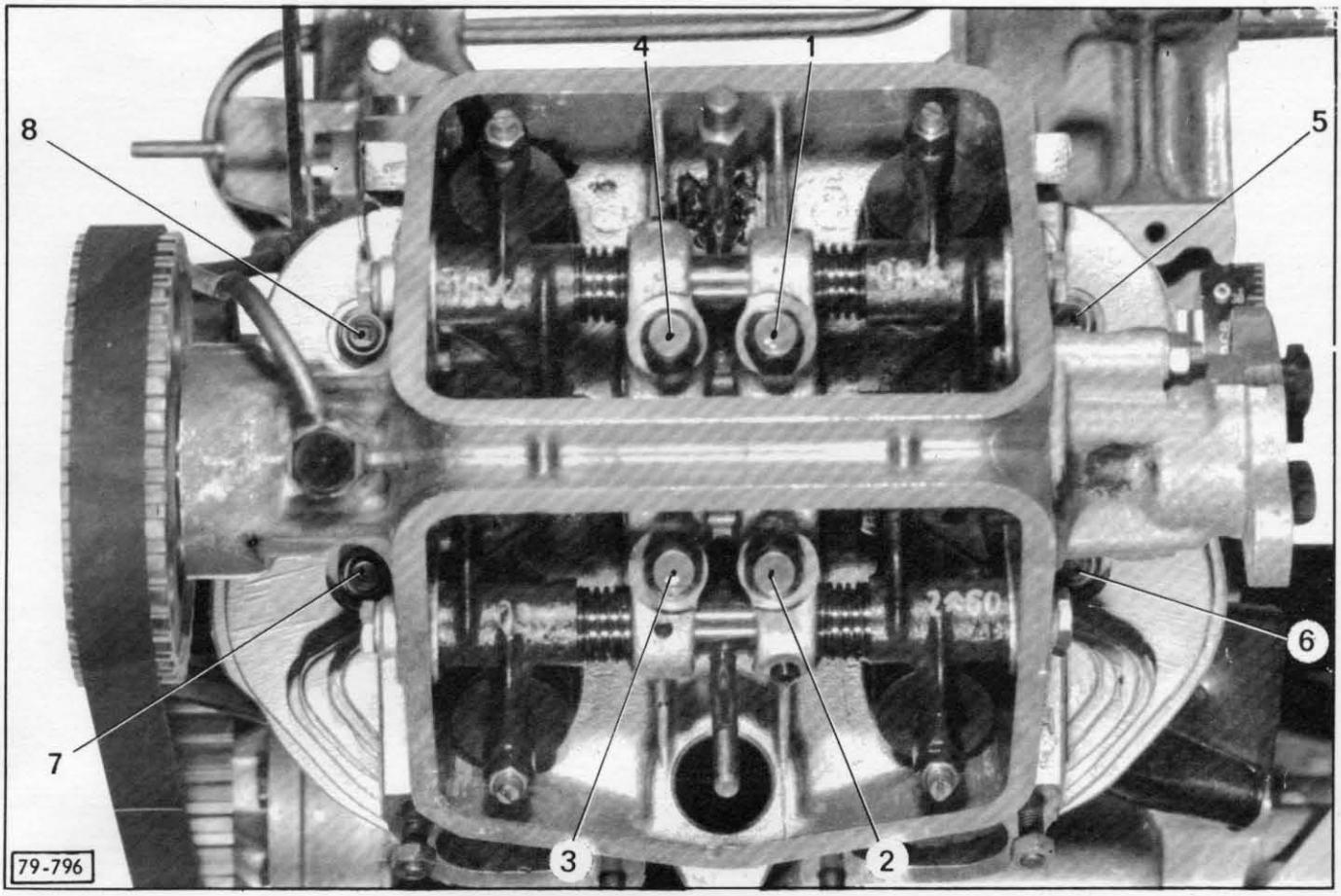
- Tensioner roller nut : ..... **1.8 m.daN**
- Camshaft pinion nut : ..... **8.2 m.daN**
- Tensioner roller stud (LOCTITE FRENETANCH) : ..... **0.3 to 0.5 m.daN**

Lubrication system :

- Filter cartridge insert (LOCTITE FORMETANCH) : ..... **1.3 to 2.2 m.daN**
- Oil cooler attachment screw : ..... **1.8 m.daN**
- Cooler by-pass valve plug (LOCTITE FORMETANCH) : ..... **5 to 5.5 m.daN**
- Oil pipe coupling screw : ..... **1.8 to 2 m.daN**
- Oil gallery blanking plug (LOCTITE FORMETANCH) : ..... **3.5 to 5 m.daN**
- Oil pressure switch : ..... **2 to 2.5 m.daN**
- Oil temperature switch (1300 cc engine) : ..... **2.5 to 3 m.daN**

Cooling system :

- Lock-nut *(lubricated face)* : ..... **22 to 24 m.daN**


4
1
8
5
6
7
3
2
79-796

ROCKER ARM ADJUSTMENT

This operation must be carried out with the engine cold.

1. Place a cloth on the exhaust manifold.

2. Disconnect spark-plug leads (1) for cylinders two and four.
Remove the cylinder head covers.

3. Adjust rocker arm clearance :
Proceed as follows to adjust each rocker arm :
a) Turn the engine so that the heel of the rocker arm to be adjusted comes onto the corresponding cam *(valve fully closed).*

b) Adjust rocker arm clearance between heel and corresponding cam at « a ».
Inlet - Exhaust : 0.20 to 0.25 mm

NOTE : If the engine is mounted in the vehicle, use angle screwdriver **A** to facilitate adjustment.

4. Replace the rocker covers :
Check that there are no roughnesses on the joint surfaces, which must be clean and dry. Glue the seal to the rocker cover (BOSTIK 1400 or MINNESOTA F 19).
Centre the rocker covers correctly.

NOTE : The lower and upper rocker covers are different. Check correctly assembly.
Oil filler (2) is mounted on the left side.

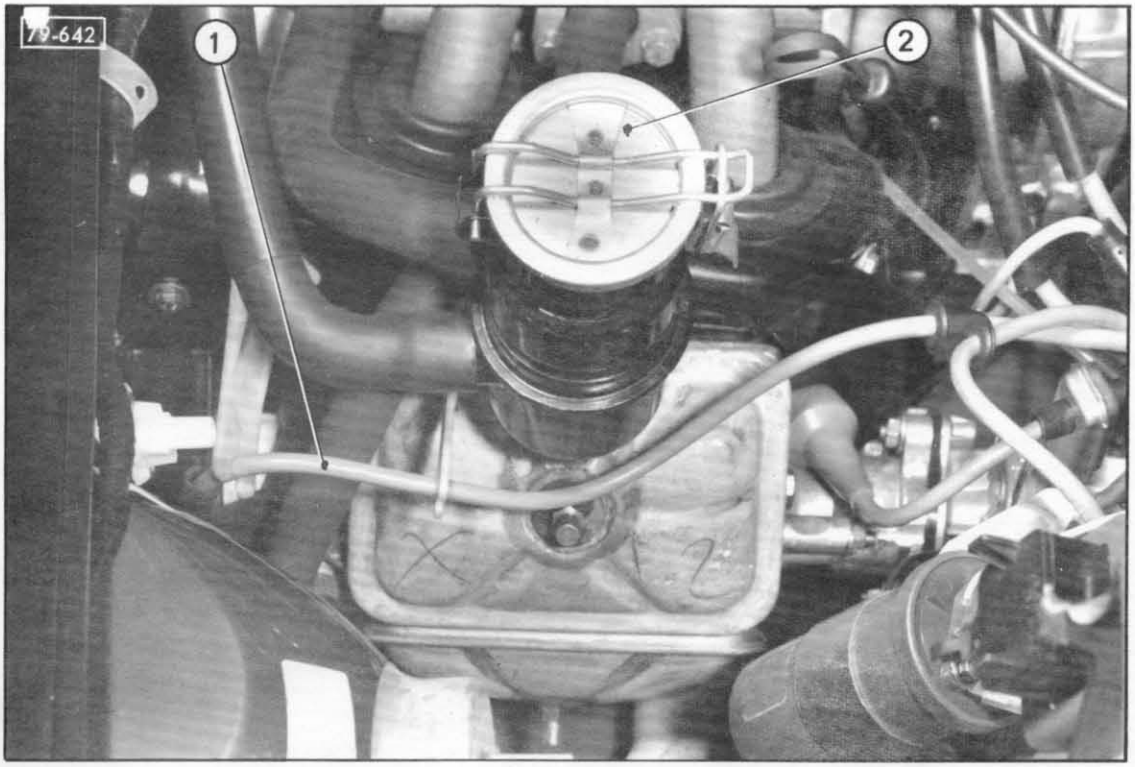
Nut tightening torque : 0.8 to 1 m.daN

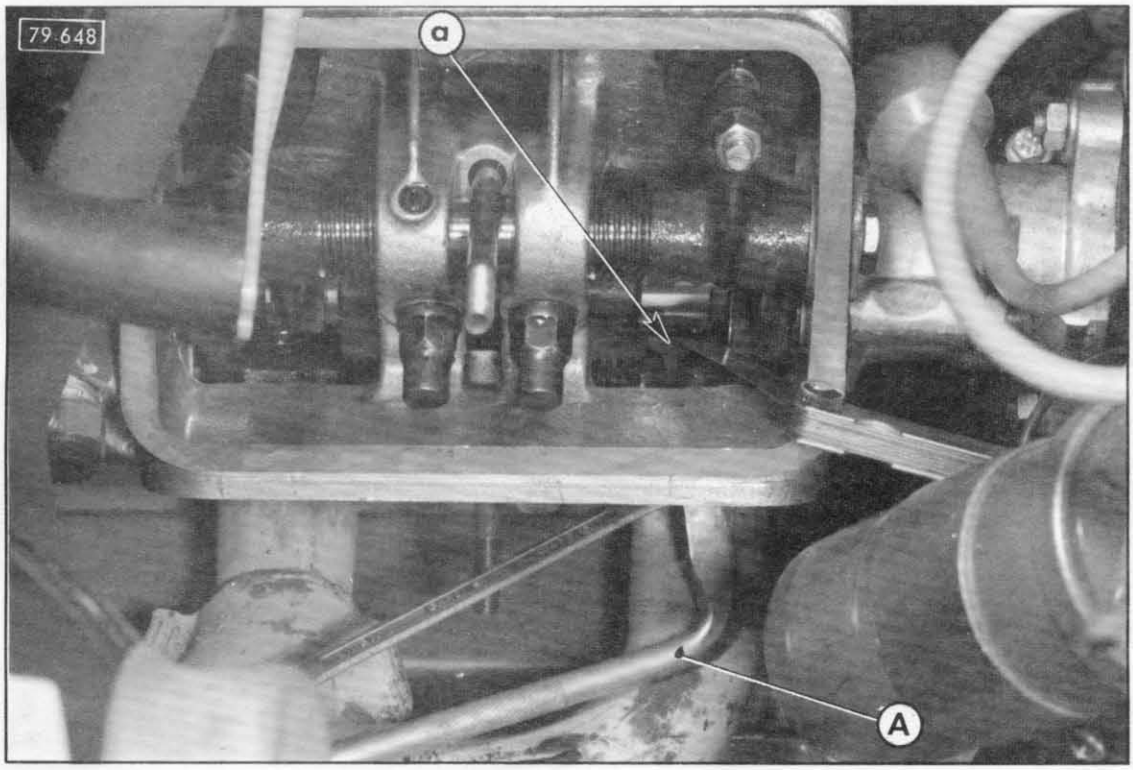
Incorrect assembly of the gaskets, faulty alignment or indequate tightening of the nut, can result in total oil loss.

5. With the engine hot, adjust idling if necessary.

ENGINE	CLUTCH	rpm
1130 cc 1300 cc	All Types	850 to 900
1300 ECO		650 to 700

Check tightness of joints.
Check oil level, and top up if necessary.


79-642
1
2


79-648
a
A

CHECKING THE VALVE TIMING

The valve timing check must be carried out with the engine cold, starting either with the left or the right camshaft.

1. Remove the upper cylinder head cover on each side.

2. **Checking the left camshaft setting :**
   a) Turn the engine in its normal running direction, until :
   - the exhaust valves of cylinder No. 1 is fully open,
   - then continue turning the engine until the flywheel pointer is opposite mark « c » on the graduated quadrant :

   10° for G 11/631 engine
   15° for G 13/625 engine
   5° for G 13/646 engine

   On the converter, mark « b » (10 teeth ahead of top dead center groove **A)** must be opposite the 15° mark on the graduated quadrant.

   b) *On cylinder No. 1 inlet rocker arm :*
   Unscrew lock-nut (1) and turn the adjustment screw so as to obtain **nil clearance and nil load** between this screw and the valve stem. Tighten lock nut (1) without forcing.

   c) Turn the engine by one revolution in its normal running direction, until the engine flywheel pointer *(mark « b » on the converter)* is again opposite mark « c » on the graduated quadrant :

   10° for G 11/631 engine
   15° for G 13/625 engine
   5° for G 13/646 engine

   d) On the inlet rocker arm, measure the clearance between the adjustment screw and the valve stem.

   It should be between 0.5 and 1 mm.

3. **Check the right camshaft setting :**
   Proceed as above, working on cylinder No. 3.

4. Adjust the inlet rocker arms of cylinders Nos. 1 and 3.

   Inlet clearance : 0.20 to 0.25 mm

5. **Replace the cylinder head covers :**

   a) Check that there are no roughnesses on the joint surfaces, which must be clean and dry.

   b) If necessary, glue the gaskets to the cylinder head covers (BOSTIK 1400 or MINNESOTA F 19).

   c) Position the cylinder head covers, centering them correctly (the cover fitted with the filler pipe is mounted on the left side).

   Attachment nut tightening torque :
   0.8 to 1 m.daN

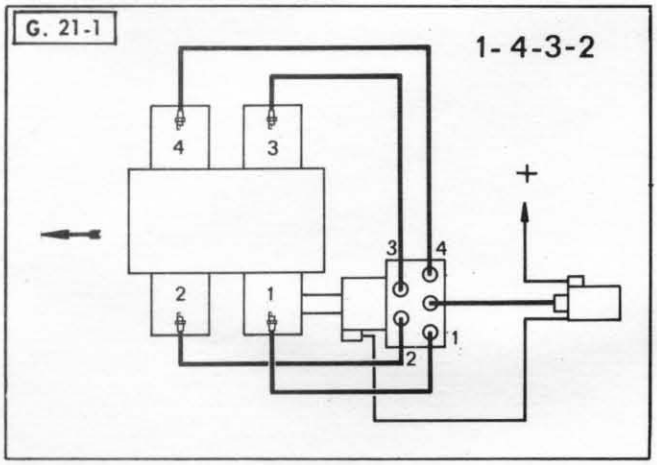
   CAUTION : Incorrect assembly of the gaskets, faulty alignment, or inadequate tightening of the attachment nut can result in a total loss of the engine oil.

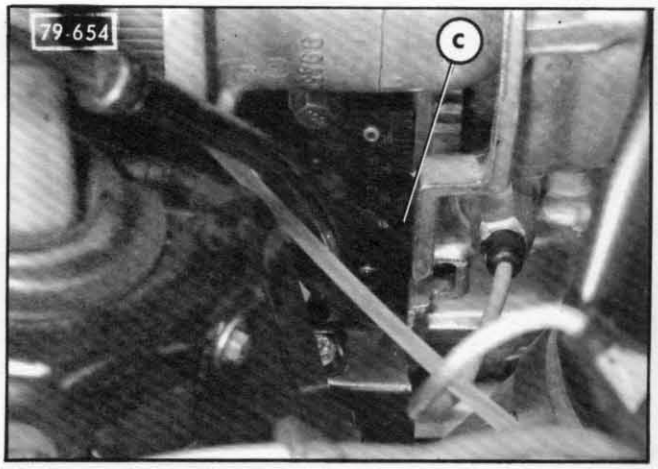
6. Check the engine oil level.

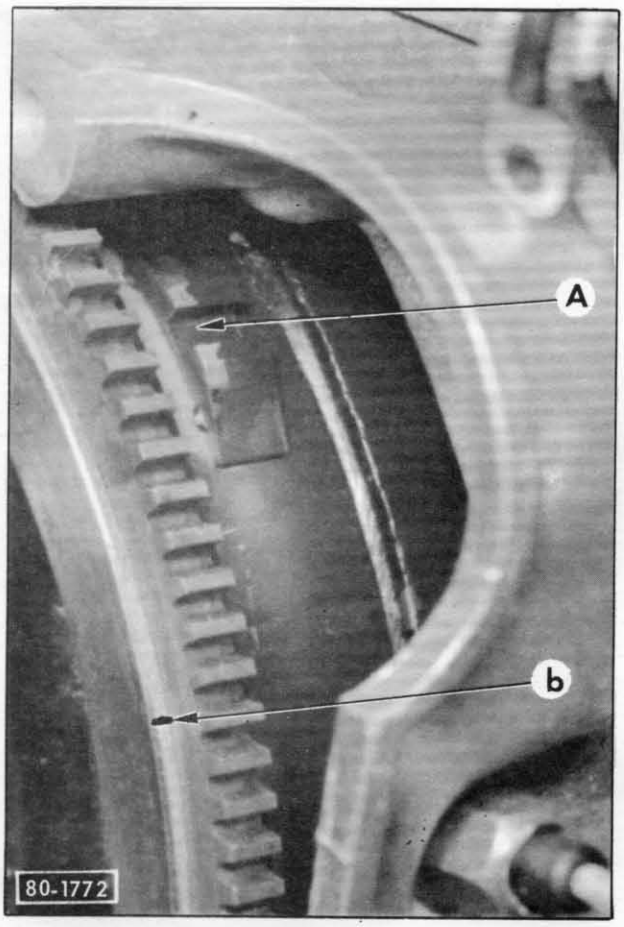
7. Run the engine, and check the tightness of the gaskets. Adjust the idling if necessary.

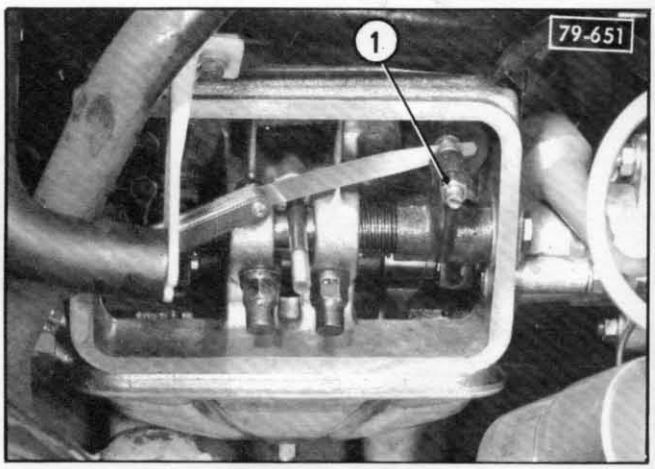
DRAWING KEY

The arrow ◄—— indicates the front end of the vehicle.


G. 21-1
1-4-3-2
4
3
2
1
3
4
2
1
+


79-654
C


A
b
80-1772


1
79-651

NOTE : This operation is valid for all types of vehicle, from 1977 models on.

All PETROL ENGINE vehicles put on the road from 1 October 1976, must be fitted with a tamper-proof carburettor *(valid for ALL EUROPEAN COUNTRIES except SWEDEN).*

This device consists in protection of the mixture adjustment screws (SOLEX and WEBER), and the aperture adjustment screws of the throttle valve or valves (SOLEX).

If the pollution setting is not correct, remove the original plug *(white for WEBER carburettor, black for SOLEX carburettor)* and replace, after adjustment, by a « REPAIR » protecting plug *(black for WEBER carburettor, white for SOLEX carburettor).*

The Replacement Parts Department supplies a new kit, ref. **4035-T**, for removal and fitting of tamper-proof plugs on SOLEX and WEBER carburettors.

NOTE : The first kits sold by the Replacement Parts Department (ref. 4029-T) can be made up to present standard by the addition of tools **(D)** ref. 4031-T and **(F)** ref. 4032-T.

COMPOSITION OF KIT REF. 4035-T :

A : Gun

B : Gun arming tool

C : Extractor tool for tamper-proof plugs **(a)** on flush mixture adjustment screw *(SOLEX)*

D : Extractor tool for tamper-proof plug **(a)** on flush mixture adjustment screw *(WEBER)*

E : Tool for fitting plug **(a)** and cap **(b)** *(SOLEX and WEBER).*

F : Tool for cracking the head of cap **(b)** on adjustment screws with cup *(SOLEX)*

G : Extractor tool for cap **(b)** *(SOLEX)*

H : Tool for fitting tamper-proof cap **(c)** on throttle valve shaft stop screw *(SOLEX).*
This kit also contains a set of plugs for SOLEX carburettors :

a- Tamper-proof plug for flush mixture adjustment screw

b- Tamper-proof cap for mixture adjustment screw with cup

c- Tamper-proof cap for throttle valve shaft stop screw

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

- **Tamper-proof plug for flush mixture adjustment screw**
  SOLEX carburettor : . . . . . No. 5 489 718 Y (white)
  WEBER carburettor : . . . . . No. 5 489 716 B (black)
- **Tamper-proof cap for mixture adjustment screw with cup**
  SOLEX carburettor : . . . . . No. 5 501 075 U (white)
- **Tamper-proof cap for throttle valve shaft stop screw**
  SOLEX carburettor : . . . . . No. 5 507 643 (white)

UTILIZATION

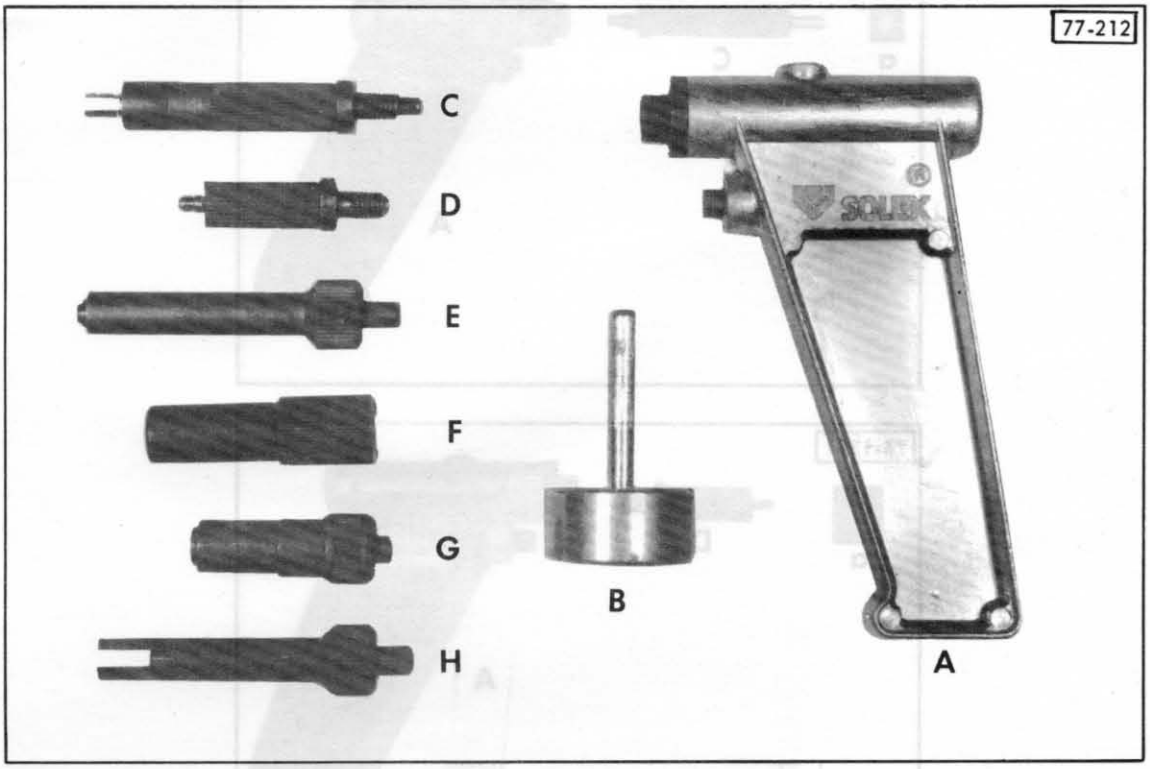
I. REMOVAL AND FITTING OF TAMPER-PROOF PLUG ON FLUSH MIXTURE ADJUSTMENT SCREWS FOR SOLEX or WEBER CARBURETTOR **(plug (a))**

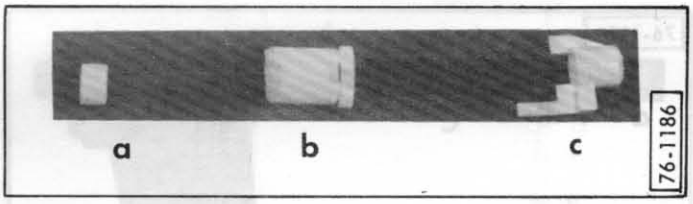
NOTES :

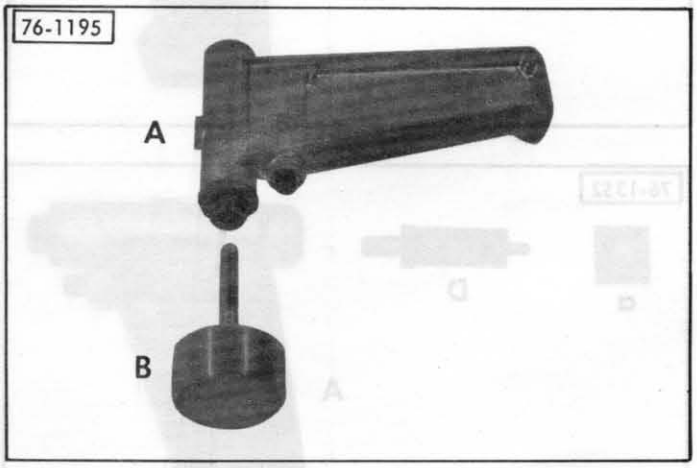
1 - On GS vehicles equipped with a WEBER carburettor the air filter must be removed for execution of this operation.
2 - On GS vehicles equipped with a twin SOLEX carburettor it is advisable to take down the throttle closing dashpot.
3 - On all types of 2 CV vehicle (Méhari and 250/400 « Fourgonnettes » vans), the filter must be removed to facilitate utilization of the tool.
4 - On CX vehicles equipped with WEBER carburettor, slightly lower the support bracket for the water hose, to allow correct alignment of the tool.
5 - On VD1 vehicles, take down the idle cut-off, and the alternator suppressor capacitor mounted on the alternator flange.

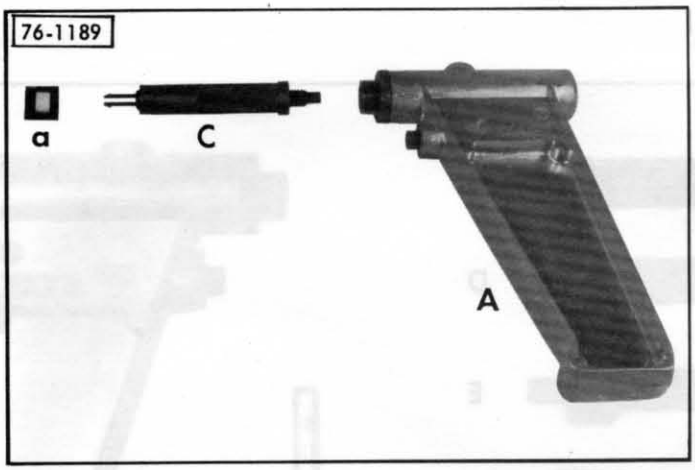
REMOVAL

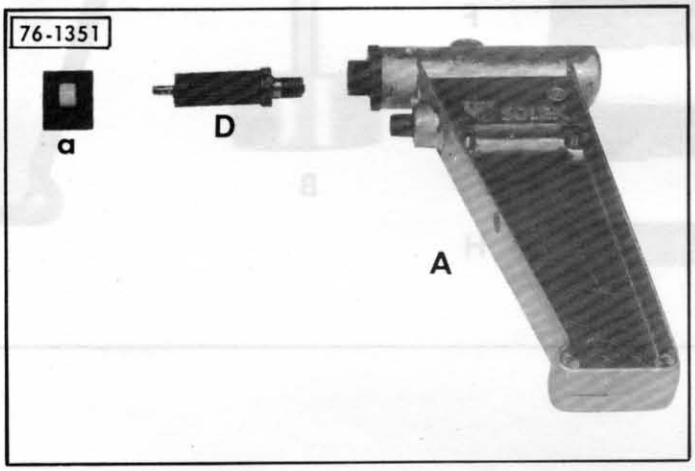
1. Arm gun **A** on tool **B.**

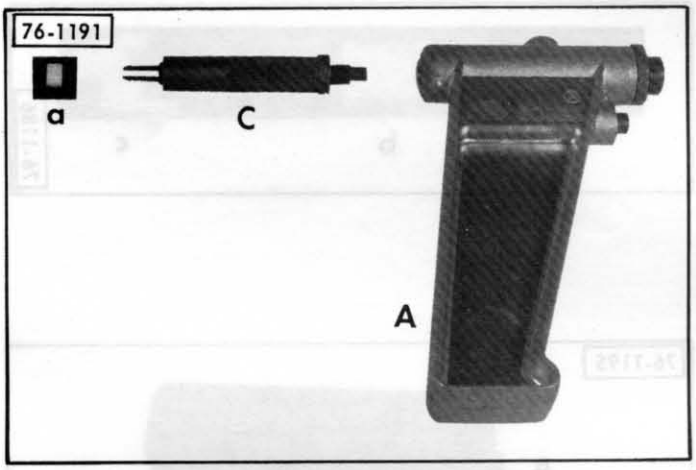

77-212
C
D
E
F
G
H
B
A
SOLEX

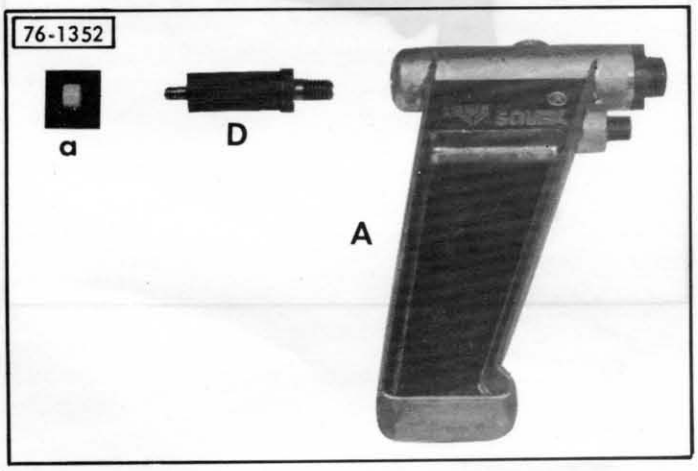

a
b
c
76-1186


76-1195
A
B


76-1189
a
C
A


76-1351
a
D
A


76-1191
a
C
A


76-1352
a
D
A

2. Pierce plug (a) :

SOLEX carburettor :

- Position and hold tool **C** against gun **A.**
- Present the tool/gun assembly against plug **(a)**, checking that the tool end is correctly centred in the plug, and that the assembly is aligned as closely as possible on the plug axis.
- Fire and extract the gun, leaving tool **C** on the carburettor.

WEBER carburettor

- Position and hold tool **D** against tool **A.**
- Present the tool/gun assembly against plug **(a)** , checking that the tool end is correctly centred in the plug, and that the assembly id aligned as closely as possible on the plug axis.
- Fire the gun, and screw the tool into the plug (LH thread).
- Extract the gun, leaving tool **D** on the carburettor.

3. Extraction of plug (a) :

- Arm tool **A.**

SOLEX carburettor :

- Screw tool **C** onto the back of gun **A.**
- Fire the gun to extract the plug.

WEBER carburettor :

- Screw tool **D** onto the back of gun **A.**
- Fire the gun to extract the gun.

4.Adjust the level of pollution :

NOTE : If the air filter has been removed *(GS and 2 CV vehicles),* replace, but *without anchoring,* for adjustment.

FITTING

5. Fitting tamper-proof plug (a) :

- Arm gun **A.**
- Screw tool **E** into gun **A.**

Place plug **(a)** in its recess in the carburettor. *Check correct position of insertion on WEBER carburettors (see figure opposite).*

- Drive the plug until it reaches its final position.

NOTE : If the air filter has been removed, replace and *fix firmly.*

II. REMOVAL AND FITTING OF TAMPER-PROOF CAP ON MIXTURE ADJUSTMENT SCREW WITH CUP ON SOLEX CARBURETTORS (cap **(b)**)

REMOVAL

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

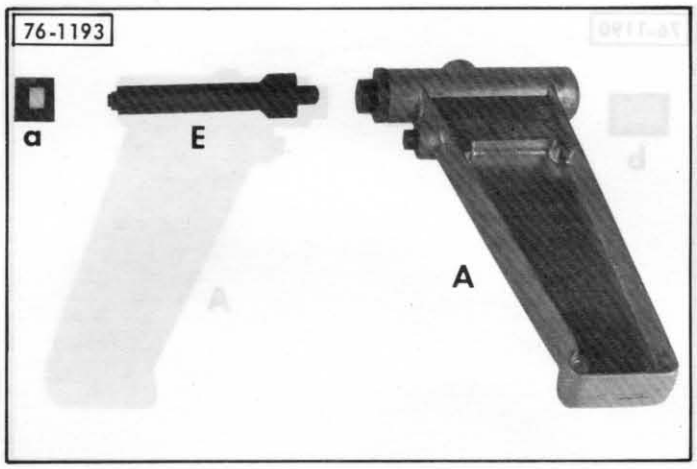
The cap must extend beyond the cup by at least 6 mm. The flare on the back of tool **F** can be used as a gauge. If this is not the case, unscrew the mixture adjustment screw.

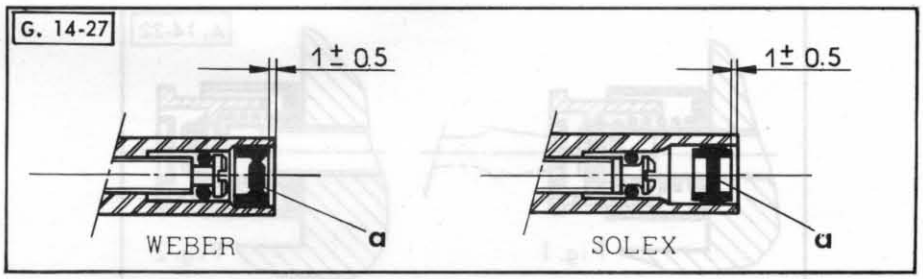
2. Extraction of cap (b) :

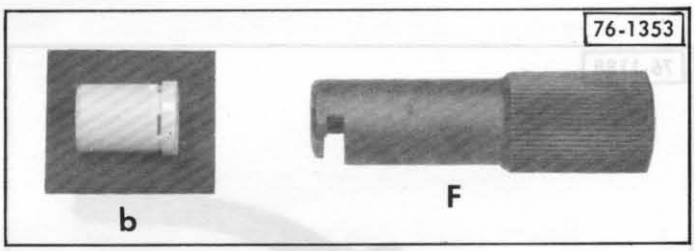
- Arm gun **A.**
- Screw tool **G** into the gun.
- Apply the tool/gun assembly against the cap.

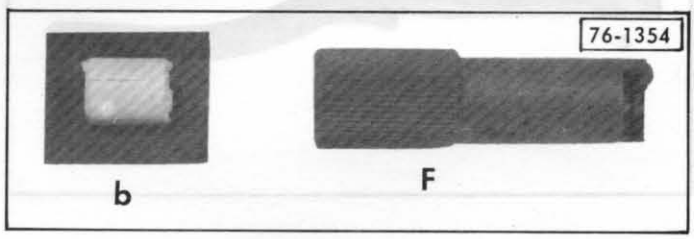
Ensure correct alignment.

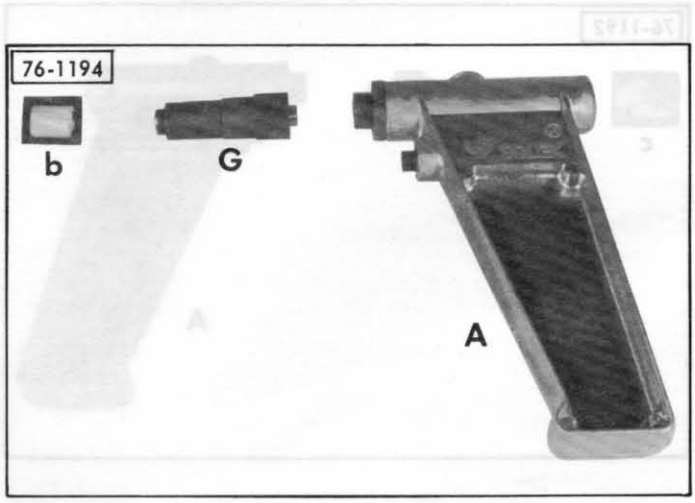
- Fire the gun and extract the cap.

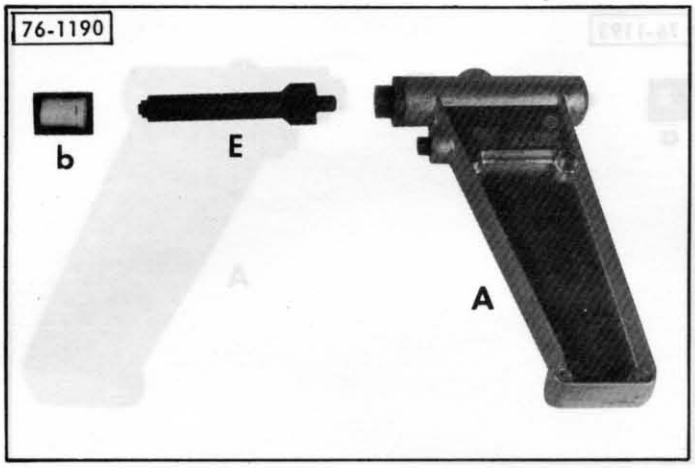

76-1193
a
E
A

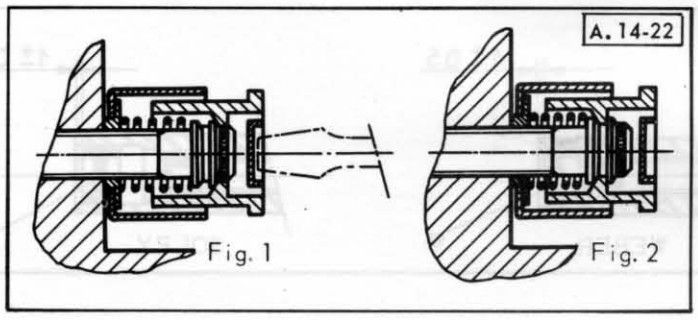

G. 14-27
1 ± 0.5
1 ± 0.5
WEBER
a
SOLEX
a

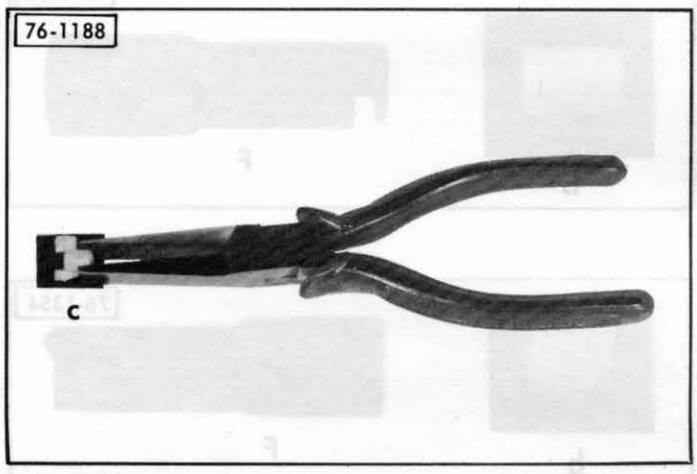

76-1353
b
F

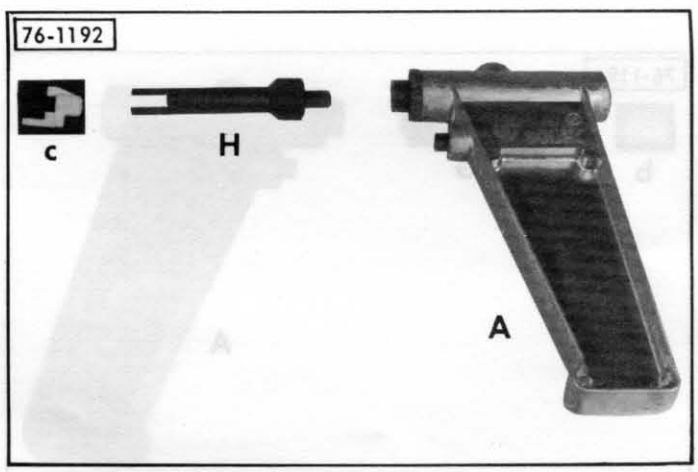

76-1354
b
F


76-1194
b
G
A


76-1190
b
E
A


A. 14-22
Fig. 1
Fig. 2


76-1188
c


76-1192
c
H
A

FITTING

3. Pre-engagement of cap (b) :
(see fig. 1 opposite)
- Place the cap in the mixture screw cup.
- Arm gun **A**
- Screw tool **E** into the gun
- Apply the tool/gun assembly against the cap
- **Fire once**

4. Adjust the exhaust emission.

5. Engagement of cap (b) :
- Arm the gun, and **strike the cap a second time,** displacing the cap to the position shown in fig. 2 opposite.

III. REMOVAL AND FITTING OF TAMPER-PROOF CAP ON THROTTLE VALVE SHAFT STOP SCREW ON SOLEX CARBURETTOR (cap (c))

This operation is only executed in the case of overhaul and adjustment on a type L'POLLU 2000 carburettor test rig.

REMOVAL

1. Remove cap **(c)** with a pair of flat-nosed pliers.

2. Aperture adjustment :
- Adjust the throttle valve aperture, using the test rig and in accordance with the standards indicated in Equipment Studies No. 14-1/16 ter and No. 14-1/16 quarter *(these documents will be supplied on request, to owners of carburettor overhaul and adjustment rigs).*

FITTING

3. Fitting cap (c) :
- Arm gun **A**
- Screw tool **H** into the gun
- Engage cap **(c)** on the throttle valve shaft stop screw
- Apply the tool/gun assembly against cap **(c)** and fire the gun.

To meet regulations currently in force, exhaust emission testing and adjustment on PETROL ENGINE vehicles must be carried out following the operations listed below :

I. ENGINE REPLACEMENT

II. CARBURETTOR REPLACEMENT

III. WORK ON THE CARBURATION SYSTEM

Replacement of carburettor components
Carburettor adjustment
Work on carburettor controls

IV. WORK ON THE INLET SYSTEM

Replacement or removal of the following :
- inlet manifold
- air filter
- crankcase gases recycling system

V. WORK ON THE ENGINE

Adjustment of rocker arm clearance
Replacement or removal of the following :
- cylinder head
- camshaft
- rocker arms
- valves
- piston sleeves

VI. WORK ON THE IGNITION SYSTEM

Replacement or reconditioning of the distributor (partial or total)
Adjustment or replacement of spark-plugs
Adjustment of ignition timing

VII. WORK ON THE EXHAUST SYSTEM

Replacement or removal of the following :
- exhaust manifold
- silencer or other par of the exhaust system

VIII. WORK ON THE ANTI-POLLUTION SYSTEM

Where the vehicle has special equipment *(for example vehicles for SWEDEN, AUSTRALIA, and JAPAN).*

OPERATION
GX. 142-00

GSA 1300

→ *7/1980*

CHARACTERISTICS AND SPECIAL FEATURES OF THE CARBURETTOR

SOLEX CARBURETTOR

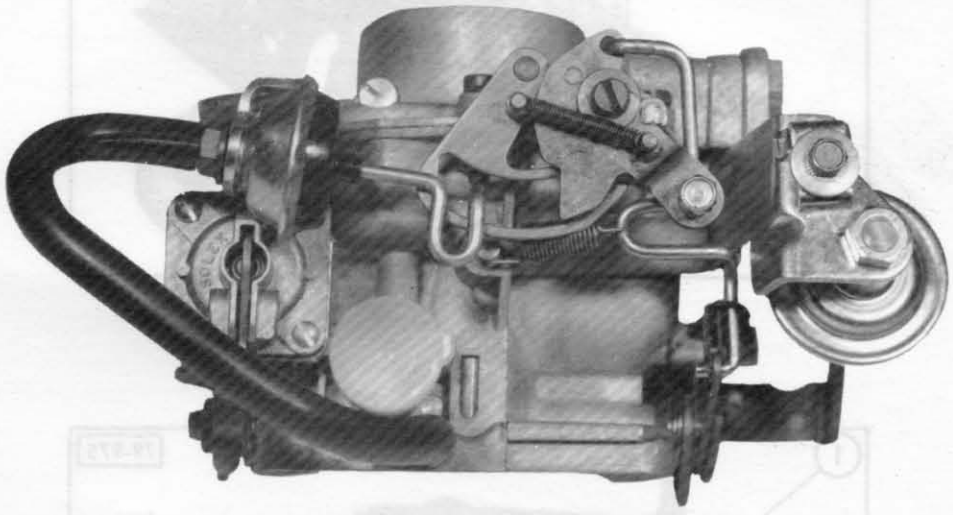
CHARACTERISTICS

Type : 28 CIC 4
Identification mark : CIT 185
Dual-choke carburettor, "compound" type, with mechanical control of second choke
Stangler flap on choke with an anti-flooding capsule
Idle cut-off
Throttle closing dashpot
Petrol return to reservoir on cover (indicated by an arrow)
Tamper-proof plug on volume control screw and on butterfly stop-screw :
Original part : black R.P. colour : white

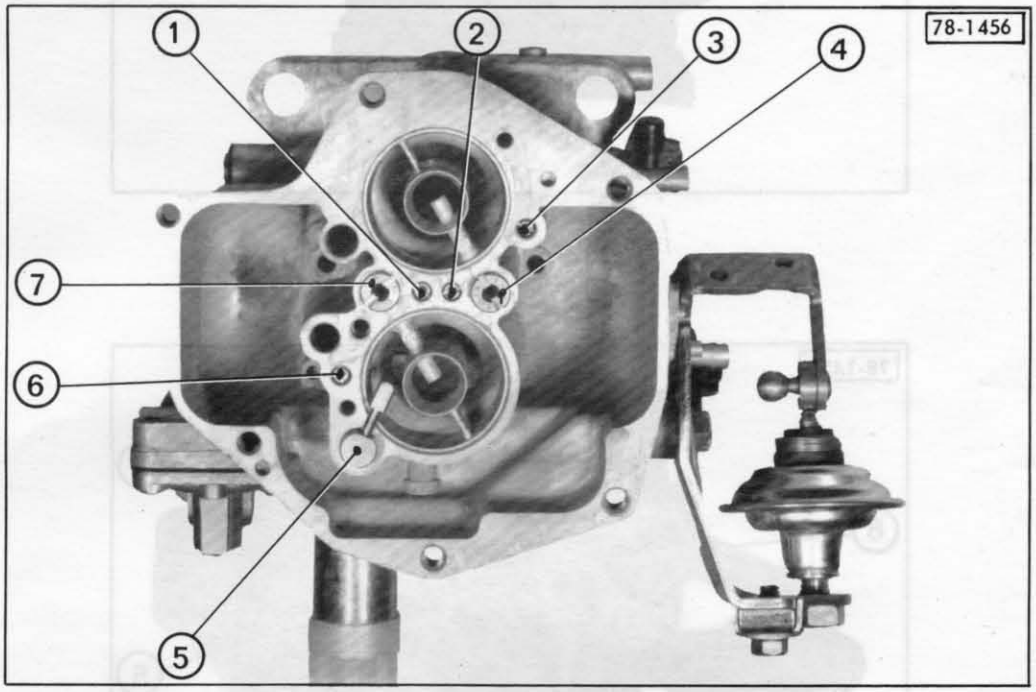
DESCRIPTION	1st CHOKE		2nd CHOKE	
Venturi bore :	20		22	
Main jet :	107.5		95	
Air correction jet and emulsion tube :	1 S 3 (220)	(7)	2 T 1 (155)	(4)
Pilot jet :	50	(6)		
Constant enrichment pilot jet :	30	(1)		
By-pass jet :			40	(3)
Econostat :			95	(2)
Accelerator-pump injector :	55	(5)		
♦ Needle valve (ball-operated) dia. in mm :		1.8		
♦ Weight of polyamide float No. 59 807 :		11.4 g		
Positive opening of 1st choke butterfly (with stangler flap closed) :	1.3 ± 0.05mm			
Opening of strangler flap under a 250 mbar vacuum (190 mmHg)	4 ± 0.2 mm			

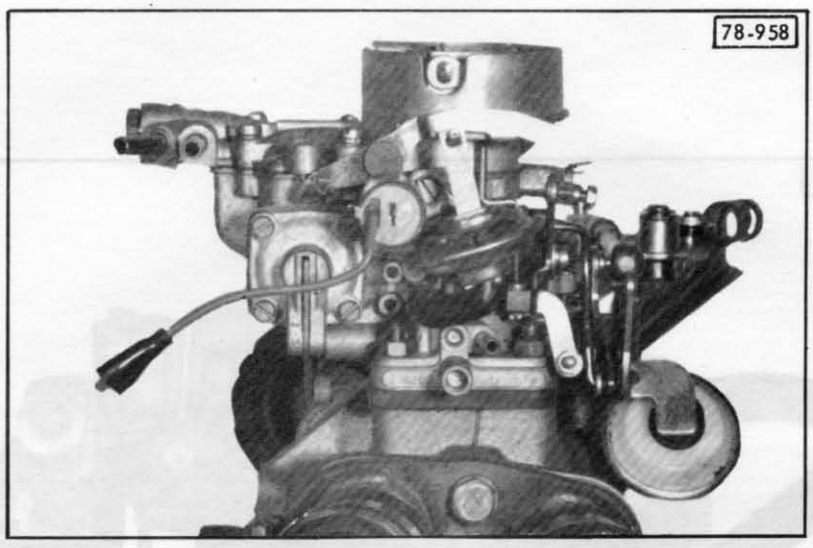
Operating time of the throttle closing dashpot between 4500 and 1200 rpm : 3 to 4.5 seconds.
Float setting : With the cover removed and turned upside-down, the distance between the float centreline and the cover joint face (gasket in position) should be : 18 mm

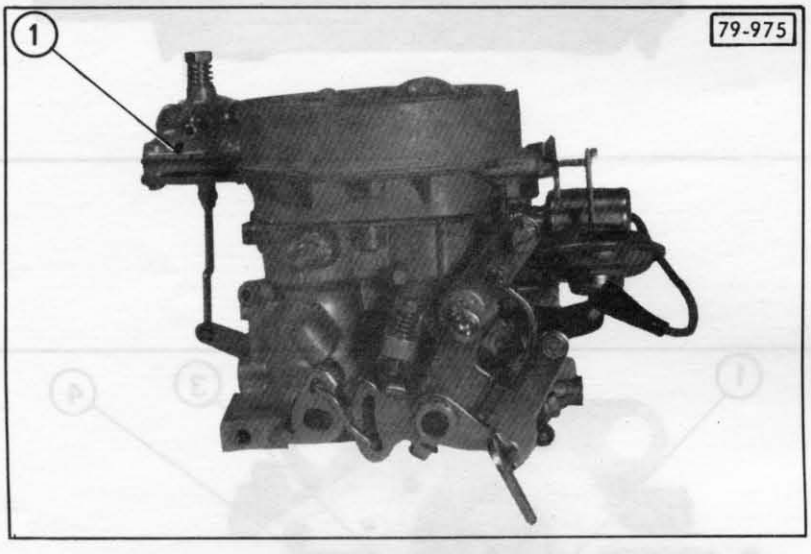
78-1454

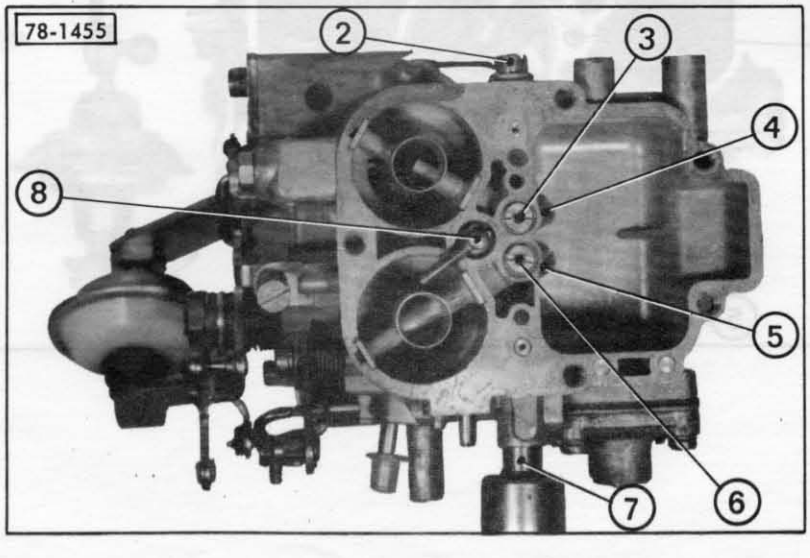


78-1456




78-958


79-975
1


78-1455
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WEBER CARBURETTOR

CHARACTERISTICS

Type : 30 DGS 13/250 — Mark : W 92-50 — *Conventional clutch*

Type : 30 DGS 19/250 — Mark : W 99-50 — *Torque converter*

Dual-choke carburettor, "compound" type, with mechanical control for second choke
Strangler flap on first chamber with anti-flooding capsule
Idle cut-off

Throttle closing dashpot

Petrol return to reservoir on cover (identified by arrow)

Capsule acceleration of idling opening (1)

Tamper-proof plugs on volume control screw and second choke butterfly stop screw :
Colours : Original part : white — Replacement part : black

DESCRIPTION		1st CHOKE		2nd CHOKE	
Venturi bore :		21		21	
Main jet :		105	(5)	107	(4)
Air correction jet :		200	(6)	155	(3)
Emulsion tube :		F 85	under 6	F 20	under 3
Pilot jet :		45	(7)		(2)
Accelerator pump injector :		45	(8)		
Econostat (in cover) :			65 (fixed)		
Needle valve (ball-operated) :			1.5		
Weight of brass float :			11 ± 2 g		
Opening of 1st choke butterfly(strangler flap fully closed) :		1.35±0.05mm			
Opening of strangler flap under 530 mbar (400 mmHg)	1st position	3 to 3.5 mm			
	2nd position	5 to 5.5 mm			

Operation time of the throttle closing dashpot (W. 92-50) between 4500 and 1200 rpm : 3 to 4.5 seconds

Float setting (cover vertical with gasket and ball not pushed in) :

Distance between joint face and float : 6.5 mm

OPERATION
GX. 142-00 a

GSA 1300

7/1980 → 7/1981

GSA 1130

7/1980 → 7/1983

CHARACTERISTICS AND SPECIAL FEATURES OF THE CARBURETTOR

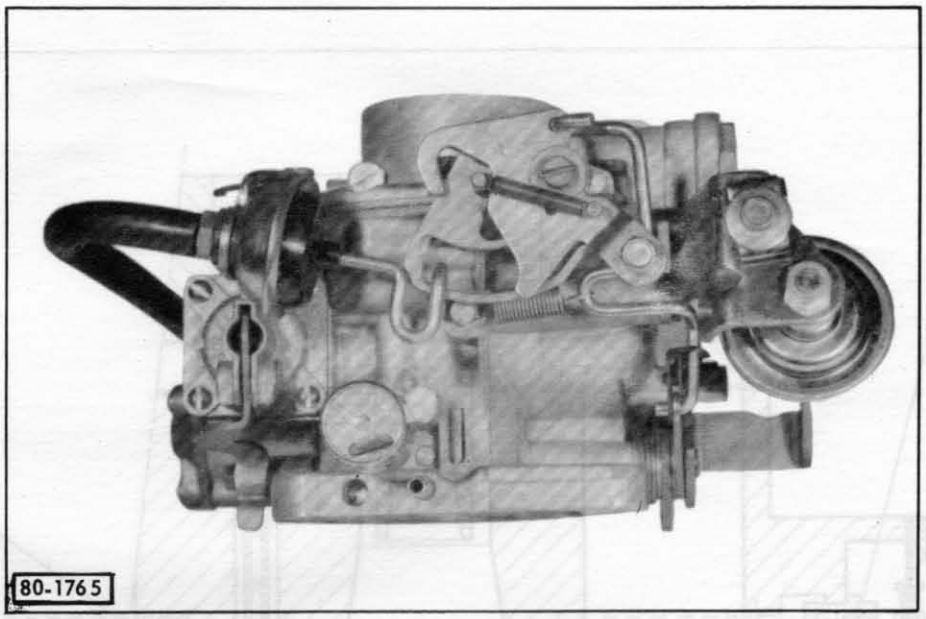
SOLEX CARBURETTOR

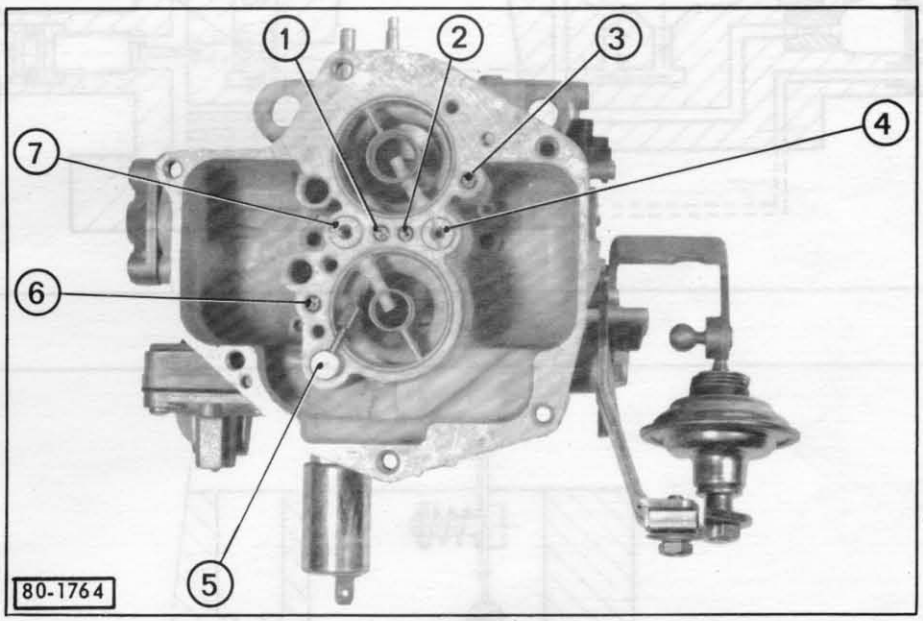
CHARACTERISTICS.

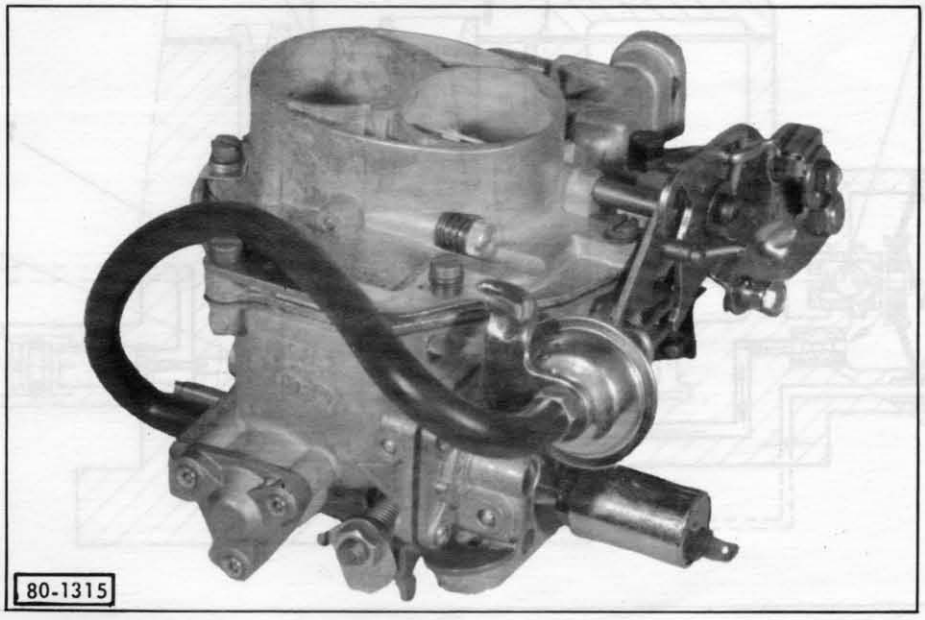
Type : 28 CIC 4
Identification mark : CIT 229 *(1130 cc engine)*
CIT 230 *(1300 cc engine)*
Dual-choke carburettor, « compound » type, with a mechanical control of second choke.
Pneumatic petrol enrichment device on first choke.
Strangler flap on first choke with an anti-flooding capsule.
Vacuum port for econoscope.
Idle cut-off.
Throttle closing dashpot.
Petrol return to fuel tank (indicated by an arrow on the cover).
Tamper-proof plug on the volume control screw and the butterfly stop-screw :
Original colour : black R.P. colour : white

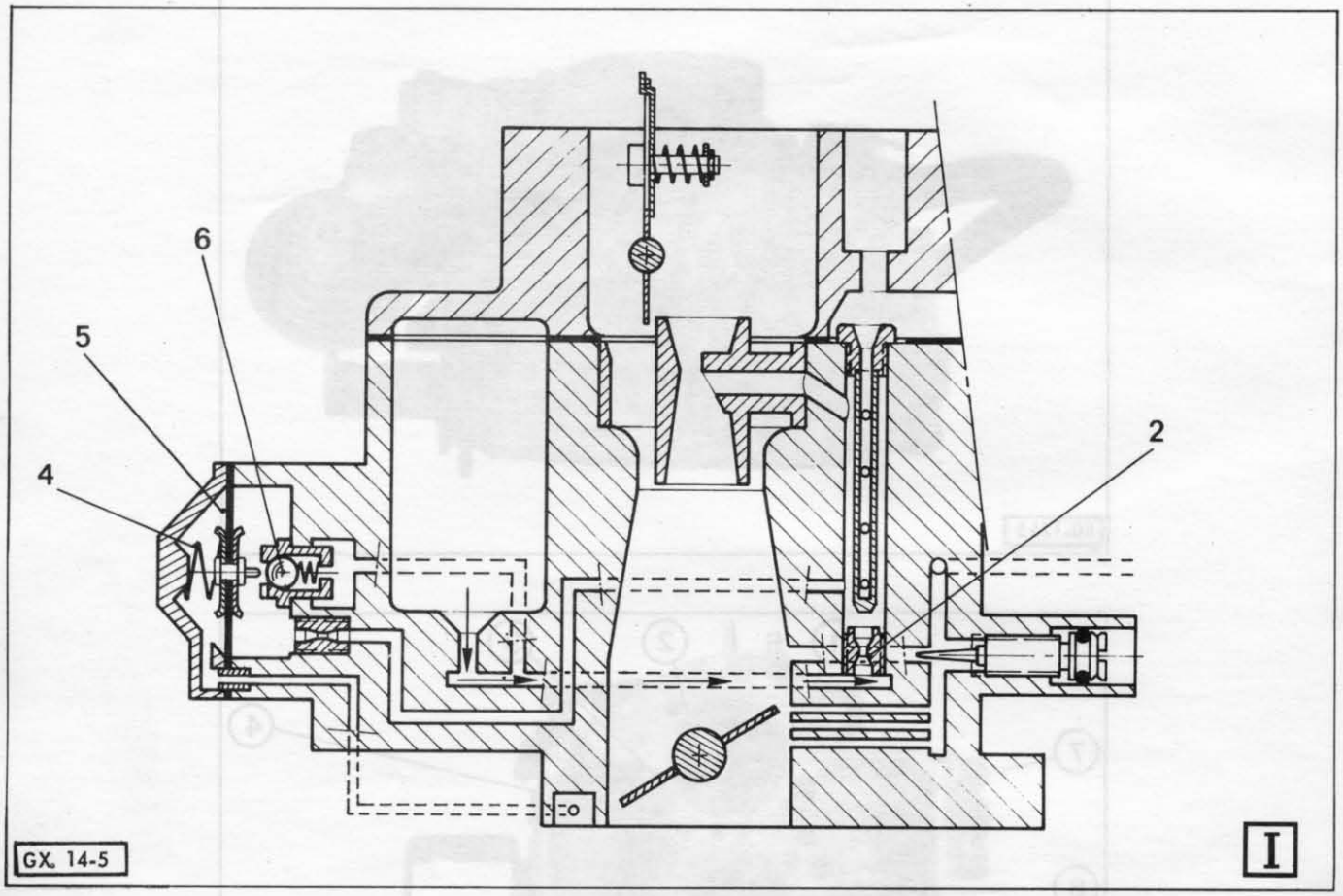
DESCRIPTION : Type : ..... Mark :	28 CIC 4 229		28 CIC 4 230	
	1st choke	2nd choke	1st choke	2nd choke
Venturi bore :	20	21	20	22
Main jet :	92.5	85	107.5	95
Air correction jet and emulsion tube :	200 P5 (7)	180 P5 (4)	210 Y3 (7)	160 T1 (4)
Pilot jet :	50 (6)		50 (6)	
Constant enrichment pilot jet :	30 (1)		30 (1)	
By-pass jet :		35 (3)		40 (3)
Econostat :		170 (2)		90 (2)
Accelerator-pump injector :	55 (5)		55 (5)	
Jet of pneumatic enrichment device :	40		50	
Needle valve :	1.8		1.8	
Weight of the float :	11.7 g		11.7 g	
Positive opening of the 1st choke butterfly (with strangler flap closed) :	1.25 ± 0.05 mm		1.30 ± 0.05 mm	
Strangler flap opening under a vacuum of 350 mbar :	3.6 ± 0.3 mm		4 ± 0.3 mm	

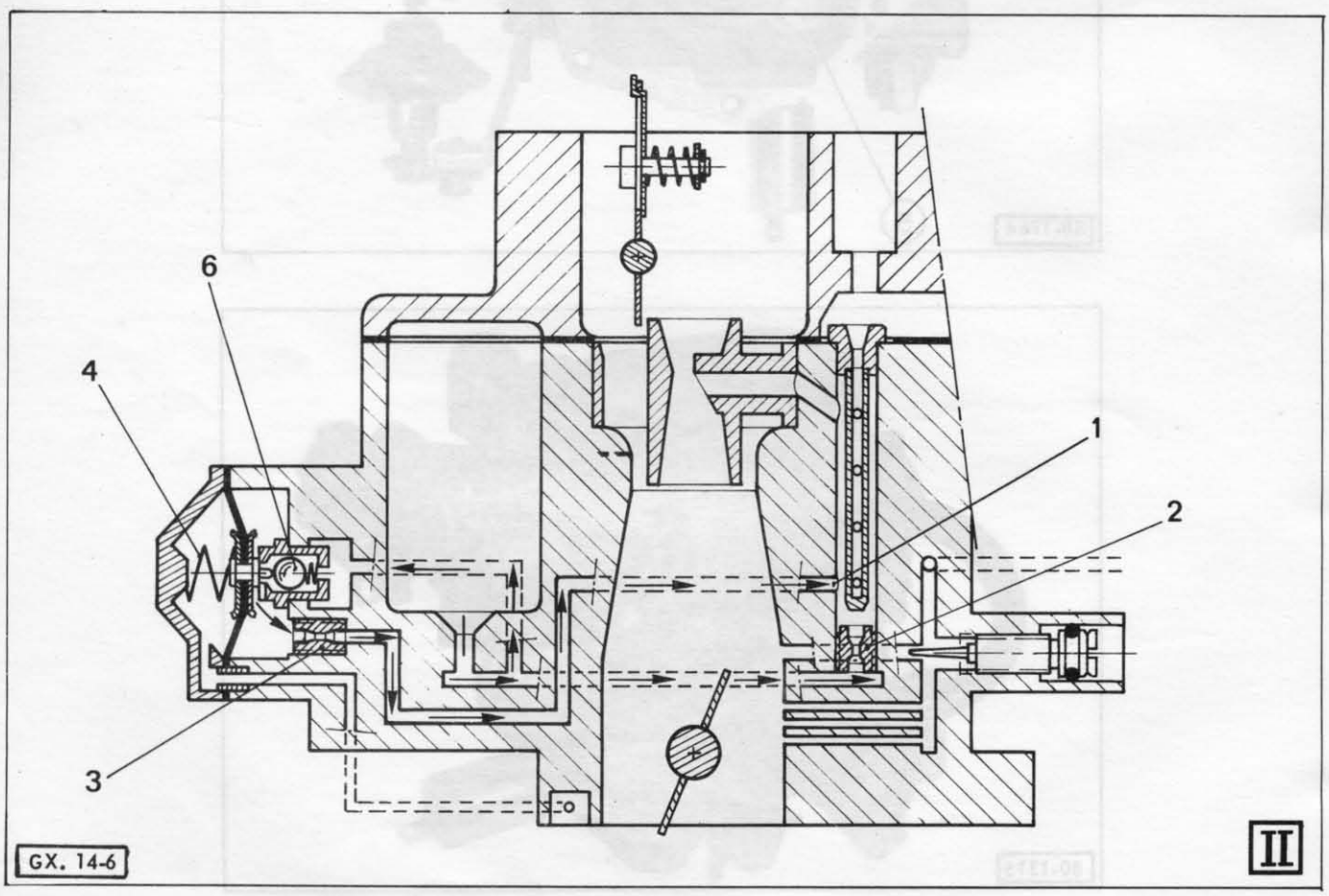
Operating time of the throttle closing dashpot between 4500 and 1200 rpm : 2 to 4.5 seconds.
Float setting : with the cover removed and turned upside down, the distance between the float centre line and the cover joint face (with gasket fitted) should be : 18 mm.


80-1765


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80-1764


80-1315


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GX. 14-5
I


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GX. 14-6
II

PNEUMATIC ENRICHMENT DEVICE ON SOLEX CARBURETTOR

The enrichment device is placed on the petrol feeding circuit of the 1st choke.

The 1st choke main jet is small, but its outflow is big enough to keep the engine running at low load with a minimum consumption.

At high load, the main jet outflow is too low and, therefore, the mixture is too poor. The enrichment device petrol inlet (located under the main jet) then opens, allowing to have a mixture richness corresponding to engine requirements.

The enrichment device is controlled by the « manifold » vacuum which varies with the engine load.

Operation :

At low load (fig. 1), the throttle valve is partly open and the vacuum in the manifold is strong. This vacuum is exerted on diaphragm (5) which compresses spring (4). Ball (6) comes to rest on its seat. The engine petrol supply is ensured by main jet (2).

At high load (fig. 2), the throttle valve is fully open. The vacuum in the manifold is weak and incapable of withstanding the force of spring (4). Ball (6) is loose from its seat, allowing petrol to flow through enrichment jet (3) towards the 1st choke draining well (near hole (1)) where it will meet petrol coming from main jet (1).

WEBER CARBURETTOR

CHARACTERISTICS.

Type : 30 DGS 17/250 } *1130 cc engine*
Mark : W 97-50 }
Type : 30 DGS 16/250 } *1300 cc engine*
Mark : W 96-50 } *Conventional clutch*

Type : 30 DGS 18/250 } *with converter*
Mark : W 98-50 }

Dual-choke carburettor, « compound » type, with mechanical control of second choke.

Pneumatic air enrichment device on 1st choke

Strangler flap on first choke with anti-floading capsule.

Idle cut-off

Vacuum port for econoscope.
Throttle closing dashpot.

Petrol return to reservoir (arrow on cover).

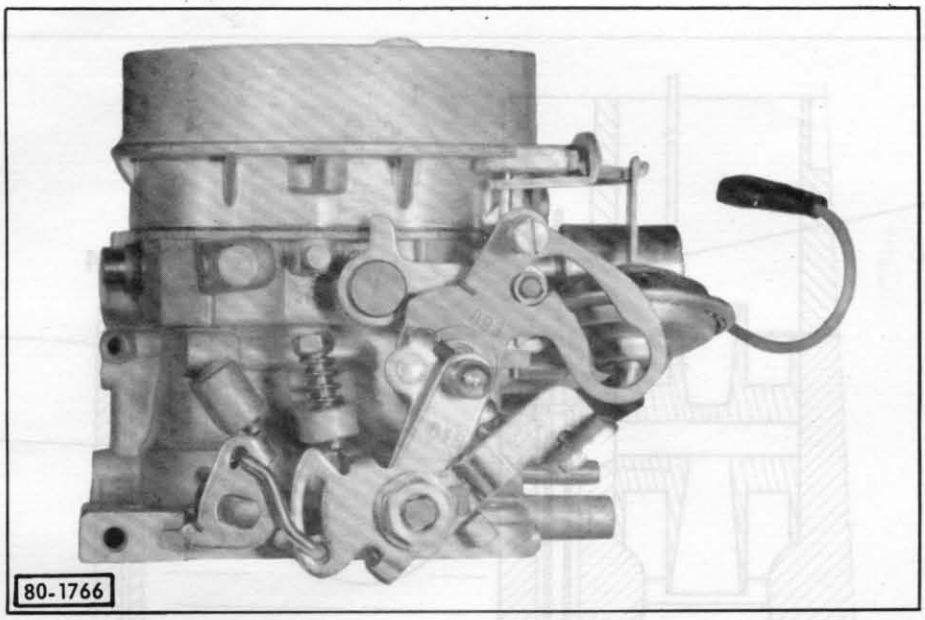
Fast idle opening by capsule (8).

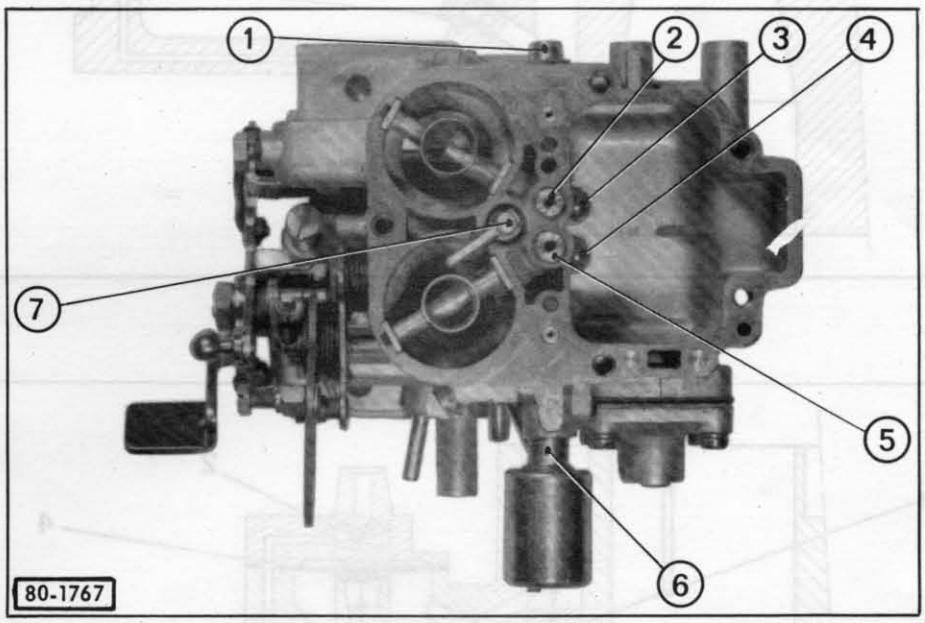
Tamper proof plugs on the volume control screw and the butterfly stop-screw of second choke.

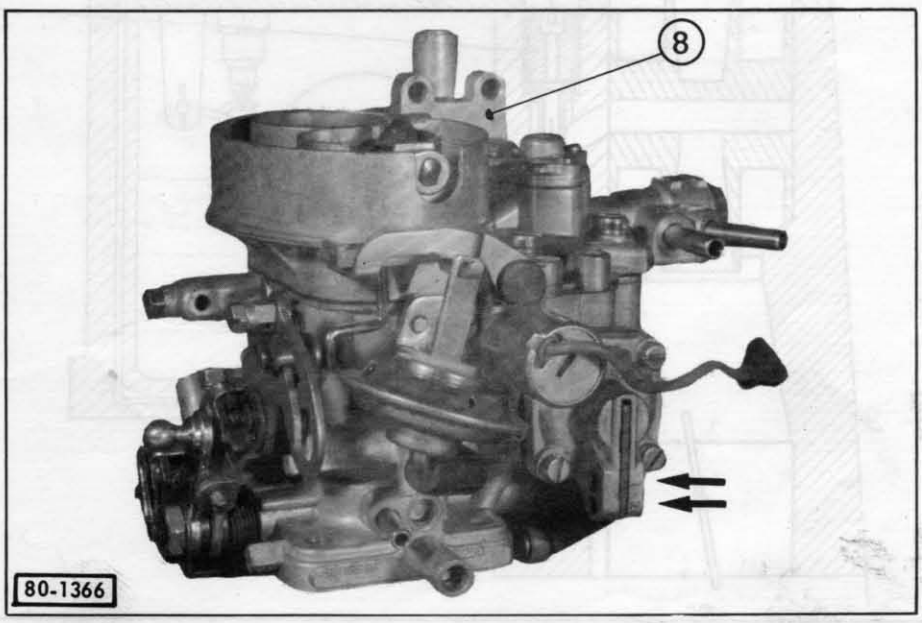
Original colour : white — R.P. colour : black

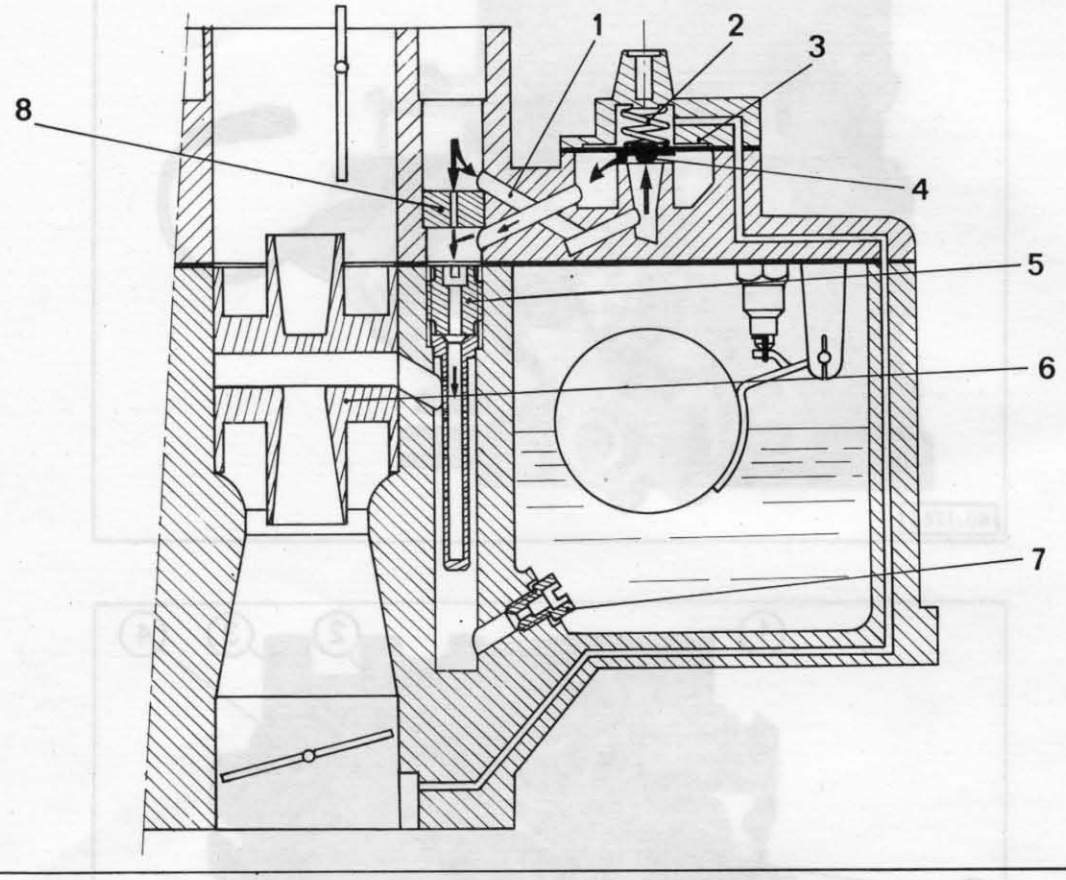
DESCRIPTION :	30 DGS 17/250 W 97-50		30 DGS 16/250 W 96-50		30 DGS 18/250 W 98-50	
Type :						
Mark :	1st choke	2nd choke	1st choke	2nd choke	1st choke	2nd choke
Venturi bore :	20	20	21	21	21	21
Main jet :	100 (4)	90 (3)	103 (4)	103 (3)	103 (4)	103 (3)
Air correction jet :	230 (5)	215 (2)	230 (5)	175 (2)	230 (5)	175 (2)
Emulsion tube :	F 74	F 20	F 74	F 74	F 74	F 74
Pilot jet :	45 (6)	45 (1)	45 (6)	45 (1)	45 (6)	45 (1)
Accelerator-pump injector :	45 (7)		45 (7)		45 (7)	
Location of accelerator-pump lever :	No.1(➡)		No.2(➡)		No.2(➡)	
Econostat :		100		65		65
Rich air inlet for 1st choke } *in the cover*	195		200		200	
Needle valve :	dia. 150		dia. 150		dia. 150	
Weight of the float :	11 g		11 g		11 g	
Positive opening of the 1st choke butterfly (with strangler flap closed) :	1.15 ± 0.05 mm		1.35 ± 0.05 mm		1.35 ± 0.05 mm	
Strangler flap opening under a vacuum of 530 mbar :	3.5 ± 0.25 mm		3.25 ± 0.25 mm		3.25 ± 0.25 mm	

Float setting : (cover in upright position with gasket and ball not pushed in) : distance between joint face and float : 6.5 mm.


80-1766

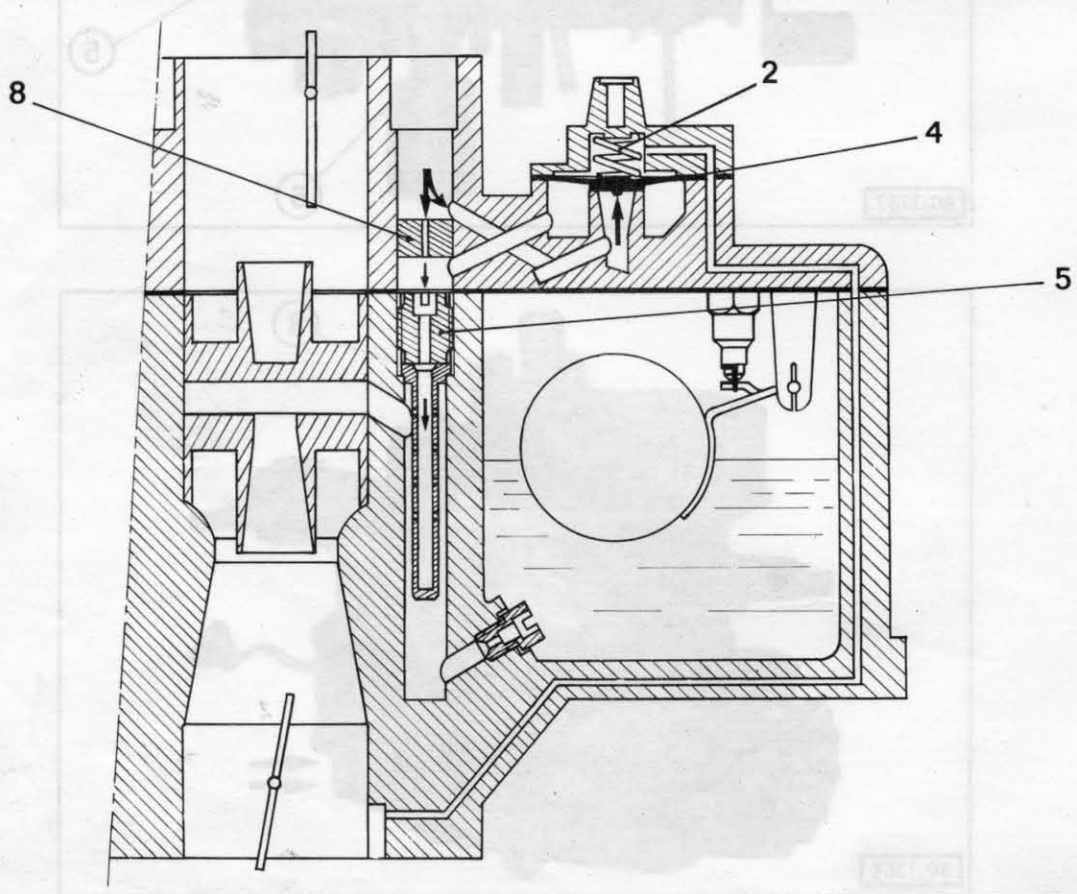

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80-1767


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80-1366



GX. 14-3

I



GX. 14-4

II

PNEUMATIC ENRICHMENT DEVICE ON WEBER CARBURETTOR

The enrichment device is placed on the venting circuit of the 1st choke draining well. Petrol and air arrive in the 1st choke, respectively through main jet (7) and inlet (5) and form an emulsion that will reach venturi (6).

The enrichment device increases or diminishes the volume of air entering the draining well. As the quantity of petrol coming through main jet (7) is constant, the changes in the air volume entail a modification of the composition of the emulsion arriving in the venturi and thus a different richness.

The enrichment device is controlled by the « manifold » vacuum which varies with the engine load.

Operation :

At low load (fig I), the throttle valve is partly open and the vacuum in the manifold is strong. This vacuum is exerted on diaphragm (3) which compresses spring (2) : valve (4) is lifted away from its seat.
The air passes through rich air inlet (8) (small dia.) and duct (1) and then flows through poor air inlet (5) (large dia.).
The emulsion discharged is poor in petrol and rich in air : the discharged mixture is poor.

At high load (fig. II), the throttle valve is open. The vacuum in the manifold is weak and incapable of withstanding the force of spring (2) : valve (4) falls back on its seat. The air flows through rich air inlet (8) (small dia.), then passes freely through air inlet (5) (large dia.) and ends up in the draining well.
The emulsion discharged is rich in petrol and poor in air : the discharged mixture is rich.

OPERATION
GX. 142-00 b

GSA 1300

7/1981 ⟶

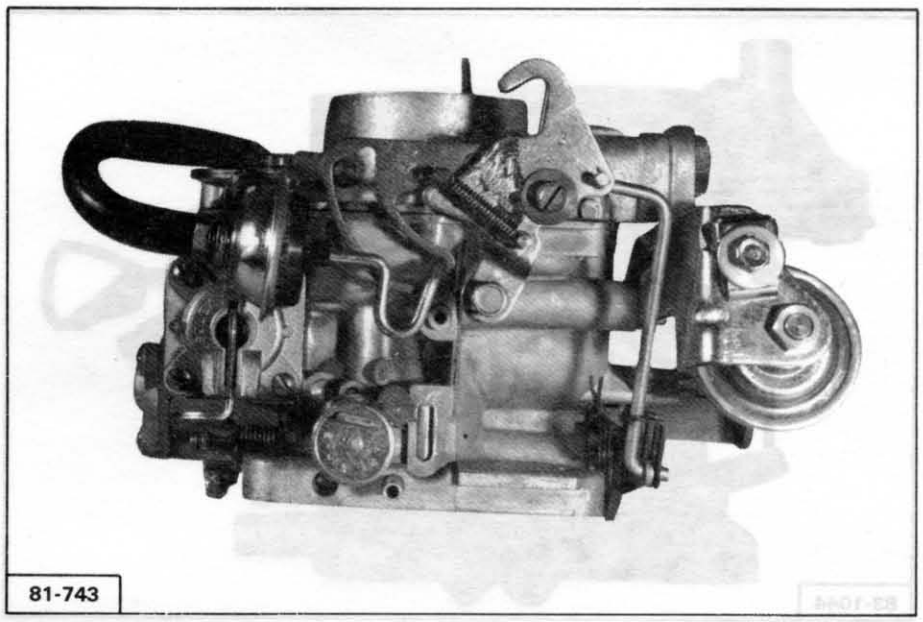
SOLEX CARBURETTOR

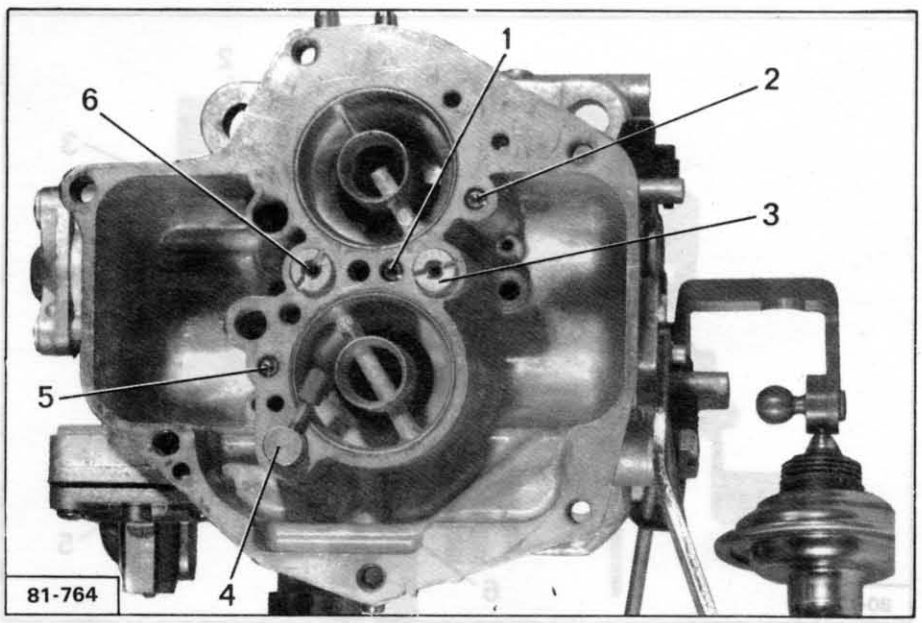
CHARACTERISTICS.

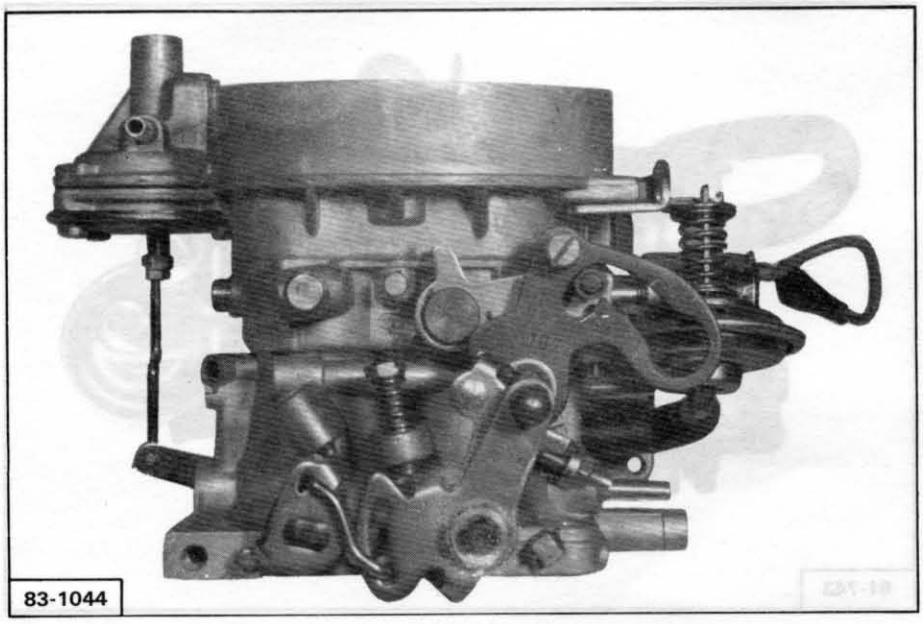
Type : 28 CIC 5
Identification mark : CIT 247
Dual-choke carburettor, « compound » type, with a mechanical control of second choke.
Pneumatic petrol enrichment device on first choke.
Strangler flap on first choke with an anti-flooding capsule.
Vacuum port for econoscope.
Idle cut-off.
Throttle closing dashpot.
Petrol return to reservoir (indicated by an arrow on the cover).
Tamper-proof plug on the volume control screw and the butterfly stop-screw :
Original colour : black R.P. colour : white

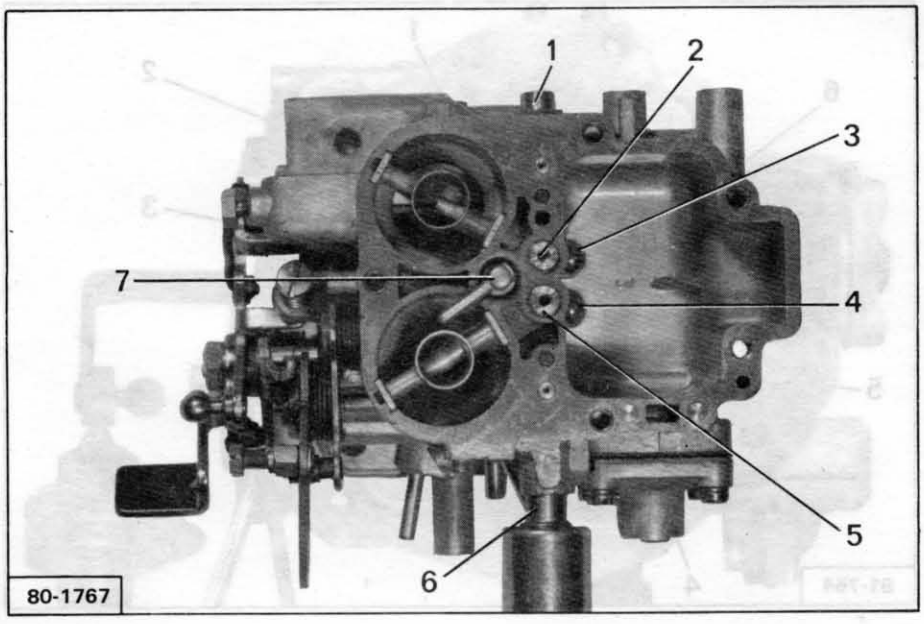
DESCRIPTION	28 CIC 5 247	
Type :		
Mark :	1st choke	2nd choke
Venturi bore	20	22
Main jet	95 under (6)	95 under (3)
Air correction jet and emulsion tube	210 S 3 (6)	160 T 1 (3)
Pilot jet	55 (5)	
By-pass jet		40 (2)
Econostat		90 (1)
Accelerator-pump injector	55 (4)	
Jet of pneumatic enrichment device	50	
Needle valve	1.8	
Weight of the float	11.7 g	
Positive opening of 1 st choke butterfly(with strangler flap closed)	1.30 ± 0.05 mm	
Strangler flap opening under a vacuum of 350 mbar	2.5 ± 0.3 mm	

Operating time of the throttle closing dashpot between 4,500 and 1,200 rpm : 2 to 4.5 seconds.


81-743


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81-764


83-1044


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80-1767

WEBER CARBURETTOR

CHARACTERISTICS.

Type : 30 DGS 25/250 — Mark : W 115-50 — *Conventional clutch*

Type : 30 DGS 26/250 — Mark : W 116-50 — *with converter*

Dual-choke carburettor « compound » type, with mechanical control of second choke.
Pneumatic air enrichment device on 1st choke.
Strangler flap on 1st choke with anti-flooding capsule.
Idle cut-off
Vacuum port for econoscope.
Throttle closing dashpot.
Petrol return to fuel tank (arrow on cover).
Fast idle opening by capsule.
Tamper proof plugs on the volume control screw and the butterfly stop-screw of 2nd choke.
Original colour : white
R.P. colour : black

DESCRIPTION Type : ..... Mark :	30 DGS 25/250 W 115-50	30 DGS 26/250 W 116-50
	1st choke	2nd choke
Venturi bore	22	22
Main jet	97 (4)	100 (3)
Air correction jet	205 (5)	140 (2)
Emulsion tube	F 74 under (5)	F 20 under (2)
Pilot jet	40 (6)	40 (1)
Accelerator pump injector	55 (7)	
Location of accelerator pump level	No. 1	
Econostat ..... *in the cover*		65
Rich air inlet for 1st choke ..... *in the cover*	180	
Needle valve	dia. 150	
Weight of the float	11 g	
Positive opening of 1st choke butterfly (with strangler flap close)	1.35 ± 0.05 mm	
Strangler flap opening under a vacuum of 530 millibars	3.70 ± 0.3 mm	

Float setting : (cover in upright position with gasket and ball not pushed in)
Distance between joint face and float : 6.5 mm.

ADJUSTMENT OF SOLEX CIT 185 CARBURETTOR

1. IDLING SPEED ADJUSTMENT

IMPORTANT NOTE : The stop screws of the first and second choke butterflies must not be adjusted unless the operation is carried out on an *L'POLLU 2000* test rig.

NOTE : A tamper-proof plug (original colour black) is fitted on the orifice of the volume control screw. Replace it by a white « R.P. » plug after having adjusted the idle and the exhaust emission *(see Op. GX. 142-000)*.

a) Adjustment conditions :
With engine cleared from unburnt gases and in good running order; with rocker arms and ignition correctly adjusted. Engine oil temperature : 80 to 90° C (this temperature must be maintained during the adjustment).

b) Idling speed : 850 to 900 rpm
CO content : 1 to 2.5%
CO_2 content : 10% min

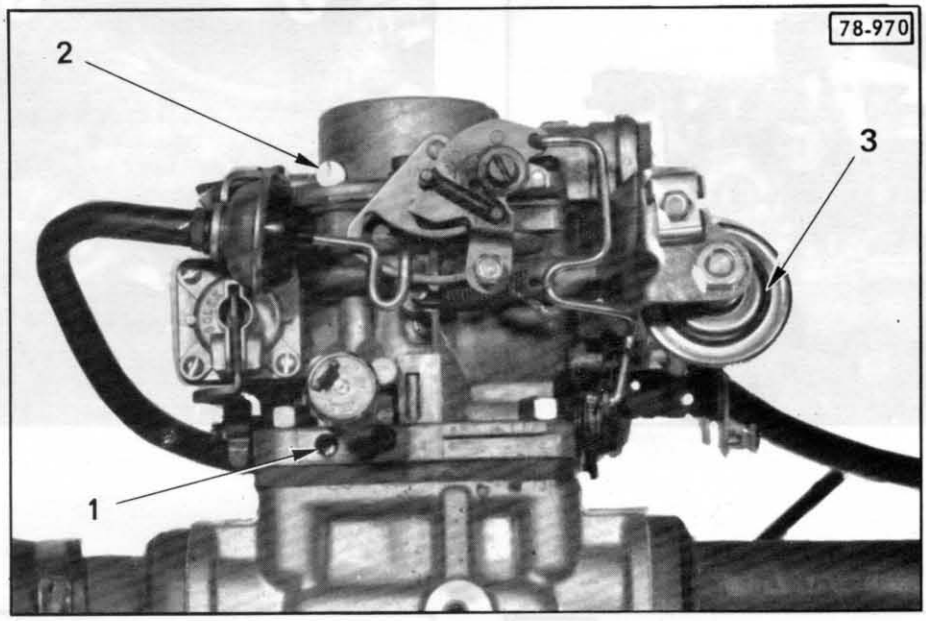
c) Adjustment of idling speed and CO and CO_2 content values :
Adjust screw (2) and volume control screw (1), repeating adjustment as often as necessary to obtain the conditions given in (b) above.

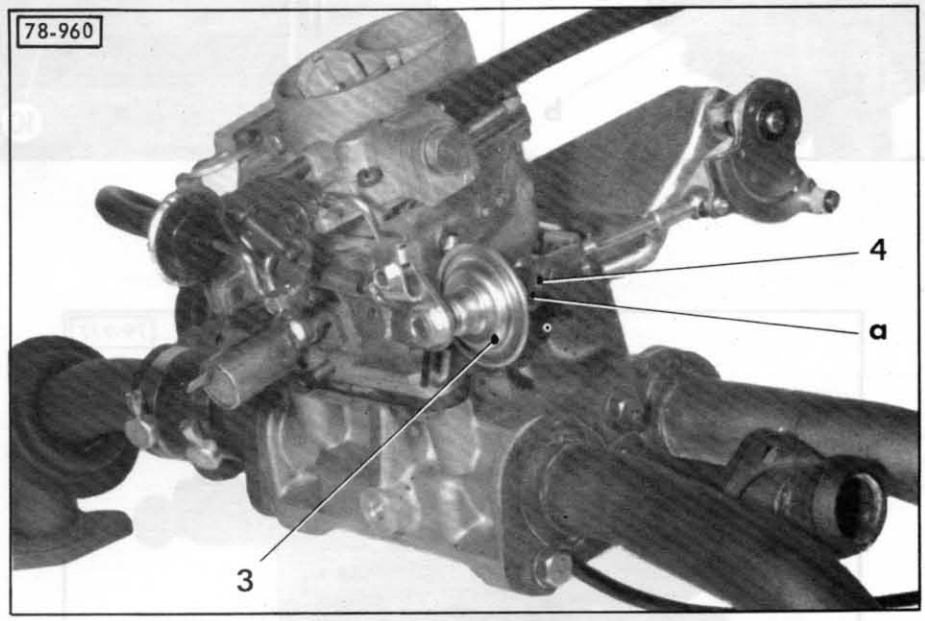
NOTE : Following each adjustment modification, rev up the engine to 3000 rpm for about ten seconds, then allow it to return to idling speed.

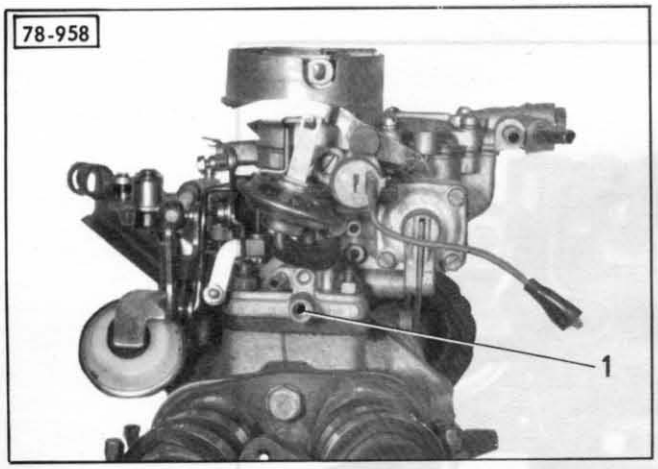
2. ADJUSTMENT OF THE DASHPOT

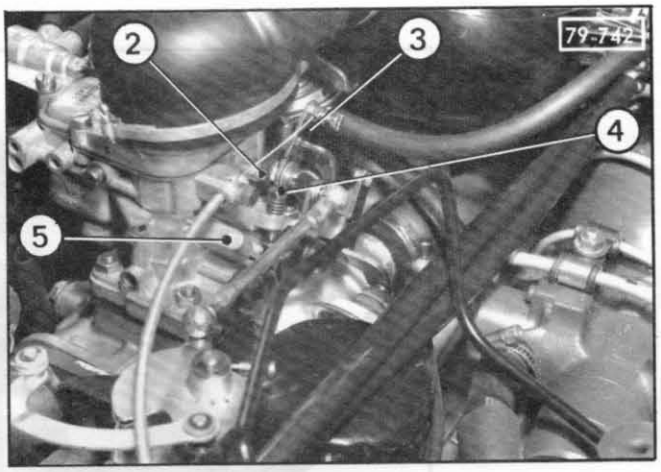
- With the engine running at 4250 rpm ± 250 rpm, adjust the position of dashpot (3), so that end (a) is in contact with lug (4) *(dashpot free)*.
- Adjust the tension of the accelerator control drawback spring :
  - Position the drawback spring on the first notch.
  - Stabilize the engine at 5000 rpm.
  - Release the accelerator control, and measure the time for drop-off from 4500 to 1200 rpm. Dashpot response time should be 3 to 4.5 seconds (adjust spring anchor position to obtain this condition).

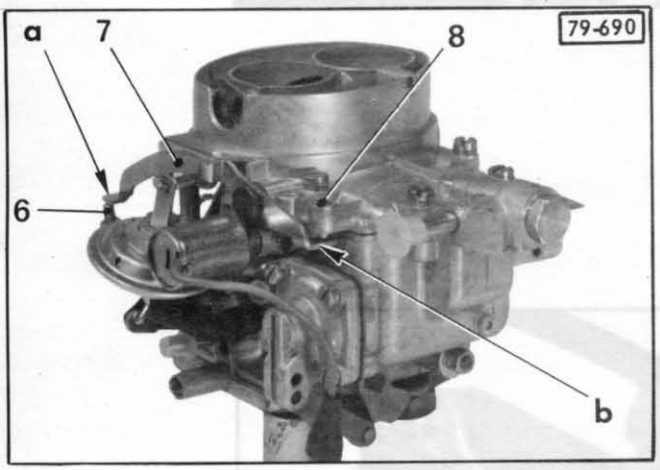
NOTE : If dashpot response time is less than 3 seconds, irrespective of spring anchor position, replace dashpot (3).

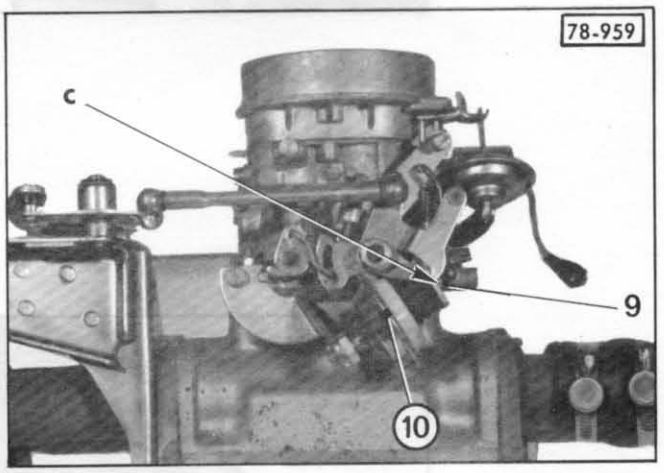

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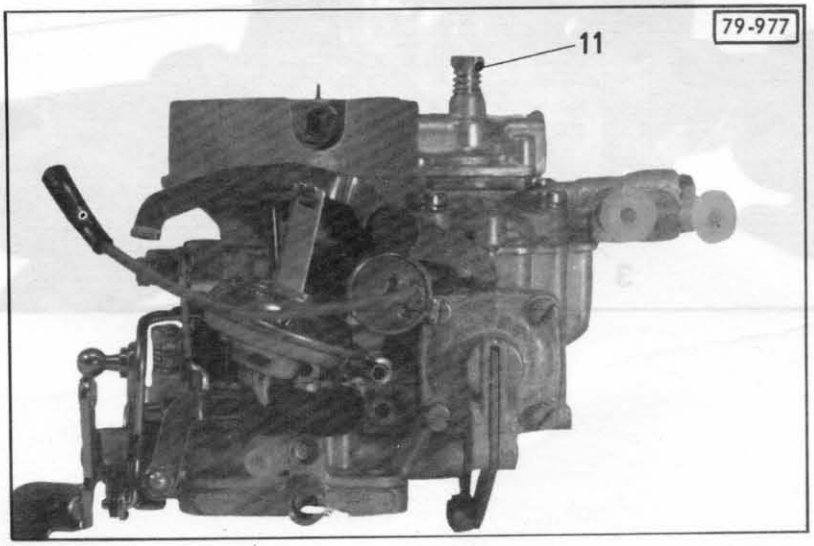

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79-742
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79-690
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78-959
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ADJUSTMENT OF WEBER W 92-50 or W 99-50 CARBURETTOR

1. IDLING ADJUSTMENT

IMPORTANT NOTE : Stop screw 5 for the second choke throttle butterfly should not be adjusted, *unless the work is carried out on an L'POLLU 2000 carburettor test rig.*

a) Adjusting conditions :

With engine cleared from unburnt gases and in good running order, rocker arms and ignition correctly adjusted.
Engine oil temperature : 80 to 90° C (this temperature must be maintained during adjustment).

b) Idling speed : 850 to 900 rpm
CO content : 1 to 2.5%
Co2 content : > 10%

c) Adjustment of idling speed and CO and CO_2 content values :

- Remove the tamper-proof plug on volume control screw (1) *(see Op. GX. 142-000)*
- Adjust stop screw (4) for the first choke throttle butterfly, and volume control screw (1), repeating adjustment as often as necessary to obtain the conditions indicated in (b) above.
- Fit a tamper-proof plug on the volume control screw (replacement plug, *colour :* black).

d) Adjustment of fast idle speed *(W 99-50 carburettor on engine with torque converter) :*

With the handbrake on and the vehicle chocked, select 1 st gear and adjust fast idle to 850 to 900 rpm, on screw (11).

Testing the fast idle circuit :

With the gearbox in neutral, and the engine running at normal speed, disconnect the plug from the contact box on the gearbox. The engine should then accelerate as a result of the vacuum passed by the fast idle control solenoid valve. If this is not the case, check that the vacuum tubes are not blocked, and that the vacuum is passed by the solenoid valve when the latter is not energized.
Vacuum should not be passed when the solenoid valve is energized (gearbox in neutral).

2. ADJUSTMENT OF STRANGLER FLAP OPENING

a) *First position :*

Pull the choke out fully, and hold lever (3) up against boss (2) by hand. The anti-flooding capsule is subjected to a vacuum of 530 m.bar max. and should bring point « a » on lever (7) into contact with screw (6). Strangler flap opening should be 3.25 mm ± 0.25 mm. If this is not the case, adjust stop screw (6).

b) *Second position :*

Pull the choke out fully, but without manual action on lever (3).
The anti-flooding capsule is subjected to a vacuum of 530 m.bar max. and should bring point « b » on lever (7) into contact with screw (8). Strangler flap aperture should be 5.25 mm ± 0.25 mm. If this is not the case, adjust stop screw (8).

3. DASHPOT ADJUSTMENT (W 92-50 only)

- With the engine running at 4250 rpm ± 250 rpm, adjust the position of dashpot (11) so that end « c » is in contact with lug (9) *(dashpot free).*
- Adjust accelerator control drawback spring tension :
  - Position the drawback spring on the first notch.
  - Stabilize the engine at 5000 rpm
  - Release the accelerator control, and measure the time for drop-off from 4500 to 1200 rpm. Dashpot response time should be 3 to 4.5 seconds (adjust spring anchor position to obtain this condition)

NOTE : If dashpot response time is less than 3 seconds, irrespective of spring anchor position, replace dashpot (10).

OPERATION
GX. 142-0 a

GSA 1300

7/1980 → 7/1981

GSA 1130

7/1980 → 7/1983

CARBURETTOR ADJUSTMENT

ADJUSTMENT OF SOLEX 28 CIC 4 Mark 229-230 CARBURETTORS

IDLING SPEED ADJUSTMENT.

IMPORTANT NOTE : The stop screws of the first and second choke butterflies must not be adjusted *unless the operation is carried out on an L'POLLU 2000 test rig.*

NOTE : A tamper-proof plug (original colour : black) is fitted on the orifice of the volume control screw. Replace it by a white R.P. plug after having adjusted the idle and the exhaust emission *(see Op. GX. 142-000).*

a) **Adjustment conditions :**
With engine cleared from unburnt gases and in good running order; with rocker arms and ignition correctly adjusted and choke on rest position. With air-filter clean.
Engine oil temperature : 80 to 90° C (this temperature must be maintained during the adjustment).

b) **Idling speed :** 850 to 900 rpm.
CO content : 1 to 2.5% - *CO_2 :* > 10% min.

c) **Adjustment of idling speed and CO and CO_2 content values :**
Adjust screw (1) and volume control screw (3), repeating the operation as often as necessary to obtain the values given in b) above.

NOTE : Following each adjustment modification, rev up the engine to 3000 rpm for about 10 seconds, then let it come back to idling speed.

DASHPOT ADJUSTMENT.

With the engine running at 4250 rpm ± 250 rpm, adjust the position of dashpot (2), so that end (5) is in contact with lug (4) *(dashpot free).*
Adjust the tension of the accelerator control drawback spring :
- Position the drawback spring of the accelerator control on the first notch.
- Stabilize the engine at 5000 rpm.
- Release the accelerator control and measure the time for the engine to drop-off from 4500 to 1200 rpm : it should be comprised between 2 and 4.5 seconds (adjust spring anchor position to obtain this condition).

NOTE : If it takes less than 2 seconds for the engine to drop-off, whatever the spring anchor position, replace the dashpot.

ADJUSTING THE 1st CHOKE BUTTERFLY OPENING.

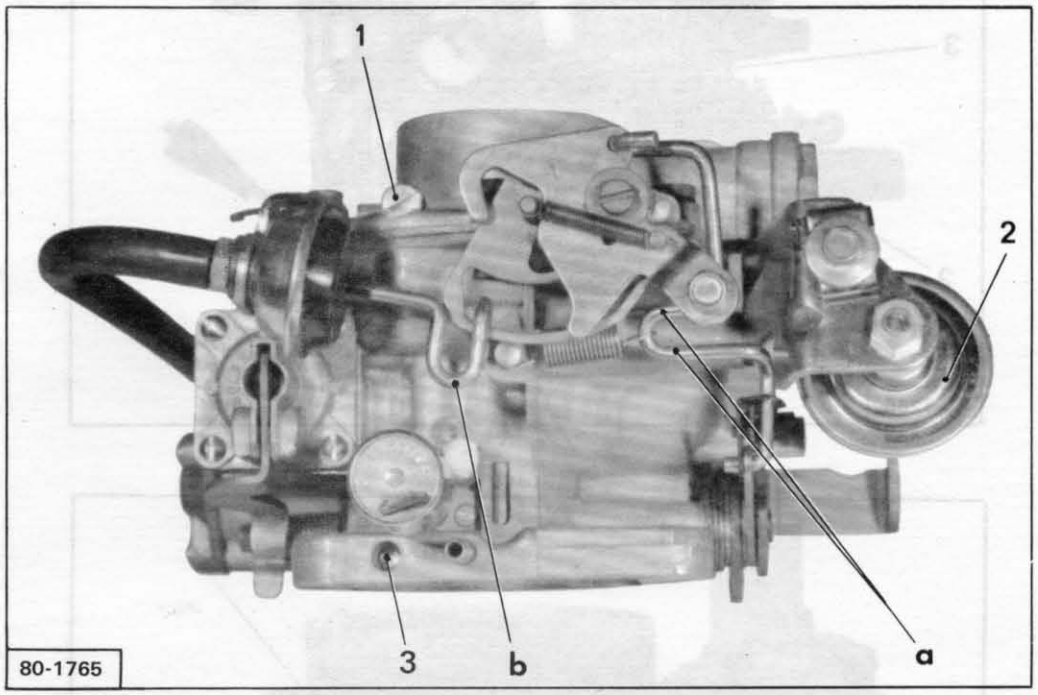
When the strangler flap is closed, the distance between the lower wing of the 1st choke butterfly and the carburettor choke must be : 1.25 ± 0.05 mm (Mark 229) or 1.30 ± 0.05 mm (Mark 230).
If it is not so, act upon legs « a » of the connecting rod buckle.

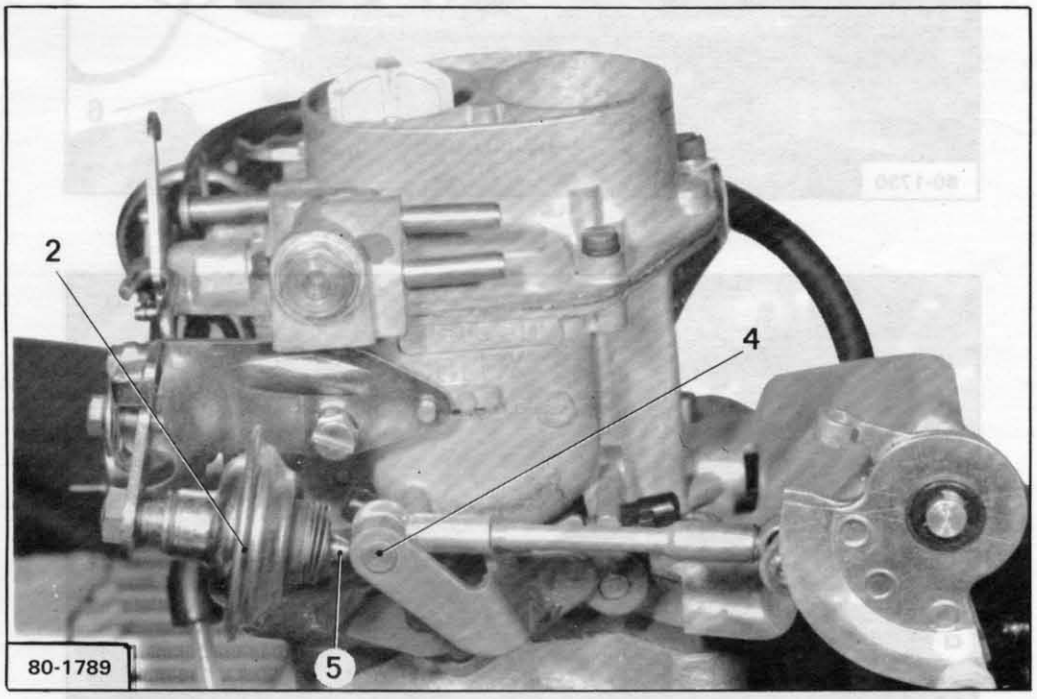
ADJUSTING THE STRANGLER FLAP OPENING.

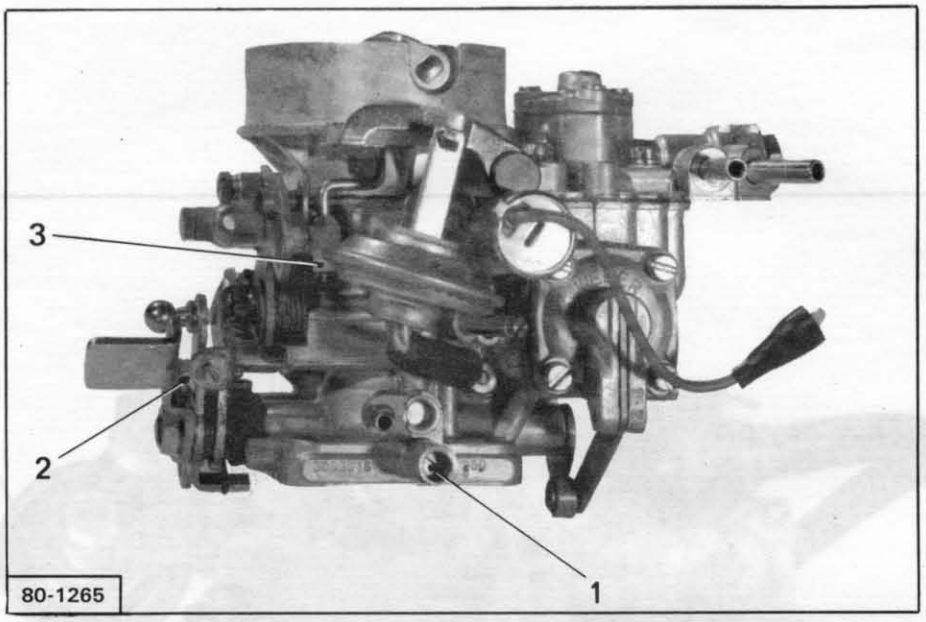
With the strangler flap closed and the anti-flooding capsule under a vacuum of 350 mbar, the strangler flap opening must be : 3.6 ± 0.3 mm (Mark 229) or 4 ± 0.2 mm (Mark 230).
If it is not so, act upon the legs of buckle « b ».

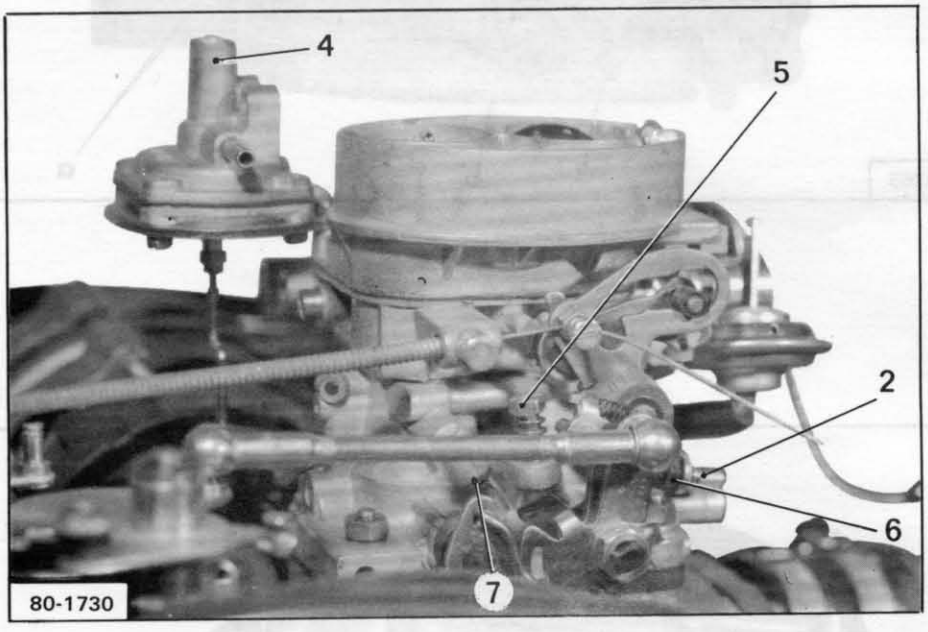
ADJUSTMENTS CARRIED OUT ON AN L'POLLU 2000 TEST RIG.

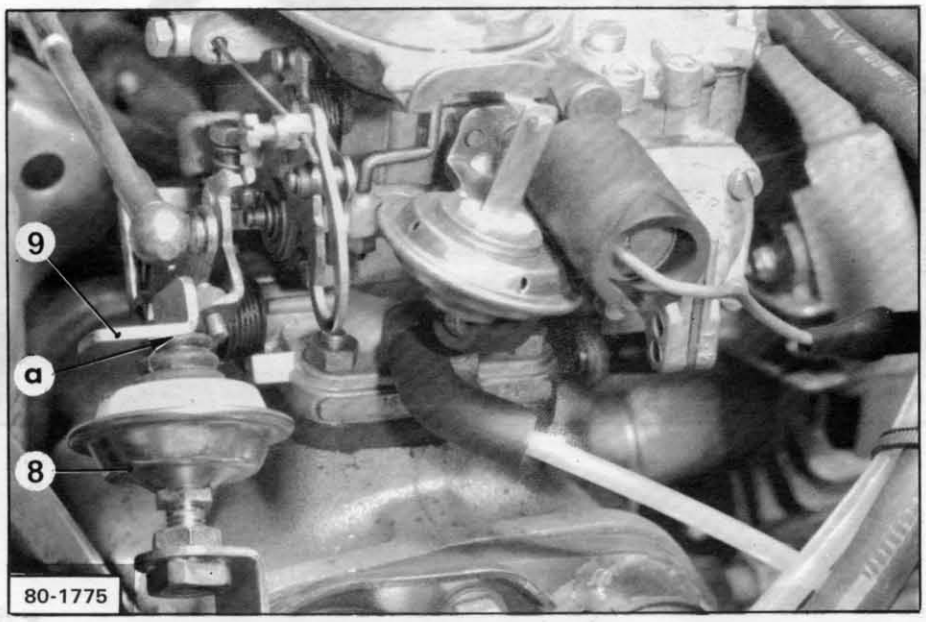
Carburettor type	Butterfly opening			Idle pre-setting			Remark
	1st choke	2nd choke	Both	W and Va closed	W open Va closed	W and Va closed	
28 CIC 4 Mark 229	K 195	K 200	K 320	N 105	N 140	N 280	Remove the idle cut-off
28 CIC 4 Mark 230	K 210	K 210	K 335	N 105	N 150	N 260	


1
2
3
b
a
80-1765


2
4
5
80-1789


3
2
1
80-1265


4
5
2
6
7
80-1730


9
a
8
80-1775

ADJUSTMENT OF WEBER W 97-50, W 96-50 or W 98-50 CARBURETTORS

1. IDLING SPEED ADJUSTMENT.

IMPORTANT NOTE : Stop screw (7) of the 2nd choke butterfly must not be adjusted *unless the operation is carried out on an L'POLLU 2000 test rig.*

a) **Adjustment conditions :**
With engine cleared from unburnt gases and rocker arms and ignition correctly adjusted. With air filter clean and choke on rest position.
Engine oil temperature : 80 to 90° C (this temperature must be maintained during the adjustment).

b) **Idling speed : 850 to 900 rpm.**
CO content : 1 to 2.5% - *CO_2 content :* > 10% min.

c) **Adjusting the idling speed and CO and CO_2 content values :**
Remove the tamper-proof plug on volume control screw (1) *(see Op. GX. 142-000).*
Act upon stop-screw (5) of the 1st choke butterfly and upon volume control screw (1) as many times as necessary to obtain the values given in b) above.
Place a tamper-proof plug on the volume control screw (the R.P. plug is black).

d) **Adjusting the fast idle speed** *(W 98-50 on engine with a converter) :*
With the hanbrake on, the vehicle on stands and the 1st gear engaged, set the fast idle between 850 and 900 rpm by acting upon screw (4).
Checking the fast idle circuit :
With the gearbox in neutral and the engine running at normal idling speed, disconnect the plug from the contact box on the gearbox.
The engine should then accelerate as a result of the vacuum passing through the fast idle electrovalve. If it is not so, check that the vacuum pipes are not blocked and that the vacuum passes through the electrovalve when the latter is not energized.
The vacuum should not pass through when the electrovalve is energized (with gearbox in neutral).

2. ADJUSTING THE STRANGLER FLAP OPENING.

With the engine running : Pull the choke fully out. The anti-flooding capsule is then subjected to the « manifold » vacuum and should open the strangler flap of : 3.5 ± 0.25 mm (W 97-50) or 3.25 ± 0.25 mm (W 96-50 and W 98-50).
With carburettor removed : Pull the choke fully out and keep it there. Plug a vacuum gauge under the orifice of the anti-flooding capsule. Under a vacuum of 530 mbar max., the capsule must open the throttle valve by 3.5 ± 0.25 (W 97-50) or 3.25 ± 0.25 mm (W 96-50 and W 98-50). If it is not so, turn plastic screw (3) in the appropriate direction so that the throttle valve opens.

3. ADJUSTING THE 1st CHOKE BUTTERFLY OPENING, WITH THE CHOKE ON.

Pull the choke fully out and keep it there. The opening of the 1st choke butterfly, if measured at the lower wing level, should be 1.15 ± 0.05 mm (W 97-50) or 1.35 ± 0.05 mm (W 96-50 and W 98-50). If it is not so act upon bolt (2) after having untightened nut (6) until the right opening is obtained.

4. DASHPOT ADJUSTMENT (W 97-50 and W 96-50 only) *(with no choke on).*

With the engine running at 4250 ± 250 rpm, adjust the position of dashpot (8) so that end « a » is in contact with lug (9) *(dashpot free).*
Adjust the tension of the accelerator control drawback spring :
- Position the drawback spring on the first notch.
- Stabilize the engine at 5000 rpm.
- Release the accelerator control and measure the time for the engine to drop-off from 4500 to 1200 rpm : it should be comprised between 2 and 4.5 seconds (adjust spring anchor position to obtain this condition).

NOTE : If it takes less than 2 seconds for the engine to drop off, whatever the spring anchor position, replace dashpot (8).

5. ADJUSTMENTS CARRIED OUT ON AN L'POLLU 2000 TEST RIG.

Carburettor Type	Butterfly opening		Idle pre-setting			Remark
	1st choke : W closed	2nd choke	1st choke : W open	2nd choke	Both	
W 97-50	N 310	K 280	N 320	K 280	N 345	Standard fitted idle cut-off
W 96-50	N 280	K 300	N 295	K 300	N 345	
W 98-50	N 330	K 320	N 340	K 320	N 385	

OPERATION
GX. 142-0 b

GSA 1300

7/1981 →

CARBURETTOR ADJUSTMENT

ADJUSTMENT OF SOLEX 28 CIC 5 Mark 247 CARBURETTOR

IDLING SPEED ADJUSTMENT.

IMPORTANT NOTE : Stop screw (2) of the second choke butterfly must not be adjusted unless the operation is carried out on an L'POLLU test rig.

NOTE : A tamper-proof plug (original colour : black) is fitted on the orifice of the volume control screw (6). Replace it by a white R.P. plug after having adjusted the idle and the exhaust emission *(see Op. GX. 142-000)*.

a) **Adjustment conditions :**
With engine cleared from unburnt gases and in good running order; with rocker arms and ignition correctly adjusted and choke on rest position. With air-filter clean.
Engine oil temperature : 80 to 90° C (this temperature must be maintained during the adjustment).

b) **Idling speed :** 650 to 700 tr/mn
CO content : 0.5 to 1.5% $CO_2 \geq 10\%$ min.

c) **Adjustment of idling speed and CO and CO_2 content values :**
Adjust screw (1) and volume control screw (3), repeating the operation as often as necessary to obtain the values given in b) above.

NOTE : Following each adjustment modification, rev up the engine to 3000 rpm for about 10 seconds, then let it come back to idling speed.

DASHPOT ADJUSTMENT (on the vehicle).

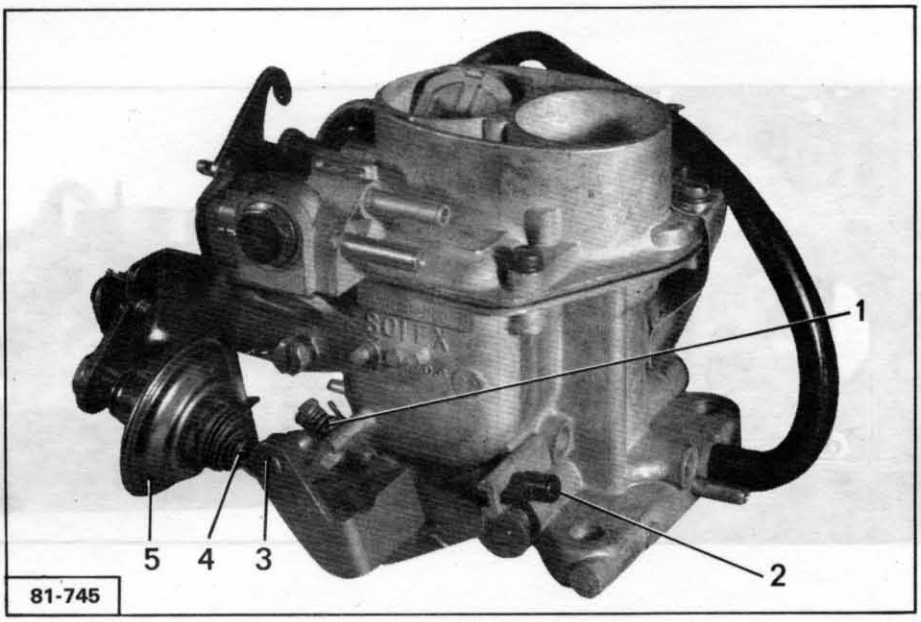
Adjustment conditions:
With idling adjusted - Drawback spring on the first notch.

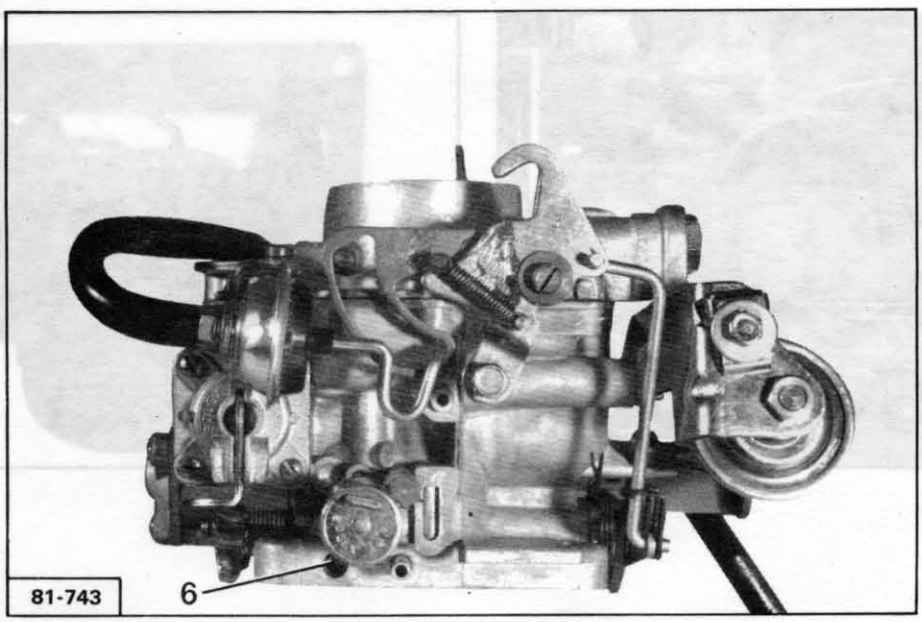
Adjustment :
Bring the engine speed up to 4250 ± 250 rpm.
Adjust the location of dashpot (5) (in free state), so as to make end (4) come into contact with bracket (3).

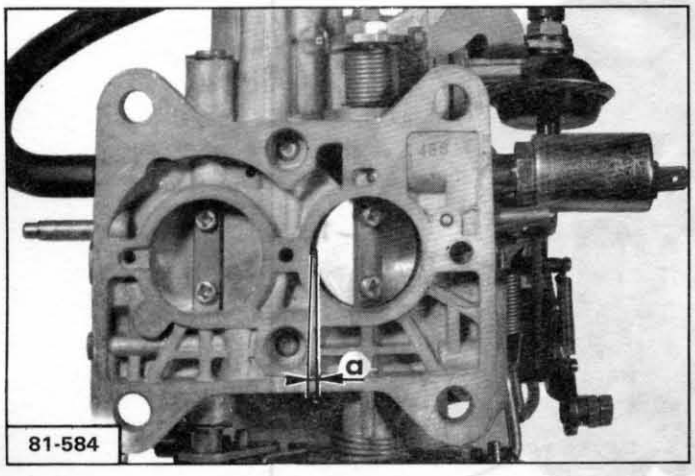
Check :
Stabilize the engine at 5000 rpm.
Release the accelerator control and measure the time for the engine to drop-off from 4500 rpm to 1200 rpm : it should be comprised between 2 and 4.5 seconds (adjust spring anchor position to obtain this condition). If it takes less than 2 seconds to drop-off, whatever the spring anchor position, replace dashpot (5).

ADJUSTMENT CARRIED OUT ON AN L'POLLU 2000 TEST RIG.

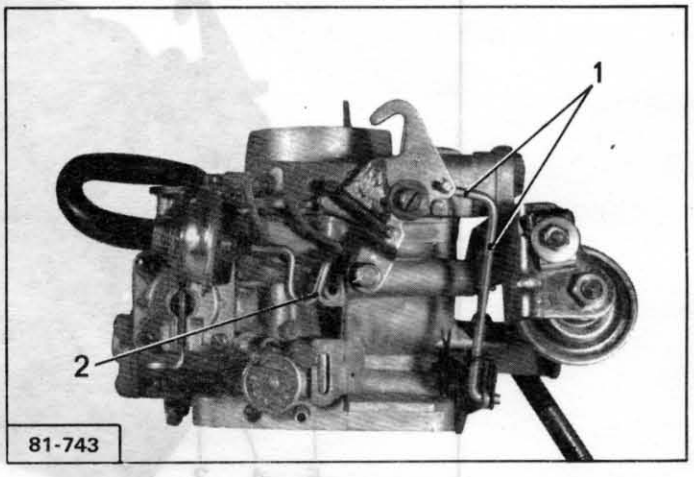
Butterfly opening		Idling pre-setting			Remark
1st choke W closed	2nd choke	1st choke W open	2nd choke	Total	
N 355	K 210	N 370	K 210	N 380	Standard fitted idle cut-off


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81-745

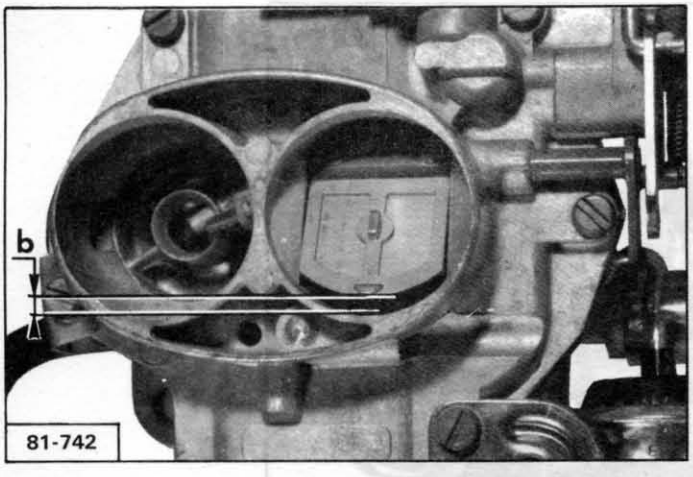

6
81-743



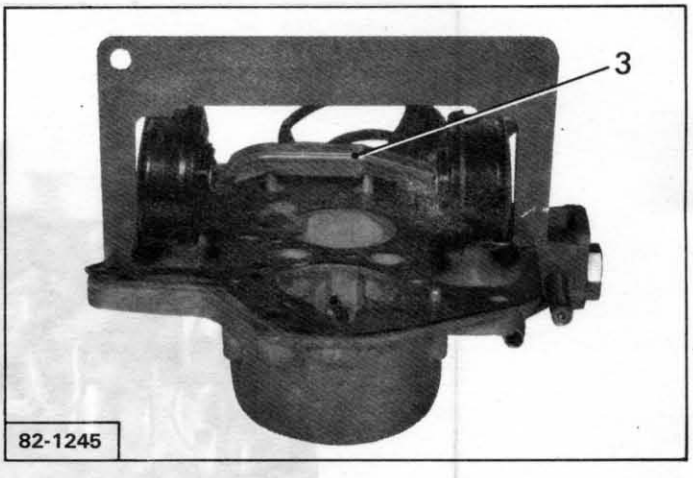
81-584



81-743



81-742



82-1245

ADJUSTING THE 1st CHOKE BUTTERFLY POSITIVE OPENING.

Strangler flap closed.
Distance **« a »** between butterfly edge and choke must be :

1.25 to 1.35 mm

If it is not so, act upon legs (1) of the connecting rod to obtain this condition.

ADJUSTING THE STRANGLER FLAP OPENING.

Strangler flap closed.
The anti-flooding capsule is subjected to a vacuum of 350 millibars : strangler flap opening **« b »** must be :

2.2 to 2.8 mm

If not, act upon buckle (2).

ADJUSTING THE LEVEL OF FUEL IN THE FLOAT CHAMBER.

Remove the float chamber cover and turn it upside down.
Position gauge 71 642 000 onto the upper joint face of the float chamber *(gasket in position)*.
The floats should be in contact with the gauge.
If need be, adjust the height of the floats by acting on connecting bar (3).
Difference max. of position from one float to the other : ± 1 mm.

ADJUSTMENT OF WEBER W 115-50 or W 116-50 CARBURETTOR

IDLING SPEED ADJUSTMENT.

IMPORTANT NOTE : Stop screw (3) of the 2 nd choke butterfly must not be adjusted *unless the operation is carried out on an L'POLLU 2000 test rig.*

a) **Adjustment conditions :**
With engine cleared from unburnt gases and rocker arms and ignition correctly adjusted. With air filter clean and choke on rest position.
Engine oil temperature : 80 to 90° C (this temperature must be maintained during the adjustment).

b) **Idling speed : 650 to 700 rpm.**
CO content : 0.5 to 1.5% - *CO_2 content :* $\geq$ 10% min.

c) **Adjusting the idling speed and CO and CO_2 content values :**
Remove the tamper-proof plug on volume control screw (4) *(see Op. GX. 142-000).*
Act upon stop-screw (2) of the 1 st choke butterfly and upon volume control screw (4) as many times as necessary to obtain the values given in b) above.
Place a tamper-proof plug on the volume control screw (the R.P. plug is black).

d) **Adjusting the fast idle** *(W 116-50, engine with enrichment device) :*
Disconnect the pipe between the carburettor and the electrovalve from the latter end and directly connect it to the opening device capsule.
Set the fast idle speed between 850 and 900 rpm by turning screw (1).
Reconnect the pipe to the electrovalve.
Checking the fast idle circuit :
Disconnect, from the fast idle electrovalve, the lead to the thermal switch located under the alternator.
Connect, to the electrovalve connector, a lead connected to the earthing.
With the gearbox in neutral and the engine running at normal idling speed, disconnect the plug from the contact box on the gearbox. The engine should then accelerate as a result of the vacuum passing through the fast idle electrovalve. If it is not so, make sure that the pressure vacuum pipes are not blocked and that the vacuum passes through the electrovalve when the latter is not energized.
The vacuum should not pass through when the electrode is energized (with gearbox in neutral).
Reconnect the thermal switch lead to the electrovalve.

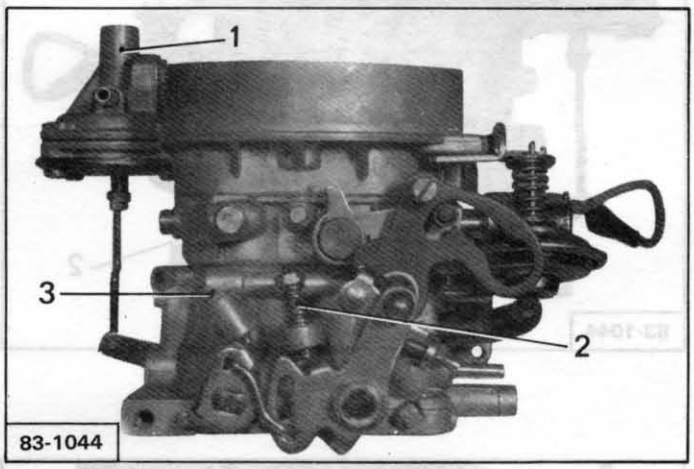
DASHPOT ADJUSTMENT (W 115-50 only) *(with no choke on) :*

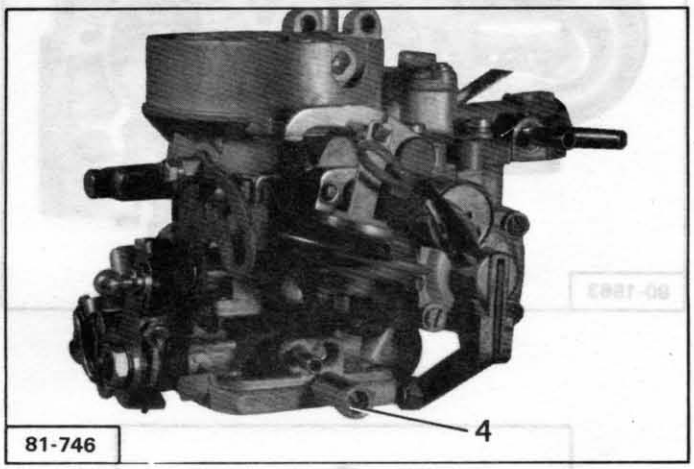
With the engine running at 4250 ± 250 rpm, adjust the position of dashpot (7) so that end (6) is in contact with lug (5) *(dashpot free).*
Adjust the tension of the accelerator control drawback spring :
- Position the drawback spring on the first notch.
- Stabilize the engine at 5000 rpm.
- Release the accelerator control and measure the time for the engine to drop-off from 4500 to 1200 rpm : it should be comprised between 2 and 4.5 seconds (adjust spring anchor position to obtain this condition).

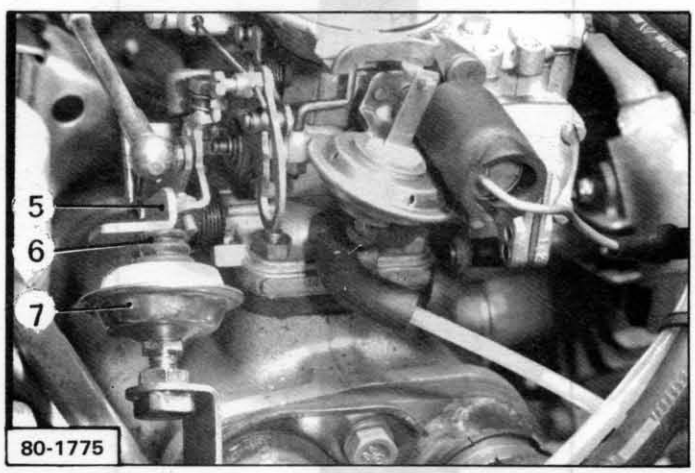
NOTE : If it takes less than 2 seconds for the engine to drop off, whatever the spring anchor position, replace dashpot (7).

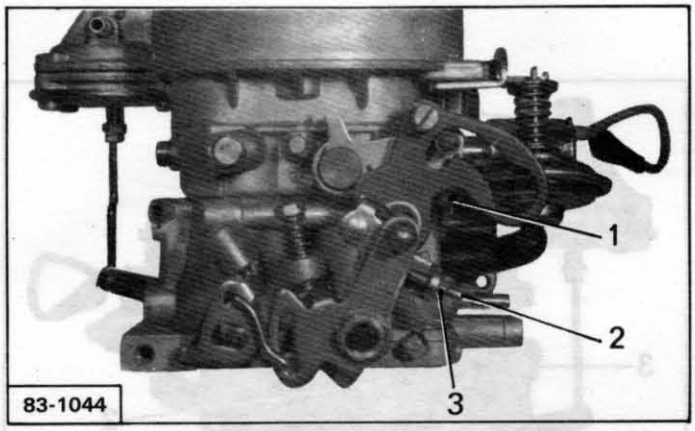
ADJUSTMENTS CARRIED OUT ON AN L'POLLU 2000 TEST RIG.

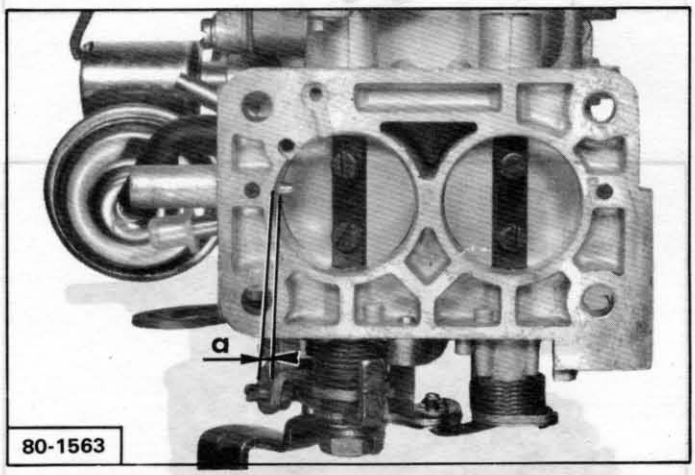
Carburettor Type	Butterfly opening		Idling pre-setting			Remark
	1st choke W closed	2nd choke	1st choke W open	2nd choke	Both	
W 115-50	N 170	K 330	N 230	K 330	N 325	Standard fitted idle cut-off. Vacuum port of electro-valve : blocked (W 116-50)
W 116-50	N 240	K 315	N 275	K 315	N 340	

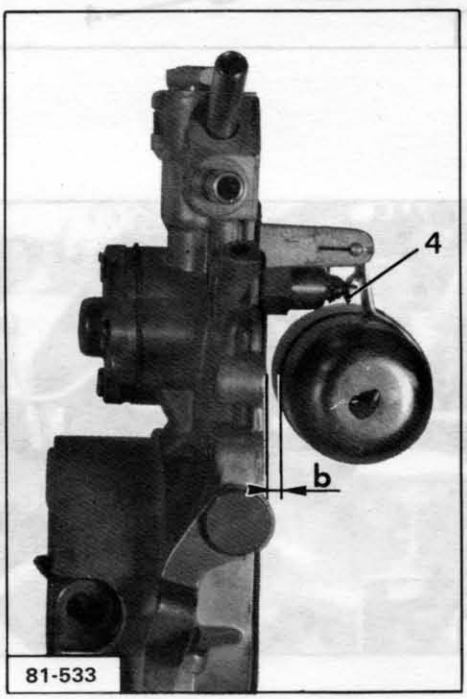

1
3
2
83-1044


4
81-746


5
6
7
80-1775


1
2
3
83-1044


a
80-1563


4
b
81-533

ADJUSTING THE STRANGLER FLAP OPENING.

With engine running : Pull the choke fully out. The anti-flooding capsule is then subjected to the « manifold » vacuum and should open the strangler flap by : **2.4 to 4 mm.**

With carburettor removed : Pull the choke fully out and keep it there. Plug a vacuum gauge under the orifice of the anti-flooding capsule. Under a vacuum of 530 mbar max., the capsule must open the strangler flap by **3.4 ro 4 mm.** If it is not so, turn plastic nut (1) in the appropriate direction so that the strangler flap opens.

ADJUSTING THE 1st CHOKE BUTTERFLY OPENING UNDER USE OF CHOKE.

Pull the choke fully out and keep it there. The opening of the 1 st choke butterfly, if measured at the lower wing level, should be : **« a » = 1.30 to 1.40 mm.** if it is not so, turn screw (2) after loosening nut (3) until the right opening is obtained.

ADJUSTING THE LEVEL OF FUEL IN THE FLOAT CHAMBER.

Maintain the cover in an upright position (with needle valve ball not pushed in).
Measure distance **« b »** between cover joint face *(with gasket in position)* and the float.
This distance should be : **6 ± 0.25 mm.**
If not, work on tab (4).

TESTING THE AIR INLET HEATING SYSTEM THERMOSTAT PROBE

NOTE : Calibration of thermal probe (2) for 1300 cc''ECO'' : 25° to 35° C.

1. At ambient temperature (below 27° C), shutter (3) should blank off pipe « a ».

2. Dip probe (2) in cold water.

3. Heat the water slowly, so as to raise the water temperature progressively.

4. When the water temperature reaches and exceeds 27° C, shutter (3) should blank off pipe « b » progressively

5. Allow the water to cool. When the water temperature reaches and goes below 27° C, shutter (3) should again blank off pipe « a ».

TESTING IN THE VEHICLE

1. Remove cover (1) and the filter cartridge.

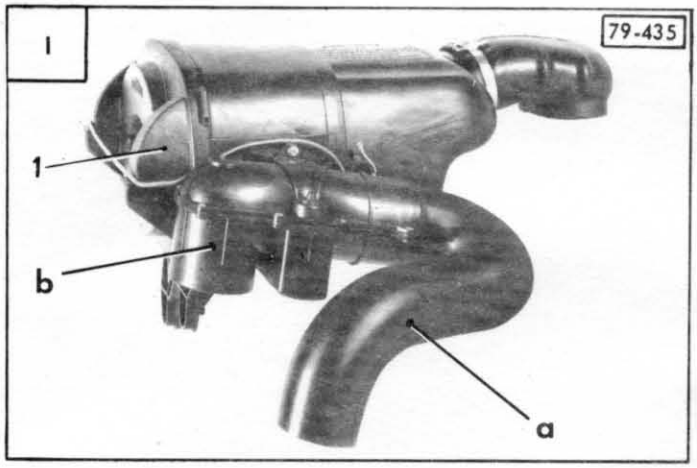
2. Check operation of shutter (3), via the interior of the air filter :

- Engine cold : shutter (3) blanks off pipe « a ».
- Engine hot : shutter (3) blanks off pipe « b ».

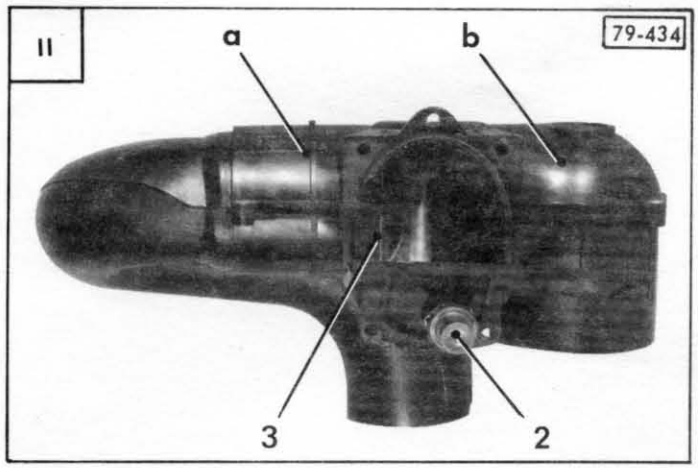
PHOTOS

I. Air filter, all types, except for 1300 cc ECO.
II. Temperature below 27° C.
III : Temperature 27° C.
IV : Temperature over 27° C.
V : Air filter for 1300 cc ECO with built-in oil separator *(7/81 ⟶)*

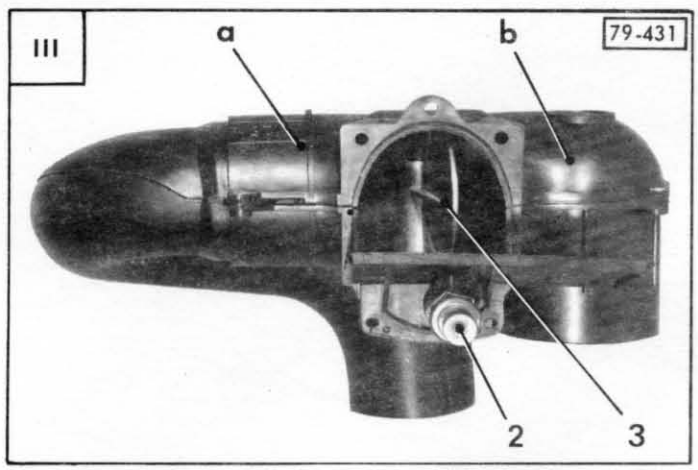
I


79-435
1
b
a

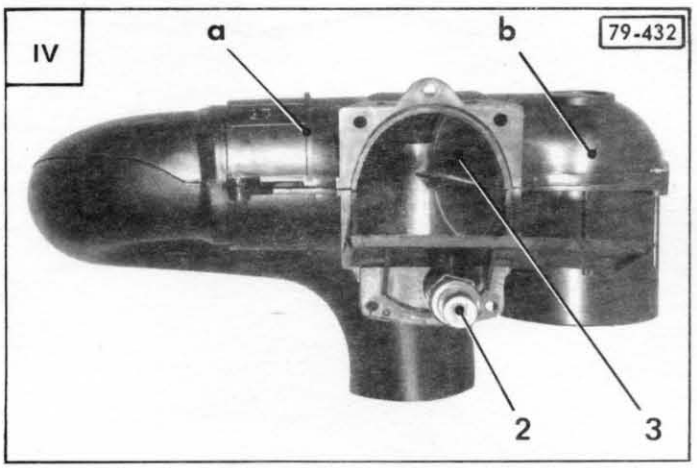
II


79-434
a
b
3
2

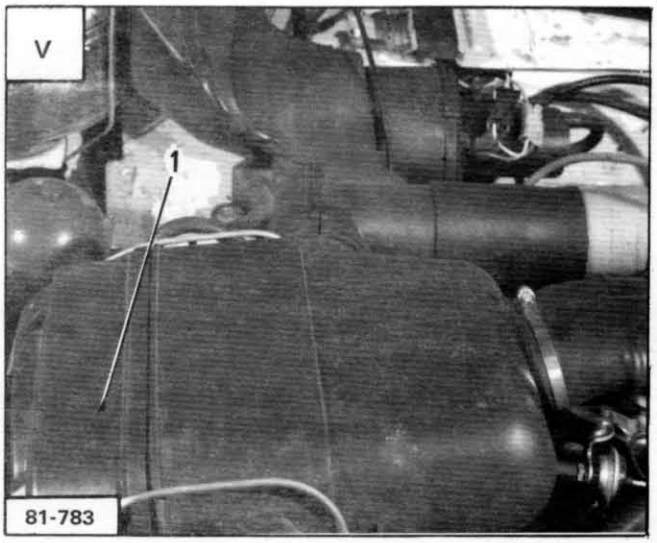
III

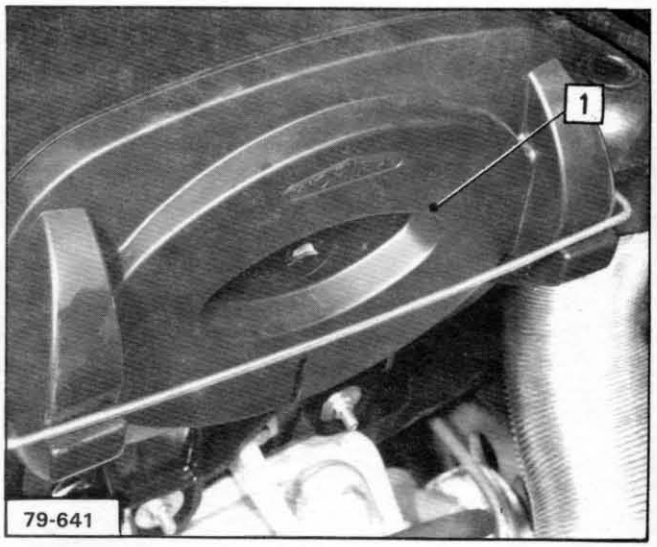

79-431
a
b
2
3

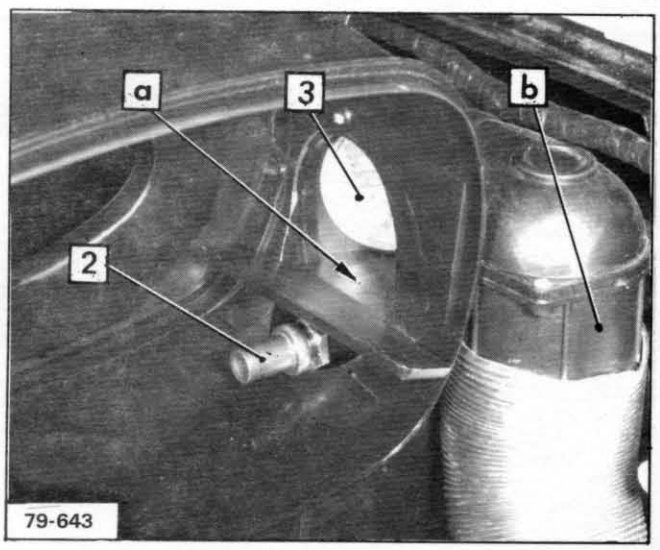
IV


79-432
a
b
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V


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81-783


1
79-641


a
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b
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79-643

CHARACTERISTICS AND CHECKS OF THE FUEL SUPPLY SYSTEM

PETROL PUMP

1. Characteristics :

Suction/deliver diaphragm type pump, driven by cam mounted on camshaft end.
Manufacturer : GUIOT ref. 567-C.

2. Testing with the 4006-T test unit :

Disconnect the fuel feed pipe from the carburettor, and connact the pipe to orifice **A** on the 4005-T test unit.
Connect a pipe between orifice **B** and the carburettor fuel inlet.
Undo knurled knob (1), by about one and a half turns.
Turn the engine.

a) Check pressure at zero flow-rate :

Do up knurled knob (1) fully.
Read the stabilized pressure on the pressure gauge.
This should be : max. 280 mbar.

b) Check seal-tightness of pump valves :

Stop the engine.
No sharp pressure drop should be observed.

c) Check seal-tightness of carburettor needle :

Blank off the fuel-return line.
Undo knurled knob (1).
Start the engine, and run for a few moments.
Stop the engine.
No sharp pressure drop should be observed.
Remove the 4005-T test unit.
Reconnect the fuel inlet pipe to the carburettor.

3. Checking pump drive cam stroke :

a) Remove the petrol pump :

- Uncouple the heater unit inlet shutter control cable (index its position in cable clamp (4)).
- Disengage lever (3) from its shaft.
- Disconnect pulser wiring harness (5).
- Undo three attachment screws (6) for the heater unit.
- Disengage the heater unit, and uncouple the hot air pipes and sleeve (2).
- Remove the petrol pump.

b) Using depth gauge C, measure the distance between the upper face of spacer (7) and the pump plunger drive cam.
This dimension must be between :

- *21 and 22 mm with the cam in the upper position.*
- *26 and 27 mm with the cam in the lower position.*

(Turn the engine over with the handle).
Measure length « m » between the spring stop cup, and the end of the pump drive plunger.
Length « m » should be 4.5 mm min.

c) Fit the petrol pump.

d) Replace the heater unit.

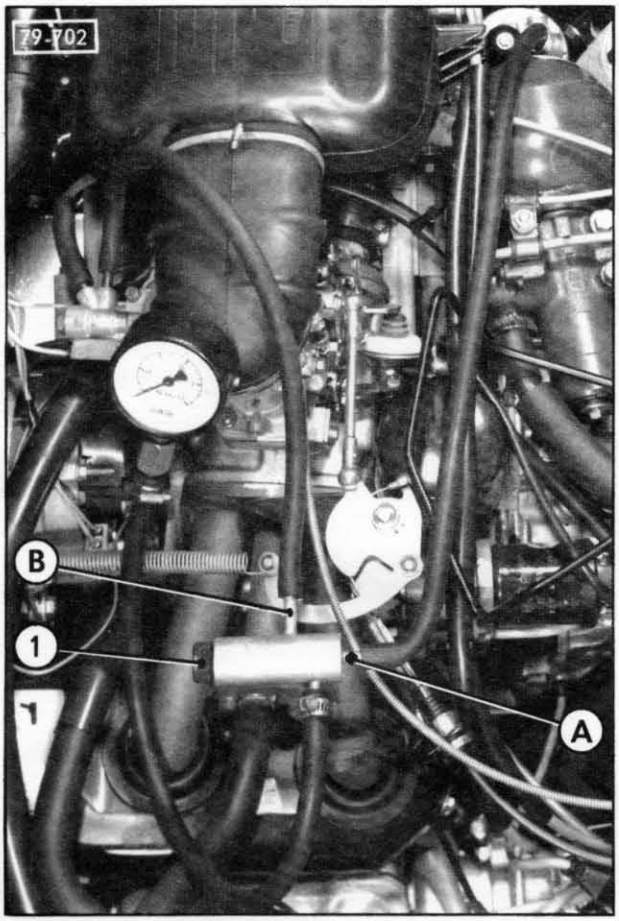
4. Checking pump seal-tightness :

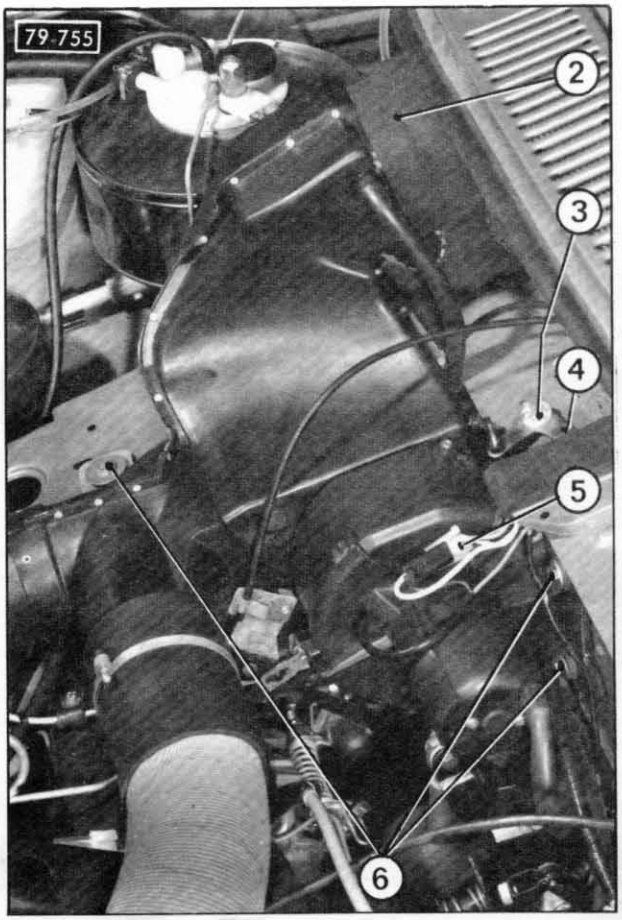
Blank off the delivery tube.
Submerge the pump in a recipient containing clean petroleum spirit.
Blow compressed air at 800 mbar into the pump suction pipe. No leak should be observed.

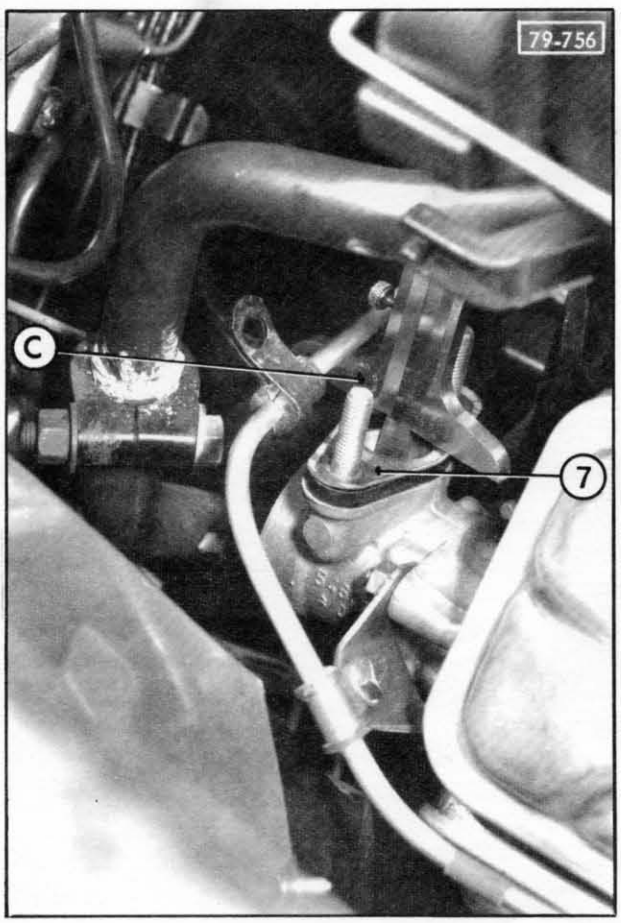
PETROL FILTER

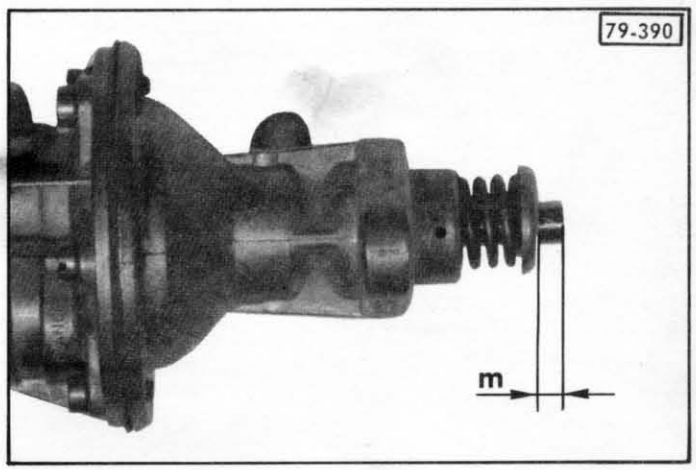
Manufacturer : GUIOT - ref. G 20
or AC DELCO ref. E/OF 16103

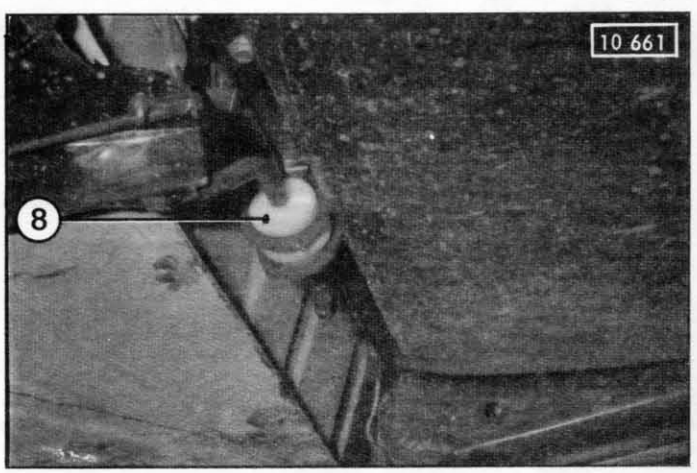
Filter (8) must be replaced after 30, 000 km.
Check correct assembly position. An arrow indicates the direction of fuel flow.


79-702
B
1
A


79-755
2
3
4
5
6


79-756
C
7


79-390
m


10 661
8

CHARACTERISTICS

1. DISTRIBUTOR

Makes and references *(engraved on the body)*

1130 cc engine	1300 cc engine
DUCELLIER 525 136 SEV-MARCHAL 41 301 802 FEMSA DJ 4 X 9	DUCELLIER 525 073 SEV-MARCHAL 41 301 502

Centrifugal and vacuum advance devices.
The tab for earth connection of « Diagnosis » wiring harness is rived to the distributor body.
Direction of rotation (viewed from drive end) : clockwise
Firing order : 1 - 4 - 3 - 2
Contact closure (cam angle) : **57° ± 2°**
Contact breaker gap : 0.35 to 0.45 mm
Dwell ratio : 63% ± 13%
Initial advance point : 10° ahead of top dead centre
Static setting : index stamped on flywheel opposite **10°** mark on graduated quadrant
Dynamic check *(vacuum capsule disconnected)*

1130 cc engine	1300 cc engine
27° at 3000 rpm	**24° at 2500 rpm**

Marks on advance curves *(engraved on the body).*

1130 cc engine	1300 cc engine
GA 9 : Centrifugal advance **GD 7** : Vacuum advance } Page 3	**GA 8** : Centrifugal advance **GD 4** : Vacuum advance } Page 4

Key to graphs : A : Advance in degrees **D** : Vacuum : **D1** : In m.bars
N : Distributor rpm **D2** : In mm.Hg

2. IGNITION CAPACITOR

Capacity : 0.25 to 0.30 µF

3. SPARK-PLUGS

Gap : 0.6 to 0.7 mm
Tightening torque (cylinder head cold) : **2 to 2.5 m.daN**
Makes and types : Refer to the Technical Bulletins published regularly.

4. COIL (external resistance type) :

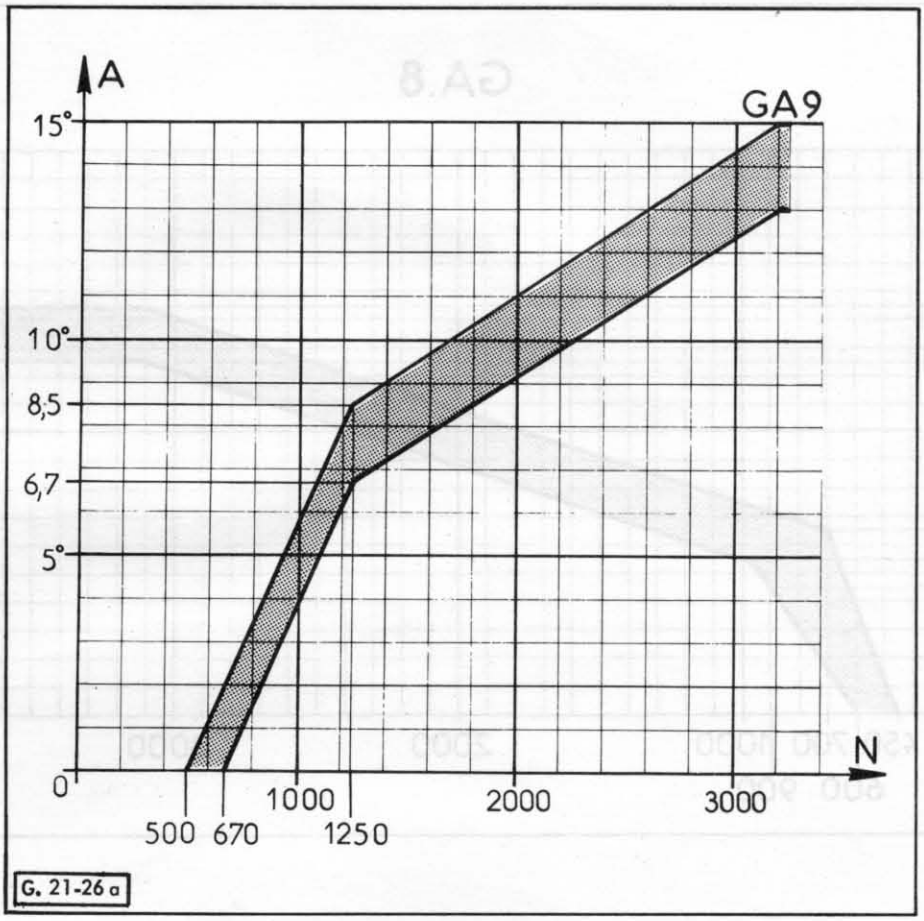
Make and reference :	DUCELLIER 2777	SEV-MARCHAL E 44 910 312	MARELLI BZR 206 A	FEMSA BI 12 R 70
Primary resistance at 20° C	0.6 to 0.8 Ω	1.5 Ω	1.35 Ω ± 4%	1.2 to 1.35 Ω
External resistance at 20° C	0.68 ± 0.02 Ω	1.1 to 1.2 Ω	0.8 Ω ± 10%	0.6 Ω
Secondary resistance at 20° C	6 ± 1 KΩ	6.5 KΩ ± 5%	7.5 KΩ ± 10%	7.4 to 8.9 KΩ

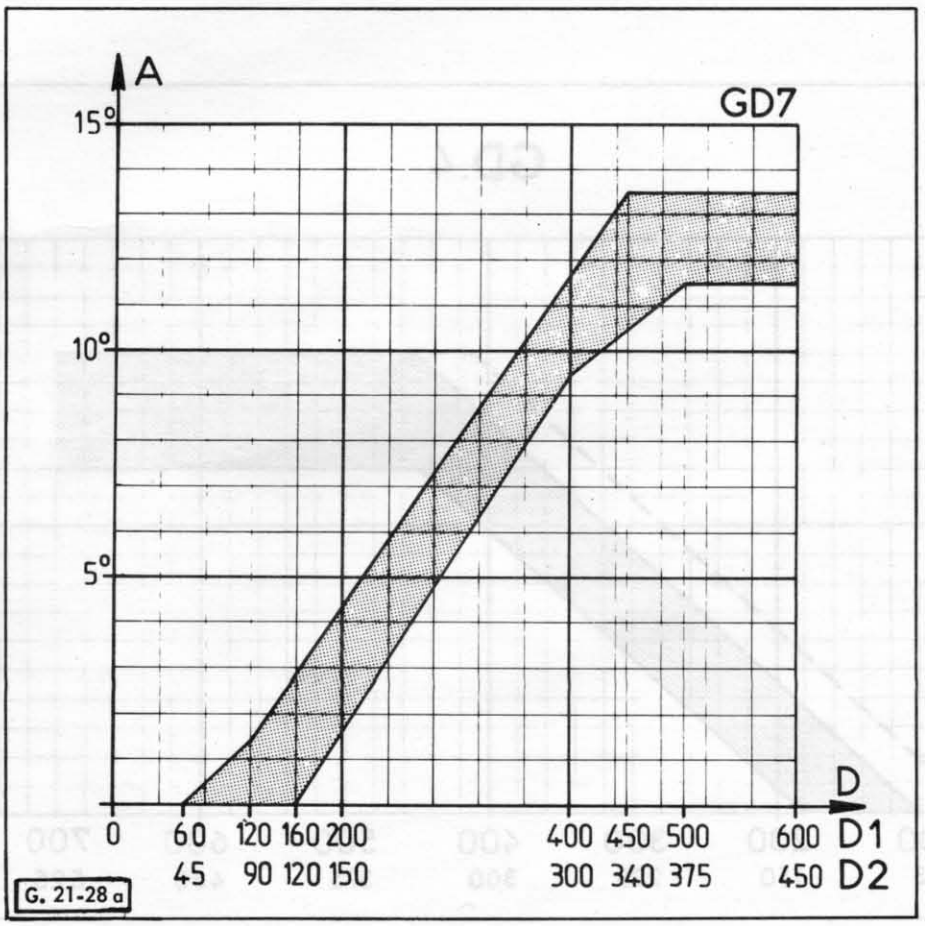
5. HV WIRES (ELECTRICFIL) :

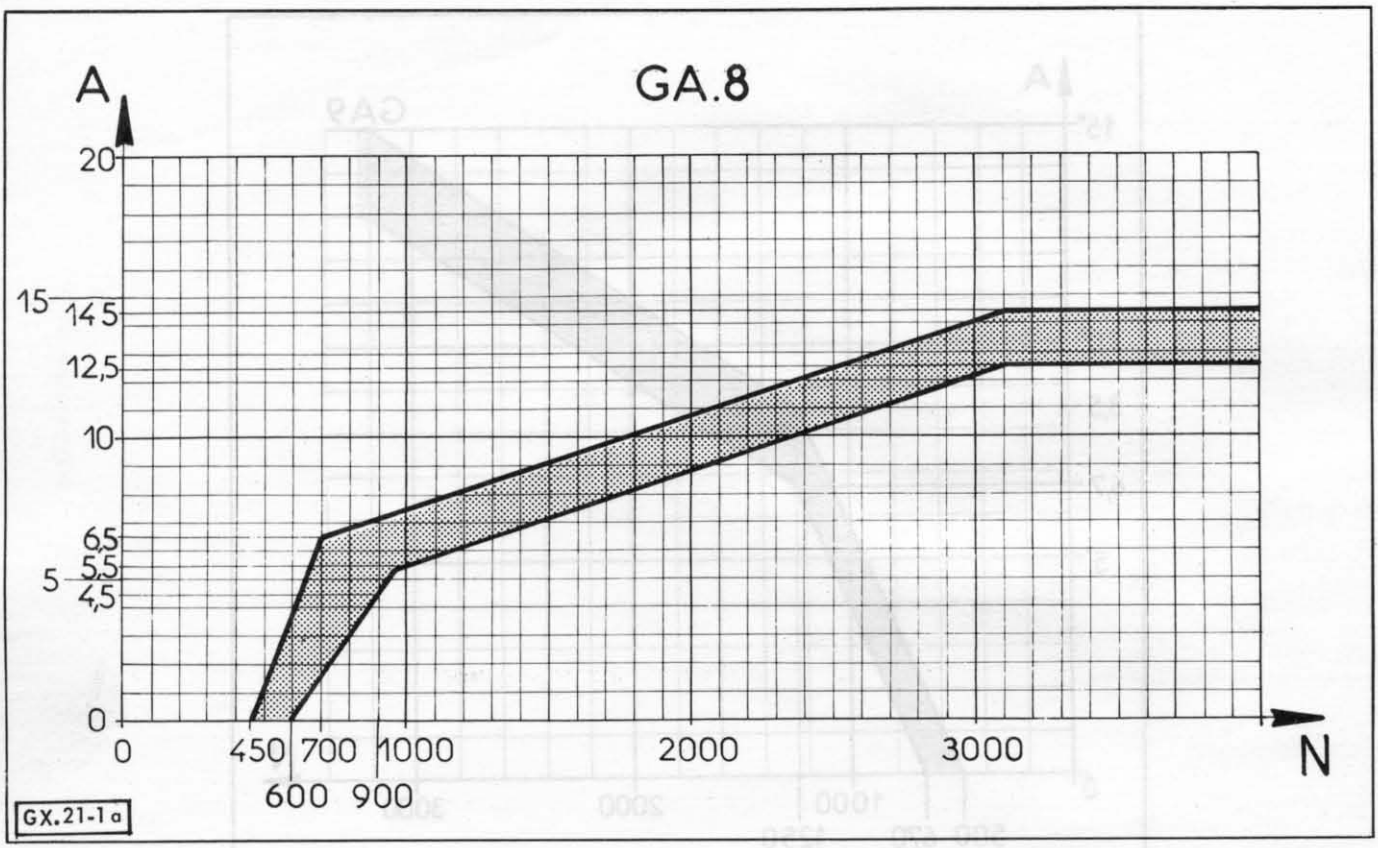
Description of wires	Length ($^{+10}_{0}$ mm)	Resistance (at 20° C)
From coil to distributor	370 mm	420 to 720 Ω
From distributor to cylinder No. 1	340 mm	370 to 570 Ω
From distributor to cylinder No. 2	610 mm	700 to 1200 Ω
From distributor to cylinder No. 3	1030 mm	1200 to 1820 Ω
From distributor to cylinder No. 4	1220 mm	1400 to 2200 Ω

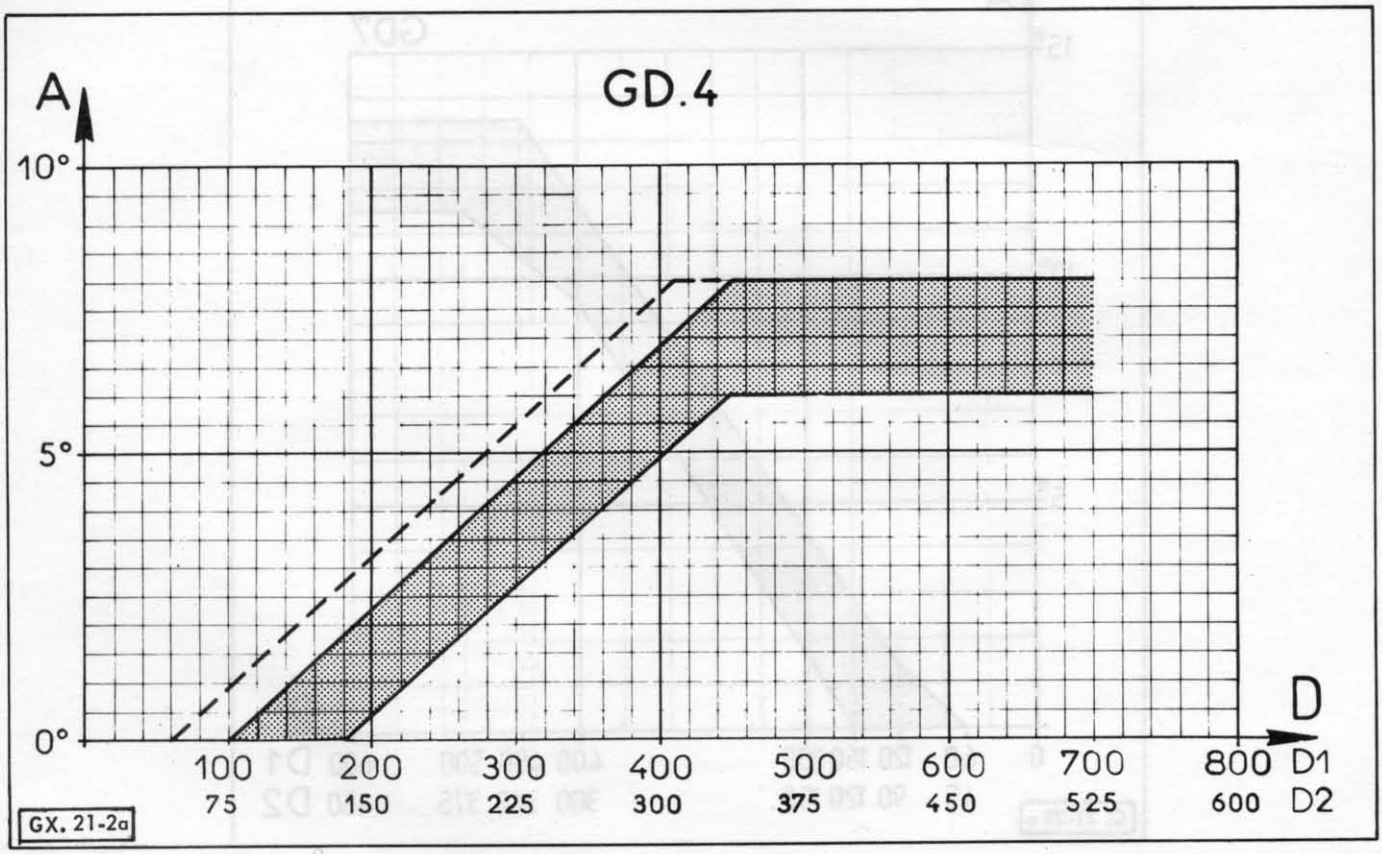
6. POSITION OF CYLINDERS IN ENGINE

Cylinder No. 1 : Rear left	Cylinder No. 2 : Front left
Cylinder No. 3 : Rear right	Cylinder No. 4 : Front right


A
GA9
15°
10°
8,5
6,7
5°
0
N
500
670
1000
1250
2000
3000
G. 21-26 a


A
GD7
15°
10°
5°
0
60
120
160
200
400
450
500
600
D
D1
45
90
120
150
300
340
375
450
D2
G. 21-28 a


GA.8
A
20
15
14,5
12,5
10
6,5
5,5
5
4,5
0
0
450
600
700
900
1000
2000
3000
N
GX.21-1a


GD.4
A
10°
5°
0°
100
75
200
150
300
225
400
300
500
375
600
450
700
525
800
600
D
D1
D2
GX. 21-2a

CHARACTERISTICS OF THE TRANSISTORIZED IGNITION SYSTEM

COMPOSITION OF THE IGNITION SYSTEM.

1. Anti-theft contactor
2. Interference capacitor *(radio option)*
3. Ignition coil
4. Pulse generator distributor
5. Transistorized module
6. Rev counter
7. Diagnostic socket

OPERATING PRINCIPLE.

The primary circuit current from the coil crosses a tripping transistor located in the module. When the pulse generator, composed of a polar wheel with four arms and a sensor, transmits a pulse, this blocks the transistor and interrupts the passage of current into the coil primary circuit thus creating a « HT » current in the secondary.
The rotor and its advance systems are identical to those of the conventional ignition system.
This controlled coil current ignition system has an insignifiant and non-adjustable DWELL angle for it is variable in relation to the speed.

SPECIFICATIONS.

Ignition order : 1 - 3 - 4 - 2
Distributor : DUCELLIER reference : 525 332
SEV-MARCHAL reference : 417 10002 A 497
Curve reference : centrifugal advance : **GA 10**
vacuum advance : **GD 8**
N : Distributor speed in rpm
A : Advance in degrees
D : Vacuum D1 : in millibars D2 : in mmHg
Advance on ignition : **6° before TDC** (TDC mark) on flywheel and engraved plate fastened to clutch casing).

Transistorized module : DUCELLIER 521 007
BOSCH 0227 100 111

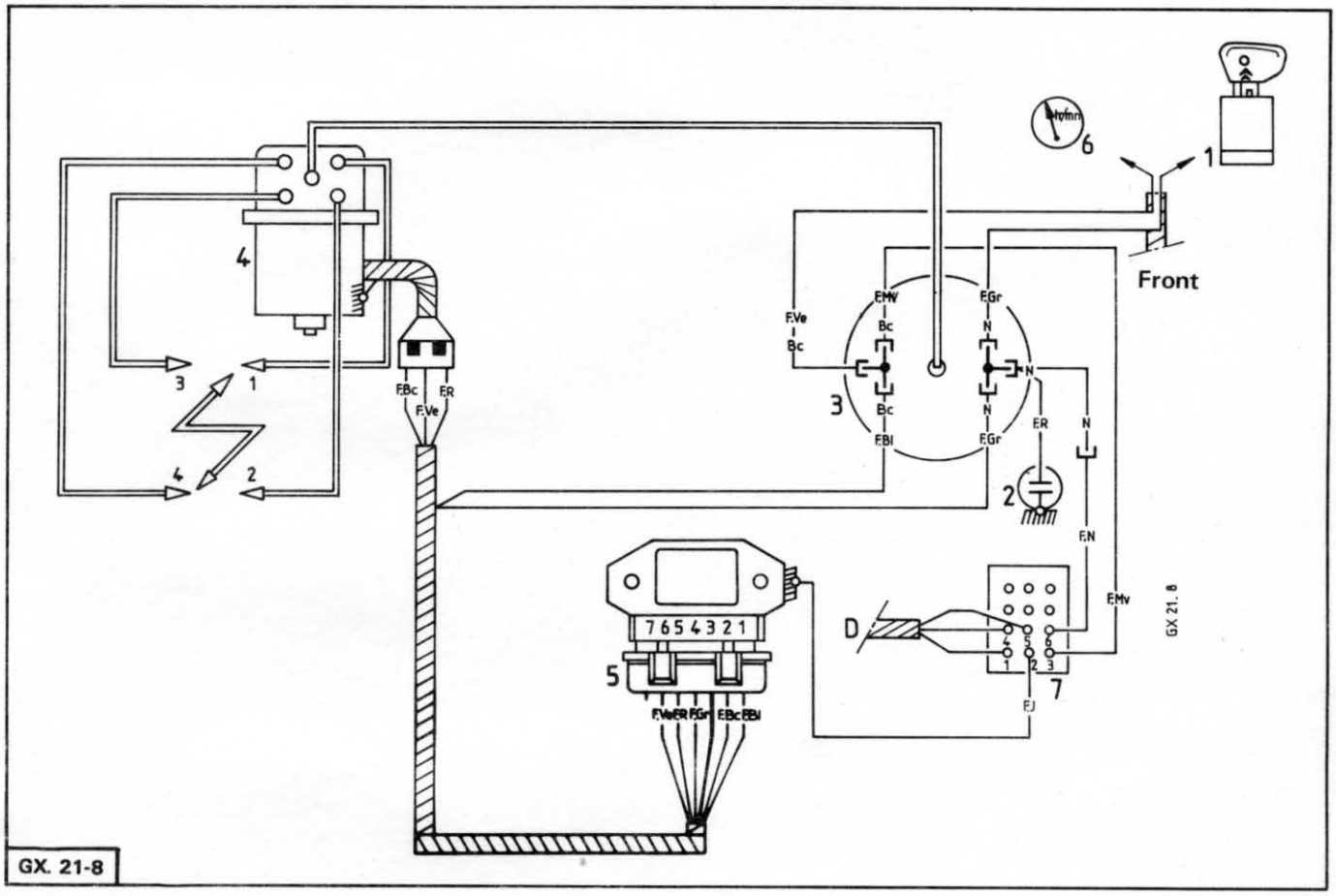
Ignition coil : DUCELLIER 520 015
BOSCH 0221 122 317

Sparking plugs :
Electrode gap : 0.6 to 0.7 mm.

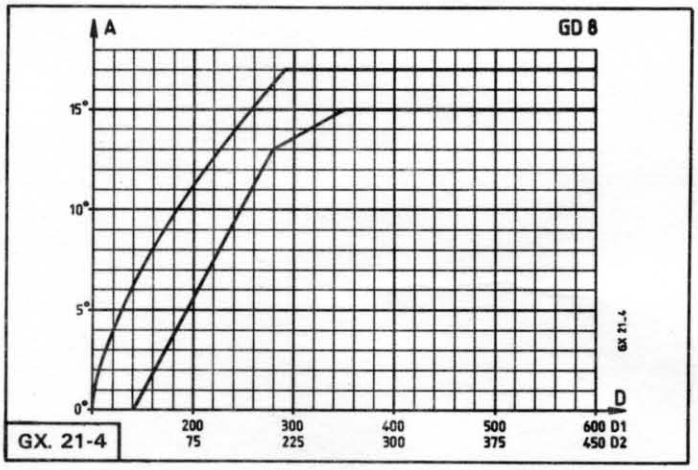
MAKE	AC	: 41,4 XLS
	CHAMPION	: N 7 Y
	MARCHAL	: GT 34-2 H
	BOSCH	: W 6 D
	EYQUEM	: 800 LS

Ignition wiring harness :

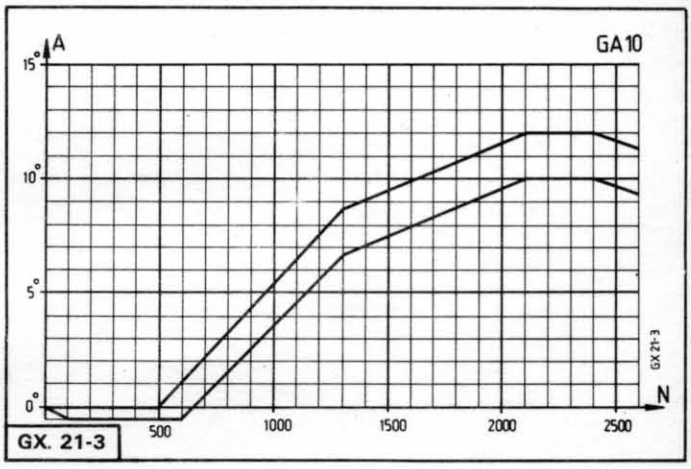
Description of wires	**Length in mm** $^{+10}_{0}$	Resistance Ω ± 20% at 20° C
Coil to distributor	460	
Distributor to cylinder No. 1	340	
Distributor to cylinder No. 2	650	
Distributor to cylinder No. 3	1150	
Distributor to cylinder No. 4	1370	



GX. 21-8



GX. 21-4



GX. 21-3

CHECKING THE TRANSISTORIZED IGNITION

PRELIMINARY CHECKS :

Check :
- the connection of the different leads (in particular the coil : a bad connection can cause a high voltage drop preventing the current from passing into the coil primary winding (15 A approx).
- condition of the leads (cuts, short-circuits across screening, etc),
- condition of the sparking plugs (deposits, cracks due to overtightening),
- condition of the distributor cap (wear, cracks) and the rotor arm (loose),

Disconnect the interference suppression capacitor and the diagnosis harness, from the circuit.
Carry out a « spark test » with the starter motor and one plug earthed.

IMPORTANT : The module may be destroyed if one of the secondary wires is too far from the earth.

CHECKING THE COIL *(module and coil supply disconnected)*

MEASUREMENT	Ohmmeter between contact numbers	Value in Ohms	
Primary winding resistance	1 and 4	DUCELLIER BOSCH	0.78 to 0.86 0.70 to 0.94
Secondary coil resistance	1 or 4 and HT coil contact	DUCELLIER BOSCH	5700 to 6300 6750 to 9540
Insulation	1 or 4 and earth	∞	

Check the coil power supply (with lamp or voltmeter) :
Turn on the ignition, there should be a 12 V current between the « BAT » terminal of the coil and the earth. Turn off the ignition.

CHECK OF MODULE.

This is designed to function with the distributor and the coil.
- Do not operate the module without its heat sink (aluminium plate) or without ventilation.
- Do not check the module with an ohmmeter : results non-significant.

Check the module power supply (with lamp or voltmeter) :
- Disconnect the module connector.
- Turn on the ignition, there should be 12 V between contact 4 of the connector and earth.
- Turn off the ignition.

The low voltage ignition circuit connected (in working order), disconnect the coil HT - distributor lead at the distributor end and connect to an earthed plug : by sending short pulses (+ 12 V) to contact 5 (red wire) on the module, there should be sparks on the plug (simulation of distributor spark current).

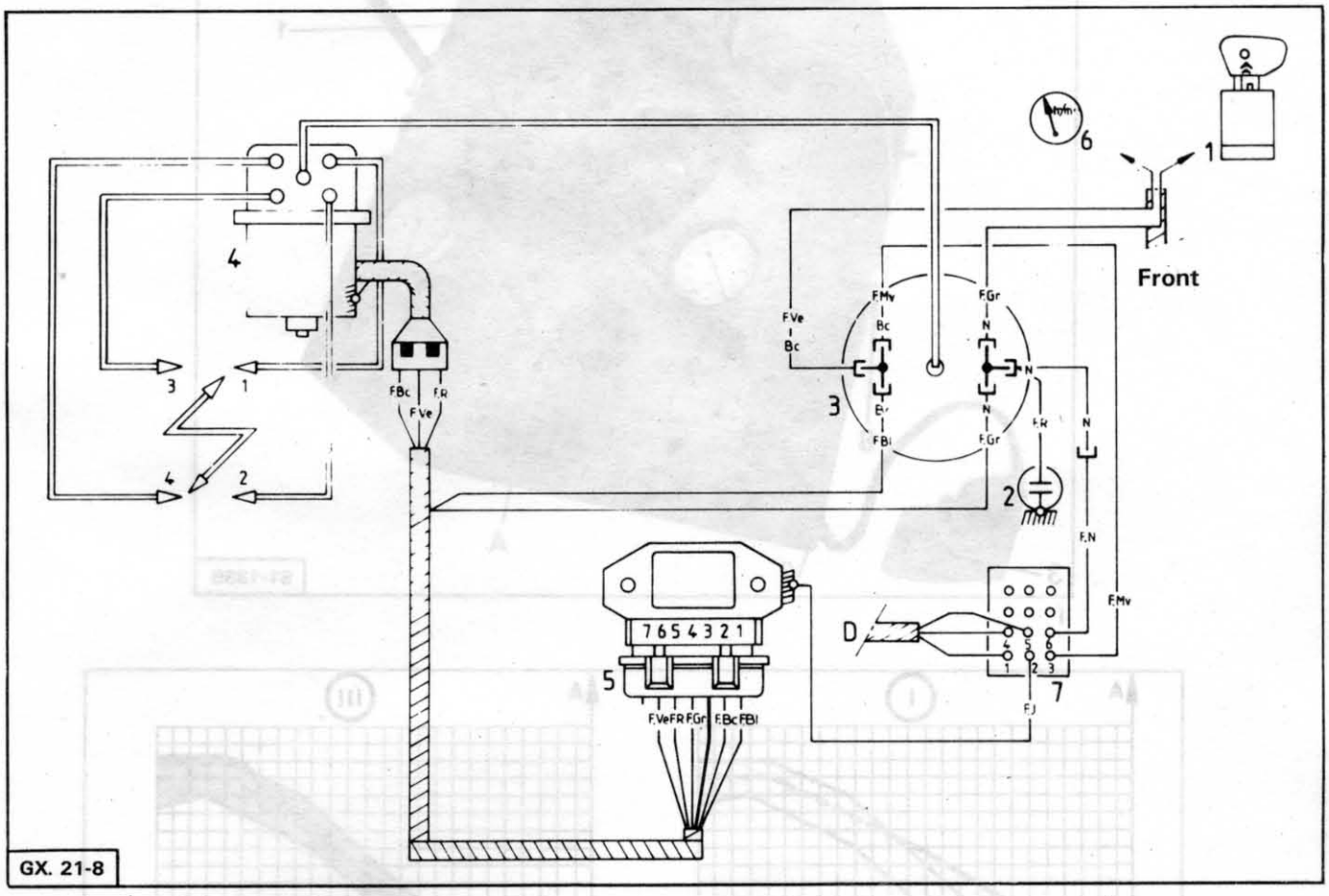
TO CHECK THE DISTRIBUTOR.

Checking of the pulse generator *(harness connector disconnected).*

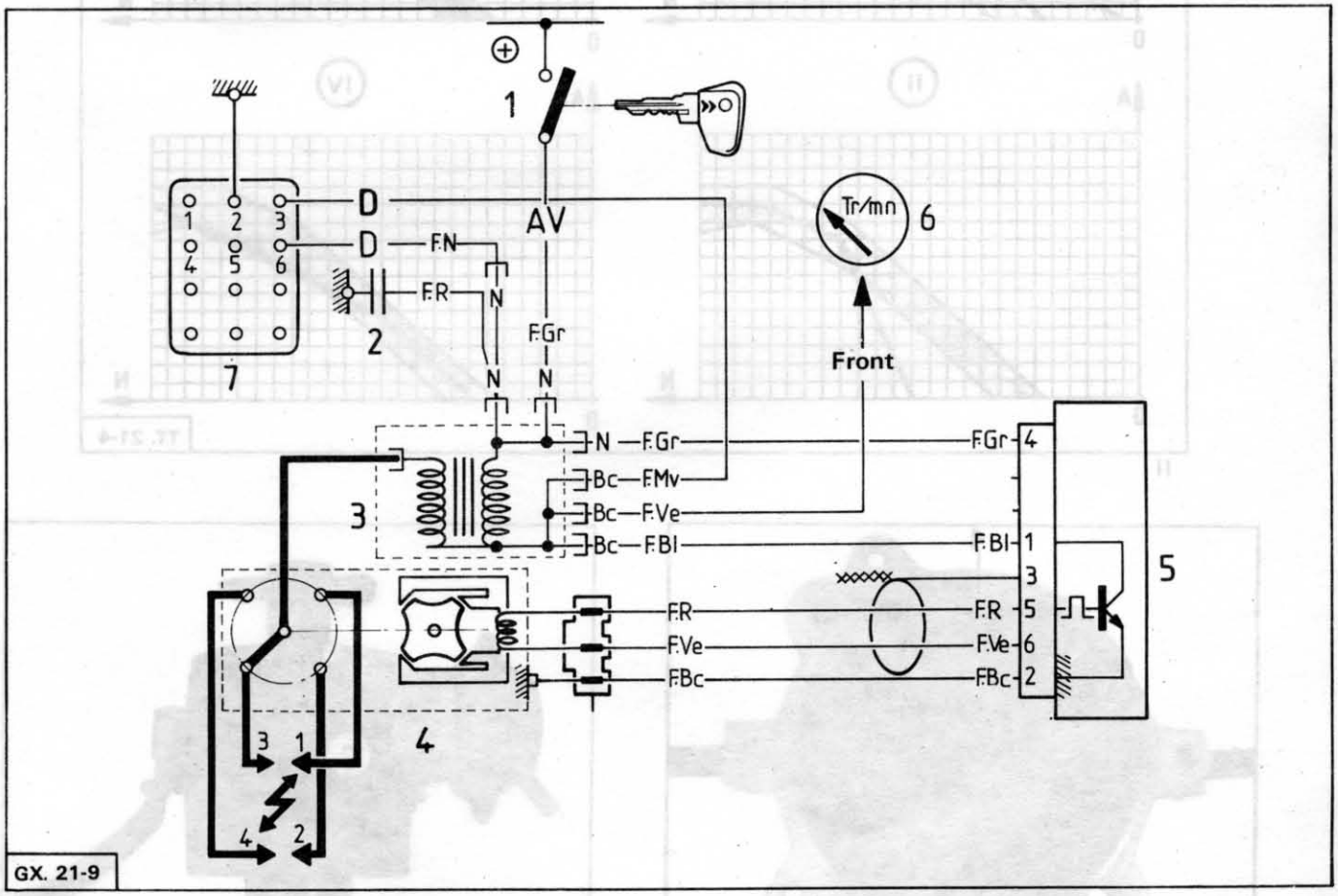
MEASUREMENT	Ohmmeter between contact numbers	Value in Ohms
Resistance	5 and 6	950 to 1250 approx.
Earth	2 and engine earth	0
Insulation	5 and 2 then 5 and 3	∞

COMPOSITION OF THE IGNITION SYSTEM (see diagrams page 3)
Leads : **AV :** Front **D :** Diagnosis **A :** transistorized ignition (without mark)

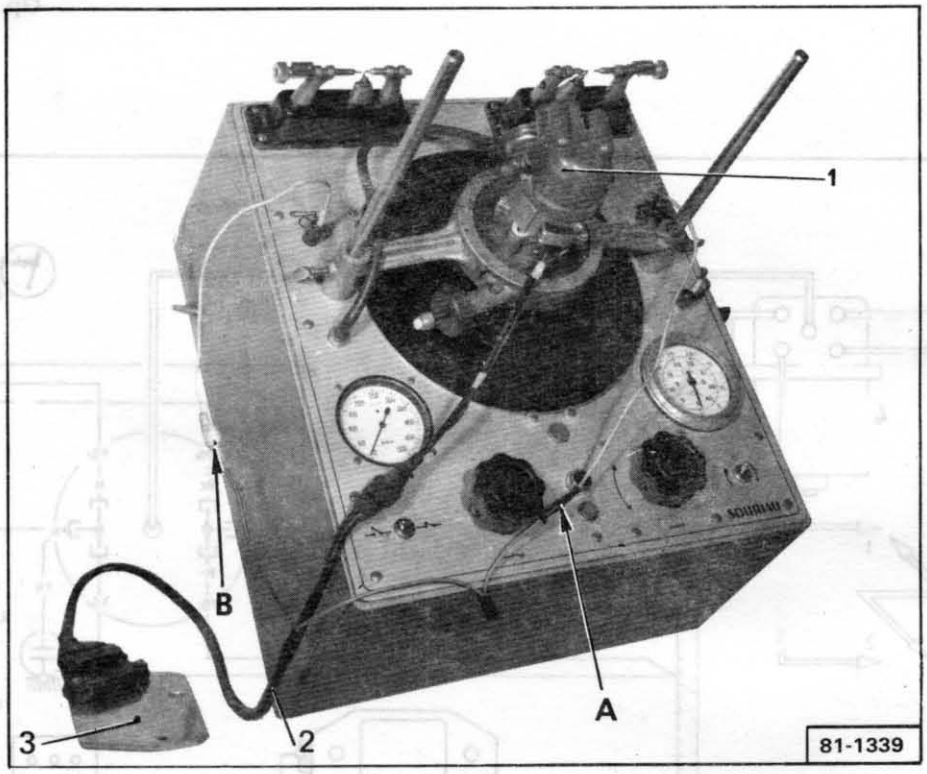
Parts list :
1. Anti-theft switch
2. Interference suppression capacitor
3. Ignition coil
4. Distributor
5. Electronic module
6. Rev counter
7. Diagnostic socket


6
1
Front
4
3
1
4
2
F.Bc
F.R
F.Ve
F.Mv
Bc
F.Ve
Bc
F.Gr
N
N
N
3
F.Bl
F.Gr
F.R
N
2
F.N
F.Mv
7 6 5 4 3 2 1
5
F.Ve F.R F.Gr F.Bc F.Bl
D
7
F.J

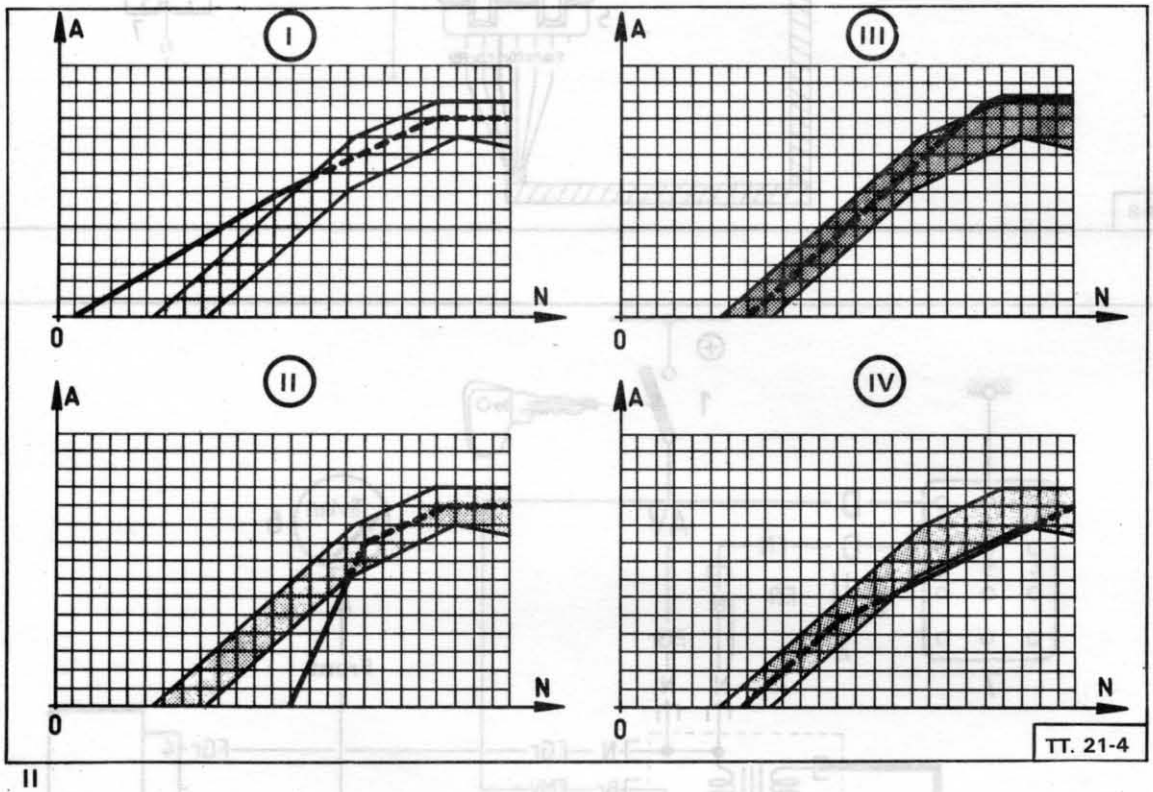
GX. 21-8


1
D
D
F.N
F.R
N
2
7
AV
F.Gr
N
N
Tr/mn
6
Front
N — F.Gr
Bc — F.Mv
Bc — F.Ve
Bc — F.Bl
3
F.R
F.Ve
F.Bc
4
F.Gr
F.Bl
F.R
F.Ve
F.Bc
5
3 1
4 2

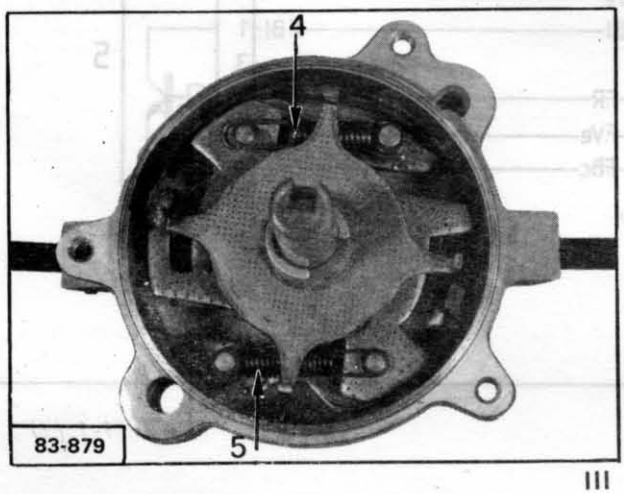
GX. 21-9



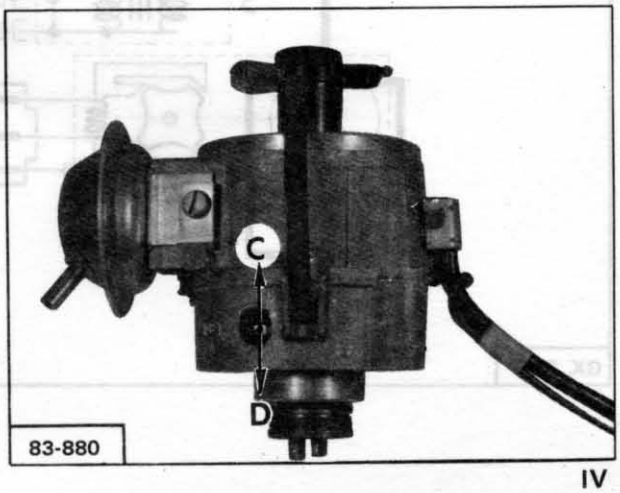
I



II



III



IV

CHECKING ON A DISTRIBUTOR TEST BENCH, Fig. I

To check the magnetic distributor on the bench, a transistorized module in good condition is essential. Use the vehicle module and leads if the bench is not equipped. The ignition coil is not required.

CHECKING THE CENTRIFUGAL SPARK ADVANCE.

Fit the distributor onto the bench.
Connect module (3) and distributor (1) to the harness (2).
Supply the system with a + **12 V from the battery** through black plug (A) (snap fastener).
Connect the bench « RUP » terminal to the harness transparent lead (B).
To check the distributor : **Figs. II and III.**

- Compare the distributor centrifugal spark advance curve with the theoretical curve *(see Op. GX. 210-00 a)*
- If the curve plotted does not correspond to the theoretical curve, modify the spring tension by bending the spring hooking point support plate.

In order to do this, remove the cap and alter the spring tension by bending the hooking point tab : **Figs. III and IV**

Curve measured	Spring concerned	Bending direction
I	5	D
II	5	C
III	4	D
IV	4	C

CHECKING THE VACUUM SPARK ADVANCE
Compare the distributor vacuum spark advance curve with the theoretical curve *(see Op. GX. 210-00 a)*

NOTE : *The vacuum spark advance device is not adjustable : If the curve measured is out of tolerance, change the capsule.*

ADJUSTMENT ON THE VEHICLE.

Distributor position.
Fit the distributor, positioning it approximately midway between the slotted holes.
Start the engine.
Use a strobe lamp to set the distributor position *(vacuum capsule disconnected)* to :

27° before TDC at 3000 rpm

Reconnect the vacuum capsule.

I. CHECKING AND ADJUSTING THE IGNITION SYSTEM ON THE VEHICLE

Each vehicle is fitted with equipment for connection to an electronic test and adjustment unit (as on CX vehicle).
This method is recommended for its rapidity, accuracy and ease of execution.

1. CHECKING CONTACT BREAKER GAP

a) *Using test equipment :*

The contact-breaker closing angle should be 57 ± 2°.
DWELL ratio should be 63% ± 3%.
If the values obtained are not correct, remove the distributor and adjust the contact gaps on a distributor test rig.

b) *Not using test equipment :*

Remove the distributor. Turn the drive shaft until one of the cam bosses raises the pawl to its maximum height. Using a set of slip gauges, measure the contact gap which should be between 0.35 and 0.45 mm.
Adjust to this value if necessary.

2. DISTRIBUTOR TIMING

A. USING AN INDICATOR LAMP

a) Turn the engine to bring cylinder No. 1 to end of compression until index « a » is opposite the 10° mark on graduated quadrant **A** (use a mirror for this purpose).
b) Switch on the ignition, and connect the indicator lamp between the terminal marked «RUP » on the coil, and earth.
c) Undo distributor attachment nuts (1). Turn the distributor first clockwise (viewed from drive end), then anti-clockwise to find the precise moment when the lamp comes on. The engine is then at the ignition point.
d) Do up the distributor attachment nuts.
e) Switch off, and disconnect the indicator lamp.

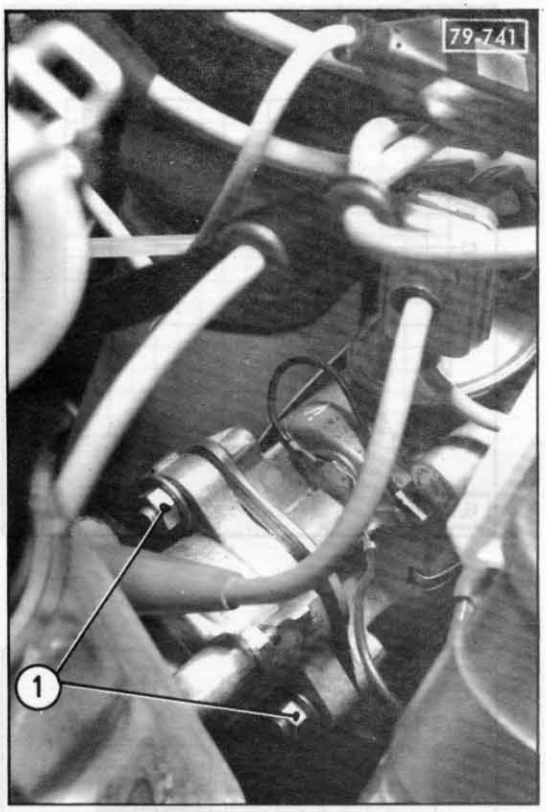
B. DYNAMIC TIMING TESTING WITH STROBOSCOPIC LAMP

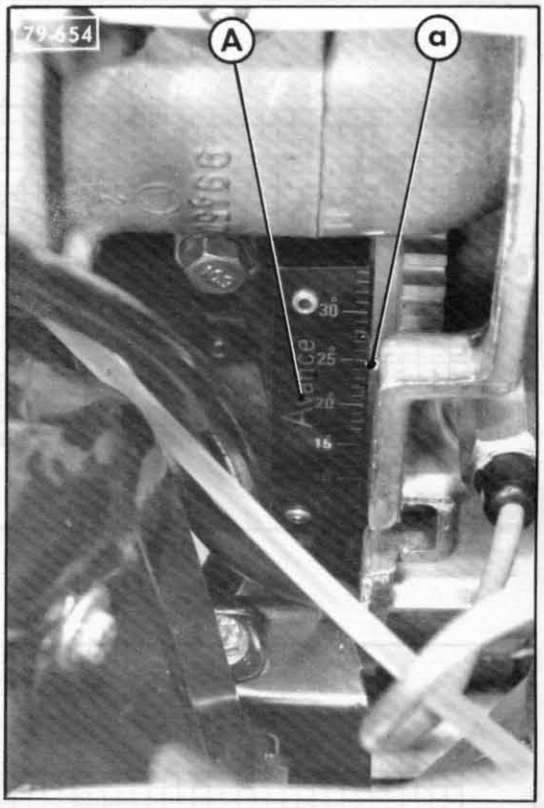
This operation must be carried out following operation A above.

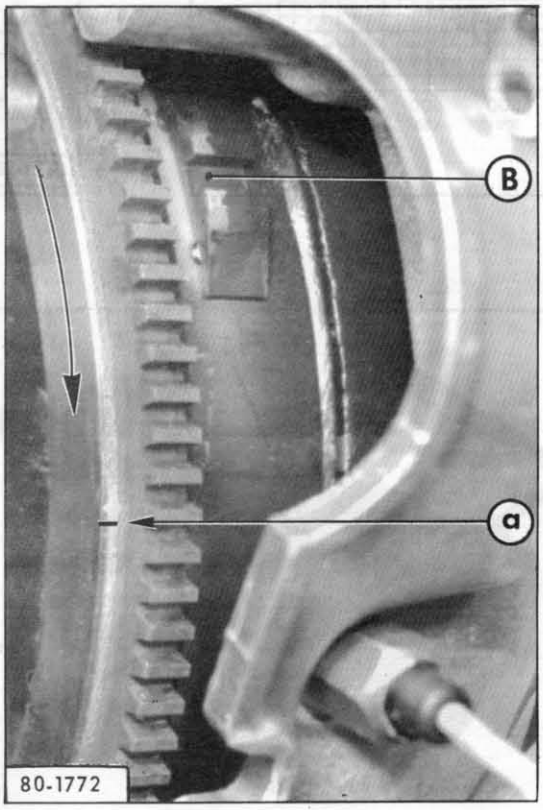
a) *Disconnect the flexible pipe from the distributor vacuum capsule.*
b) Connect a revolution counter and a stroboscopic lamp (HV wire to spark-plug No. 1 lead), or use an electric test unit, connecting the 12-pin socket.
c) Run the engine, and illuminate the graduated quadrant and engine flywheel with the lamp :
♦ - At **2500 rpm,** mark « a » should be opposite the **24°** mark on the quadrant **(1300 cc engines).**
♦ - At **3000 rpm,** mark « a » should be opposite the **27°** mark on the quadrant **(1130 cc engines).**
If this test gives an incorrect result, do not change distributor timing. Remove the distributor, and check advance curve development on a distributor test rig.
d) Stop the engine, and disconnect the test equipment.
e) *Reconnect the flexible pipe to the vacuum capsule.*

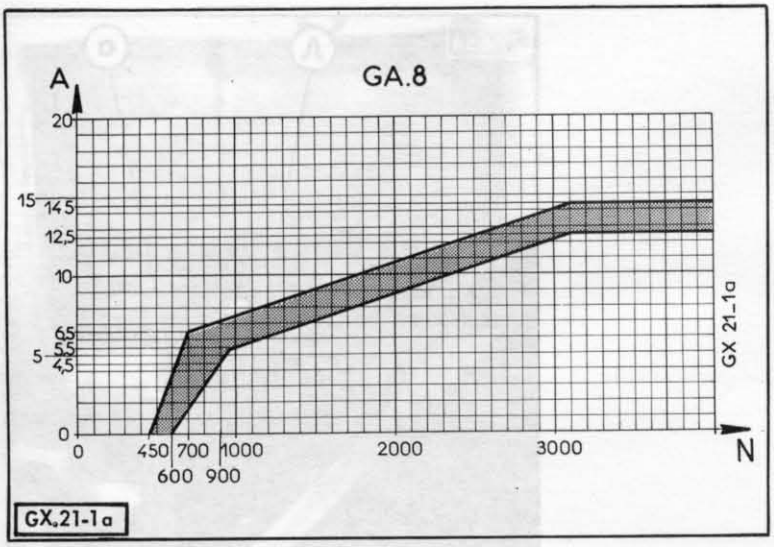
IMPORTANT NOTE for engines with torque converter

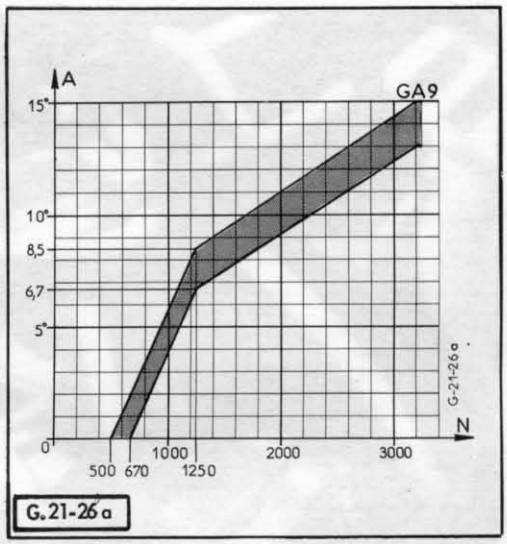
Identification of ignition mark « a » on engine flywheel :
The flywheel has two slots and a marker line « a ». When the flywheel rotates, marker line « a » is located ten teeth ahead of larger slot B (see photo opposite). The marker line is not painted when the vehicle leaves the factory. Paint in the line to facilitate timing and dynamic testing.

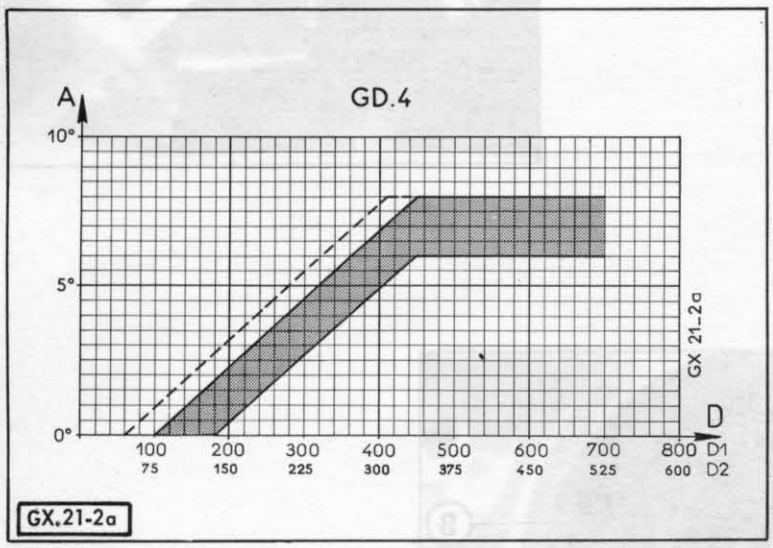

79-741
1

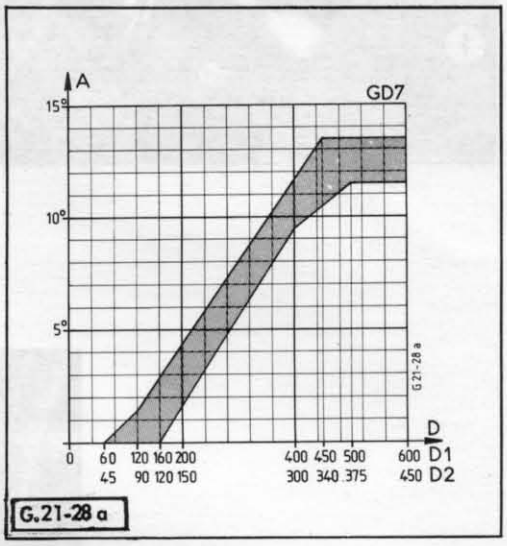

79-654
A
a
30
25
20
15

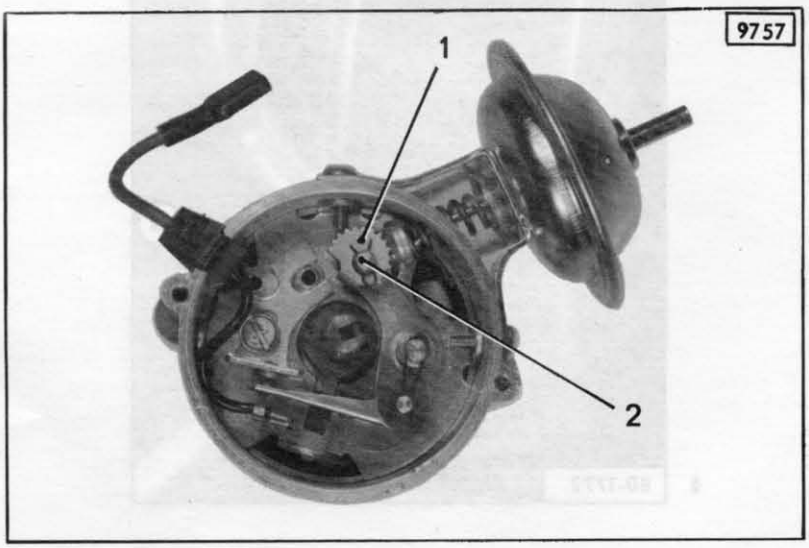

B
a
80-1772


GA.8
A
20
15
14,5
12,5
10
6,5
5,5
5
4,5
0
0
450
700
1000
2000
3000
600
900
N
GX 21-1a
GX.21-1a


GA9
A
15°
10°
8,5
6,7
5°
0
500
670
1000
1250
2000
3000
N
G-21-26a
G.21-26a


GD.4
A
10°
5°
0°
100
75
200
150
300
225
400
300
500
375
600
450
700
525
800
600
D1
D2
D
GX 21-2a
GX.21-2a


GD7
A
15°
10°
5°
0
60
45
120
90
160
120
200
150
400
300
450
340
500
375
600
450
D1
D2
D
G21-28a
G.21-28a


9757
1
2

II. CHECKING AND ADJUSTING ON A DISTRIBUTOR TEST BENCH

1. Check condition of contact points.

2. Check and adjust cam angle : 57° ± 2°.

3. Check cam geometry : 90° ± 1°.

4. Check absence of pawl bounce up to 3500 rpm.

♦ **5. Check centrifugal advance curve development (GA. 8 or GA. 9) :**

A : Distributor degrees **N :** Distributor rpm

This curve is checked *with nil vacuum* (capsule not connected).

Take measurements at various points on the curve, increasing speed from 1000 to 3500 rpm, then decelerating down to 0 rpm, and finally increasing again from 0 to 1000 rpm.

The points are measured without reversal of direction, and must be inscribed within the curve form shown on the chart. If this is not the case, correct the curve by adjusting the tension of the advance regulator springs, by bending the anchor tabs. If necessary, replace the springs.

♦ **6. Checking negative pressure advance curve development (GD. 4 or GD. 7) :**

A : Distributor degrees **D :** Vacuum **(D1 :** in m.bars, **D2 :** in mm.Hg **)**

The test is made with *zero centrifugal advance,* and at constant speed (200 rpm).

IMPORTANT NOTE : If the capsule has a venting hole, blank off this hole during testing.

Take measurements at various points on the curve, increasing vacuum from 0 to 600 mbar (or 0 to 450 mm.Hg), then decreasing down to 0.

The points are measured without reversal of direction, and must be inscribed within the curve form shown in the chart. If it is not the case, adjust the capsule control stem (SEV-MARCHAL distributor), or capsule spring tension by toothed segment (1) (DUCELLIER distributor).

7. For a DUCELLIER distributor, **check DWELL balance :**

Check that the DWELL ratio remains within tolerances of 63% ± 3% (or 57° ± 2°), with the distributor rotating at 200 rpm, by applying and then cancelling a vacuum of 500 m.bar (375 mm.Hg).

Use flat (2) to adjust for *correct cam angle, with and without vacuum.*

CHECKING THE OIL PRESSURE ON THE VEHICLE

NOTE : For a vehicle equipped with a WEBER carburettor, the dashpot with dashpot support (1) must be removed.

1. Remove :
- spare wheel,
- left heating duct,
- spare wheel support (2).

If necessary, take an oil level reading.
Warm up the engine *(oil temperature 80° C)*.

2. Remove oil pressure-switch (3).
Connect coupling 3099-T, equipped with coupling 4009-T *(copper seals)*. Use pressure gauge 2279-T (graduated from 0 to 10 bar), fitted with flexible pipe (A).
Connect a revolution counter.

NOTE : *The corresponding equipment from the MULLER 455 kit can also be used.*

3. Run the engine. For an oil temperature of 80° C, pressure values should be as follows :
- **4.7 bar minimum at 2000 rpm**
- **6.2 to 7 bar at 6000 rpm**

4. If oil pressure is not correct, replace the discharge valve spring.
In this case, remove the filter cartridge.

If this action has no result, check the oil pump and lubrication circuit.

5. Disconnect pressure gauge 2279-T, and couplings 3099-T and 4009-T.
Disconnect the revolution counter.

6. Fit the pressure switch *(copper seals)*.

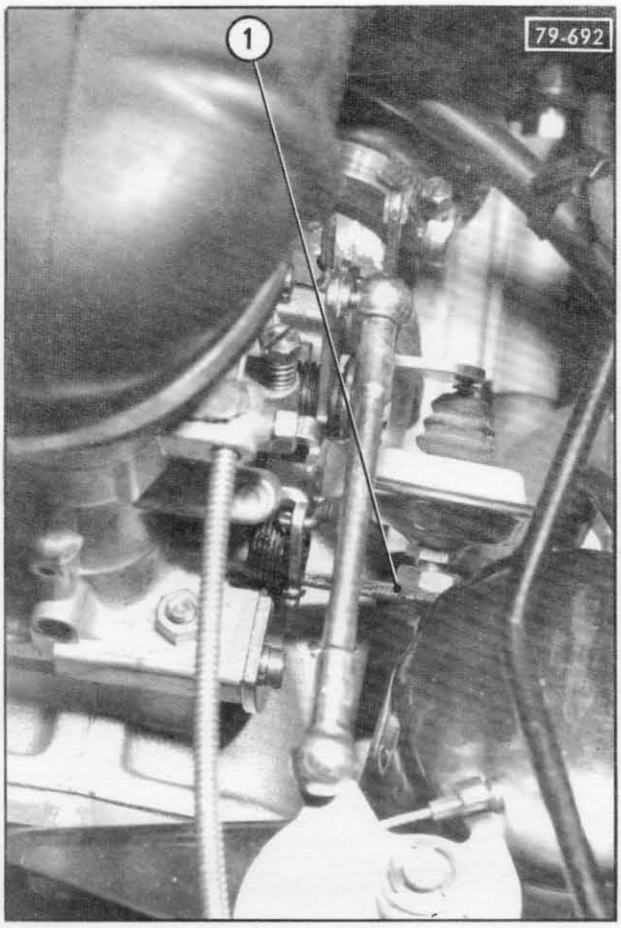
Tighten from 2 to 2.5 m.daN.

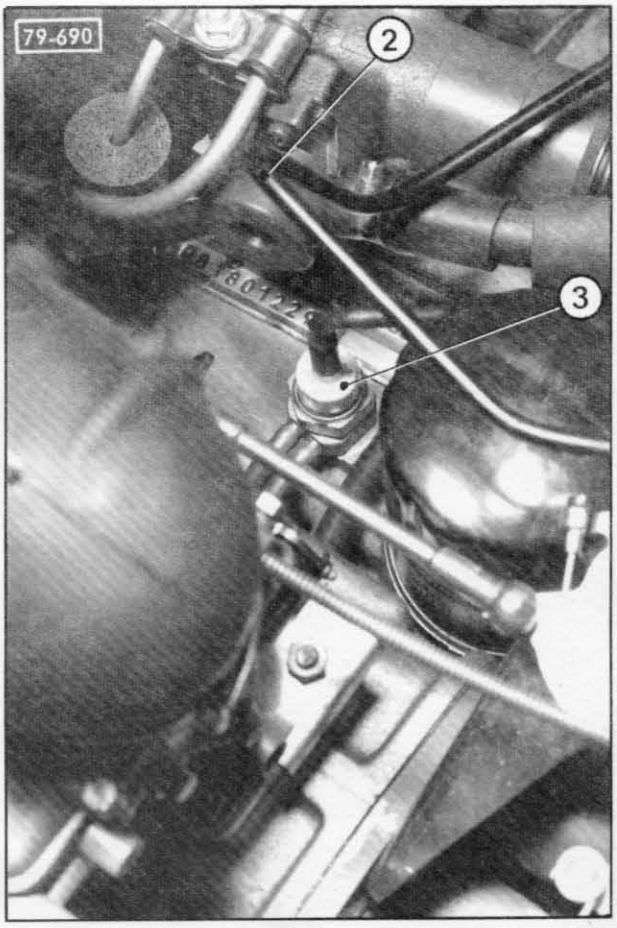
Connect the switch power supply wire.

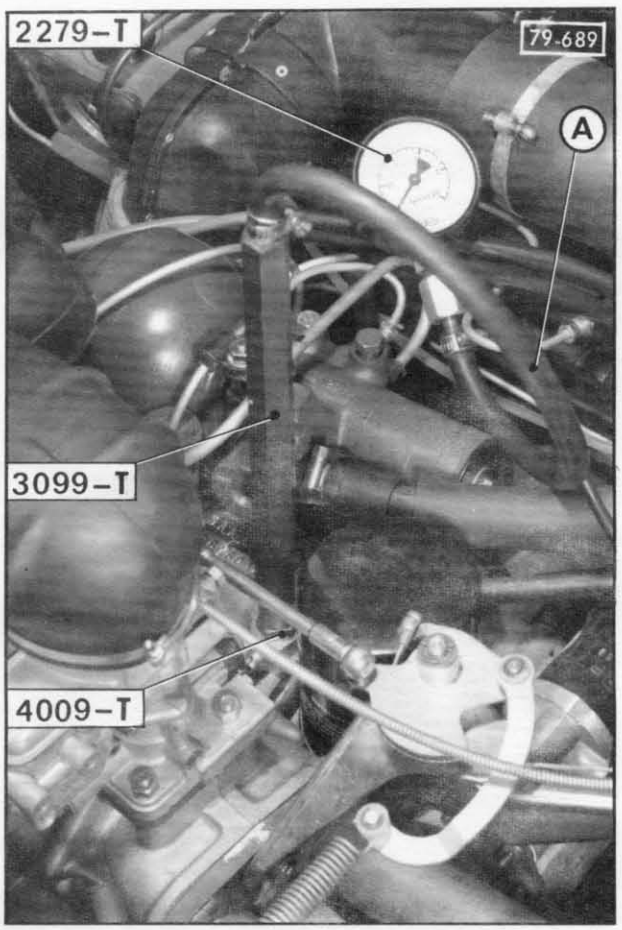
7. Check oil level.

8. On a vehicle equipped with a WEBER carburettor, replace the dashpot.

9. Reassemble :
- spare wheel support,
- left heating duct,
- spare wheel.


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2279-T
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3099-T
4009-T

CHARACTERISTICS

Diaphragm type mechanism :	VERTO
Damper hub type plate :	3 black springs 3-red springs
Plate hub :	21 splines
Clutch liner :	FERODO A 755 *(→ 3/82)* FERODO F 201 *(3/82 →)*
Thrust bearing :	Ball type

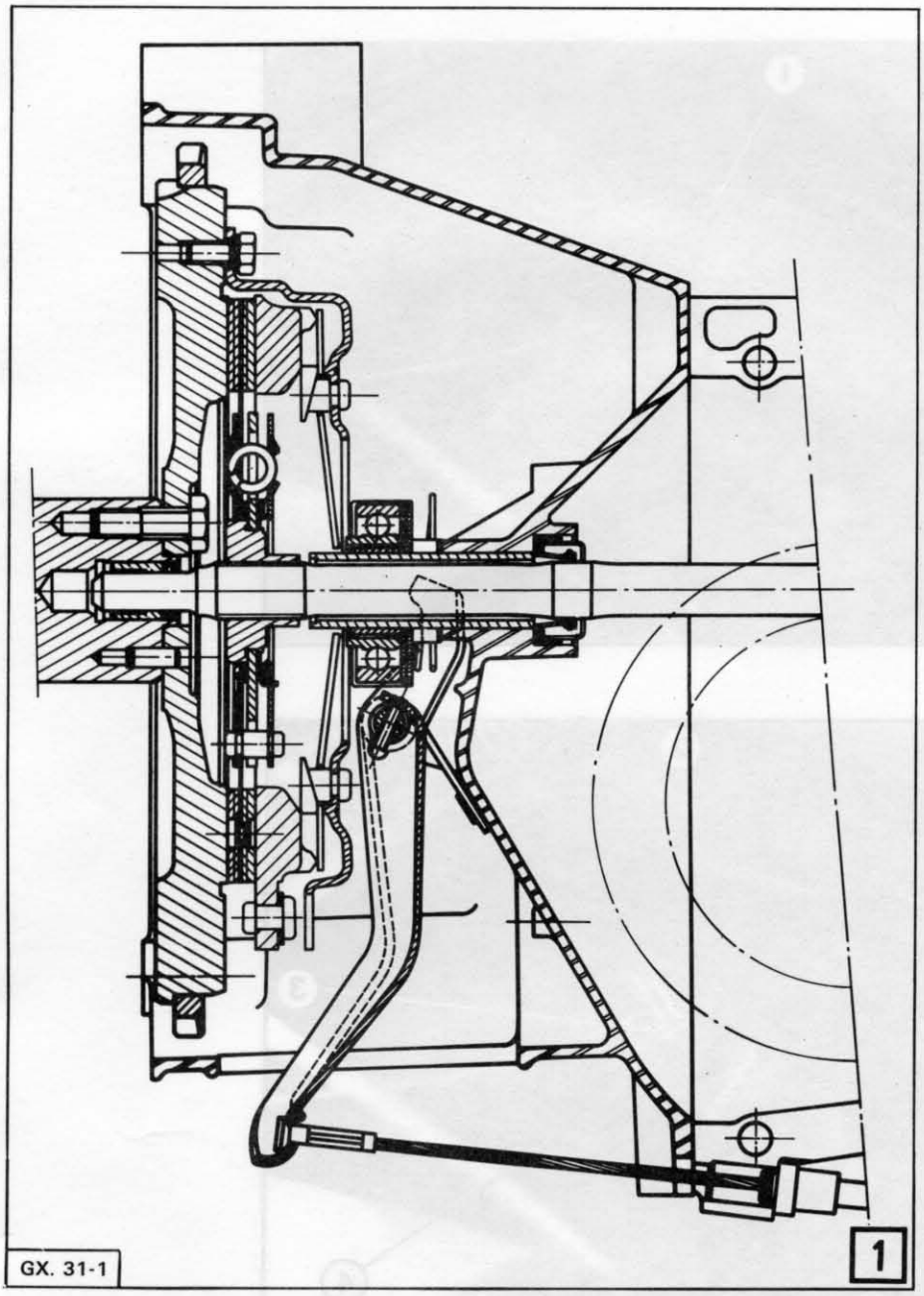
NOTE :

Since **August 1981 (R.P. organization No. 1745),** a new self-centring thrust bearing, with a splined inner race in plastic, has been fitted on all GSA vehicles with pedal-operated clutch. Consequently, a new clip nhas been created and MUST, WITHOUT FAIL, BE FITTED IN THE PROPER DIRECTION (see Fig. 2 and 3) : « a » at gearbox end. **The new thrust bearing can be fitted on GSA vehicles produced prior to the modification.** The value and adjustment method for the clutch clearance are unchanged.

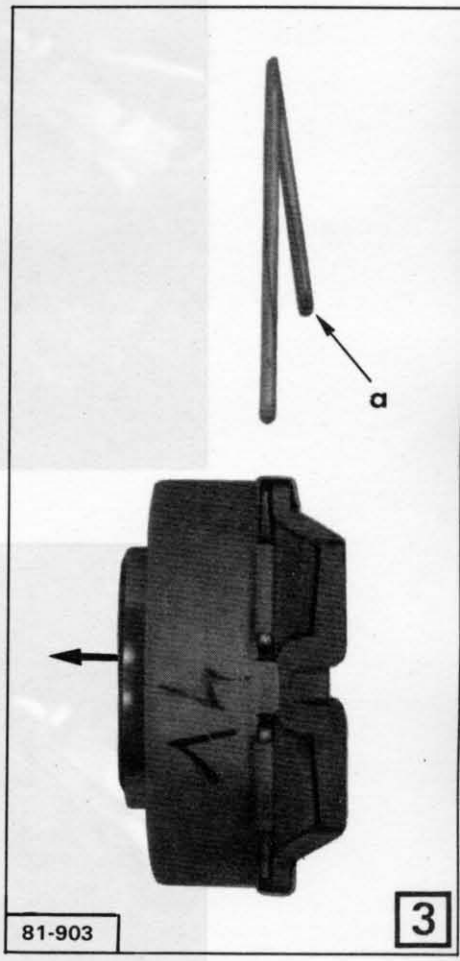
SPECIAL FEATURES

Clutch plate :

- Lining thickness : $7.7\ ^{+0.15}_{-0.30}$ mm
- Clearance between stop and diaphragm : 1 to 1.5 mm
- Pedal clearance : 15 to 20 mm
- Fork shaft screw assembled with LOCTITE FORMETANCH
- Tightening torque for clutch mechanism attachment screws : **1.8 m.daN**

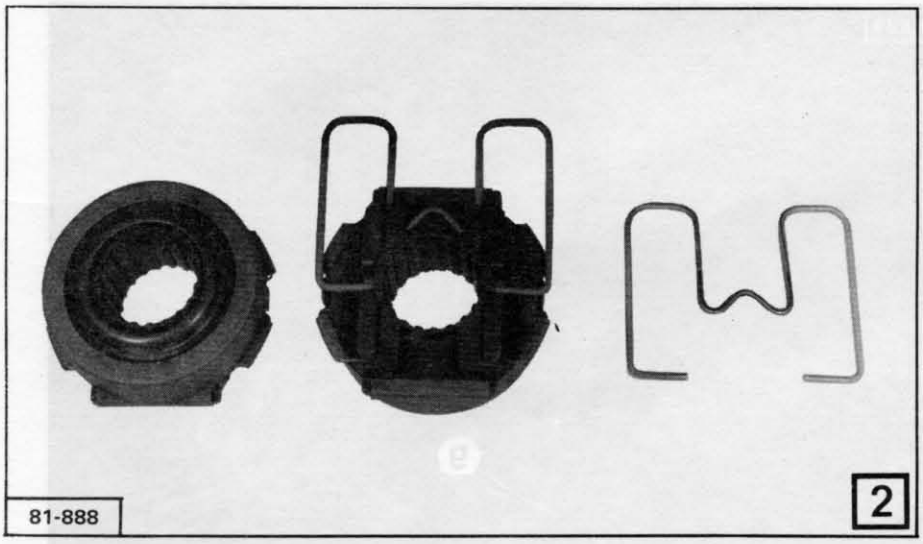

GX. 31-1

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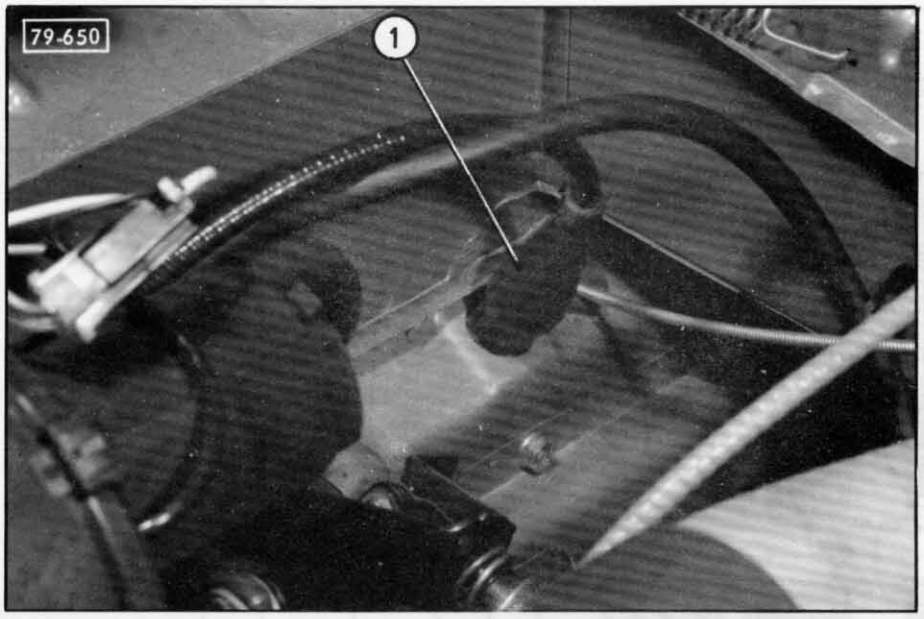


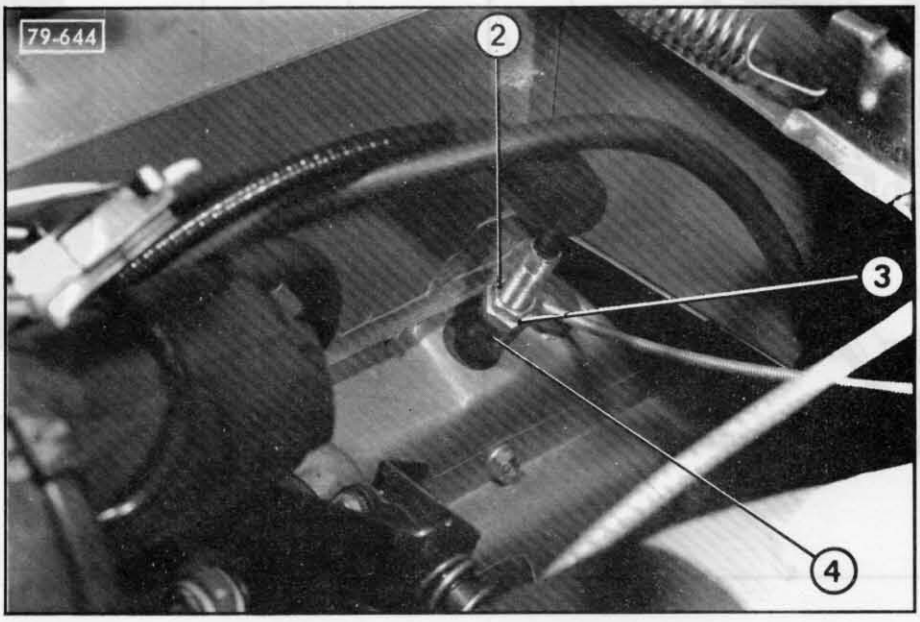
81-903

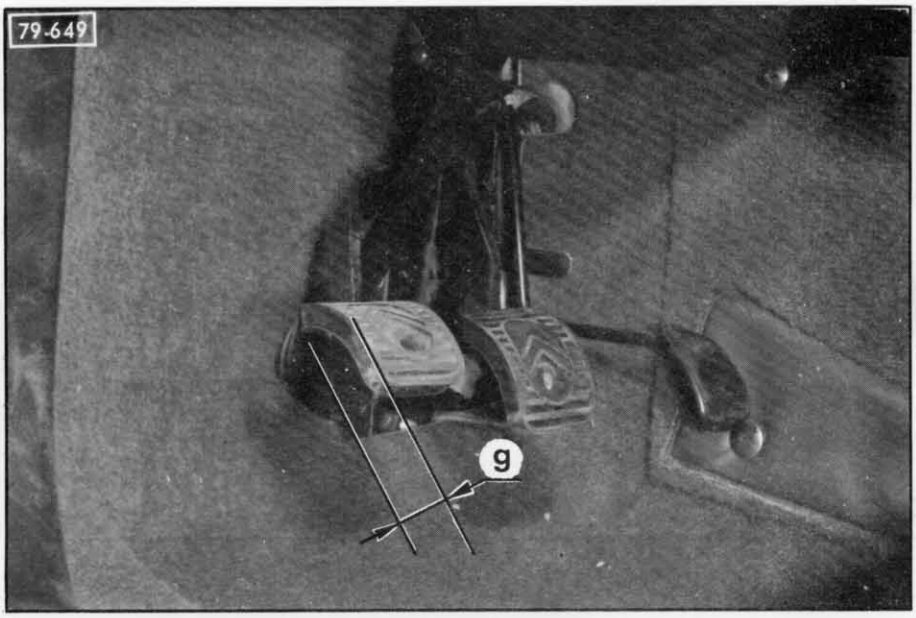
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CHECKING AND ADJUSTING PEDAL-OPERATED CLUTCH CONTROL SYSTEM

ADJUSTMENT OF CLUTCH CLEARANCE

1. Remove spare wheel :

2. Adjust clutch clearance :

- Disengage seal (1).
- Undo lock-nut (2).
- Adjust nut (3) to obtain :

  3.2 to 4.8 mm clearance between fixed tube (4) and nut (3)

  Under these conditions, clutch pedal clearance is :

  g = 15 to 20 mm
- Tighten lock-nut (2).
- Fit seal (1).
- Replace spare wheel.

I. CHARACTERISTICS.

- Torque converter with a built-in disc clutch.
- Engagement and disengagement of the clutch are controlled by a hydraulic system with an electrovalve distributor. This electrovalve is controlled by an electric switch operated by the selector fork shafts.

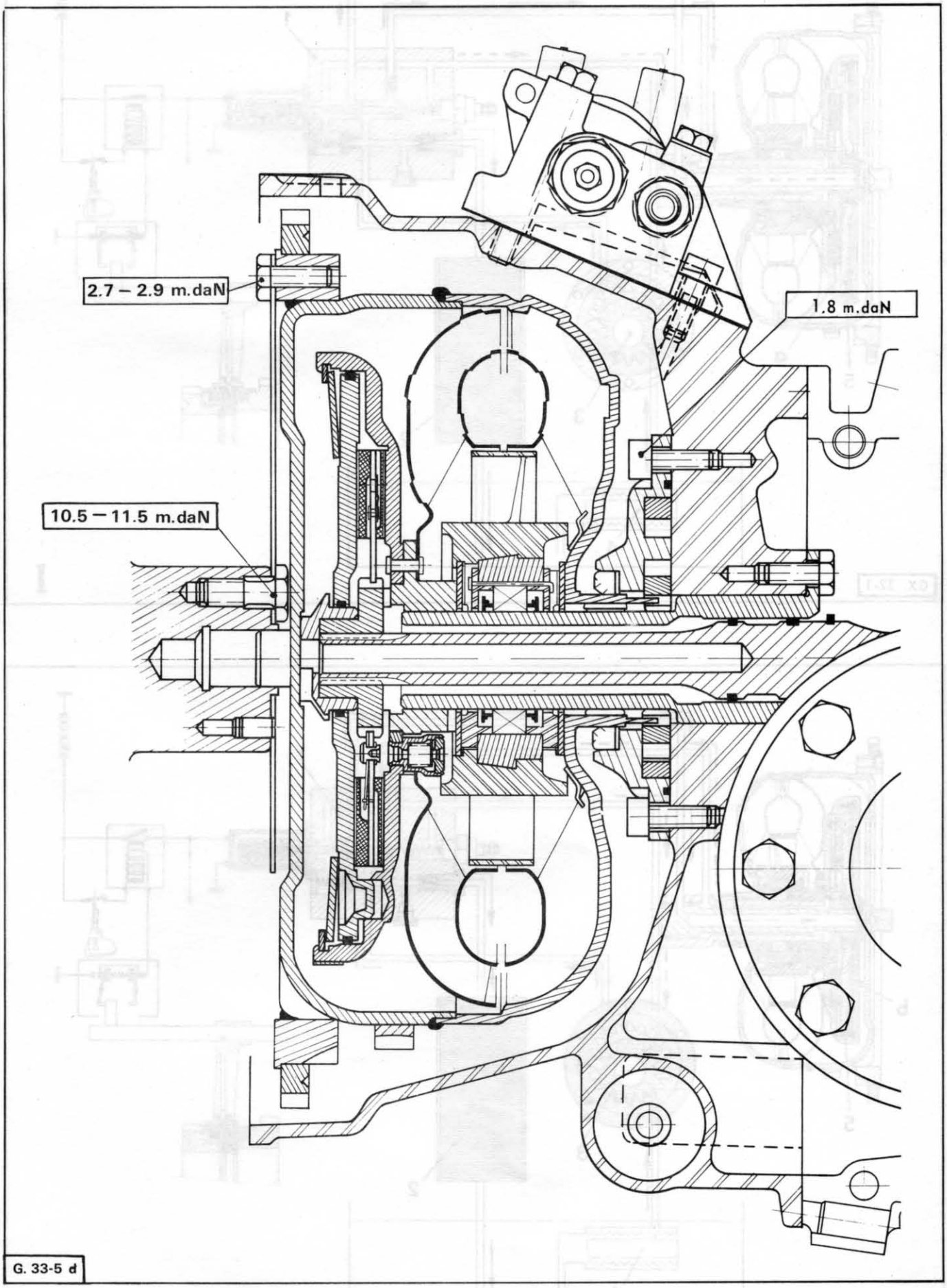
II. SPECIAL FEATURES.

- Gap between the electrovalve control contacts : ..... 1.45 ± 0.2 mm
- Calibration of temperature switch : ..... 135 ± 3° C
- Operating pressure : ..... 5.5 to 6.5 bars at 5000 ± 100 rpm
- Type of oil : ..... TOTAL FLUIDE T
- Total capacity *(including gearbox)* : ..... 4 litres approx.
- Filling the converter : after filling, actuate the electrovalve a dozen times.

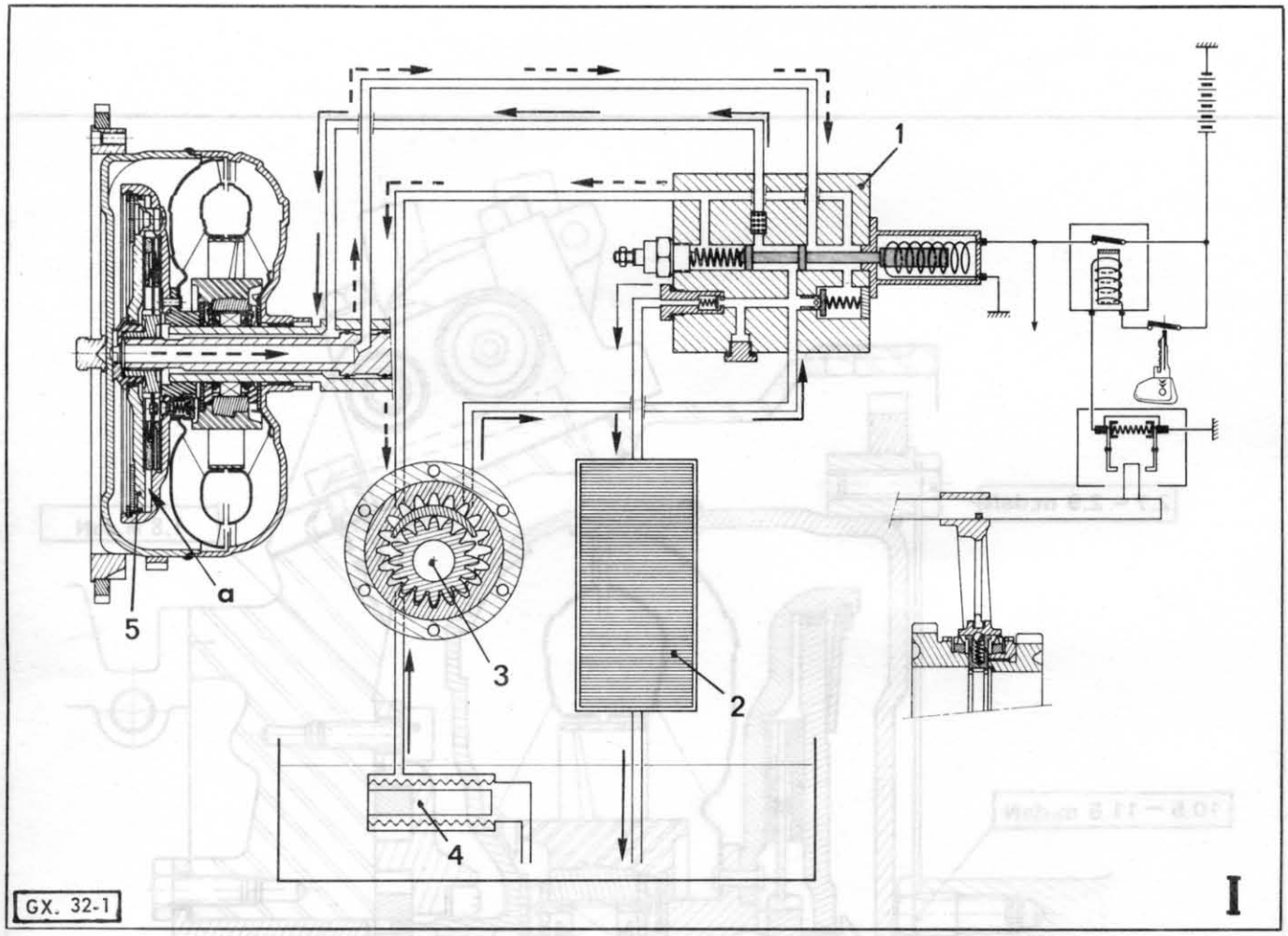
III. TIGHTENING TORQUES (in m.daN).

- Electrovalve fixing screws : ..... 1.2 to 1.7 m.daN
- Pipe union-bolt : ..... 3.5 to 4.5 m.daN
- Suction strainer : ..... 1 to 1.5 m.daN
- Switch baseplate fixing screws : ..... 0.30 to 0.40 m.daN
- Contacts fixing screws : ..... 0.35 to 0.40 m.daN

The screws fixing the diaphragm to the crankshaft must be replaced after each removal and must be smeared with LOCTITE FRENETANCH before they are fitted.

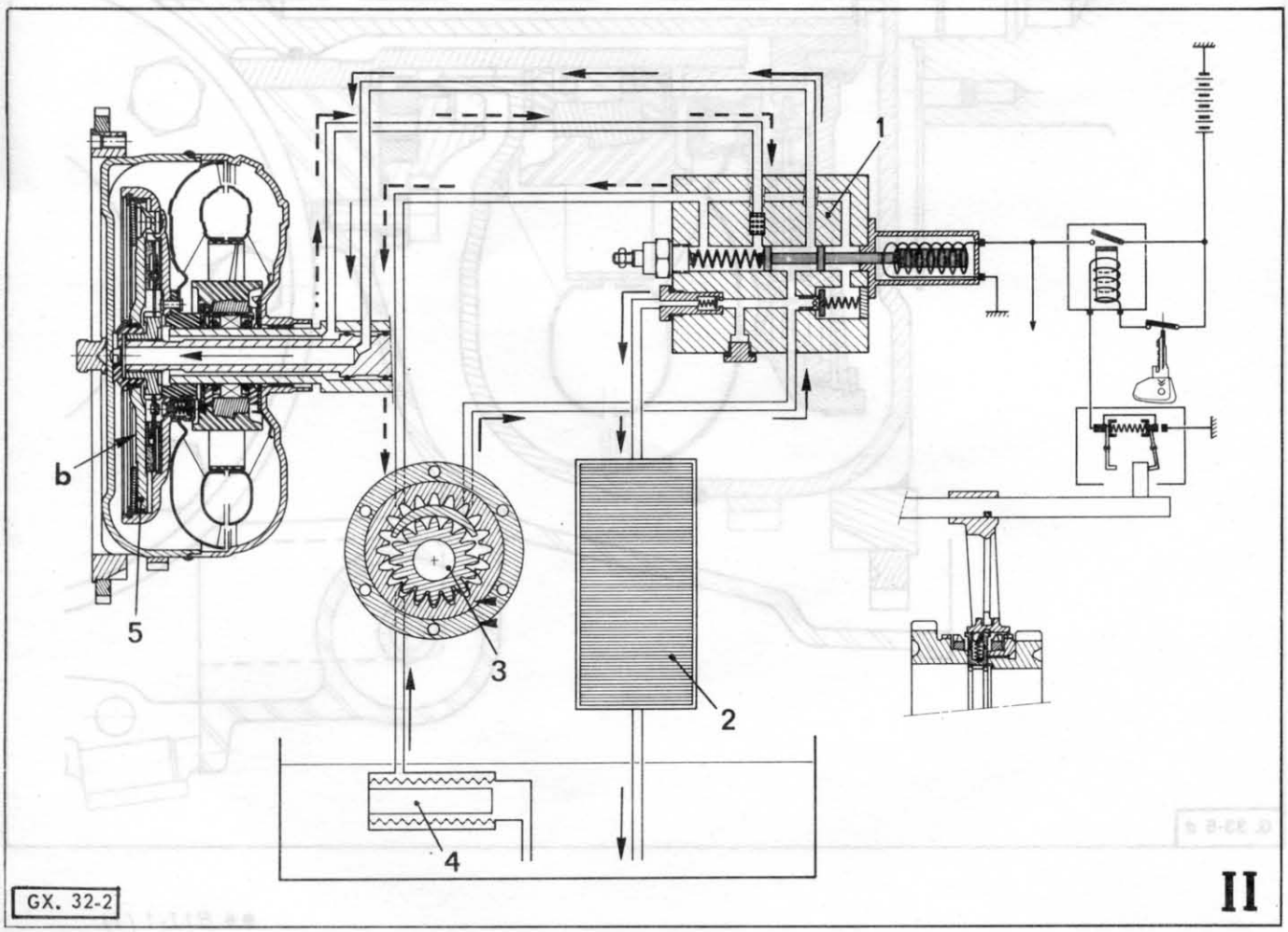


G. 33-5 d



GX. 32-1

I



GX. 32-2

II

IV. TORQUE CONVERTER OPERATING PRINCIPLE.

1 : Electrovalve
2 : Cooler
3 : Pump
4 : Suction strainer
5 : Converter under pressure

——————► : Circuits under pressure

– – – – – – – ► : Return circuits

Figure I : With gearbox in neutral and engine running

The piston of the slide of electrovalve (1) enables the oil to flow through. This oil will exert a pressure on face « a » of converter plate (5) thus ensuring the disengagement of the clutch.

Figure II : With a gear engaged and engine running

Changing gear entails changing the position of the slide of electrovalve (1). Thereby the oil exerts a pressure on face « b » of converter plate (5) thus ensuring the engagement of the clutch.

I - CHECKING AND ADJUSTING THE GAP BETWEEN THE ELECTROVALVE CONTROL CONTACTS

1. Remove :
- the spare wheel,
- the left heater duct.

2. Uncouple gear control drawing rod (3).

3. Disconnect :
- the cable from the battery negative terminal,
- control wire (4) for the fast idle.

4. Remove :
- rubber clip (2),
- cover (1) from the electrovalve control unit.

5. Check the adjustment of the contact gaps :
Proceed in the same way for each contact.

a) Engage a gear.

> In order to obtain a correct opening of a contact, the corresponding gear must be fully engaged.

b) Check the contact gap corresponding to the gear engaged by using either gauge **A** (dia. = 1.5 mm) inluded in kit **3112-T** or a set of shims.

Contact gap : 1.45 ± 0.2 mm (1st and REVERSE)
1.60 ± 0.2 mm (2nd and 3rd)

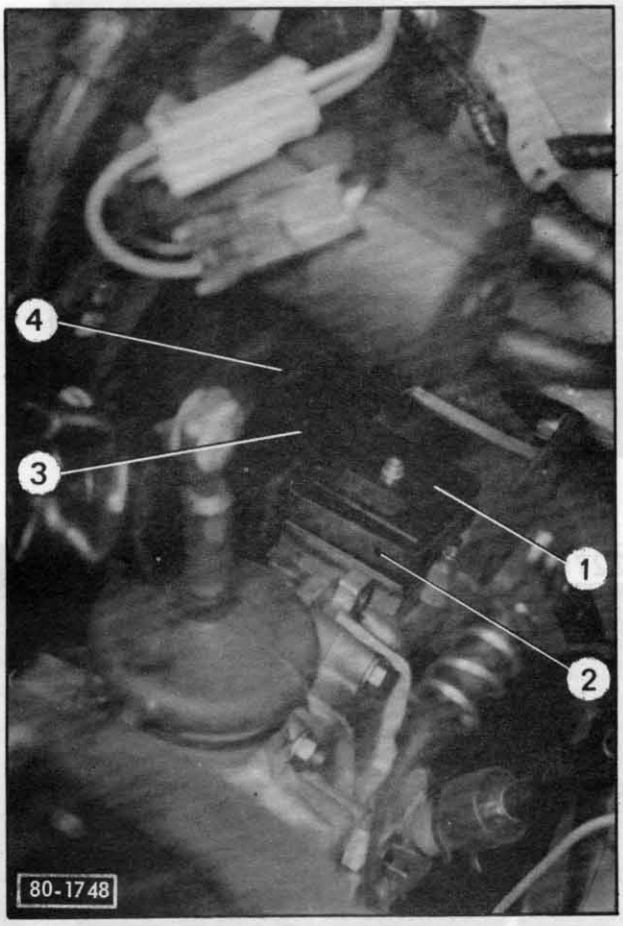
c) Adjust the contact by slackening screw (5) on the fixed contact (3 mm Allen key). **Tighten the screw from 0.35 to 0.4 m.daN.**

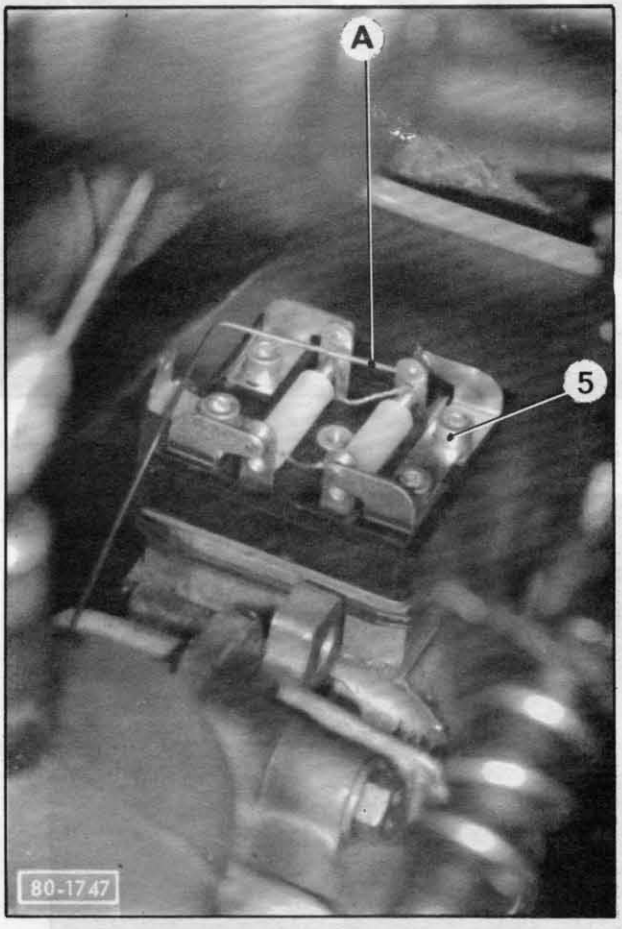
6. Fit :
- cover (1) on the electrovalve control unit,
- rubber clip (2).

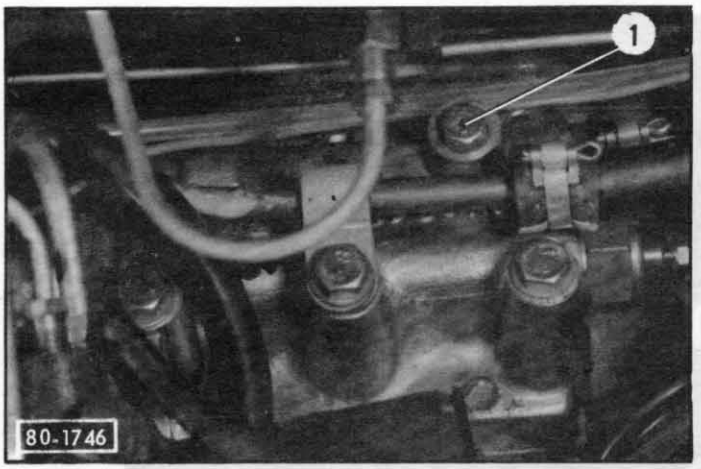
7. Connect :
- control wire (4) on the fast idle,
- the cable of the battery negative terminal.

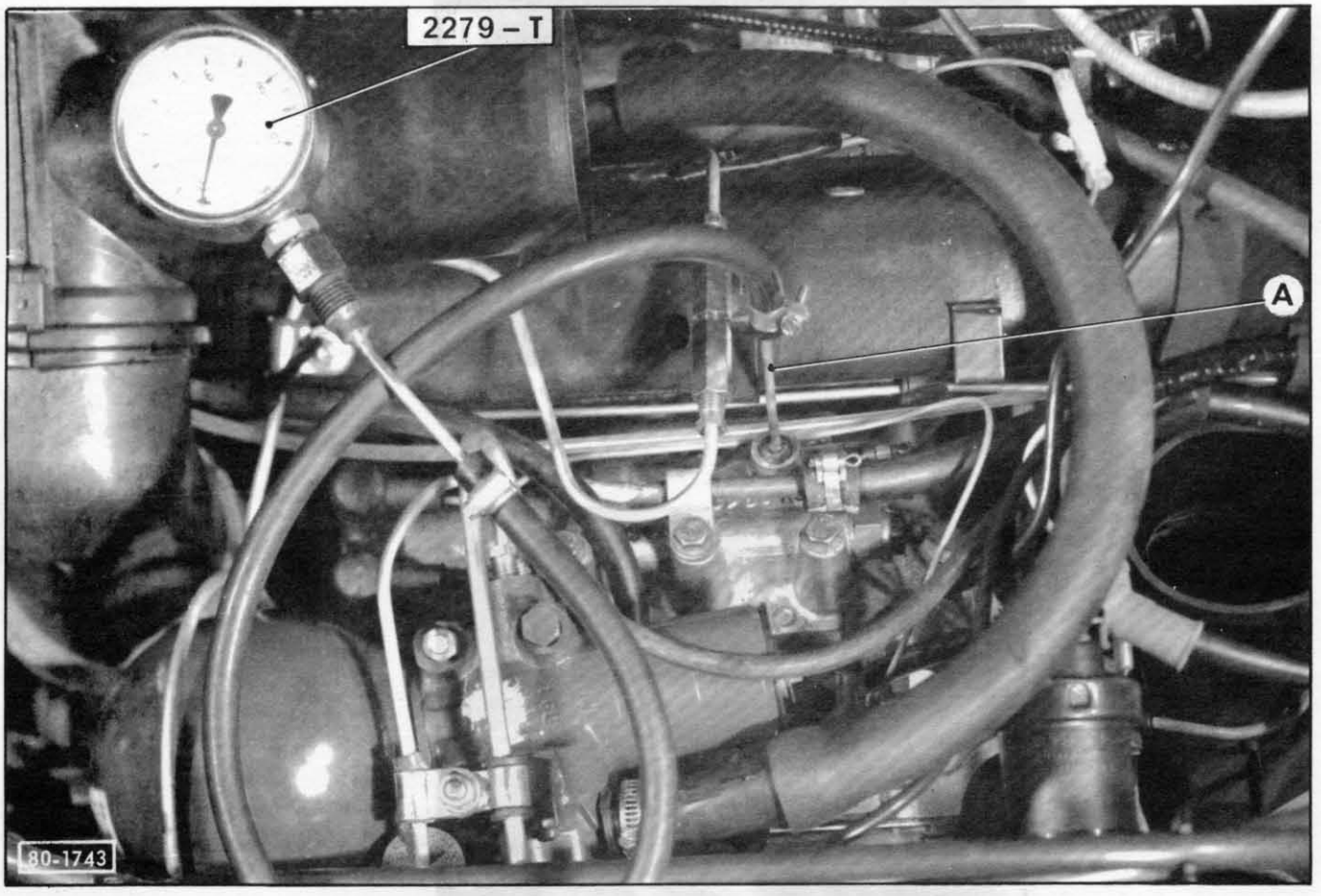
8. Couple gear control drawing rod (3).

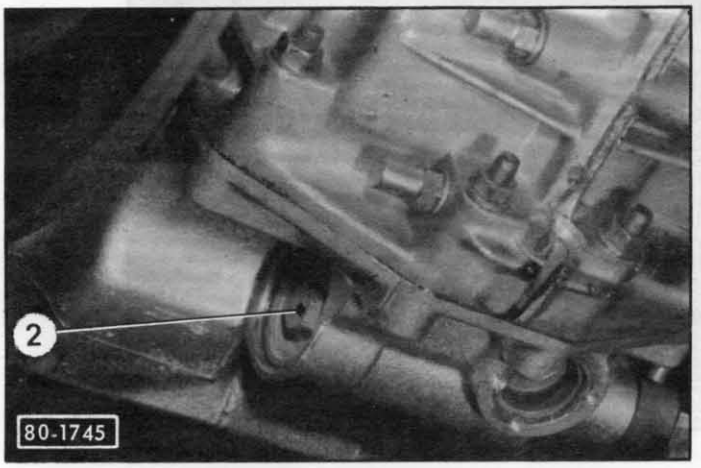
9. Fit :
- the left heater duct,
- the spare wheel.


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II - CHECKING THE PRESSURE IN THE CONVERTER OIL SUPPLY SYSTEM

1. Remove :
- the spare wheel,
- the left heater duct,
- the spare wheel supporting bracket.

2. Remove the distributor plug (1) :
Fit in its place one of the unions **A** of kit 3112-T , choosing the one with the appropriate diameter.

Connect this union to oil-pressure gauge 2279-T *(graduated from 0 to 10 bars).*

> *The corresponding tools of kit MULLER 455 can also be used.*

3. Check the oil-pressure :

a) This operation must be carried out when the **gearbox oil is at a temperature of 70 ± 5° C.**

b) Run the engine **at 5000 ± 100 rpm : the pressure must be between 5.5 and 6.5 bars.**

c) Run the engine **at idle** (850 $^{+50}_{0}$ rpm) : **the pressure must be 4 bars min.**

> If the pressure is incorrect, before carrying out any operation, check the gearbox oil level *(Op. GX.ea. 330-0)* and the cleanliness of suction filter (2) for the converter supply pump.

4. Remove union **A** and oil-pressure gauge 2279-T

5. Fit :
- distributor plug (1),
- the spare wheel supporting bracket,
- the left heater duct,
- the spare wheel.

I - CHARACTERISTICS

1. Gear ratios :

Gear ratios are given for vehicles fitted with 145 SR 15 XZX tyres, for which laden development is 1.89 m.

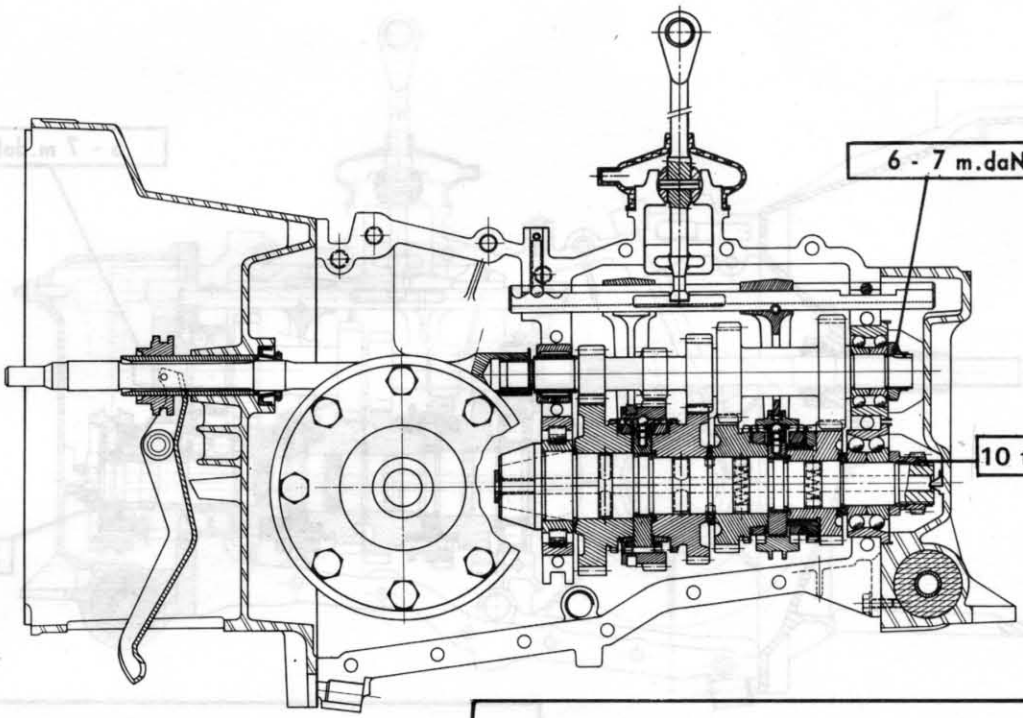
a) 4-speed gearbox : **IDENTIFICATION No. : 465**

Gear	Gearbox ratios	C/W and P	Overall ratios	Road speed at 1000 rpm engine speed kph	mph
1st	(11/42) 3.818 : 1	(8/33) 4.125 : 1	15.75 : 1	7.2	4.47
2nd	(17/39) 2.294 : 1		9.463 : 1	11.983	7.45
3rd	(26/39) 1.5 : 1		6.187 : 1	18.328	11.39
4th	(32/33) 1.031 : 1		4.253 : 1	26.663	16.57
Rev.	(11/23 x 23/46) 4.181 : 1		17.25 : 1	6.573	4.08
Speedometer drive ratio : 6/13 (2.16 : 1)					

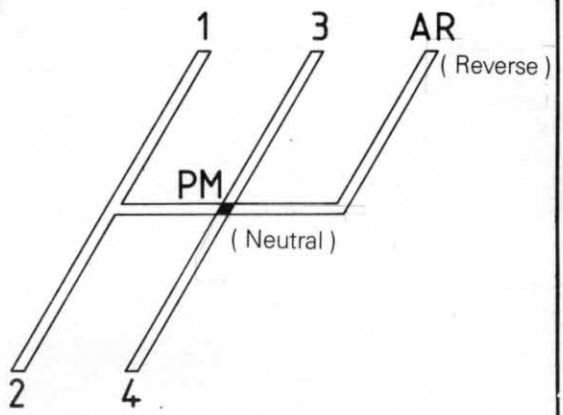
b) 5-speed gearbox (C/W and P : 8/35 (4.375 : 1)) : **IDENTIFICATION No. : 456.**

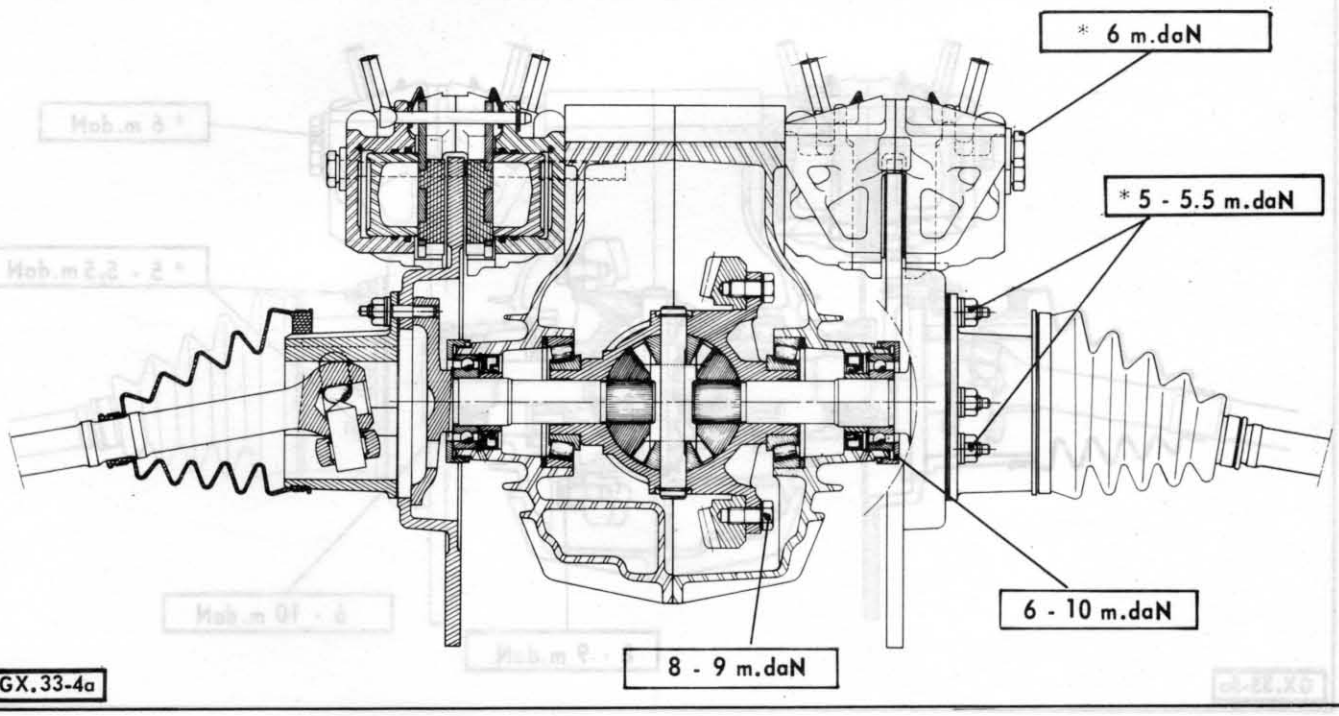
Gear	Gearbox ratios	C/W and P	Overall ratios	Road speed at 1000 rpm engine speed kph	mph
1st	(11/42) 3.818 : 1	(8/35) 4.375 : 1	16.704 : 1	6.788	4.22
2nd	(17/39) 2.294 : 1		10.036 : 1	11.299	7.02
3rd	(26/39) 1.5 : 1		6.562 : 1	17.281	10.74
4th	(30/34) 1.133 : 1		4.958 : 1	22.872	14.21
5th	(34/31) 0.911 : 1		3.988 : 1	28.435	17.67
Rev.	(11/23 x 23/46) 4.181 : 1		18.295 : 1	6.198	3.85
Speedometer drive ratio : 12/23 (1.916 : 1)					

GX.33-10



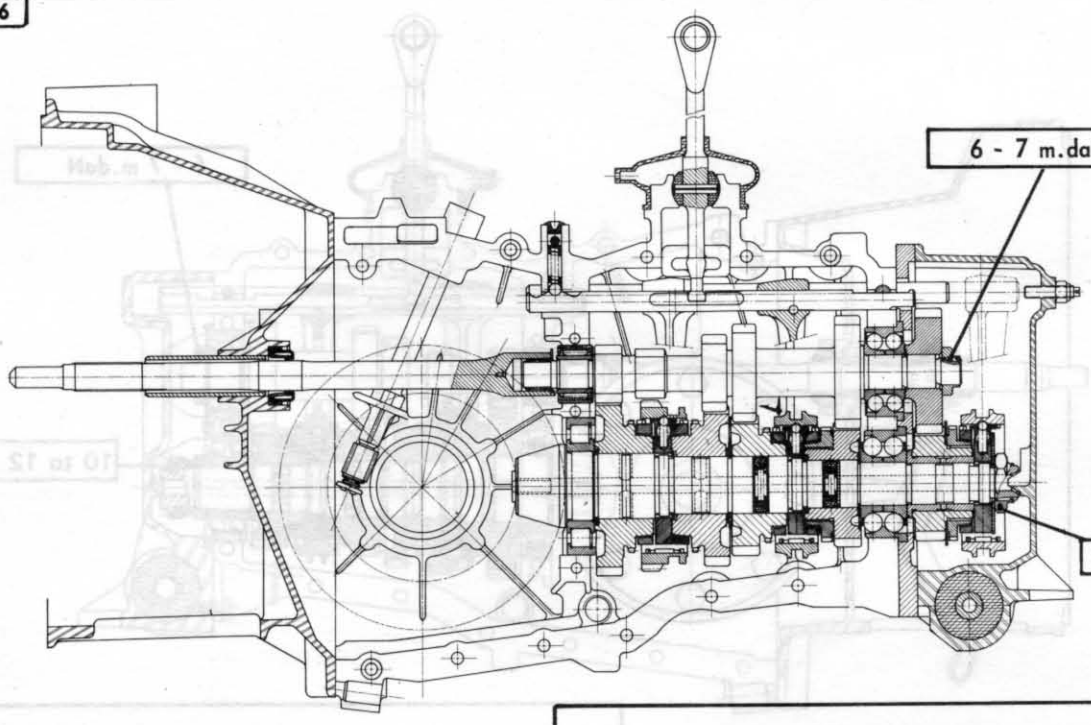
GX. 33-1



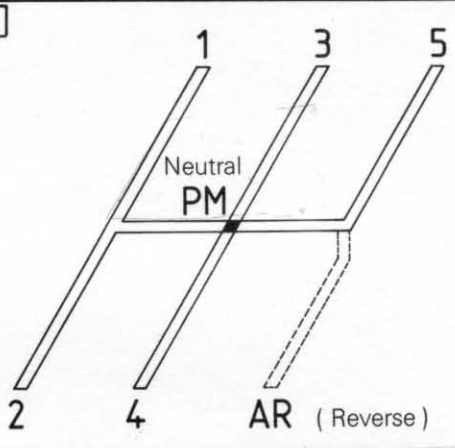


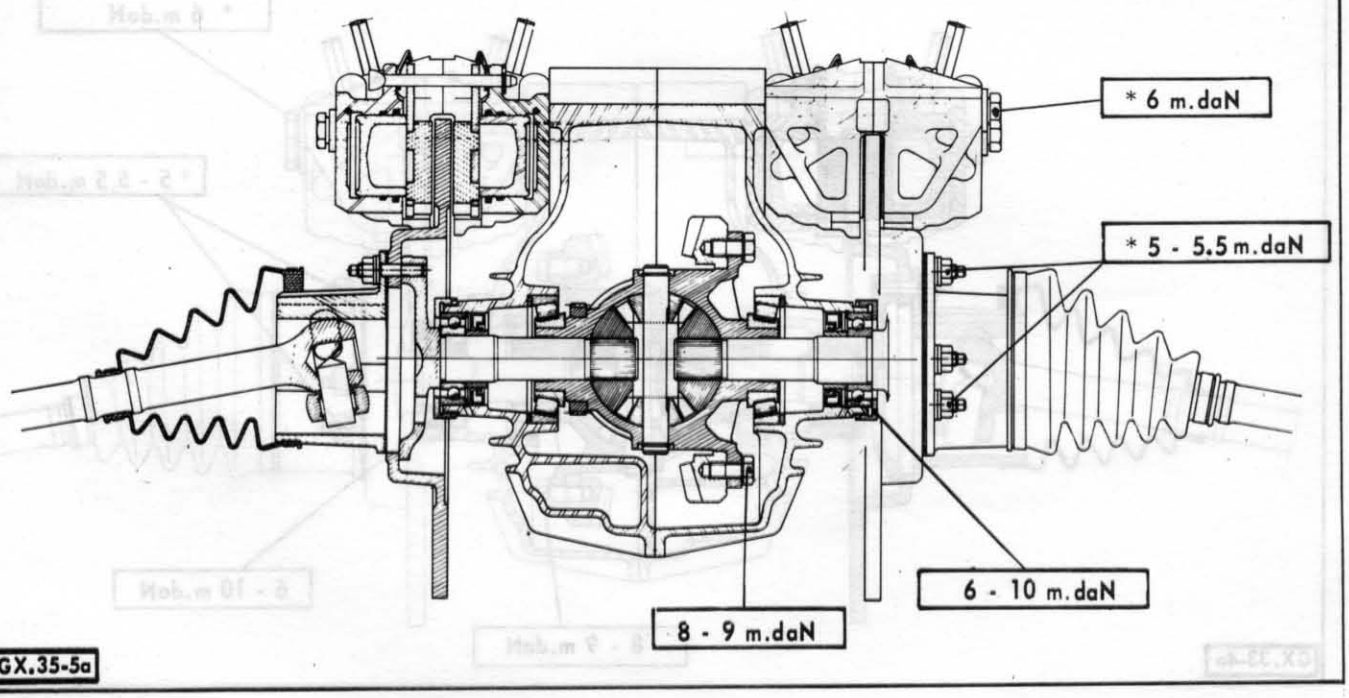
GX.33-4a

GX. 33-6



GX. 33-3





GX.35-5a

c) 5-speed gearbox (C/W and P : 8/33 (4.125 : 1) : **IDENTIFICATION No. : 453.**

Gear	Gearbox ratios	C/W and P	Overall ratios	Road speed at 1000 rpm engine speed kph	mph
1st	(11/42) 3.818 : 1	(8/33) 4.125 : 1	15.75 : 1	7.2	4.47
2nd	(17/39) 2.294 : 1		9.463 : 1	11.983	7.45
3rd	(26/39) 1.5 : 1		6.187 : 1	18.328	11.39
4th	(30/34) 1.133 : 1		4.675 : 1	24.256	15.07
5th	(34/31) 0.911 : 1		3.761 : 1	30.151	18.74
Rev.	(11/23 x 23/46) 4.181 : 1		17.25 : 1	6.573	4.08
Speedometer drive ratio : 12/23 (1.916 : 1)					

2. Lubrication :

- Oil : TOTAL EP 80 W/90 W (G.B. only) - TOTAL EP 80 W/85 W (Europe except G.B.) - TOTAL EP 80 W (Europe except G.B. and France)
- Capacity : *4-speed box :* approx. 1.4 litres
  5-speed box : approx. 1.5 litres

3. Gearchange control :

- Floor-mounted gear lever
- 5-speed gearbox : *(7/81 ⟶).*
- Elimination of security device for shifting to reverse on console at « a ».
- Gear control lever is now same as on 4-speed gearbox.

II - SPECIAL FEATURES

1. Adjustments :

- End-float of 1st/2nd synchromesh hub : ..... max. 0.05 mm
- End float of 3rd/4th synchromesh hub : ..... max. 0.05 mm
- End-float of half-washers between 2nd and 3rd gear pinions : ..... max. 0.05 mm
- Backlash on crownwheel and pinion : ..... 0.13 to 0.27 mm
- Total pre-load on differential ball bearings : ..... 0.05 mm

III - GEAR SEQUENCE

1. 4-speed gearbox :

Fig. 1 : 1st gear
Fig. 2 : 2nd gear
Fig. 3 : 3rd gear
Fig. 4 : 4th gear
Fig. 5 : Reverse

The primary shaft pinions are constantly engaged with the driven pinions.

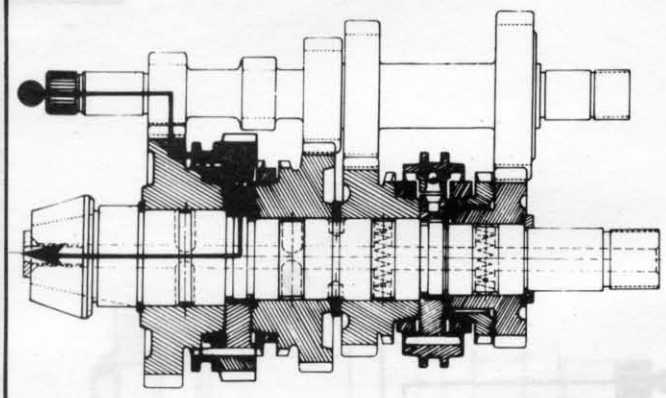
2. Tightening torques :

- Reverse gear reversing lever shaft : ..... **2.7 to 3 m.daN**
- Drain and filler plugs : ..... **3.5 to 4.5 m.daN**
- Reversing lamp switch : ..... **1.2 to 1.5 m.daN**
- Rear cover screws : ..... **2.5 to 3 m.daN**
- Gearbox half-casing assembly nuts and screws : ..... **1.3 to 1.5 m.daN**
- Clutch housing assembly screws : ..... **1.3 to 1.5 m.daN**
- Gearbox outlet attachment stud insertion : ..... **0.4 m.daN**
- Screws for lower rear cover (2) : ..... **0.4 to 0.5 m.daN**

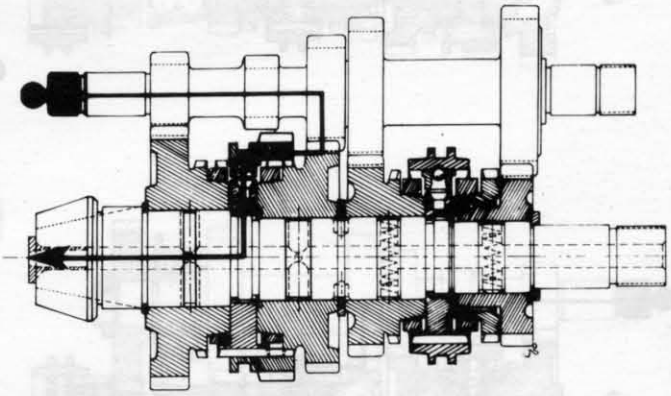
3. Seal-tightness :

Coat the sealing surfaces of the half-casings, clutch housing and rear cover, as well as the screw heads and the nuts with *LOCTITE FORMETANCH.*

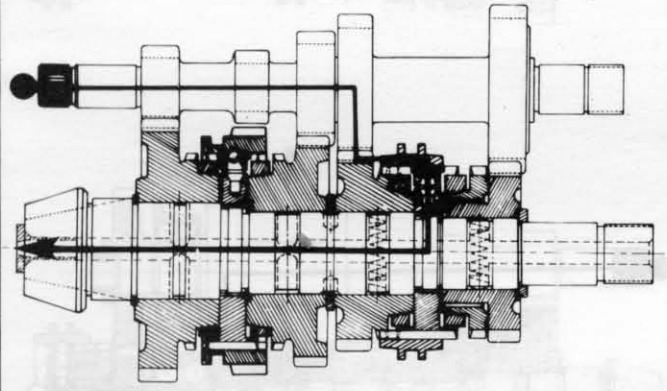
GX. 33-9



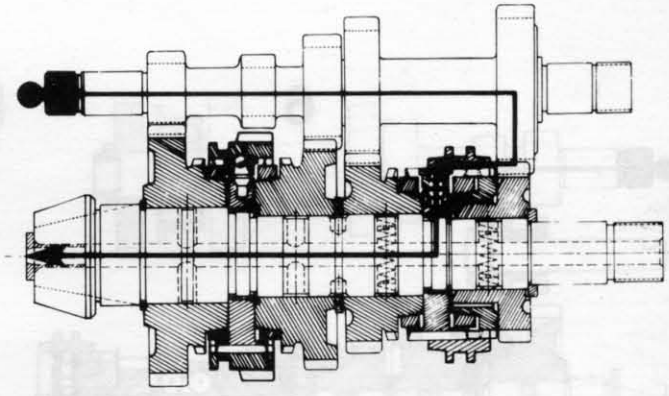
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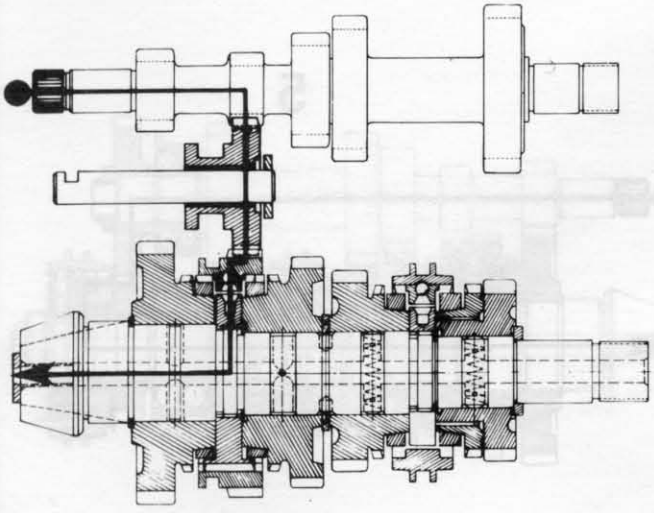
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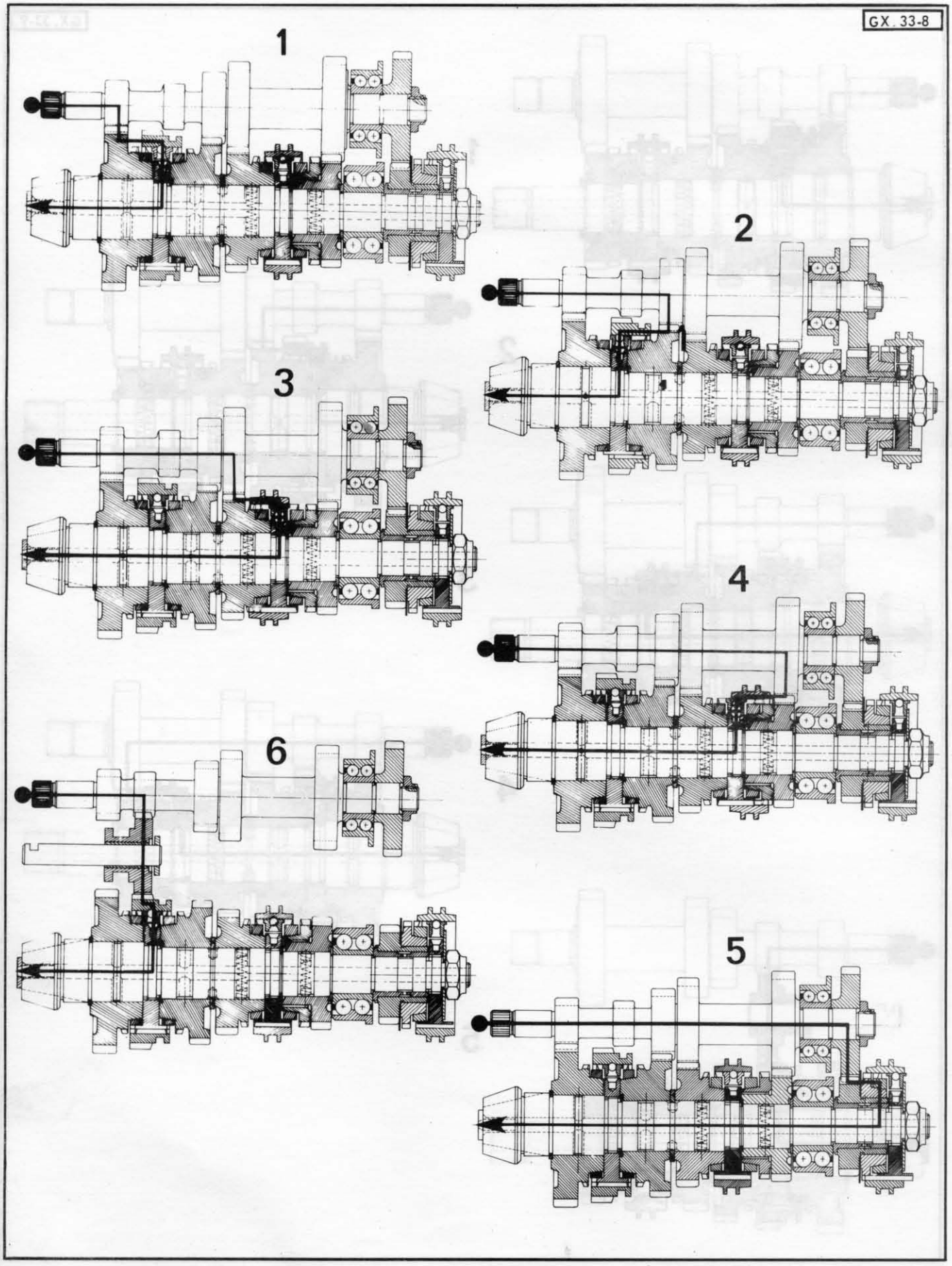
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GX. 33-8
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1. 5-speed gearbox :

Fig. 1 : 1st gear
Fig. 2 : 2nd gear
Fig. 3 : 3rd gear
Fig. 4 : 4th gear
Fig. 5 : 5th gear
Fig. 6 : Reverse

The primary shaft pinions are constantly engaged with the driven pinions.

2. Tightening torques :

- Reverse gear reversing lever shaft : ..... **2.7 to 3 m.daN**
- Drain and filler plugs : ..... **3.5 to 4.5 m.daN**
- Reversing lamp switch : ..... **1.2 to 1.5 m.daN**
- Rear cover screws : ..... **1.9 to 2.3 m.daN**
- Gearbox half-casing assembly nuts and screws : ..... **1.3 to 1.5 m.daN**
- Clutch housing assembly screws : ..... **1.3 to 1.5 m.daN**
- Gearbox outlet attachment stud insertion : ..... **0.4 m.daN**
- Bearing thrust plate attachment screws : ..... **2.5 to 3 m.daN**
- Lower rear cover screws (2) : ..... **0.4 to 0.5 m.daN**

3. Seal-tightness :

Coat the sealing surfaces of the half-casings, clutch housing and rear cover, as well as the screw heads and the nuts with *LOCTITE FORMETANCH.*

GEARBOX WITH TORQUE CONVERTER

I - CHARACTERISTICS

1. Gear ratios:

Gear ratios are given for vehicles fitted with 145 SR 15 XZX tyres, for which laden development is 1.89 m.

3-speed gearbox { **IDENTIFICATION No. : 457**
IDENTIFICATION No. : 462

Gear	Gearbox ratios	C/W and P	Overall ratios	Road speed at 1000 rpm engine speed kph	mph
1st	(15/41) 2.733 : 1		11.274: 1	10.058	6.251
2nd	(24/41) 1.708 : 1	(8/33)	7.046 : 1	16.094	10.002
3rd	(32/33) 1.031 : 1	4.125 : 1	4.253 : 1	26.663	16.571
Rev	(14/19 x 19/35) 2.499:1		10.312: 1	10.996	6.834
Speedometer drive ratio: 6/13 (2.16 : 1)					

2. Lubrication:

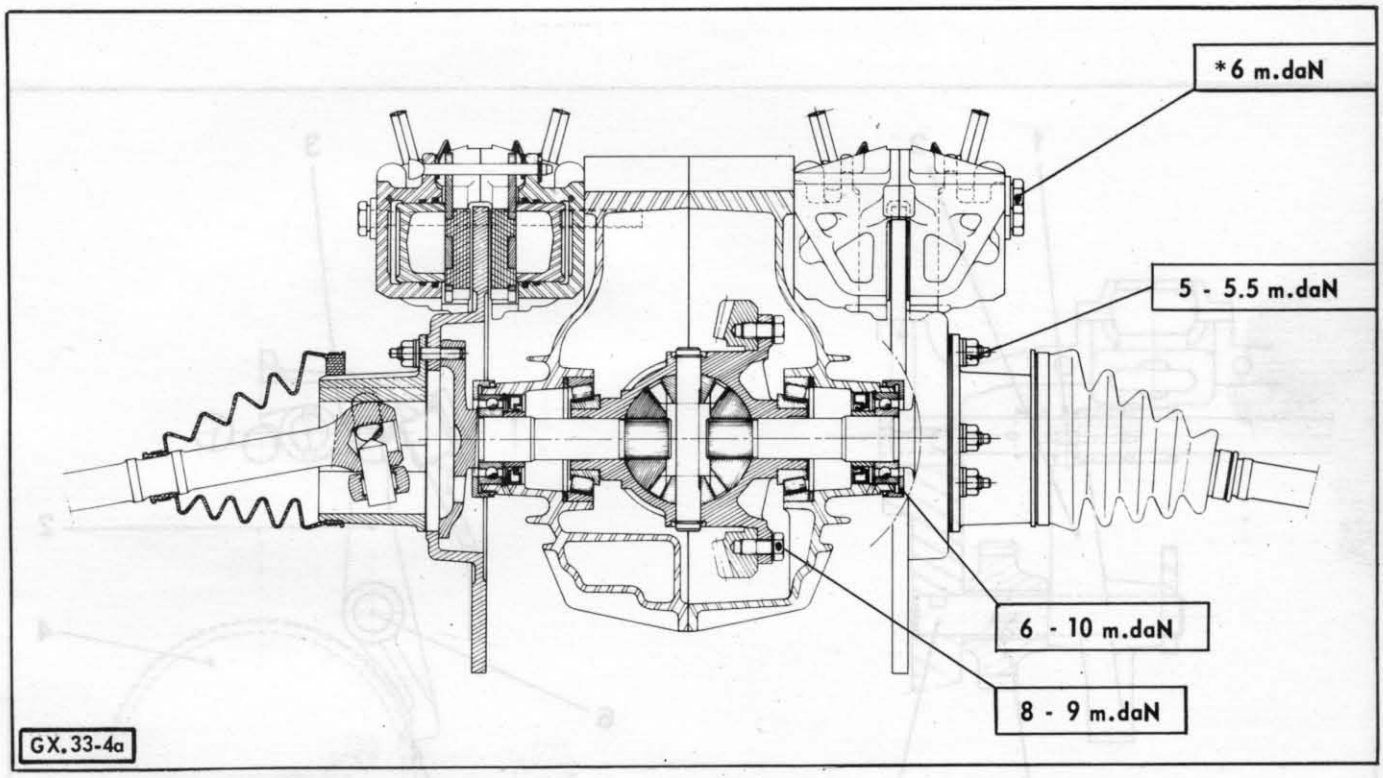
- Oil: ..... TOTAL "Fluid T' **EXCLUSIVELY**
- Total capacity (including converter) : ..... approx. 4 litres
- Capacity after draining: ..... approx. 1.4 litres

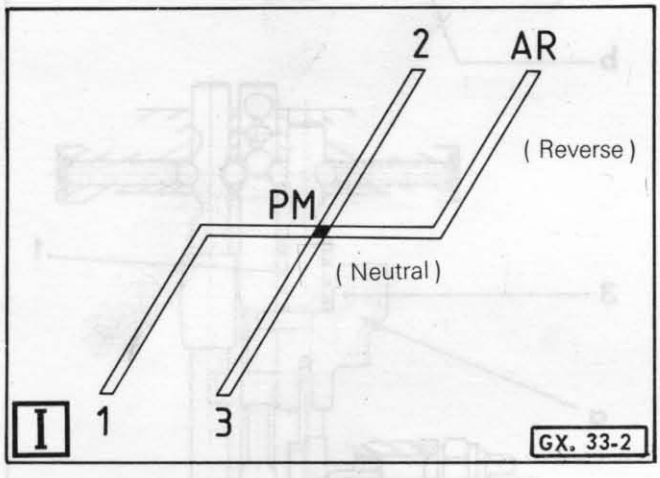
3. Gear change control:

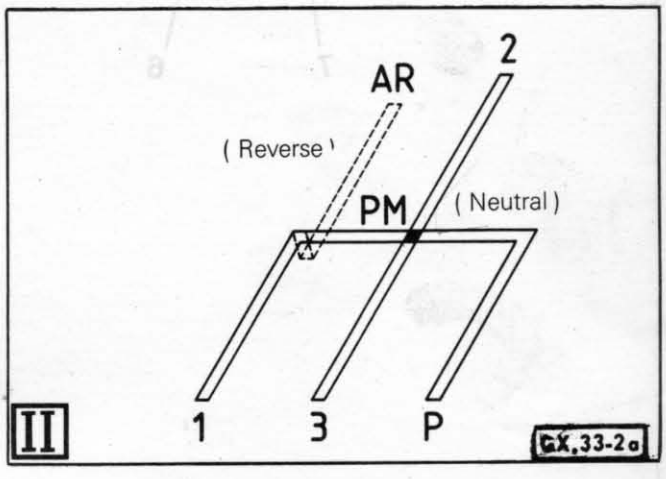
- Floor-mounted gear lever

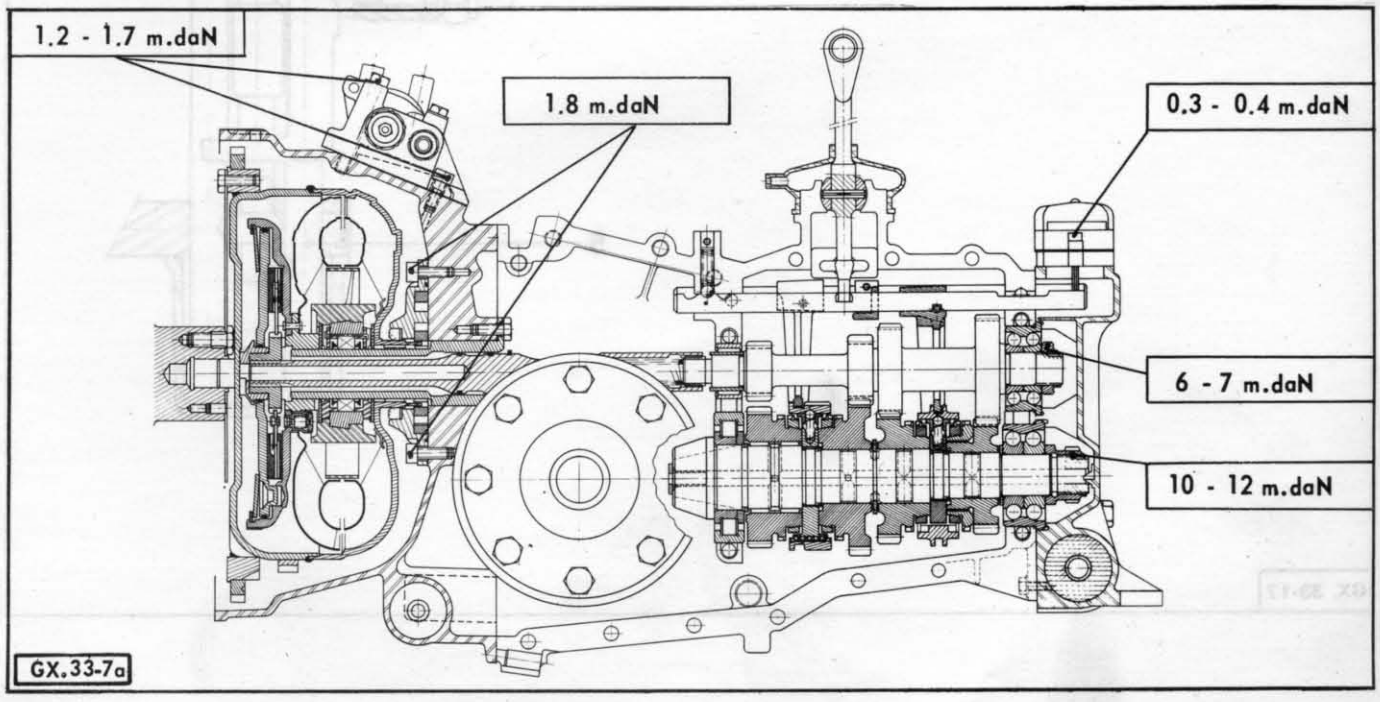
I: Gear diagram **until March 1980** (with no parking lock)

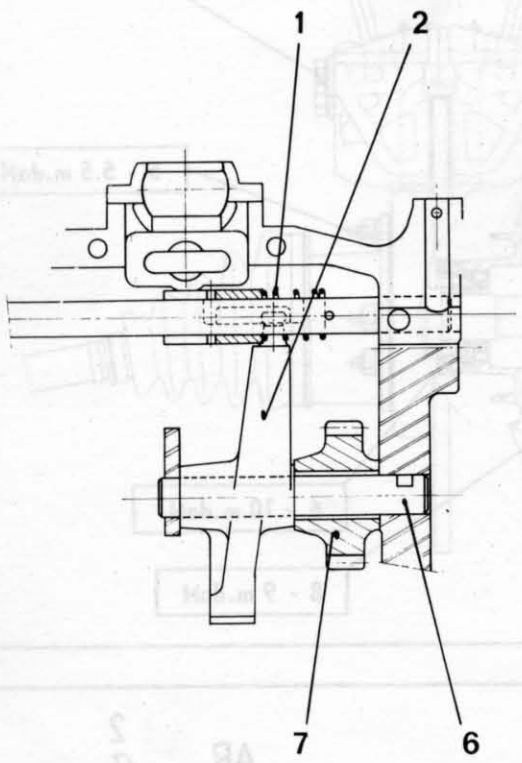
II: Gear diagram **from March 1980** (with a parking lock)

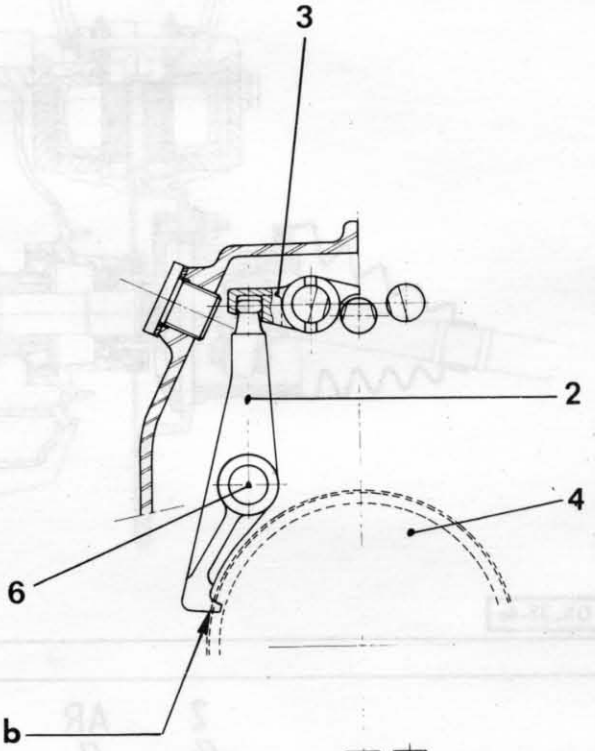

*6 m.daN
5 - 5.5 m.daN
6 - 10 m.daN
8 - 9 m.daN
GX.33-4a

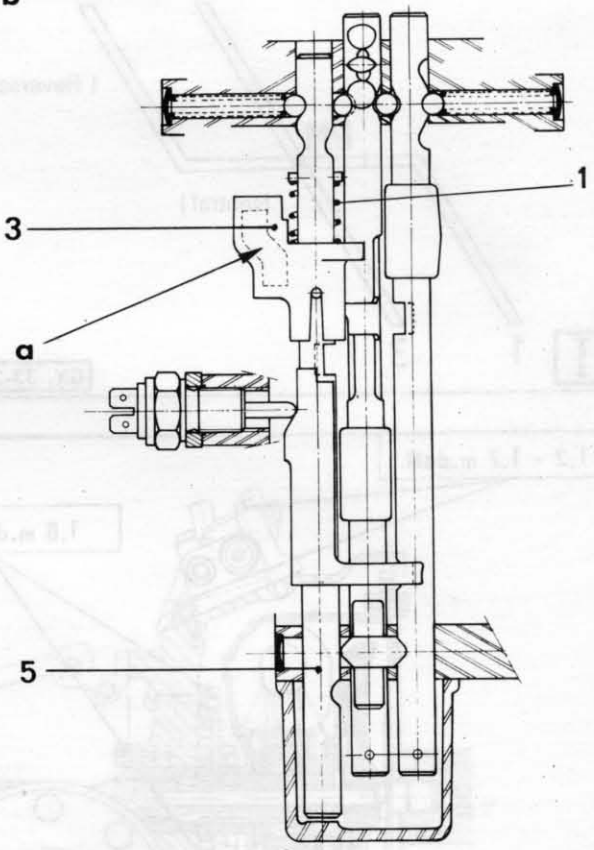

2
AR
(Reverse)
PM
(Neutral)
I
1
3
GX. 33-2


AR
2
(Reverse)
PM
(Neutral)
II
1
3
P
GX.33-2a


1.2 - 1.7 m.daN
1.8 m.daN
0.3 - 0.4 m.daN
6 - 7 m.daN
10 - 12 m.daN
GX.33-7a







GX. 33-17

II - SPECIAL FEATURES

1. Adjustments :

- End float of 1st/Rev synchromesh hub : ..... max. 0.05 mm
- End float of 2nd/3rd synchromesh hub : ..... max. 0.05 mm
- End float of half-washers between 1st and 2nd gear pinions : ..... max. 0.05 mm
- Backlash for crownwheel and pinion : ..... 0.13 to 0.27 mm
- Total pre-load on differential bearings : ..... 0.05 mm
- Gap between the electrovalve control contacts { 1st and Reverse : ..... 1.45 ± 0.2 mm / 2nd and 3rd : ..... 1.60 ± 0.2 mm
- Clutch contactor drive pin extension beyond shaft :
  1st/REV shaft : ..... $14.4\ ^{+1}_{0}$ mm
  2nd/3rd shaft : ..... $18.4\ ^{+1}_{0}$ mm

2. Operation of parking lock device :

As from March 1980, this device is fitted on all gearboxes with a torque converter.

The figures on page 4 represent the device in « Park » position.

Acting upon gear change lever as shown in gear diagram II on page 3, entails parking lock shaft (5) to move backwards. This, in turns, drives along parking lock cam (3).

Profile « a » of cam (3) causes parking lock (2) to rotate around shaft (6) of reverse gear final drive (7).

End « b » of parking lock (2) engages with the exterior teeth of 1st-Rev sliding gear (4).

If parking lock (2) bumps against a tooth of sliding gear (4), the pushing pressure exerted by spring (1) which is then kept compressed, will be strong enough to engage the lock correctly as soon as sliding gear (4) will rotate.

3. Tightening torque values :

- Reverse gear reversing lever shaft : ..... **2.7 to 3 m.daN**
- Drain plug : ..... **3.5 to 4.5 m.daN**
- Filling plug : ..... **3.5 to 4.5 m.daN**
- Reversing lamp switch : ..... **1.2 to 1.5 m.daN**
- Gearbox half-casing assembly nuts and screws : ..... **1.3 to 1.5 m.daN**
- Clutch housing assembly nuts : ..... **1.3 to 1.5 m.daN**
- Rear cover screws : ..... **2.5 to 3 m.daN**
- Pipe coupling screws : ..... **3.5 to 4.5 m.daN**
- Strainer plug : ..... **1 to 1.5 m.daN**
- Contactor attachment screws : ..... **0.3 to 0.4 m.daN**
- Drive shafts anchor stud insertion : ..... **0.4 m.daN**

4. Seal-tightness :

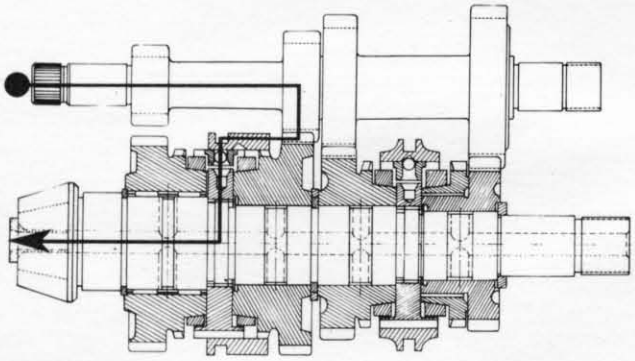
Coat the sealing surfaces of the half-casings, clutch casing,rear cover, screw heads and nuts with *LOCTITE FORMETANCH.*

III - GEAR SEQUENCE

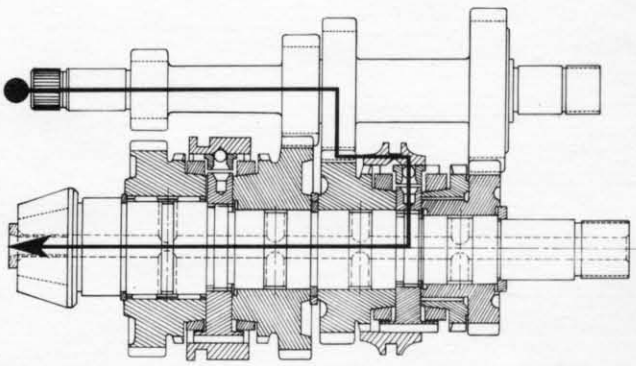
Fig. 1 : 1st gear
Fig. 2 : 2nd gear
Fig. 3 : 3rd gear
Fig. 4 : Reverse

The primary shaft pinions are constantly engaged with the driven pinions.

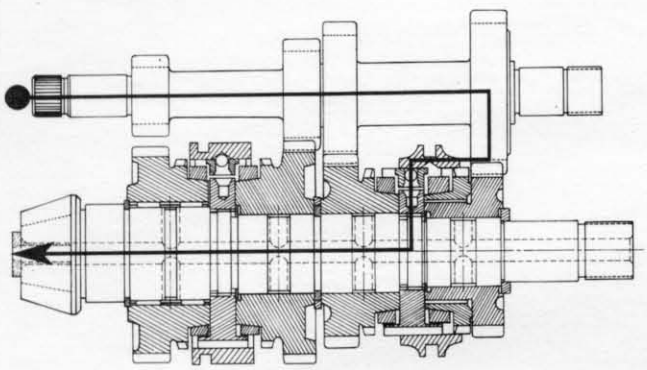
GX. 33-2 a



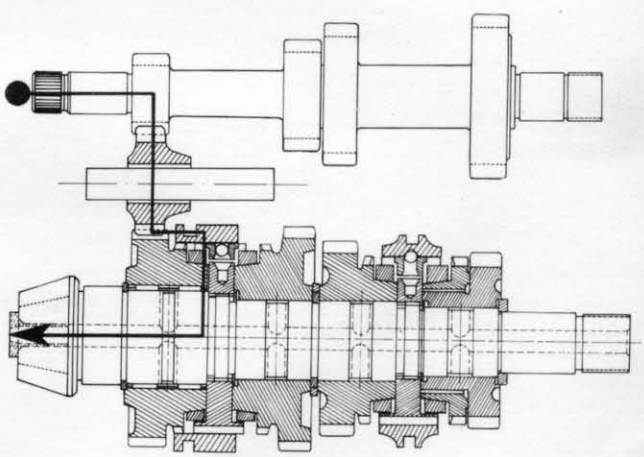
1



2



3



4

DRAINING AND FILLING UP A GEARBOX AND A TORQUE CONVERTER

1. Set the vehicle on a pit or a car lift.

2. Remove :
- the spare wheel,
- draining plug (1),
- level plug (2),
- reversing lamp switch (3).

3. Filling :

USE « TOTAL FLUIDE T » OIL EXCLUSIVELY.
USING ANY OTHER OIL WILL RUIN THE CLUTCH AND THUS, THE CONVERTER.

- Fit drain plug (1).
  Tightening torque : 3.5 to 4.5 m.daN.
- Fill up the gearbox through the hole of reversing lamp switch (3) *(capacity : 1.4 litres approx.)*.
- Fit level plug (2) and reversing lamp switch (3) without tightening them.

4. Top up the gearbox oil :

In order to obtain a correct level proceed in the following way :

a) **Wedge the front wheels and apply the hand-brake (very important).**

b) Run the engine at idle and engage a gear.

Slightly move the gear change lever in order to energize the electrovalve controlling the clutch *(a snapping noise indicates that the electrovalve is energized)*.

c) Repeat the operation a dozen times.

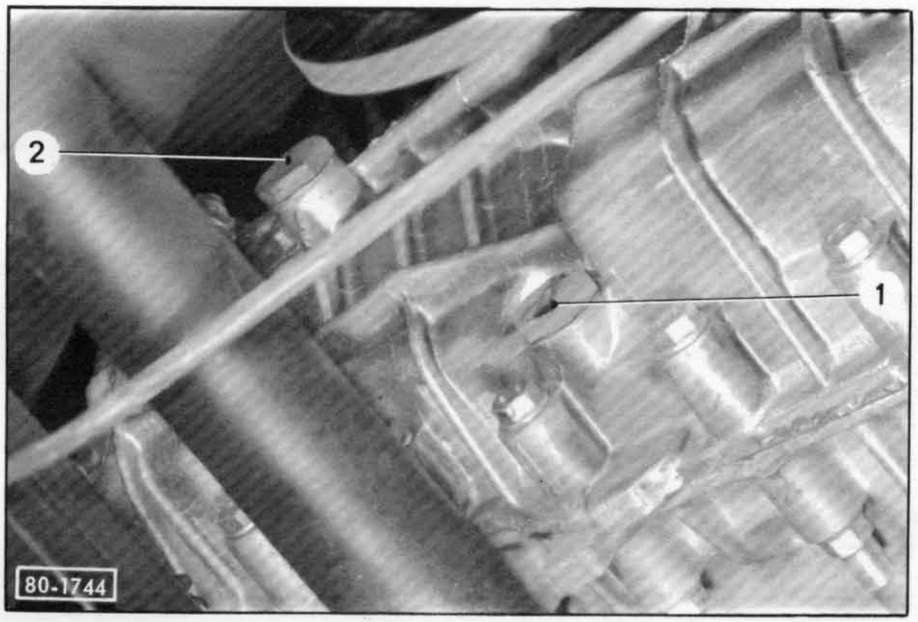
d) With the engine running at idle and a gear engaged, remove level plug (2) and reversing lamp switch (3) so as to top up the gearbox.

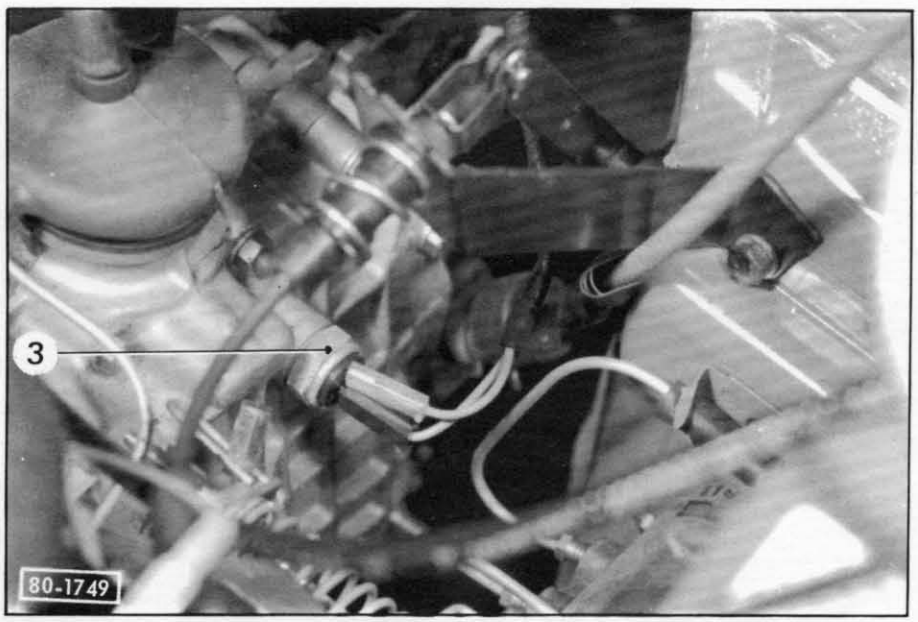
e) Fit level plug (2).
Tightening torque : 3.5 to 4.5 m.daN.
Fit reversing lamp switch (3).
Tightening torque : 1.2 to 1.5 m.daN.

NOTE : The difference in oil level when the gearbox is « cold » and when it is « warm » is 0.2 litres approx.

Thus, when checking the level on a « warm » gearbox, with engine running, some oil may flow out : *do not top up afterwards.*

5. Fit the spare wheel.


2
1
80-1744


3
80-1749

CHARACTERISTICS

- Tri-axe joint at gearbox end.
- Constant velocity ball joint at wheel end.

SPECIAL FEATURES

Lubrication :
- Grease : GS 245 MO *(molybdenum disulfide),* sold with drive shaft repair kit.
  R.P. reference : 75 530 215.

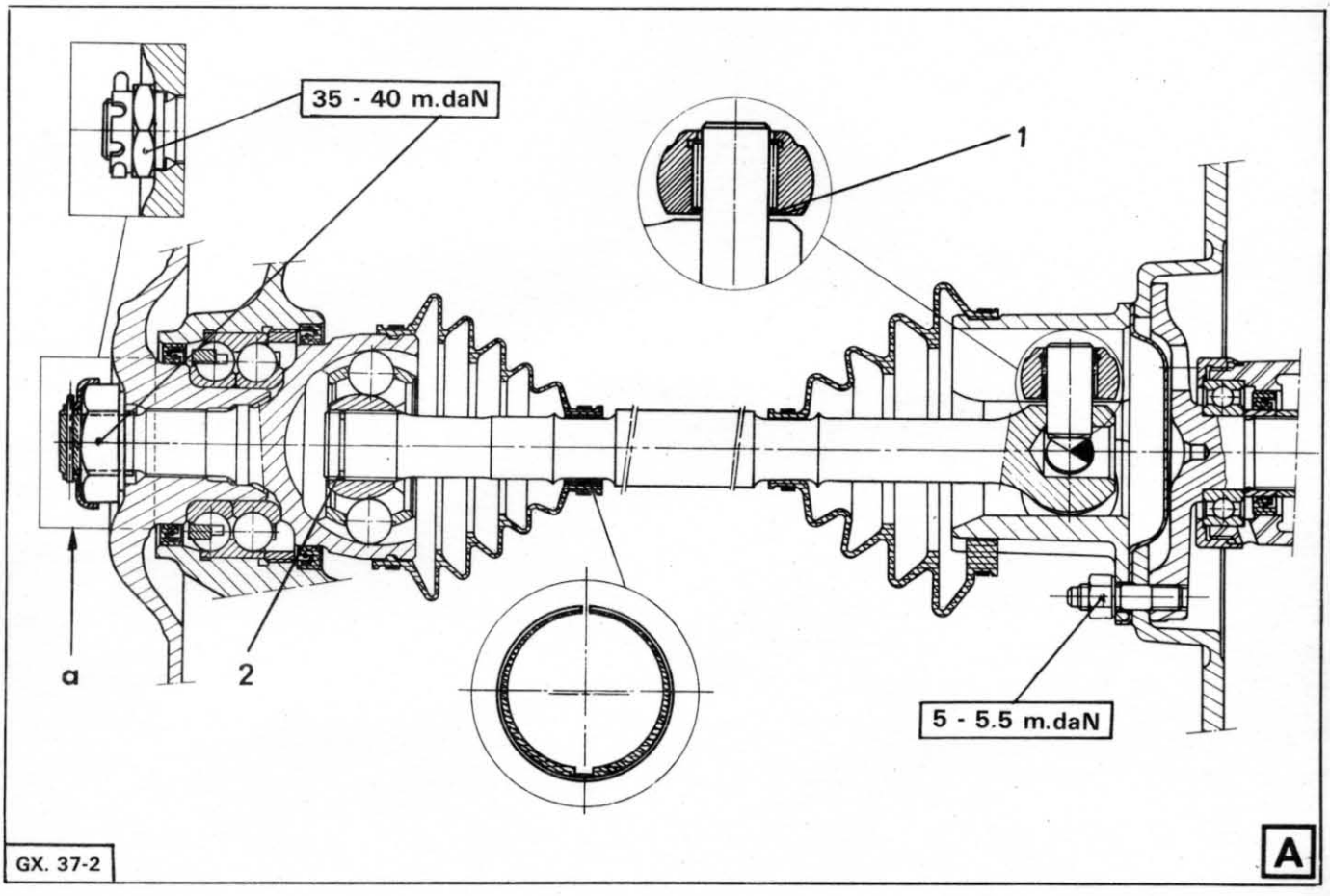
Mandatory tightening torque values (torque spanner) : **Torque in m.daN**

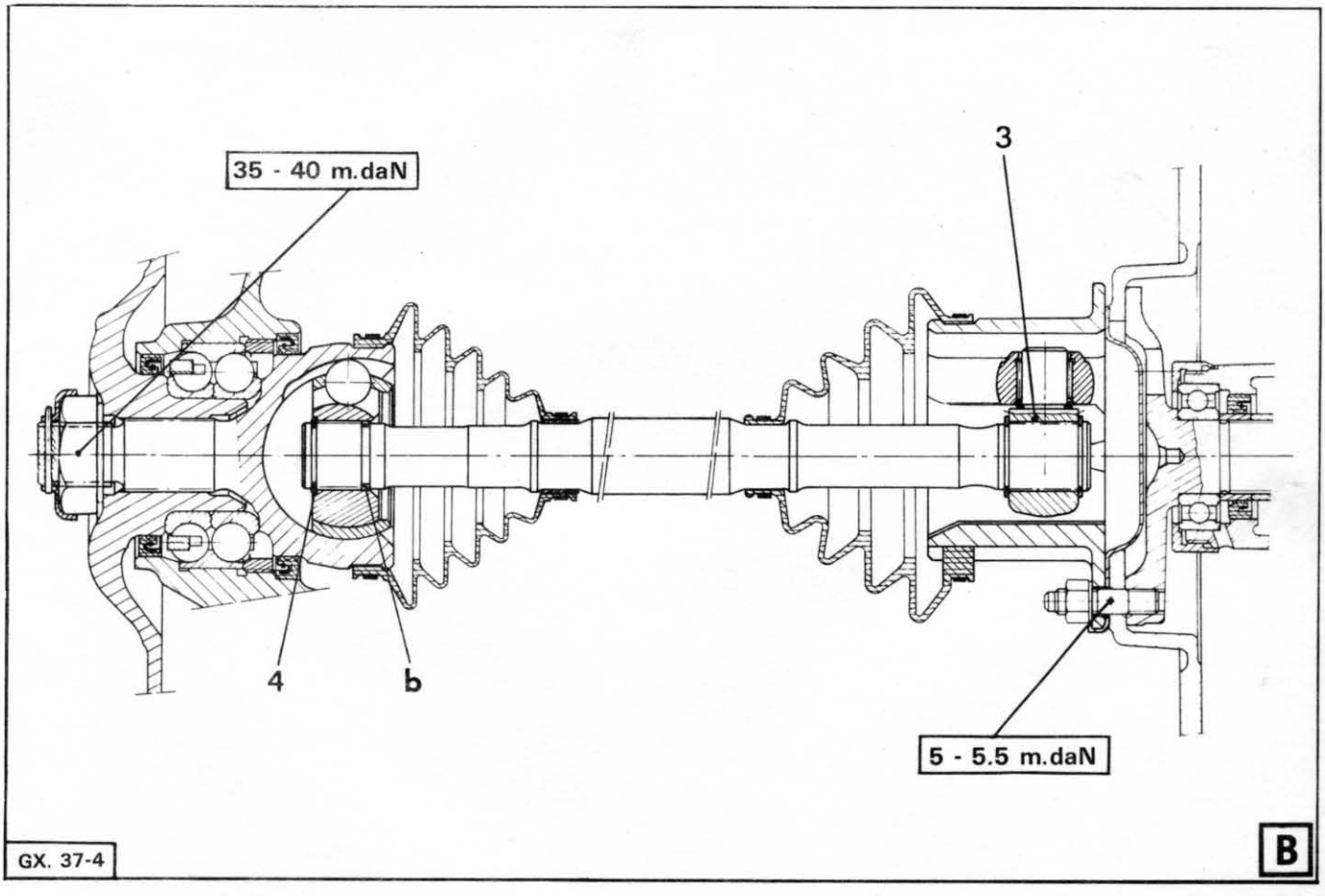
- Drive shaft/hub anchor nut : Two types of fitting (see diagram **A**) : ..... **35 to 40**
  (2/83 ⟶) : Fitting (a) : R.P. No. 2291.
- Drive shaft/gearbox outlet attachment nuts and screws : ..... **5 to 5.5**

- Needle retainer washer (1) must be fitted at shaft end

1st Possibility : Diagram **A.**
- At gearbox end :
  The three axles are welded on the driveshaft.
- At wheel end :
  A stop-ring (2) prevents the stub from sliding.

2nd Possibility : Diagram **B.**
- At gearbox end :
  Tri-axle (3) is removable.
- At wheel end :
  Shoulder « b » and stop-ring (4) prevents the stub from sliding.


35 - 40 m.daN
1
a
2
5 - 5.5 m.daN
GX. 37-2
A


35 - 40 m.daN
3
4
b
5 - 5.5 m.daN
GX. 37-4
B

I. CHARACTERISTICS

1. High-pressure pump :

Single-cylinder pump, driven by connecting-rod and eccentric machined on oil pump shaft.

- Pump speed/engine speed ratio : 1/2
- Piston diameter : ..... 15 mm
- Piston stroke : ..... 10 ± 0.05 mm
- Output per cycle at engine speed 500 rpm (175 bar load, type LHM fluid at 60° C)0.9 cc min.
- Max. reservoir capacity : ..... 3.3 litres
- Suction pipe orientation *(see sketch)*

2. Pressure regulator with pilot slide-valve :

- Cut-in pressure : ..... 145 ± 5 bar
- Cut-out pressure : ..... 170 ± 5 bar

3. Main accumulator :

- Capacity : ..... 0.4 litre
- Pressure setting : ..... 62^{+2}_{-32} bar

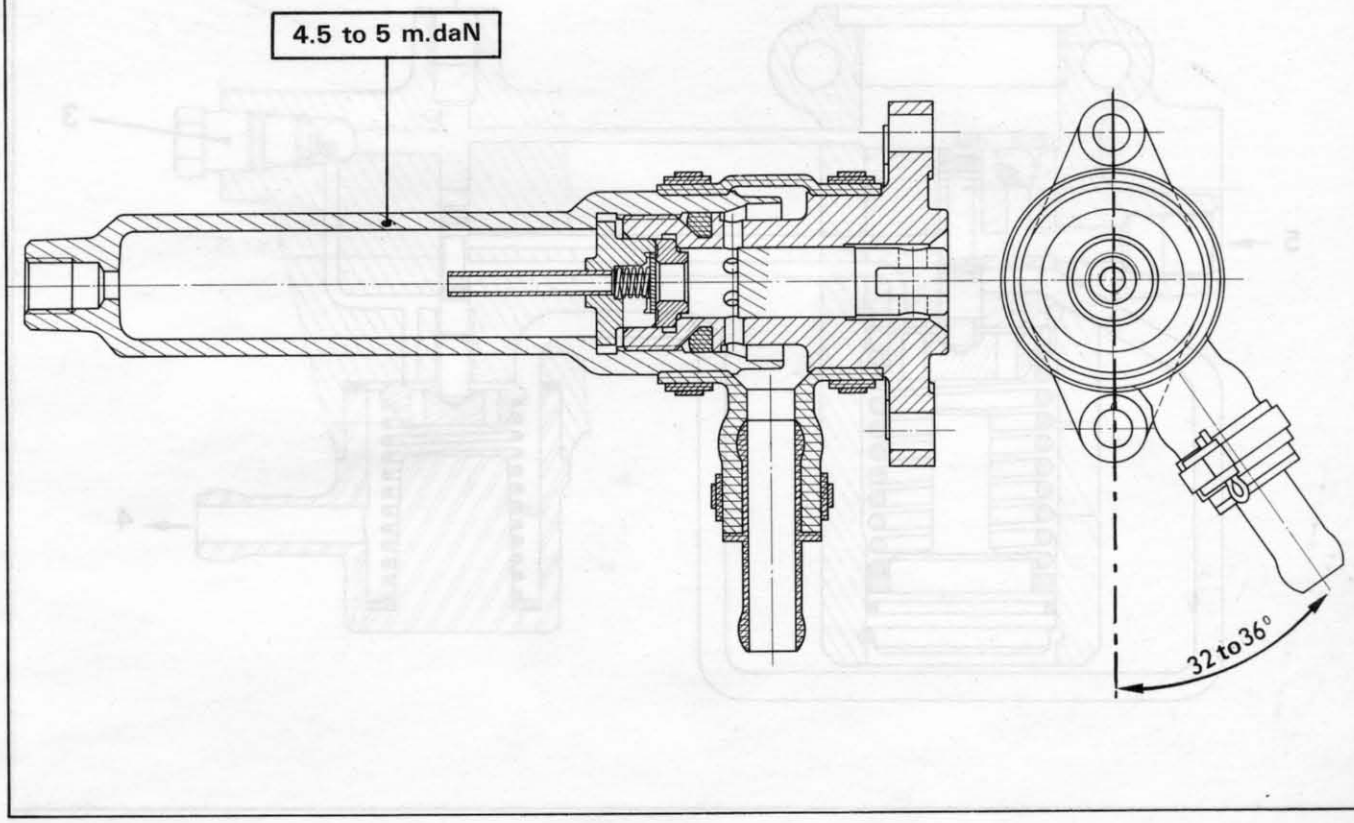
4. Pressure switch :

- Pressure setting : ..... 75 to 95 bar

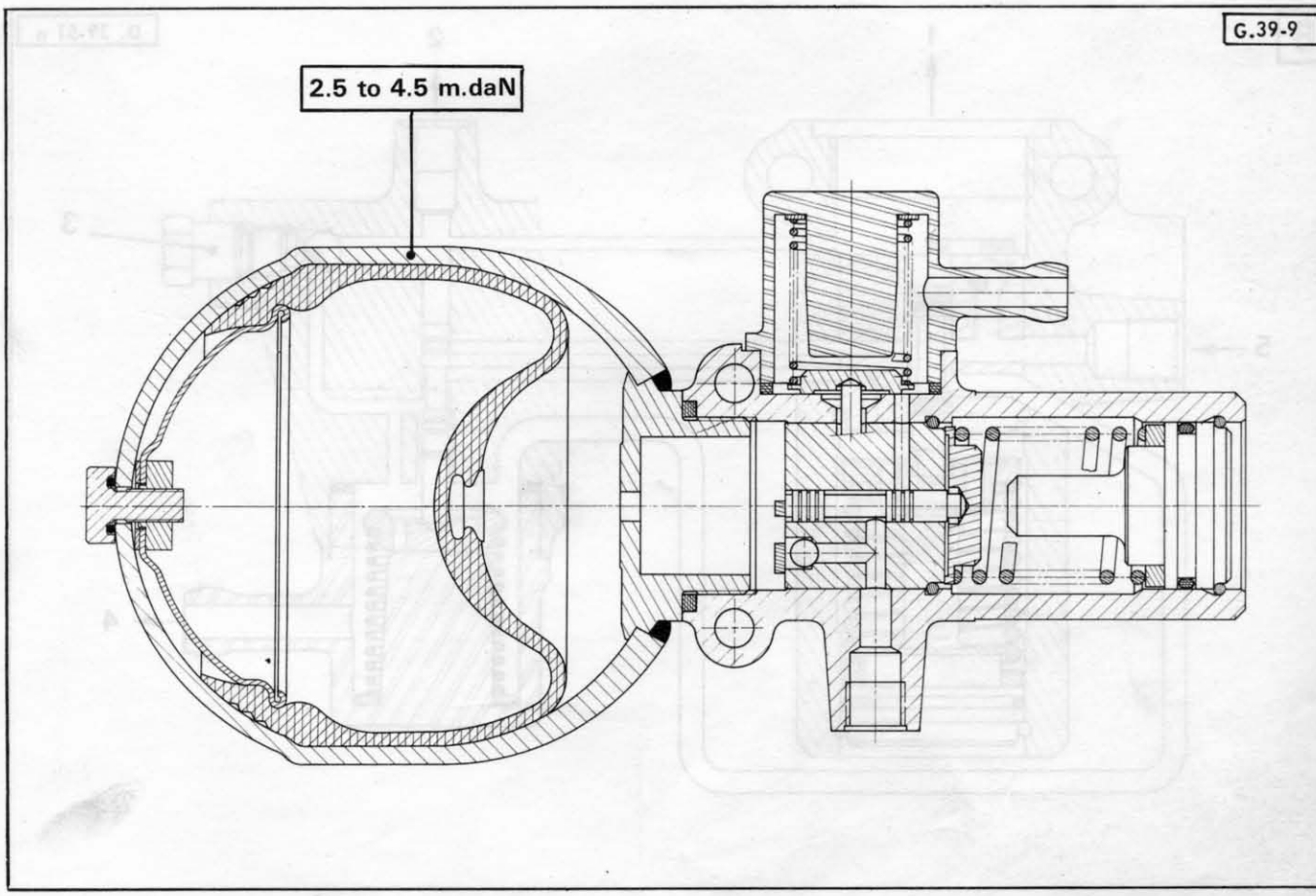
5. Safety valve :

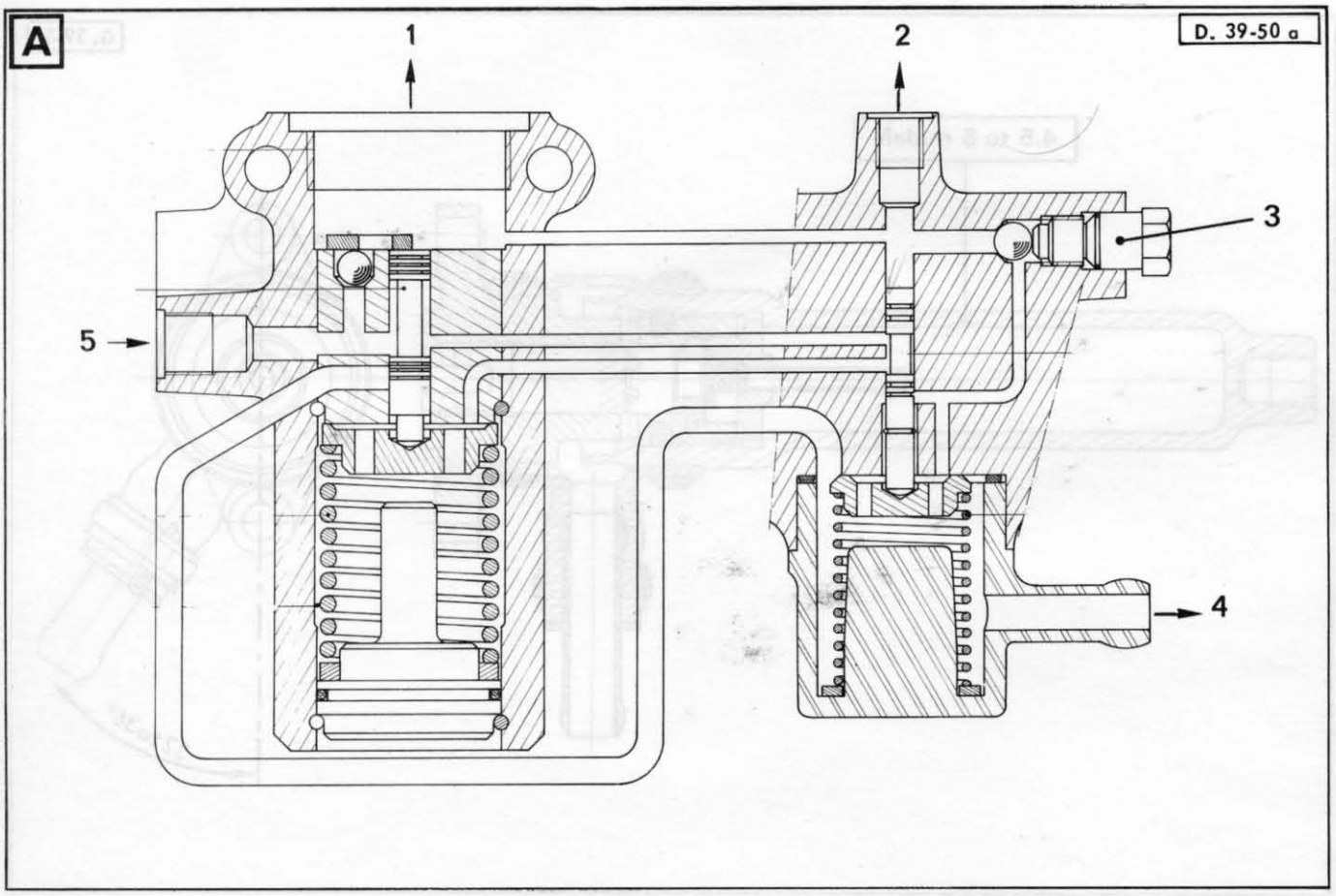
- Pressure setting : ..... 70 to 90 bar

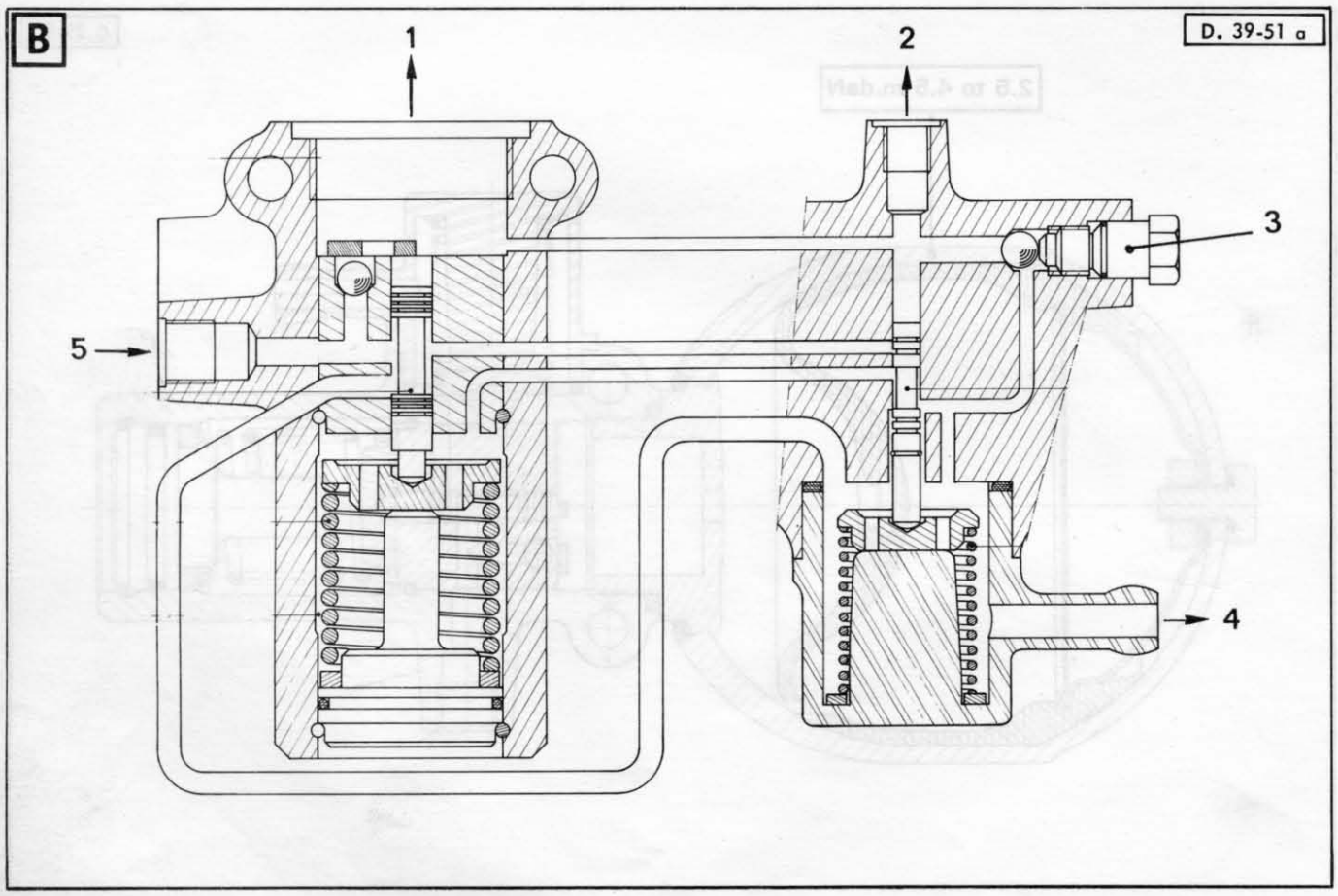
G. 39-3



G.39-9




A
D. 39-50 a
1
2
3
4
5


B
D. 39-51 a
1
2
3
4
5

II. SPECIAL FEATURES

1. High pressure pump :

Replace the O-ring seal when any work is done on the pump.

2. Pressure regulator :

-Thickness of cut-out adjustment shims : ..... 0.3 mm
cut-in adjustment shims : ..... 0.3 and 0.7 mm
- Pressure variation for 0.3 mm shim : ..... approx. 3 bar
- Pressure variation for 0.7 mm shim : ..... approx. 7 bar

III - TIGHTENING TORQUE VALUES

- HP pump attachment nuts : ..... **1.2 to 1.4 m.daN**
- Pressure regulator attachment screws : ..... **1.8 m.daN**
- Safety valve attachment screws : ..... **1.1 to 1.3 m.daN**
- Pressure switch : ..... **1.1 to 1.2 m.daN**

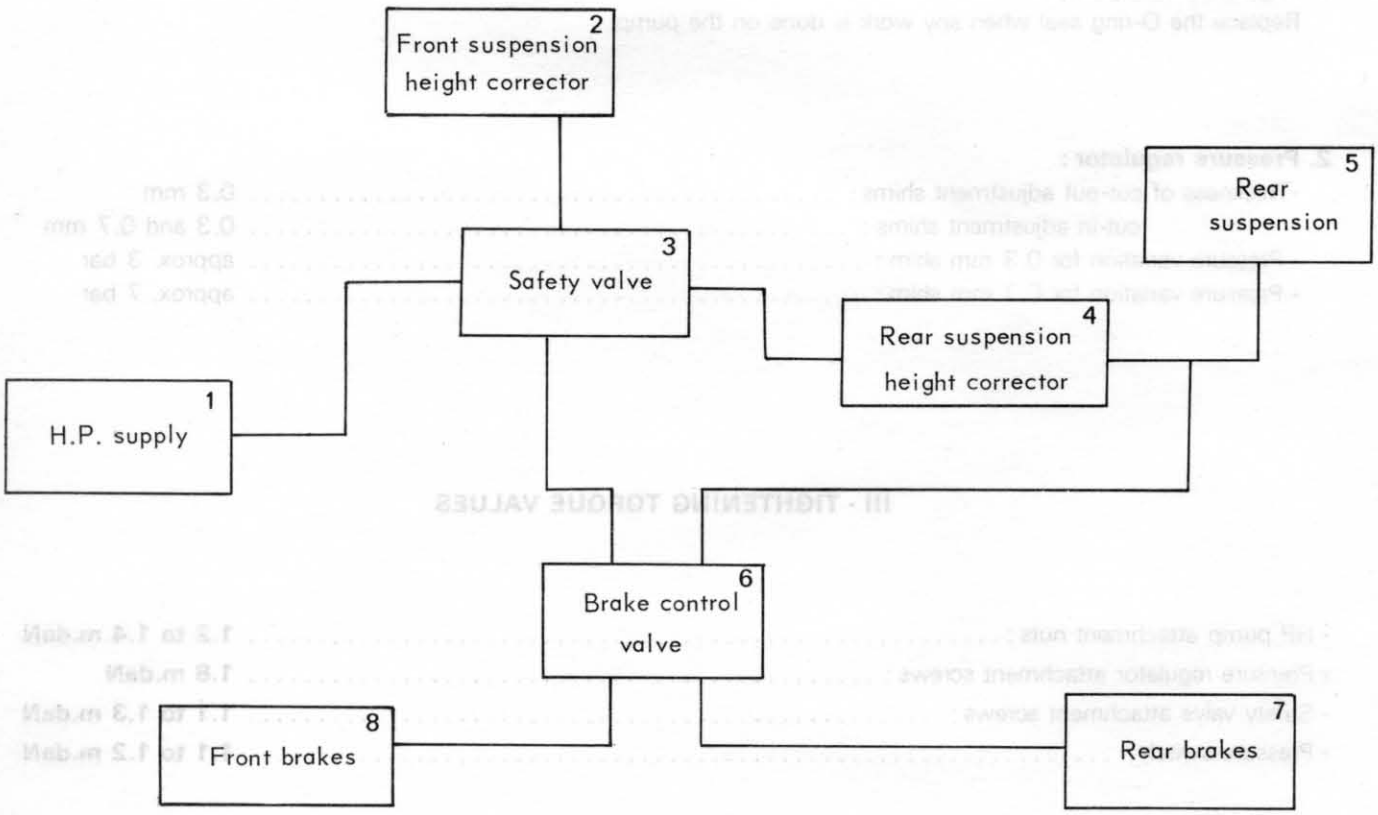
Key to operating diagram of the pressure regulator :

A : Cut-in **B :** Cut-out

1 : Accumulator
2 : To user line
3 : Pressure relief screw
4 : To reservoir
5 : High-pressure inlet

IV - HYDRAULIC CIRCUIT

1. Operating diagram :



2. Key to assembly diagram : Figure 1 *(⟶ 2/82),* **Figure 2** *(2/82 ⟶).*

A : Four-way union with bleed screw

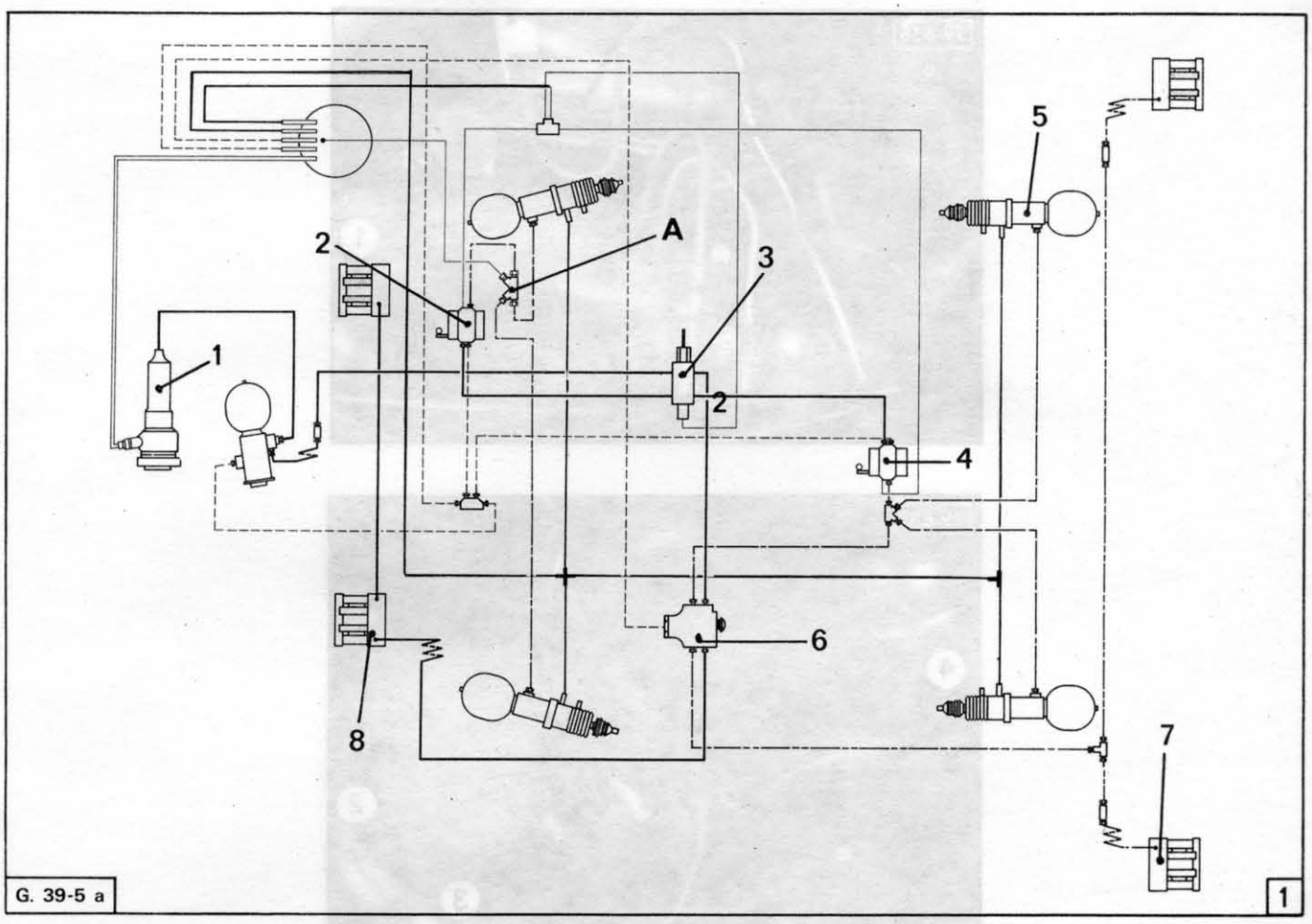
———————— High pressure

— —— - —— — Suspension pressure

--—— - - —— - - Rear brake pressure

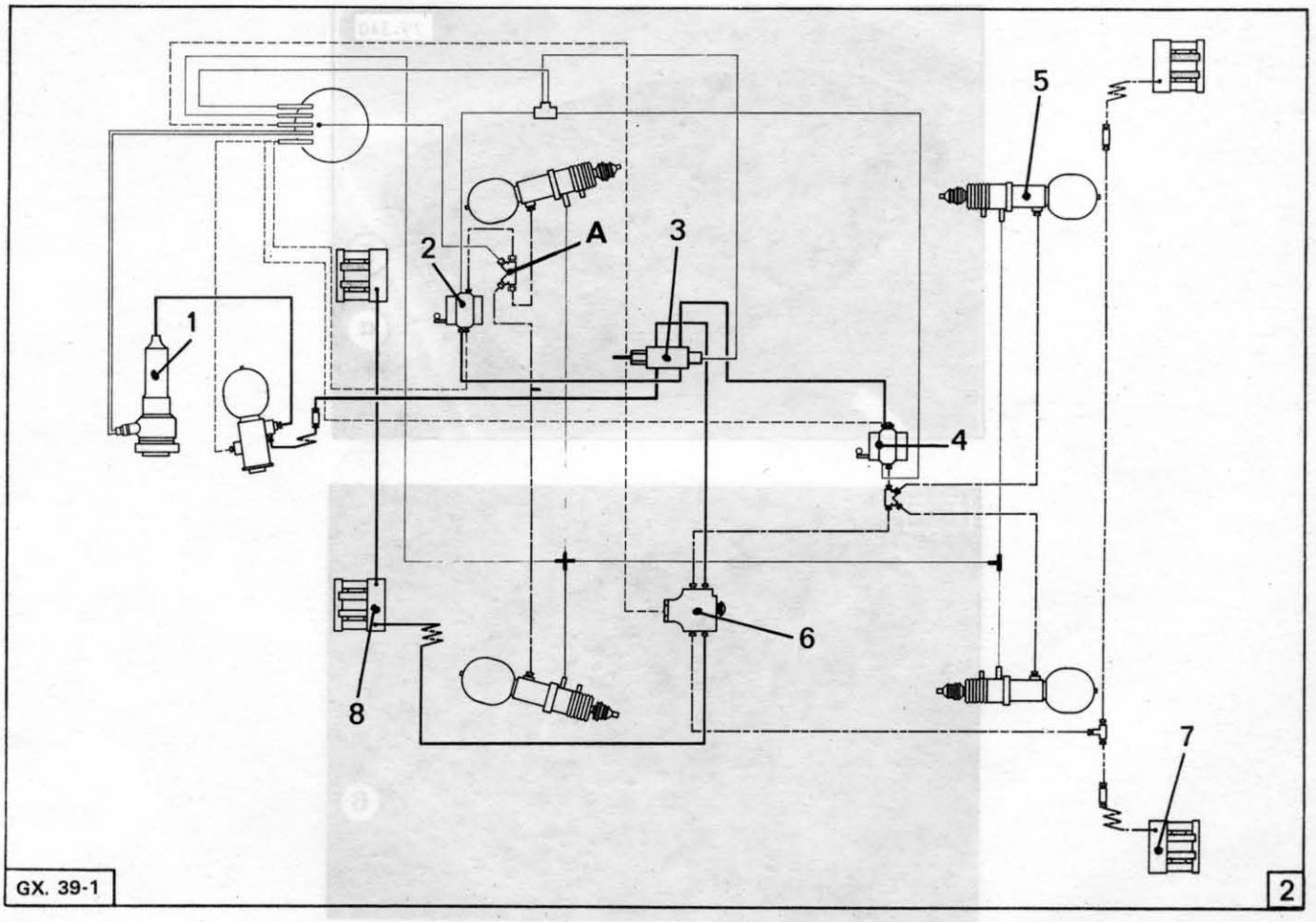
- - - - - - - - - - Discharge

———————— Overflow return



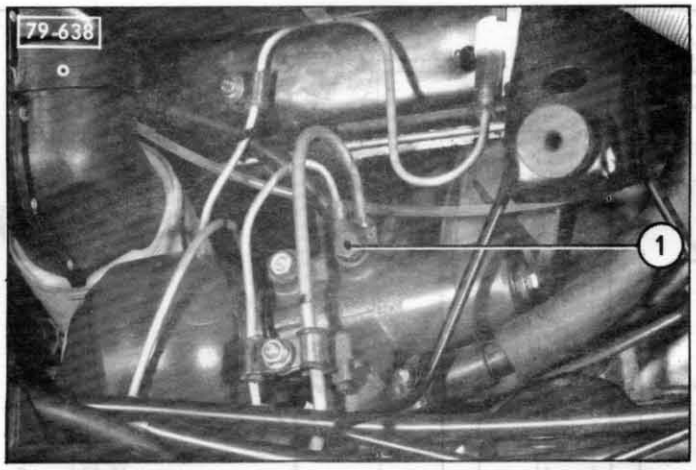
G. 39-5 a

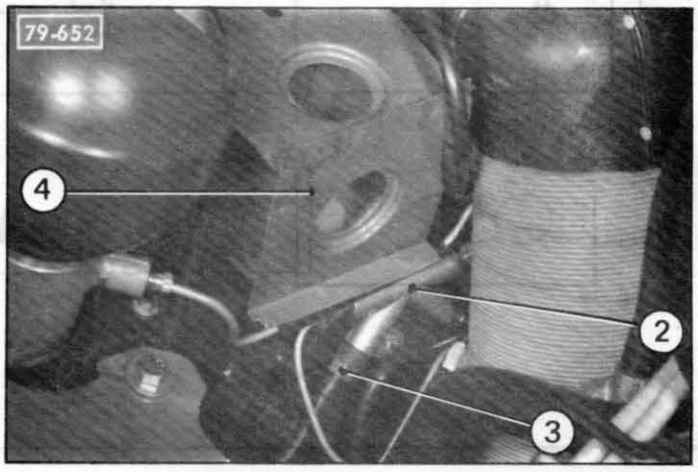
1

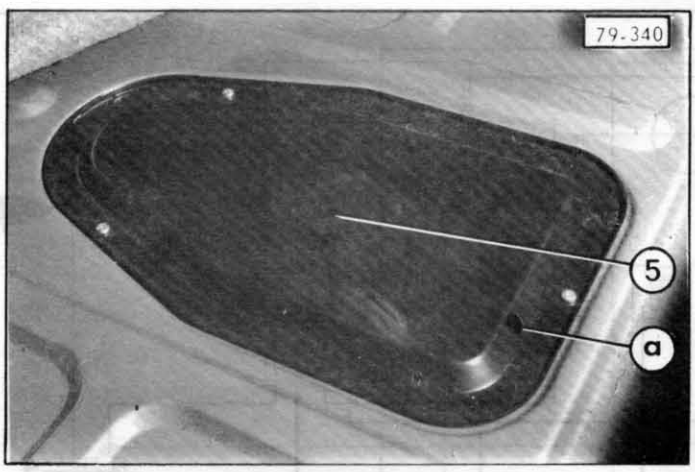


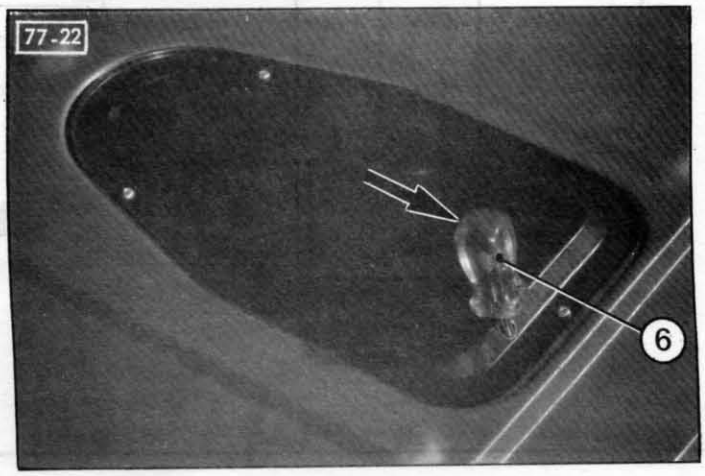
GX. 39-1

2


79-638
1


79-652
4
2
3


79-340
5
a


77-22
6

V - DEPRESSURIZATION OF THE HYDRAULIC SYSTEM

- Move the manual height control to the normal driving position.

- Undo pressure regulator relief screw (1).

Front suspension :

- Undo bleeder screw (3) on four-way union (2) (right side of axle unit under extension (4).

Rear suspension :

- Disengage orifice « a » of flap (5).

- Set the corrector in the discharge position, operating the control with a short screwdriver (6).

  Push screwdriver (6) towards the front of the vehicle, in the direction shown by the arrow (➡).

PREPARATION

1. Check that the hydraulic fluid reservoir filters are clean.

2. Depressurize the system :
Undo pressure regulator relief screw (1).

3. Undo union nut (2) on service pipe (3) and disengage the pipe end from the pressure regulator.

4. Connect pipe (4) fitted with pressure gauge **A** *(graduated from 0 to 250 bar)* to the pressure regulator, in place of the service pipe.

TESTING

5. Checking the main accumulator :

- Do up pressure regulator relief screw (1).
- Disconnect the switch power supply wire.
- Operate the starter, checking the reading on pressure gauge **A**. The value increases regularly, and then appears to stabilize. This value corresponds to pressurization of the main accumulator.
- The pressure reading should be :

$$62 \, {}^{+2}_{-32} \text{ bar}$$

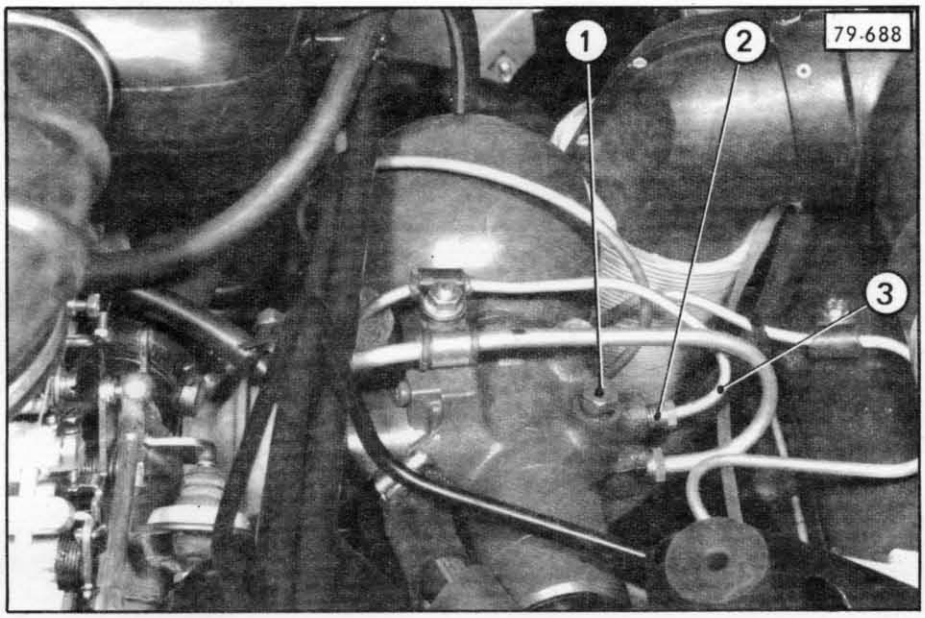
- Reconnect the switch power supply wire.

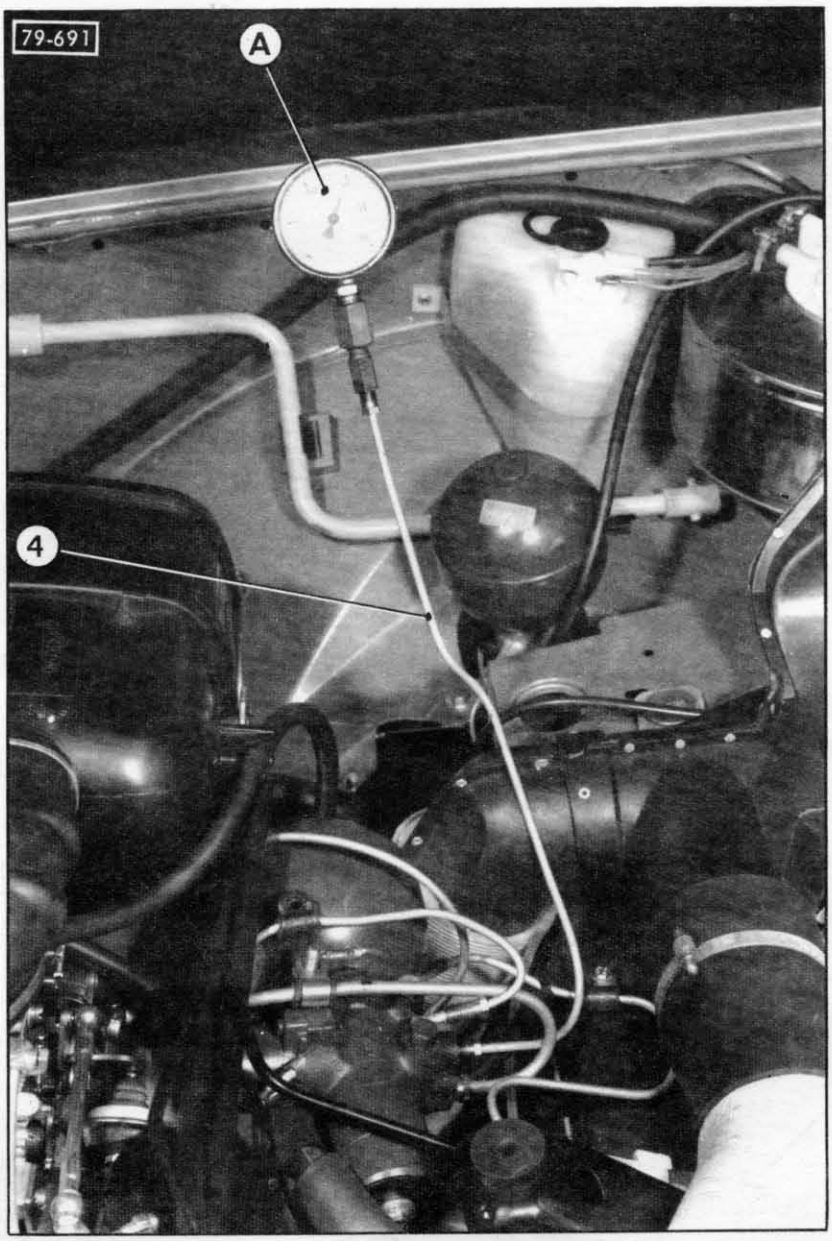
6. Checking the pressure regulator :

a) Checking cut-out pressure :
- Start engine, and maintain slight acceleration.
- Undo pressure regulator relief screw (1) and check the pressure gauge.
  When the needle stabilizes, the reading corresponds to cut-out pressure :
  170 ± 5 bar
- When cut-out pressure is reached, leave the engine running for a few moments longer, to stabilize pressure.
- Stop the engine. Check the pressure gauge, and note the drop for *a period of 3 minutes.*

If pressure drop is greater than 10 bar, the pressure regulator is defective.

b) Checking cut-in pressure :
- Start the engine, and maintain slight acceleration.
- When cut-in occurs, undo pressure regulator relief screw (1) slightly.
- The needle of pressure gauge **A** drops gently, rising again when the HP pump cuts in.
- The minimum reading on pressure gauge **A** corresponds to cut-in pressure :
  145 ± 5 bar


79-688
1
2
3


79-691
A
4

I. CHARACTERISTICS

Conditions for check and adjusment :

With the vehicle in normal driving position, and the engine idling, check :
- height at front : 189 ± 10 mm (measured between the underface of the anti-roll bar and the tyre ground contact plane),
- height at rear : 272 ± 10 mm (measured between the underface of the mid-point of the axle unit flanged edge, and the tyre ground contact plane).

- Castor *(non-adjustable)* : ..... $1° 15' \begin{smallmatrix} +1° 25' \\ -1° 15' \end{smallmatrix}$
- Camber *(non-adjustable)* : ..... 0° ± 1°
- Steering lock angle *(non-adjustable)* : .....
  - *Inner wheel* : ..... 40° to 45° 30'
  - *Outer wheel* : ..... 34° to 37°
- Alignment *(toe-in)* : ..... 0 to 2 mm

Since **November 1981 (R.P. Organization No. : 1838)** fitting of a new anti-vibration bush *(the inner bush material is modified)* and a new articulation shaft (mark on head is 10-9 instead of 8-8). See **Fig. A**. The new anti-vibration bush is identified by means of 4 bosses on its polyurethane part.

II. SPECIAL FEATURES

Conditions for mounting the front axle unit *(each side of vehicle) :*

1. Tighten at « c » *(stage 1)* to : ..... **2 m.daN**
2. Tighten at « a » to : ..... **4.5 to 5 m.daN**
3. Tighten at « c » and « d » to : ..... **4.5 to 5 m.daN**
4. Shim as necessary at « b » (to within 0.5 mm), and tighten to : ..... **9 to 10 m.daN**

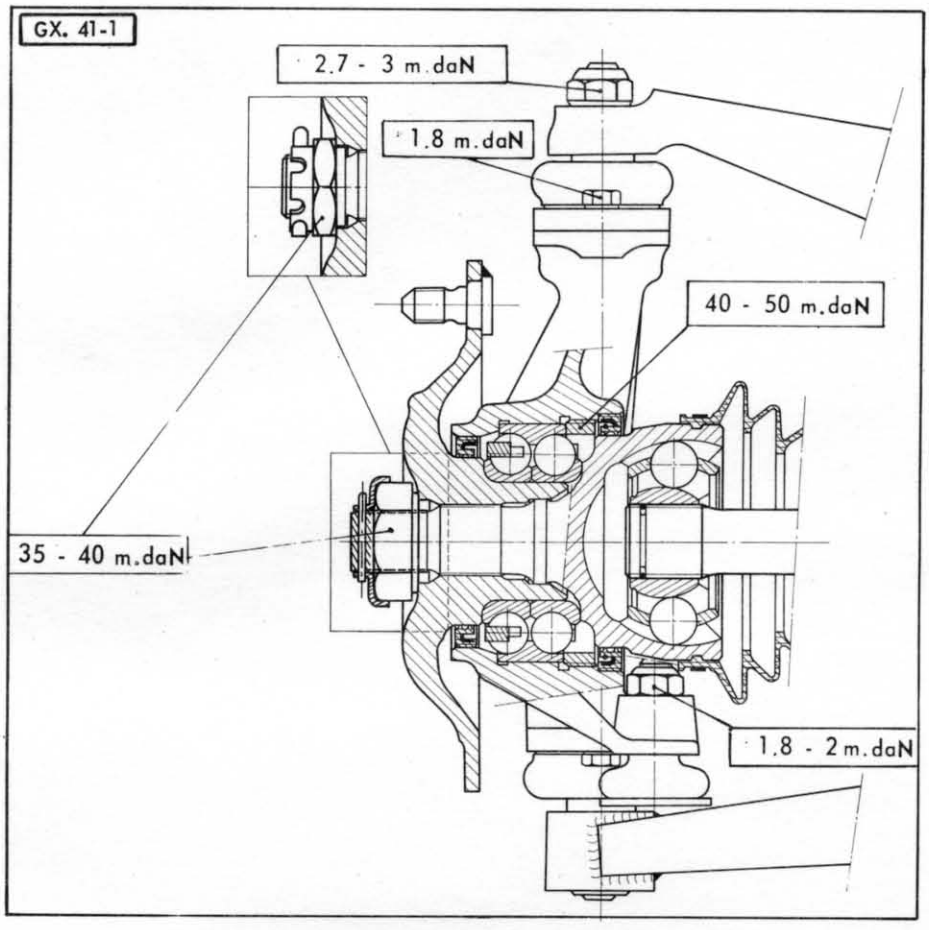
Tightening torque values :

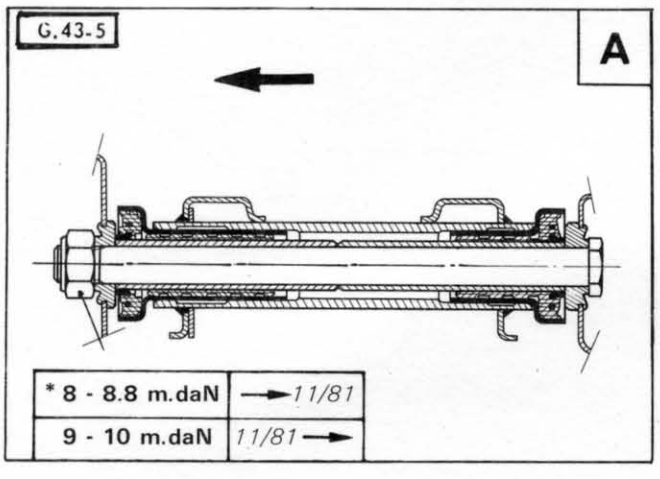
- Swivel nut on anti-roll bar : ..... **2.5 to 3 m.daN**
- Swivel nut on anti-roll bar link rod to upper arm : ..... **2.5 to 3 m.daN**

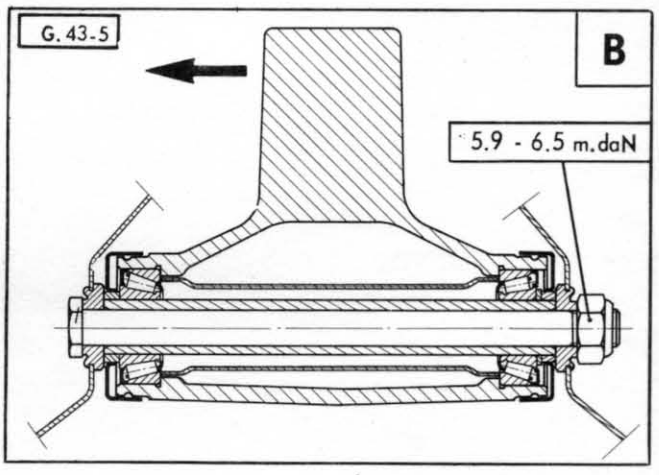
Wheel nuts : Pressed-steel rim : ..... **5.5 to 7.5 m.daN**
Light-alloy rim (do not grease the threads) : ..... **7.5 to 8.5 m.daN**

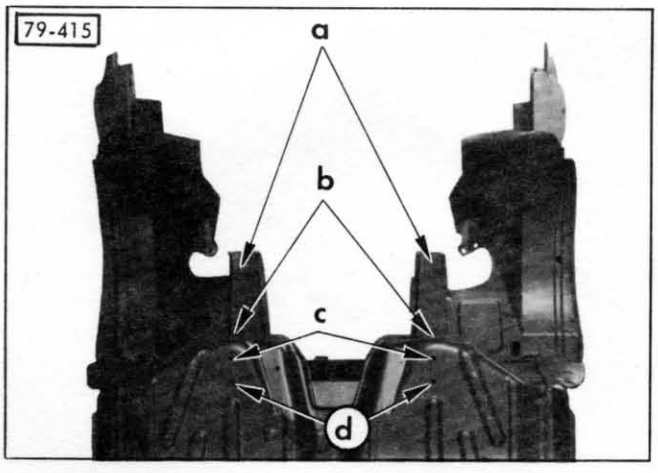
Key to sketches :

A : Lower arm **B :** Upper arm
The arrow (➡) indicates the front of the vehicle.


GX. 41-1
2.7 - 3 m.daN
1.8 m.daN
40 - 50 m.daN
35 - 40 m.daN
1.8 - 2 m.daN


G.43-5
A
* 8 - 8.8 m.daN
11/81
9 - 10 m.daN
11/81


G.43-5
B
5.9 - 6.5 m.daN


79-415
a
b
c
d

CONDITIONS FOR CHECKING AND ADJUSTING THE FRONT AND REAR AXLE UNITS, USING PROJECTION EQUIPMENT

The checks and adjustments remain the same whatever equipment is used. Nevertheless follow the manufacturer's instructions.

In order to carry out correct controls, it is imperative to check and to mark the height position of the vehicle.

1. Check the tyre pressure :

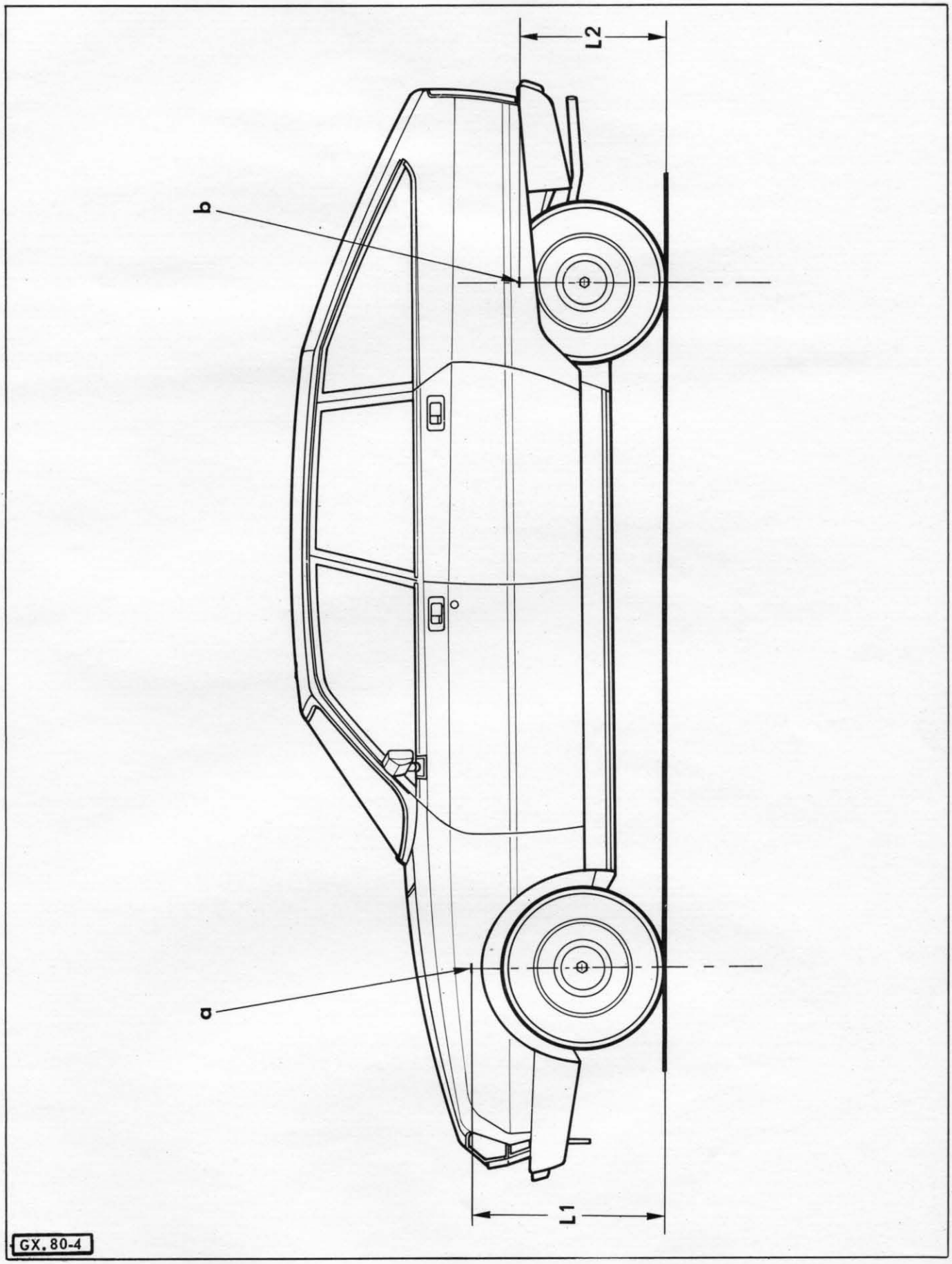
	MICHELIN 145 SR 15 XZX Pressed-steel rim	MICHELIN 14 HR XVS Light-alloy rim	GSA Entreprise
Front	1.8 bars	1.7 bars	1.8 bars
Rear	1.9 bars	1.8 bars	2.1 bars

2. Mark down the vehicle heights, on normal driving position :

a) **Check the heights :**
Adjust them if necessary : - Front height : **189 mm**
- Rear height : **272 mm**

b) **Mark the vehicle position :**
Stick a strip of adhesive tape at « a » and another at « b ». Draw a mark on each one of them.
Measure distance **L1**, at the front, with the vehicle at the **absolute height of 189 mm** and distance **L2**, at the rear, with the vehicle at the **absolute height of 272 mm.**
Mark down values **L1** and **L2** in order to make the checks easier.

3. Make sure the lengths of the visible threads on the left and right steering levers are equal to within 2 mm.


L2
b
a
L1
GX. 80-4

I. CHARACTERISTICS

Check conditions :

With the vehicle in normal driving position, and the engine idling, check :
- height at front : 189 ± 10 mm (measured between the underface of the anti-roll bar and the tyre ground contact plane),
- height at rear : 272 ± 10 mm (measured between the underface of the mid-point of the axle unit flanged edge, and the tyre ground contact plane.

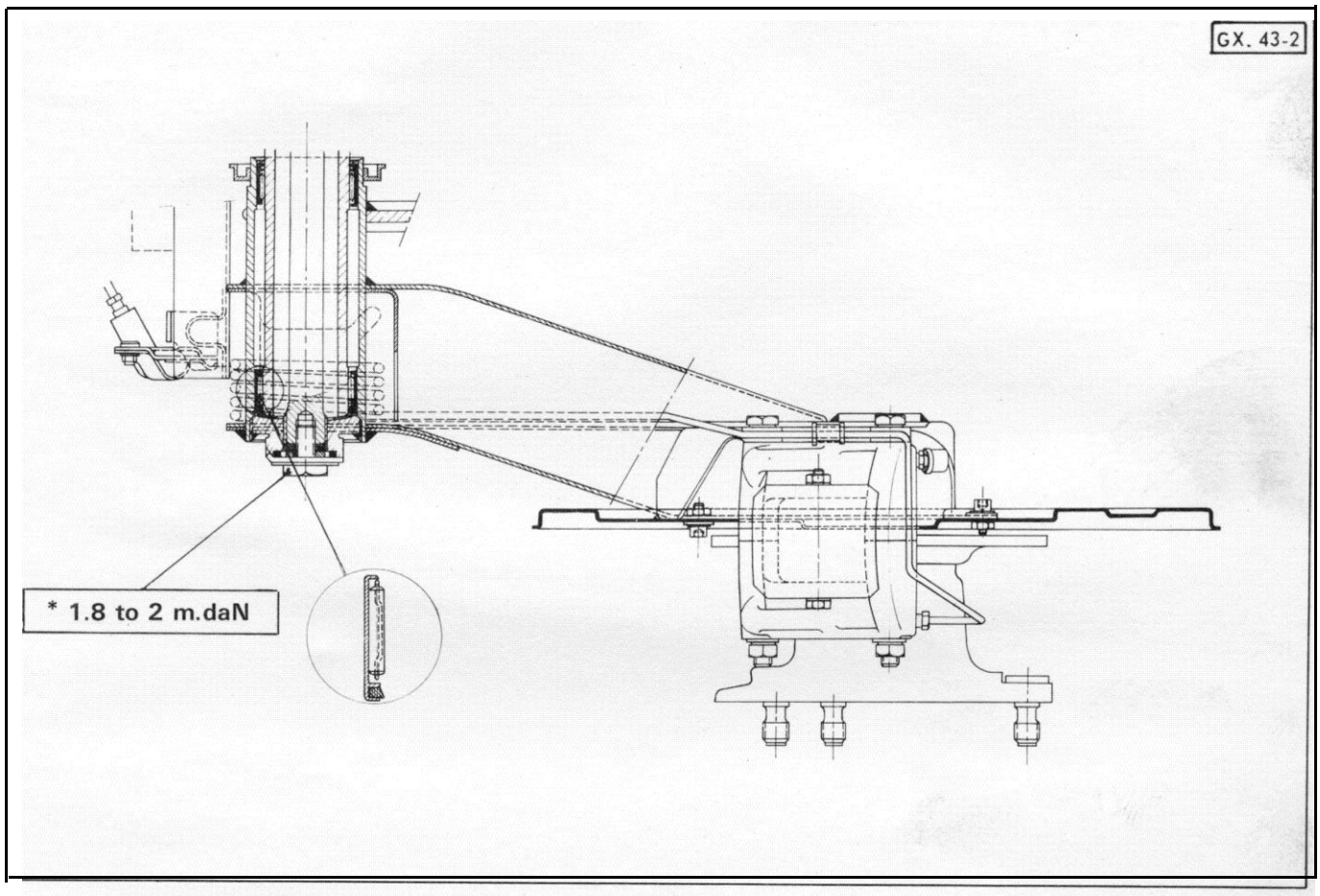
- Alignment *(toe-in)* : ..... 0 to 5 mm
- Camber : ..... 0° ± 40 minutes

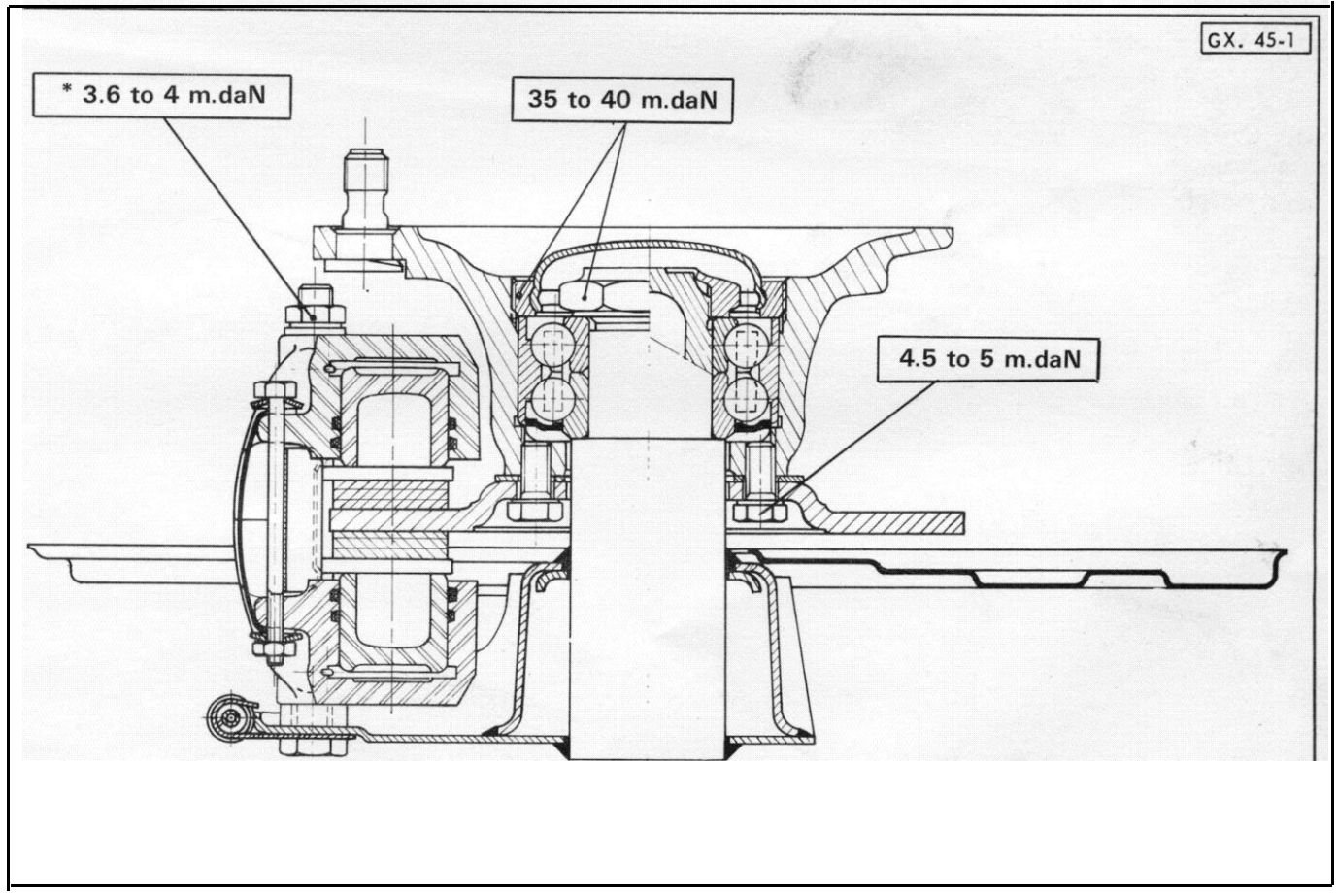
II. SPECIAL FEATURES

- After tightening the flexible mountings for the rear axle unit on the body, no transverse play on the axle should be observed, or any stress in the flexible mountings.

- Position the anti-roll bar, *making the marks on the splines coincide :*
  - Right side : 30 splines
  - Left side : 32 splines *(paint mark)*

Tightening torques :		**Torque in m.daN**
- Attachment nut for flexible mount on axle :	.....	**3 to 4**
- Attachment nut for flexible mount on body :	.....	**3 to 4**
- Wheel nuts **- Pressed-steel rims :**	.....	**5.5 to 7.5**
- Light-alloy rims (do not grease the threads) :	.....	**7.5 to 8.5**


GX. 43-2
* 1.8 to 2 m.daN


GX. 45-1
* 3.6 to 4 m.daN
35 to 40 m.daN
4.5 to 5 m.daN

I - CHARACTERISTICS

Pneumatic units :

Pressure setting :

Front : ..... $55\ ^{+5}_{-10}$ bar

Rear : ..... $35\ ^{+5}_{-10}$ bar

Markings : pressure settings are engraved on the pneumatic units, close to the plugs.

Suspension cylinders *(identical at front and rear) :*

Piston diameter : ..... 35 mm

Piston length : ..... 117.5 mm

Dampers : Clinched onto the pneumatic units.

Anti-roll bars :

Front bar diameter : ..... 21.5 mm

Rear bar diameter : ..... 17 mm

Coupling to right arm : ..... 30 splines

Coupling to left arm (paint marking) : ..... 32 splines

Manual height control : Three positions

1. Normal running - 2. Intermediate - 3. High

Ground clearance height :

- Height at front if measured between the underface of the mid-point of the anti-roll bar, and the tyre ground contact plane
- Height at rear is measured between the mid-point of the axle unit trailing edge, and the tyre ground contact plane.

Height at front *(normal running position) :* **189 ± 10 mm**

Height at rear *(normal running position)* **272 ± 10 mm**

Key to hydraulic system :

——————— High pressure

— ——— - ——— - Suspension pressure

——— -- ——— -- Rear brake pressure

— — — — — — — — Discharge

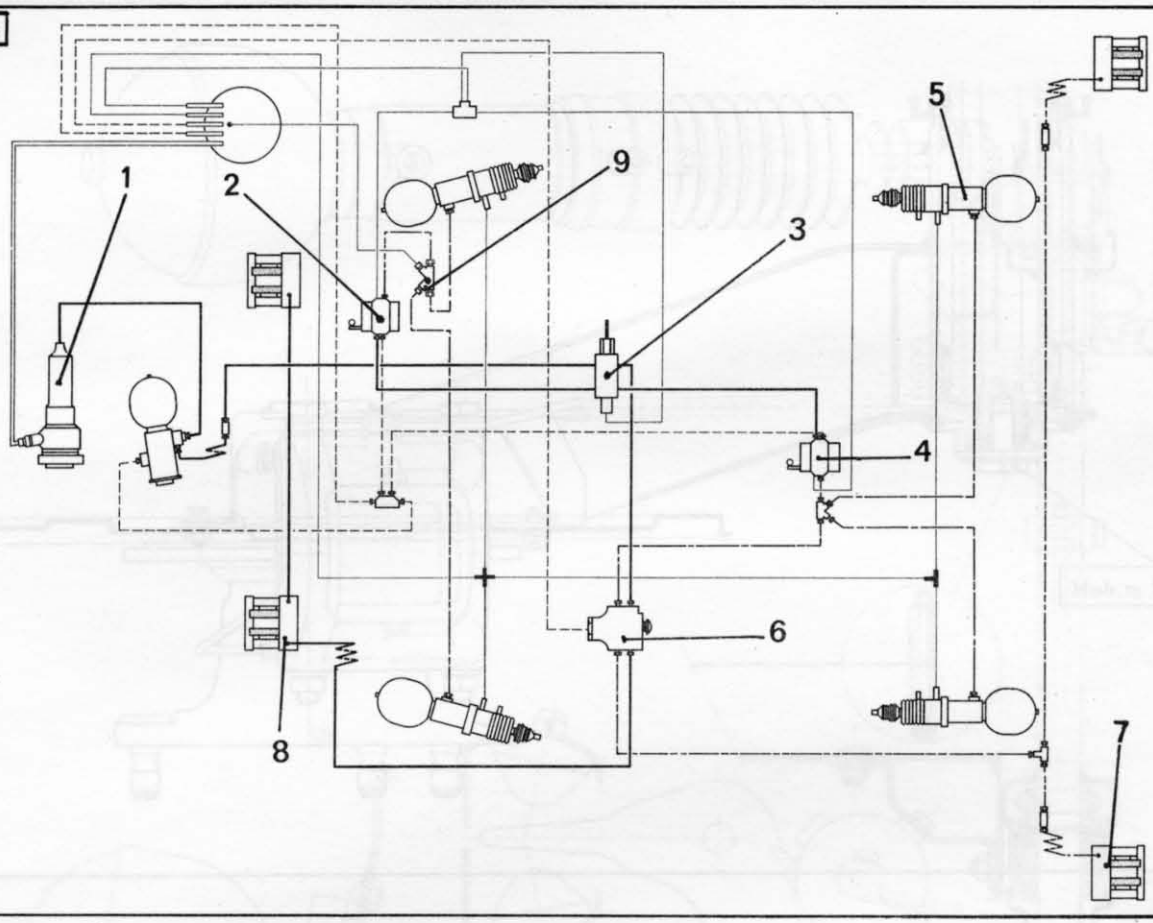
——————— Overflow return

1. HP supply
2. Front suspension height corrector
3. Safety valve
4. Rear suspension height corrector
5. Rear suspension
6. Brake control valve
7. Rear brakes
8. Front brakes
9. Union with bleed screw

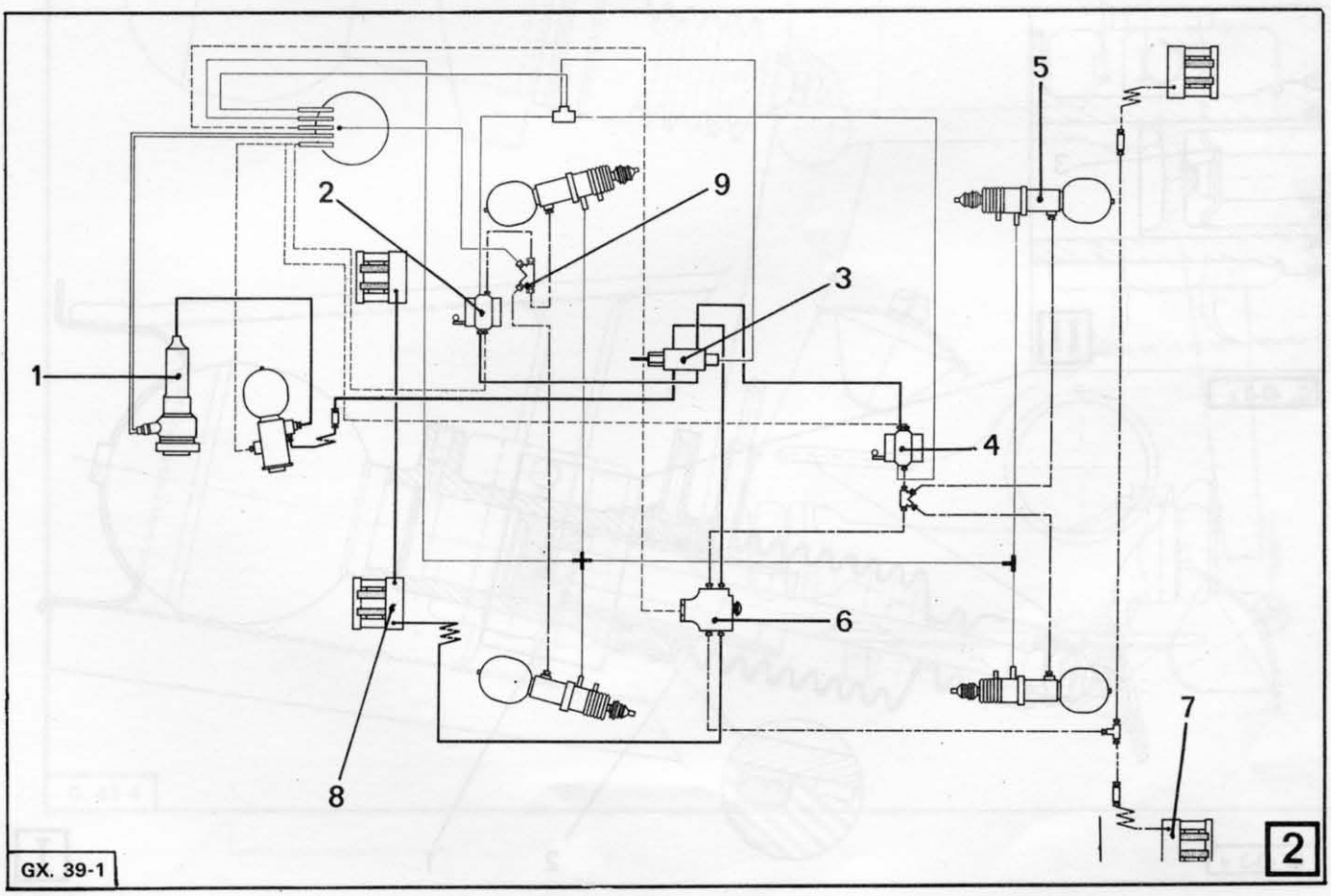
Figure 1 *(⟶ 2/82)*

Figure 2 *(2/82 ⟶)*

G. 39-5 a

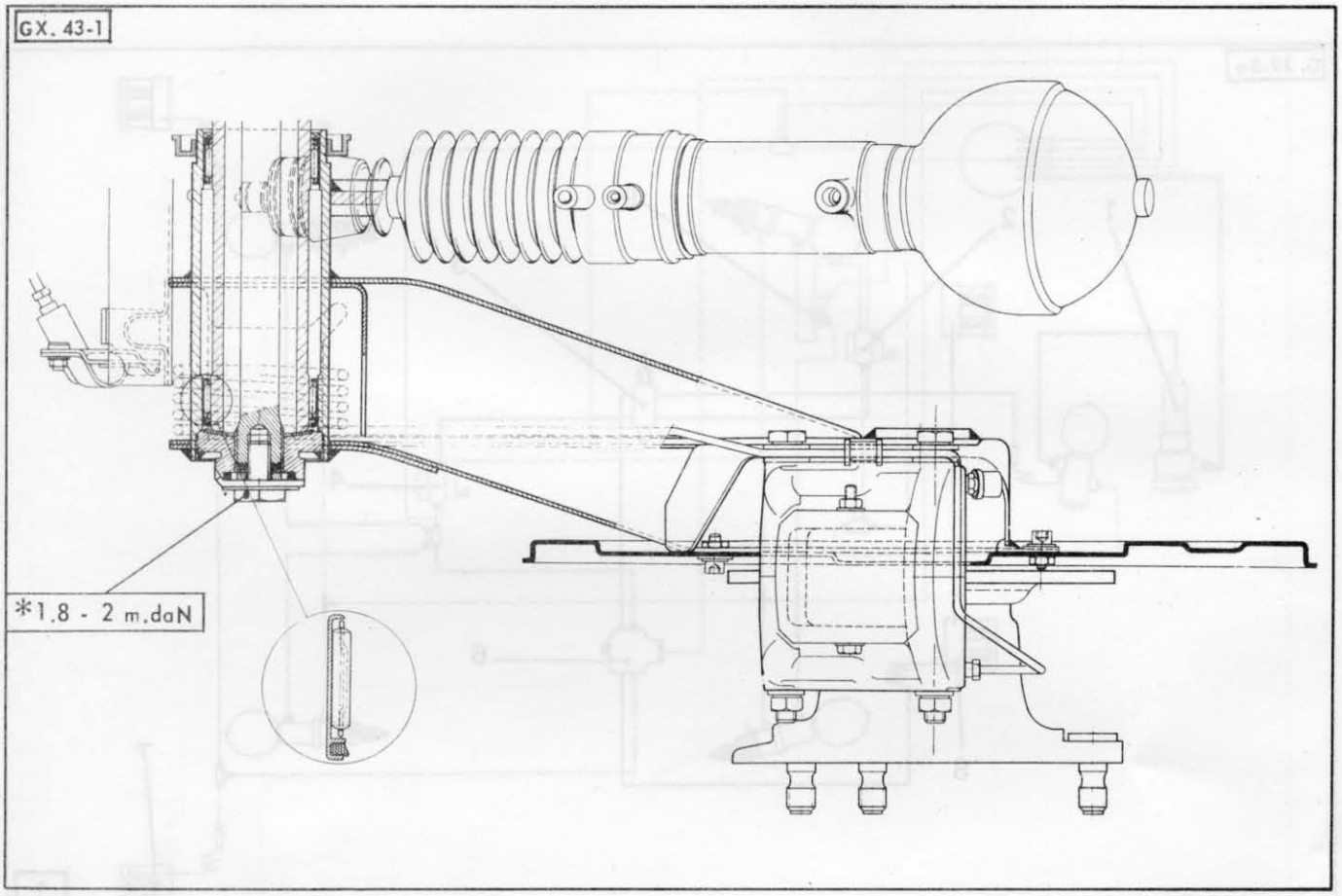


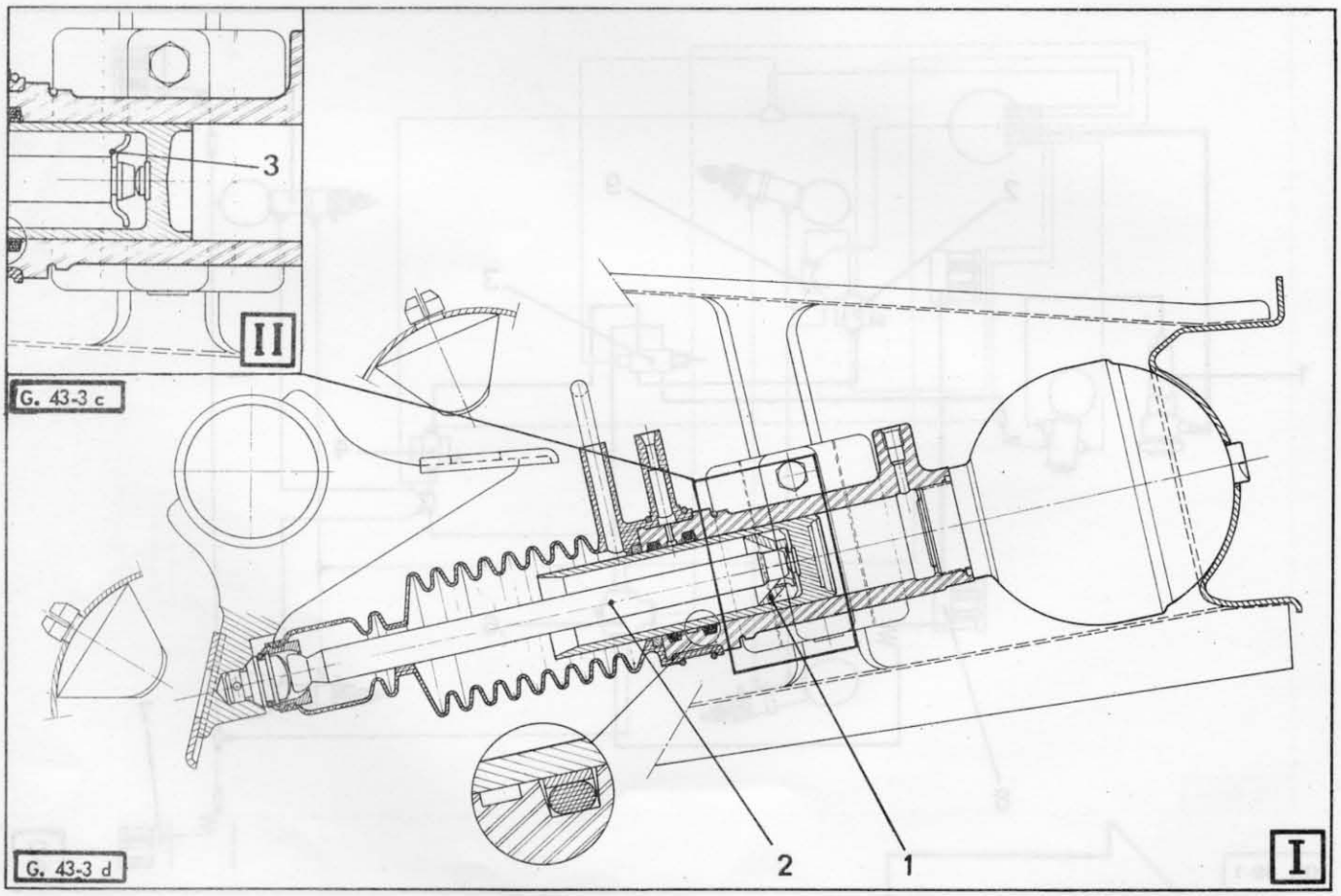
1



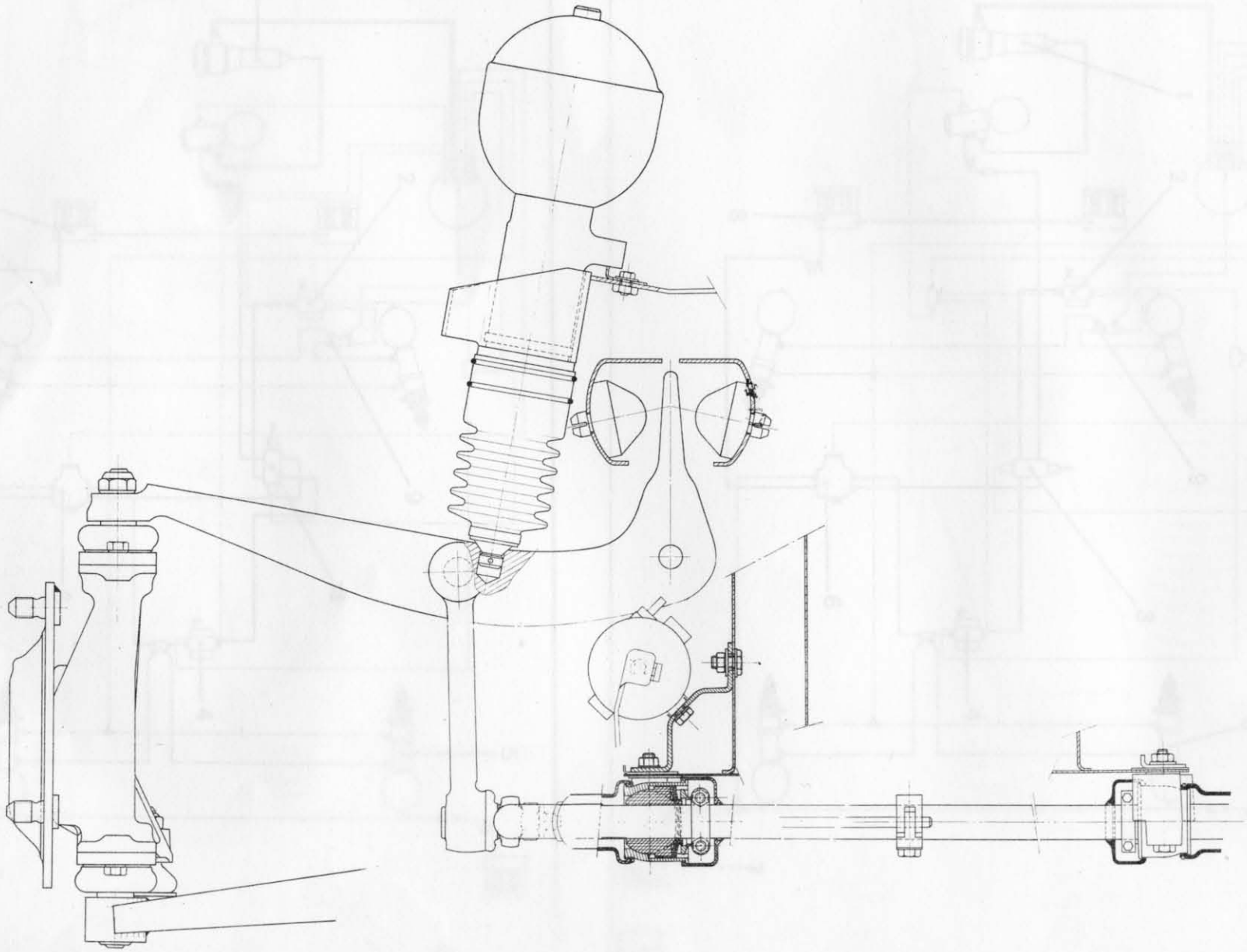
GX. 39-1

2


GX. 43-1
*1.8 - 2 m.daN


3
II
G. 43-3 c
G. 43-3 d
2
1
I

G. 43-4



II - SPECIAL FEATURES

Tyre pressure (145 x 15 « MICHELIN XZX »)

- Front : ..... 1.8 bar
- Rear: ..... 1.9 bar

Height preadjustment :

- With the height correctors in the neutral position, undo the automatic control stem collars on the front and rear anti-roll bars.
- Equalize clearance between the limit stops to within : 2 mm

Adjustment of anti-roll bars :

Front :

- Side position : equal protrusion on both sides to within : 2 mm
- Angular position : assembly with no load on swivels
- Nil lateral play : bearing assembly with load : 35 to 40 kg

Rear :

- Angular position : engage the splines so that the marks on bar and arm coincide
- Bar/arm play under 200 kg load : 0.04 to 0.14 mm

Tightening torque values :

Ball-pin nut on anti-roll bar: 2.5 **to** 3 **m.daN**

- Bali-pin sleeve-nut on link rod with upper arm : 2.5 **to** 3 **m.daN**

♦ Diagram I :

As from October 1980. push rods (2) are centered in the pistons by means of plastic cones (1) instead of washers (3) crimped on the rods and shown in **Diagram II**

The new rods can be replaced by the former ones by fitting plastic cones (1) in the pistons.

I. HEIGHT PREADJUSTMENT

This operation is required following replacement of certain elements of the suspension system.

1. Position the front end rear suspension arms :
   - Remove from correctorthree screws (1) and protector (2).
   - Remove the rear corrector access trap, after lifting the carpet.

   a) Undo front automatic control collar (5).

   b) Undo rear corrector attachment screws (3). Position in the middle of the slot, and retighten.

   c) Move the manual height control lever to ***normal*** *running position* « *a* ».

   NOTE : The height control lever has three positions:
   a - normal running
   b intermediate
   c - high

   d) If necessary. release any stress on the corrector slide-valve, displacing sector (6), and undoing control bush nut (4).

   e) Position the suspension arms so that :
   - front arm stops (7) and rear arm stops (8) and (9) are in the mid-way position :

   J I *= J2 ± 2 mm*
   J3 = J4 ± 2 mm

   f) Check that the front and rear corrector slide-valves are in the neutral position.

2. Tighten the front automatic control collar :

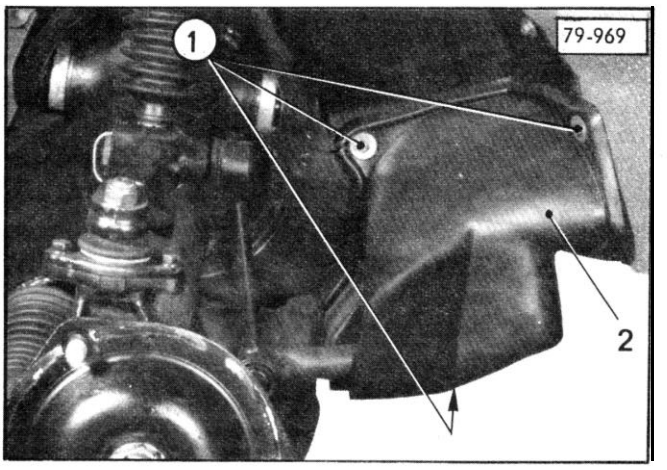
   At front: leave the corrector slide-valve ball-pin free (d = 1 to 2 mm).

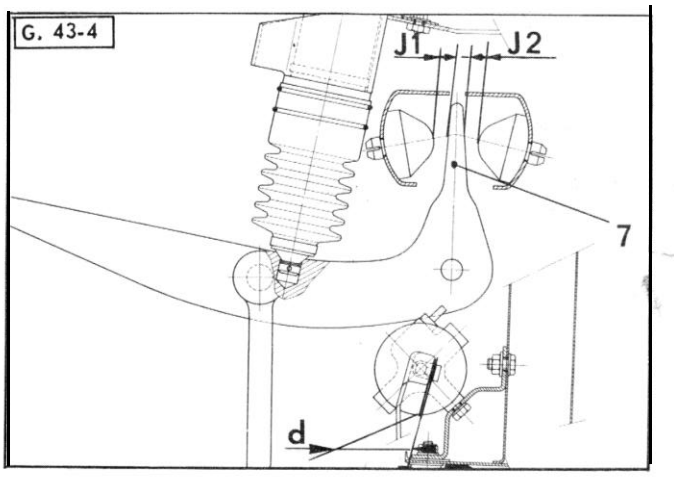
   Collar tightening torque : 1.4 to 1.5 **m.daN**

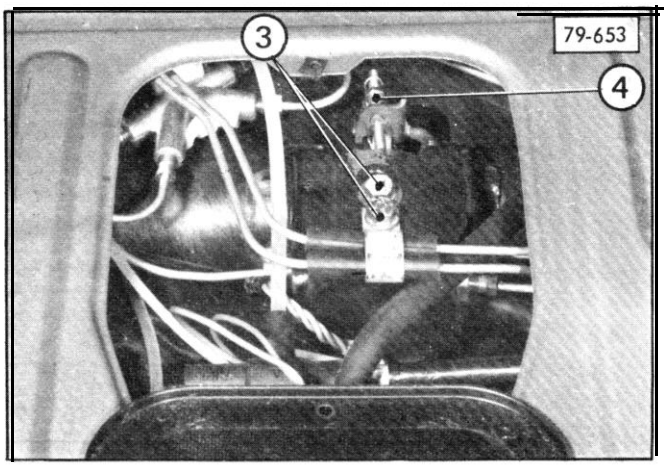


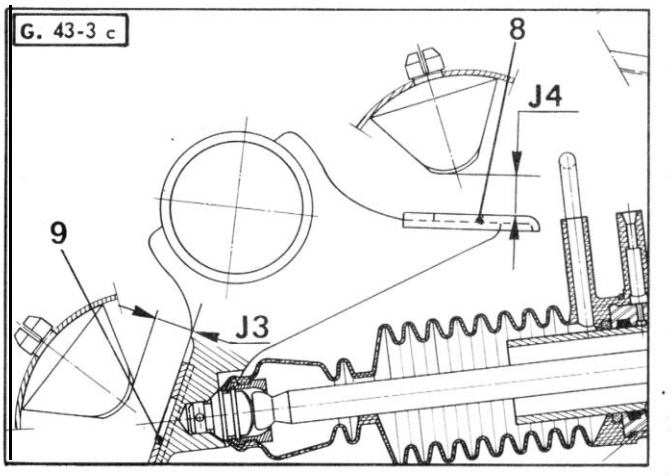
3. Fit :
   - front corrector protector (2),
   - trap for access to rear ***corrector.***

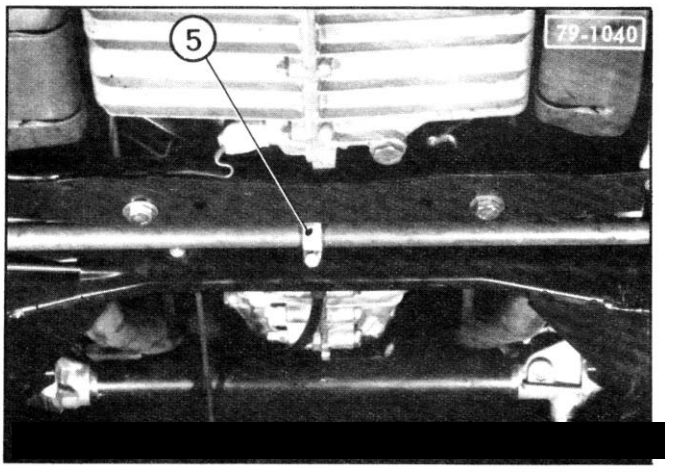


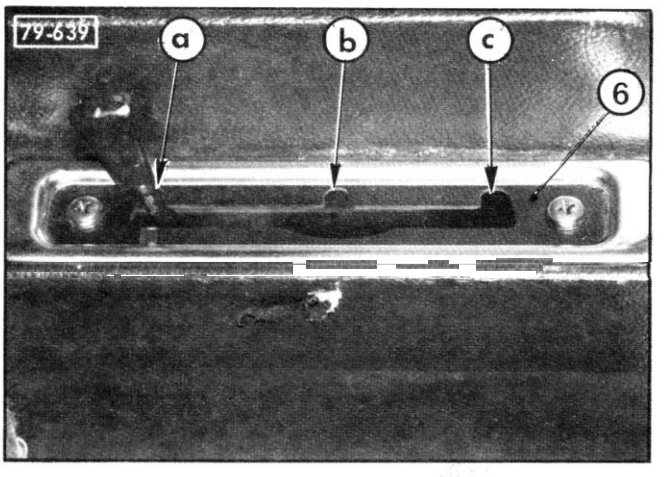

79-969
1
2

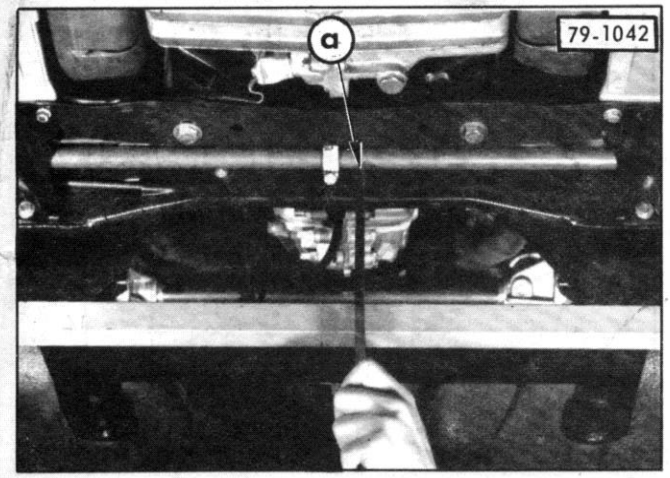

G. 43-4
J1
J2
7
d

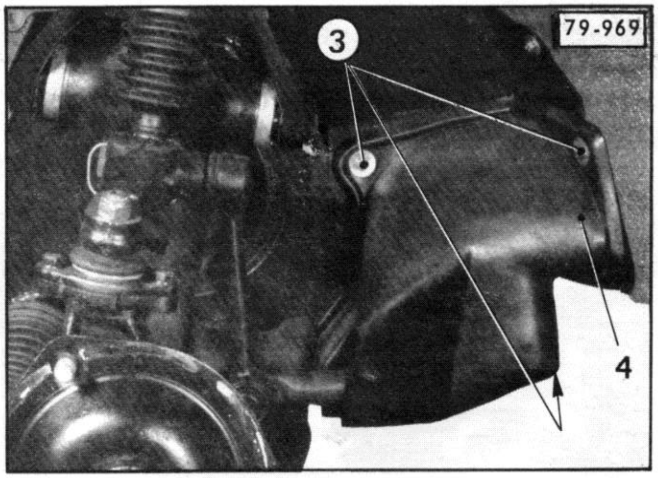

79-653
3
4

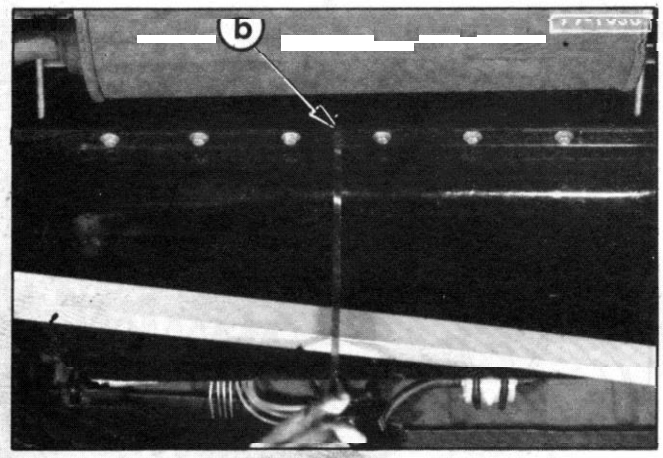

G. 43-3 c
8
J4
9
J3

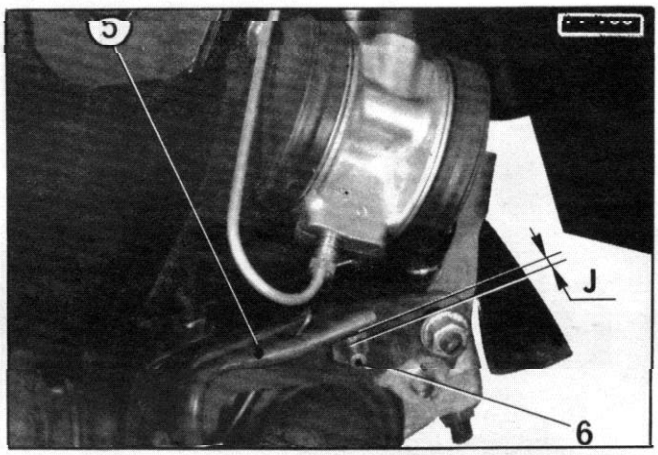

79-1040
5

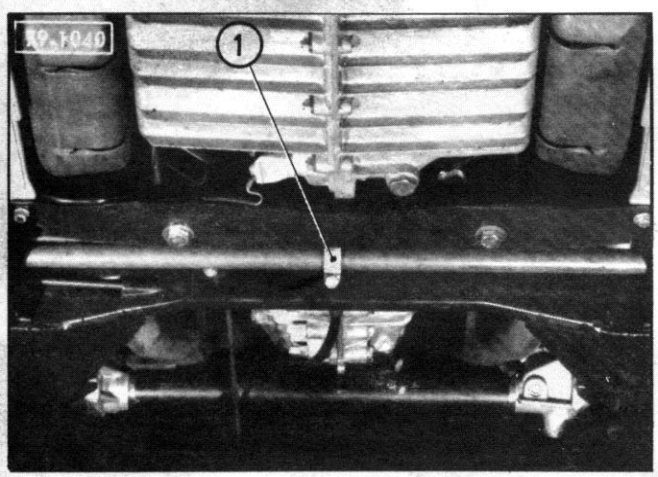

79-639
a
b
c
6

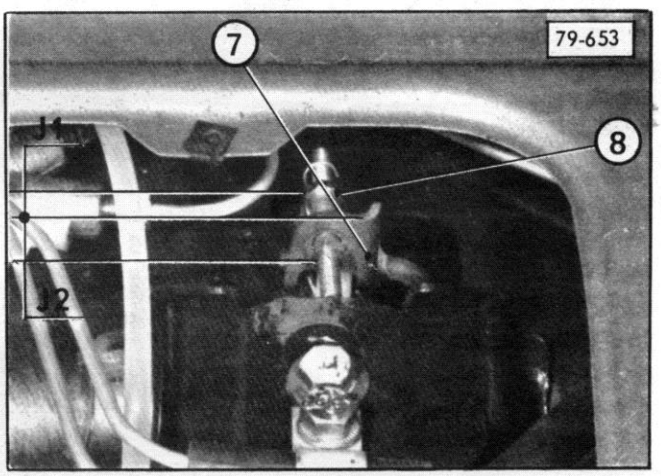

79-1042
a

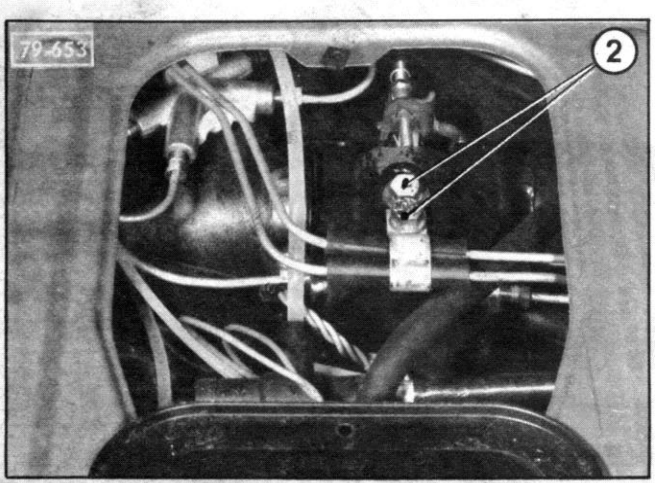

79-969
3
4


b


5
J
6


1


79-653
7
8
J1
J2


79-653
2

II. HEIGHT ADJUSTMENT

NOTE : This operation can be carried out without pre-adjustment, in the case of a vehicle where the height values require only slight correction.

This operation must be carried out with the engine idling.

IMPORTANT :
Height readings are taken as follows :
- *front* : underface of mid-point « a » of the anti-roll bar, and the tyre ground contact plane,

rear : underface of mid-point « b » of the axle unit flanged edge. and the tyre ground contact plane.

1. Check the tyre pressure :
   -*Front: 1.8* bar
   - Rear : 1.9 bar

2. Adjust the height values :

   a) *From:* partially undo collar (1), and adjust to obtain :
   Height at front: 189 ± 10 mm
   Collar (1) tightening torque: **1.4 to** 1.5 **m.daN**

   b) Rear: remove rear corrector access trap (under carpet in boot).
   Undo corrector attachment screws (2), and adjust the corrector to obtain :
   Height at rear : 272 ± 10 mm
   Tighten screws (2).

3. Adjust manual control :

   a) Remove front corrector three screws (3) and protector (4).

   b) Set the manual height control in the *normal running position.*

   c) *Front corrector control.*
   Clearance J between lever (5) and adjustable stop (6) should be 5 mm.

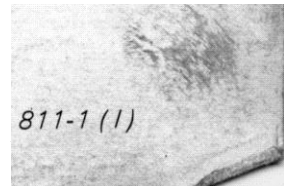
   d) Rear *corrector* control :
   Clearance J1 and J2 on either side of bracket (7) should be approximately equal.

4. Check height values :
   Manual height control lever in *normal running position.*
   Check that the front corrector swivel is free in its recess (1 to 2 mm play) (see *chapter I*).

   Front :
   Raise the vehicle by hand, holding the bumper. Release when the weight becomes too great. The vehicle drops, rises and then stabilizes. Measure height.
   -Lower the vehicle by pressing on the bumper. Release when excessive resistance is encountered. Measure height.
   -Take the mean of the two measurements. which should give a value between :
   179 and 199 mm

   Rear
   Repeat the same procedure. The mean of the height values should be between :
   262 and 282 mm
   Move the manual height control to the intermediate position.
   The variation in height should be between 30 and 40 mm.
   Adjust at (6) and (8) to obtain this condition.

5. Fit :
   front corrector protector,
   - rear corrector access trap.



ANTI-ROLL BAR ADJUSTMENT

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

2. Remove protective covers (1) and (2).

3. Disengage the lower part of dust-guards (5) *(these should be pinched between the bearing blocks and the axle unit).*

4. Adjust bearing preload :

Use tool 2067-T

a) Undo one screw (3) and one collar (4).

b) Compress the spring of the tool, by means of nut (6).

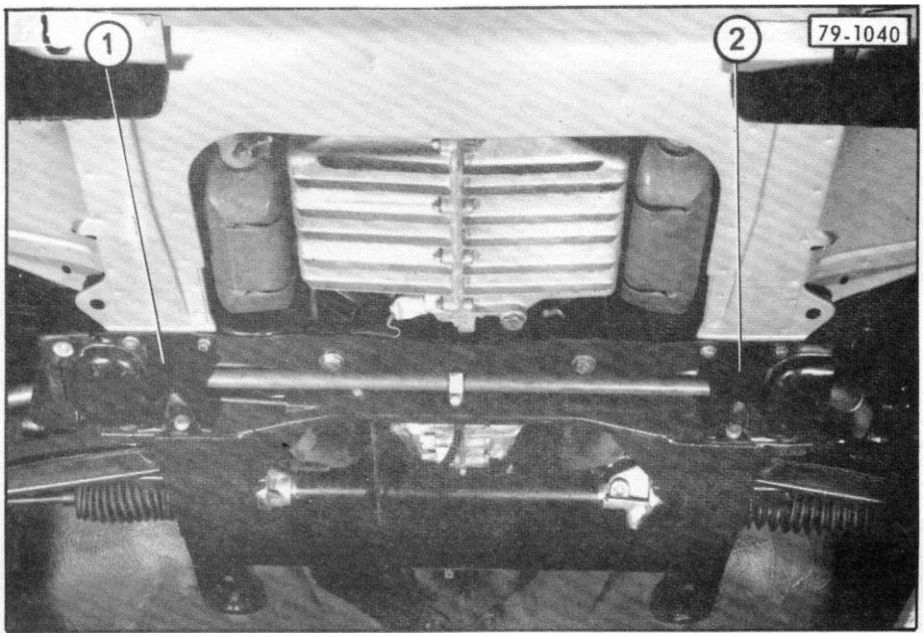
c) Present the tool, with the ends in contact with two stop collars (4).
Undo nut (4) fully, so that the tool applies the specified load **(35 to 40 kg)** on the bearing blocks.

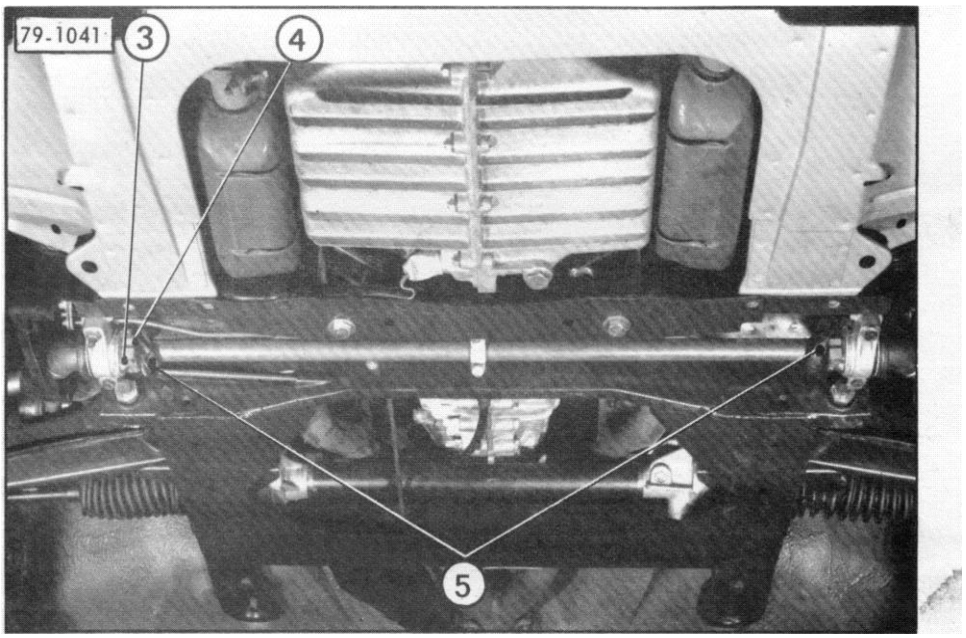
d) **Tighten screw (3) from 1 to 1.1 m.daN**

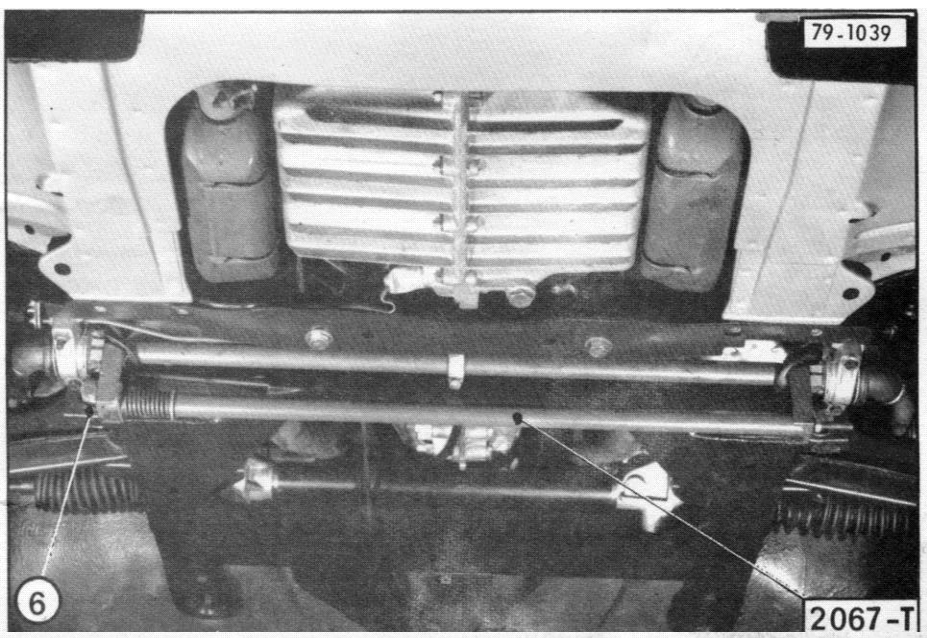
e) Remove tool 2067-T .

5. Replace the dust-guards on the bearing blocks.

6. Replace protective covers (1) and (2).
Check that the covers are not touching the anti-roll bar.


1
2
79-1040


79-1041
3
4
5


79-1039
6
2067-T

CHARACTERISTICS

- Rack and pinion steering
- Front wheel alignment *(wheel toe-in, normal running position) :* ..... *0 to 2* mm

Lock angle *(non-adjustable)* { outer wheel : ..... 34° to 37 °
inner wheel : ..... 40° to 45" 30

Turning circle : { between walls: ..... IO.40 m
between kerbs : ..... 9.66 m

-Steering ratio: 1/19

SPECIAL FEATURES

After adjusting wheel alignment, the steering level threaded portion extending beyond the lock nut. should be equal on both sides (to *within 2 mm).*

Rack mid-way position : Extension should be equal on either side of the housing

- Rack plunger play *(min. play point)* : ..... 0.1 to 0.25 mm
- Pinion rotary torque after plunger adjustment : 0.06 m.daN max.

Turning torque at kingpin, after adjustment (*wheels hanging free) :* , *1.5* m.daN max.

Steering wheel spoke position with vehicle wheels in the « straight-ahead » position : vertical *(spoke pointing downwards)*

TIGHTENING TORQUES

Clamp for steering column cardan (UJ) : ..... 1.3 to 1.4 m.daN

Attachment of fixed steering tube : 1.3 to 1.4 m.daN

Fig. 44-1

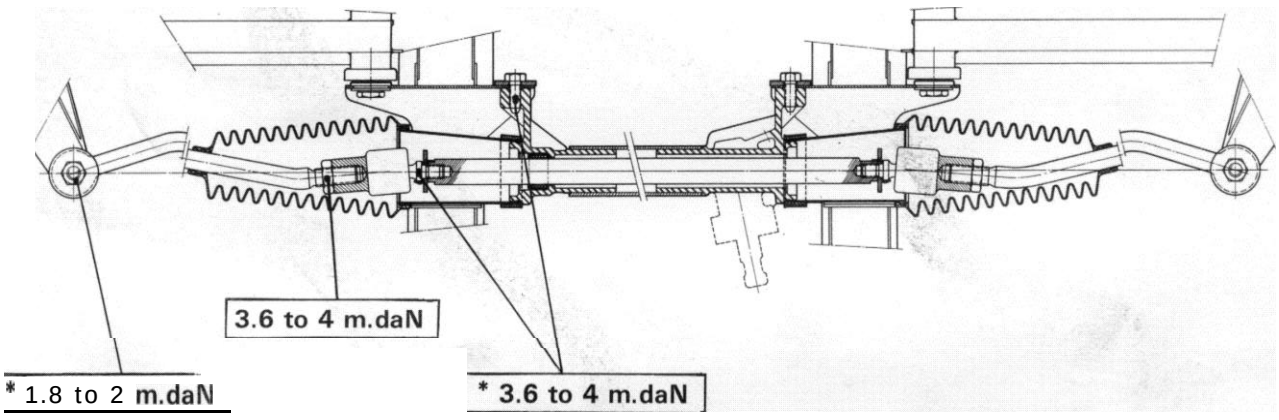
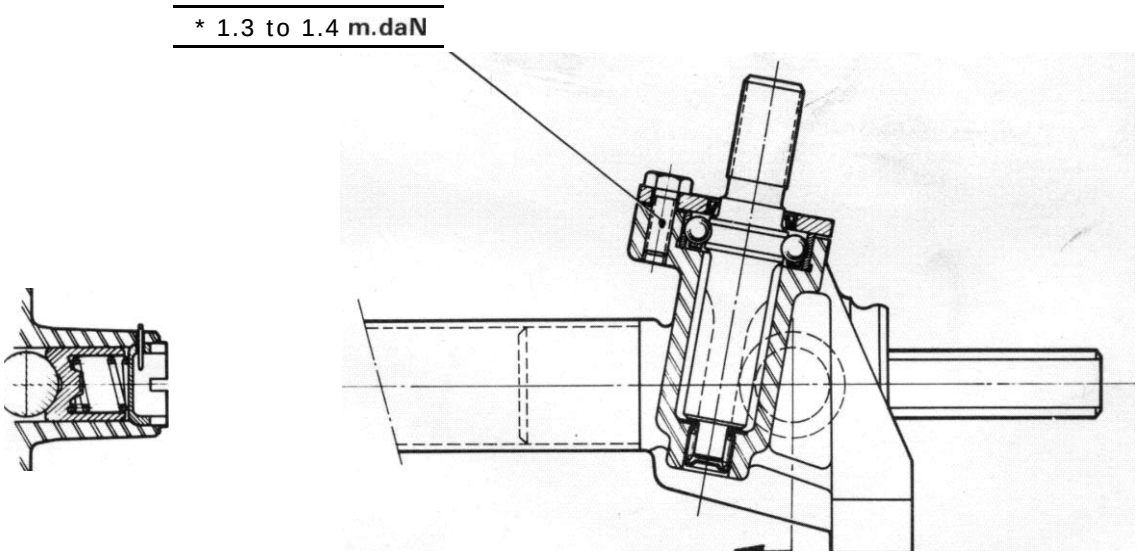


Fig. 44-2 b



I. CHARACTERISTICS

Main brakes:
- Disc brakes on all four wheels (two pistons per brake unit).
- Power-assisted hydraulic control (brake valve incorporated in system)
  - front braking system supplied by main accumulator
  - rear braking system supplied by rear suspension
  - front brakes have priority supply via the safety valve

Handbrake:
- Independent from main braking system
- Two independent pads acting on each front disc

Total friction area:
- Main brakes: ..... 217 cm^2
- Handbrake: ..... 44 cm^2

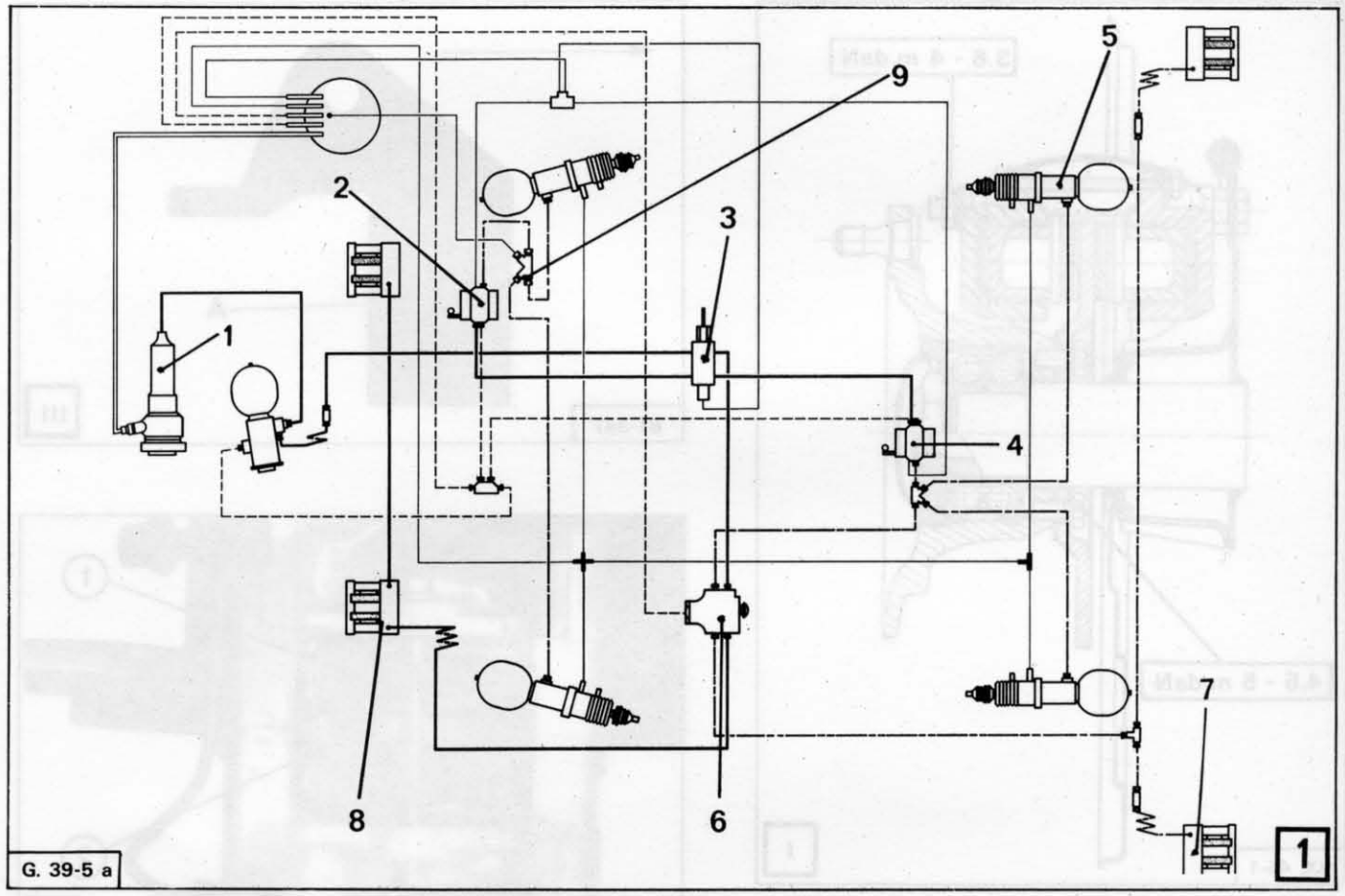
SUPPLY DIAGRAM OF HYDRAULIC SYSTEM
(with safety valve and bleed screw on front suspension system)

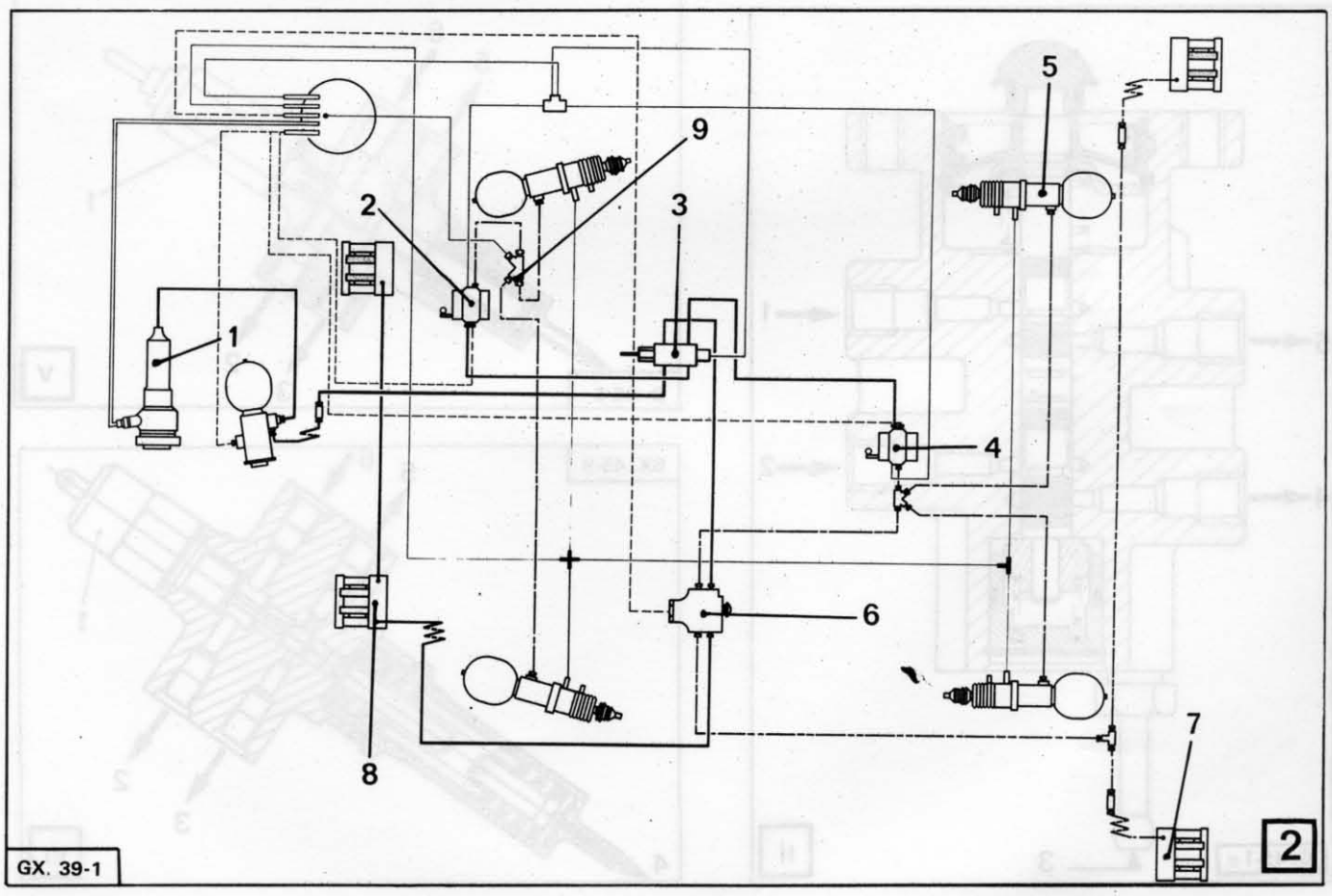
KEY

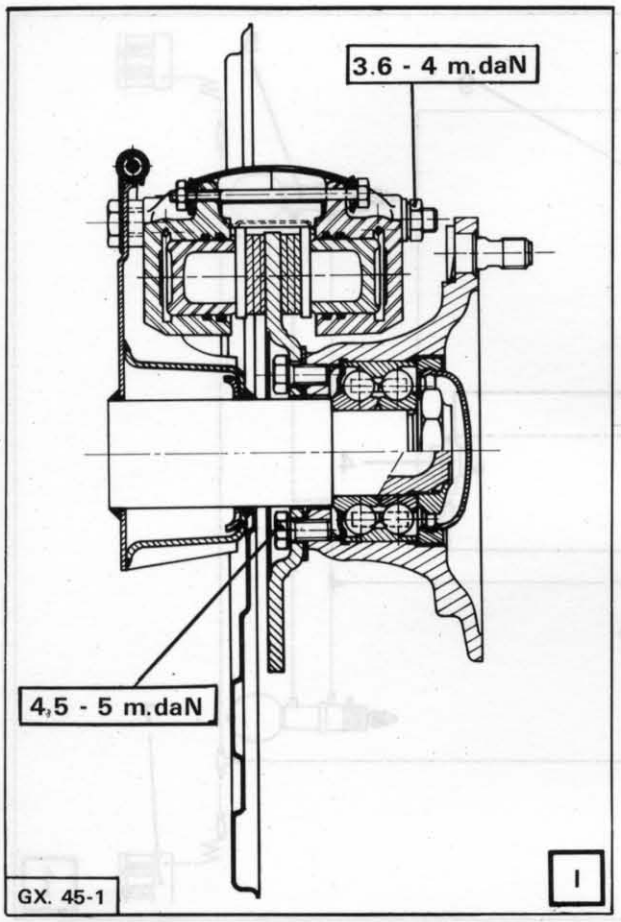
- High pressure
- Suspension pressure
- Rear brake pressure
- Discharge
- Overflow return

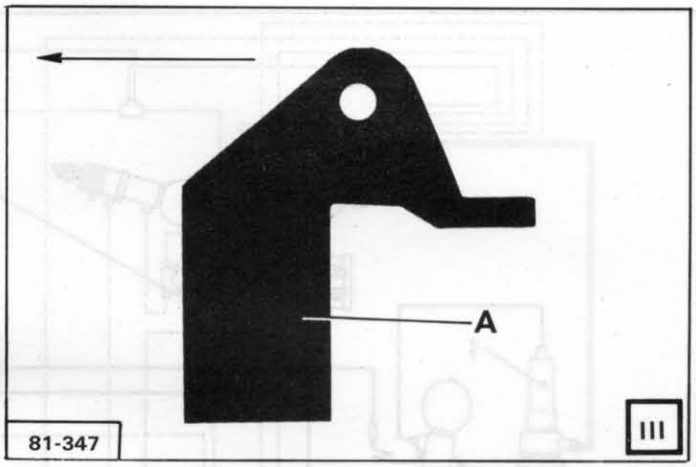
1. HP supply
2. Front suspension height corrector
3. Safety valve
4. Rear suspension height corrector
5. Rear suspension
6. Brake control valve
7. Rear brakes
8. Front brakes
9. Union with bleed screw

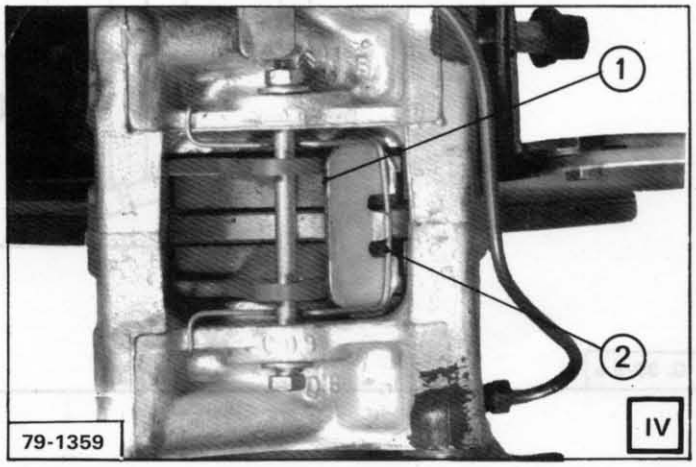
Fig. 1 *(→ 2/82)*
Fig. 2 *(2/82 →)*

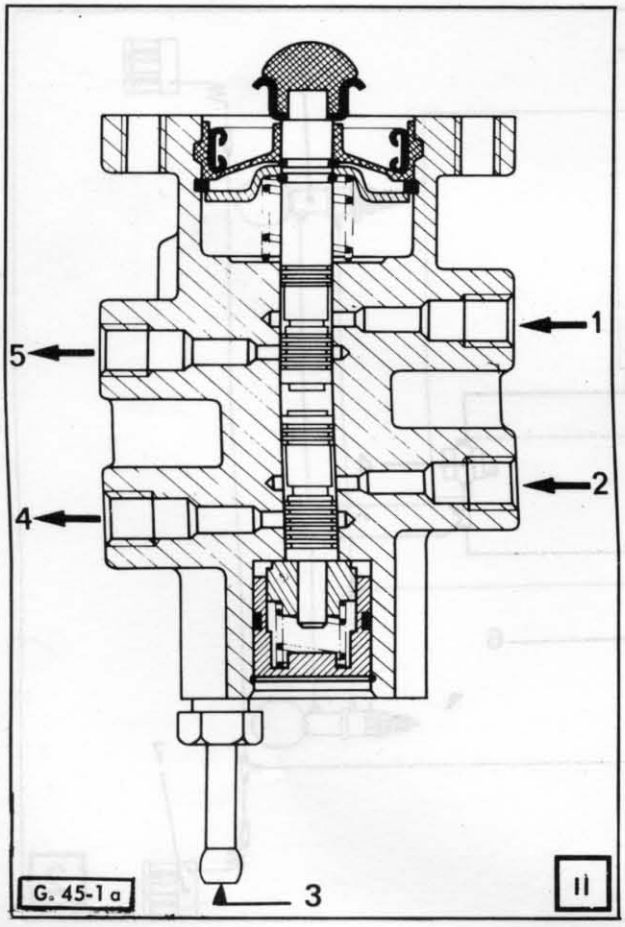

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G. 39-5 a
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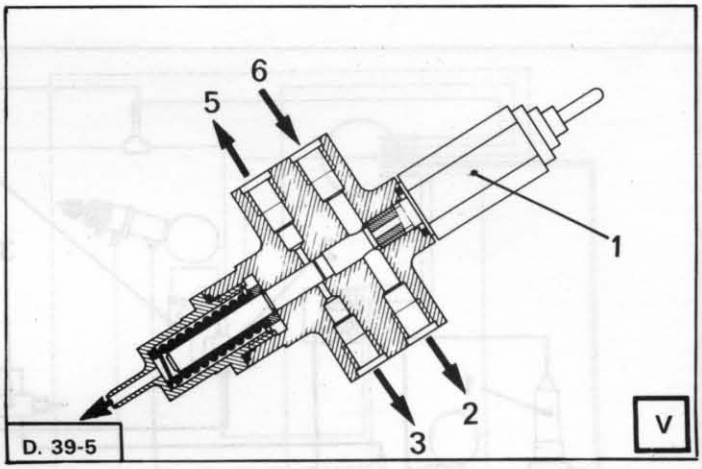

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GX. 39-1
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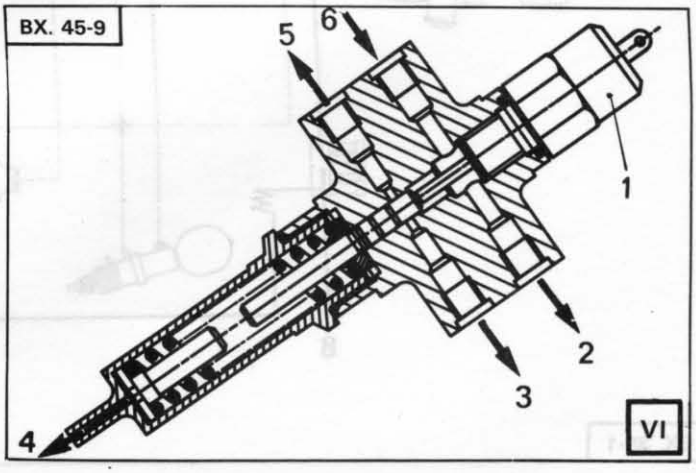

3.6 - 4 m.daN
4,5 - 5 m.daN
GX. 45-1
I


A
81-347
III


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2
79-1359
IV


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G. 45-1 a
II


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D. 39-5
V


BX. 45-9
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VI

II. SPECIAL FEATURES

- Clearance between pedal and brake valve : ..... 0.1 to 0.5 mm
- Stoplamp switch : *Stoplamps should come on as soon as the pedal hits the brake valve.*

(7/81 ⟶) :
New brake valve with a smaller slide valve dia. : 7.5 mm instead of 8.5 mm.
The fitting of that new brake valve entails the use of pads with a new lining :
Reference : TEXTAR T 292, FERODO F 578.

Main braking system :	FRONT	REAR
- Disc diameter :	270 mm	178 mm
- Disc thickness :	9 mm	6 mm
- Min. thickness after wear :	7 mm	5 mm
- Max. disc run-out :	0.2 mm	0.2 mm
- Diameter of operating pistons :	45 mm	30 mm
- Area of one pad :	36.5 sq. cm	17.75 sq. cm
- Pad lining thickness :	12 mm	7.55 mm

Check of plane-parallel condition of discs : Measure at eight different points. Variation in readings must not exceed 0.02 mm.

(3/82 ⟶) R.P. No. 1941 :
An anti-rattle pad **A** has been added to the rear brakes. It is located between the piston and the brake pad, and should be fitted, **without fail,** in the appropriate direction (⟶ Front) **(Fig. III).** It is essential that the abutment of spring (2) against the brake pads be rearwards **(Fig. IV).**
The fitting of the anti-rattle pad results in the elimination of anti-rattle shim (1).

Handbrake :
- Pad lining thickness : ..... 3.65 mm
- Surface area of one pad : ..... 11 sq. cm
- *Pad adjustment :* At max. run-out point the pad and the disc should touch lightly.

BRAKE VALVE DIAGRAM - FIGURE II

KEY
1 - High pressure source
2 - Rear suspension
3 - Discharge and return
4 - Rear brakes
5 - Front brakes

SAFETY VALVE DIAGRAM

FIGURE V *(⟶ 4/83)*
FIGURE VI *(4/83 ⟶)*

KEY :
1 { Pressure switch *(⟶ 4/83)*
Malfunction detector *(4/83 ⟶)*
2 - Front brakes (brake valve)
3 - Rear suspension (corrector)
4 - Overflow return
5 - Front suspension (corrector)
6 - High pressure

Figure I :
Front brake unit, fitted on all models up to July 1980

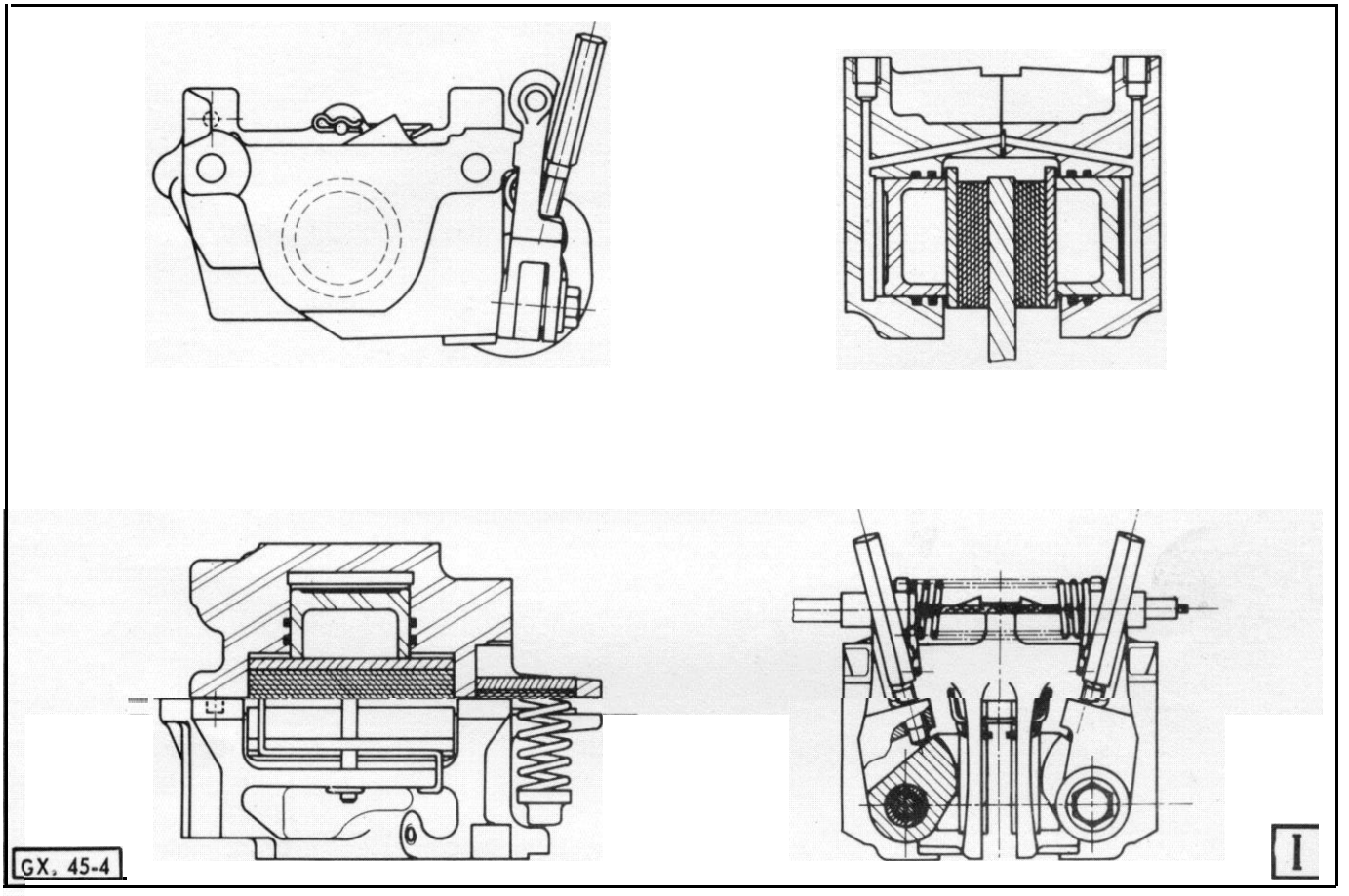
Figure II :

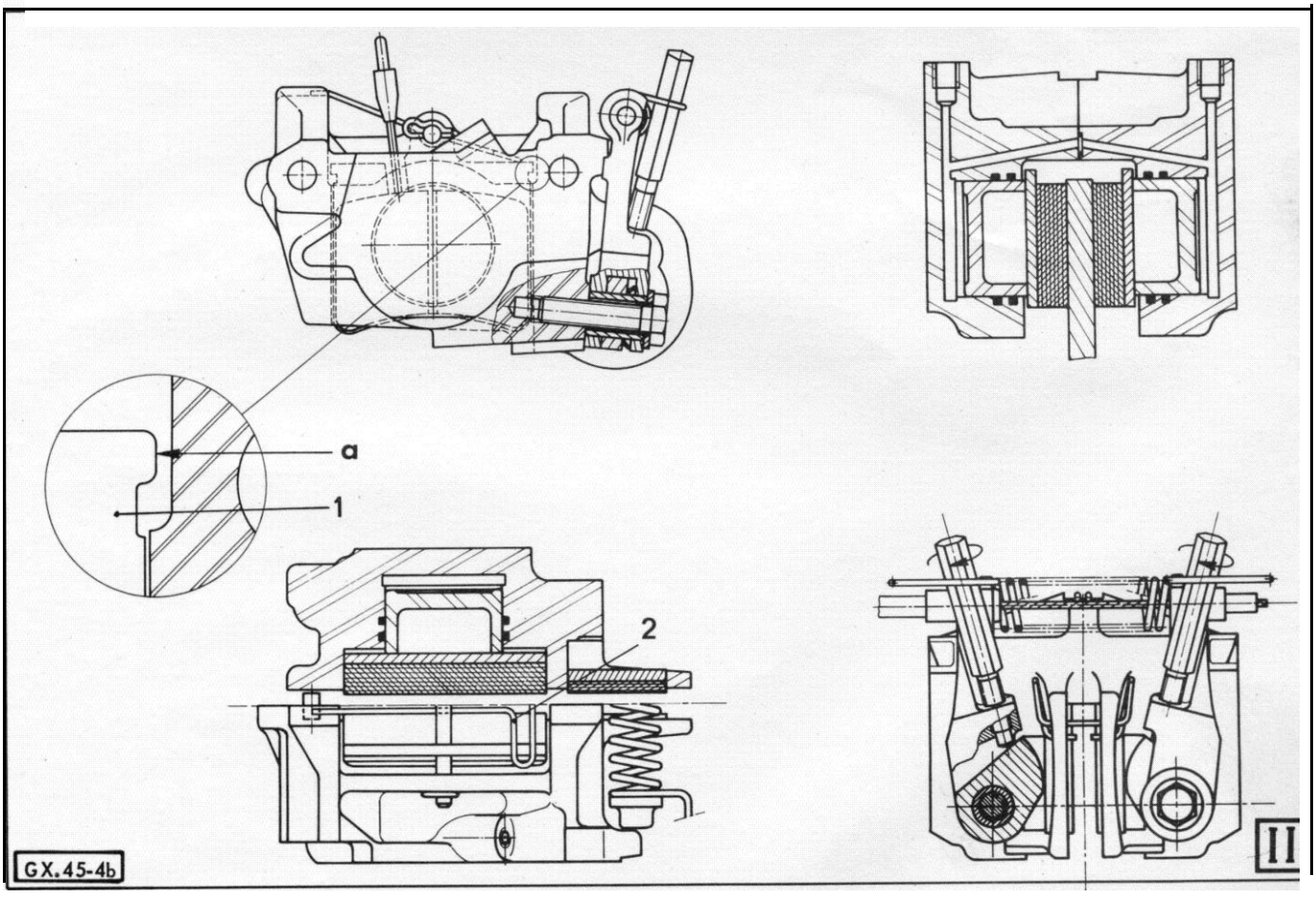
Front brake unit, fitted on all models since July 1980.

These brake units have a new shape allowing the new brake pads (1) and their new thrust springs (2) to be mounted. These new pads have « heels » at (a) that will keep them from falling when they are being replaced.

III. TIGHTENING TORQUES (m.daN)

Front brake unit attachment screws :	**6**
Brake valve attachment screws :	**1.7 to 1.8**
Pedal unit attachment screws :	**1.85**
Handbrake cable lock-nut :	**1.5**


GX. 45-4
I


a
1
2
GX.45-4b
II

I. BLEEDING THE FRONT BRAKES

NOTE : This operation must be carried out *at nil pressure* so as to avoid emulsification of the fluid, and consequent possible formation of air pockets in the circuit.

1. Depressurize the circuit :

a) With the engine stopped, undo the pressure regulator relief screw.

b) Connect right brake unit bleed screw (1) to the reservoir, using a length of transparent tube.

c) *Hold the brake pedal down,* and undo the bleeder screw.

2. **Bleed the brakes :**

a) Start the engine.

b) Undo the pressure regulator relief screw. and allow the fluid to flow until no air bubbles are observed. At this moment do up bleed screw (1).

c) Release the brake pedal. and disconnect the bleed tube.

II. BLEEDING THE REAR BRAKES

The rear brakes must be bled under pressure.

- Jack up the rear of the vehicle, with the wheels hanging free.
- Remove the wheel;.

Connect a length of transparent bleed tube to each bleed screw, with the free ends of the tubes placed in a clear recipient.

Start the engine.

Using a jack, raise one of the rear suspension arms (*the rear corrector is then in the « inlet » position).*

- Press the brake pedal.

Partially undo the bleed screw, and allow the fluid to flow until no more bubbles are observed

Do up the bleed screw.

- Replace the wheels.
- Lower the vehicle to the ground.

III. ADJUSTMENT OF BRAKE PEDAL CLEARANCE

1. Adjust pedal clearance :

Bend the metal at « a », to obtain clearance **J** between pedal and regulator:

J = 0.1 to 0.5 mm

IV. ADJUSTMENT OF STOP LIGHT CONTACTOR

1. Check brake pedal clearance adjustment (see preceding paragraph).

2. Adjust stoplamp switch (2) :

The stop lights should come on as soon as the pedal comes into contact with the brake valve.

Bend stoplamp switch support bracket to achieve this condition.

V. TESTING AND ADJUSTMENT OF THE HAND-BRAKE

1. Raise and chock the front of the vehicle.

Release the handbrake control fully.

Remove the spare wheel.

2. Adjust the cams :

Check that levers (7) are in contact with the brake unit. if necessary undoing handbrake cable adjustment lock-*nut (3)* and nut (4).

Turn adjustment screw (5), so as to obtain a setting at the limit of brushing contact.

Carry out this adjustment at the point of maximum run-out on the disc.

(Turn by rotating the corresponding wheel).

3. Adjust the handbrake control cables :

On each brake unit.

Check that sleeve end fitting (6), and the sleeve are in place.

Advance cable adjustment nut (4) until it is in contact with lever (7) (pull on the cable to facilitate this operation).

Check that the free lengths of the threaded end fittings are identical on each side (to within 5 mm).

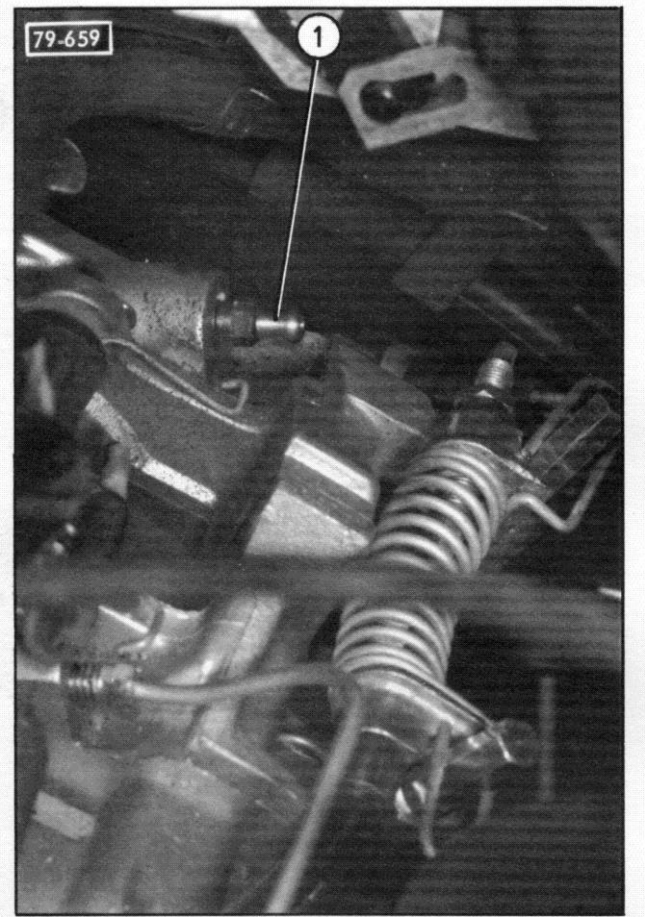
Tighten lock-nuts (3) to 1.5 m.daN

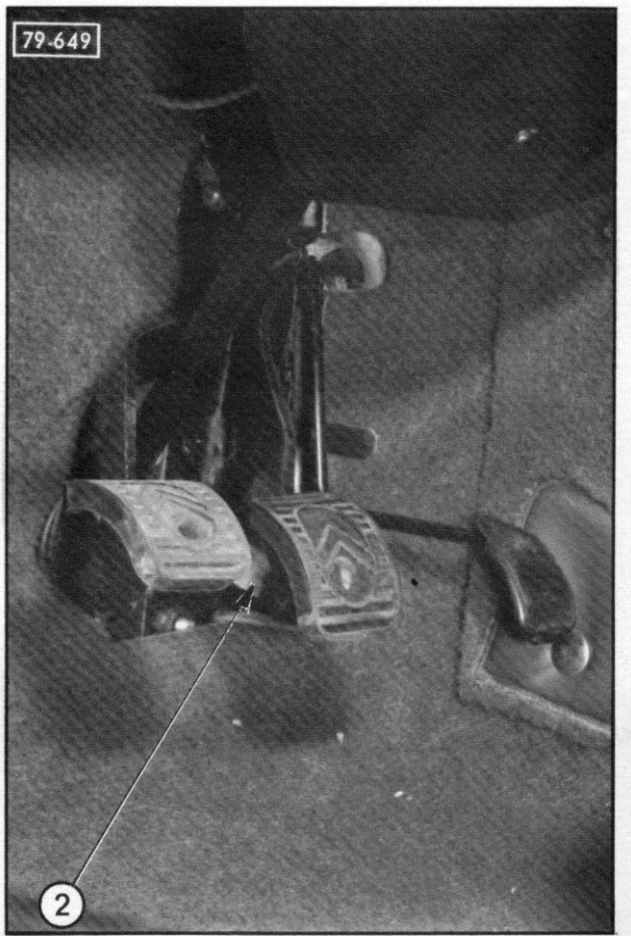
4. Test the handbrake :

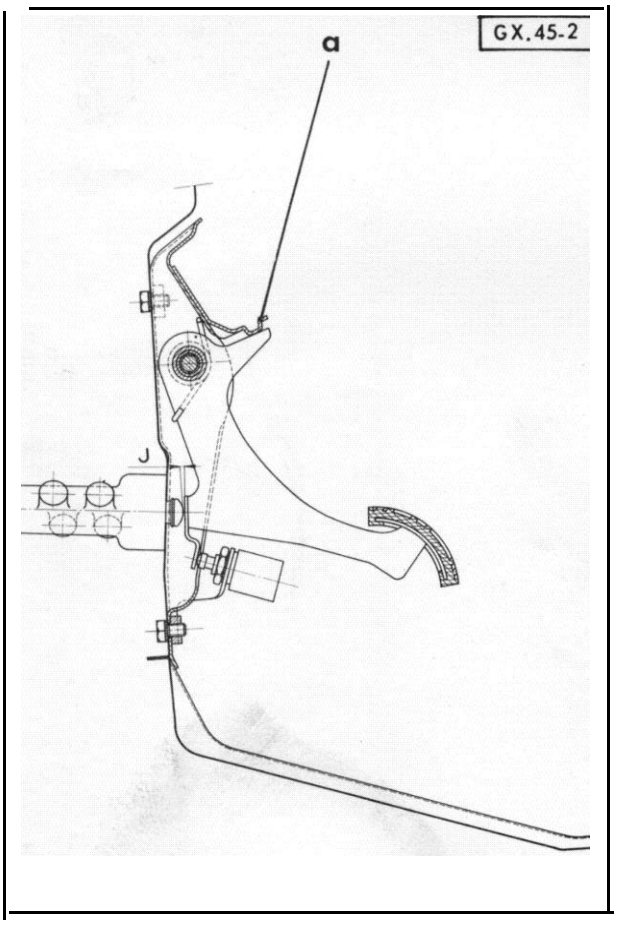
Operate the handbrake control a number of times. checking that the setting does not vary. and that the locking system functions correctly.

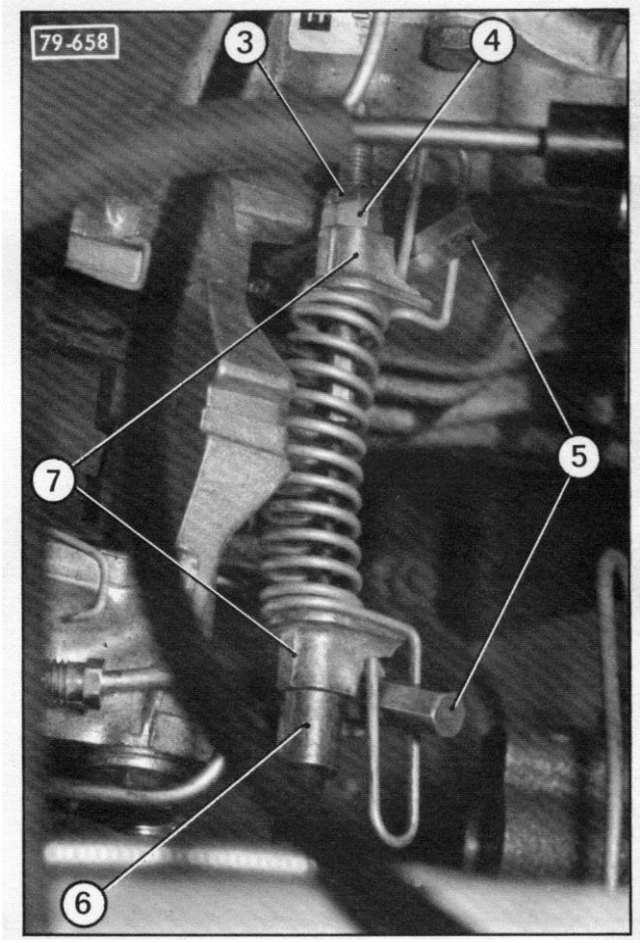
Replace the spare wheel.

Lower the vehicle to the ground.


79-659
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79-649
2


GX.45-2
a
J


79-658
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4
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6
7

LIST OF OPERATIONS IN SECTION II

Operation number	DESCRIPTION
	REMOVAL AND FITTING
GX. 100-1	Removal and fitting of the engine / gearbox unit
GX. 100-4	Removal and fitting of the engine only
GX. 122-4	Work on the timing gear :
	- Removal and fitting of a belt, tensioner roller or timing pulley
GX. 133-1	Work on engine/gearbox assembly bearers
	I. Removal and fitting of a front flexible bearer
	II. Removal and fitting of a rear flexible bearer
GX. 222-1	Work on the lubrication system :
	I. Removal and fitting of pump drive or oil pump on vehicle
	II. Removal and fitting of discharge valve
♦ GX. 311-1	Working on the clutch housing : pedal-operated or with torque converter:
	I. Replacing the thrust-bearing guide sleeve
	II. Replacing the stator sleeve on a gearbox with a torque converter
	(See Operation *GX. 311-3* in Section *III*)
♦ GX. 330-1	Working on a gearbox :
	- Removing and fitting the 5th gear pinions or the bearing holding plate (on vehicle)
GX. 334-1	Work on the gear Change mechanism
	I. Removal and fitting of fork shaft control levers
	II. Removal and fitting of gear lever control
GX. 343-4	Work on the gearbox drive outlet shaft :
	- Removal and fitting of a gearbox drive outlet shaft
GX. 372-1	Removal and fitting of a drive shaft
GX. 391-1	Removal and fitting of an HP pump
GX 412-1	Working on front axle arms :
	I. Removal and fitting of a lower arm
	II. Removal and fitting of an upper arm
	III. Checking an upper arm
GX. 413-1	Work on the swivel joints :
	- Removal and fitting of complete swivel or upper/lower ball joint
GX. 414-1	Removal and fitting of the front axle unit
GX. 422-1	Removal and fitting of a rear axle arm
GX 424-1	Removal and fitting of the rear axle unit
GX 424-4	Work on the rear axle unit :
	- Removal and fitting of a rear arm support tube

LIST OF OPERATIONS IN SECTION II

Operation number	DESCRIPTION
GX. 433-1	Work on hydraulic suspension system components : I. Removal and fitting of a front suspension cylinder II. Removal and fitting of a rear suspension cylinder III. Removal and fitting of a front height corrector IV. Removal and fitting of a rear height corrector
GX. 434-1	Removal and fitting of the front anti-roll bar
GX. 441-1	Removal and fitting of a theft-proof steering lock
GX. 442-1	Removal and fitting of a steering system
GX. 451-1	Work on the brakes : I. Replacement of the front brake pads II. Replacement of the rear brake pads III. Removal and fitting of a front brake unit IV. Removal and fitting of a rear brake unit V. Removal and fitting of a front brake disc VI. Replacement of the handbrake pads
GX. 455-1	Work on hydraulic brake system piping - Replacement of a spiral pipe

SPECIAL TOOLING

TOOLS SOLD

2510-T : Lifting bar
2511-T : Sling

TOOLS NOT SOLD

MR. 630-31/84 a : Mandrel
MR. 630-31/84 b : Mandrel
MR. 630-44/14 : Sling safety hook 2511-T

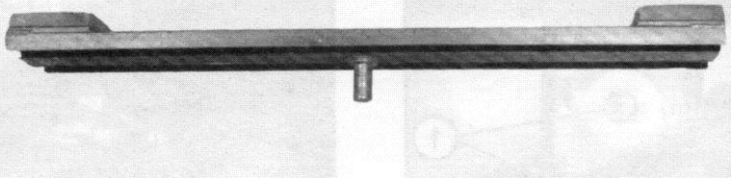
TIGHTENING TORQUES

Recommended values :	**Torque in m.daN**
Front elastic mount attachment screws :	**4 to 4.5**
Gearbox rear attachment screws :	**2.3 to 4**
Wheel nuts :	**5.5 to 7.5**

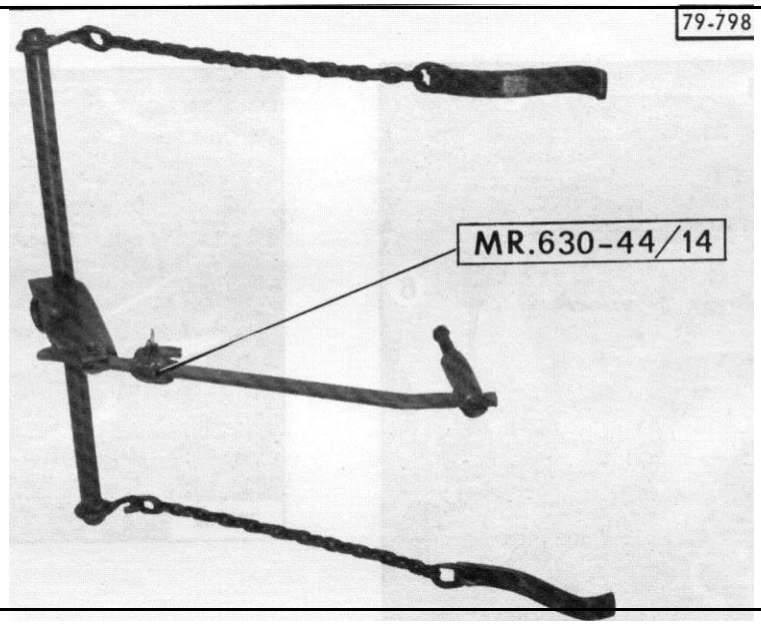
Mandatory values :

♦ Drive shaft/gearbox output attachment nuts :	**5 to 5.5**
♦ *Lower ball-pin attachment on pivot* :	**1.8**

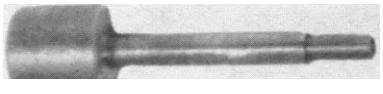
2510-T 79-1047



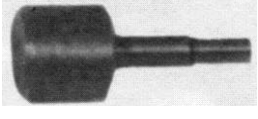
2511-T 79-798



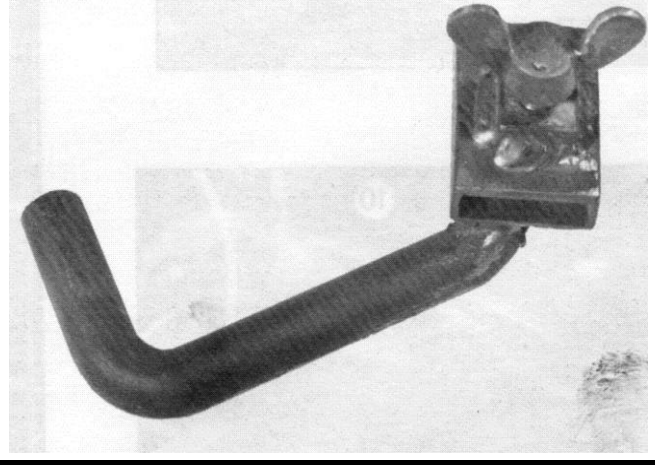
MR.630-31/84a 79-1093

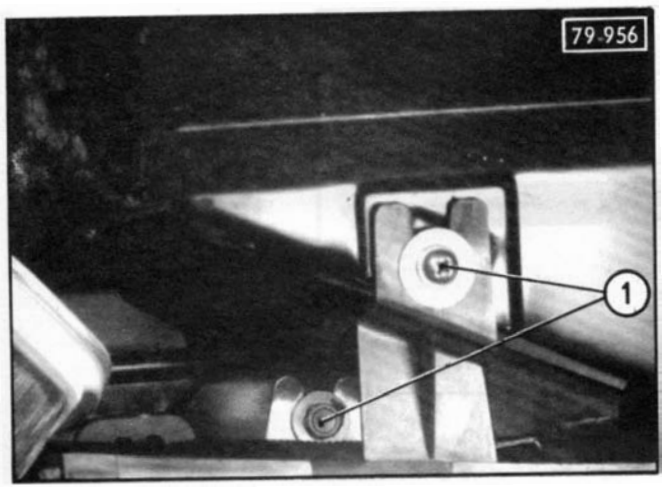


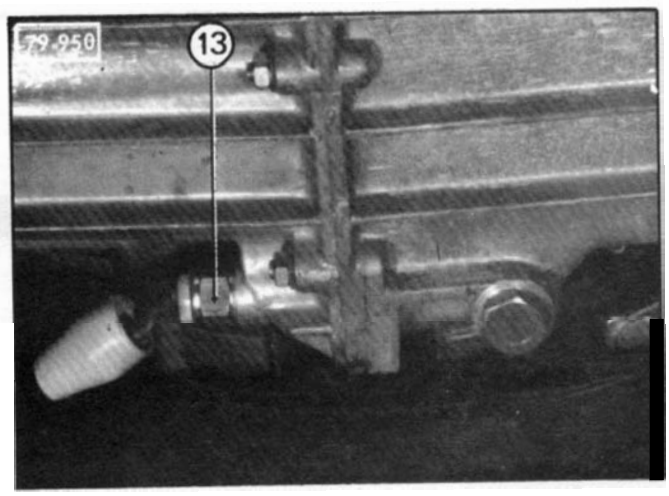
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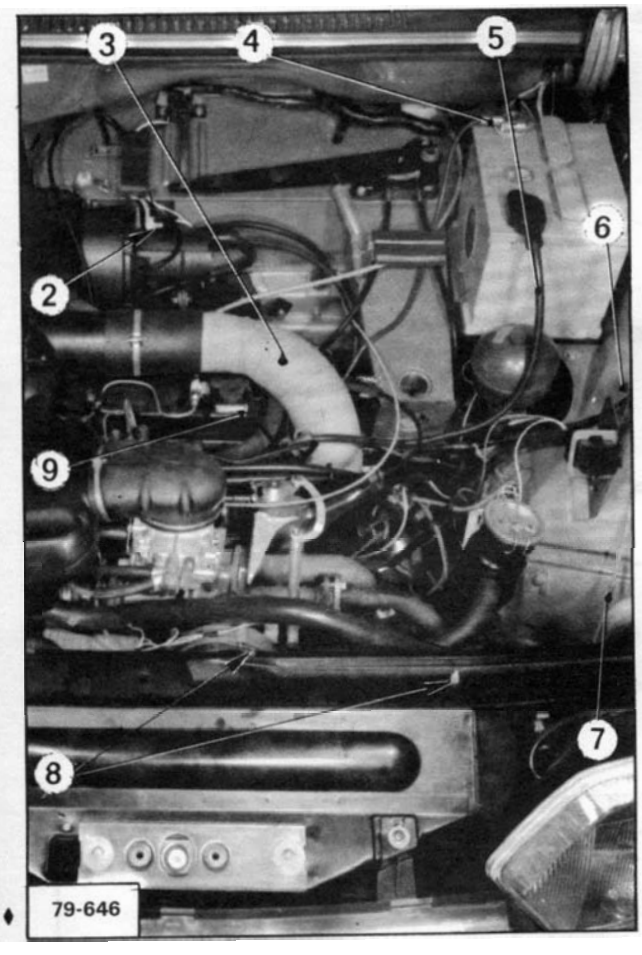


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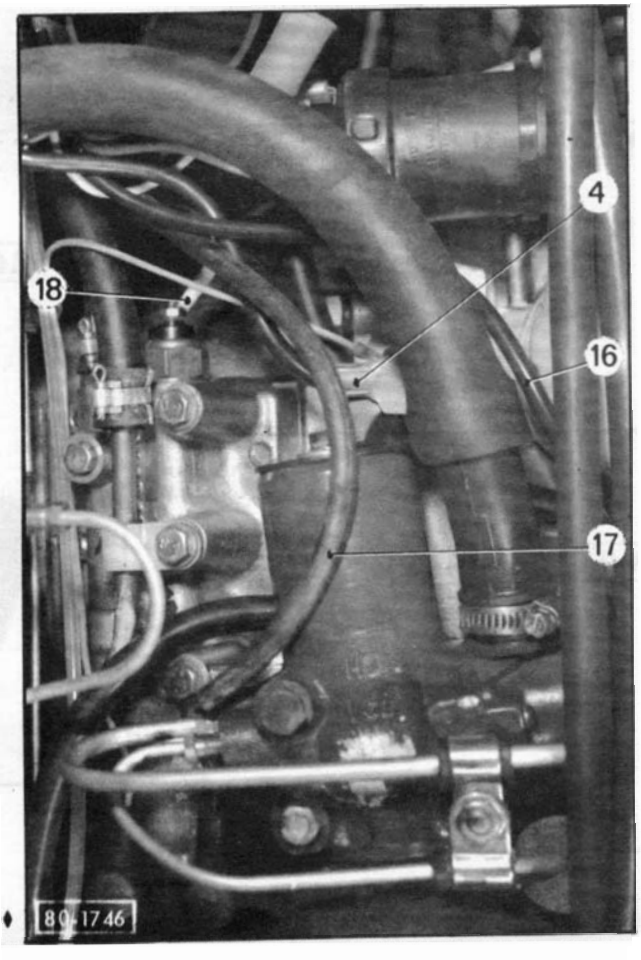


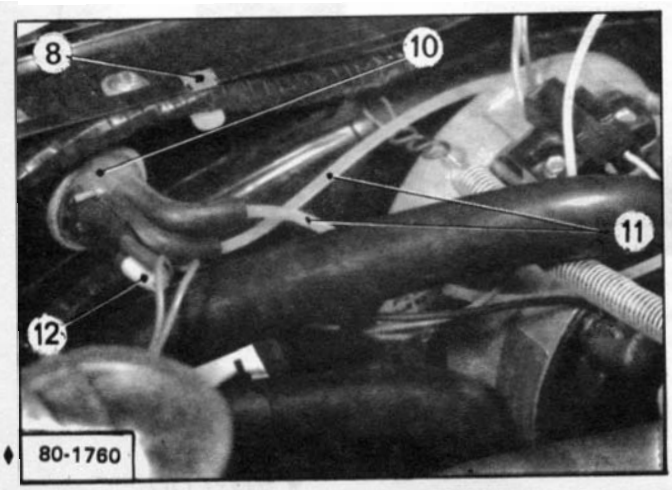

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♦ 5

REMOVAL AND FITTING OF THE ENGINE/GEARBOX UNIT.

REMOVAL

1. Remove the wheel embellishers and slacken the front wheel nuts.

FITTING

2. Chock the front of the vehicle, with wheels hanging free :
Use a garage jack fitted with lifting bar 2510-T

3. Depressurize the hydraulic circuits
(See Op. GX. 390-00).

4. Remove :
front wheels.
- right windscreen wiper.
- spare wheel.

prop attachment screw (6) (fix bonnet in fully open position),
- grille (four screws (1)),
- left heater duct (3).

5. Disconnect :
battery leads (4) and (5).
- headlamp connectors.
- horn (s) wire(s).
- heater unit connectors (2)

6. Disengage the electric harness from clips (8) on the anti-recirculation plate.

7. Uncouple bonnet release cable (7).

6. On vehicles with a torque converter :
Disconnect :
- harness (12) from fast idle electrovalve (10),
- vacuum pipes (11) *(Note* ***the position of each one of them).***

9. Remove :
- direction indicator lamps.

headlamps,
- horn (s) and horn support(s).
- bumper,
- air filter,

anti-recirculation plate.
front valance.
- spare wheel bracket (9),

heating unit,
- right heater duct.
- earth cable (4).

10. Disconnect :
idle cut-out wire.
- alternator earth wire and connector.
- diagnostic socket electric harness.
- plug No. 1 lead and reference sensor (14) *(on* ***vehicles*** → *7/80),*
- wire for circuit-breaker (15),
- ignition coil HV wire,
- starter wires.
- engine oil pressure switch wire (16),
- wire for thermal switch (15),
- wires for reversing light contactor.
- wire for front brake pad wear indicators.

11. On vehicles with a torque converter :
Disconnect :
- electrovalve supply wire (17),
- wire (18) of the converter oil pressure switch.
- cooling tube for the converter oil cooler.

12. Uncouple :
- accelerator cable.
- choke cable,
- pump fuel inlet pipe,
- fuel return pipe.
- speedometer cable *(5-speed* ***gearbox).***

handbrake cables.
- gear lever control (1),
- lower pivot arms.

drive shafts on gearbox side.
- clutch cable.
- hydraulic fluid reservoir suction pipe.
- service pipe (4) from two-way union (5) and from the axle unit at point (3),
- feed pipe (2) for front brakes.
- pressure regulator return pipe (6).

13. *On vehicles with a torque converter :*

Disconnect :

flexible wires (7) and (8) from the converter oil cooler and withdraw them from attachments (9) and (10).

14. Remove :

exhaust manifold collars (11),

Y pipe (12).

16 Position the lifting, fitted with sling 2511-T

Tighten the chains without lifting the engine-gearbox unit.

16. Remove :

gearbox rear attachment screws (13),

front flexible mount attachment screws

17. Remove the engine/gearbox unit :

a) Pull the engine/gearbox unit slightly. and remove :

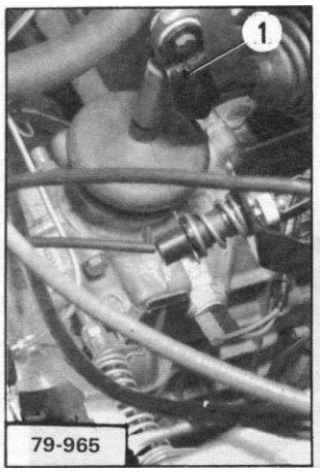
clamp for dust-guard (15) and disengage the dust-guard upwards.
- pin(18), using mandrel MR. 630-31/84 a
- lever (14), turning it by a quarter of a turn.

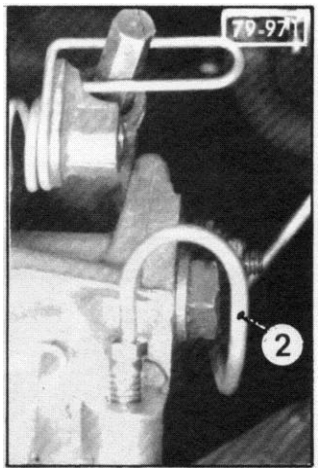
b) Disconnect speedometer cable *(on a 4-speed* ***gearbox*** *or* ***when converter is*** *fitted).*

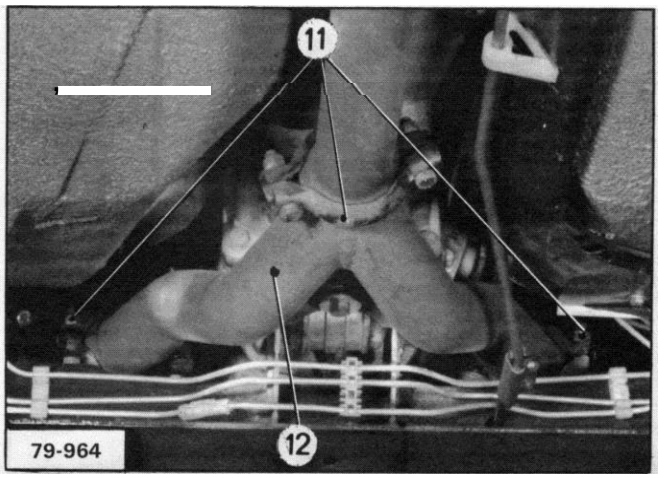
c) Disengage the engine/gearbox unit pulling it out towards the front.

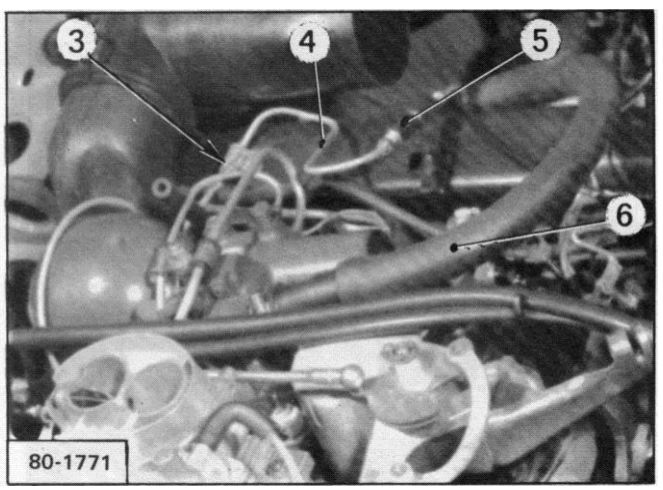
CAUTION :
- Take care not to knock the distributor against the wheel arch.
- Take care not to catch brake unit junction pipe (17) or handbrake adjustment screws (16). on the upper crossmember of the axle unit.

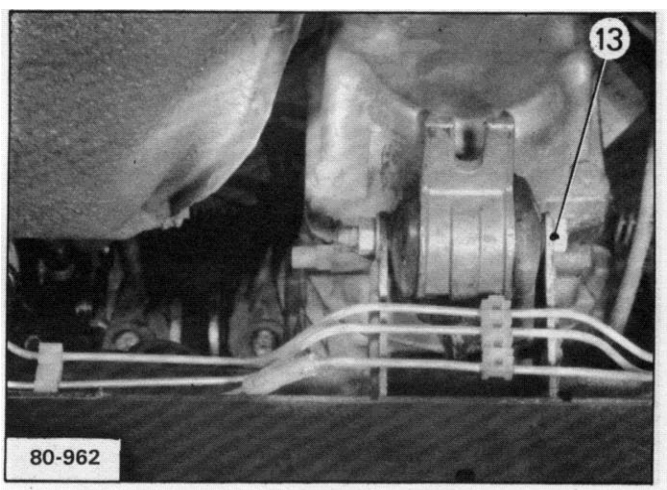
16. Remove exhaust pipe (19), if necessary.

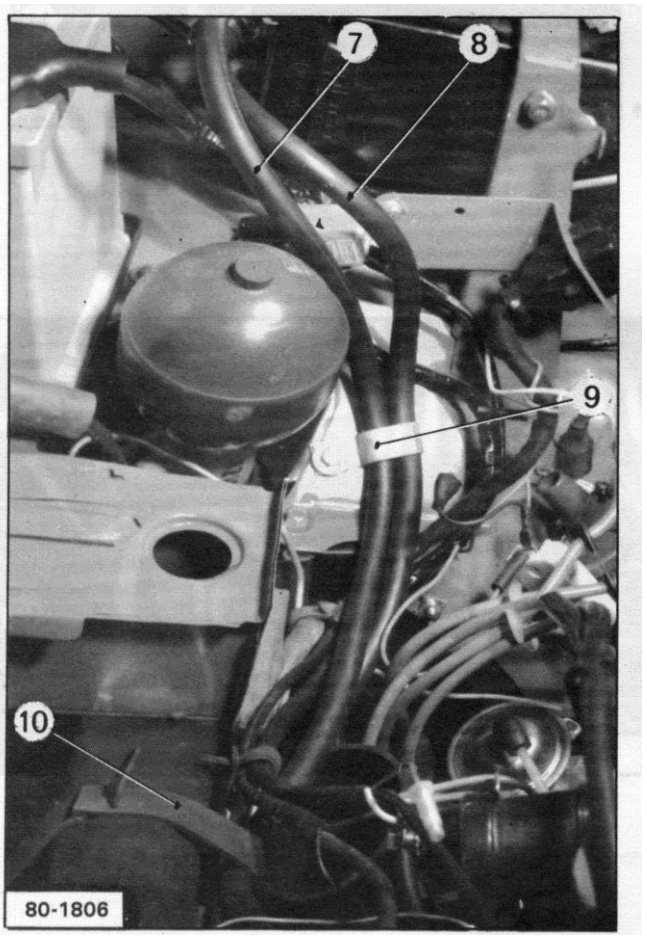

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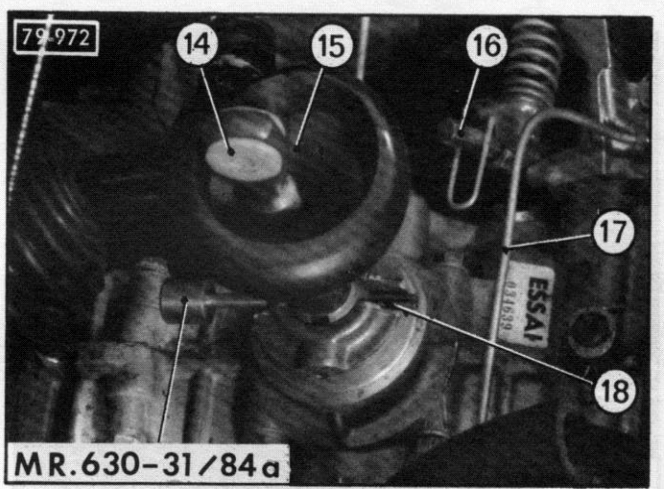

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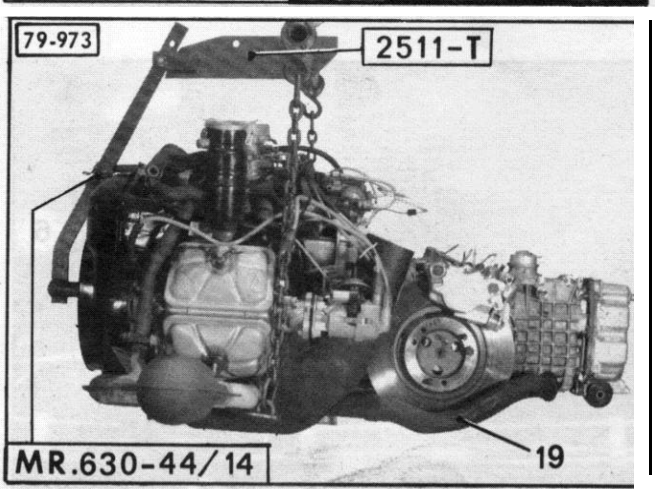

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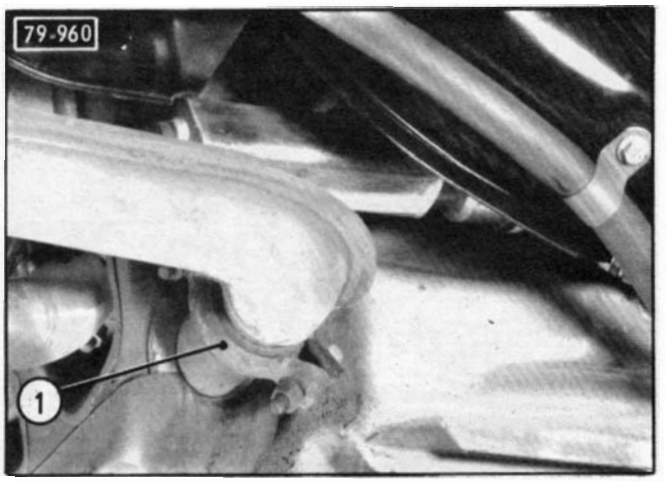

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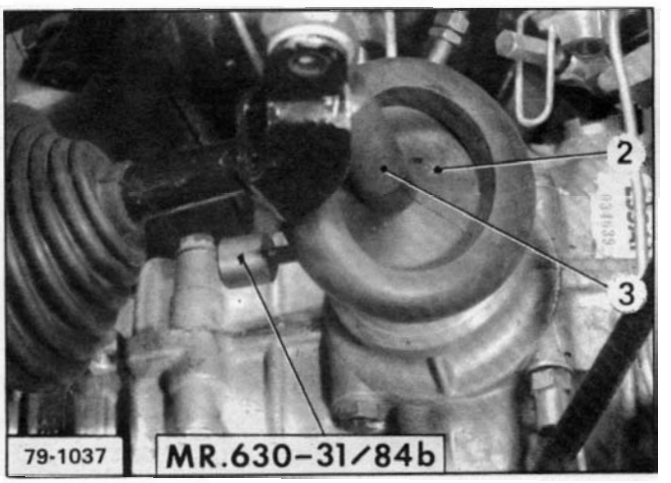

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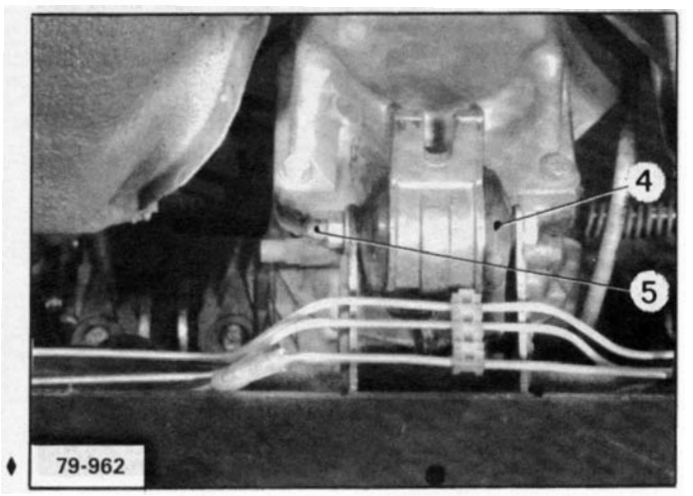

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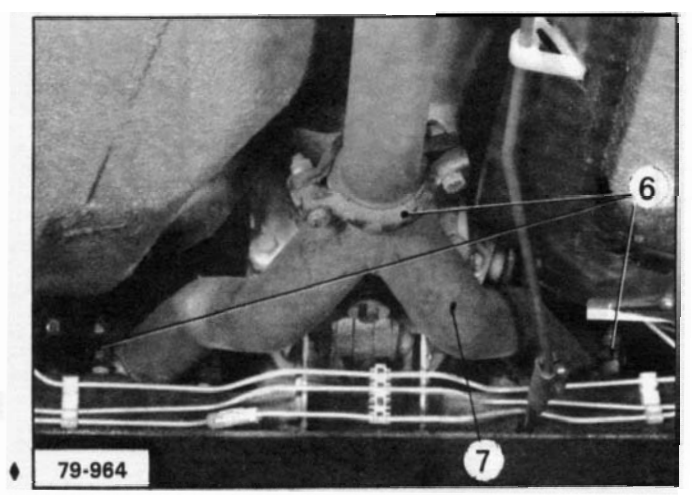

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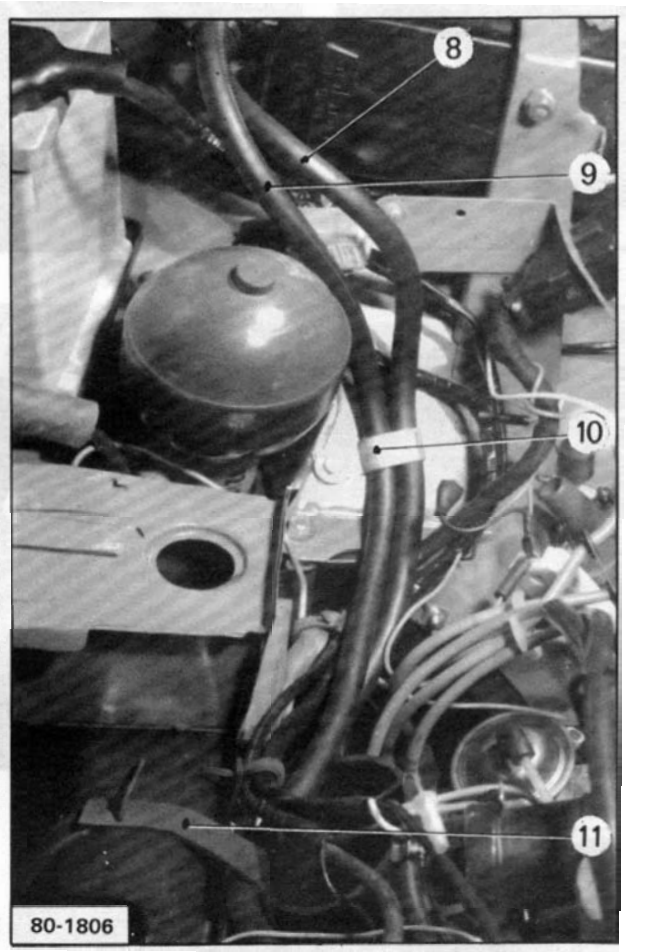

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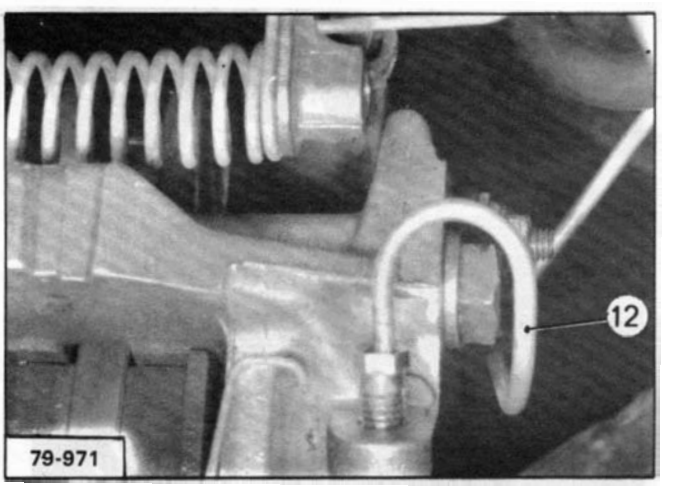

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FITTING.

19. Fit the exhaust pipes, if necessary without tightening front collars (1).

20. Fit the engine/gearbox unit :

a) Engage the gearbox under axle unit upper cross-member.

b) Fit fork shaft control lever (3) *(as for removal turn it* ***by a*** *quarter* ***of a*** *turn to* ***position it correctly).***

c) Insert pin. using mandrel
MR. 630-31/84 b

d) Fit dust-guard (2) with its collar

e) Connect speedometer cable (on a *4-speed* ***gearbox or when*** *converter* ***is fined).***

f) Engage rear flexible mounting (4) in its bracket on the axle unit.
Fit screw (5).
Tightening torque : 2.3 to 4 **m.daN.**

g) Fit and tighten the front flexible mount attachment screws.
Tightening torque : 4 to 4.5 **m.da.**
Remove sling 2511-T

21. Fit:
- Y pipe (7),
- collars (6).

Tighten collars (1) and (6)

22. *On vehicles with a torque converter.*

Couple :
- flexible tubes (8) and (9) to the converter oil cooler. and fix them at (10) and (1 1).

23. Couple :
front brake feed pipe (12),
- the service pipe to the two-way union and to the axle unit,
- pressure regulator return pipe.

24. Couple :
- drive shafts,
  Tightening torque : 5 to 5.5 **m.daN**
- lowerarms,
  Tightening torque : 1.8 **m.daN**
- clutch cable.

gear control,
- handbrake cables,
- speedometer cable *(5-speed* ***gearbox].***

fuel return pipe,
fuel pump inlet pipe.
choke cable,
- accelerator cable.

25. Connect :
front brake pad wear indicator wire.
- reversing light contactor wires.
- thermal switch wire.
- pressure switch wire,
- starter wires.
- ignition coil HV wire.

circuit-breaker wire.
plug No. 1 lead with reference sensor.
*(**vehicles** ⟶ 7/80)*
- diagnostic socket electric harness.
- alternator earth wire and connector.
- idle cut-off wire.

26. ***On** vehicles **with a** torque **converter :***
Connect *:*
- electrovalve supply wire.
- wire for the converter oil pressure switch,
- cooling tube (2) for converter oil cooler.

27. Adjust :
- handbrake *(Op.* GX. 451-O).
- clutch clearance *(Op.* GX. *312-00)*

28. Fit :
earth cable (12),
- right heater duct.
- heater unit.
- spare wheel bracket (11),
(fit two-way *union (10)),*
front valance,
- anti-recirculation plate.
air filter,
- bumper,
- horn (s),
- headlamps,
- direction indicators.

29. Couple bonnet release cable (3)

30. Fit the cable cluster to the anti-recirculation plate using plastic clips and collars.

31. **Connect** :
- heater unit connectors (9),
- horn (s) wire (s),
headlamp connectors.
- battery leads (12) and (4)

32. On ***vehicles** with **a** torque converter :*
Connect *:*
- harness (8) on the fast idle electrovalve,
vacuum pipes (6) and (7),
- ***pipe (6) comes from** the **vacuum** port **of the** carburettor,*
- ***pipe (7) goes** to **the vacuum capsule controlling** the throttle opener.*

33. Fit :
- left heater duct (5),
- grille,
- bonnet prop attachment screw (1)
- right windscreen wiper.
- front wheels.

34. Lower the vehicle to the ground.

35. Tighten the front wheel nuts and fit the embellishers.

36. Check engine and gearbox oil levels.

37. Prime the HP pump :

a) Fill hydraulic fluid suction pipe and connect to the LHM reservoir.

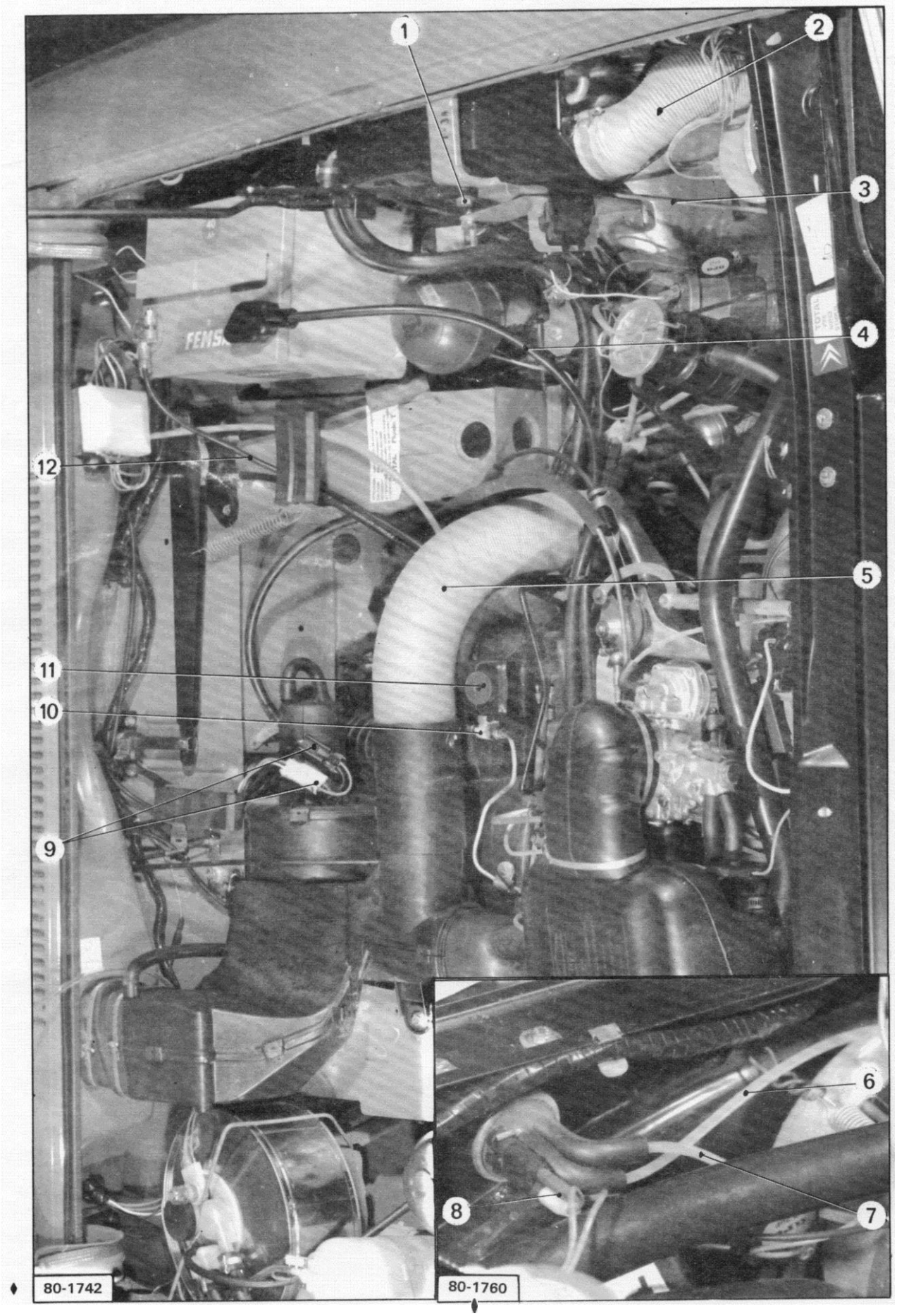
b) Undo the pressure regulator relief screw and start the engine.

c) Do up the pressure regulator relief screw and start seal-tightness of unions.

38. Bleed the front brakes :
(See Op. GX. 453-O)

39. Fit the spare wheel.

40. Start the engine and let it warm up :
Check and adjust, if necessary :
- ignition point,
- idle speed.
- headlamps.


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SPECIAL TOOLS

TOOLS SOLD

♦ **1790-T** : Wrench for removal and fitting of the converter

2510-T : Lifting bar

2511-T: Sling

♦ **3186-T :** Lug for securing the converter on the gearbox

TOOLS NOT SOLD

MR. 630-44/14 : Safety hook for sling 251 I-T

TIGHTENING TORQUE VALUES

Recommended values :

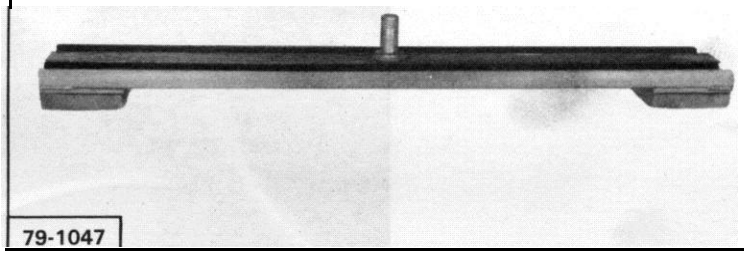
Engine/gearbox assembly stud nuts : 4 - 6 m.daN
- Engine mounting attachment screws : 4 to 4.5 **m.daN**
- Screws fixing the membrane on the converter (LOCTITE SCELBLOC) : 2.7 to 2.9 **m.daN**

1790-T



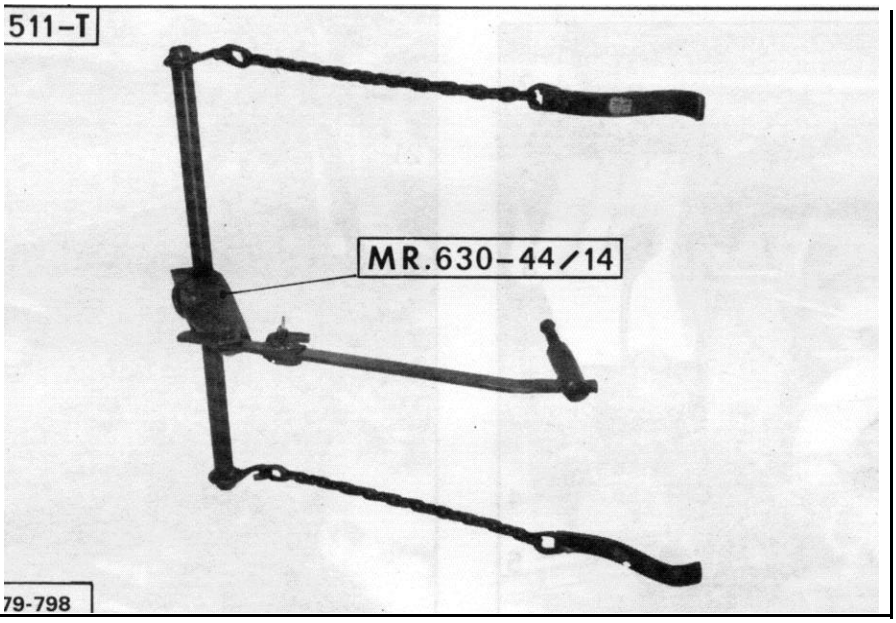
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2510-T



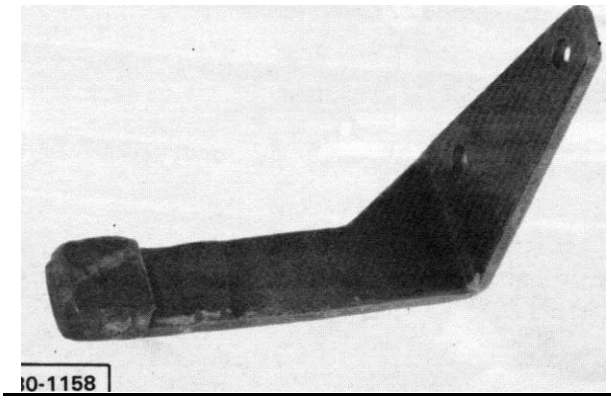
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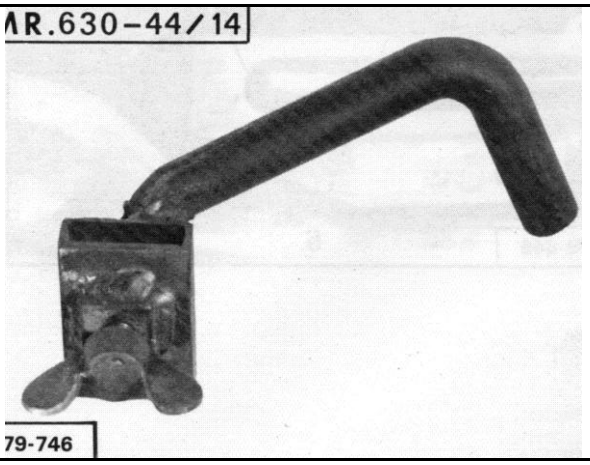
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-186-T

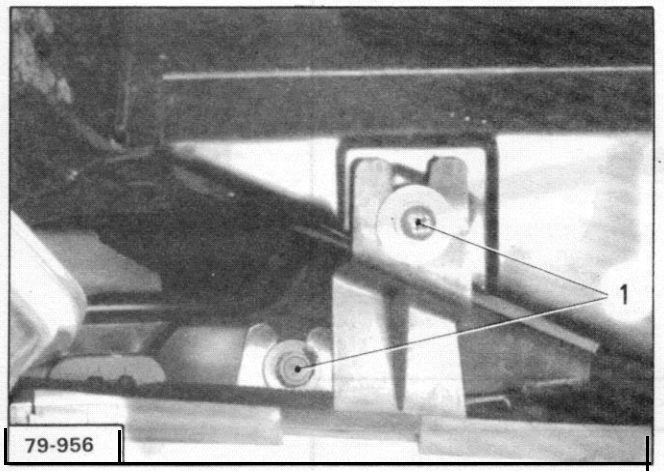


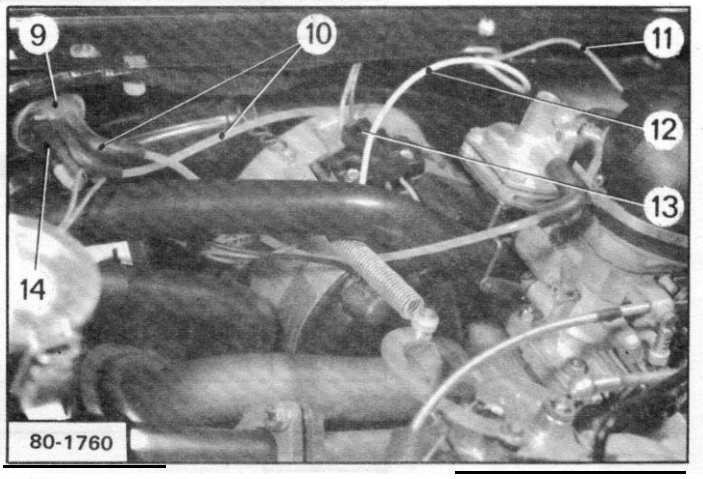
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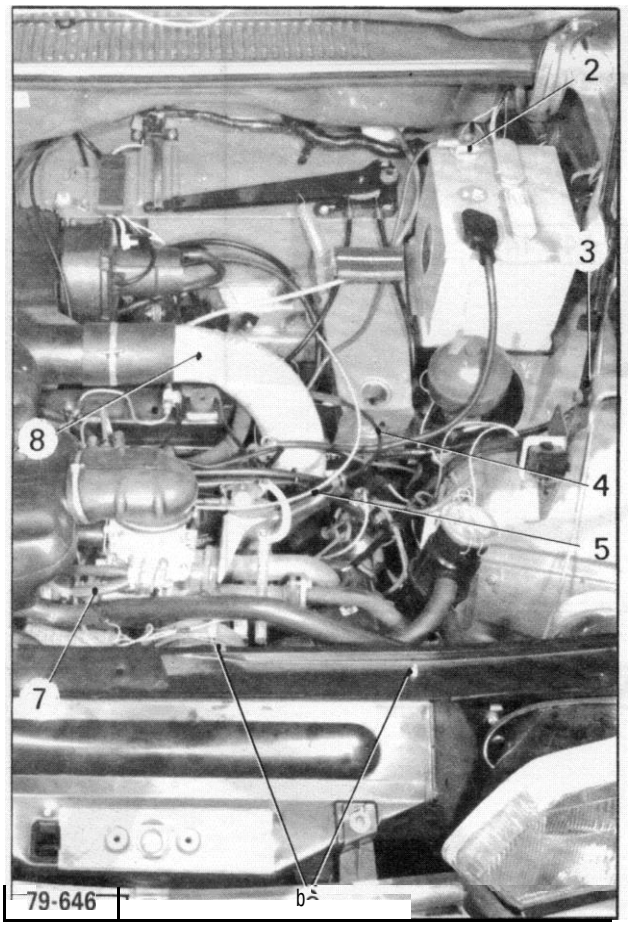
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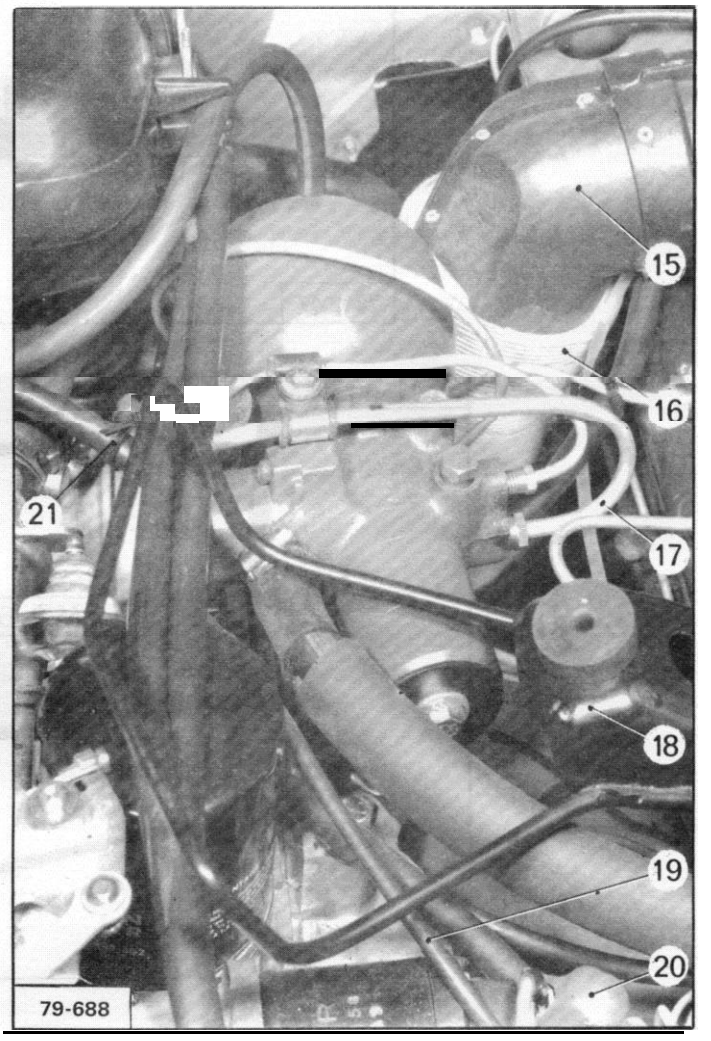


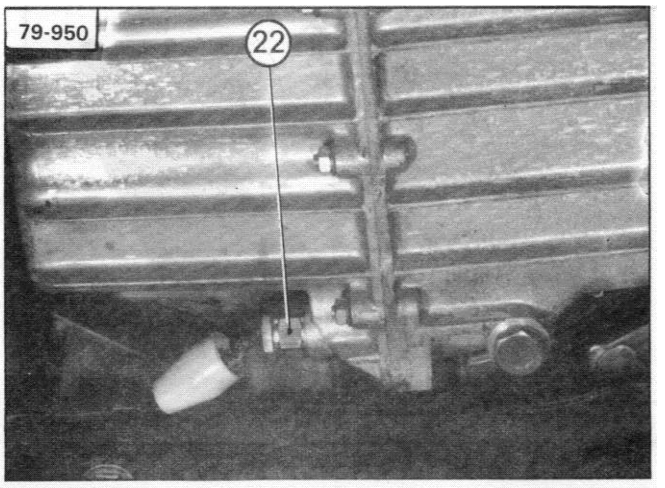
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REMOVAL AND FITTING OF THE ENGINE ONLY

REMOVAL

1. Chock the vehicle, with front wheels hanging free. Use a garage jack fitted with lifting bar 2510-T.

2. Depressurize the hydraulic circuits (see Op. *GX.* 390-00)

3. Remove :
- right windscreen wiper.
- spare wheel.
- prop attachment screw (3), fixing the bonnet fully open,
- grille (four screws (1)),

left heater duct (8).

4. Lift up as far as possible. right heater duct (16) along heater box duct (15).

5. Disconnect :
- battery negative lead (2),
- headlamp connectors.
- horn wire (s).

6. Disengage the cable cluster from clips (6) on the fan anti-recirculation plate.

7. Uncouple the bonnet release cable

6. *Vehicles with a torque converter :*

Disconnect :
- harness (14) from fast idle electrovalve (9),
- vacuum pipes (10) (note their respective position).

9. Remove :
- direction indicators.
- headlamps.
- horn (s) and their support.
- bumper,

air filter,
- fan anti-recirculation plate.

valance,
- spare wheel bracket (18).

10. Disconnect :
- idle cut-off wire (11),
- alternator earth wire (12) and connector (13),
- plug No. 1 lead with reference sensor. *(vehicles → 7/80).*
- circuit-breaker wire.

ignition coil distributor HT wire.
- starter motor wires (20),
- oil pressure switch wire (19),

wire for engine oil temperature switch (**22**).

11. Uncouple :
- accelerator cable (4),
- choke cable (5),
- fuel inlet pipe on pump.
- carburettor fuel return pipe (7) ***(disengage it from plastic collars (21),***
- hydraulic fluid reservoir suction pipe.
- HP pump delivery pipe (17) from pressure regulator.

12. Remove :

- heater pipe (1),
- heater duct shutters (4),
- collars (3),

hot air intake (2),

- Y union attachment screw (5) on gearbox.

13. *Vehicles with a torque converter :*

a) Disconnect :

- cooling tube (6) of the torque converter oil cooler,

b) Remove :

pressure regulator,

- the three screws (8) fixing diaphragm (7) to converter (9),

c) Fix securing lug 3186-T instead of pressure regulator.

It is imperative to use securing lug 3186-T when removing the engine, or the converter will not stay in place.

14. Remove the engine :

a) Position sling 2511-T fitted with safety hook MR. 630-44/14 Take the strain on the chains but do not raise the engine.

b) Remove front flexible mount attachment screws (12).

c) Raise the engine/gearbox unit, until the clutch casing comes into contact with the axle unit upper crossmember.

d) Chock the engine/gearbox “nit under the clutch casing, ahead of the clutch control fork.

e) Undo the four engine/gearbox assembling nuts (11).

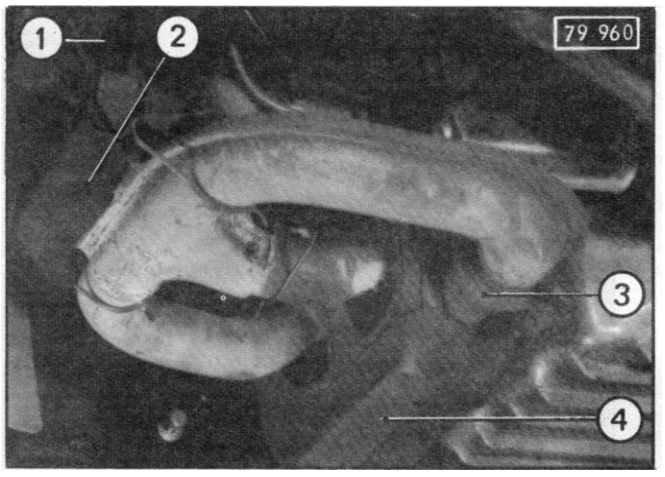
Use wrench 1790-T

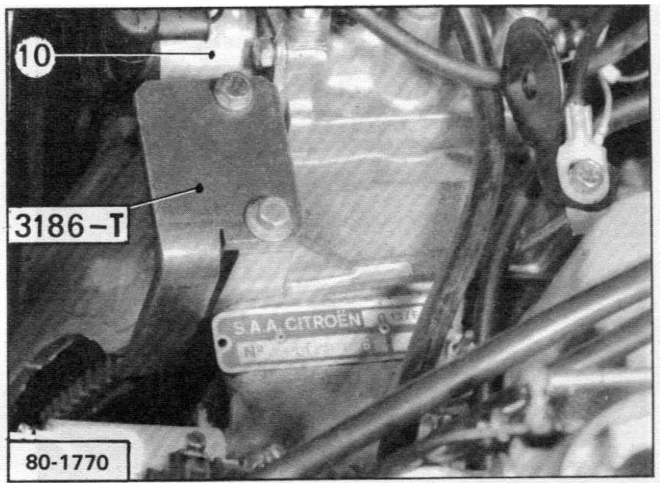
On vehicles with a torque converter, never uncouple the electromagnet (10) from the converter distributor.

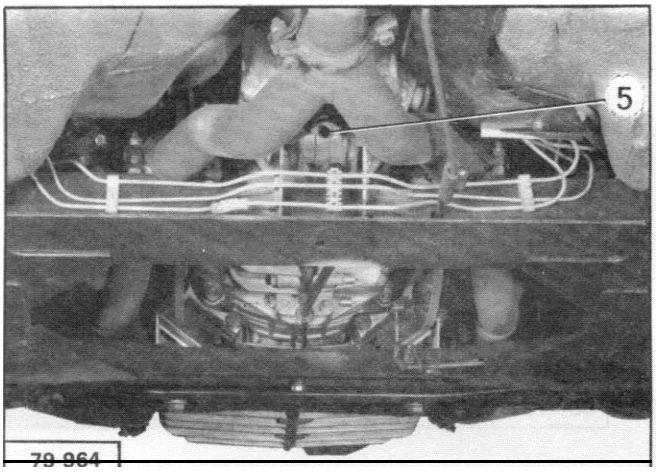
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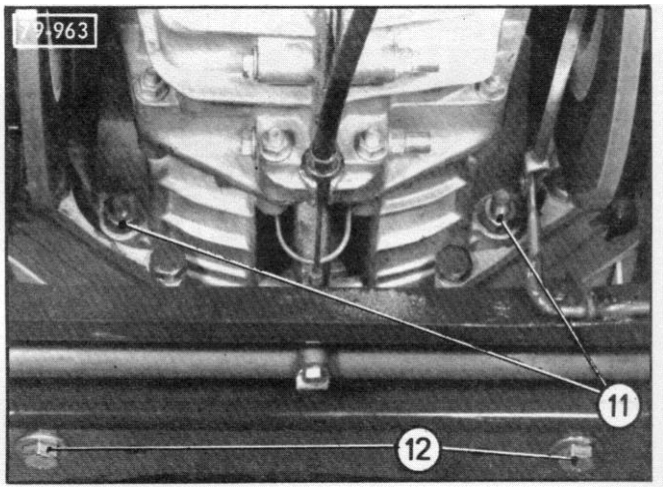
f) Remove the engine

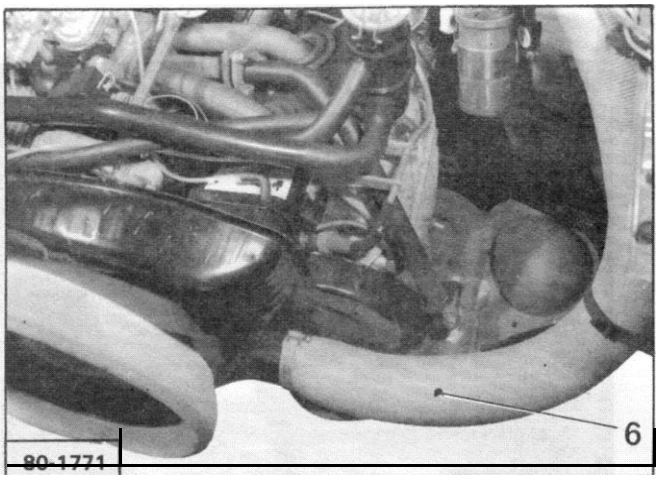
Support the engine so that no load is exerted on the manual gearbox drive-shaft.

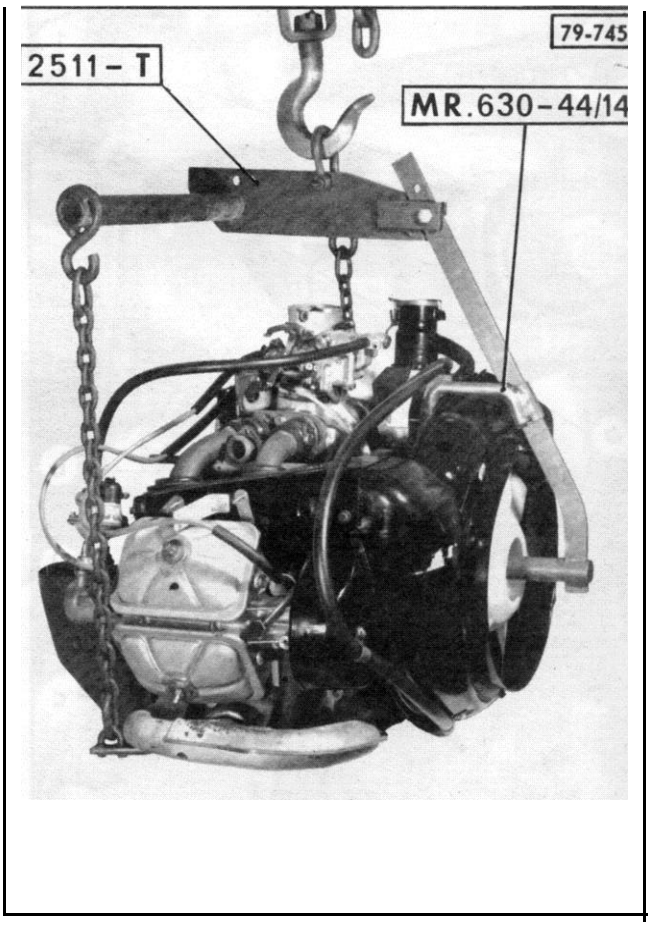

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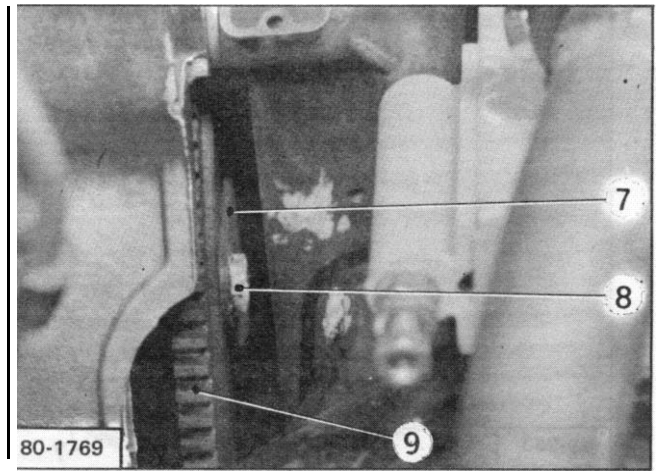

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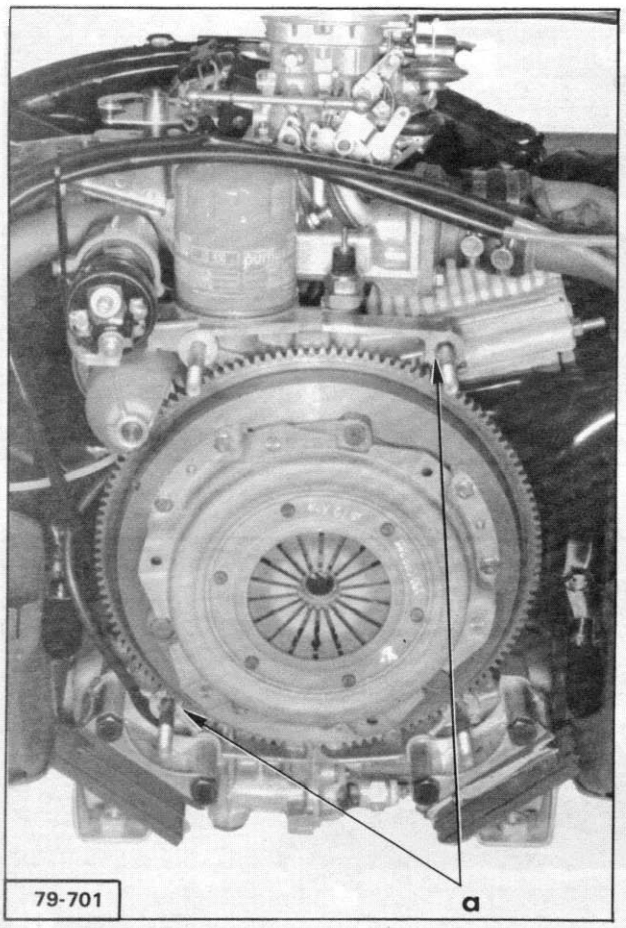

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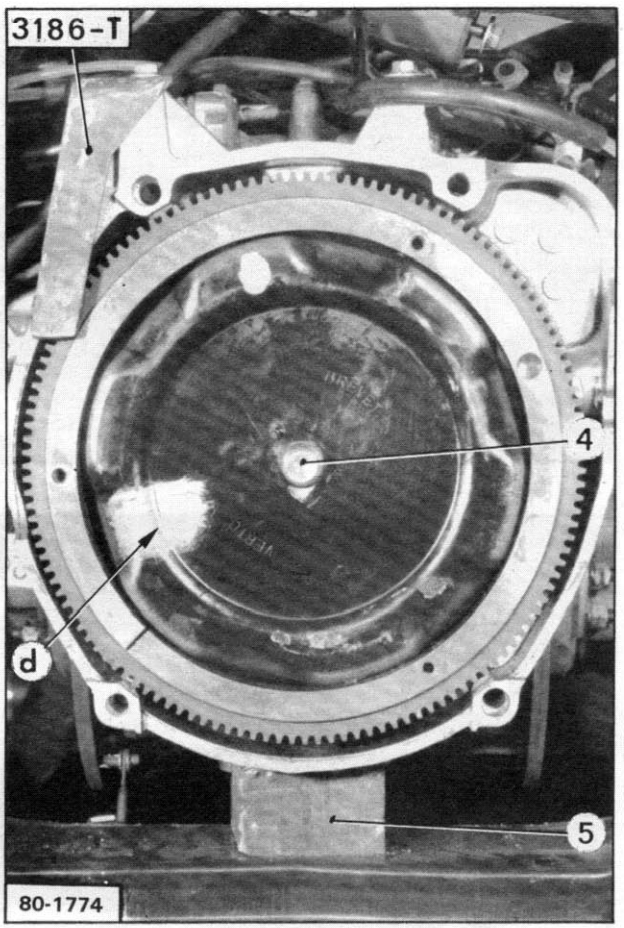

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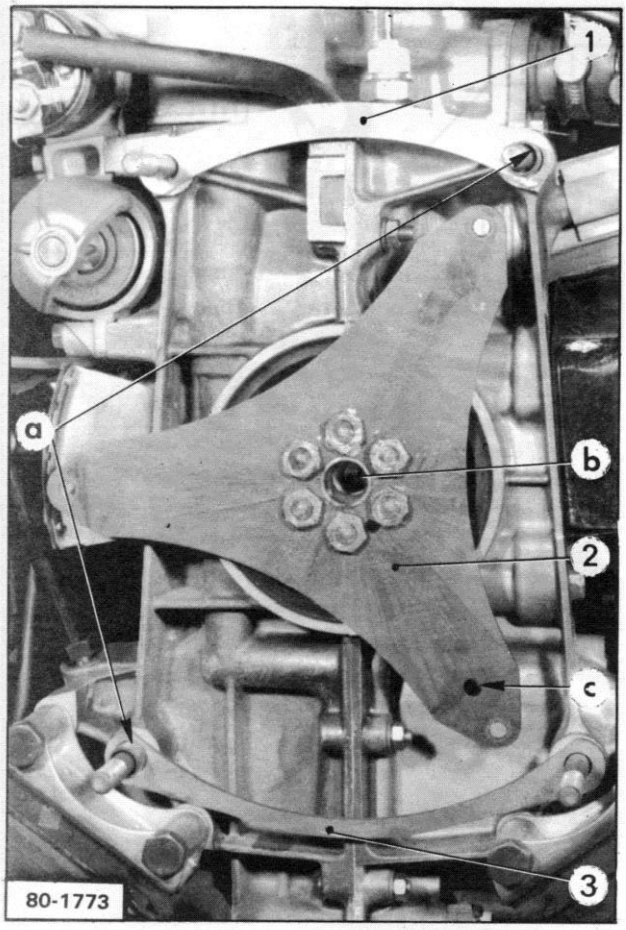

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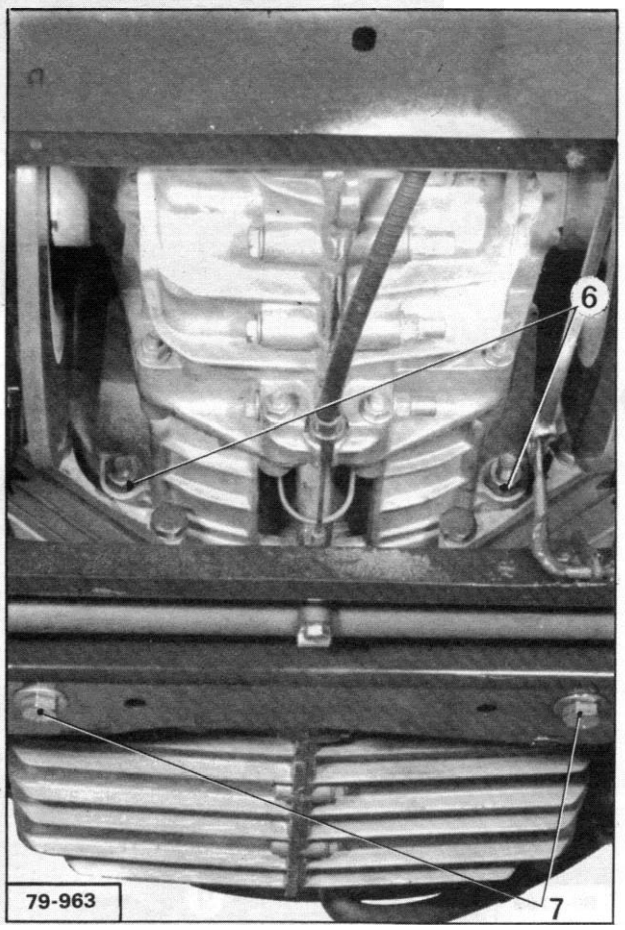

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FITTING.

Check :

- that the two centering studs are in position in the crankcase recess « a »,
- that the corresponding recesses in the clutch or converter casings are not distorted.
- that, ***on vehicles with a converter, lower*** spacers (3) and upper spacers (1) are correctly positioned on the crankcase.

15. ***Vehicles with a manual gearbox :***

Assemble the engine with the gearbox :

a) Select a gear.

b) Position the engine, and engage the assembling studs, bringing the clutch disc hub into contact with the drive-shaft.

c) Turn the crankshaft to engage the splines

d) Fit assembling screws (***6) (complete with spring washers).***
Tightening torque : 4.5 **m.daN;**

16. Vehicles with a converter :

Assemble the engine with the gearbox :

a) Before fitting, make sure hole « c » of drive diaphragm (2) is opposite the torque converter blue mark « d » (for *ignition timing*).

b) Smear converter centering stud (4) and its crankshaft housing « b » with TOTAL MULTIS grease.

c) Position the engine on the gearbox. and engage the assembling studs so as to bring converter centering stud (4) in its crankshaft housing « b ».

d) Fit assembling screws ***(6) (complete with spring washer.).*** Use wrench 1790-T
Tightening torque : 4.5 **m.daN.**

13. Put into place the engine/gearbox unit :

a) Lift up the engine/gearbox unit and remove the chock from under the clutch on converter housings.

b) Lower the engine/gearbox unit, until the front flexible mounts come into contact with the lower crossmember.

c) Engage attachment screws (7).

d) Remove sling 2511-T

e) Tighten front flexible mount attachment screws (7).
Tightening torque : 4 to 4.5 **m.daN;**

18. Vehicles with a toque convener:

a) Remove securing lug 3186-T

b) Fit the three screws (1) (new ones) fixing the diaphragm on the torque converter, using LOCTITE SCELBLOC.
Tightening torque : **2.7** to **2.9 m.daN.**

c) Fit the pressure regulator.

d) Couple cooling tube (4) of the torque converter oil cooler.

19. Fit :
- collars (10),
- Y union attachment screws on gearbox,
- hot air intake (12),
- heater pipe (9),
- heater duct shutters (11).

20. Couple :
- HP pump pipe (14) to pressure regulator.
- carburettor fuel return pipe (15),
- fuel inlet pipe on pump.
- choke cable (16),
- accelerator cable (3).

21. Connect :
- engine oil temperature switch wire.
- oil pressure switch wire.
- starter wires,
- ignition coil-distributor HT wire.
- circuit-breaker wire.
- plug No. 1 lead with reference sensor (vehicles → *7/80*),
- alternator earth wire (20) and connectors (19),
- idle cut-off wire.

22. Fit :
- spare wheel bracket (17),
- valance.
- fan anti-recirculation plate,
- air-filter,
- bumper.
- horn (s),
- headlamps.
- direction indicators.

23. Couple bonnet release cable (5)

24. Attach the cable cluster to the fan anti-recirculation plate. by its plastic clips and collars.

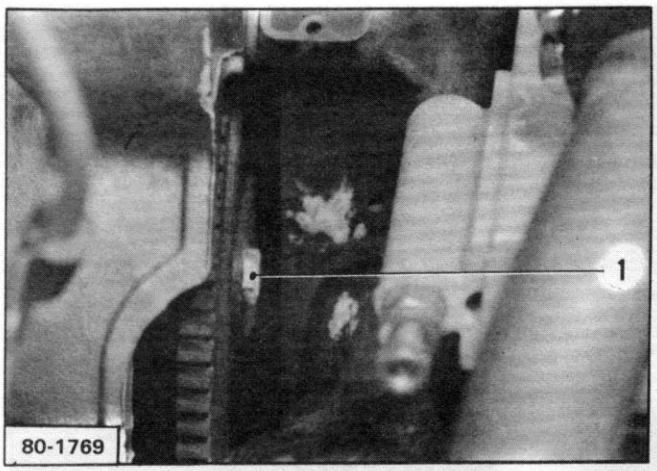
25. Connect :
- horn wire (s),
- headlamp connectors.
- battery negative lead.

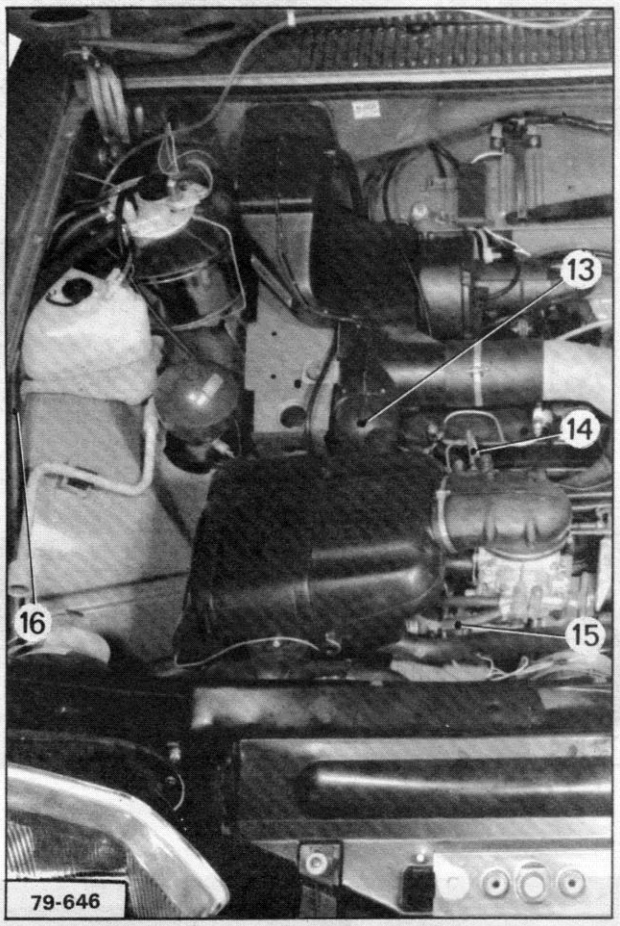
26. *Vehicles* with a torque converrer :
Connect :
- harness (21) on the fast-idle electrovalve,
- vacuum tubes (17) and (18) : tube (17) goes to the vacuum capsule *controlling* the throttle opener: tube (18) comes from the vacuum inlet on the carburettor

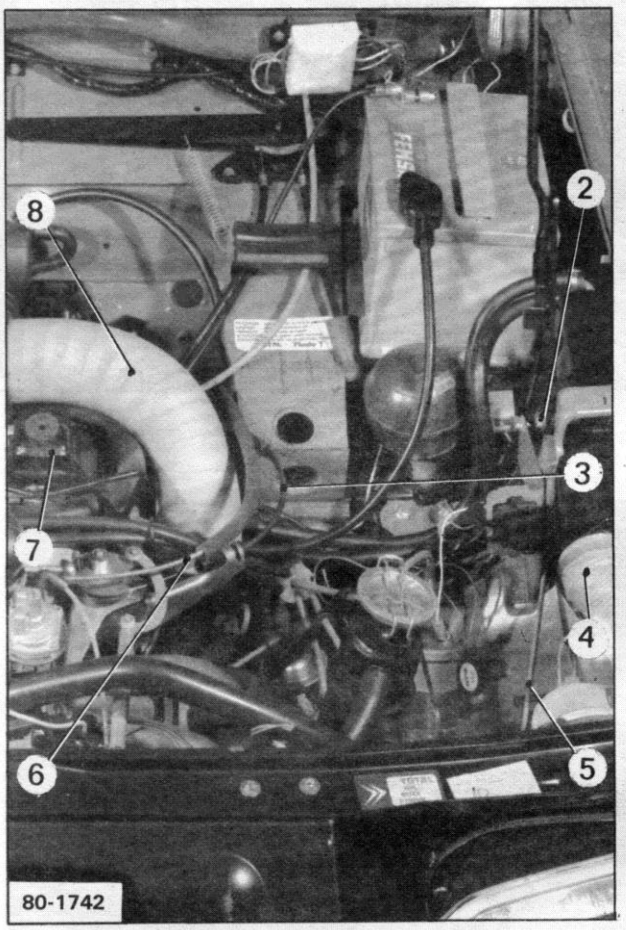
27. Slide the right heater duct along heater box duct (13) so as to bring it back to' its original position.

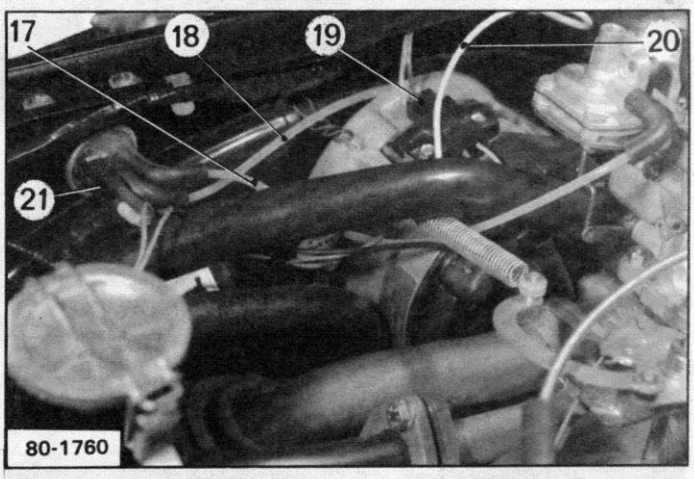
28. Fit :
- left and right heater ducts (8).
- grille,
- bonnet prop attachment screw.
- spare wheel.
- right windscreen wiper.

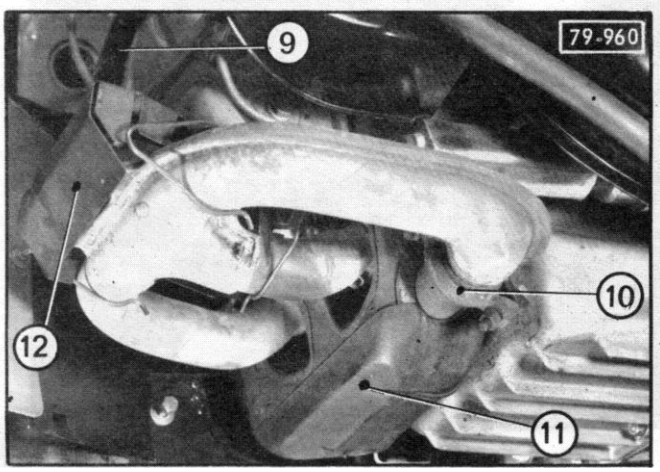
29. Prime the **HP** pump :
a) Fill suction pipe (16) with hydraulic fluid, and connect it to the reservoir.
b) Undo the pressure regulator relief screw and start the engine.
c) Do up the pressure regulator relief. screw and check seal-tightness of unions.


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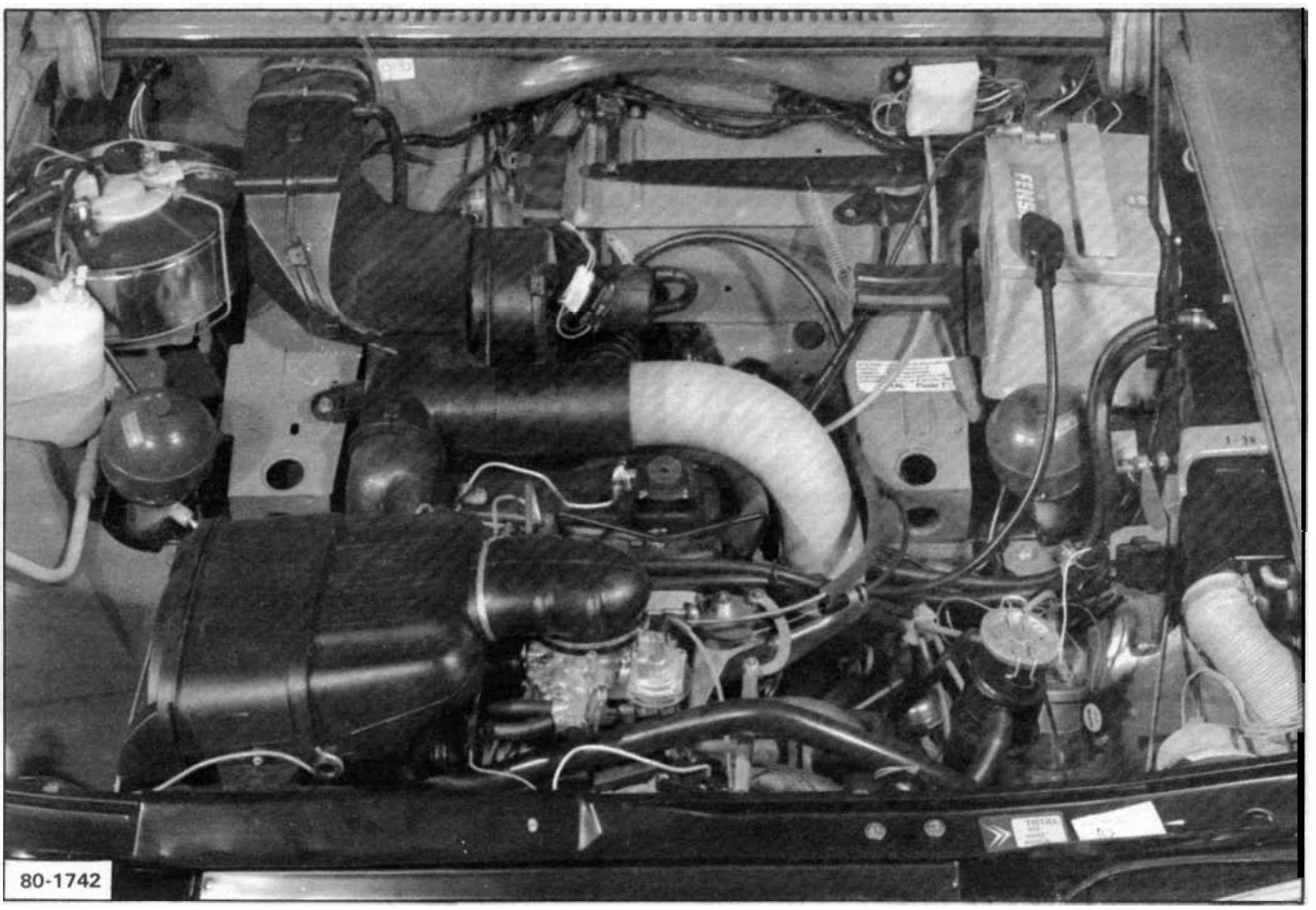

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79-646



80-1742

30. Lower the vehicle to the ground.

31. Check engine and gearbox oil levels.

32. Start the engine and warm UP.

Check, and adjust if necessary :
- Ignition point.
- idling.
- seal-tightness of exhaust connections.
- headlamps.

SPECIAL TOOLS

TOOLS NOT SOLD

MR. 630-I 1/26 : Camshaft pulley anchor spanner

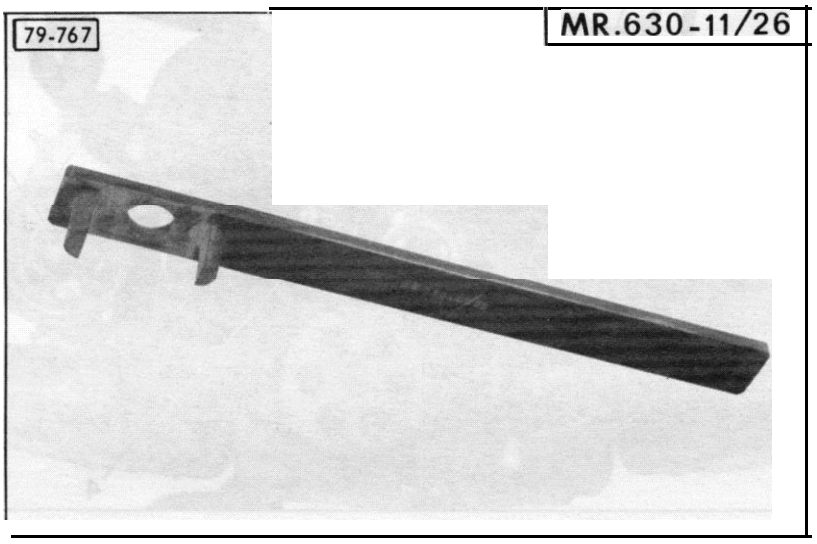
MR. 630-17/1 : Extension piece for fan removal

TIGHTENING TORQUE VALUES

Recommended tightening torques :	**Torque in m.daN**
-Camshaft pulley nuts:	8.2
- Tensioner roller attachment nut :	1.8
-Fan attachment nut:	22 to 24

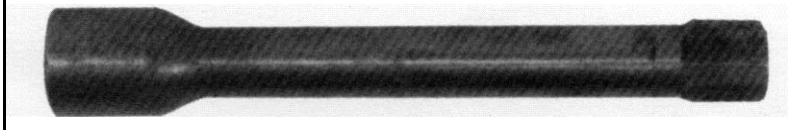
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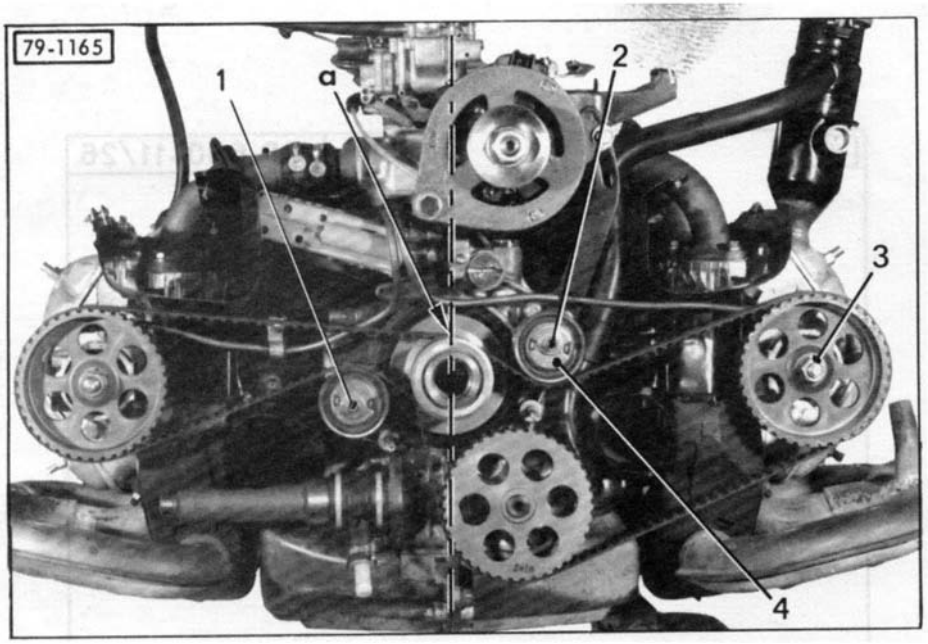
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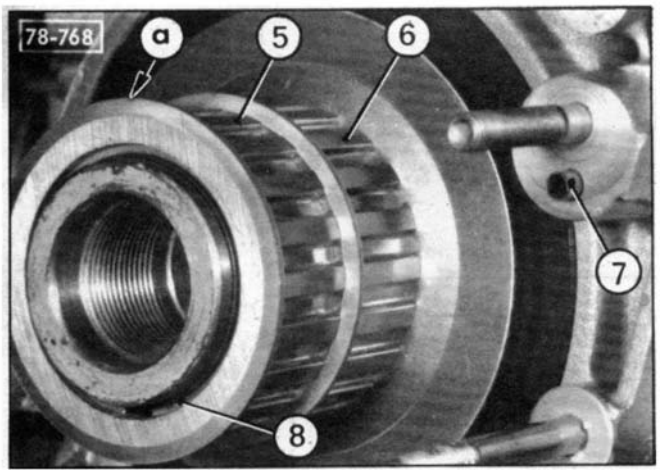


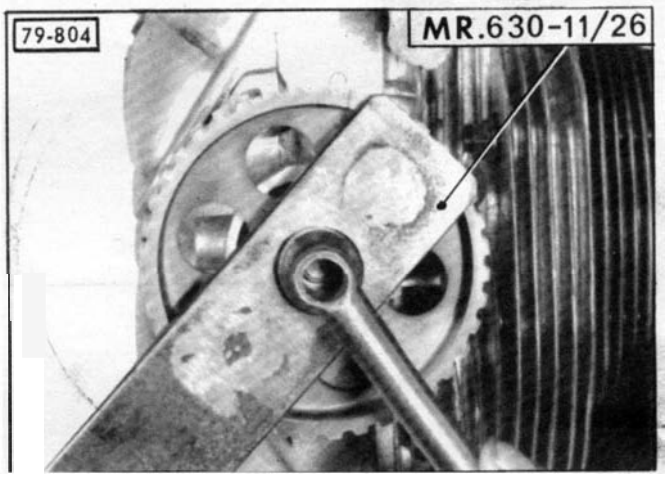
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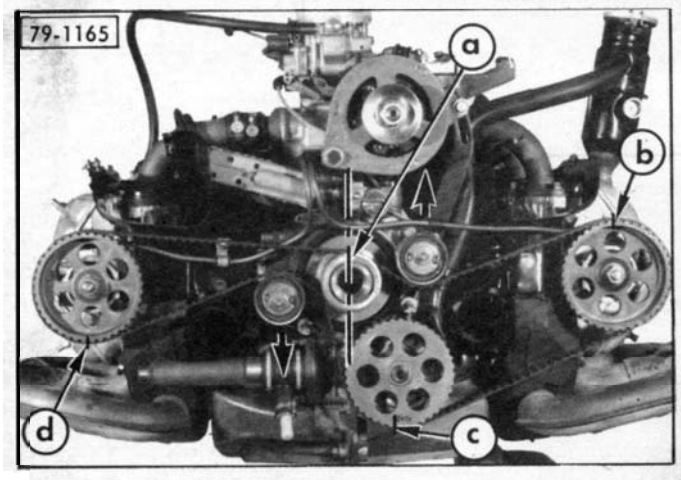
MR.630-17/1

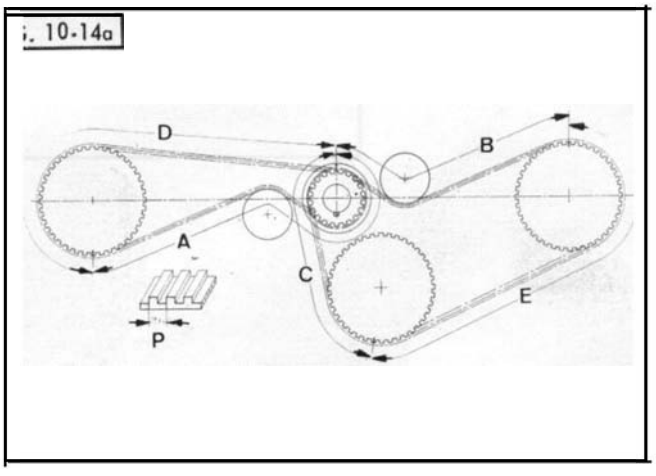



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MR.630-11/26


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REMOVAL AND FITTING OF A BELT, A TENSIONER ROLLER OR A TIMING PULLEY

REMOVAL

1. Remove :
   - grille,
   - direction indicators,
   - headlamps,
   - horn (s) and horn support (s),
   - bumper,
   - air filter.
   - anti-recirculation plate,
   - fan.
   - alternator belt,
   - air manifold.

2. Remove belts :

a) Position the riming gear :

Turn the crankshaft so as to align mark « a' » with the centre plane of the engine (see ***photo).***

Leave the crankshaft in this position throughout the operation.

b) Undo tensioner roller nuts (1) and (2).
Remove the left belt. then the right belt.

3. Remove the tensioner rollers :

To remove the tensioner rollers only. it is not necessary to remove the belts.

Undo nuts (1) and (2).
Disengage the tensioner rollers *(put* ***friction pads (4)*** *carefully* ***on one side/.***

4. Remove timing pinions and pulleys :
Extract circlip (8).
Remove pinions (***5)*** and (***6) (putting the key carefully on*** *one* ***side).***
♦ Anchor the pulley with tool MR. 630-I 1/26
Remove nuts (3).
Remove the camshaft pulleys.

FITTING

NOTE :
- the two camshaft pulleys.
pinions (5) and (6),
- and the two tensioner rollers
are identical.

Before reassembly, check that the belts, pulleys, pinions and tension rollers are free from any trace of grease or oil.

5. Fit the timing pulleys and pinions :
a) Fit the camshaft pulleys :
Position the pulley on each camshaft ***(positioning pin).***
Tighten the nut (with plain washer) to 8.2 **m.daN**
♦ ***(Anchor tool MR.*** *630- 1 1/26* ***).***
b) Fit pinions (5) and (6), with collars towards the front of the engine ***(remember to insert the key).***
c) Fit circlip (8).

6. Fit the tensioner rollers :
Check that *roll* ***split*** *pins (7) are in place.*
Position the tensioner rollers ***with friction pad (4) facing*** *outwards.*
Fit nuts (1) and (2) (spring washer).

7. Fit belts :
a) Position *the timing* ***gear :***
With mark « a » at top dead centre. position marks « b », « c » and « d » on the pulleys as shown in the figure opposite.
b) Compress the tensioner rollers (direction of arrows) and tighten nuts (1) and (2).
c) Fit the right belt. ensuring that its white marks coincide with marks « a » and « d » so that :
A = 43 notches
D = 30 notches
NOTE : 1 notch = P ***(see sketch).***
d) Fit the left belt. making :
- the white marks coincide with marks « a » and « b »,
the yellow mark coincide with mark « c » so that :
B = 33 notches
C = 25 notches
E = 47 notches
e) Release the tensioner rollers. and tighten nuts (1) and (2).

8. Tension the belts :

Turn the crankshaft through 90°, in the normal running direction.
Undo nut (1) on the left tensioner roller to release the roller, **end tighten to 1.8 m.daN.**
Turn the crankshaft through 360° in normal running direction, and repeat the operation for the right tensioner roller.

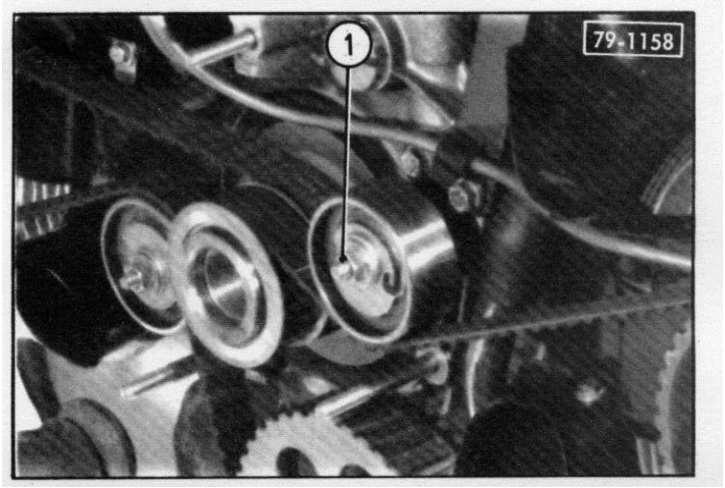
9. Fit :
- air manifold,
- alternator belt.
- fan.

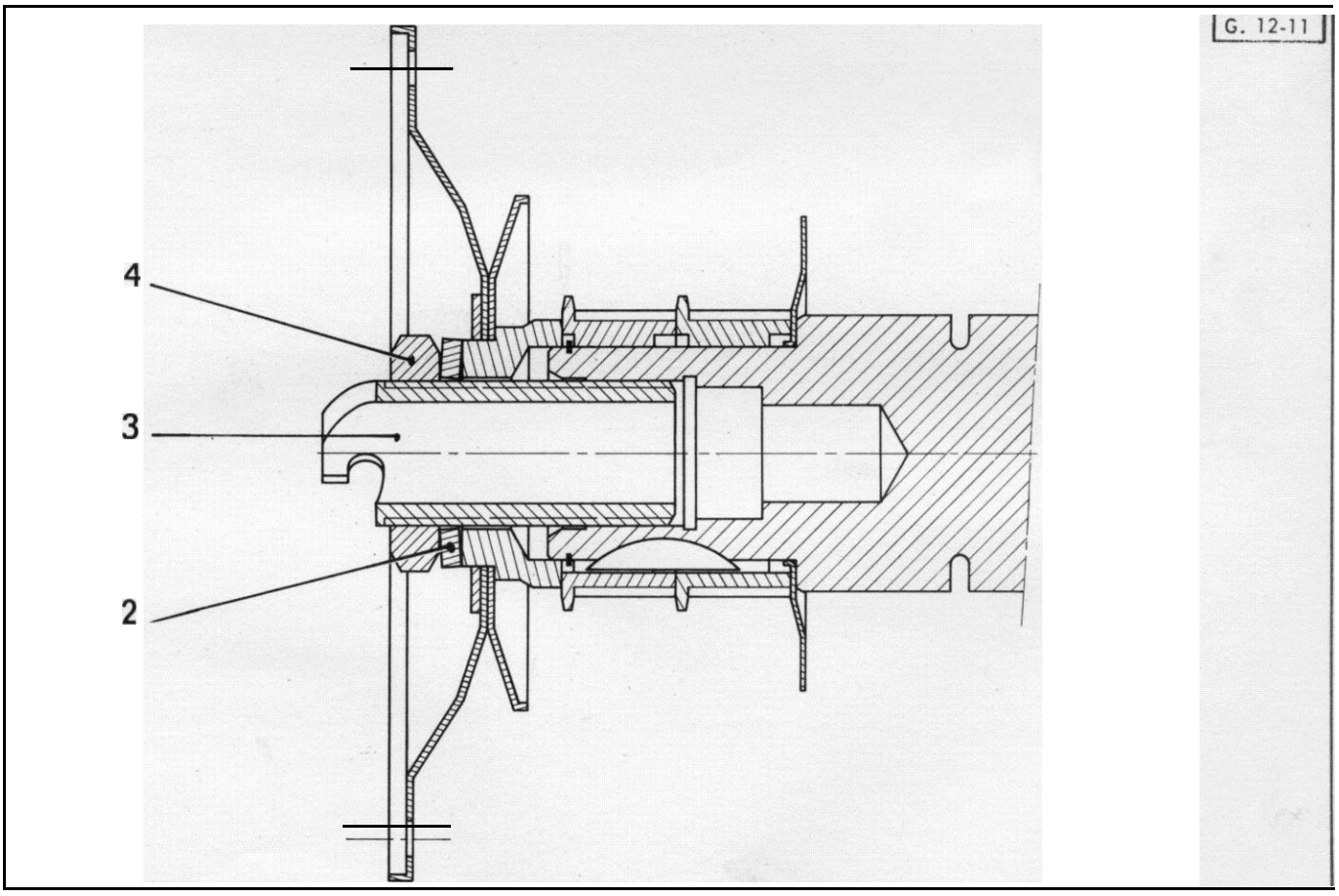
10. Tighten the fen :

Fit starting dog (3). equipped with spring washer (2) and nut (***4***) ***(grease thread and face).***
Position the dog so that it is horizontal when the engine is at the ignition point.
Tighten the nut to 22 to 24 m.daN
♦ (use extension piece MR. 630-17/1).

11. Fit:
- anti-recirculation plate.
- bumper,
- horn (s) and horn support (s),
- air filter.
- headlamps.
- direction indicators.
- grille.

12. Check sening of headlamps.


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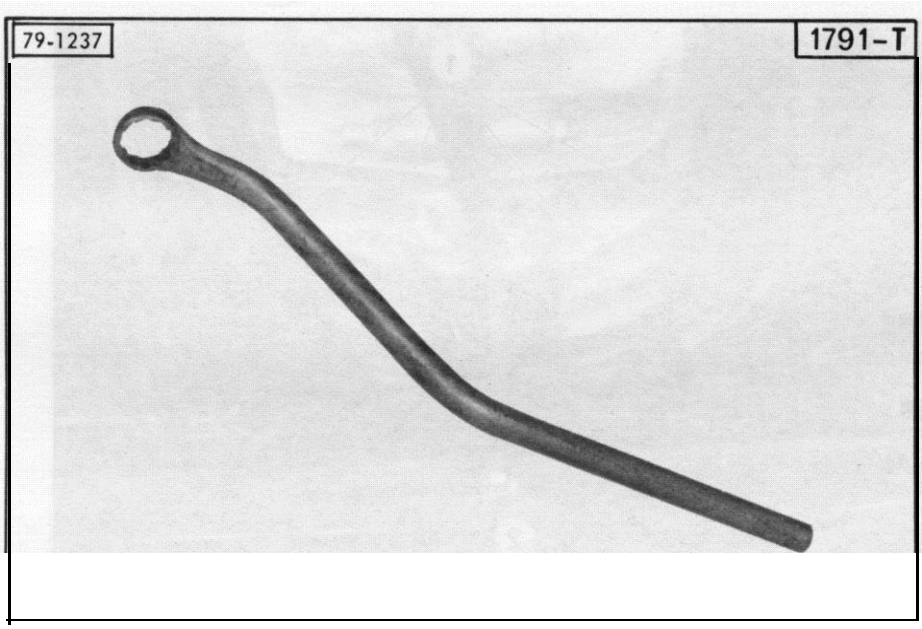
RECOMMENDED SPECIAL TOOL

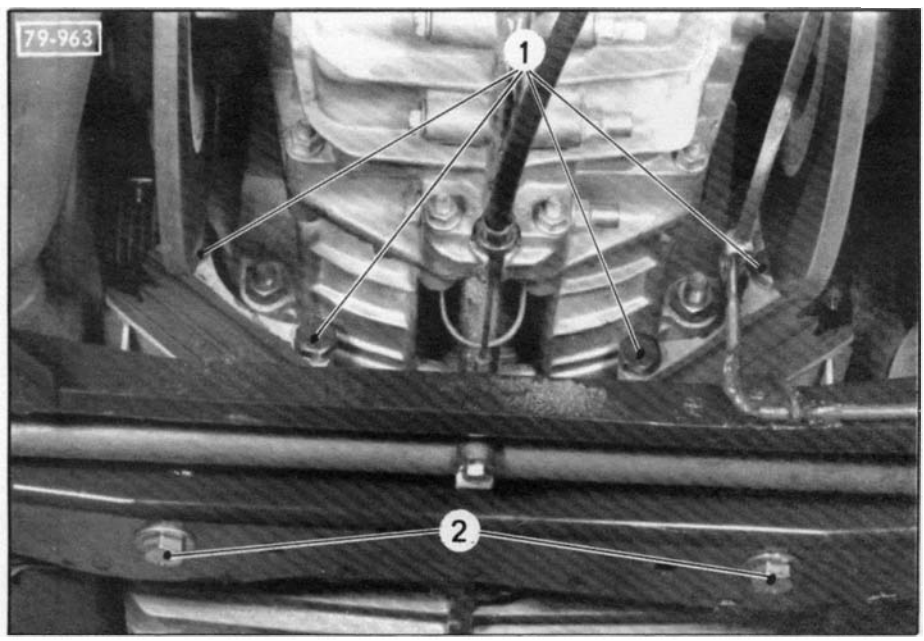
TOOL SOLD

1791-T : Spanner for removal and fitting of front flexible bearer.

TIGHTENING TORQUE VALUES

Recommended tightening torques :	**Torque in m.daN**
▪ Gearbox tear cover attachment screw :	***2.5 to 3***
▪ Exhaust collar attachment screw :	***1 to 1.2***
▪ Flexible support attachment screw (engine ***housing) :	***5 to 6***
Flexible support attachment ***screw (cross-member) :.	***4 to 4.5***


79-1237
1791-T


79-963
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I. REMOVAL AND FITTING OF A FRONT FLEXIBLE BEARER

REMOVAL

1. Chock the front of the vehicle.

2. Undo two flexible bearer attachment screws (2).

3. Slightly raise the engine/gearbox assembly, using a jack located under the crankcase *(first inserting* a ***wood block*** *)*.

4. Undo flexible bearer attachment screws (1) on the crankcase (spanner 1791-T).

5. Remove the flexible bearers.

NOTE : The flexible bearers must have the same manufacturer's reference.

FITTING

6. Position the flexible bearers

7. Fit screws (1) ***(plain washer under head)*** Tighten **to** 5 to 6 **m.daN** ***/spanner*** 1791-T).

8. Lower the engine/gearbox assembly onto the flexible bearers.

9. Fit and **tighten screws (2) to 4 to 4.5 m.daN** (plain and spring washers).

10. Lower the vehicle to the ground

II. REMOVAL AND FITTING OF A REAR FLEXIBLE BEARER
(Gearbox rear cover assembly)

REMOVAL

1. Remove the spare wheel.

2. **3 and 4-speed gearboxes : Uncouple the speedometer cable.**
Extract the locking pin on the speedometer connector. Disengage the cable.

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

4. Drain the gearbox.

5. Remove central exhaust coupling (3) :

Remove attachment collars (1) for coupling (3).
Undo central support attachment nut (2).
Remove central coupling (3).
Support the central pipe in a sling.

6. Remove the gearbox rear cover :

Undo rear elastic mount attachment screw (5).
Undo six cover attachment screws (4) and two screws (6).
Remove the cover.

FITTING

7. Fit the gearbox rear cover :

Carefully clean the contact surfaces of cover and gearbox casing.
Coat the cover sealing face with CURTYLON or LOCTITE FORMETANCH.
Tighten six screws (4) to 2.5 to 3 **m.daN** *(plain* washers] and two screws (6).
Tighten screw (5) to 2.3 to 4 **m.daN** /star *washer).*

8. Fit central exhaust coupling :

Position coupling (3) and fit collars (1) for connection to the central pipe, and left and right branch pipes. Tighten nuts to 1 to 1.2 **m.daN.**
Tighten nut (2) *(**washer and** thrust **spring under** nut, **washer under screw head]*** attaching the central support.

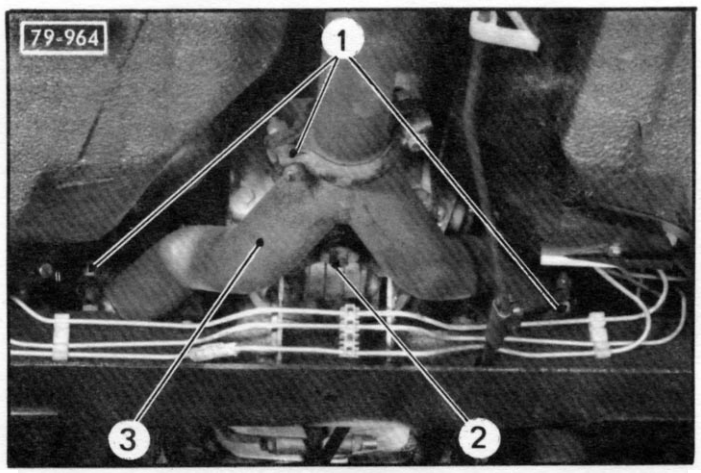
9. ***3 and 4-speed gearboxes :*** Couple the speedometer cable *(to* rear *cover).*
Insert locking pin.

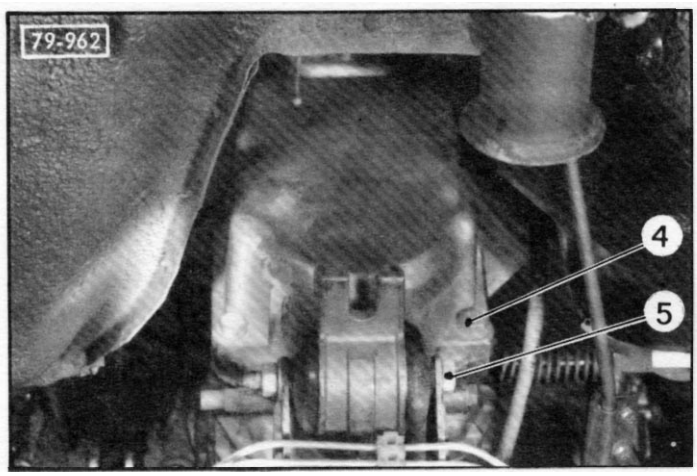
10. Fill the gearbox with oil :
Undo the gauge plug.
Fill up via reversing light contactor (7).

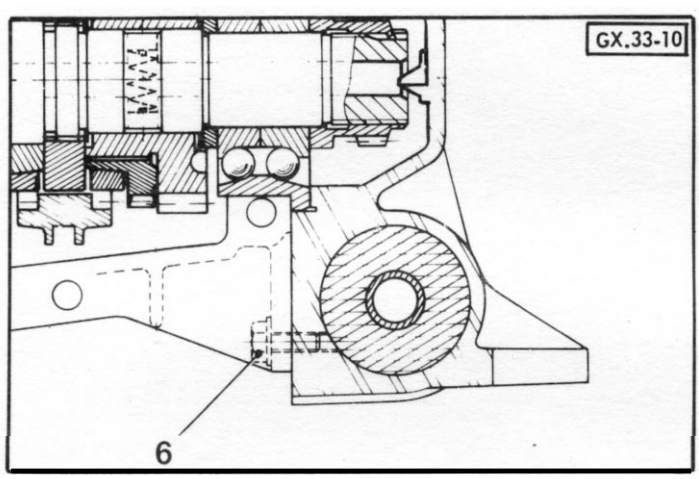
Never unscrew plug (8) for filling.

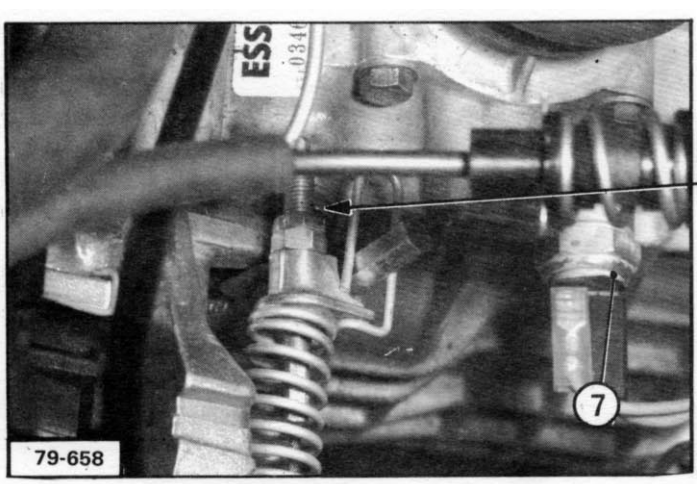
Torque tightness for reversing light contactor: 1.2 to 1.5 **m.daN** (copper *seal).*

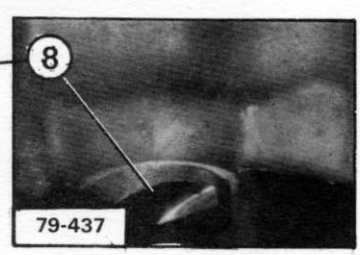
11. Replace the spare wheel


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RECOMMENDED SPECIAL TOOLS

TOOLS SOLD

1683-T : Oil filter spanner (dia. 76 mm)

4001-T : Oil pump assembly jig

TOOLS NOT SOLD

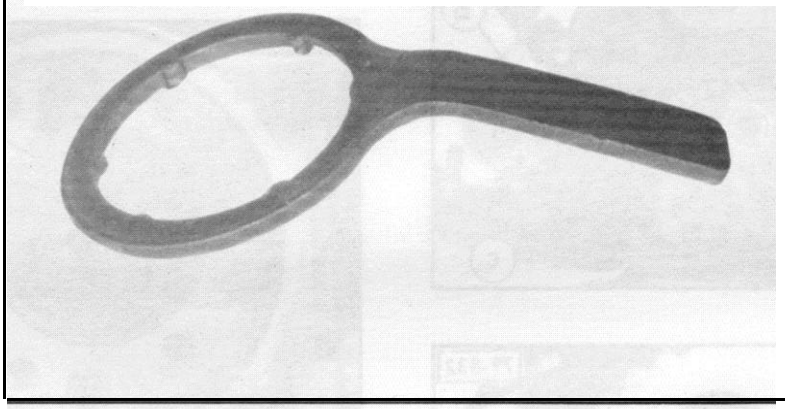
MR. 630-17/1 : Extension piece for removal and fitting of the fan

TIGHTENING TORQUE VALUES

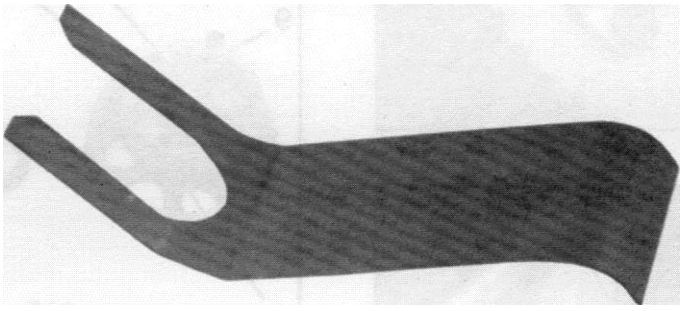
Recommended values :

Oil pump drive attachment screw	:	**1.5**	**to**	**1.8**	m.daN
- HP pump attachment screw	:	**1.2**	**to**	**1.4**	m.daN

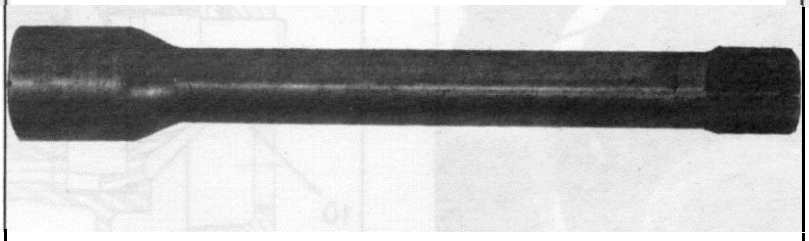
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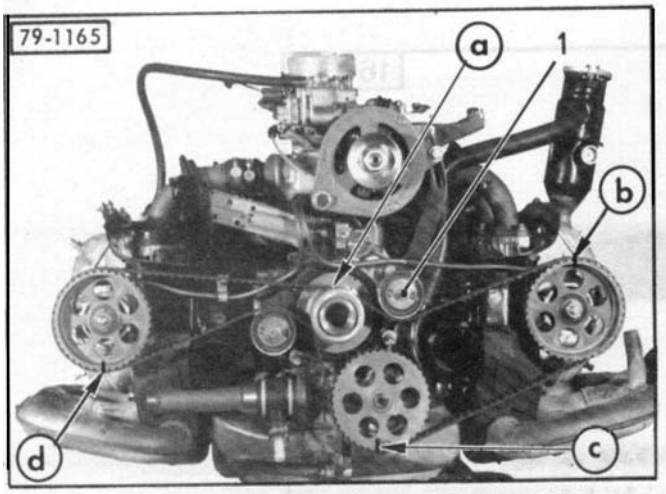


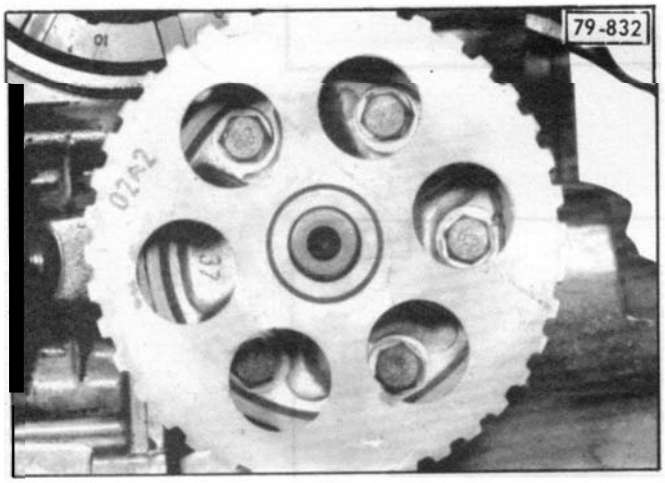
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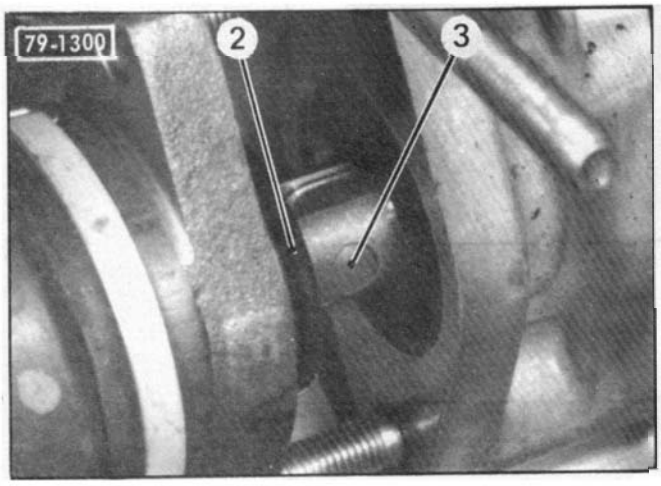


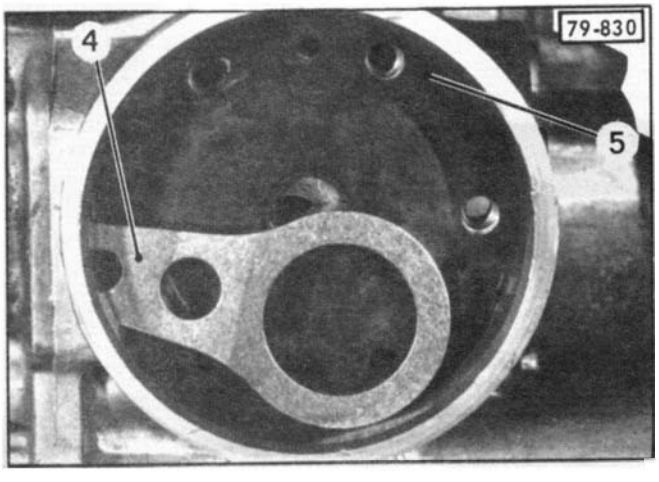
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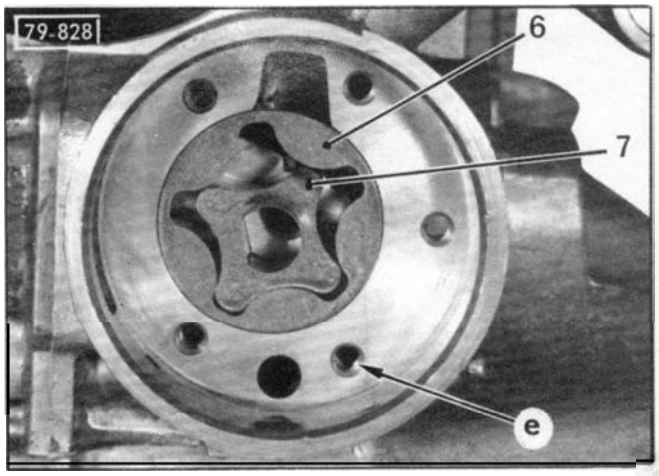


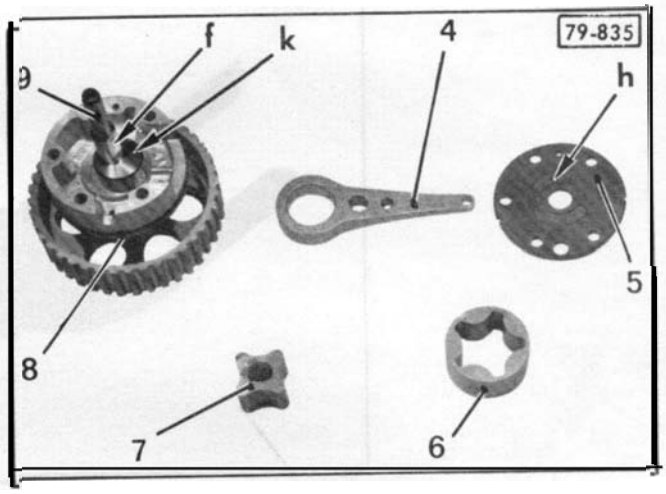

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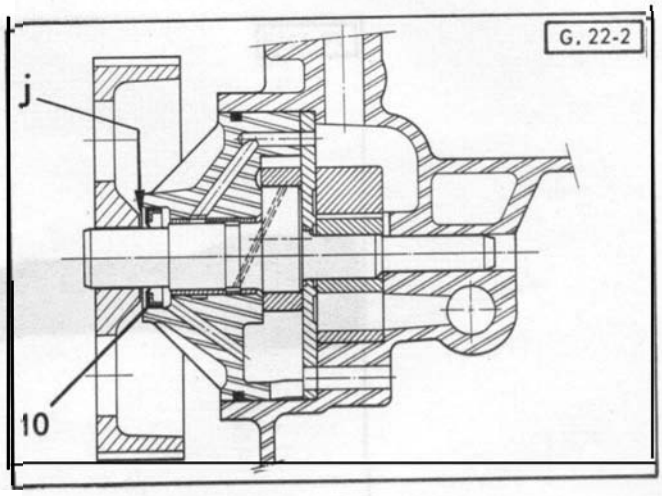

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REMOVAL AND FITTING OF PUMP DRIVE (OR SEAL), OR OIL PUMP (ON VEHICLE)

REMOVAL

1. Remove :
   - grille.
   - direction indicators,
   headlamps,
   - horn (s) and horn support (s).
   - bumper.
   air filter,
   - fan cowling,
   fan (***using*** *extension piece* ***MR. 630-I*** *7/1*)
   alternator belt,
   - air collector.

2. **Depressurize** the circuit :
   (See Op. *GX. 390-00,* page 9)

3. Remove the left timing gear belt :
   a) Position marks a. b. c and d (on ***pulleys and pinions)*** as shown in the photo opposite.
   b) Undo tensioner roller nut (1). Remove the belt.

4. Remove the oil pump drive :
   Undo the five attachment screws.

> Extract the pump drive, pulling on two diametrically opposed points on the pulley, to avoid damage to the pump bearing.

5. Remove the HP pump drive rod :
   Undo the HP attachment nuts.
   Disengage the pump (rake care *with* ***the*** *pump* ***piston).***
   Extract shaft (3) by hand.
   Remove rod (4).

6. Remove the oil pump pinions :
   Remove :
   cover plate (5),
   - pinions (6) and (7).

FITTING

> Check that 'the timing gear belts, pulleys and tensioner rollers show no traces of oil or grease.

7. Oil and fit the oil pump pinions.

> Temporarily fit a guide pin at « e », to facilitate assembly of the cover plate and pump drive.

8. Fit cover plate (5)
   Position so that recesses « h » are towards the inside of the casing.

9. Position drive rod (4).

10. Fit the pump drive :
    a) Replace seal (8).
    Oil shaft (9) and cam « k ».
    b) Fit jig **4001-T** at « j », to avoid driving in **seal** (10).
    c) Position the pump drive (in *the right direction*) ***on*** the guide pin, and engage the shaft in the central pinion. Turn the shaft to engage flat «f» in the oil pump pinion.
    d) Guide rod (4) so as to engage on cam « k ». Remove the guide pin. Fit and tighten the attachment screws to 1.5 to 1.8 **m.daN** (contact ***washers***).
    Remove jig 4001-T and check that the pump drive rotates freely.

11. Fit the HP pump :
    If necessary. replace O-ring seal (2).
    Fit shaft (3).
    Engage pump. and tighten the nuts to 1.2 to 1.4 **m.daN** (*contact* ***washers).***

12. Fit the left timing gear belt :
    (See Op. GX. ***122-4***)

13. Fit:
    - air manifold,
    - alternator belt.
    - fan.

> Fit the starting dog equipped with its nut (grease ***threads and face).*** and position so that the dog is horizontal when the engine is at ignition point. Tighten the nut **to** 17 **to** 20 **m.daN** (torque wrench and extension piece MR. 630-I 7/1).
> The dog should have 4 to 5 threads showing after the nut is tightened.

-fan cowling,
- bumper,
- horn (s) and horn support (s),
- headlamps,
- direction indicators,
- grille.

REPLACEMENT OF A DISCHARGE VALVE

REMOVAL

1. Extract the oil filter cartridge :
   Use spanner 1683-T
   Protect ***the clutch*** *casing* ***from oil*** *spillage*

2. **Remove** the discharge valve :
   Remove :
   - circlip (1),
   - washer (2),
   - spring washer (3),
   - piston (4),
   - spring (5),
   - sleeve (6),
   - spring follower (7).

FITTING

3. Fit the discharge valve :
   Fit :
   - spring follower (7) *(wings « b » in bottom* ***of recess).***
   sleeve ***(6) .***
   spring (5),
   - piston (4) after oiling *(guide «* ***a*** *»* ***on*** *spring* ***end),***

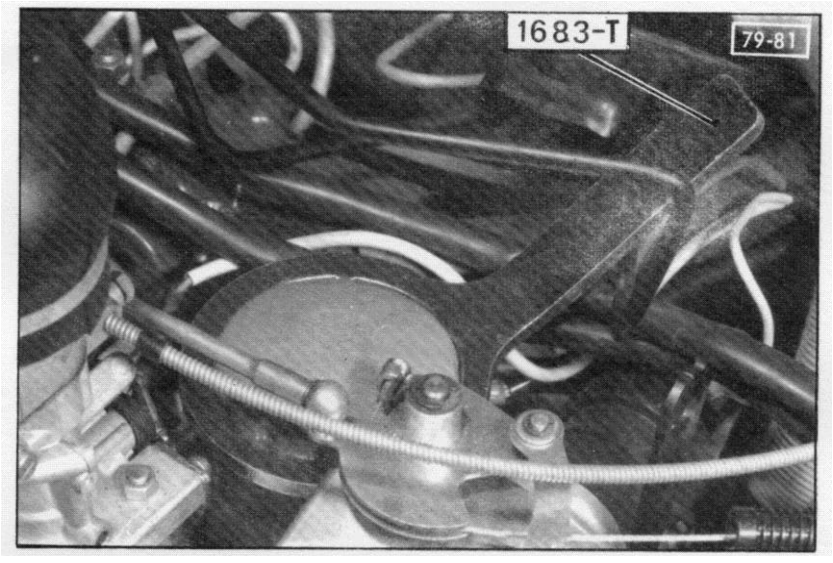
   spring washer (3),
   - washer (2),

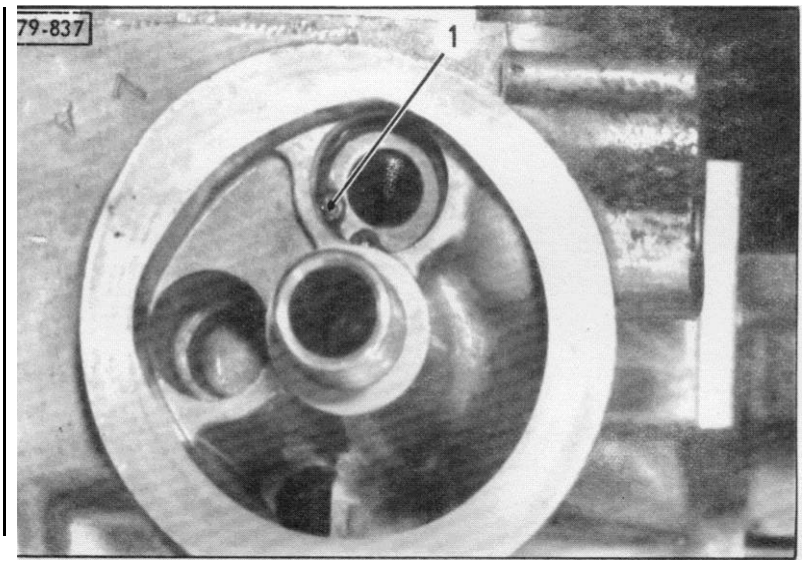
   circlip (1).

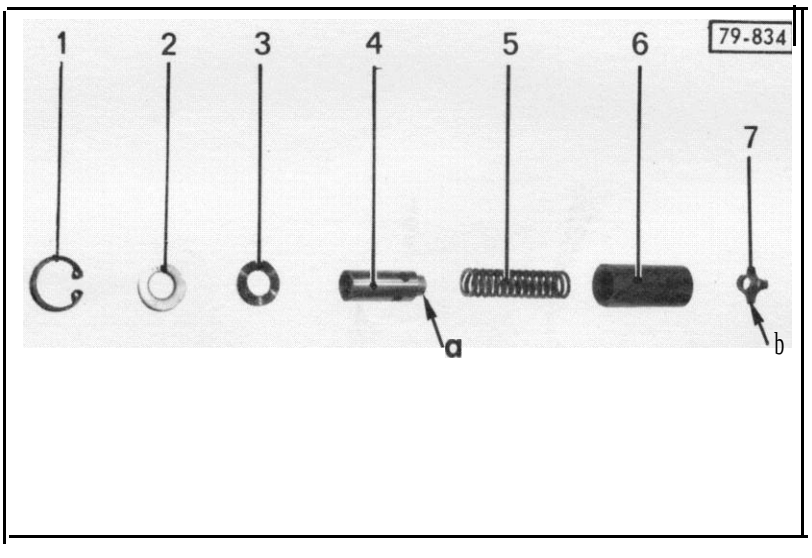
4. **Fit** the filter cartridge :
   Oil the seal :
   Advance the cartridge manually. until it touches the casing.
   Tighten by 1/2 or 3/4 of a turn.

5. Start the engine. and check seal-tightness.

6. Check engine oil level.


1683-T
79-81


79-837
1


1
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79-834
a
b

SPECIAL **TOOLS**

OUT 30.4058 **T** : Pin extractor for 5th gear selector fork shaft.
with 1 : Push-rod

2 : Ball ☐ dia. = 5.5 mm

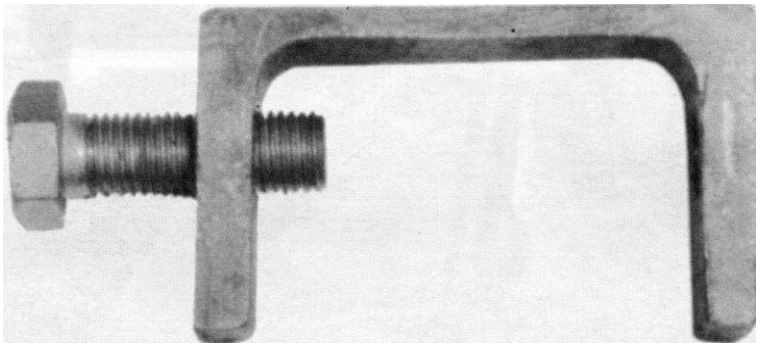
3 : Ball B dia. = 9.5 mm

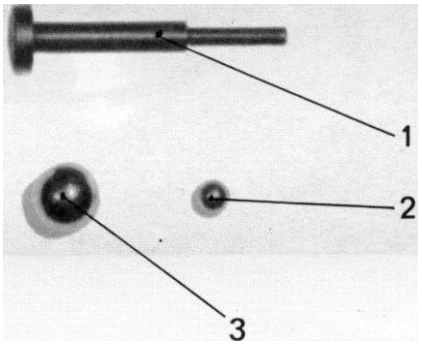
TIGHTENING **TORQUES**

Imperative tightening torques :

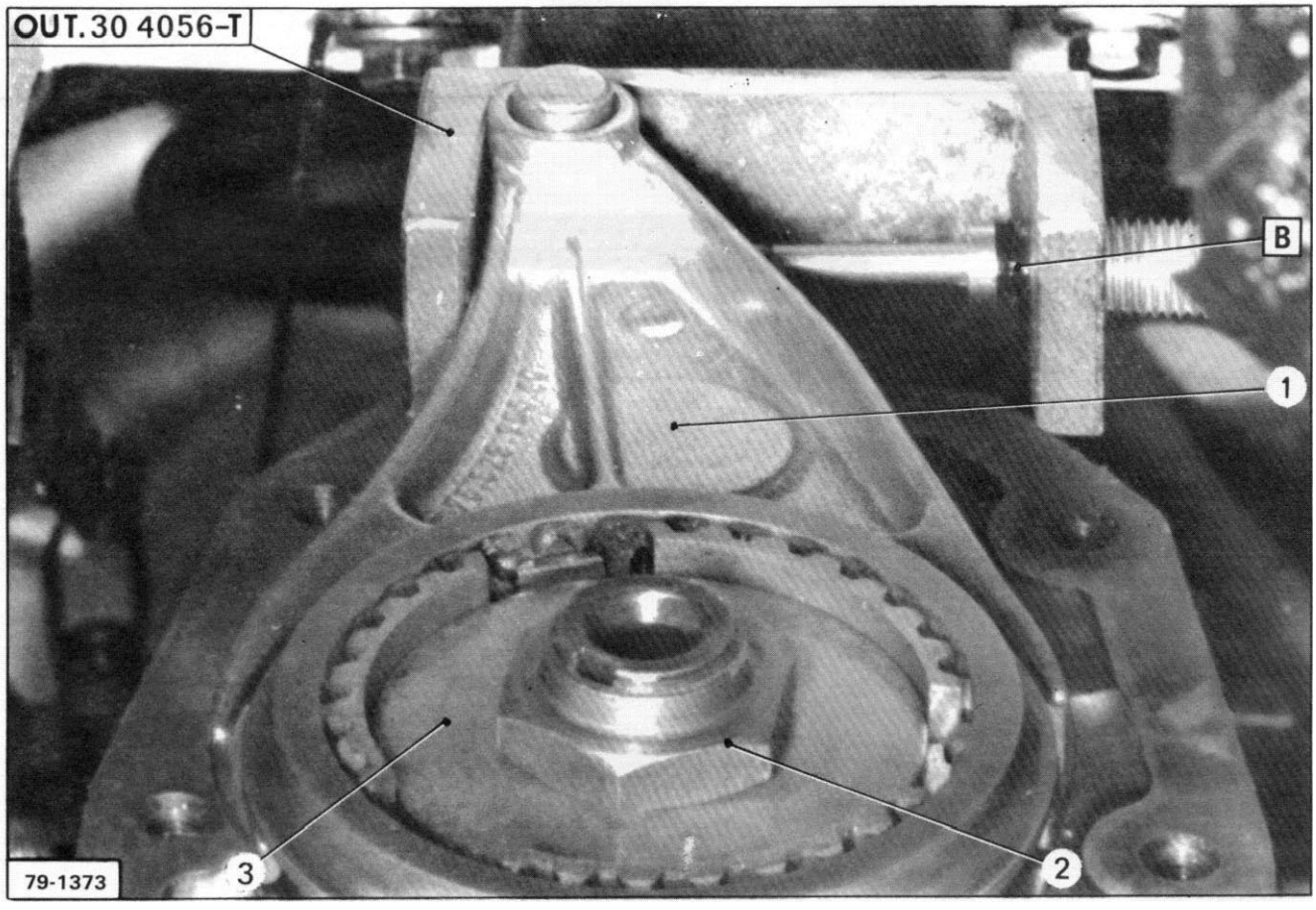
Bevel pinion nut:	5-speed gearbox: 22 to **25 m.daN** 4-speed gearbox: 10 to 12 **m.daN**
Primary shaft nut:	**6** to 7 **m.daN**
Cover fixing screws:	5-speed gearbox: 1.9 to 2.3 **m.daN** 4-speed gearbox: **2.5** to 3 **m.daN**
Bearing holding plate fixing screws:	**2.5** to 3 **m.daN**

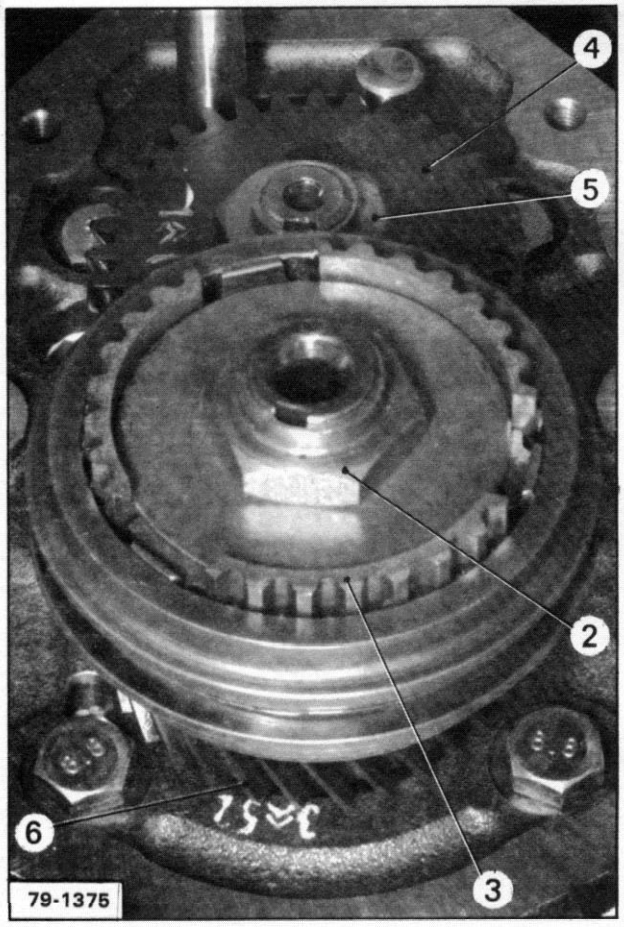
OUT.30 4056 – T

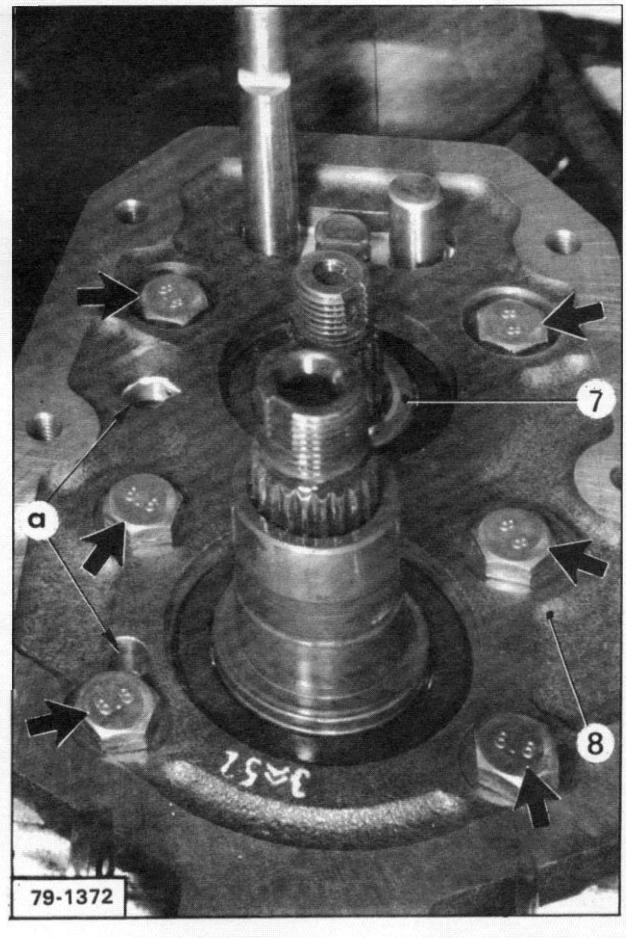




80-2000


OUT. 30 4056-T
B
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79-1373


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79-1375


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a
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79-1372

REMOVAL AND FITTING 5TH GEAR PINIONS OR A BEARING HOLDING PLATE, ON VEHICLE.

REMOVING.

1. Place the vehicle on a carlift or a pit.

2. **Remove the gearbox rear cover :** *(See Op. GX. 133-I).*

3. **Remove the roll split pin from the 5th gear fork :** Use tool **OUT** 30.4056 **T** with ball dia. = 9.5 mm *(stick it with grease).*

4. Engage 4th gear. using the gear change lever. and 5th gear. acting directly on the sliding pinion.

5. Remove bevel pinion nut (2).

6. Remove 5th gear selector fork (1) and hub-sliding pinion unit (3).

7. Put back in place hub-sliding pinion unit (3), **without the selector fork.**

   Fit nut (2) and bring it into contact without tightening it, and engage **5th gear again.**

8. **Remove** primary shaft nut (5).

9. **Remove :**
   - 5th gear nut (2) and hub-sliding pinion unit (3),
   - 5th gear sliding pinion (6) and its synchromesh ring,

   primary shaft pinion (4). **Take care not to let the bearing ball race (7) fall.**

   if necessary, bearing holding plate (8).

10. Clean the joint faces. Use a solvent **since scraping is forbidden.**

FITTING

11. Smear the joint face of bearing holding plate (8) with CURTYLON or LOCTITE FOAMETANCH and fit the plate.

    Tighten the six screws (➡) to : **2.5 to 3 m.daN.**

    Grind the outer diameter of the socket to adapt it to the spot facing.

Make sure the sealing compound does not plug holes « a » thus keeping the oil from flowing through.

12. Fit:
- primary shaft pinion (1),
- 5th gear idling pinion (5).
- hub-sliding pinion unit (4) and synchromesh ring.

13. Fit nut (3), bring it into contact without tightening it and engage 5th gear.

14. Fit primary shaft nut (2) (a new one).

Tightening torque : 6 to 7 **m.daN.**

15. Remove :
bevel pinion nut (3),
5th gear hub-sliding pinion unit (4).

16. Lock primary shaft nut (2) by peening of metal.

17. Place a new roll split pin (6) on the REMOVED 5th gear selector fork.

Make sure pin cut « a » is in the correct position (see drawing).

Slide the pin in far enough to be able to push it home later on. though taking care nor to bother the fitting of the selector fork on its shaft

18. Fit the hub-sliding pinion unit and the 5th gear selector fork simultaneously.
Make sure the stop plate is in place and the synchromesh ring correctly positionned.
Fit bevel pinion nut (3) (a new one).

19. Engage 5th gear and tighten bevel pinion nut (3).

Tightening torque : 22 to 25 **m.daN**

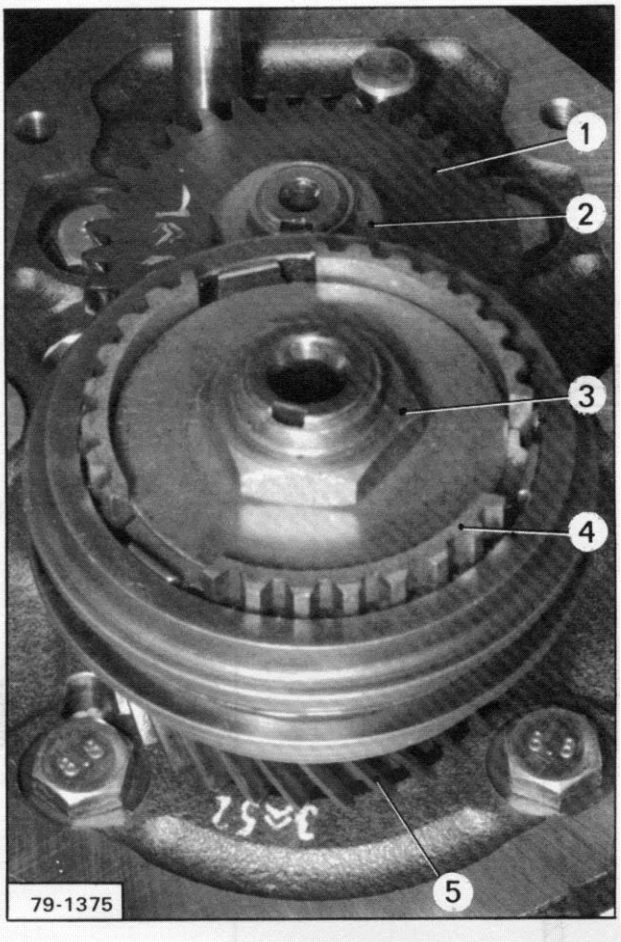
Lock the nut by peening metal.

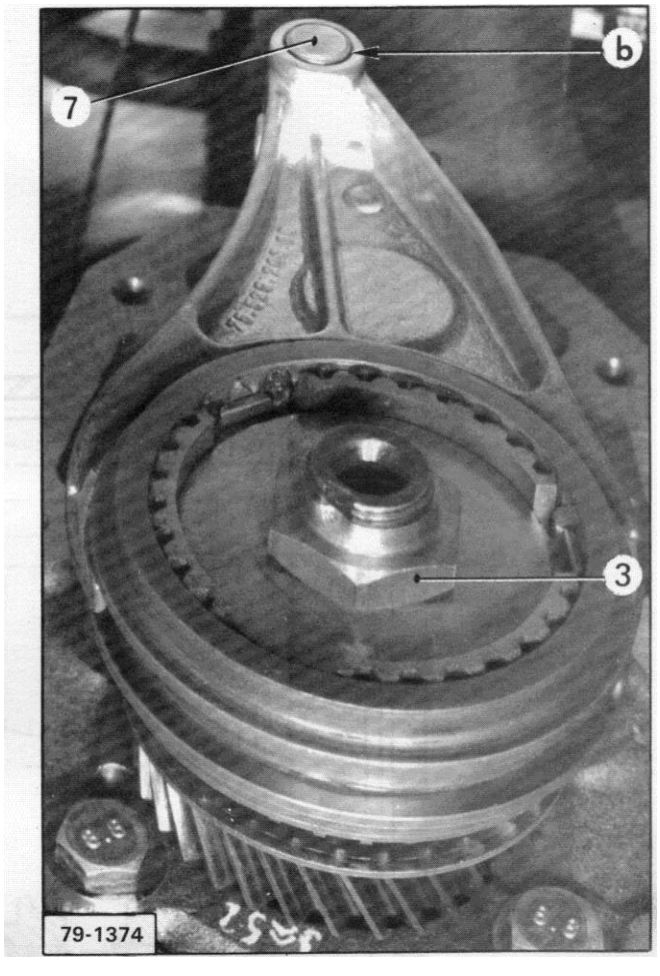
20. Disengage 5th gear.

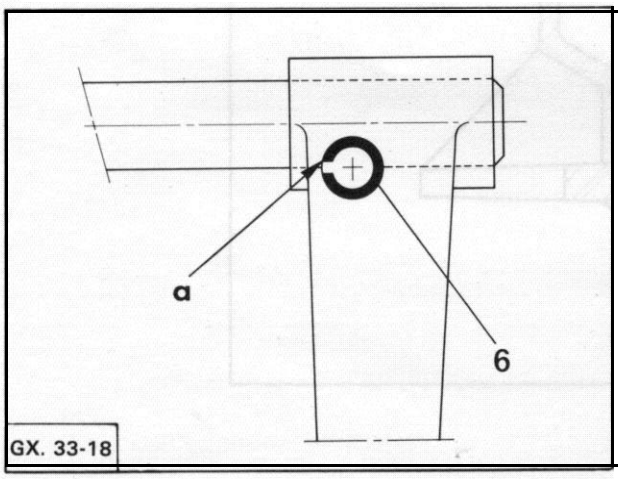
21. Place the fork so that, in « b », it is flush with the shaft chamfer (7').

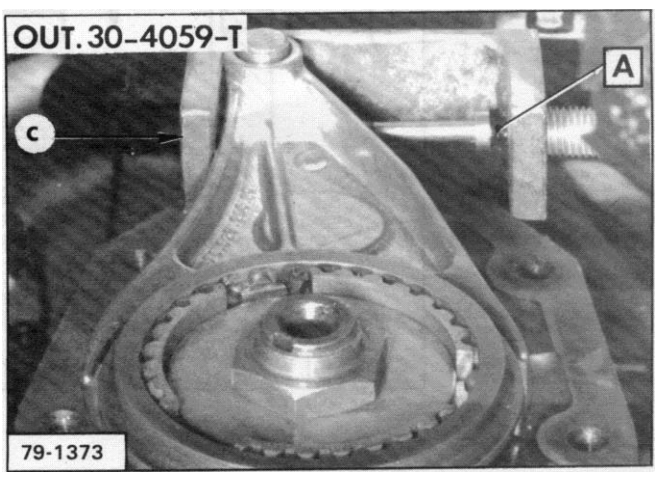
Push roll split pin home, using tool OUT 30.4056 with ball dia. = 5.5 mm (stick it with grease)

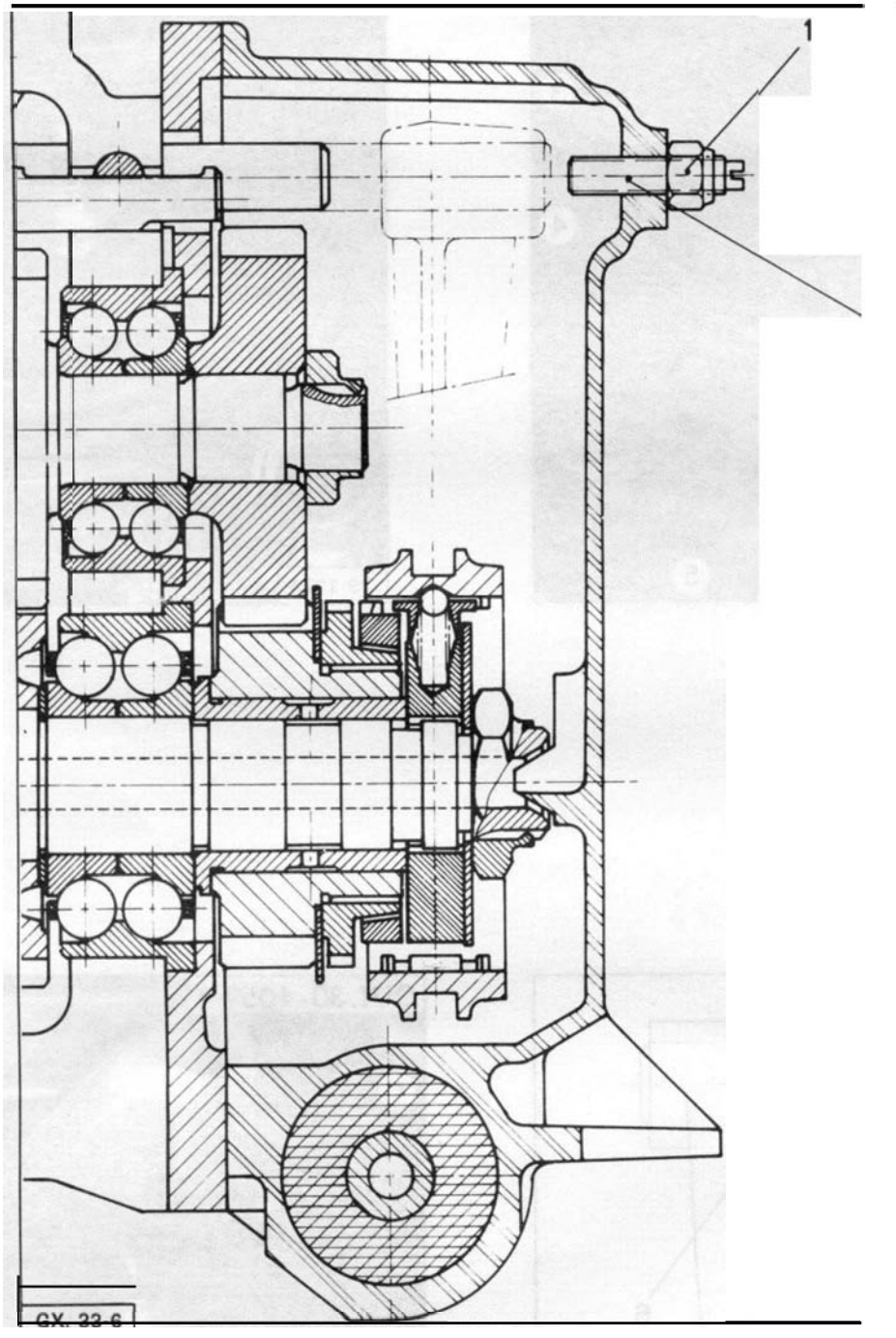
Place a finger in the tool hole « c » and stop pushing the pin in as soon as it is touching said finger.


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79-1375


7
b
3
79-1374


a
6
GX. 33-18


OUT. 30-4059-T
A
c
79-1373


1
GX. 23 G

22. Smear the rear cover joint face and the screws (threads and under head) with CURTYLON or LOCTITE FORMETANCH.

23. Fit rear cover *(* see ***Op. GX.*** *133-* ***1)***

24. Fill the gearbox with oil (TOTAL EP 80 W 90 (G.B) or TOTAL EP 80 W/85 W (FRANCE) : 1.5 *litres approx).*

25. Carry out a road test and then check the rear cover tightness.

Adjust. if necessary. reverse gear stop screw (2) (at the top part of the rear cow).

Unscrew locknut (1)

Engage reverse gear.

Bring screw (2) into contact with the selector fork shaft, and then undo it by one quarter of a turn.

Tighten lock nut (1).

RECOMMENDED SPECIAL TOOLS

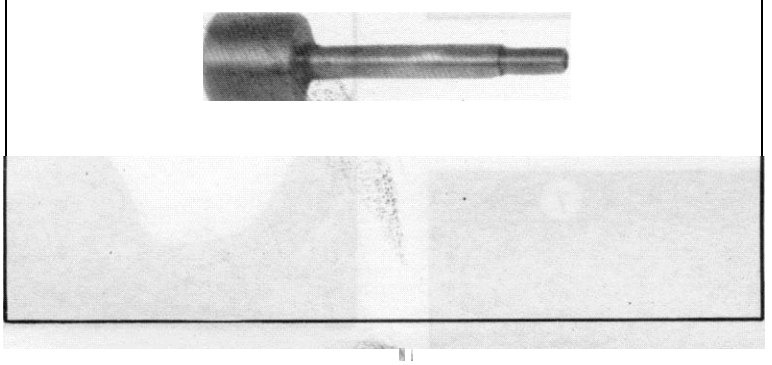
TOOLS NOT SOLD

MR. 630-31/84 : Mandrel for extracting and fitting the fork shaft control lever pin

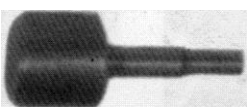
A : Tool for extracting the pin

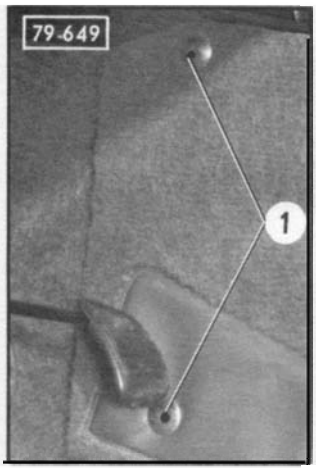
B : Tool for fitting the pin.

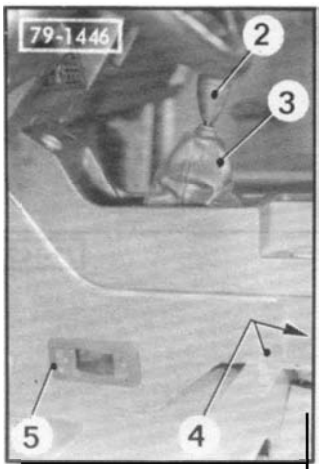
MR.630-31/84.(A) 79-1093

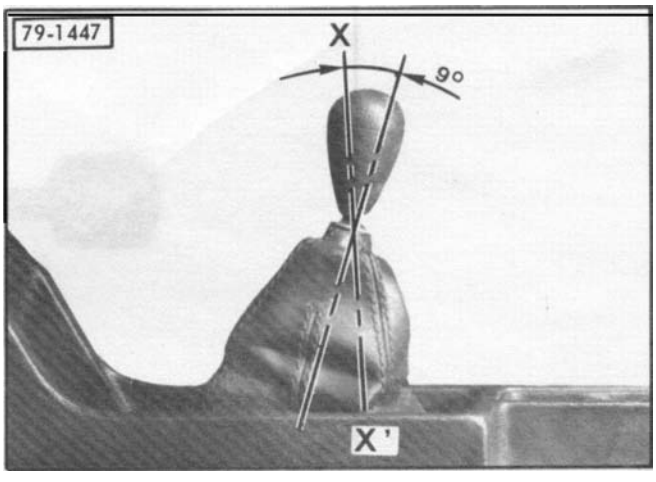


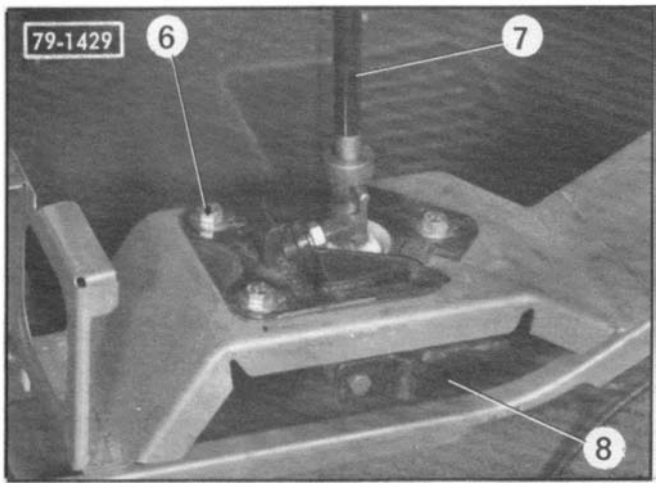
MR.630-31/84.(B) 79-1093

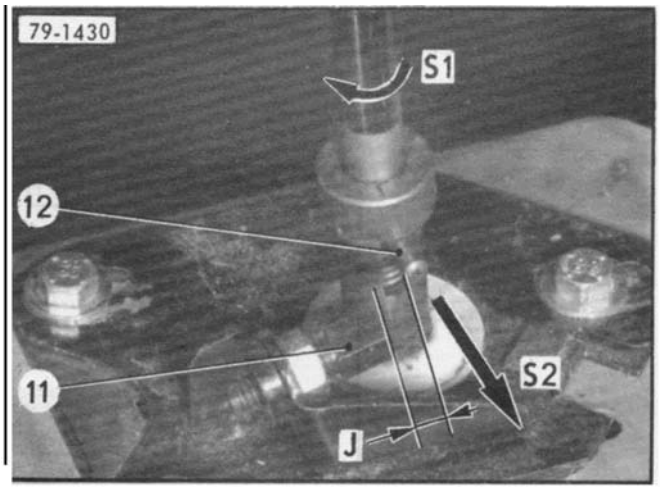


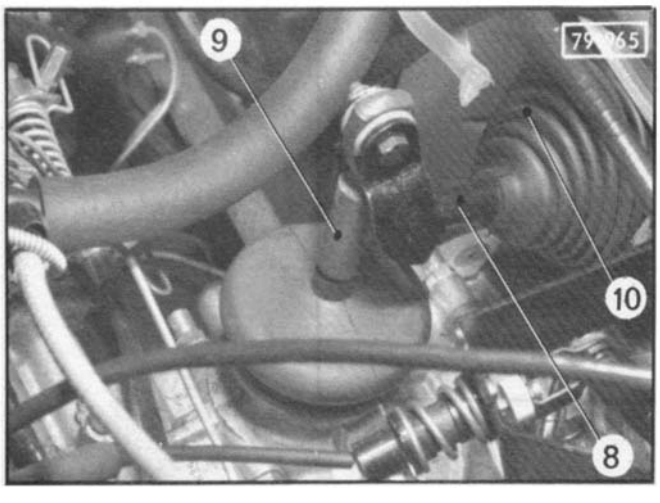

79-649
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79-1446
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X
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79-1429
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79-1430
S1
12
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I - REMOVAL AND FITTING OF THE GEAR LEVER AND TIE-ROD

REMOVAL

1. Take out the front seats.

2. Remove the console cladding :
   Remove knob (2) from lever (7) and dust-guard (3).
   Remove air outlet grille (***5***).
   Undo screws (1) and (4).
   Remove console cladding *(after* ***selecting*** *4th* ***gear).***

3. Remove the gear lever :
   Undo three screws (6).
   Uncouple lever (7) from tie-rod (8).
   Remove the lever.

4. Remove tie-rod (8) :
   Take out the spare wheel.
   Uncouple tie-rod (8) from fork shaft control lever (9).
   Disengage dust-guard (10) from its recess.
   Disengage tie-rod (8) forwards.

FITTING

5. Fit tie-rod (8) :
   Engage :
   the tie-rod via the front of the vehicle.
   dust-guard (10) in its recess on the dashboard.
   lever (9) in the tie-rod bracket.
   Fit the shaft and NYLSTOP nut. but do not tighten fully.

The shaft should be fitted with free rotation, and no lateral play.. :

Replace the spare wheel.

6. Anchor the gear lever/housing assembly to the **console** :
   Engage the housing in its recess on the console.
   Fit three screws (6).

7. Couple lever (7) to tie-rod (8) :
   Engage the lever in the tie-rod bracket.
   Fit the shaft and NYLSTOP nut. but do not tighten fully.

The shaft should be fitted with free rotation, and no lateral play.

NOTE : The lever should be inclined approx. 9" to the rear. with respect to vertical axis XX' If this is not the case. undo three screws (6), and move the housing so as to obtain a correct gear lever position.

8. Adjust reverse gear stop (11) *(5-speed* ***gearbox):***
   Take up the play of lever (7) in direction S 1 *(rotation* on lever axis) and S 2 (reverse gear *preselection).*
   Adjust play J to max. 0.6 mm ***(between shah*** *(12)* ***and*** *stop screw (11),* by means of the stop screw, or displacing the upper plate of the housing with respect to the lower plate. Tighten stop screw locknut (1 1) so that one flat of the screw head is approximately horizontal.
   Check that 4th gear and reverse can be selected freely.

9. Fit the console cladding :
   Select 4th gear. and fit the console cladding
   Fit and tighten screws (1) and (4).
   Fit air outlet grille (5).
   Fit dust-guard (3) and gear lever knob (2).

10. Replace the front seats.

II - REMOVAL AND FITTING OF A FORK SHAFT CONTROL LEVER

REMOVAL

1. Remove the spare wheel

2. Uncouple the gear lever tie-rod :
Remove.
shaft (2),
collar (5),
Disengage tie-rod (3) from lever (1).
Disengage dust-guard (4).

3. **Remove the fork shaft control lever :**
Extract roll split pin (6) using tool [MR. 630-31/84]
Disengage control (1), turning through 90°.

Too [MR. 630-31/84 (A)] makes it possible to leave pin (6) in place in ball joint (7).

FITTING

4. Fit the fork shaft control lever :
Insert roll pin (6) using tool [MR. 630-31/84 (B)]
Position lever (1) in the ball joint *(turning through 90").*
Push roll pin (6) with tool MR. 630-31/84 (B) until the tool body comes into contact with the gearbox casing.

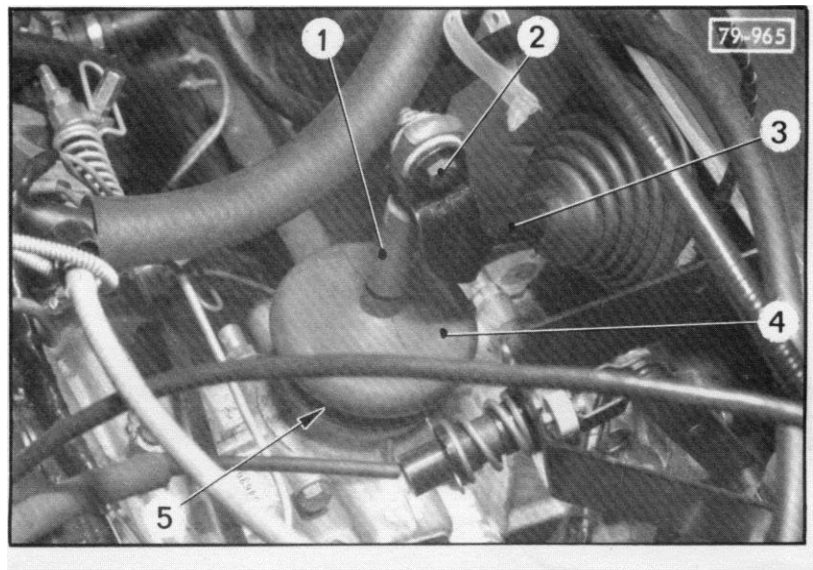
Tool MR. 630-31/84 (B) is used for precision adjustment of the position of pin (6) in the ball joint, so as to avoid damage to the gearbox casing.

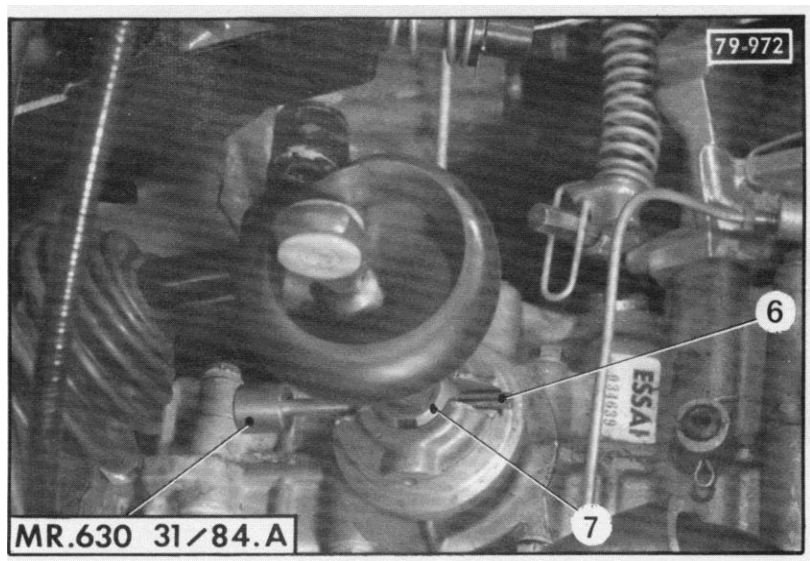
Fit dust-guard.
Fit collar (5).

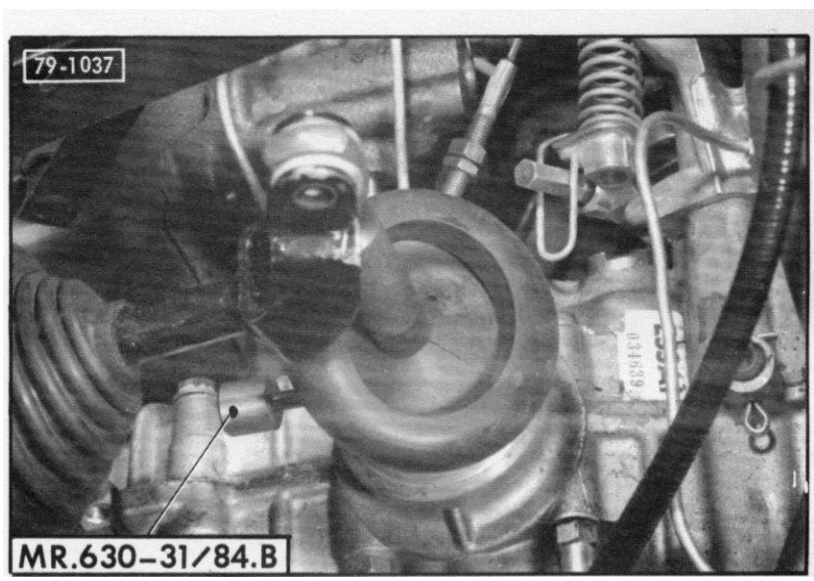
5. Couple the fork shaft control lever to tie-rod (3) :
Engage lever (1) in the bracket of tie-rod (3).
Fit the shaft and NYLSTOP **nut. but do not tighten fully.**

The shaft must be fitted with free rotation, and no lateral play.

6. Replace the spare wheel.


79-965
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79-972
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ESSAI
MR.630 31/84.A


79-1037
MR.630-31/84.B

SPECIAL TOOLS

TOOLS SOLD

2400-T : Universal extractor

3184-T bis (E) : Mandrel for inserting the gearbox drive outlet shaft seals.

TIGHTENING TORQUE VALUES

Mandatory values *(torque* **spanner) :**

- Drive shaft/gearbox outlet attachment screws and nuts 4.5 to 5 **m.daN**
- Front brake unit attachment screws : 6 **m.daN**

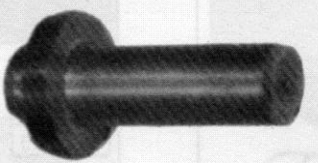
Recommended value ***(pipe spanner).***

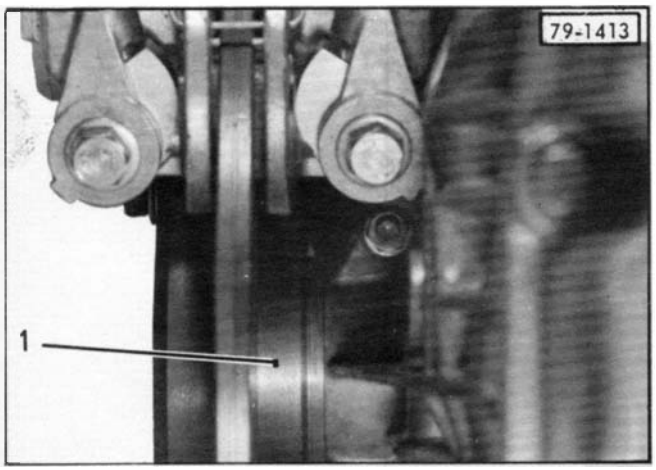
- Gearbox outlet ring nut : 6 to 10 m.daN

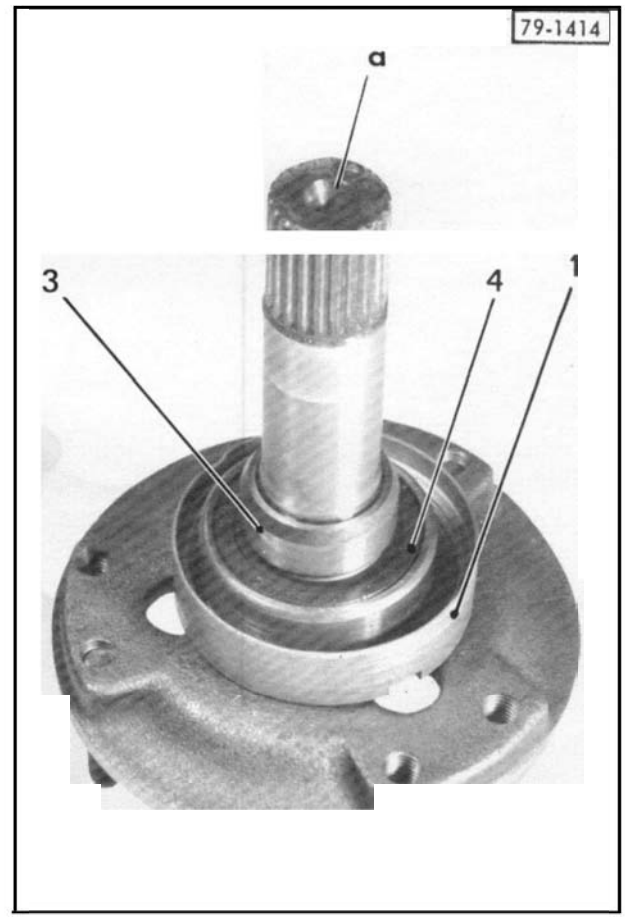
2400-T 12762

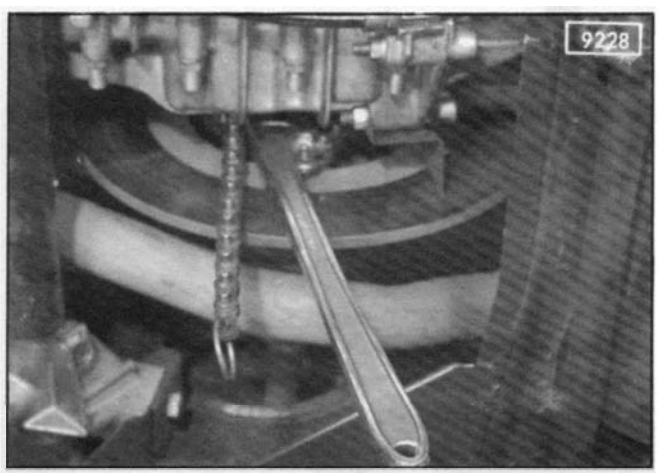


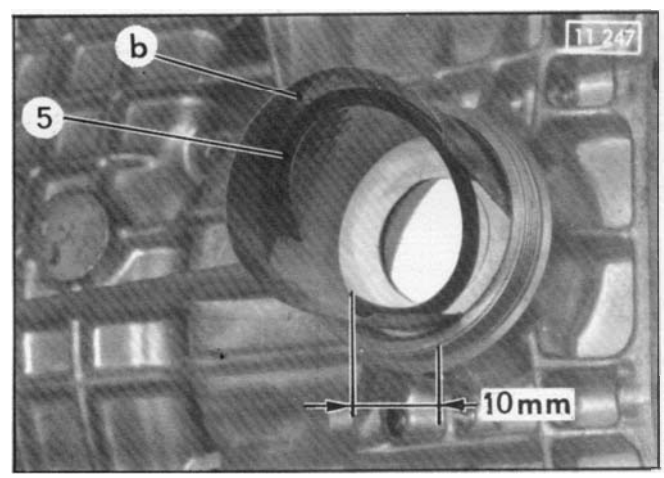
3184-T.bis (E) 14722

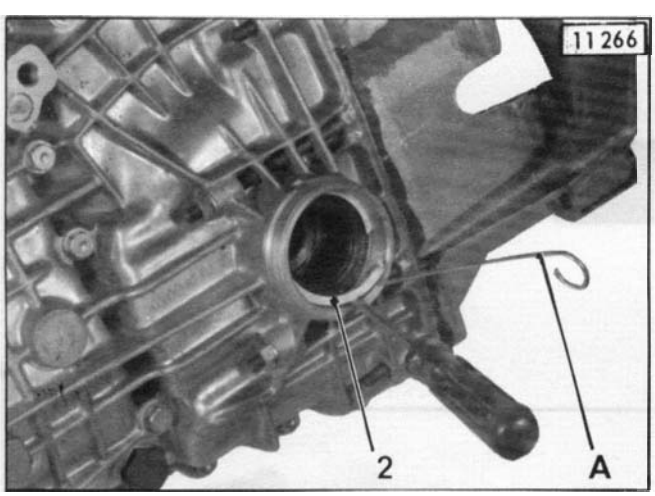


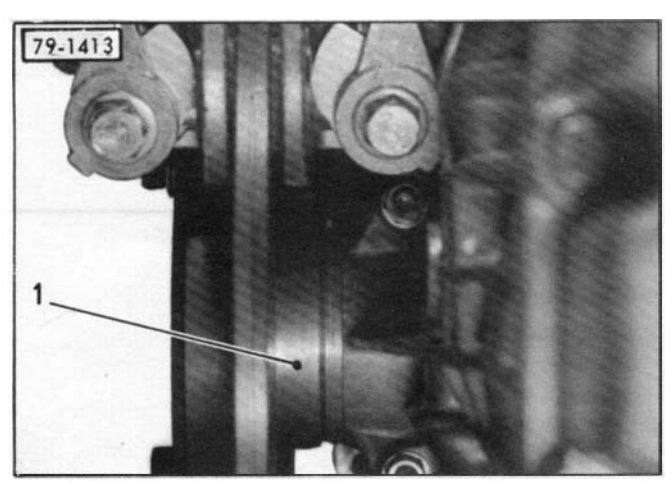

79-1413
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11247
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10mm


11266
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A


79-1413
1

REMOVAL AND FITTING OF A GEARBOX DRIVE OUTLET SHAFT (or bearing or seal)

REMOVAL

1. Remove the spare wheel

2. Chock the front of the vehicle, with the wheels hanging free

3. Disconnect the negative battery lead.

4. Remove the brake disc *(see **Op. GX. 451-l. page 6)***

5. Undo gearbox bearing ring nut (1), from underneath the vehicle.

7. Remove the gearbox casing seal ring :
Undo circlip (2).
Disengage the circlip from its groove, lifting with screwdriver blade.
Hold the circlip with hook A. to complete disassembly.
Push the seal ring against the differential housing, and disengage manually.

8. Strip down the output shaft : .
Remove bush (3) and bearing (4):
Use universal extractor 2400-T bearing on ring nut (1) as close as possible to the shaft.

The extractor should have a central screw, equipped with a ball to avoid damage to shaft end « a ».

FITTING

9. Prepare the output shaft.
Fit
New ring nut (1),
Sealed bearing (4) (assemble in a press. using a tube with ID 26 mm. OD 34 mm. length 120 mm),
- Bush (3).

Bush (3) (in contact with the seal) must show no trace of scratching or cutting. Replace if necessary.

Fit the gearbox drive outlet shaft seal :
Grease the bore in the gearbox casing, and the periphery of the seal.
Insert the seal using a tube with OD 51 mm. or a 36 mm socket spanner.
Insert the seal as far as the circlip groove.
Insert circlip (5) in the bore. using sheet of foil « b » with dimensions as follows :
- length 150 mm.
-width 50 mm.
thickness 0.2 mm.
Remove the foil, and complete insertion of the circlip and seal, using mandre E included in kit 3184-T bis.

To facilitate extraction, the tip of the circlip should be 10 mm from the extraction hole.

10. Fit the shaft assembly :
Engage the shaft teeth with the differential teeth.
Strike lightly with a mallet, to facilitate insertion Of bearing (4).
Tighten ring nut (1) (pipe spanner) ***(recommended** tightening torque : **6 to 10m.daN**).*
Lock ring nut (1) by pew-beating into the corresponding cut-cut in the casing.

11. Fit the brake disc *(see **Op. GX.** 451-1, **page** 6).*

12. Check gearbox oil level.

13. Connect the negative battery lead.

14. Lower the vehicle to the ground.

15. Replace the spare wheel.

SPECIAL TOOLS

TOOLS SOLD

2418 - T : 14 mm ratchet spanner (length 700 mm)

2510-T : Lifting bar (used with garage jack)

6310-T : Hub locking tool

TIGHTENING TORQUE VALUES

Mandatory values :

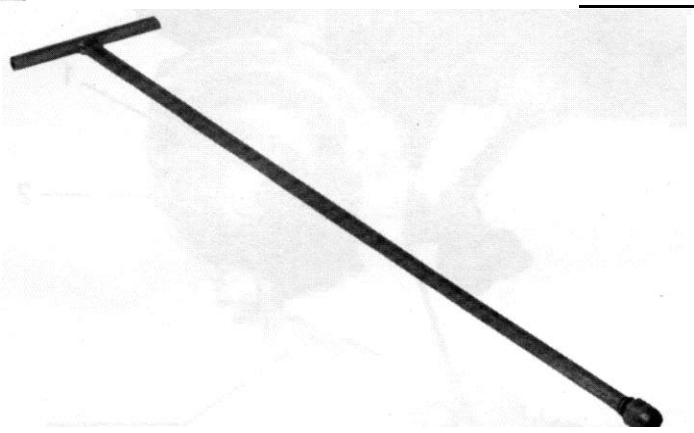
- **Drive shaft/hub locknut 35 to 40 m.daN**
- Drive shaft/gearbox drive outlet attachment screw and nut : 4.5 **to** 5 **m.daN**
- **Lower ball-joint attachment screw : . . . 1.8 m.daN**

Recommended values :

-Wheel nuts: **5.5 to 7.5 m.daN**

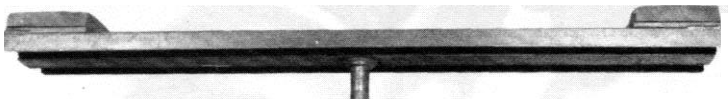
79-1228

12418-1



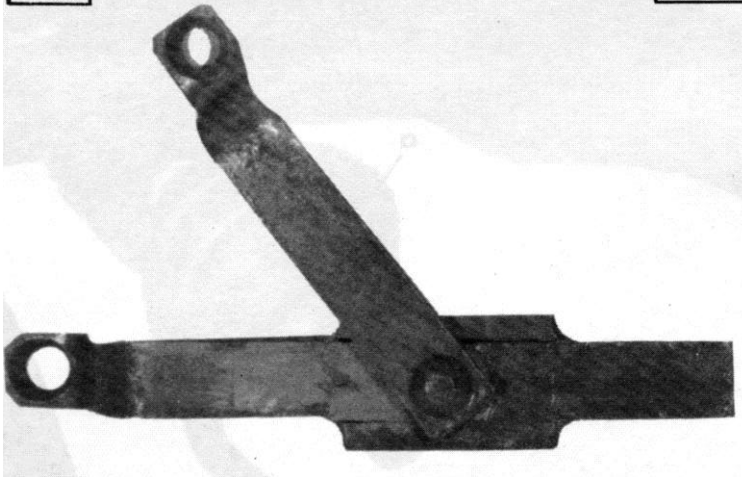
79-1047

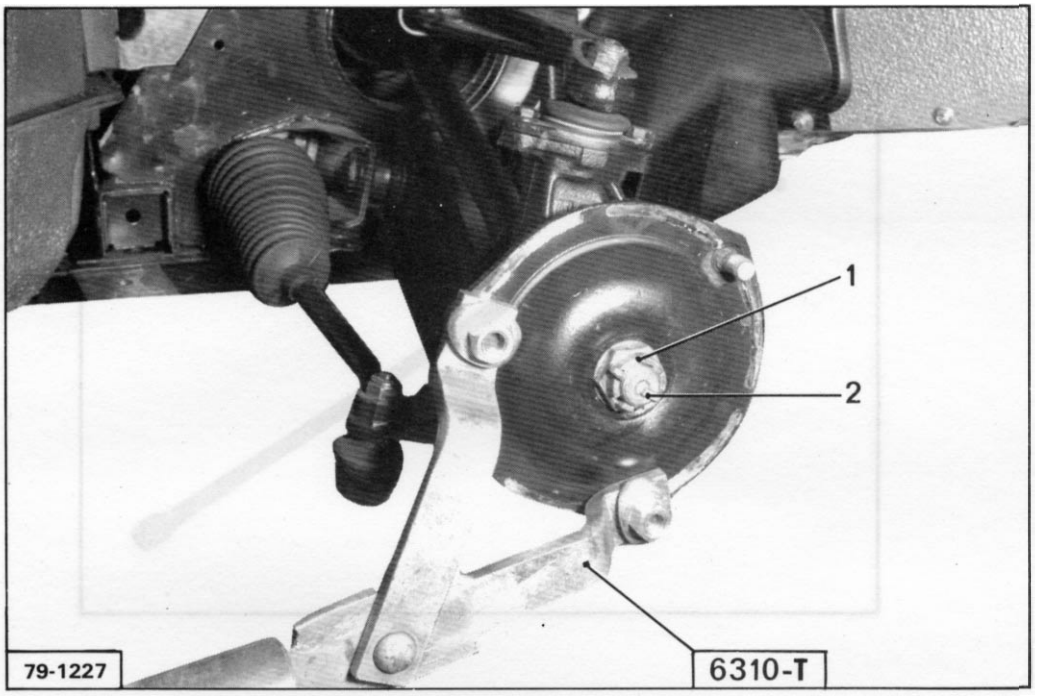
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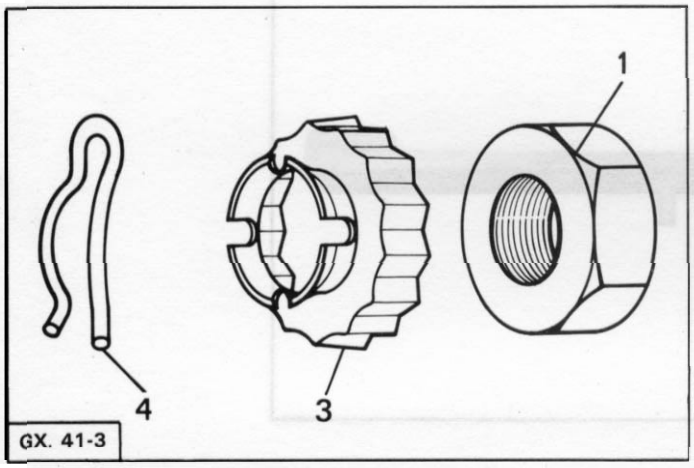


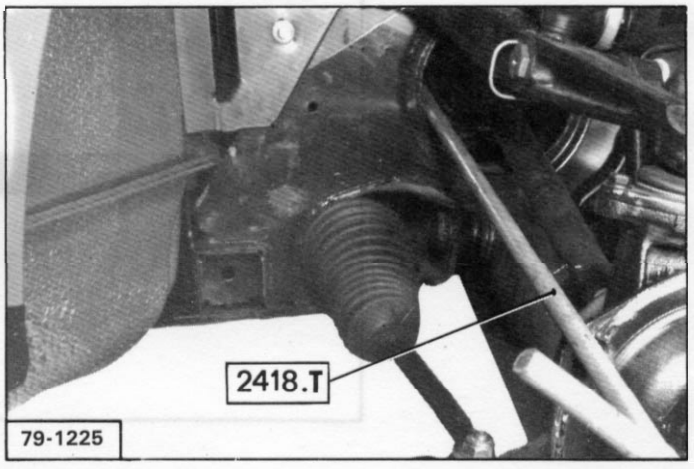
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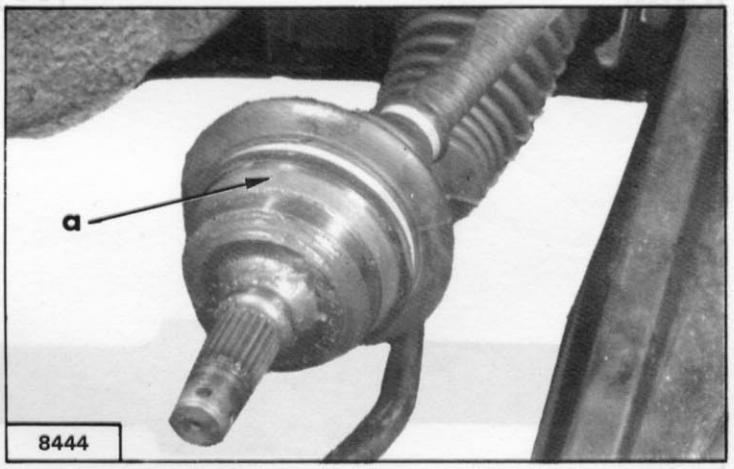
6310-




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79-1227
6310-T


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GX. 41-3


2418.T
79-1225


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8444

REMOVAL AND FITTING OF A DRIVE SHAFT

REMOVAL

1. Raise the vehicle to the *high position,* to position a jack *fitted with lifting* **bar** 2510-T **underneath.**

2. Remove the wheel embellisher
Slacken off the wheel nuts.
Chock the front of the vehicle.
Remove the wheei.

3. Remove :
- pin (2),
- nut (1), *locking the hub plate with tool* 6310-T

4. Depressurize the circuit (see ***Op.*** *GX. 390-00,* ***page*** *9).*

5. Remove the attachment fittings on gearbox output **(spanner** *2418-T)*

6. Undo the lower swivel attachment screws.

7. Remove the drive shaft :

Remove the upper arm stop. corresponding to the « down » position.
Disengage the drive shaft end from the hub. moving the hub upwards.
Raise the upper arm fully. and disengage the drive shaft.

Do not uncouple the ball joints from the tri-axe : joint, when disengaging the drive shaft.

FITTING

Before reassembly, check that the tripod joint swivels are not uncoupled.

8. Fit the drive shaft :
a) Raise the upper arm fully.
b) Position the drive shaft at gearbox drive outlet.
Engage the drive shaft end in the hub (grease ***the contact face of*** *seal ring* « ***a*** ».

9. Couple the lower swivel. Tighten the screws *(contact washer)* ***1.8*** **m.daN**

10. Fit and tighten the gearbox output attachment nuts and screws to 5 **m.daN** ***(spanner*** ***24 18-T***

11. Fit and tighten nut (1) *(grease threads and faces)* **to 35 to 40 m.daN.**
(Lock the hub plate with *tool* 6310-T)
Fit pin (2).

12. Fit the upper arm stop
Fit the wheel.

13. Tighten the pressure regulator relief screw. and the 4-way union screw (see ***Op. GX.*** *390-00,* ***page*** *9)*
Lower the vehicle to the ground.
Tighten the wheel nuts to 5.5 **to** 7.5 **m.daN**
Fit the embellisher.

REMOVAL AND FITTING OF AN HP PUMP

REMOVAL

1. Depressurize the **circuit**
(See Op. GX. *390-00, page 9)*

2. Remove :
- grille,
- bumper.
- direction indicators.
- headlights.

air filter.
- horn (s) and horn support (s),
- fan cowling,
- fan.
- air manifold.

3. Remove pump delivery pipe attachment (1).

4. Disengage bush (7) and push protective casing (6) *(direction of arrow).*

5. Undo the connector screw and disengage pipe (2), taking care to avoid distorting the pipe.

6. Remove the pump :
Undo nuts (5)
Pull gently on the pump. until shaft (8) Can be removed.

If necessary. turn the engine over to bring the control rod to top dead cent"?.

7. Uncouple the flexible suction pipe :
Undo collar (3).
Disengage flexible pipe (4) and blank off.

8. If necessary, remove protective casing (6).

FITTING

During this operation, anchor the pump piston to prevent it from falling.
Check that contact faces on pump and engine housing are perfectly clean.
Fit a new O-ring seal between pump and engine housings.

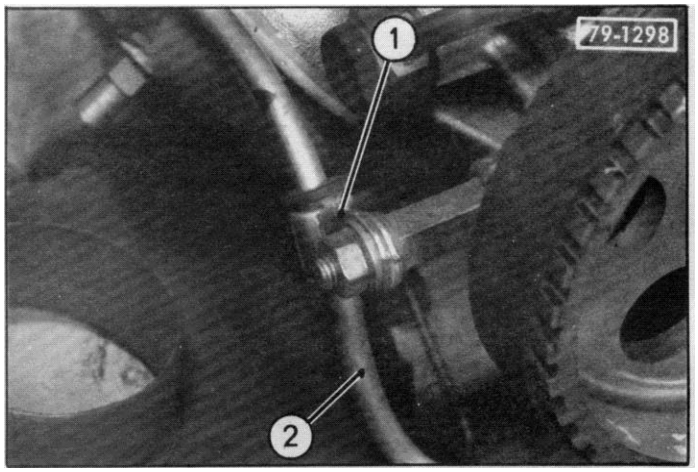
9. Couple the flexible suction pipe :
Engage flexible pipe (4) on the end fitting.
Fit and tighten collar (3).

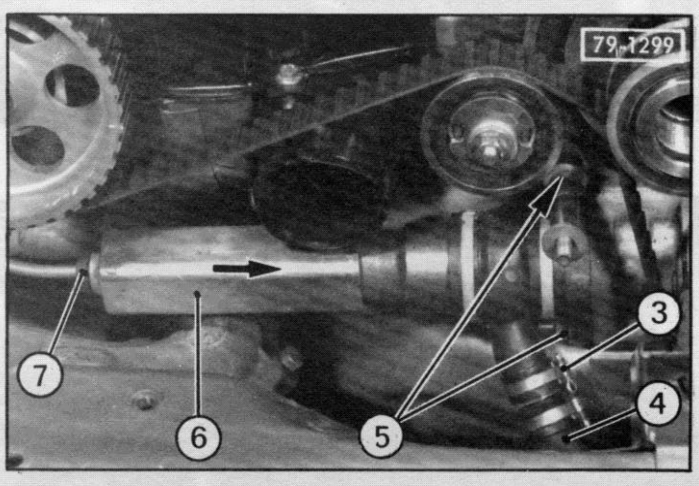
10. If necessary. replace protective casing (6) on the pump body.

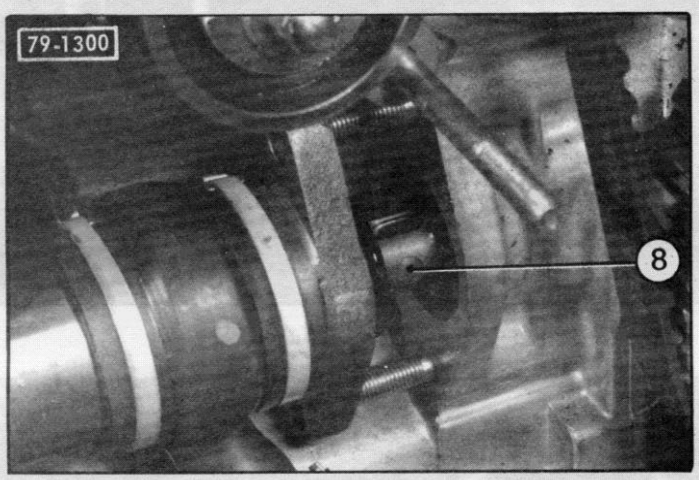
11. Engage the pump on the lower attachment stud :
Connect the piston control rod and fit Shaft (8).

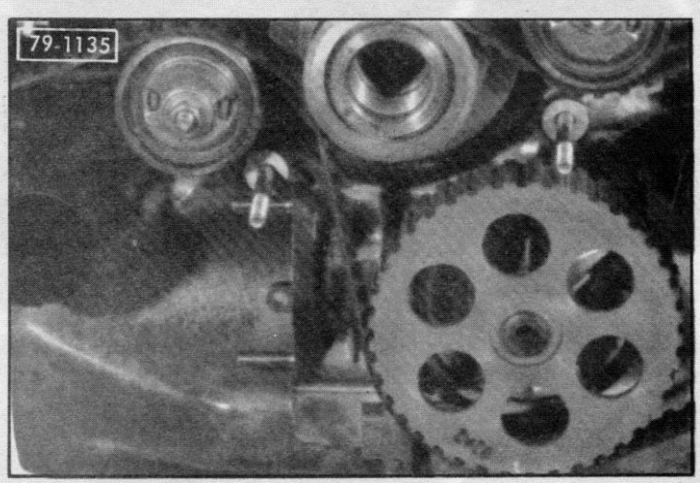
If necessary, turn the engine over to bring the rod to its position.

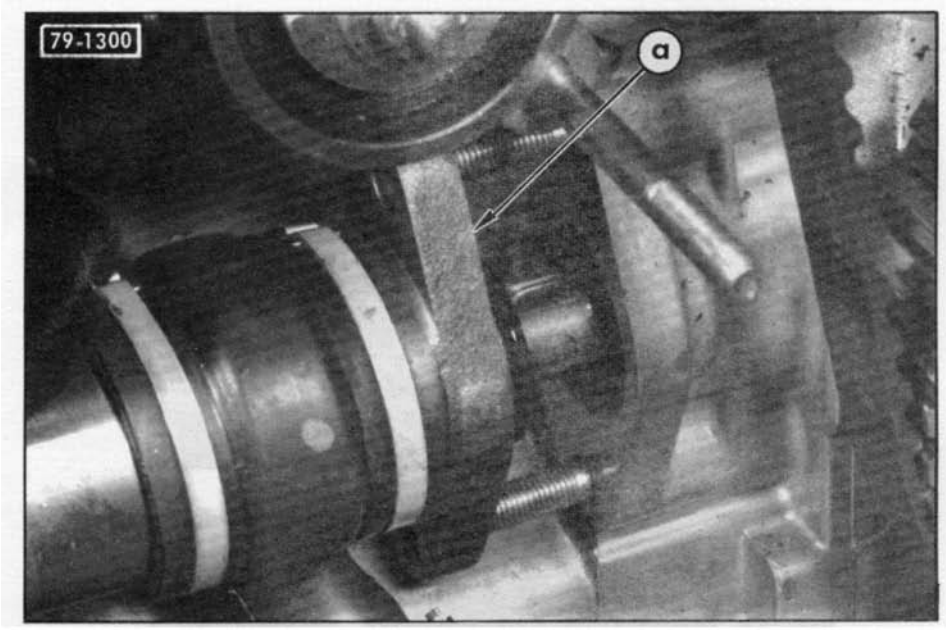
A

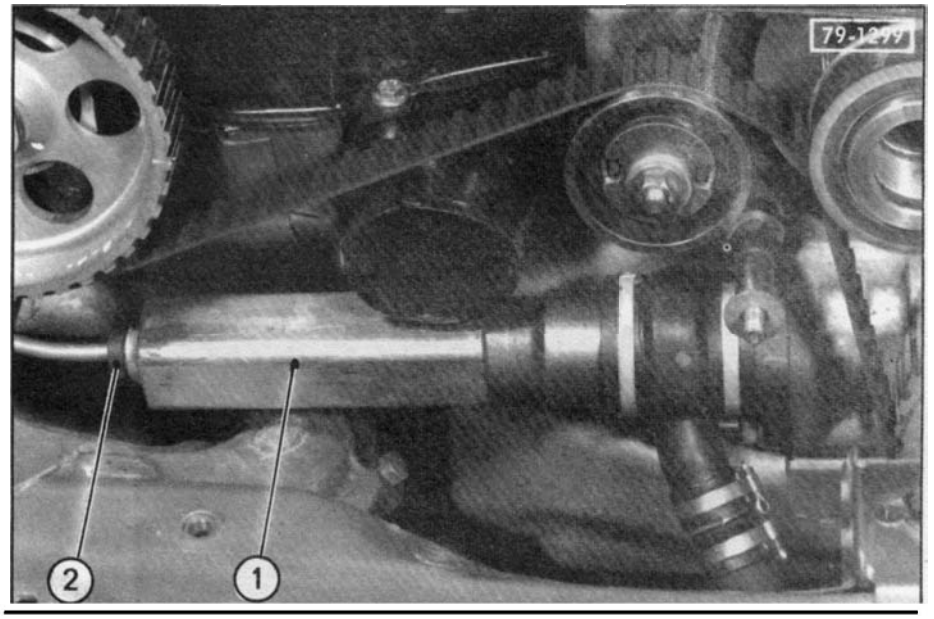

79-1298
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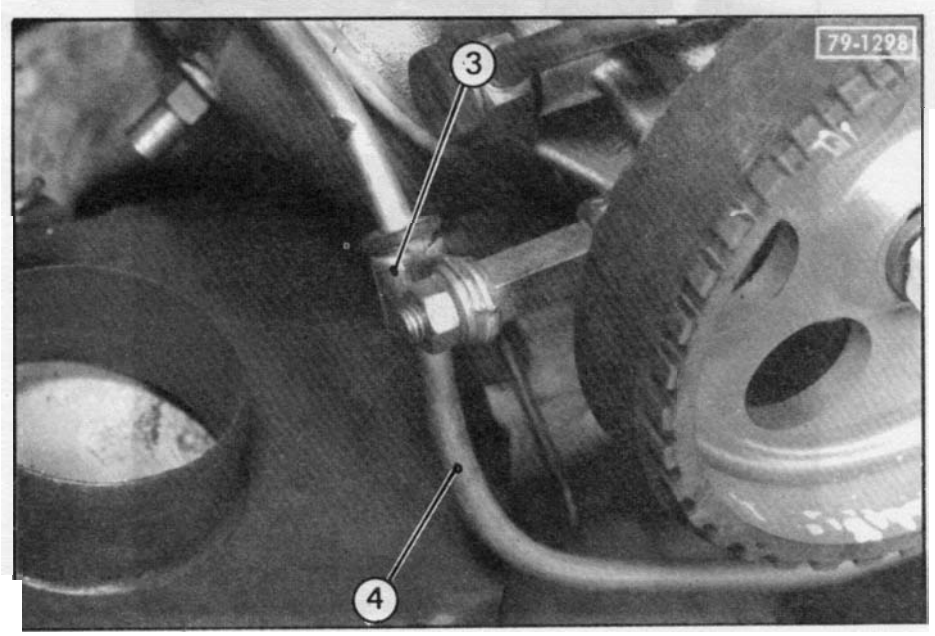

79-1299
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79-1300
8


79-1135


79-1300
a


79-1299
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79-1298
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4

CAUTION : Check :
- that the piston is in position inside the pump sleeve,
-that the O-ring seal is in its groove in the crankcase.

Engage the pump fully on the attachment studs (it should be possible to apply face-plate « a » to the engine crankcase without effort).
Tighten the nuts to 1.3 to 1.4 **m.daN** (contact **washers).**

12. Couple delivery pipe (4) to the pump (fit new seal)
Tighten the union nut moderately.

13. Position bush (2) in protective casing (1).
- Move casing (1) on pipe (4), to fit bush (2).
- Return casing (1) to its correct position on the pump body. Bush (2) should be in contact with the connector screw.

14. Position bracket (3) for attachment of pipe (4) on the cylinder head.
Tighten the nut (**spring washer).**

15. Fit :
- air-manifold.
- fan.

16. Prime the HP pump :
- Disengage the hydraulic reservoir plunger tube.
- Fill the HP pump with LHM fluid. via the plunger tube.
- Start the engine, with **the pressure regulator relief screw slackened off.**
- Replace the plunger tube rapidly in the reservoir.

17. Tighten the pressure regulator relief screw

18. Fit :
- fan cowling.
- horn (s) and horn support (s).
- air filter,
- headlamps.
- direction indicators.
- bumper.

grille.

SPECIAL TOOLS

TOOLS SOLD

1892-T or 1892-T bis : Swivel extractor

3319-T : Expanding tool for fitting lower arms

♦ 6321-T : Upper arm checking pad.

TIGHTENING TORQUE VALUES

Mandatory values :

- **Ball-joint** hub attachment screw : ..... 1.5 **m.daN**
- Upper ball-joint attachment nut : ..... 2.7 to 3 **m.daN**
- ♦ Lower ball-joint attachment nut : ..... 2.7 to 3 **m.daN**
- Nut for attachment of anti-roll bar link lever on upper arm : ..... 2.5 to 3 **m.daN**

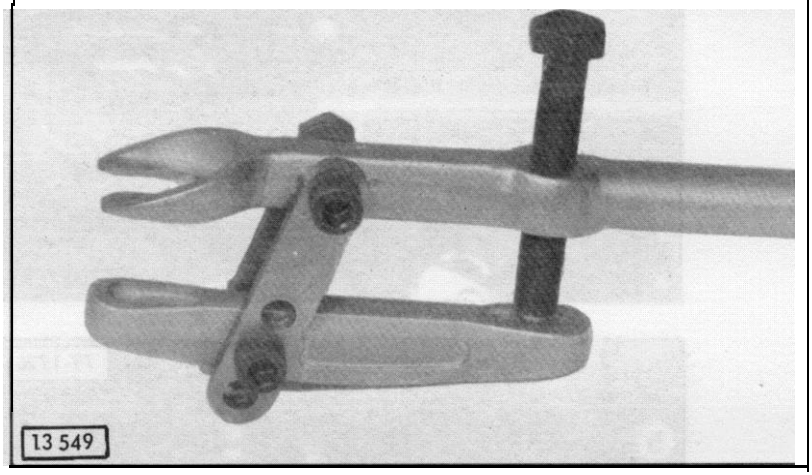
Recommended value :

- **Wheel nuts :** ..... 5.5 to 7.5 **m.daN**

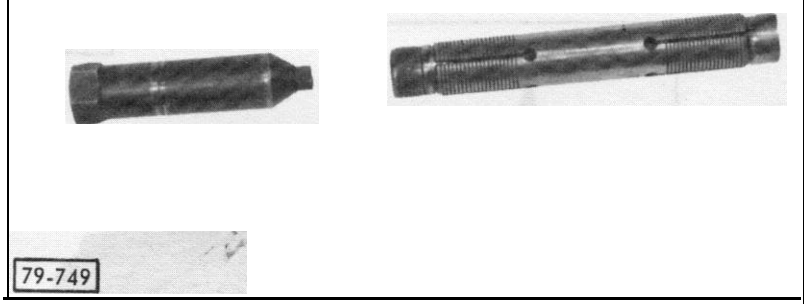




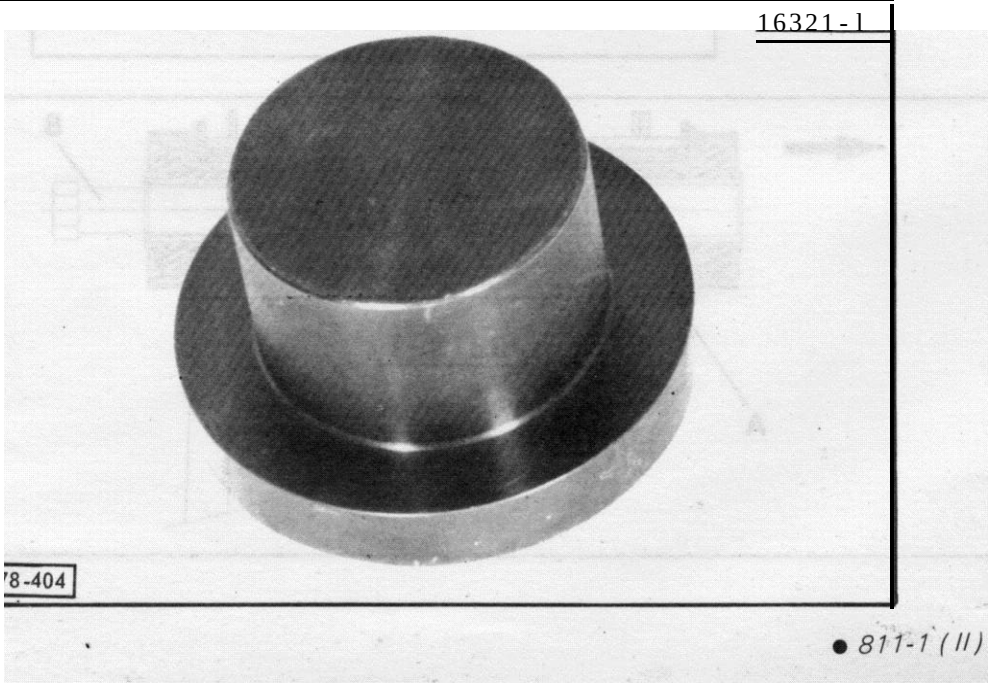
1892-T ou 1892-T bis

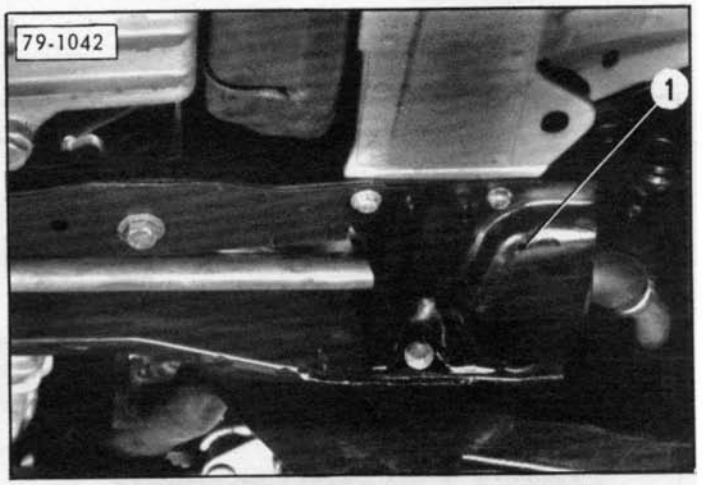


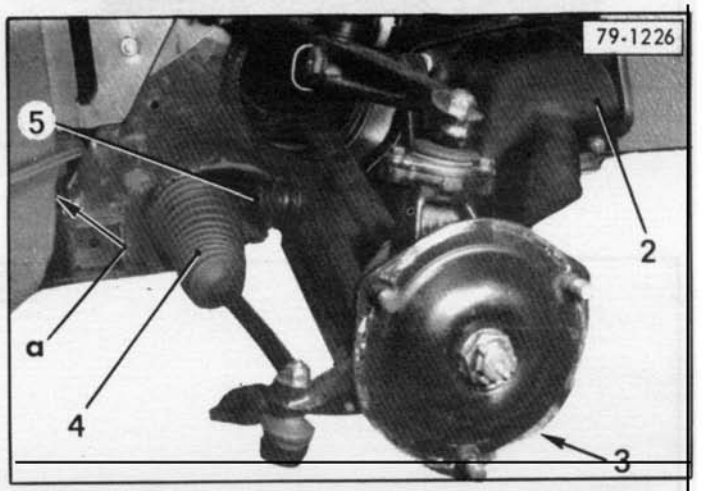
13319-T

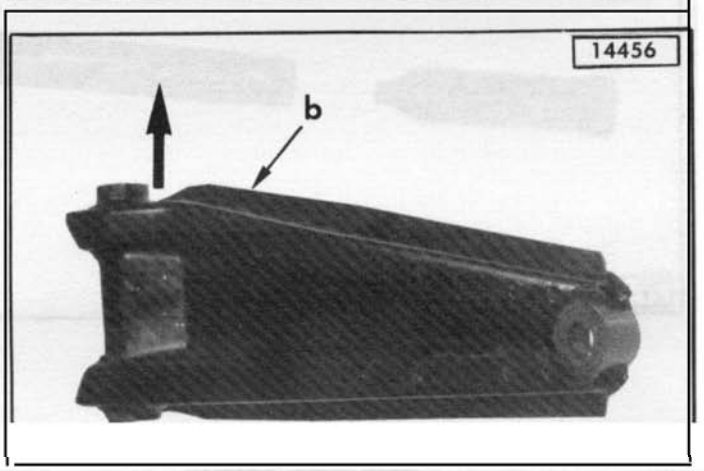


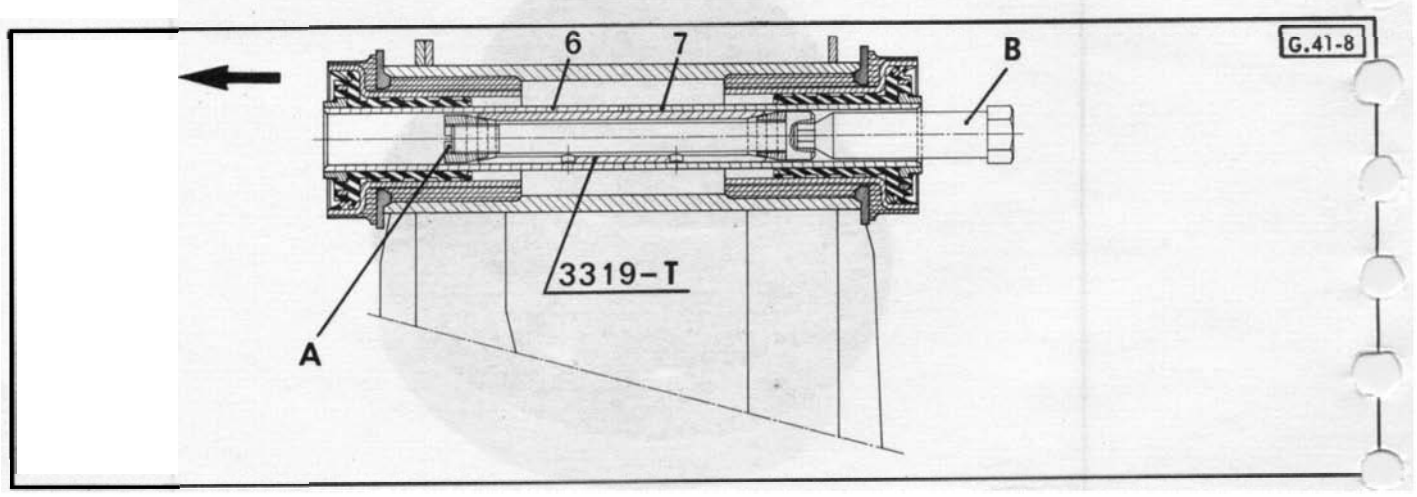
16321-l




79-1042
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79-1226
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14456
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G.41-8
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3319-T
A

I - REMOVAL AND FITTING OF A LOWER ARM

REMOVAL

♦ 1. Remove the wheel hub cap (on the side concerned).
Undo the wheel nuts.
Chock the front of the vehicle, *with* ***the wheels hanging free (raise the vehicle*** *to the* ***high position,*** *to allow* ***positioning of*** *the* ***jack).***

2. **Depressurize** the circuit :
(See Op. *GX. 390-00, page* 9)

3. Remove the wheel and height corrector protective casing (2) ***(if*** *working* ***on the*** *right* ***side].***

4. Remove anti-roll bar bearing protector plate (1).

5. Uncouple the lower ball-joint:
Slacken off nut (3) by a few turns.
Crack off the bail-joint using extractor tool 1892-T or 1892-T bis
Undo nut (3).

6. Disengage sleeve (4)

7. Remove the arm :
Undo the nut and disengage shaft (5). If necessary. push in the wheelarch panel slightly at point « a ».
Disengage the arm horizontally, then upwards.

FITTING

NOTE : The right and left arms are different. Lip « b » faces forwards (➡) when the arm is mounted on the vehicle.

8. Fit the **arm** :
Place the expandable element of too 3319-T in the arm (See ***sketch for*** *position* ***of screw A).***
Hold the arm in a vice. to bring tubes (6) and (7) into contact.
Tighten the expandable element by means of end fitting 8 of tool 3319-T.
Position the arm.
Release the expandable element and drive out.
Fit the shaft, and a new NYLSTOP nut.
♦ Tightening torque : 8 to 8.8 **m.daN.**

9. Couple the lower ball-joint :

Check the rubber seal. If the seal is in bad condition, replace the ball-joint assembly.

The cones are fitted dry. The use of solvent for degreasing the ball-joint tail is PROHIBITED.

Fit a new NYLSTOP nut.
Tightening torque : 2.7 to 3 **m.daN**

10. Fit sleeve (4).
With the road wheels in the straight ahead position sleeve length should be 155 ± 3 mm.

11. Fit anti-roll bar protector plate (1) *(contact* ***washer).***

12. If working on the right side, fit height corrector protective casing (2) *(contact* ***washer).***

13. Replace the wheel and slightly tighten the wheel nuts.

14. Lower the vehicle to the ground.
Tighten the wheel nuts to 5.5 to 7.5 **m.daN**

12. Tighten the pressure regulator relief screw and 4-way union screw *(see* ***Op.*** *GX. 390-00,* ***page 9).***

II - REMOVAL AND FITTING OF AN UPPER ARM

REMOVAL

♦ **1.** Remove wheel hub cap (on the side concerned).
Undo the wheel nuts.
Chock the front of thevehicle. *with the wheels hanging free (raise the vehicle to the high position, to allow positioning of the jack)*

2. Depressurize the circuit :
(See Op. *GX. 390-00, page* **9).**

3. Remove the wheel

NOTE : If the operation is carried out on the right side. remove height corrector protective casing (4).

4. Uncouple the upper swivel :
Slacken off barrel nut (2) by a few turns, and strike its end *sharply to* crack off ball joint (3).

5. Extract pin (8).

6. **Uncouple the upper swivel :**
Undo nut (6) by a few turns.
Crack off the swivel using extractor tool 1892-T or 1892-T bis.
Undo nut (6).

7. **Remove the arm :**
Undo nut (1).
Drive out the articulation shaft.
Disengage tha **arm.**

FITTING

NOTE : The left and right arms are different. Boss « a » should point forwards (➡) when the arm is in position on the vehicle.

8. Fit the arm :
Place adjustment washer (10) on the opposite side to boss « a » (stick with grease).
Fit protective cups (9).
Position the arm and engage the shaft.
Fit a *new NYLSTOP nut.*
Tightening torque : 5.9 to 6.5 m.daN
Check arm articulation : **no play is permissible.**

9. Couple the upper ball joint :

Check rubber seal (5). If this seal is in bad condition, replace the ball joint assembly.

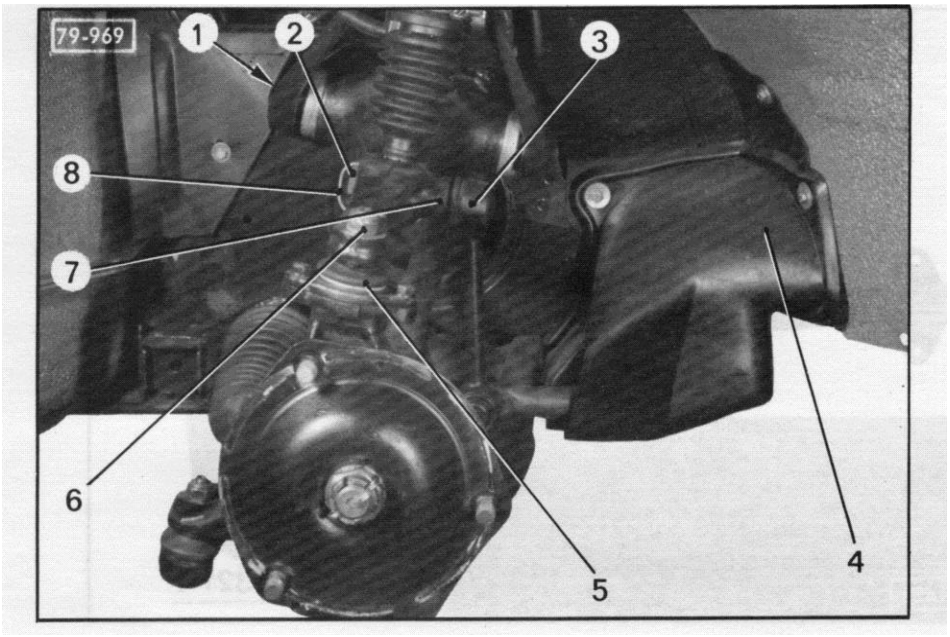
The cones are assembled dry. Use of solvent for degreasing the ball joint tail is PROHIBITED.

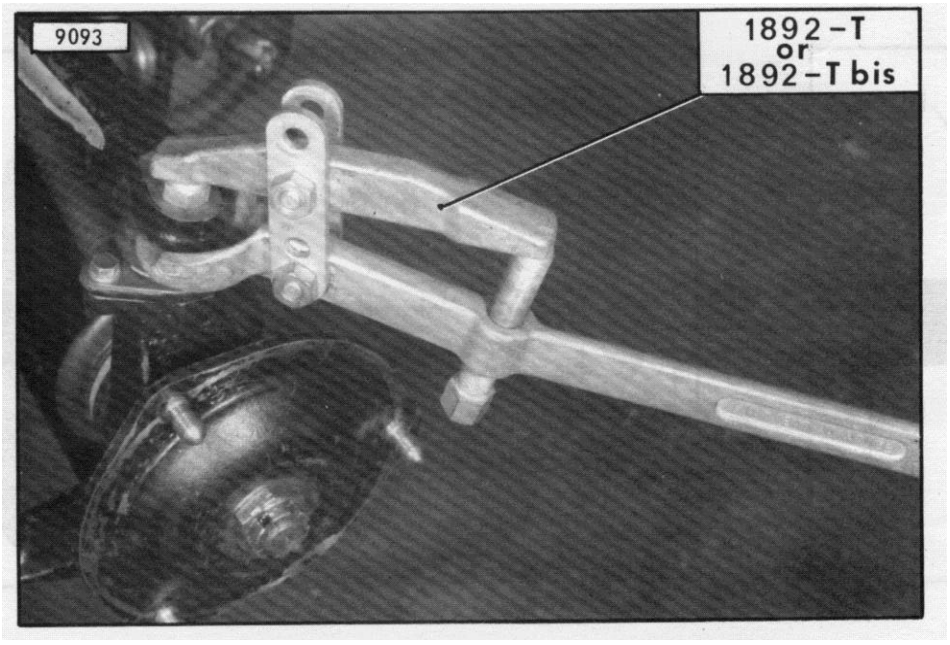
Fit new NYLSTOP nut (6) and tighten to 2.7 to 3 **m.daN**

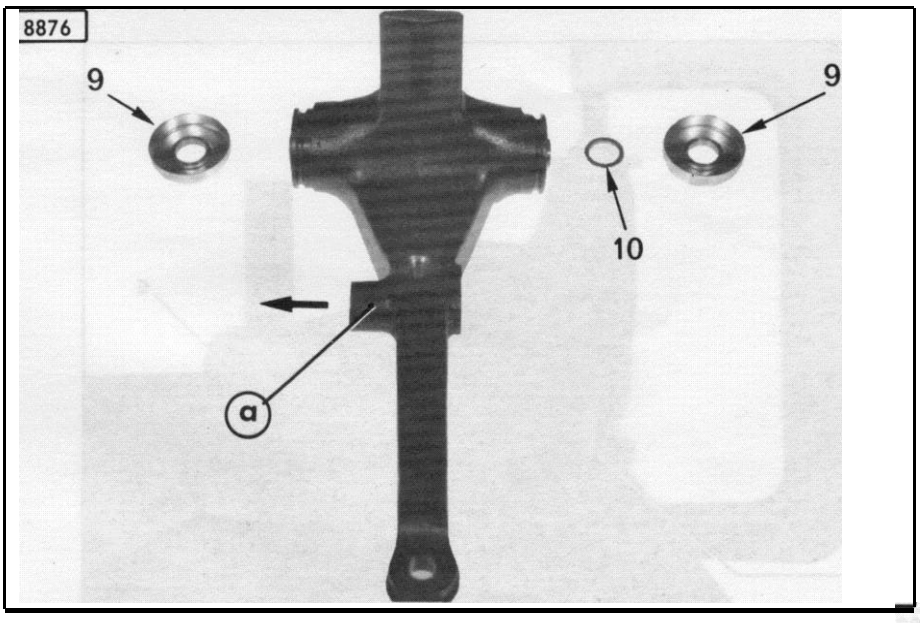
10. Couple the anti-roll bar :
Check rubber seal (7) *(if the seal is in bad condition, replace the link rod).*
Tighten barrel nut (2) to 2.5 **to** 3 **m.daN**
Fit pin (8).

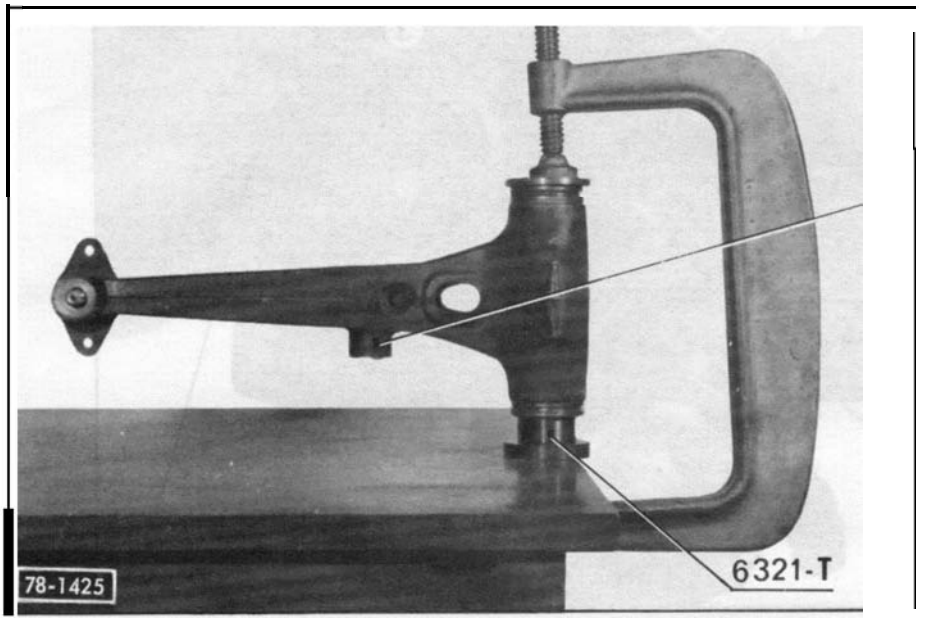
11. *Right side :* fit height corrector protective casing (4).
Fit the wheel. and do up the wheel nuts. but do not tighten fully.
Lower the vehicle to the ground.
Tighten the wheel nuts to 5.5 **to** 7.5 **m.daN**

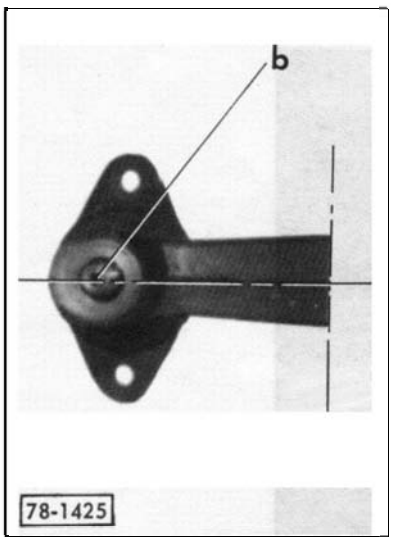
12. Do up the pressure regulator relief screw and 4-way union screw (See *Op. GX. 390-00, page 9).*

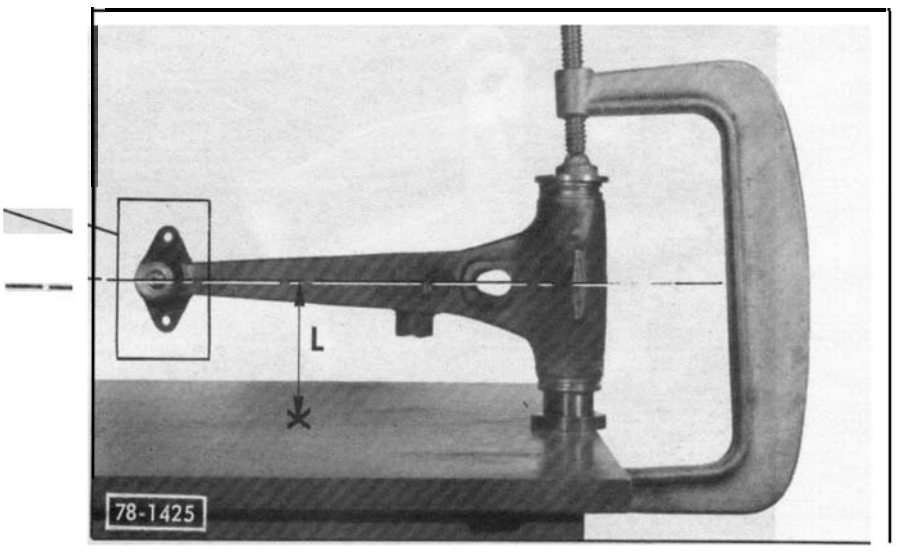

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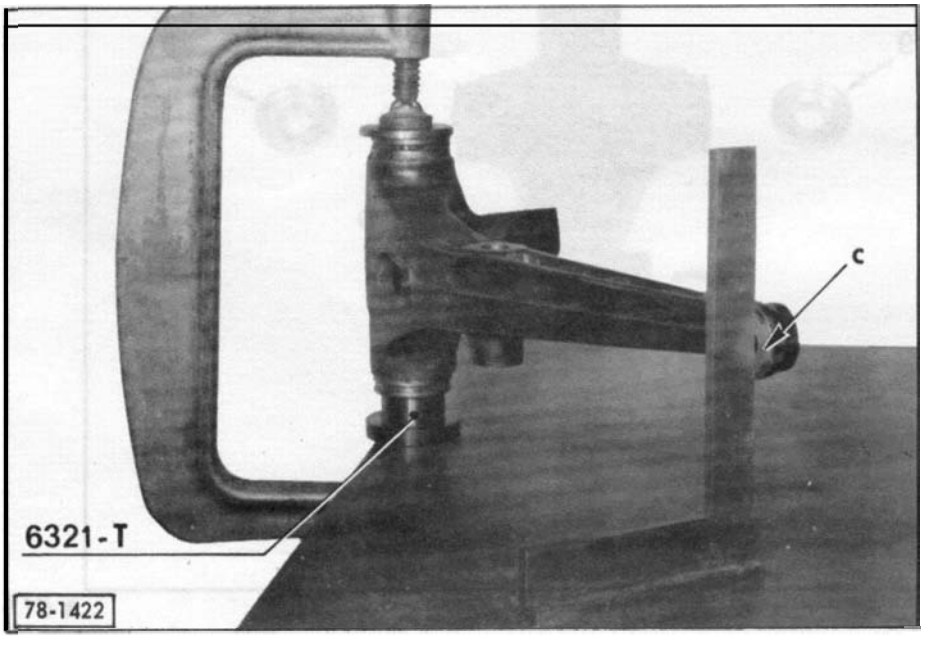

9093
1892-T
or
1892-T bis


8876
9
9
10
a


78-1425
6321-T


b
78-1425


L
78-1425


c
6321-T
78-1422

III - CHECKING AN UPPER ARM

Note the position of each component and remove the units (bearing inner races and thrust washers).

1. Place checking pad 6321-T on the arm front part, on boss « a » side (see photograph opposite)

2. Fix the arm to the jig es shown on photograph (boss « a » facing downwards).

3. Fit the arm with its ball joint.

4. Measure distance **L.**

Distance L must be measured with accuracy, perpendicularly to the surface of the jig.

Distance L is the distance between the surface of the jig and the ball joint shaft centre line "b"

L = 111 ± *1* mm (ball joint exterior ring fitted).

As an indication :
L = 99 ± **1** mm (ball joint exterior ring removed)

5. Make sure the arm is not twisted by placing en angle bar abuning on face « c ».

SPECIAL TOOLS

TOOLS SOLD

1892-T or 1892-T bis : Ball joint extractor

631 O-T : Hub locking tool

TIGHTENING TORQUE VALUES

7

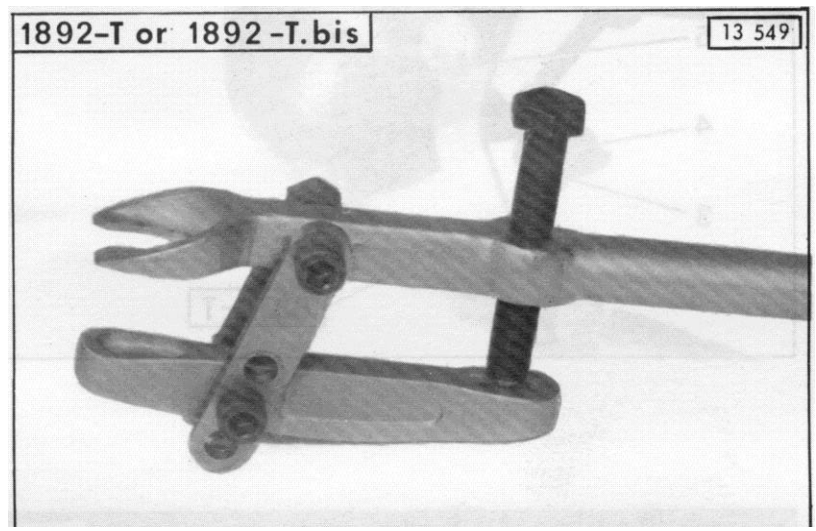
Mandatory values :

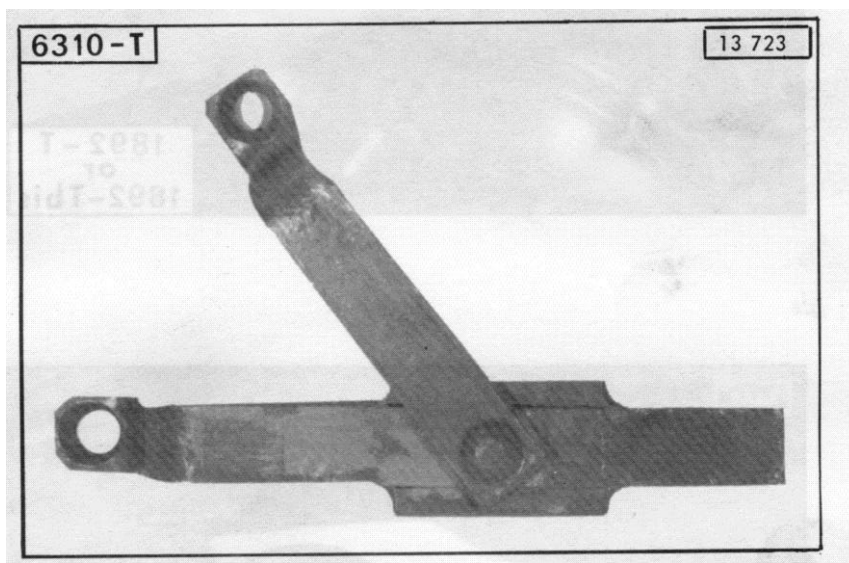
- **Upper ball joint nut :** ..... **2.7 to 3** m.daN
- **Lower ball joint nut :** ..... **2.7 to 3** m.daN
- **Upper and lower ball joint attachment screws :** ..... **1.8** m.daN
- **Steering lever ball joint nut :** ..... **1.8 to 2** m.daN

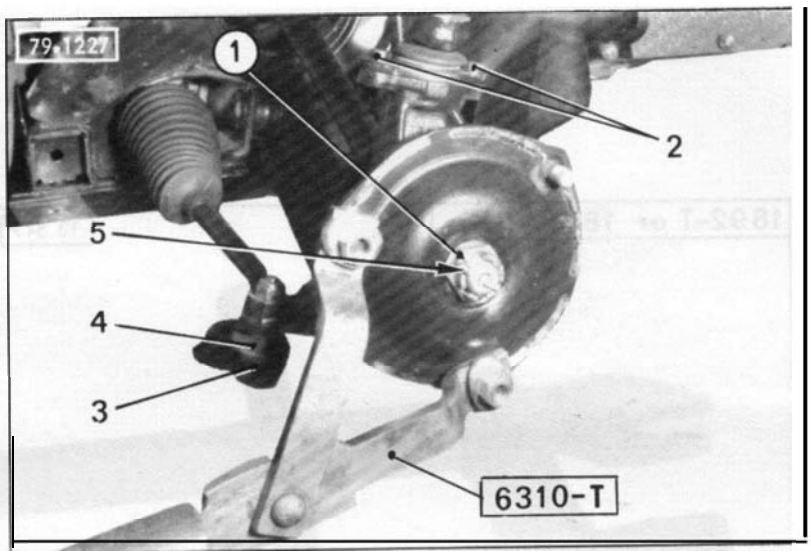
-Drive shaft nut: ..... **35 to 40** m.daN

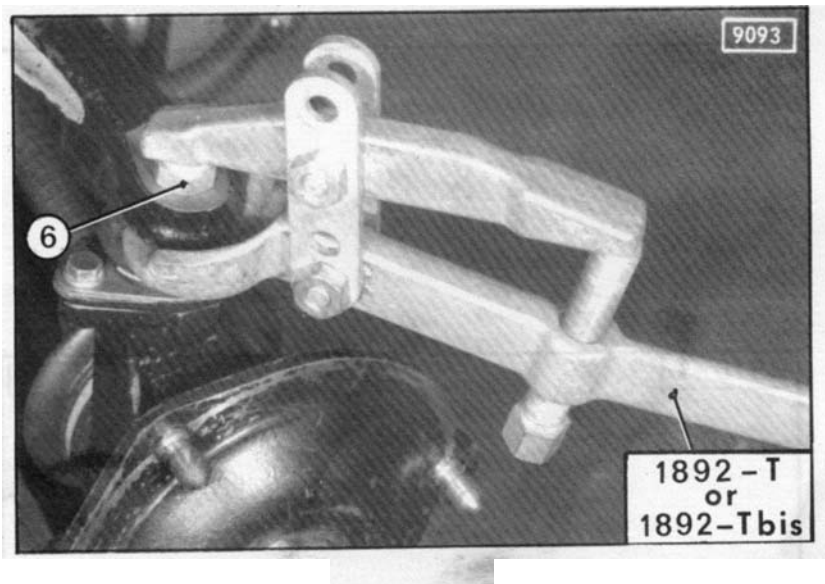
Recommended value :

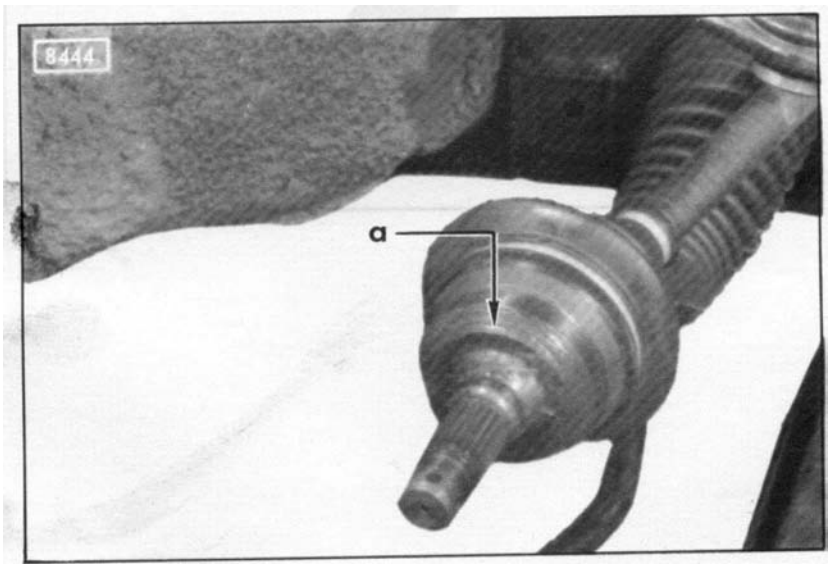
- **Wheel nuts :** ..... **5.5 to 7.5** m.daN


1892-T or 1892-T.bis
13 549


6310-T
13 723


79-1227
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6310-T


9093
6
1892-T
or
1892-Tbis


8444
a

REMOVAL AND FITTING OF A COMPLETE SWIVEL OR UPPER/LOWER BALL JOINT

REMOVAL

1. Raise the vehicle to the *high position,* for positioning the jack.

2. Slacken off the wheel nuts (side concerned).
Chock the front of the vehicle.
Remove the wheel.

3. Remove :
- pin (5),
- nut (1) *(use tool* 6310-T)

4. Uncouple steering lever ball joint (3) from the swivel :
Slacken off the attachment nut, and use extractor tool 1892-T or 1892-T bis

5 Remove the upper and lower ball joints (if necessary) :
Use extractor tool 1892-T or 1892-T bis
Slacken off nut (6) by a few turns, and take purchase on this nut.

6. Remove the swivel joint :
Undo upper and lower ball joint attachment screws (2).
Push the end of the drive shaft. and disengage the swivel joint.

Do not pull on the drive shaft, to avoid disengaging the ball joints from the «tri-axe» joint.

FITTING

Check the condition of the rubber ball joint protectors. If they are in bad condition, replace the ball-joint assembly (s).

7. Fit the upper and lower ball joints :

The cones are fined dry. Use a solvent for degreasing the ball joint tails IS PROHIBITED.

Replace the NYLSTOP nuts. and tighten to2.7 **to** 3 **m.daN.**

8. Fit the pivot :
Position the pivot, and fix the lower swivel.
Tighten the screws *(contact* ***washers)*** **to 1.8 m.daN.**

9. Fit the drive shaft :
Grease surface « a » of the seal.
Fit nut (1).

10. Fix the upper ball joint :
Tighten the nuts *(contact* ***washer)*** **to 1 .8 m.daN.**

11. Couple steering lever ball-joint (3) to the swivel

Check rubber seal (4). If the seal is in bad condition, replace the steering lever assembly

The cones are fitted dry. The use Of solvent for degreasing the ball joint tail is PROHIBITED.

Replace the NYLSTOP nut. and tighten to **1 .8 to 2 m.daN**

12. Tighten nut (1) *(grease* ***threads and faces) to 35*** **to 40 m.daN.**
use tool 6310-T
Pin the nut.

13. Fit the wheel and lower the vehicle to the ground.
Tighten the wheel nuts to 5.5 to 7.5 m.daN.

SPECIAL TOOLS

TOOL SOLD

2510-T : Lifting bar

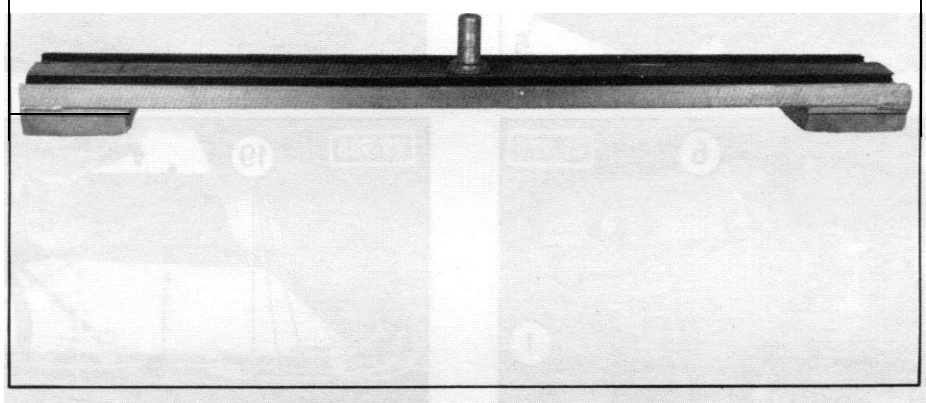
TIGHTENING TORQUE VALUES

Mandatory values :

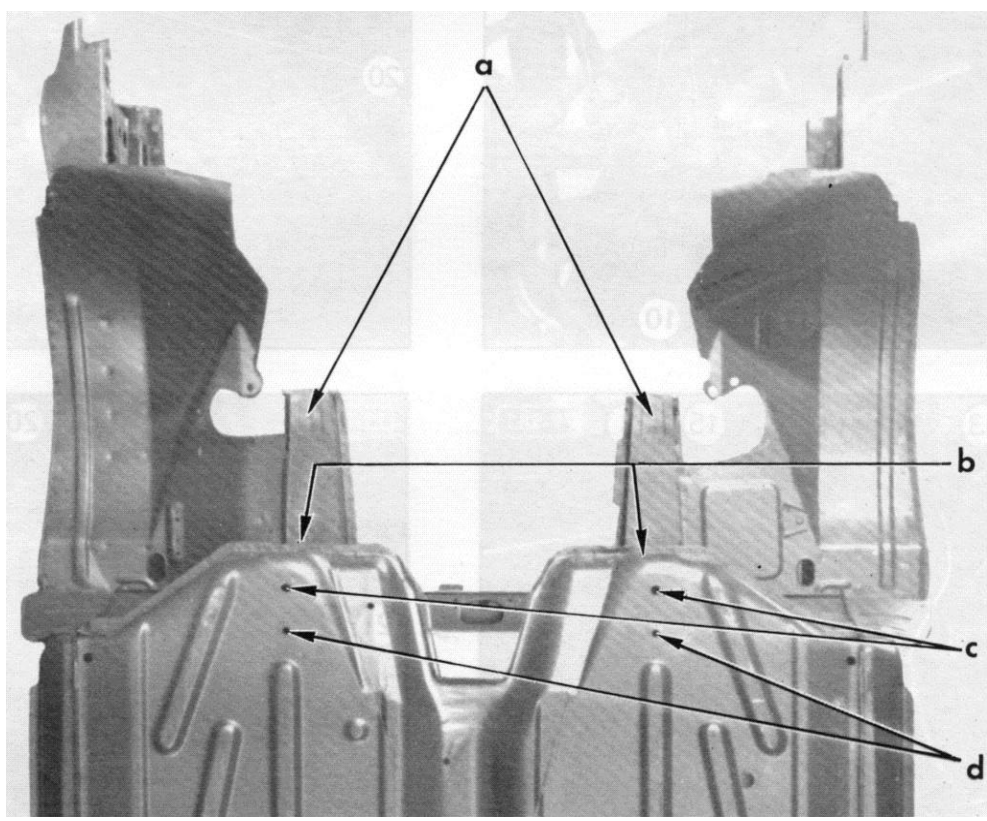
1 : Initial tightening on « c » *(pilot* ***holes) :***	***2*** **m.daN**
2 : Point « a » :	4.5 to 5 **m.daN**
3 : Final tightening to point « c » and « d » :	4.5 to 5 **m.daN**
4 : Point « b » *(after chocking)* :	**9 to 10 m.daN**

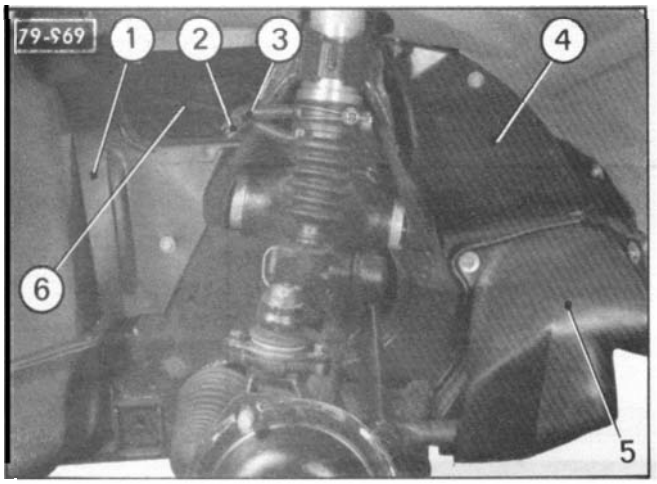
2510-T

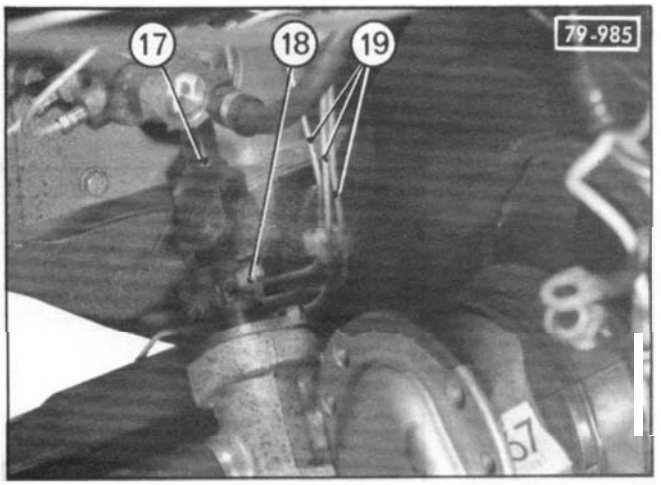
79-1047

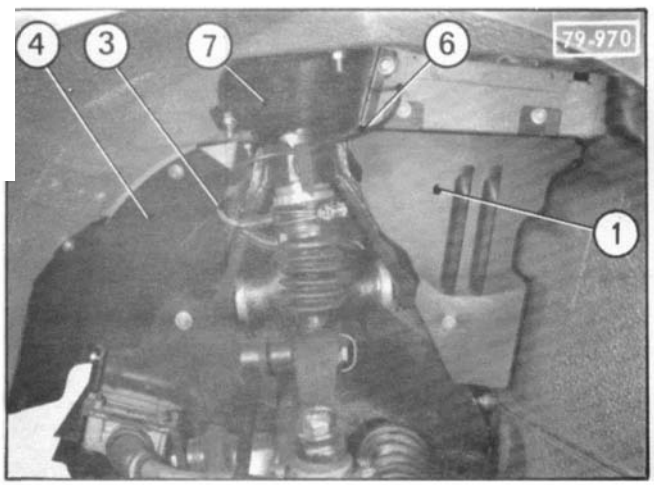


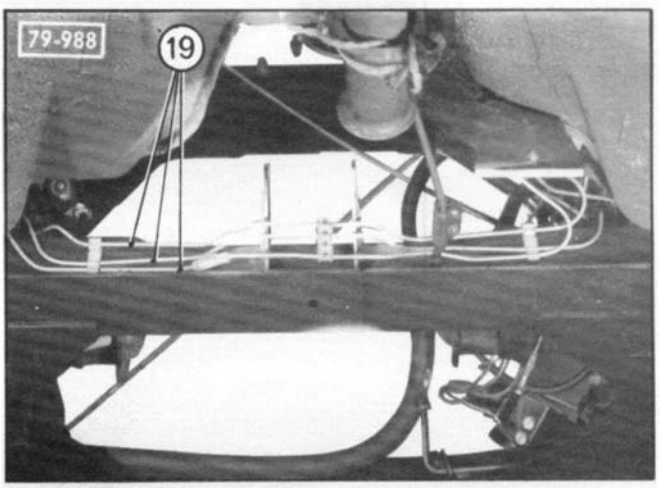
79-415

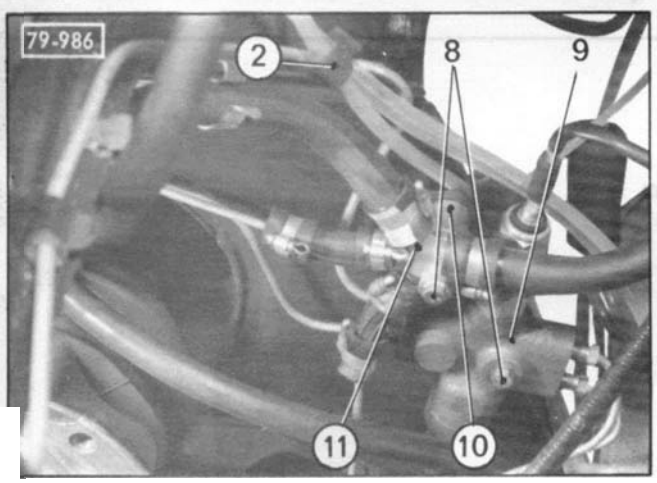


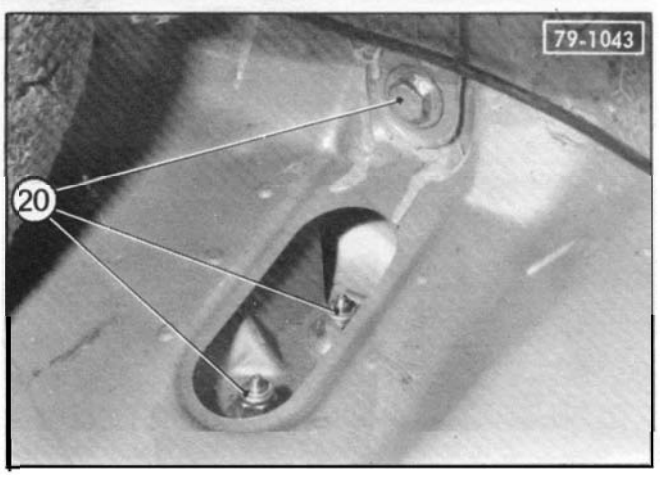

79-969
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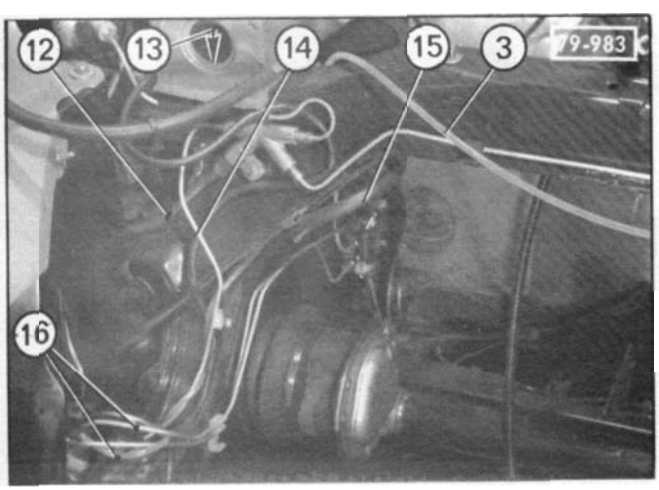

17
18
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79-985

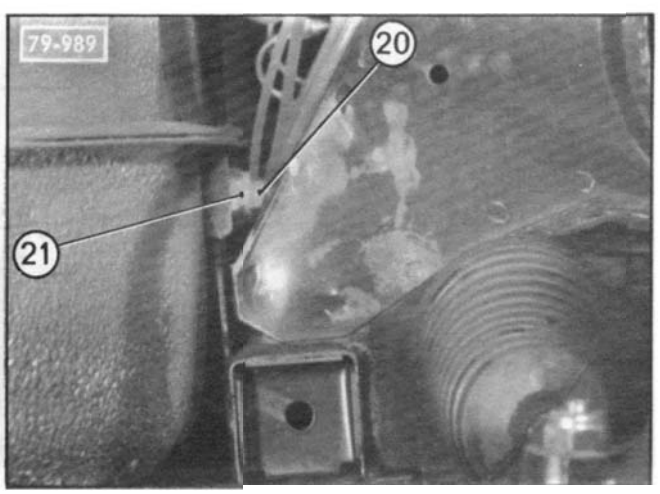

4
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79-970
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79-988
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79-986
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79-1043
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79-983
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79-989
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21

REMOVAL AND FITTING OF THE FRONT AXLE UNIT

REMOVAL

1. Remove the engine/gearbox assembly. (See Op. GX. 100-I)

***2.* Remove :**

- battery.
- suspension spheres *(fit* a ***plug on each*** *suspension* ***cylinder).***
- ***right side*** *;* ***protector*** plates (4) and panels between cradle and scuttle (1),
- *left* ***side*** : suspension sphere protector plate (7),
- attachment screws (8) for 4-way union (11) and safety valve (9) ***(keep spacer (10).***
- height corrector and its support,
- manual height control link rod,
- attachment screw (18) for UJ shaft (17) on rack pinion.

***3.* Uncouple :**

- height corrector feed pipe (14).
- suspension cylinder overflow return pipes (3) disengaging the pipes from attachment collars (2),
- LHM fluid reservoir pipe (12).

***4.* Disengage :**

- pipes (14). (16) and (19) from their brackets on the axle unit,
- fuel feed pipe (15),
- suspension cylinder venting pipes (6).

5. Remove the axle unit :

Place a jack fitted with lefting bar 2510-T under the unit.

Inside ***the vehicle*** *;* raise the front carpet. and undo axle unit rear attachment screws (20) on each side. Undo attachment screws (13) on the front extensions Disengage the axle unit.

Mark the position of spacers (21) between body and lower attachment lugs.

6. Strip down the unit if necessary.

7. Reassemble the unit, if necessary

8. Fit the axle unit in the vehicle :

Fit new NYLSTOP nuts.

Place the axle unit on a garage trolley kack, fitted with lifting bar 2510-T

- Position the steering wheel ***/spoke downwards).***

Place the rack in the straight ahead position (equal *extension* ***on either side of housing).***

- Position the unit under the body attachment points.
- Engage the splines of UJ shaft (10) on the rack pinion.

Fit screws (2) and (4).

Tighten screws (2) to 2 **m.daN**

Fit screws (3).

Tighten screws (2), (3) end (4), in the order indicated, to 4.5 to 5 **m.daN**

- Fit appropriate spacers at point « a », to obtain a maximum clearance of 0.5 mm between lug (7) and the spacers. before tightening.

(***There are*** *two* ***spacer*** *thicknesses :* 1 and 2 mm).

-Tighten screw (1) to 9 **to 10m.daN**

9. Fit the height corrector and its support.

10.Adjust the anti-roll bar :
(See Op. GX. 430-O)

11 .**Adjust** front height values :
(See Op. GX. 430-O)

12. Couple :

manual height control link rod (17),

- suspension cylinder overflow return pipes (8),

feed pipe (6) from height corrector to 4-way union,

- LHM fluid reservoir pipe (5).

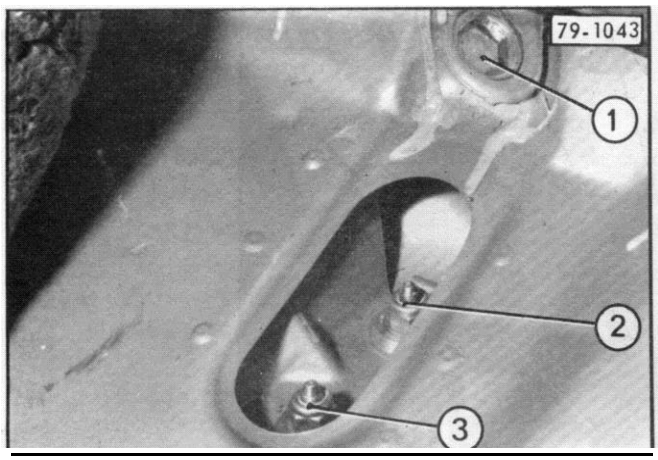
13. Fit :

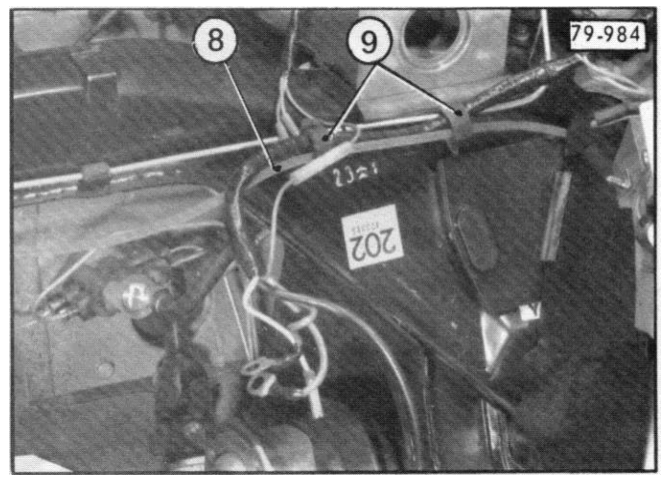
- collars (9),
- screw (13) *new NYLSTOP nut,* leaving a gap of 1 to 1.5 mm between pipe (15) and stop (14).

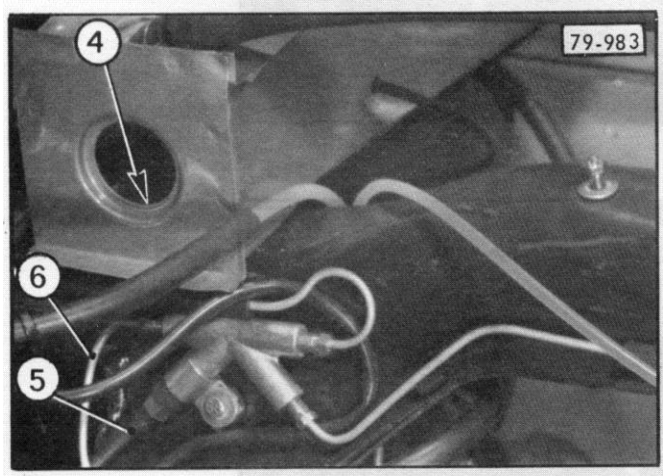
Tightening torque : 1.3 to 1.4 **m.daN**

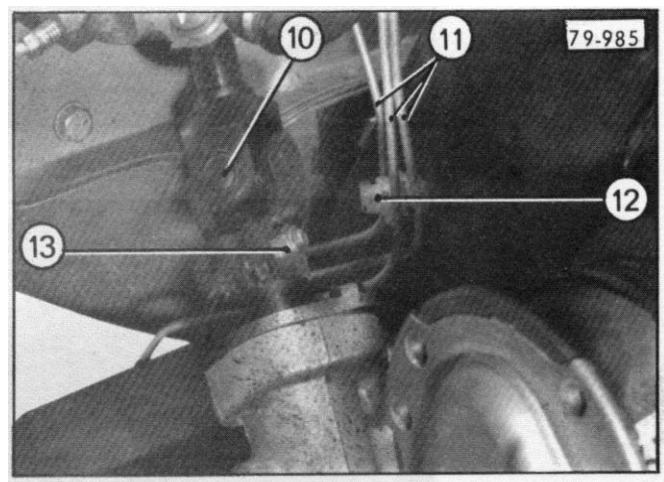
14. Fix pipes (6) and (11) in brackets (12) and (16).

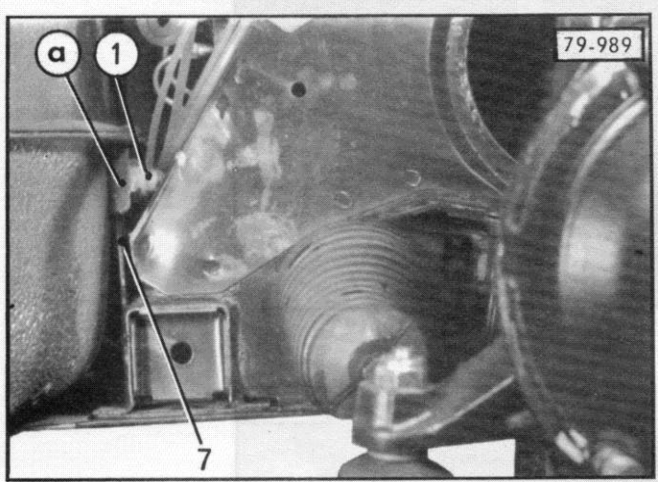
Fit the suspension cylinder venting pipes in the extensions.

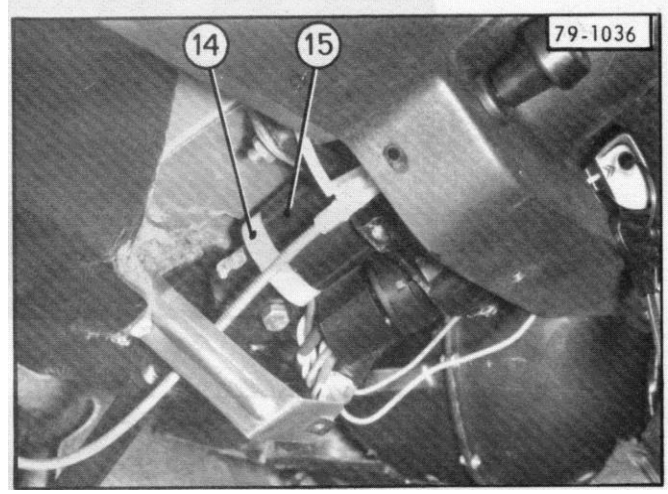

79-1043
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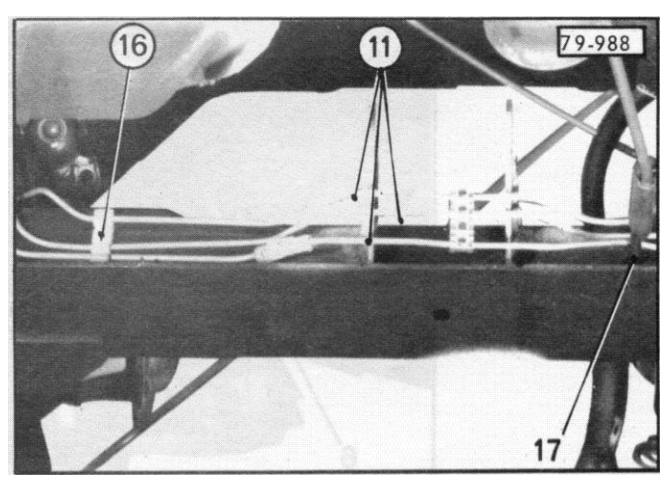

79-984
8
9

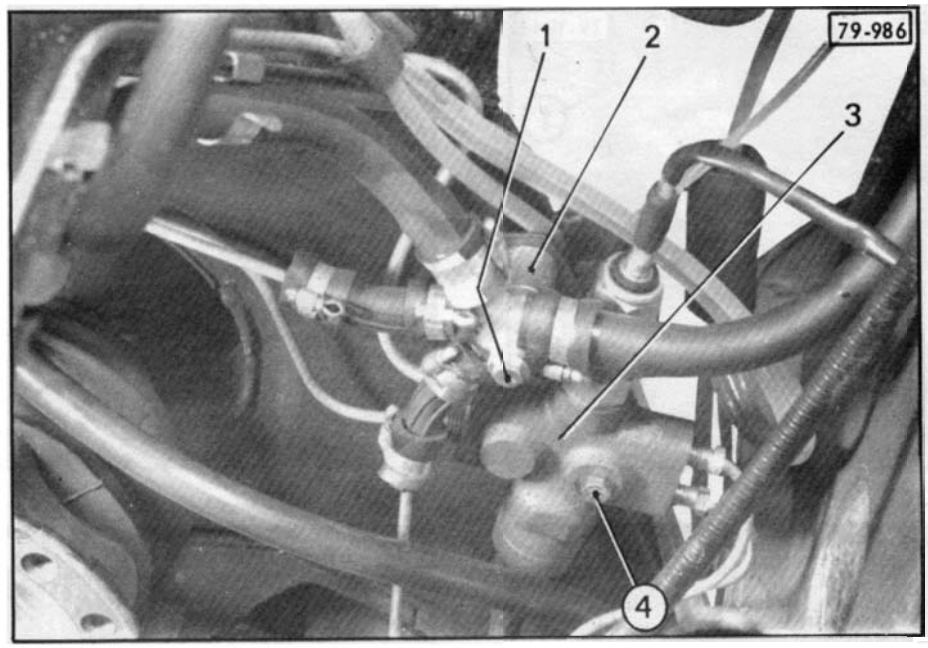

79-983
4
6
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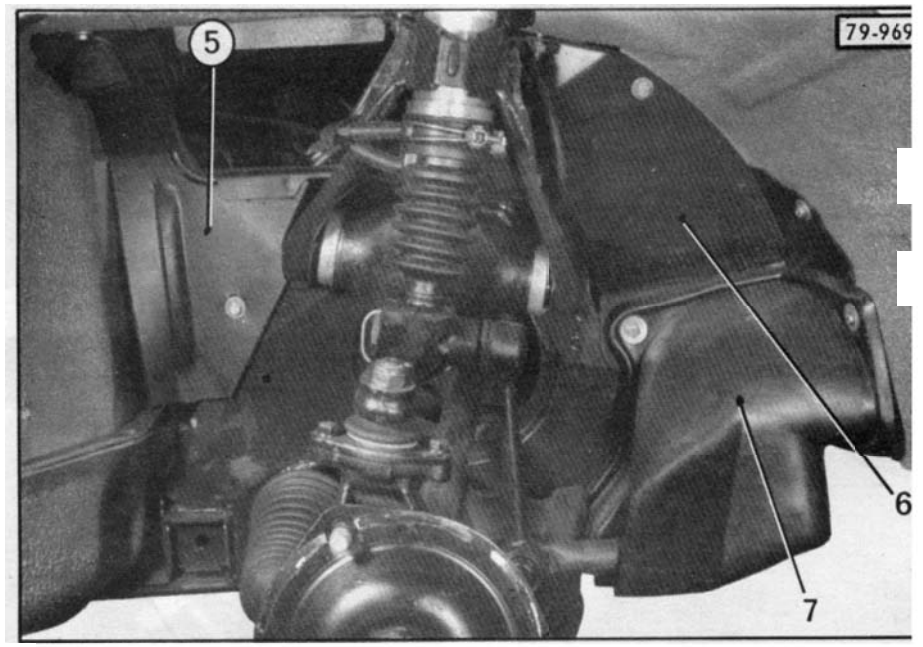

79-985
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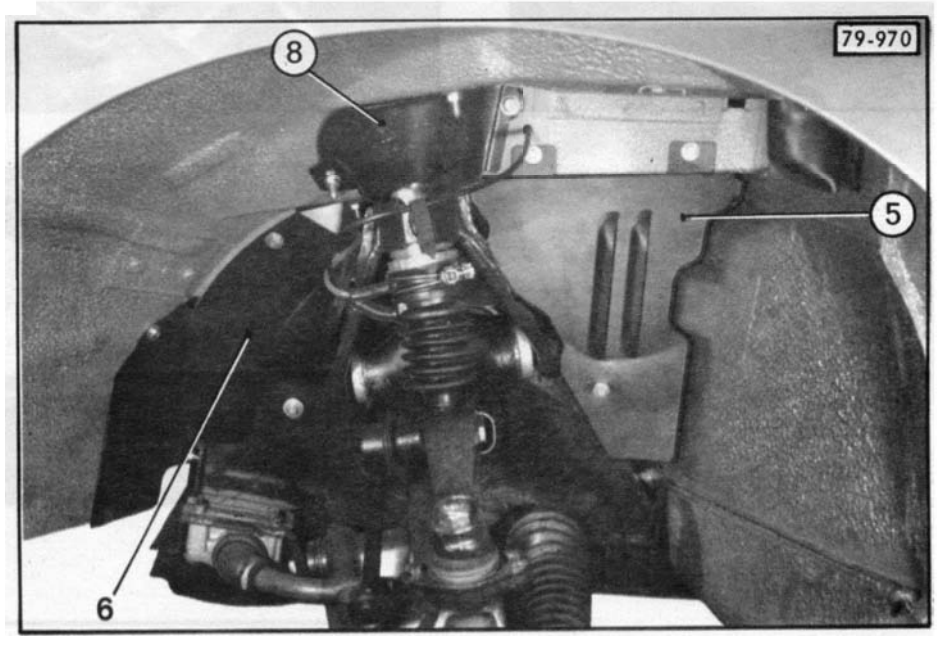

79-989
a
1
7


79-1036
14
15


79-988
16
11
17


79-986
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4


79-969
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6
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79-970
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15. Fit:
- attachment screw (1) and (4) for safety valve (3) and 4-way union (2).
- *on* ***each side*** *:* protector plates (16) and panels between cradle and scuttle (5)
- *right* ***side*** *:* height corrector plastic casing (7),
- *left* ***side*** : suspension sphere protector plate (8),
- battery,
- suspension spheres.

16. Fit engine/gearbox assembly

16. Fit engine/gearbox assembly

(See Op. GX. *100-1*)

17. Adjust height at front

(See Op. ***GX. 430-O)***

18. Check parallelism :

Toe-in : 0 to 2 mm

SPECIAL TOOLS

TOOLS SOLD

1651-T bis : Dial gauge carrier scale
2069-T : Tool for fitting the rear arm
2437-T : Dial gauge
4036-T : Rear arm extractor, comprising :
A : Stud
B : Half-shells
C : Hub
0 : Tube

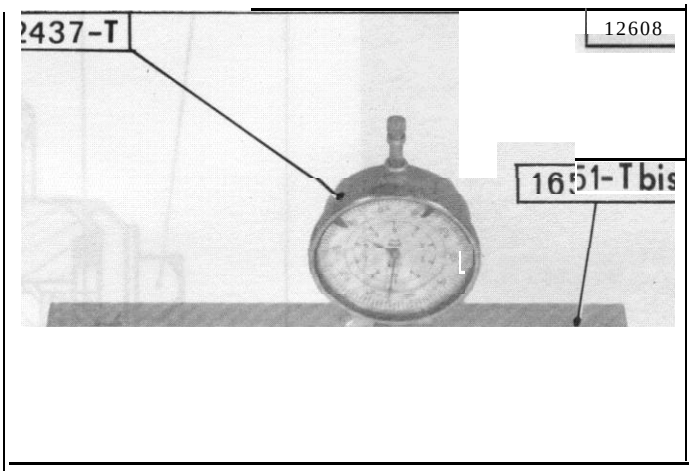
TIGHTENING TORQUE VALUES

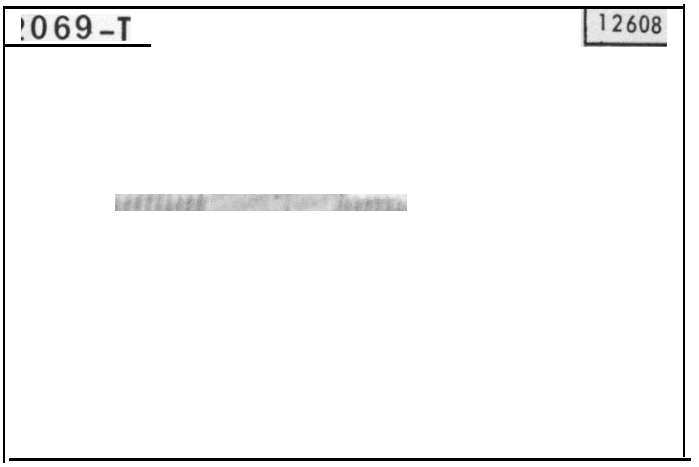
Mandatory value :

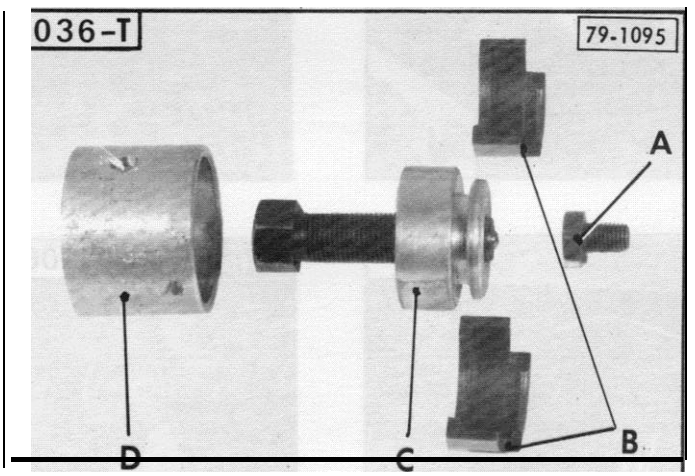
-Retainer nut: . . . . . **1.8 to 2** m.daN

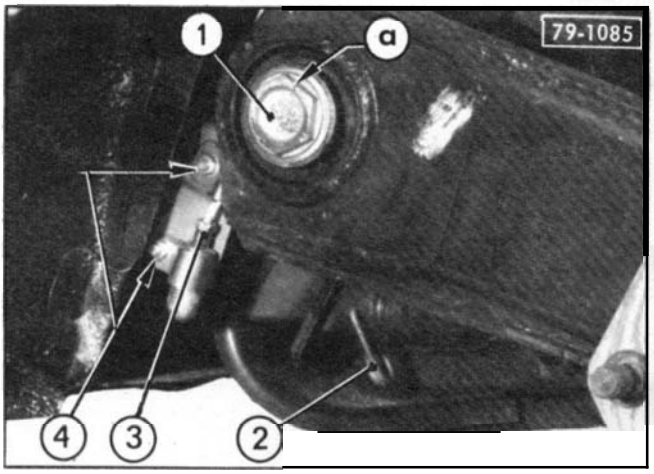
Recommended value :

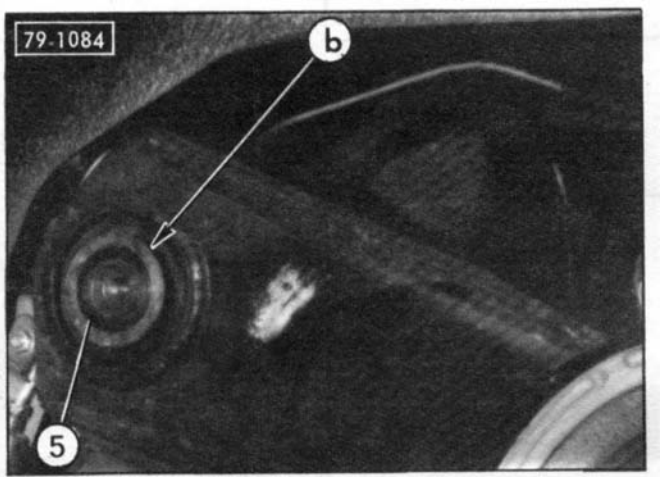
-Wheel nuts: . . . . . 5.5 **to** 7.5 m.daN

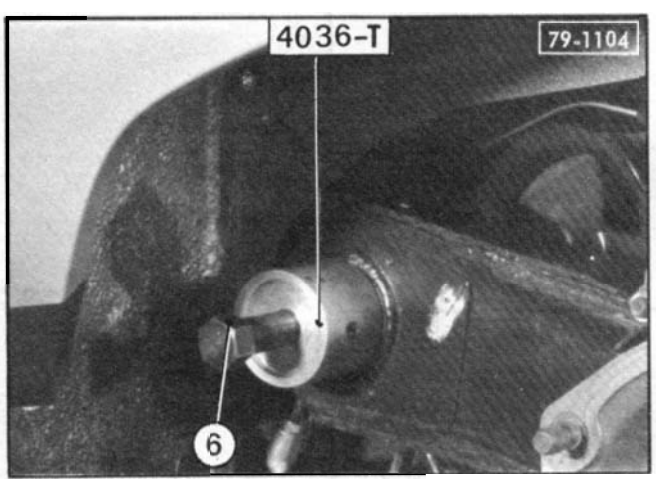

2437-T
12608
1651-T bis

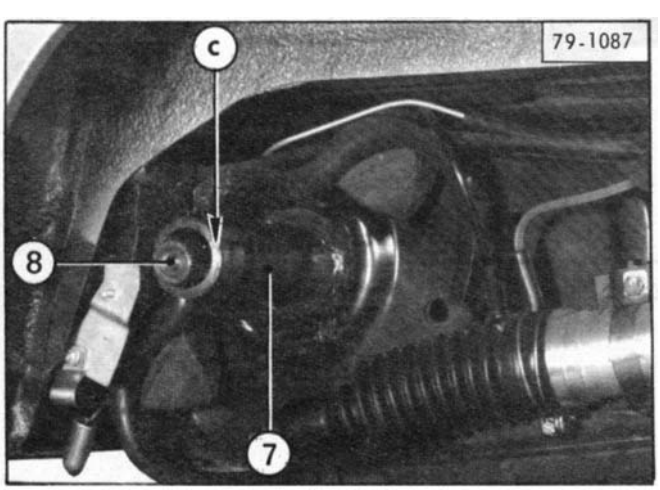

2069-T
12608


2036-T
79-1095
A
B
C
D

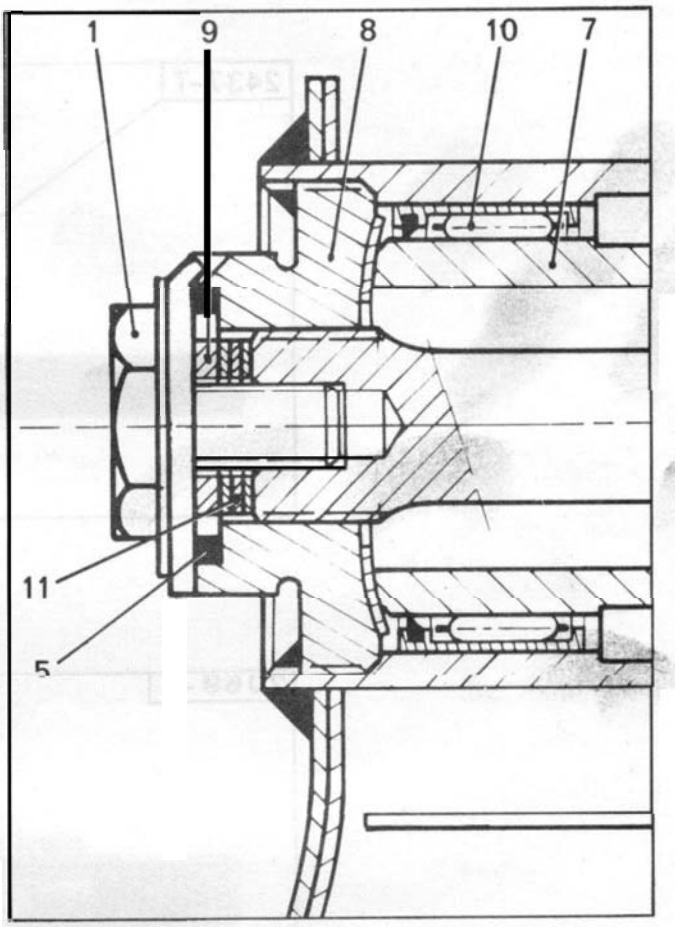

79-1085
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a
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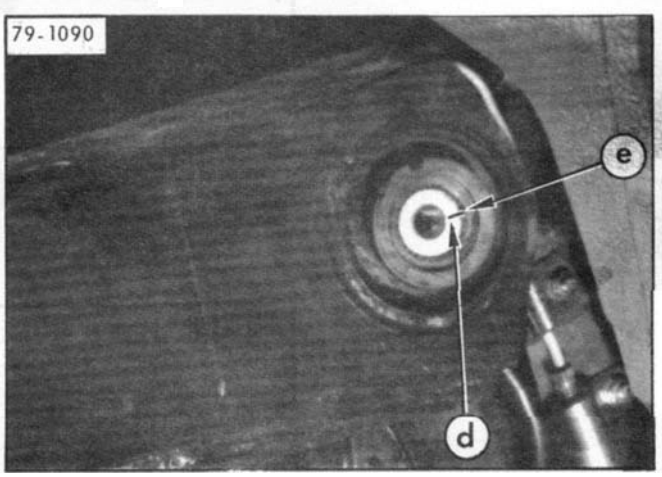

79-1084
b
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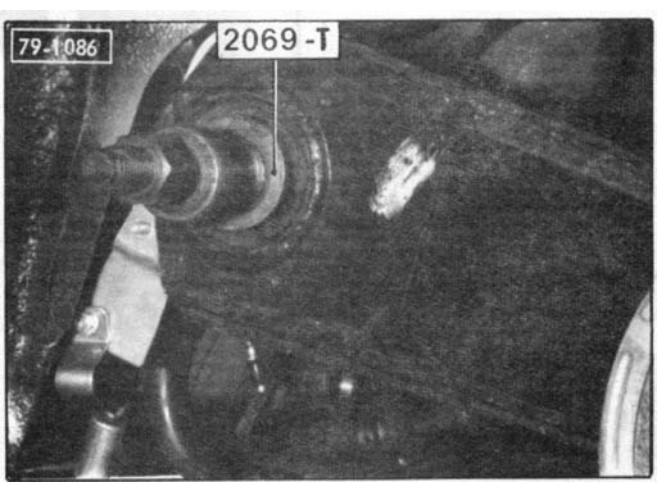

4036-T
79-1104
6


79-1087
c
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G, 43-20


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79-1090
e
d


79-1086
2069-T

REMOVAL AND FITTING OF A REAR AXLE ARM

Lateral play must be adjusted following replacement of an anti-roll bar or rear axle arm.

REMOVAL

1. Remove thk embellishers and undo the wheel nuts

2. Chock the rear of the vehicle, with the wheels hanging free.

3. Remove the wheels.

4. Depressurize the hydraulic circuits : (see Op. GX. *390-00)*

5. Remove the rear axle :

a) Extract pin (2), and push the suspension piston rod.

b) Undo collars (4) and disconnect coupling (3).

c) Release and remove screw (1), follower washer (9) (setting washers (1 1) according to the side), and seal (5).

d) Fit extractor 4036-T
Screw the stud in place of retainer screw (1).
Position the hub and half-shell at point « b ».
Fit the tube on the assembly.

e) Turn screw (6) with extractor tool 4036-T to disengage the axle arm from anti-roll bar (8).

f) Remove extractor tool 4036-T and arm.

PREPARATION

6. If contact face « c » of carrier tube (7) shows any traces of binding. rub lightly with an oilstone.

a) Carefully clean :
- carrier tube (7),
- contact faces of anti-roll bar and arm.

b) Grease *(bearing* ***grease) :***
- face « c » and contact surfaces of the bearing on support tube (7),
- arm hub bearings (10),
- anti-roll bar and arm splines.

FITTING

The two arms are fixed at the ends of the anti-roll bar. and the distance separating the arms determines lateral play.
This play is adjusted by shims (11), inserted behind the retainer screw on one of the two arms.

7. 1 st case :
Fit arm without adjustment shim :

a) Engage the arm hub on carrier tube (7) and couple to anti-roll bar (8).

Make mark « d » on the bar (engraved tie) end mark « e » on the hub (missing spline) coincide. If mark « d » is not visible, position the arms with respect to each other. They must be in the same plane, and apply no torsion to the bar.

b) Undo the retainer screw for the other arm, on the anti-roll bar.

c) Fit tool 2069-T equipped with spacer washer (9) (thickness 2.3 mm).

d) Tighten screw (2) in the anti-roll bar.

e) Tighten nut (1) fully, until the arm is correctly positioned. *Lateral play must then be adjusted on the other arm.*

f) Take down tool 2069-T

g) Fit seal (3).

h) Fit retainer screw (8) equipped with spacerwasher (7).
Tightening torque,: 1.8 to 2 **m.daN**

i) Lock retainer screw (8) at « a ».

8. Second case : Fit **arm** complete with adjustment shims:

a) Engage the arm hub on carrier tube (5) and couple to the anti-roll bar as indicated in paragraph 7 a.

b) Adjust arm lateral play as indicated in the following paragraph.

9. Adjustment of lateral play :

a) Fit tool 2069-T
Tighten central screw (2) in the anti-roll bar.
Tighten nut (1) while operating the arm

Stop tightening when the arm drops slowly under its own weight.

On each side. the end of carrier tube (5) is then bearing on friction washer (4), producing slight rub.

b) Take down tool 2069-T

c) Using scale 1651-T equipped with dial gauge 2437-T , measure the distance between face « c » of the arm hub, and face « d » of the anti-roll bar.

This value A, increased by 0.04 to 0.14 mm. represents thickness B of spacer washer (7) (2.3 mm), and thickness C of adjustment shims (6) to be fitted on the bar end.

d) Using extractor tool 4036-T , move the arm outwards by 2 to 3 mm.
Take down extractor tool 4036-T

e) Fit adiustment shims (6) and spacer washer (7) on the end of the anti-roll bar, and position tool 2069-T .
Tighten nut (1) moderately. bringing the shims into contact with the end of the anti-roll bar.

Do not use retainer screw (8) for this operation.

Take down too 2069-T *(keep the shims)*

f) Fit seal (3)

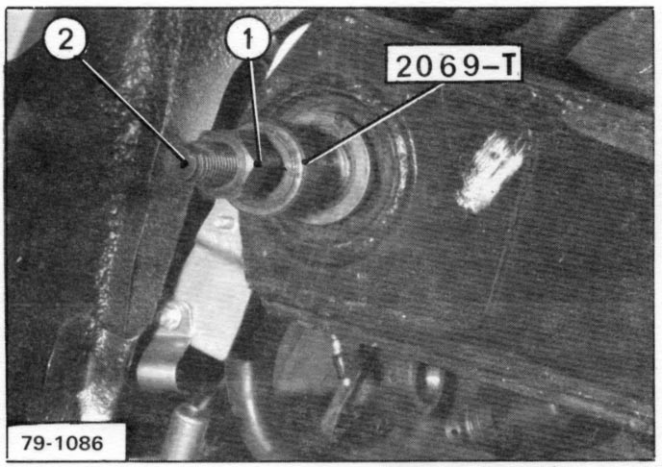
g) Fit retainer screw (8) complete with adjustment shims (6) and spacer washer (7).
Tightening torque : 1.8 **to** 2 **m.daN**
Lock retainer screw (8) at « a »

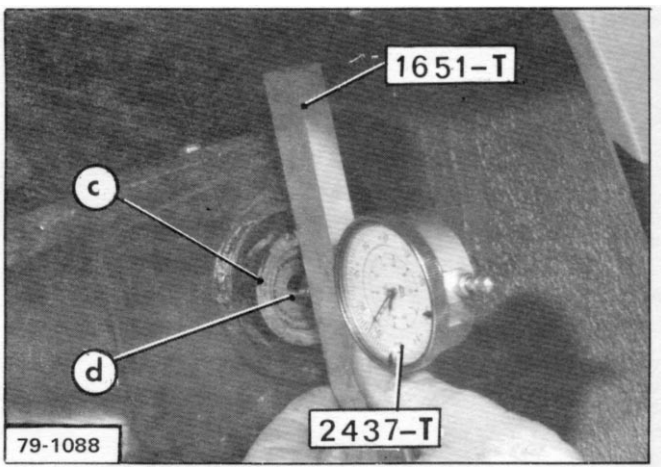
10. Fit the suspension piston rod. Insert pin (10).

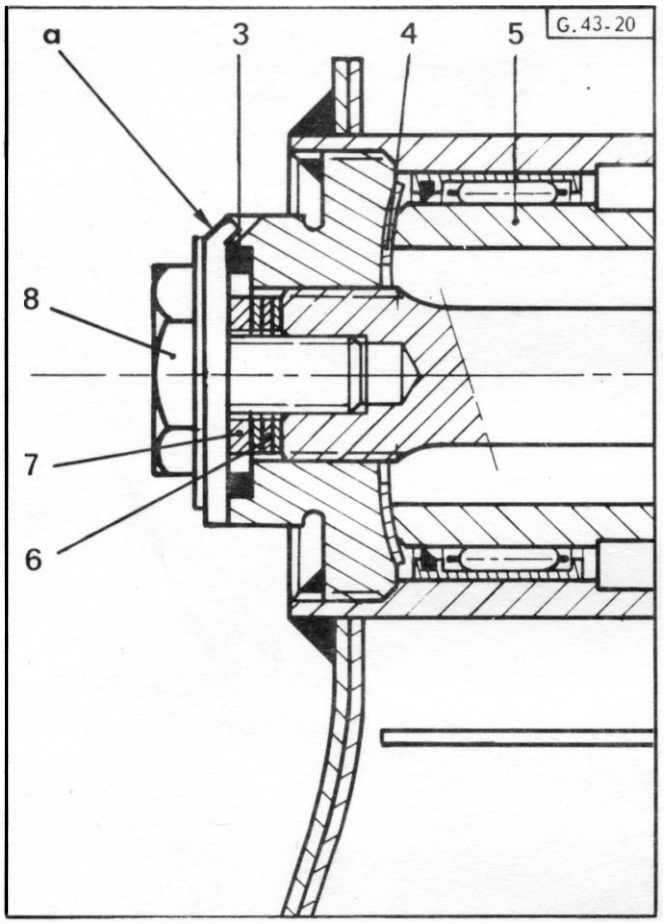
11. Connect coupling (9) and tighten collars (11)

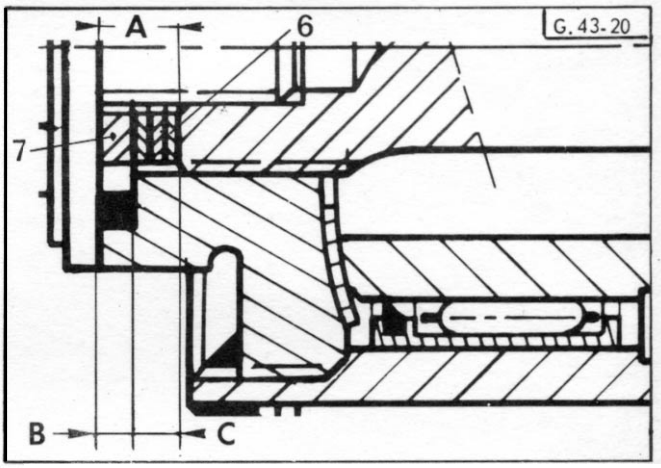
12. Bleed the rear brakes
(see Op. *GX. 451-O)*

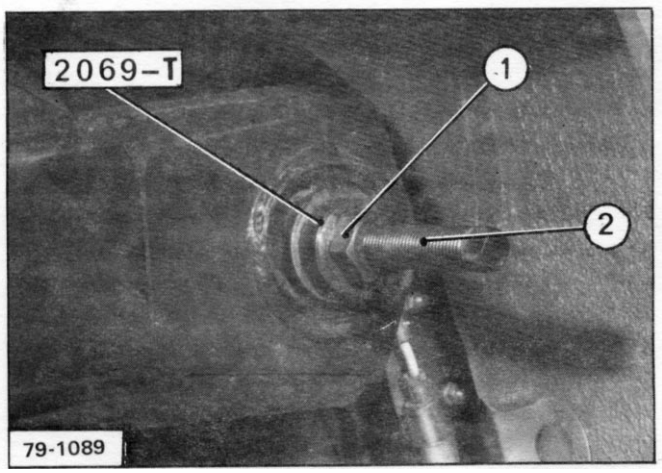
13. Fit the wheels, and lower the vehicle to the ground. Tighten the wheel nuts and fit embellishers.

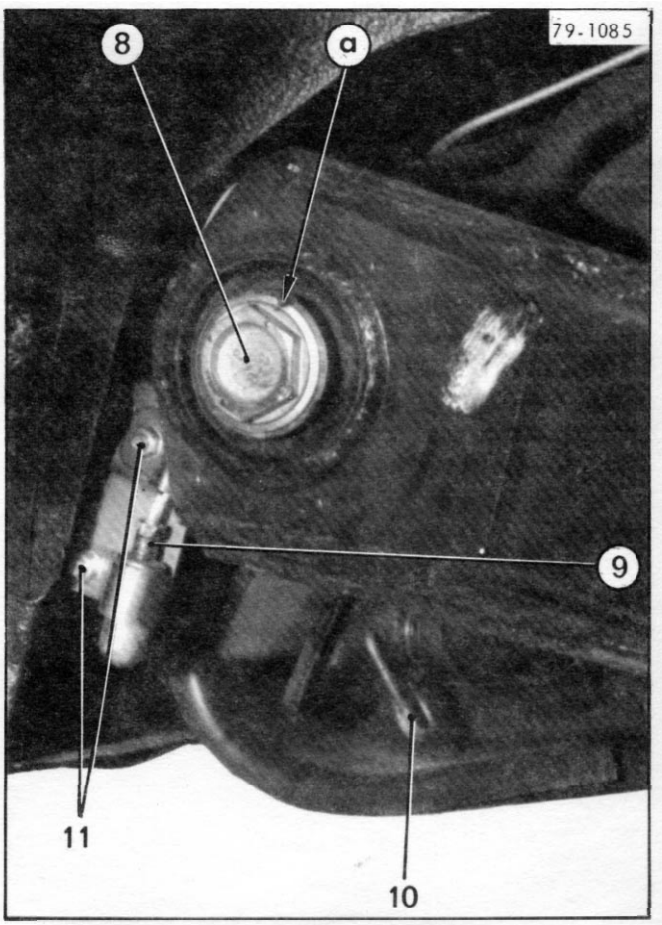

2
1
2069-T
79-1086


1651-T
c
d
2437-T
79-1088


G.43-20
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G.43-20
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B
C


2069-T
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79-1089


79-1085
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SPECIAL TOOLS

TOOLS SOLD

2510-T : Lifting beam

TIGHTENING TORQUE VALUES

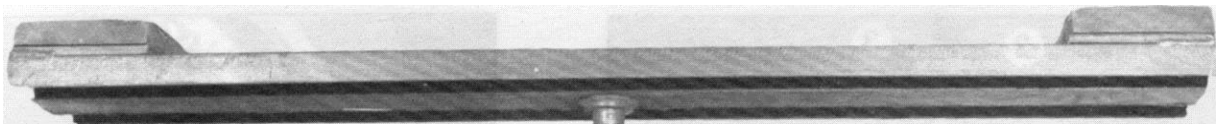
Mandatory values :

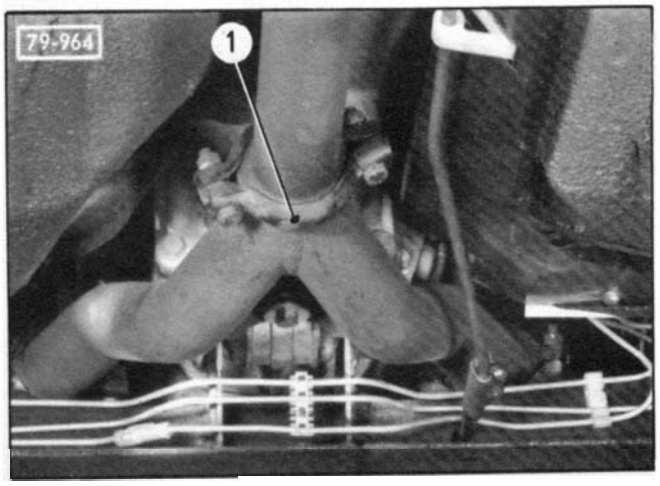
Elastic mount/axle attachment nut : 3 **to** 4 **m.daN**

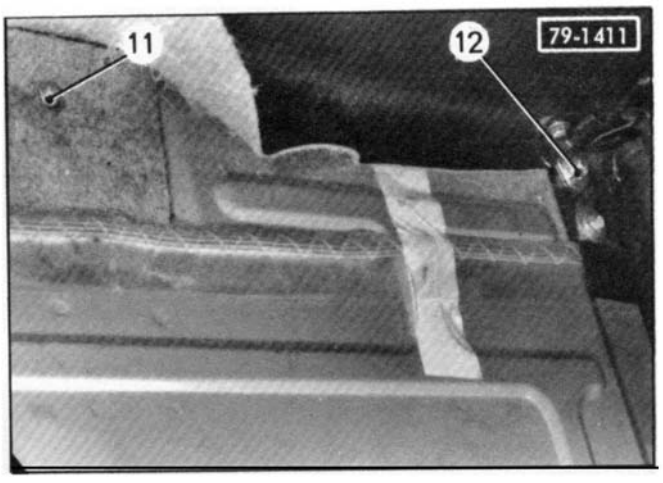
Elastic mount / body attachment nut : 3 **to** 4 **m.daN**

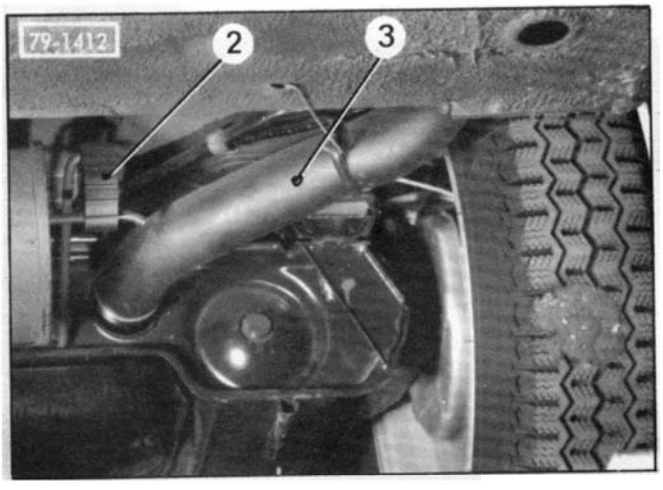
9-1047

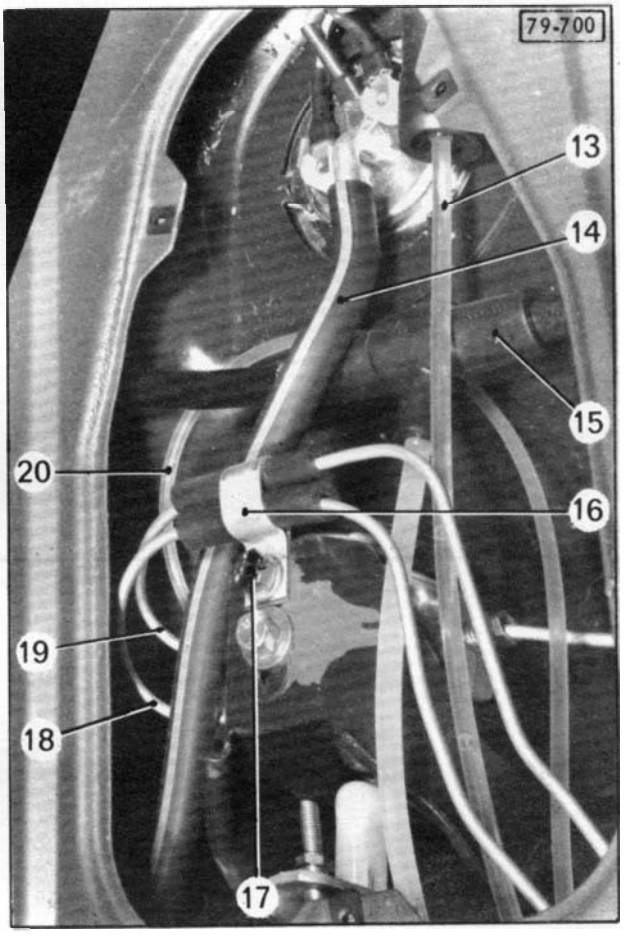
2510-1

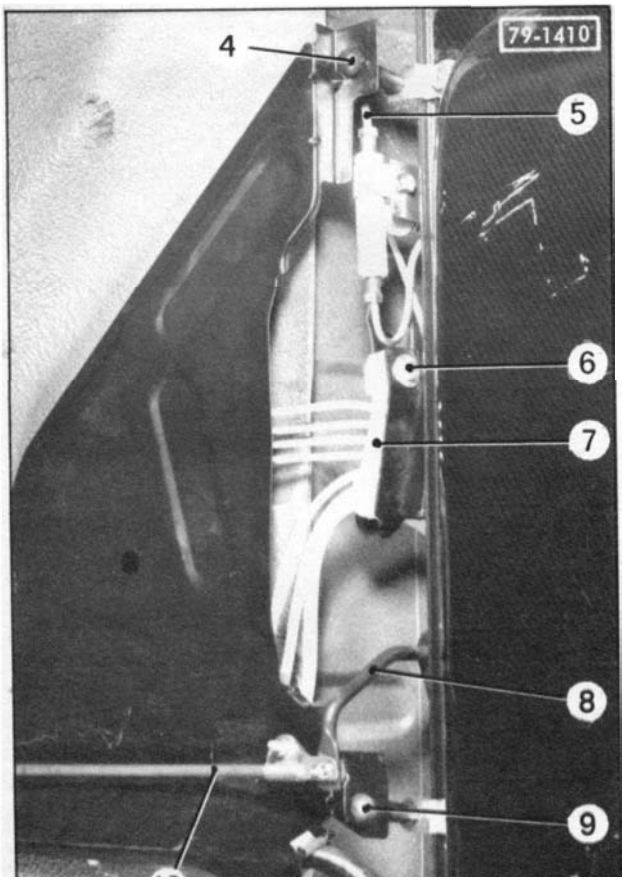


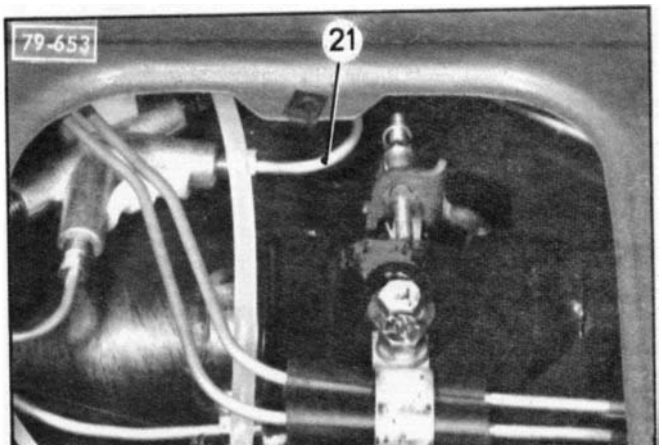

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79-653
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REMOVAL AND FITTING OF THE REAR AXLE UNIT

REMOVAL

1. Remove the embellishers and slacken off the rear wheel nuts.

2. Chock the vehicle, with the rear wheels hanging free.

3. **Depressurize the hydraulic circuits :**
(see **Op.** *GX. 390-00, page* **9)**

4. Disconnect the negative battery lead

5. **Remove :**
rear wheels.
- collar (1),
elastic mounts (2),
exhaust pipe and silencer assembly,
attachment fitting (4) and (9) for the protective panel,
- attachment screw (6) for pipe bracket (7).

6. If necessary, drain the tank

7. **Uncouple :**
- tank filler pipe (3),
- manual height control rods (8) and (10),
- 3-way union feed pipe (5).

8. Pull back the bench seat.
Remove the carpet from the boot bottom.
Raise the side trim. for access to attachment fittings (1 1) and (12) for the axle unit elastic mounts.
Remove the tank access trap.

9. Place a jack. fitted with lifting beam 251O-T under the axle unit. at the midpoint between thesuspension spheres and arm articulation shaft.

10. **Undo attachment nuts (11) and (12) :**
Using the jack. lower the axle unit by a maximum of 10 cm.

11. **Undo attachment screw (17)** for collar (16)

12. **Uncouple :**
- height corrector feed pipe (18) and discharge pipe (19),
- height corrector overflow return pipe (20),
- overflow return pipe (13),
- 4-way union pipe (21),
gauge rheostat cable cluster.
- fuel suction pipe (14),
tank vent T coupling (15).

13. **Remove the axle unit :**

Check that pipe (5) and bracket (7) are not caught on the unit.

14. *If* necessary. strip down the unit

FITTING

15. *If* ***necessary.*** reassemble the unit.

The position of the front and rear elastic mount spacers IS different.

Front mounts : the spacer is fitted on the body attachment stud.

Rear *mounts :* spacer (2) is placed under the attachment nut on the unit.

Cap (1) is inserted between mount and body.

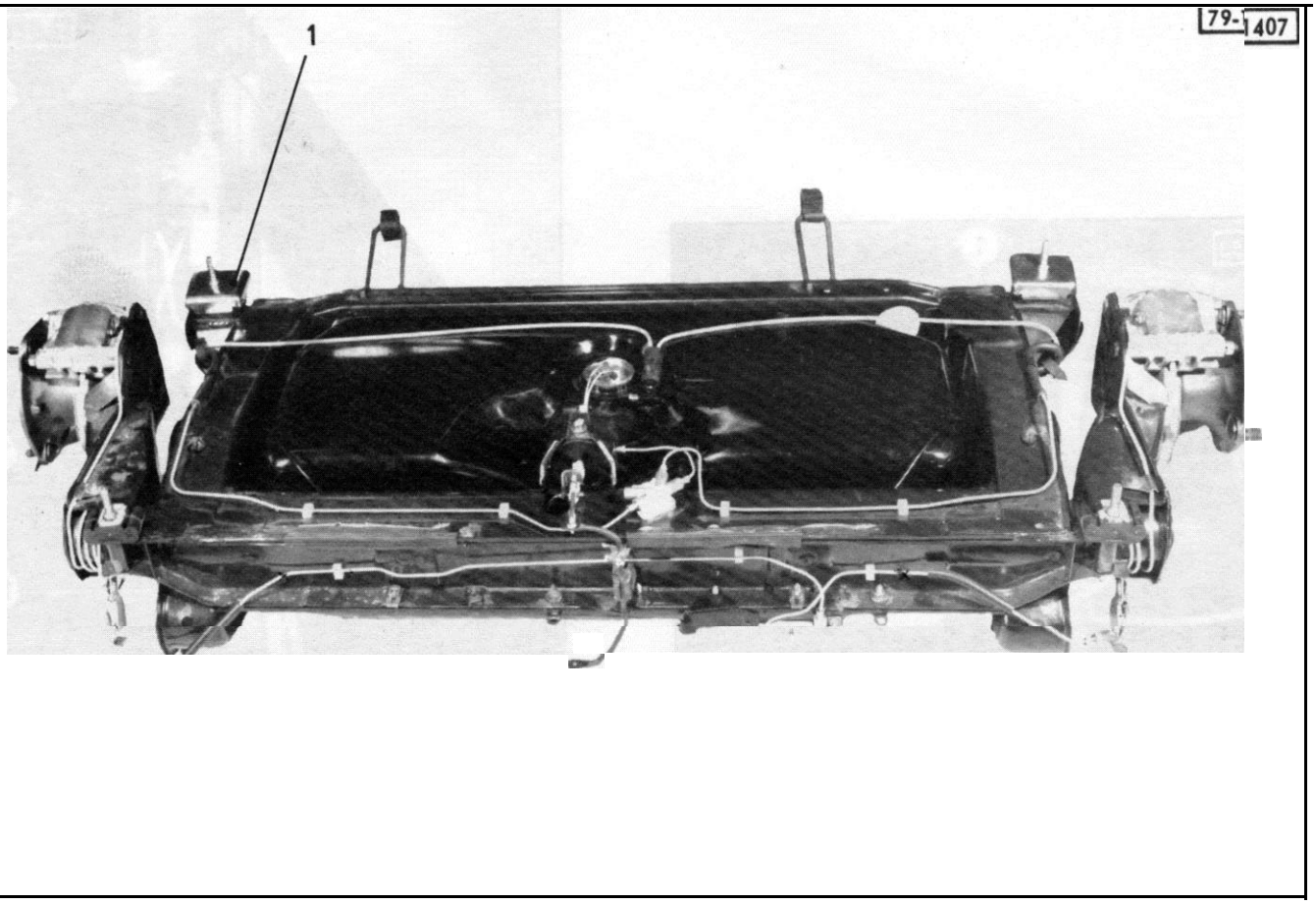
The larger inside diameter of spacer (2) should face the elastic mount.

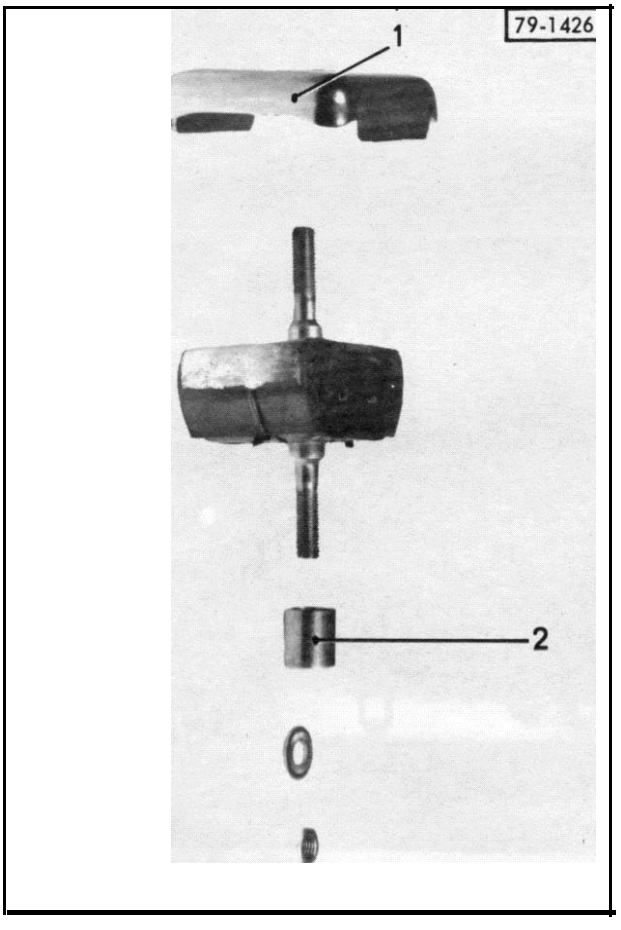
Fit the elastic mounts. but do not tighten the attachment nuts.

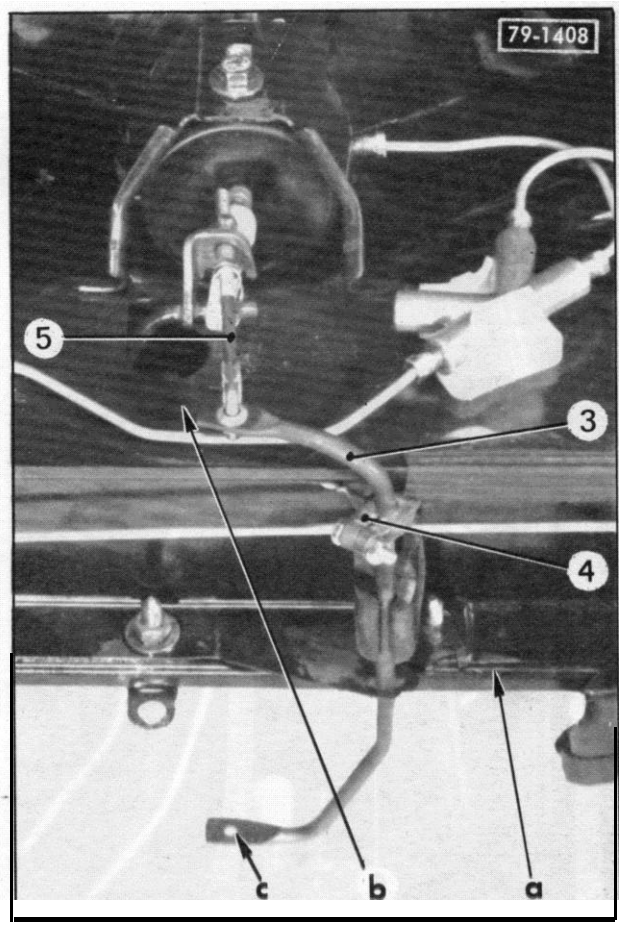
Adjust the position of manual height control rod (3).

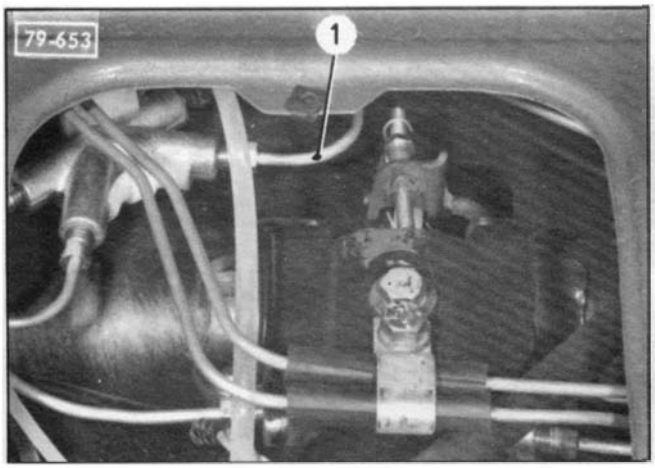
Undo collar (4) and position rod (3) so that :

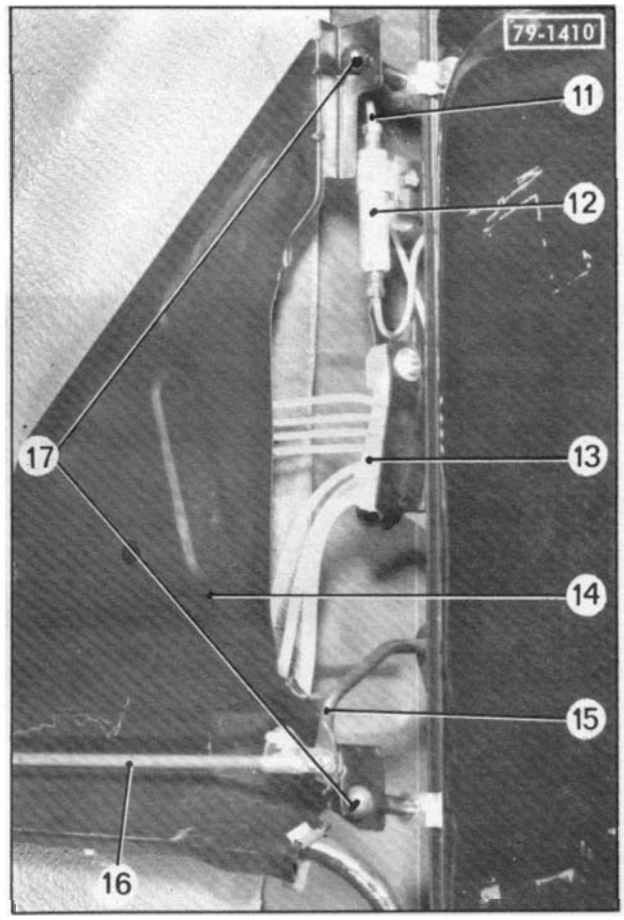
- adjustment rod (5) is parallel to face « b » of the unit,
- lower part « c » of rod (3) is parallel with edge « a » of the axle unit panels.

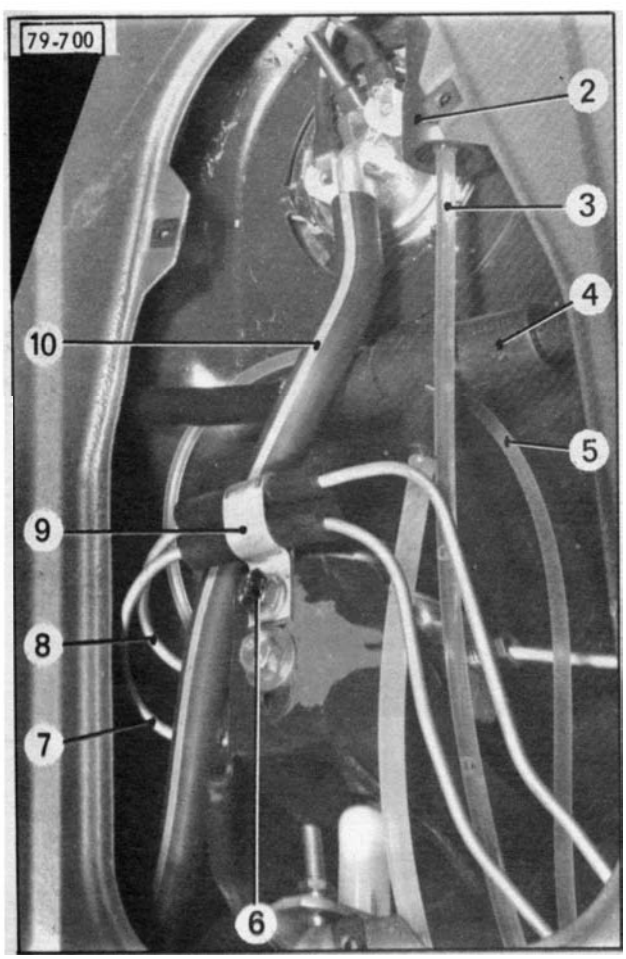

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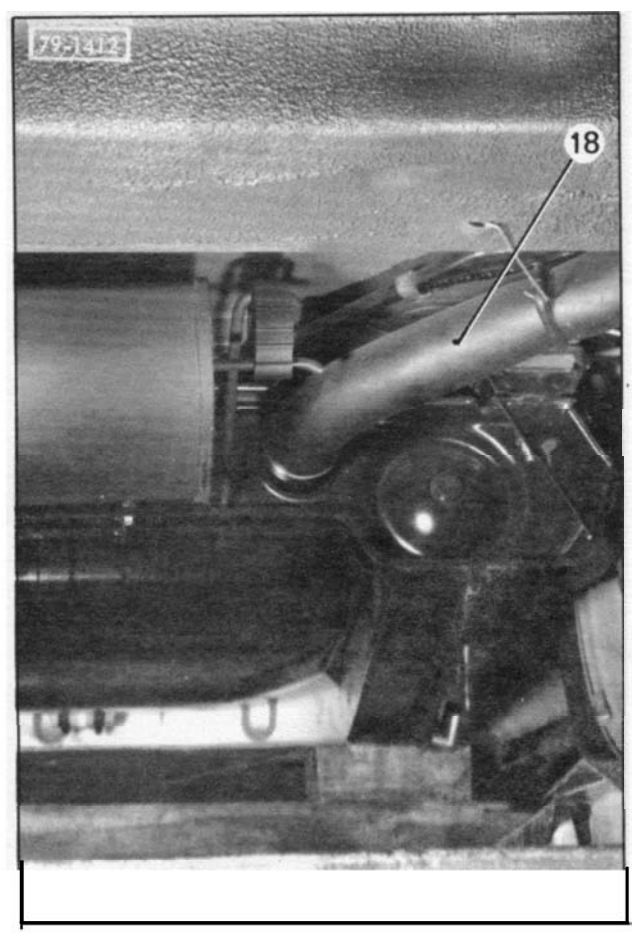

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79-1412
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16. Position the axle unit :

Check that the spacers are present on the front elastic mount stud. and that caps arefitted on the rear elastic mounts.

Using a jack equipped with lifting beam 2510-T position the unit under the body and raise about 10 cm.

Check that the hydraulic pipss follow this movement, without catching on the unit.

17. Connect :

pipe (1) to the 4-way union.
- pipes (7) and (8) to the height corrector *(remove collar (9) for this purpose),*
- overflow return pipe (5) to the height corrector,
- pipe (3) to overflow return union (2),
- « T » coupling (4) to the tank vent.

suction pipe (10) to the fuel gauge.
- gauge rheostat cable cluster.

18. Fit collar (9) and attachment screw (6).

19. Fit the unit :

Raise the unit. engaging the rear studs and front spacers in their recesses on the body. Place a flat washer, contact washer and nut on each attachment stud.

Tighten the attachment nuts on the body and unit *(if necessary J*

Tightening torque : 3 to 4 **m.daN**

20. Under the vehicle :

Couple rear brake feed pipe (11) to 3-way union (12).

Position pipes and bracket (13).

Tighten the screw *(contact washer).*

Fit protective panels (14) (use soapy *water to facilitate fitting rubber attachment fittings (17).*

Couple manual height control rods (15) and (16).

Fit the exhaust pipe and silencer assembly.

Couple tank filler pipe (18).

21. Connect the negative batten, lead.

Start the engine.

Tighten the pressure regulator relief screw.

Check seal-tightness of unions.

22. Bleed the rear brakes

(see Op. GX. 453-O. page 5)

23. Fit the wheels. and lower the vehicle to the ground.

24. Adjust vehicle height

(see op. 453-0, page 5)

25. Fit tank access trap.

Replace and glue (if necessary) the lateral trim.

Replace the boot carpet.

Return the bench seat to its normal position.

26. Tighten the wheel nuts to 5.5 to 7.5 **m.daN**

Fit the embellishers.

RECOMMENDED SPECIAL TOOLS

TOOLS SOLD

2074-T : Tool for removing and fitting a rear arm support tube.

REPLACING A REAR ARM SUPPORT TUBE

REMOVAL

1. Remove the rear axle arm.
(See Op. GX. 422-1)

2. Remove the access trap in the boot floor.

3. Undo attachment screw (4) for automatic height control (3) on the anti-roll bar.
Remove : :
- anti-roll bar (via *left side)*
- nut (*2*).

Disengage rod (1) of automatic height control (3).

4. **Remove the support tube :**
Measure extension of the tube beyond the axle unit *(see photo opposite).*

a) Fit stem A of tool 2074-T with parts **B, C. D and E (check correct assembly position for parts D and E: see sketch),** which are then left assembled *(if necessary adjust the pressure of spring « C », to obtain a good lock for parts F and G)*
Engage this assembly in the support tube, as far as access orifice « a » to automatic control (3) (hold the latter upwards).

b) Screw **hook H onto part F, and engage the assembly in orifice « a ». Lock part F into groove « b ».**
Remove hook **H.**

c) Displace stem **A** in the direction of the arrow *(see sketch I)*, to engage the assembly in the support tube.
Position parts **I, J, K and Las** shown on the sketch *(grease stem. nut end stop).*
Screw up nut **L** to disengage the support tuba.
Strip down tool 2074-T *except parts B, C, D and E).*

FITTING

5. Fit the support tube :
a) Engage stem **A,** equipped with parts **B, C, D and E,** in the axle unit opposite orifice « a ».

b) Hold the automatic height control as for removing.
Screw hook H onto part G *(attach a length of string to part G, using the hole provided for this purpose. for recovery of this part if it rolls accidentally into the unit).*
Engage the assembly via orifice « a », and **lock part G in the groove (➔).**
Check the correct position of part G (see *sketch II).*
Detach hook **H.**
Engage the following on stem **A.**
new support tube.
- parts **J, K and L.**

Hold the stem. and engage the support tube in the axle unit
Tighten the nut by hand until contact with part **J** is made.

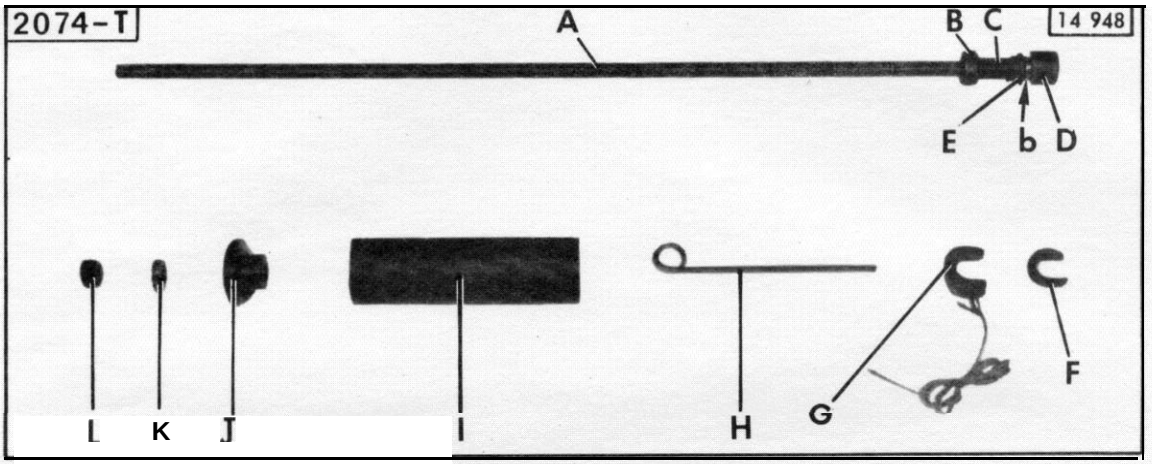
The parts are in the correct assembly position when stem A is horizontal. Hold the assembly in this position, and do up nut L to complete positioning of the support tube.

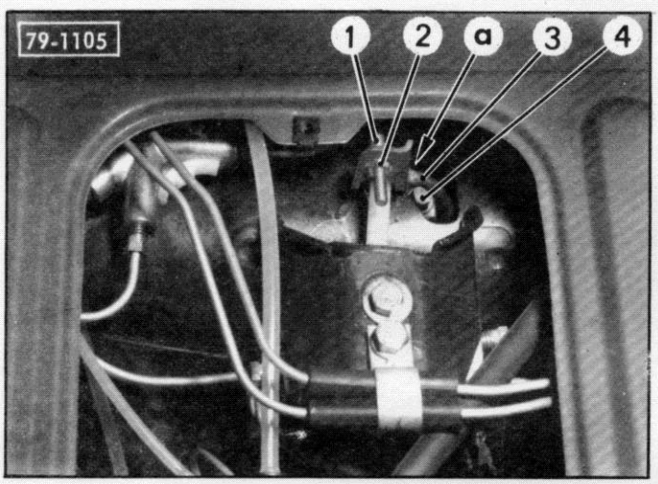
The tightening load is high throughout the operation, and very high once the part is in place. The stem must be anchored by means of its flat.
Measure extension of the support tube with respect to the axle unit. This dimension should be approximately identical to that measured on disassembly.

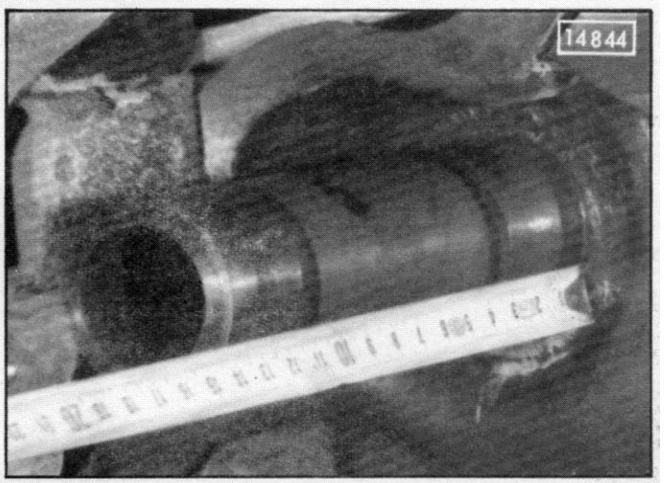
c) Remove tool 2074-T

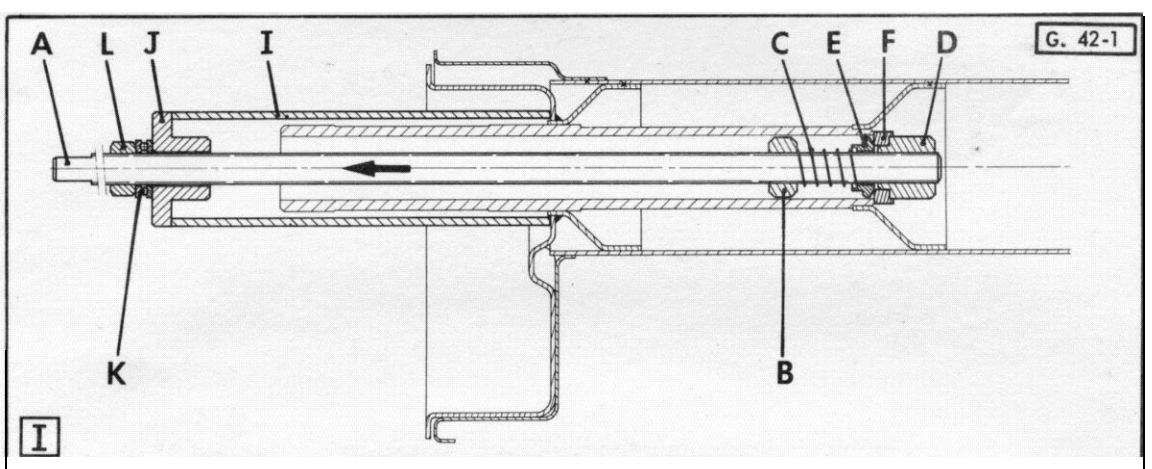
6. Fit :
- anti-roll bar,
- axle arms *(see Op. 422-I).*

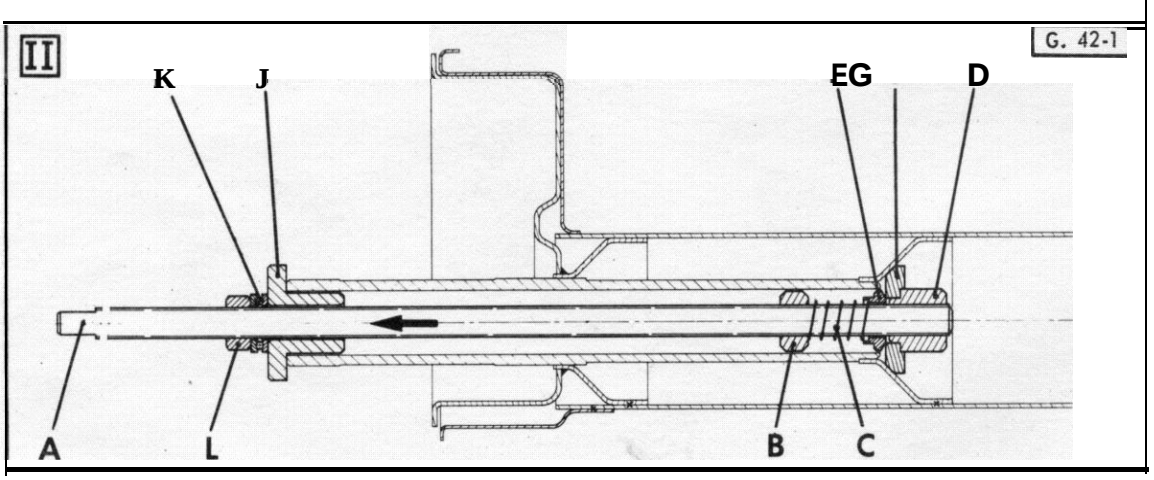
Execute the necessary adjustment operations.


2074-T
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14844


G. 42-1
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B
I


G. 42-1
II
K
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EG
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A
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B
C

REMOVAL AND FITTING OF A FRONT SUSPENSION CYLINDER

REMOVAL

1. Remove the embellisher. and slacken off the wheel nuts on the appropriate side.

2. Chock the front of the vehicle, with the wheels hanging free.
Remove the wheel.

3. Depressurize the front hydraulic circuit (see *Op. GX.* 390.00)

4. *Left side only.*
Remove protective panel (1).

5. Extract pin (3) :
Push the piston shaft, to drive out the liquid contained in the cylinder.

6. Disconnect :
- vent pipe (2),
overflow return pipe (4),
- union for feed pipe (7

7. Remove the pneumatic unit :
Bear on the cylinder/pneumatic unit assembly during this operation, to avoid boss « a » jumping out of bracket (6).

8. Remove bracket (6) :

9. Remove the suspension cylinder :
Lower the upper arm as far as possible.
Rotate the cylinder to allow boss « a » to pass through cutout (5) in the axle unit.
Disengage the cylinder via the bottom.

FITTING

> Check that the cylinder dust-guard is filled with LMH fluid. If this is not the case. fill with approx. 7 cc of fluid.

10. Fit the suspension cylinder :
Engage the cylinder.
Insert pin (3).
Position the cylinder. and fit bracket (6).

11. Couple :
- overflow return pipe
vent pipe (2).

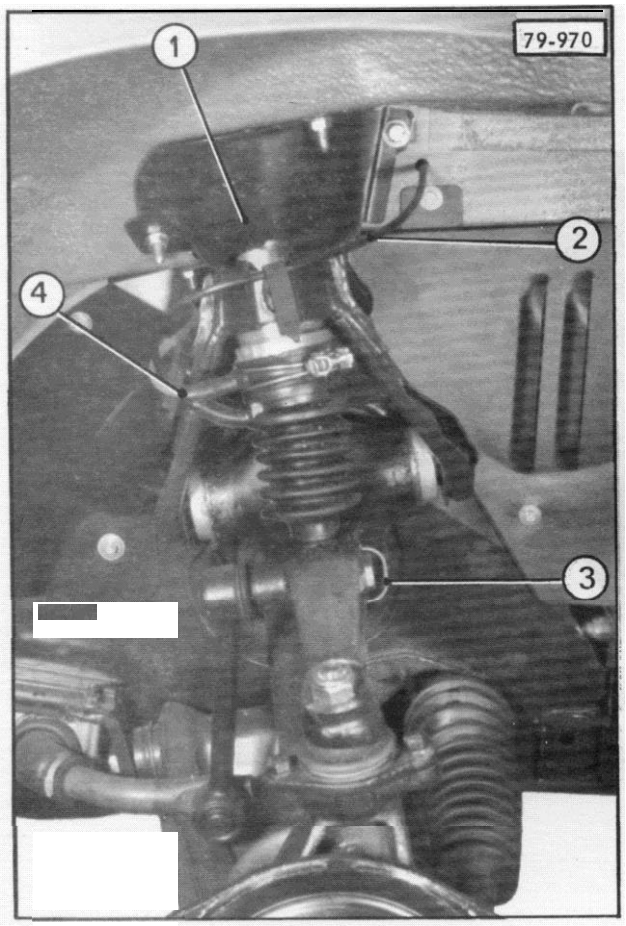
12. Fit the pneumatic unit :
Fit a new seal.
Tighten the unit by hand.

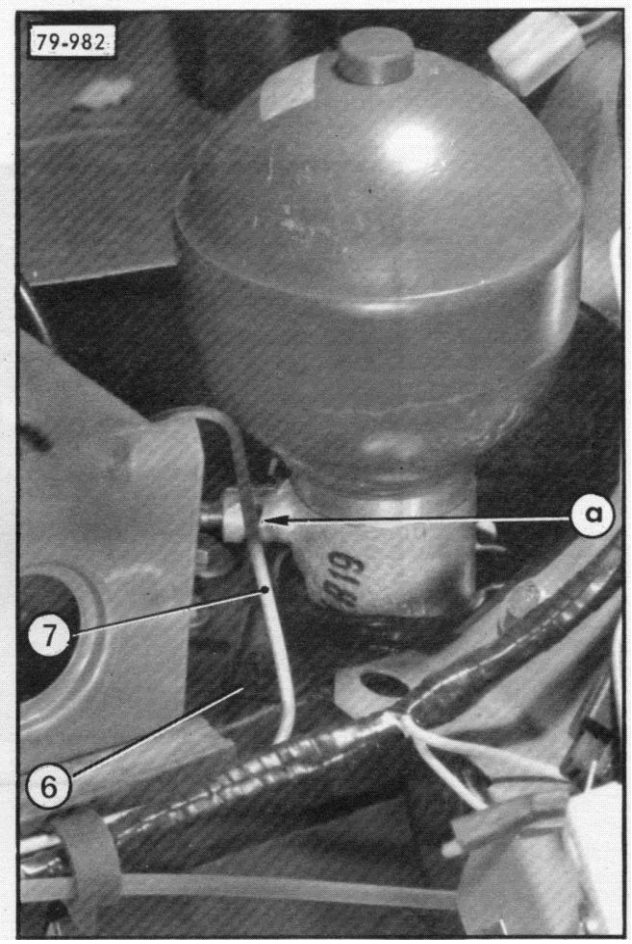
13. Connect the union for feed pipe (7) *(fit new* seal).

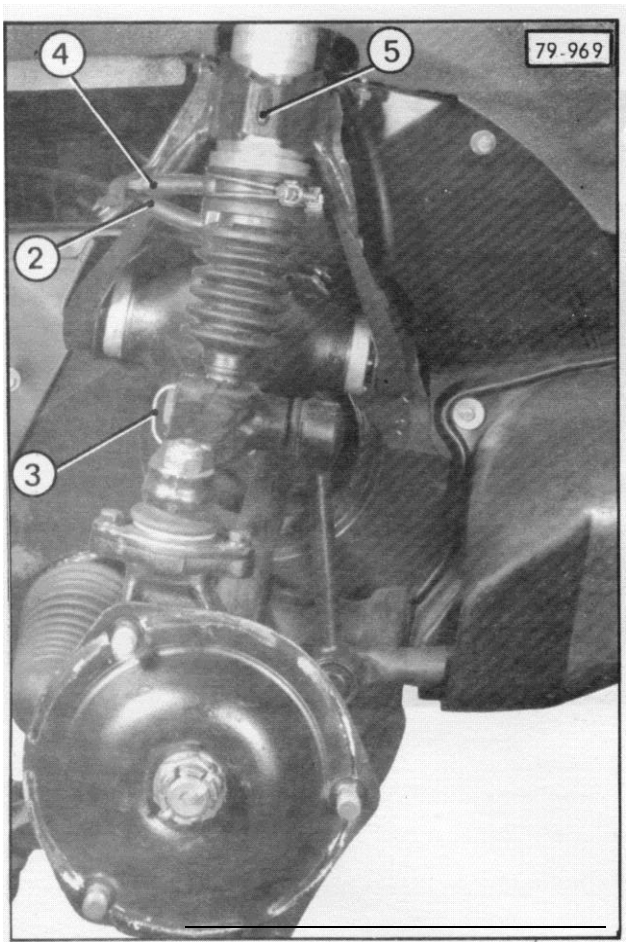
14. Fit the wheel

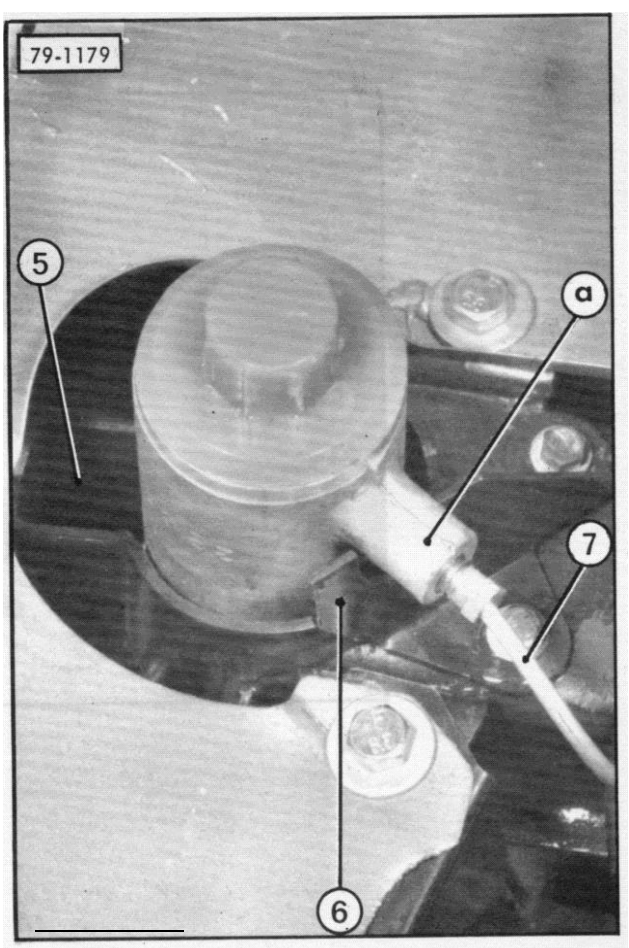
15. Start theengine. with the manual height control *in the high position.*
Check seal-tightness.

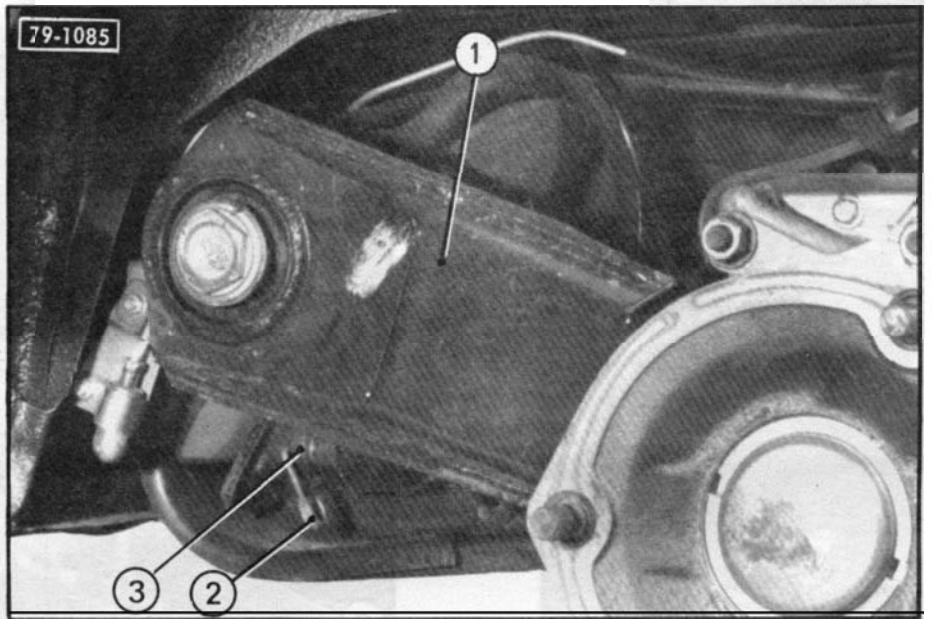
16. Lower the vehicle to the ground, tighten the wheel and fit the embellisher.

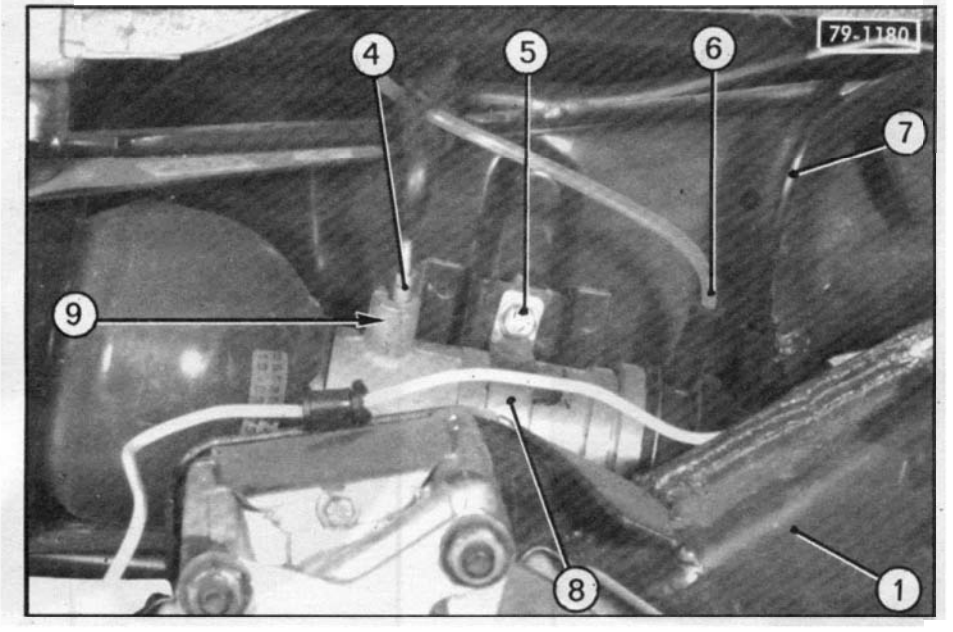

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REMOVAL AND FITTING OF A REAR SUSPENSION CYLINDER

REMOVAL

1. Remove the embellisher and slacken off the wheel nuts on the appropriate side.

2. Chock the rear of the vehicle, with the wheels hanging free.
Remove the wheel.

3. Depressurize the circuit
(see Op. **GX.** 390-00)

4. Extract pin (2).

5. Uncouple :
- feed pipe union (4),
- overflow retum pipe (6),
- vent pipe (7).

6. Remove collar (8)

7. Remove the cylinderlpneumatic unit assembly :
Raise the arm fully (using a jack), to disengage the cylinder/pneumatic unit assembly.

8. Remove the pneumatic unit.

FITTING

Check that the dust-guard of the cylinder contains LHM fluid. If this is not the case, fill withapprox. *25* cc of fluid.

9. Fit the pneumatic unit :
- Fit a new 0-ring seal.
- Tighten the unit by hand

10. Fit the cylinderlpneumatic unit assembly :
Raise arm (1) fully (using a jack) to position the cylinderlpneumatic unit assembly.
Engage the end of rod (3) in the arm.
Insert pin (2).
Lower the arm.
Place the pneumatic unit on the axle unit. and fit collar (8).
Position boss (9) pointing upwards.
Tighten screw (5).

11. Couple :
- vent pipe (7),
- overflow return pipe.
- feed pipe union (4) (fir new seal)

12. Fit the wheel.

13. Start theengine, with the manual height controlin *the* high *position.*
Check seal-tightness of the circuit.

14. Lower the vehicle to the ground, tighten the wheel nuts, and fit the embellisher.

REMOVAL AND FITTING OF A FRONT HEIGHT CORRECTOR

REMOVAL

1. Remove the embellisher and slacken off the right front wheel nuts.

2. Chock the front of the vehicle, with the wheels hanging free. and take down the right wheel.

3. Depressurize the front circuit
(see Op. *GX.* 390-00)

4. **Take** down :
- height corrector plastic casing (1),
- anti-roll bar bearing protective plate (2)

5. Uncouple :
- HP feed pipe (8),
- front suspension feed pipe (5),
- discharge pipe (3).
- overflow retum pipe (4).

6. Remove the height corrector :
Undo anti-roll bar bearing attachment screws (6) and (7).
Undo attachment screw (9) for corrector support (10).
Disengage the corrector and its support.

Screw (6) can only be removed with the corrector and corrector support.

7. Detach the corrector from its support.

FITTING

8. Fit the corrector on its support

Insert screw (6) before fixing the corrector

9. Fit the height corrector :
Position the corrector/corrector support assembly.
Fit screws (6). (7) and (9), *but* do nor *tighten* fully.

10. Couple :
- pipes (3). (5) and (8) (**fit** new seals),
- overflow return pipe (4).

Tighten screws (6), (7) and (9) : torque tightness for screws (6) and (7) : 1.9 to 2.1 **m.daN** (torque spanner)

12. Check that the corrector ball joint is not binding in its recess.
Clearance : ▮ to 2 mm

13. Adjust the anti-roll bat
(see Op. *GX. 430-0)*

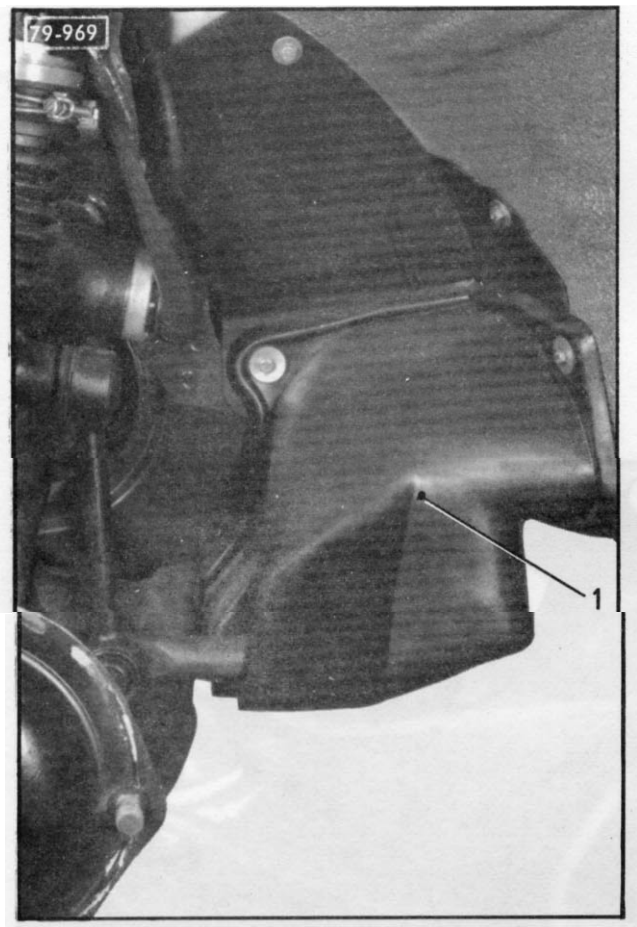
14. Start the engine. and check seal-tightness

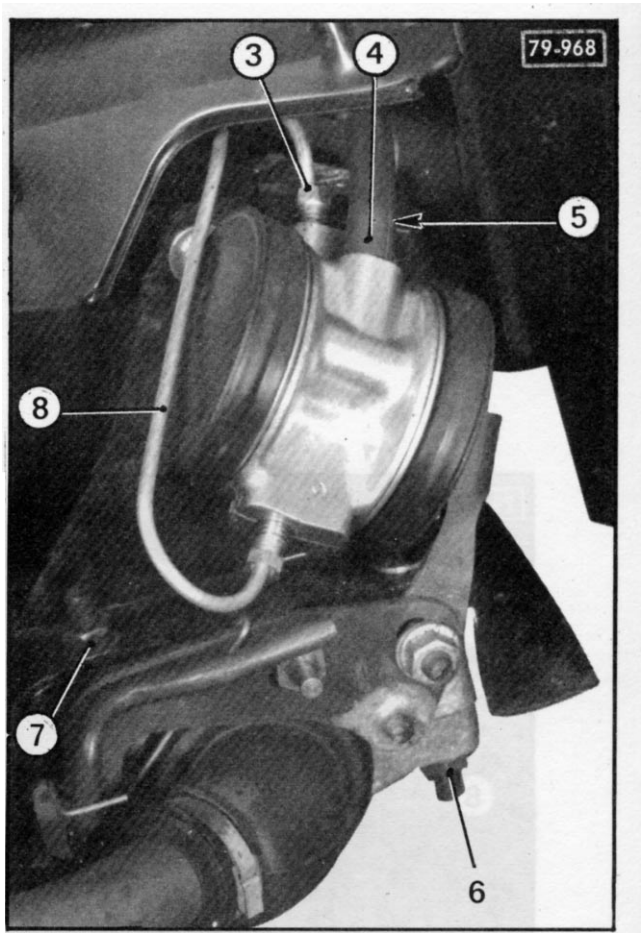
15. Fit corrector plastic casing (1) and protective plate (2)

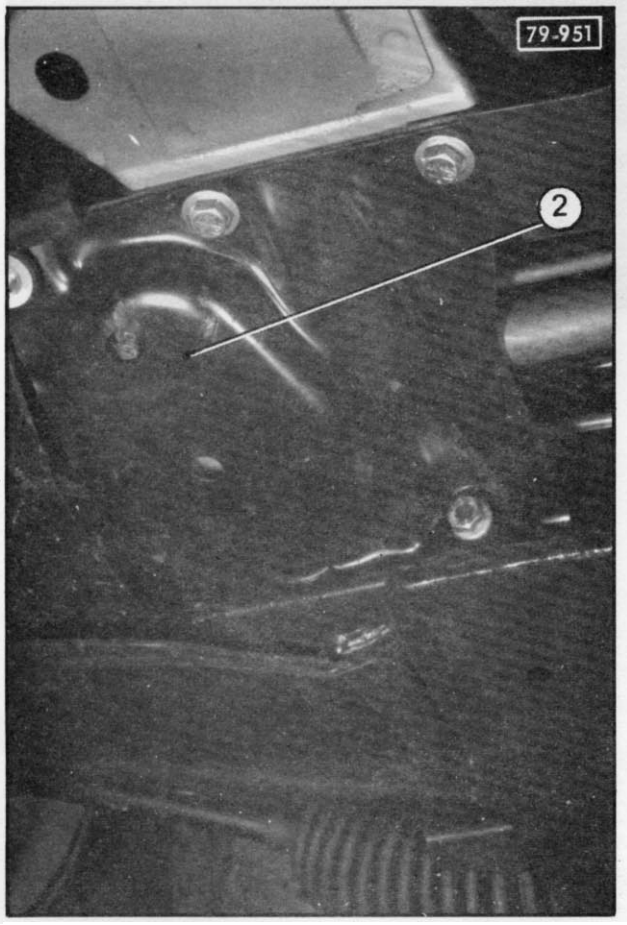
16. Fit the right front wheel

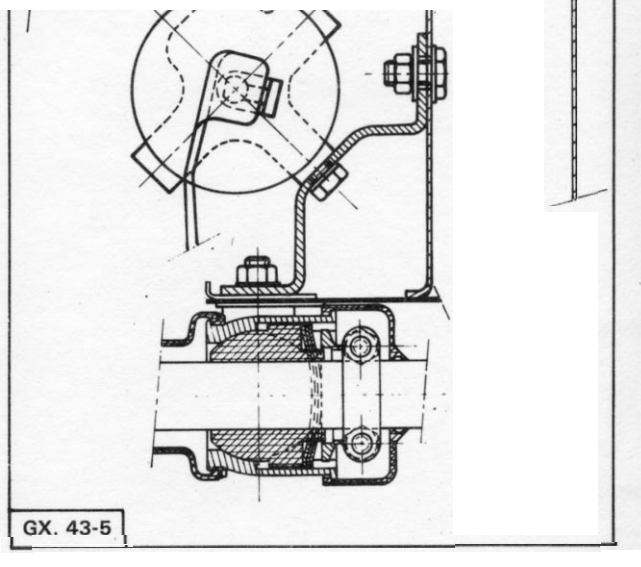
17. Lower the vehicle to the ground. tighten the wheel nuts and fit the embellisher.

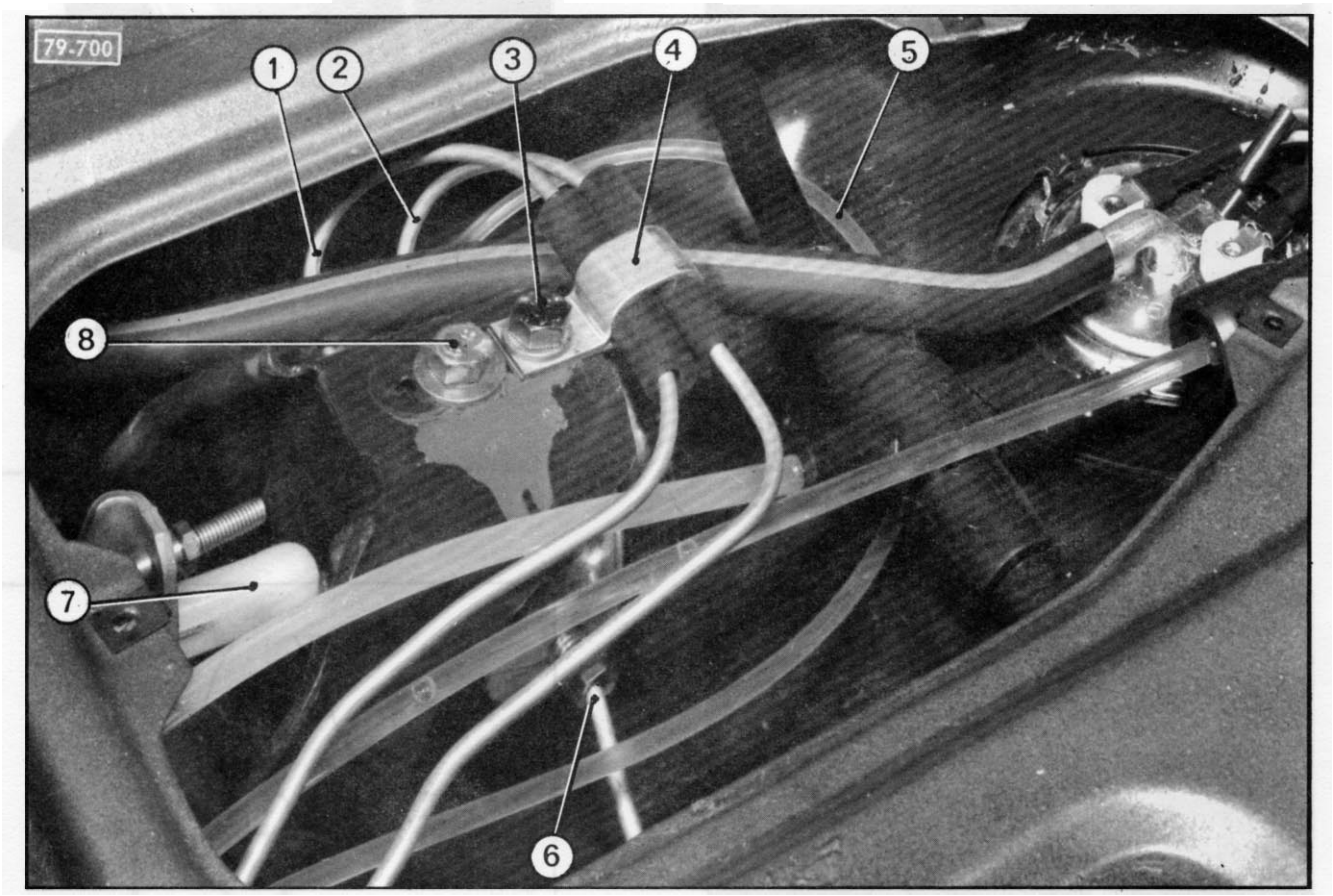
18. Check height values
(see Op. *GX. 430-0)*


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GX. 43-5


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REMOVAL AND FITTING OF A REAR HEIGHT CORRECTOR

REMOVAL

1. Depressurize the rear circuit
(see Op. GX. *390-00*)

2. Remove the tank access trap (under carpet in boot).

3. Undo screw (3) and collar (4).

4. Uncouple :
- pipes (1), (2) and (6),
- corrector ball-joint lever (7) (manual height control in normal position).

5. Remove the height corrector :
- Index the position of the corrector on the slots.
- Undo screw (8).
- Disengage the corrector. and uncouple overflow return pipe (5).

FITTING

6. Fit the height corrector :
Couple overflow return pipe (5).
Engage the height corrector.
Fit screw (8), but do not tighten fully (spring washer).

7. Couple :
- pipes (1). (2) and (6) (fir new seals).
- corrector ball joint lever (7).

8. Fit collar (8) and screw (3)

9. Orient the corrector in the position indexed on disassembly, and tighten nuts (3) and (8).

10. Stan the engine and check seal-tightness.

11. Check height values
(see Op. **GX.** 430-0)

12. Replace the tank access trap.

SPECIAL TOOLS

TOOLS SOLD

1892-T or 1892-T.bis : Ball-joint extractor

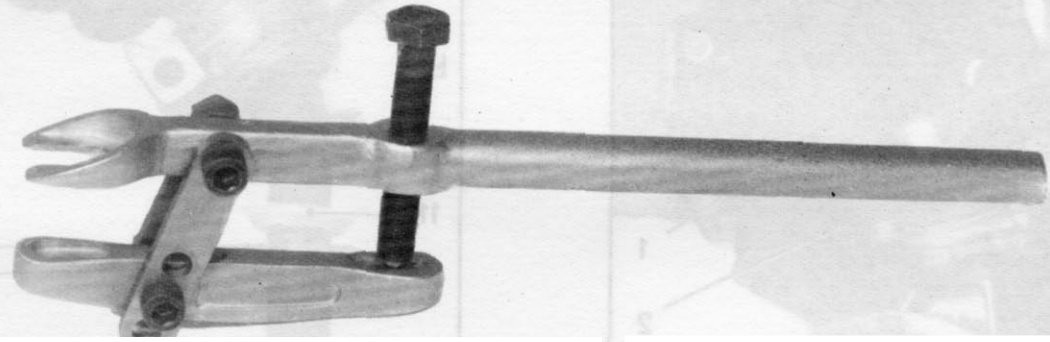
2067-T : Front anti-roll bar adjustment tool

TIGHTENING TORQUE VALUES

	Torque in m.daN
Mandatory tightening torque :	
Anti-roll bar bearing attachment nuts :	**1.9 to 2.1**
Recommended tightening torques :	
Lock collar tightening screw :	**1 to 1.1**
Automatic control collar tightening screw:	**1.4 to 1.5**
Anti-roll bar swivel nut :	**2.5 to 3**
Upper arm swivel nut :	**2.5 to 3**

13 549

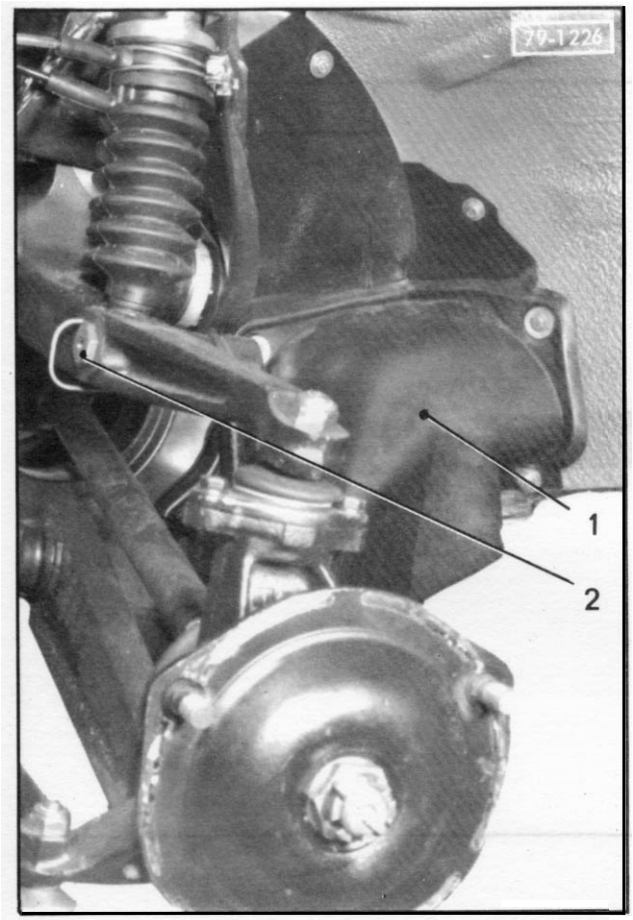
1892-T or 1892-T.bis

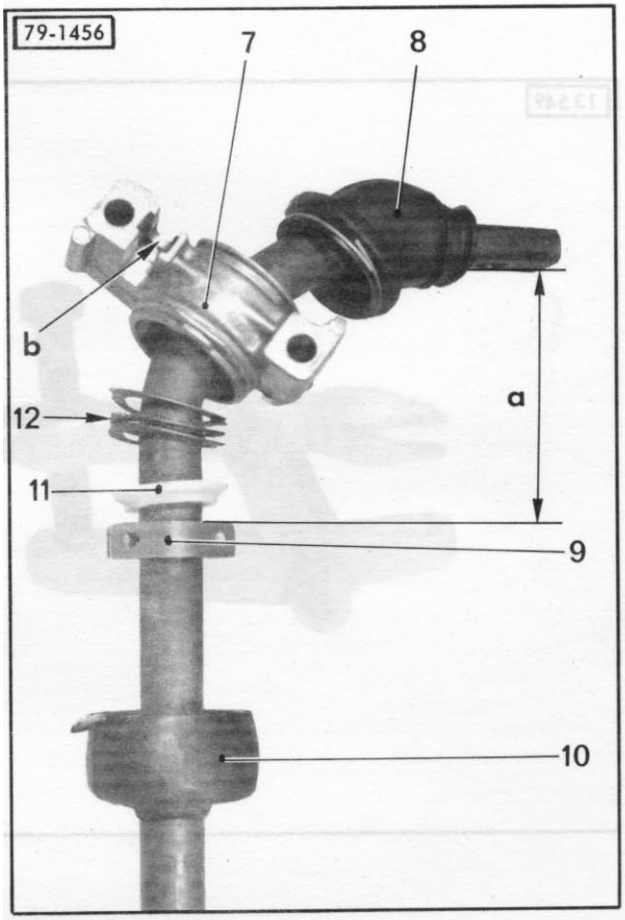


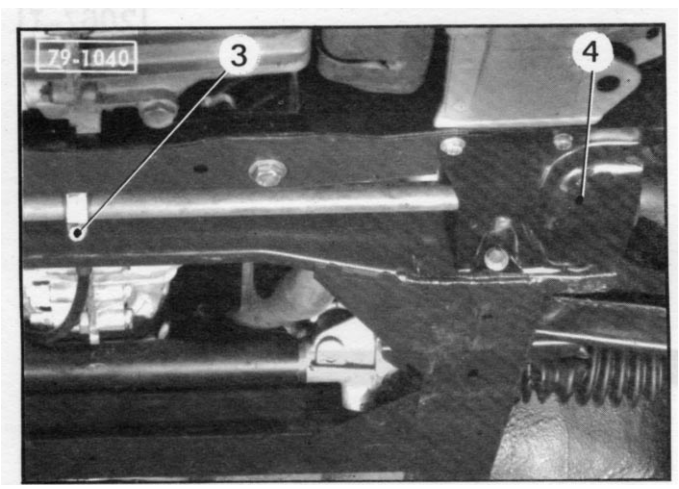
79-1476

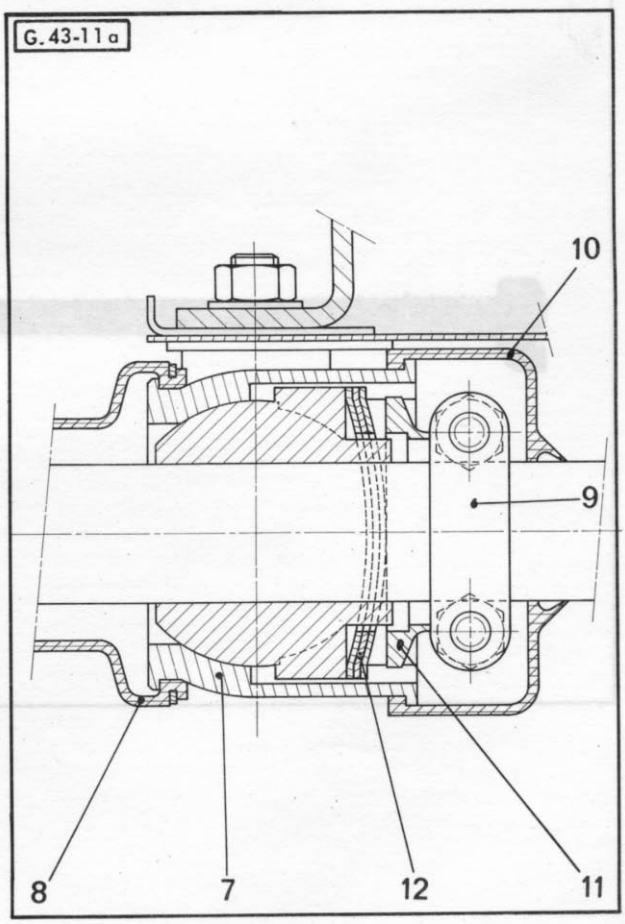
2067–T

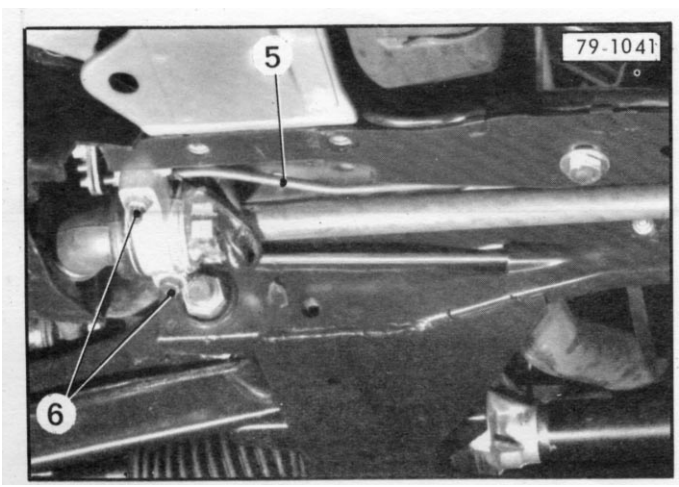



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G.43-11a
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REMOVAL AND FITTING OF THE FRONT ANTI-ROLL BAR

REMOVAL

1. Remove the embellishers and slacken off the front wheel nuts.

2. Chock the front of thevehicle, with the wheels hanging free.

3. Depressurize the front circuit (See Op. GX. *390-00,* page *9*)

4. Remove the wheels.

5. *Right* side *:* remove height corrector plastic casing (1).

6. Take down :
- anti-roll bar bearing protection plates (4).
- collar tightening screw (3) for control rod (5).

> The automatic control unit must remain in place on the vehicle.

- barrel nuts (2).

> Undo these nuts partially, then striking the top of the nuts to crack off the ball joint.

- anti-roll bar bearing attachment screws (6)
- anti-roll bar:bearings assembly.

7. Strip down the anti-roll bar :
Use extractor tool 1892-T bis to uncouple the link rods.

FITTING

8. Prepare the anti-roll bar :
On each end of the bar :
a) Engage rubber sleeve (10).
b) Fit stop collar (9).
Position so that the heads of the screws are directed forwards. and the cut in the half-collars is perpendicular to the plane of the bar.
Adjust the position of the collar to obtain :
a a a = 93 mm
c) Engage :
- thrust cup (11),
- spring washers (12),
- bearing block (7).

> The right and left bearings are different :
> -The right bearing has a recess *a* b » for the automatic height control rod nylon bush.

rubber dust cover (B).

d) Fit the link rod.

> Left and right rods are different

Tightening torque: **2.5** to **3** m.daN

> The cones are fitted dry. The use of solvent for degreasing the ball joint tail is PROHIBITED.

9. Fit the anti-roll bar :

a) Using lifting beam **A** (**length 1.50 m),** raise the suspension arm swivel assembly. until beam **A** comes into contact with the axle unit *(on* each side).

b) Position the anti-roll bar.
Couple the link rods to the upper arms.

Tightening torque : 2.5 to 3 m.daN

The cones are fitted dry. The use of solvent for degreasing the ball joint tail is PROHIBITED.

c) Fit nylon half-bearings (3) in the rod bearing blocks.

d) Right side : Fit nylon half-bearings (2) on automatic height control rod (1) (stick with grease).

When half-bearings (2) are assembled. they should form a wedge. Automatic height control rod (1) passes through hole « b », closest to narrower end « c ».

e) Engage bearing (2) in its recess in the anti-roll bar right bearing block.
Narrow end « c » should be in the bottom of the recess.

10. Fix the anti-roll bar :

la) Raise the bar until attachment nuts and screws (4) can be inserted/ contact washers under screw heads and nuts). Do up the nuts by a few threads only.

b) Raise the bar. pressing on the middle, until one of the bearing blocks comes into contact with the axle unit.

If the other bearing block does not touch, insert attachment shims between this bearing and the axle unit. fix the bar without stress.
One shim thickness = 1 mm.

c) Tighten attachment nuts (4).

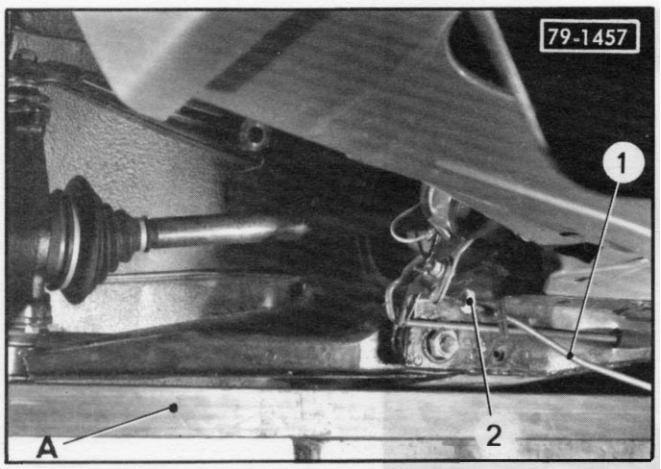
Tightening torque : 1.9 to 2.1 m.daN

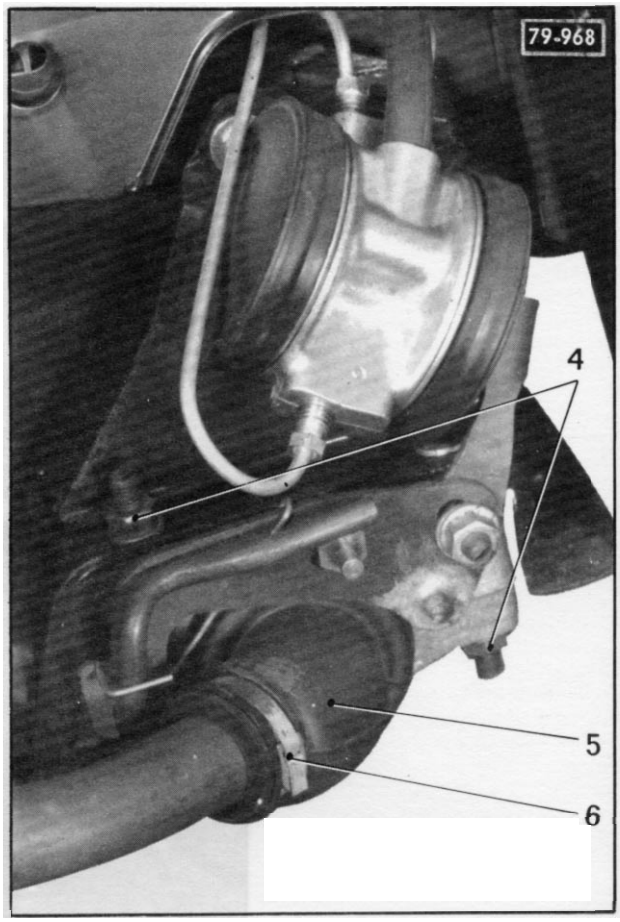
ll. **Adjust preloed on the bearing blocks, using** **2067-T**
(See Op. GX. *430-0,* page *6)*

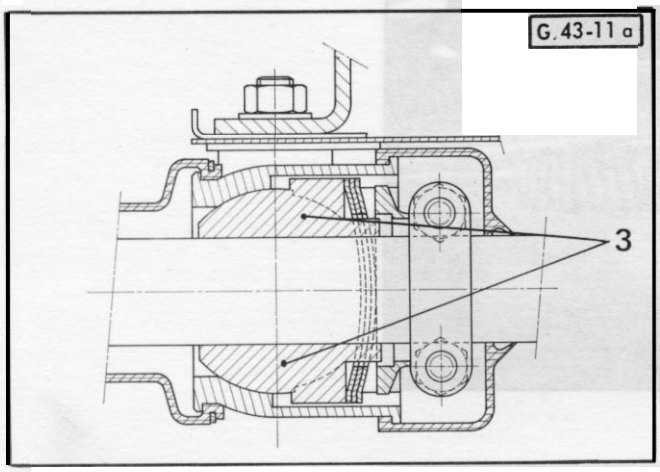
12. Fit dust-guards (5) (do not *twist)*

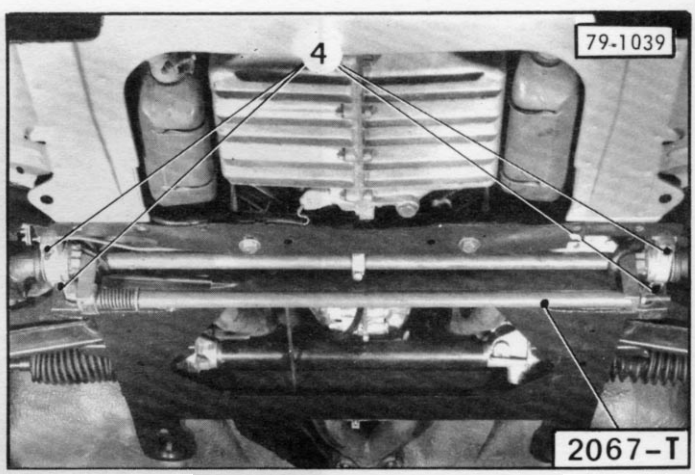
Fit :
- locking ring at bearing block end.
- collar (6).

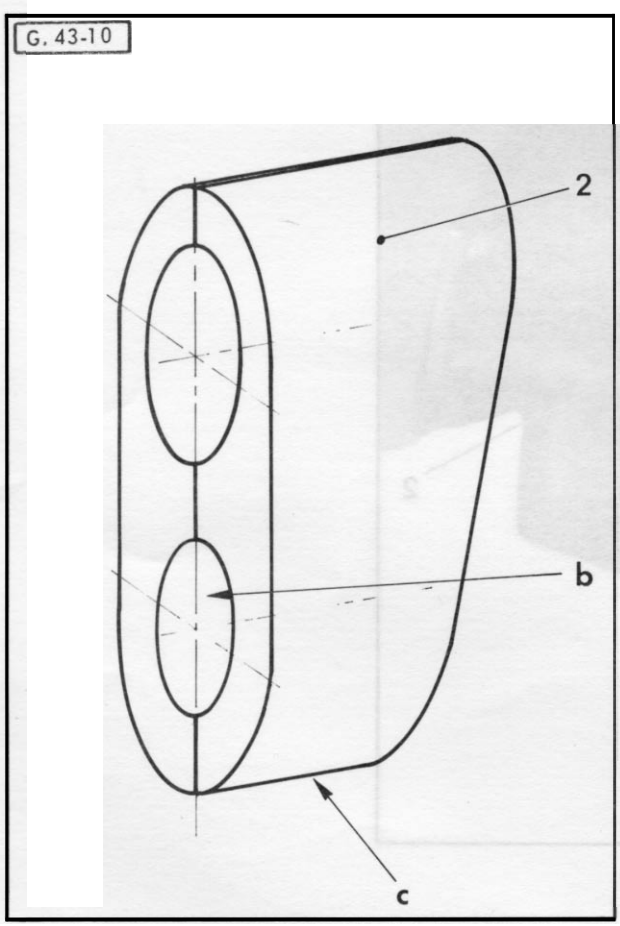
13. Adjust and fix automatic height control rod (1) /See Op. GX. *430-0,* page *2)*.

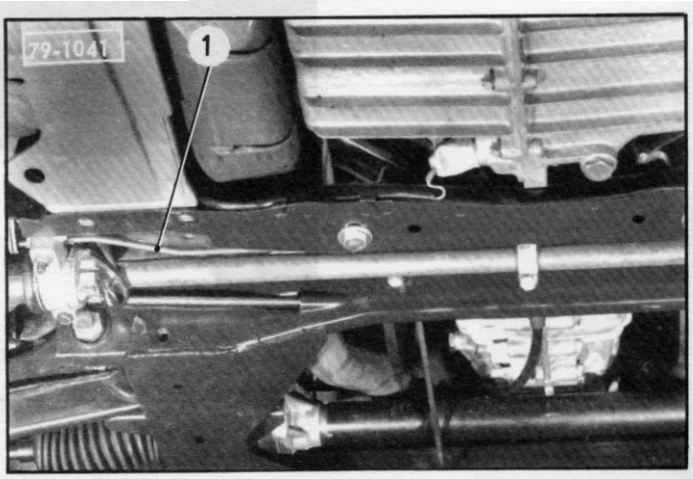

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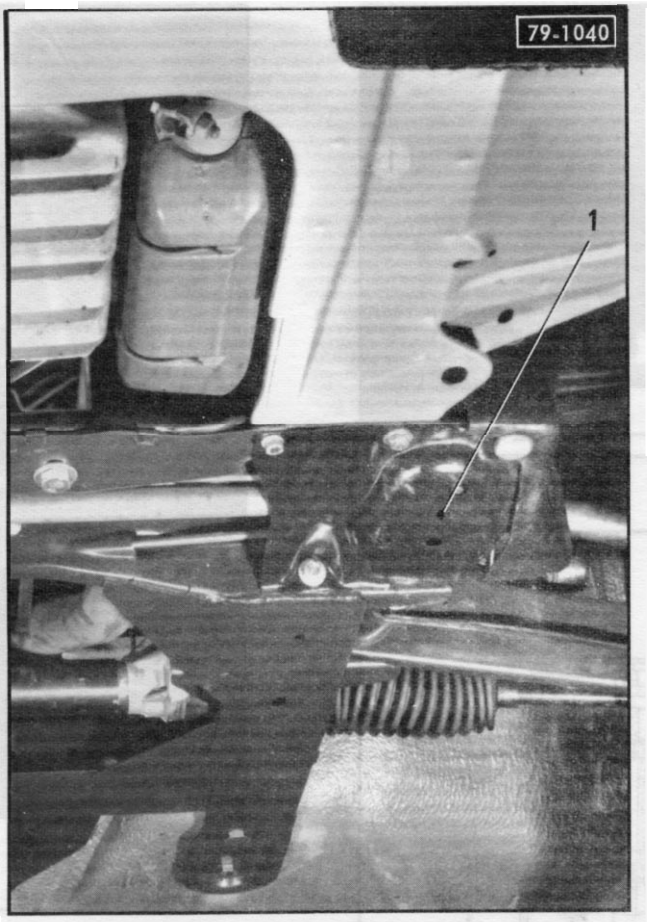

79-968
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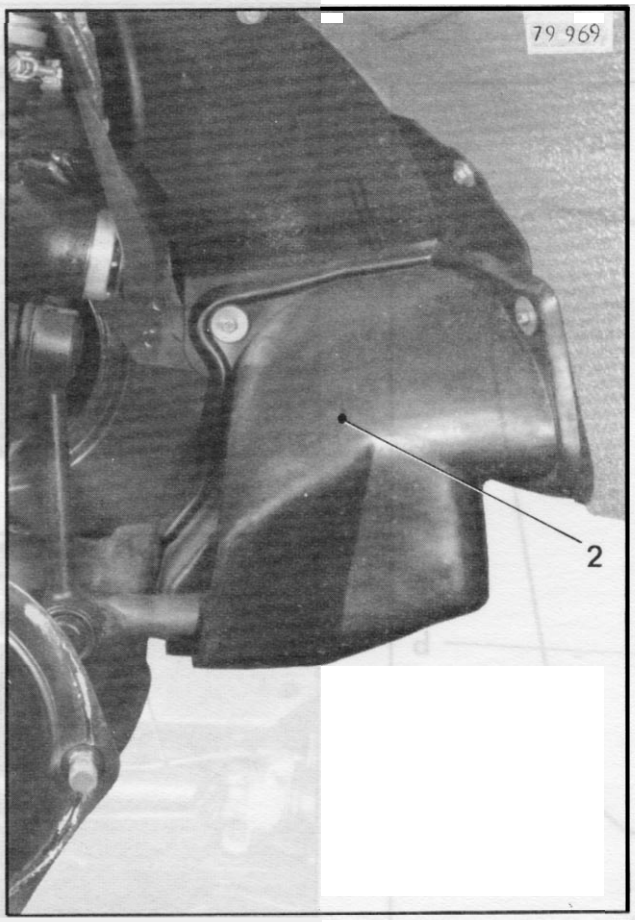

G. 43-11 a
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2067-T


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79-1040
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79 969
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14. Fit :

- bearing block protection plates (1).
- height corrector plastic casing (2).
- wheels.

15. Lower the vehicle to the ground.

16. Tighten wheel nuts and fit embellishers,

17. Check, and adjust height values if necessary :

(See Op. GX. *430-0,* page 5**)**

REMOVAL AND FITTING OF A THEFT-PROOF STEERING LOCK

REMOVAL

1. Disconnect the battery ground cable.

2. Undo four screws (5) and remove steering lock lower cover (6)

3. Remove the steering wheel. uncoupling the UJ shaft from the steering column.

4. Remove grille (1) (pulling our), and the left speaker (if fitted).

5. Remove the speedometer block :
- Uncouple the speedometer cable (pulling our) at the engine end.
- Undo three screws (2 and (3).
- Disengage the speedometer block. first pulling out the two connectors

6. Remove the steering wheei support tube :
- Undo screws (4) and (7) attaching the lower dashboard (*to* increase rhe *flexibility* o f rhe larrer when disengaging rhe *support* tube *).*
- Undo the attachment screw for brackets (8) and disengage the brackets to the left.
- Undo the attachment screw for the ignition keyhole light, and pivot so that the lamp is pointing upwards.
- Uncouple the lock connector.
- Undo the two upper screws and two lower screws of the support tube.
  Disengage the tube, pulling out the lower dashboard slightly for this purpose.

7. Disassemble the lock from the support tube :
Cut a screwdriver slot in the conical head of the attachment screw. Undo the screw and disengage the lock.

FITTING

8. Fit the lock in the support tube :
Use a new snap-off head screw. Tighten until the head breaks off.

9. Fit the support tube, proceeding as for disassembly but in reverse order, centering the tube correctly
Position the ignition keyhole lamp bracket. and tighten the attachment screw.
Fit lower dashboard screws (4) and (7).
Connect the lock.

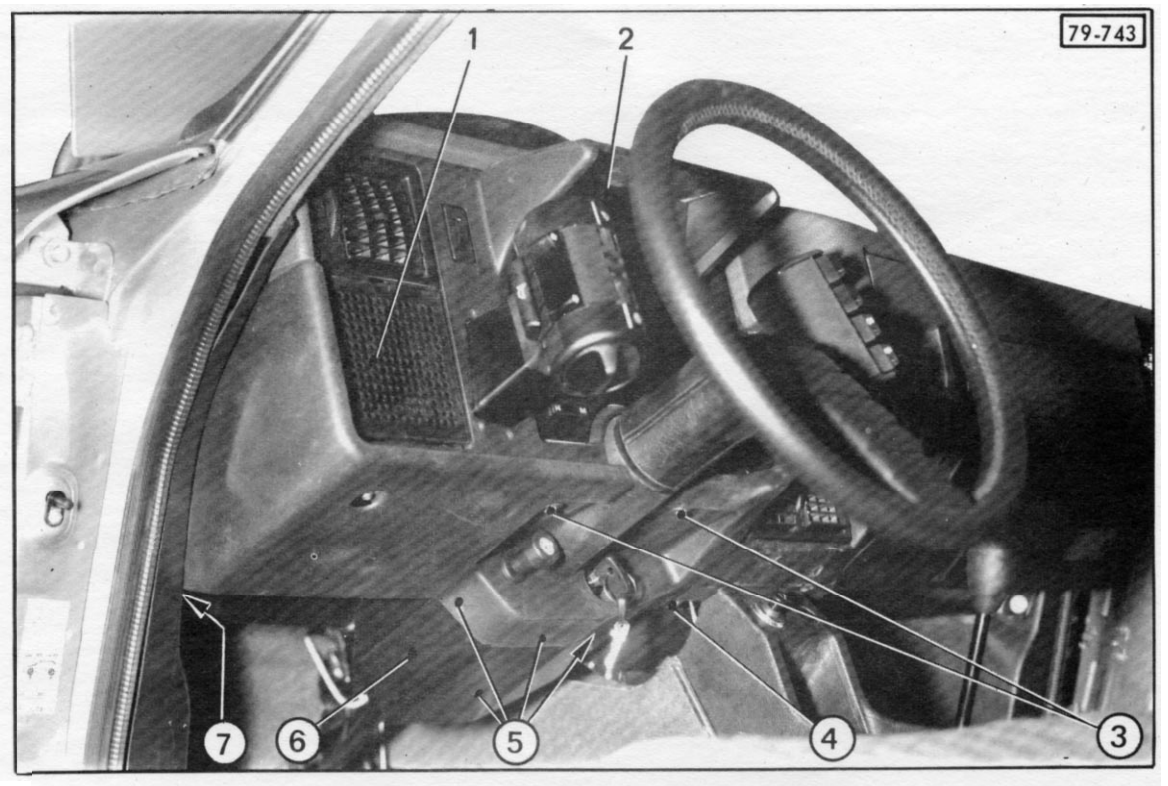
10. Fit the speedometer block and connect up :
Tighten screws (2) and (3).
Couple the speedometer cable, inserting the hand via orifice *a* a ».

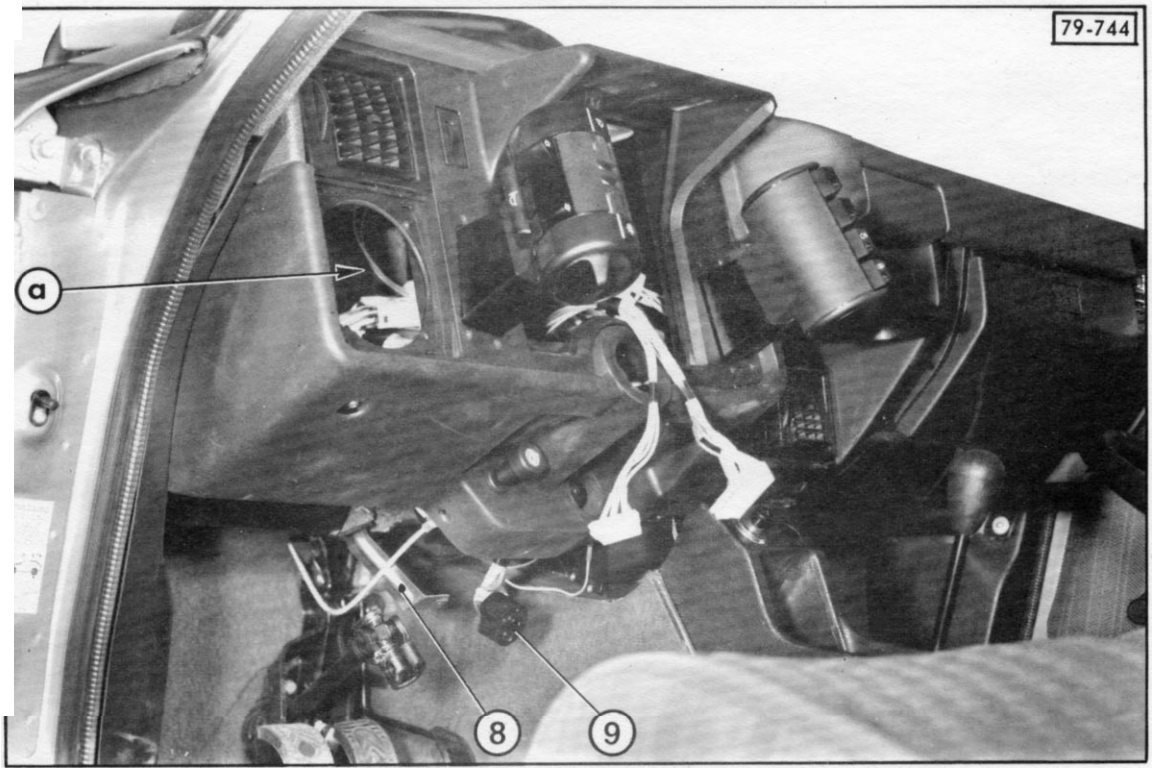
11. Fit the left speaker (where appropriare) and grille (1)

12. Fit the steering wheel. coupling the UJ shaft (spoke pointing downwards. roadwheels in straight ahead position)
Use a NYLSTOP nut (tightening torque : **1.3 to 1.4 m.daN**)

13. Fit lower cover (6) :
Position bracket (8) to fit the central cover attachment screw.
Tighten the bracket.
Tighten four attachment screws (5).

14. Connect the battery earth cable.


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TIGHTENING torque values

Steering gear/axle unit attachment screw: ..... 3.6 to 4 **m.daN**
UJ shaft attachment nut : ..... 1.3 to 1.4 **m.daN**

REMOVAL AND **FITTING** OF A STEERING SYSTEM

REMOVAL

1. Chock the vehicle, *with* front wheels hanging free.

2. Remove the front wheels.

3. Disengage sleeves (1).

4. Uncouple the steering tie-rods :
Release retainers (2).
Undo steering tie-bar ball-joint screws (4) (17 mm spanner with heads inclined at 15° and 75°, FACOM No. 34 orequivalent). Holdrheracksreadyduring *this* operation.

5. Disengage plastic sleeves (3) from the rack.

6. Remove the steering column and UJ **shaft** :

The ends of the **UJ** shaft are different, and their positions must **be** identified before disassembly.

Undo upper UJ attachment nut (5).
Undo the lower UJ attachment nut.
Disengagethesteering column from support tube(6)
Remove UJ shaft (7).

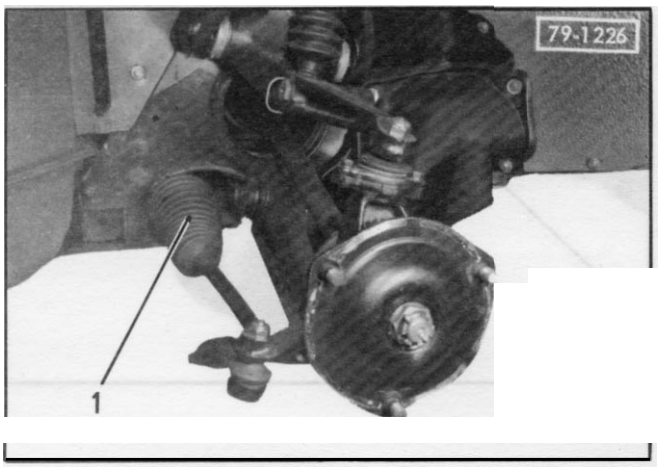
7. Remove the steering system :
Undo screws (8)attaching the steering gearbox to the axle unit.
Remove front height corrector control rod (9) (index the position of the collar on the rod. to avoid modifying vehicle height setting).

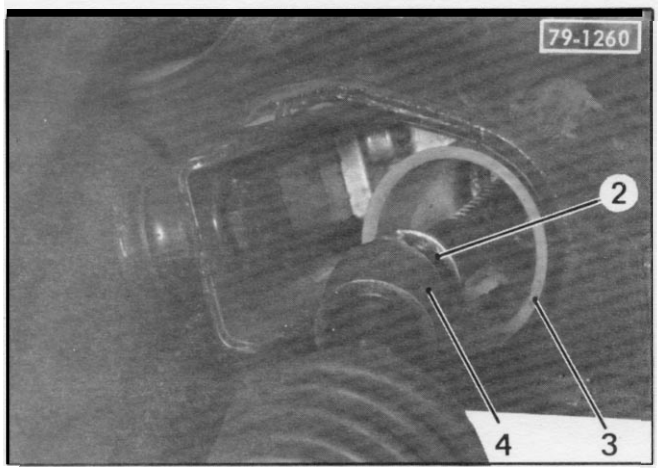
Disengage the steering system from its recess, from underneath the vehicle.
If necessary, file down each side at « a ».

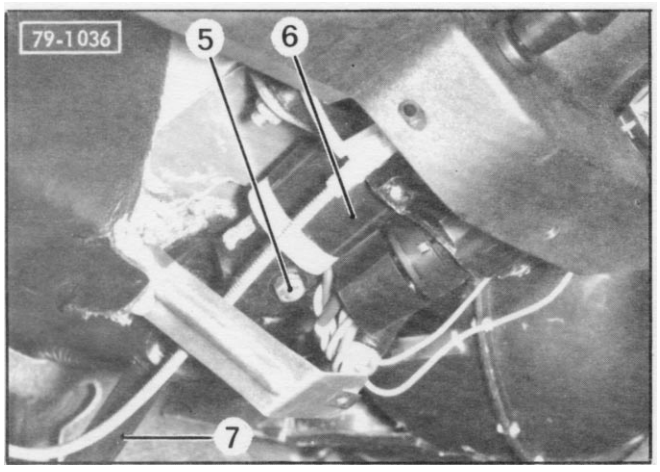
FITTING

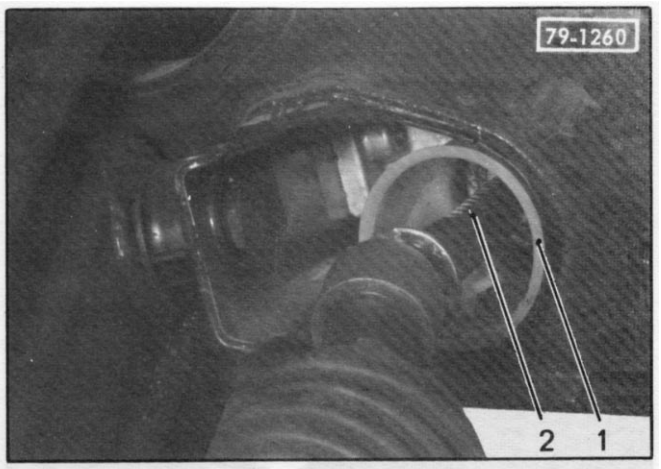
8. Fit the steering system :
Engage the steering system in its recess in the axle unit.
Tighten screws (8) *to 3.6* to ***4*** *m.daN (thrust plate* under screw head).

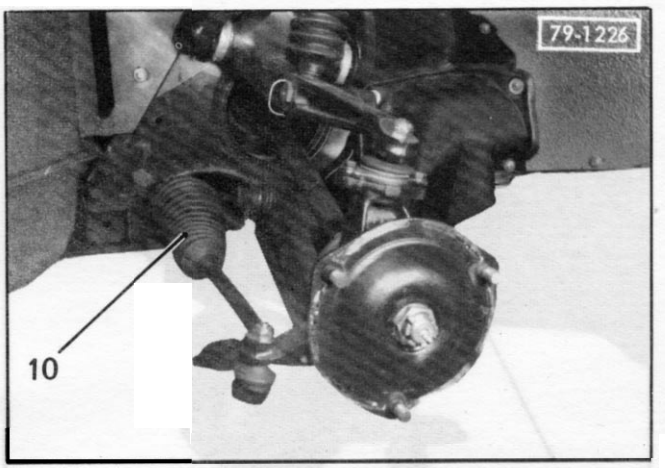
9. Couple the UJ shah and steering column :
Fit UJ shaft(7) in the position indexed on disassembly
The ends are not the same : at the steering wheel end. the orifice indentation for lock screw (5) should engage in the splines.

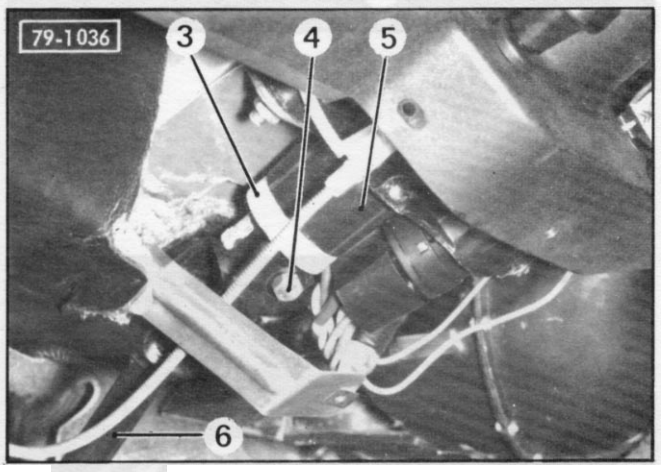

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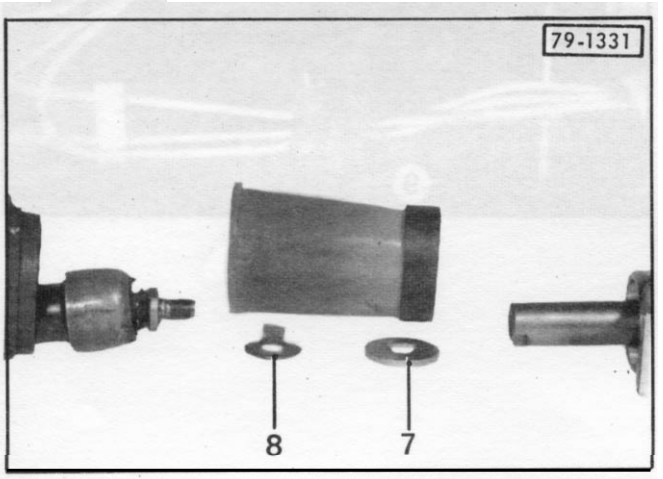

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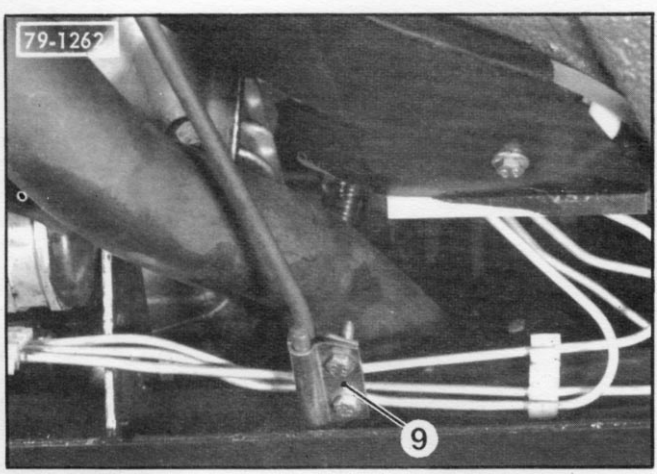

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79-1262
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a) Engage the lower UJ on the rack pinion

b) Adjust *the* position of rack (2) to obtain equal extension on eirher side of *the* casing.

c) Engage the steering column in support tube (5).

d) Interpose plastic washer (3) and couple the steering column to the upper UJ of UJ shaft (6).

Before coupling up. position the steering wheel. The spoke should be in a vertical position, pointing downwards.

Fit screw (**4**) *(fit a* new *NYLSTOP nut* followingany work ***on*** *the* steering system)
Hold UJ shaft (6) up against the steering column. and tighten nut (4) to 1.3 **to** 1.4 **m.daN**

10. **Adjust play between steering column and UJ shaft** :

a) Position the lower UJ shaft (6) on the rack pinion, to obtain a gap of 1 to 1.5 mm between washer (3) and support tube (5).
Tighten the attachment nut to 1.3 **to** 1.4 **m.daN.**
(Fir a new *NYLSTOP nut* afrer any intervention on the steering system).

b) Fit the protectivesleeveforthe lower UJ shaft(6).

11. **Couple the steering track-rods** :

Fit plastic sleeves (l) on the steering gearbox
Screw up the steering track-rod ball-joint screws fully on the rack. first fitting :
- lock washer (7).
- retainer (8).

Hold the rack steady and tighten the ball-joint screws 3.6 **to** 4 **m.daN**
Use a pair of pliers to bend the retainer onto the flat of the ball-joint screw.

12. **Couple the front height corrector control rod** :

If necessary, adjust the height control to match the index made on disassembly of collar (9).

13. Couple sleeves (10) to plastic sleeves (1).
Adjust the posirion of sleeves *(10).*
With the wheels in the straight ahead position, sleeve length should be 155 ± 3 **mm.**

14. Fit the front wheels.

15. Lower the vehicle to the ground and check front wheel toe-in.
This should be **0 to** 2 **mm** with the vehicle at normal height

I - REPLACEMENT OF THE FRONT BRAKE PADS

REMOVAL

Push at point *a* a » on each pad, to force the pistons to the bottom of their recesses.

1. Extract pin (2).
   Push shaft (3).

2. Hold the pads by wires (1) before shaft (3) is fully disengaged.

3. Remove the shah and spring (**4**).
   Remove the pads via the top.

To ensure even braking action the **four** pads must always be replaced at the same time.

FITTING

4. Fit the **pads** :
   a) Fit the pads, holding in place by means of wear indicator wires (1)
   b) Fit spring (**4**).
   c) Engage shaft (3) in the unit, and ensure that spring (**4**) passes under the shaft
   d 1 Drive in the shaft and fit pin (2).
   e) Connect up the wear indicator wires.

5. Check that the brake pedal travel is normal. after operating the pedal a few times

II - REPLACING THE REAR BRAKE PADS

REMOVAL

1. Undo nut (6) and take down plate (*5*).

Push lightly on each pad at point **a** b », to facilitate disassembly.

2. *Hold the **pads** with* a hook
   Take down :
   - nut (6),
   - shaft (7),
   - spring (8) and muffler pad (9) *(⟶ 3/82)*,
   - *(3/82 ⟶)* : muffler pad (10).

3. Disassemble the pads via the top.
   Place a few drops of LHM fluid on the pistons. having first cleaned with petroleum spirit
   Fit the old pads and shaft (7).
   Press at point **a** b » to complete engagement of the pistons in the bottom of their recesses.
   Take down the pads and shaft (7).
   Clean the pad recess.

To ensure even braking action, the four pads must always be replaced at the same time.

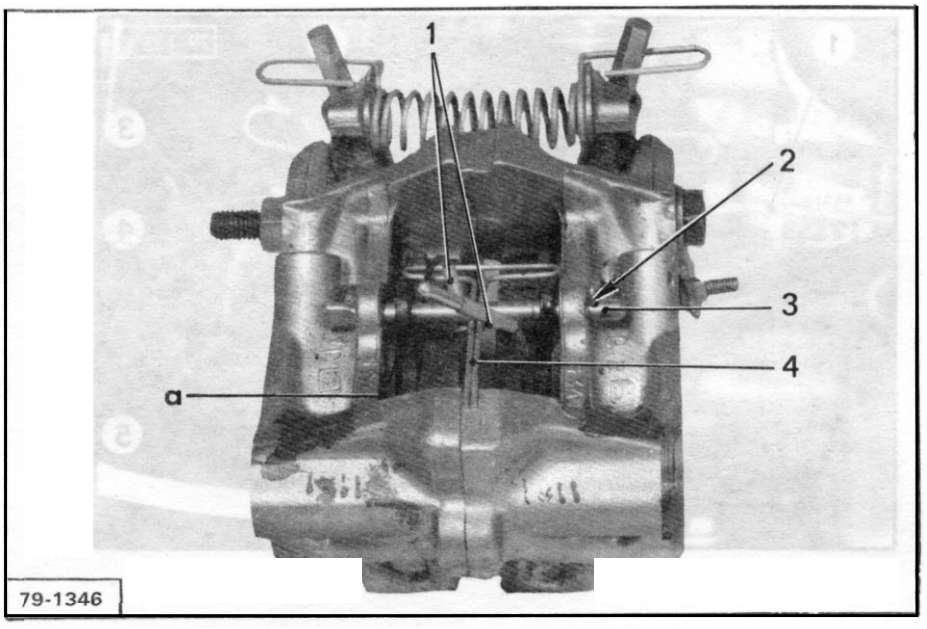
FITTING

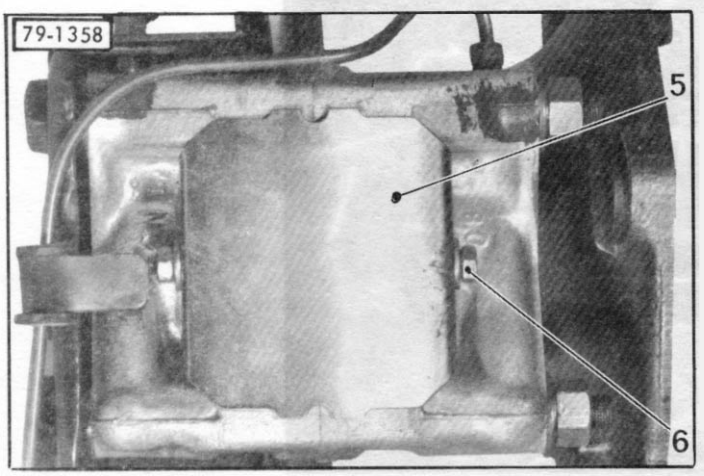
Position the pads, end check that they slide freely. If this condition is not met lightly file face F1 or F2.
NOTE : With the pad in position. its lateral play should be between 0.4 and 0.6 mm.

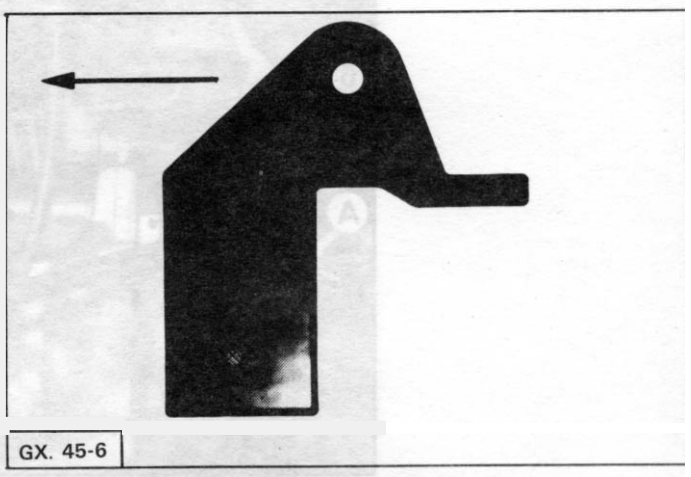
4. Fit the pad on the wheel side. and engage shaft (7)
   Fit the second pad, muffler pad and spring (8).
   Drive in shaft (7) and fit nut (6).

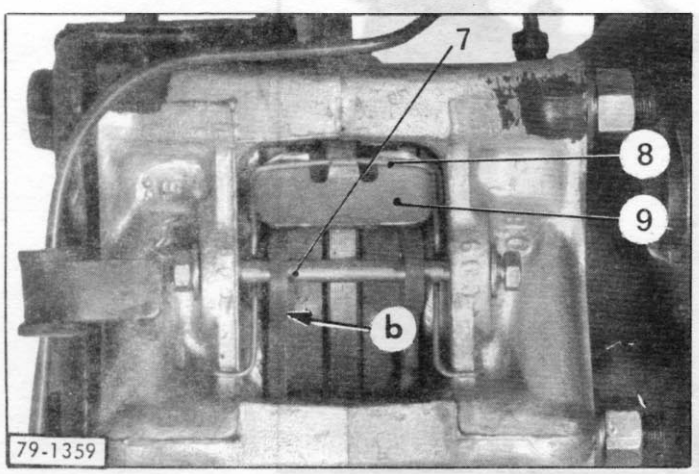
5. Fit plate (*5*) and tighten nut (6)

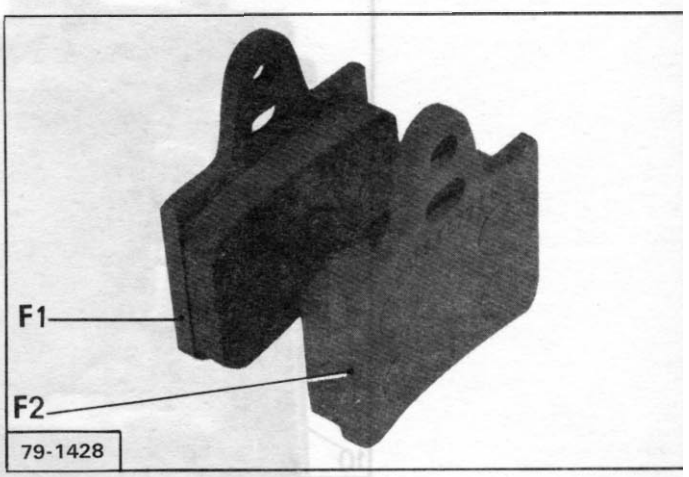
3/82 ⟶ : *A* muffler pas has been added. It is located between the piston and the brake pad and must, without fail, be fitted in the appropriated direction (⟶) arrow towards front of vehicle. The fitting of that muffler pad entails the elimination of muffler pad (9).

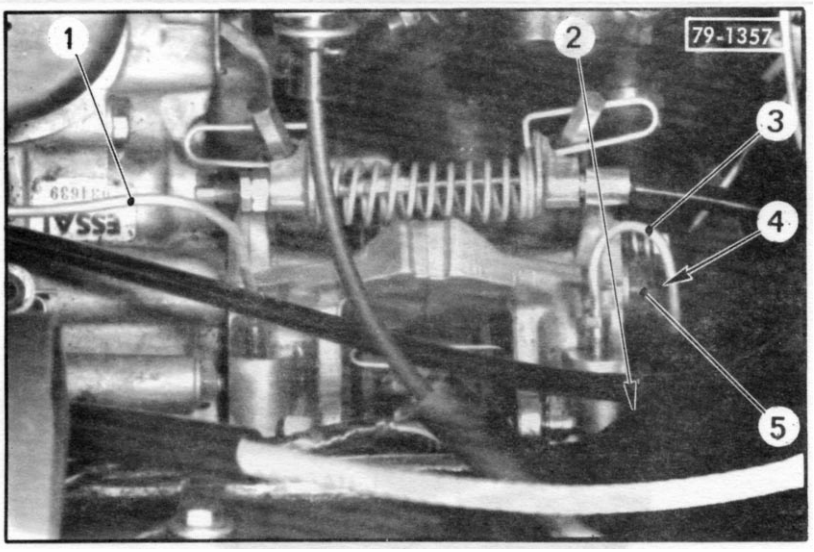

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79-1346

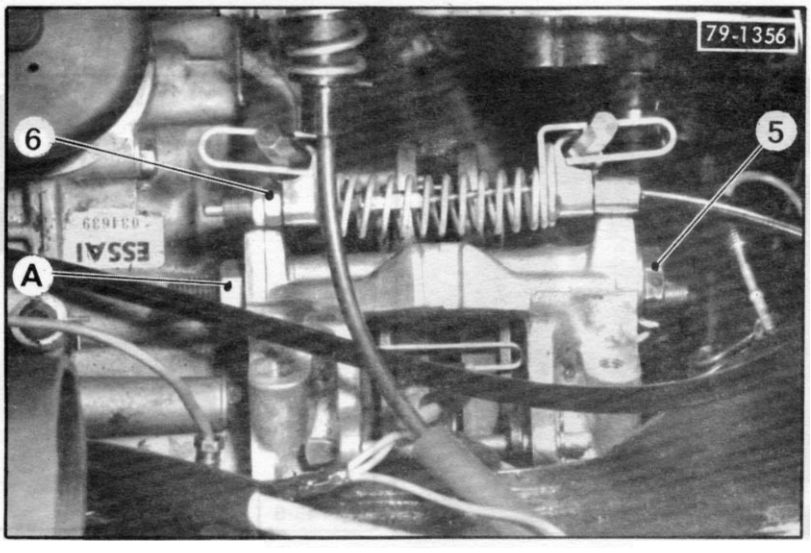

79-1358
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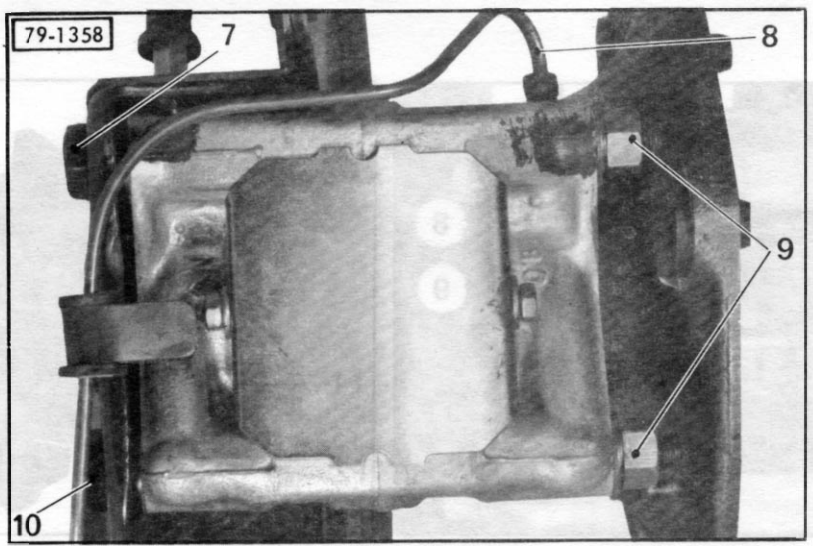

GX. 45-6


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79-1359


F1
F2
79-1428


79-1357
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79-1356
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A


79-1358
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III - REMOVAL AND FITTING OF A FRONT BRAKE UNIT

REMOVAL

1. Set the manual height control in the high *position.*
2. Undo the cut-out pressure relief screw.
   Disconnect the negative battery lead.
3. **Remove the unit** :
   a) Righr side *:*
   Remove the heater unit.
   Disengage the heater unit and heater ducts, and place on its side.
   Uncouple unit connection pipe (1).
   b) *Left side :*
   Uncouple unit connection pipe (1).
   Uncouple feed pipe (3) and disengage from unit (4).
   c) Slacken off screws (2) and (5) attaching the unit.
   Extract rear screw (5).
   Pivot the unit. Replace screw (5).
   Fit nut **A** (10 x 1.50) so as to hold the two half-units together.
   d) Uncouple the handbrake cable.
   Undo the lock nut and nut (6).
   e) Undo front attachment screw (2), and disengage the unit.

FITTING

4. **Fit the brake unit** :
   a) Check the condition of the contact surface of the units on the gearbox. Remove any asperities with a scraper.
   b) Present thecornplete unit. fitted with the handbrake pads *(the two half-units* are assembled and held rogerher by screw (5). and *nut* **A** used for *disassembly.*
   c) Fit front attachment screw(2). Do not tighten fully (plain washer on righr side *).*
   d) Remove the nut, pivot the unit and fit screw (5) (plain washer on *right side),* tighten screws (2) and (5) **to 4.5 to *6* m.daN.**
5. **Fit the main brake pads.**
   (see corresponding operation)
6. **Adjust handbrake pad clearance**
   (See Op. *GX. 453-0,* page *2)*
7. **Couple and adjust the handbrake cable.**
8. **Couple the feed pipe** :
   a) Righr side :
   Fit connection pipe (1) (fir new *seal).*
   b) Lefr side *:*
   Fit pipes (1) and (3) (fir new seals)
   Engage the pipe in bracket (4).
   Tighten the couplings to 0.8 to 0.9 m.daN
9. Connect the negative battery lead.
10. Bleed the front brakes
    (See Op. *GX. 453-0,* page *4)*
11. **Fit the heater unit**

IV - REMOVAL AND FITTING OF A REAR BRAKE UNIT

REMOVAL

1. Chock the rear of the vehicle. with the wheels hanging free.
2. Depressurize the circuits (see Op. *GX. 390-00,* page *9).*
   Take down the wheel.
3. Uncouple pipe (8).
4. Slacken off nuts (9) and undo screw (7).
   Pivot the unit and replace screw (7) and its nut, to hold the two half-units together.
5. Undo. screw (10) and take down the unit.

FITTING

6. Present the unit on the disc.
   Fit screw (10) and its nut (do nor *tighten* fully).
   Undo screw (7) and pivot the unit.
   Fit screw (7) and nut (9).
   Tighten nut (9) to *2.6* to 4 m.daN *(contact* washers) (grease rhreads and face).
   Couple pipe (8) (fir new seal).
   Tighten the coupling to 0.8 to 0.9 m.daN
7. Bleed the rear brakes.
   (see Op. *GX. 453-0,* page *2).*
8. Fit wheel, and lower the vehicle to the ground.

V - REMOVAL AND FITTING OF A FRONT BRAKE DISC

REMOVAL

1. Set the height control in the high position.
Chock the front of the vehicle with the wheels *hanging* free.

2. Depressurize the circuit
(see Op. *GX. 390-00,* page *9).*

3. Remove the brake unit (see paragraph *III)*
Do not uncouple the handbrake cable.

4. Uncouple the drive shaft
(see *Op. GX. 372-1).*

5. Remove the disc :
Extract the attachment studs.
Disengage the disc vis the top.

FITTING

6. Fit the dic :
Position the disc and fit gearbox outlet studs (1) (shoulder end outwards)

7. Couple the drive shaft
(see Op. *GX. 372-1)*

8. Fit the brake unit
(see paragraph *III)*

9. Lower the vehicle to the ground

VI - REPLACING THE HANDBRAKE PADS

REMOVAL

1. Take down the heater unit

2. On each unit :
- Uncouple the handbrake cable.
- Remove spring (2).
- Undo screws (5).
- Remove assemblies (**4**) (lever and cam) *(collect* rhe spring *washer)*

3. Remove the pads :
Hold spring (3) and disengage the pads

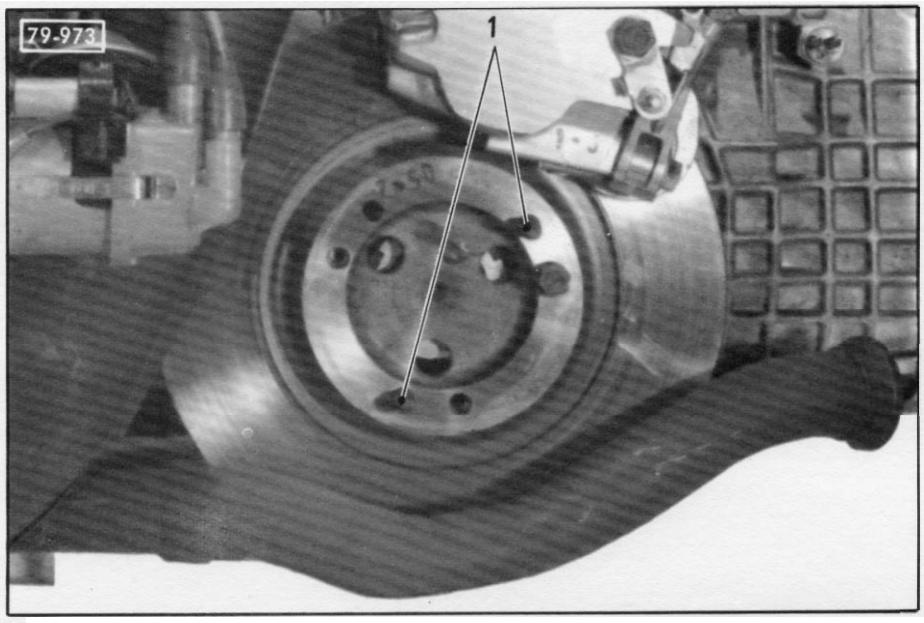
FITTING

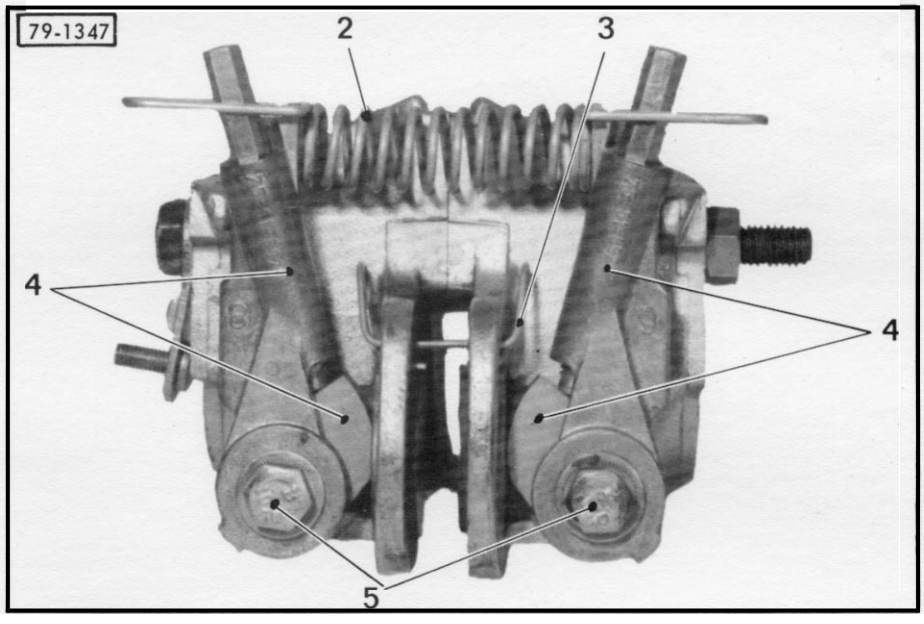
4. Fit the pads :
Raise spring (3), and engage the pads on their supports,

5. Fit assemblies (**4**) (spring washer between lever and cam) and fit spring (2).
Tighten screws (5).

6. Adjust pad clearance, end couple and adjust the handbrake cables (see *Op. GX. 453-0,* paragraph V)

7. Fit the heater unit.


79-973
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79-1347
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I. BLEEDING THE FRONT BRAKES

NOTE : This operation must be carried out *at nil pressure* so as to avoid emulsification of the fluid, and consequent possible formation of air oockets in the circuit.

1. Depressurize the circuit :

a) With the engine stopped. undo the pressure regulator relief screw.

b) Connect right brake unit bleed screw (1) to the reservoir. using a length of transparent tube.

c) Hold *the* brake pedal down, and undo the bleeder screw.

2. Bleed the brakes :

a) Start the engine.

b) Undo the pressure regulator relief screw. and allow the fluid to flow until no air bubbles are observed. At this moment do up bleed screw (1).

c) Release the brake pedal. and disconnect the bleed tube.

II. BLEEDING THE REAR BRAKES

The rear brakes must be bled under pressure.

- Jack up the rear of the vehicle, with the wheels hanging free.
- Remove the wheels.
- Connect a length of transparent bleed tube to each bleed screw. with the free ends of the tubes placed in a clear recipient.
- Stan the engine.
  Using a jack, raise one of the rear suspension arms *(the* rear *corrector* is then in the « *inlet* » *position).*
- Press the brake pedal.
- Partially undo the bleed screw, and allow the fluid to flow until no more bubbles are observed
- Do up the bleed screw.
- Replace the wheels.
- Lower the vehicle to the ground.

III. ADJUSTMENT OF BRAKE PEDAL CLEARANCE

1. Adjust pedal clearance :

Bend the metal at « a », to obtain clearance **J** between pedal and regulator :

J = 0.1 to 0.5 mm

IV. ADJUSTMENT OF STOP LIGHT CONTACTOR

1. Check brake pedal clearance adjustment (see preceding paragraph).

2. Adjust stoplamp switch (2) :

The stop lights should come on immediately the pedal comes into contact with the brake valve.

Bend stoplamp switch support bracket « a » to achieve this condition.

V. TESTING AND ADJUSTMENT OF THE HAND-BRAKE

1. Raise and chock the front of the vehicle.
Release the handbrake control fully.
Remove the spare wheel.

2. Adjust the *cams* :

Check that levers(7)are in contact with the brake unit. if necessaly undoing handbrake cable adjustment locknut (3) and nut (4).

Turn adjustment screw (5), so as to obtain a setting at the limit of brushing contact.

Carry out this adjustment at the point of maximum run-out on the disc.

(Turn by rotating the corresponding wheel).

3. Adjust the handbrake control cables :

On each brake *unit :*

Check that sleeve end fitting (6), and the sleeve are in place.

Advance cable adjustment nut (4) until it is in contact with lever (7) (pull on the cable to facilitate this operation).

Check that the free lengths of the threaded end fittings are identical on each side (to within 5 mm).

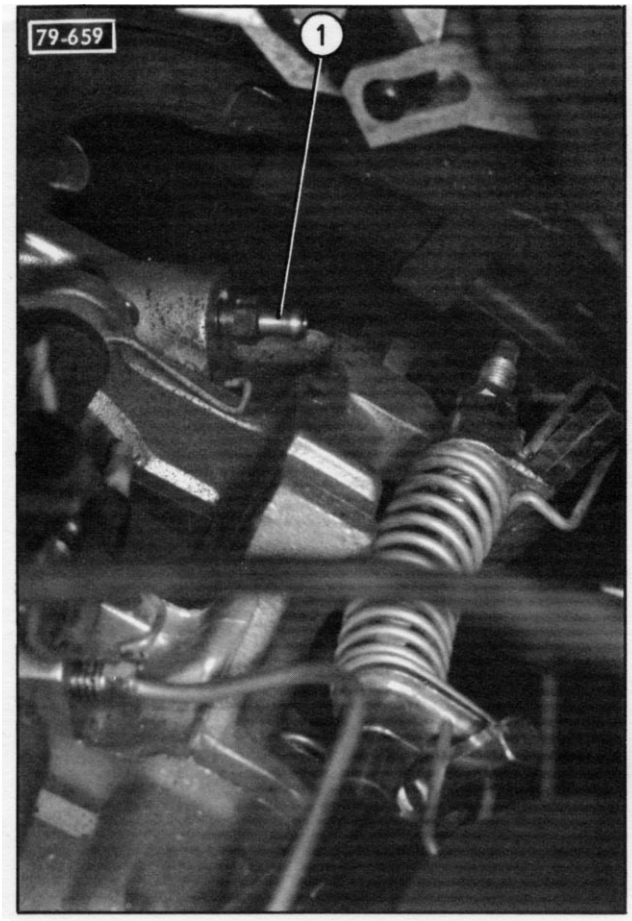
Tighten lock-nuts (3) to 1.5 m.daN

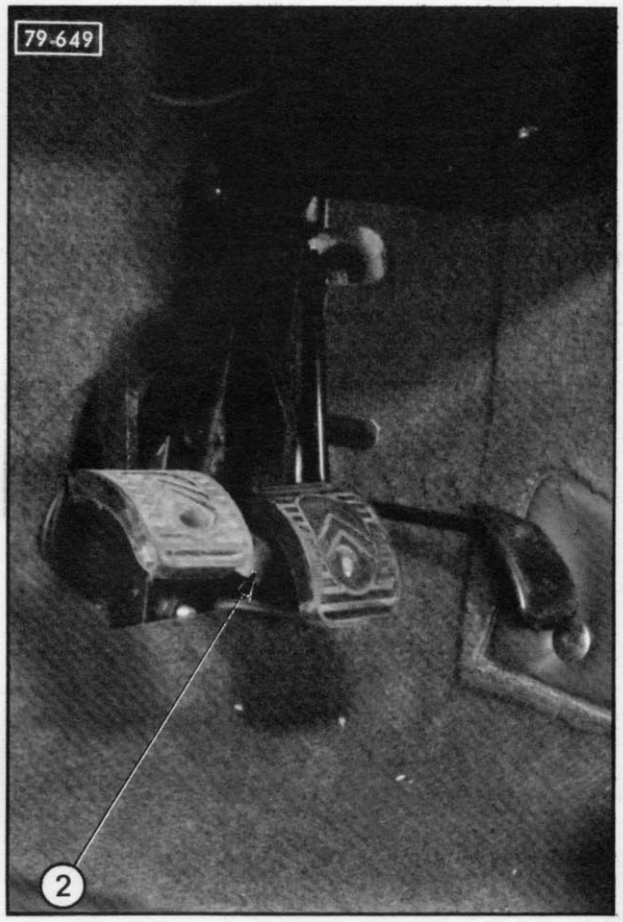
4. Test the handbrake :

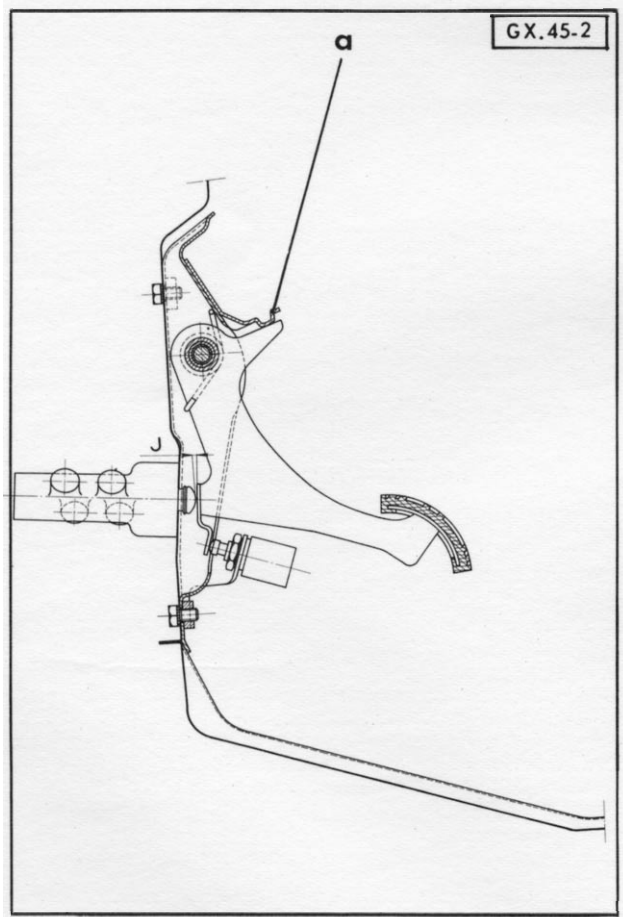
Operate the handbrake control a number of times. checking that the setting does not vary, and that the locking system functions correctly.

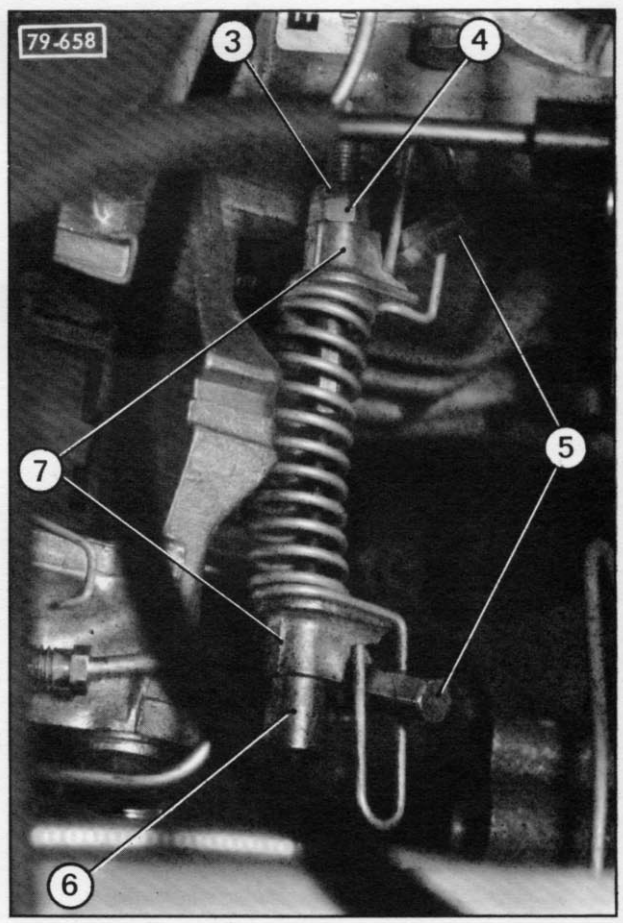
Replace the spare wheel.

Lower the vehicle to the ground.


79-659
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79-649
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GX.45-2
a
J


79-658
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REPLACING A SPIRAL PIPE

REMOVAL

1. Move the manuel height control to the high posirion. Chock the rear of the vehicle, with the wheels hanging free. Remove the wheel.

2. **Depressurize the circuit**
(See Op. *GX. 390-00,* page *9*).

3. **Remove the spiral pipe** :
Disconnect unions (1) and (3). and attachment brackets (2). (4) and (5).
Disengage the pipe from the clip (➡).
Bend the pipe and unscrew (direcrion *F1).*

FITTING

4. **Fit the spiral pipe** :
a) Bend end « a » of the pipe. position on the arm hub and screw up (direcrion *F2).*

CAUTION : Do not bend the spiral part

b) Straighten end « a » of the pipe.
Connect couplings (1) and (4) *(fit* new seals)

c) Engage the pipe in the clip (➡) (rubber prorecror)

d) Fit attachment brackets (2). (4) and (5) (rubber prorecrors).

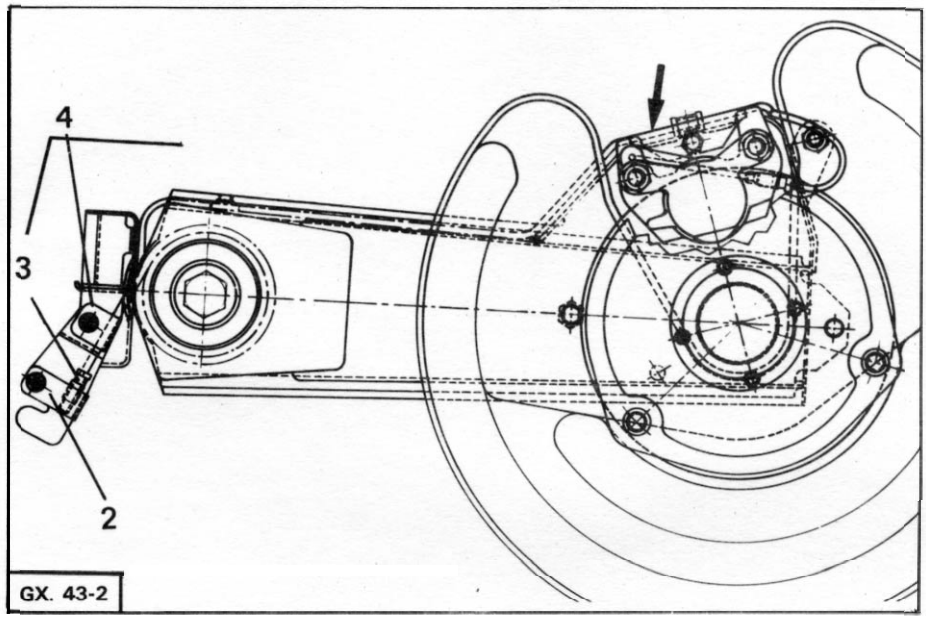
Check that the spiral pipe does not touch the arm at any pornt (minimum clearance 2 mm) (the turns of the spiral should vibrate when touched lightly).

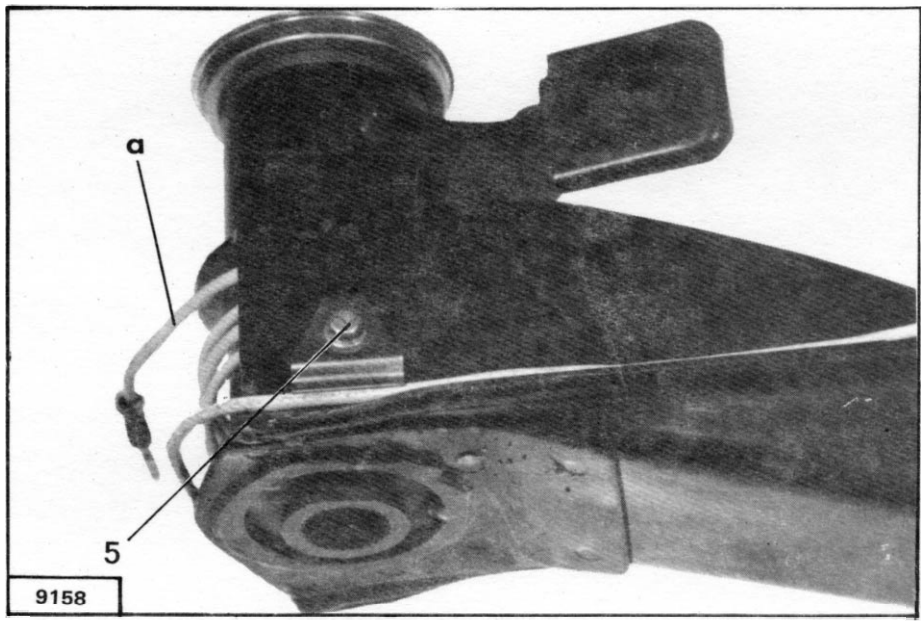
5. Do up the pressure regulator relief screw.

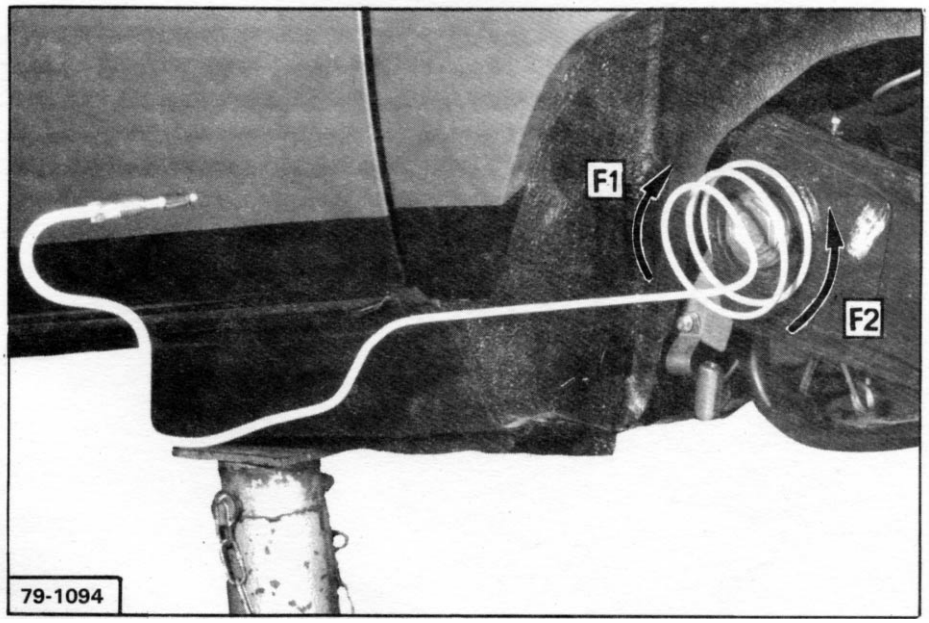
6. Start the engine.

7. Bleed the rear brake circuit (see Op. GX. *453-0).*

8. Fit the wheel and lower the vehicle to the ground.


4
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GX. 43-2


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9158


F1
F2
79-1094

LIST OF OPERATIONS IN SECTION III

Operation number	DESCRIPTION
	RECONDITIONING
GX. 100-3	Reconditioning an engine
GX. 112-3	Reconditioning a cylinder head.
GX. 311-3	Reconditioning the clutch housing of a pedal-operated clutch/torque converter clutch I. Replacing the thrust guide sleeve *(pedal operated clutch)* II. Replacing the stator sleeve of a gearbox with a torque converter
GX. 330-3	Reconditioning a gearbox (pedal-operated clutch)
♦ GX.ea. 330-3	Reconditioning a gearbox with a torque converter
GX. 372-3	Drive shaft reconditioning
GX. 391-3	Reconditioning a high pressure pump
GX. 412-3	Work on the front axle arm : I. Replacement of upper arm articulation bearings II. Replacement of lower arm « Fluid Blocs » (Anti-vibration bushes)
GX. 413-3	Reconditioning a swivel hub
GX. 422-3	Reconditioning a rear axle arm : I. Replacement of a wheel hub bearing or brake disc II. Replacing the arm hub bearings III. Replacing an anti-roll bar anchor cup
GX. 433-3	Reconditioning a suspension cylinder
GX. 442-3	Reconditioning a steering system
GX. 451-3	Reconditioning a brake unit *(front or rear)*
GX. 453-3	Work on a hydraulic brake control - Reconditioning a hydraulic brake control (brake valve)

OPERATION GX. 100-3

RECONDITIONING AN ENGINE

SPECIAL TOOLS

TOOLS SOLD

1601-T : Spark-plug spanner

1671-T : Inertial extractor
(With 12 mm end fitting)

1683-T : Oil filter spanner (dia 76 mm)

1694-T : Mandrel for fitting front crankshaft seal
(sold in kit)

1696-T : Mandrel for fitting rear cranshaft seal
(sold in kit)

1699-T : Mandrel for gudgeon pin disassembly and assembly

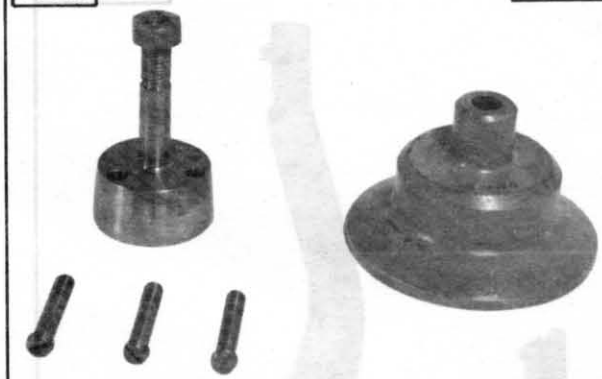
2410-T : Stud extractor tool

2473-T : Torque wrench (sold in kit 4006-T ter)

79-789 **1601-T**



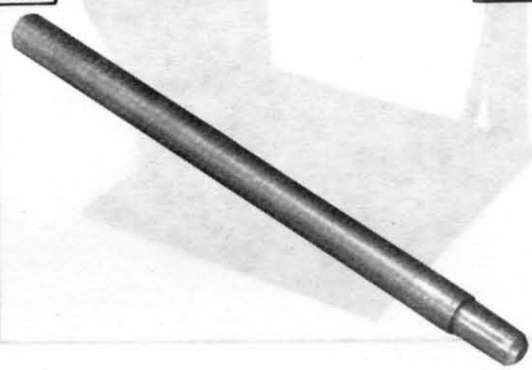
79-788 **1696-T**



76-923 **1671-T**



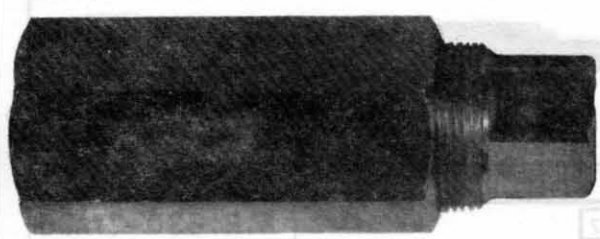
79-966 **1699-T**



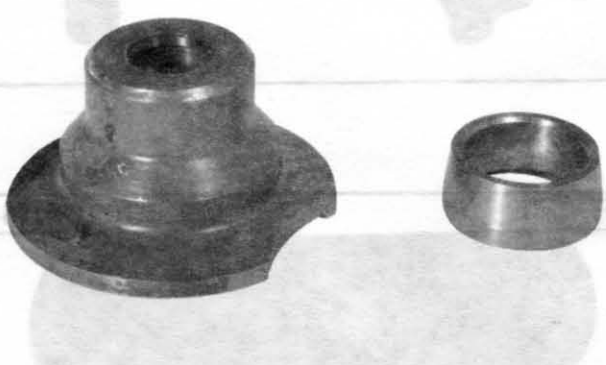
76-924 **1683-T**



12834 **2410-T**



79-769 **1694-T**



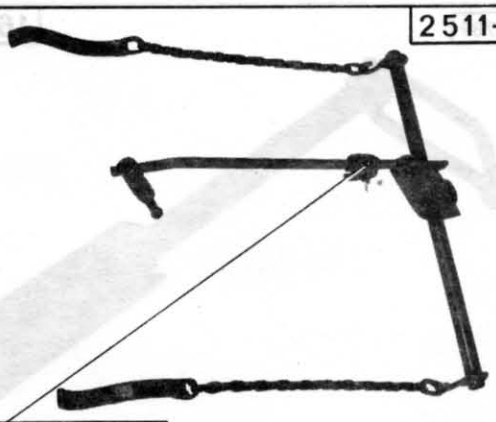
79-875 **2473-T**



79-795 **2508-T**

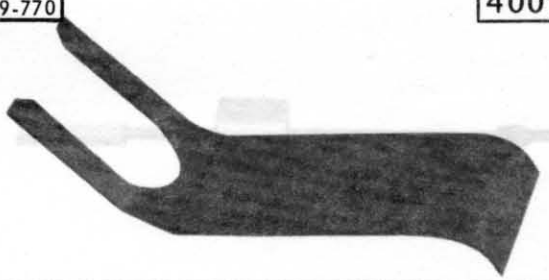


79-798 **2511-T**



MR.630-44/14

79-770 **4001-T**



76-923 **3052-T bis**



79-877 **4006-T-(D)**



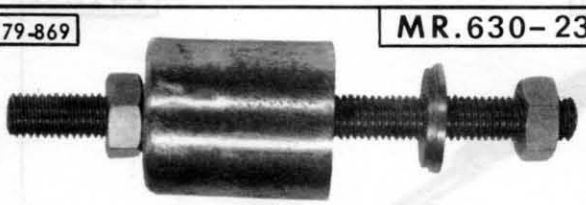
79-767 **MR.630-11/26**



79-746 **MR.630-44/14**



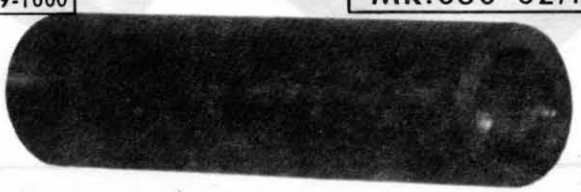
79-869 **MR.630-23/9**



79-876 **MR.630-31/85**



79-1000 **MR.630-62/14**



TOOLS SOLD (cont.)

2508 : Engine bench support.

3052-T bis : Mandrel for fitting the self lubricating bush in the crankshaft.

2511-T : Sling

4001-T : Jig for fitting oil pump

4006-T (D) : Spanner for cylinder head nuts (13 mm A/F).

TOOLS NOT SOLD

MR. 630-11/26 : Special spanner for camshaft pulleys.

MR. 630-23/9 : Small end shell extractor.

MR. 630-31/85 : Mandrel for clutch disc alignment.

MR. 630-44/14 : Safety hook for sling 2511-T

MR. 630-62/14 : Swaging tool for by-pass valve

TIGHTENING TORQUE VALUES

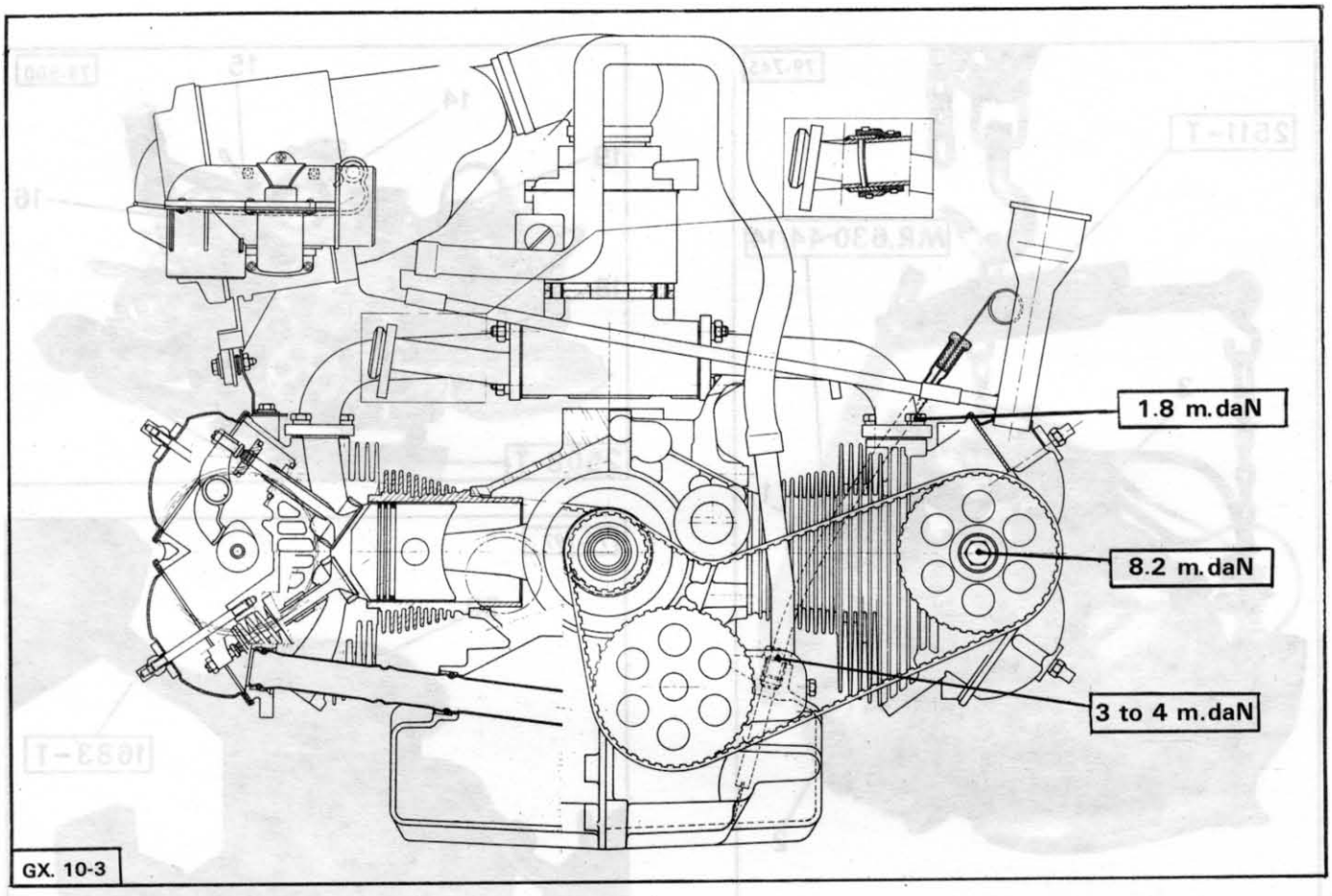
Mandatory values *(torque wrench) :*

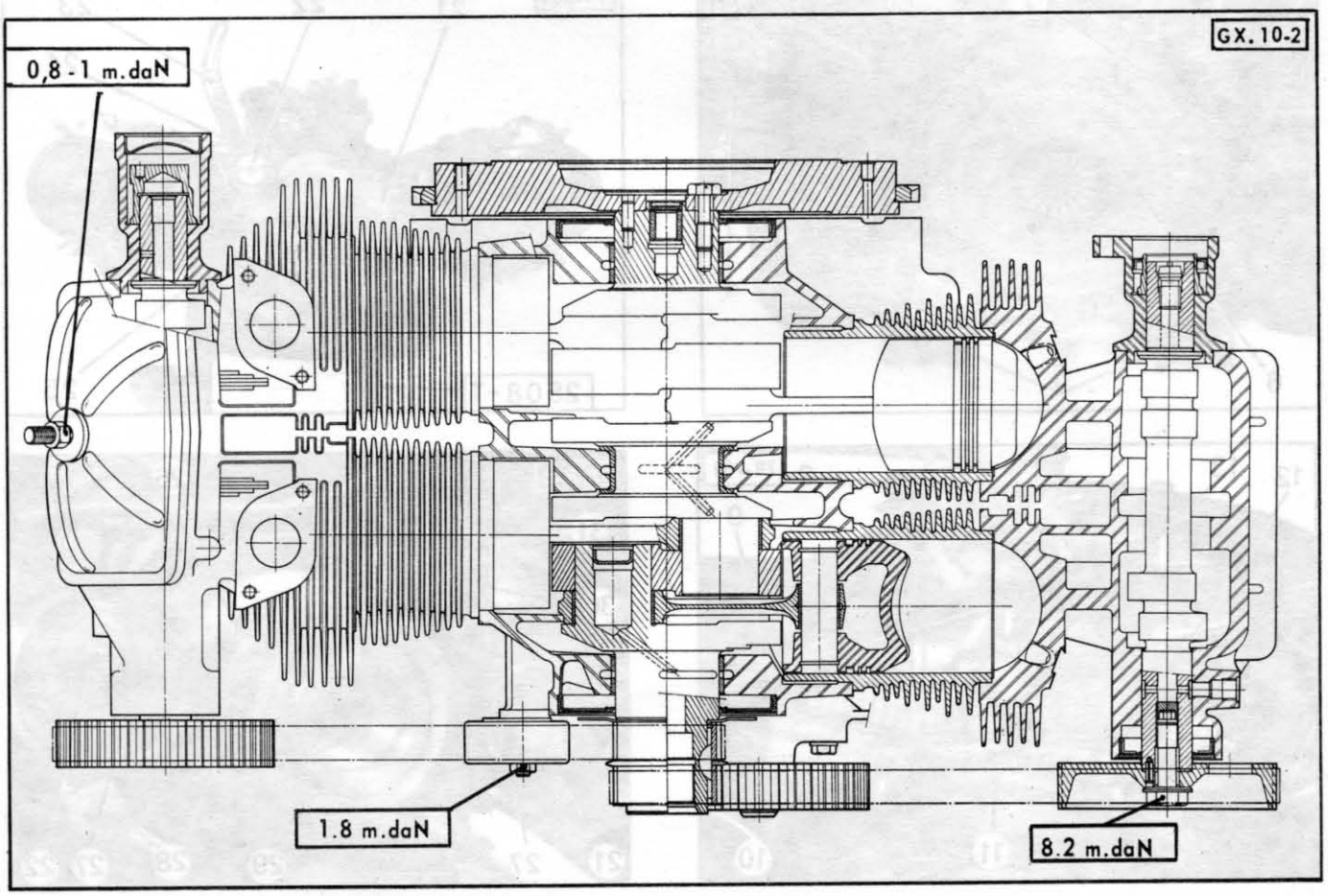
Tightening point	Torque (m.daN)
Crankshaft bearing nut :	4 to 4.5
Half-crankcase nut :	1.2 to 1.5
Cylinder head attachment screws { stage 1 :	0.8 to 1
Cylinder head attachment screws { stage 2 :	2 to 2.5
Lubrication pipe coupling screw :	1.8 to 2
Oil pressure switch :	2 to 2.5
Engine flywheel attachment screw *(grease threads and faces)*, with 3 spots of LOCTITE FORMETANCH between crankshaft and engine flywheel :	6.4 to 6.9
Clutch mechanism attachment screw :	1.8
Elastic mount attachment screw :	5 to 6
Starting dog lock-nut (grease face) :	22 to 24
Rocker arm shaft plug :	1.7 to 1.8

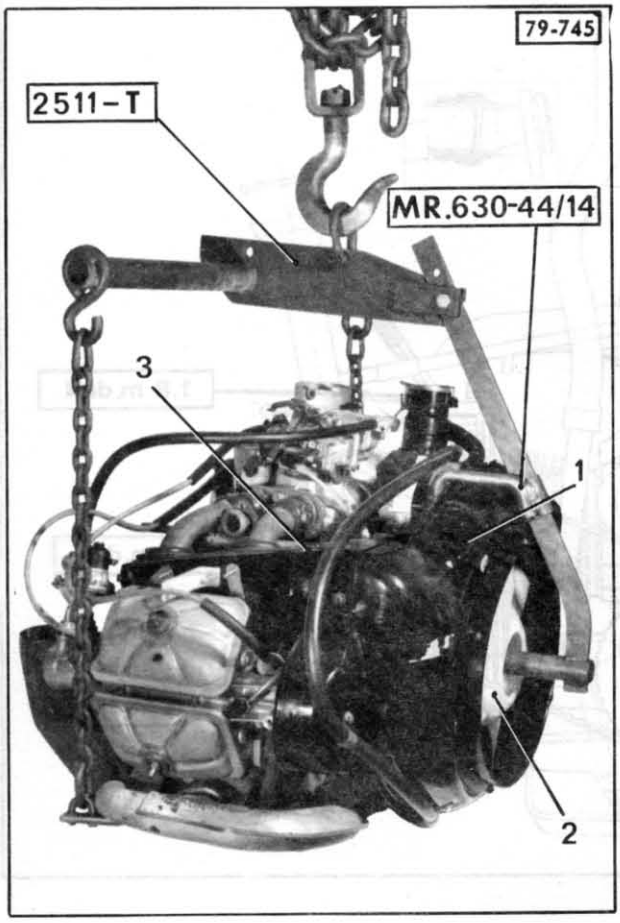
Recommended values :

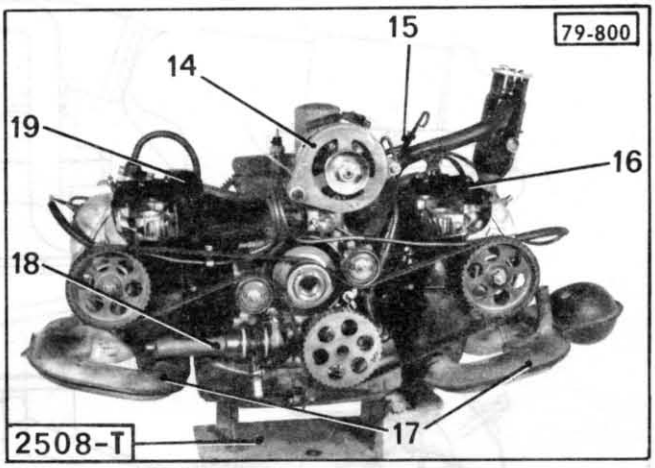
Tightening point	Torque (m.daN)
Drain plug :	3.5 to 4.5
Thermal switch :	2.5 to 3
Oil pump bearing screw :	1.5 to 1.8
Inlet manifold attachment screw :	1.8
Cylinder head stud insertion (LOCTITE FRENETANCH) :	0.8 to 1
Oil filter screw :	1.4
Camshaft bearing nut :	1.5 to 1.8
Lubrication circuit plug (LOCTITE FRENETANCH) :	3.5 to 5
Camshaft bearing stud insertion (LOCTITE FRENETANCH) :	0.3 to 0.5
Exhaust flange nut :	1.5
Tensioner roller stud insertion (LOCTITE FRENETANCH) :	0.3 to 0.5
Filter cartridge attachment insert (LOCTITE FRENETANCH) :	1.3 to 2.2
Belt tensioner roller nut :	1.8
Oil cooler attachment screw :	1.8

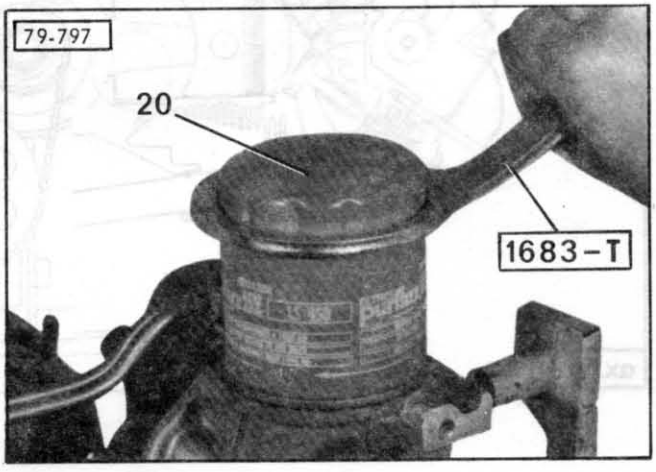
Filter cartridge : bring the cartridge into contact with the crankcase, and do up half or three-quarters of a turn *(oil the seal)*.
Seal tightness between half-crankcases (LOCTITE FORMETANCH)

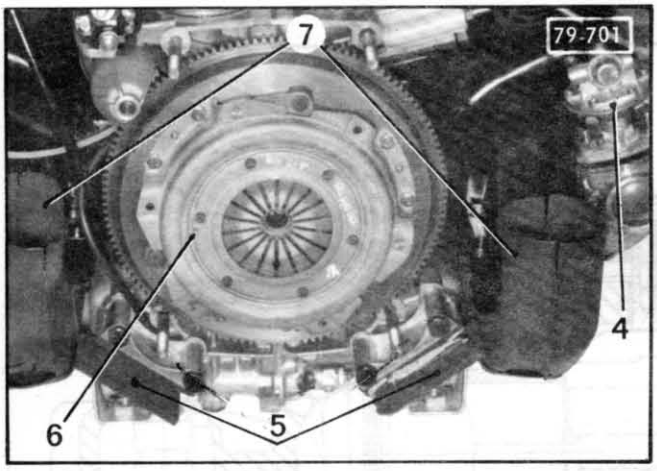

1.8 m.daN
8.2 m.daN
3 to 4 m.daN
GX. 10-3

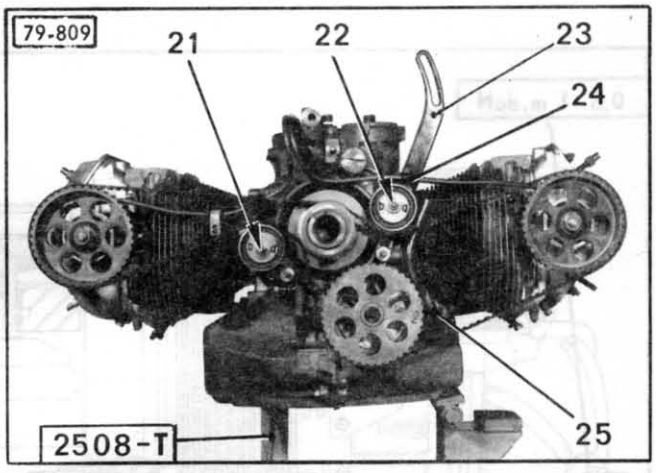

GX. 10-2
0,8 - 1 m.daN
1.8 m.daN
8.2 m.daN

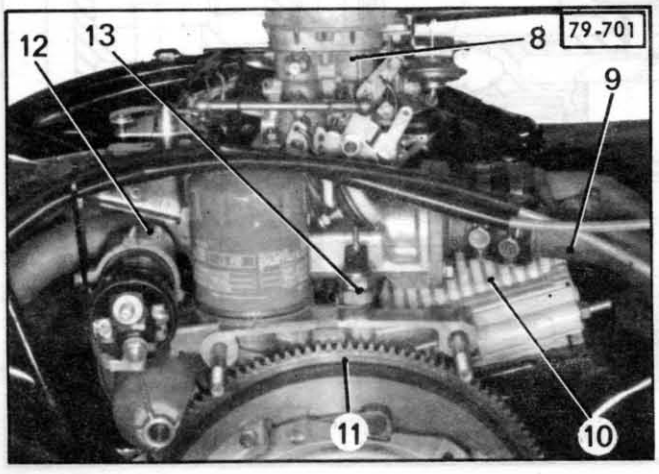

79-745
2511-T
MR.630-44/14
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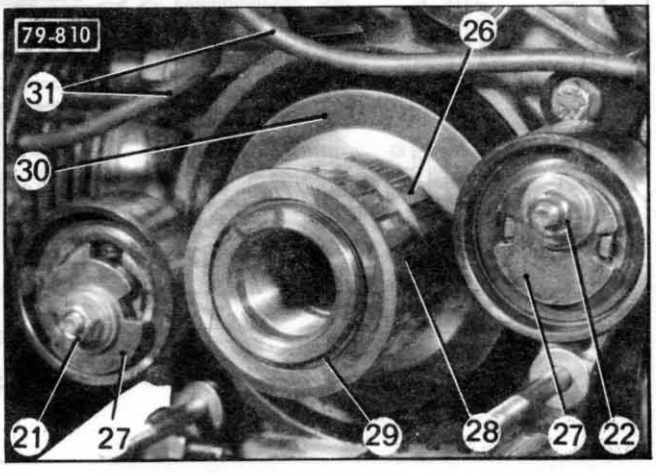

79-800
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2508-T


79-797
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1683-T


79-701
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79-809
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2508-T
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79-701
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79-810
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RECONDITIONING AN ENGINE

I - DISMANTLING

1. Remove :
- clutch (6),
- elastic mounts (5).

2. Place the engine on support 2508-T.

3. Drain the engine oil

4. Remove :
- HP pipe,
- cooling duct covers (3),
- carburettor (8) and spacer, or carburettor/inlet and pipes (9),
- oil cooler (10),
- air cooler seal,
- starter motor (12),
- starting dog,
- fan (2),
- alternator belt,
- air manifold (1) and spacers,
- distributor, with protector and spark-plug leads,
- spark plugs,
- fuel pump (4) and spacer,
- alternator (4),
- oil pressure switch (13),
- HP pump (18),
- exhaust manifold (17),
- engine flywheel (11),
- cooling circuit pipes (16) and (19),
- heater ducts (7),
- oil dipstick guide tube (15),
- breather (25).

5. Extract oil cartridge (20), using tool 1683-T.

6. Remove the camshaft drive belts :
Slacken off nuts (21) and (22), compress tensioner rollers and disengage the belts.
Extract snap-ring (29) and disengage pinions (26) and (28) from the crankshaft.
Remove the key and protector plate (30).

7. Remove the tensioner rollers :
Undo nuts (21) and (22).
Remove the tensioner rollers *(keeping thrust plates (27))*.

8. Remove lubrication pipe (31) :
Undo the union screws on the left and right cylinder heads, and bracket (24).

9. Remove alternator tension device (23).

10. Remove the cam shaft pulleys :
Lock pulley (2) with tool MR. 630-11/26 .
Undo the nuts, and remove camshaft pulley (2).

11. Remove cylinder head covers (1).

12. Remove the cylinder heads :
Undo attachment nuts (4), (5) and (7) for each cylinder head.
Disengage :
- cylinder heads,
- oil return pipes (6),
- pipes (3) under cylinder.

13. Remove the cylinders :
Remove the 4 cylinders.

If the cylinders are to be re-used, index their respective positions.
Fit pieces of hose A on the cylinder head studs, to avoid scoring the pistons.

14. Remove the pistons :
- Remove the gudgeon pin stop rings located towards the outside of the engine at « a » and « b ».
- Extract the gudgeon pins unsing mandrel 1699-T
- Disengage the pistons **(place in their corresponding cylinders in the case of reassembly).**
- Remove pieces of hose **A.**

15. Extract the piston rings.

16. Remove the oil pump drive :
Undo five attachment screws (8).

Extract the pump drive, taking purchase on two diametrically opposed points on the pulley, to avoid damaging the pump bearings.

Extract O-ring seal (9).

17. Remove the HP pump control rod :
Disengage rod (10).

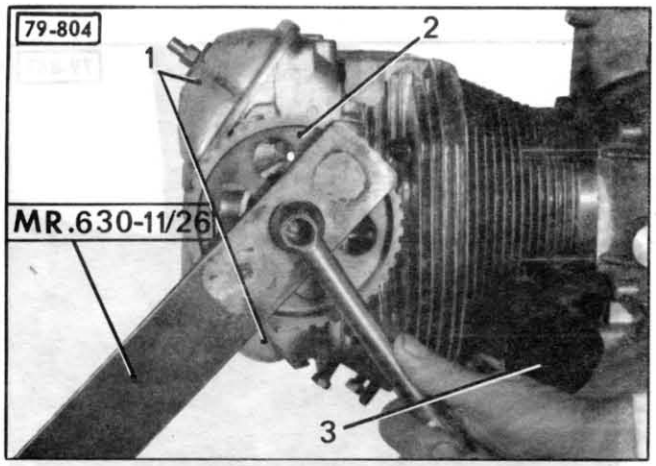
18. Remove the oil pump pinions :
Remove :
- face plate (11),
- pinions (12) and (13).

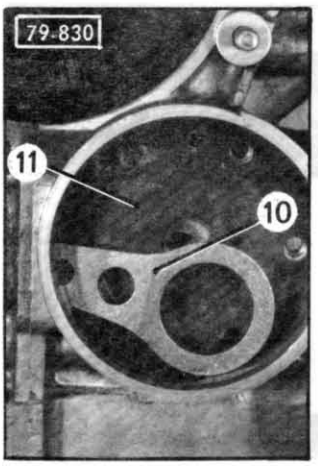
19. Position the engine with the left half-crankcase downwards.

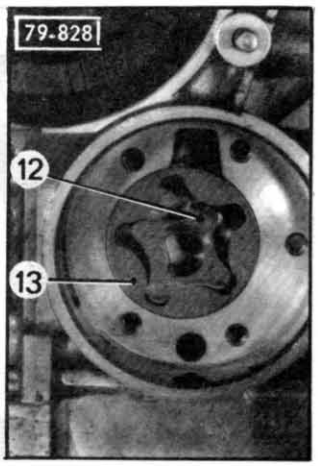
20. Remove the right half-crankcase :
Undo :
- nuts (14),
- half-crankcases assembly nuts (➡).

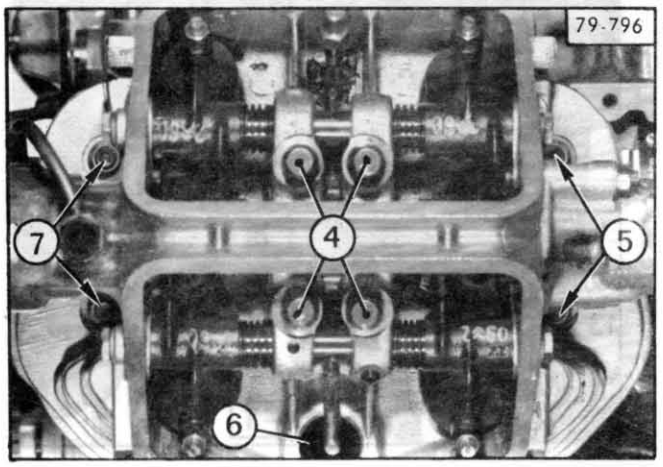
Disengage right half-crankcase (15) and remove the half-bearings.

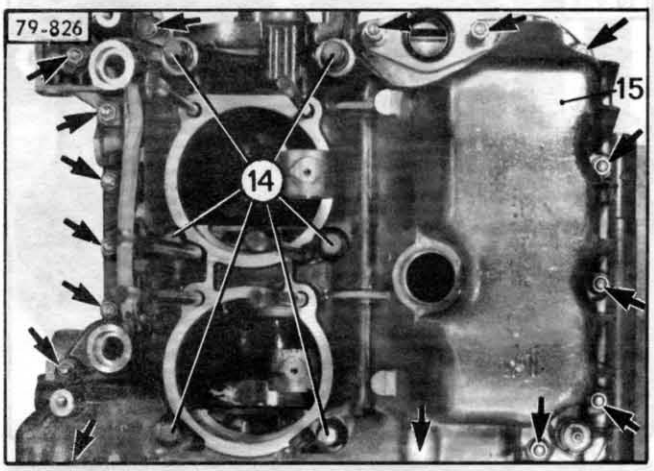
21. Remove the crankshaft :
Disengage the front and rear seal rings.
Remove :
- crankshaft/rod assembly (16),
- half-bearings (17), (18) and (19).

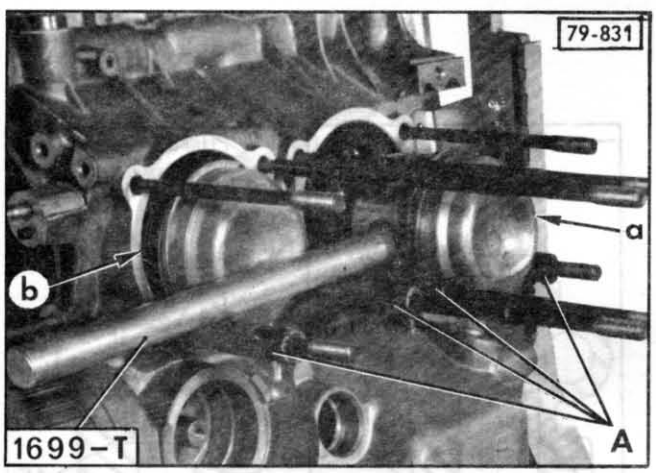

79-804
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MR.630-11/26
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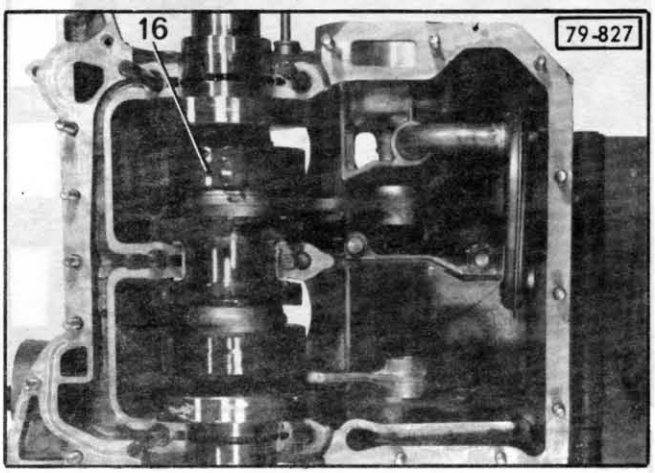

79-830
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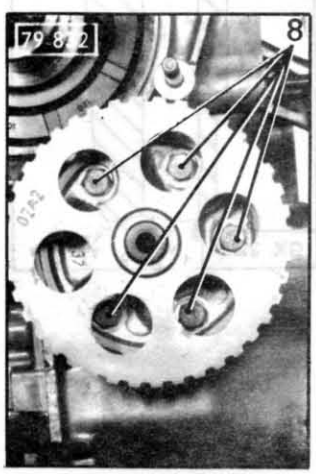

79-828
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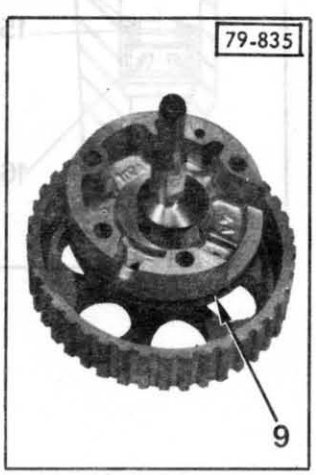

79-796
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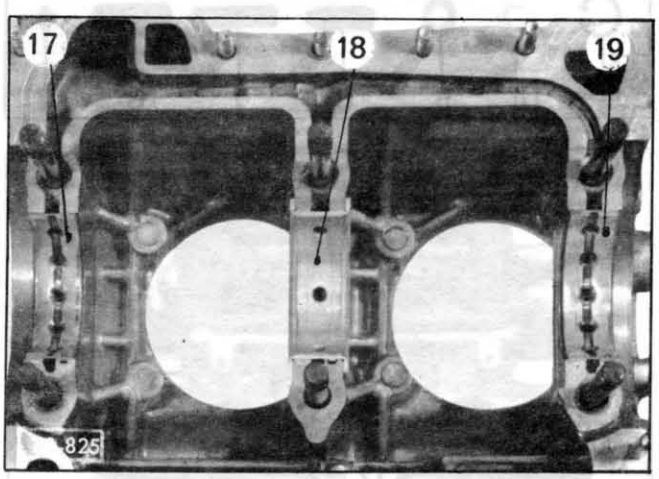

79-826
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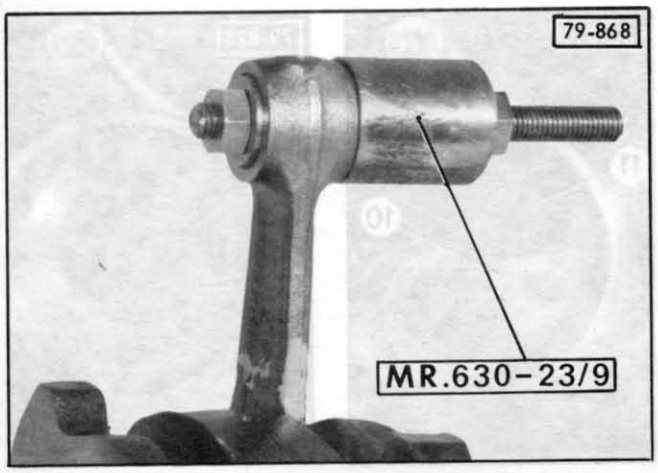

79-831
a
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1699-T
A

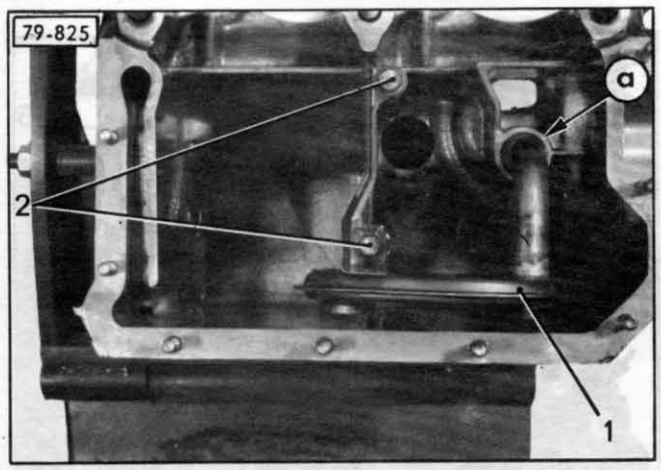

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79-827

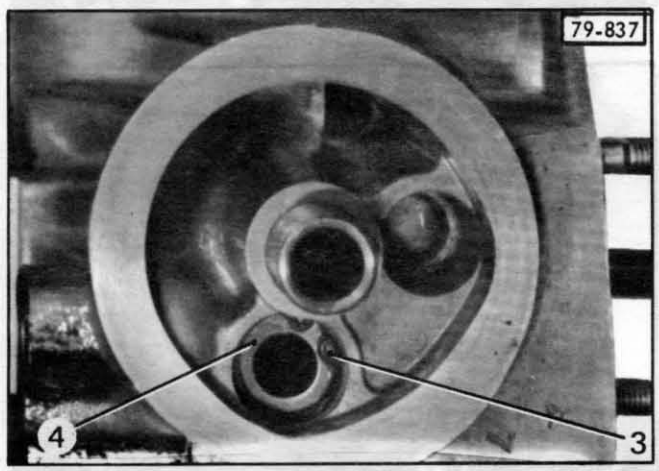

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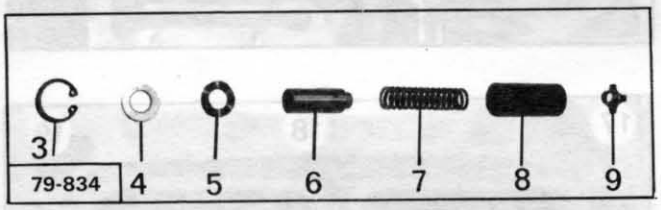

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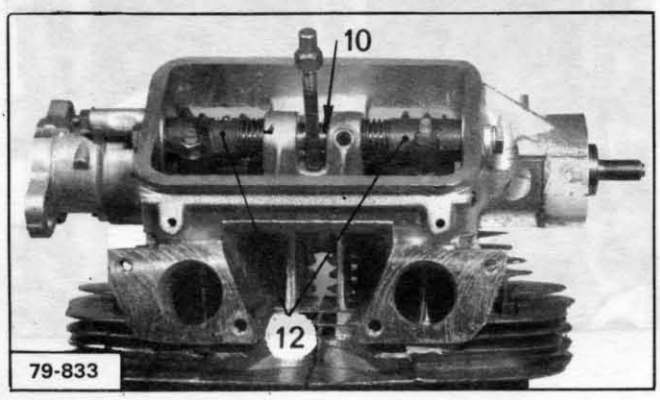

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825

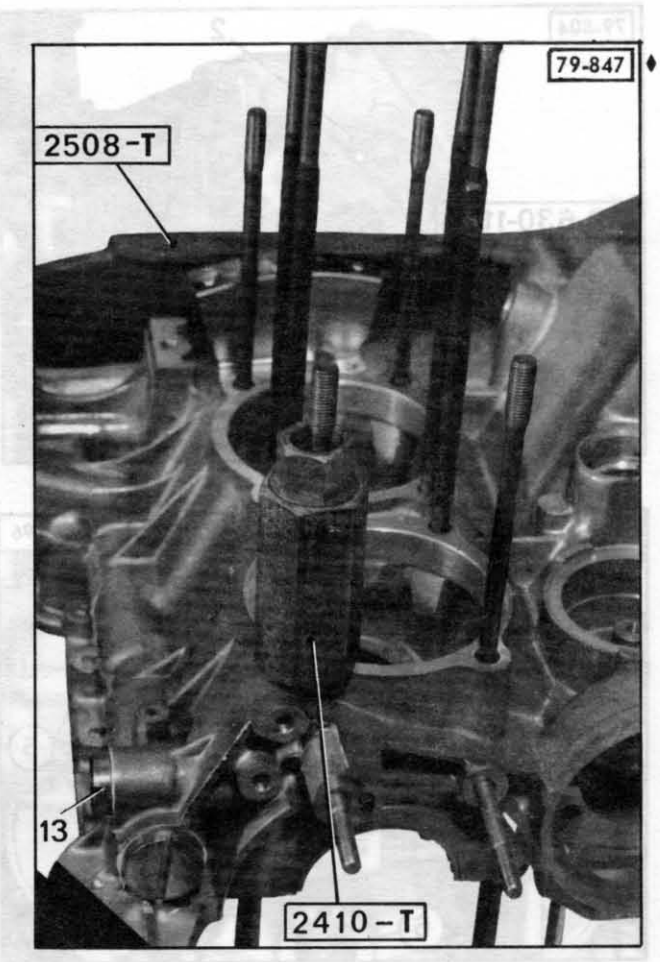

79-868
MR.630-23/9

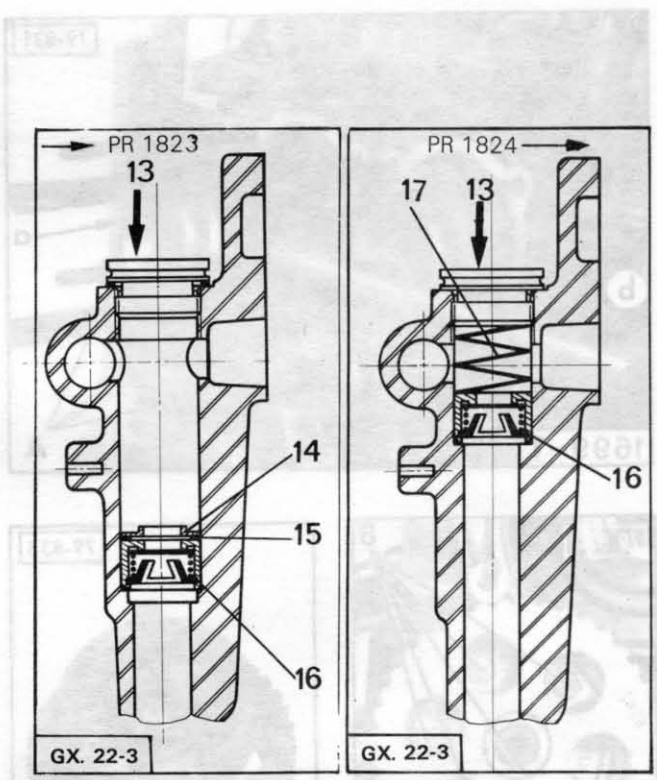

79-825
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79-847
2508-T
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2410-T


PR 1823
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GX. 22-3
PR 1824
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GX. 22-3

22. Remove the small end shells, if necessary.

This delicate operation is not recommended, and can only be executed in a specialist workshop.
Use extractor tool MR. 630-23/9 .
See preparation on page 14.
Prepare small end of rods.

23. Remove the suction strainer :
Undo screw (2).
To facilitate removal, heat zone « a » of the crankcase surrounding the strainer pipe.
Disengage strainer (1).
Remove the pipe seal.

24. Remove the discharge valve :
Remove :
- circlip (3),
- washer (4),
- spring washer (5),
- piston (6),
- spring (7),
- sleeve (8),
- spring cup (9).

25. Extract the front and rear lubrication circuit plugs, and oil thermal switch.
If necessary :
→ *11/81 :* R.P. No. 1824
- plug (13),
- cup (14),
- washer (15) and valve (16).
- *11/81* → *:* R.P. No. 1824
- plug (13),
- spring (17) and valve (16).

NOTE : Fitting the new arrangement on a former crankcase is prohibited.

26. Remove the left half-crankcase from support 2508-T .

For replacement of the half-crankcases :
- **Extract the studs.**
- **Use tool 2410-T for the cylinder head studs. Position the tool at the base of the cylinder head.**

27. Strip down the cylinder heads (if necessary) :
Remove :
- rocker arm shafts (10),
- rocker arms (12),
- camshafts (11),
- valve springs,
- valves,
- seals.

28. Clean the parts :
→ *6/82 :* R.P. No. 2032

a) To ensure seal-tightness of the front and rear bearing blocks, the crankshaft incorporates a microturbine in each seal contact zone.

Do not use emery cloth on this zone, at the risk of causing an oil leak.

6/82 → *:* R.P. No. 2032

b) The seal-tightness of the front and rear bearing blocks is ensured by means of a microturbine on the lower lip of each seal.

Markings on seals for mandatory fittings :
Red inner lip, with the words « côté distribution » *(timing end).*
Brown inner lip, with the words « côté volant » *(flywheel end).*

NOTE :
- **Fitting a former seal (with no microturbine) on a new crankshaft (with no microturbine) is PROHIBITED.**
- **Fitting a new seal (with a microturbine) on a former crankshaft (with a microturbine) is permissible.**

c) For efficient cleaning of the oil cooler, dip it in a bath of cellulose thinner, for about one hour. Drain and dry off with a compressed air jet.

When replacing a con-rod, also replace the oil cooler and oil suction strainer.

II - PREPARATION

1. Prepare the cylinder heads :

a) If necessary, grind the valves and valve seats *(see Op. GX. 112-3)*

b) Lap the valves.

c) Fit the valves and valve springs.

d) Fit the camshafts.

e) Fit the seals.

f) Fit the rocker arms and rocker arm shafts.

2. Prepare the small ends (If necessary) :

Fit the small end shells.

NOTE :

This operation can only be carried out in a specialist workshop.

Shells sold by the Replacement Parts Department have a bore ground to a size approx. 0.05 mm less than the final dimension required.

Blank off holes « a » in the shell with grease or tallow.

Fit the prepared shell (using extractor tool MR. 630-23/9) so that the axis of the shell lubrication holes is perpendicular to the con-rod axis.

Ream the shell.

This delicate operation must be carried out with the greatest care.

The bore diameter to be obtained is :

$$22.005 \begin{matrix} +0.011 \\ -0.006 \end{matrix} \text{ mm}$$

In the absence of a plug gauge, use the new shaft to check bore diameter.

Blow compressed air through hole « b », to drive out grease and swarf.

Clean the shell bore.

3. Prepare the pistons :

One or two cylinder/piston sets cannot be replaced separately. The difference in weight between two pistons must not exceed a few grams, and the Replacement Parts Department only sells sets of four cylinder/piston pairs, which must not then be used separately.

4. Fit the piston rings :

Compression ring (1), scraper ring (2) and scraper-collector (3) are marked « TOP » (or « HAUT » or « H »), engraved on one of the faces close to the cut (Fig. **A**).

On assembly, ensure that this mark is oriented towards the top of the piston.

The groove in the scraper ring is equipped with splined pin (5). The grooves in the seal and compression rings have half-moons (4).

Badly fitted piston rings cause high consumption.

U-FLEX ring (3) Fig. B :
The U-FLEX ring, when free, has a bigger diameter than that of the piston, requiring the use of a piston ring collar.

If the same pistons are re-used, only replacing the piston rings, carefully clean the ring grooves, using a piece of worn piston ring (cut and ground).

If excessive play is found, the piston cannot be re-used.

5. Prepare the cylinders :

There are two classes of cylinder (different height), identified by paint spots of different colours (red or green). The two cylinders on the SAME SIDE of the engine must have the SAME COLOUR CODE (identical class).

Arrange the cylinders so that vanes **« e »** are positioned face to face after assembly on the engine.

6. Fit the pistons in the cylinders :

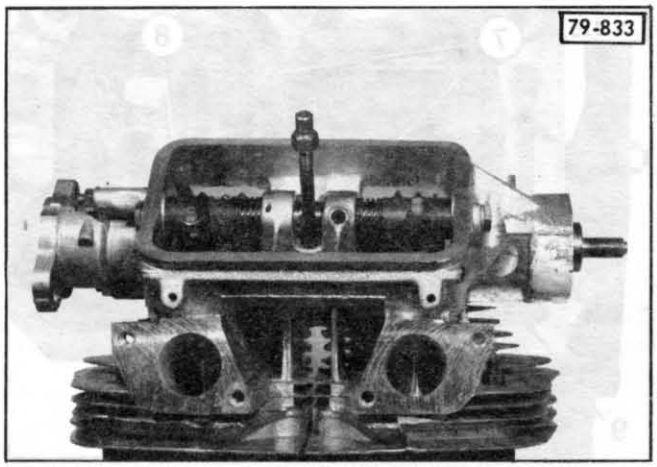
a) Assembly direction (1130 cc) :

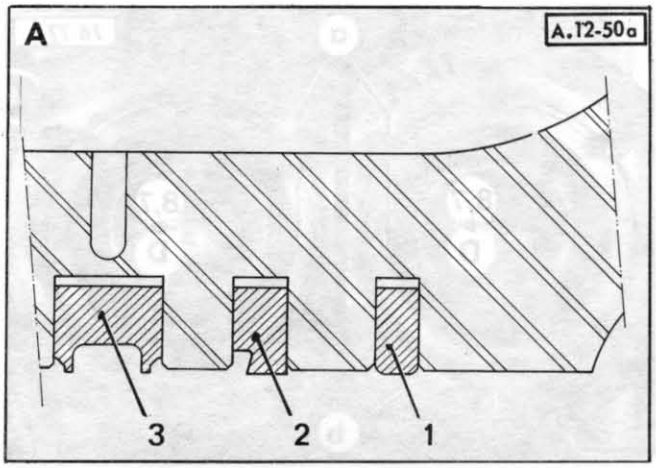
Correct piston position is essential.

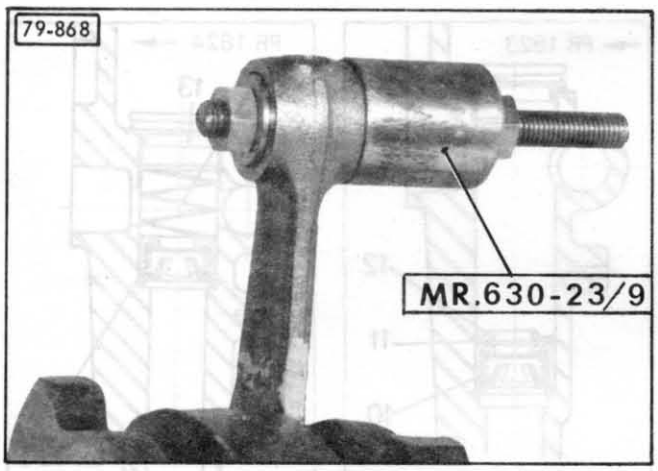
After fitting, the figure and letter « D » **(right)** or « G » **(left)** must be legible from the top. The arrow must point towards the **timing gear side** and the splined pin must point **upwards.**

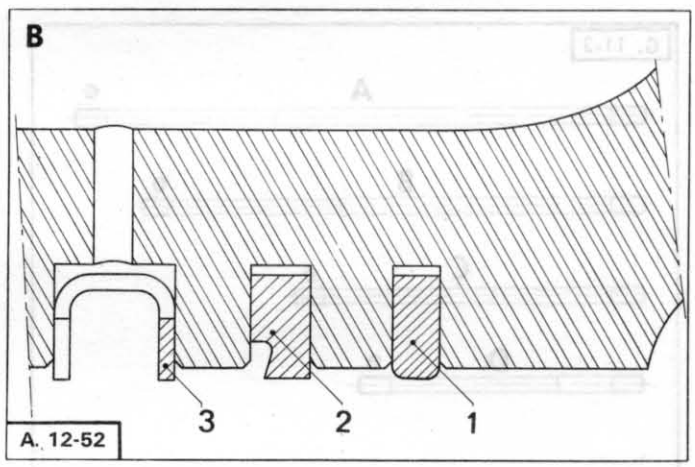
b) 1300 cc :

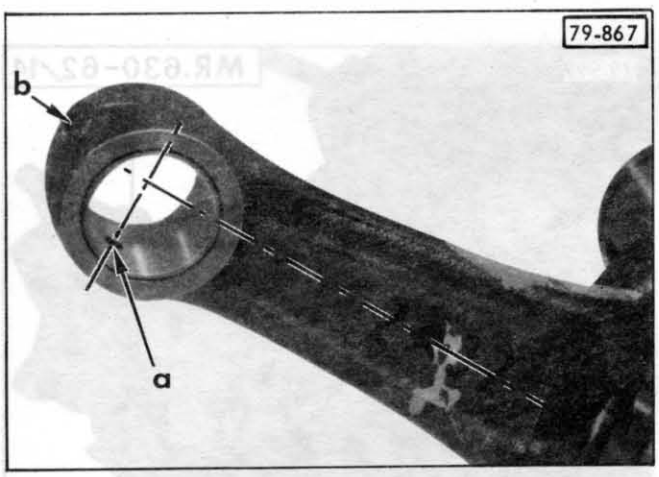
The gudgeon pin is no longer offset in the piston. The stop pin at « c » for piston ring No. 2 must always point upwards. Compression ratio value 8.7 at « d » must be legible from the top.

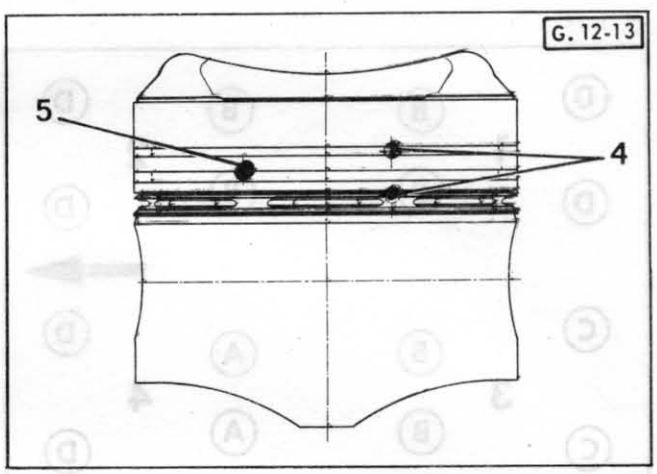

79-833

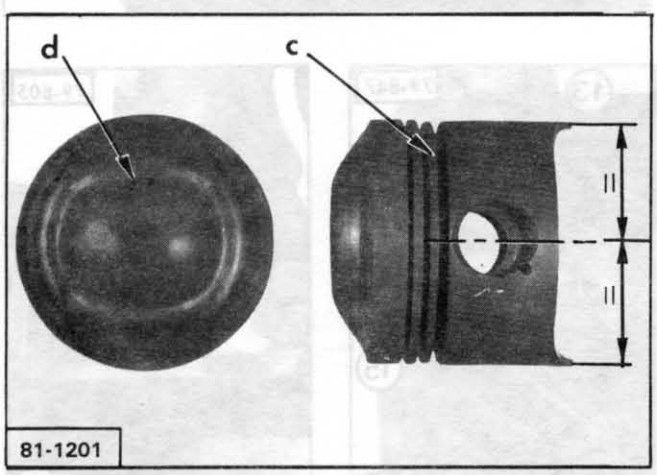

A
A.12-50a
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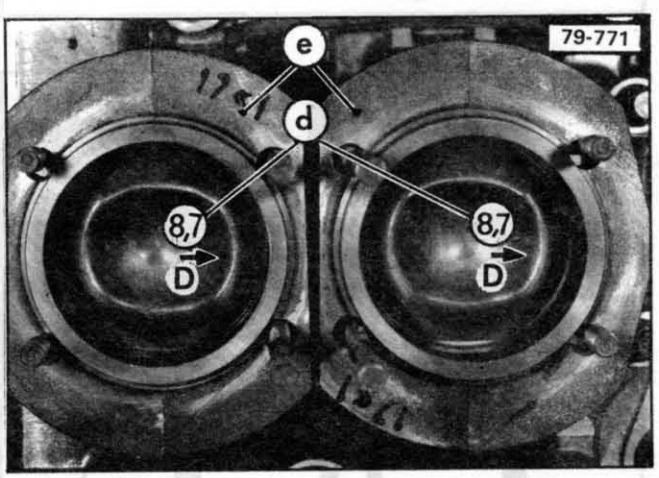

79-868
MR.630-23/9

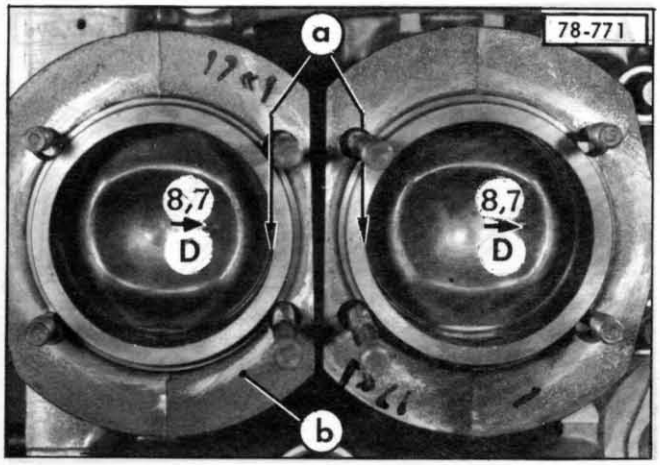

B
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A. 12-52

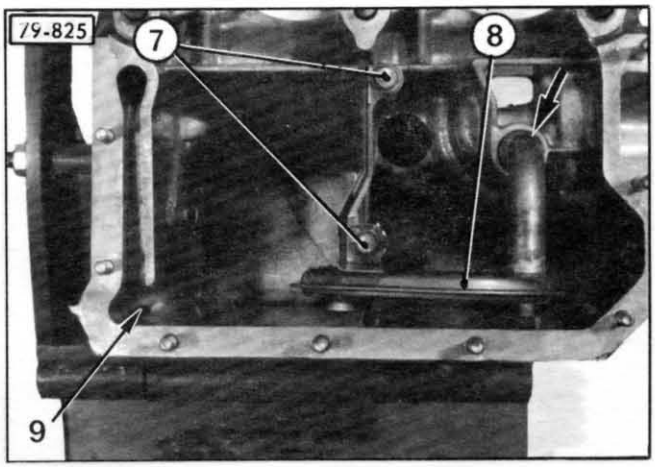

79-867
b
a

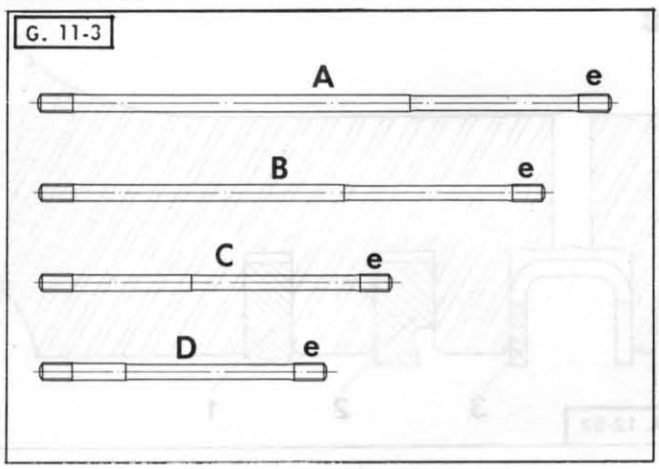

G. 12-13
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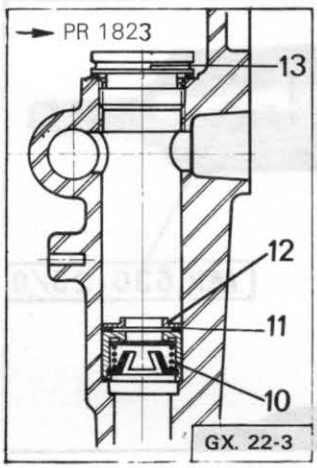

d
c
II
II
81-1201

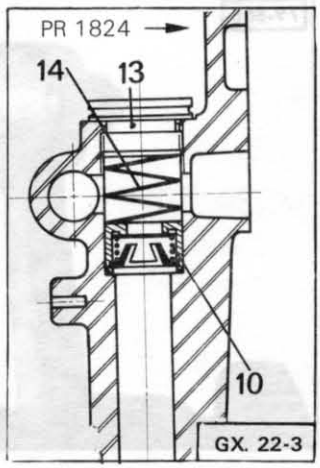

79-771
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D


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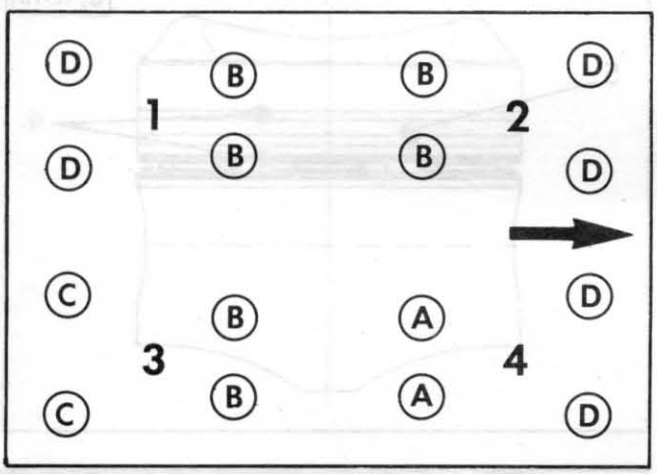

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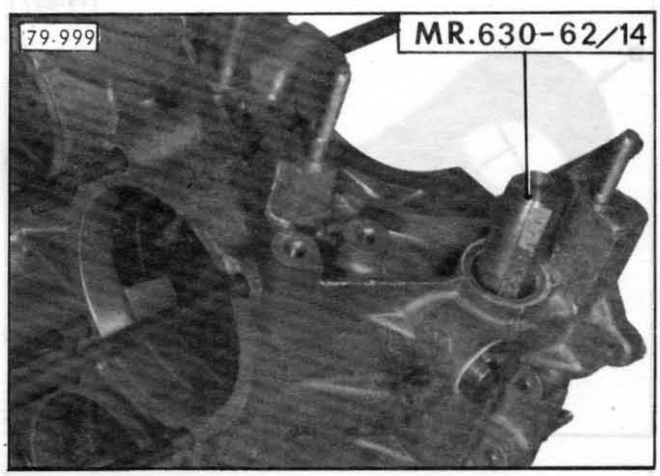

G. 11-3
A
e
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C
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D
e

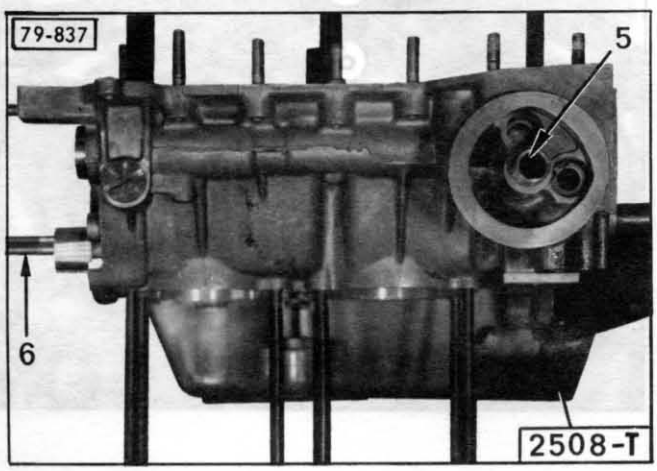

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GX. 22-3

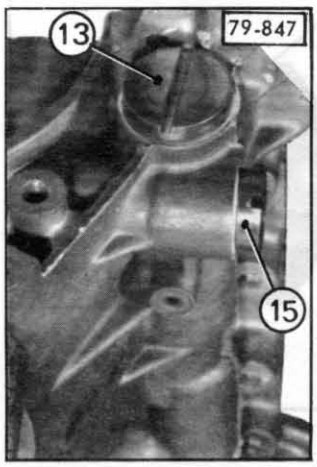

PR 1824
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GX. 22-3

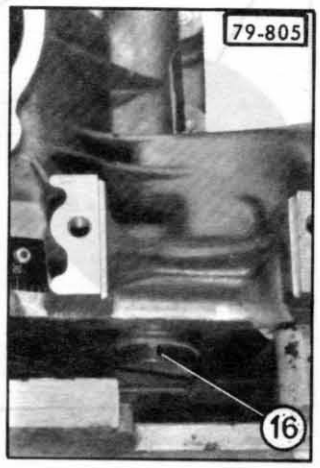
G. 11-3


D
B
B
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B
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79-999
MR.630-62/14


79-837
5
6
2508-T


13
79-847
15


79-805
16

b) Before fitting the pistons :
Fit the gudgeon pin stop ring, which should be located at « a » on vane side « b ».
Position the ring gaps at 120° to each other.

c) Fit the pistons in the corresponding cylinders (indexed on dismantling).
Use a piston ring collar.
Engage each piston in the lower part of the cylinder.

d) Oil the gudgeon pin, and engage in the boss, without the stop ring (providing for passage of the small end).

7. Prepare the oil pump :
Check that the contact faces of the pump body show no traces of impact damage or scoring (engine end and cover end).

8. Replace the starter ring (if necessary) :
Drive out the starter ring using a riveting hammer.
Clean the contact surface of the crown wheel with the flywheel.
Heat the starter ring with a blow-torch, turning constantly to ensure even expansion (heat to approx. 200 to 250° C, until the metal is pale yellow in colour).
Position the new crown wheel **with the unmachined face towards the flywheel shoulder.**
Check the starter-ring run-out (max. 0.3 mm).

9. Prepare the distributor :
Check the condition of the points.
Replace if necessary.

10. Prepare the two crankcase halves :
a) Check the condition of the following :
- threadings,
- sealing surfaces (absence of impact damage and dirt).

b) For replacement of the two crankcase halves, fit :
- engine/gearbox coupling studs,
- cylinder head attachment studs, following the **arrangement indicated on the opposite page**

End « e » (shorter threaded portion) is inserted in the crankcase.

End « e » of each stud inserted in the right crankcase must be coated with LOCTITE FORMETANCH

Stud tightening torque : 0.8 to 1 m.daN

c) *The following parts must be fitted with LOCTITE FRENETANCH.*
- tensioner roller attachment stud (6),
  Tightening torque : 0.3 to 0.5 m.daN
- filter cartridge attachment insert (5),
  Tightening torque : 1.3 to 2.2 m.daN

d) Fit the drain plug *(with new seal)*
Tightening torque : 3.5 to 4.5 m.daN

III - FITTING

1. Place the left half-housing on support 2508-T.

2. Fit the oil suction strainer :
Fit the seal on the suction pipe of strainer (8).
Coat the end of this pipe with LOCTITE FRENETANCH and engage in its recess (➔) in the crankcase.
Tightening strainer attachment screws (7) to 1.4 m.daN

3. Fit the cooler by-pass valve :
Fit :
a) ⟶ *11/81 :*
- valve (10),
- washer (11),

Using tool MR. 630-62/14 , insert cup (12), striking moderately hard to fix the cup in the crankcase.

b) *11/81* ⟶ :
- valve (10),
- spring (14).

Fitting that new arrangement on a former crankcase is prohibited.

Coat the threads of valve plug (13) with LOCTITE FRENETANCH and insert (copper seal).
Tighten to 3.5 to 5 m.daN.

4. Fit the lubrication circuit plugs (14) and (15) :
Coat the plugs threads with LOCTITE FRENETANCH and insert (copper seal).
Tighten from 3.5 to 5 m.daN.

5. Fit the crankshaft :

a) Position shaft line half-bearings (1) in the left and right half-housings.
Check that the housing bores are clean, and that the half-bearing pins are correctly engaged in notches « a ».
Oil the half-bearings.

b) Fit the crankshaft :
Using a set of feeler gauges, check the lateral play of the crankshaft on the central bearing.
The value measured should be :
0.09 to 0.20 mm
(Play not adjustable)

6. Fit the right crankcase half :

Coat the sealing faces of the two crankcase halves with LOCTITE FORMETANCH.
Position the right crankcase half on the left crankcase half.
Fit bearing block stud attachment nuts (2) *(copper seal).*
Fit the crankcase-halves attachments (➔) *(flat washers).*

Tighten nuts (2) from 4 to 4.5 m.daN
Tighten nuts (➔) to 1.2 to 1.5 m.daN

7. Fit the front and rear bearing seals :

Fit new seals following any disassembly operation. Never fit the seals before assembling the two crankcase halves, at the risk of pinching the seals and causing an oil leak. Only fit seals supplied by the Replacement Parts Department.

NOTE : For the appropriate seal, refer to page 13, paragraph 28.

a) Oil the lip of rear seal (3), and insert using tool 1696-T.

b) Oil the lip of front seal (4) and insert using tool 1694-T and the starting dog.

8. If necessary replace the drive shaft alignment bush in the crankshaft :

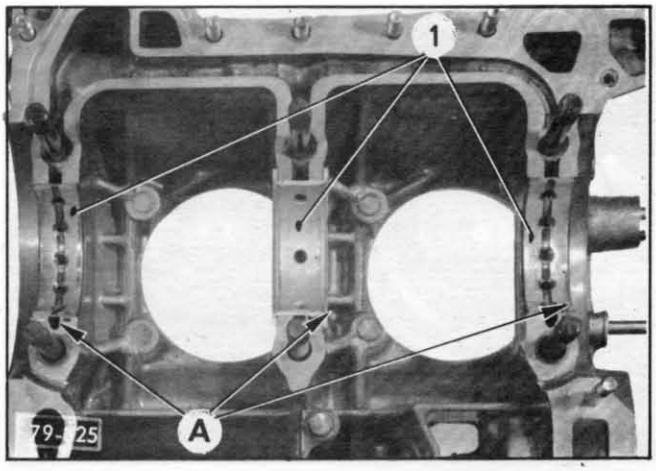
a) Extract the bush using tool 1671-T (fitted with 12 mm expandable head).

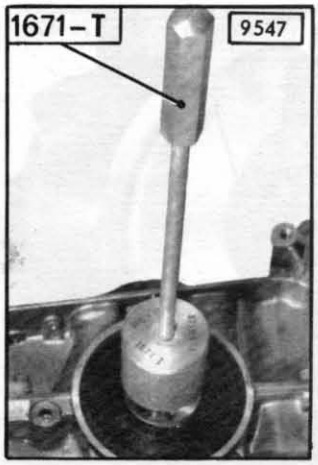
b) Fit the bush :
Soak the bush for about one hour in engine oil at ambient temperature.
Allow to drain.
Fit alignment bush (5). *The bush should be positioned 5 mm back from the crankshaft shoulder*
Use mandrel 3052-T bis to obtain this condition (after fitting the bush, disengage the mandrel by means of central screw « b »).

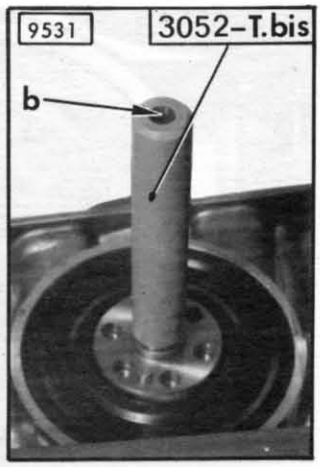
c) Fit seal (6).
Position the seal so that the face carrying the manufacturer's name and reference faces the outside of the engine.

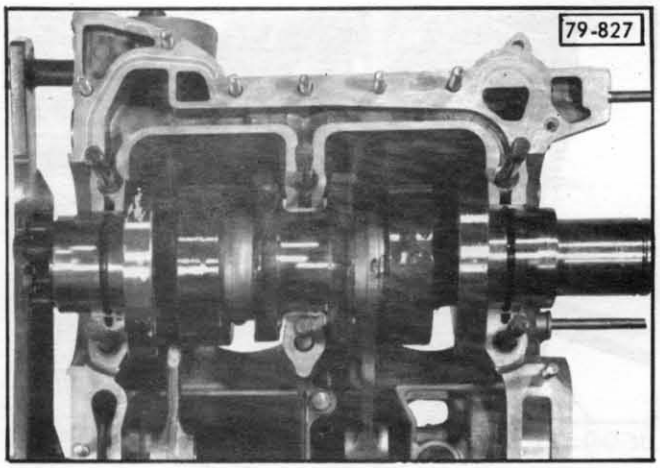
9. Fit the discharge valve :

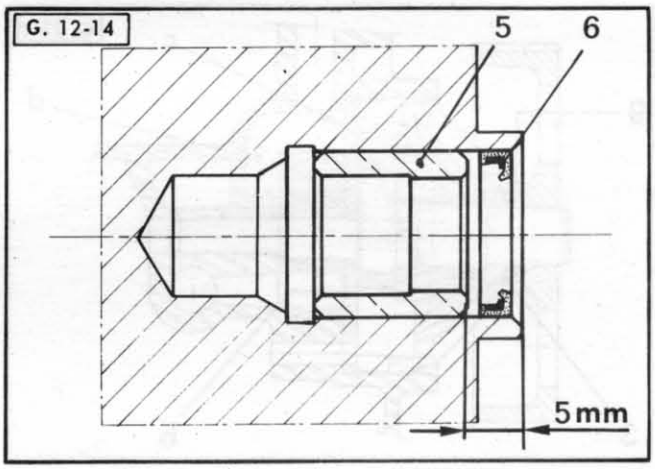
Fit :
- cup (13) *(with ears « c » in bottom of recess),*
- sleeve (12),
- spring (11),
- piston (10) (first oiling guide « d » at spring end),
- spring washer (9),
- washer (8),
- circlip (7).

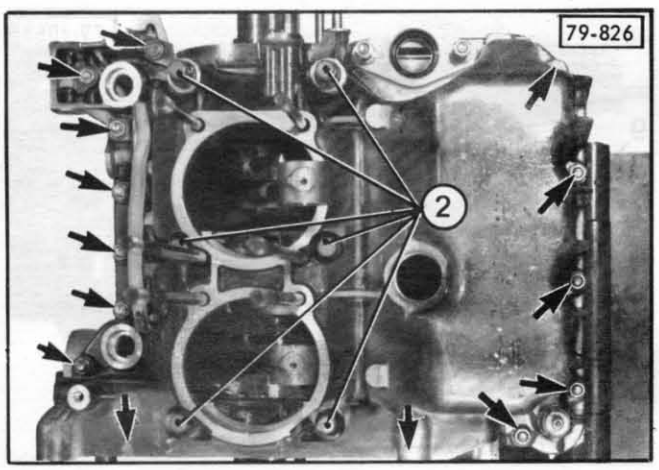

1
A

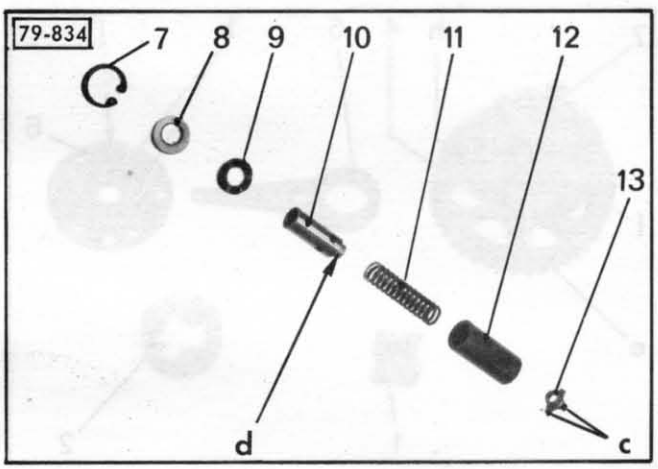

1671-T
9547

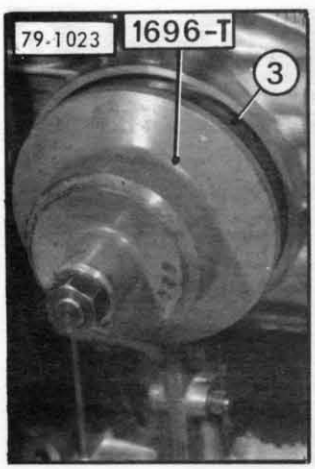

9531
3052-T.bis
b

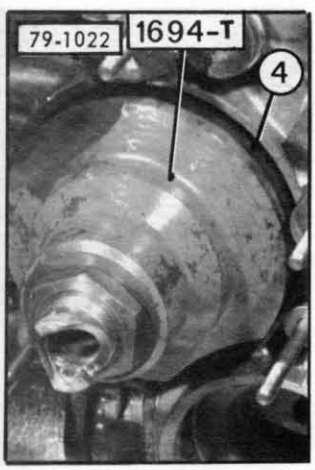

79-827

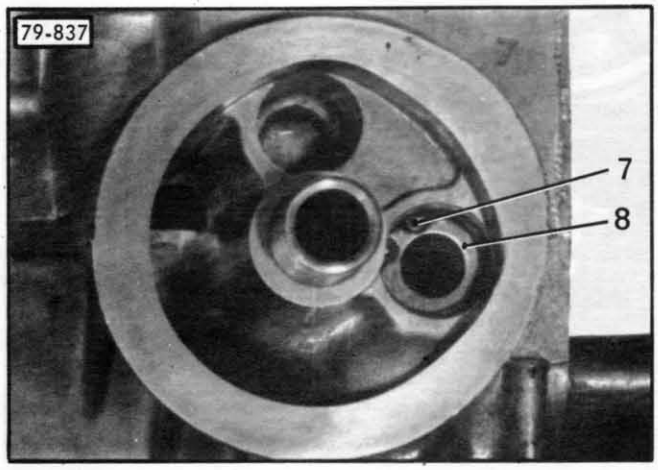

G. 12-14
5
6
5mm

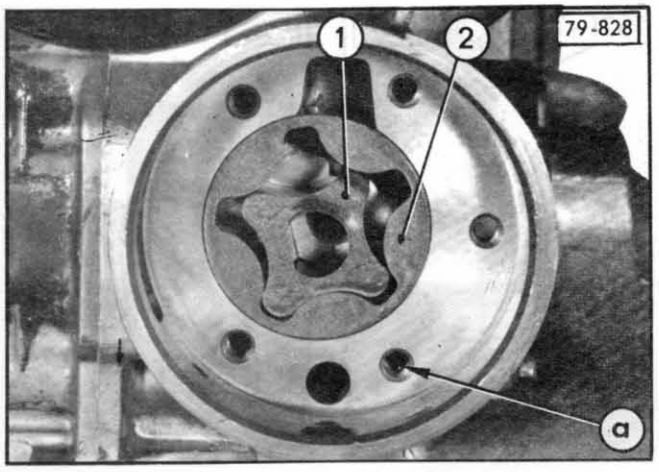

79-826
2

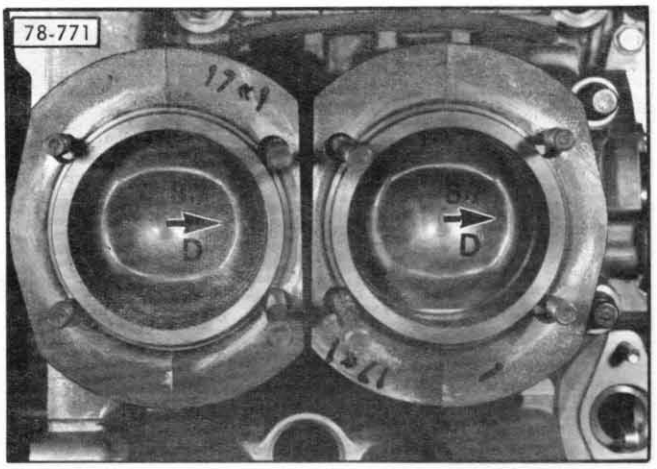

79-834
7
8
9
10
11
12
13
d
c

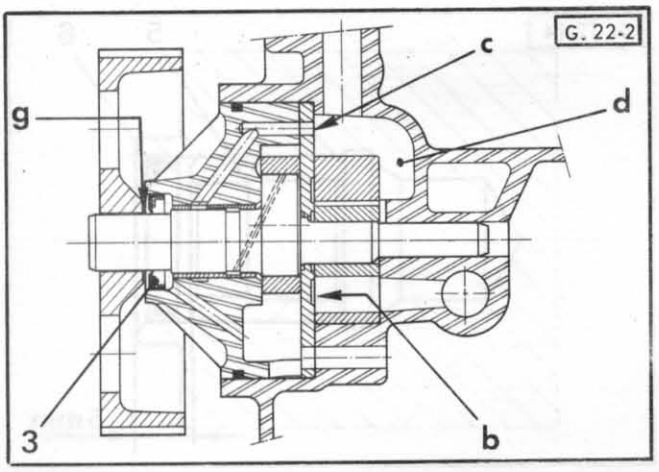

79-1023
1696-T
3

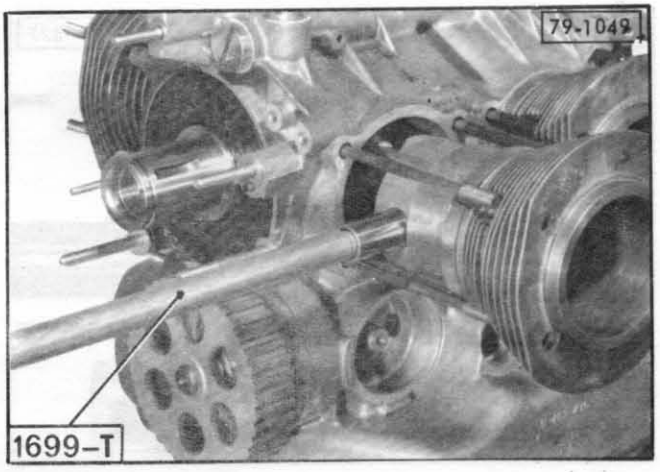

79-1022
1694-T
4

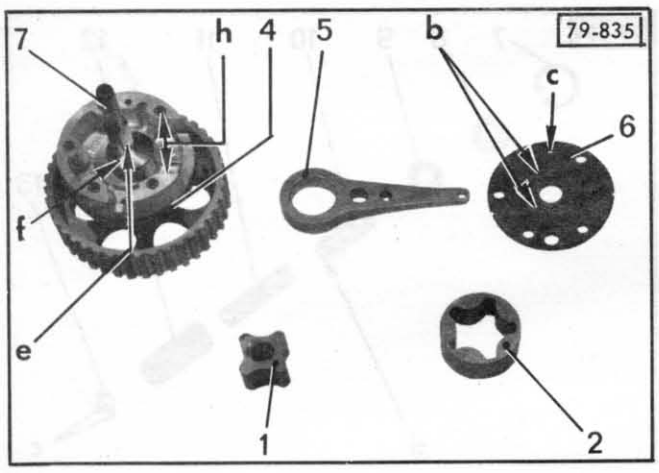

79-837
7
8

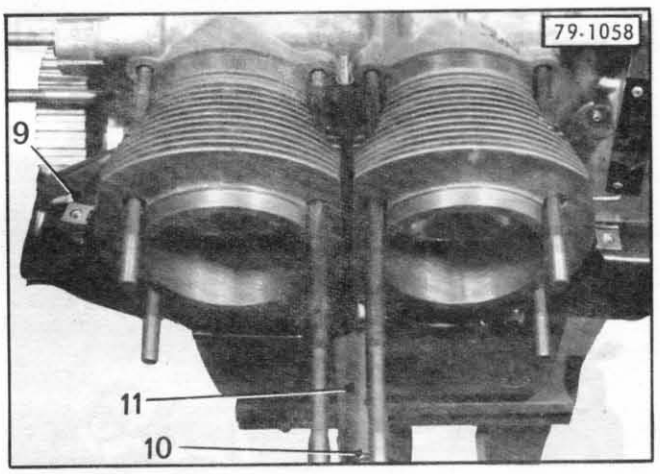

79-828
1
2
a

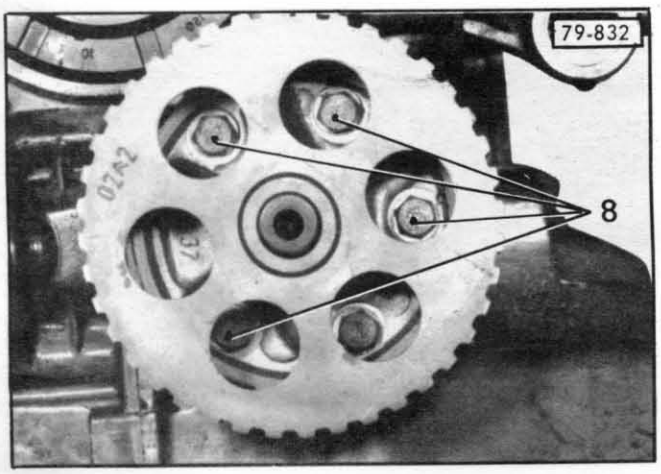

78-771
D
D

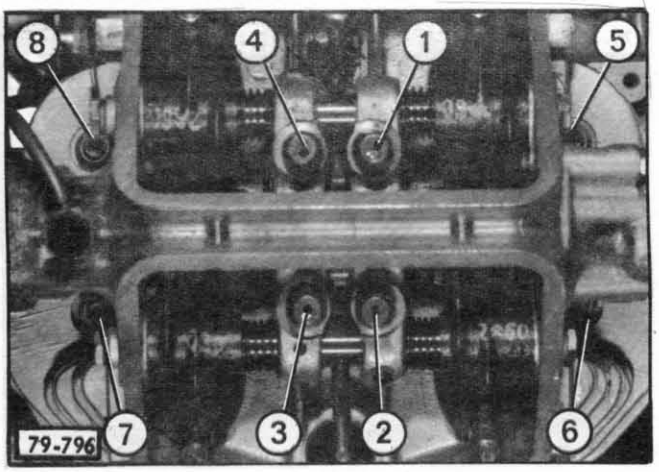

G. 22-2
c
d
g
3
b


79-1049
1699-T


79-835
7
h
4
5
b
c
6
f
e
1
2


79-1058
9
11
10


79-832
8


8
4
1
5
79-796
7
3
2
6

10. Oil and fit oil pump pinions (1) and (2) :

Fit a guide stud temporarily at « a », to facilitate positioning of the plate and pump drive.

11. Fit face plate (6) :

Position the plate so that recesses « b » are towards the interior of the housing, and small hole « c » is opposite cavity « d » (delivery).

12. Fit HP pump control rod (5).

13. Fit the pump drive :

a) Fit new O-ring seal (4).
Oil shaft (7) and cam « f ».

b) Place jig 4001-T between the pulley and bearing at « g », so that seal (3) is no driven in.

c) Position the pump drive on the guide stud (orient control rod recess « h » towards the HP pump), and engage the shaft in the central pinion.
Rotate the shaft to engage drive flat « e » in the oil pump pinion.

d) Guide rod (5) so that it engages on drive mechanism cam « f ».
Fit screws (8) (spring washers).

Tighten opposite screws alternately, tightening by a fraction of a turn each time, until the pump drive is fully home.

Tighten screws (8) to 1.5 to 1.8 m.daN
Extract jig 4001-T.
Check that the pump drive rotates freely.

14. Fit the cylinders :

a) Oil the small ends.
Position the cylinder/piston assemblies on the con-rods.

CAUTION : Check correct assembly position (see page 14, paragraphs 5 and 6)
Complete fitting of the gudgeon pin with mandrel 1699-T

b) Fit the gudgeon pin stop rings.
Check that the rings are properly engaged in their grooves.

c) Oil the piston skirts, and the inside of the cylinders.

d) Engage the cylinders fully.

e) Fit ducts (9) under the cylinders.

15. Fit the cylinder heads :

a) Coat O-ring seals (10) on oil return pipes (11) with engine oil. Engage the longer ends in their recesses in the crankcase.

b) Rotate the crankshaft, to bring the key slot to the bottom, on engine dead centre.
Avoid rotating the crankshaft again before the belts are fitted.

Position the cylinder head, guiding oil return pipes (11).
Do up the nuts progressively (heavy gauge flat washers) and tighten temporarily **from 0.8 to 1 m.daN** starting at the centre.

c) Tighten down the cylinder heads.
Follow the tightening order indicated in the figure opposite.
Tightening torque : 2 to 2.5 m.daN
Use wrench 4006-T.D from kit 4006-T ter

16. Fit the camshaft pulleys :

The two camshaft pulleys are identical.

Engage a pulley on the end of each camshaft (setting pin)
Anchor the pulley with tool [MR. 630-11/26] and **tighten the nut** (flat washer) to **8.2 m.daN** (torque wrench.

17. Fit the alternator tension device.

18. Fit the lubrication system pipes :
Fit union screws (1) on the cylinder head lubrication pipes (fit new seals).
Tighten the union screws to 1.8 m.daN to 2 m.daN.
Fit the oil pressure switch *(new seal)*, and **tighten from 2 to 2.5 m.daN.**
Fix bracket (13).

Check that there is at least 5 mm play between the pipes and camshaft pulleys.

19. Fit the tensioner rollers :

The two tensioner rollers are identical.

a) If necessary, engage the guide roll pins in their holes.

b) Position tensioner rollers (2) and (5) with thrust plates (3) and (6) facing outwards.
Fit nuts (4) and (7) (contact washers), but do not tighten fully.

20. Fit the timing gear pinions on the crankshaft :
Fit :
- protective plate (12),
- crankshaft key,
- pinions (8) and (9),
- snap-ring (10).

Arrange pinions (8) and (9) so that collars (7) face the front of the engine.

21. Fit the timing gear belts :

Before fitting, check that the belts, pulleys, pinions and tensioner rollers show no traces of grease or oil. All belts fitted on the same engine must be from the same manufacturer.

a) Check that mark « a » (on cover (11) of pinions (8) and (9) is pointing upwards on engine dead centre.
Position marks « b », « c » and « d » on the camshaft pulleys and oil pump, as shown in the figure opposite.

b) Compress the tensioner rollers (see arrows).
Tighten nuts (4) and (7).

c) Fit the right belt, making its marks coincide with marks « a » and « d » so that (tensioner roller side) :

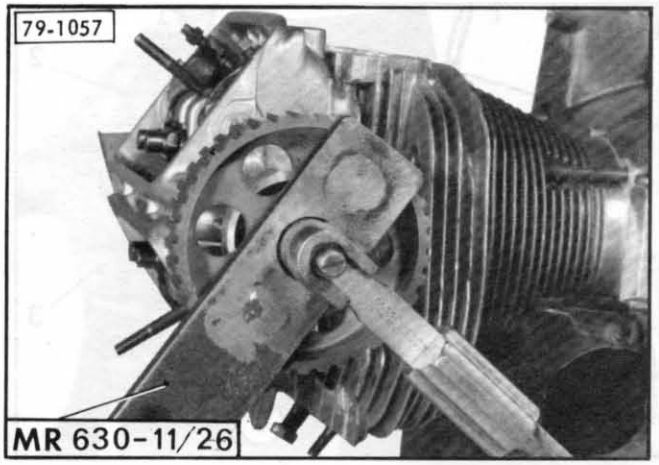
ad = 43 notches

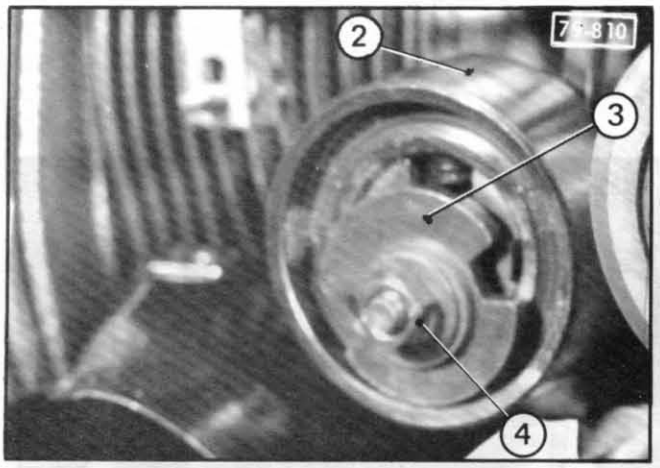
d) Fit the left belt, making :
- the white marks coincide with « a »» and « b »,
- the yellow mark coincide with « c ».
In this position :

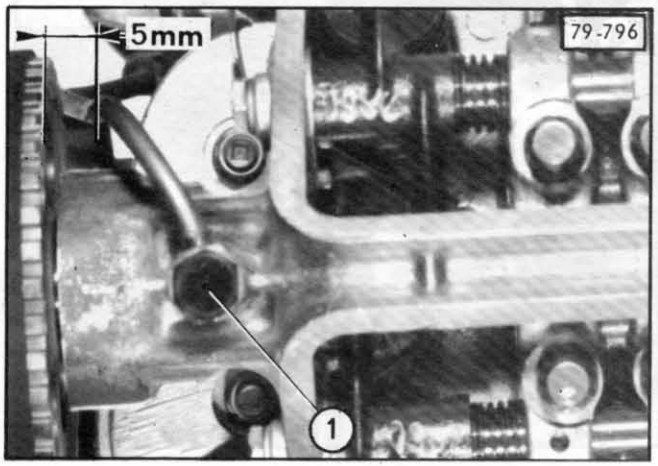
ab = 33 notches
ac = 25 notches

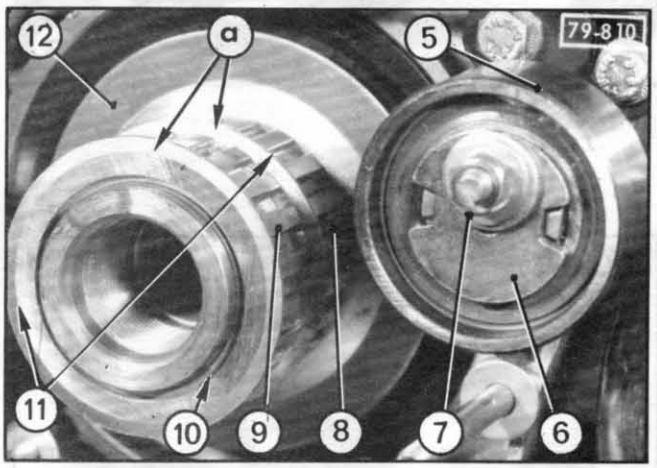
e) Release the tensioner rollers, and tighten nuts (4) and (7).

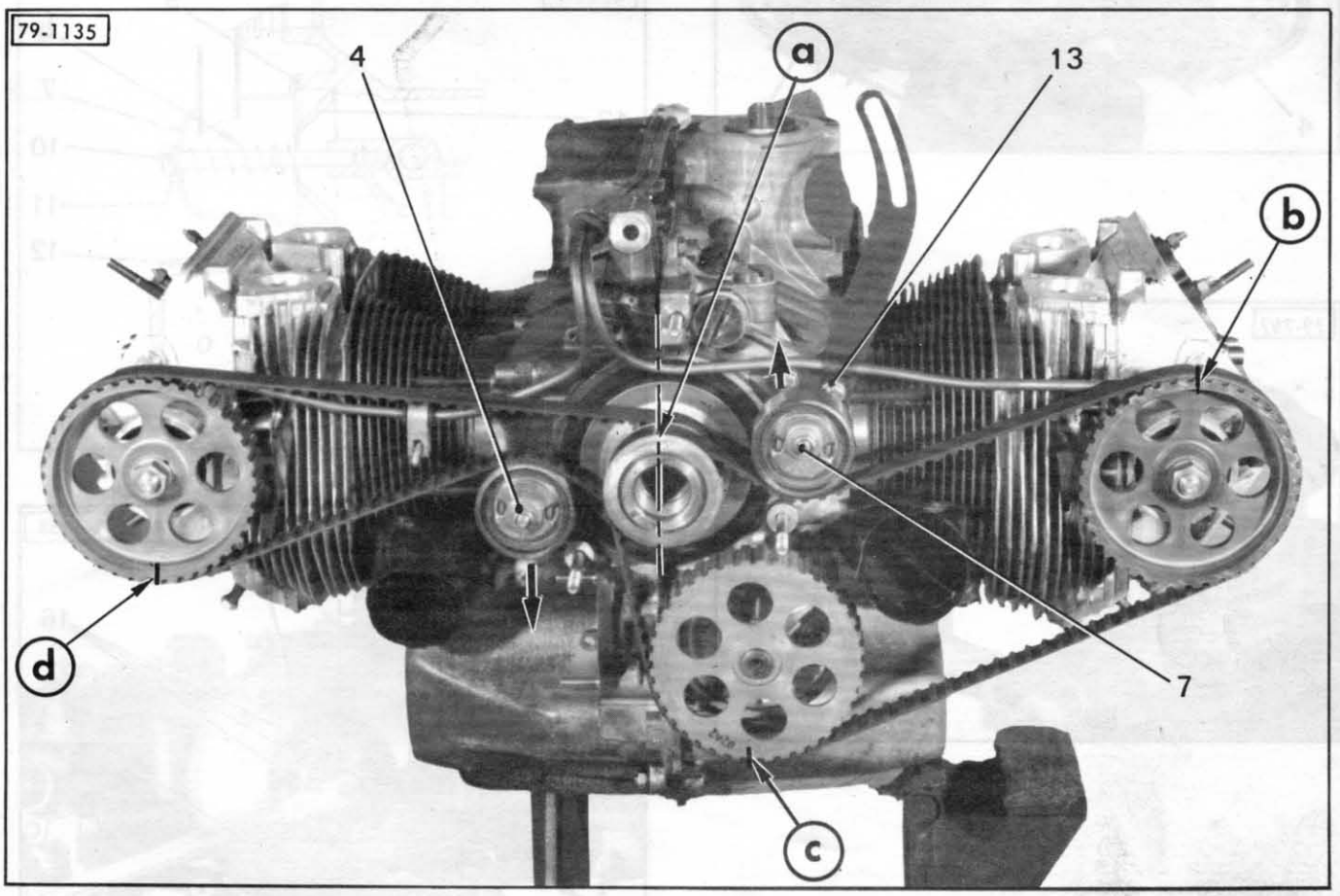
22. Tension the belts :
Rotate the crankshaft through 90° in the normal direction.
Slacken off nut (7) on the left tensioner roller, releasing the roller and **tightening again to 1.8 m.daN.**
Rotate the crankshaft one full turn in normal running direction, and repeat the same operation with nut (4) on the right tensioner roller.

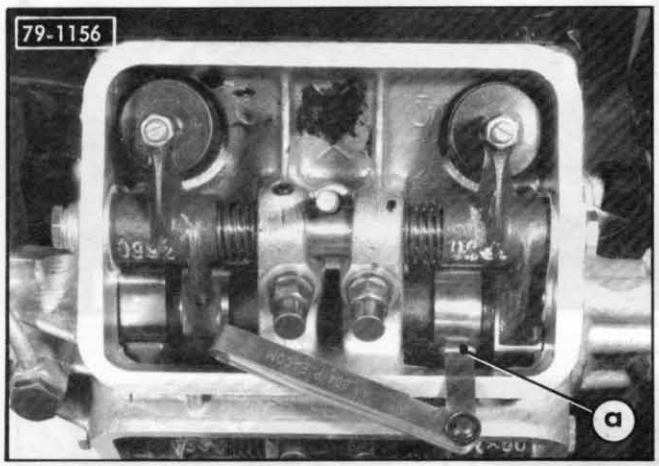

79-1057
MR 630-11/26

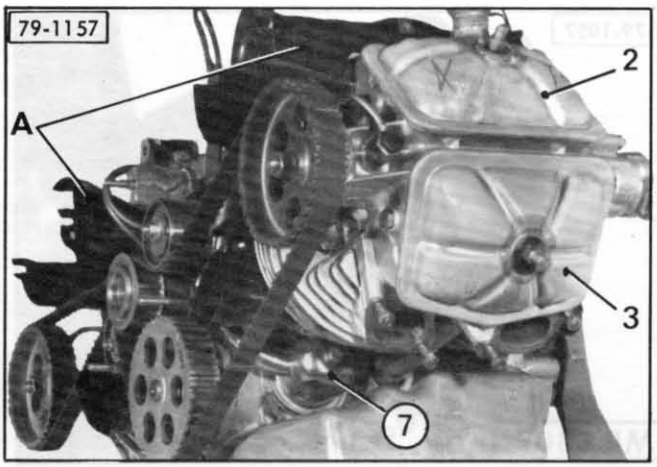

2
3
4

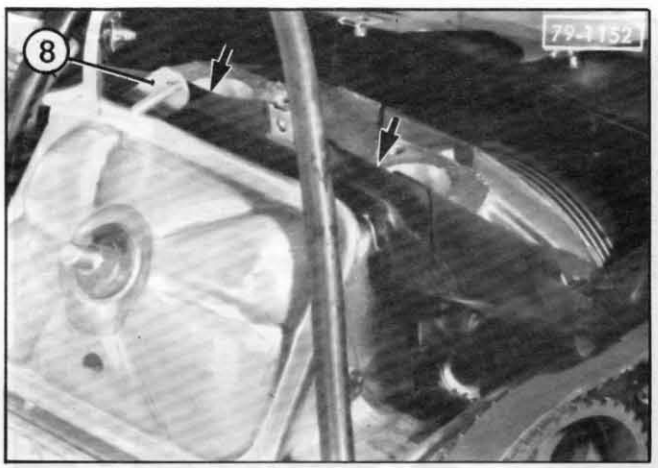

5mm
79-796
1

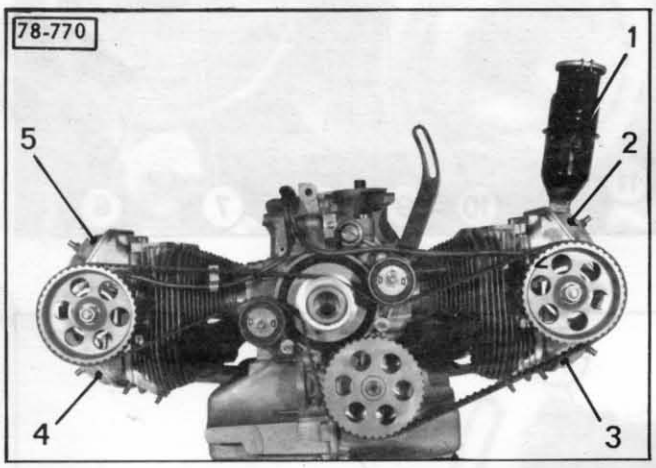

12
a
5
79-810
11
10
9
8
7
6

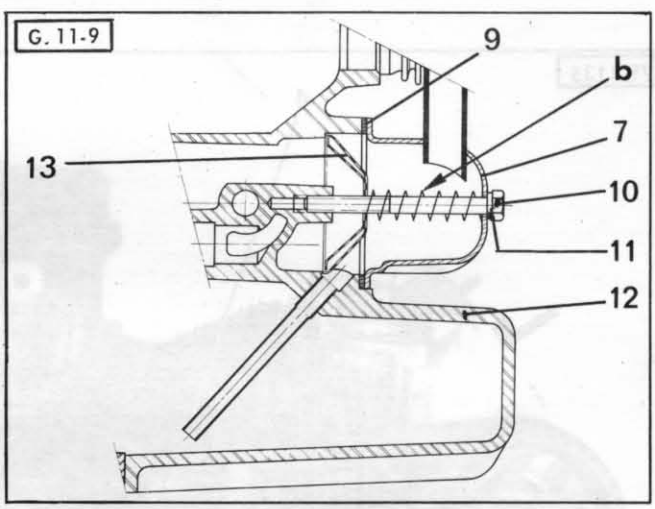

79-1135
4
a
13
b
d
7
c

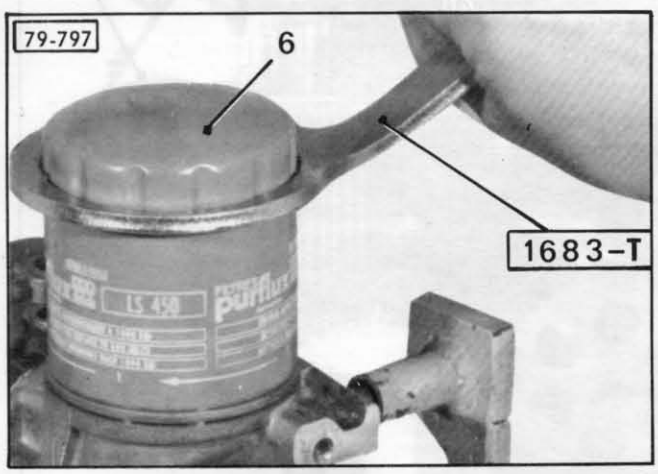

79-1156
a

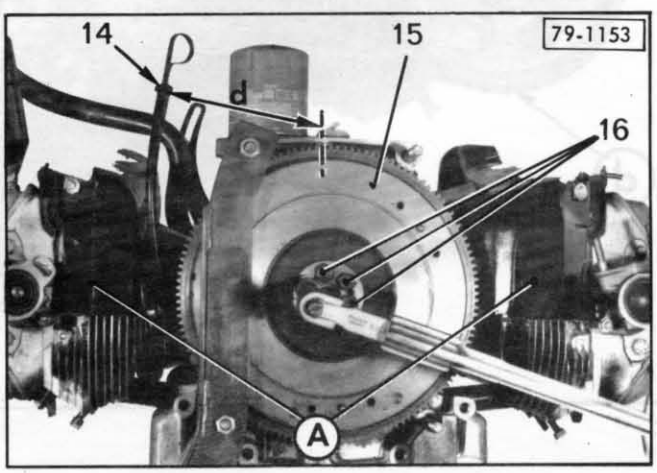

79-1157
A
2
3
7


8
79-1152


78-770
1
2
3
4
5


G. 11-9
9
b
7
10
11
12
13


79-797
6
1683-T


14
15
79-1153
d
16
A

23. Adjust rocker arm clearance :

Adjust each rocker arm in successsion, proceeding as follows :

a) Turn the engine arm over so that the heel of the rocker arm to be adjusted is *on the back of the corresponding cam* (valve fully closed).

b) *Adjust clearance between rocker arm heel and corresponding cam at « a ».*

Inlet/exhaust : 0.20 to 0.25 mm

24. Fit the cylinder head covers :

Carefully oil rocker arms, shafts and cams.

a) Check that there are no asperities on the sealing surfaces, which must be clean and dry.

b) Glue the seal to the cylinder head cover (BOSTIK 1400 or MINNESOTA F 19).
Carefully center the cylinder head covers.

Lower cylinder head covers (3) and (4) and upper covers (2) and (5) are different.
- Check correct assembly position.
- Cover (2) incorporating filler orifice (1), is mounted on the left.
- Incorrect fitting of the seals, bad alignment or an insufficiently tightened attachment nut, can lead to total oil loss.

Tighten the nut to 0.8 to 1 m.daN.

25. Fit oil filter cartridge (6) :

Oil the seal.
Insert the cartridge by hand, until it comes into contact with the engine housing.
Tighten by 1/2 or 3/4 of a turn, using spanner 1683-T .

26. Fit cooling ducts A :

a) *Left side :*
Assemble the upper and lower ducts, and fix the latter to the cylinder head.

b) *Right side :*
Fix the duct to the right cylinder head.
Fit screws (➡) (contact washer), inserting air filter (8) (under the duct sidewall).
Tighten the screws.
Glue the cooler unit seal to the carter (BOSTIK 1410 or MINNESOTA EC 1236).

27. Fit the breather :

Check the sealing surface on crankcase (12).
Glue seal (9) to breather (7) (BOSTIK 1410 or MINNESOTA EC 1236).
Fit grille (13).
Fit new seal (11) on screw (10).
Engage :
- screw (10) in breather (7),
- spring « b » on screw (10).
Position the breather on the crankcase, and tighten screw (10) to **0.5 to 0.7 m.daN**

The breather pipe must not touch the cooling duct.

28. Fit the oil dipstick guide tube :

On assembly, direct the curved part of the guide towards the gearbox, so as to obtain dimension d = 225 mm (distance betweeen sealing surface crankcase halves and the end of guide (4).

29. Fit the heater ducts :

Fit the heater ducts, couple to the cooling ducts.

30. Fit engine flywheel (15) :

Fit new attachment screws following any disassembly operations.

Put three spots of LOCTITE FORMETANCH between the crankshaft and engine flywheel (15).
Tighten screws (16) from 6.4 to 6.9 m.daN
(grease threads and face).
Use a torque wrench.

31. Fit the fuel pump :

Fit spacer (2).
Position fuel pump (1).
Tighten nut (3) to 2.1 m.daN (contact washer).

32. Fit the distributor :

Position the distributor cover and fit distributor (4). Set in mid-slot, and tighten the nuts moderately (contact washer).

Final adjustment is made with the engine installed in the vehicle.

33. Fit the exhaust manifolds :

Fit new seals.
Position manifold (5).
Tighten the nuts to 1.5 m.daN.

34. Fit oil pressure switch (6) :

Fit a new seal.
Tighten from 2 to 2.5 m.daN.

35. Fit the oil cooler unit :

Fit new seals on the couplings of cooler unit (7).
Position cooler unit (7) and **tighten the screws to 1.8 m.daN.**

36. Fit the starter :

Position starter (8) on its support.
Tighten the attachment screws to **1.8 m.daN** (contact washer).
Longest screw (9) is inserted in the top hole.

37. Fit inlet manifolds to carburettor assembly A :

a) Check the condition of rubber sleeves **B**.
(→ 7/81).

b) Fit the left and right manifold assembly (leaving collars (10) loose).
Tighten the screw of the forward lug on the engine housings to 1.8 m.daN.
Fit new seals on the cylinder head end.

Check that the gas orifice in the seal corresponds to that in the cylinder head.

Tighten screws (→) to 1.8 m.daN (heavy gauge washers).

c) Tighten collars (10).

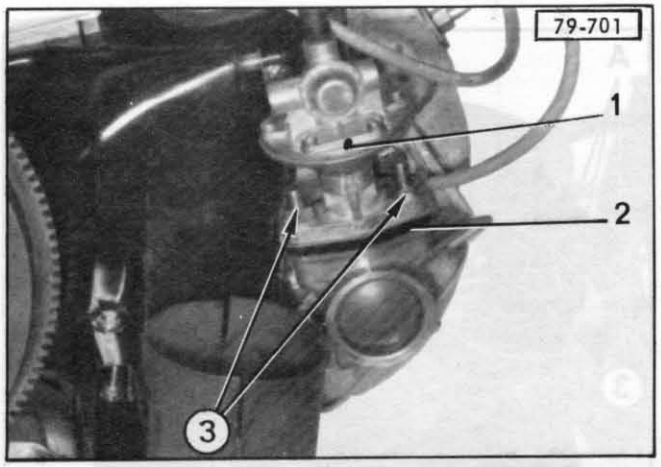
38. Fit high pressure pump (12).

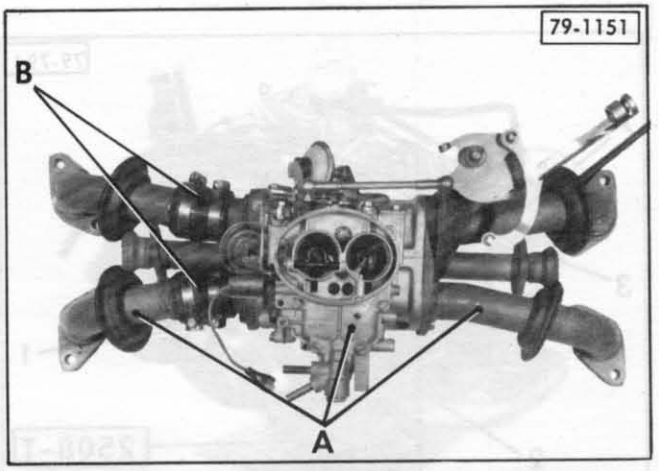
39. Fit alternator (11) :

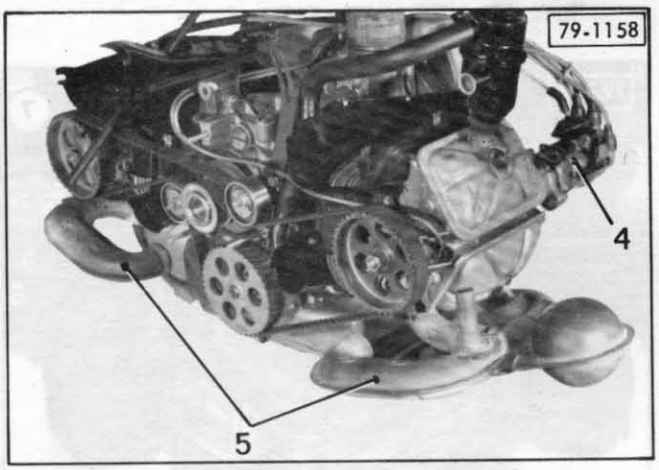
Do not tighten the screws (flat washers under screw head and nut).

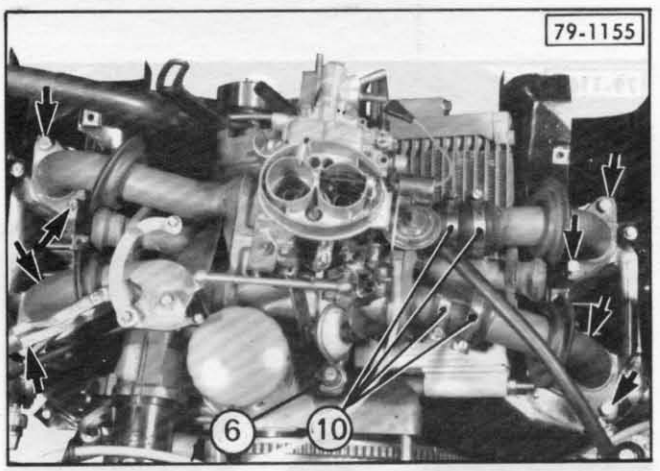
40. Fit air manifold (14) :

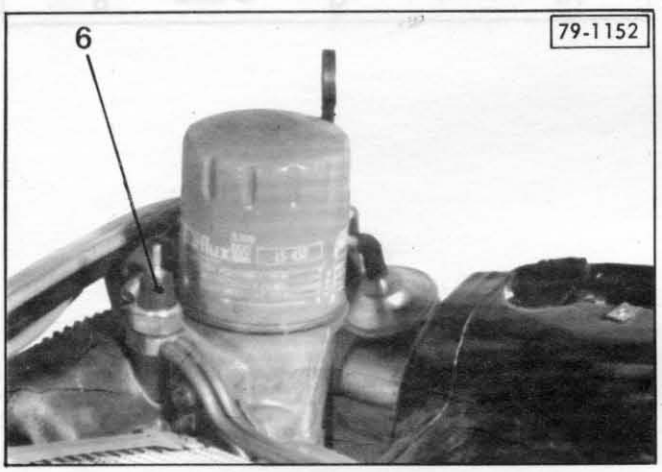
Place a flat washer, spacer and second flat washer on each stud (13).
Engage the air manifold on the studs.
Fit spring washers, and tighten nuts (15).

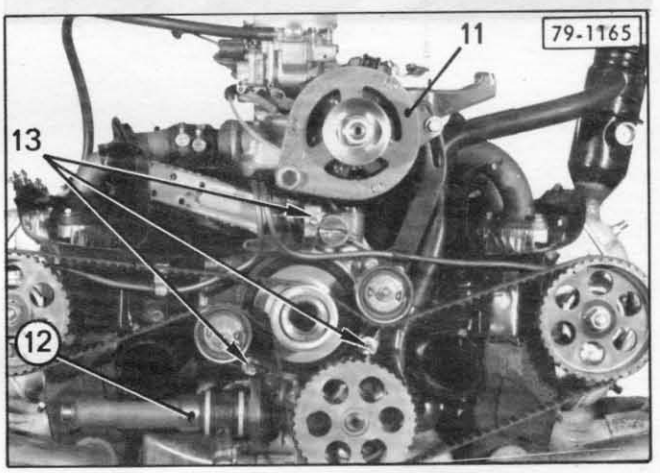

79-701
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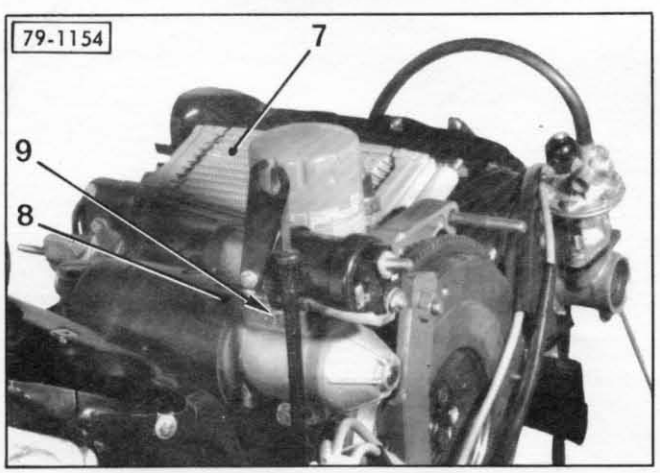

79-1151
B
A

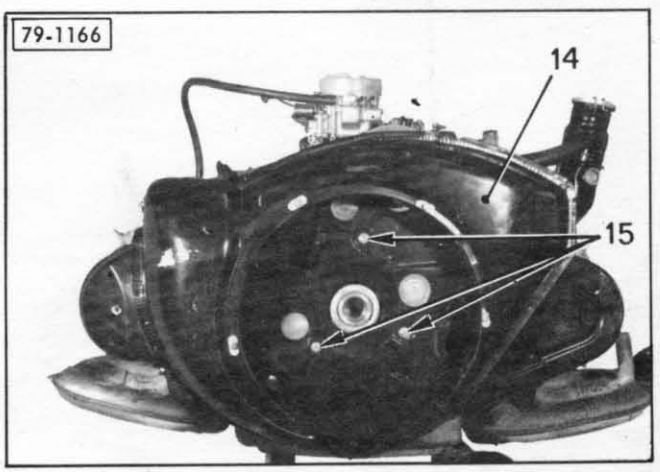

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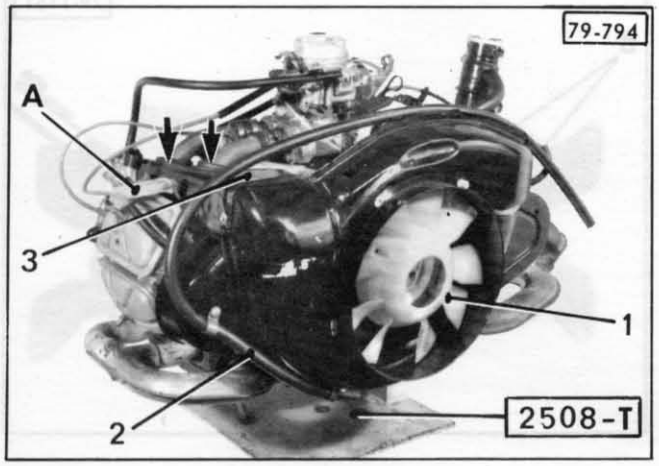

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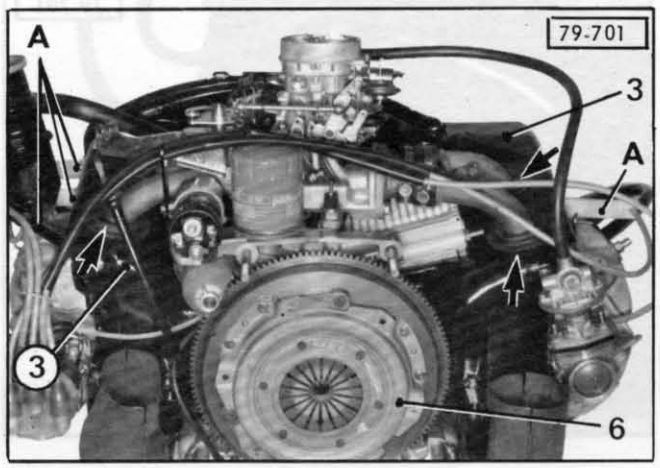

79-1152
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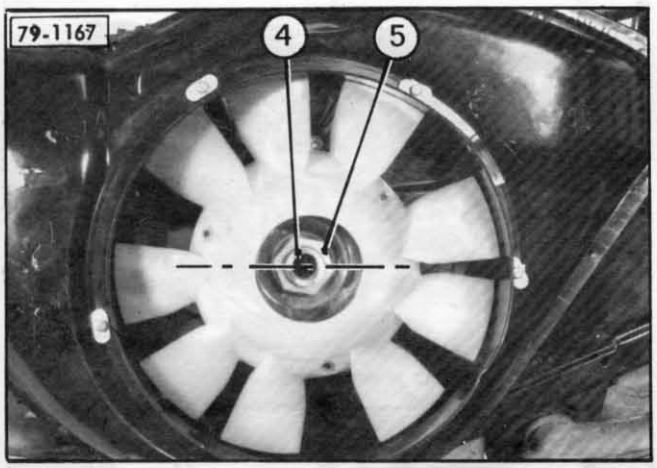

79-1165
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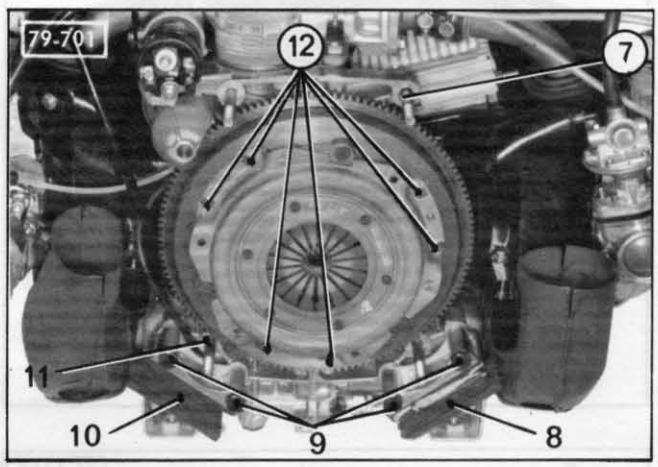

79-1154
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79-1166
14
15


79-794
A
3
1
2
2508-T


A
79-701
3
A
3
6


79-1167
4
5


79-701
12
7
11
10
9
8

41. Fit the fan :
PLace the belt on the alternator pulley.
Engage the belt on fan pulley (1).
Fit the fan.
Fit starter dog (4), equipped with a spring washer and lock-nut (5) *(grease threads and face).*
Position so that the starter dog is horizontal **when the engine is at ignition point.**
Tighten lock-nut (5) to 22 to 24 m.daN (torque wrench).

The starter dog should show 4 to 5 mm of threading after the nut is tightened.

42. Fit the high pressure pipe.
Fix intake pipe (2) to the air manifold.

43. Fit the covers for upper ducts (3) :
Fit plug lead support « a ».
Fit plugs (➡).

44. Tension the alternator belt.
Tighten the bearing and tension device screws.

45. Fit the spark plugs.
Connect the leads to the spark plugs.
Fill up with engine oil.

46. Remove the engine from support 2805-T.

47. Fit the clutch :
Position the clutch plate and clutch mechanism (6).
Center the plate using mandrel MR. 630-31/85
Tighten screws (12) to 1.8 m.daN (spring washer).

48. Fit the elastic mounts :

All elastic mounts fitted in the same vehicle must be from the same manufacturer.

Position supports (8) and (10).
Fit the attachment screws, inserting a flat washer under the head of each screw (9).
Tighten to 5 to 6 m.daN

49. Fit the two alignment fingers on engine/gearbox coupling studs (7) and (11).

NOTE : On the engines fitted with a rigid inlet manifold, a loosening and re-tightening operation must, without fail, be carried out on the manifold, **with engine cold.**
Tighten to 1.8 m.dN.

OPERATION
GX. 112-3

RECONDITIONING A CYLINDER HEAD

SPECIAL TOOLS

TOOLS SOLD

1615-T : Valve lapper

1652-T bis : Valve spring compression lever
(use with support MR. 630-43/31)

1695-T : Tool for fitting camshaft seal (distributor end)

1697-T : Tool for fitting camshaft seal

4024-T : Universal spring compression tool

TOOLS NOT SOLD

MR. 630-11/26 : Special for taking down and tightening camshaft pulleys

MR. 630-25/8 : Rocker arm extractor

MR. 630-43/31 : Vice support for cylinder head

TIGHTENING TORQUE VALUES

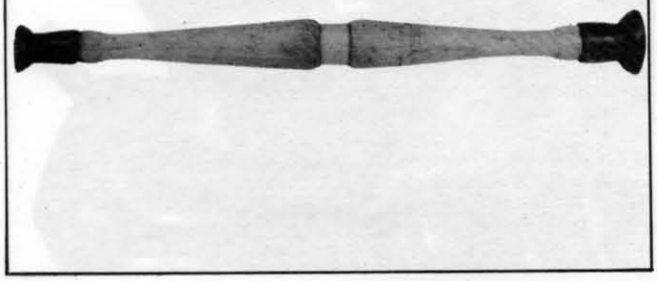
Mandatory values *(torque wrench) :*

Tightening point	Torque (m.daN)
Rocker arm shaft plug screw :	1.4 to 1.6
Camshaft pulley attachment nut :	8.2

Recommended values :

Tightening point	Torque (m.daN)
Insertion of camshaft rear bearing attachment stud :	0.3 to 0.5
Insertion of camshaft pulley attachment stud :	2.5 to 3
Camshaft rear bearing attachment nut :	1.5 to 1.8
Cylinder head cover attachment stud :	

1615-T 79-799



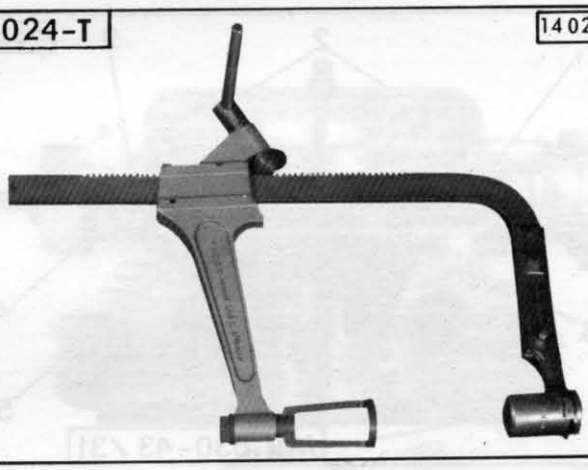
1697-T 79-786



1652-T.bis 79-766



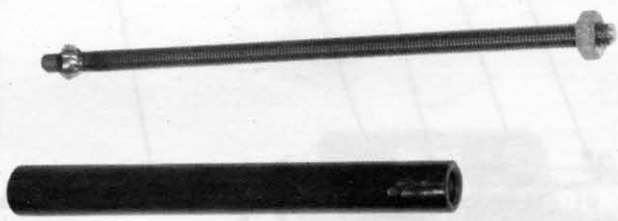
4024-T 14029



1695-T 79-768



MR.630-25/8 79-836

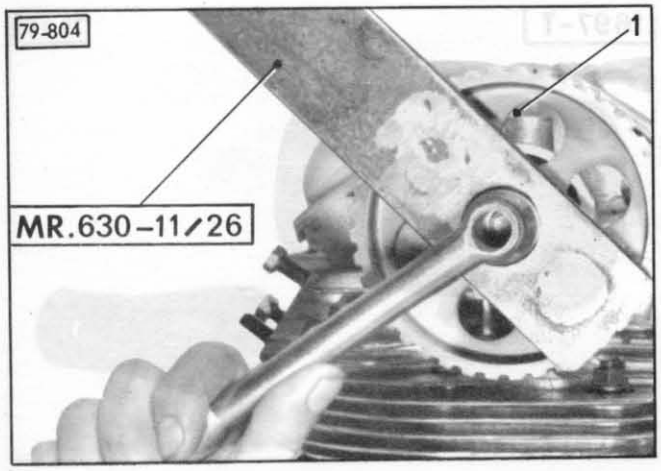


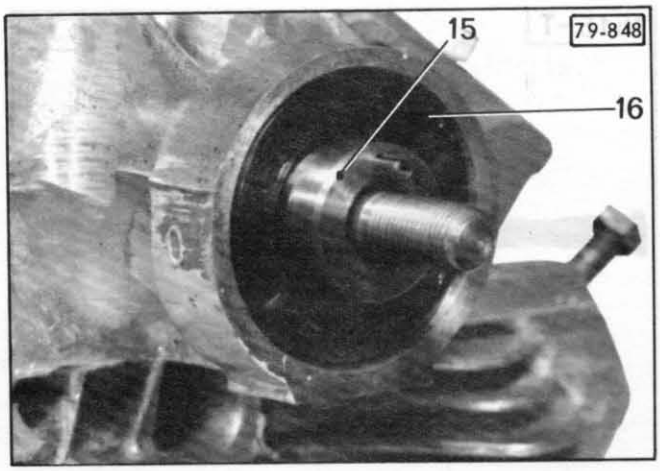
79-767 MR.630-11/26

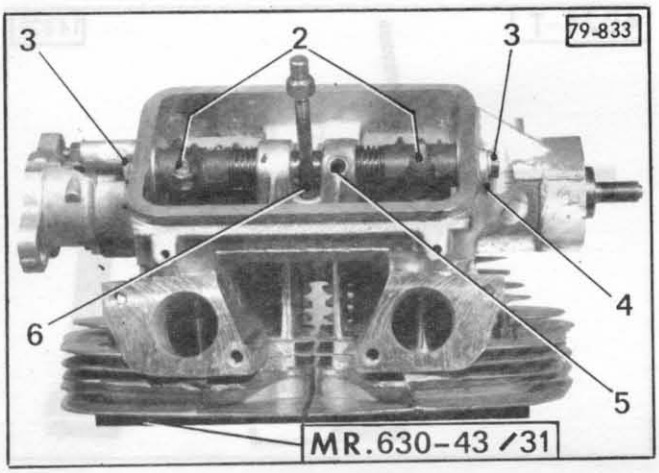


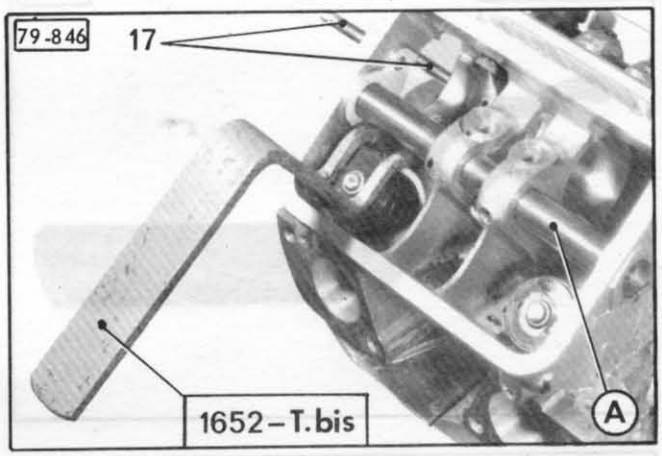
MR.630-43/31 79-829

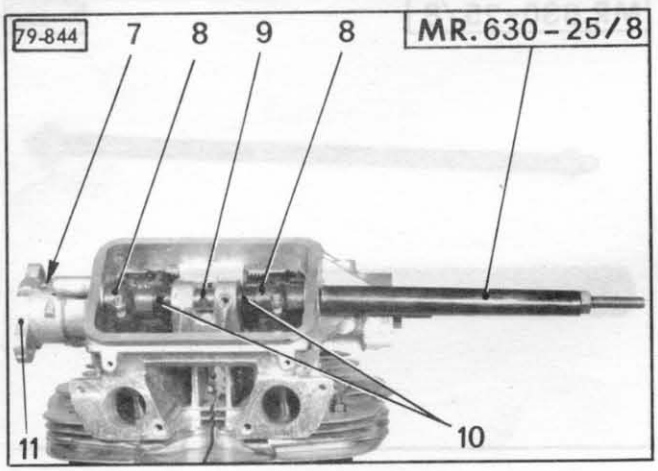


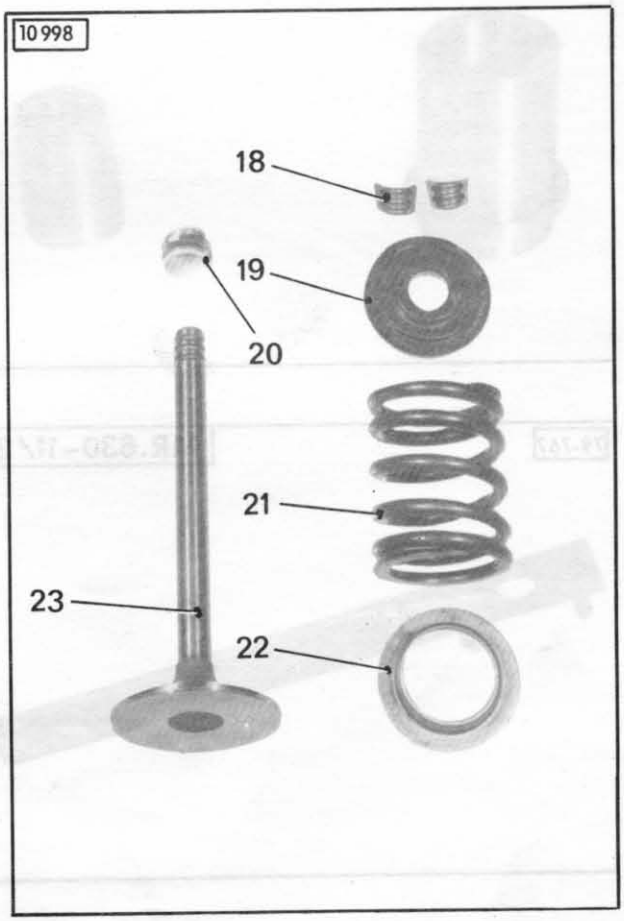

79-804
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MR.630-11/26

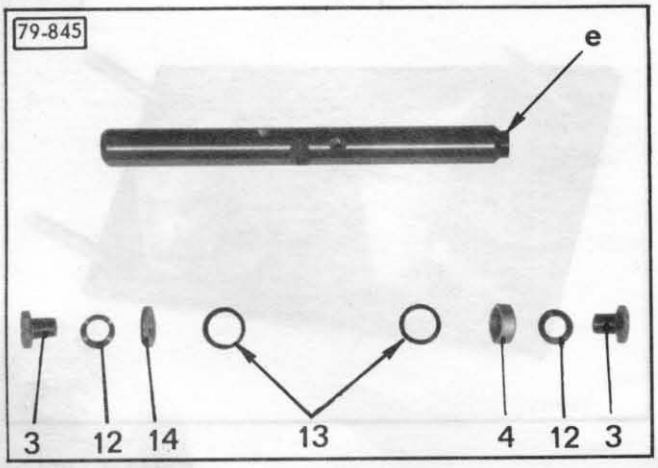

79-848
15
16


79-833
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5
MR.630-43/31


79-846
17
1652-T.bis
A


79-844
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MR.630-25/8
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10998
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RECONDITIONING A CYLINDER HEAD

DISMANTLING

1. Place the cylinder head in a vice :
Use support MR. 630-43/3

2. Remove the camshaft pulley :
Use tool MR. 630-11/26 to anchor pulley (1).

3. Remove rocker arm shafts (9) :

a) Slacken off adjustment screws (2) on the rocker arms.

b) At each end of the rocker arm shafts, remove :
- plug (3) and copper seal (12),
- spacer (4) or (14),
- O-ring seal (13).

c) Extract :
- studs (6),
- grub-screws (3) (3 mm Allen key).

d) Extract the shafts using tool MR. 630-25/8
Disengage :
- rocker arms (8),
- springs (10).

4. Remove the camshaft :

a) Undo attachment nut (7) for rear bearing (11).

b) Crack off bearing (11) tapping the end of camshaft (15) lightly with a mallet, and disengage the assembly.

The camshaft and rear bearing cannot be separated.

c) Remove front seal (16).

5. Remove the valves :

a) Fit stem A (diameter 16 mm, length 270 mm) in place of each rocker arm in succession.
Compress the valve springs using tool 1652-T bis

b) Disengage :
- half stop rings (18),
- cups (19),
- springs (21),
- thrust washers (22),
- seals (20).

c) Take the cylinder head off support MR. 630-43/31 .
Disengage :
- valves (23),
- stem A.

6. Clean the parts.

To ensure the seal-tightness of the front bearing, the camshaft has a micro-turbine machined in the seal contact zone.
Take care not to damage this micro-turbine, at the risk of causing an oil leak.

PREPARATION

7. For replacement of the cylinder head :

Two camshaft rear bearing attachment studs (17) must be fitted with LOCTITE FRENETANCH.
Tightening torque : 0.3 to 0.5 m.daN.

8. Grind the valve seats if necessary.
The seats must be ground to the angles shown on the opposite page.
A : inlet B : exhaust

9. Grind the valves :

	Valves	Angle (°)	Head dia. (mm)	Stem diameter (mm)	Length (mm)
1300	Inlet	90	38	$8\ ^{-0.005}_{-0.020}$	94.6
	Exhaust	90	35.7	$8.5\ ^{-0.021}_{-0.036}$	93.8
1130	Inlet	120	39	$8\ ^{-0.005}_{-0.020}$	97.4
	Exhaust	90	34	$8.5\ ^{-0.021}_{-0.036}$	96.3

b) Grind the valve contact angles to the values indicated.

c) Execute a slight chamfer at « a » on the valve heads, to break the angle.

10. Lap the valves :
Use valve lapping tool 1651-T.
Conditions :
- On the valve : the large diameter of the contact surface must be equal to the largest diameter of the head.
- On the seat : valve contact surface with « b » must have the following maximum values :

Inlet : 1 to 1.4 mm
Exhaust : 1.4 to 1.8 mm

11. Carefully clean the cylinder head to eliminate any trace of emery in the gas ducts.
Blow through the ducts and lubrication pipes with compressed air.
If the passages are obstructed, dip the cylinder head in a bath of cellulose solvent for about one hour. Blow through again with compressed air.

12. Valve spring setting :

Length under load (mm)	Load (kg)	Length under load (mm)	Load (kg)
32	25.4 ± 2.5	24	59.6 ± 2

13. Prepare the camshaft (left cylinder head) :

a) *Rear bearing :* Remove seal (1). Fit a new seal with tool 1695-T.

b) *Front end :* If necessary, replace roll split pin (4) (pulley drive). Fit a new pin, positioning slot « c » towards the exterior of the camshaft.

14. Replacement of camshaft stud (2) :

Pulley attachment stud (3) must be fitted with LOCTITE FRENETANCH
Tightening torque : 2.5 to 3 m.daN.

15. Fit the valves :

a) Oil the valve stems and guides.
Position the valves.

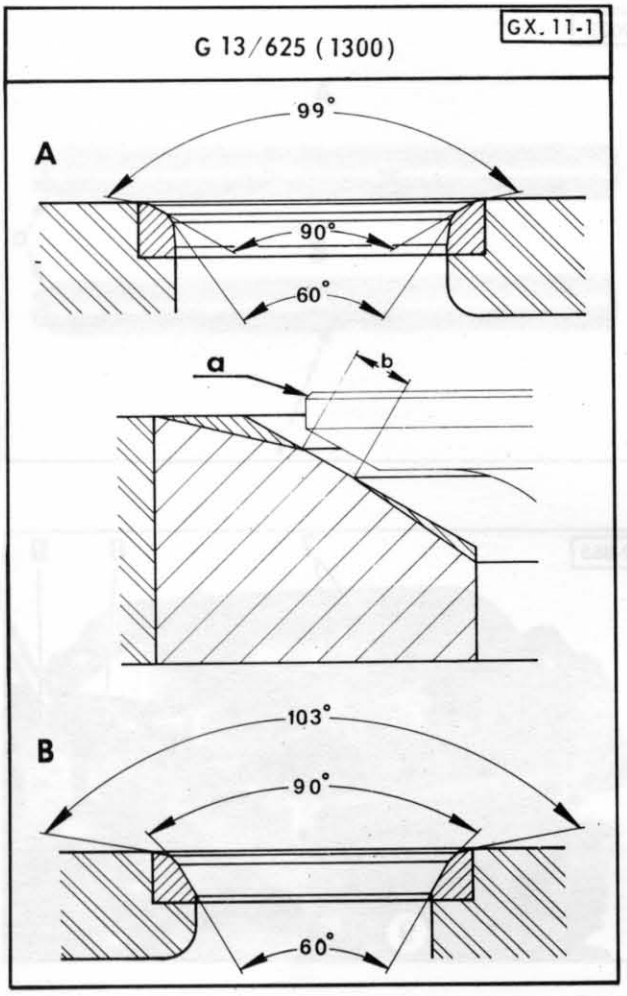
b) Fix the cylinder head in the vice, using support MR. 630-43/31.

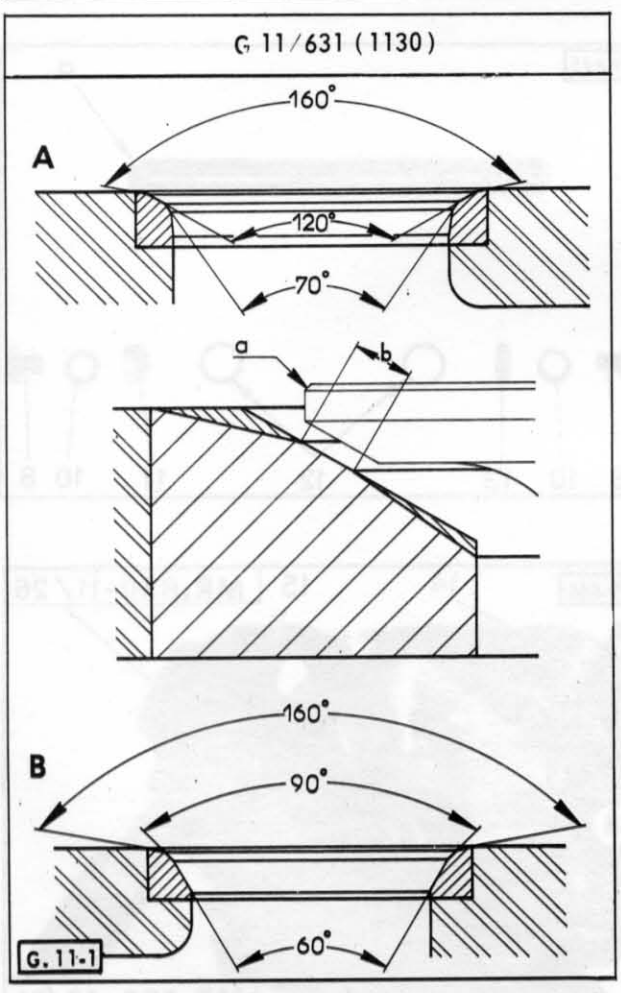
c) Fit seals (5) (new seals after any dismantling operation).

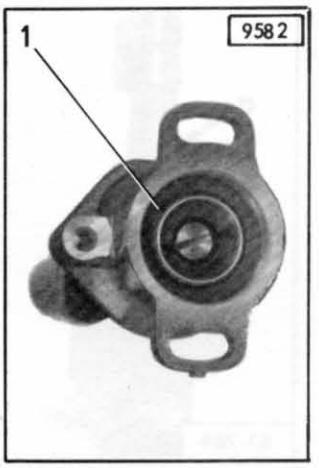
Seal (5) inside diameter :
- exhaust : 8.5 mm
- inlet : 8 mm
Slide seal (5) onto the valve stem, until it comes onto the guide (use a tube with inside diameter 8.5 mm to terminate insertion of the seal).

d) Fit stem D (see paragraph 5 a) in place on each rocker arm shaft in successsion. As appropriate, fit on each valve :
- thrust washer (9),
- spring (8),
- cup (7).

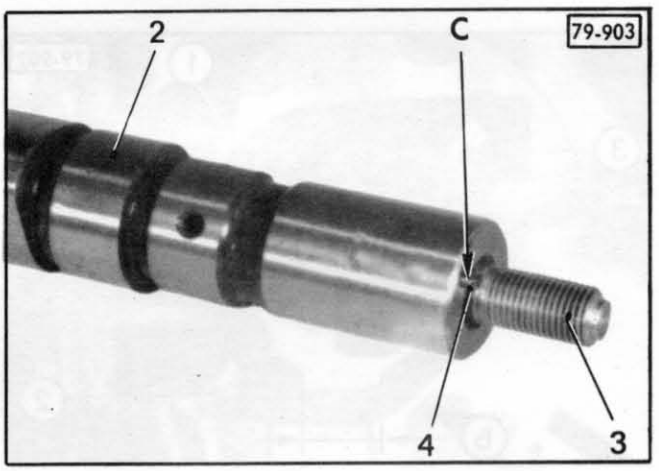
Compress the valve springs using tool 1652-T bis
Fit half stop rings (6).
Extract stem D.

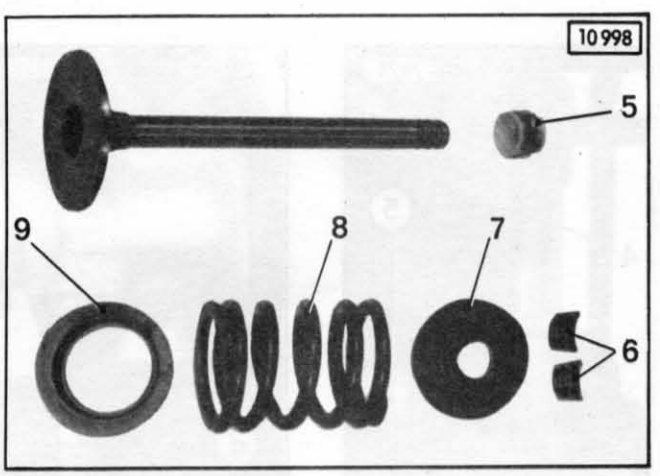

G 13/625 (1300)
GX. 11-1
A
99°
90°
60°
a
b
B
103°
90°
60°

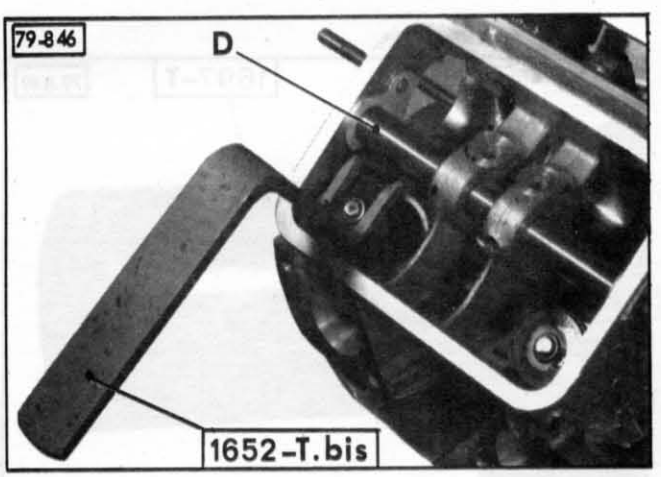

G 11/631 (1130)
A
160°
120°
70°
a
b
B
160°
90°
60°
G. 11-1

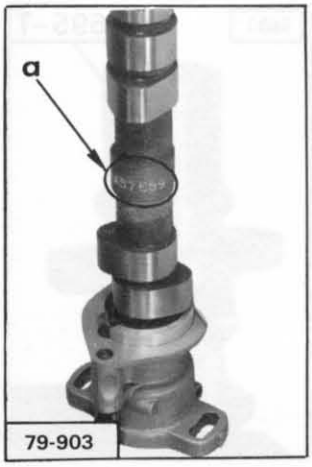

9582
1

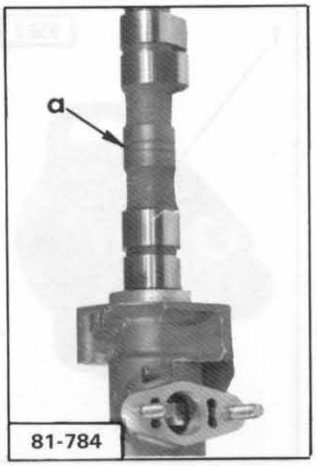

9601
1695-T

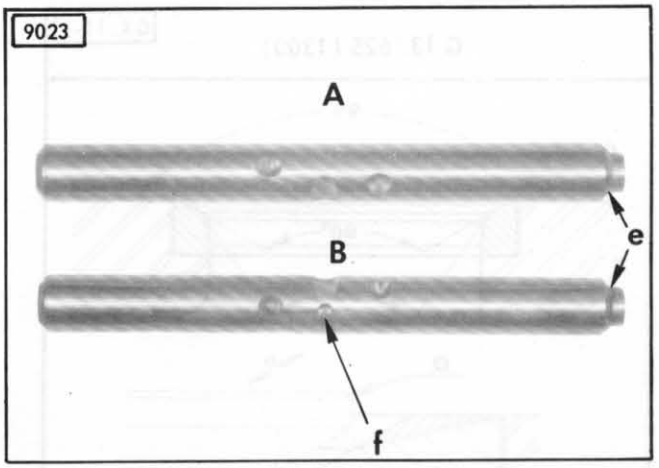

79-903
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C
4
3

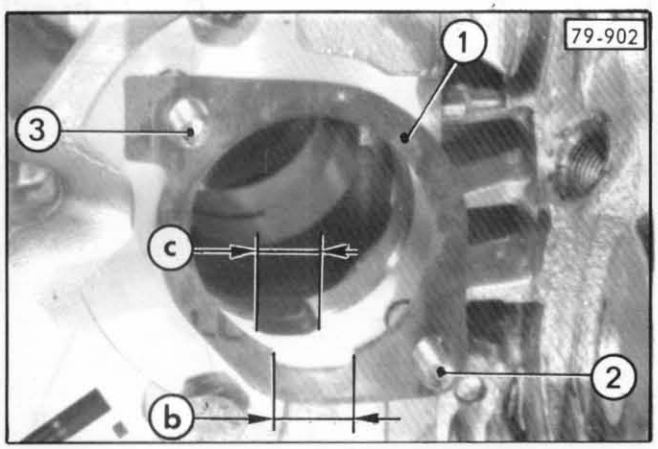

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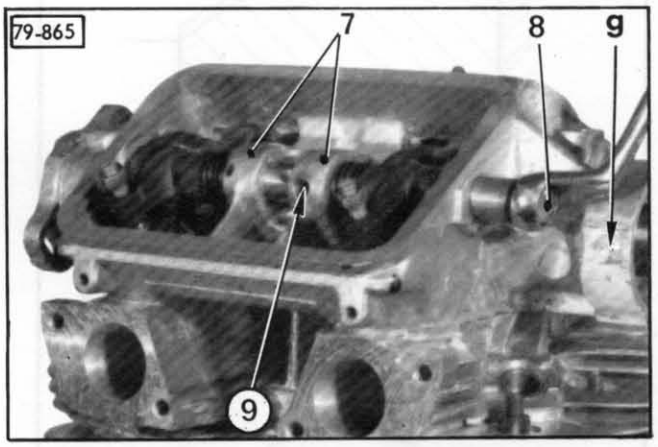

79-846
D
1652-T.bis

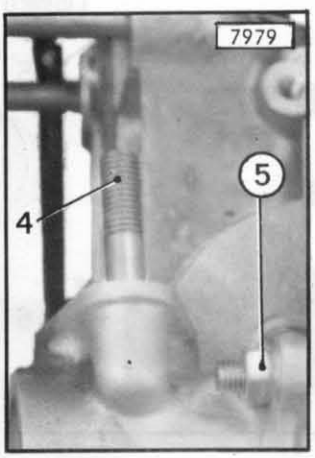

a
79-903

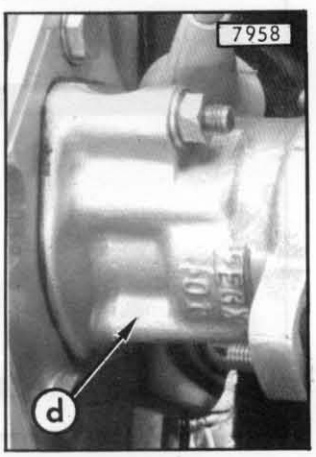

a
81-784

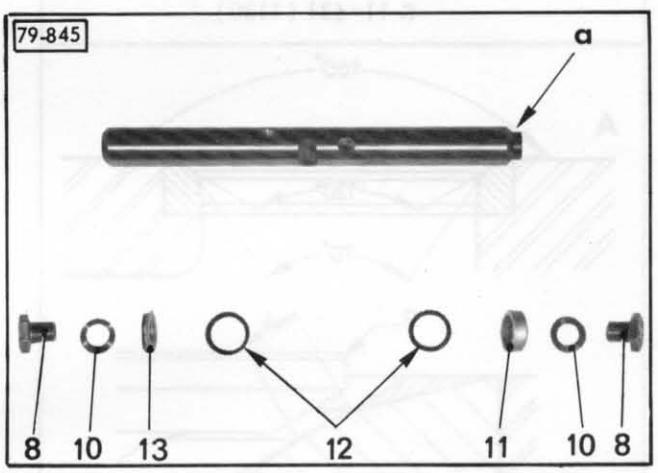

9023
A
B
e
f

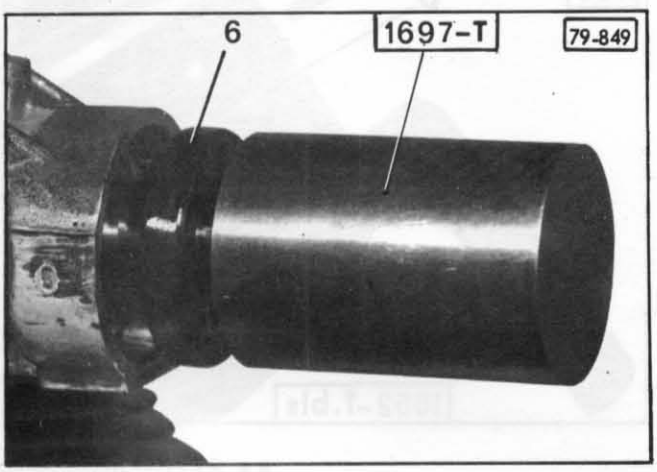

79-902
1
3
c
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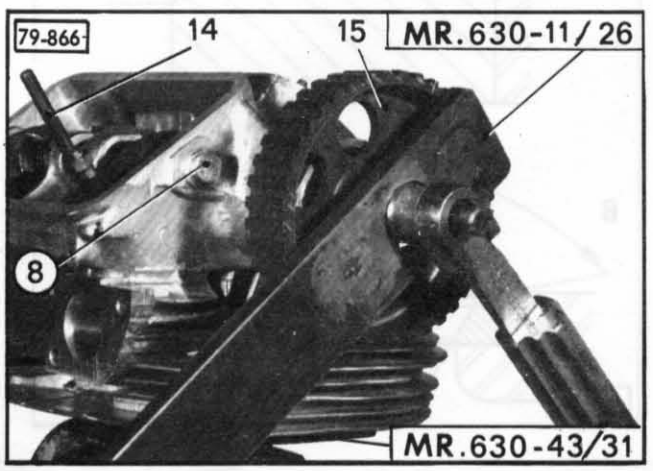

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1697-T
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MR.630-11/26
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MR.630-43/31

16. Fit the camshaft :

a) **Camshaft identification (1300 engine only) :**
→ *7/81 :* . An identification number is stamped on each shaft at « a » :
- A 57 E 59 : left camshaft
- A 58 E 60 : right camshaft

7/81 → *:* 2 circular grooves at « a ».

b) Fit the paper seal between camshaft rear bearing and cylinder head :
Engage each seal (1) on attachment studs (2), *making slot « b » in the seal coincide with oil return groove « c » in the cylinder head, coating* the seal with LOCTITE AUTOFORM before fitting. Oil the contact surface of the front seal on the camshaft.

c) Engage the camshaft in the cylinder head.

Position the rear bearing : boss « d » (oil return) on the bearing should correspond with groove « c » in the cylinder head. It must therefore be directed towards the exhaust ports.

(In the case of the right cylinder head, this means that fuel attachment studs (4) must face the inlet ports).

d) Tighten attachment nuts (5) (contact washer) to **1.5 to 1.8 m.daN.**

17. Fit the camshaft front bearing seal :

Use tool 1697-T

Seal (6) must be fitted when the camshaft is in place. Otherwise the seal will be damaged during shaft assembly.

18. Fit the rocker arm shafts :

Shaft identification :

- Left inlet shaft and right outlet shaft A are identical, and are not marked.
- Right inlet shaft and left exhaust shaft B are identical, and can be identified by blind hole « f ». Identification of the shafts is essential for correct orientation of the lubrication holes.

a) Position the rocker arms and springs in the cylinder head.

All rocker arms and springs are identical. The springs must bear on central bearings (7).

b) Oil the shafts and engage in the cylinder head, with shoulder « e » towards camshaft front bearing « a ».
Temporarily fit plug (8) to orient the shaft and align the blind stop hole with grub screw (9).

Coat the threads of grub screw (9) with LOCTITE FRENETANCH before inserting.

Remove plug (8).
On each end of the shafts, fit :
- O-ring seal (12),
- spacer (11) or (13) *(spacer (11) is thicker, and is fitted on shoulder end « e ».*
- plug (8) and copper seal (10).

Tighten screws (8) to between **1.4 and 1.6 m.daN.** Fit cylinder head casing attachment studs (14), with the shorter threaded portion at the cylinder head end.

19. Fit the camshaft pulley :
Position pulley (15) (alignment pin on camshaft). Anchor the pulley with tool MR. 630-11/26, and **tighten the nut** (flat washer) to **8.2 m.daN** (torque wrench).

20. Take the cylinder head off support MR. 630-43/31

OPERATION
GX. 311-3

RECONDITIONING THE CLUTCH HOUSING OF A PEDAL-OPERATED CLUTCH/TORQUE CONVERTER CLUTCH

SPECIAL TOOLS

TOOLS SOLD

1671-T : Inertial extractor

4053-T : Tool for removing the thrust bearing guide-sleeve

I - REPLACING A THRUST BEARING GUIDE-SLEEVE

(Manual gearbox)

Gearbox removal is not required for this operation.

1. Remove the engine only *(see Op. GX. 100-4 in section II).*

2. Remove the left-hand brake disc.
(see Op. GX. 451-1, chapter V, section II).

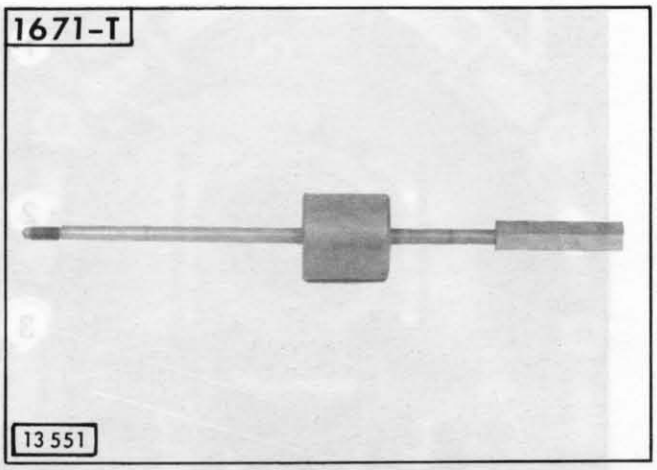
3. Remove the following :
- clip (1),
- thrust bearing (2),
- lock screw (3) on fork spindle (7),
- fork spindle (7),
- fork (4), spring (5) and anti-squeak bushes (6).

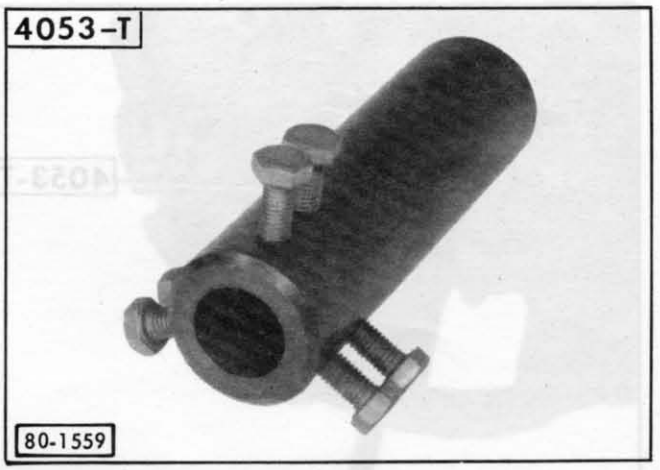
4. Remove the thrust-bearing guide-sleeve (8) :

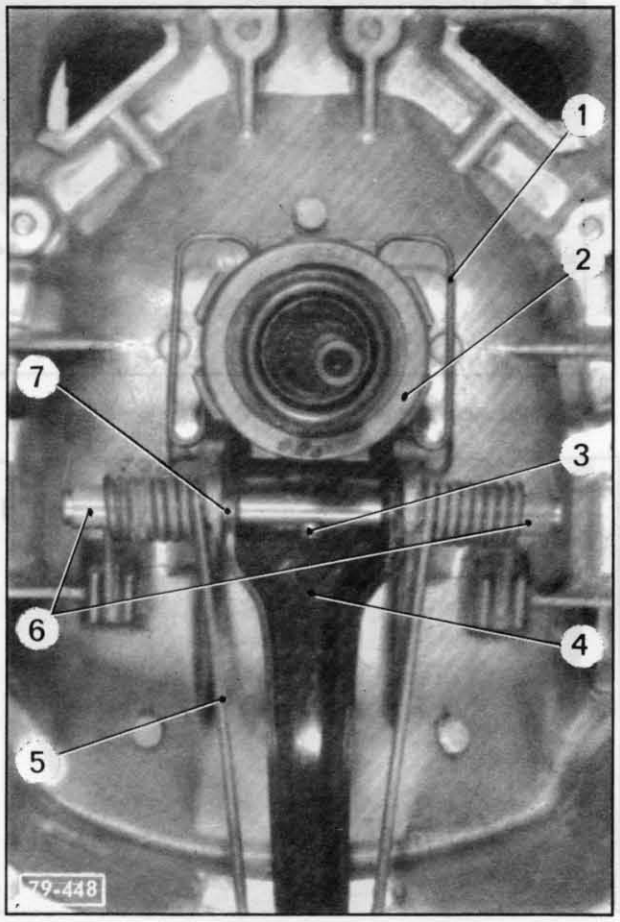
Cap sleeve (8) with tool 4053-T fitted with inertial extractor 1671-T *(tool 4053-T should be in contact with the housing).*

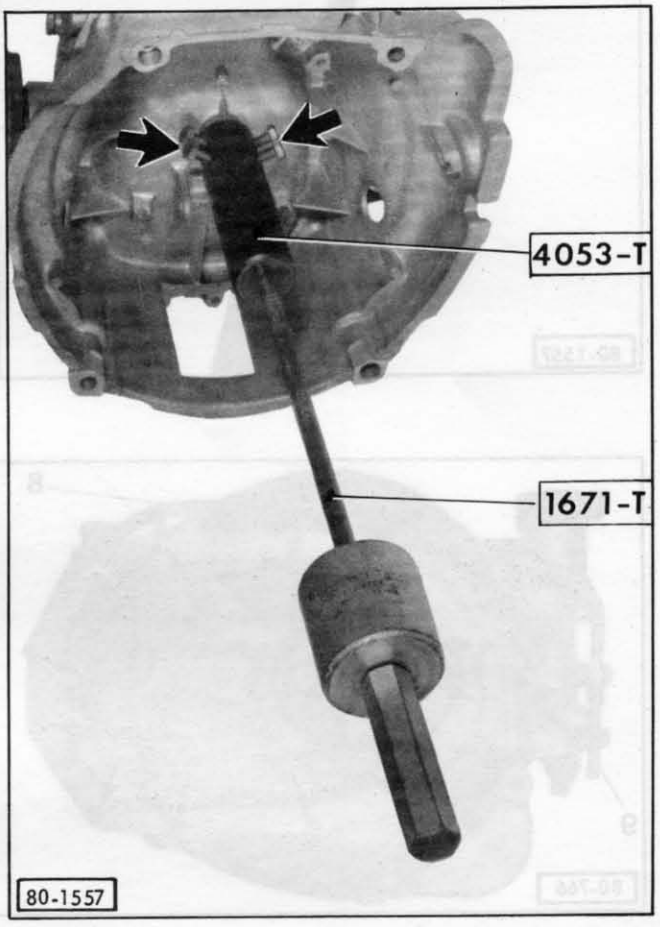
Tighten screws (➔) on the sleeve and remove it.

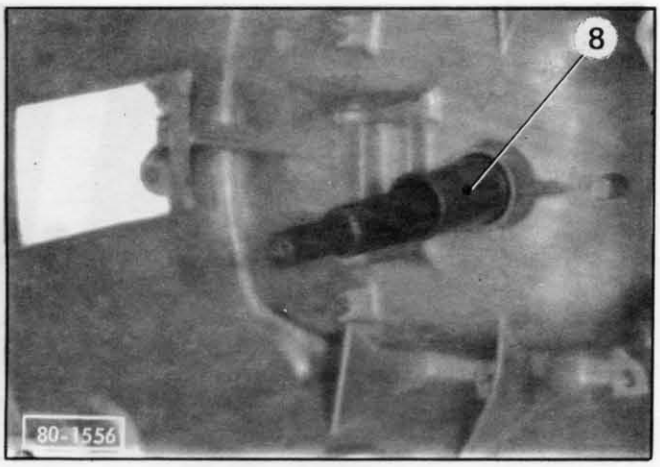
5. Degrease the new sleeve and its recess (9) in the housing with LOCTITE SUPER-CLEAN.

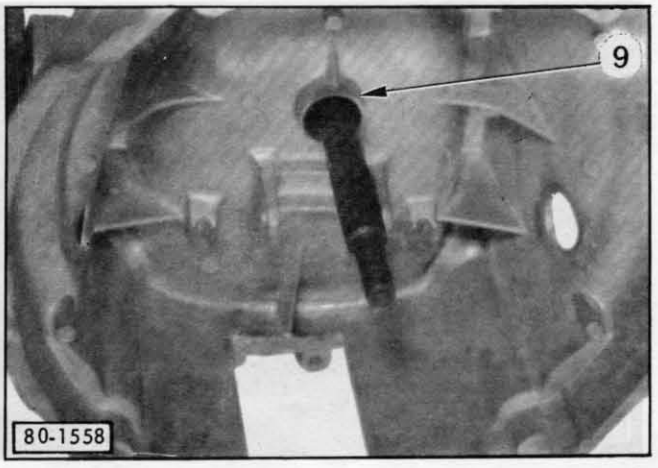

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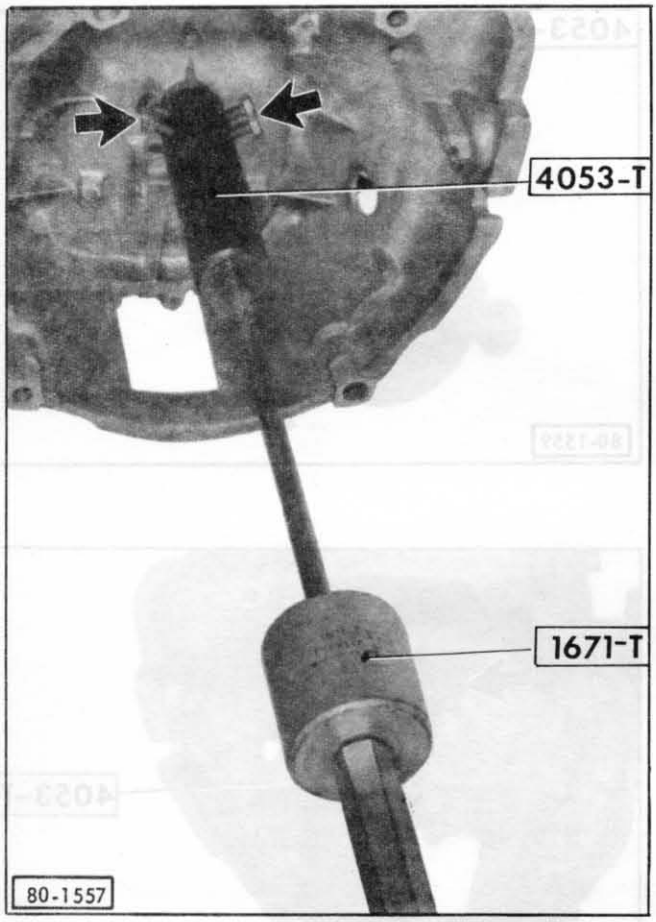

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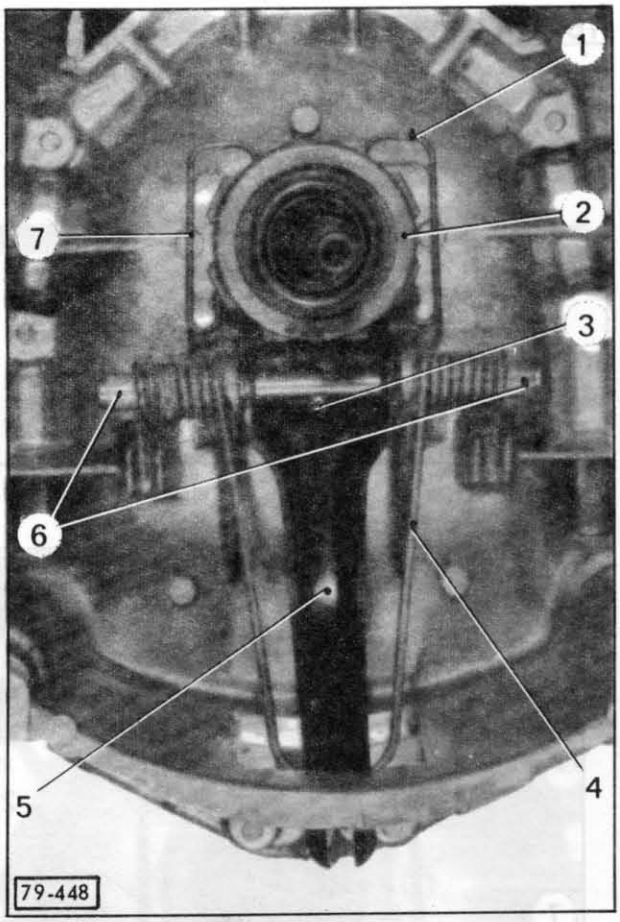

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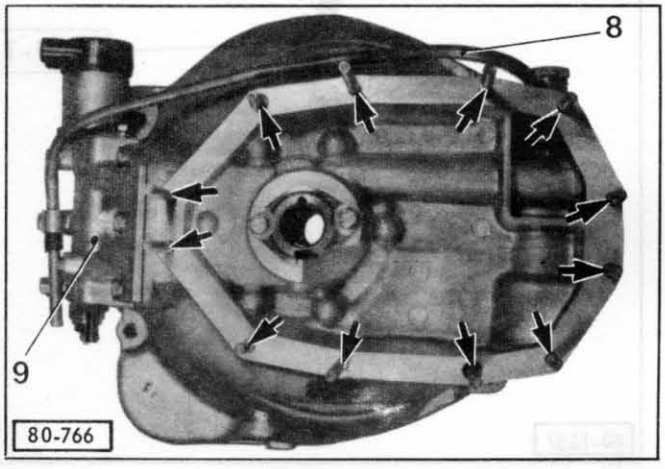

4053-T
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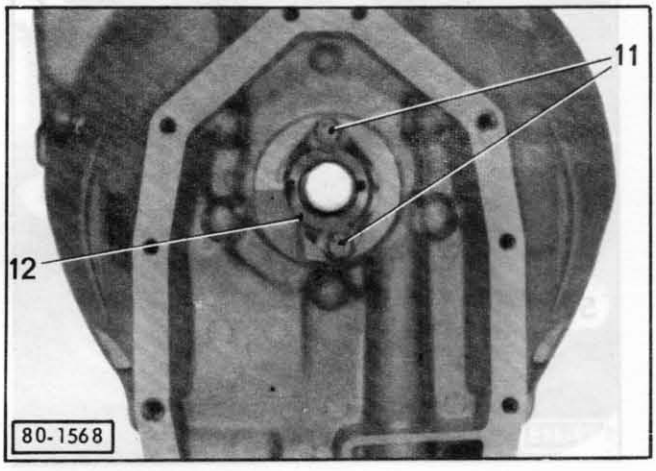

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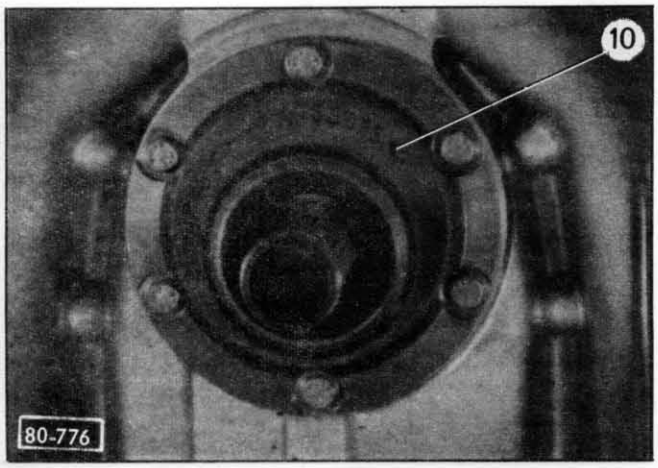

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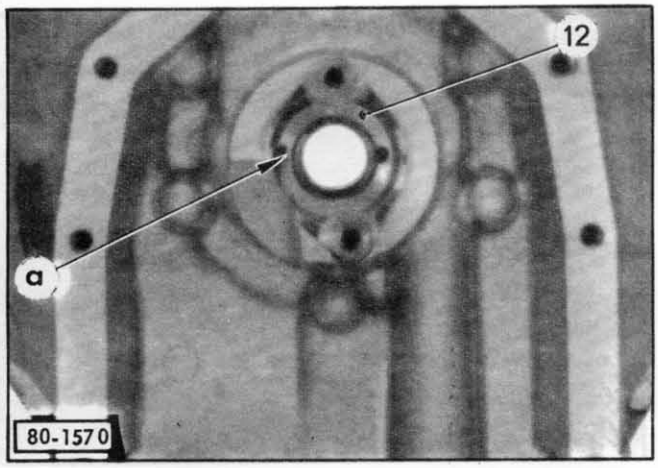

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6. Fit the thrust bearing guide-sleeve :

Smear the sleeve end *(end to be engaged in clutch housing)* with LOCTITE FRENBLOC.

Introduce the sleeve in tool 4053-T

Do not tighten screws (➡).

Introduce the sleeve in the housing, using inertial extractor 1671-T until tool 4053-T comes into contact with the clutch housing *(the protrusion of the sleeve is obtained by means of tool 4053-T).*

Remove the tool.

Wipe off LOCTITE traces on the sleeve.

A new thrust bearing should without fail be fitted once the thrust bearing guide-sleeve has been replaced.

Lubrication :
Using TOTAL MULTIS MS grease, fill the thrust bearing groove and smear the sleeve.

7. Fit the following :
- Anti-squeak bushes (6), spring (4), fork (5), fork spindle (2), screw (3), thrust bearing (1) and clip (7).

II - REPLACING THE STATOR SLEEVE OF A GEARBOX WITH TORQUE CONVERTER

The removal of the engine-gearbox assembly is required for this operation *(see Op. GX. 100-1 section II)*

1. Separate the converter housing from the gearbox.

2. Strip the converter housing :

Remove the following :
- distributor assembly (9),
- radiator return pipe (8),
- oil pump (10) *(mark its location in relation to the housing),*
- the oil strainer and its seal,
- studs (➡).

3. Remove the stator sleeve :
Remove :
- screws (11),
- sleeve (12) using a press.

4. Clean the converter housing.

5. Heat the converter housing up to 120° C approx.

6. Position the sleeve :
Take care to have recess « a » in the sleeve well positioned in relation to the corresponding machined area in the converter housing.

7. Re-assemble the converter housing :

Fit oil pump (1) with a new seal. Centre the pump by means of mandrel 1689-T
Tighten screws (2) **to 1.9 m.daN.**

Fit distributor (3). Its contact face should be smeared with LOCTITE FORMETANCH.
Tighten the attachment screws **to 1.2 to 1.7 m.daN.**

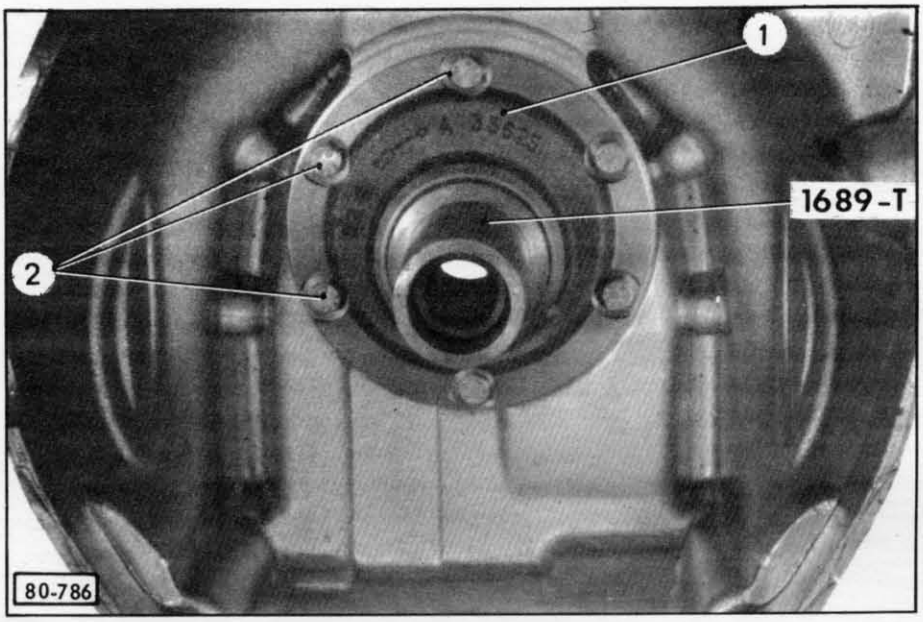
Fit radiator return pipe (7).

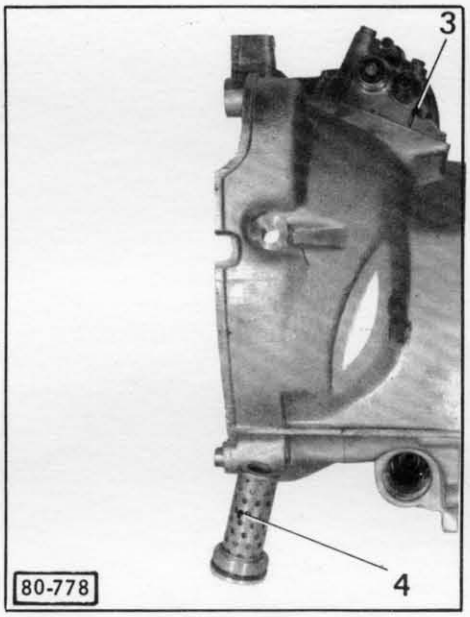
Fit attachment studs (6).

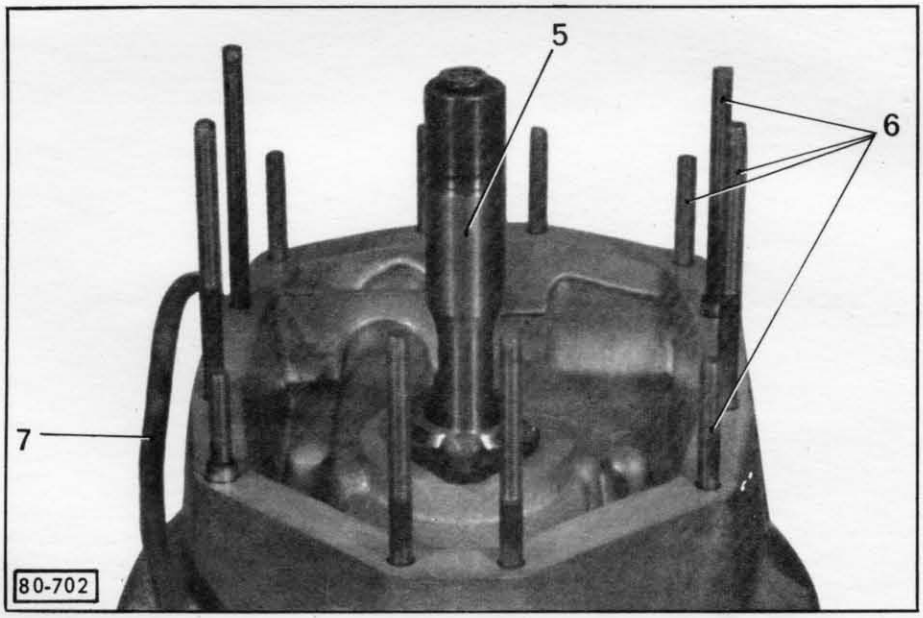
Fit oil strainer (4), **tighten it to 1 to 1.5 m.daN.**

Fit first motion shaft (5).

8. Couple the converter housing to the gearbox.


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OPERATION
GX. 330-3

RECONDITIONING A GEARBOX
(PEDAL-OPERATED CLUTCH)

SPECIAL TOOLS

TOOLS SOLD

2437-T : Dial gauge

3253-T : Snap ring pliers

Kit 3184-T bis : containing :

A : Dial gauge support
B : Dial gauge support
C : Cap
D : Mandrel
E : Mandrel
F : Dial gauge support
G : Mandrel
H : Stud

2400-T : Universal extractor
(used with stud H from kit 3184-T bis)

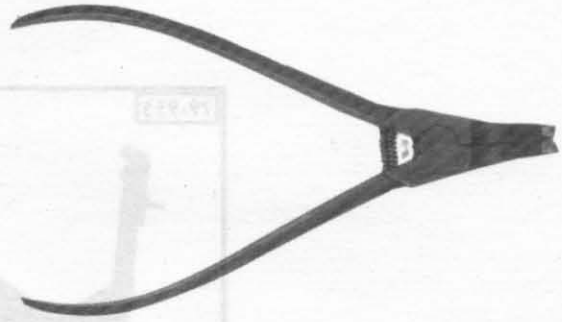
♦ This extractor can be fitted with four different types of hooks having the following references :
RK 1127 - RK 1329 - RK 1330 and RK 1331

♦ **OUT 30 4055-T :** Pinchers for retarding dowels

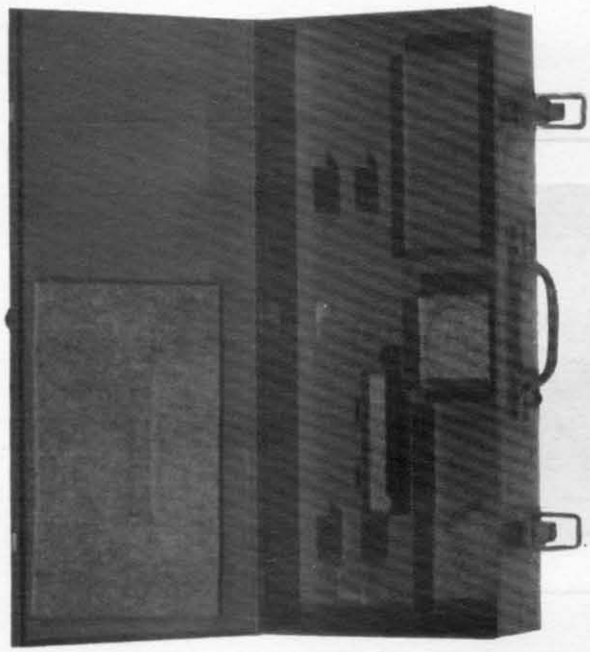
2437-T 12 827

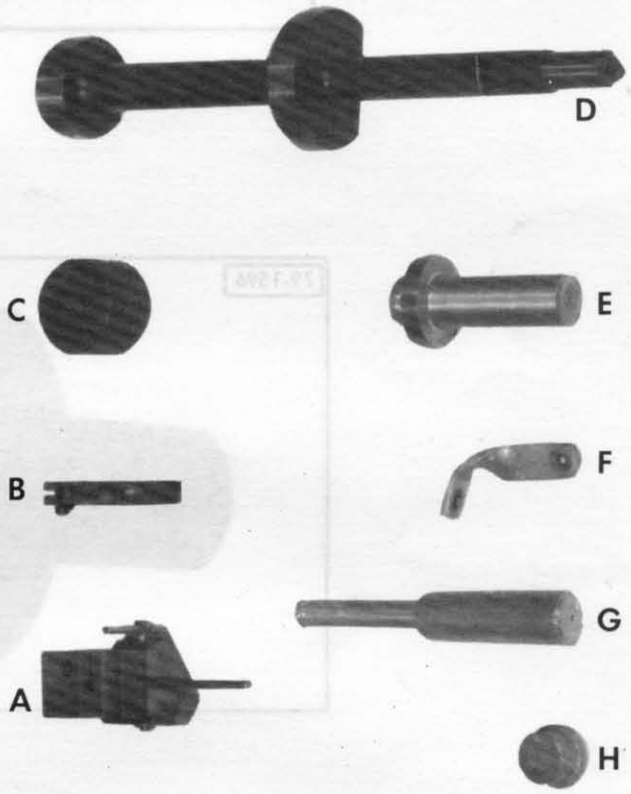


3253-T 12 763

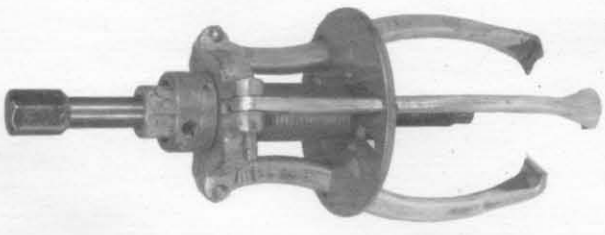


3184-T.bis 14 722

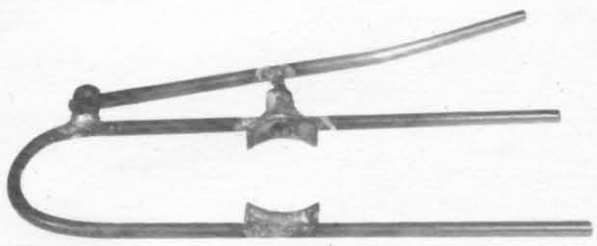




2400-T 12 762

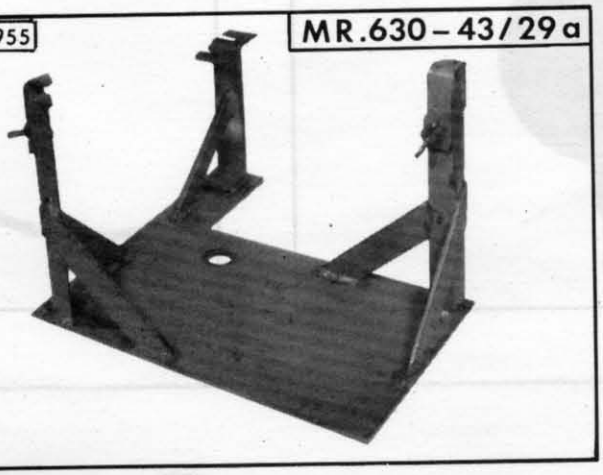


79-954 **OUT. 30-4055-T** ♦



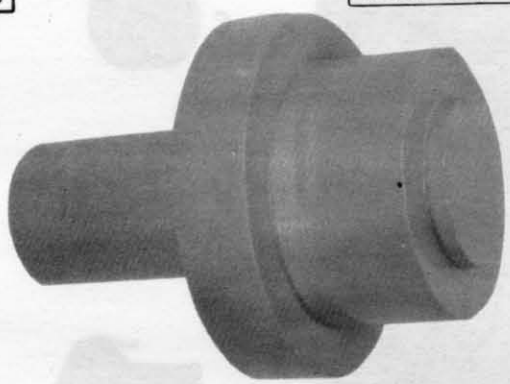
79-955

MR.630-43/29a



79-1596

MR.630-33/8



TOOLS NOT SOLD

MR. 630-43/29 a : Gearbox bench support

MR. 630-33/8 : Mandrel for fitting gearbox drive-outlet seals

TIGHTENING TORQUE VALUES

Mandatory values *(torque wrench) :*

- ♦ - Bevel pinion nut : 4-speed : ..... **10 to 12 m.daN**
  5-speed : ..... **22 to 25 m.daN**
- Primary shaft nut : ..... **6 to 7 m.daN**
- Rear cover attachment screws : ..... **2.5 to 3 m.daN**
- Differential crown wheel attachment screw : ..... **8 to 9 m.daN**

Recommended values :

- Gearbox drive outlet shaft threaded bushing : ..... **6 to 7.5 m.daN**
- Reversing light contactor : ..... **1.2 to 1.5 m.daN**
- ♦ - Half-casing assembly nuts and screws : ..... **1.3 to 1.5 m.daN**
- ♦ - Clutch housing assembly nuts : ..... **1.3 to 1.5 m.daN**
- Drain and filling plugs : ..... **3.5 to 4.5 m.daN**

RECONDITIONING A GEARBOX (PEDAL-OPERATED CLUTCH)

I - DISMANTLING

1. Drain the gearbox.

2. Place the gearbox on support MR. 630-43/29 a with the half-casing resting on the support.

3. Remove the gearbox output shafts :
Undo the ring nut, using pipe wrench (1).
Disengage output shaft (2) from the gearbox *(tapping with a mallet, if necessary).*

4. Remove *(if necessary) :*
- clip (4),
- stop (5),
- set screw (6) for fork shaft (8),
- fork (9), spring (3) and anti-rattle bushes (7).

5. Remove rear cover (13) :
Undo attachment screws (12) and (14), and disengage cover (13).

6. Remove clutch housing (10) :
Undo attachment nuts (11) and disengage housing (10).

7. Remove the right half-casing :

A - FOUR-SPEED GEARBOX

- Place a finger on plug (16) and extract pin (15).
- Remove plug (16).
- Undo assembly nuts and screws (17).
- Remove the right half-casing.

Prepare to catch the ball lock, ball joint guide and guide thrust spring, when they fall.

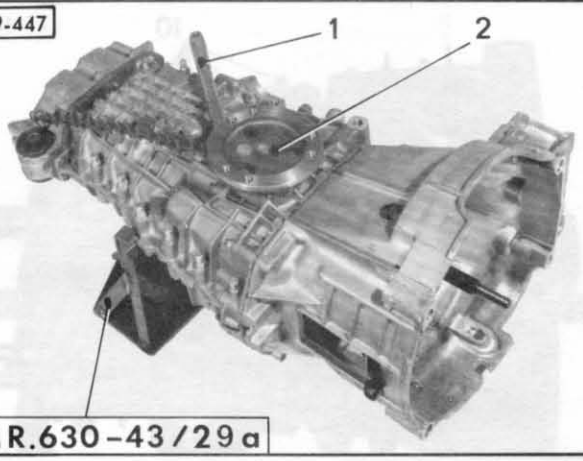
B - FIVE-SPEED GEARBOX

- Extract anchor pin (22) for 5th gear fork (21) *(place a set under the shaft to avoid damage to same).*
- Release and undo nut (19).

For this operation select 3rd gear by pushing the shaft of fork (23) and 5th gear by means of sliding gear (18).

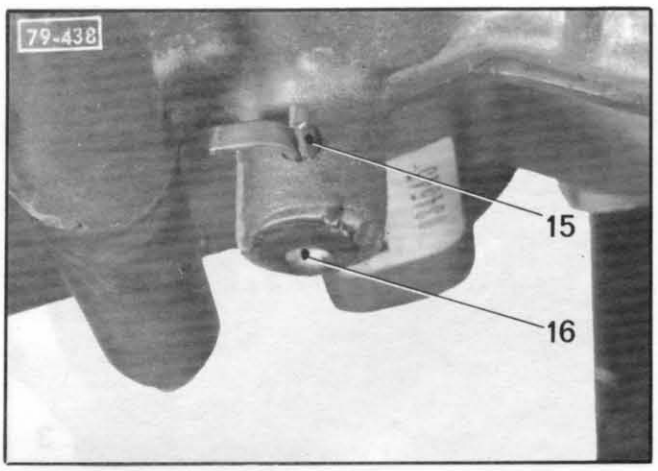
- Remove the assembly comprising synchromesh hub (20) and sliding gear (18) with fork (21).
- Temporarily fit 5th gear synchromesh and nut (19), but do not tighten fully.
- Engage 3rd and 5th gears as before.
- Release nut (24).

79-447

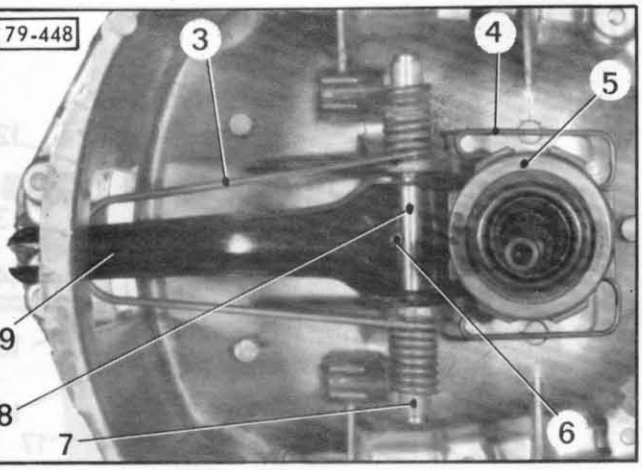


MR.630-43/29a

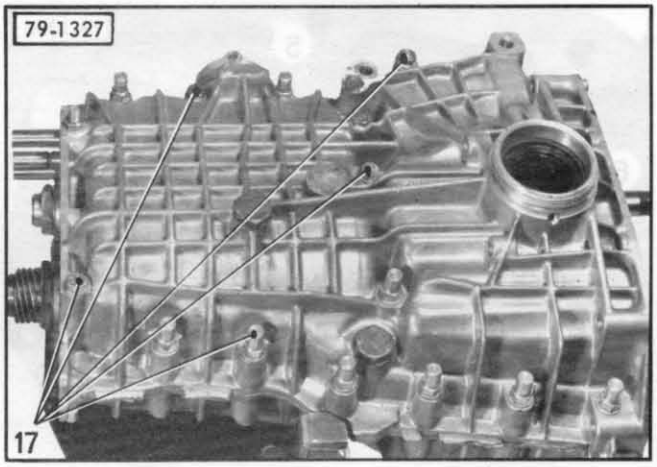
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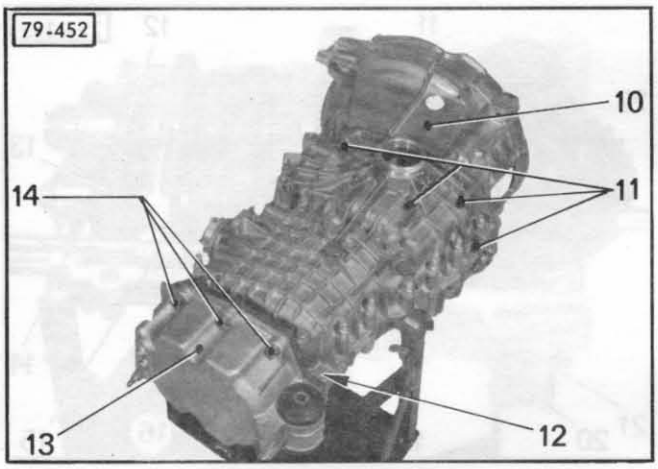
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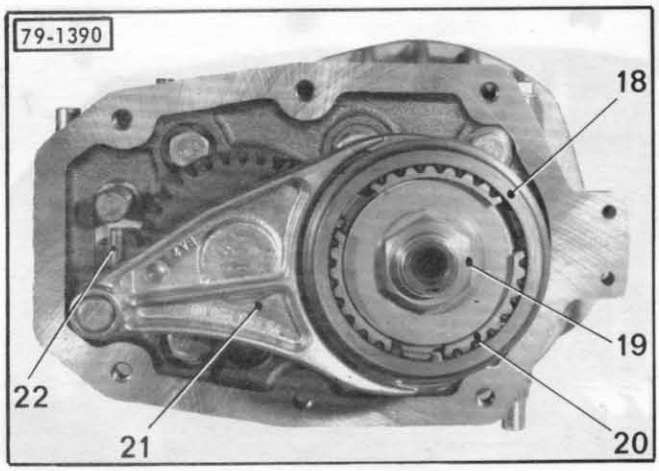
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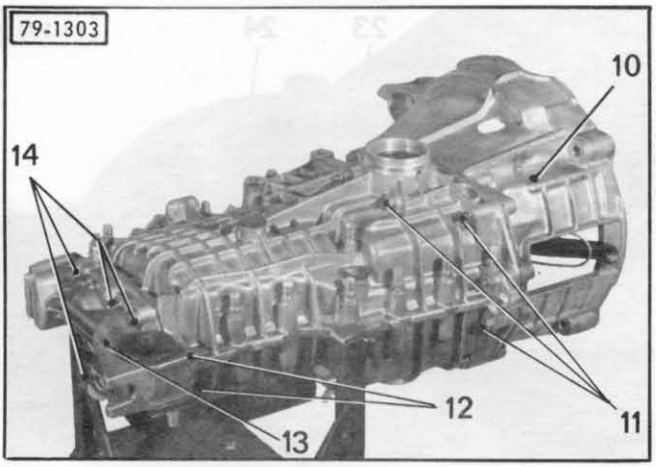
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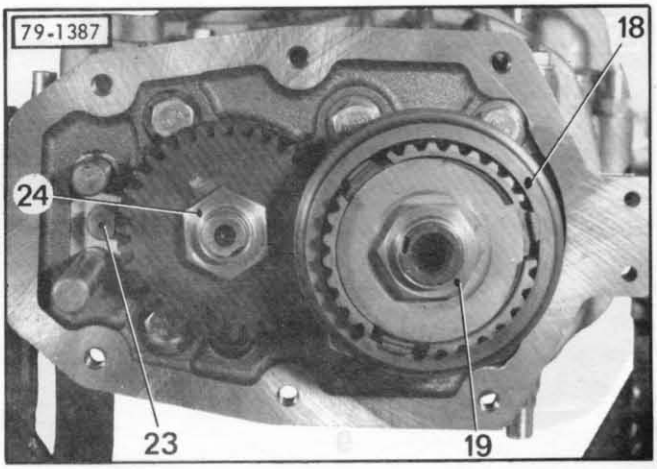
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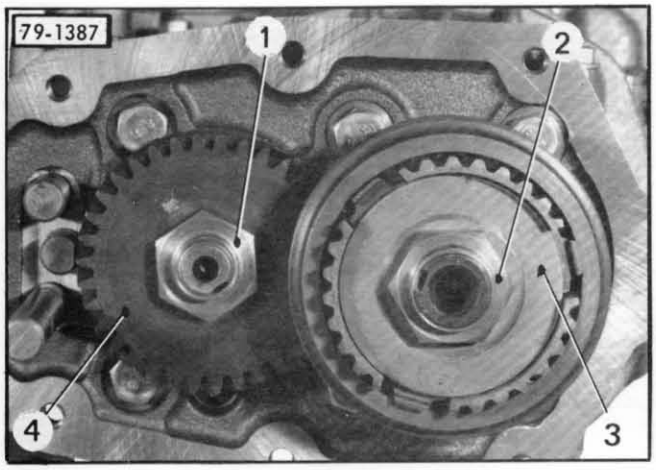


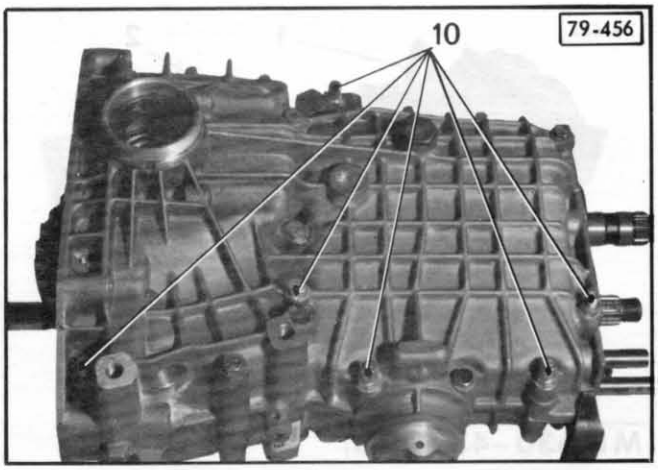
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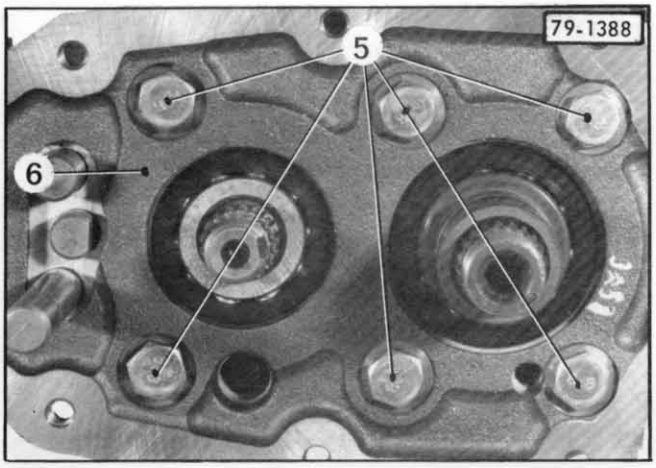


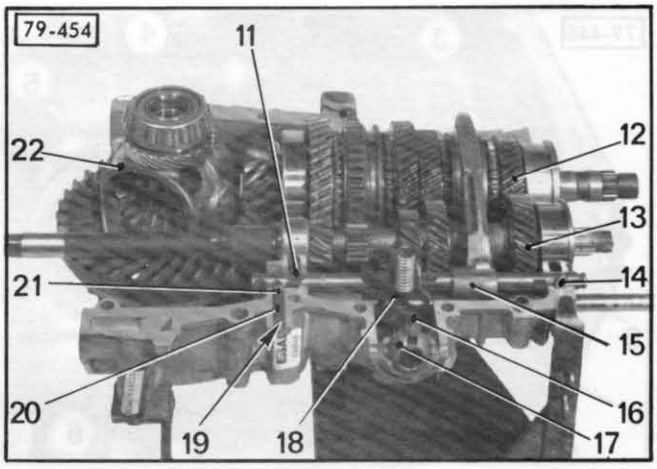
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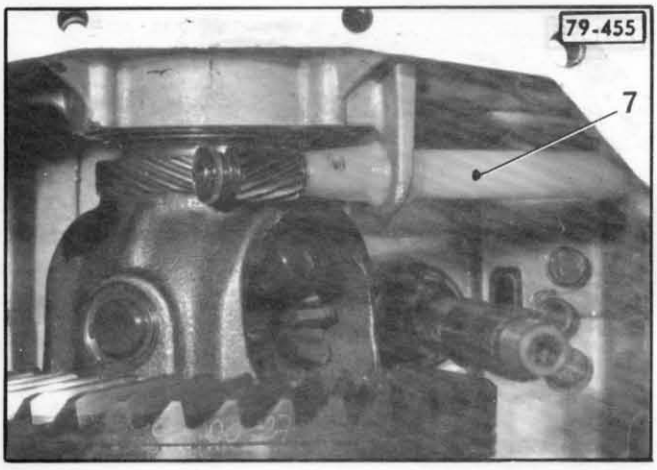


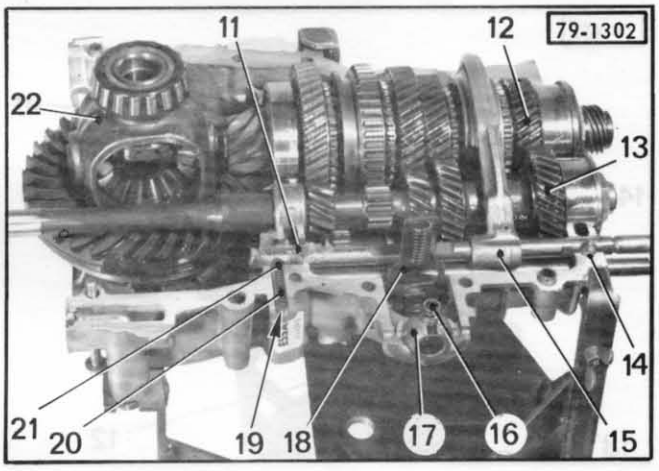

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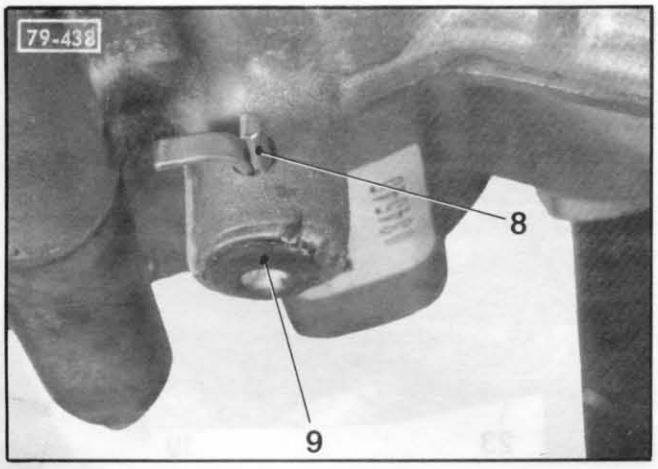

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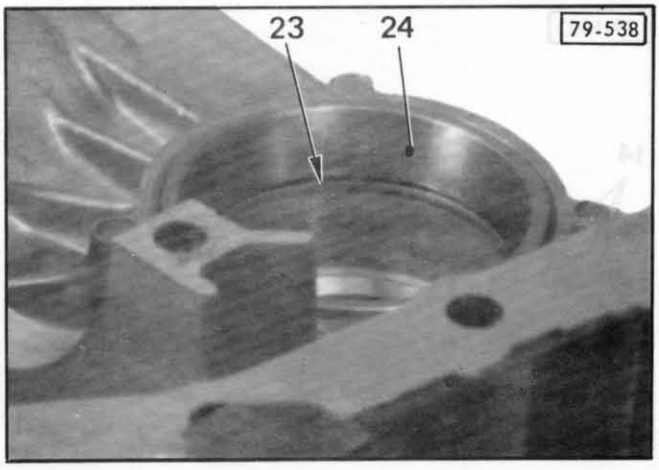

79-1388
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79-454
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79-455
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79-1302
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79-438
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79-538
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- Remove :
  - nuts (1 and (2),
  - sychromesh hub (3),
  - 5th gear drive pinion (4),
  - driven pinion and spacer.

- Undo screws (5), and take down bearing thrust plate (6).

- Remove speedometer connector (7).

- Place a finger on plug (9), and extract pin (8).
- Remove plug (9).

- Undo assembly nuts and screws (10).
- Remove the right half-casing.

> Catch ball lock (11), swivel guide (16) and the thrust spring of guide (16) when they fall.

8. Remove :

- spring carrier plate (18),
- ball-joint (17),
- catch (14),
- spring (20), ball lock (21) and capsule (19),
- shaft and fork for 3rd/4th gear (15),
- ball lock under 3rd/4th gear fork shaft,
- primary shaft/drive shaft assembly (13),
- bevel pinion assembly (12),
- differential (22),
- outer bushes (24) for the differential bearings *(identify with corresponding bearing).*

> If the gearbox is dismantled for overhaul, without replacing the following :
>
> - casings,
> - crownwheel and pinion,
> - differential bearings,
> - differential.
>
> Index the position of adjustment shims (23), avoiding the need to readjust tooth engagement play.

II - STRIPPING DOWN GEARBOX ASSEMBLIES

1. Strip down the left half-casing :

If necessary, extract circlip (17) and seal (18).
extract pin (1), using a magnet.
Remove :
- shaft (3), reverse gear pinion (2) and spacer (4),
- shaft (7) and reverse gear lever (6),
- reversing light switch (10).

A - 4-SPEED GEARBOX

Remove reverse gear drive shaft (5) :
- Disengage the shaft rearwards, placing a finger over ball lock recess « a », to avoid the ball springing out.
- Extract the ball lock and spring.

B - 5-SPEED GEARBOX

Disengage 5th gear safeguard (11) as they jump
Disengage 5th gear safeguard (9) to the gear.

Catch plunger (12) and spring (11) as they jump out.

Disengage drive shaft (8) to the rear, placing a finger on ball lock recess « b » to prevent the ball springing out.
Extract the ball and its spring.
Extract pin (13) and drive shaft (8).

Do not remove shaft A under any circumstances

2. Strip down the right half-casing :

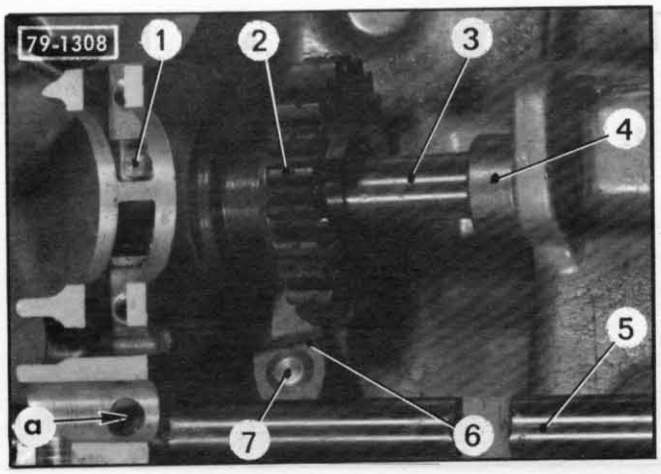
Remove :
- 1st/2nd gear shaft and fork *(place a finger over the ball lock orifice, to prevent the ball springing out).*

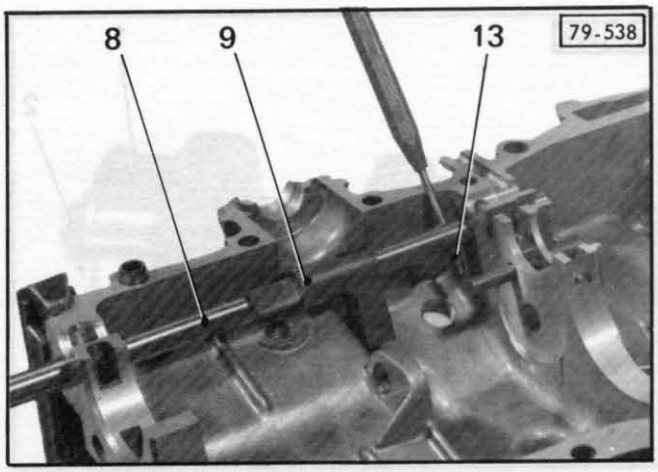
When extracting pin (16), place the assembly comprising shaft (15) and fork (14) against the rear shaft bearing, to avoid damage.

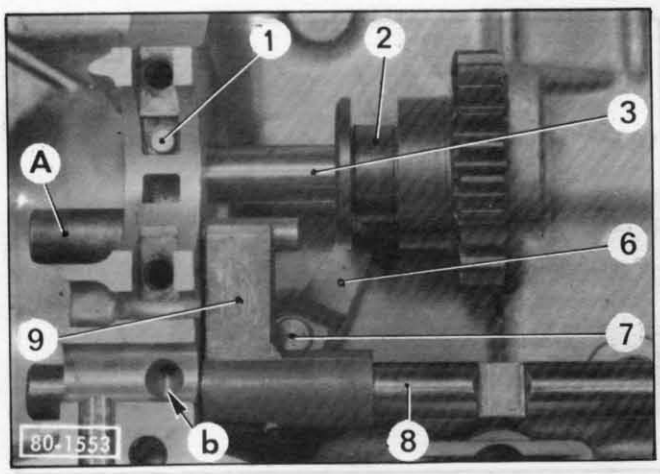
- Drain and level gauge plugs.
- circlip (17) and seal (18) if necessary.

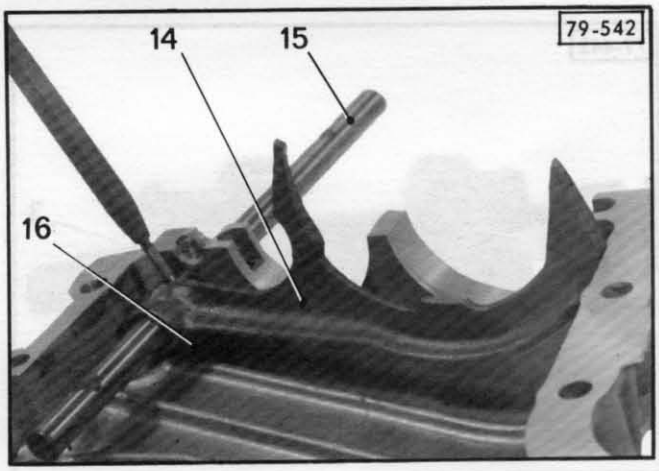
3. Strip down the primary shaft :

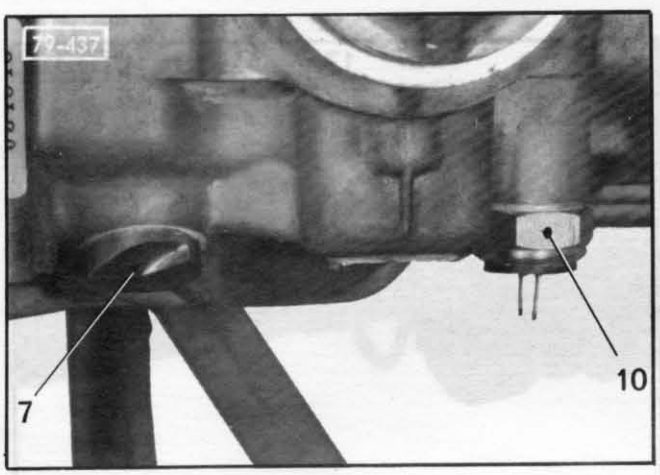
Remove drive shaft (21), expanding circlip (19).
Remove needle bearing (20).

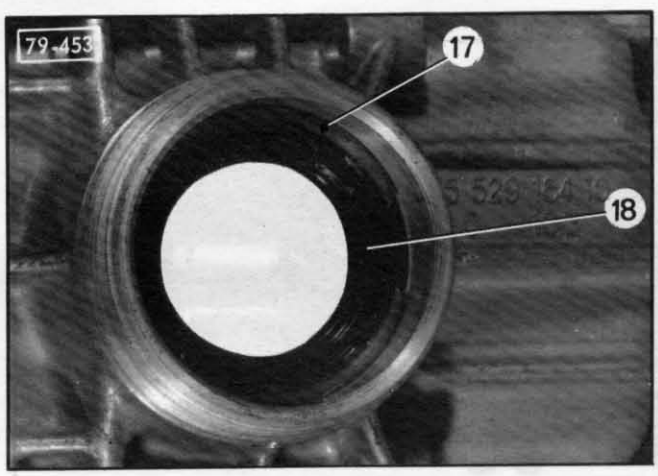

79-1308
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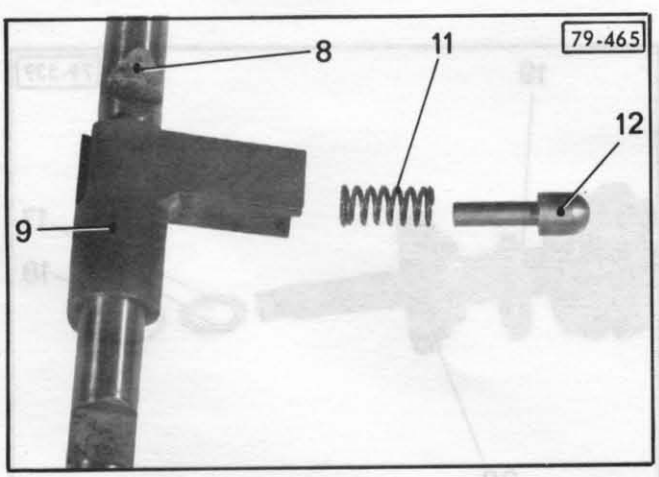

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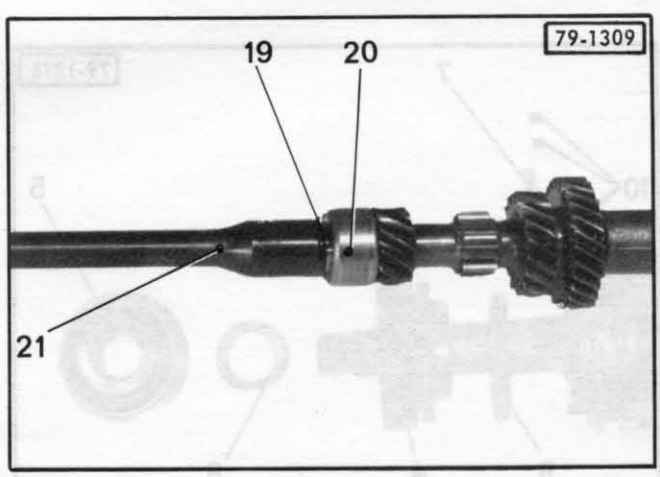

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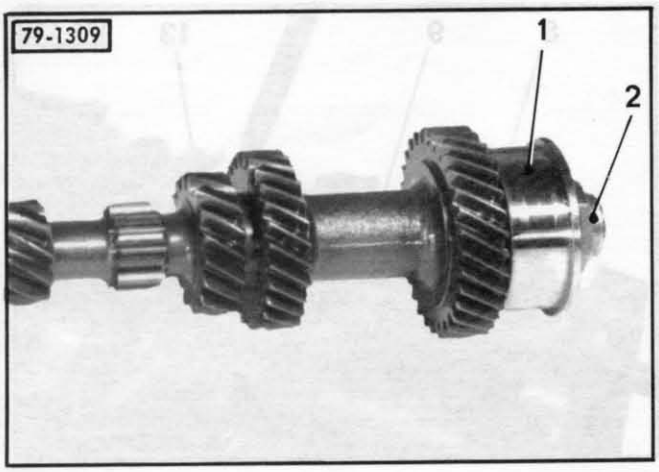

79-542
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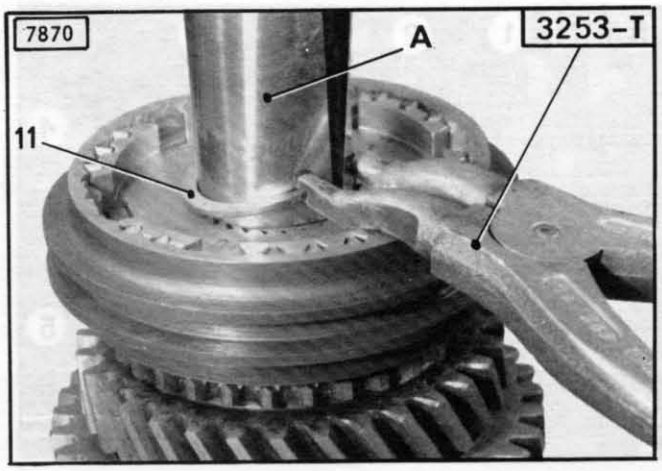

79-437
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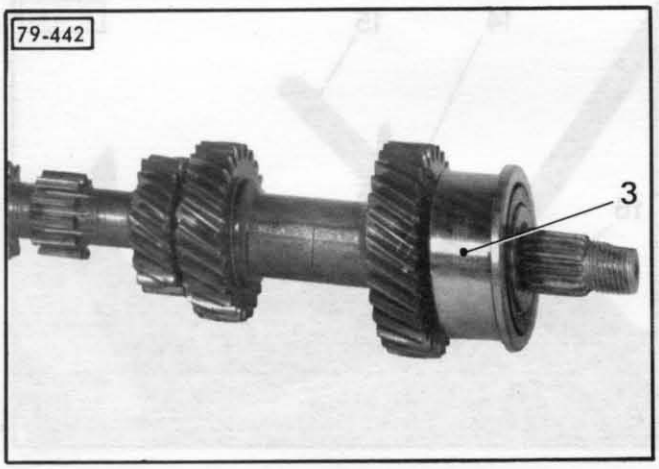

79-453
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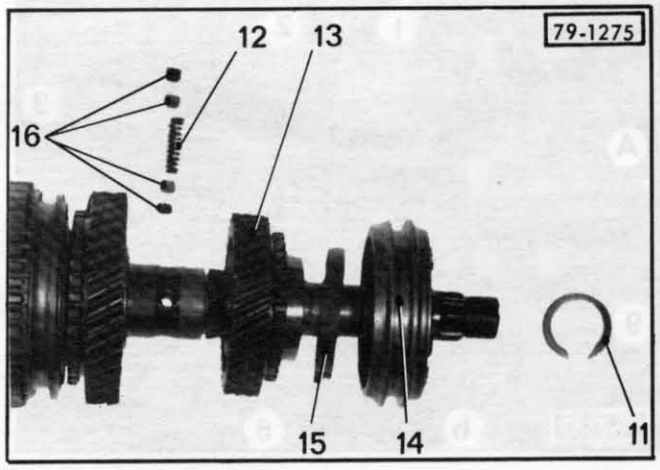

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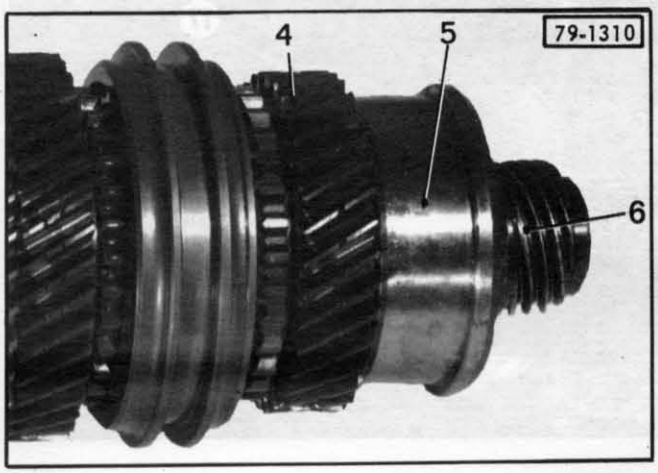

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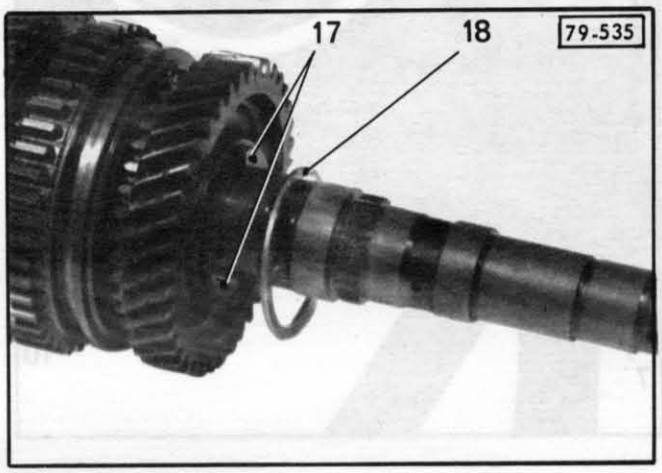

79-1309
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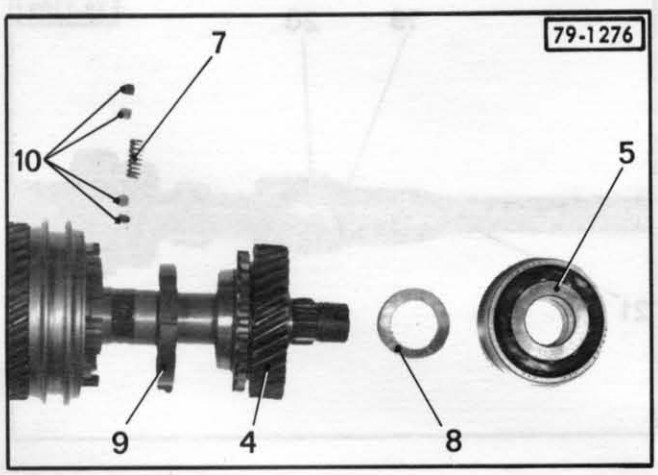

7870
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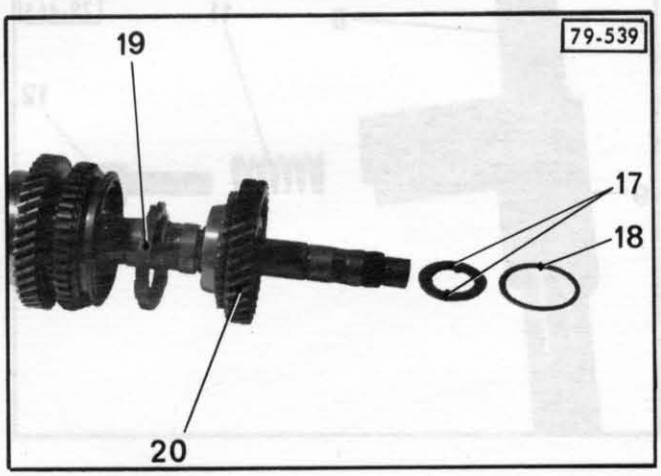

79-442
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79-1275
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79-1310
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79-1276
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79-539
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A - 4-SPEED GEARBOX

Release and undo nut (2).
Extract bearing (1).

B - 5-SPEED GEARBOX

Extract bearing (3).

4. Remove the bevel pinion :

The contact surfaces of the gearwheels on the bevel pinion are threaded, and any trace of impact damage or scoring on these surfaces can cause binding of the parts when in operation. IT IS THEREFORE ESSENTIAL, to take the necessary precautions during disassembly.

A - 4-SPEED GEARBOX

Release and undo nut (6), then proceeding as for the five-speed box.

B - FIVE-SPEED GEARBOX

a) Remove :
- bearing (5),
- distance adjustment washer (8),
- 4th gear pinion (4) *(during disassembly, take care not to lose lock pins (10) and spring (7)),*
- 4th gear synchromesh ring (9).

If the gearbox is overhauled without replacing the following :
- casings,
- crown wheel and pinion,
- bearing (5).

Keep distance adjustment washer (8) to avoid the need for repeating the adjustment operation.

b) Remove stop ring (11).
For this purpose, wrap the end of the bevel pinion with sheet of foil « A » *(thickness 0.1 mm).*
Hold in contact with stop segment (11).
Open the ends of the stop ring slightly, using pliers 3253-T .
Slide the foil under the stop ring.
Remove stop ring (11), sliding over the foil.

c) Remove :
- 3rd/4th gear synchromesh hub and sliding gear assembly (14),
- 3rd gear synchromesh ring (15),
- 3rd gear pinion (13) *(during disassembly, do not lose lock pins (16) and spring (12).*

The 3rd gear and 4th gear synchromesh rings are identical. If these parts are not replaced, they must be kept paired with their existing pinions.

d) Remove :
- washer (18),
- two half-washers (17),
- second gear pinion (20),
- second gear synchromesh ring (19).

e) Extract stop ring (1) *(see paragraph b).*

f) Remove :
- 1st/2nd gear synchromesh hub and sliding gear (2),
- 1st/2nd gear synchromesh ring (3),
- 1st gear pinion (4).

The 1st and 2nd gear synchromesh rings are different. They must therefore be kept with their corresponding pinions.

The synchromesh rings are identified as follows :

A : 1st gear synchromesh ring :
- dissymetrical cone « a »,
- three bosses « d ».

B : 2nd gear synchromesh ring :
- symmetrical cone « b »,
- three bosses « d »

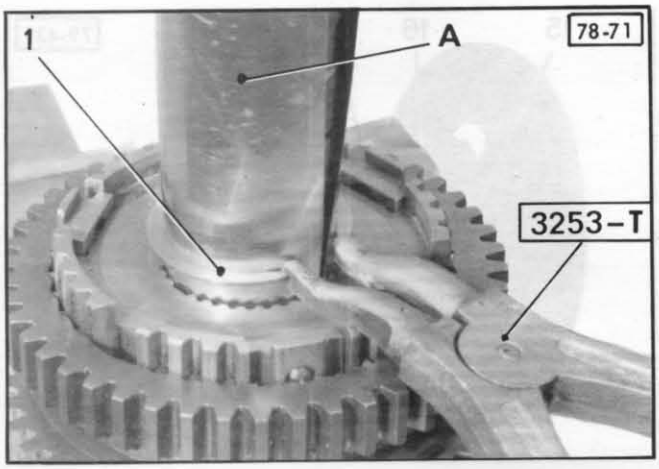
g) Remove :
- stop ring (6);
- bearing (5) *(disassembly in a press, using a tube with ID 50 mm, length 60 mm)*

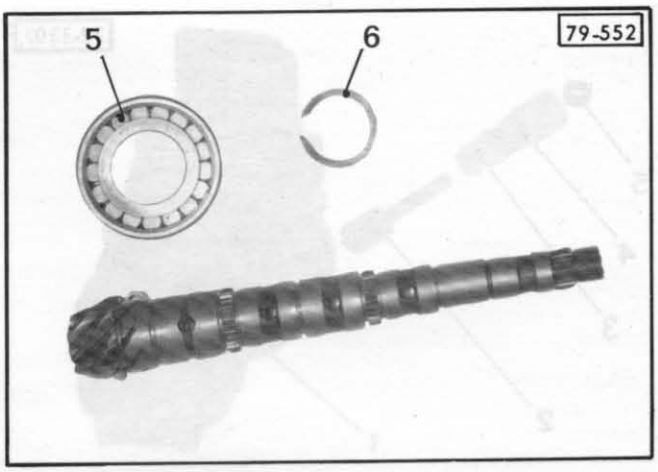
5. Strip down the differential :

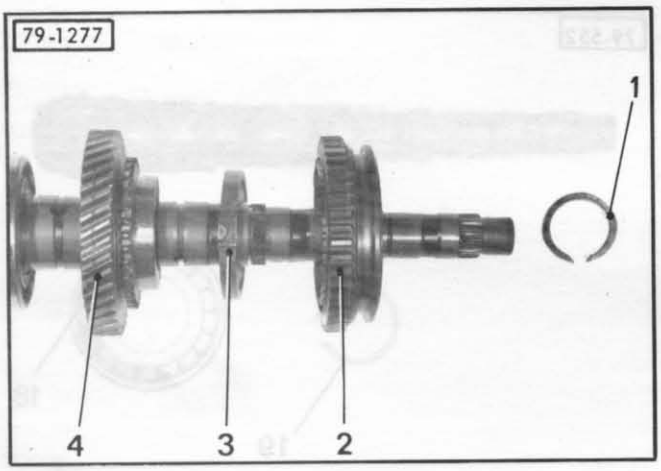
Remove :
- bearing (7) (use universal extractor 2400-T and stud H from kit 3184-T bis).
- circlip (9),
- shaft (8),
- two satellite gears (12),
- two planet gears (10),
- crown wheel (11).

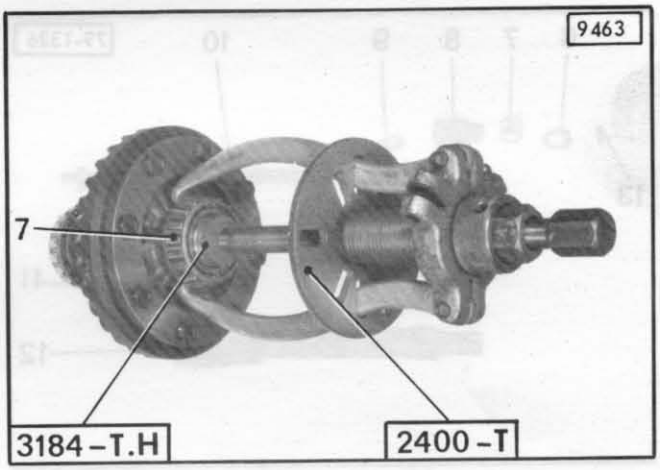
6. If necessary, strip down the gearbox drive outlet shafts :

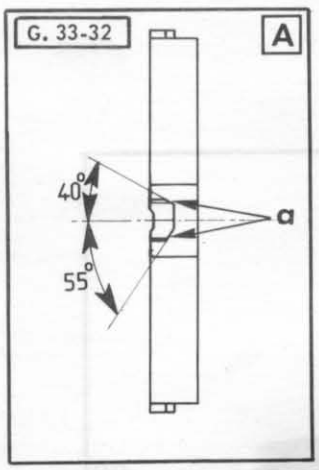
Remove :
- bush (15), bearing (14) and ring nut (13), using universal extractor tool 2400-T and taking purchase on ring nut (13).

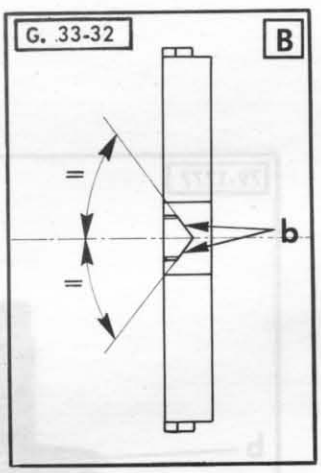

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3253-T

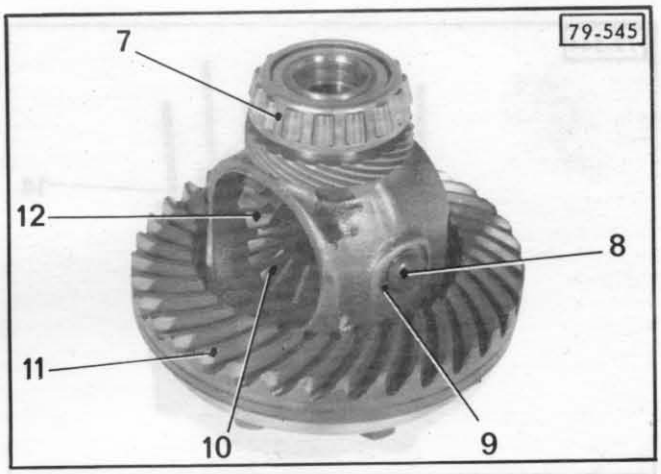

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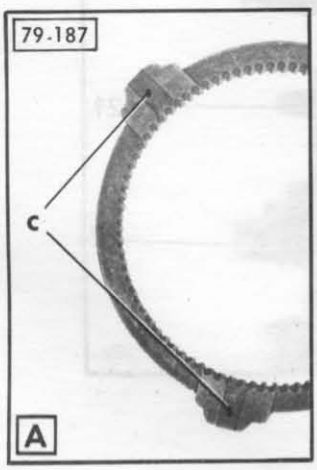

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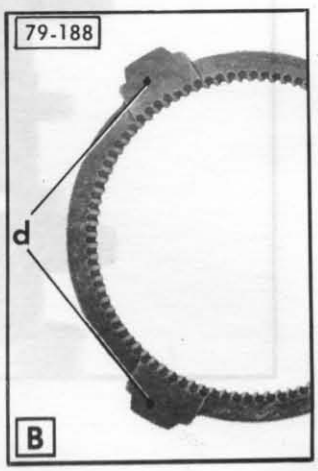

9463
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3184-T.H
2400-T

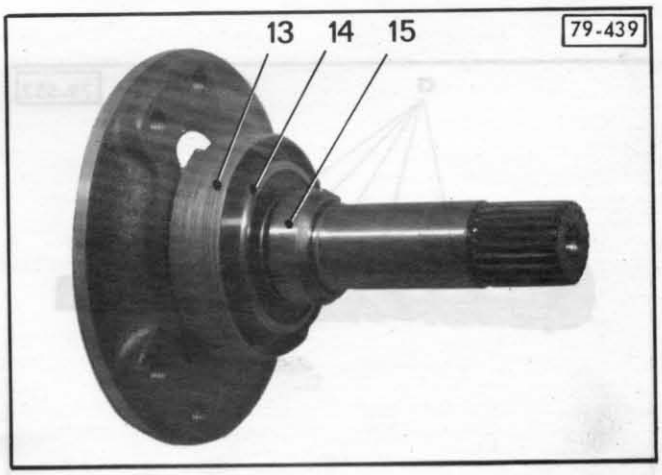

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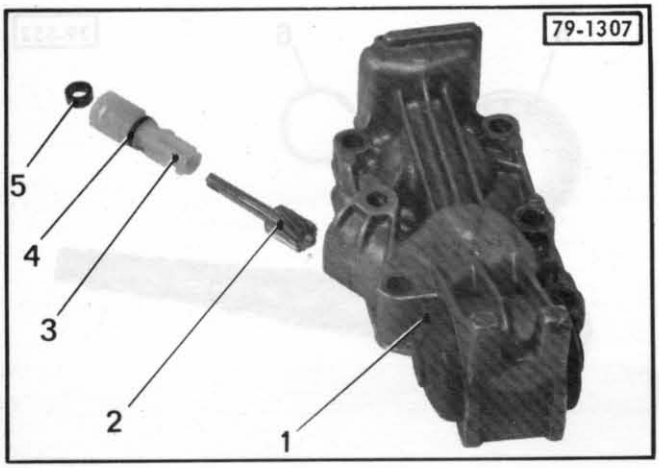

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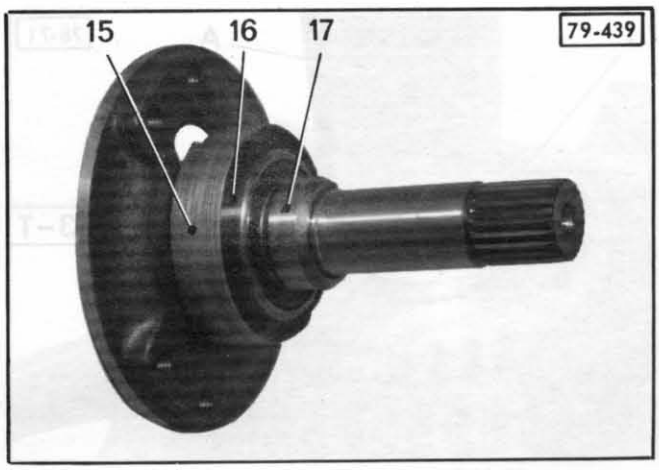

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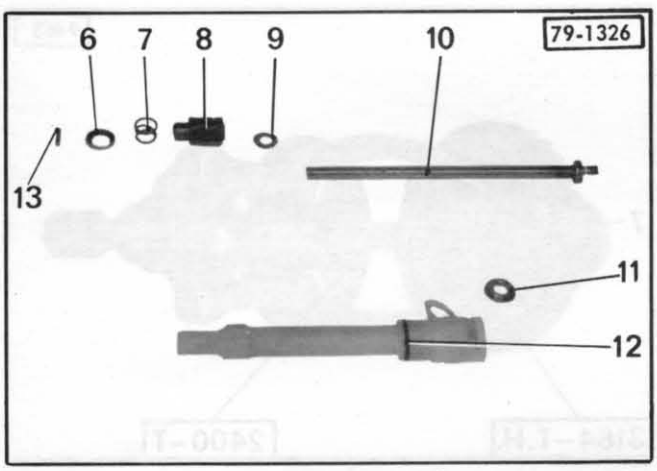

79-187
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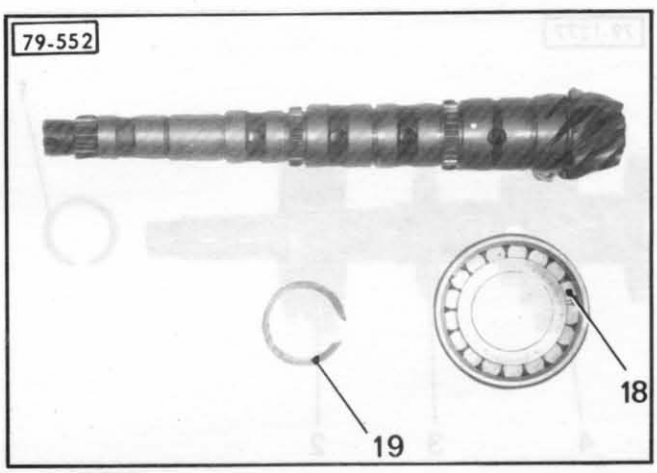

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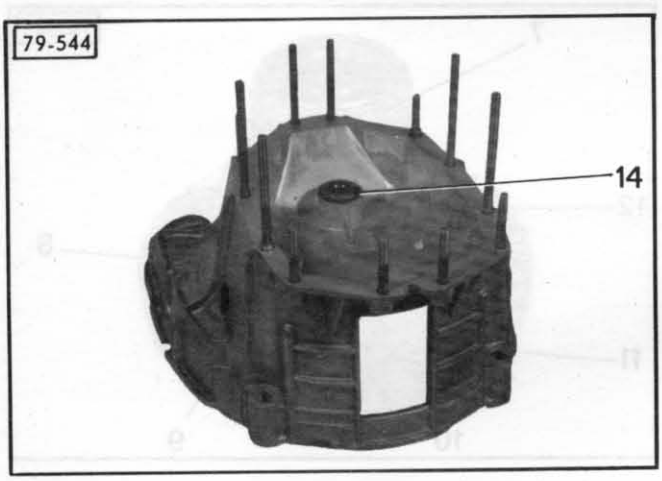

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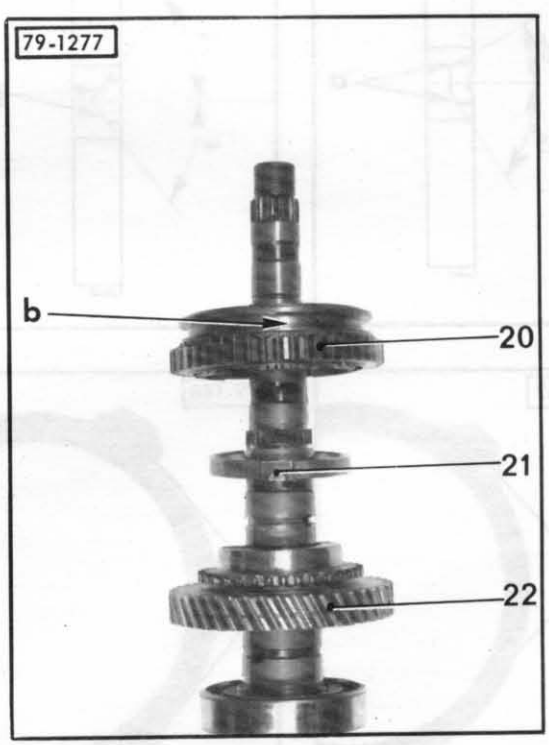

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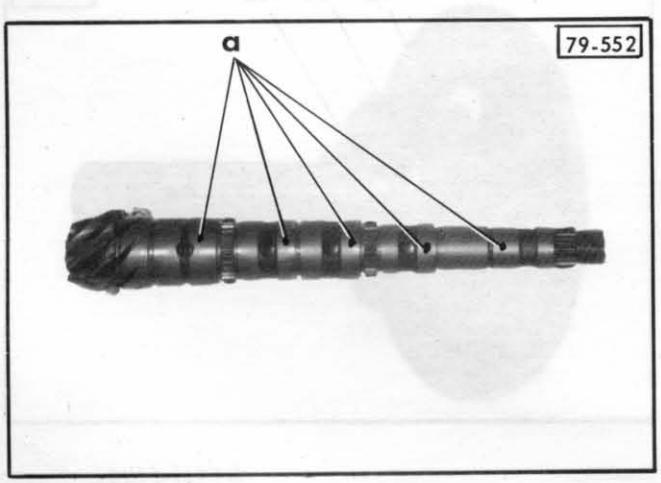

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7. *FOUR-SPEED GEARBOX*

Srip down the rear cover :

Disengage speedometer connector (3) from rear cover (1).

Disengage pinion (2).

Remove seals (4) and (5).

8. *FIVE SPEED GEARBOX*

Strip down the speedometer drive system

Remove :

- pin (13), by compressing spring (7),
- cup washer (6),
- spring (7),
- pinion (8),
- washer (9),
- shaft (10),
- spacer (11),
- seal (12).

9. If necessary, strip down the clutch housing :

Remove :

- studs,
- seal (14).

10. Clean the parts.

Machining of drive pinion surfaces « a » is strictly prohibited.

III - PREPARATION OF ASSEMBLIES

1. If necessary, prepare the gearbox drive outlet shafts.

On each shaft, fit :

- ring nut (15),
- bearing (16) and ring nut (17) *(assemble in a press, using a tube with ID 26 mm, length 120 mm).*

Ring nut (17) (in contact with the seal) must show no traces of cutting or scoring.

2. Prepare the drive pinion assembly :

Oil all parts before fitting :

a) Fit bearing (18) :

Assemble in a press, using a tube *(with ID 45 mm, length 220 mm).*

Fit stop ring (19) *(see paragraph b) on page 13)*

b) Fit :

- 1st gear pinion (22),
- 1st gear synchromesh ring (21) *(see paragraph 4, subparagraph f), page 14),*
- 1st/2nd gear synchromesh hub and sliding gear assembly (20).

A - FOUR-SPEED GEARBOX

Groove « b » at 1st gear pinion end.

B - FIVE-SPEED GEARBOX

Groove « b » at 2nd gear pinion end.

c) Adjust 1st/2nd gear synchromesh hub axial play.
Select stop ring (1) as sold by the Replacement Parts Department, giving **J1 = 0.05 mm max.**
The thickness of ring (1) ranges from **1.42 to 1.58 mm** (0.04 mm increments).

d) Fit stop ring (1) *(see paragraph 4, subparagraph b), page 13).*

e) Fit :
- 2nd gear synchromesh ring (5) *(see paragraph 4, subparagraph f, page 14),*
- 2nd gear pinion (4).

f) Adjust 2nd and 3rd gear pinion stop play.
Select half-washer (3) as sold by the Replacement Parts Department, giving :

J2 = 0.05 mm max.

The thickness of half-washers (3) must have the same ranges from **2.56 to 2.71 mm** (0.03 mm increments)

The two half washers (3) must have the same thickness.

g) Fit :
- two half-washers (3),
- washer (2).

h) Fit :
- lock pins (11) and spring (10),
- 3rd gear pinion (9) (use tool MR. 630-27/18),
- synchromesh ring (8),
- 3rd/4th gear synchromesh hub and sliding gear assembly.

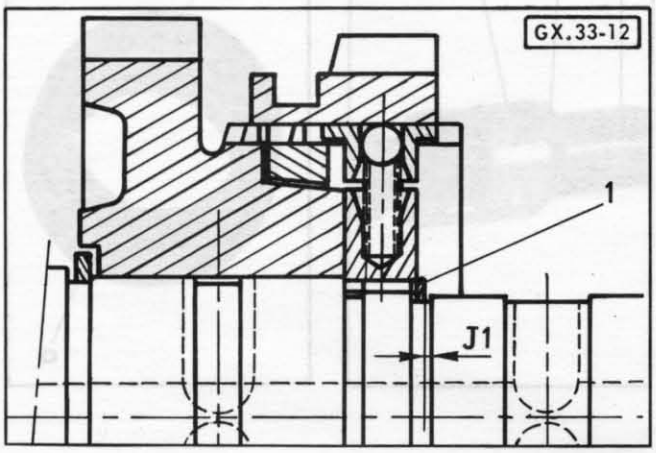
Synchromesh hub and sliding gear assembly (7) is symmetrical.

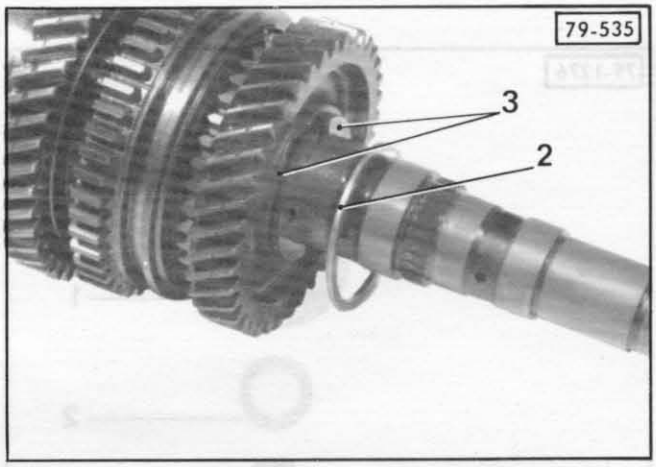
i) Adjust 3rd/4th gear synchromesh hub axial play.
Select stop ring (6) as sold by the Replacement Parts Department, giving :

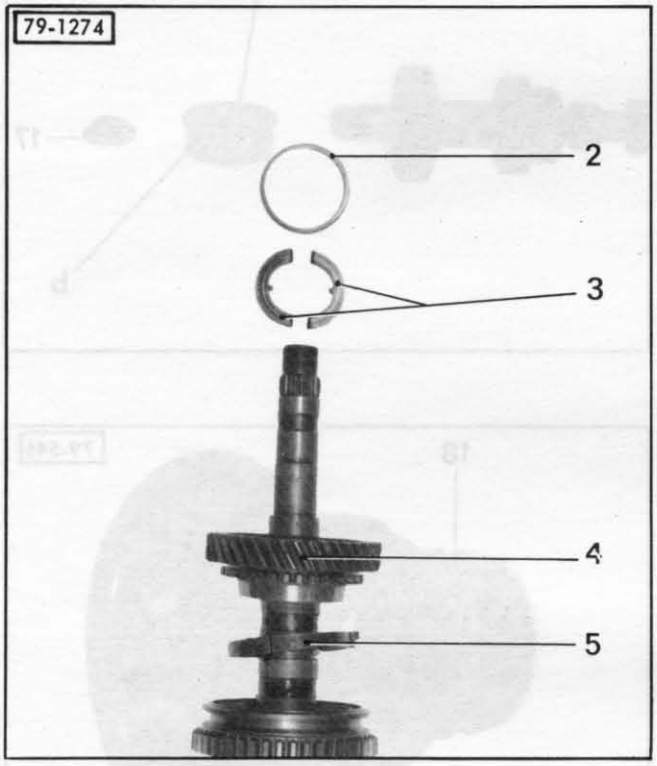
J3 = 0.05 mm max.

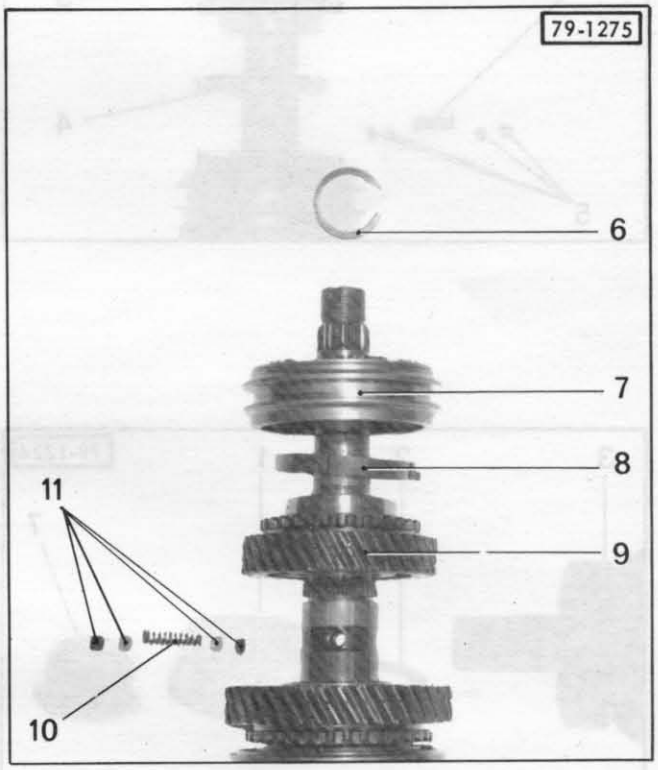
The thickness of stop rings (6) ranges from **1.42 to 1.58 mm** (0.04 mm increments).

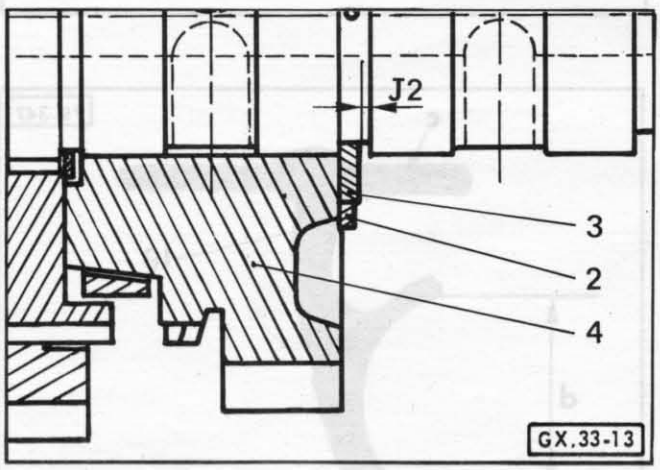
j) Fit stop ring (6) *(see paragraph 4, subparagraph b), page 13).*

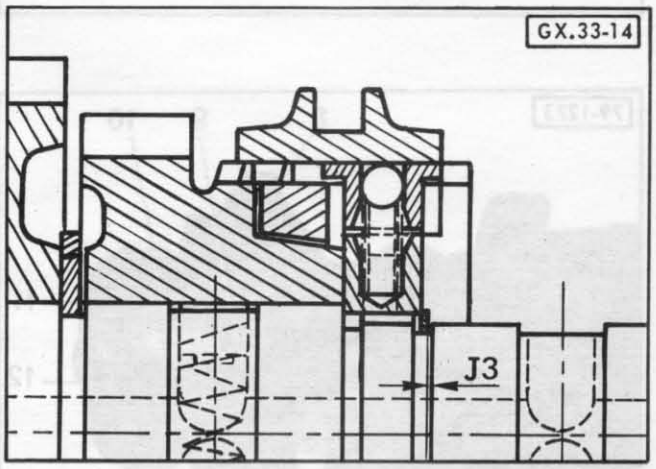

GX.33-12
1
J1

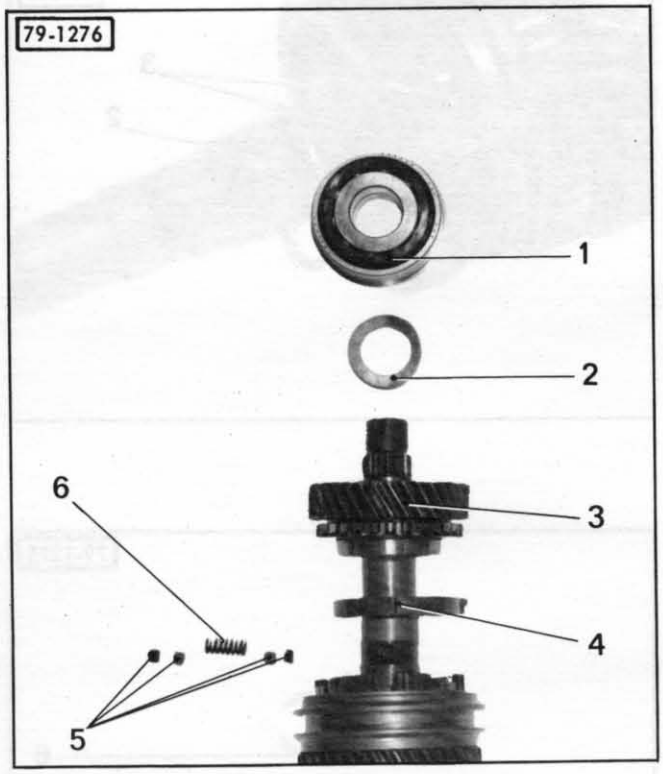

79-535
3
2

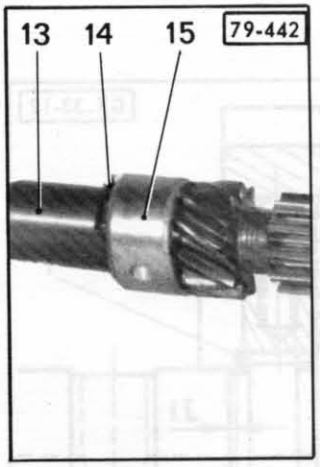

79-1274
2
3
4
5

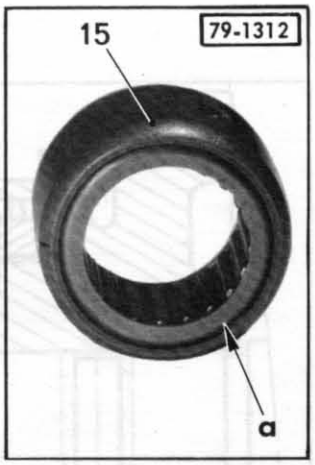

79-1275
6
7
8
9
11
10

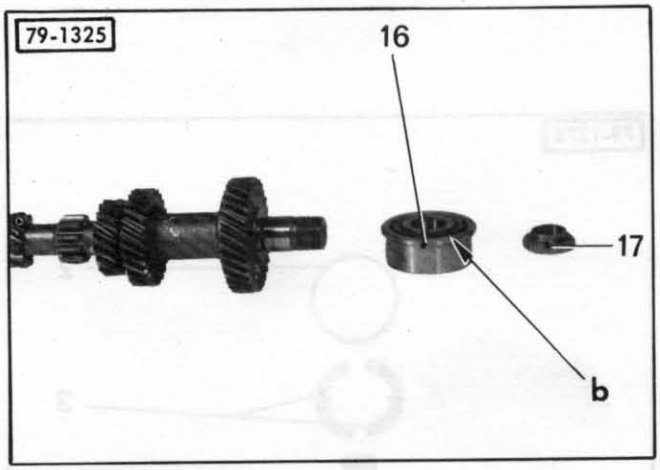

J2
3
2
4
GX.33-13

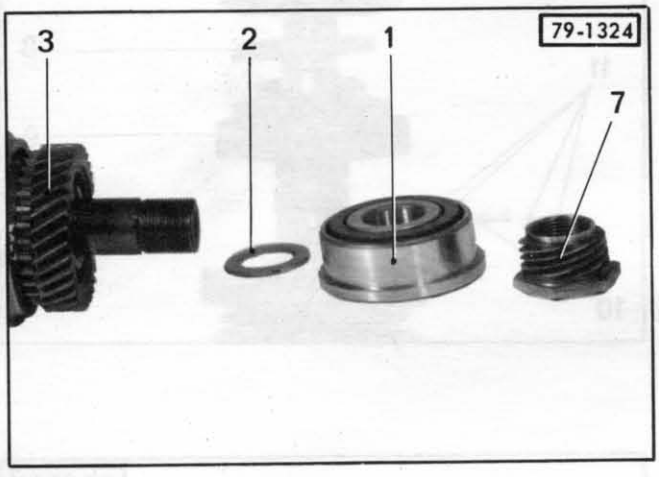

GX.33-14
J3

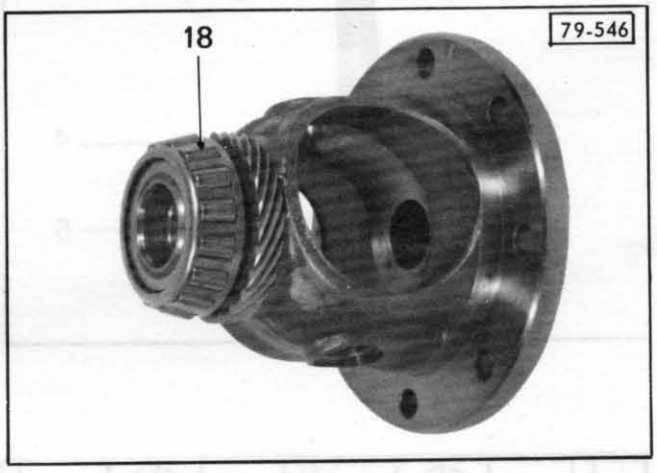

79-1276
1
2
3
4
5
6

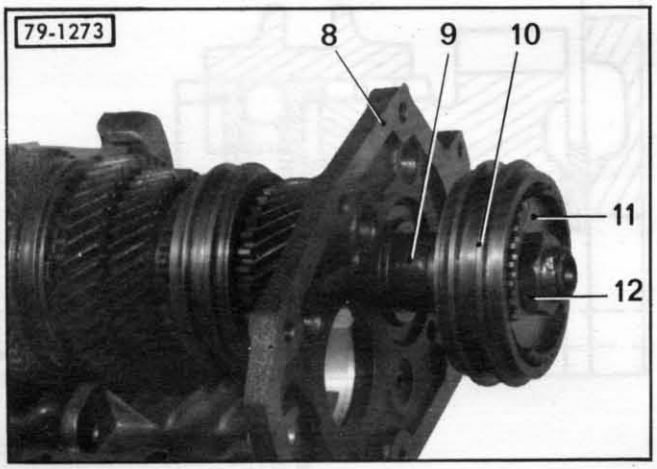

13
14
15
79-442

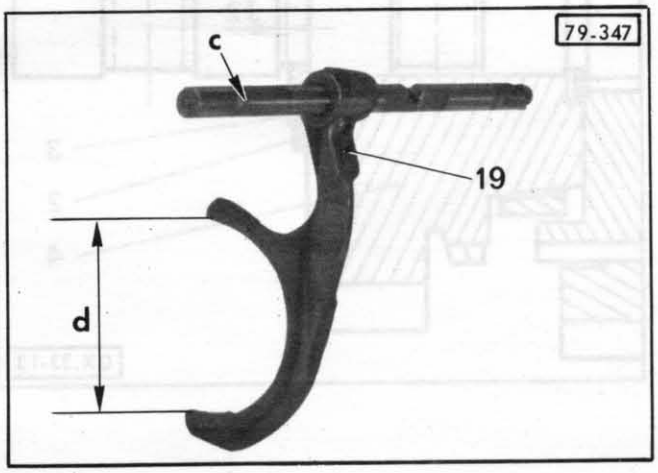

15
79-1312
a


79-1325
16
17
b


3
2
1
79-1324
7


18
79-546


79-1273
8
9
10
11
12


79-347
c
19
d

k) Fit :
- spring (6) and retarding dowels (5),
- 4th gear pinion (3) with synchromesh ring (4) (use tool MR. 630-27/28),
- adjustment washer (2), *after measuring its thickness,*
- bearing (1).

A - 4-SPEED GEARBOX

♦ Fit nut (7) and tighten it **to between 10 and 12 m.daN** *without locking it (adjustment of crown wheel and pinion distance).*

B - 5-SPEED GEARBOX

For crown wheel and pinion distance adjustment only.
Fit :
- thrust plate (8),
- 5th gear pinion spacer (9),
- 5th gear synchromesh hub and sliding gear assembly (10),
- stop washer (11),
- nut (12); tightening it **to between 22 and 25 m.daN** *(do not lock).*

To tighten nut (7) or (12), hold the drive pinion in a vice (fitted with soft jaws), by means of the first gear pinion.
Clamp the 1st/2nd gear sliding gear.

3. Prepare the drive shaft/primary shaft assembly :

a) Fit needle bearing (15) *(face « a » towards the drive shaft).*

b) Couple drive shaft (13) to the primary shaft, slightly opening the ends of circlip (14).

A - 4-SPEED GEARBOX

Fit the ball bearing (16) *(shoulder « b » towards the rear).*
Tighten nut (17) to between 6 and 7 m.daN and lock.

B - 5-SPEED GEARBOX

Fit ball bearing (16) *(shoulder « b » towards the rear).*

4. Prepare the differential housing :

Fit bearings (18) in a press, using a tube with *ID 36 mm, OD 45 mm, and length 40 mm.*

Assembly of the differential is completed after adjustment of the crown wheel and pinion.

5. Prepare the 3rd/4th gear fork :

- Opening « d » in the 3rd/4th is smaller than that in the 1st/2nd gear fork.
- The 3rd/4th gear drive shaft is identified by flat « c » for its catch.

Fit stop pin (19).
Oil the shaft lightly, and grease the locking slots.

♦ 6. Prepare the clutch casing *(if necessary)*

a) Grease the housing bore and seal periphery.
Fit the seal *(with metal collar (5) visible on the stud side)*, using mandrel **G** from kit 3184-T bis.

b) Replace the thrust guide sleeve
(see Op. GX. 311-3).

c) Insert the assembly studs.
The studs are of 3 different lengths, and are arranged as follows :
- longest studs at (4) and (6),
- medium length studs at (3),
- shortest studs in other positions.

The shorter threaded part screwed into the clutch casing.

d) Check that alignment rings (1) and (2) are in position.

e) Fit anti-rattle bushes (10) in springs (11) *(collars face to face)*.
Oil shaft (12) slightly.
Engage shaft (12) in one port « a » in the casing, and then in the spring, fork and bearings.
Position the shaft and fit screw (9) (apply LOCTITE OLEOETANCH).
Position the two ends of spring (11) in contact with bosses « b » on the casing.
Fit stop (8) *(grease guide)*.
Fit strip (7), blocking the stop onto the fork.

7. Prepare the right half-casing :

The five locking balls (14) are identical. Springs (13) and (17) have the same length *(20 turns)*.
Spring (18) is shorter *(14 turns)*

a) Oil shaft (16) lightly, and grease locking slots « c ».

b) Engage shaft (16) in the rear bearing (with slot « c » at the differential end.

c) Engage 1st/2nd gear fork (15) on shaft (16).

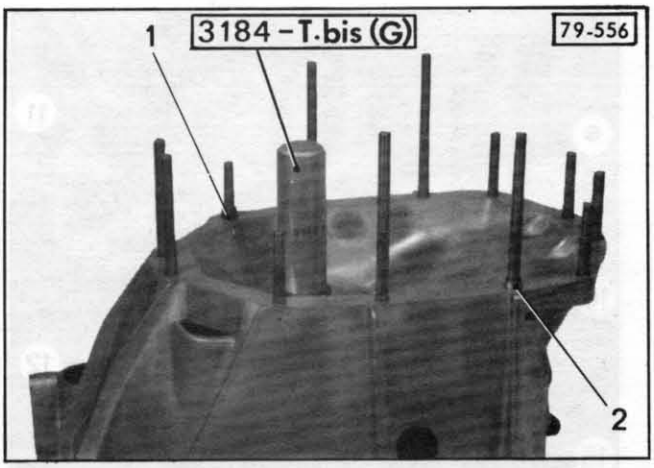
d) Fit stop pin (19) in the fork.

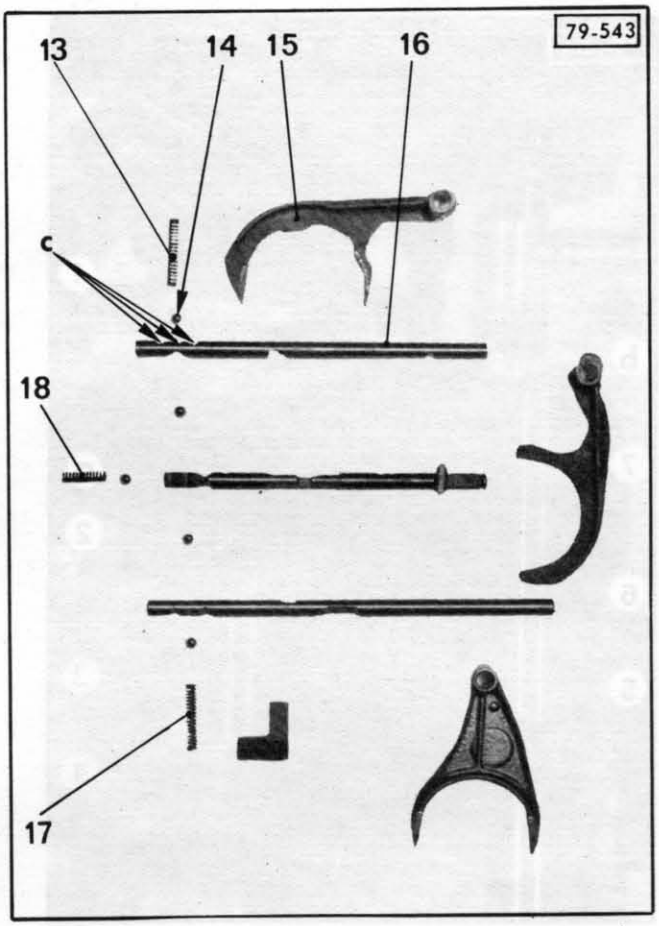
To insert the pin, place the shaft/fork assembly against the rear bearing, to avoid damage.

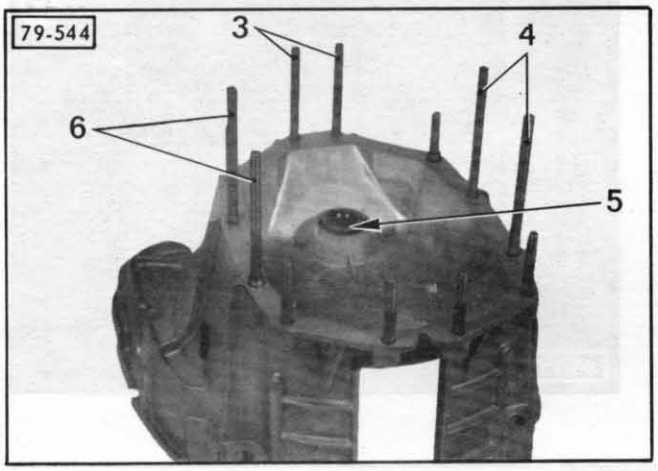
e) Grease spring (13) and ball (14) and insert in recess « d ».

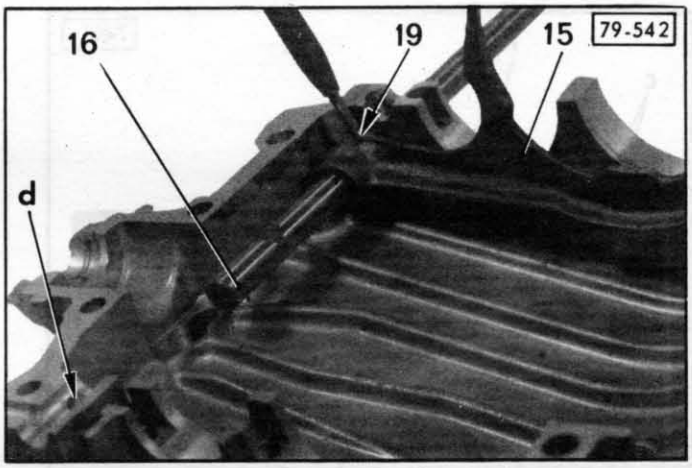
f) Compress the ball and spring (using a 5 mm rod), and engage shaft (16) in its front bearing.

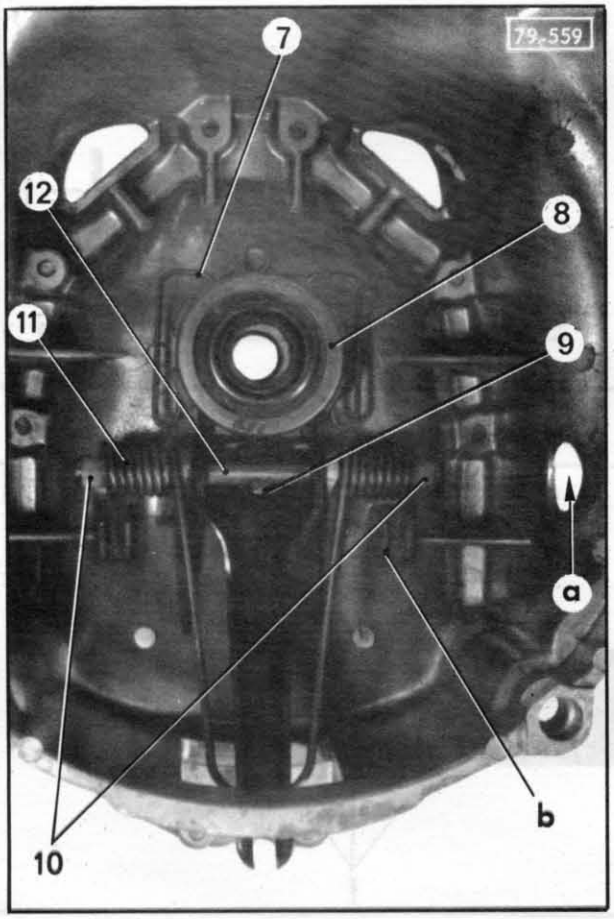
g) *FIVE-SPEED GEARBOX*
Fit the speedometer drive.

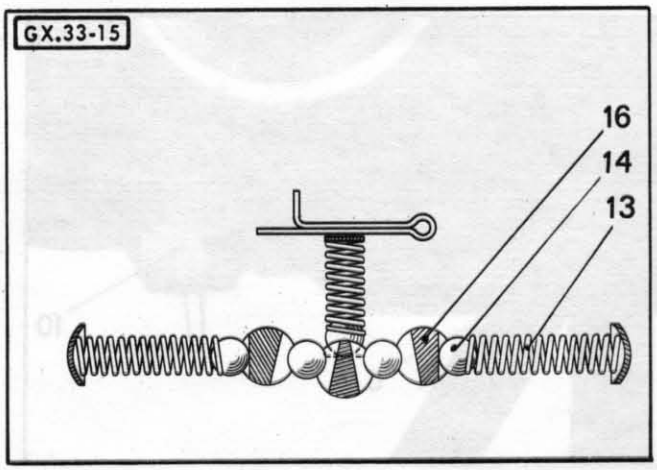

3184 - T.bis (G)
79-556
1
2

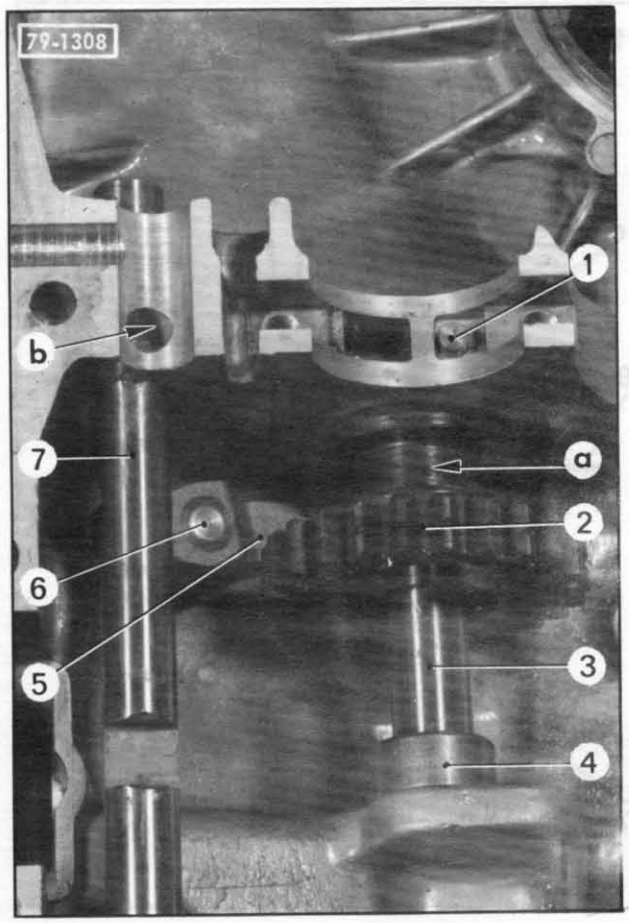

79-543
13
14
15
16
c
18
17

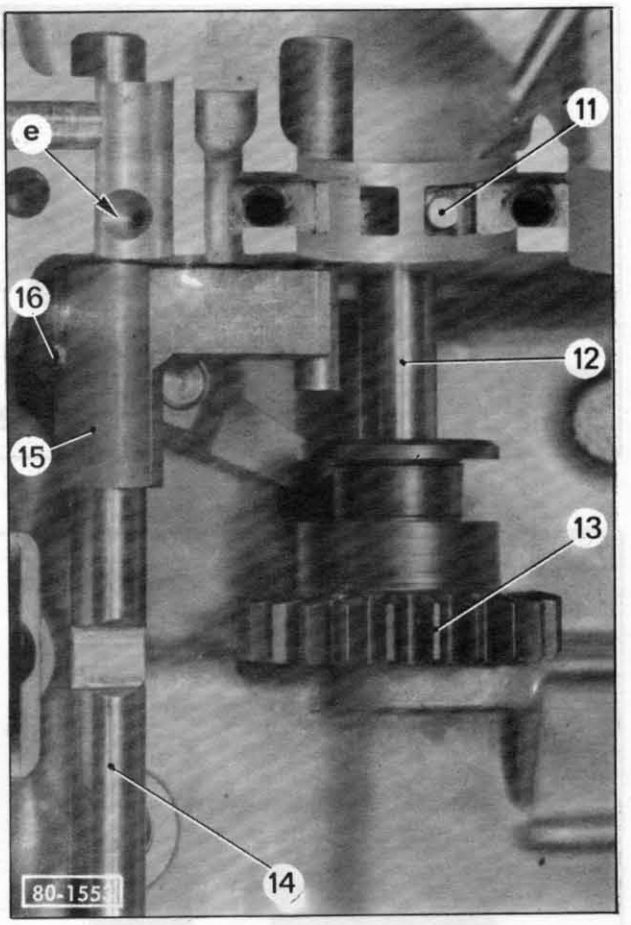

79-544
3
4
6
5

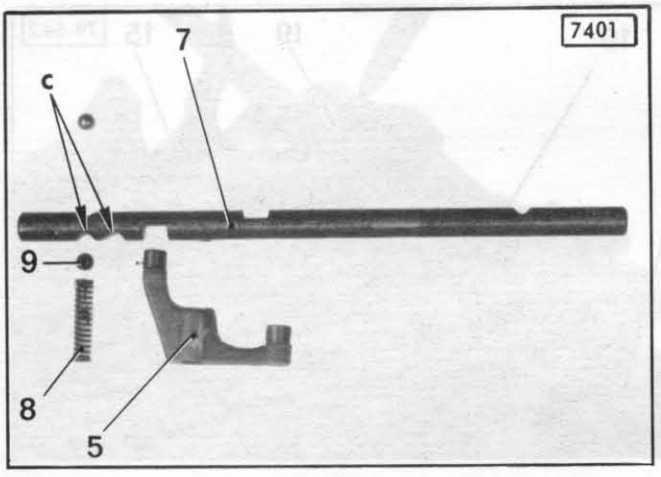

16
19
15
79-542
d

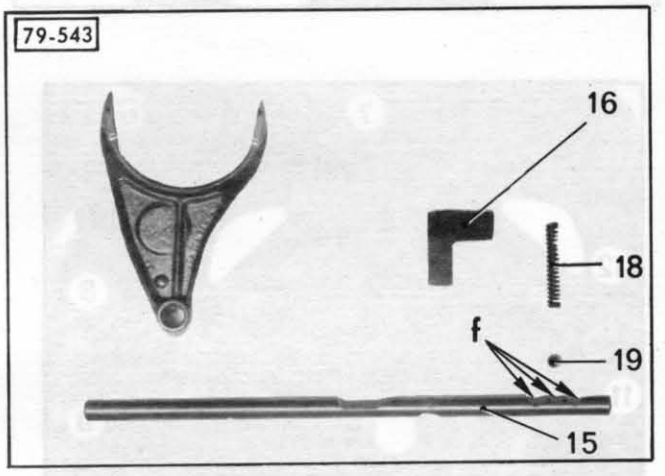

79-559
7
12
8
11
9
a
b
10

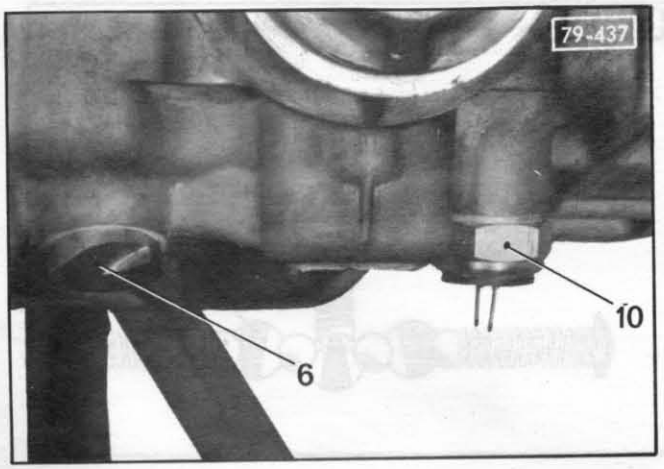

GX.33-15
16
14
13

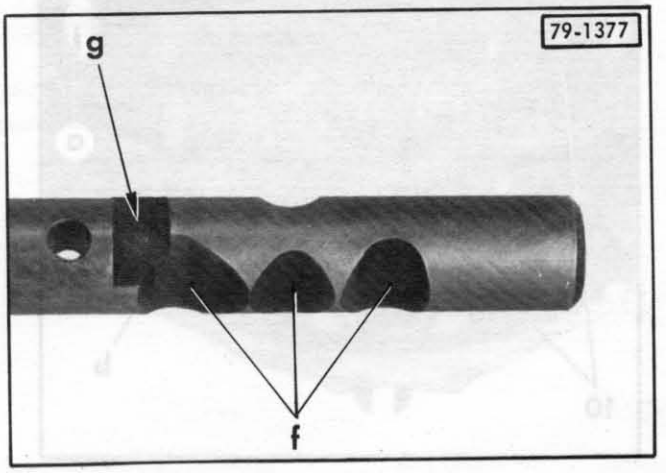

79-1308
1
b
7
a
2
6
5
3
4


e
11
16
12
15
13
14
80-155


7401
c
7
9
8
5


79-543
16
18
f
19
15


79-437
10
6


79-1377
g
f

8. Prepare the left half-casing :

A. *FOUR-SPEED GEARBOX*

a) Oil shaft (3) and engage in the rear bearing *(stop slot at differential end).*

b) Fit :
- spacer (4),
- pinion (2) *(groove « a » on differential side).*

c) Complete assembly of shaft (3) and insert pin (1) fully home in its recess.

> Pin (1) should stand slightly proud, as it serves as a stop for the primary shaft needle bearing.

d) Oil drive shaft (7), and grease locking slots « c ».

e) Engage shaft (7) in the rear bearing *(locking slots « c » at differential end).*

f) Grease spring (8) and ball (9) and insert them in recess « b ».

g) Compress the spring and the locking ball *(using a 5 mm rod),* and engage the shaft in its front bearing.

h) Fit reverse gear lever (5).

i) Fit and tighten lever (6) to shaft (5).

j) Fit and **tighten reversing light switch (10) to between 1.2 and 1.5 m.daN**

B. *FIVE-SPEED GEARBOX*

a) Oil shaft (12) and engage in the rear bearing *(stop slot at differential end).*

b) Fit :
- pinion (13) (groove « d » on differential side),

c) Complete assembly of shaft (12) and engage pin (11) fully home in its recess.

> As for the 4-speed gearbox, the pin should stand slightly proud, as it serves as a stop for the primary shaft needle bearing.

d) Oil drive shaft (14) and grease locking slots « f ».

e) Engage shaft (14) in its rear bearing *(locking slots « f » at differential end).*

f) Engage the 5th gear safeguard (15) on shaft (14).

g) Insert pin (16) engaging it on the opposite side to slot « g ».
Leave the pin standing proud by 3 to 3.5 mm.

h) Grease spring (17) and ball (18), and insert them in recess « e ».

i) Compress the spring and the locking ball *(using a 5 mm rod),* and engage shaft (14) in the front bearing until hole « e » is blanked.

j) Fit plunger (4) and spring (3) in 5th gear safeguard (2).

k) Position pin (8) fully home in the safeguard recess.

l) Fully compress plunger (4), which should engage in slot « a » of shaft (1).

m) Complete assembly by pushing shaft (1), and bringing safeguard (2) onto locking shaft (5).

n) Fit reverse lever (6).

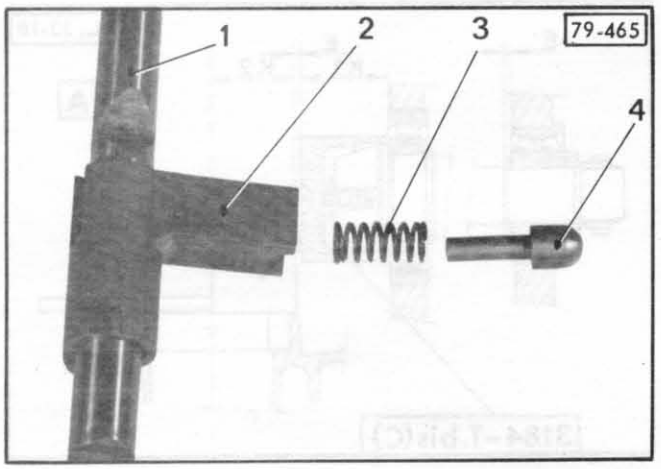
o) Fit and tighten lever (6) to shaft (7).

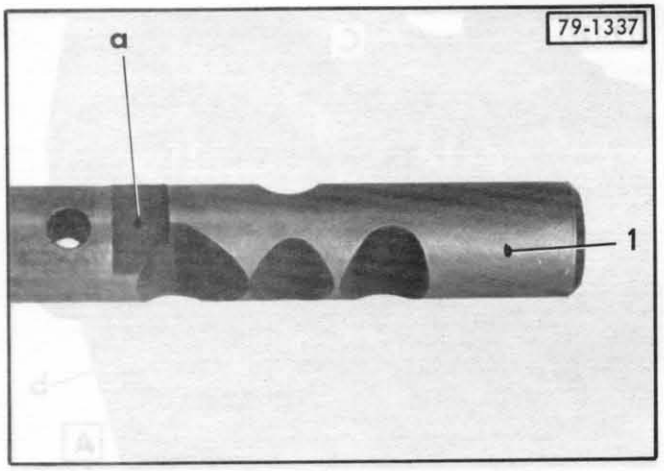
p) Fit and **tighten reversing contactor (9) to between 1.2 and 1.5 m.daN.**

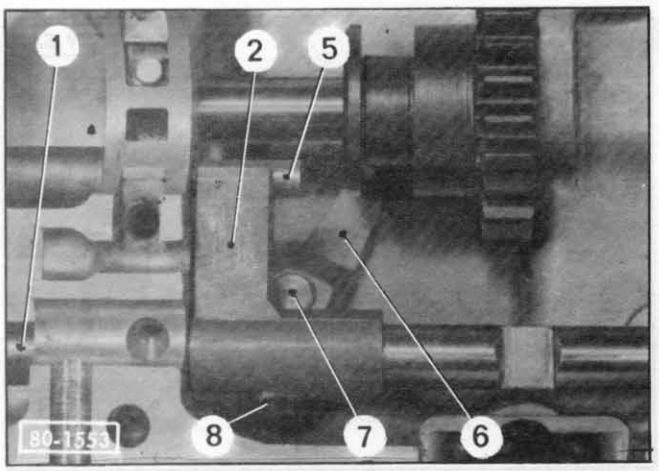
9. Fit the gearbox outlet drive shaft seals, via the inside of the half-casing :

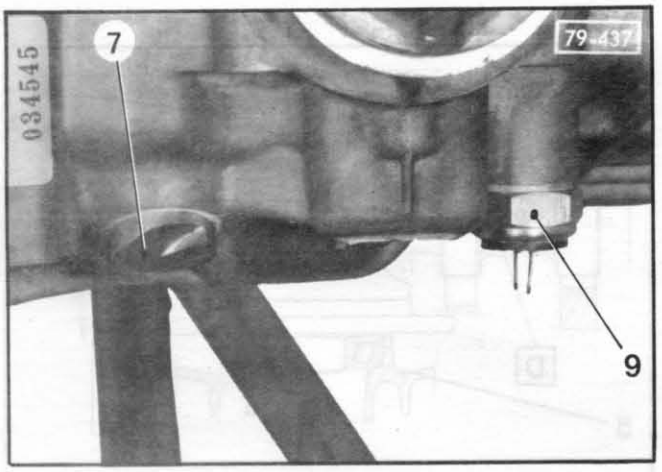
On each half-casing :

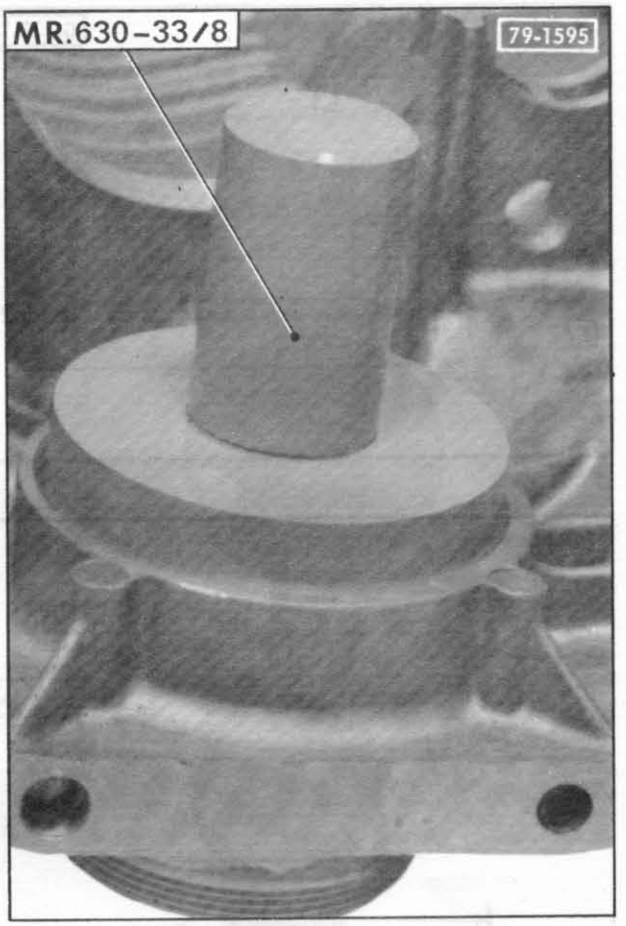
- Insert clip (11) in the bore, using sheet of foil **A** *(length 150 mm, thickness 0.2 mm and width 60 mm).*
- Grease the recess, and the periphery of seal (10).
- Position the seal, *with the marked face upwards.*
- Bring the seal onto circlip (11), using mandrel MR. 630-33/8

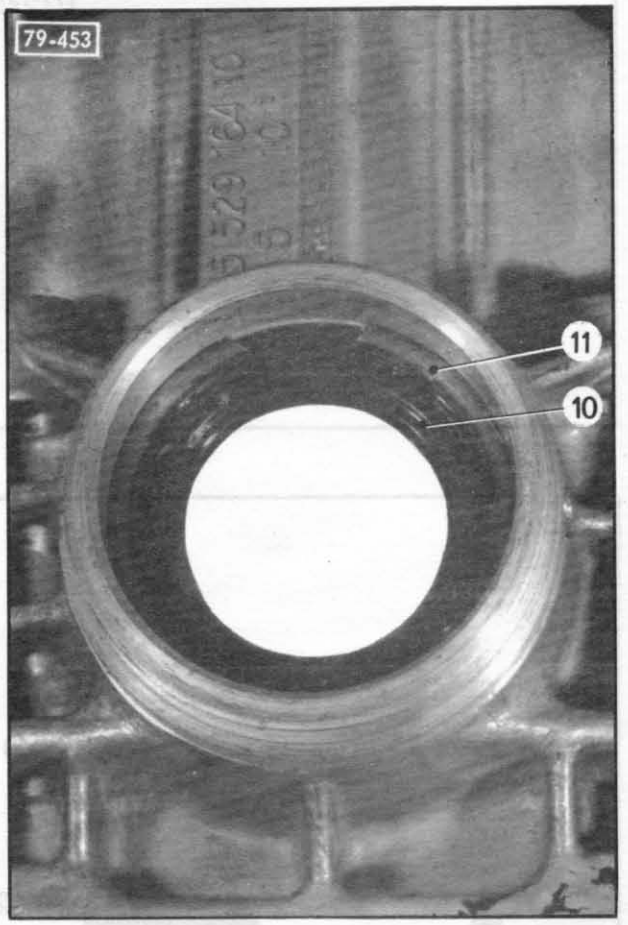

79-465
1
2
3
4


79-1337
a
1

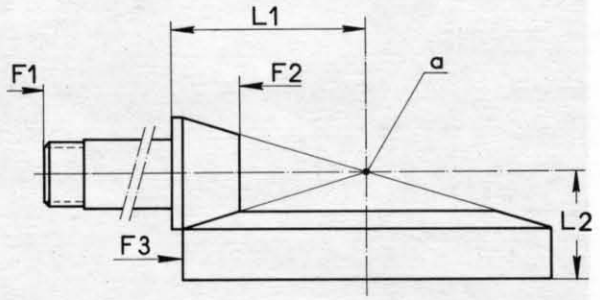

1
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80-1553
8
7
6


034545
7
79-437
9

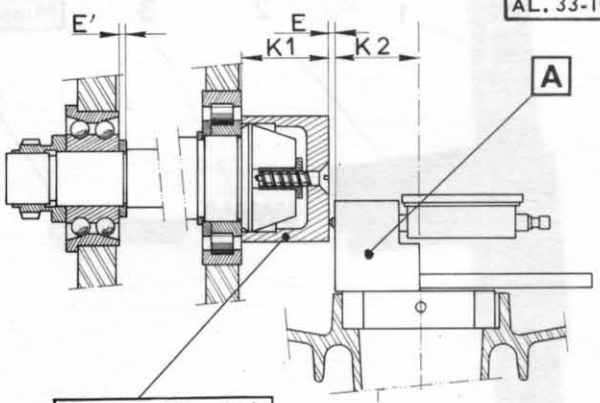

MR.630-33/8
79-1595


79-453
11
10

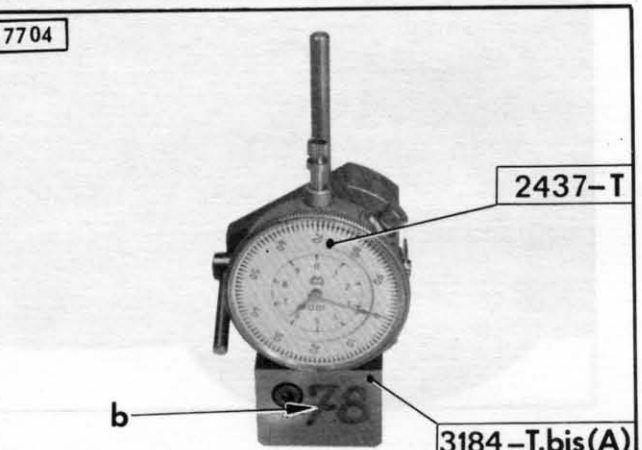
G. 33-13



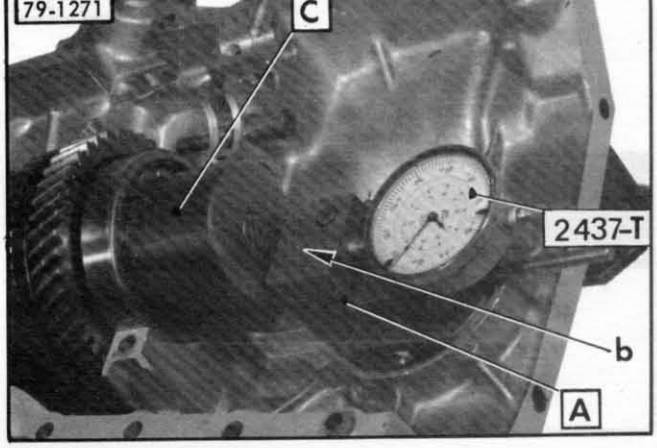
AL. 33-10



7704



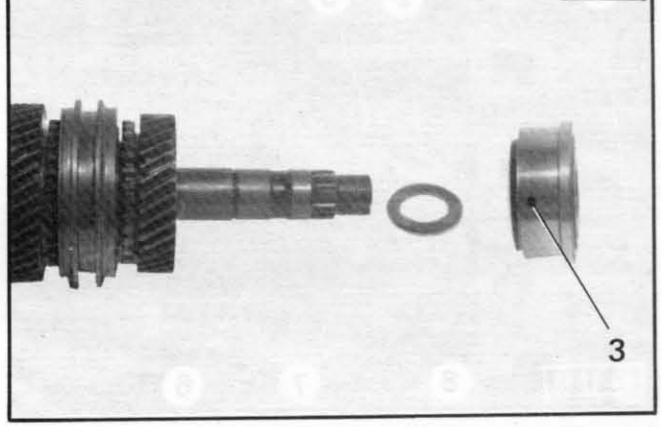
79-1271



79-1310



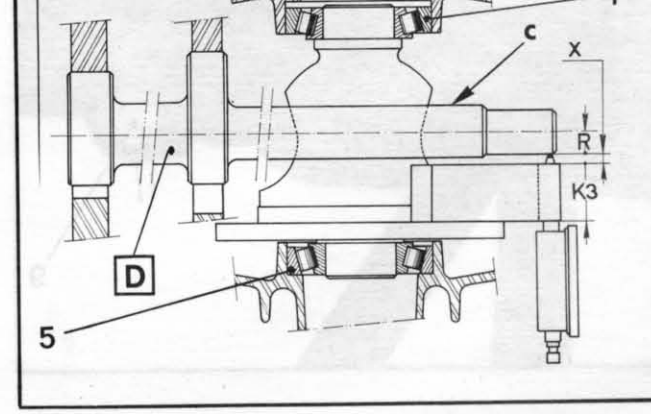
79-540



79-1273



AL. 33-11a



IV - ADJUSTMENT OF CROWN WHEEL AND PINION

The drive pinion and crown wheel are paired and identified by identical inscriptions engraved on face F1 or F2 of the drive pinion, and side F3 of the crown wheel.

Never unmatch a crown wheel and pinion set.

Two dimensions are also engraved on side F3 of the crown wheel.

Larger dimension L1 : distance from rear face of pinion to intersection point « a ».

Shorter dimension L2 : distance from crown wheel contact face on housing to intersection « a » of the crown wheel and pinion shafts.

1. Principle of crown wheel and pinion adjustment :

The drive pinion is positioned with respect to the differential shaft, and the crown wheel with respect to the drive pinion shaft, ensuring correct engagement of pinion and crown wheel.

2. Adjust the crown wheel and pinion distance, L1 :

a) Fit dial gauge [2437-T] on support [A] from kit [3184-T bis]

Calibrate the assembly on a calibration table, with the dial **O** mark opposite the large needle.

Index the position of the totalizer needle.

b) *Four-speed gearbox :*

Fit the drive pinion assembly in the left half-casing, and fix the rear cover with three screws.

c) *Five-speed gearbox :*

Fit the complete drive pinion assembly *(paragraph 2, subparagraph k or B, page 21).*

Fit thrust plate (1) by three screws (2).

d) Fit cap [C] and support [A] equipped with the calibrated dial gauge.

Cap [C] and support [A] with the dial gauge in the calibration position, correspond to distance K1 + K2 = 78 mm (dimension engraved on the support at « b »).

e) Pivot support [A] and block it as soon as the large needle changes its direction of rotation.

f) Turn the needles to the calibration position, then release slowly, counting the number of turns and the fractions of a turn.

Reading E + dimension engraved on support = L1.

g) **Calculate the difference between the dimension engraved on the pinion, and distance L1 measured,** and reduce or increase thickness **(E')** of the adjustment washer, as appropriate.

h) Replace the existing washer with that calculated at « g » above.

Four-speed gearbox :

Tighten the drive pinion nut to between **10 and 12 m.daN** and lock it by pin-bitting.

Five-speed gearbox

Fit bearing (3) only.

3. Adjust the position of the crown wheel :

a) Place left bearing ring (5) in its recess, **with no adjustment shim.**

Fit the differential housing, using mandrel [D] (end « c » engaged in the differential housing).

Fit the right half-casing and rear cover.

Check that the differential housing is in position, **and that ring (4) is in contact with the bearing rollers.**

b) Fit dial gauge **2437-T** on ruler **B** of tool kit **3184-T bis** and calibrate the assembly setting it between 8 and 9 mm.

The mandrel **D** and calibrated ruler **B** unit corresponds to a distance of **K3 + R = 35 mm, engraved on ruler B**

c) Place the ruler against the housing, pivot the unit and block it as soon as the large needle changes its direction of rotation.
Bring the needles back to the calibration position and release slowly counting the number of turns and fractions of a turn.

Distance engraved on ruler + reading X = distance between contact face and shaft. The difference between the distance engraved on crownwheel and the distance measured gives the theoretical thickness of shims.

d) Proceed in the same way for the right side.
Make sure the differential is in position, the right bearing ring **fully home in the housing** and the left bearing ring **in contact with the bearing rollers.**

4. Add the bearing preload :

This load is of : **0.05 mm** for both bearings
That is of : **0.025 mm** for each bearing.
Thickness of left side shim :
Theoretical left shim thickness + theoretical right shim thickness + 0.05 mm = **total thickness of shims to be fitted.**
Calculate the difference between the total thickness of the shims already chosen.
Total thickness of shims to be fitted − thickness of left shim to be fitted = **thickness of right shim to be fitted.**

V- FITTING

1. Fit the differential :

a) Fit the crownwheel **tightening screws (2) (grease face and threads) to between 8 and 9 mdaN.**

b) Fit :
- the two planet gears, holding them by means of the two gearbox output shafts.
- the two satellite gears, making sure they are in line with the satellite shaft and then removing the shaft.

Make sure the satellite gears are correctly positioned by rotating the planet gears.
Engage the satellite shaft and fit circlip (1).

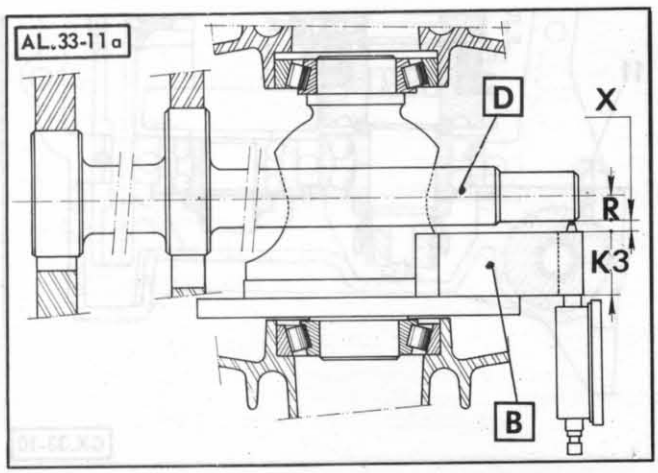
2. Fit the gear train unit :

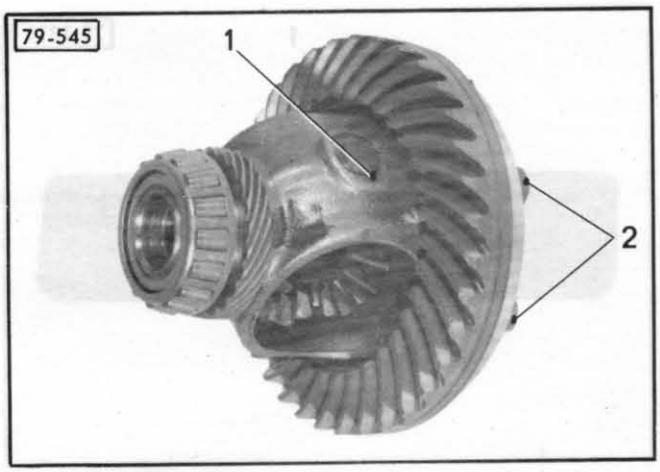
Position the following in the left half-casing :
- the differential,
- the bevel pinion unit,
- the primary shaft unit, *turning needle bearing (3) so that the pin fits in the bearing stop slot.*
- needle bearing (3) is in position when slot « a » is in line with the half-casing joint face.

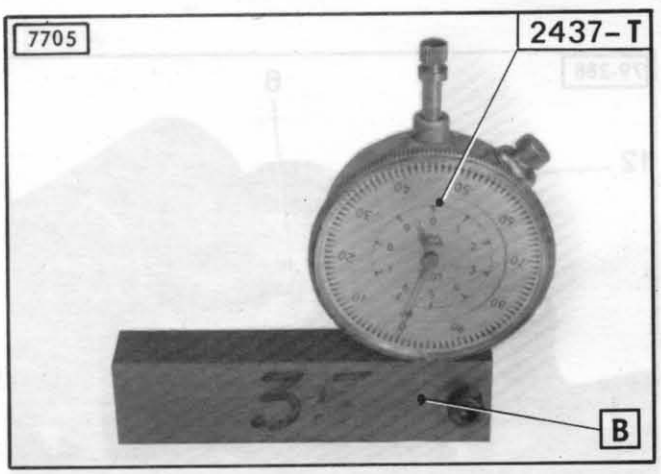
3. Checking the crownwheel and pinion tooth engagement play :

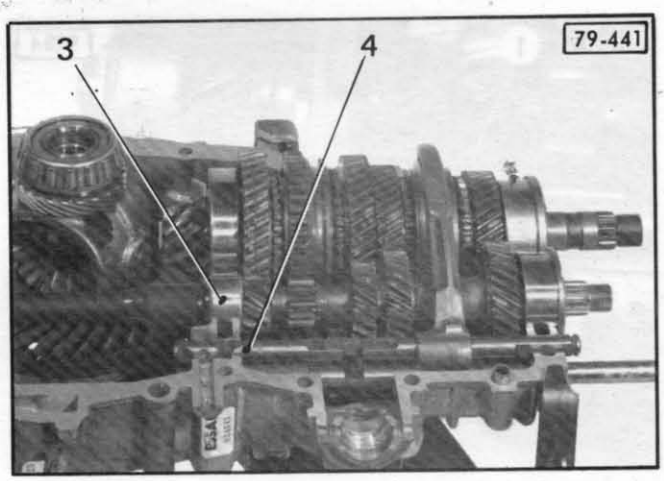
The tooth engagement play should be correct if the crownwheel and pinion have been carefully adjusted.

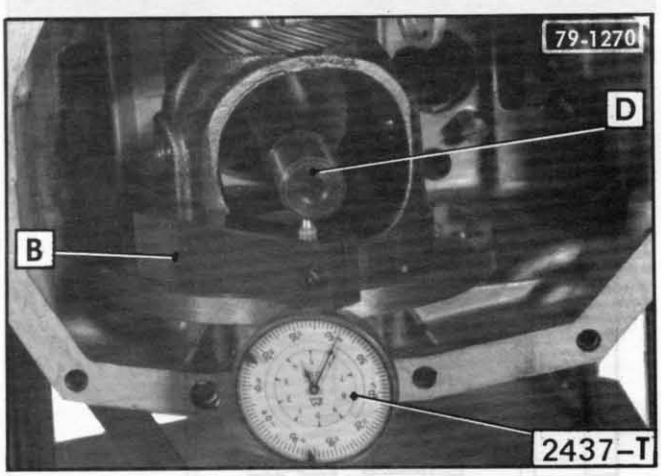
However, this value should be checked.
Fit the right half-casing and the rear cover.
Using support **F** from tool kit **3184-T bis** and dial gauge **2437-T**, measure the tooth engagement play which should be comprised **between 0.13 and 0.27 mm.**
Remove the dial gauge, the rear cover and the right half-casing.

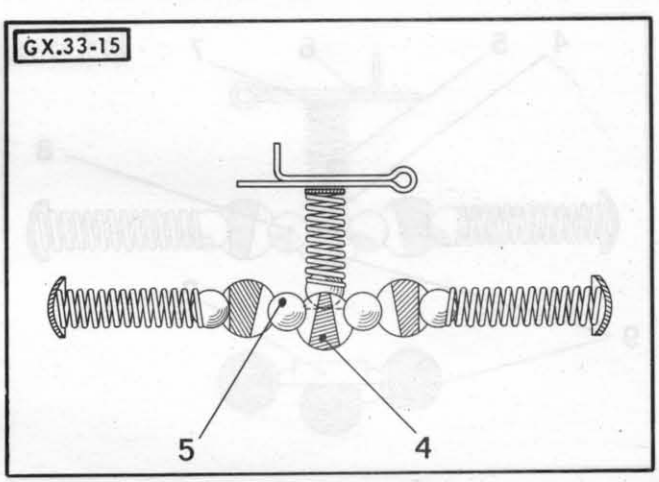

AL.33-11a
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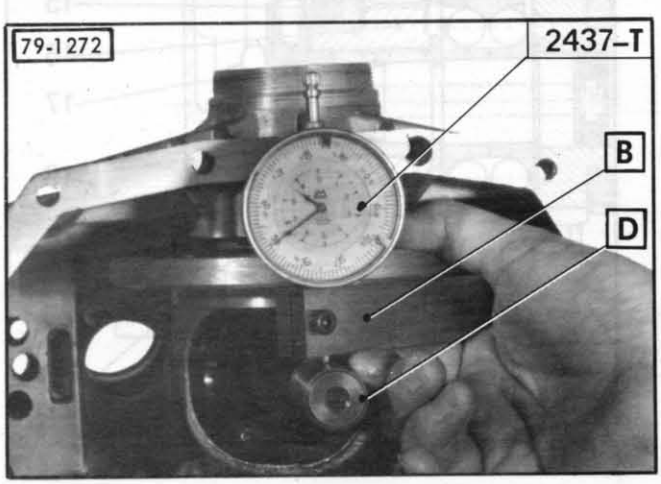

79-545
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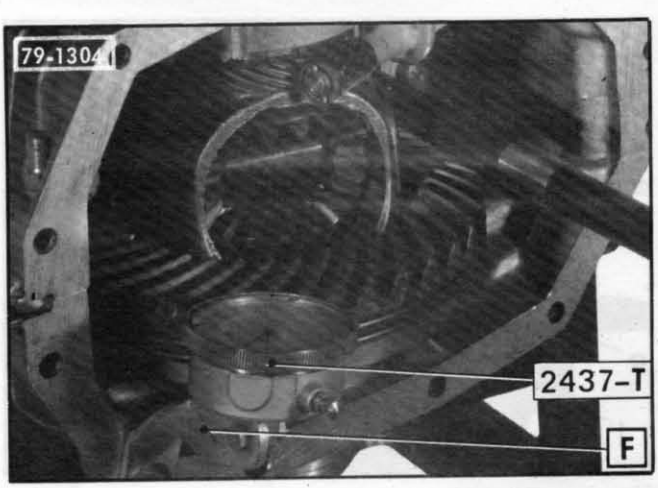

7705
2437-T
B

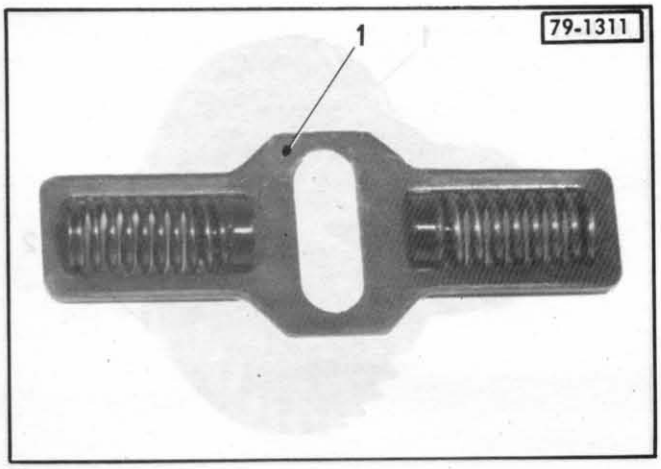

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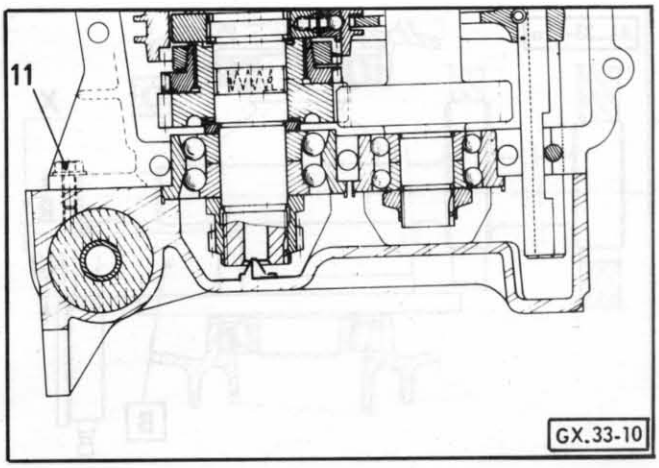

79-1270
D
B
2437-T

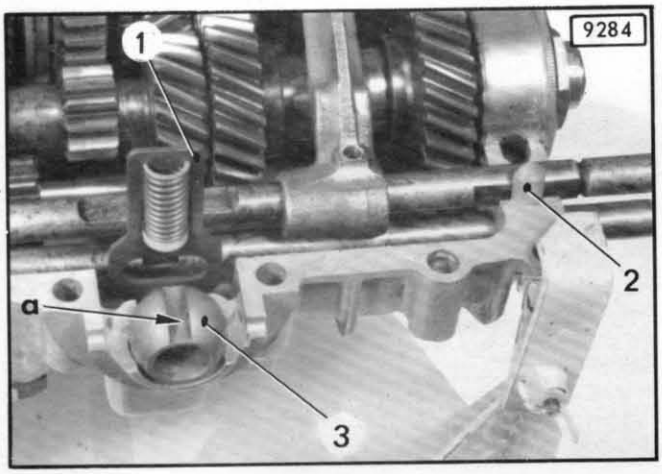

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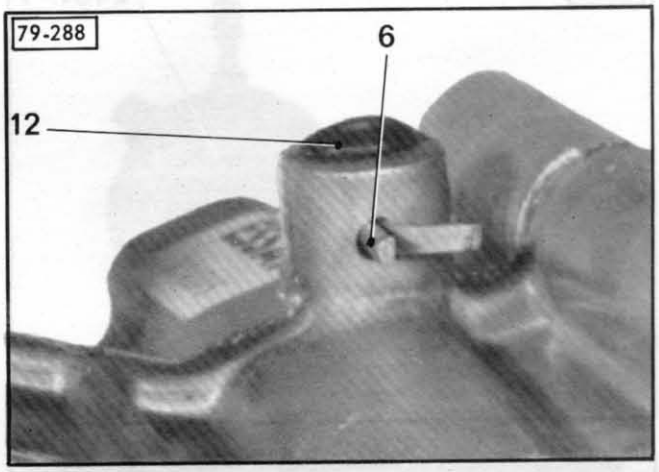

79-1272
2437-T
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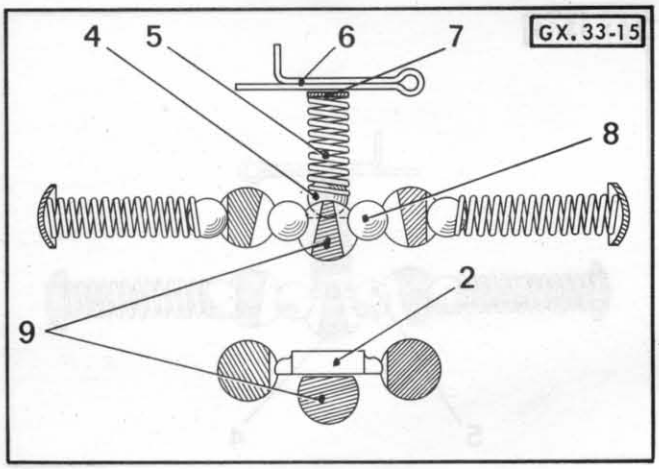

79-1304
2437-T
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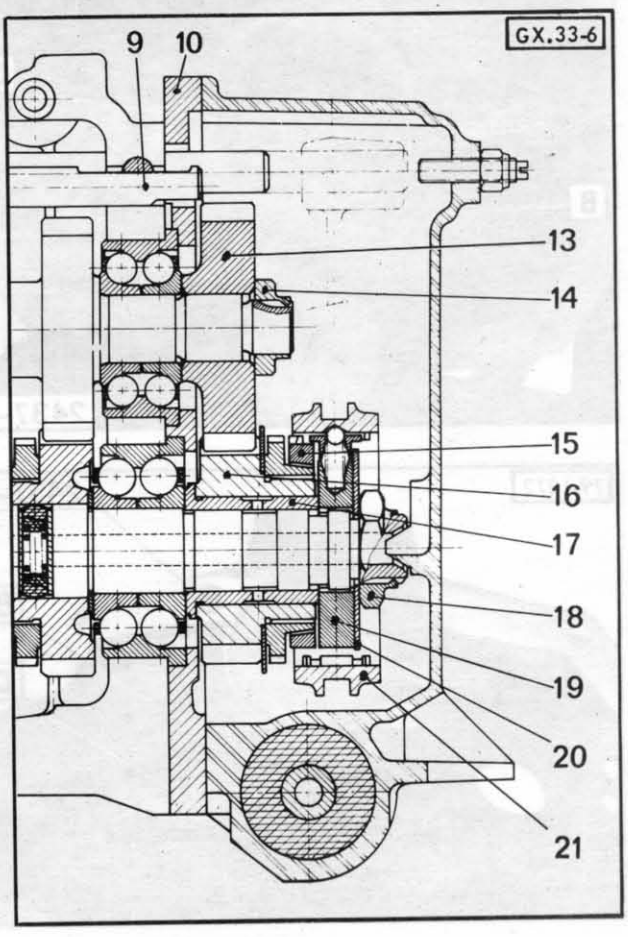

79-1311
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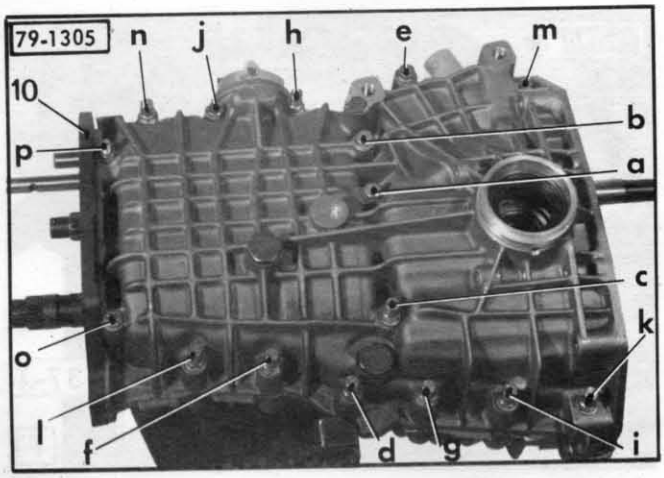

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GX.33-10


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GX.33-15
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GX.33-6
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79-1305
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4. Fit the right half-casing :

a) Fit :
- spring retainer plate (1),

Four-speed gearbox only :
The springs for plate (1) are different. Fit those with heavier gauge wire at the reverse gear pinion end (in left half-housing).

- control lever and swivel assembly (3) *(guide groove « a » on right half-casing side),*
- locking catch (2).

b) Stick locking ball (8), spring and ball-joint guide to the right half-casing with grease.

c) Coat the sealing surface with LOCTITE FORMETANCH.

d) Assemble the two half-casings.

e) Fit the screws (flat washers under screw head. The blind nuts **must** be fitted on the right half-casing side).
Do up the screws, but do not tighten fully.

f) *FOUR-SPEED GEARBOX :*
Fit the rear cover, coating the sealing surfaces with LOCTITE FORMETANCH, and do up the screws finger tight *(flat washers under screw heads).*

g) *FIVE-SPEED GEARBOX :*
Fit thrust plate (10) coating the sealing surface with LOCTITE FORMETANCH, and do up the screws finger tight.

h) Tighten the half-casing assembly screws fully.

Follow the tightening order indicated in the photo

Tightening torque : 1.3 to 1.5 m.daN

i) *FOUR-SPEED GEARBOX :*
Tighten :
- six rear cover attachment screws **2.5 to 3 m.daN**
- two screws (11) to between **0.3 and 0.5 m.daN.**

j) *FIVE-SPEED GEARBOX :*
Tighten the attachment screws for thrust plate (10) to between 2.5 and 3 m.daN.

5. Fit the clutch housing :
Coat the sealing surfaces with LOCTITE FORMETANCH.
Tightening torque : 1.3 to 1.5 m.daN *(flat washers)*

6. Fit :
- ball lock (4) and spring (5),
- capsule (7),
- pin (6),
- plug (12).

7. *FIVE-SPEED GEARBOX :*
a) Fit :
- 5th gear drive pinion (13),
- nut (14),
- spacer (17) and 5th gear driven pinion (16),
- hub/synchromesh sliding gear assembly (19) and bush (15),
- stop plate (20) and nut (18).

b) Select :
- 3rd gear by pushing shaft (9),
- 5th gear by means of synchromesh sliding gear (21).

c) Tighten and lock nut (1).
Tightening torque : 6 to 7 m.daN.

d) Remove :
- nut (3),
- hub/synchromesh sliding gear assembly (2) with stop plate (4).

e) Fit :
- simultaneously, 5th gear fork (5), ring and synchromesh assembly (2) *(the sliding gear identification groove « a » should be positioned towards the rear of the gearbox).*
- stop plate (4),
- nut (3).

f) Select 3rd and 5th gears *(see b, page 33).*

g) Tighten and lock nut (3).
Tightening torque 22 to 25 m.daN

h) Disengage 3rd and 5th gears.
Fit a new pin (6) (place a support under the fork shaft).

8. *FIVE-SPEED GEARBOX*
Adjust the reverse gear stop :

a) Select reverse gear.

b) Measure distance L, between the face of the cover bearing on spacer (7) and the end of control shaft (8).

c) Smear screw (9) with LOCTITE FRENETANCH, fit it with its lock-nut (10) and position it.

d) Tighten stop-screw (9) so that :
L1 = L + 0.5 mm

e) Tighten lock-nut (10).

f) Fit the rear cover after having smeared the joint face with LOCTITE FORMETANCH.
Tighten :
- the six screws (11) **from 2.5 to 3 m.daN,**
- the two screws (12) **from 0.3 to 0.5 m.daN.**

9. Fit the gearbox drive outlet shafts :

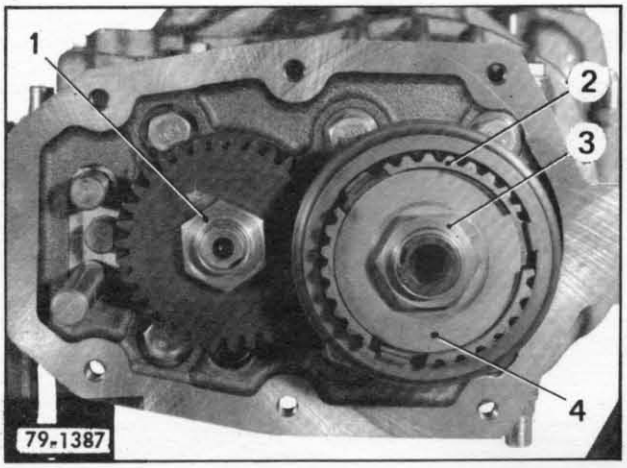
Check that the planet gears are correctly positioned, and that on assembly, the shaft teeth engage correctly in the corresponding planet gears *(when the two drive outlet shafts are turned by hand in the same direction, the differential crown wheel should be driven).*

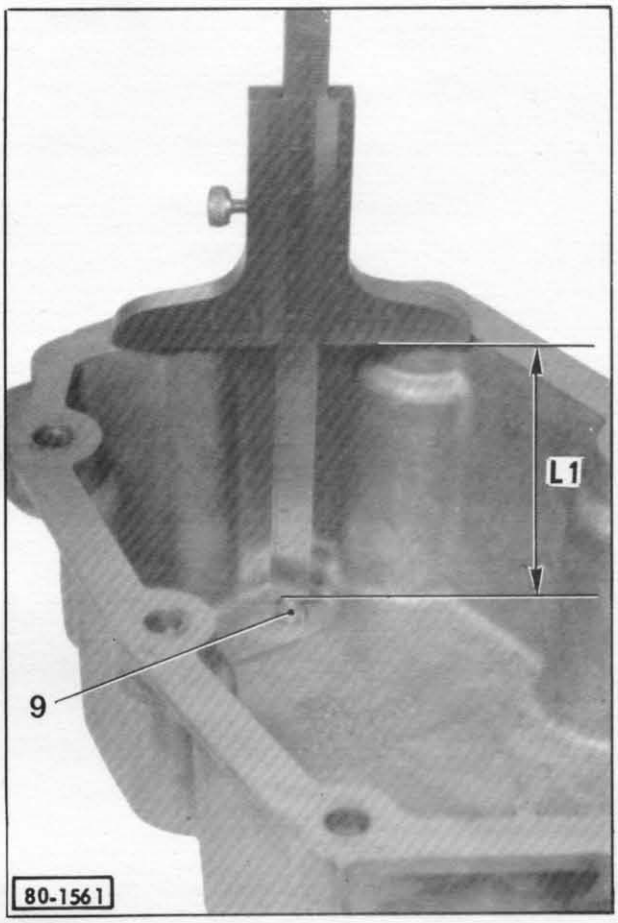
a) Position shafts (13) (tap lightly with a mallet to position the bearing correctly).

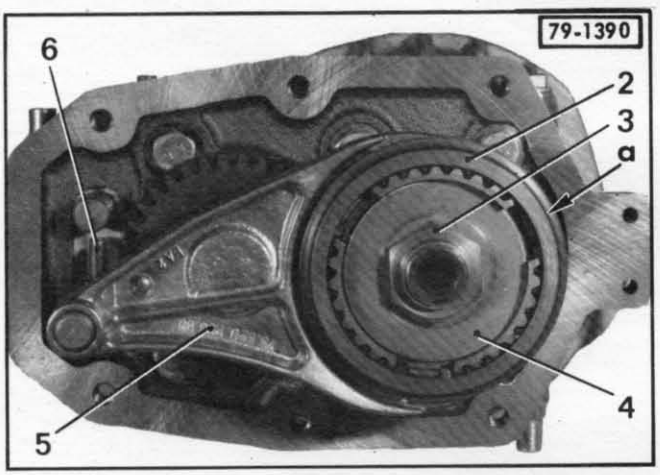
b) **Tighten the ring nuts from 6 to 7.5 m.daN,** using a pipe wrench.

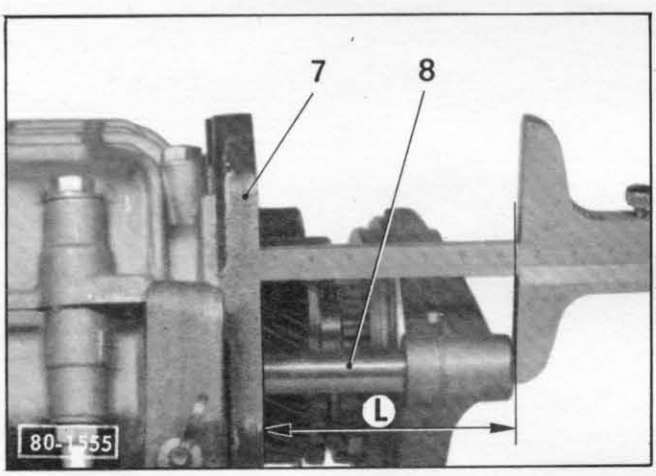
c) Lock the ring nuts, by pin-bitting in the corresponding recesses in the casings.

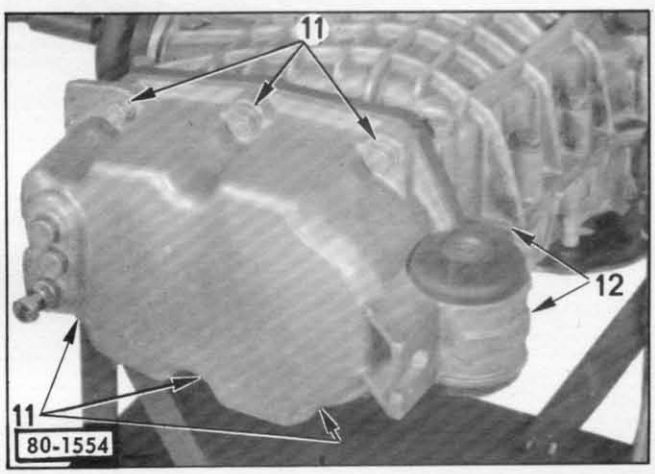
10. Fit the drain and level gauge plugs.
Tighten to 3.5 to 4.5 m.daN *(copper seal).*

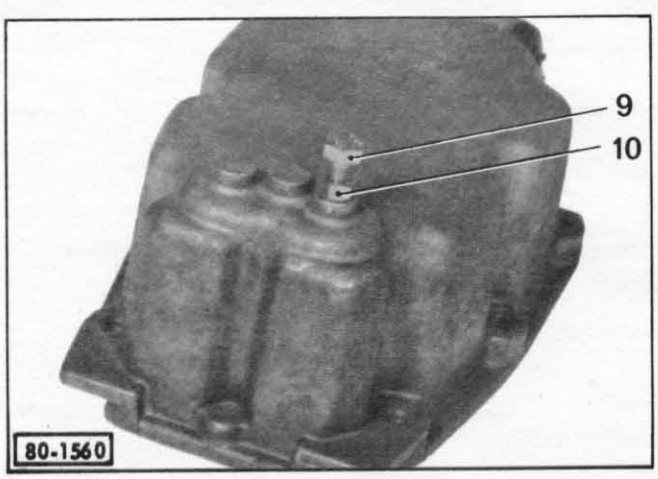

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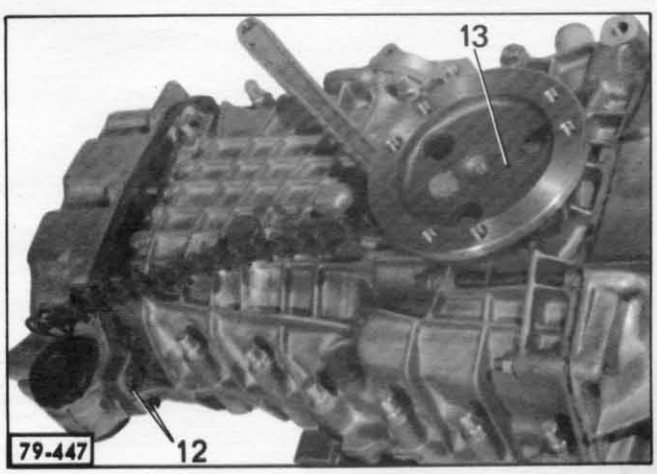

L1
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80-1561


79-1390
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7
8
L
80-1555


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12
11
80-1554


9
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80-1560


13
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79-447

OPERATION
GX.ea. 330-3

RECONDITIONING A GEARBOX WITH A TORQUE CONVERTER

SPECIAL TOOLS

TOOLS SOLD

KIT 3184-T bis :

use the following tools :

A : Dial gauge support

B : Dial gauge support

C : Cap

D : Mandrel

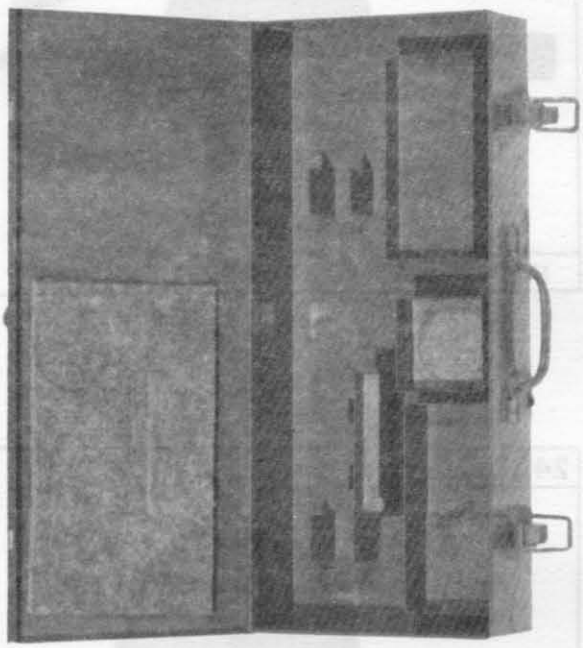
F : Dial gauge support

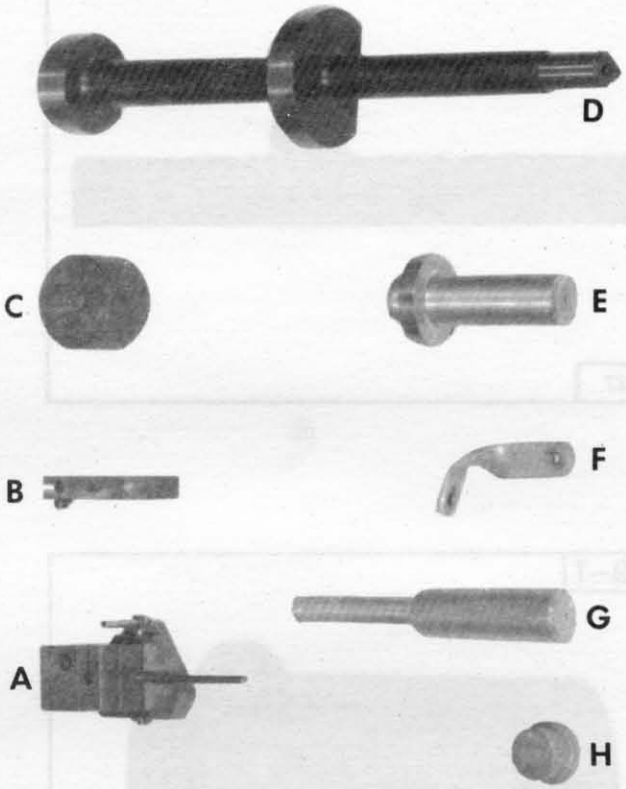
H : Stud

3186-T : Converter securing lug

3253-T : Snap ring pliers.

3184 - T.bis





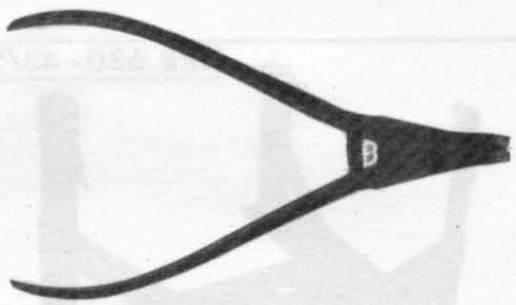
14722

3186-T



80-1158

3253-T



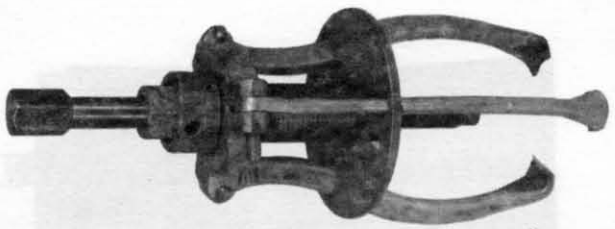
12763

1651-Tbis



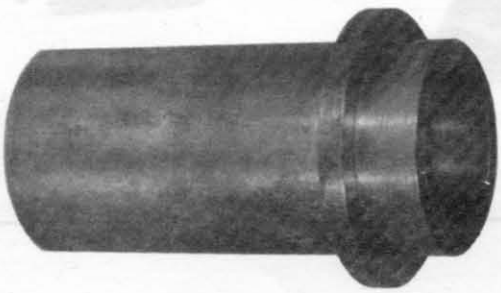
12827

2400-T



12762

1689--T



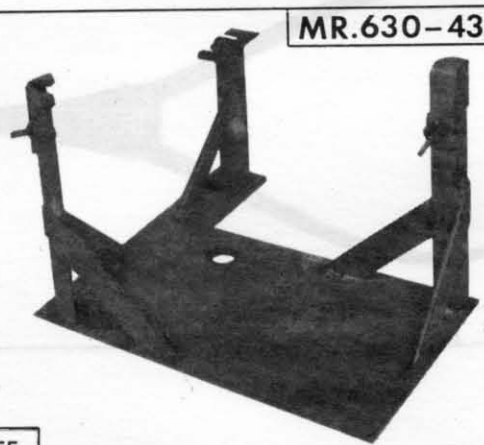
12824

2437-T



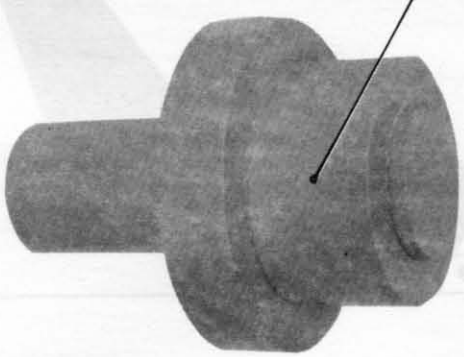
12827

MR.630-43/29a



76-955

MR.630-33/8



79-1596

SPECIAL TOOLS

TOOLS SOLD (continued)

1651-T bis : Ruler

1689-T : Mandrel for centering oil pump.

2400-T : Universal extractor *(to be used with stud* **H** *from kit 3184-T)*

2437-T : Dial gauge.

TOOLS NOT SOLD

MR. 630-43/29 a : Gearbox bench support

MR. 630-33/8 : Mandrel for fitting of gearbox drive outlet seals.

TIGHTENING TORQUES

Mandatory values *(torque wrench) :*

Tightening points	Torque in m.daN
Bevel pinion nut :	10 to 12
Primary shaft nut :	6 to 7
Rear cover attachment screws :	2.5 to 3
Differential crown wheel attachment screw :	8 to 9

Recommended values :

Tightening points	Torque in m.daN
Bush-nut for gearbox drive outlet shaft :	6 to 7.5
Reversing lamp contactor :	1.2 to 1.5
Half-casing assembly nuts and screws :	1.3 to 1.5
Converter housing assembly nuts :	1.3 to 1.5
Drain and filling plugs :	3.5 to 4.5

RECONDITIONING A GEARBOX WITH A TORQUE CONVERTER

I- DISMANTLING

1. Drain the gearbox.

2. Uncouple the gearbox from the housing-converter unit :

a) Make sure the converter securing lug **3186-T** is in place.

b) Place the gearbox on the support, in a vertical position, with the converter resting on the support

This will prevent the converter oil from flowing out during the operation.

c) Remove the nuts and washers securing the gearbox casing on the converter housing.
Withdraw the gearbox vertically from the housing/converter unit.

d) Remove control shaft (1). Do not loose the spring placed at « a ».

e) Remove the seal located between the gearbox and the converter housing.

3. Uncouple the converter housing from the converter :

Slide the converter/housing unit towards the edge of the support and remove securing lug **3186-T**.
Disengage housing (2) vertically from converter (3).

4. Remove the gearbox output shafts :

On each side :

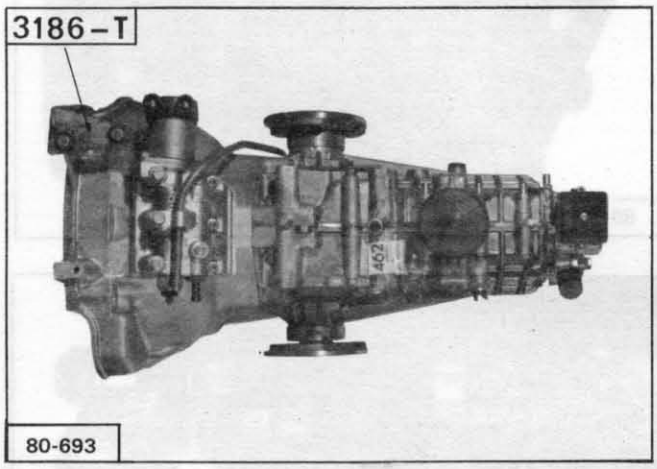
Place the gearbox on support **MR. 630-42/29 a** with the left half-casing resting on the support.

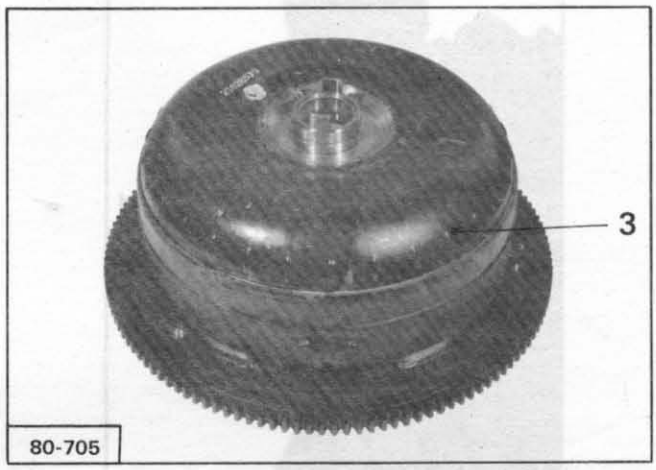
Untighten bush-nuts (5) using pipe wrench **A.**

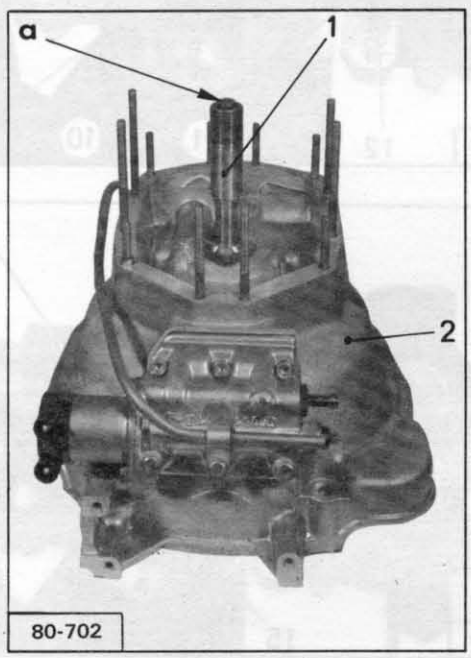
Disengage the gearbox output shafts (4)
(tapping with a mallet, if necessary).

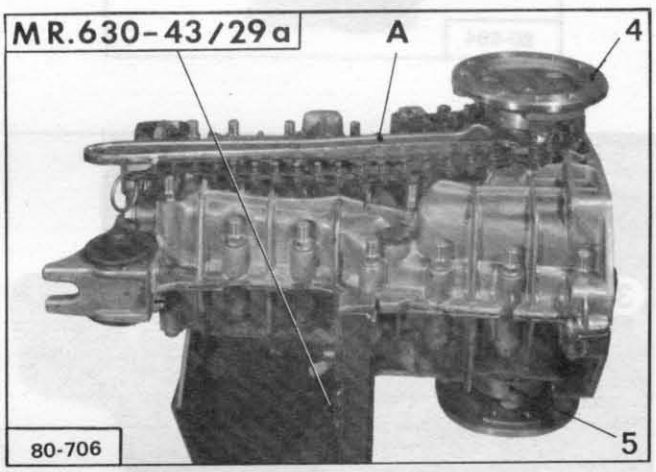
5. Remove the clutch control switch :

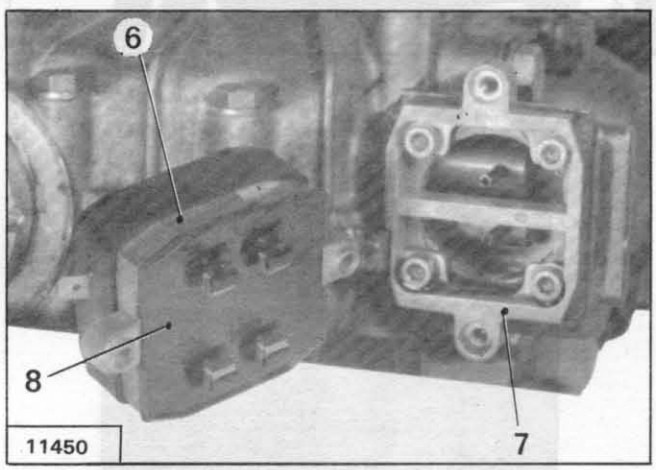
Remove :
- control switch body (6) and its cover (4 mm Allen key),
- seal (8),
- control switch baseplate (7) (4 mm Allen key).

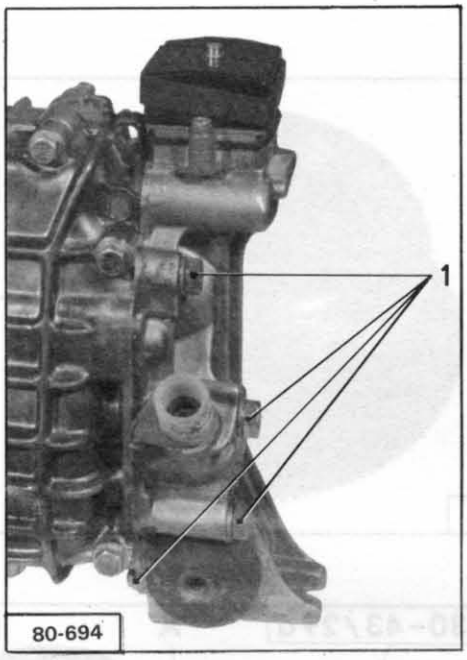

3186-T
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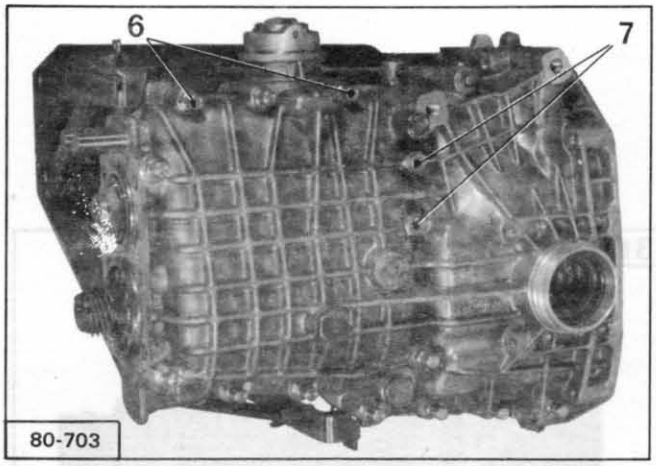

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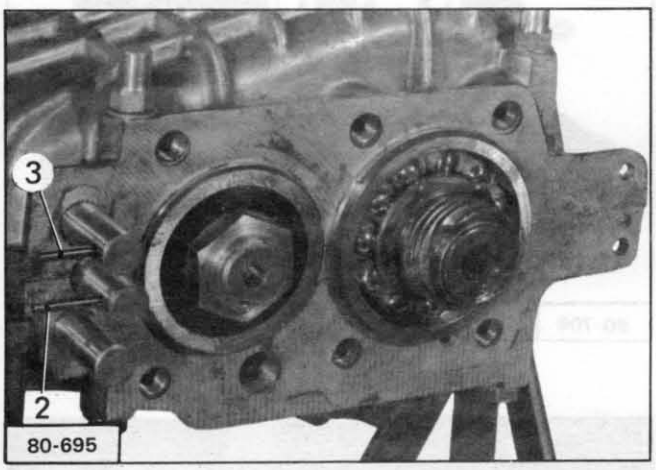

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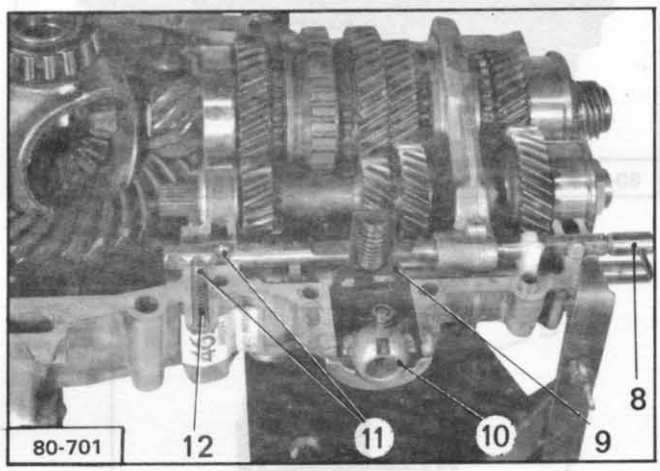

MR.630-43/29a
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80-706

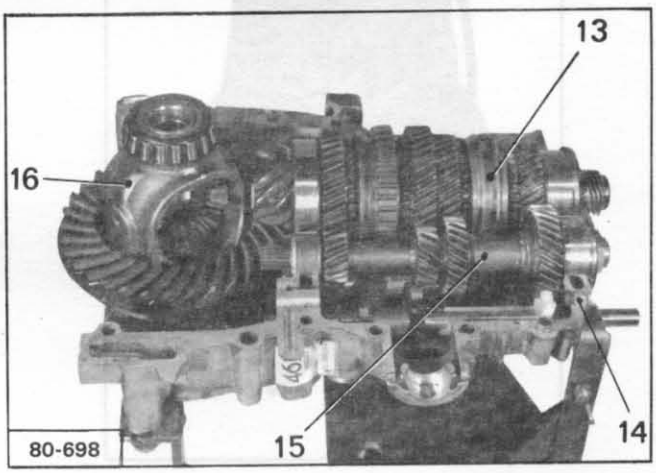

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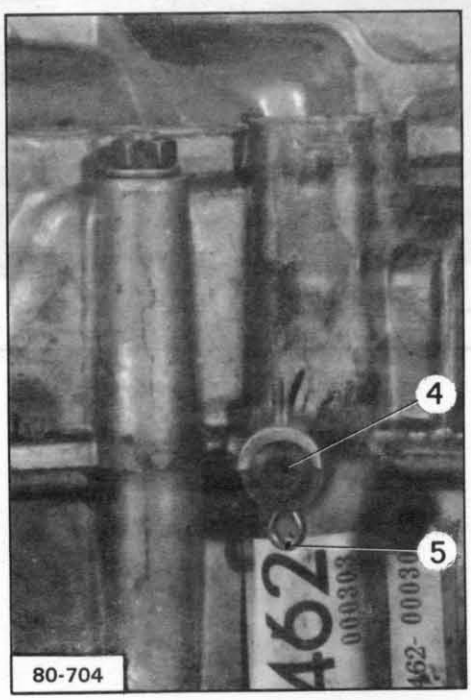

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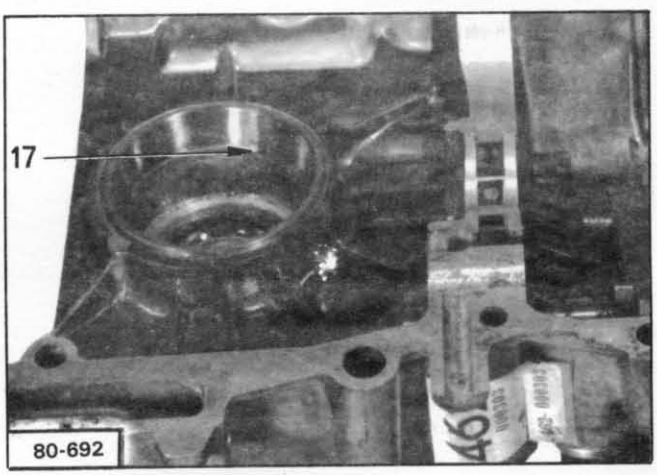

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80-692

6. Remove the rear cover :

Remove the rear cover securing screws (1).
Disengage the rear cover (be careful not to bend roll split pins (2) and (3) of the clutch switch control).
Put a finger on plug (4) and remove split pin (5).

7. Remove the right half casing :

Remove :
- half-casing assembly screws and nuts (6),
- central bearing assembly screws (7), (two screws on right half-casing side and one on left half-casing side),
- the right half-casing.

Prepare to catch locking balls (11), ball joint guide (10) and guide thrust spring when they fall.

8. Remove :

- ball joint (10),
- retainer plate (9) for draw-back spring,
- spring (12) and locking balls (11),
- selector fork shaft and 2nd - 3rd gear selector fork (8),
- interlock plunger (14).

9. Remove the gear train unit.

Remove :
- primary shaft (15),
- bevel pinion unit (13),
- differential (16),
- the locking ball under the 2nd-3rd gear selector fork,
- outer races of differential bearings *(mark down each differential bearing and its outer race).*

If removing the gearbox for an overhaul, without changing :
- the crankcases,
- the crownwheel and pinion,
- the differential bearings,

note the position of setting shims (17), it will avoid having to readjust the backlash.

II- STRIPPING DOWN THE GEARBOX UNITS

1. Strip down the left half-casing :

Remove shaft stop pin (1).
Drive the shaft out, using a bronze drift.
Remove reverse gear pinion (2) and parking brake lock (3).

2. Remove shaft (5) and parking locking cam (6) :

To carry out this operation :
- Move the shaft (5) - locking cam (6) unit all the way to the front.
- Drive out thrust pin (8) for spring (7).
- Place a finger over hole « a » and move shaft (5) - locking cam (6) unit all the way to the rear.
- Remove the locking ball and its spring.
  Tilt the locking cam (6) so as to bring pin (9) in a vertical position.
- Drive out pin (9).
- Remove :
  - spring (7),
  - parking locking cam (4),
  - reversing lamp switch cam (4),
  - shaft (5).

Remove reversing lamp switch.
Remove circlip (10) and seal (11), if necessary.

3. Strip down the right half-casing :

Remove 1st-Rev gear fork.
To carry out this operation :
- Move the axle and fork unit towards the rear placing a finger on hole « b » in order to prevent the locking ball from being thrown out from its housing.
- Remove the locking ball and its spring.
- Move the axle and fork unit so as to bring the fork against the gearbox housing and lift up the fork to allow withdrawing the pin.
- Drive the Mecanindus pin out.
- Withdraw the axle and the fork.
- Remove, if necessary, Mecanindus pins (12) controlling the clutch switch.

4. Strip down the primary shaft :

Remove the needle bearing.

NOTE : Inner race (13) is not interchangeable.

Hold the shaft in a vice fitted with soft jaws.

Remove :
- nut (15) (locked by metal peening).
- bearing (14).

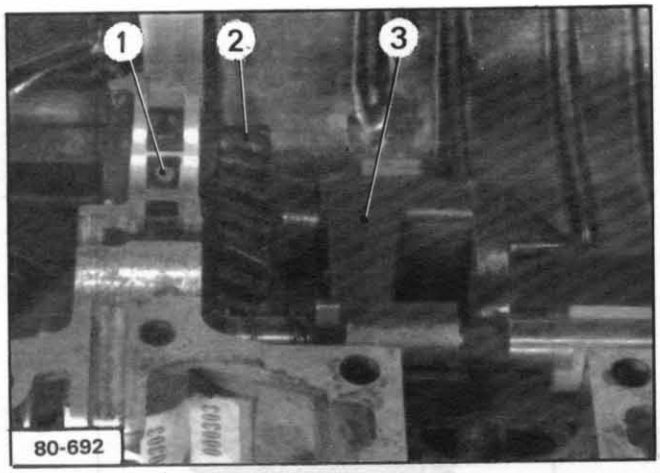
5. Strip down the bevel pinion :

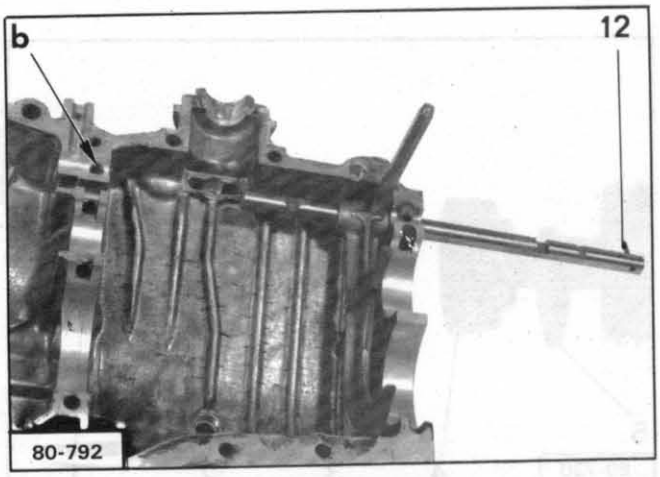
The contact surfaces of the gearwheels on the bevel pinion having been treated, any impact or scoring trace on these surfaces can cause binding of the parts when in operation.

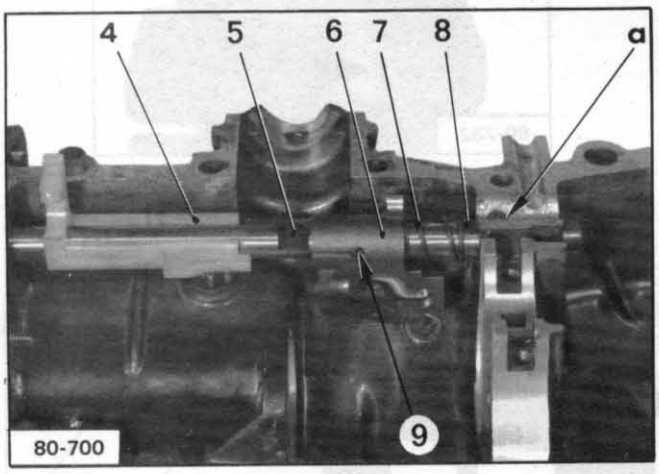
IT IS THEREFORE ESSENTIAL to take the necessary precautions when removing.

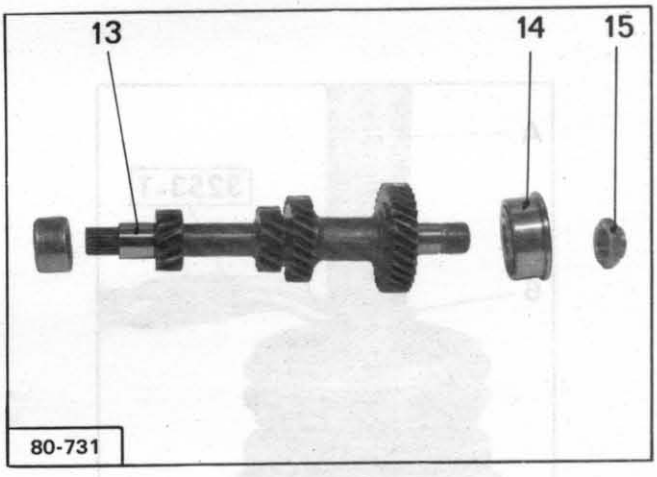
Hold the bevel pinion unit in a vice fitted with soft jaws, using either the reverse gear idling pinion or the 1st gear idling pinion.

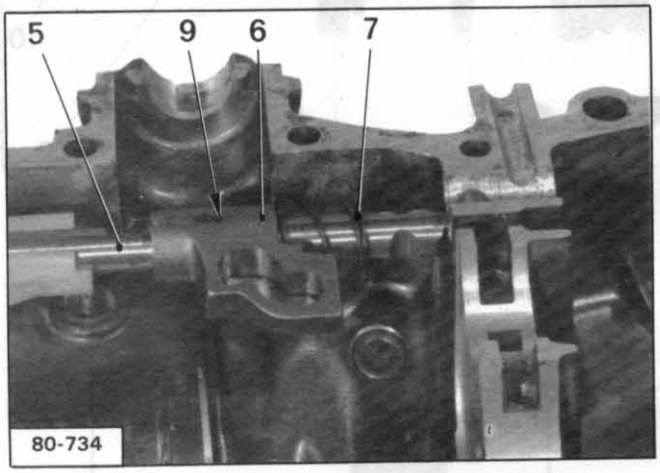
Lock the pinion, held by the vice, on the shaft by moving the corresponding sliding pinion in the correct direction.


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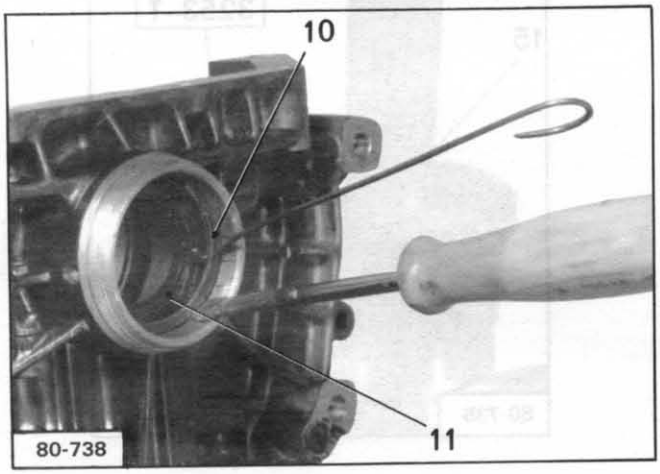

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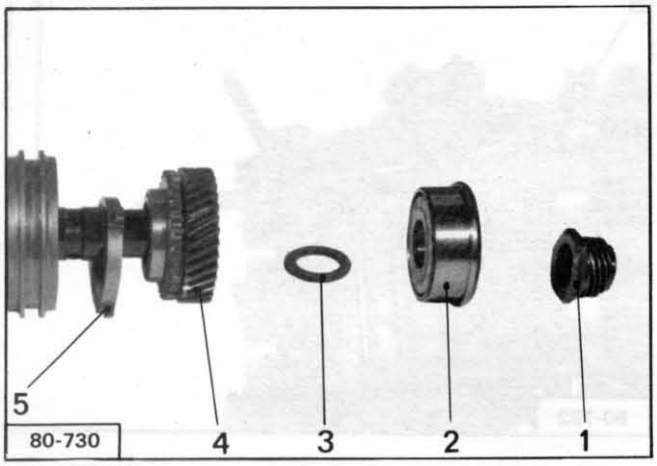

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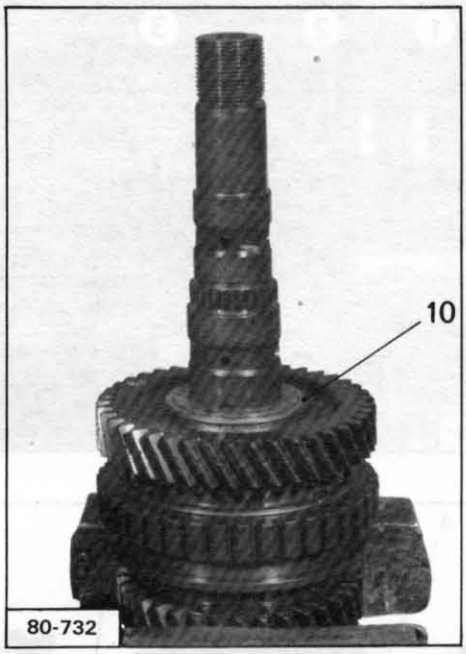

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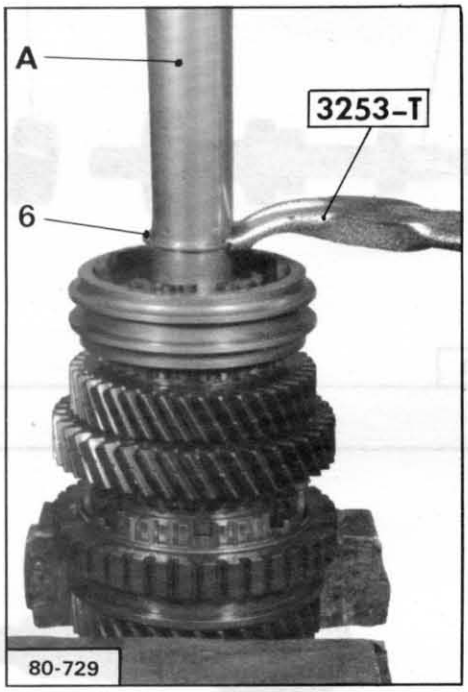

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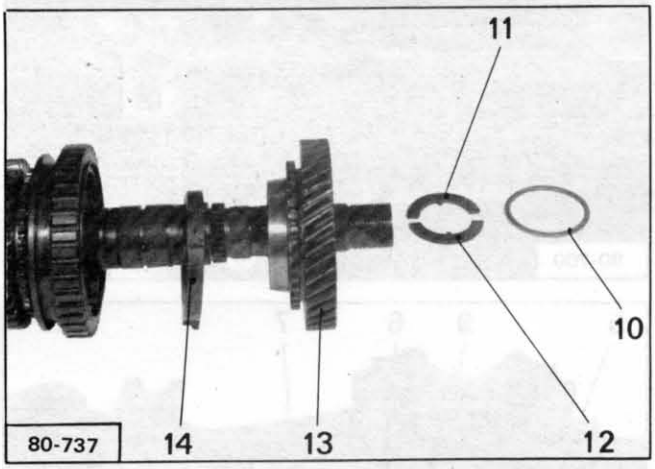

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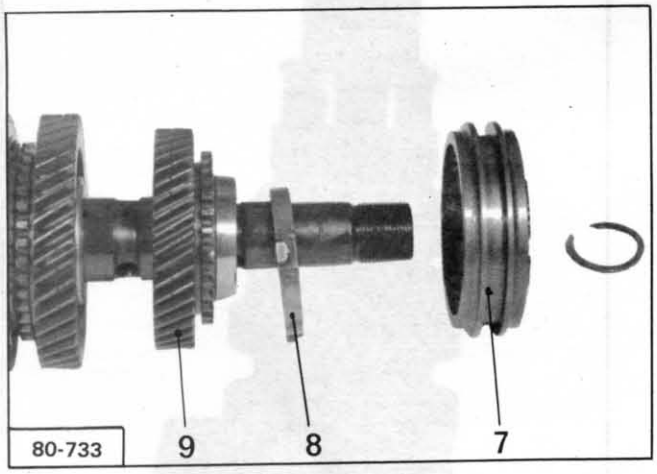

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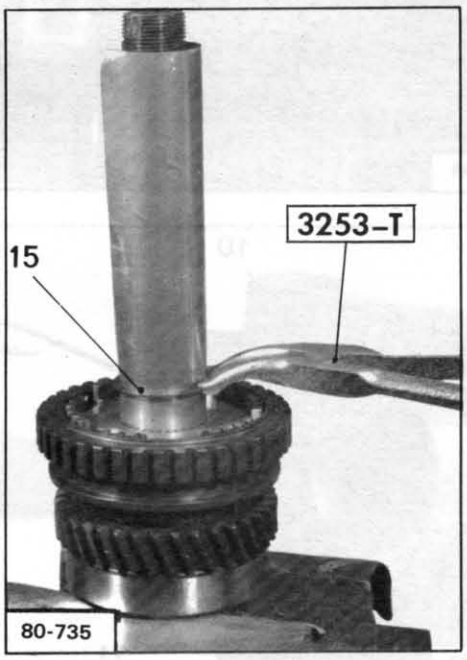

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3253-T
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3253-T
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80-735

6. Remove :
- nut-screw (1) (locked by metal peening),
- bearing (2),
- setting washer (3) for the crownwheel and pinion distance,
- 3rd gear idling pinion (4),
- 3rd gear synchro ring (5).

If overhauling the gearbox, without changing :
- the crankcases,
- the crownwheel and pinion,
- bearing (2)

keep setting washer (3), it will avoid having to readjust the crownwheel and pinion distance.

7. Remove locking ring (6).
Wrap the end of the bevel pinion with a sheet of metal foil **A** *(thickness = 0.10 mm)*.
Hold it against locking ring (6).
Slightly separate the ends of the ring using pliers **3253-T**.

Slide the foil under the ring.
Remove ring (6) by sliding it over the metal foil.

8. Remove :
- synchro hub and sliding pinion unit (7) for 2nd and 3rd gears,
- 2nd gear synchro ring (8),
- 2nd gear idling pinion (9).

The synchro rings for 2nd and 3rd gears are identical.
However, they must be paired with their corresponding pinions.

9. Remove the 1st gear idling pinion.

Withdraw washer (10) and remove the two half-washers (11) and (12).

Remove :
- 1st gear pinion (13),
- 1st gear synchro ring (14).

The synchro rings for reverse gear and 1st gear are identical.

However, if these parts are to be reused, they must be paired with their corresponding pinions.

These synchro rings are different from those fitted on a manual gearbox.

Place the bevel pinion unit in a vice fitted with soft jaws holding it by the bevel pinion.

Remove the locking ring (15) for the reverse and 1st gear synchro hub.

Do the same as for removing the locking ring for the 2nd and 3rd gear synchro hub. *(See paragraph 7).*

10. Remove :

- synchro hub and sliding pinion unit (1) for reverse and 1st gears,
- reverse gear synchro ring (12),
- reverse gear idling pinion (3),
- needle cage (4).

11. Remove :

- locking ring (5). (Take the same precautions as for removing the synchro hub locking rings), *(see paragraph 7, page 13)*,
- bearing (6), *using a press and a tube with an inner diameter = 5 mm and a length = 60 mm.*

The bevel pinion on gearboxes with a torque converter has no retarding dowels.

12. Dismantle the differential :

Remove :

- bearings (7). Use universal extractor **2400-T** and pad **H** of tool kit **3184-T bis**
- circlip (8),
- axle (9),
- both satellite gears (12),
- both planet gears (11),
- crown wheel (10).

13. Strip down the gearbox output shafts, if necessary :

Remove :

- ring (15),
- bearing (14),
- bush-nut (13)

using universal extractor **2400-T** resting on bush-nut (13).

14. Strip down the rear cover :

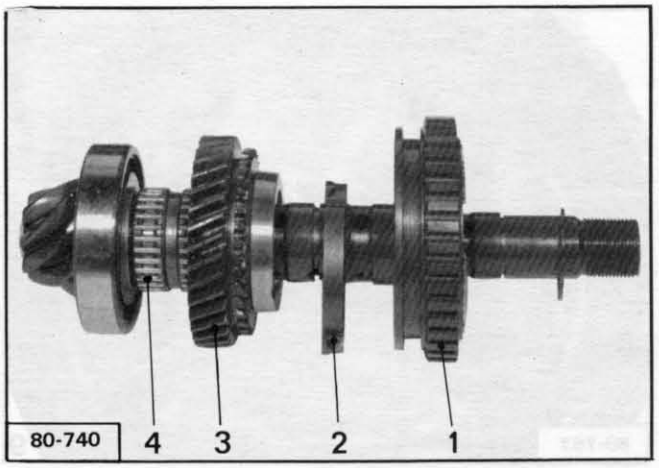
Disengage speedometer drive (17) from rear cover (18).

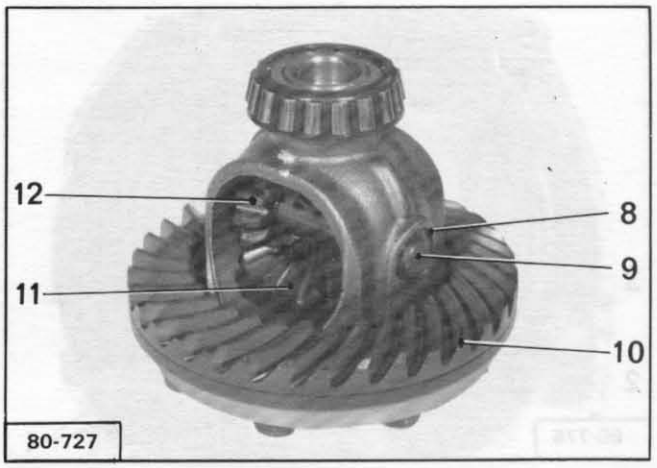
Disengage pinion (19).

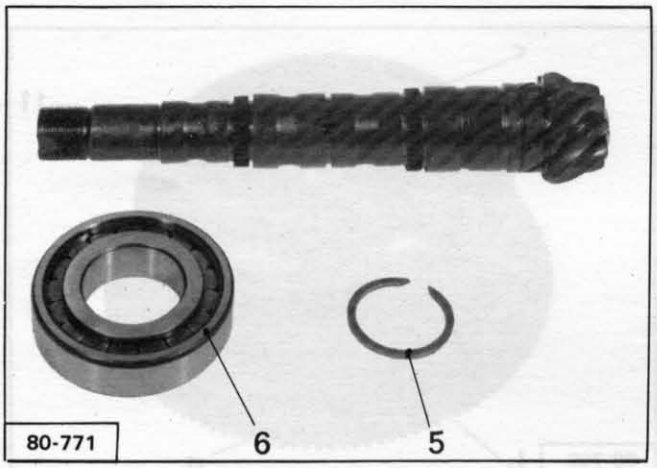
Remove seals (16) and (20).

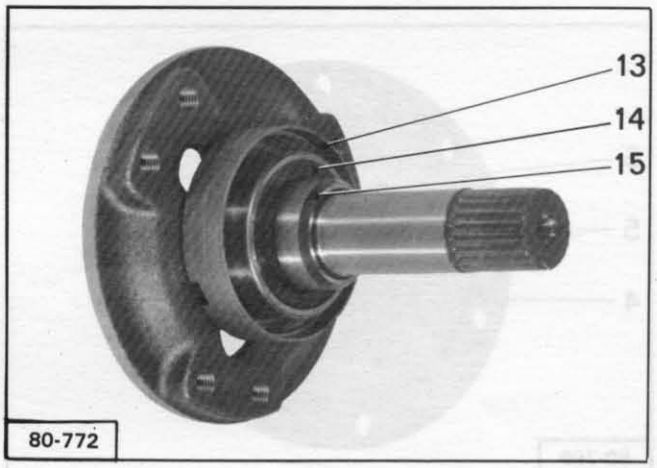
15. Strip down the converter housing.

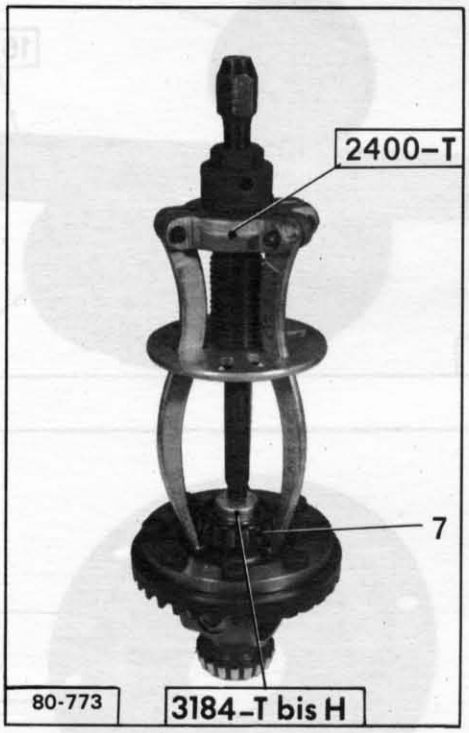
Remove distributor unit (21).

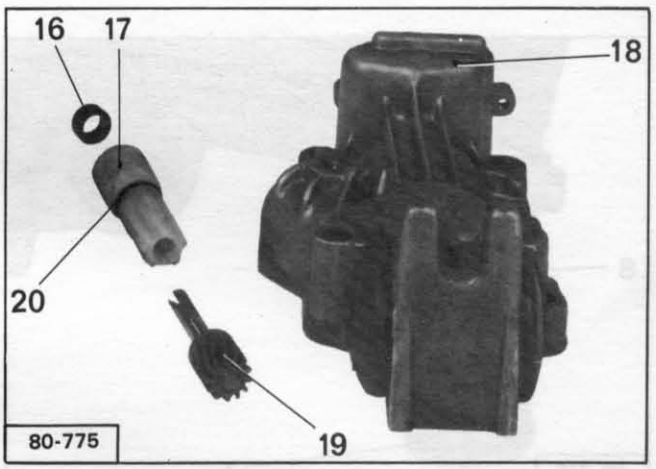

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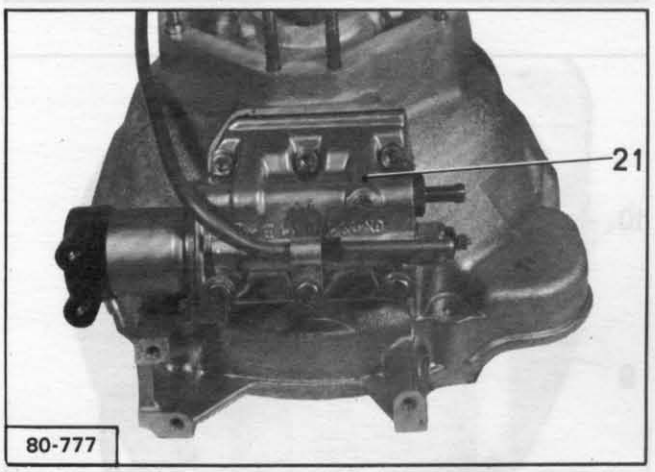

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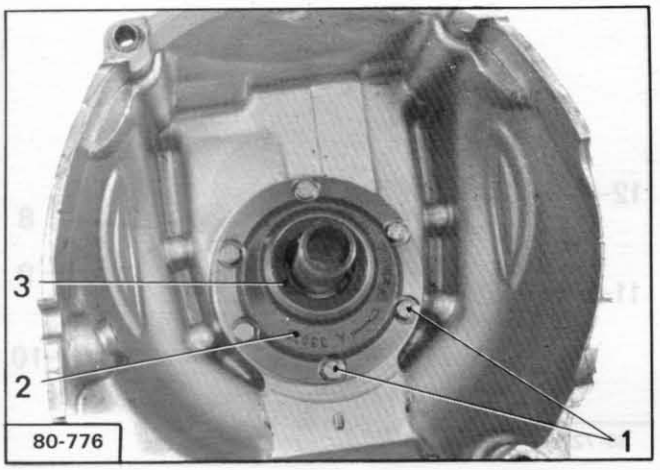

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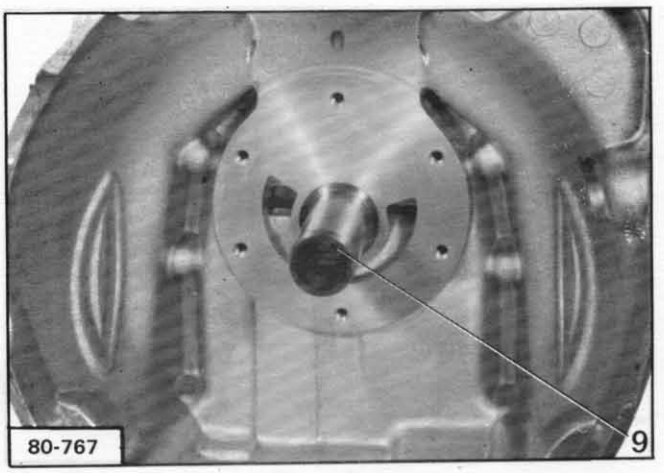

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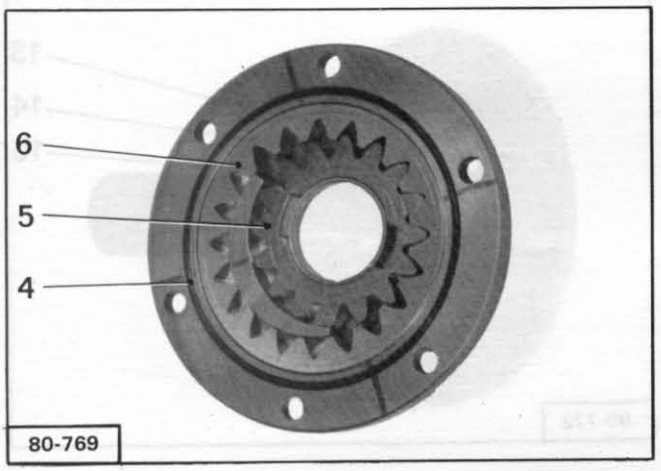

2400-T
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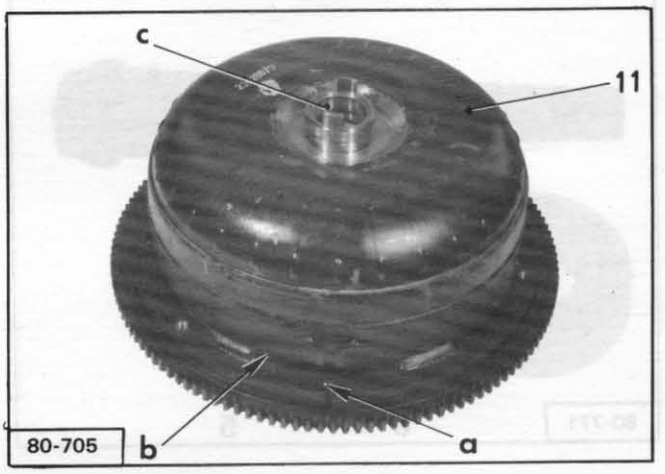

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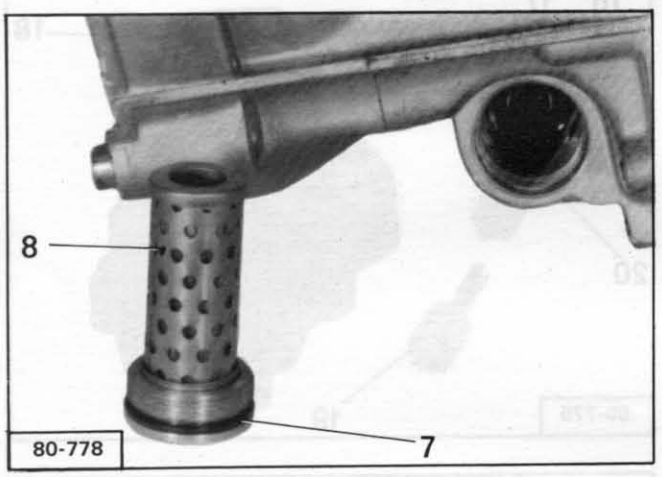

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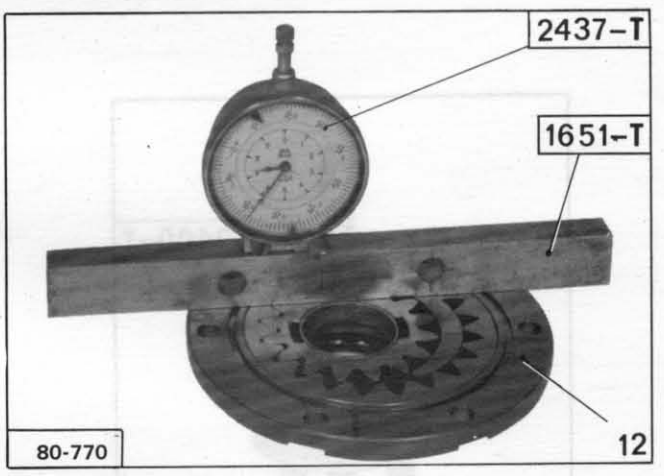

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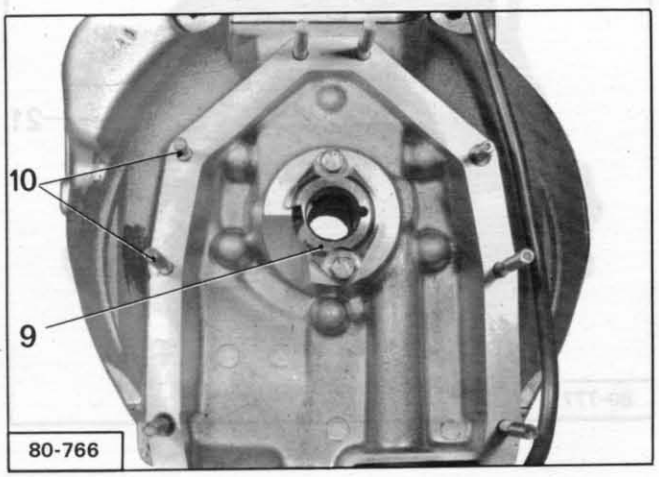

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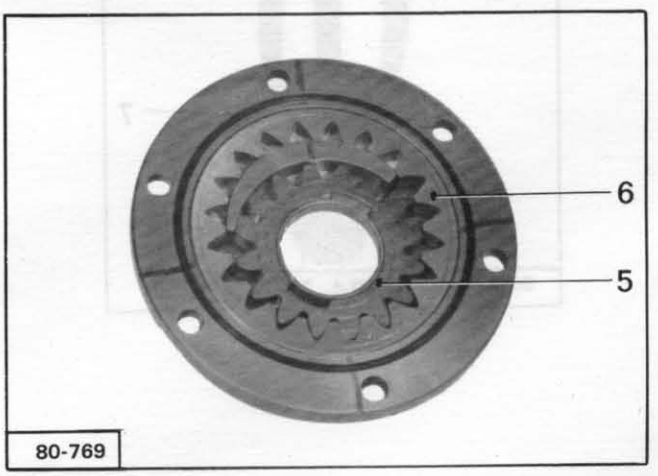

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2437-T
1651-T
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80-769

16. Remove the oil pump :

Note the position of the pump in relation to the converter housing.
Remove :
- securing screws (1) of the pump casing,
- pump casing (2) and the pinions,
- pinions (5) and (6),
- o-ring seal (4),
- seal (3).

Remove oil strainer (8) and disengage o-ring seal (7)
Remove gudgeons (10), *if necessary.*

Remove stator sleeve (9), *if necessary : See Operation GX. 311-3.*

17. Drain the converter :

Turn converter (11) upside down above a sump and let it drain off for several hours.

18. Replace the starter gear ring, *if necessary :*

To carry out this operation :
Cut the gear ring with a saw opposite a slot « a » of flange « b » and drive it out.
Fit the new gear ring.
Place the converter on two wooden beams.
Carefully clean flange « b » where the gear ring comes into place.
Heat up the new gear ring using a welding torch fitted with an 800-to-1000-litre burner.
Direct the welding torch flame towards the inner bore of the gear ring, going round constantly in order to obtain a regular expansion.
Stop heating when the gear ring reaches a temperature of 200° C (straw coloured).
Position the gear ring on the flange, *with the unmachined side towards the flange shouldering.*
Carry out this operation quickly.
If necessary, finish off the positioning of the gear ring by using a bronze drift.

19. Clean the parts :

The bearings of the different pinions on the bevel pinion shaft must have no defects. **Any machining of the surfaces in any way whatsoever, is FORBIDDEN.**
Blow through the converter housing oil pipes with compressed air.
Finish cleaning the joint faces, using methylated spirit.

III- PREPARING THE ASSEMBLIES

Fill in the converter with TOTAL Fluide T oil
(this oil is the same for the converter and the gearbox)
To carry out this operation, lay the converter flat on the work bench.
Fill in the converter through hole « c » repeating the operation several times since it takes a certain time for the oil to be distributed in the converter.

If the converter has been drained off correctly, it should contain **1.5 litre of oil** approximately.
The complete filling can be done only once the gearbox is fitted on the vehicle (Real capacity of the converter : 2.3 litres approximately).

1. Prepare the oil pump :

Check the side clearance of the pinions.
Place the pinions in pump housing (12).
Fit dial gauge **2437-T** on a ruler **1651-T** and calibrate the assembly on a jig.
Place the assembly, once it is calibrated, on the pump housing and measure the clearance between the housing thrust face and each pinion (5) and (6).
This clearance must be comprised between 0.03 and 0.06 mm.

Fit seal (1). To make it easier smear the cover bore and the outside of the joint with grease.

2. Prepare the converter casing :

Fit the oil pump :
Oil pinions (2) and (3).
Secure the o-ring seal (4) in its groove, using grease.
Put oil pump (5) in its place in the converter housing.
Centre the pump using mandrel **1689-T** .

Fit the oil-pump fixing screws and tighten them to **1.9 mdaN** (no washer under the screw head).

Make sure the pump rotates freely by acting upon the driving notches.
If it does not, unscrew the pump attachments and recenter it using mandrel **1689-T** until the pinions can rotate freely.

3. Fit the distributor :

Fit the joint.
Place the distributor in its position on the converter casing with electromagnet (6) on the right of the casing.
Fit securing screws (7) and tighten them to **1.5 mdaN.**

4. Fit the assembly studs :

There are 3 different lengths of studs.
Place them as follows :
- at (8) : the 4 longer studs.
- at (9) : the medium size studs
- at other places : the shortest studs.

Make sure the two centering rings are in position at « d » and « e ».

Place o-ring seal (10) in strainer (11).
Make sure the rubber washer is in position at « f ».
Tighten the strainer in its housing in the converter casing **from 1 to 1.5 mdaN.**

5. Prepare the gearbox output shafts :

Position on each shaft :
- bush-nut (12),
- bearing (13), using a press and a tube (inner dia. = 26 mm, outer dia. = 34 mm, length = 120 mm),
- ring (14).

Ring (14) must show no traces of scoring or impact. If it does, change it.

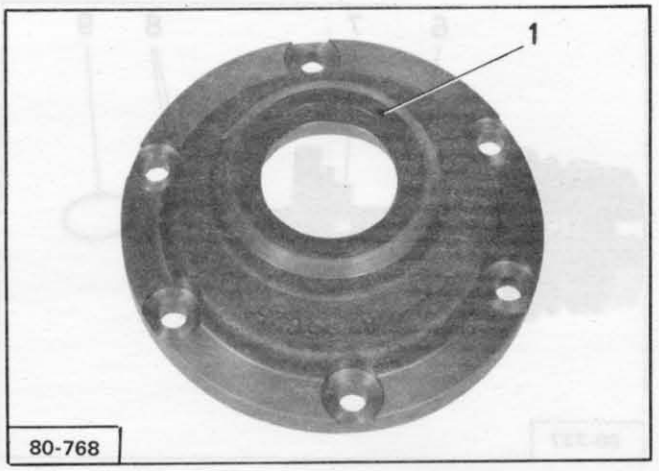
6. Prepare the bevel pinion unit :

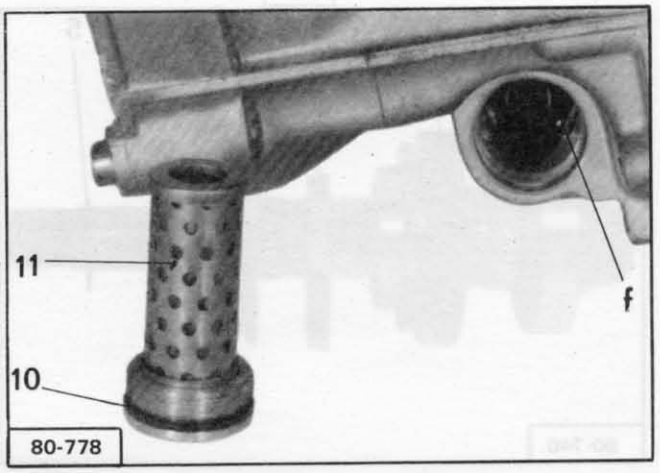
Oil all parts before fitting.

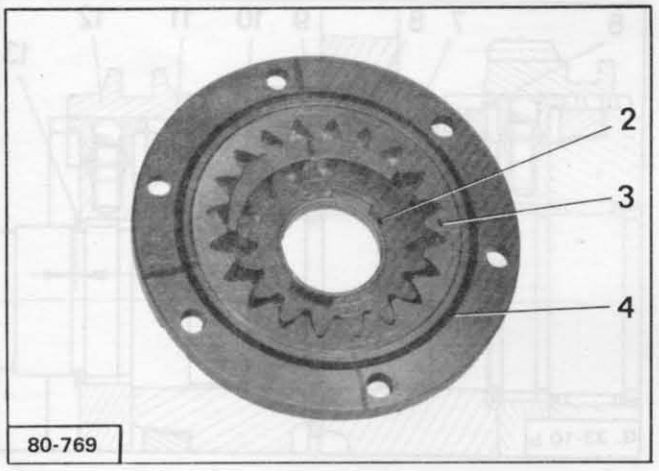
NOTE : The locking ring ends are slightly chamfered. Position the locking ring with the pointed section of its ends away from the component to be held in position. This will make it easier to remove the locking ring with pliers **3253-T** .

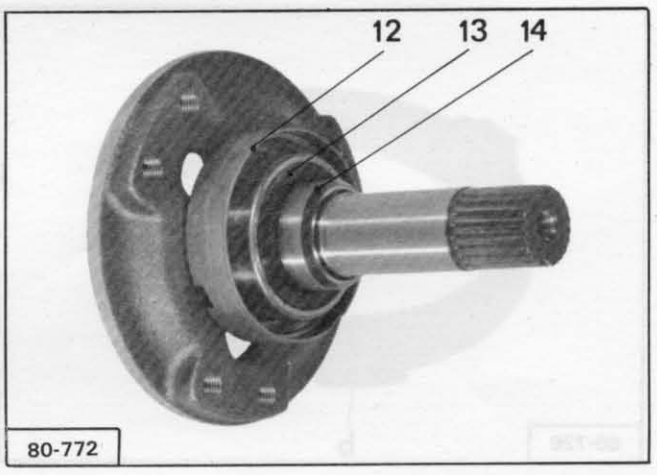
Press-fit bearing (15) using a tube with inner dia = 45 mm, length = 220 mm.

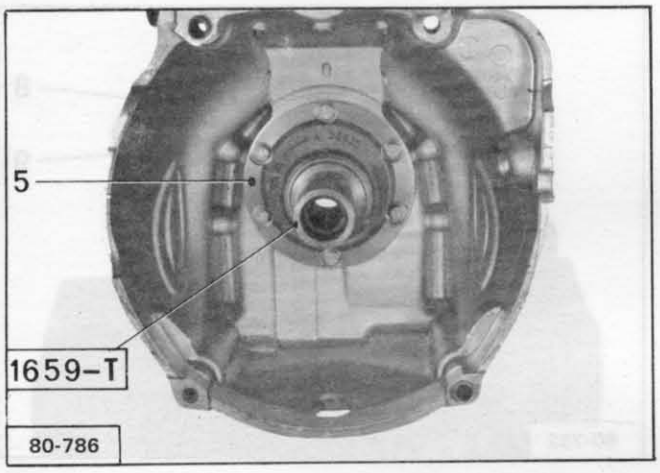
Fit locking ring (16) using pliers **3253-T** and protecting the contact surface of the reverse gear pinion with a sheet of metal foil.

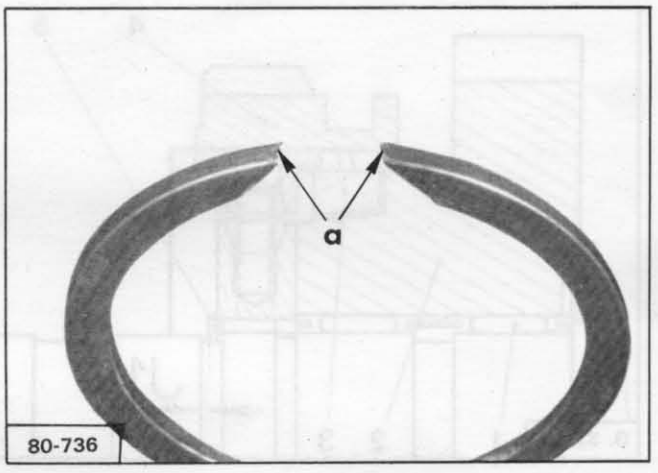

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80-768

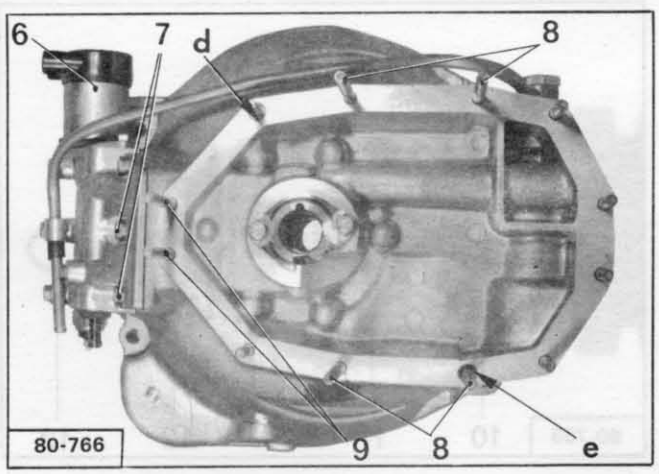

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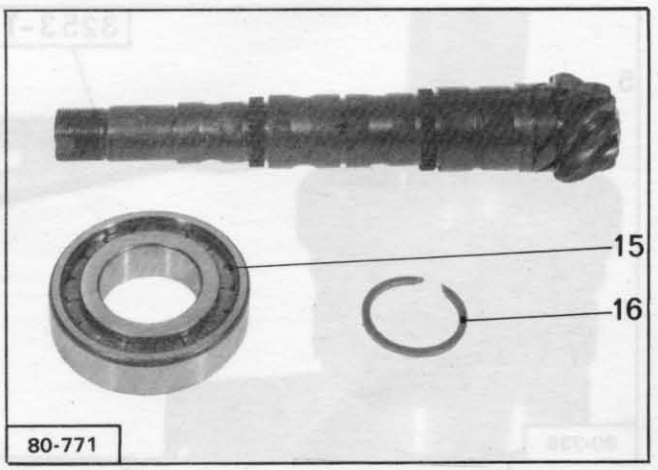

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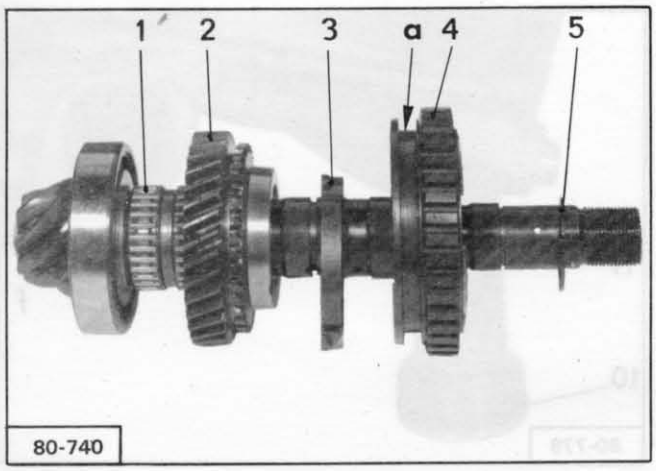

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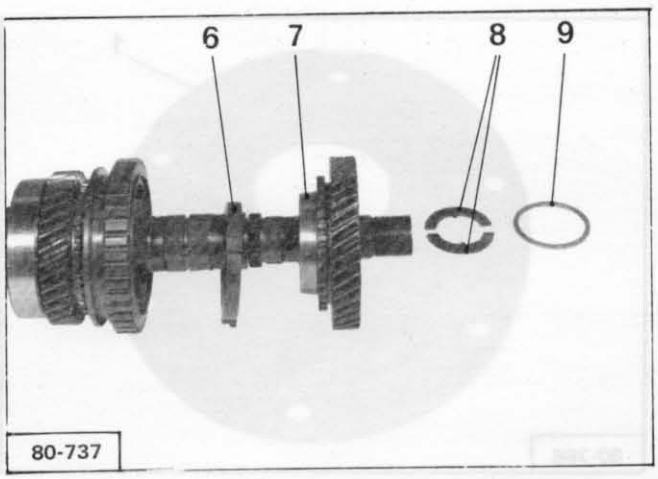

5
1659-T
80-786

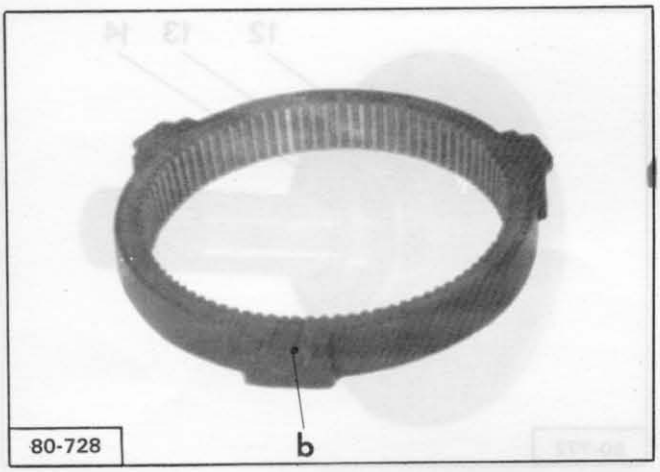

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80-736

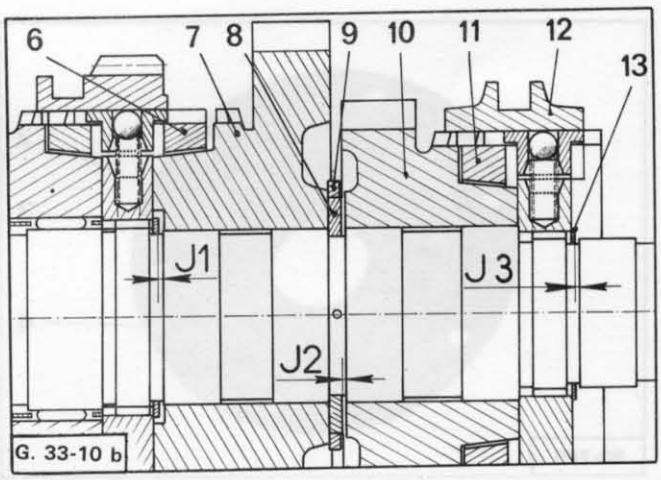

6
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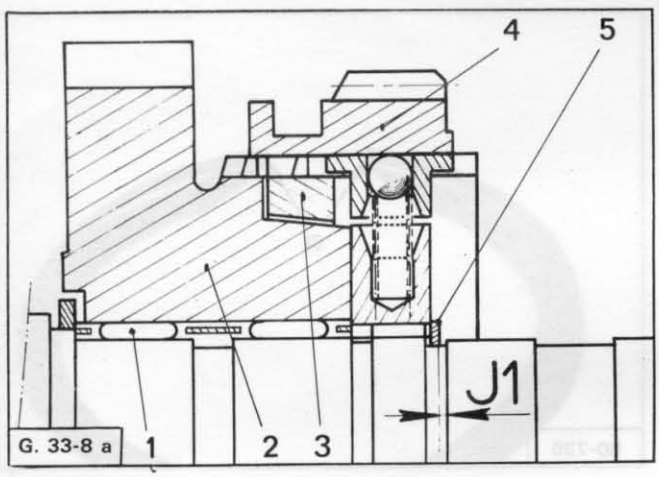

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16
80-771

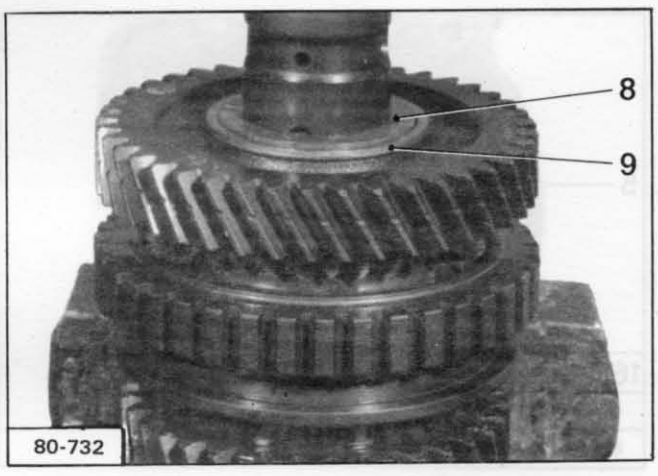

1
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80-740

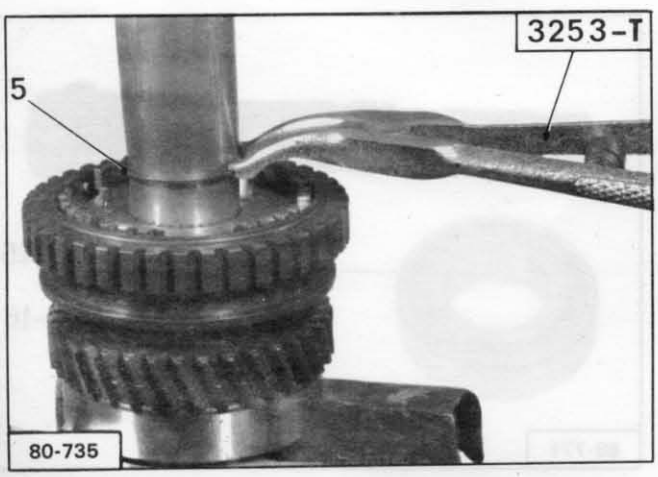

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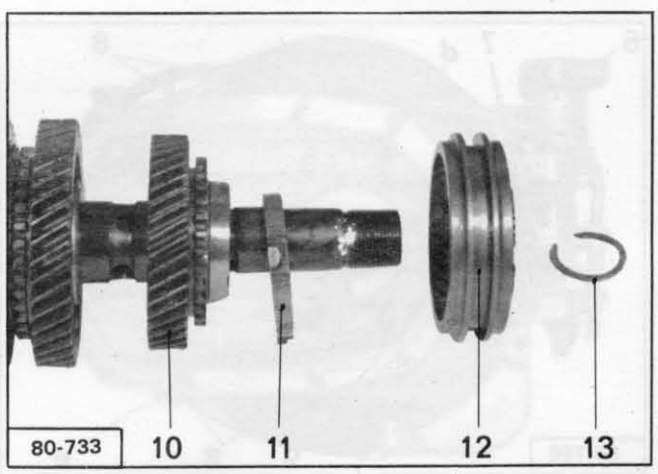

80-728
b


6
7
8
9
10
11
12
13
J1
J2
J3
G. 33-10 b


4
5
J1
G. 33-8 a
1
2
3


8
9
80-732


3253-T
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80-735


80-733
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11
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13

Position the following :
- needle cage (1),
- reverse gear pinion (2),
- reverse gear synchro ring (3),
- synchro hub-sliding pinion unit (4) for reverse and 1st gears (with groove « a » on reverse gear pinion side).

The reverse and 1st gear synchro rings are different from those for 1st and 2nd gears fitted on manual gearboxes.
They are marked by three grooves « b » on large diameter face.

7. Adjust the fore-and-aft clearance of the 1st-reverse gear synchro hub.

Among locking rings (5) sold by the Replacement Parts Department, choose the one that will provide a clearance **J1 = 0.05 mm max.** The thickness of rings (5) ranges from 1.42 mm to 1.58 mm, with 0.04 mm increments.

Position locking ring (5).
Wrap the bevel pinion shaft with a sheet of metal foil (thickness = 0.10 mm). Use pliers **3253-T** .

Prise away the ends of the ring.
Slide it over the metal foil.
Slide the metal foil and ring assembly along the shaft until the ring can engage in the groove.

Position :
- 1st gear synchro ring (6),
- 1st gear pinion (7):

8. Adjust the clearance of the stop for the reverse and 1st gear wheels :

Choose among half washers (8) sold by the Replacement Parts Department the ones that will provide a clearance :

J2 = 0.05 mm max.

The thickness of half-washers (8) ranges from 2.56 mm to 2.71 mm, with 0.03 mm increments.

Both half-washers (8) must be of the same thickness.

Position :
- the two half-washers (8),
- washer (9).

Position :
- 2nd gear pinion (10),
- 2nd gear synchro ring (11),
- 2nd-3rd gear sliding pinion and synchro hub unit (12)

Unit (12) is symmetrical.

The 2nd and 3rd gear synchro rings are identical to the 3rd, 4th and 5th gear ones fitted on manual gearboxes.

9. Adjust the fore-and-aft clearance of the 2nd-3rd gear synchro hub :

Choose among locking rings (13) sold by the Replacement Parts Department the one that will provide a clearance :

J3 = 0.05 mm max.

The thickness of locking rings (13) ranges from 1.42 mm to 1.58 mm with 0.04 mm increments.
Position locking ring (13).
Proceed in the same way as for the locking ring for 1st-reverse gear synchro hub *(see paragraph 7).*

Position :
- 3rd gear synchro ring (1),
- 3rd gear pinion (2),
- setting washer (3), *after having measured its thickness*,
- bearing (5) (with shouldering « a » facing the rear of the bevel pinion),
- nut-screw (4).

Tighten nut-screw (4) from 10 to 12 mdaN. Do not peen the edge so as to allow adjusting the crown-wheel and pinion distance.

NOTE : During this operation, hold the bevel pinion in a vice fitted with soft jaws by using the reverse gear pinion (6) locked on the bevel pinion shaft by means of the 1st-reverse gear sliding pinion.

Never hold the sliding pinions in a vice.

10. Prepare the primary shaft :

Fit ball bearing (8) with shouldering « b » facing the rear.

Hold the primary shaft by gripping one of its pinions in a vice fitted with soft jaws.

Tighten nut (9) from **6 to 7 mdaN** and lock it.

Fit needle bearing (7) *with face « c » towards the mainshaft.*

11. Prepare the mainshaft :

Oil joints (10) and (11) and fit them on the shaft, one by each end.

NOTE : Spring (12) will be placed in its housing only when fitting the shaft in the converter.

12. Prepare the differential casing :

Fit tapered bearings (13) using a press and a tube (inner dia = 36 mm, outer dia. = 45 mm, length = 40 mm).

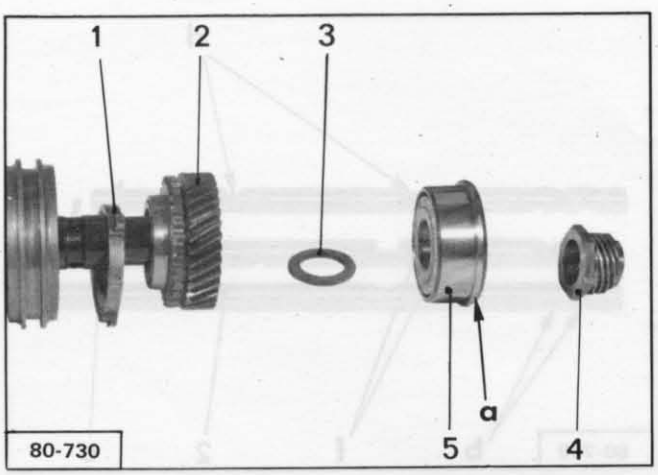
Do not invert the bearing outer rings.
The fitting of the differential casing will be through only once the crownwheel and pinion is adjusted.

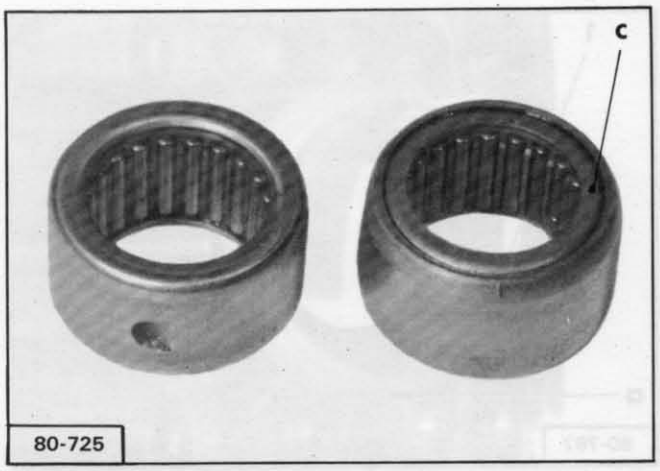
13. Prepare the rear cover :

Position rubber seal (14) and o-ring seal (15) on speedometer drive bearing (17) *(new seals)*.

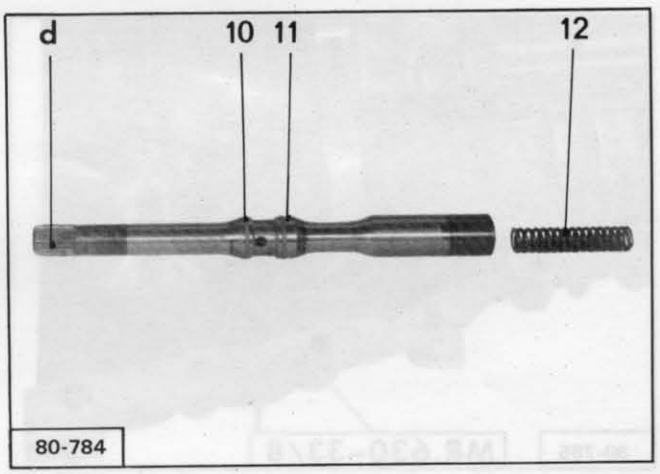
Fit pinion (16) *(pre-greased shaft)* in bearing (17).

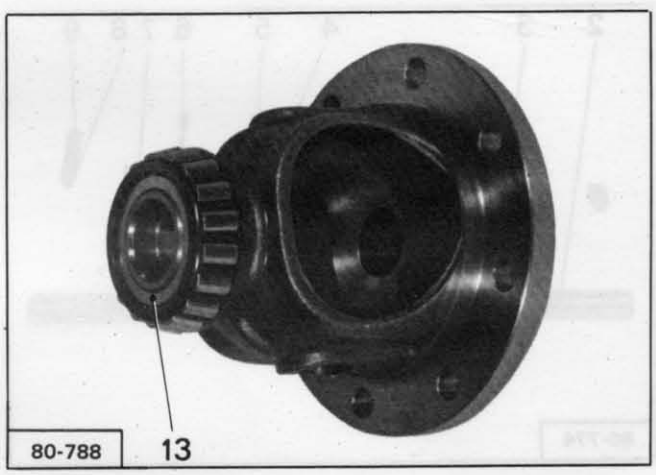
Engage the speedometer drive unit in the cover, placing groove « e » of bearing (17) so as to allow the fitting of screw « f ».

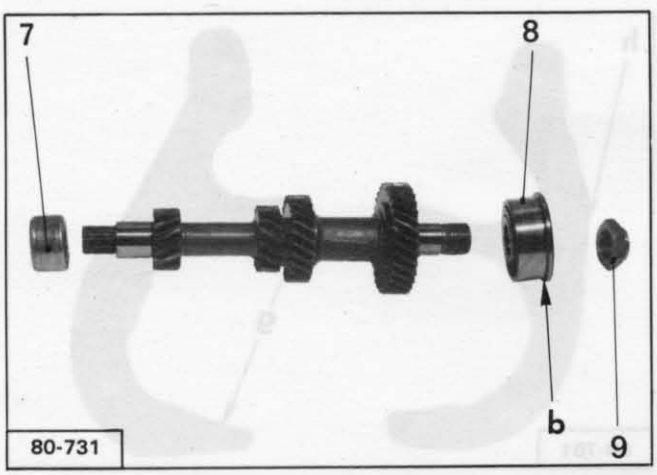

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80-730

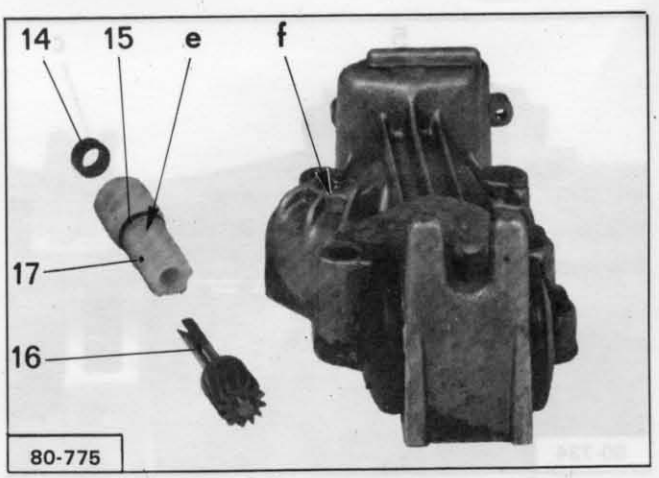

c
80-725

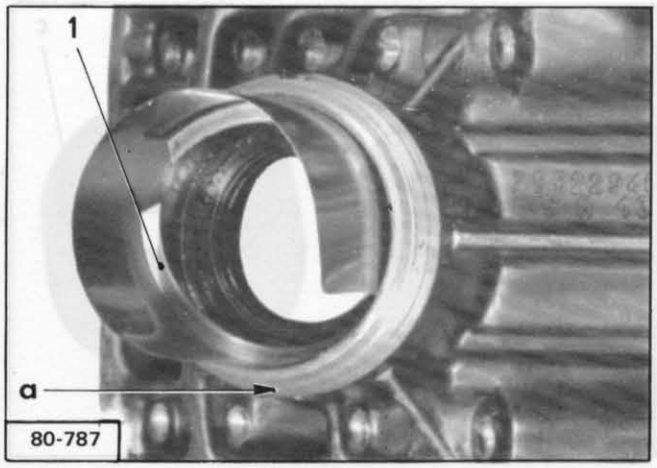

6
80-739

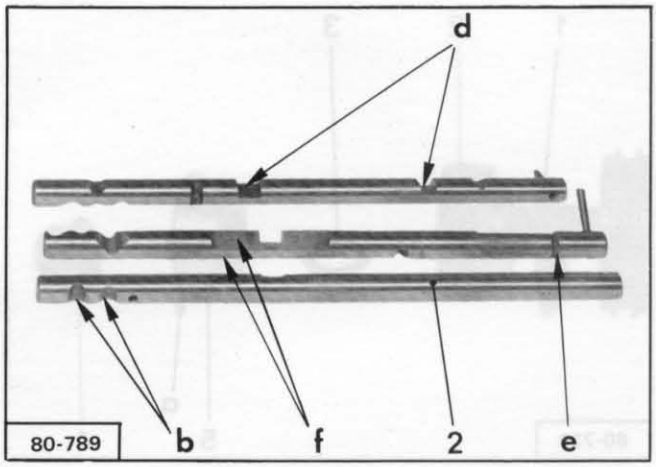

d
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11
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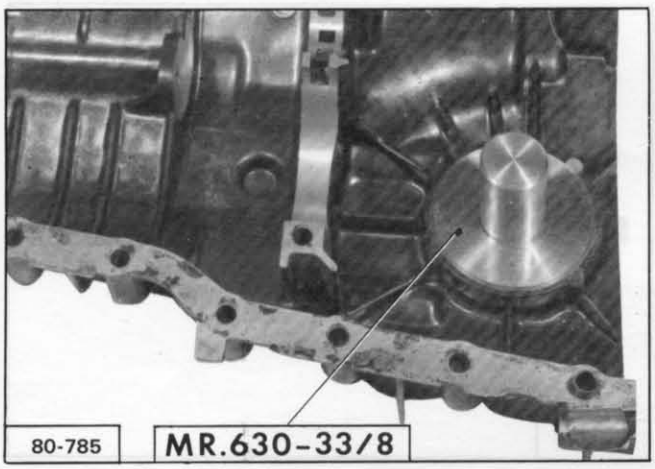

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80-788

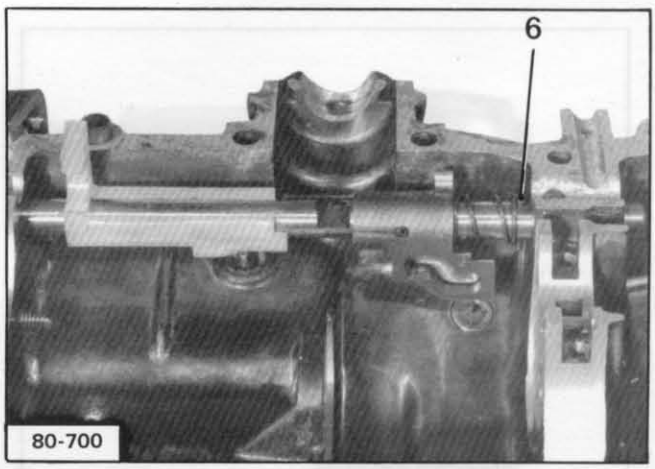

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8
b
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80-731

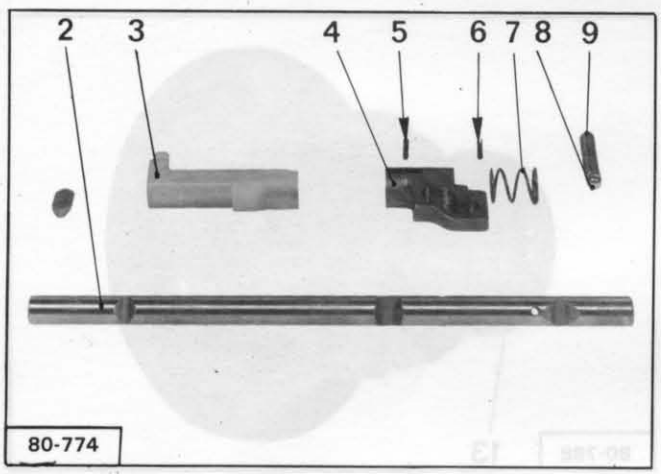

14
15
e
f
17
16
80-775

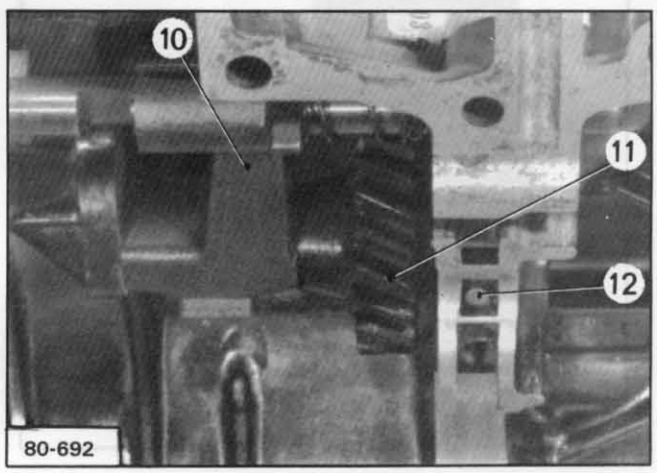

1
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80-787

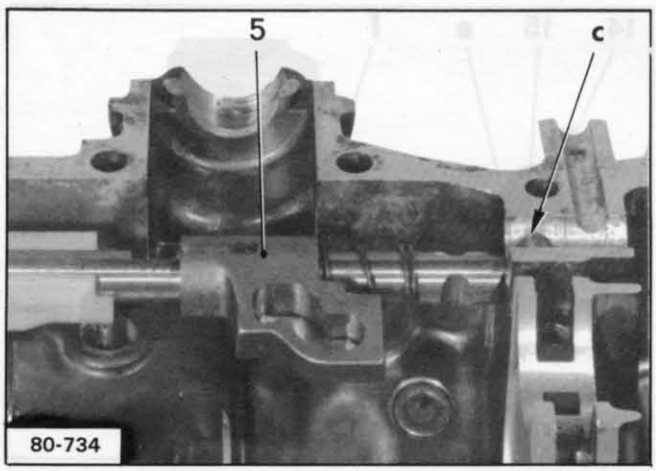

d
b
f
2
e
80-789

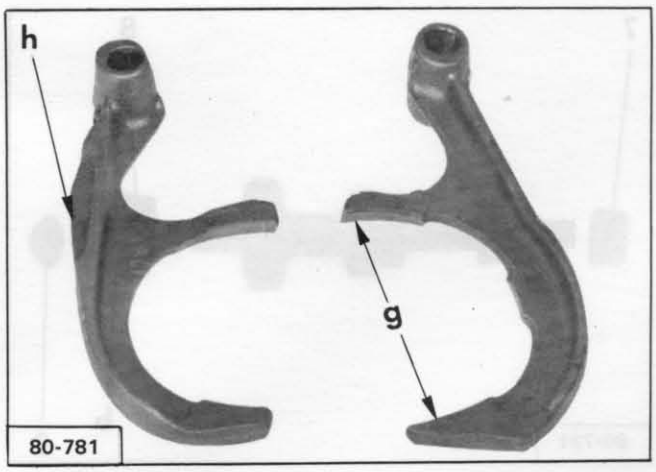

80-785
MR.630-33/8


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80-700


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80-774


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80-692


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c
80-734


h
g
80-781

14. Fit the seals on the gearbox output shafts (from inside the half-casings) :

On each half-casing :
Fit circlip (1) in the bore using a sheet of metal foil (length = 150 mm, thickness = 0.2 mm, width = 60 mm).
Once the circlip is fitted, one of its end should be at 10 mm approx. from draining hole « a ».
Remove the metal foil sheet.
Grease the seal housing and the outside of the seal.
Position the seal, *with the marked side facing outwards.*
Bring the seal against circlip (1), using mandrel **MR. 630-33/8** from inside the casing.

15. Prepare the left half-casing :

Oil shaft (2) and grease locking slots « b ».
Engage shaft (2) in the half-casing rear bearing.
Fit, one after the other, on shaft (2), reverse lamp switch cam (3), parking locking cam (4) and cam spring (7).
Fit pin (5) on shaft (2). To carry out this operation, shaft (2) must be engaged in the half-casing front bearing.
Remove shaft (2) from the front bearing and grease spring (9) and ball (8), before fitting them in their housing « c ».
Compress the ball and the locking spring (tube dia. = 5 mm) and engage shaft (2) in its front bearing.
Lightly compress spring (7) and fit pin (6).
Oil the reverse gear pinion shaft and engage it in the rear bearing *(with the stop slot on differential side).*
Fit the parking brake lock (10) and pinion (11).
Finish positioning the shaft and fit pin (12) fully home in its housing.

Pin (12) should slightly stand proud as it serves as a stop for the primary shaft needle bearing.

Fit reverse lamp switch and tighten it **from 1.2 to 1.5 mdaN**

16. Prepare the right half-casing :

Identifying the shafts and the selector forks :

- Parking brake control shaft : has no hole at its end for the fitting of a pin.
- Reverse and 1st gear selector fork shaft : has two slots at « d ».

  2nd and 3rd gear selector fork shaft : has a circular slot at « e » and two flats at « f ».
- Reverse and 1st gear selector fork : gap « g » is bigger than that of the 2nd-3rd gear selector fork which has a round rib at « h ».

The five balls and the two locking springs, each one in its half-casing, are identical (20 turns).

The third spring, which is fitted only once the half casings are assembled, is shorter (14 turns).

Fit the Mecanindus pins controlling the clutch switch, on the selector fork shafts.

Place the slot of each pin perpendiculary to the longitudinal axle of the selector fork shaft.

Adjust the protrusion of each pin :
- on the reverse and 1st gear selector fork shaft :

$$h1 = 14.4 \, {}^{+1}_{0} \text{ mm}$$

- on the 2nd and 3rd gear selector fork shaft :

$$h2 = 18.4 \, {}^{+1}_{0} \text{ mm}$$

Slightly oil shaft (2) and grease locking slots « a ».
Engage shaft (2) in the rear bearing.
Fit reverse and 1 st gear selector fork (3) onto shaft (2).
Fit selector fork stop pin (1).

When fitting the pin, place the shaft-selector fork unit against the rear bearing in order not to damage them.

Grease the spring and the locking ball and position them in their housing « b ».
Compress the ball and the spring (tube dia. = 5 mm) and engage shaft (2) in its front bearing.

IV- ADJUSTING THE CROWNWHEEL AND PINION

The bevel pinion and the crownwheel are paired and marked by identical inscriptions on face **F1** or **F2** of the bevel pinion and on side **F3** of the crownwheel.

Do not unmatch a crownwheel and a pinion set.

Two dimensions are also engraved on side F3 of the crownwheel.
Larger dimension L1 : distance between the rear face of the pinion and the crownwheel and pinion axles intersection point « e ».
Shorter dimension L2 : distance between the crownwheel thrust face on housing and the crownwheel and pinion axles intersection point « e ».

1. Crownwheel and pinion adjustment principle

The drive pinion is positioned with respect to the differential shaft and the crownwheel with respect to the bevel pinion, so as to ensure a correct fitting of the pinion and the crownwheel.

2. Adjusting the crownwheel and pinion distance L1

a) Fit dial gauge **2437-T** on support **A** from kit **3184-T bis**.
Calibrate the assembly on a calibration table, with the dial **0** mark opposite the large needle.
Note the position of the totalizing needle.

b) Fit the bevel pinion assembly in the left half-casing and fix the rear cover with 3 screws.

c) Fit cap **C** and support **A** (both taken out of tool kit **3184-T bis**) equipped with dial gauge **2437-T**.

The cap **C** and support **A** unit, with the dial gauge in the calibration position, corresponds to a distance of : **K1 + K2 = 78 mm,** engraved on the support at « c ».

d) Pivot support **A** and block it as soon as the large needle changes its direction of rotation.

e) Bring back the needles to the calibration position, then release slowly, counting the mumber of turns and fractions of a turn.

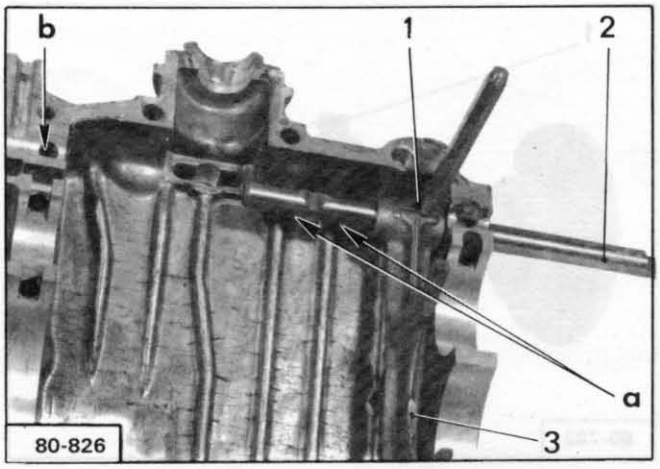
Reading E + distance engraved on support = *crownwheel and pinion distance.*

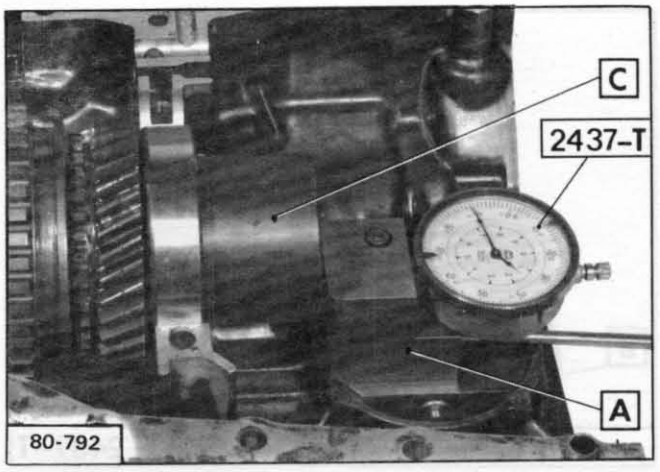
f) **Calculate the difference between the distance engraved on the pinion and the crownwheel and pinion distance measured** and reduce or increase as appropriate, thickness **(E').**
Remove the adjustment equipment, the rear cover and the bevel-pinion-and-pinions unit.

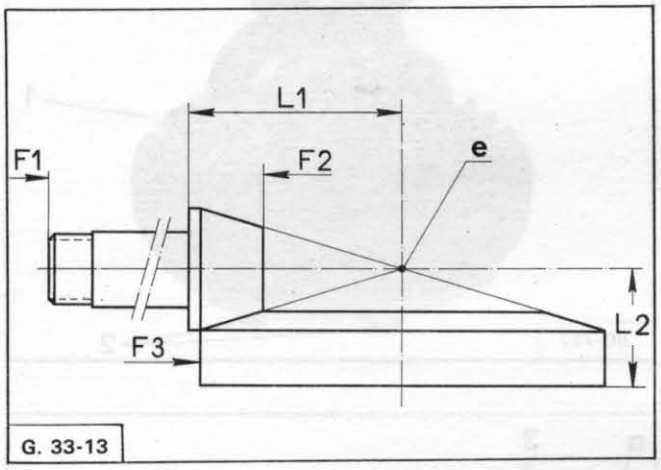
g) Replace the existing washer by that calculated above
Tighten bevel pinion nut from **10 to 12 m.daN,** and lock it by peening of metal.

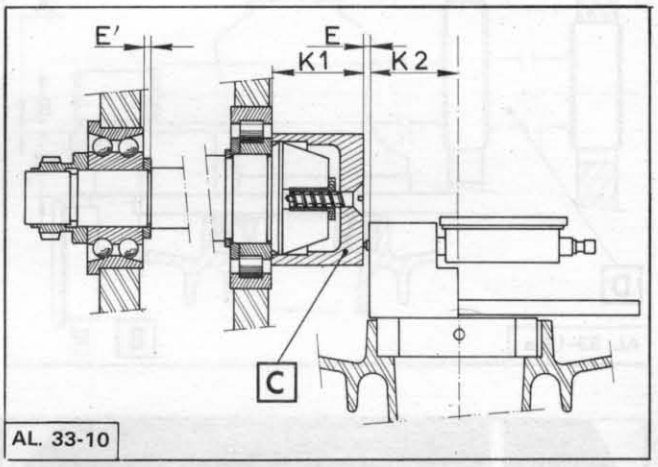
3. Adjusting the crownwheel position :

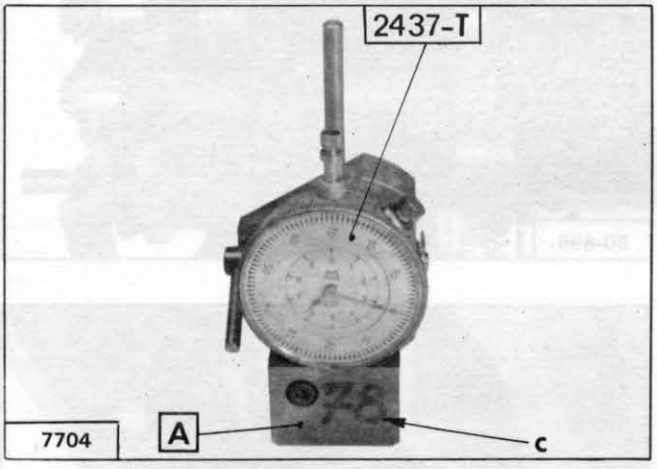
a) Put left bearing ring (5) in its housing, **with no adjustment shim.**
Fit the differential housing using mandrel **D** (with its end « d » engaged in the housing).
Fit the right half-casing and the rear cover.
Make sure that the housing is in position **and that ring (4) is in contact with the bearing rollers.**

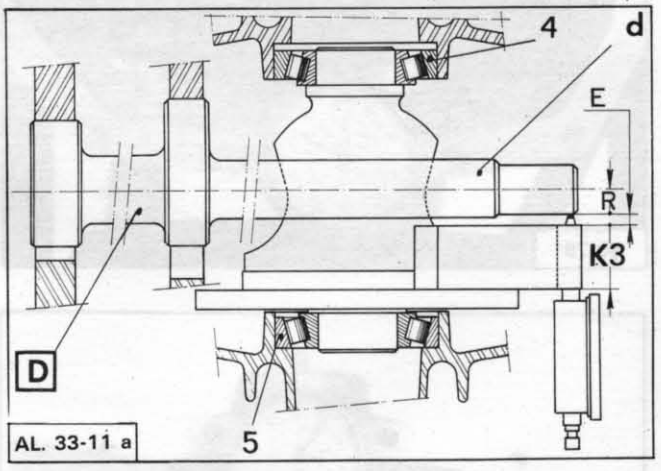

b
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2
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80-826

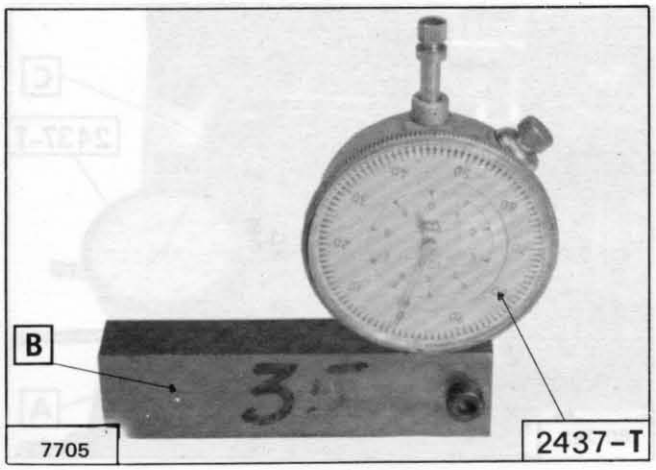

C
2437-T
A
80-792

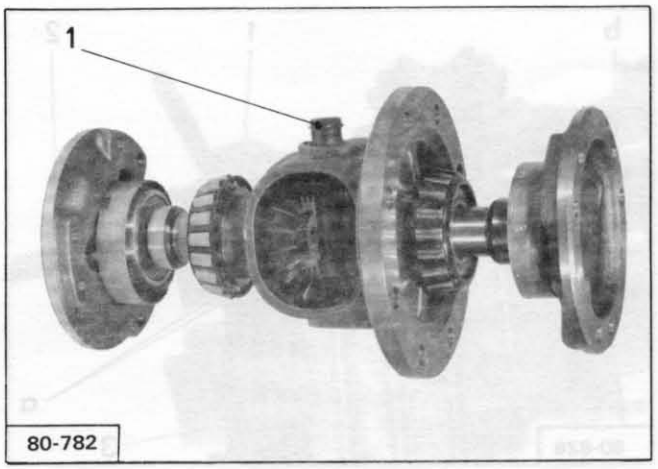

L1
F1
F2
e
L2
F3
G. 33-13

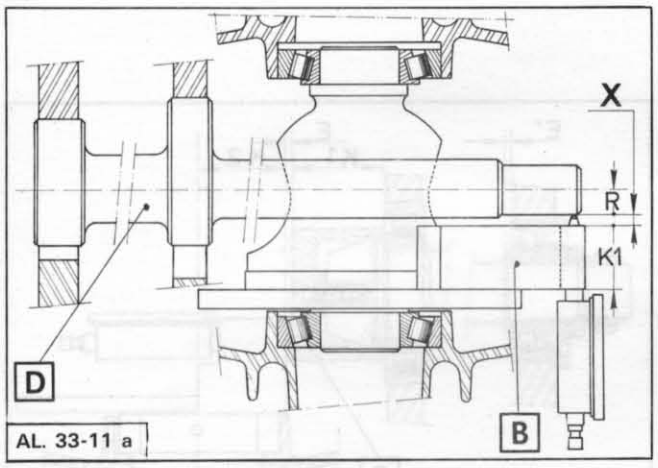

E'
E
K1
K2
C
AL. 33-10

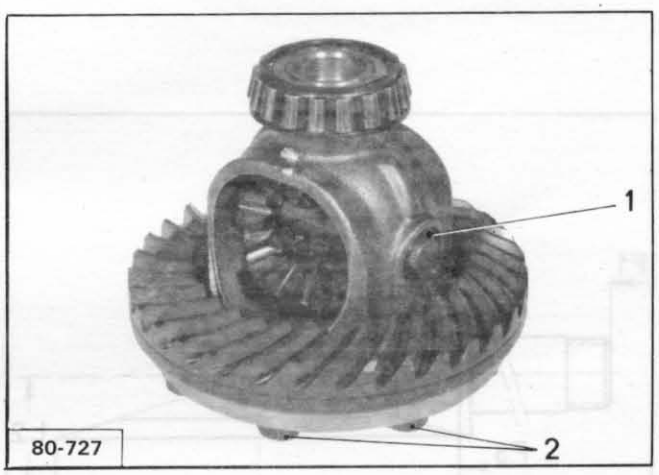

2437-T
A
c
7704

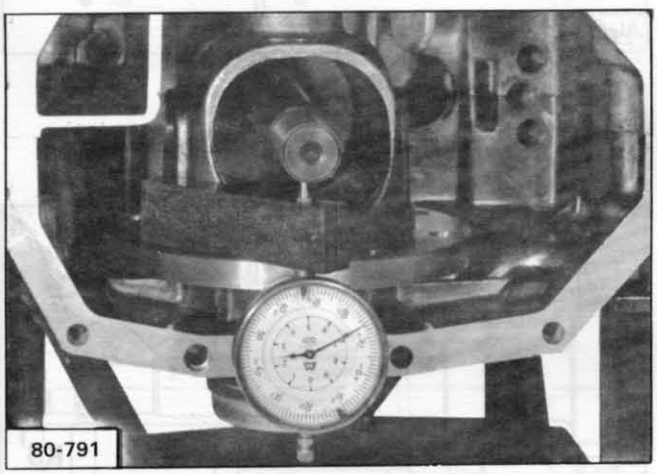

4
d
E
R
K3
D
5
AL. 33-11 a

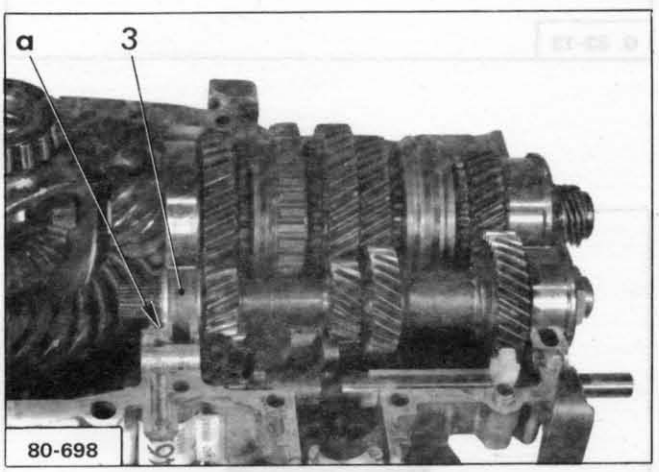

B
3
7705
2437-T

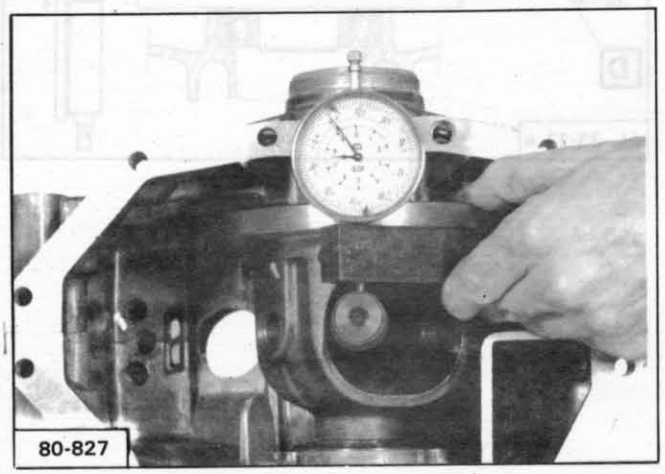

1
80-782

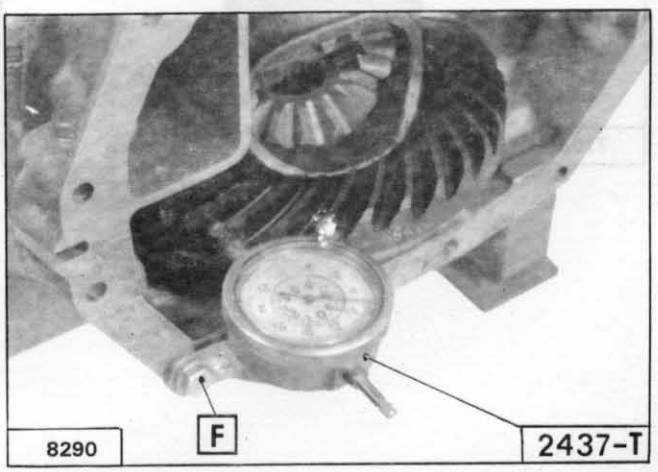

X
R
K1
D
B
AL. 33-11 a


1
2
80-727


80-791


a
3
80-698


80-827


F
8290
2437-T

b) Fit dial gauge **2437-T** on ruler **B** of tool kit **3184-T bis** and calibrate the assembly setting it between 8 and 9 mm.

The mandrel **D** and calibrated ruler **B** unit corresponds to a distance of **K3 + R = 35 mm, engraved on ruler B**

c) Place the ruler against the housing, pivot the unit and block it as soon as the large needle changes its direction of rotation.
Bring the needles back to the calibration position and release slowly counting the number of turns and fractions of a turn.

Distance engraved on ruler + reading X = distance between contact face and shaft. The difference between the distance engraved on crownwheel and the distance measured gives the theoretical thickness of shims.

d) Proceed in the same way for the right side.
Make sure the differential is in position, the right bearing ring **fully home in the housing** and the left bearing ring **in contact with the bearing rollers.**

4. Add the bearing preload :

This load is of : **0.05 mm** for both bearings
That is of : **0.025 mm** for each bearing.
Thickness of left side shim :
Theoretical left shim thickness + theoretical right shim thickness + 0.05 mm = **total thickness of shims to be fitted.**
Calculate the difference between the total thickness of the shims already chosen.
Total thickness of shims to be fitted − thickness of left shim to be fitted = **thickness of right shim to be fitted.**

V- FITTING

1. Fit the differential :

a) Fit the crownwheel **tightening screws (2) (grease face and threads) to between 8 and 9 mdaN.**

b) Fit :
- the two planet gears, holding them by means of the two gearbox output shafts.
- the two satellite gears, making sure they are in line with the satellite shaft and then removing the shaft.

Make sure the satellite gears are correctly positioned by rotating the planet gears.
Engage the satellite shaft and fit circlip (1).

2. Fit the gear train unit :

Position the following in the left half-casing :
- the differential,
- the bevel pinion unit,
- the primary shaft unit, *turning needle bearing (3) so that the pin fits in the bearing stop slot.*
- needle bearing (3) is in position when slot « a » is in line with the half-casing joint face.

3. Checking the crownwheel and pinion tooth engagement play :

The tooth engagement play should be correct if the crownwheel and pinion have been carefully adjusted.

However, this value should be checked.
Fit the right half-casing and the rear cover.
Using support **F** from tool kit **3184-T bis** and dial gauge **2437-T**, measure the tooth engagement play which should be comprised **between 0.13 and 0.27 mm.**
Remove the dial gauge, the rear cover and the right half-casing.

4. Assemble the half-casings :

a) Check on the left half-casing, that sliding pinions (1) and (2) are correctly positioned on « neutral ».

b) Fit the 2nd-3rd gear selector fork on its shaft using pin (3).
Place a locking ball, smeared with grease, at « a ».
Fit the 2nd-3rd gear selector fork and shaft unit in the casing by sliding it under the reverse lamp switch-cam.

c) Position the reverse lamp switch-cam so as to allow cam end « b » to fit in the slot of the 1st-reverse gear selector fork shaft.
To carry out this operation, place the switch-cam end at about 12 mm from the casing edge.

d) Fit the spring retainer plate.

The plate springs are different.
The one with the biggest wire diameter goes on the reverse gear pinion side (in the left half-casing).

e) Fit interlock plunger (5).
Grease and fit ball pin (4) with guiding slot « c » towards right half-casing side.

f) Temporarily fit a gearbox output shaft in order to center the planet gears.

g) Secure with grease to the right half-casing, the ball pin guide and spring in their housing « d » as well as locking ball (6).
Make sure selector fork (7) is on « neutral » position : there should be a distance of approx. 12 mm between the shaft flat and the casing edge.

h) Smear the joint faces with LOCTITE FORMETANCH.
Assemble the half-casings.
Fit the screws (flat washer under each screw head, blind nuts **absolutely** fitted on right half-casing side).
Do up the screws without tightening them.

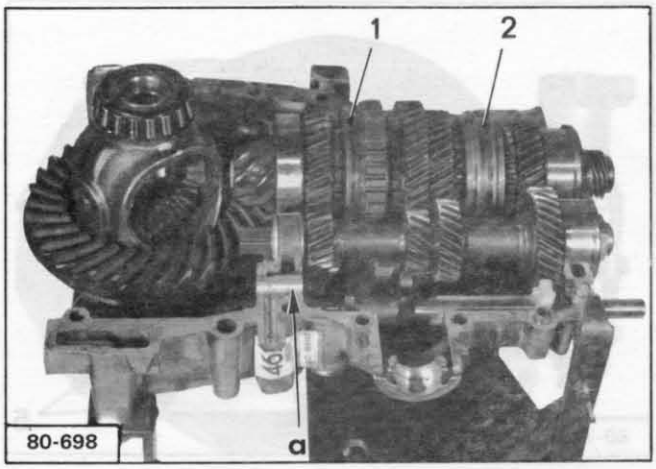
i) Fit the rear cover, coating the joint face with LOCTITE FORMETANCH.
Do up the screws finger tight *(flat washers under each screw head).*

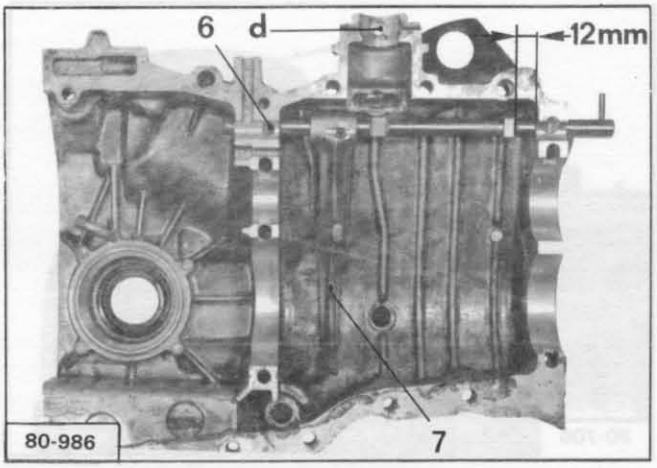
j) Tighten the half-casings assembly screws fully.

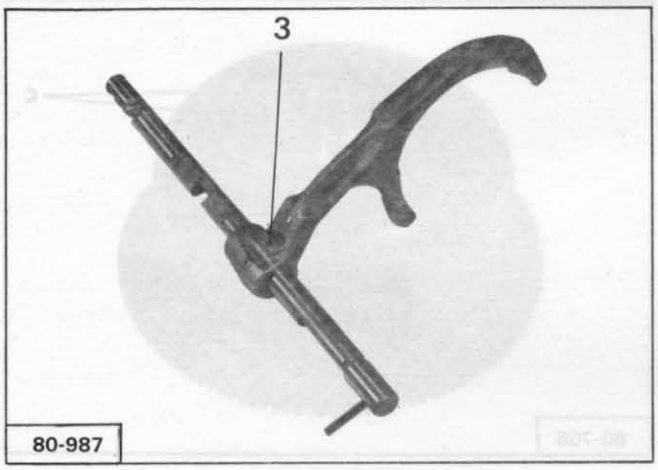
Follow the tightening order indicated in the photo.

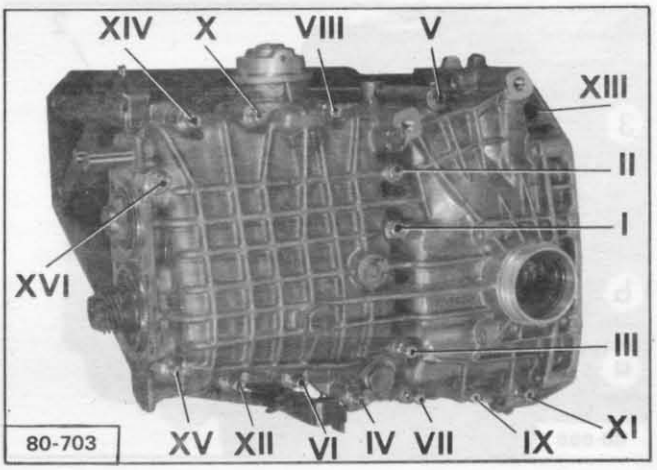
Tightening torque : 1.3 to 1.5 mdaN.
Tighten :
- the six rear cover securing screws (8) **to between 2.5 and 3 mdaN,**
- the two screws (9) **to between 0.3 and 0.5 mdaN**

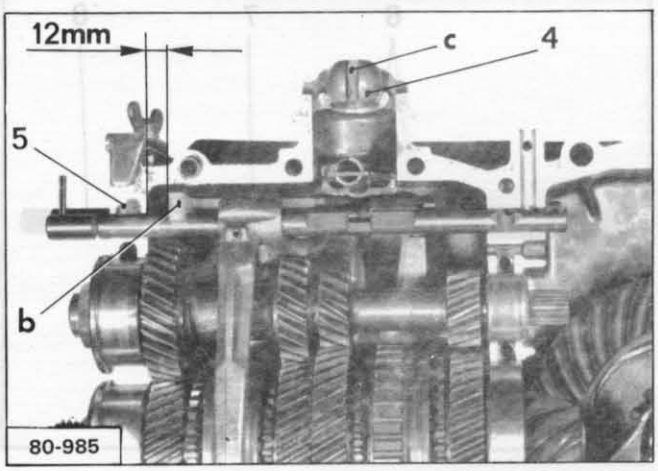
k) Fit the interlocking for the 2nd-3rd gear selector fork shaft.
Position :
- the locking ball and the spring,
- pin (10),
- the plug.

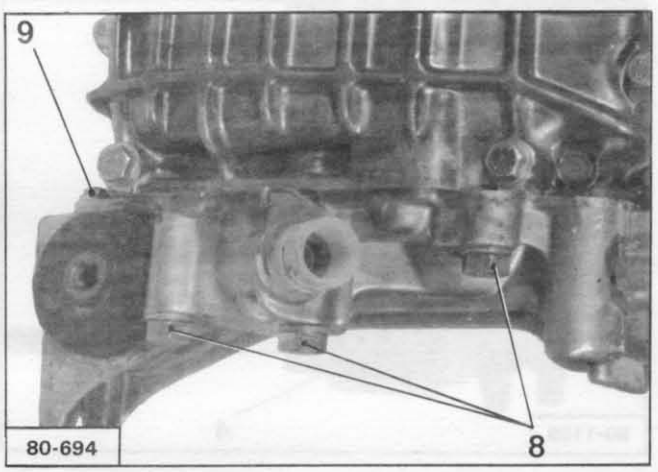

1
2
a
80-698

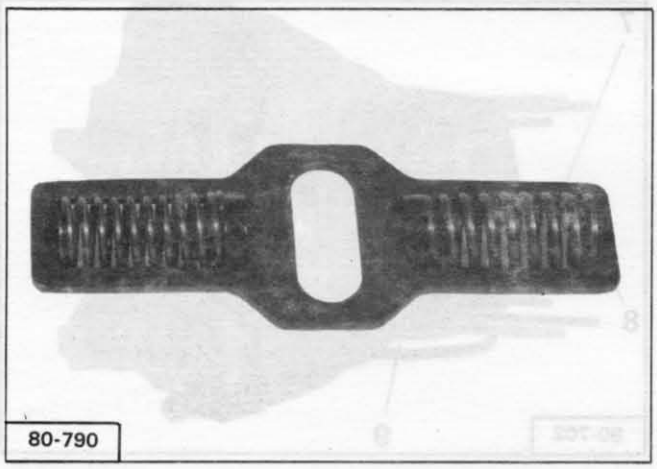

6
d
12mm
7
80-986

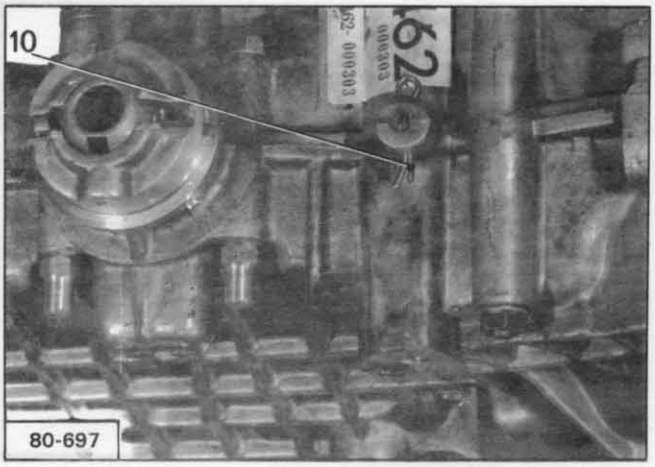

3
80-987

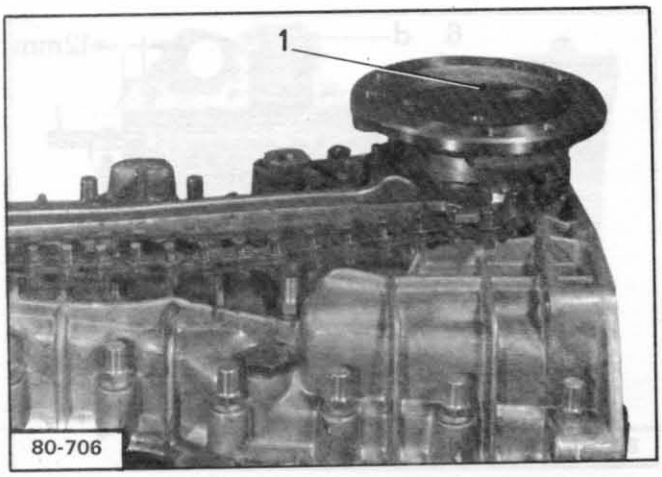

XIV
X
VIII
V
XIII
II
I
XVI
III
XI
XV
XII
VI
IV
VII
IX
80-703

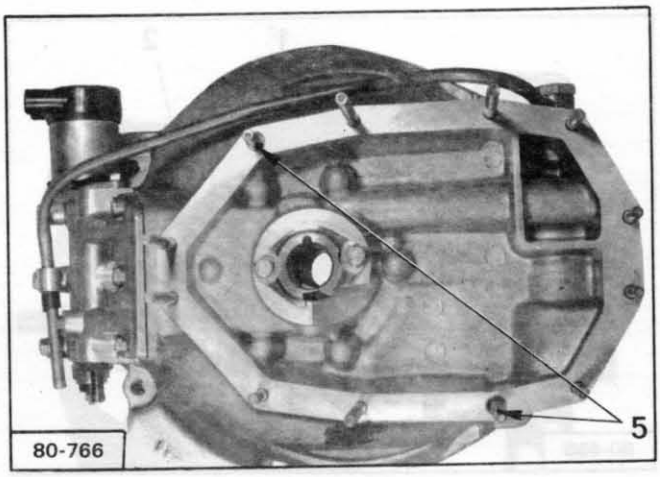

12mm
c
4
5
b
80-985

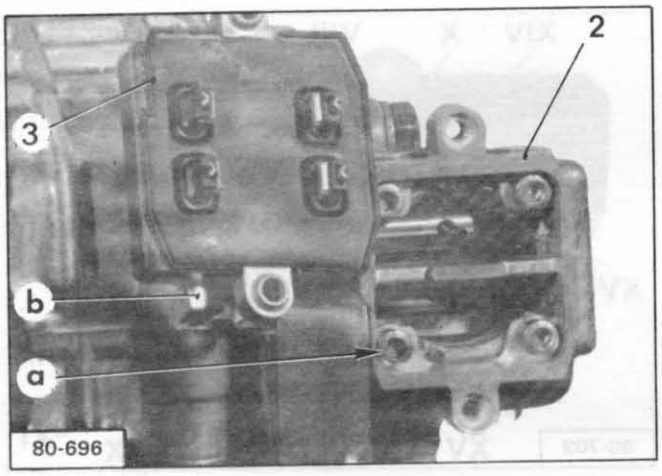

9
8
80-694

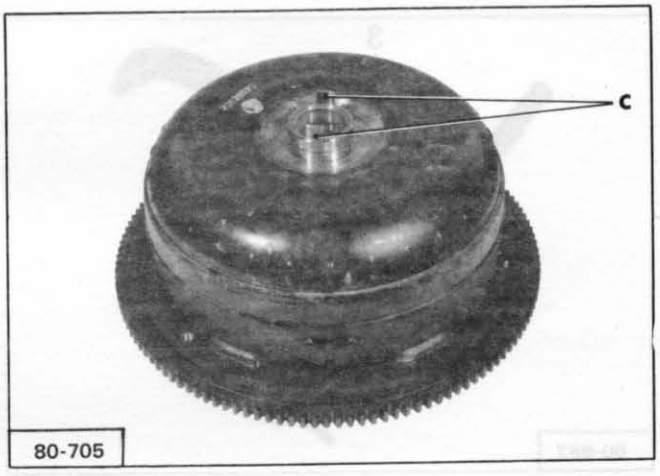

80-790

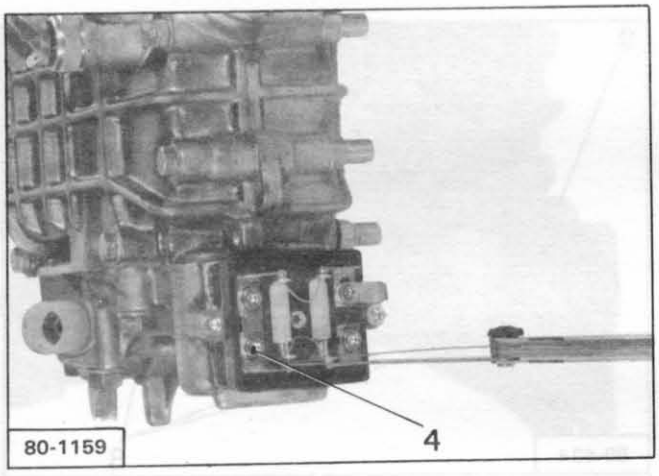

10
62
80-697

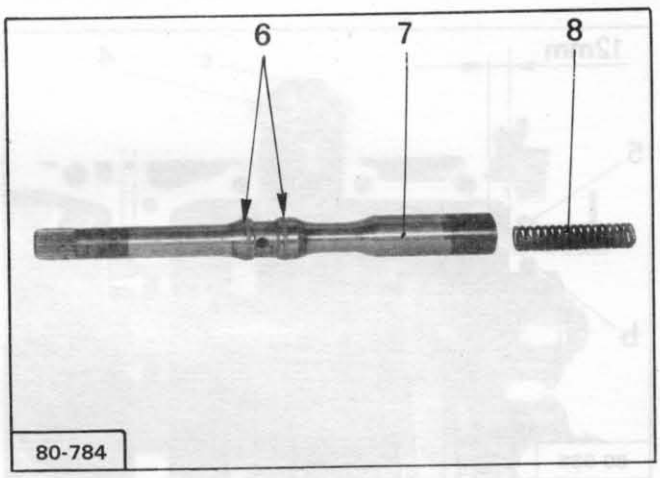

1
80-706

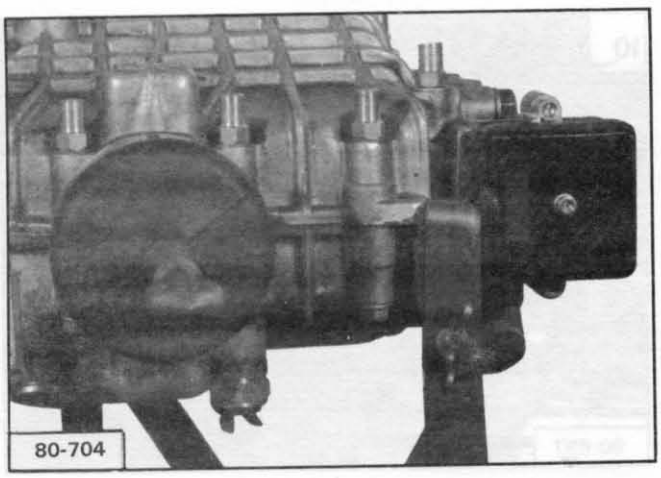

5
80-766

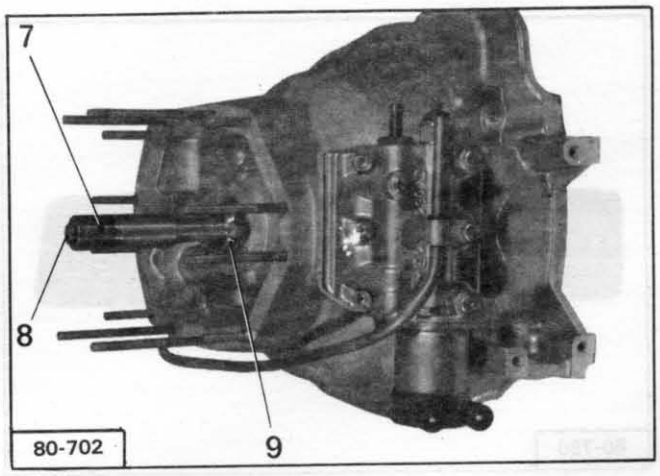

2
3
b
a
80-696


c
80-705


4
80-1159


6
7
8
80-784


80-704


7
8
9
80-702

5. Fit the gearbox output shafts :

Make sure the planet gears are correctly positioned and that, on assembly, the shaft teeth engage correctly in the corresponding planet gear teeth *(when turning the two output shafts by hand, in the same direction, the differential crownwheel should be driven along).*

a) Position shafts (1). (Tap lightly with a mallet to help positioning of the bearing).

b) **Tighten the bush-nuts to between 6 and 7.5 mdaN,** using a tube wrench.

c) Lock the rings by metal peening in the corresponding millings in the casings.

6. Fit the draining and level plugs.
Tighten them to between 3.5 and 4.5 mdaN (copper joint).
Fit the reverse lamp switch.
Tighten it to between 1.2 and 1.5 mdaN.
Fit clutch control switch.
Smear the joint face of switch baseplate (2) with CURTYLON.
Fit the switch baseplate on the rear cover (with recess « a » towards the front of the gearbox).
Engage on the contact pins, rubber joint (3) with the edging towards cover side.
Fit the switch on the baseplate (with flat plug « b » towards the right half-casing side).

7. Adjust the contact gap of the clutch control switch.
To carry out this operation, temporarily fit the gear change lever, each contact gap being adjusted with the corresponding gear engaged.
On « neutral » all the contacts must be closed.

Adjustment method :
Engage a gear, using a lever.
Adjust contact gap, using a set of shims and acting upon the mooving contact by means of screw (4).
- 1st and REV, to **1.45 ± 0.2 mm**
-2nd and 3rd, to **1.60 ± 0.2 mm**
Tighten the screw but not too closely.
Carry out the same operation for the other gears.
Fit the switch cover and position the plastic clip.

8. Fit the converter housing on the converter.
Make sure the two centering studs (5) are in place.
Place the converter flat on the work bench.
Engage the casing on the converter so that drive blocks « c » engage correctly in the corresponding notches of the pump pinion.

9. Fit the mainshaft :

Make sure seals (6) are in place.
Engage mainshaft (7) in stator sleeve (9).
Put spring (8) in its housing.

Fit the converter securing lug.

Slide the converter and converter casing unit towards the edge of the work bench.

Fit converter securing lug **3186-T** by means of two screws .

It is imperative to use lug 3186-T : it will keep the converter from coming out which would prevent the gearbox and engine to assemble and thus cause a damage to the drive blocks.

Connect the gearbox to the converter housing-converter unit.

Fit the joint on the converter casing. Offer up and engage the gearbox vertically on the studs of the converter housing.

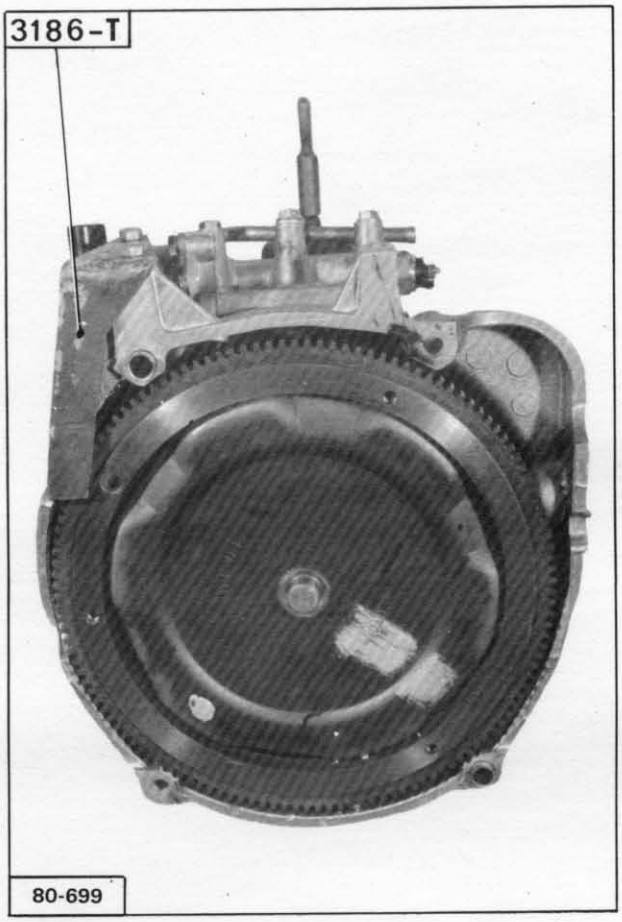
If necessary, engage a gear, using the gear change lever fitted momentarily, and turn the gearbox output shafts so as to allow the primary shaft splines to engage in the corresponding mainshaft splines.

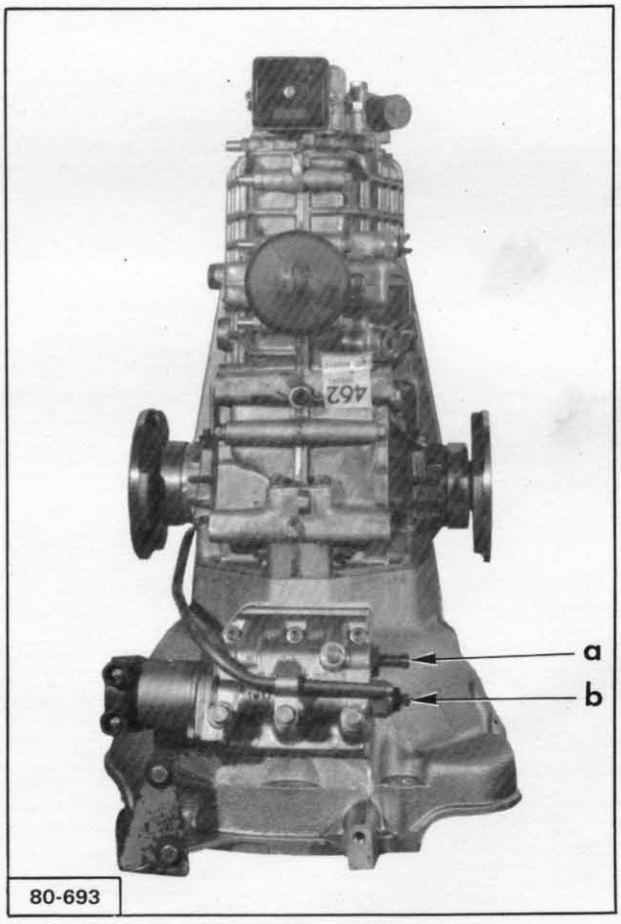
Fit the lugged contact washers and the assembling nuts.

Tighten them to between 1.3 to 1.5 mdaN.

Fit the gearbox vertically.

Plug holes « a » and « b » of the oil inlet and outlet pipings with rubber caps.


3186-T
80-699


462
a
b
80-693

OPERATION
GX. 372-3

RECONDITIONING A DRIVE SHAFT

RECOMMENDED SPECIAL TOOLS

TOOLS SOLD

1671-T : Inertial extractor

TOOLS NOT SOLD

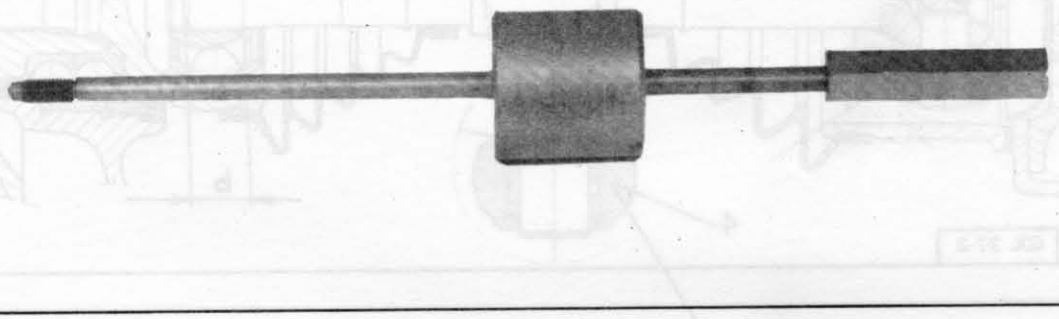
MR. 630-25/23 : Ball joint extractor sleeve

MR. 630-31/133 : Half-shells and ring for compression of the drive shaft snap-ring
(Ball joint assembly)

MR. 630-64/55 : Tool for fitting transmission shaft sleeves

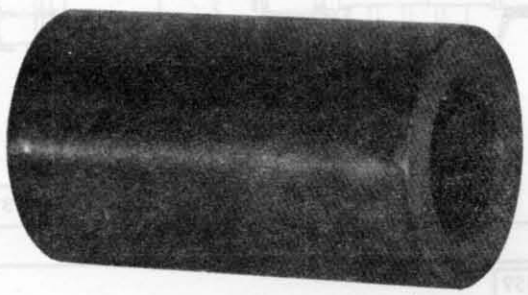
13 551

1671-T



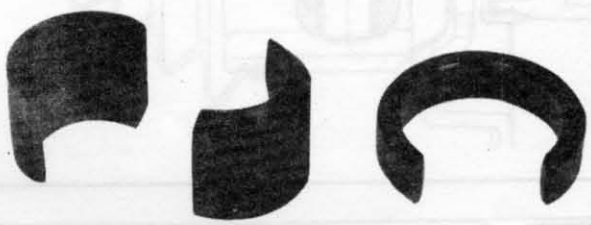
79-76

MR.630-25/23



79-160

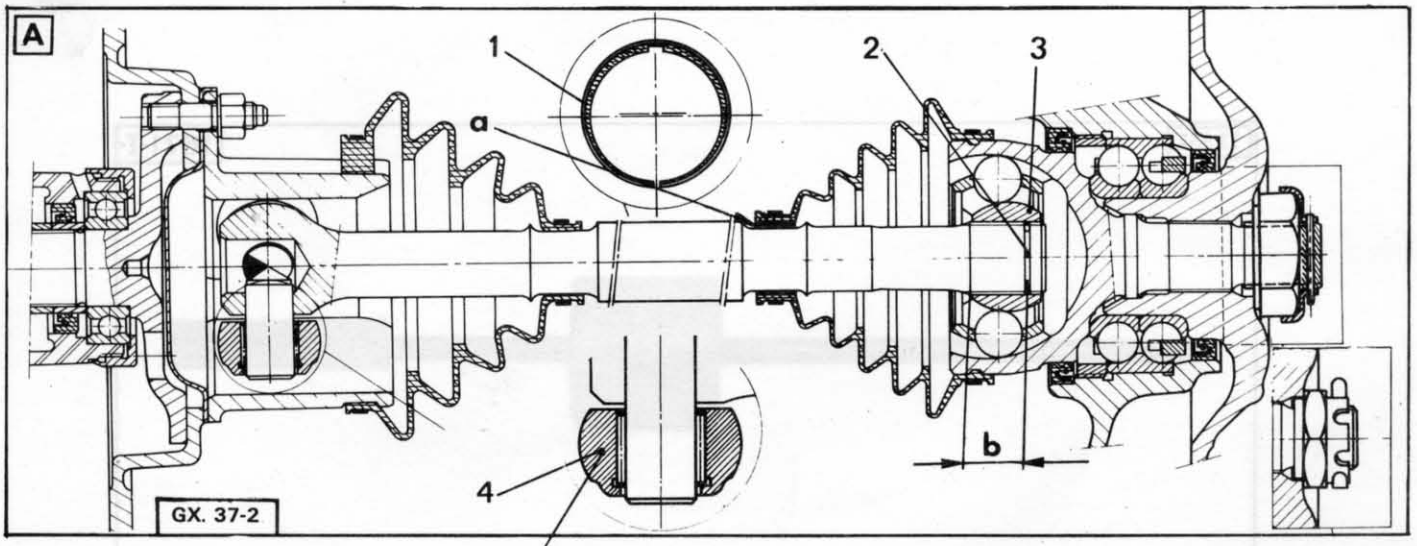
MR.630 31/133

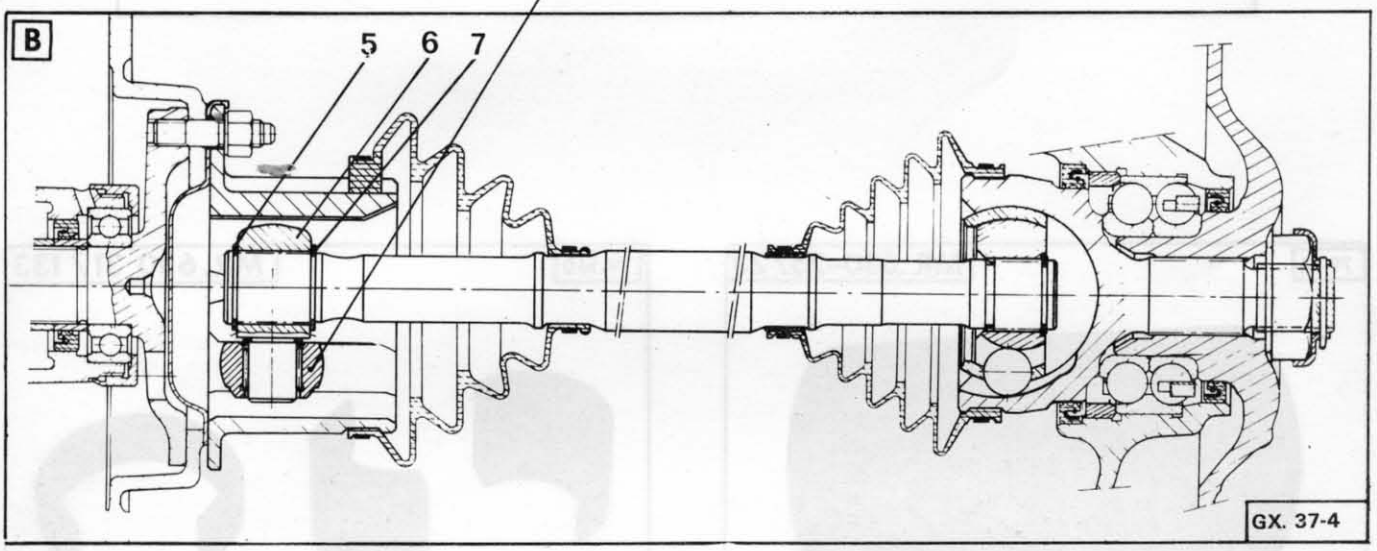


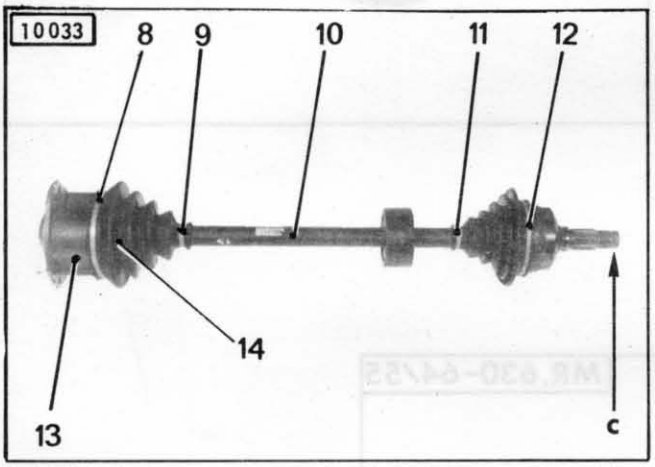
13 046

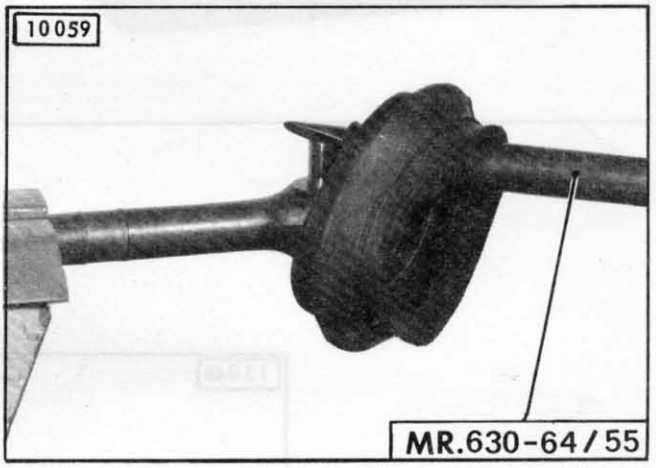
MR.630-64/55

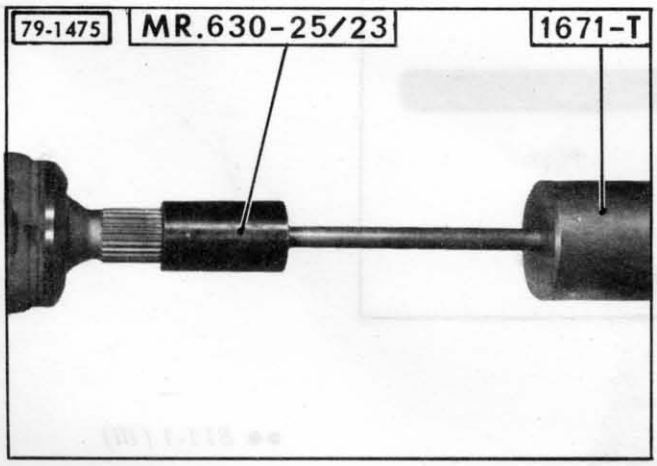


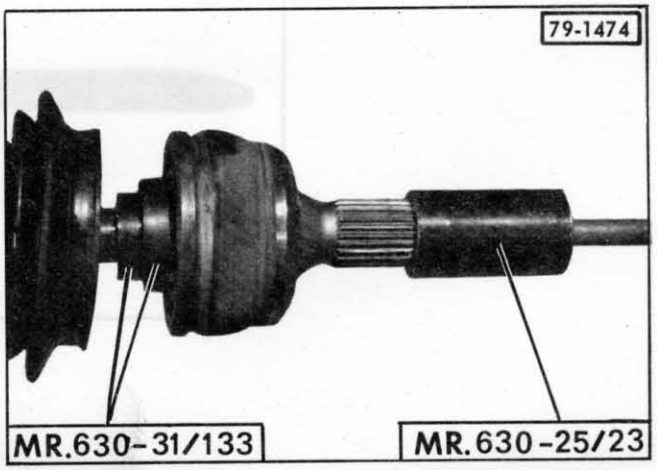

A
1
2
3
a
b
4
GX. 37-2


B
5
6
7
GX. 37-4


10033
8
9
10
11
12
14
13
c


10059
MR.630-64/55


79-1475
MR.630-25/23
1671-T


79-1474
MR.630-31/133
MR.630-25/23

RECONDITIONING A DRIVE SHAFT

DISMANTLING

If the parts are to be re-used, their respective positions must be indexed.

1. Fix drive shaft in a vice *(fitted with soft jaws).*

2. *Ball joint end :*

a) Remove collars (11) and (12), and disengage the sleeve.

b) Fit extractor sleeve MR. 630-25/23 on end « c » of the drive shaft, and remove the ball joint using inertial extractor 1671-T
Remove the tools.

c) Extract snap-ring (2).
Disengage the sleeve from shaft (10).

Do not attempt to disassemble the joint

3. *Tri-axe joint end :* (1st possibility) **(Fig. A) :**
Remove collars (8) and (9), and disengage driver (13) and ball joints (4) *(take care to catch the needles* **(28 per ball joint)** *as they fall).*

(2nd possibility) (Fig. B) :
- Lock ring (5),
- Tri-axe (6),
- Lock ring (7),
- Remove the sleeve.

4. Clean the parts, **but do not use solvent.**

ASSEMBLY

5. Fit the protective sleeves :

a) *Drive shaft without damper :*
Engage the two protective sleeves on shaft (10).
Grease the shaft slightly, to facilitate assembly of the tri-axe sleeve.
Insert venting ring (1) between sleeve and shaft at « a ».

b) **Drive shaft with damper :**
Fit the tri-axe joint sleeve using tool MR. 630-64/55 .

The tool and sleeve must be greased, to facilitate passage over the tri-axe.

Engage the ball joint and sleeve **and fit vent ring (1) at « a ».**

6. *Fit the ball joint :*
Fit a **new** snap-ring (2).
Insert the snap-ring in its groove, using tool MR. 630-31/133

Snap ring (2) can only be inserted in its groove in yoke (3) if engagement length « b » is correct (16.5 mm)

Engage central yoke (3) on the end of shaft (10), and complete assembly using inertial extractor tool 1671-T and striking extractor sleeve MR. 630-25/23 .
Load ball joint and sleeve with 100 grams of type GL 245 MO grease *(supplied with sleeves).*
Fit the sleeve over the ball joint.
Fit the collars **using LIGAREX type collars only.**

7. *Fit the tri-axe joint :*

If the parts are re-used, follow the identification marks made on disassembly.

a) Coat the ball joints and needles with type GL 245 MO grease.
Position on the tri-axe. Load the driver and sleeve with 200 grams of grease *(supplied with the sleeves).*

b) Fit the driver and position the sleeve.

c) Fit the collars, **using LIGAREX collars only.**

OPERATION
GX. 391-3

RECONDITIONING A HIGH PRESSURE PUMP

RECOMMENDED SPECIAL TOOLS

TOOL SOLD

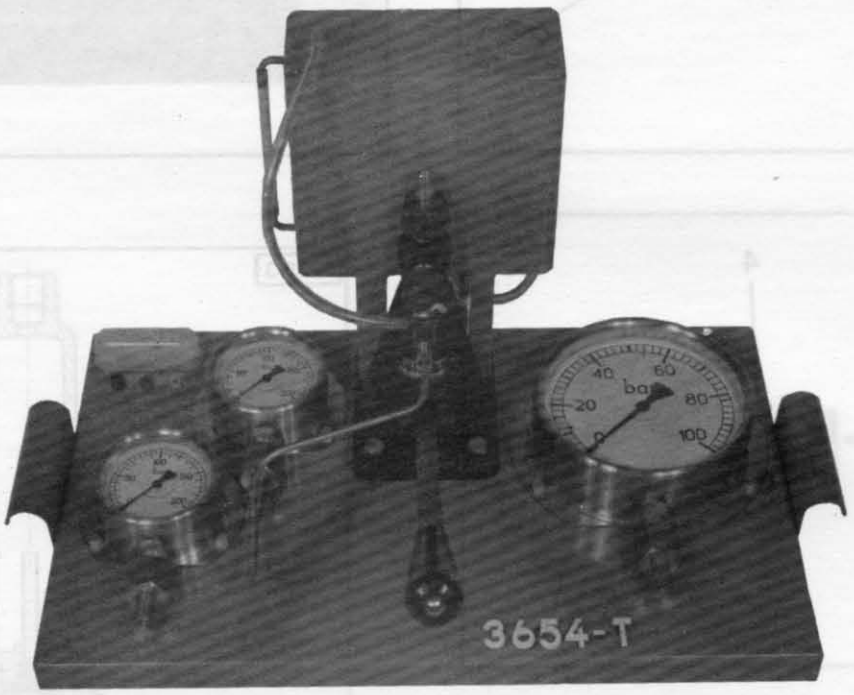
3654-T : Hydraulic test rig

♦ TIGHTENING TORQUE

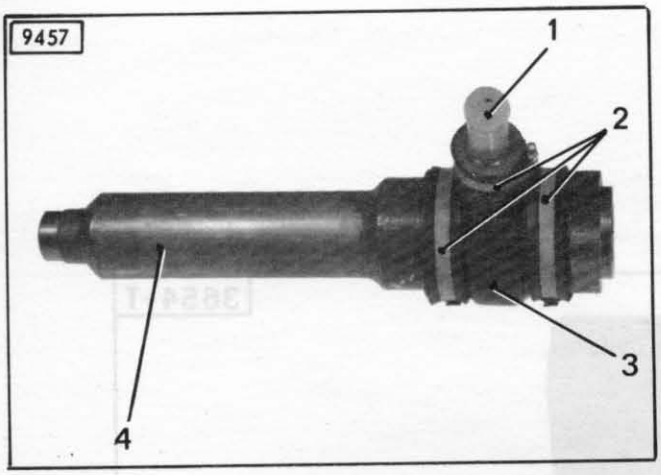
Recommended tightening torque (in m.daN) :

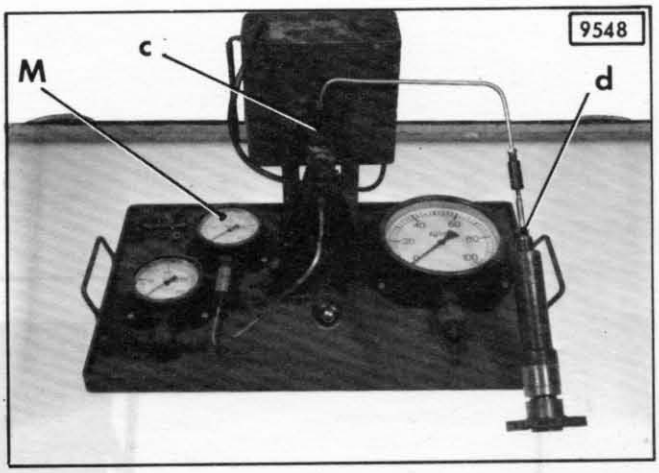
Capacity chamber tightening : ..... **4.5 to 5**

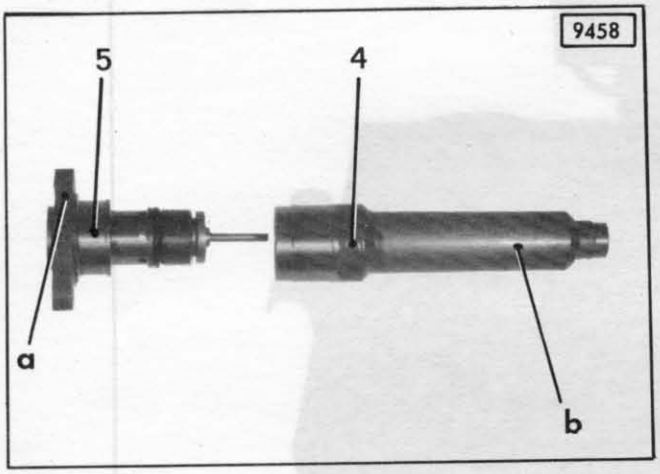
4744

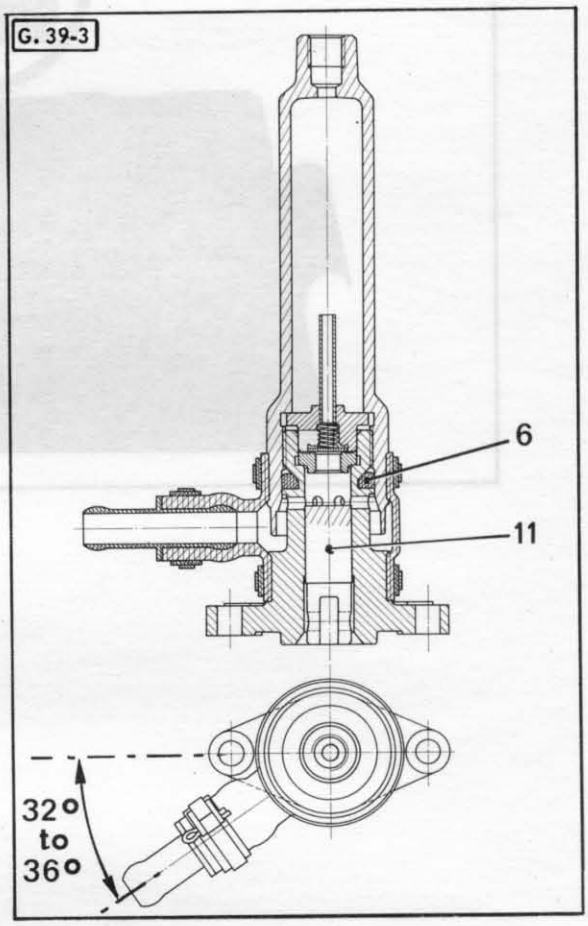


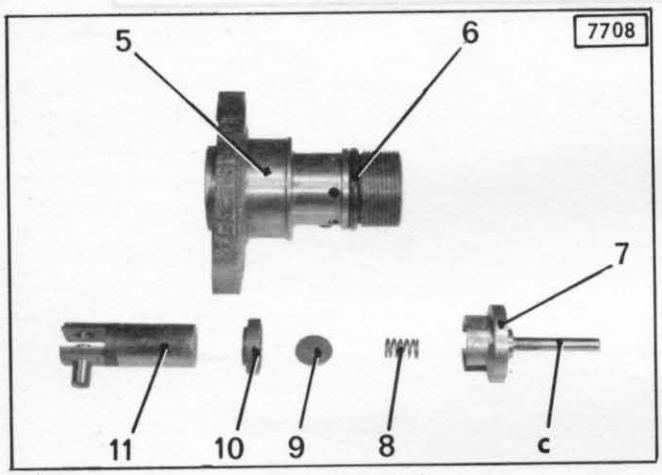
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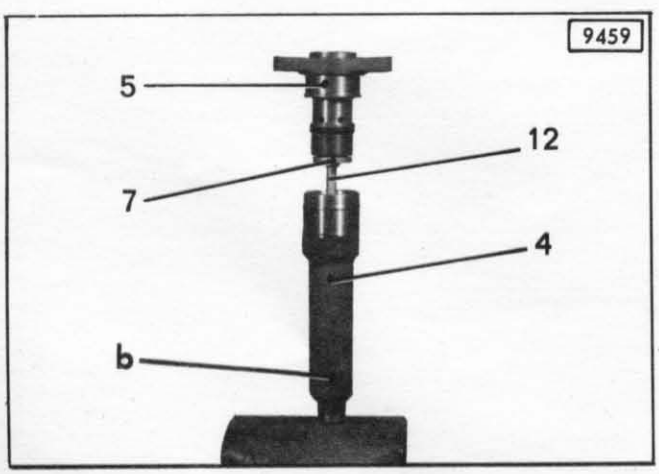

9457
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9548
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M
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9458
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G. 39-3
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32°
to
36°


7708
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9459
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RECONDITIONING A HIGH PRESSURE PUMP

DISMANTLING

1. Remove the suction sleeve :
Remove collars (2).
Disengage sleeve (3) after oiling the body of chamber (4) lightly.
Remove plastic pipe (1).

2. Remove the chamber :
Anchor pump body (5), holding baseplate « a » in a vice fitted with clamps.
Unscrew chamber (4) using a pipe wrench, fitted on part « b » of the body.

3. Strip down the pump body :
Remove :
- valve support (7),
- spring (8),
- valve (9),
- valve seat (10),
- O-ring seal (6),
- piston (11) and its shaft.

4. Clean and inspect the parts.

ASSEMBLY

5. Oil all parts lightly with LHM fluid.
NOTE : The valve and valve seat can be ground, by rubbing on a sheet of No. 600 emery paper, moistened with petroleum spirit and laid on a calibration table.

6. Assemble the pump body :
a) Fit O-ring seal (6) *(coated with LHM fluid).*
b) Insert in pump body (5) :
- valve seat (10) *(positioned as shown in figure opposite),*
- valve (9),
- valve support (7) with spring (8).

7. Fit the chamber :
a) Fix pipe (12) vertically in a vice *(hydraulic circuit pipe, diameter 6.35 mm, length 200 mm).*
Engage chamber (4) on pipe (12) *(end « b » towards the vice)*
Position pump body assembly (5) (see paragraph 6), engaging pipe « c » of support (7) in the end of pipe (12). Bear on the pump body to compress spring (8), positioning valve (9) and seat (10) correctly in the pump body. Maintaining the assembly in the compressed position, do up chamber (4) on the pump body by hand.

b) Take down the pump, and hold in the vice *(fitted with soft jaws)* by baseplate « a ». **Tighten down chamber** using a pipe wrench *(located on part « b »)* **to 4.5 to 5 m.daN**

8. Check pump seal-tightness :

Use test rig 3654-T *(painted green)*
Connect pump orifice « c » on the rig to HP pump delivery orifice « d ».
Increase pressure to 150 bar *(pressure gauge M).*

a) If seal tightness is good, the pressure gauge needle should not move or only drop slowly.

b) If a leak is observed between pump body and chamber, O-ring seal (6) must be replaced.

c) If the pressure gauge reading drops, the valve and valve seat must be replaced.

9. Fit suction sleeve (3) :

a) Coat the chamber body and inside of sleeve (3) lightly with LHM fluid.
Engage the suction sleeve on the chamber, and position so that the suction pipe, when assembled, forms an angle of **32 to 36°** with a line passing through the pump body attachment hole *(see sketch)*. Fit and tighten the two collars moderately, after inserting the protective rubber rings.

b) Fit plastic suction pipe (1).
Fit and tighten the attachment collar *(rubber ring).*

c) Coat piston (11) lightly with LHM fluid. Insert the piston, equipped with its shaft, in the pump body.

10. Blank off the pump orifices with protective plugs.

OPERATION
GX. 412-3

WORK ON FRONT AXLE ARM

SPECIAL TOOLS

TOOLS SOLD

1671-T : Inertial extractor

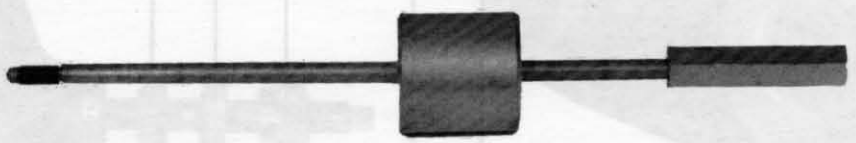
3319-T : Expandable mandrel for anchoring the lower arm "fluid-bloc (rubber bush)

6308-T : 35 mm expandable mandrel (used with extractor 1671-T)

6322-T : Adjustment tool for arm articulation bearings.

1671-T

13 551



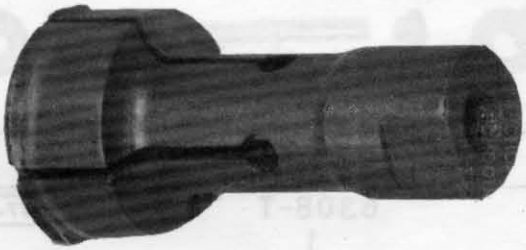
3319-T

79-749



6308-T

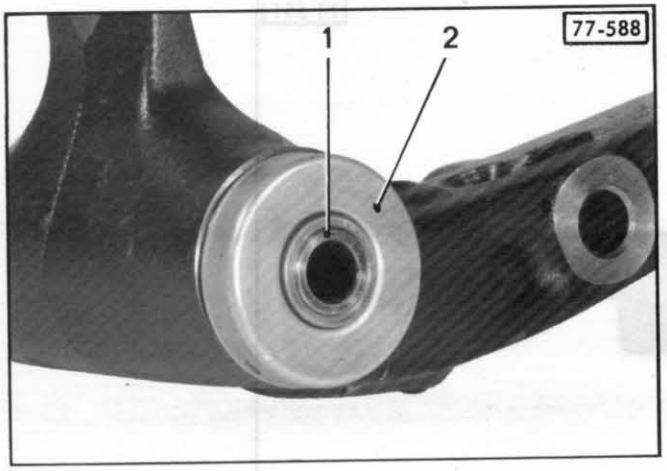
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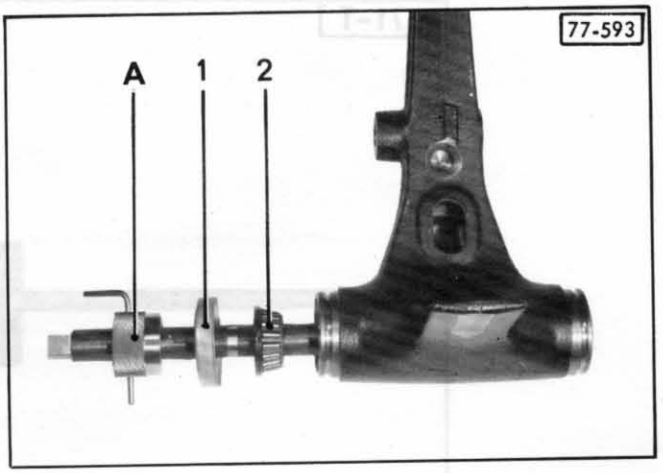


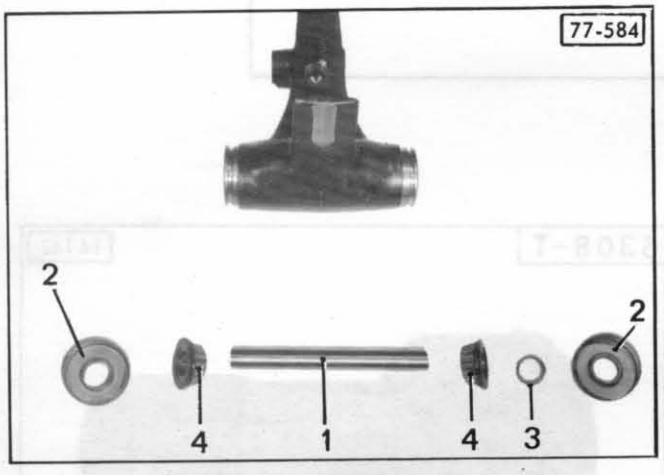
6322-T

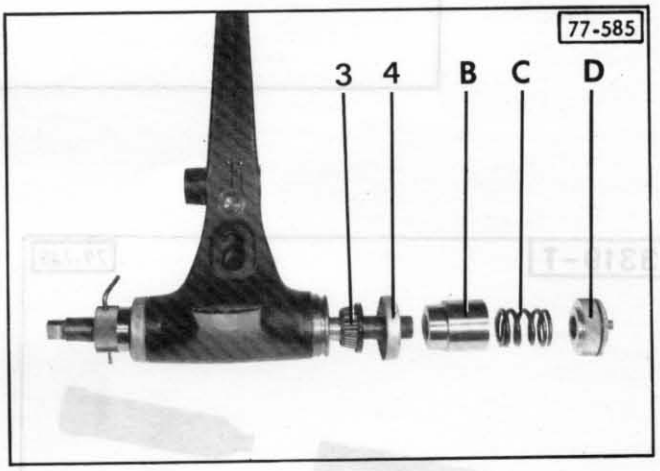
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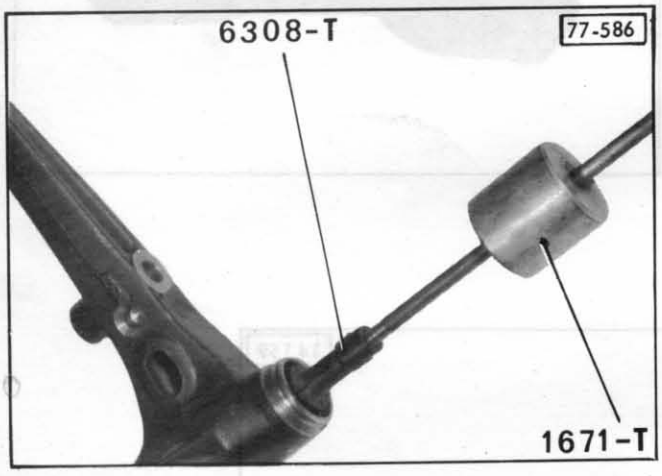


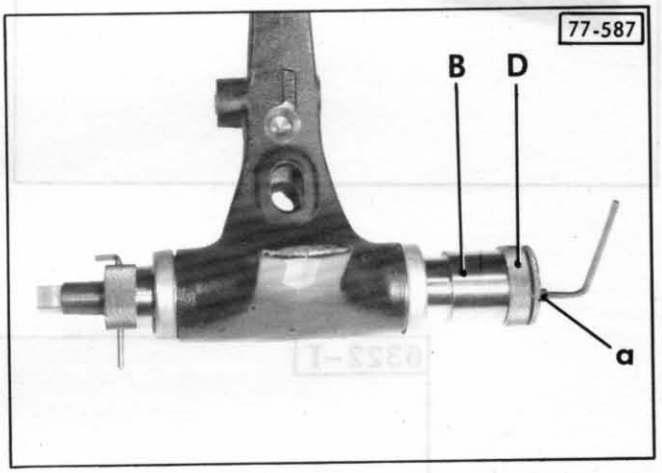

77-588
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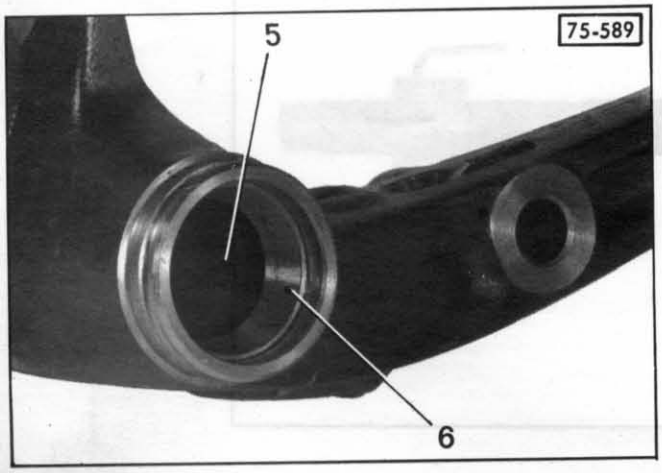

77-593
A
1
2

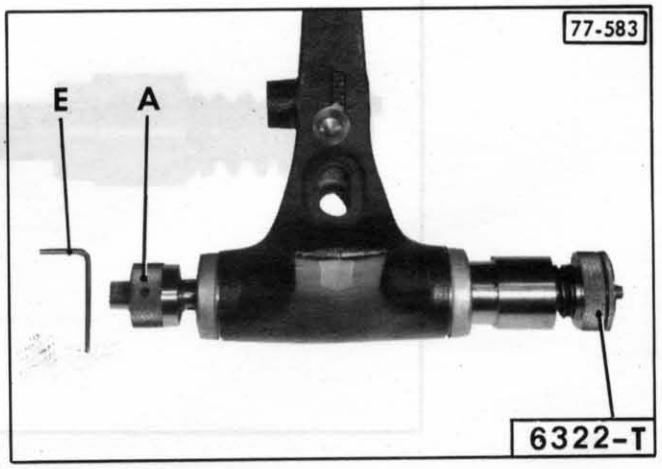

77-584
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77-585
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4
B
C
D


6308-T
77-586
1671-T


77-587
B
D
a


75-589
5
6


77-583
E
A
6322-T

I - REPLACEMENT OF UPPER ARM ARTICULATION BEARINGS

DISMANTLING

1. Disengage spacer (1) :

Remove :
- spacer rings (2),
- adjustment shim (3),
- race/bearing cage assemblies (4).

2. Extract outer bearing rings (6), using expandable mandrel 6308-T fitted with inertial extractor 1671-T .
Remove bearing protector tube (5).

3. Clean the parts.

ASSEMBLY

4. Fit :

a) Bearing race (6) *(use 42 mm OD pipe).*

b) Bearing protector tube (5).

c) Second outer bearing race (6).

5. Determine bearing setting

A - PREPARE THE BEARINGS

NOTE : Bearing measurements must be taken under a 500 N (50 kg) load.

Adjustment tool 6322-T is used to generate this load.

a) Insert tool 6322-T in the arm, equipped with nut A pinned to the first hole, with spacer ring (1), and corresponding race bearing cage assembly (2).

b) Fit :
- race bearing cage assembly (3),
- spacer ring (4),
- tube **B**,
- spring **C**,
- nut **D**.

c) Tighten nut **D** until tube **B** is in contact with the nut. Lock nut **D** by tightening screw « a » *(Allen key).*

B - DETERMINE ADJUSTMENT SHIM THICKNESS

a) Take down tool 6322-T from the arm. Disenage pin **E** and undo nut **A.**

b) Remove the spring from tool 6322-T , and fit :
- tube **C**,
- nut **B**,
- pin **A** *(first hole)*.

c) Measure dimension **L**.

d) Measure the length of spacer **L1**.
Calculate the difference : **L1 - L = E.**

When fitted in the vehicle, the bearings must have a preload between 0.03 and 0.23 mm. To obtain the thickness of the adjustment shim, add 0.03 to 0.23 mm to the difference between the dimensions.

The thickness of the adjustment shim is :
E + 0.13 ± 0.10 mm

Adjustment shims are supplied by the Replacement Parts Department, with thicknesses as follows :
1.71 mm, 1.88 mm, 2.05 mm, 2.22 mm, 2.39 mm

6. Fit the bearings :
Fit :
- spacer (1) *(coated with grease)*
- bearings (2) *(TOTAL MULTIS grease)*,
- **adjustment shim (3) on the side opposite boss « a »** *(towards rear of vehicle ➡)*.
- spacer rings (4).

II - REPLACEMENT OF LOWER ARM « FLUID-BLOCS » (anti-vibration bushes)

REMOVAL

1. Remove the plastic part (6) of the « fluid-bloc » :

a) Hold the arm in a vice (fitted with soft jaws).

Use tool 3319-T to facilitate extraction of the « fluid-bloc ».

2. Remove rubber part (5) of the « fluid bloc »
Heat metal part « b » of the « fluid bloc ».
Disengage the « fluid bloc ».

3. Remove the second « fluid bloc »

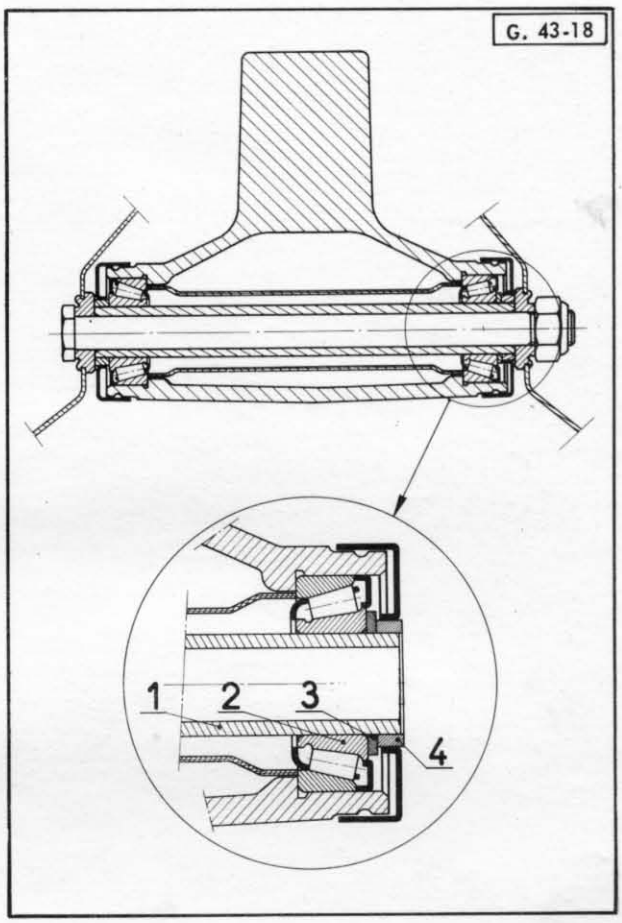
4. Clean the arm.

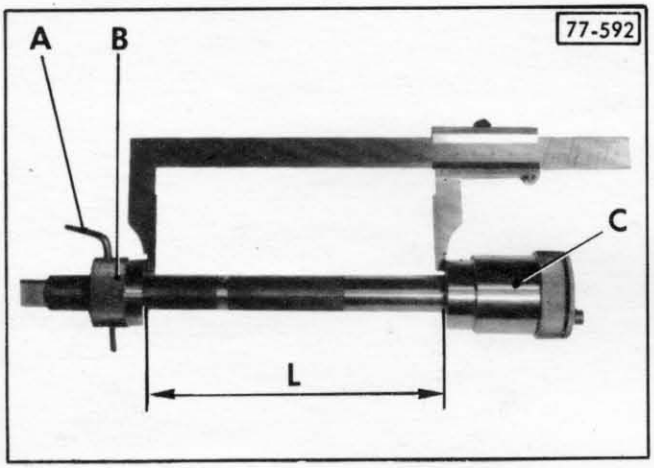
FITTING

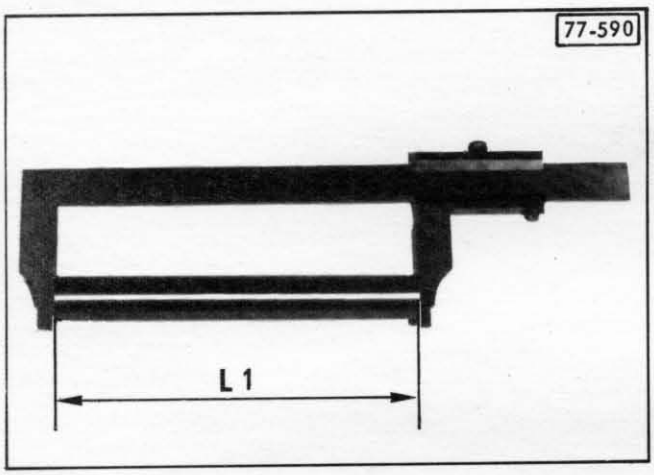
5. Fit rubber part (5) of the « fluid bloc » :
A press is used for this operation
a) Coat the part of the « fluid bloc » engaging in the arm with rubber solution.
b) Position the « fluid bloc », taking purchase on metal part « a ».
c) Fit the rubber part of the second « fluid bloc ».

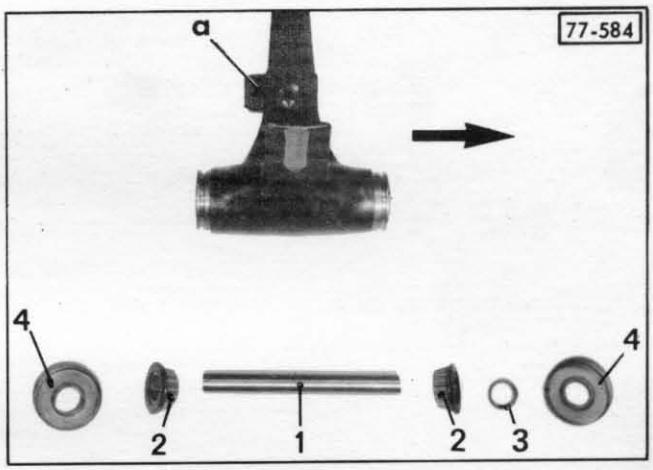
6. Fit plastic part (6) of the « fluid bloc » :
a) Coat with silicone grease.
b) Engage the « fluid bloc », and complete insertion by tapping face « c » with a mallet.

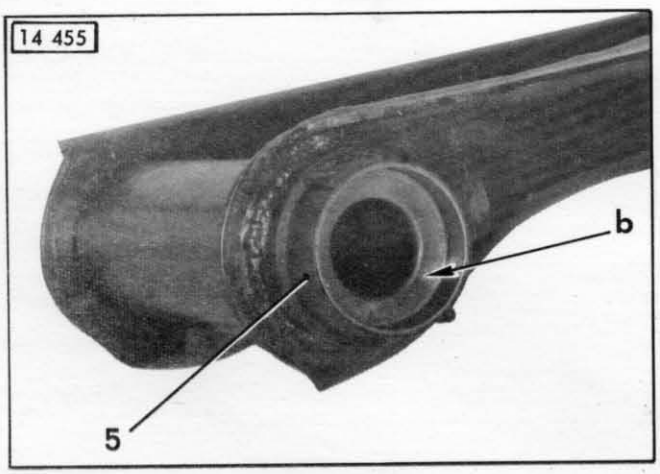
7. Fit the plastic part of the second « fluid bloc ».

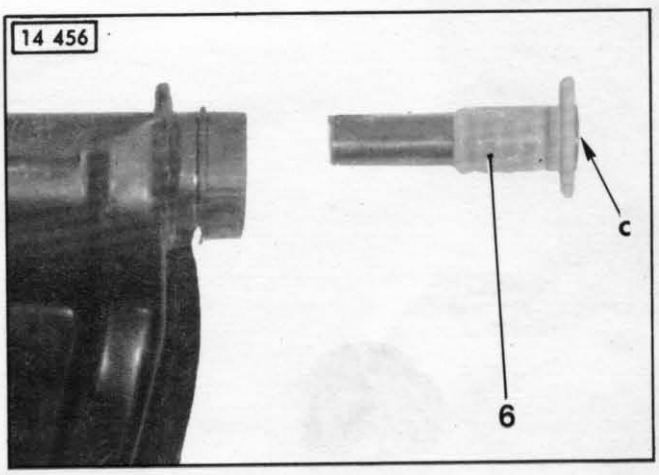

G. 43-18
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77-592
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C
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77-590
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77-584
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2
1
2
3
4


14 455
b
5


14 456
c
6

OPERATION
GX. 413-3

RECONDITIONING A SWIVEL HUB

SPECIAL TOOLS

TOOLS SOLD

1893-T : Front hub extractor

3320-T : Front hub nut spanner

3321-T : Hub nut disassembly tool

TOOLS NOT SOLD

MR. 630-31/96 : Mandrel for fitting hub bearings

MR. 630-31/97: Mandrel for fitting swivel seal ring.

TIGHTENING TORQUE VALUES

Imperative values:

Tightening point	Torque (m.daN)
Front hub nut *(locked by pin-bitting two diametrically opposed points) :*	40 to 50

79-928



1893-T

79-750



3320-T

12607



3321-T

79-927

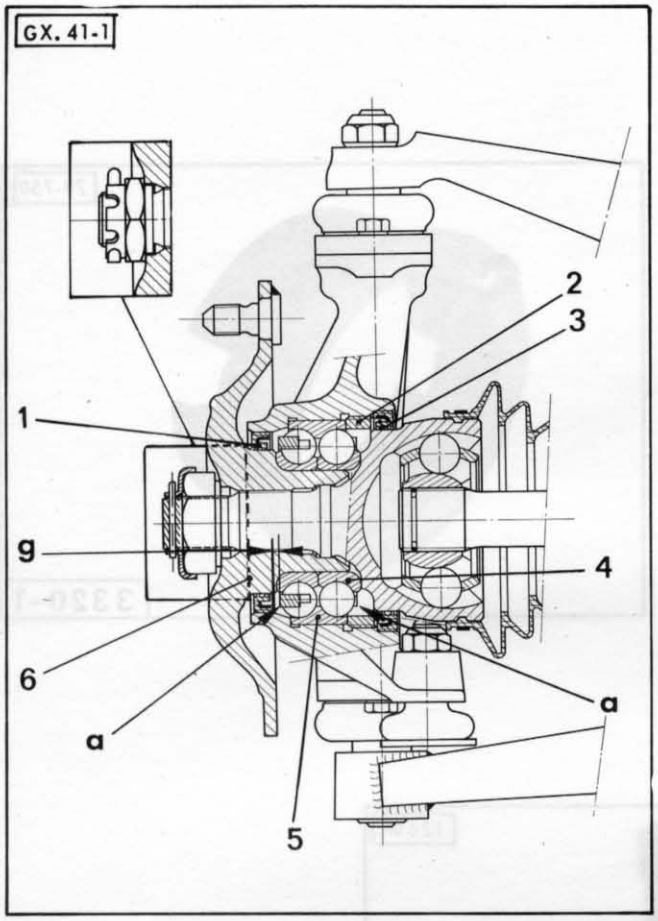


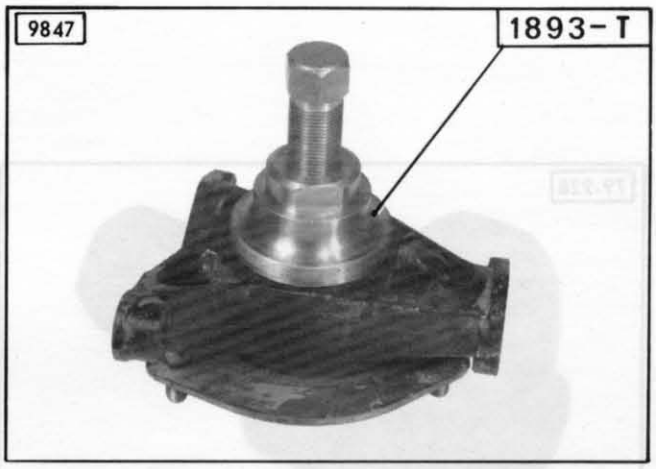
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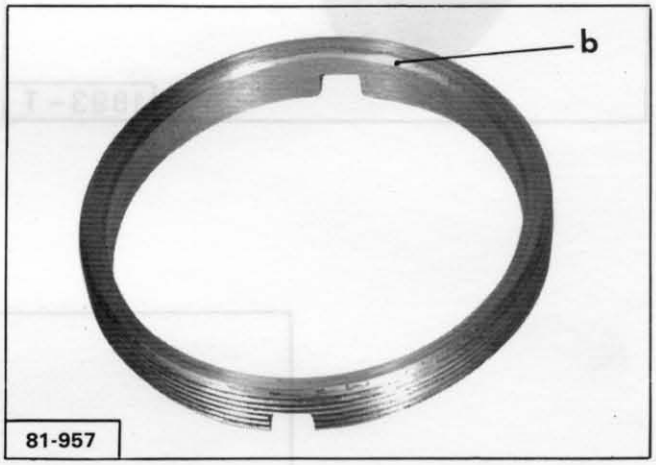
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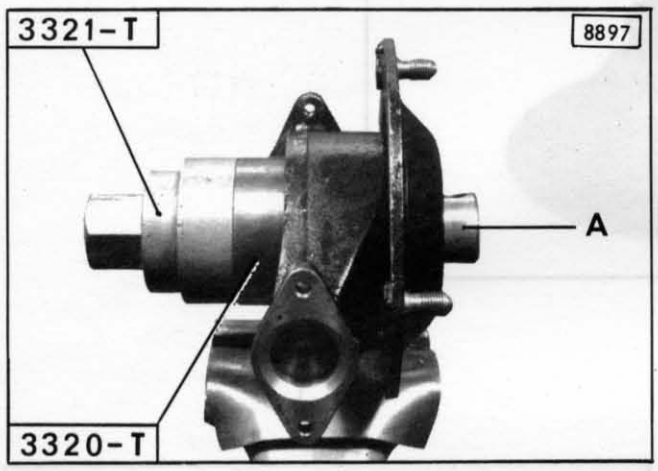


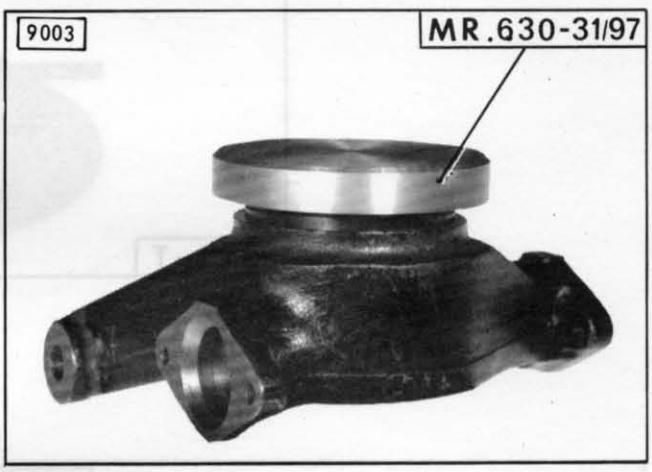
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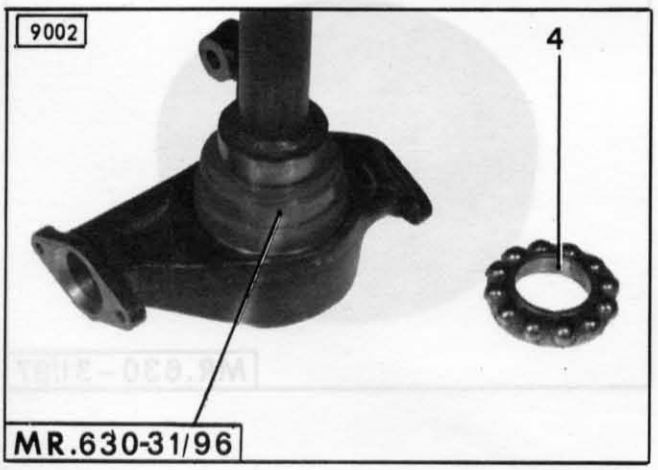

GX. 41-1
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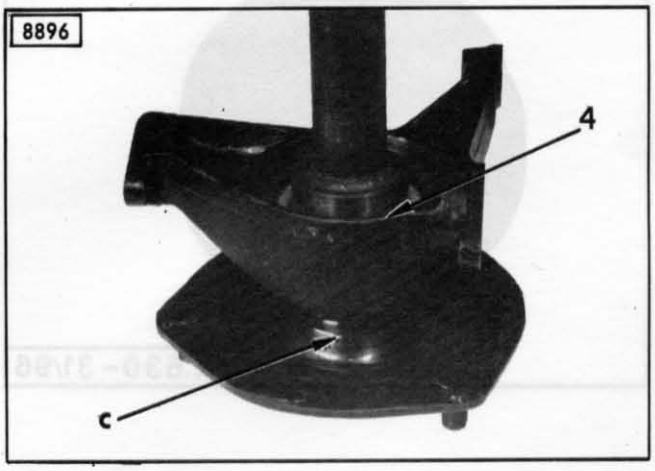

9847
1893-T


b
81-957


3321-T
8897
A
3320-T


9003
MR.630-31/97


9002
4
MR.630-31/96


8896
4
c

RECONDITIONING A SWIVEL HUB

REMOVAL

1. Remove seal ring (3) :

2. Remove ring nut (2) :
Drill out the pin-bitting locks on the ring nut, using a 4 mm drill-bit.
Fit the central part of tool 3321-T equipped with spanner 3320-T .
Insert screw **A.**

3. Remove hub (6) :
Screw extractor 1893-T in place of the ring nut.

4. Remove seal ring (1).

5. Remove the hub bearing.

FITTING

6. Fit the hub bearing :
Coat the bearing with grease.
Remove inner race (4), and insert the bearing in the swivel, using a press and mandrel MR. 630-31/96 . *The mandrel should bear on outer race (5).* Fit inner race (4).

CAUTION : Protruding parts « a » of the ball races should be positioned towards the ouside of the bearing (see sketch).

6/81 ⟶ R.P. No. 1667 : new bearing outside dia. = 82 mm.

7. Fit ring nut (2) :
Use the central part of tool 3321-T , equipped with spanner 3320-T .
Insert screw A.
Tighten the ring nut to 40 to 50 m.daN *(torque wrench),* and lock by pin-bitting at two diametrically opposed points.
With a dia. 82 bearing, make sure that there is a bevelled edge at « b » on ring nut (2).

8. Fit seal ring (1) :
Use mandrel MR. 630-31/97 to ensure clearance « g » between ring and bearing race.

9. Fit the hub :

Grease the inner lip of ring (1), and contact surface « c » with the hub.
Position the hub, using a press, and *taking purchase on inner race (4)* of the bearing.

10. Fit seal ring (3) :

Push fully home in its recess.

OPERATION
GX. 422-3

RECONDITIONING A REAR AXLE ARM

SPECIAL TOOLS

TOOLS SOLD

3321-T : Tool for removal and fitting of the rear hub

3304 : Spanner for removal and fitting of the rear hub ring nut.

6310-T : Tool for anchoring the wheel hub

1671-T : Inertial extractor.
2070-T : Expandable tool for extraction of the bearings

2071-T : Mandrel for fitting rear wheel hub bearing

TOOL NOT SOLD

MR. 630-31/96 : Mandrel for fitting rear wheel hub bearing

TIGHTENING TORQUE VALUES

Mandatory values *(torque wrench) :*

Hub nut :	**35 to 40 m.daN**
Hub ring nut :	**35 to 40 m.daN**
Brake unit attachment :	**3.6 to 4 m.daN**

Recommended value :

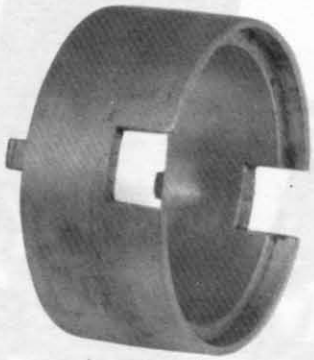
Brake disc attachment :	**4.5 to 5 m.daN**

79-1171



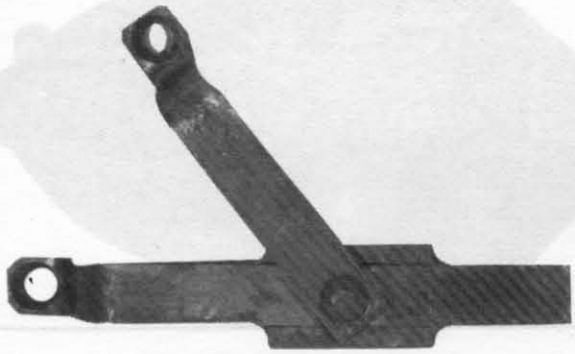
3321-T

79-1178



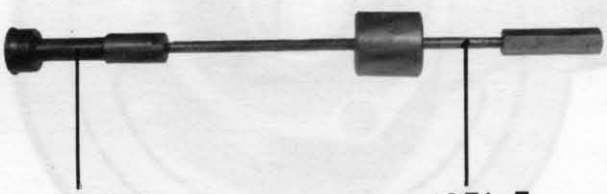
3304-T

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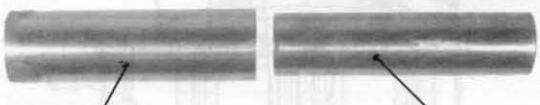


6310-T

9366



11 357



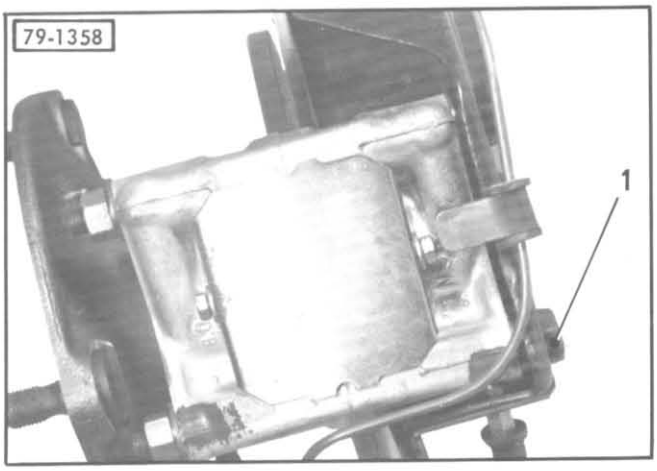
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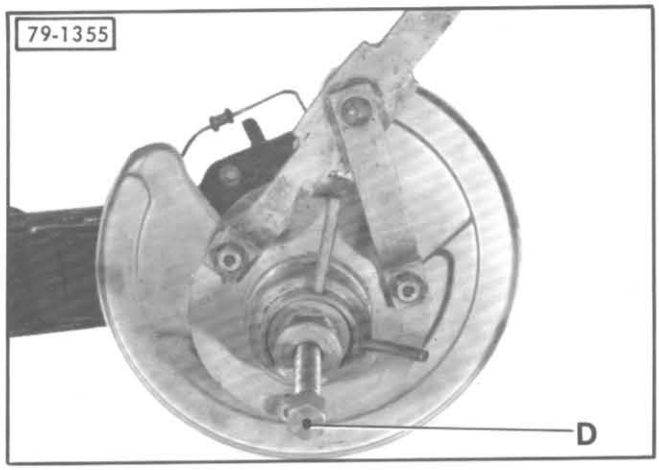


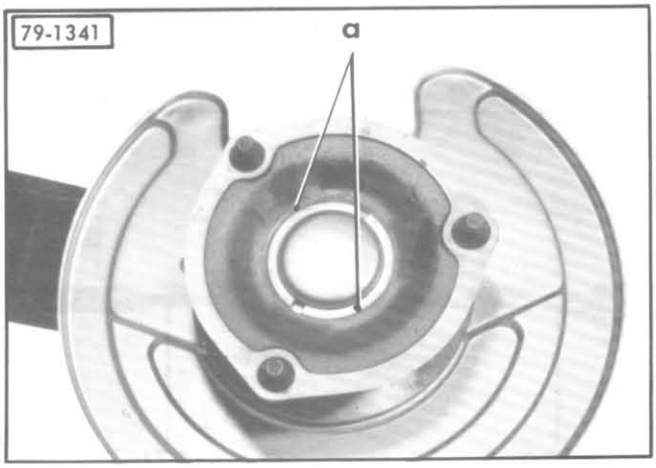
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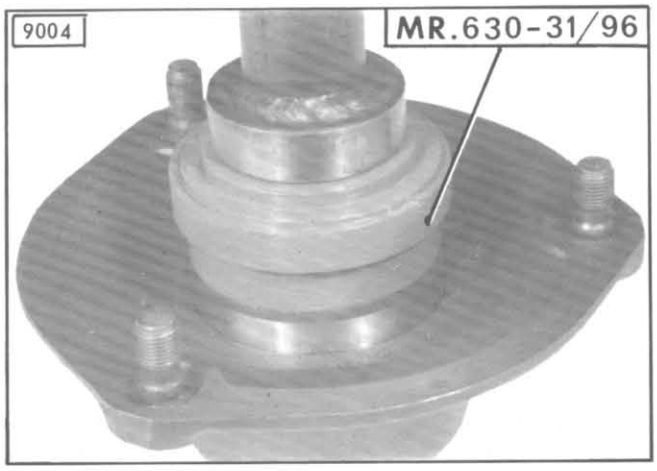


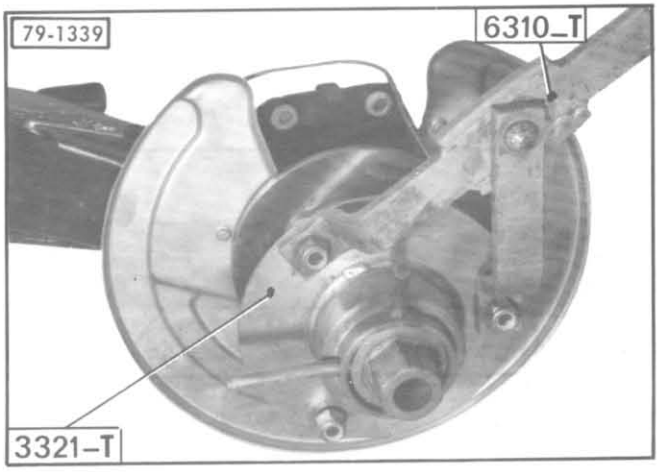
MR.630-31/96

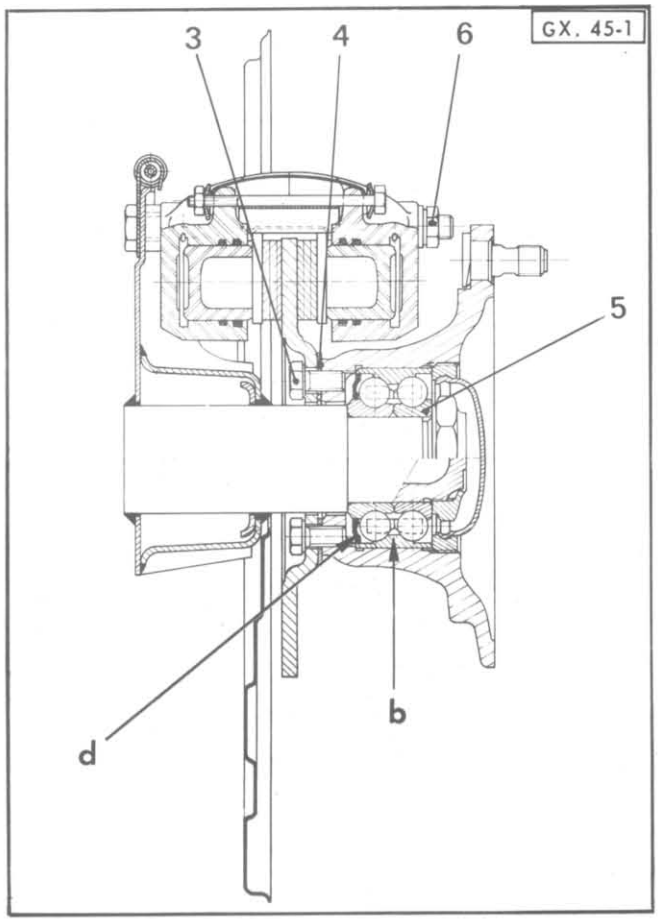

79-1358
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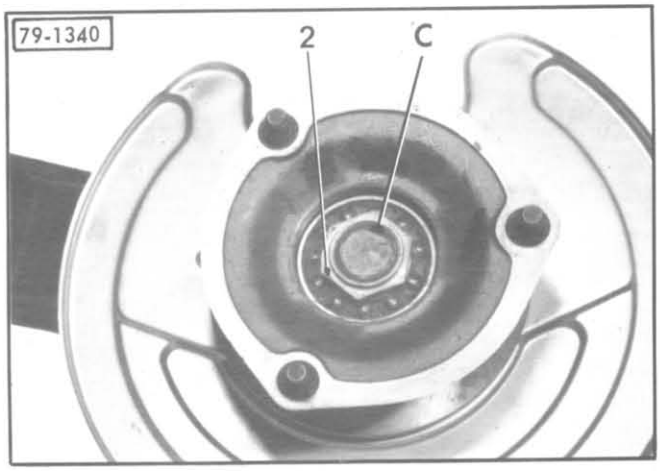

79-1355
D


79-1341
a


9004
MR.630-31/96


79-1339
6310_T
3321–T


GX. 45-1
3
4
6
5
b
d


79-1340
2
C

I - REPLACEMENT OF A WHEEL HUB BEARING OR BRAKE DISC

REMOVAL

1. Remove spiral pipe (if necessary).

2. Remove the brake unit.
Proceed as follows, to avoid separating the two half-units :
- Slacken off the unit attachment screw.
- Undo screw (1) bleeder screw side).
- Extract the bleeder screw.
- Tip the unit, replace screw (1) and tighten the nut.
- Undo the other screw.
- Remove the brake unit.

3. Remove the ring nut :
Drill out the pin-bit locks « at » a on the ring nut, using a 4 mm drill-bit.
Use tool 3321-T and spanner 3304-T anchoring the hub with tool 6310-T.

4. Undo nut (2) :
Use a cold chisel to release the nut at « c ».

5. Remove the wheel hub :
Repeat the same operation as for taking down the ring nut, using tool 3321-T, but without wrench 3304-T extracting the hub with screw **D.**

6. Remove the brake disc :
Undo screws (3).
Collect thrust washer (4) inserted between disc and hub.

7. Remove the wheel hub bearing :

8. If necessary, remove the brake disc protector panel.

FITTING

9. Fit the brake disc protector panel (if necessary).

10. Fit the wheel hub bearing :
Prepare the new bearing :
Remove, interior race (5) (not seal-tight), complete with its balls, to allow insertion of mandrel MR. 630-31/96.
Position the bearing on the hub (sealed face « d » on disc side).
Insert the bearing in a press.

11. Fit the brake disc on the hub :
Insert thrust washer (4) between disc and hub.
Fit and tighten screws (3) to 4.5 to 5 m.daN *(torque wrench).*

12. Fit the hub :
Position the hub assembly on the stub.
Engage the bearing (without inner race (5) and commence assembly by doing up nut (2).
Remove nut (2) and fit a spacer with ID 37 mm, thickness 7 mm.
Replace screw (2) and terminate engagement of the bearing.
Fit inner race (5) (side « b » of the nylon races must be assembled face to face : see sketch).
Fit a new screw *(grease threads and face).*
Tighten to 35 to 40 m.daN (torque wrench).
Pin-bit the nut collar in the stub chamfer at « c ».

13. Fit the ring nut :
Use tool 3321-T and spanner 3304-T anchoring the hub with tool 6310-T.

Tighten the ring nut *(grease threads and face)* **to 35 to 40 m.daN**
Lock by pin-bit at two diametrically opposed points « a ».

14. Fit the brake caliper.
Tighten nuts (6) *(grease threads and face)* **to 3.6 to 4 m.daN.**

15. Fit the spiral pipe (if necessary)

II - REPLACING THE ARM HUB BEARINGS

REMOVAL

1. If necessary, remove arm hub deflector (1).

2. Remove seal (2)

3. Remove the arm hub bearings :
Use extractor 1671-T fitted with expandable tool 2070-T.

4. Remove friction washer (3).

5. Clean the parts.

FITTING

6. Fit the friction washer :
Coat with bearing grease (TOTAL MULTIS) on both faces, and insert in the arm hub.

The friction washer is flat when new. Fit a new friction washer following any removal operation.

7. Fit the bearings in the arm hub :

The needle bearings are equipped with seals « a ». Follow the assembly arrangement shown in the sketch opposite :
The side with seal « a » must be positioned in the direction of arrow F2 for inner bearing (4) and arrow F1 for outer bearing (5).

a) Insert guide mandrel **A** (tool 2071-T) in the arm hub.
Engage outer bearing (5) on mandrel **A**, *checking correct assembly position,* and push with tube **B,** until the tube comes into contact with end « b » of mandrel **A**.

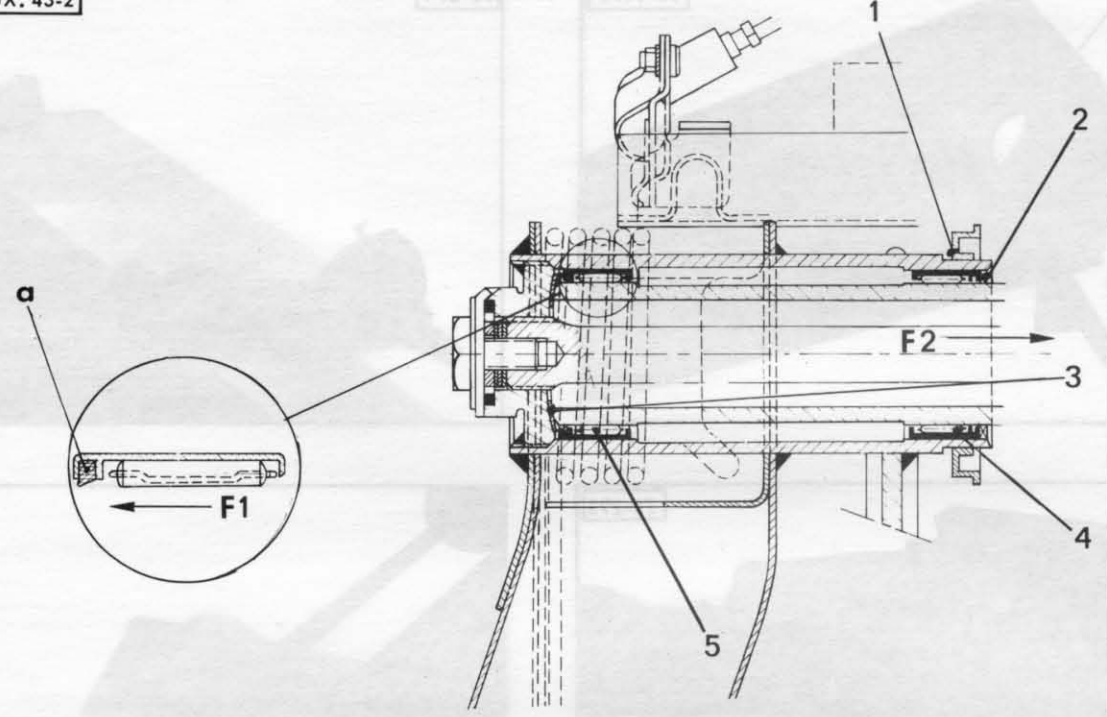
b) Proceed as above for inner bearing (4), using tube **C,** *and checking correct assembly position.*
The correct position of the bearings is determined by the length of tubes **B** and **C.**

c) Take down tool 2071-T.
Coat the bearing needles with grease (TOTAL MULTIS).

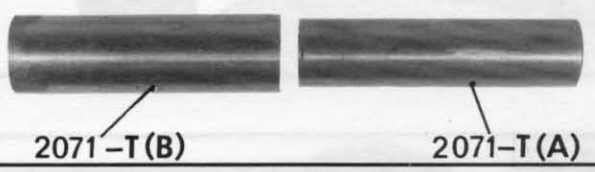
8. Fit seal (2) :
Position the marked face toward the outside of the hub, and push the seal home until it is in contact with bearing (4).

9. If necessary, fit deflector (1).
The deflector should stand 2 to 3 mm back from the edge of the hub.

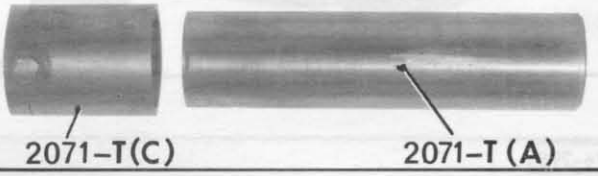
GX. 43-2



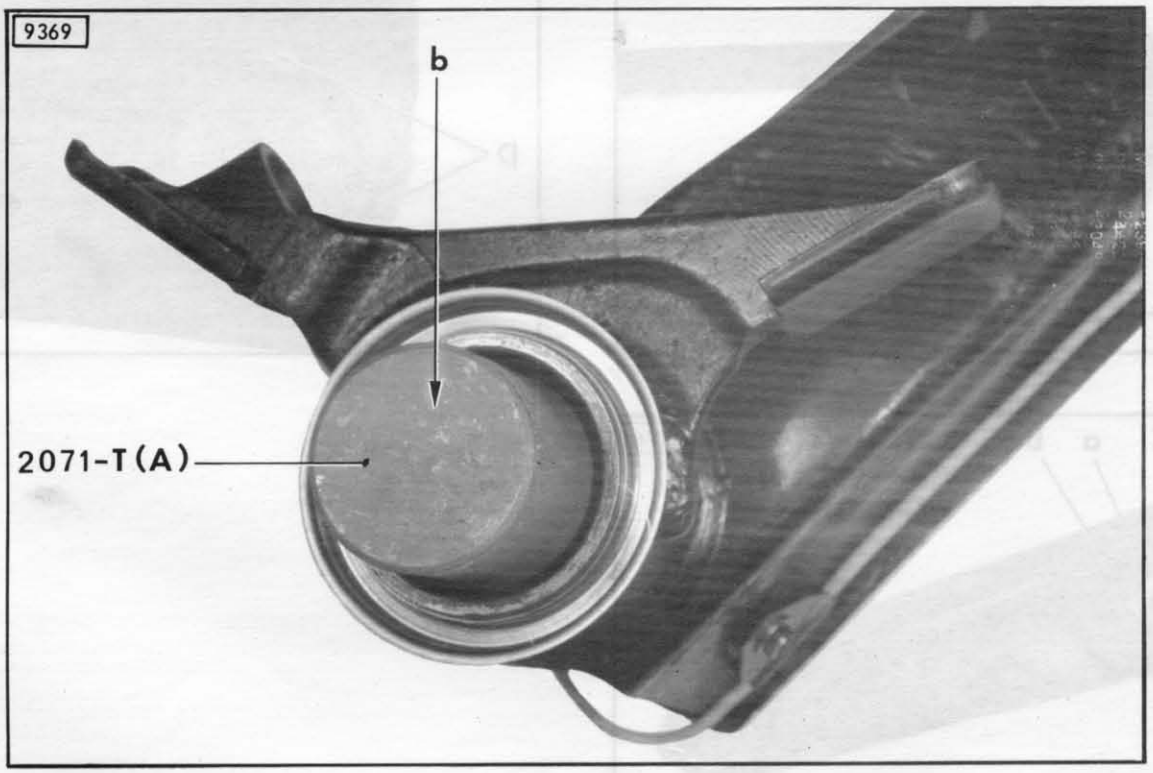
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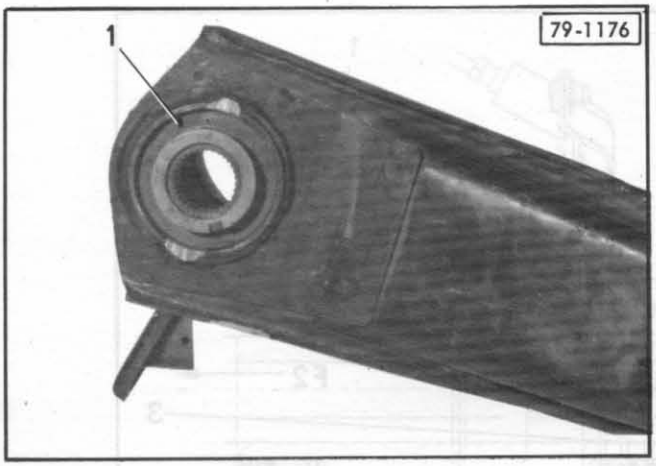


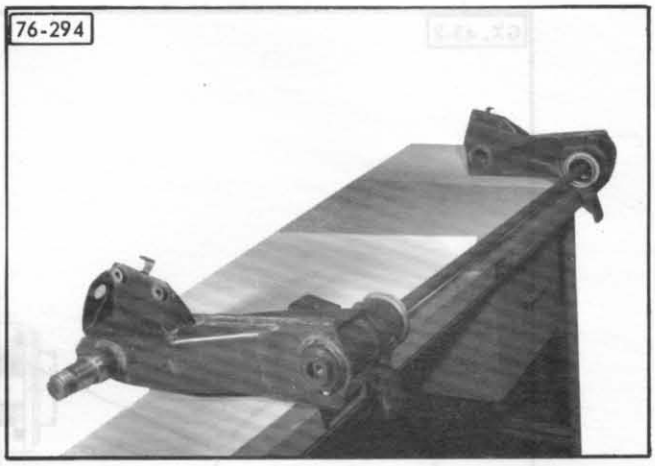
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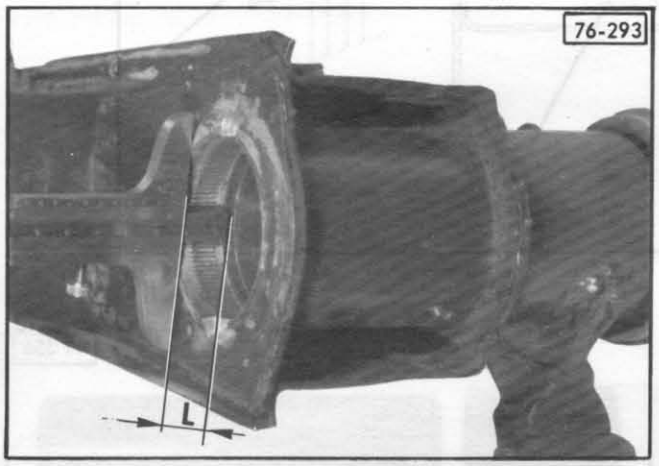


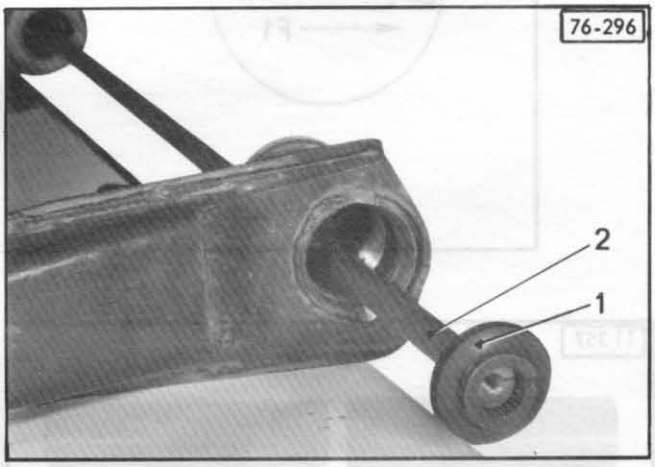
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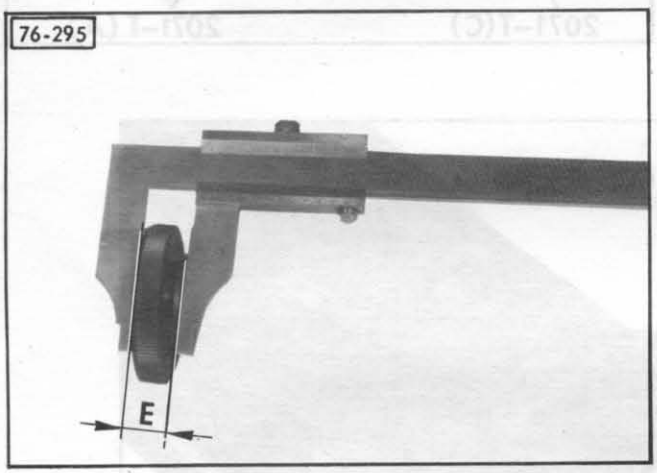


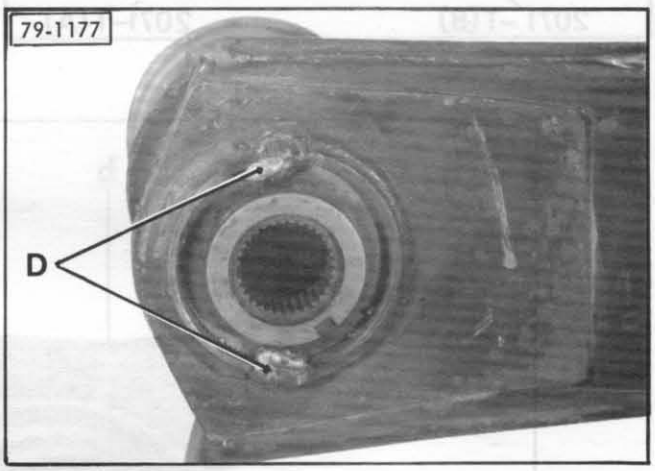

79-1176
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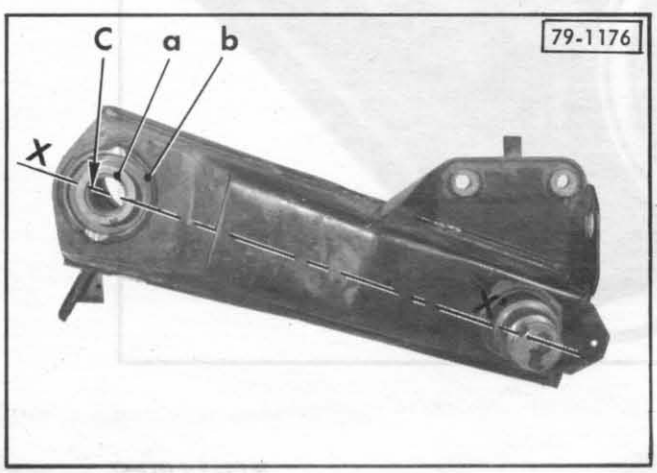

76-294


76-293
L


76-296
2
1


76-295
E


79-1177
D


79-1176
C
a
b
X

III - REPLACING AN ANTI-ROLL BAR ANCHOR CUP

1. Disengage cup (1) by grinding, or if necessary, by drilling out the welding tacks, taking care not to damage the welded joint between hub and arm shell.

2. Remove the cup :
Drive out the cup in a press, using mandrel 2071-A from tool set 2071-T .

> The old anti-roll bar should not be re-used after disassembly.

3. Fit the new cup :
For correct execution of this operation, the new anti-roll bar to be fitted on the vehicle must be to hand.
To facilitate subsequent fitting of the cup in the arm, measure depth (L) of the cup recess in the arm.
Measure thickness (E) of the old cup and calculate the difference : **E - L** = dimension to be obtained between cup face « a » and arm collar « b » (see photo).

4. Position the cup for a left arm :
(large diameter hole, 32 teeth).
Position missing tooth **C** approximately on arm axis XX' and engage firmly in the arm teeth.

a) Engage the anti-roll bar in the left cup, with the index marked (engraved line) on the position of the missing tooth.

b) Place this assembly (arm and bar) on a bench, as shown in the photo.
To facilitate completion of the operation, clamp the arm to the bench.

c) With right arm cup (1) positioned on anti-roll bar (2) as for the left arm (missing tooth opposite engraved line of bar), rotate the arm gently to engage the cup teeth with those of the arm.

> The position of the cup on the anti-roll bar can be changed by one tooth, while maintaining the engraved line on the bar opposite the missing tooth on the cup.

> **Incorrect arm alignment affects the attitude of the vehicle.**

d) Identify the position of the cup on the arm.

e) Disengage the arm from the anti-roll bar.

5. Insert the cups in the arms, using a press.
Take account of the measurements made (see paragraph 3) when inserting the cups).

7. Carefully degrease the cups on the arm contact teeth side.
Seal the teeth with SILICOMET paste.

OPERATION
GX. 433-3

RECONDITIONING A SUSPENSION CYLINDER

RECOMMENDED SPECIAL TOOLS

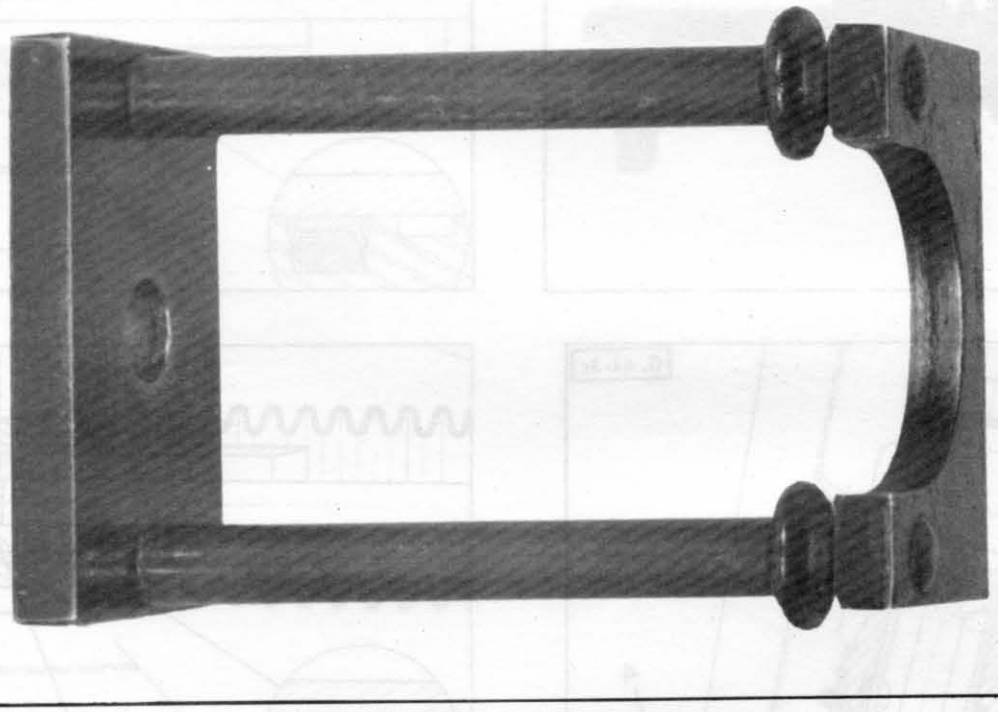
TOOLS SOLD

2293-T : Suspension cylinder support

3654-T : Hydraulic test rig

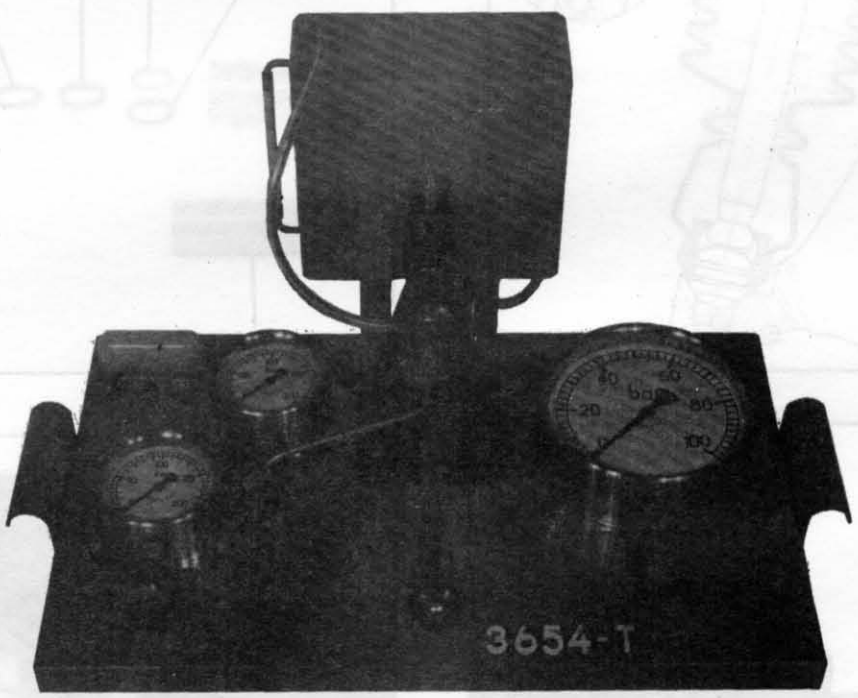
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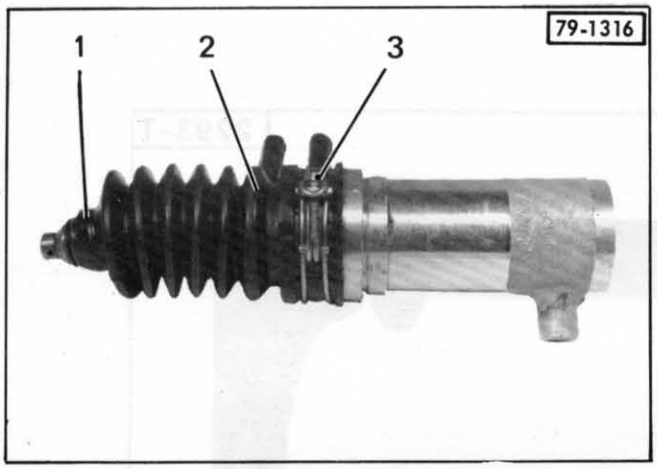
2293-T

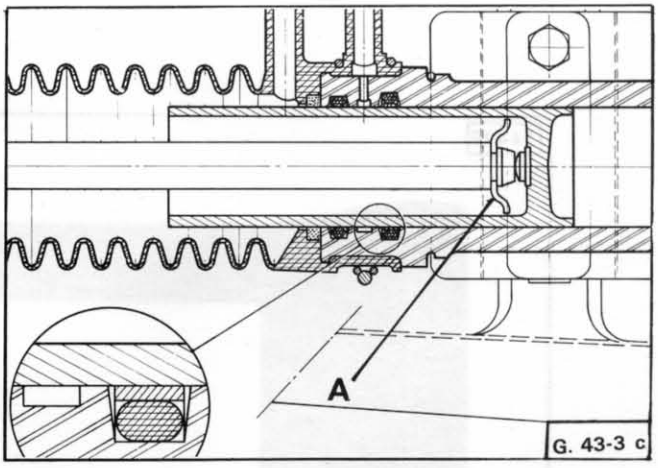


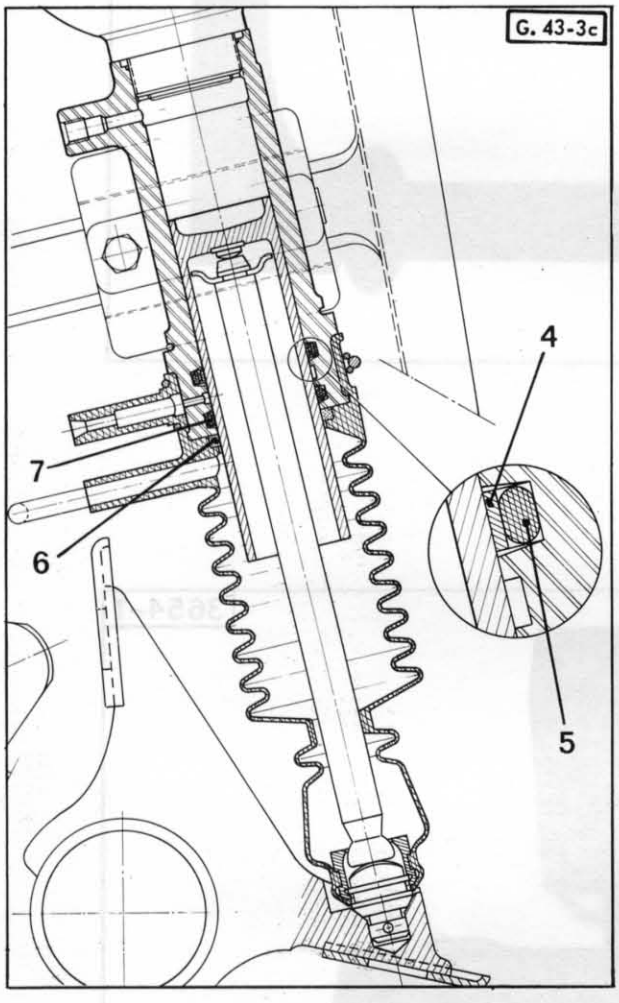
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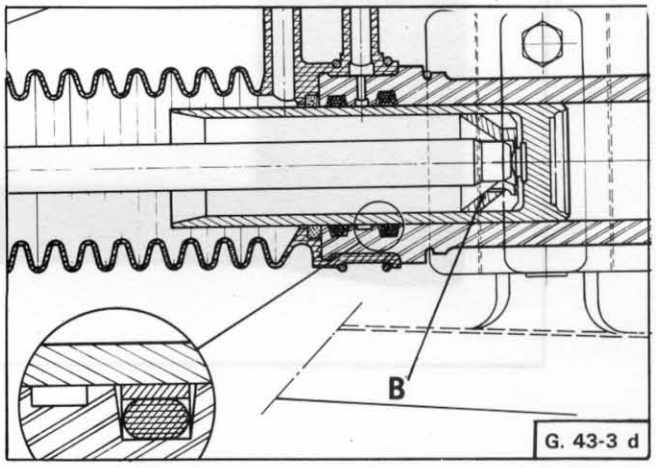
3654-T

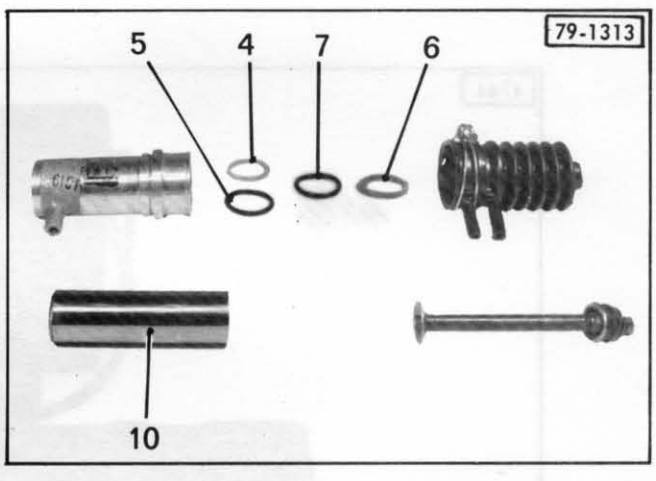


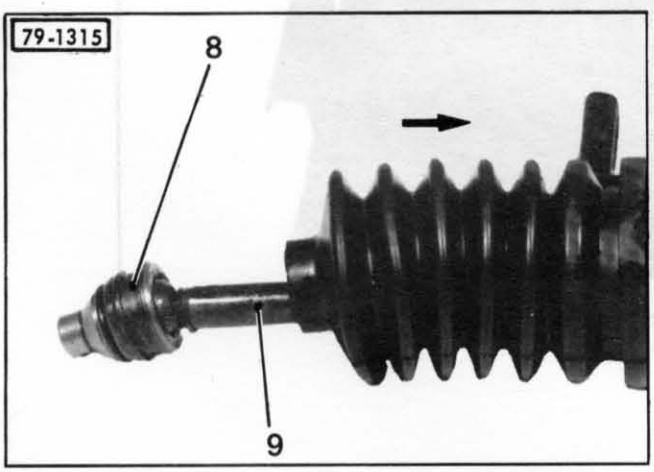

79-1316
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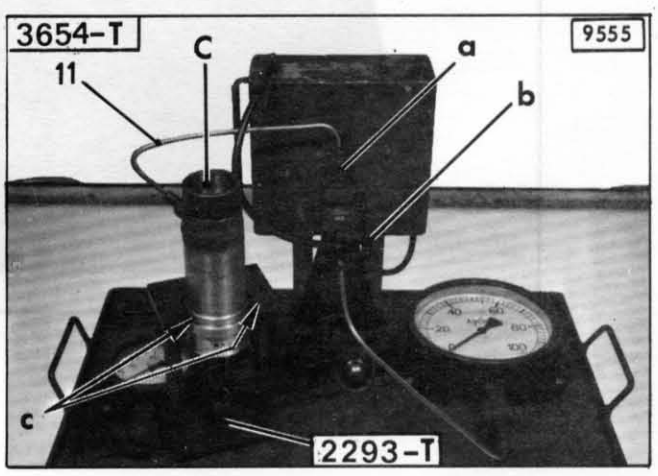

A
G. 43-3 c


G. 43-3c
4
7
6
5


B
G. 43-3 d


79-1313
5
4
7
6
10


79-1315
8
9


3654-T
9555
C
11
a
b
c
2293-T

RECONDITIONING A SUSPENSION CYLINDER

DISMANTLING

1. Remove :
- dust-guard attachment (3),
- assembly comprising dust-guard (2) and piston shaft (9).

2. Remove :
- felt seal (6),
- piston (10),
- O-ring seal (7),
- PTFE (teflon) seal (4),
- O-ring seal (5).

3. Remove the collar and elastic protective ring (1).

4. Disengage dust-guard (2) from recess (8) pushing the dust-guard towards the piston shaft (direction of arrow).

5. Disengage dust-guard (2) from piston shaft (9).

6. Clean and check the parts.
NOTE : If piston (10) shows traces of shallow scratching, light rubbing with No. 600 emery cloth, dipped in petroleum spirit, is admissible. Carefully clean with petroleum spirit and blow off with compressed air.

ASSEMBLY

7. Coat the inside of the cylinder with LHM fluid.

a) Fit :
- O-ring seal (5),
- PTFE (teflon) seal (4) on O-ring seal (5) (take care not to distort during fitting)

Fit the PTFE (teflon) seal on the O-ring, pressing with the thumb over its total surface area.

b) Fit O-ring seal (7).

8. Engage the piston in the cylinder, after coating with LHM fluid. Do not insert the piston fully.

9. Check the seal-tightness of the suspension cylinder :

Use test rig 3654-T *(painted green)* and accessories 3657-T .Connect the pump to the pressure gauge (graduated from 0 to 100 bar).

a) Place the cylinder, equipped with the piston shaft, on support 2293-T

NOTE : If necessary, adjust the support at « c » for correct mounting of the suspension cylinder.

b) Fit plug **C** equipped with a seal. Engage the end of the shaft in the recess in support 2293-T .

c) Connect the cylinder feed orifice « a » in the pump, by means of pipe (11). Tighten test rig bleed screw « b ».

d) Build up pressure to 40 bar. Check the pressure gauge, which should show no drop in pressure.

e) Undo bleed screw « b ». Remove plug **C.** Uncouple pipe (11) from the cylinder and pump.

f) Remove the cylinder from support 2293-T

10. Fit felt seal (6), soaked in LHM fluid, on the piston.

11. Fit dust-guard (2) on piston shaft (9).
7/81 ⟶ *:* cup **A** is replaced by cone **B.**

12. Fit dust-guard (2) in recess (1).
Fit the protective elastic ring.

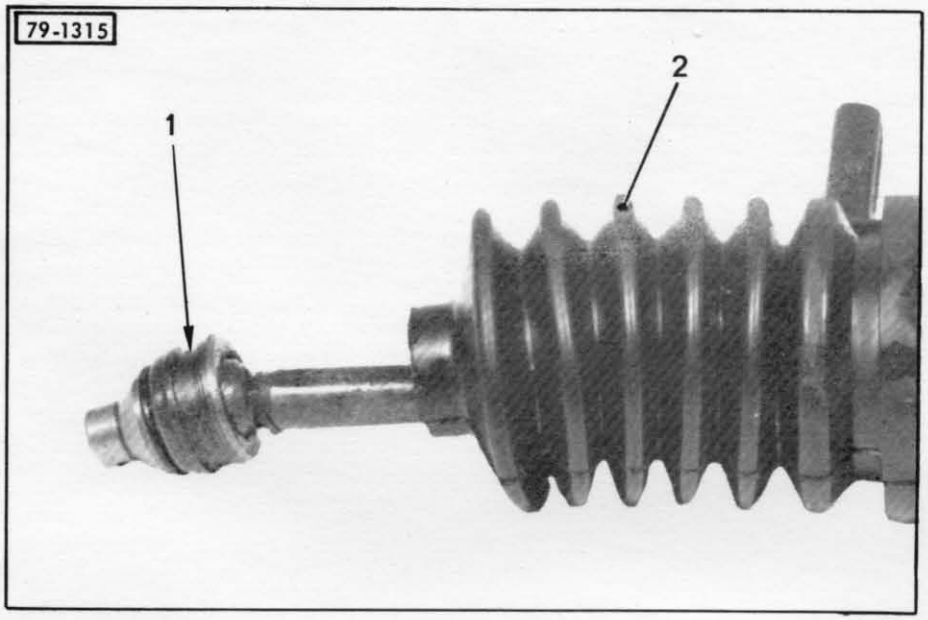
13. Fit the dust-guard/piston shaft assembly on the cylinder :

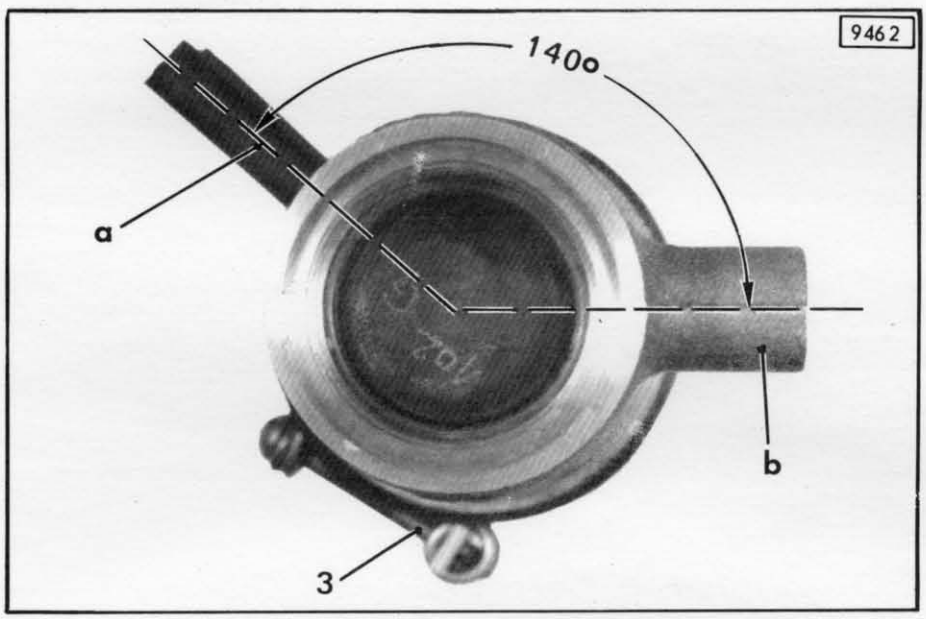
NOTE : The position of the dust guard with respect to the cylinder is different for the front and rear cylinders.
- Front : cylinder feed orifice « b » should form an angle of 140° with overflow return and vent orifices « a » *(see photo opposite)*.
- *Rear :* orifices « a » and « b » should be in the same plane.

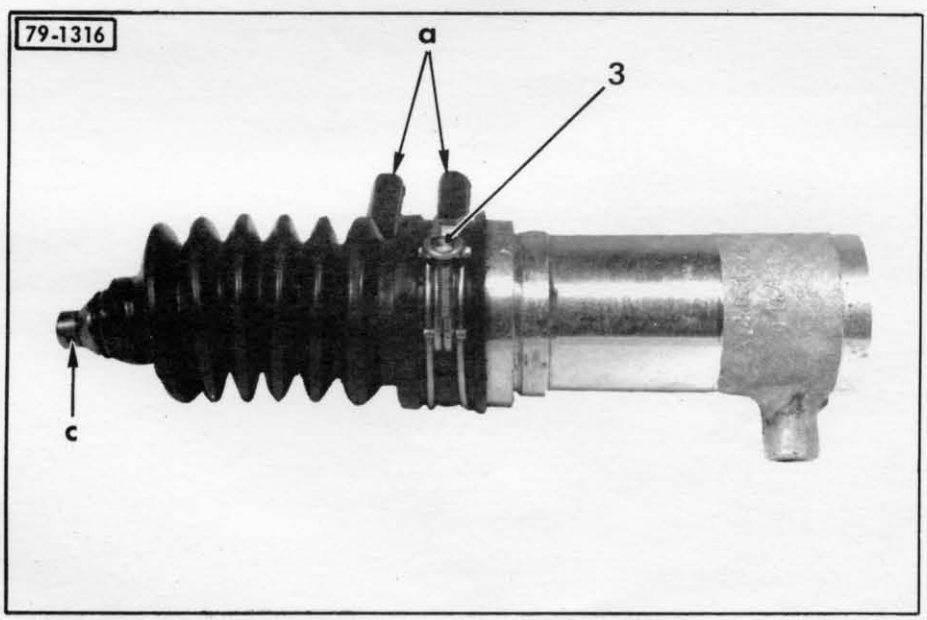
14. Fit collar (3) and piston :
- *Front cylinder :* see figure opposite
- *Rear cylinder :* the screw of collar (3) should point towards the exterior of the vehicle.

15. Position recess (1) :
- *Front cylinder :* pinhole « c » should be in the same plane as orifices « a »; to within 5°.
- *Rear cylinder :* pinhole « c « should be perpendicular to the plane formed by orifices « a » and « b ».

NOTE : Before mounting in the vehicle, fill each dust guard with LHM fluid, as follows :
- front dust guard : 7 cc
- rear dust guard : 25 cc


79-1315
1
2


9462
140o
a
b
3


79-1316
a
3
c

OPERATION
GX. 442-3

RECONDITIONING A STEERING SYSTEM

RECONDITIONING A STEERING SYSTEM

DISMANTLING

1. Fix the steering gear box in a vice *(fitted with soft jaws).*

2. Remove :

- pin (4) and nut (5),
- spring (3),
- plunger (2),
- flange (7),
- pinion (8) and bearing,
- rack (1),
- rubber bush (10),
- needle bearing (9) *(drive into the interior of the housing, using a tube with OD 13 mm).*

3. If necessary, remove :

- retainer ring for bush (10) at « b »,
- seal (6).

4. Clean the parts.

ASSEMBLY

5. Fit needle bearing (9) *which should be inset 1 mm with respect to housing face « a »*. Lock the bearing, pin-bitting the metal of the casing at « a » at three equidistant points.

6. Fit rubber bush (10) in its retainer ring at « b ».

7. Coat bearing (9), rack (1) and drive pinion (8) with grease (TOTAL MULTIS MS).
Engage the rack in the steering gearbox, and fit pinion (8).

8. Fit seal (6) on flange (7). Fit the flange.

The face of seal (6) carrying the manufacturer's mark should be positioned towards the bearing of pinion (8) (seal lip towards the housing).

Tightening torque : 1.3 to 1.4 m.daN

9. Fit and adjust the rack plunger :

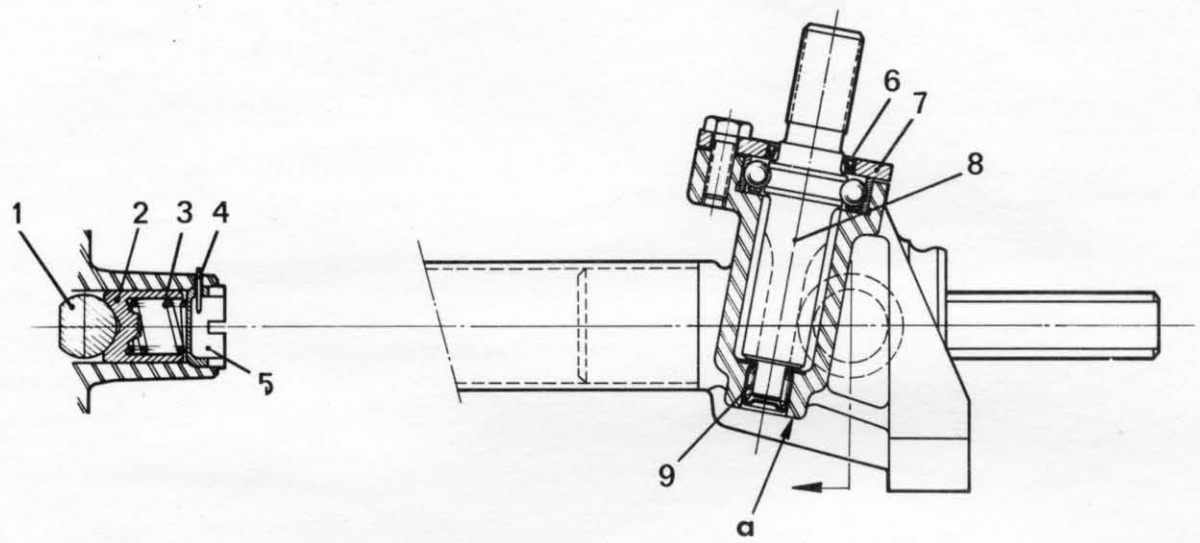
a) Fit plunger (2) and spring (3).

b) **Tighten nut (5) fully, then slacken off by 1/8th to 1/6th of a turn.**

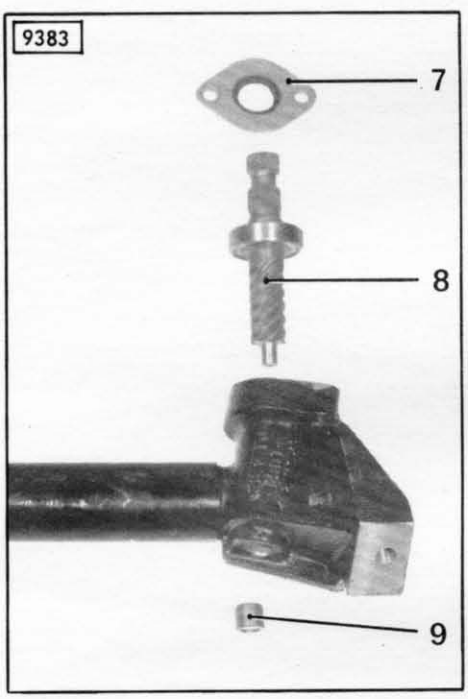
c) Drive the rack over its full stroke, rotating the pinion to check that there is no hard point. In the contrary case, adjust plunger pressure at this point, by means of nut (5). The rack should be displaced with no sensation of tooth-to-tooth movement.

d) Fit stop pin (4) and nut (5).

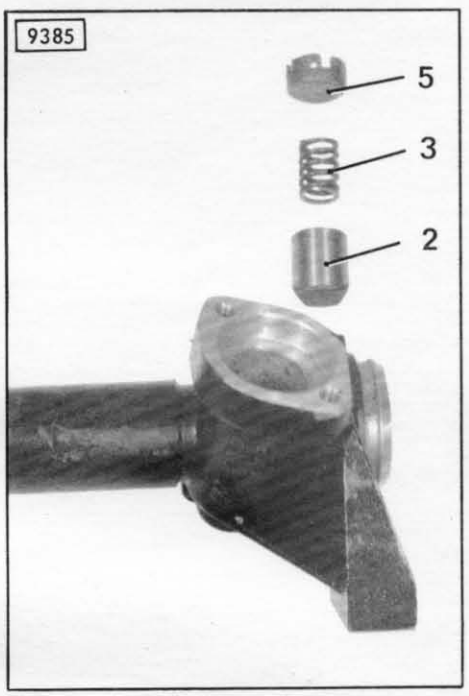
G. 44-2 b



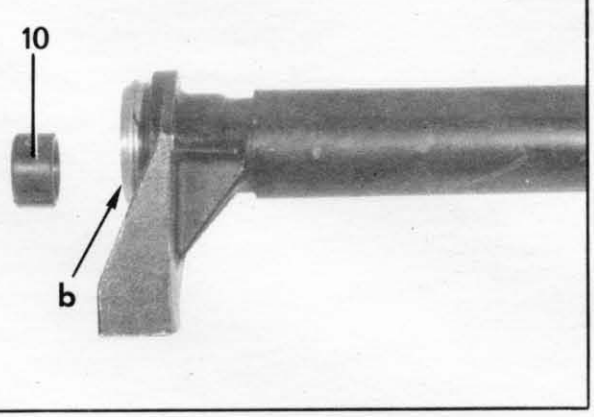
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9385



9384



OPERATION
GX. 451-3

RECONDITIONING A BRAKE UNIT
(Front or rear)

RECONDITIONING A BRAKE UNIT *(Front or rear)*

DISMANTLING

1. Strip down the brake unit *(front brake unit).*

Disengage :
- handbrake pads (2),
- two screws (3),
- lever/cam assemblies (5),
- spring (1).

Remove :
- pad locking ring (4),
- nut **A,** fitted when the unit was removed.

Drive out screw (6) and uncouple the two half-units.

2. Strip down the half-units :

Extract piston (7), blowing compressed air through feed orifice (11).

Remove :
- O-ring seal (9),
- dust-guard (8),
- square profile seal (10).

3. Clean the parts with petroleum spirit. Blow off and dry with compressed air.

If the pistons show any trace of impact damage or scratching, they must be replaced.

ASSEMBLY

4. Prepare the half-units :

Replace all seals following any disassembly operations.

a) Coat piston (7) and its recess with LHM fluid.

b) Fit :
- square profile seal (10),
- dust-guard (8).

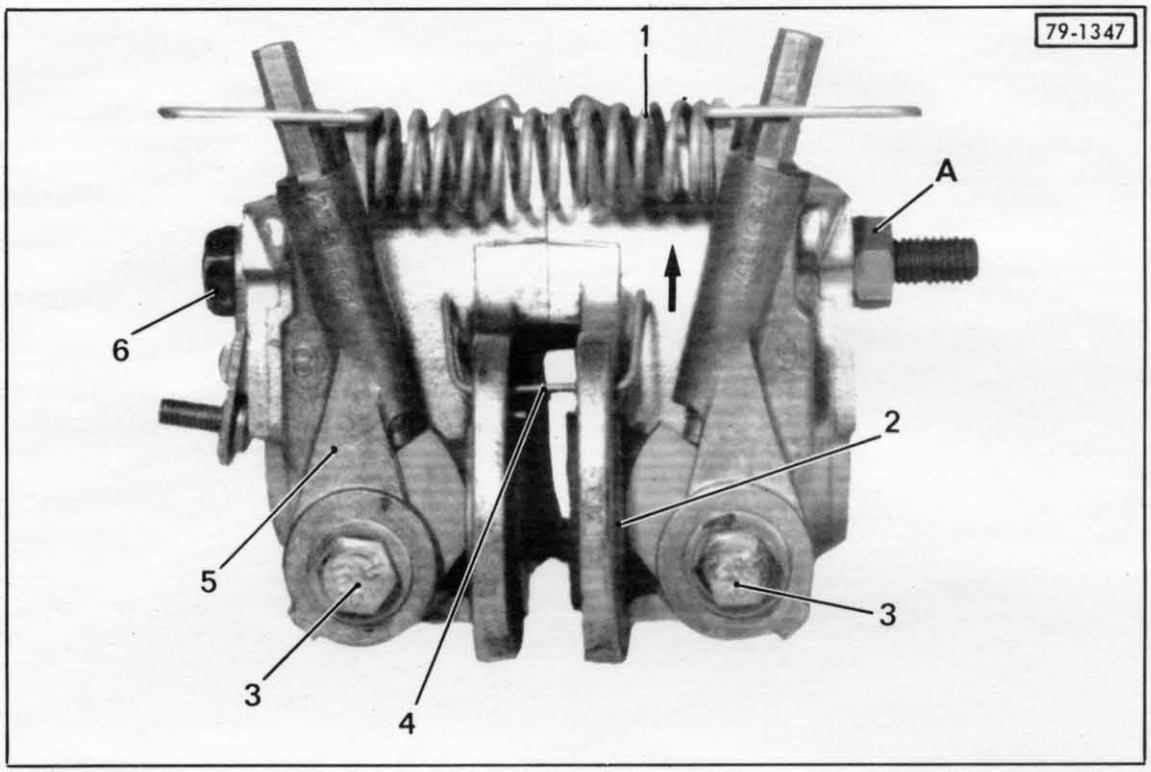
c) Engage piston (7) in its recess, with hollow part « b » towards the exterior of the half-unit.
Fit O-ring seal (9) at « a » *(check that pipe (11) is present).*

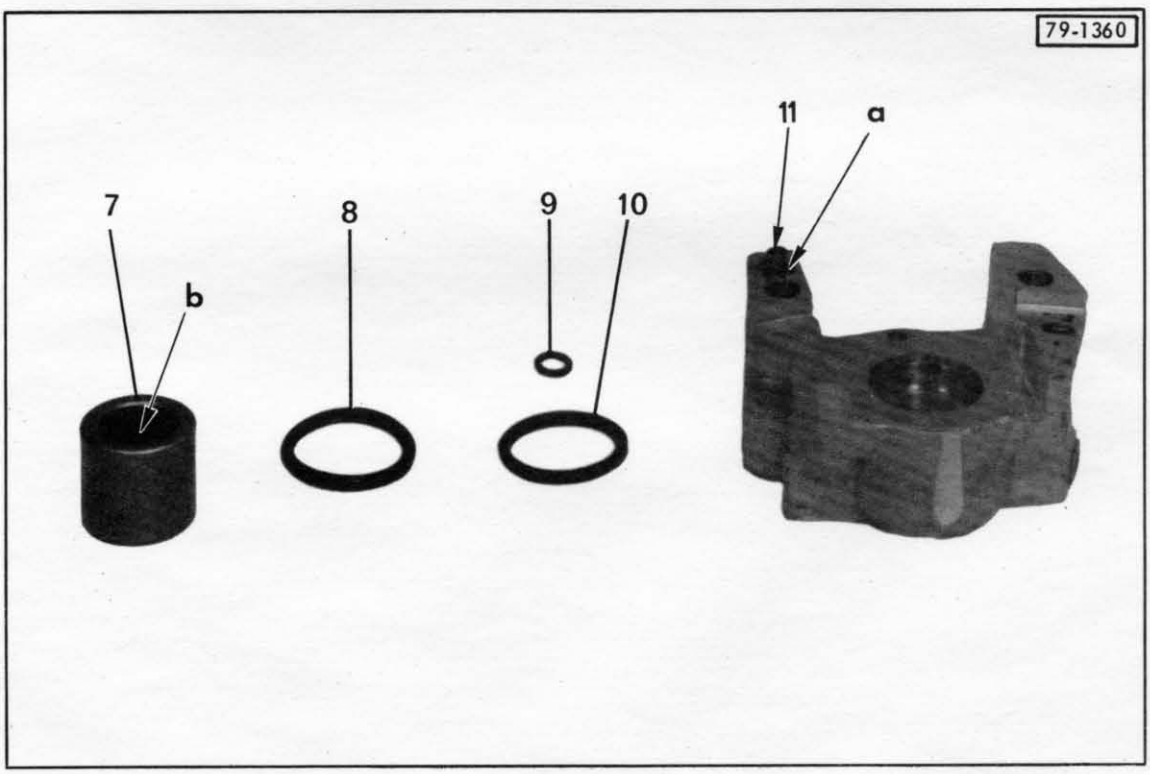
5. Assemble the two half-units by means of screw (6) and nut **A.**

6. Prepare the brake unit *(front brake unit)*

Fit :
- spring (4),
- handbrake pads (2),

(tip spring (4) forwards, following the direction of the arrow, to lock the pads),
- lever/cam assembly (5),
- screws (3) *(do not tighten fully),*
- spring (1).


79-1347
1
A
6
2
5
3
3
4


79-1360
11
a
7
b
8
9
10

OPERATION
GX. 453-3

RECONDITIONING A HYDRAULIC BRAKE CONTROL

RECONDITIONING A HYDRAULIC BRAKE CONTROL
(brake control valve)

DISMANTLING

1. Hold the brake control in a vice.

2. Using a screwdriver as a lever, take off retainer ring (4) and rubber protector (5).

3. Remove :
- circlip (3),
- slide-valve/cup assembly (2) (disconnect if necessary),
- spring (1).

4. Turn the control over in the vice. Remove union (10) and its seal.

5. Push in plug (7) slightly, to allow extraction of snap-ring (6).

6. Using a 5 mm dia. bronze rod, drive out slide-valve (11), thrust washer (9), spring (8) and plug (7).

7. Disengage O-ring (12) from plug (7).

8. Clean the parts with petroleum spirit. Blow with compressed air.

NOTE : Slide-valves (2) and (11) are adjusted in the control unit and cannot be sold separately.
- ——► *7/81* : dia. = 8.5 mm
- *7/81* ——► : dia. = 7.5 mm.

ASSEMBLY

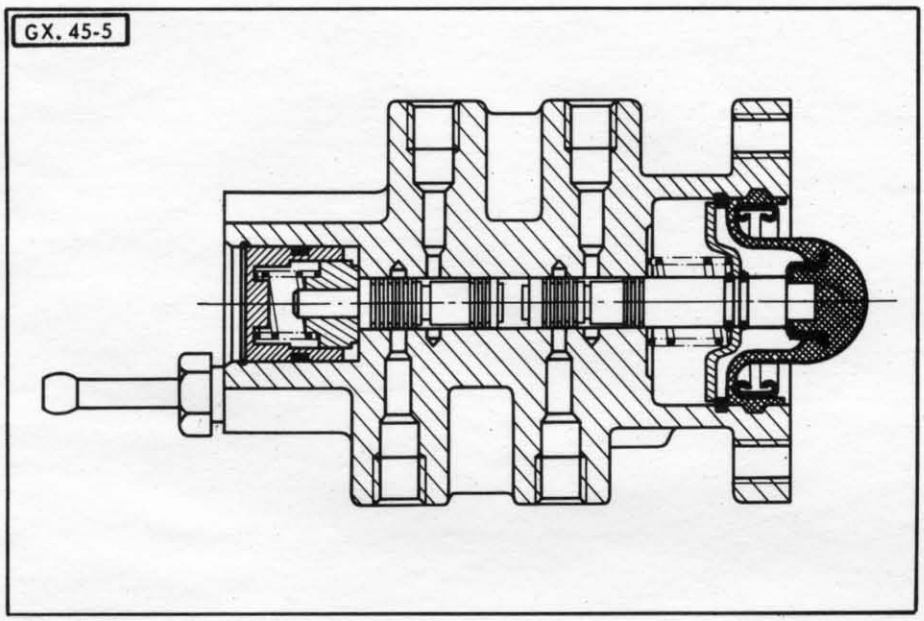
9. Coat all parts and the interior of the block with LHM fluid.

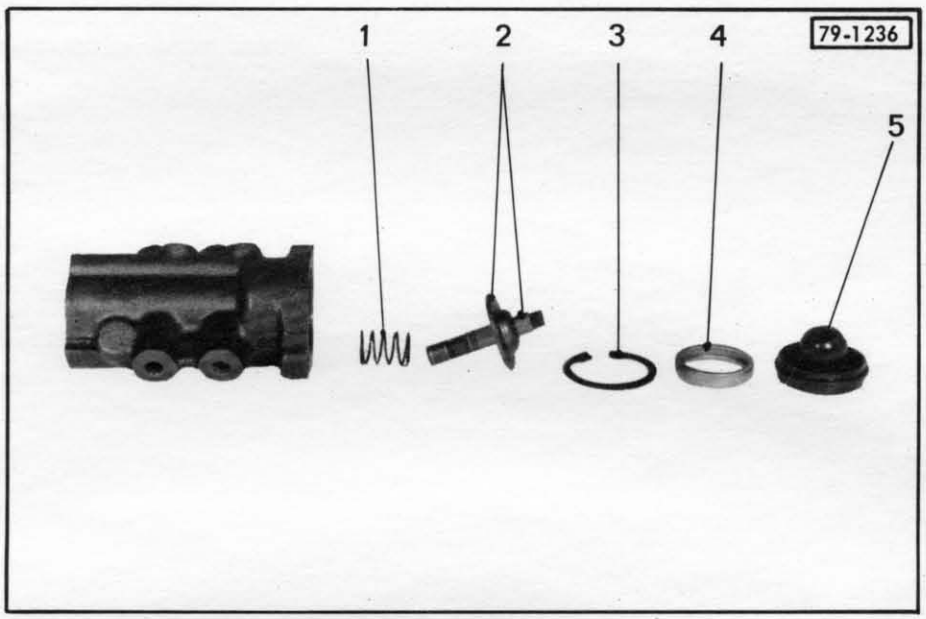
10. If necessary, assemble slide-valve (2) *(snap ring, cup and second snap ring).*

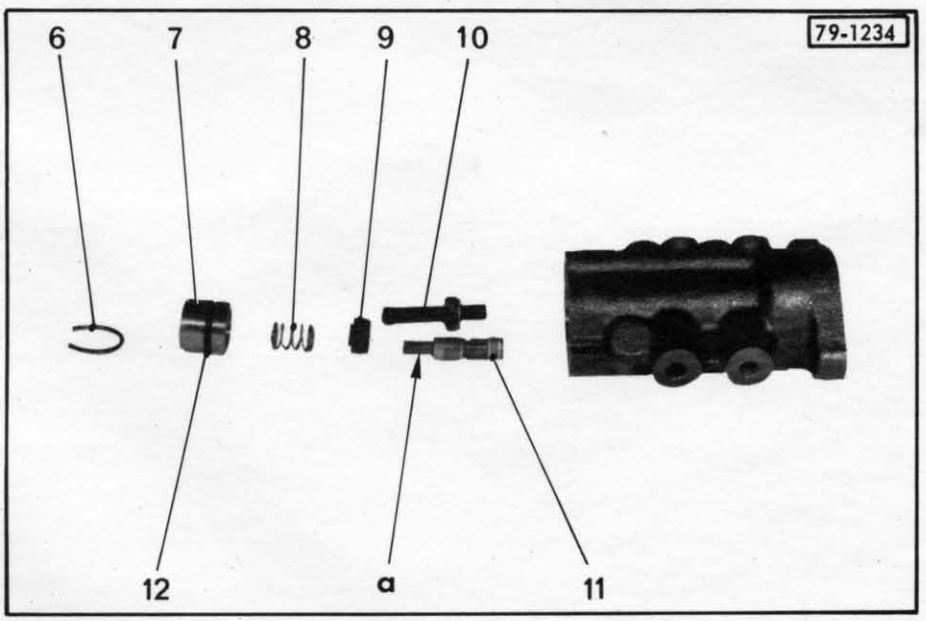
11. Hold the brake control in a vice. Fit :
- spring (1),
- slide-valve assembly (2),
- circlip (3),
- rubber protector (5),
- retainer ring (4).

12. Engage slide-valve (11) equipped with the thrust washer (9) in the control unit *(end « a » pointing outwards).*
Fit :
- spring (8),
- plug (7) with seal (12),
- snap-ring (6).

13. Fit union (10) *(copper seal)*


GX. 45-5


1
2
3
4
5
79-1236


6
7
8
9
10
79-1234
12
a
11

LIST OF OPERATIONS IN SECTION IV

Operation number	DESCRIPTION
	ELECTRICAL SYSTEM - HEATING - VENTILATION
GX. 510-000	General information on the electrical installation
GX. 510-00	Arrangement of the electrical installation *(→ 7/1980)* *LHD. (page 1 to 8)* *RHD (page 9 to 15)*
GX. 510-00a	Arrangement of the electrical installation *(7/1980 → 7/1981)* LHD (page 1 to 8) } All GSA vehicles RHD (page 9 to 15) }
GX. 510-00 b	Arrangement of the electrical installation *(7/1981 → 7/1982)* *LHD (page 1 to 8)* } All GSA vehicles *RHD (page 9 to 13)* }
GX. 510-00 c	Arrangement of the electrical installation : *LHD :* Saloon *(page 3 to 8) 7/1982 → 7/1983* Estate *(page 9 to 14) 7/1982 →* *RHD :* All GSA vehicles *(page 15 to 19) 7/1982 → 7/1983*
GX. 510-00 d	Arrangement of the « DECEL » installation
GX. 510-00 e	Arrangement of the electrical installation : *LHD :* Saloon *(7/1983 →)*
GX. 520-1	Working on instrument panel and controls - Removal and fitting of an instrument panel - Replacement of a warning lamp in lighting switchboard (Satellite) - Replacement of a warning lamp in keyboard selector
GX. 532-0	Charging circuit specifications and testing
GX. 533-0	Starter motor specifications and testing
GX. 533-3	Reconditioning a starter motor
GX. 640-1	Removal and fitting of a control for heating-ventilation
GX. 653-00	Arrangement of the GSA TUNER radio installation
GX. 961-0	Checking and repairing a heated rear-window resistor

GENERAL INFORMATION ON THE ELECTRICAL INSTALLATION

PRESENTATION

All the operations describing the arrangement of the electrical installation comprise the following tables and diagrams :

- bulb table,
- fuse table,
- wiring diagram,
- circuit diagram,
- list of components,
- description of wiring harnesses.

READING THE DIAGRAMS

The wiring diagram indicates the layout of the leads and the approximate location of the components.

The circuit diagram presents the various circuits in a functional way, which can be very helpful when trying to find out the cause of a malfunction in the electrical system. When a unit is connected to several circuits, its various sections are shown in « exploded form » on different vertical grid lines.

Method of identification :

The method of identification is the same for both wiring and circuit diagrams.

The numbers printed in large types identify the components.

They appear in numerical sequence on the wiring diagram and on the list of components (L.H. column).

The list of components is the link between both diagrams.

The numbers in the R.H. column, which also appear in the lower part of the circuit diagram, indicate the position of a given component on this diagram.

The wiring harnesses are identified by large block letters.

Usually, the main harness (front harness) is not identified on the circuit diagram.

The leads are identified by colour marks on the lead itself or on the insulating sleeve.

When only a colour is indicated, it is the colour of the sleeve. For example : Mv = Mauve sleeve.

When the colour mark is preceded by letter F, the colour mentioned is that of the lead. For example : F Ve = green lead.

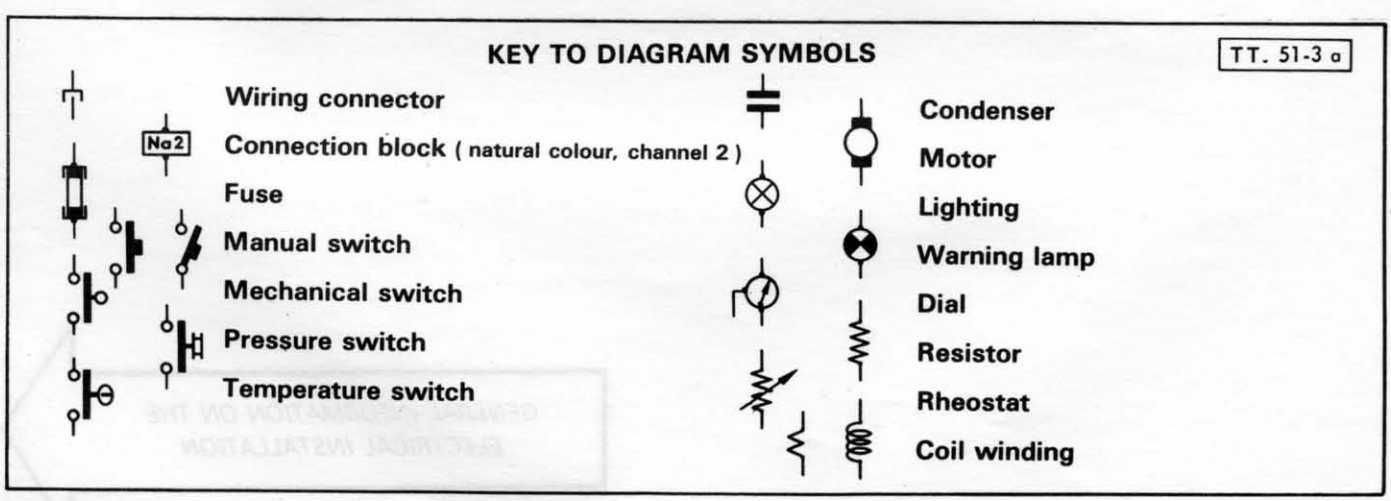
If necessary, both indications can be given at the same time : F.Ve Mv = green lead with mauve sleeve.

The leads carrying no identification mark cannot be mistaken.

The marks identifying the "exploded" harness connecting blocks on the circuit diagram indicate the colour of the considered connection block and the channel No. For example : Na 4 : *colour of connection block : Natural; channel No. : 4.*

Two harnesses can sometimes be joined by two connection blocks *of the same colour,* but carrying a different number of channels. In that case, to avoid all possible mistakes, *the smaller connection block* id identified by indicating the total number of channels, in addition to other information concerning the colour of the connector and the channel number.

For example : NA3 / 4 V *Colour of connection block : Natural.*
channel No. 3
Total number of channels in the connection block : 4



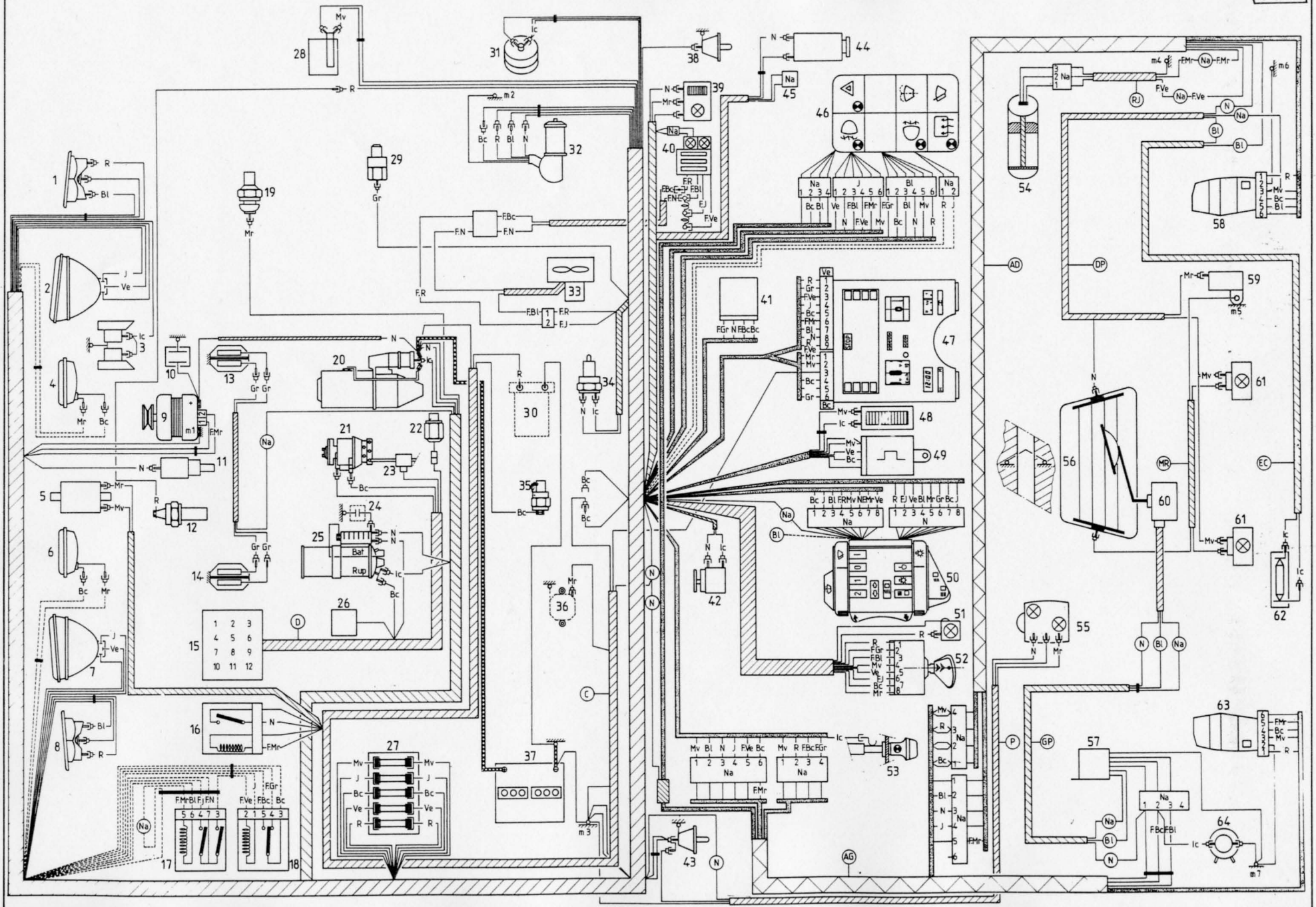
OPERATION
GX. 510-00

LEFT-HAND DRIVE → *7/1980*

ARRANGEMENT OF THE ELECTRICAL INSTALLATION

BULB TABLE

Use	Quantity	Base	Voltage	Power	International standard
Main beam - dipped beam	2	P.43 t.38	12 V	60/55 W	H4
Front fog light *(GSA X3)*	2	X 511	12 V	55 W	H2
Front and rear direction indicators Reversing light Rear fog lights	4 2 2	BA. 15 s	12 V	21 W	P. 25/1
Stop and tail light	2	BAY. 15 d	12 V	21/5 W	P. 25/2
Side light Number plate light	2 2	BA. 15 s	12 V	5 W	R. 19/5
Roof light *(no sliding roof)*	2	BA. 15 s	12 V	10 W	R. 19/10
Roof light *(with sliding roof)*	1	Festoon	12 V	5 W	C. 11
♦ Lateral spots	2			7 W	
Door ledge light Boot light	1 1	Festoon	12 V	5 W	C. 11
Anti-theft lock light Odometer light	1 1	BA. 9 s	12 V	2 W	T. 8/2
Drum light ♦ Clock light *(Club)*	2 1	BA. 9 s	14 V	4 W	T. 8/4
Fuel gauge indicator light	2	Wedge base dia. 10	12 V	2 W	
Silhouette light Miscellaneous lamps Heater-ventilation control light	2 12 2	Wedge base dia. 5	12 V	1.2 W	



FUSE TABLE

Supply to	Colour	Rating	Circuit protected
Battery « + » (via anti-theft lock)	Mauve	16 A	Regulator power supply Reversing lights Idle cut-off Rear window heater and warning lamp Heater-ventilation unit
Battery « + »			Clock power supply Hazard warning lights and warning lamp
Battery « + » (via anti-theft lock)	Red	16 A	Dashboard power supply : - Battery charge, brake pad wear, torque converter oil temperature (option), engine oil temperature, fuel minimum level, engine oil pressure, brake fluid pressure and level, and emergency STOP lamps. - Fuel gauge indicator - Tachometer Drum and silhouette light Choke warning lamp (on choke control) Windscreen wipers and windscreen washer pump Horn Rear window wiper and washer pump Torque converter relay power supply (option) Direction indicators and warning lamp
Switch block (satellite)	Green	10 A	Tail and sidelight warning lamp Rear fog light relay power supply Tail and sidelights Number plate light Clock, odometer and fuel gauge indicator light Heater-ventilation control light Anti-theft lock light
Switch block	Yellow	10 A	Rear fog lights and warning lamp
Battery « + »	White	10 A	Radio supply connector (option) Stop lights Boot light Door ledge light Roof light Cigar-lighter

WIRING HARNESS LIST

No marking	: Front	**AD**	: Rear light	**RJ**	: Gauge rheostat
C	: Torque converter *(opt.)*	**P**	: Roof light	**EC**	: Boot light
D	: Electronic diagnosis	**GP**	: Left rear door	**MR**	: Rear earth connection
AG	: Rear left	**DP**	: Right rear door		

PARTS LIST

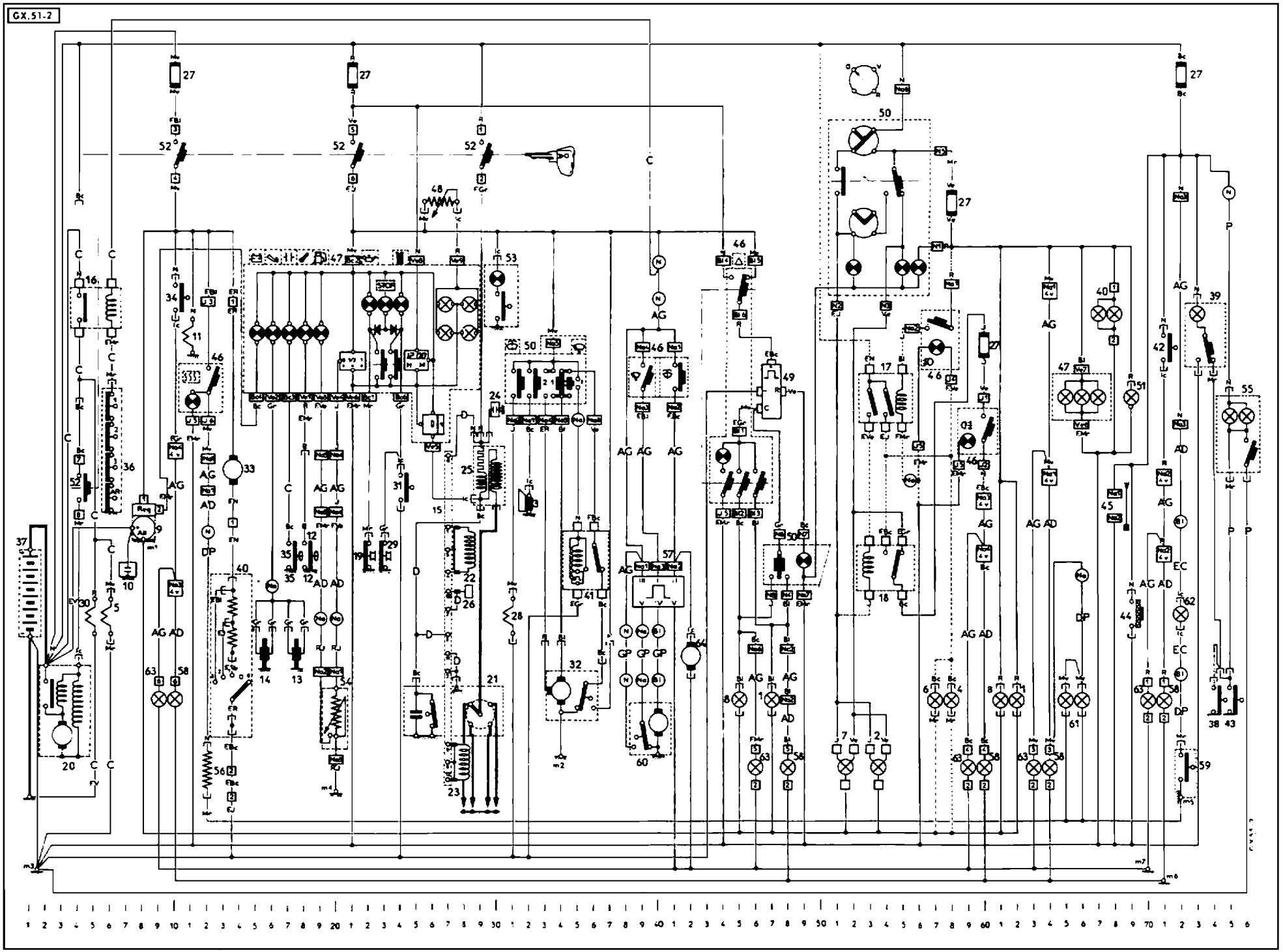
No.	Description	Position
1	Right side light :	62
	Right front direction indicator :	47
2	Right main and dipped beam :	53-54
3	Horn :	32
4	Right front fog light *(X3)* :	58
5	Compensated idle solenoid valve *(torque converter)*	6
6	Left front fog light *(X3)* :	57
7	Left main and dipped beam :	51-52
8	Left side light :	61
	Left front direction indicator :	45
9	Alternator with regulator :	8
10	Radio suppressor capacitor :	7
11	Idle cut-off :	11
12	Engine oil thermal switch :	18
13	Right front brake block :	17-18
14	Left front brake block :	15-16
15	12-pin electronic test connector :	27
16	Torque converter relays *(option)* :	4 to 6
17	Front fog light relays *(X3)* :	53 to 55
18	Rear fog light cut-out relays *(X3)* :	53 to 55
19	Engine oil pressure switch :	22
20	Starter :	2 to 4
21	Distributor :	25 to 30
22	Top dead centre sensor :	28
23	Cylinder No. 1 sensor :	28
24	Radio suppressor capacitor :	30
25	Ignition coil :	29-30
26	HV transducer connector :	28
27	Fuse box :	10-21-58-60-72
28	Windscreen wiper pump :	31
29	Hydraulic pressure switch :	23
30	Clutch solenoid *(torque converter)* :	5
31	Hydraulic fluid level contactor :	24
32	Windscreen wiper motor :	34 to 36
33	Air blower :	13-14
34	Reversing light switch :	10
35	Torque converter oil thermal switch :	17
36	Gearbox switch box *(torque converter)* :	6
37	Battery :	1
38	Right door switch contact :	75
39	Door ledge light :	73-74
40	Air blower control and light :	13-67-68
41	Windscreen wiper timer unit :	35-36
42	Stoplamp switch :	71
43	Left door switch contact :	74
44	Cigar-lighter :	69
45	Radio power supply connector *(option)* :	58
46	**Keyboard selector :**	
	Rear window heater switch :	12
	Hazard warning light switch :	44 to 46

No.	Description	Position
46	Front fog light switch *(X3)* :	57-58
	Rear fog light switch :	60
	Rear wiper switch (intermittent) :	39
	Rear wiper and washer switch with timer unit :	41
47	**Instrument and warning lamp cluster :**	
	- Battery charge :	15
	- Front brake wear warning lamp :	16
	Torque converter oil warning lamp *(option)*...	17
	Engine oil temperature warning lamp :	18
	- Fuel minimum level warning lamp :	19
	- Engine oil pressure warning lamp :	22
	- « Emergency STOP » light warning lamp :	23
	- Hydraulic fluid level warning lamp :	24
	- Fuel gauge indicator :	21
	- Clock and light :	25-65
	- Tachometer :	26
	- Silhouette light :	27
	- Drum light :	28
	- Odometer light :	66
	- Fuel gauge indicator light :	67
48	Drum and silhouette lighting rheostat :	26
49	Direction indicators :	47
50	**Switch block :**	
	- Front wiper and washer selector :	31 to 35
	- Horn control :	32
	- Direction indicator and warning lamp switch :	47 to 49
	- Vehicle light selector and warning flash control	51 to
	- Main beam-dipped-tail side light warning lamp	52-55-56
51	Ignition keyhole switch light :	69
52	Anti-theft lock switch :	4-10-21-29
53	Choke control and warning lamp :	30
54	Fuel gauge rheostat :	20
55	Roof light :	75-76
56	Rear window heater :	12
57	Rear wiper timer unit :	39 to 41
58	**Right rear light block :**	
	- Stop and tail :	71-64
	- Direction indicator :	48
	- Reversing :	10
	- Fog :	60
59	Boot light contact switch :	72
60	Rear wiper motor :	39-40
61	Number plate lights :	65-66
62	Boot light :	72
63	**Left rear light block :**	
	- Stop and tail :	70-63
	- Direction indicator :	46
	- Reversing :	9
	- Fog :	59
64	Rear washer pump :	42

EARTH CONNECTION LIST

m1	Alternator earthing : 8	m5	Boot light switch earthing : 72
m2	Right bonnet hinge earthing : 34	m6	Right rear boot earthing : 71
m3	Left bonnet hinge earthing : 2	m7	Left rear boot earthing : 70
m4	Right rear earth connection under bumper : 20		

LIST OF WIRING HARNESSES (see page 5) ..... *X3 vehicles*


GX.51-2

OPERATION GX. 510-00

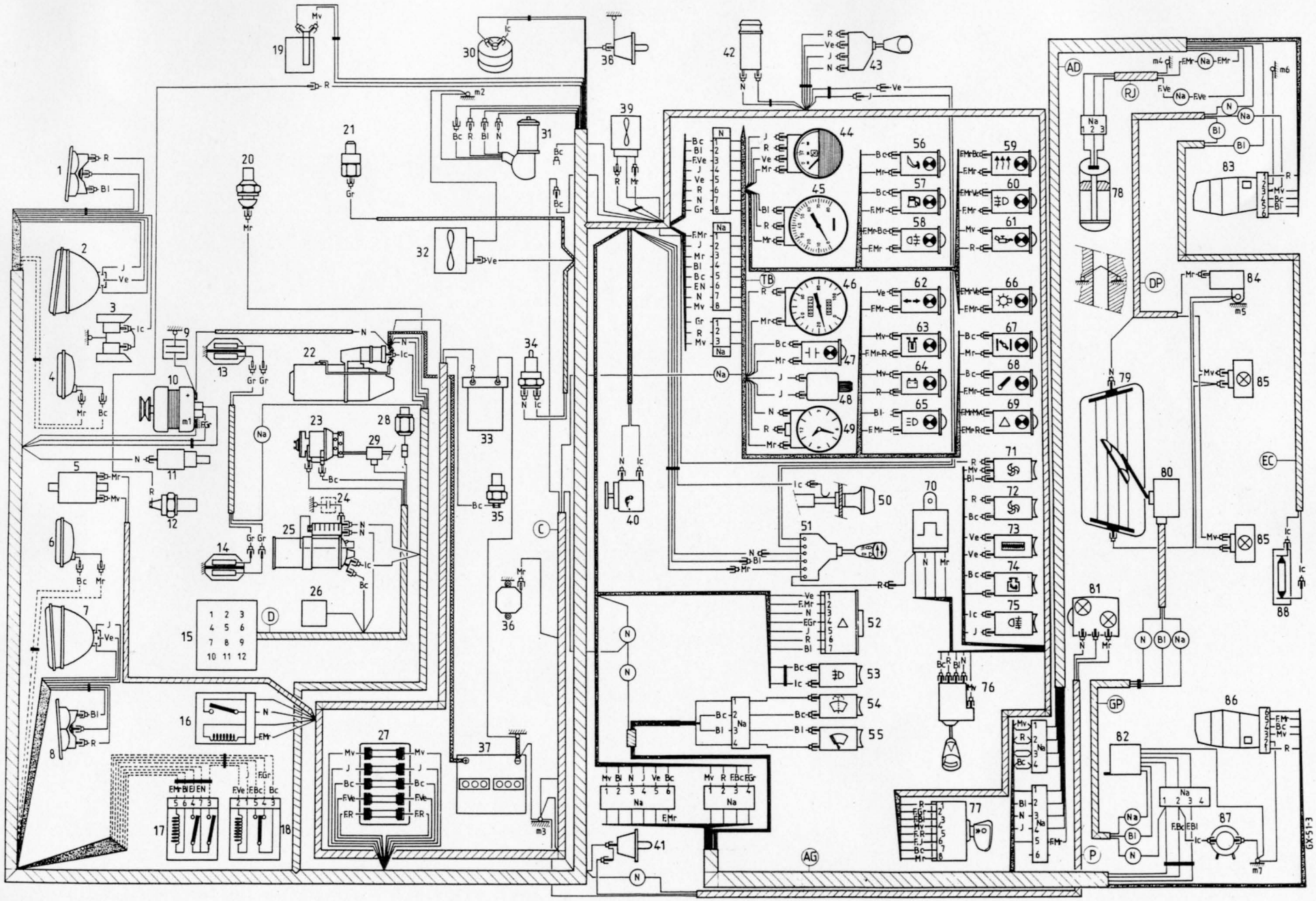
All GSA vehicles (⟶ *7/1980*)

RIGHT-HAND DRIVE

ARRANGEMENT OF THE ELECTRICAL INSTALLATION

BULB TABLE

Use	Quantity	Base	Voltage	Power	International standard
Main beam - dipped beam	2	P.43 t.38	12 V	60/55 W	H4
Front fog lamp *(X3)*	2	X 511	12 V	55 W	H2
Direction indicators, front and rear Reversing lamps Rear fog lamps	4 2	BA. 15 s	12 V	21 W	P. 25/1
Stop and tail light	2	BAY. 15 d	12 V	21/5 W	P. 25/2
Sidelamps Number plate lamp	2 2	BA. 15 s	12 V	5 W	R. 19/5
Interior lamp *(with no sun-roof)*	2	BA. 15 s	12 V	10 W	R. 19/10
Interior lamp *(with sun-roof)*	1	Festoon	12 V	5 W	C. 11
Lateral spots	2			7 W	
Boot lamp	1	Festoon	12 V	5 W	C.11
Lamps for : - Tachometer - Speedometer - Fuel gauge sender unit - Clock	 1 1 1 1	BA. 9 s	12 V	2 W	T. 8/2
Warning lamps for : - Direction indicators - Headlamps - Side and tail lamps - Heated rear window - Choke - Rear fog lamp - Front fog lamp - Min. fuel level	 1 1 1 1 1 1 1 1	BA. 9 s	24 V	4 W	T. 8/4
Warning lamps for : - Battery charge - Hazard warning - Brake pad wear - Engine oil pressure - Hydraulic pressure and level - Engine oil temperature - Oil temperature *(optional torque converter)*	 1 1 1 1 1 1 1	BA. 9 s	12 V	4 W	T. 8/4



GX 51-3

FUSE TABLE

Supply to	Colour	Rating	Circuit protected
Battery « + » (via anti-theft lock)	Mauve	16 A	Regulator power supply - Reversing lamps - Idle cut-off Heated rear window and warning lamp - Fresh air blower
Battery « + »	Red		Hazard warning lamps and warning lamp - clock
Battery « + » (via anti-theft lock)		16 A	Motor for windscreen wiper - Windscreen washer pump - Motor for rear screen wiper - Rear screen washer pump - Warm air blower - Fuel gauge sender unit - Direction indicators and warning lamp. *Warning lamps for :* oil pressure, engine oil temperature, torque converter oil temperature *(Optional),* brake pad wear, hydraulic pressure and level, min. fuel level, choke.
Battery « + »	White	10 A	Interior lamp - Cigar lighter - Stoplamps - Boot lamp
Lighting switch	Yellow	10 A	Rear fog lamps and warning lamp
	Green	10 A	*Lighting for :* clock, tachometer, speedometer, fuel gauge sender unit. Side and tail lamps, and warning lamp Number plate lamp

DESCRIPTION OF WIRING HARNESSES

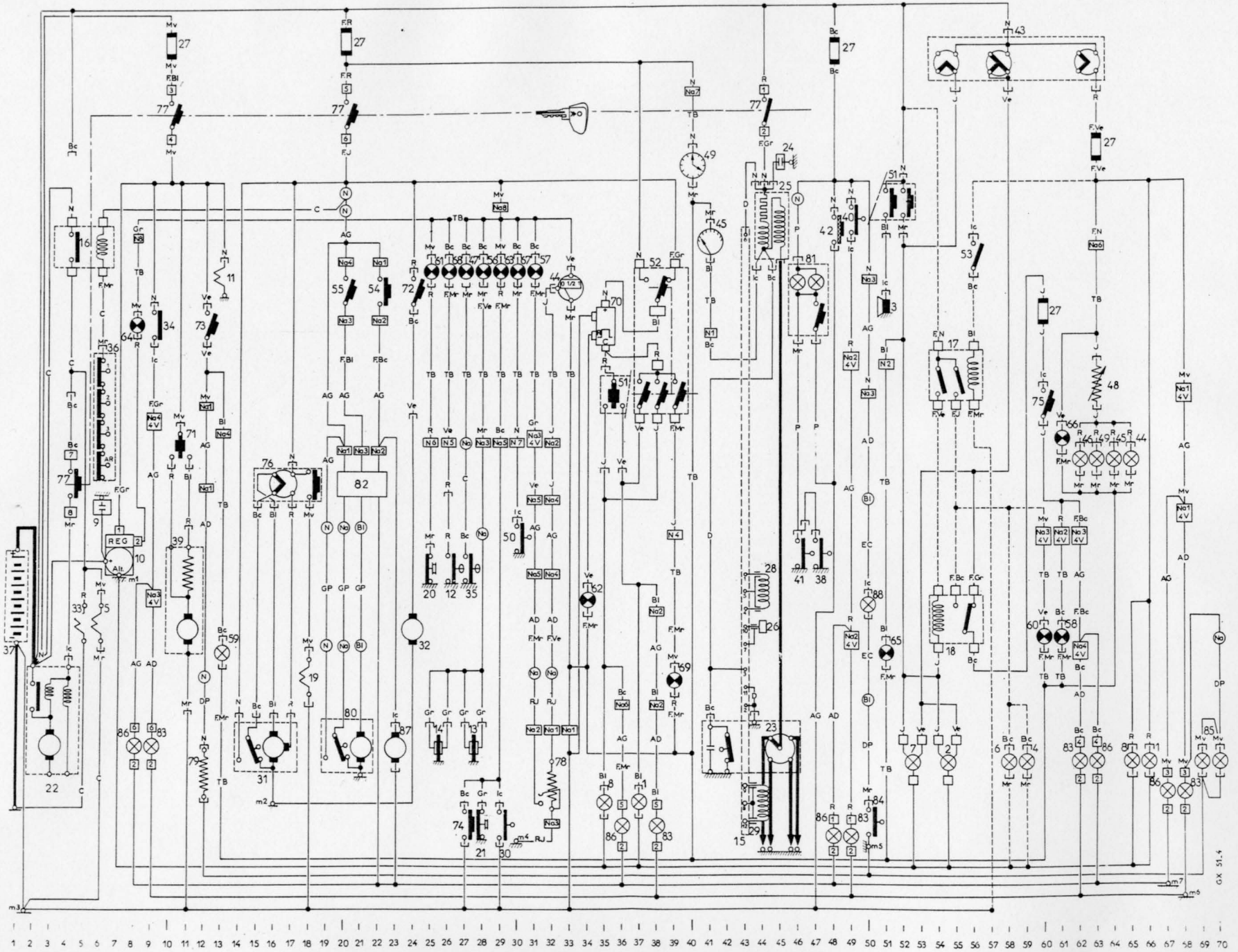
No identification mark: Front		**AD** : Rear, R.H.		**RJ** : Fuel gauge rheostat	
C	: Converter *(optional)*	**P**	: Interior lamp	**EC** : Boot lighting	
D	: Diagnosis	**GP**	: Rear door, L.H.	**TB** : Dashboard	
AG	: Rear, L.H.	**DP**	: Rear door, R.H.	– – – – – – – –	GSA X3

LIST OF COMPONENTS

No.	Description	Position
1	Front sidelamp, R.H. :	66
	Direction indicator, R.H. :	37
2	Headlamp main and dipped beams, R.H. :	54-55
3	Horn :	51
4	Front fog lamp, R.H. :	59
5	Electrovalve for compensated idling *(converter)*	6
6	Front fog lamp, L.H. :	58
7	Headlamp main and dipped beams,L.H. :	52-53
8	Front sidelamp, L.H. :	65
	Direction indicator, L.H. :	35
9	Suppressor capacitor *(optional)* :	6
10	Alternator with regulator :	7
11	Idling damper :	13
12	Engine oil thermal switch :	26
13	Front brake unit,R.H. :	27-28
14	Front brake unit, L.H. :	25-26
15	Socket for diagnosis (12-pin) :	43
16	Relay for torque converter *(optional)* :	4 to 6
17	Relay for front fog lamps :	54 to 56
18	Relay for rear fog lamps *(X3)* :	54 to 56
19	Windscreen washer pump :	18
20	Engine oil pressure switch :	25
21	Hydraulic fluid pressure switch :	28
22	Starter :	2 to 4
23	Distributor :	41 to 46
24	Suppressor capacitor *(optional)* :	45
25	Ignition coil :	44-45
26	H.T. sensor :	44
27	Fuse box :	10-20-48-60-63
28	TDC sensor :	44
29	Sensor for No. 1 cylinder :	44
30	Contact for hydraulic fluid level :	29
31	Windscreen wiper motor :	14 to 17
32	Warm air blower :	24
33	Relay for torque converter *(optional)* :	5
34	Reversing lamp switch :	9
35	Converter oil temperature switch *(optional*	
36	Control switch unit on gearbox *(converter)* :	6
37	Battery :	1
38	Door pillar switch, R.H. :	47
39	Cold air blower :	10-11
40	Stop lamp switch :	49
41	Door pillar switch, L.H. :	46
42	Cigar lighter :	48
43	Lighting switch :	54 to 63
44	Fuel gauge receiver and lighting :	33-65
45	Tachometer and lighting :	41-64
46	Speedometer (lighting) :	62
47	Warning lamp for torque converter *(optional)* :	27
48	Rheostat for dashboard lighting :	63
49	Clock and lighting :	40-63
50	Choke control :	30
51	Signal lighting switch :	35-36-51-52
52	Hazard warning switch :	37 to 39
52	Front fog lamp switch :	56
54	Switch for rear window washer/wiper :	22
55	Rear window washer :	20
56	Brake pad wear warning lamp :	28
57	Min. fuel warning lamp :	31
58	Rear fog lamp warning lamp :	61
59	Heated rear window warning lamp :	13
60	Front fog lamp warning lamp :	60
61	Oil pressure warning lamp :	25
62	Direction indicator warning lamp :	34
63	Warning lamp for hydraulic fluid level and pressure :	29
64	Battery charge warning lamp :	8
65	Warning lamp for headlamps :	51
66	Warning lamp for sidelamps :	61
67	Choke warning lamp :	30
68	Engine oil temperature warning lamp :	26
69	Hazard warning lamp :	39
70	Flasher unit :	35
71	Cold air blower switch :	10-11
72	Warm air blower switch :	24
73	Heated rear window switch :	12
74	Test button for hydraulic pressure warning lamp :	27
75	Rear fog lamp switch :	60
76	Rear window wiper/washer switch :	15 to 16
77	Anti-theft switch :	4-10-20-44
78	Fuel gauge rheostat :	32
79	Heated rear window :	12
80	Rear window wiper motor :	19 to 21
81	Interior lamp :	46-47
82	Timer unit for rear window wiper :	2 to 22
83	Rear lamp cluster, R.H. :	
	- Stoplamp and tail lamp :	49-68
	- Direction indicator :	38
	- Reversing lamp :	9
	- Fog lamp :	62
84	Boot lamp switch :	50
85	Rear number plate lamp :	69-70
86	Rear lamp cluster,L.H. :	
	- Stoplamp and tail lamp :	48-67
	- Direction indicator :	36
	- Reversing lamp :	8
	- Fog lamp :	63
87	Rear window washer pump :	23

LIST OF EARTHING POINTS

m1	Earth on alternator : 7	m5	Earth on boot lamp switch : 50
m2	Earth on bonnet R.H. hinge : 16	m6	Earth inside of boot,R.H. : 68
m3	Earth on bonnet L.H. hinge : 1-2	m7	Earth inside of boot, L.H. : 67
m4	Earth below R.H. rear bumper : 30		



GX 51-4

OPERATION
GX. 510-00 a

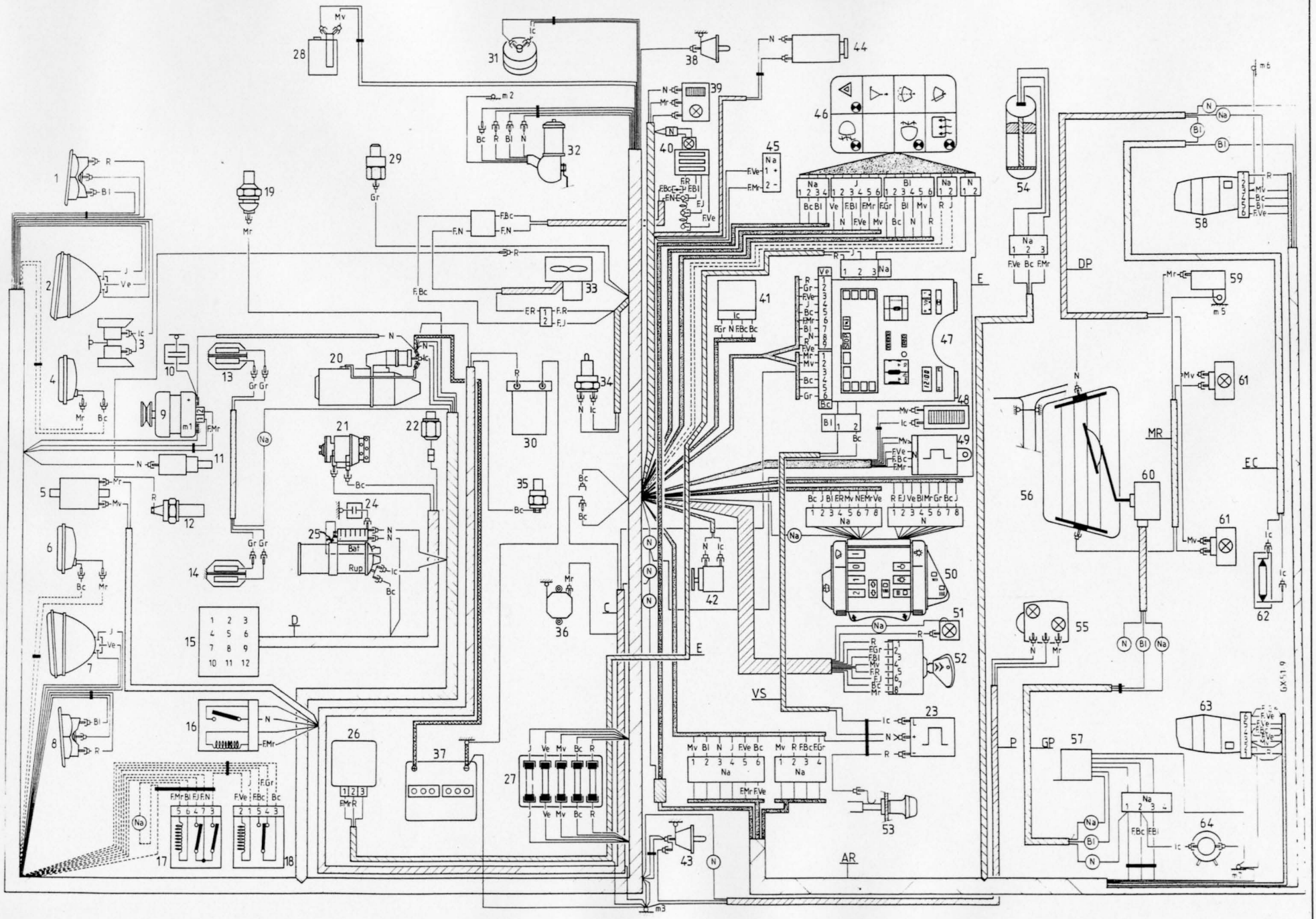
ALL GSA VEHICLES *7/1980 → 7/1981*

LEFT-HAND DRIVE

ARRANGEMENT OF THE ELECTRICAL INSTALLATION

BULB TABLE

Use	Quantity	Base	Voltage	Power	International standard
Main beam - dipped beam *(except 1130)*	2	P.43 t.38	12 V	60/55 W	H4
Main beam-dipped beam *(1130)*	2	P. 45 t. 41	12 V	45/40 W	
Front fog light *(GSA X3)*	2	X 511	12 V	55 W	H2
Front and rear direction indicators Reversing lamps Rear fog lamps	4 2 2	BA. 15 s	12 V	21 W	P. 25/1
Stoplamps and tail lamps	2	BAY. 15 d	12 V	21/5 W	P. 25/2
Sidelamps Number plate lamp	2 2	BA. 15 s	12 V	5 W	R. 19/5
Interior lamp *(with no sun-roof)*	2	BA. 15 s	12 V	10 W	R. 19/10
Interior lamp *(with sun-roof)*	1	Festoon	12 V	5 W	C. 11
Lateral spots	2			7 W	
Door ledge light	1	Festoon	12 V	5 W	C. 11
Boot lamp	1				
Ignition keyhole lamp Odometer lamp	1 1	BA. 9 s	12 V	2 W	T. 8/2
Drum lamp Clock lamp *(Club)*	2 *1*	BA. 9 s	14 V	4 W	T. 8/4
Fuel gauge indicator light	2	Wedge base dia. 10	12 V	2 W	
Silhouette lamp Miscellaneous warning lamps Heater control lamp - ventilation	2 14 2	Wedge base dia. 5	12 V	1.2 W	



GX. 51-9

FUSE TABLE

Supply to	Colour	Rating	Circuit protected
Battery « + » (via anti-theft lock)	Mauve	16 A	Regulator power supply Reversing lamps Idle cut-off Heated rear window and warning lamp Heater unit - Ventilation
Battery « + »	Red	16 A	Clock power supply Hazard warning lamps and warning lamp
Battery « + » (via anti-theft lock)			Dashboard power supply : - Warning lamps for : battery charge, brake pad wear, torque converter oil temperature *(optional),* engine oil temperature, min. fuel level, engine oil pressure, brake fluid pressure and level, « emergency STOP » signal - Fuel gauge sender unit - Tachometer Lighting of drums and silhouette Choke warning lamp (on rod) Windscreen wiper and washer pump Horn Rear window wiper and washer pump Torque converter relay energizing *(optional)* Direction indicators and warning lamp - Econoscope
Switch block (satellite)	Green	10 A	Warning lamp for side and tail lamps Reduction of lighting for digit clock Energizing for front fog lamps Side and tail lamps Lighting for number plate Lighting for clock, odometers, fuel gauge sender unit Lighting for heater unit - Ventilation Anti-theft keyhole lighting
Switch block	Yellow	10 A	Rear fog lamps and warning lamp
Battery « + »	White	10 A	Radio power supply terminal *(optional)* Stoplamps Boot lamp Lighting for door ledge Interior lamp Cigar-lighter

DESCRIPTION OF WIRING HARNESSES

No marking	: Front	**AR**	: Rear	**VS**	: Choke warning lamp
C	: Converter *(optional)*	**P**	: Interior lamp	**EC**	: Boot lamp
D	: Diagnosis	**GP**	: Rear door, L.H.	**MR**	: Rear earthings
E	: Econoscope	**DP**	: Rear door, R.H.		

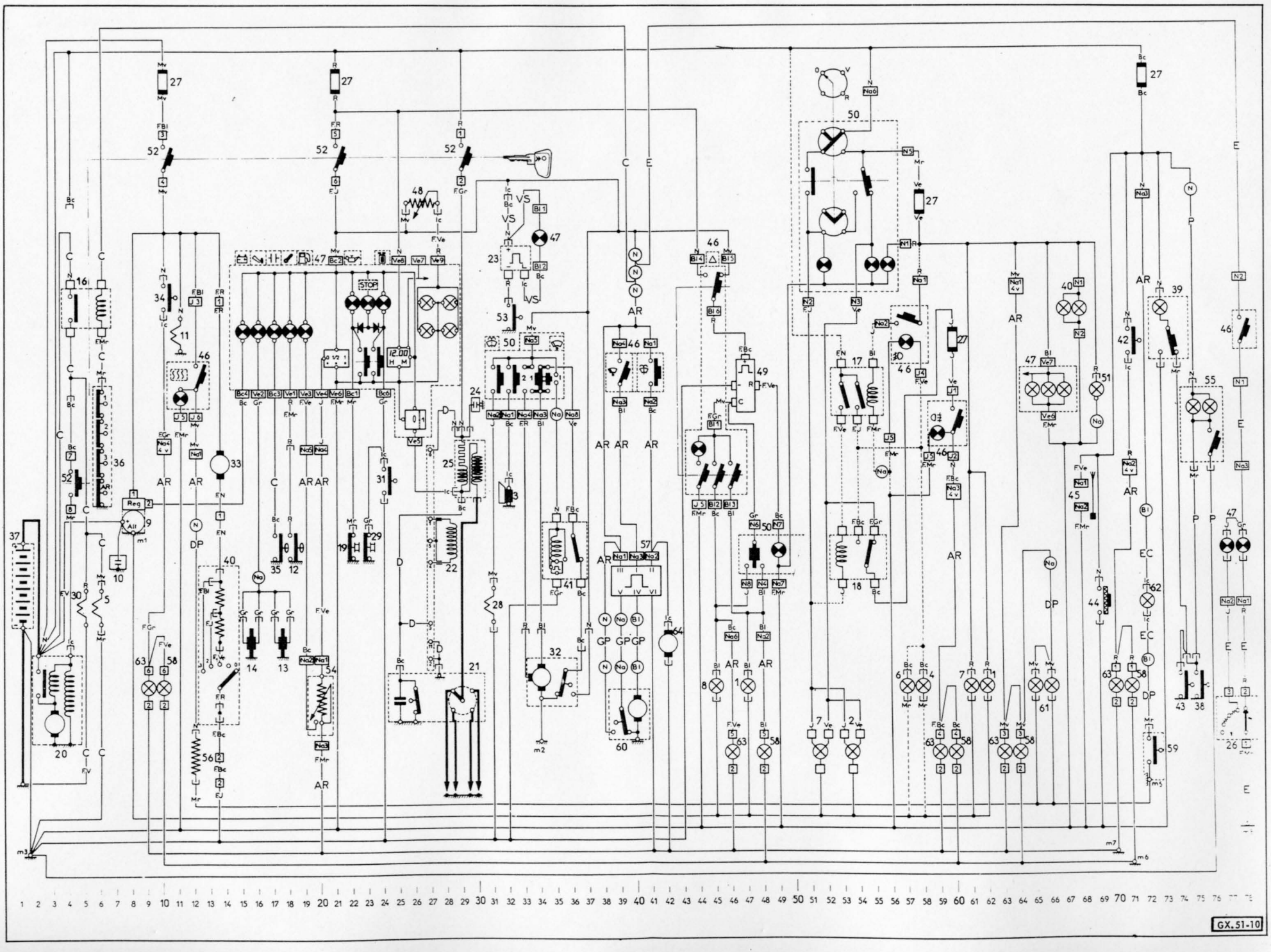
LIST OF COMPONENTS

No.	Description	Position
1	Front sidelamp, R.H.	62
	Front direction indicator,RH :	47
2	Headlamp main and dipped beams, R.H. :	53-54
3	Horn :	32
4	Front fog lamp , R.H. *(X3)* :	58
5	Electrovalve for compensated idling *(t. converter)*	6
6	Front fog lamp ,LH *(X3)* :	57
7	Headlamp main and dipped beams, L.H. :	51-52
8	Front sidelamp, L.H.	61
	Direction indicator, L.H. :	45
9	Alternator with regulator :	8
10	Suppressor capacitor :	7
11	Idling damper :	11
12	Engine oil temperature switch :	18
13	Front brake unit, R.H. :	17-18
14	Front brake unit, L.H. :	15-16
15	Socket for diagnosis (12-pin) :	27
16	Relay for torque converter *(optional)*	4 to 6
17	Relay for front fog lamps *(X3)* :	53 to 55
18	Relay for rear fog lamps *(X3)* :	53 to 55
19	Engine oil pressure switch :	22
20	Starter :	2 to 4
21	Distributor :	25 to 30
22	TDC sensor :	28
23	Choke warning lamp unit	32-33
24	Suppressor capacitor :	30
25	Ignition coil :	29-30
26	Econoscope sensor :	78
27	Fuse box :	10-21-58-60-72
28	Windscreen washer pump :	31
29	Hydraulic pressure switch :	23
30	Declutching solenoid *(converter)* :	5
31	Contact for hydraulic fluid level :	24
32	Windscreen wiper motor :	34 to 36
33	Air blower :	13-14
34	Reversing lamp switch :	10
35	Converter oil temperature switch :	17
36	Control switch unit on gearbox *(converter)* :	6
37	Battery :	1
38	Door-pillar switch, R.H. :	75
39	Door ledge lamp :	73-74
40	Blower control and lamp :	13-67-68
41	Windscreen wiper timer unit :	35-36
42	Stoplamp switch :	71
43	Door pillar switch, L.H. :	74
44	Cigar-lighter :	69
45	Connector for radio power supply *(optional)* :	68
46	**Switches on keyboard :**	
	Heated rear window :	12
	Hazard warning lamp :	44 to 46
	Front fog lamp *(X3)* :	57-58
	Rear fog lamp *(X3)* :	60

No.	Description	Position
46	Rear window wiper, intermittent :	39
cont)	Timer unit for rear window wiper/washer :	41
	Econoscope :	78
47	**Instrument cluster :**	
	Warning lamps for :	
	- Battery charge :	15
	- Front brake pad wear :	16
	- Torque converter oil *(optional)* :	17
	- Engine oil temperature :	18
	- Min. fuel level :	19
	- Engine oil pressure :	22
	- « Emergency STOP » :	23
	- Hydraulic fluid level :	24
	- Fuel gauge sender unit :	21
	- Clock and lighting :	25-65
	- Tachometer :	26
	- Silhouette lighting :	27
	- Drum lighting :	28
	- Odometer lighting :	66
	- Lighting for fuel gauge sender unit :	67
	- Warning lamp for choke :	34
	- Warning lamps for econoscope : Yellow :	77
	: Orange :	78
48	Rheostat for lighting of drum and silhouette :	26
49	Flasher unit :	47
50	**Switch unit :**	
	- Switch for windscreen wiper/washer :	31 to 35
	- Switch for horn :	32
	- Switch for direction indicators and warning lamp	47 to 49
	- Switch for lighting and flasher :	51 to 56
	- Warning lamps for headlamp main beam, dipped beam and side/tail lamps :	52-55-56
51	Ignition keyhole lamp :	69
52	Anti-theft switch :	4-10-21-29
53	Choke control rod :	32
54	Rheostat for fuel gauge :	20
55	Interior lamp :	75-76
56	Heated rear window :	12
57	Timer unit for rear window wiper :	39 to 41
58	**Rear lamp cluster, R.H. :**	
	- Stoplamp and tail lamp :	71-64
	- Direction indicator :	48
	- Reversing lamp :	10
	- Fog lamp :	60
59	Switch for boot lamp :	72
60	Motor for rear window wiper :	39-40
61	Number plate lamps :	65-66
62	Boot lamp :	72
63	**Rear lamp cluster, L.H.**	
	- Stoplamp and tail lamp :	70-63
	- Direction indicator :	46
	- Reversing lamp :	9
	- Fog lamp :	59
64	Rear window washer pump :	42

LIST OF EARTHING POINTS

m1	Earth on alternator : 8	m5	Earth on boot lamp switch : 72
m2	Earth on bonnet R.H. hinge : 34	m6	Earth inside of boot,R.H.: 71
m3	Earth on bonnet L.H. hinge : 2	m7	Earth inside of boot,L.H : 70



GX.51-10

OPERATION
GX. 510-00 a

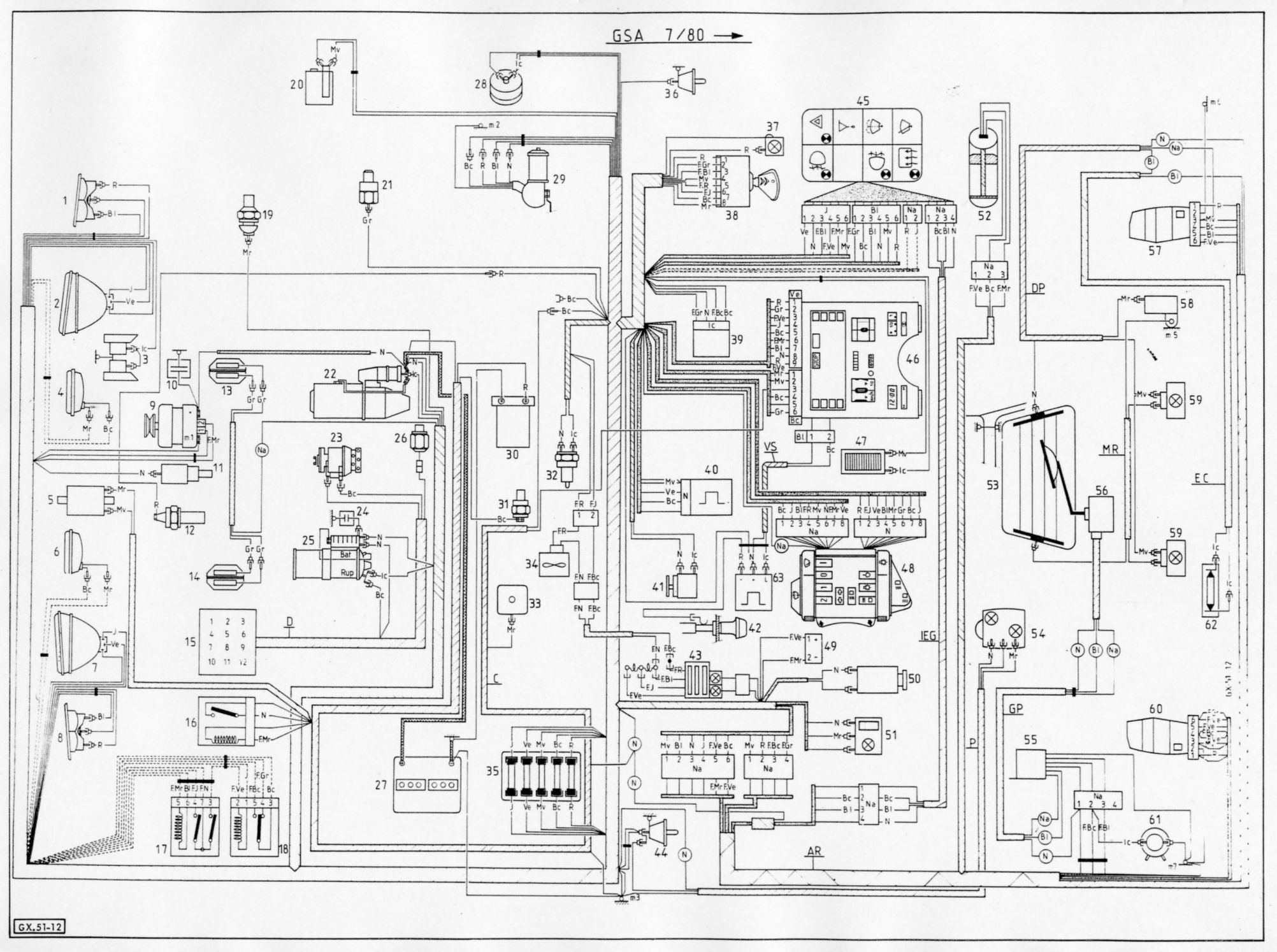
ALL GSA VEHICLES *7/1980 ⟶ 7/1981*

RIGHT-HAND DRIVE

ARRANGEMENT OF THE ELECTRICAL INSTALLATION

BULB TABLE

Use	Quantity	Base	Voltage	Power	International standard
Main beam - dipped beam *(except 1130)*	2	P.43 t.38	12 V	60/55 W	H4
Main beam-dipped beam *(1130)*	2	P. 45 t. 41	12 V	45/40 W	
Front fog light *(GSA X3)*	2	X 511	12 V	55 W	H2
Front and rear direction indicators Reversing lamps Rear fog lamps	4 2 2	BA. 15 s	12 V	21 W	P. 25/1
Stoplamps and tail lamps	2	BAY. 15 d	12 V	21/5 W	P. 25/2
Sidelamps Number plate lamp	2 2	BA. 15 s	12 V	5 W	R. 19/5
Interior lamp *(with no sun-roof)*	2	BA. 15 s	12 V	10 W	R. 19/10
Interior lamp *(with sun-roof)*	1	Festoon	12 V	5 W	C. 11
Lateral spots	2			7 W	
Door ledge lamp	1	Festoon	12 V	5 W	C. 11
Boot lamp	1				
Ignition keyhole lamp Odometer lamp	1 1	BA. 9 s	12 V	2 W	T. 8/2
Drum lamp Clock lamp *(Club)*	2 1	BA. 9 s	14 V	4 W	T. 8/4
Fuel gauge sender unit	2	Wedge base dia. 10	12 V	2 W	
Silhouette lamp Miscellaneous warning lamps Heater control lamp - ventilation	2 14 2	Wedge base dia. 5	12 V	1.2 W	


GSA 7/80 →
DP
MR
EC
GP
AR
IEG
VS
D
C
P
GX.51-12

FUSE TABLE

Supply to	Colour	Rating	Circuit protected
Battery « + » (via anti-theft lock)	Mauve	16 A	Regulator power supply Reversing lamps Idle cut-off Heated rear window and warning lamp Heater unit - Ventilation
Battery « + »			Clock power supply Hazard warning lamps and warning lamp
Battery « + » (via anti-theft lock)	Red	16 A	Dashboard power supply : - Warning lamps for : battery charge, brake pad wear, torque converter oil temperature *(optional)*, engine oil temperature, min. fuel level, engine oil pressure, brake fluid pressure and level, « emergency STOP » signal - Fuel gauge sender unit - Tachometer Lighting of drums and silhouette Choke warning lamp (on rod) Windscreen wiper and washer pump Horn Rear window wiper and washer pump Torque converter relay energizing *(optional)* Direction indicators and warning lamp
Switch block (satellite)	Green	10 A	Warning lamp for side and tail lamps Reduction of lighting for digit clock Energizing for front fog lamps Side and tail lamps Lighting for number plate Lighting for clock, odometers, fuel gauge sender unit Lighting for heater unit - Ventilation Anti-theft keyhole lighting
Switch block	Yellow	10 A	Rear fog lamps and warning lamp
Battery « + »	White	10 A	Radio power supply terminal *(optional)* Stoplamps Boot lamp Lighting for door ledge Interior lamp Cigar-lighter

DESCRIPTION OF WIRING HARNESSES

No marking	: Front	**AR**	: Rear	**VS**	Choke warning lamp
C	: Converter *(optional)*	**P**	: Interior lamp	**EC**	: Boot lamp
D	: Diagnosis	**GP**	: Rear door, L.H.	**MR**	: Rear earthings
I E G	: Intermediate rear window wiper	**DP**	: Rear door, R.H.	_ _ _ _ _	: *X3 only*

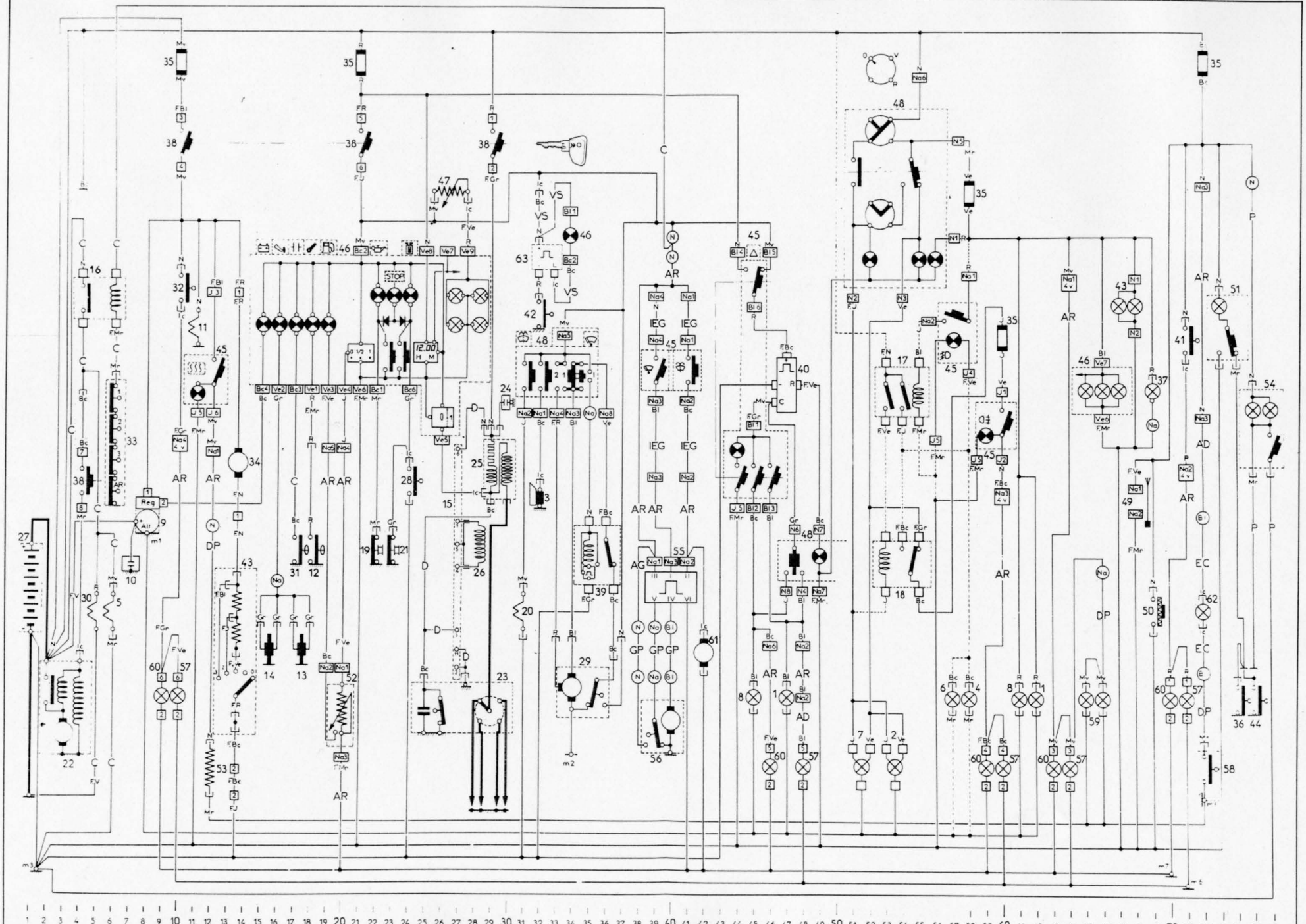
LIST OF COMPONENTS

No.	Description	Position
1	Front sidelight, R.H :	62
	Direction indicator, R.H. :	47
2	Headlamp main and dipped beams, R.H. :	53-54
3	Horn :	32
4	Front fog lamp , R.H. *(X3)* :	58
5	Electrovalve for compensated idling *(t. converter)*	6
6	Left front fog lamp *(X3)* :	57
7	Headlap main and dipped beams, L.H. :	51-52
8	Front sidelamp, L.H.	61
	Direction indicator, L.H. :	45
9	Alternator with regulator :	8
10	Suppressor capacitor :	7
11	Idling damper :	11
12	Engine oil temperature switch :	18
13	Front brake unit, R.H. :	17-18
14	Front brake unit, L.H. :	15-16
15	Socket for diagnosis (12-pin) :	27
16	Relay for torque converter *(optional)*	4 to 6
17	Relay for front fog lamps *(X3)* :	53 to 55
18	Reversing lamp cut-off relay *(X3)* :	53 to 55
19	Engine oil pressure switch :	22
20	Windscreen washer pump :	31
21	Hydraulic fluid pressure switch :	23
22	Starter :	2 to 4
23	Distributor :	25 to 30
24	Suppressor capacitor :	30
25	Ignition coil :	29-30
26	TDC sensor :	28
27	Battery :	1
28	Contact for hydraulic fluid level :	24
29	Windscreen wiper motor :	34 to 36
30	Declutching solenoid *(converter)* :	5
31	Oil temperature switch *(converter)* :	17
32	Reversing lamp switch :	10
33	Reversing lamp switch :	10
34	Switch on gearbox *(converter)* :	6
34	Air blower :	13-14
35	Fuse box :	10-21-58-60-72
36	Door pillar switch, R.H. :	74
37	Ignition switch, R.H. :	69
38	Anti-theft ignition switch :	4-10-21-29
39	Windscreen wiper timer :	35-36
40	Flasher unit :	47
41	Braking light switch :	71
42	Choke knob :	32
43	Blower and lighting switch :	13-67-68
44	Door pillar switch, L.H. :	75
45	**Switches on keyboard :**	
	Rear-window heating :	12
	Hazard warning lamp :	44 to 46
	Front fog lamp *(X3)* :	57-58

No.	Description	Position
	- Rear fog lamps :	60
	- Rear window wiper, intermittent :	39
	- Rear window washer/wiper timed :	41
46	**Instrument cluster :**	
	- Battery charge warning lamp :	15
	- Front brake pad wear warning lamp :	16
	- Converter oil temperature warning lamp *(optional)*	17
	- Engine oil temperature warning lamp:	18
	- Petrol level low warning lamp :	19
	- Engine oil pressure warning lamp:	22
	- « Emergency STOP » indicator lamp :	23
	- Hydraulic fluid level warning lamp :	24
	- Fuel gauge sender unit :	21
	- Clock and lighting :	25-65
	- Tachometer :	26
	- Silhouette lighting :	27
	- Drum lighting :	28
	- Odometer lighting :	66
	- Lighting for fuel gauge sender unit :	67
	- Warning lamp for choke :	34
	Drum and silhouette lighting rheostat :	26-27
48	**Switching unit (satellite) :**	
	- Front windscreen washer/wiper control	31 to 35
	- Horn control :	32
	- Flasher control and indicator :	47 to 49
	- Lighting and headlamp flasher control	51 to 56
	- Headlamp/dipped/sidelight indicators	52-55-56
49	Connector for radio power supply :	68
50	Cigar lighter :	69
51	Door sill light :	73-74
52	Fuel gauge rheostat :	20
53	Rear window heating :	12
54	Dome light :	75-76
55	Rear window wiper timer :	39-40
56	Rear window wiper motor :	39-40
57	**Rear lamp cluster, R.H. :**	
	- Stoplights and sidelights :	48
	- Direction indicator :	48
	- Reversing light :	10
	- Fog lamp :	60
58	Boot light switch :	72
59	Licence-plate lights :	65-66
60	**Rear lamp cluster, L.H. :**	
	- Stoplights and sidelights :	70-63
	- Direction indicator :	46
	- Reversing light :	9
	- Fog light :	5ç
61	Rear window washer pump :	42
62	Boot light :	72
63	Choke indicator light :	32-33

LIST OF EARTHING POINTS

m1	Earth on alternator	m4	Earth on boot lamp switch
m2	Earth on RH hinge of bonnet	m5	Earth inside boot, R.H.
m3	Earth on LH hinge of bonnet	m6	Earth inside boot, LH



GX.51-11

OPERATION
GX. 510-00 b

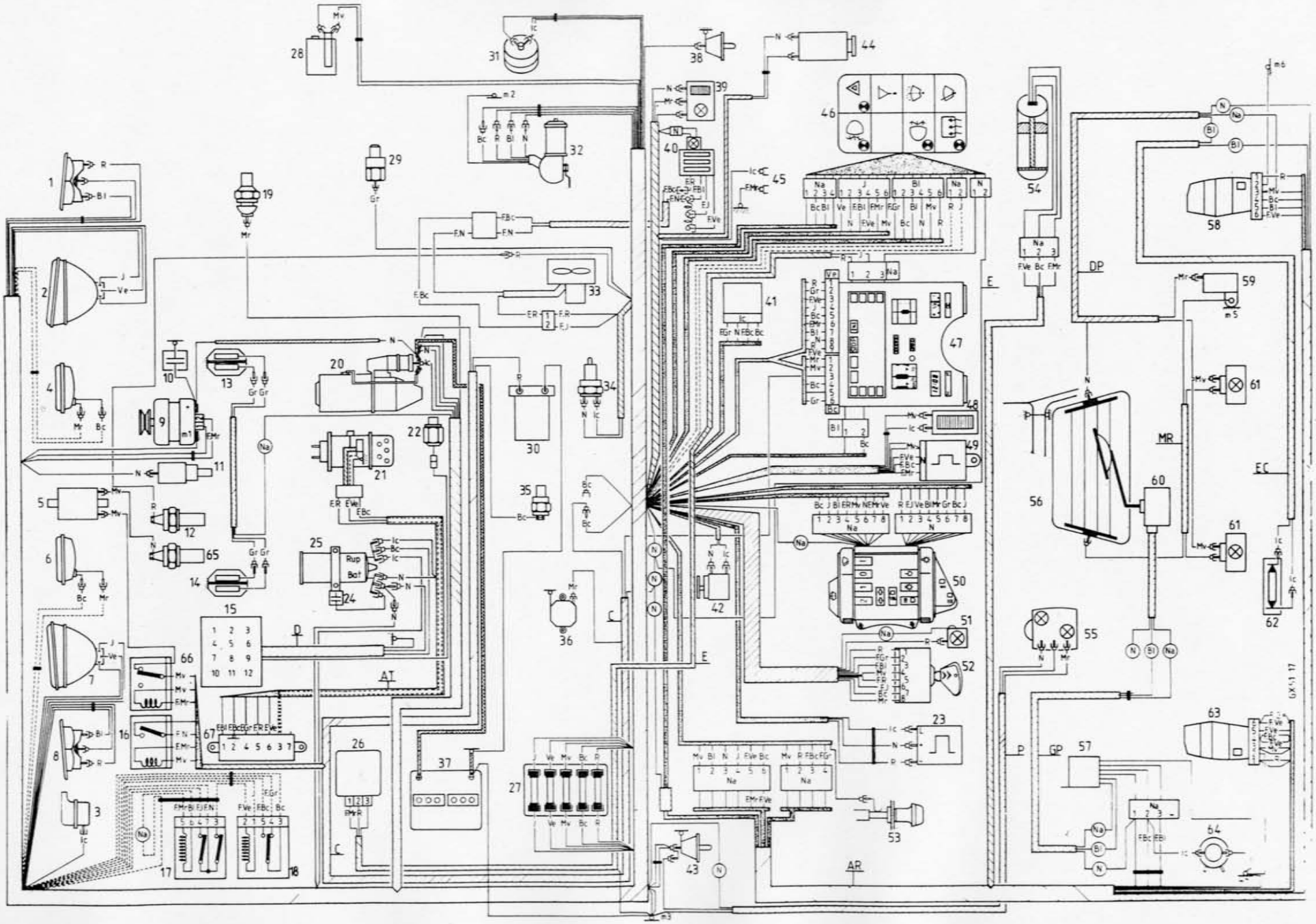
ALL GSA VEHICLES *7/1981 ⟶ 7/1982*

LEFT-HAND DRIVE

ARRANGEMENT OF THE ELECTRICAL INSTALLATION

BULB TABLE

Use	Quantity	Base	Voltage	Power	International standard
Main beam - dipped beam *(except 1130 and 1300 Spécial)*	2	P.43 t.38	12 V	60/55 W	H4
Main beam-dipped beam *(1130 and 1300 Spécial)*	2	P. 45 t. 41	12 V	45/40 W	
Front fog light *(GSA X3)*	2	X 511	12 V	55 W	H2
Front and rear direction indicators Reversing lamps Rear fog lamps	4 2 2	BA. 15 s	12 V	21 W	P. 25/1
Stoplamps and tail lamps	2	BAY. 15 d	12 V	21/5 W	P. 25/2
Sidelamps Number plate lamp	2 2	BA. 15 s	12 V	5 W	R. 19/5
Interior lamp *(with no sun-roof)*	2	BA. 15 s	12 V	10 W	R. 19/10
Interior lamp *(with sun-roof)*	1	Festoon	12 V	5 W	C. 11
Lateral spots	2			7 W	
Door ledge light *(X3 or Pallas)*	1	Festoon	12 V	5 W	C. 11
Boot lamp	1				
Ignition keyhole lamp Odometer lamp	1 1	BA. 9 s	12 V	2 W	T. 8/2
Drum lamp Clock lamp *(Club)*	2 1	BA. 9 s	14 V	4 W	T. 8/4
Fuel gauge indicator light	2	Wedge base dia. 10	12 V	2 W	
Silhouette lamp Miscellaneous warning lamps Heater control lamp - ventilation	2 14 2	Wedge base dia. 5	12 V	1.2 W	



GX. 51-17

FUSE TABLE

Supply to	Colour	Rating	Circuit protected
Battery « + » (via anti-theft lock)	Mauve	16 A	Regulator power supply Reversing lamps Idle cut-off Heated rear window and warning lamp Heater unit - Ventilation
Battery « + »	Red	16 A	Clock power supply Hazard warning lamps and warning lamp
Battery « + » (via anti-theft lock)			Dashboard power supply : - Warning lamps for : battery charge, brake pad wear, torque converter oil temperature *(optional)*, engine oil temperature, min. fuel level, engine oil pressure, brake fluid pressure and level, « emergency STOP » signal - Fuel gauge sender unit - Tachometer Lighting of drums and silhouette Choke warning lamp (on rod) Windscreen wiper and washer pump Horn Rear window wiper and washer pump Torque converter relay energizing *(optional)* Direction indicators and warning lamp - Econoscope
Switch block (satellite)	Green	10 A	Warning lamp for side and tail lamps Reduction of lighting for digit clock Energizing for front fog lamps Side and tail lamps Lighting for number plate Lighting for clock, odometers, fuel gauge sender unit Lighting for heater unit - Ventilation Anti-theft keyhole lighting
Switch block	Yellow	10 A	Rear fog lamps and warning lamp
Battery « + »	White	10 A	Radio power supply terminal *(optional)* Stoplamps Boot lamp Lighting for door ledge Interior lamp Cigar-lighter

DESCRIPTION OF WIRING HARNESSES

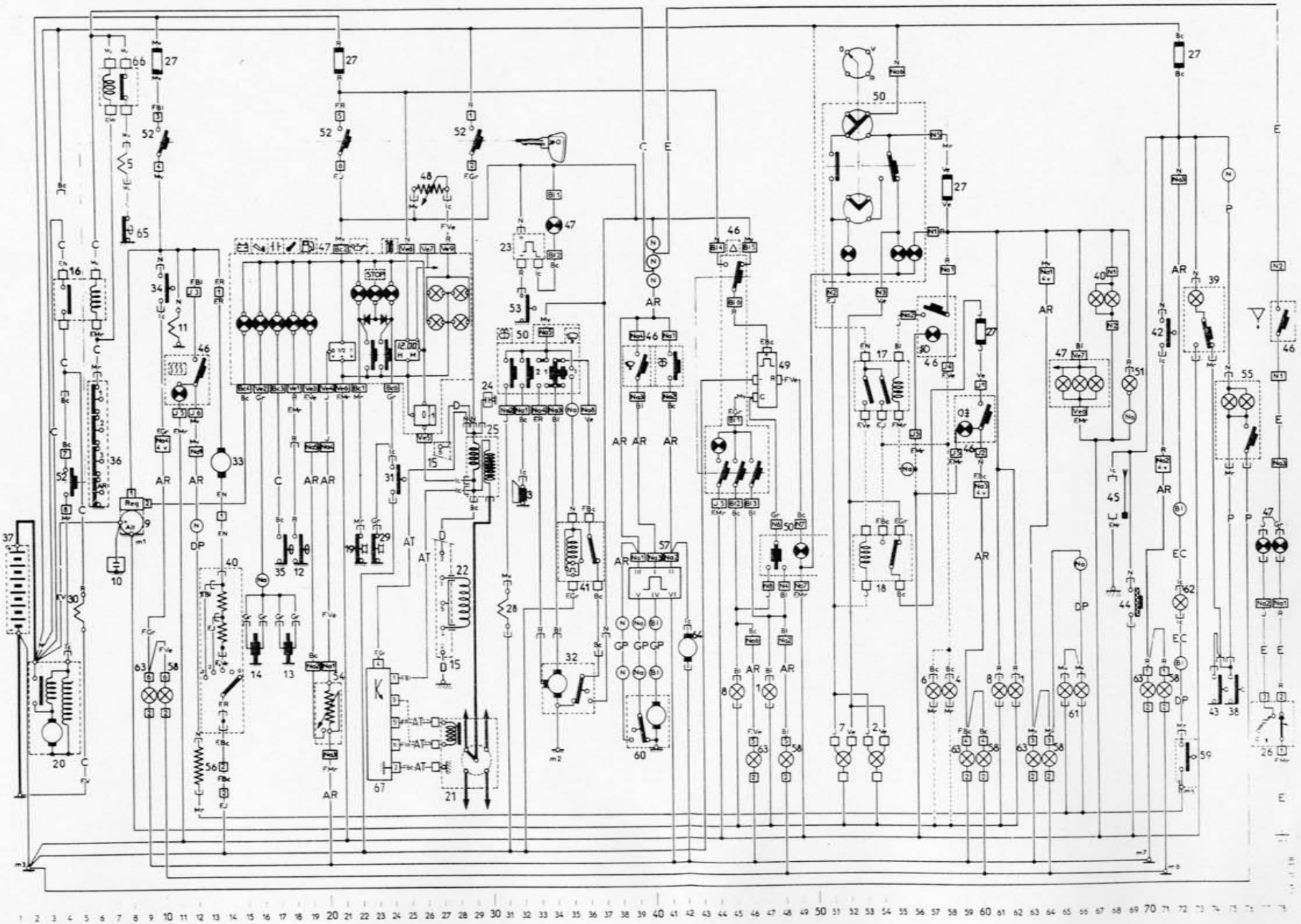
No marking	: Front	**AR**	: Rear	**EC**	: Boot lamp
C	: Converter *(optional)*	**P**	: Interior lamp	**MR**	: Rear earthings
D	: Diagnosis	**GP**	: Rear door, L.H.		
E	: Econoscope	**DP**	: Rear door, R.H.		

LIST OF COMPONENTS

No.	Description	Position
1	Front sidelamp, R.H.	62
	Front direction indicator, RH :	47
2	Headlamp main and dipped beams, R.H. :	53-54
3	Horn :	32
4	Front fog lamp , R.H. *(X3)* :	58
5	Electrovalve for compensated idling *(t. converter)*	6
6	Front fog lamp , LH *(X3)* :	57
7	Headlamp main and dipped beams, L.H. :	51-52
8	Front sidelamp, L.H.	61
	Direction indicator, L.H. :	45
9	Alternator with regulator :	8
10	Suppressor capacitor :	7
11	Idling damper :	11
12	Engine oil temperature switch :	18
13	Front brake unit, R.H. :	17-18
14	Front brake unit, L.H. :	15-16
15	Socket for diagnosis (12-pin) :	27
16	Relay for torque converter *(optional)*	2 to 6
17	Relay for front fog lamps *(X3)* :	53 to 55
18	Relay for rear fog lamps *(X3)* :	53 to 55
19	Engine oil pressure switch :	22
20	Starter :	2 to 4
21	Distributor :	25 to 30
22	TDC sensor :	28
23	Choke warning lamp unit	32
24	Suppressor capacitor :	30
25	Ignition coil :	29-30
26	Econoscope sensor :	78
27	Fuse box :	10-21-58-60-72
28	Windscreen washer pump :	31
29	Hydraulic pressure switch :	23
30	Declutching solenoid *(converter)* :	5
31	Contact for hydraulic fluid level :	24
32	Windscreen wiper motor :	34 to 36
33	Air blower :	13-14
34	Reversing lamp switch :	10
35	Converter oil temperature switch :	17
36	Control switch unit on gearbox *(converter)* :	6
37	Battery :	1
38	Door-pillar switch, R.H. :	75
39	Door ledge lamp *(X3 or Pallas)* :	73-74
40	Blower control and lamp :	13-67-68
41	Windscreen wiper timer unit :	35-36
42	Stoplamp switch :	71
43	Door pillar switch, L.H. :	74
44	Cigar-lighter :	69
45	Connector for radio power supply *(optional)* :	68
46	**Switches on keyboard :**	
	Heated rear window :	12
	Hazard warning lamp :	44 to 46
	Front fog lamp *(X3)* :	57-58
	Rear fog lamp :	60
	Rear window wiper, intermittent :	39
	Timer unit for rear window wiper/washer :	41
	Econoscope :	78
47	**Instrument cluster :**	
	Warning lamps for :	
	- Battery charge :	15
	- Front brake pad wear :	16
	- Torque converter oil *(optional)* :	17
	- Engine oil temperature :	18
	- Min. fuel level :	19
	- Engine oil pressure :	22
	- « Emergency STOP » :	23
	- Hydraulic fluid level :	24
	- Fuel gauge sender unit :	21
	- Clock and lighting *(Club)* :	25-65
	- Tachometer *(Pallas and X3)* :	26
	- Silhouette lighting :	27
	- Drum lighting :	28
	- Odometer lighting :	66
	- Lighting for fuel gauge sender unit :	67
	- Warning lamp for choke :	34
	- Warning lamps for econoscope : Yellow :	77
	: Orange :	78
48	Rheostat for lighting of drum and silhouette :	26
49	Flasher unit :	47
50	**Switch unit :**	
	- Switch for windscreen wiper/washer :	31 to 35
	- Switch for horn :	32
	- Switch for direction indicators and warning lamp	47 to 49
	- Switch for lighting and flasher :	51 to 56
	- Warning lamps for headlamp main beam, dipped beam and side/tail lamps :	52-55-56
51	Ignition keyhole lamp :	69
52	Anti-theft switch :	4-10-21-29
53	Choke control rod :	32
54	Rheostat for fuel gauge :	20
55	Interior lamp :	75-76
56	Heated rear window :	12
57	Timer unit for rear window wiper :	39 to 41
58	**Rear lamp cluster, R. H. :**	
	- Stoplamp and tail lamp :	71-64
	- Direction indicator :	48
	- Reversing lamp :	10
	- Fog lamp :	60
59	Switch for boot lamp :	72
60	Motor for rear window wiper :	39-40
61	Number plate lamps :	65-66
62	Boot lamp :	72
63	**Rear lamp cluster, L H.**	
	- Stoplamp and tail lamp :	70-63
	- Direction indicator :	46
	- Reversing lamp :	9
	- Fog lamp :	59
64	Rear window washer pump :	42
65	Oil thermal switch, 60° C *(converter)* :	8
66	Fast idle relay *(converter)* :	7-8
67	Ignition module :	23

LIST OF EARTHING POINTS

m1	Earth on alternator : 8	m5	Earth on boot lamp switch : 72
m2	Earth on bonnet R.H. hinge : 34	m6	Earth inside of boot, R.H. : 71
m3	Earth on bonnet L.H. hinge : 2	m7	Earth inside of boot, L.H. : 70



GX. 51-18

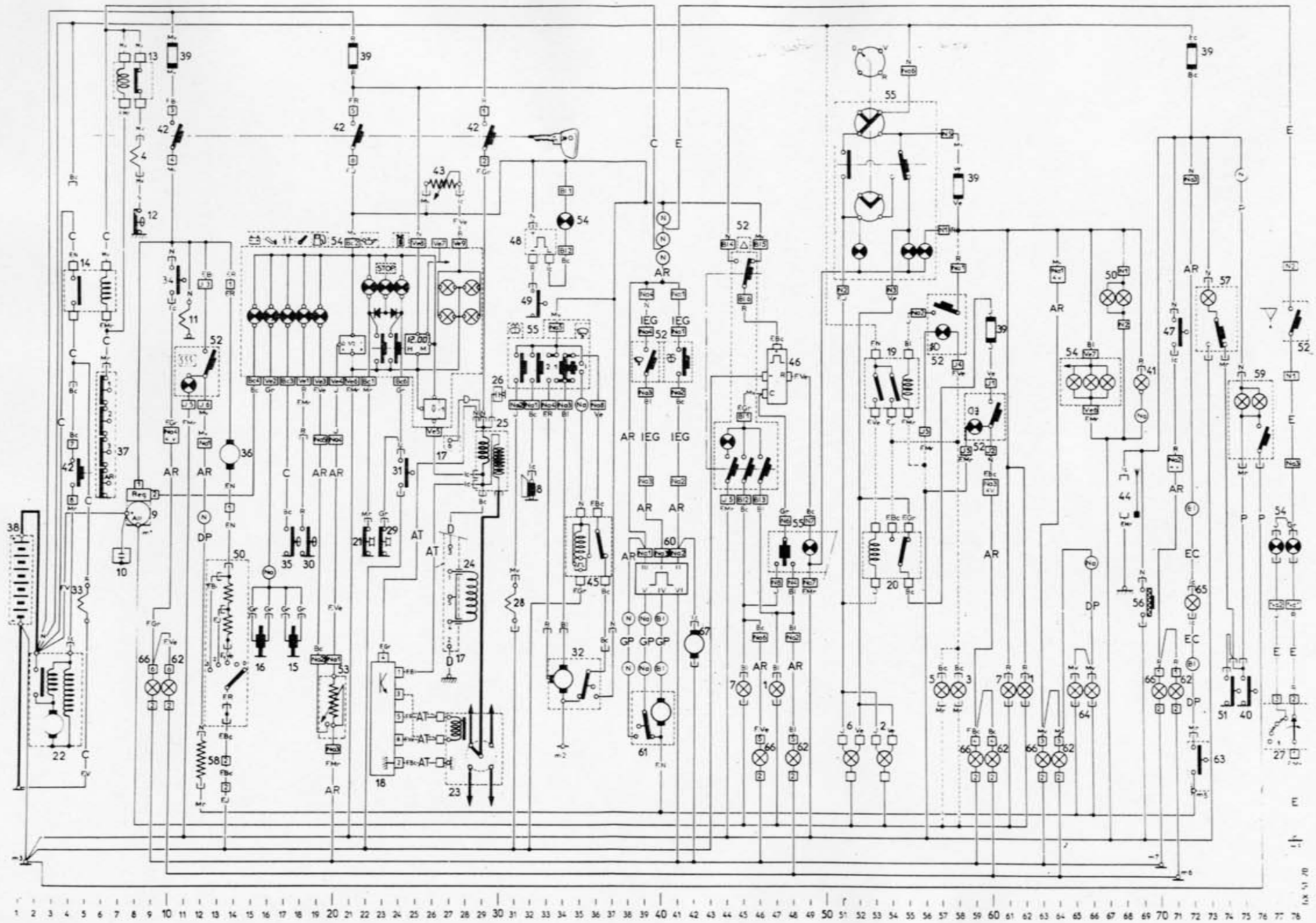
OPERATION
GX. 510-00 b

ALL GSA VEHICLES *7/1981 ⟶ 7/1982*

RIGHT-HAND DRIVE

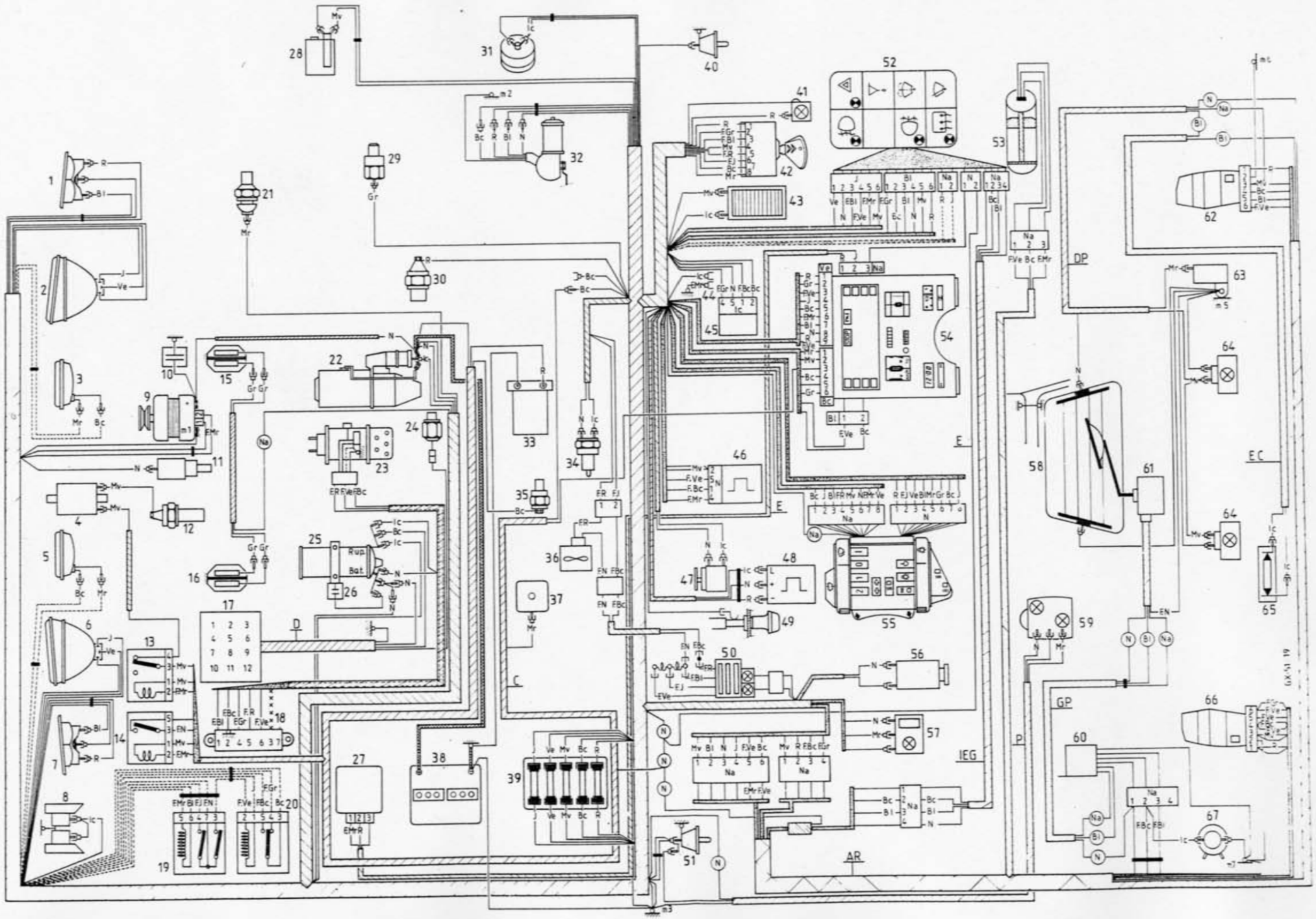
ARRANGEMENT OF THE ELECTRICAL INSTALLATION

•• *811-1 (IV)*



DESCRIPTION OF COMPONENTS

Ident. mark	Description and Position
1	Front sidelamp, RH ... 62
	Direction indicator, RH : ... 47
2	Headlamp, main and dipped beams, RH ... 53-54
3	Front fog lamp RH (X1) : ... 58
4	Electrovalve for compensated idling *(converter)* ... 8
5	Front fog lamp, LH *(X1)* : ... 57
6	Headlamp, main and dipped beams, LH ... 51-52
7	Front sidelamp, LH ... 61
	Direction indicator, LH ... 45
8	Horn ... 32
9	Alternator with regulator ... 8
10	Suppressor capacitor ... 7
11	Idling damper ... 11
12	Engine oil temperature switch (60° C) converter ... 8
13	Fast idle relais *(converter)* ... 7 - 8
14	Relay for torque converter *(optional)* ... 4 to 6
15	Front brake unit, RH ... 17 - 18
16	Front brake unit, LH ... 15 - 16
17	Socket for diagnosis (12-contact) ... 27
18	Ignition module unit (1300) ... 23
19	Relay for front fog lamps (X1) ... 53 to 55
20	Rear fog lamps cut-off relay (X1) : ... 53 to 55
21	Engine oil pressure switch ... 22
22	Starter motor ... 2 to 4
23	Distributor ... 25 to 30
24	TDC sensor ... 28
25	Ignition coil ... 29 - 30
26	Suppressor capacitor ... 30
27	Econoscope sensor ... 78
28	Windscreen washer pump ... 31
29	Hydraulic fluid pressure switch ... 23
30	Engine oil thermal switch ... 18
31	Switch for hydraulic fluid level ... 24
32	Windscreen wiper motor ... 34 to 36
33	Declutching solenoid *(converter)* ... 5
34	Switch for reversing lamps ... 10
35	Oil temperature switch *(converter)* ... 17
36	Air blower ... 13 -14
37	Switch unit on gearbox *(converter)* ... 6
38	Battery ... 1
39	Fuse box ... 10 - 21 - 58 - 60 - 72
40	Door pillar switch, RH ... 75
41	Ignition keyhole lamp ... 69
42	Ignition switch ... 4 - 10 - 21 - 29
43	Rheostat for drum and silhouette lighting ... 26
44	Sockets for radio supply *(optional)* ... 68
45	Windscreen wiper timer ... 35 - 36
46	Flasher unit ... 47
47	Stoplamp switch ... 71
48	Choke lamp unit ... 32 - 33
49	Choke knob ... 32
50	Blower control and lighting ... 13 - 67 - 68
51	Door pillar switch, LH ... 74
52	Switches on keyhole :
	- Heated rear window ... 12
	- Hazard warning lamp ... 44 to 46
	- Front fog lamps (X1) ... 57 - 58
	- Rear fog lamps ... 60
	- Rear window wiper, intermittent : ... 39
	- Rear window washer/wiper, timed ... 41
	- Econoscope switch ... 78
53	Rheostat for fuel-gauge unit ... 20
54	Speedometer unit :
	- Battery charge warning lamp ... 15
	- Front brake pad warning lamp ... 16
	- Converter oil temperature warning lamp *(option)* ... 17
	- Engine oil temperature warning lamp ... 18
	- Low fuel level warning lamp ... 19
	- Engine oil pressure warning lamp ... 22
	- Emergency "STOP" indicator lamp ... 23
	- Hydraulic fluid level warning lamp ... 24
	- Petrol-gauge receiver ... 21
	- Clock and lamp ... 25 - 65
	- Tachometer ... 26
	- Silhouette lamp ... 27
	- Drum lamp ... 28
	- Odometer lamp ... 66
	- Petrol-gauge receiver lamp ... 67
	- Choke knob lamp ... 34
	- Econoscope lamps : Yellow ... 77
	Orange ... 78
55	Switching unit (satellite) :
	- Windscreen washer/wiper control ... 31 to 35
	- Horn control ... 32
	- Direction indicator control and warning lamp ... 47 to 49
	- Headlamp lighting and flasher control ... 51 to 56
	- Warning lamps for main beam/dipped/side-lamp ... 52 - 55 - 56
56	Cigar lighter ... 69
57	Door sill lamp ... 73 - 74
58	Heated rear window ... 12
59	Interior lamp ... 75 - 76
60	Rear window wiper timer ... 39 to 41
61	Rear window wiper motor ... 39 -40
62	Rear lamp cluster, RH :
	- Stoplamp and tail lamp ... 71 - 64
	- Direction indicator ... 48
	- Reversing lamp ... 10
	- Fog lamp ... 60
63	Boot lamp switch ... 72
64	Number plate lamp ... 65 - 66
65	Boot lamp ... 72
66	Rear lamp cluster, LH :
	- Stoplamp and tail lamp ... 70 - 63
	- Direction indicator ... 46
	- Reversing lamp ... 9
	- Fog lamp ... 59
67	Rear window washer pump ... 42



OPERATION
GX. 510-00 c

GSA

Saloon : page 3 to 8 *7/82 → 7/83*

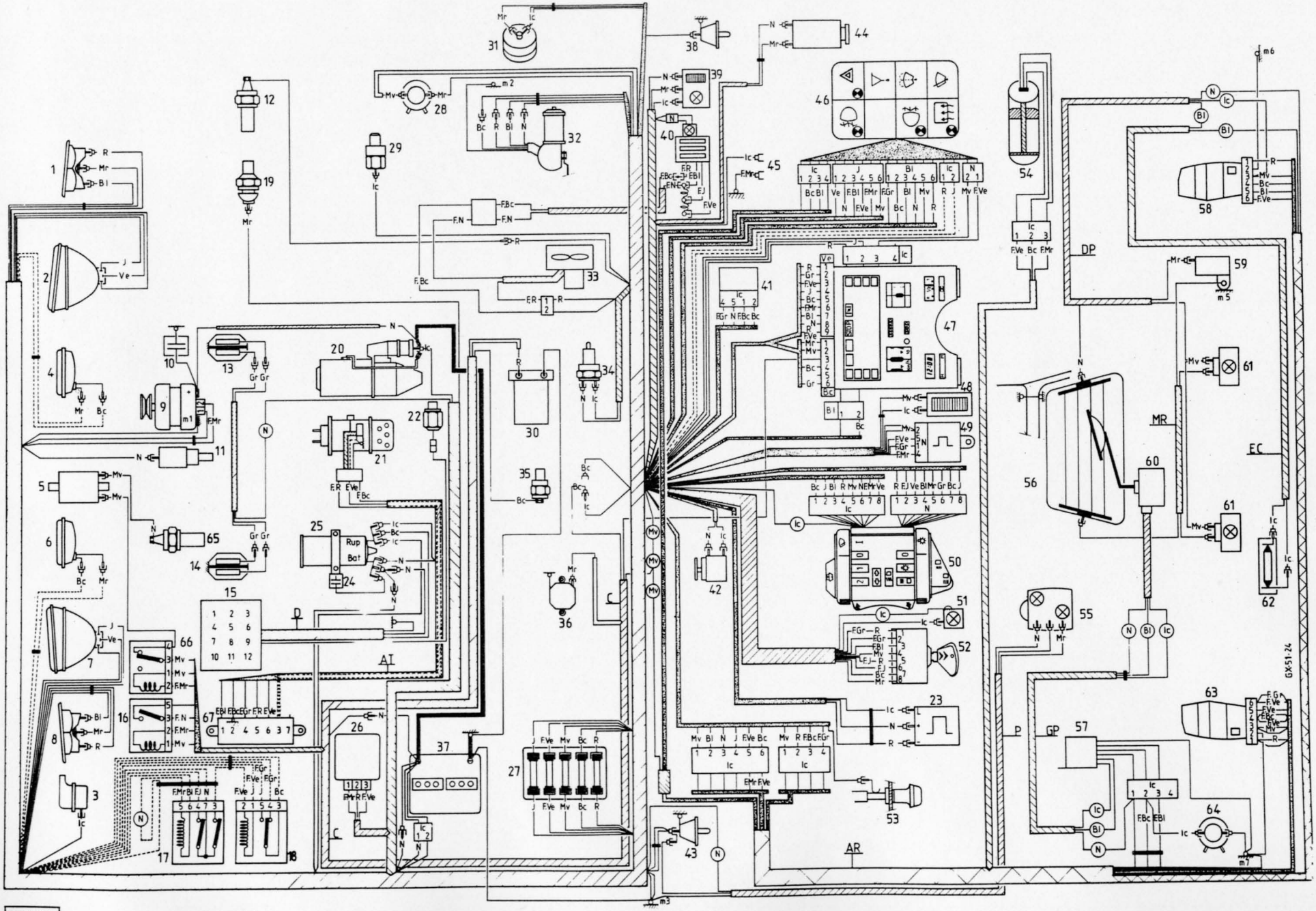
Estate : page 9 to 14 *7/82 →*

LEFT-HAND DRIVE

ARRANGEMENT OF THE ELECTRICAL INSTALLATION

BULB TABLE

Use	Quantity	Base	Voltage	Power	International standard
Main beam - dipped beam *(X1 - X3, Saloon, Pallas and Club Estate)*	2	P.43 t.38	12 V	60/55 W	H4
Main beam-dipped beam *(1130 and 1300 Spécial)*	2	P. 45 t. 41	12 V	45/40 W	
Front fog light *(GSA X3)*	2	X 511	12 V	55 W	H2
Front and rear direction indicators Reversing lamps Rear fog lamps	4 2 2	BA. 15 s	12 V	21 W	P. 25/1
Stoplamps and tail lamps	2	BAY. 15 d	12 V	21/5 W	P. 25/2
Sidelamps Number plate lamp	2 2	BA. 15 s	12 V	5 W	R. 19/5
Interior lamp *(with no sun-roof)*	2	BA. 15 s	12 V	10 W	R. 19/10
Interior lamp *(with sun-roof)*	1	Festoon	12 V	5 W	C. 11
Lateral spots	2			7 W	
Door ledge light	1	Festoon	12 V	5 W	C. 11
Boot lamp	1				
Ignition keyhole lamp Odometer lamp	1 1	BA. 9 s	12 V	2 W	T. 8/2
Drum lamp Clock lamp *(Club)*	2 1	BA. 9 s	14 V	4 W	T. 8/4
Fuel gauge indicator light	2	Wedge base dia. 10	12 V	2 W	
Silhouette lamp Miscellaneous warning lamps Heater control lamp - ventilation	2 14 2	Wedge base dia. 5	12 V	1.2 W	



GX. 51-24

FUSE TABLE

Supply to	Colour	Rating	Circuit protected
Battery « + » (via anti-theft lock)	Mauve	16 A	Regulator power supply Reversing lamps Idle cut-off Heated rear window and warning lamp Heater unit - Ventilation
Battery « + »	Red	16 A	Clock power supply Hazard warning lamps and warning lamp
Battery « + » (via anti-theft lock)			Dashboard power supply: - Warning lamps for : battery charge, brake pad wear, torque converter c temperature *(optional)*, engine oil temperature, min. fuel level, engine oil pressure, brake fluid pressure and level, « emergency STOP » signal - Fuel gauge sender unit - Tachometer Lighting of drums and silhouette Choke warning lamp (on rod) Windscreen wiper and washer pump Horn Rear window wiper and washer pump Torque converter relay energizing *(optional)* Direction indicators and warning lamp - Econoscope
Switch block (satellite)	Green	10 A	Warning lamp for side and tail lamps Reduction of lighting for digit clock Energizing for front fog lamps *(X1 and X3)* Side and tail lamps Lighting for number plate Lighting for clock, odometers, fuel gauge sender unit Lighting for heater unit - Ventilation Anti-theft keyhole lighting
Switch block	Yellow	10 A	Rear fog lamps and warning lamp
Battery « + »	White	10 A	Radio power supply terminal *(optional)* Stoplamps Boot lamp Lighting for door ledge Interior lamp Cigar-lighter

DESCRIPTION OF WIRING HARNESSES

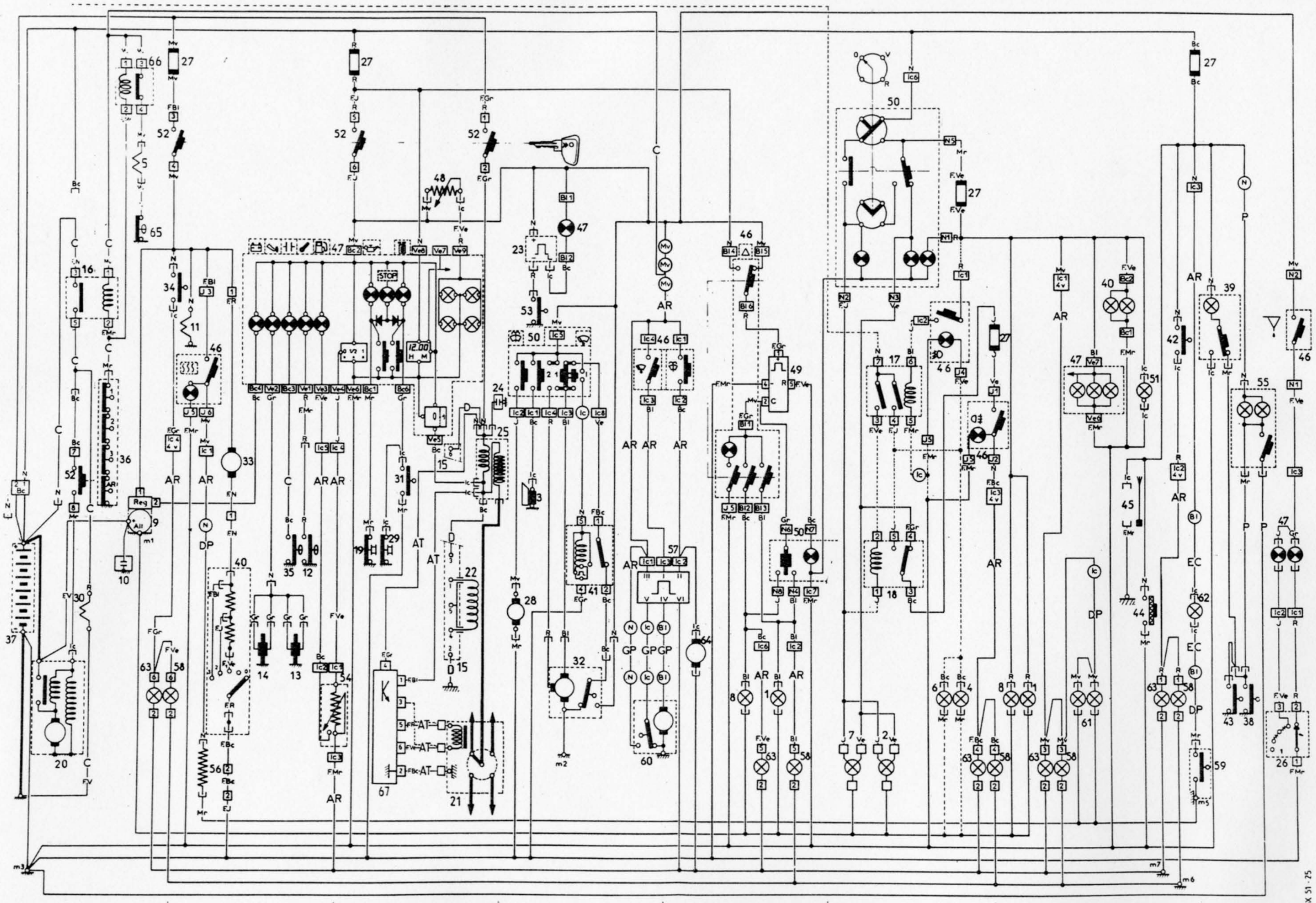
No marking	: Front	**AR**	: Rear	**EC**	: Boot lamp
C	: Converter *(optional)*	**P**	: Interior lamp	**MR**	: Rear earthings
D	: Diagnosis	**GP**	: Rear door, L.H.		
E	: Econoscope	**DP**	: Rear door, R.H.		

LIST OF COMPONENTS

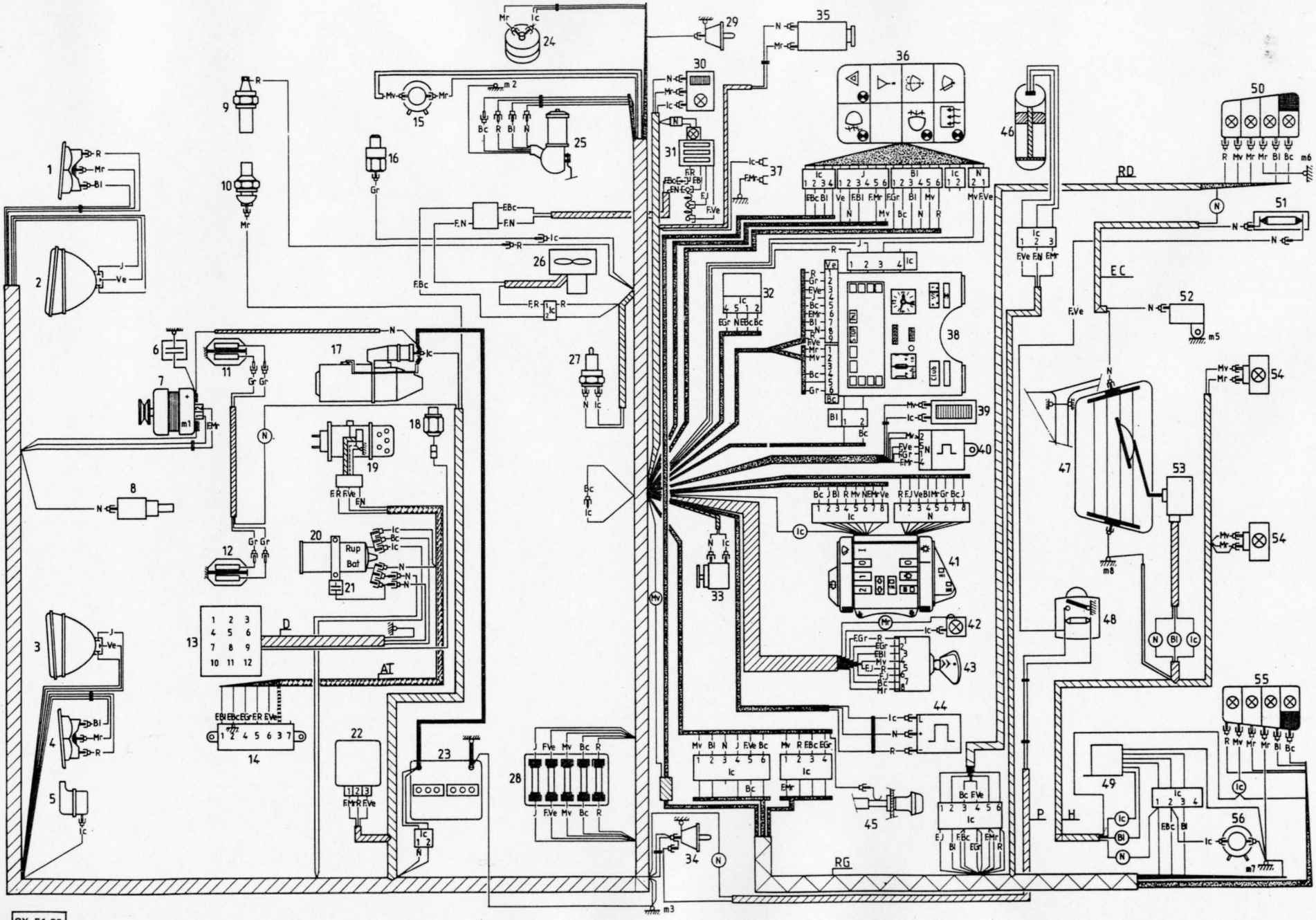
No.	Description	Position
1	Front sidelamp, R.H.	62
	Front direction indicator, RH :	47
2	Headlamp main and dipped beams, R.H. :	53-54
3	Horn :	32
4	Front fog lamp , R.H. *(X1 and X3)* :	58
5	Electrovalve for compensated idling *(t. converter)*	6
6	Front fog lamp , LH *(X1 and X3)* :	57
7	Headlamp main and dipped beams, L.H. :	51-52
8	Front sidelamp, L.H.	61
	Direction indicator, L.H. :	45
9	Alternator with regulator :	8
10	Suppressor capacitor :	7
11	Idling damper :	11
12	Engine oil temperature switch :	18
13	Front brake unit, R.H. :	17-18
14	Front brake unit, L.H. :	15-16
15	Socket for diagnosis (12-pin) :	27
16	Relay for torque converter *(optional)*	2 to 6
17	Relay for front fog lamps *(X1 and X3)* :	53 to 55
18	Relay for rear fog lamps *(X1 and X3)* :	53 to 55
19	Engine oil pressure switch :	22
20	Starter :	2 to 4
21	Distributor :	25 to 30
22	TDC sensor :	28
23	Choke warning lamp unit :	32
24	Suppressor capacitor :	30
25	Ignition coil :	29-30
26	Econoscope sensor :	78
27	Fuse box :	10-21-58-60-72
28	Windscreen washer pump :	31
29	Hydraulic pressure switch :	23
30	Declutching solenoid *(converter)* :	5
31	Contact for hydraulic fluid level :	24
32	Windscreen wiper motor :	34 to 36
33	Air blower :	13-14
34	Reversing lamp switch :	10
35	Converter oil temperature switch *(optional)* :	17
36	Control switch unit on gearbox *(converter)* :	6
37	Battery :	1
38	Door-pillar switch, R.H. :	75
39	Door ledge lamp :	73-74
40	Blower control and lamp :	13-67-68
41	Windscreen wiper timer unit :	35-36
42	Stoplamp switch :	71
43	Door pillar switch, L.H. :	74
44	Cigar-lighter :	69
45	Connector for radio power supply *(optional)* :	68
46	**Switches on keyboard :**	
	Heated rear window :	12
	Hazard warning lamp :	44 to 46
	Front fog lamp *(X1 and X3)* :	57-58
	Rear fog lamp :	60
	Rear window wiper, intermittent :	39
	Timer unit for rear window wiper/washer :	41
	Econoscope :	78
47	**Instrument cluster :**	
	Warning lamps for :	
	- Battery charge :	15
	- Front brake pad wear :	16
	- Torque converter oil *(optional)* :	17
	- Engine oil temperature :	18
	- Min. fuel level :	19
	- Engine oil pressure :	22
	- « Emergency STOP » :	23
	- Hydraulic fluid level :	24
	- Fuel gauge sender unit :	21
	- Clock and lighting *(except 1 130)* :	25-65
	- Tachometer *(Pallas - X1 and X3)* :	26
	- Silhouette lighting :	27
	- Drum lighting :	28
	- Odometer lighting :	66
	- Lighting for fuel gauge sender unit :	67
	- Warning lamp for choke :	34
	- Warning lamps for econoscope : Yellow :	77
	: Orange :	78
48	Rheostat for lighting of drum and silhouette :	26
49	Flasher unit :	47
50	**Switch unit :**	
	- Switch for windscreen wiper/washer :	31 to 35
	- Switch for horn :	32
	- Switch for direction indicators and warning lamp	47 to 49
	- Switch for lighting and flasher :	51 to 56
	- Warning lamps for headlamp main beam, dipped beam and side/tail lamps :	52-55-56
51	Ignition keyhole lamp :	69
52	Anti-theft switch :	4-10-21-29
53	Choke control rod :	32
54	Rheostat for fuel gauge :	20
55	Interior lamp :	75-76
56	Heated rear window :	12
57	Timer unit for rear window wiper :	39 to 41
58	**Rear lamp cluster, R.H. :**	
	- Stoplamp and tail lamp :	71-64
	- Direction indicator :	48
	- Reversing lamp :	10
	- Fog lamp :	60
59	Switch for boot lamp :	72
60	Motor for rear window wiper :	39-40
61	Number plate lamps :	65-66
62	Boot lamp :	72
63	**Rear lamp cluster, L.H.**	
	- Stoplamp and tail lamp :	70-63
	- Direction indicator :	46
	- Reversing lamp :	9
	- Fog lamp :	59
64	Rear window washer pump :	42
65	Oil thermal switch, 60° C *(converter)* :	8
66	Fast idle relay *(converter)* :	7 - 8
67	Ignition module :	23

LIST OF EARTHING POINTS

m1	Earth on alternator : 8	m5	Earth on boot lamp switch : 72
m2	Earth on bonnet R.H. hinge : 34	m6	Earth inside of boot, R.H. : 71
m3	Earth on bonnet L.H. hinge : 2	m7	Earth inside of boot, L.H. : 70



GX. 51-25


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55
56
D
AT
P
H
EC
RD
RG
m1
m2
m3
m5
m6
m7
m8
Rup
Bat
GX. 51-29

FUSE TABLE

Supply to	Colour	Rating	Circuit protected
Battery « + » (via anti-theft lock)	Mauve	16 A	Regulator power supply Reversing lamps Idle cut-off Heated rear window and warning lamp Heater unit - Ventilation
Battery « + »	Red	16 A	Clock power supply Hazard warning lamps and warning lamp
Battery « + » (via anti-theft lock)			Dashboard power supply : - Warning lamps for : battery charge, brake pad wear, torque converter oil temperature *(optional)*, engine oil temperature, min. fuel level, engine oil pressure, brake fluid pressure and level, « emergency STOP » signal - Fuel gauge sender unit Lighting of drums and silhouette Choke warning lamp (on rod) Windscreen wiper and washer pump Horn Rear window wiper and washer pump Torque converter relay energizing *(optional)* Direction indicators and warning lamp - Econoscope
Switch block (satellite)	Green	10 A	Warning lamp for side and tail lamps Side and tail lamps Lighting for number plate Lighting for clock, odometers, fuel gauge sender unit Lighting for heater unit - Ventilation Anti-theft keyhole lighting
Switch block	Yellow	10 A	Rear fog lamps and warning lamp
Battery « + »	White	10 A	Radio power supply terminal *(optional)* Stoplamps Boot lamp Lighting for door ledge Interior lamp Cigar-lighter

LIST OF COMPONENTS

No.	Description	Position
1	Front sidelamp, RH	62
	Front direction indicator, RH	47
2	Headlamp, main and dipped beams, RH	53-54
3	Headlamp, main and dipped beams, LH	51-52
4	Front sidelamp, LH	61
	Front direction indicator, LH	45
5	Horn	32
6	Suppressor capacitor	6
7	Alternator with regulator	7
8	Idling damper	10
9	Engine oil temperature switch	18
10	Engine oil pressure switch	22
11	Front brake unit, RH	17 - 18
12	Front brake unit, LH	15 - 16
13	Socket for diagnosis	27
14	Ignition module	23
15	Windscreen washer pump	31
16	Hydraulic pressure switch	13
17	Starter	2 to 4
18	TDC sensor	28
19	Distributor	27 to 29
20	Ignition coil	28 to 30
21	Suppressor capacitor	30
22	Econoscope sensor	77 - 78
23	Battery	1
24	Contact for hydraulic fluid level	24
25	Windscreen wiper motor	33 to 36
26	Air blower	13
27	Reversing lamp switch	9
28	Fuse box	9 - 21 - 58 - 60 - 72
29	Door pillar switch, RH	74
30	Door ledge lamp	73 - 74
31	Blower control and lamp	13 - 67 - 68
32	Windscreen wiper timer unit	35 - 36
33	Stoplamp switch	71
34	Door pillar switch, LH	75
35	Cigar lighter	69
36	**Switches on keyboard :**	
	- Heated rear window	10 - 11
	- Hazard warning lamp	44 to 46
	- Rear fog lamp	60
	- Front fog lamp (not connected)	58
	- Rear window wiper, intermittent	39
	- Timer unit for rear window wiper-washer	41
	- Econoscope	78
37	Connectors for radio power supply *(optional)*	68

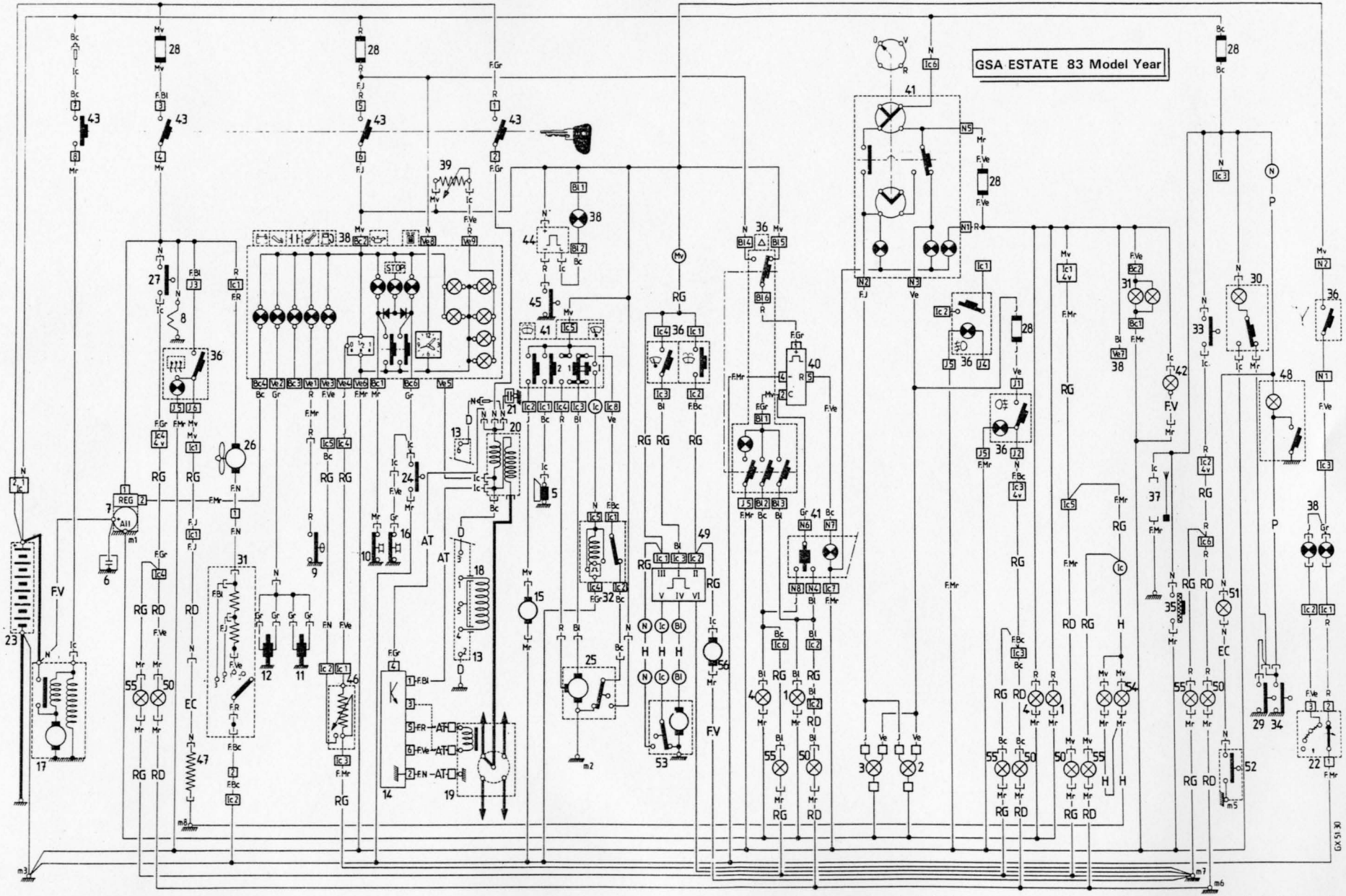
No.	Description	Position
38	**Instrument cluster :**	
	Warning lamps for :	
	- Battery charge	15
	- Front brake pad wear	16
	- Torque converter oil *(not connected)*	17
	- Engine oil temperature	18
	- Min. fuel level	19
	- Engine oil pressure	22
	- «Emergency STOP »	23
	- Hydraulic fuel level	24
	- Fuel gauge sender unit	21
	- Clock	25
	- Odometer lighting	26
	- Lighting for drum, clock, silhouette	29
	- Warning lamp for choke	34
	- Warning lamps for econoscope : Yellow	77
	Orange	78
39	Rheostat for lighting of drum, clock, silhouette	26
40	Flasher unit	47
41	**Switch unit :**	
	- Switch for windscreen wiper/washer	31 to 35
	- Switch for horn	32
	- Switch for direction indicators and warning lamp	47 to 49
	- Switch for lighting and flasher	51 to 57
	- Warning lamps for headlamp main beam, dipped beam and side/tail lamps	52 - 55 - 56
42	Ignition keyhole lamp	69
52	Anti-theft switch	4 - 9 - 21 - 29
44	Flasher unit for choke warning lamp	32-33
45	Choke control rod	32
46	Rheostat for fuel gauge	19 - 20
47	Heated rear window	11
48	Interior lamp	75
49	Timer unit for rear window wiper	39 to 41
50	**Rear lamp cluster, RH :**	
	- Stoplamp and tail lamp	71 - 63
	- Direction indicator-Reversing lamp-Fog lamp	48 - 9 - 60
51	Boot lamp	72
52	Switch for boot lamp	72
53	Motor for rear window wiper	39 - 40
54	Number plate lamps	65 - 66
55	**Rear lamp cluster, LH :**	
	- Stoplamp and tail lamp	70 - 64
	- Direction indicator-Reversing lamp-Fog lamp	46 - 8 - 59
56	Rear window washer pump	42

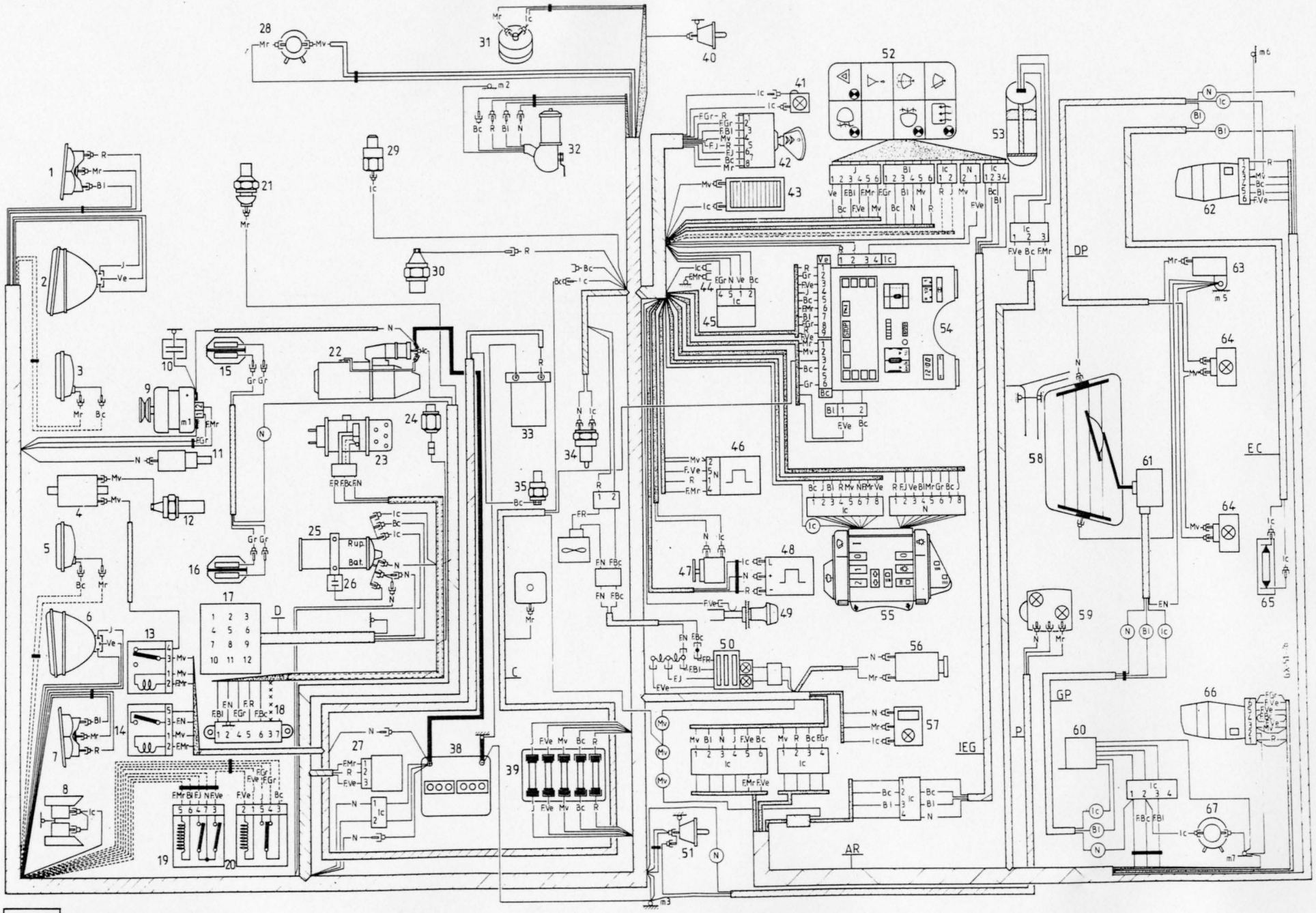
LIST OF EARTHING POINTS

m1	Earth on alternator 7	m5	Earth on boot lamp switch 72
m2	Earth on bonnet R.H. hinge 34	m6	Earth inside of boot, RH 71
m3	Earth on bonnet L.H. hinge 2	m7	Earth inside of boot, LH 70
		m8	Earth on tailgate 11

DESCRIPTION OF WIRING HARNESSES

No marking : Front	**RD** : Rear, RH	**P** : Interior lamp
D : Diagnosis	**RG** : Rear, LH	**EC** : Boot lamp
AT : Transistorized ignition		


GSA ESTATE 83 Model Year
STOP
REG
AT
F.V
P
GX 51-30



OPERATION
GX. 510-00 d

ARRANGEMENT OF THE « DECEL » INSTALLATION

OPERATION.

This system is intended for cutting off the petrol inlet of the carburettor idling circuit, when a deceleration occurs,, by stopping the supply to the idling damper.
This condition is obtained when :

- the switch on butterfly spindle is closed (idling),
- the clutch control switch is closed (clutch-engaged position),
- the engine speed goes down (information given by the tachymeter unit).

If one of these conditions is not observed, the idling damper is normally supplied.

a) In acceleration :

The switch on butterfly spindle opens up, so the idling damper is normally supplied throughout the duration of the engine speed increase.

c) In deceleration :

- Two cases are to be considered : slow or fast deceleration. This differentiation is obtained by the tachymeter unit which registers the variations in the pulse frequency on the coil primary.
- In slow deceleration, the supply to the idling damper is cut off when the switch on butterfly spindle closes. The supply is re-established when the engine speed reaches 1350 rpm.
- In fast deceleration, the supply to the idling damper is cut off when the switch on butterfly spindle closes. The supply is re-established when the engine speed reaches 1900 rpm.

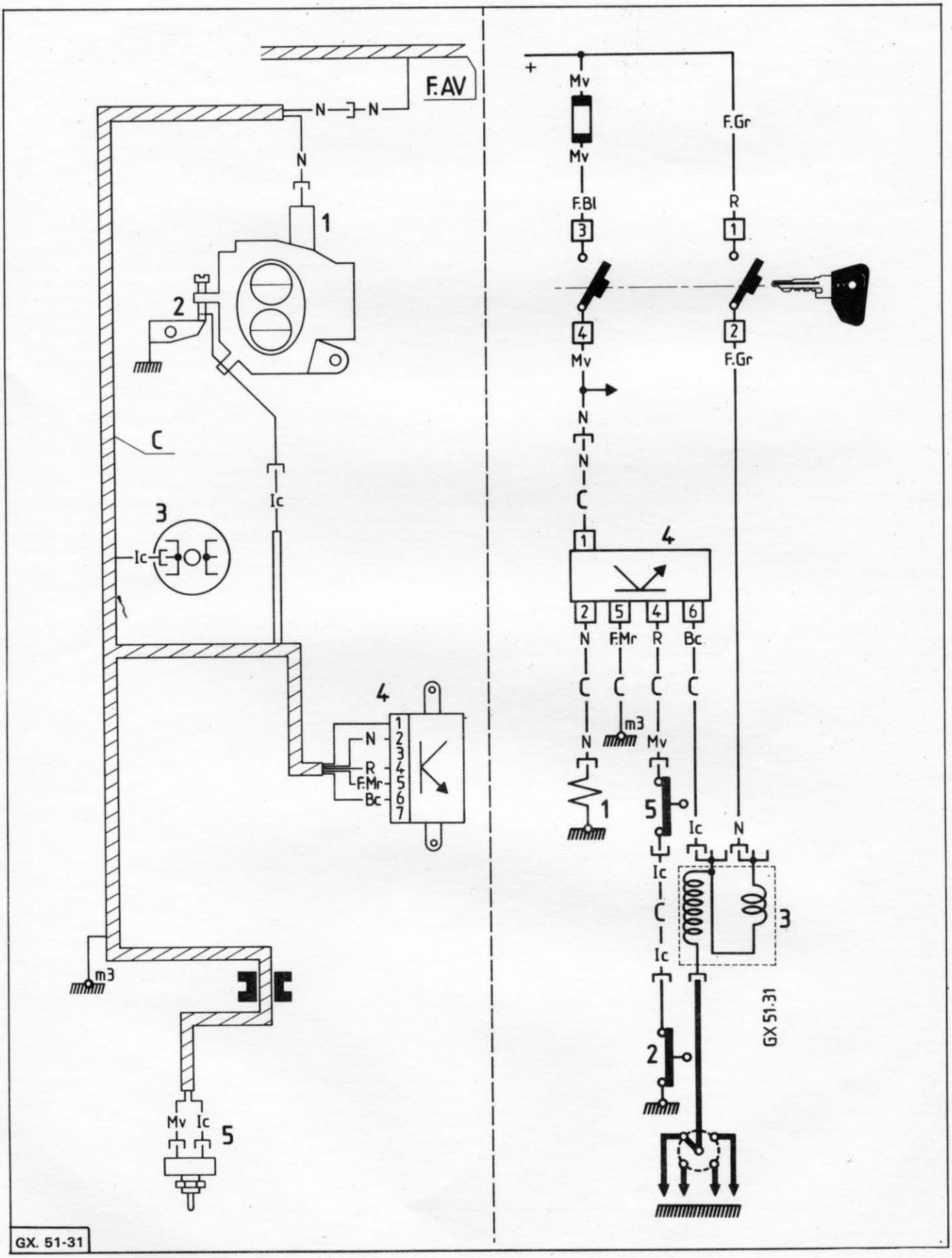
c) When braking the engine by releasing the accelerator pedal or changing gears down :

Though both the switch on butterfly spindle and the clutch control switch are closed, this case is likened to an acceleration, owing to the fact of the engine speed increase (information on speed is received by the tachymeter unit) and the idling damper is normally supplied.

Item	Mark	Description
Part	1 2 3 4 5	Idling damper Switch on butterfly spindle Ignition coil Tachymeter unit Clutch control switch
Wiring harness	F.AV C	Front wiring harness Harness for deceleration cut-off circuit
Earthing	m3	Earth on L.H. hinge of bonnet

OBSERVATIONS.

To cope with the case of an incident related to the sytem of supply cut-off in deceleration, connecting the black connector of the front harness in place of the black connector of the idling damper is enough.
The clutch control switch should open when the pedal travel is over $20\ ^{+10}_{0}$ mm.


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OPERATION
GX. 510-00 e

GSA Saloon

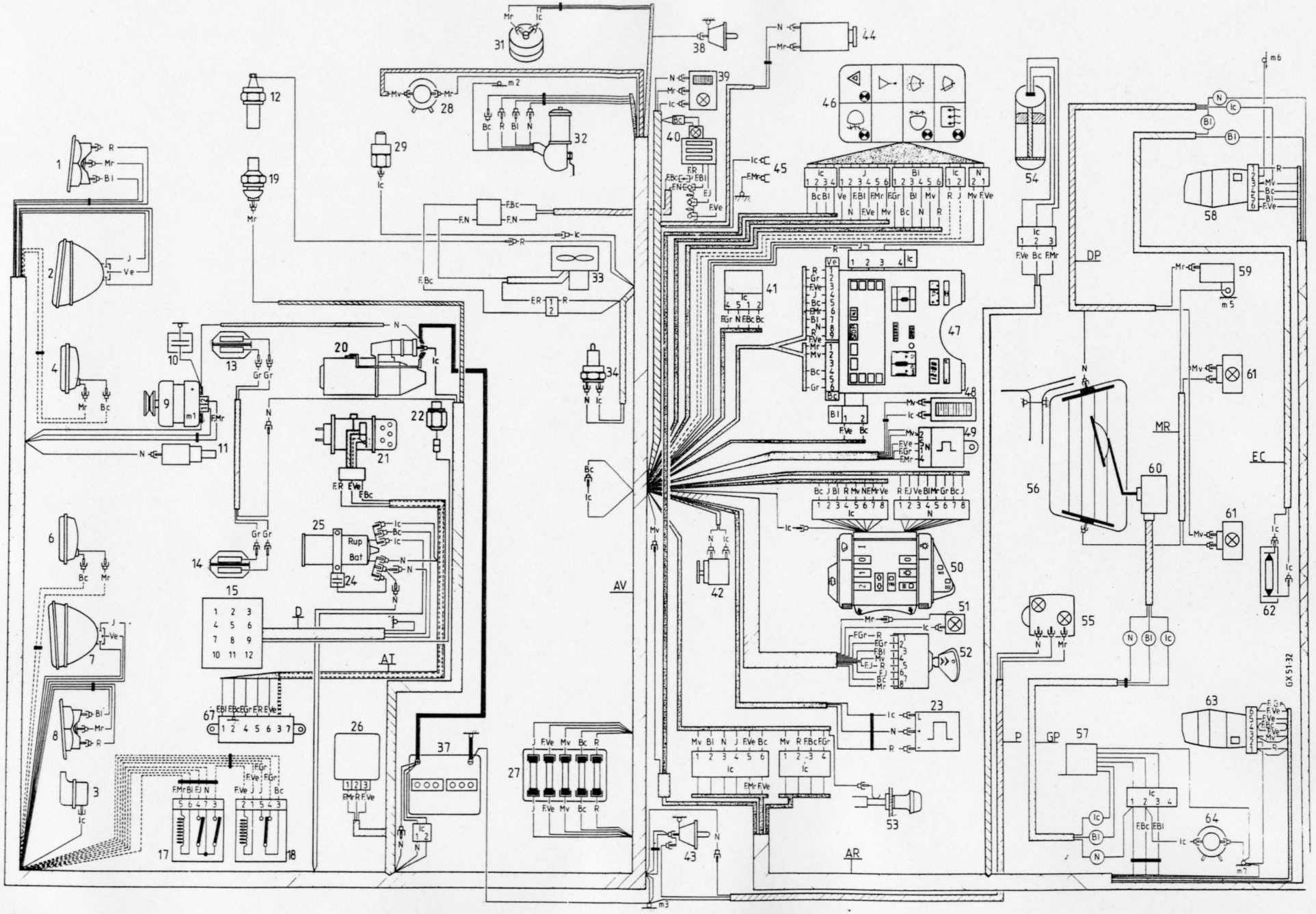
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LEFT-HAND DRIVE

ARRANGEMENT OF THE ELECTRICAL INSTALLATION

BULB TABLE

Use	Quantity	Base	Voltage	Power	International standard
Main beam - dipped beam *(except Spécial)*	2	P.43 t.38	12 V	60/55 W	H4
Main beam-dipped beam *(Spécial)*	2	P. 45 t. 41	12 V	45/40 W	
Front fog light *(GSA X3)*	2	X 511	12 V	55 W	H2
Front and rear direction indicators Reversing lamps Rear fog lamps	4 2 2	BA. 15 s	12 V	21 W	P. 25/1
Stoplamps and tail lamps	2	BAY. 15 d	12 V	21/5 W	P. 25/2
Sidelamps Number plate lamp	2 2	BA. 15 s	12 V	5 W	R. 19/5
Interior lamp *(with no sun-roof)*	2	BA. 15 s	12 V	10 W	R. 19/10
Interior lamp *(with sun-roof)*	1	Festoon	12 V	5 W	C. 11
Lateral spots	2			7 W	
Door ledge light *(X3 and Pallas)*	1	Festoon	12 V	5 W	C. 11
Boot lamp	1				
Ignition keyhole lamp Odometer lamp	1 1	BA. 9 s	12 V	2 W	T. 8/2
Drum lamp Clock lamp *(Spécial)*	2 1	BA. 9 s	14 V	4 W	T. 8/4
Fuel gauge sender light	2	Wedge base dia. 10	12 V	2 W	
Silhouette lamp Miscellaneous warning lamps Heater control lamp - ventilation	2 14 2	Wedge base dia. 5	12 V	1.2 W	


AV
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GX 51 32

FUSE TABLE

Supply to	Colour	Rating	Circuit protected
Battery « + » (via anti-theft lock)	Mauve	16 A	Regulator power supply Reversing lamps Idle cut-off Heated rear window and warning lamp Heater unit - Ventilation
Battery « + »	Red	16 A	Clock power supply Hazard warning lamps and warning lamp
Battery « + » (via anti-theft lock)			Dashboard power supply : - Warning lamps for : battery charge, brake pad wear, engine oil temperature, min. fuel level, engine oil pressure, brake fluid pressure and level, « emergency STOP » signal - Fuel gauge sender unit - Tachometer *(except Spécial)* Lighting of drums and silhouette Choke warning lamp (on rod) Windscreen wiper and washer pump Horn Rear window wiper and washer pump *(X3 or optional)* Direction indicators and warning lamp
Switch block (satellite)	Green	10 A	Warning lamp for side and tail lamps Energizing for front fog lamps *(X1 and X3)* Side and tail lamps Lighting for number plate Lighting for clock, odometers, fuel gauge sender unit Lighting for heater unit - Ventilation Anti-theft keyhole lighting
Switch block	Yellow	10 A	Rear fog lamps and warning lamp
Battery « + »	White	10 A	Radio power supply terminal *(optional)* Stoplamps Boot lamp Lighting for door ledge *(X3 and Pallas)* Interior lamp Cigar-lighter

DESCRIPTION OF WIRING HARNESSES

No marking : Front	**AD** : Rear, RH	**EC** : Boot lamp
D : Diagnosis	**P** : Interior lamp	**MR** : Rear earthings
AG : Rear, LH	**GP** : Rear door, L.H.	
	DP : Rear door, R.H.	

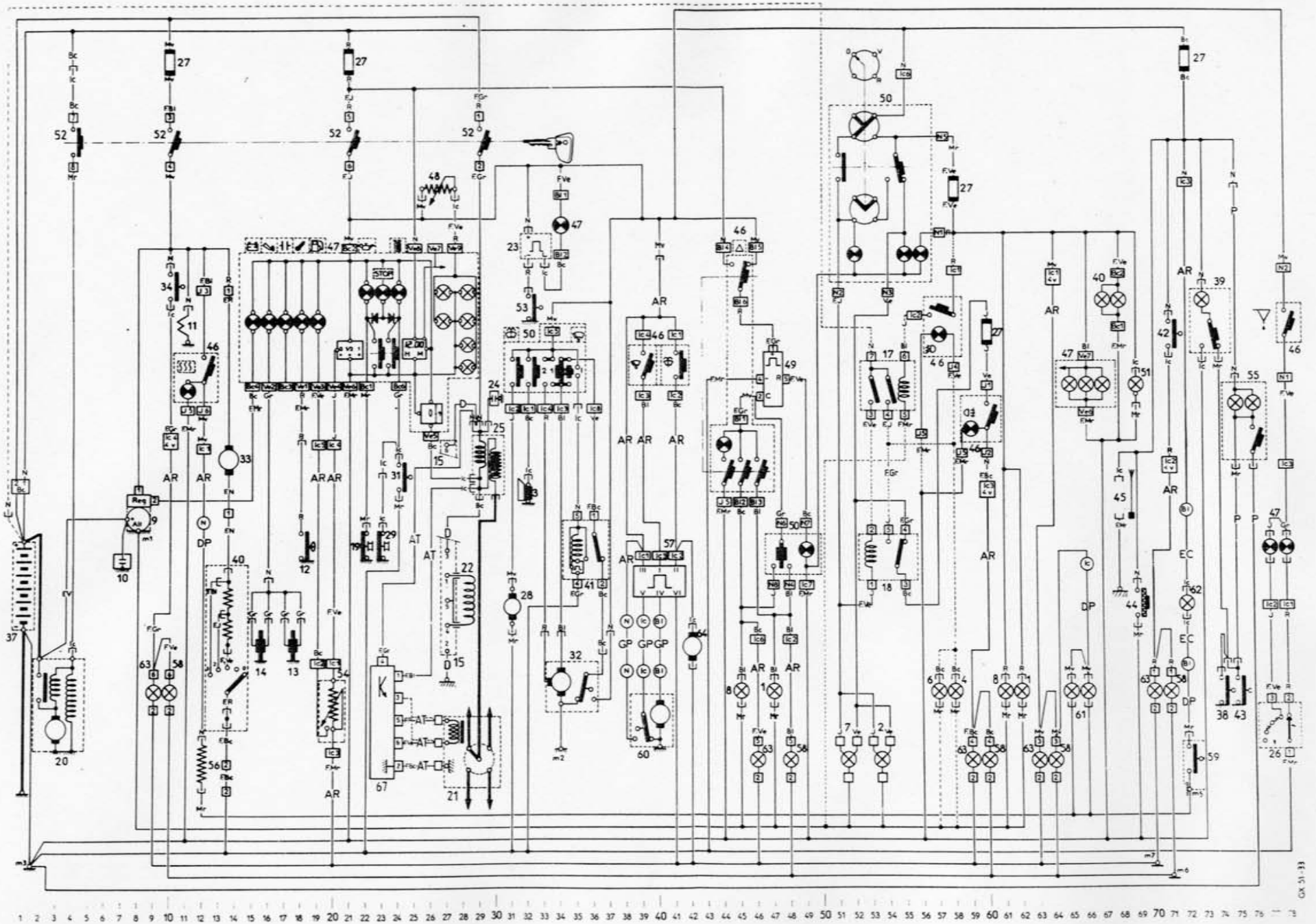
LIST OF COMPONENTS

No.	Description	Position
1	Front sidelamp, R.H.	62
	Front direction indicator, RH :	47
2	Headlamp main and dipped beams, R.H. :	53-54
3	Horn :	32
4	Front fog lamp , R.H. *(X1 and X3)* :	58
6	Front fog lamp ,LH *(X1 and X3)* :	57
7	Headlamp main and dipped beams, L.H. :	51-52
8	Front sidelamp, L.H.	61
	Direction indicator, L.H. :	45
9	Alternator with regulator :	8
10	Suppressor capacitor *(optional)* :	7
11	Idling damper :	11
12	Engine oil temperature switch :	18
13	Front brake unit, R.H. :	17-18
14	Front brake unit, L.H. :	15-16
15	Socket for diagnosis (12-pin) :	27
17	Relay for front fog lamps *(X1 and X3)* :	53 to 55
18	Relay for rear fog lamps *(X1 and X3)* :	53 to 55
19	Engine oil pressure switch :	22
20	Starter :	2 to 4
21	Distributor :	25 to 30
22	TDC sensor :	28
23	Choke warning lamp unit :	32-33
24	Suppressor capacitor *(optional)* :	30
25	Ignition coil :	29-30
26	Econoscope sensor *("Spécial" saloon)* :	78
27	Fuse box :	10-21-58-60-72
28	Windscreen washer pump :	31
29	Hydraulic pressure switch :	23
31	Contact for hydraulic fluid level :	24
32	Windscreen wiper motor :	34 to 36
33	Air blower :	13-14
34	Reversing lamp switch :	10
37	Battery :	1
38	Door-pillar switch, R.H. :	75
39	Door ledge lamp *(Pallas and X3)* :	73-74
40	Blower control and lamp :	13-67-68
41	Windscreen wiper timer unit :	35-36
42	Stoplamp switch :	71
43	Door pillar switch, L.H. :	74
44	Cigar-lighter :	69
45	Connector for radio power supply *(optional)* :	68
46	**Switches on keyboard :**	
	Heated rear window :	12
	Hazard warning lamp :	44 to 46
	Front fog lamp *(X1 and X3)* :	57-58
	Rear fog lamp :	60
	Rear window wiper, intermittent :	39
	Timer unit for rear window wiper/washer :	41
	Econoscope *("Spécial" saloon)* :	78

No.	Description	Position
47	**Instrument cluster :**	
	Warning lamps for :	
	- Battery charge :	15
	- Front brake pad wear :	16
	- Engine oil temperature :	18
	- Min. fuel level :	19
	- Engine oil pressure :	22
	- « Emergency STOP » :	23
	- Hydraulic fluid level :	24
	- Fuel gauge sender unit :	21
	- Clock and lighting :	25-65
	- Tachometer *(except Spécial)* :	26
	- Silhouette lighting :	27
	- Drum lighting :	28
	- Odometer lighting :	66
	- Lighting for fuel gauge sender unit :	67
	- Warning lamp for choke :	34
	- Warning lamps for econoscope :	
	- Yellow *("Spécial saloon)* :	77
	- Orange *("Spécial' saloon)* :	78
48	Rheostat for lighting of drum(s) and silhouette :	26
49	Flasher unit :	47
50	**Switch unit :**	
	- Switch for windscreen wiper/ washer :	31 to 35
	- Switch for horn :	32
	- Switch for direction indicators and warning lamp	47 to 49
	- Switch for lighting and flasher :	51 to 56
	- Warning lamps for headlamp main beam, dipped beam and side/ tail lamps :	52-55-56
51	Ignition keyhole lamp :	69
52	Anti-theft switch :	4-10-21-29
53	Choke control rod :	32
54	Rheostat for fuel gauge :	20
55	Interior lamp :	75-76
56	Heated rear window :	12
57	Timer unit for rear window wiper :	39 to 41
58	**Rear lamp cluster, R.H. :**	
	- Stoplamp and tail lamp :	71-64
	- Direction indicator :	48
	- Reversing lamp :	10
	- Fog lamp :	60
59	Switch for boot lamp :	72
60	Motor for rear window wiper *(X3 or optional)* :	39-40
61	Number plate lamps :	65-66
62	Boot lamp :	72
63	**Rear lamp cluster, L H.**	
	- Stoplamp and tail lamp :	70-63
	- Direction indicator :	46
	- Reversing lamp :	9
	- Fog lamp :	59
64	Rear window washer pump *(X3 or optional)* :	42
65	Ignition module :	23

LIST OF EARTHING POINTS

m1	Earth on alternator : 8	m5	Earth on boot lamp switch : 72
m2	Earth on bonnet R.H. hinge : 34	m6	Earth inside of boot, R.H. : 71
m3	Earth on bonnet L.H. hinge : 2	m7	Earth inside of boot, L.H. : 70


STOP
AR
AT
DP
GP
Reg
EC

OPERATION
GX. 533-0

STARTER MOTOR SPECIFICATIONS AND TESTING

STARTER MOTOR SPECIFICATIONS AND TESTING

12 V retracting pinion solenoid starter.
Flat collector
9-tooth pinion (Module 2.116/1.814)
Manufacturers :
DUCELLIER : 532016
PARIS-RHÔNE : D 8 E 155
Power : 0.90 kW.
♦ FEMSA : MOB 12-2
♦ Power : 0.70 kW.

TESTING

ON THE VEHICLE : Check that the battery is fully charged, and measure :
a) Consumption with pinion blocked : 380 to 440 A
b) No-load consumption (starter removed) : 50 A

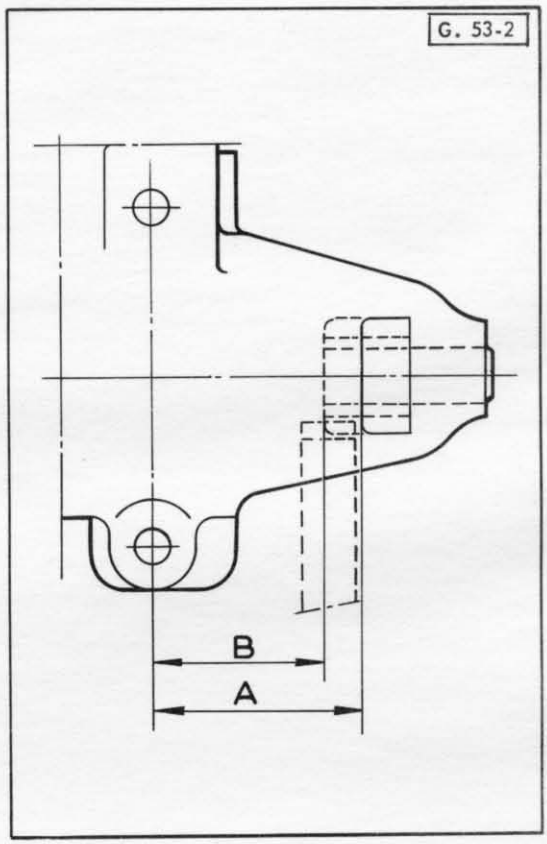
ON THE TEST BED :

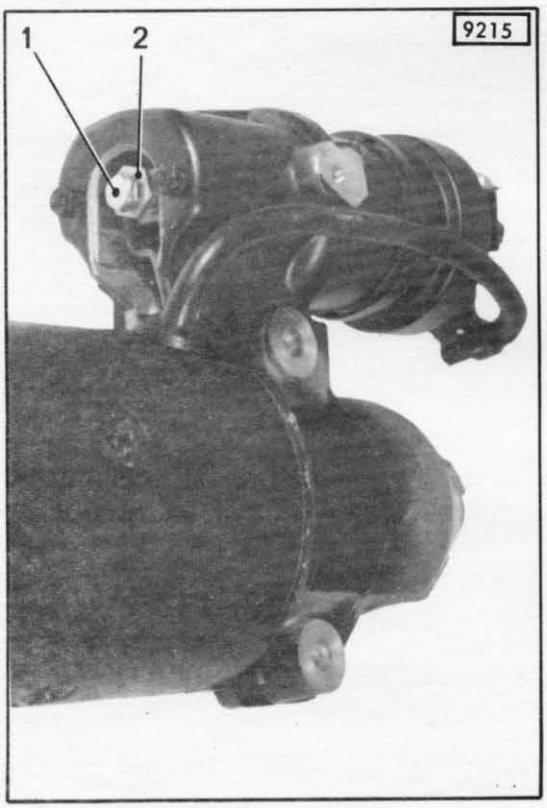
Mean torque at 1000 rpm :	0.70 m.daN
Corresponding current :	280 A
Torque with pinion blocked :	1.1 m.daN
Corresponding current :	380 A
Voltage :	7.5 V

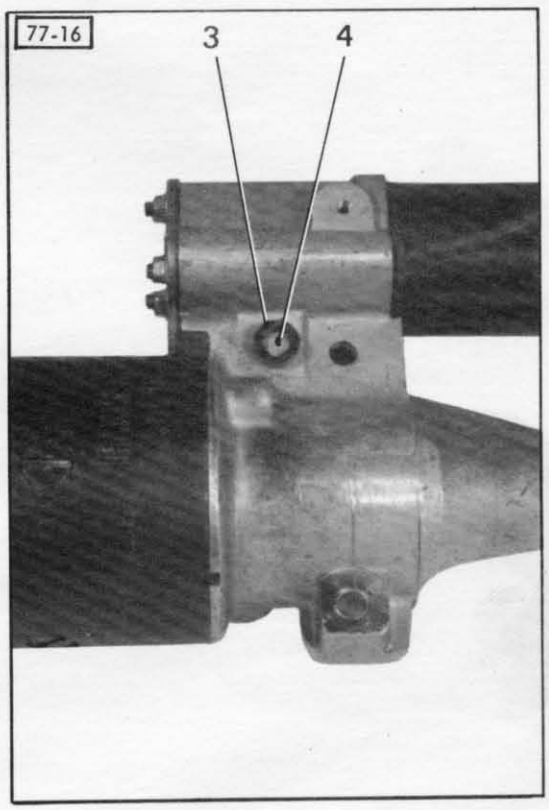
Position of starter pinion :

Solenoid not energized : A = 46.8 mm min.
Solenoid energized : B = 37.3 mm max.

Notes :
- DUCELLIER starter motor : the pinion is adjusted on sleeve (2), to obtain a clearance of 0.5 mm min. to 1 mm max. between sleeve (2) and screwhead (1), corresponding to the above pinion positions.
- PARIS-RHÔNE starter motor : the pinion is adjusted by rotating eccentric sleeve (3) after driving out shaft (4) and partially disengaging the sleeve from the bore splines.


G. 53-2
B
A


1
2
9215


77-16
3
4

OPERATION
GX. 533-3

RECONDITIONING A STARTER MOTOR

FEMSA MOB 12-2 STARTER MOTOR

DISMANTLING

Note the position of solenoid (1).
Dismantle the starter motor following exploded view shown on page 4.

CHECKING THE COMPONENTS
Use an ohmmeter to check the components.

Check the field coils
Set the ohmmeter on position : **Ω × 1000.**
Make sure the windings show no signs of heating up or priming.
Check the winding insulation :
Place the ohmmeter flat plugs on casing (4) and lead (2). The needle must not deviate (Resistance = ∞).
Check the circuit "continuity" :
Set the ohmmeter on position : **Ω × 1.**
Place the flat plugs on leads (2) and (3). The resistance measured must be inferior to **0.1 Ω.**

Check the armature
Make sure the windings show no signs of heating up.
Use a "growl tester" to check the armature winding.
Check the armature commutate :
Check the insulation of the commutate blades. Clean between the blades.
Skim the armature commutate, if necessary (nominal dia = **32 mm**).

Check the brushes
Make sure the brushes slide correctly in their guides.
Replace the brushes if their length **L** is smaller than 8 mm (nominal length = **18 mm**).

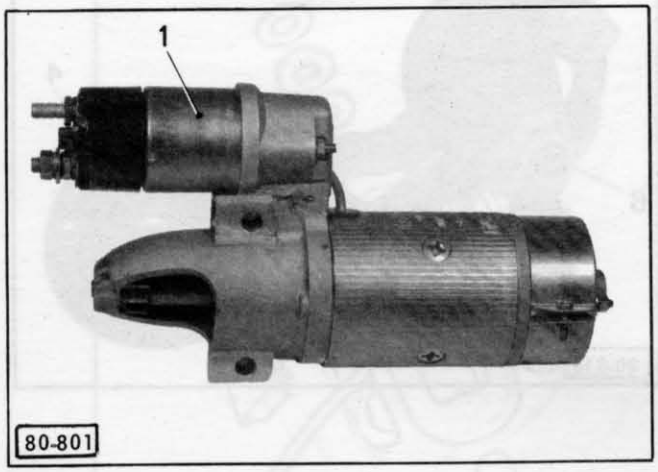
Check the bearings
Replace the shells if the contact surfaces are worn out.
Check the insulation of brush-holder (5).
Check the springs.

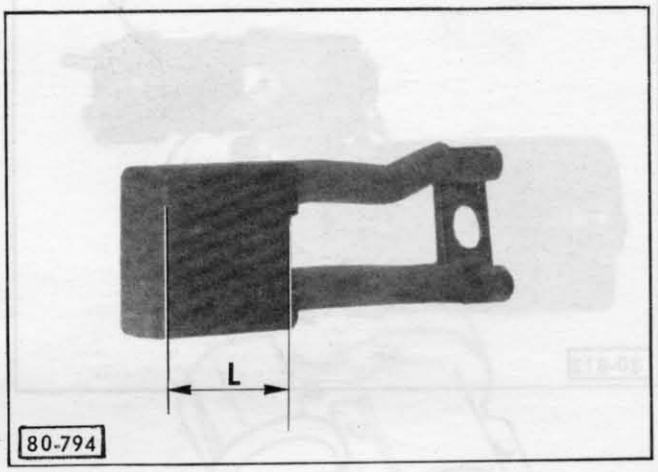
Check the starter pinion
Check the condition of the pinion teeth.
Make sure the pinion slides correctly on the armature splined shaft.

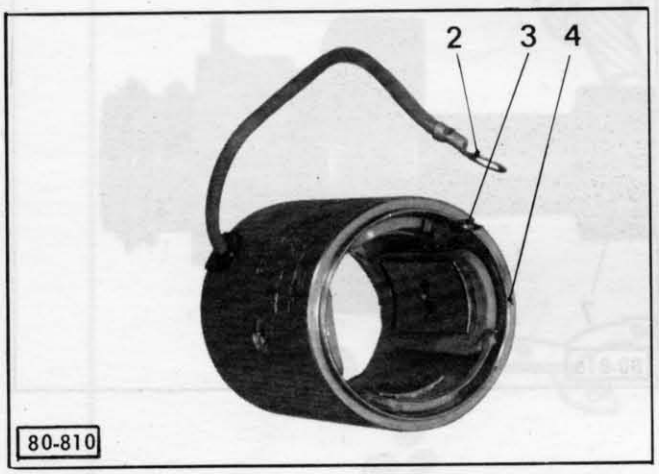
Check the solenoid
Set the ohmmeter on position **Ω × 1,** then carry out the following checks :
Check the secondary winding resistance by placing the ohmmeter flat plugs on terminal « b » and on earth « c ». The resistance measured must be **1 Ω** approx.
Place the ohmmeter flat plugs on terminals « a » and « b ». The primary winding resistance measured on the ohmmeter must be **0.25 Ω** approx.

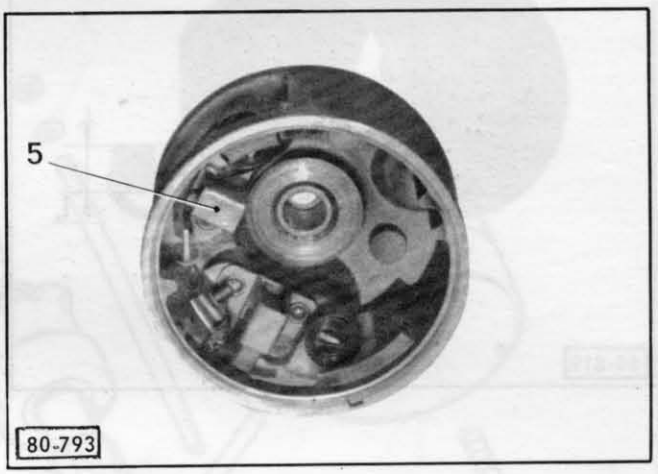
REASSEMBLING

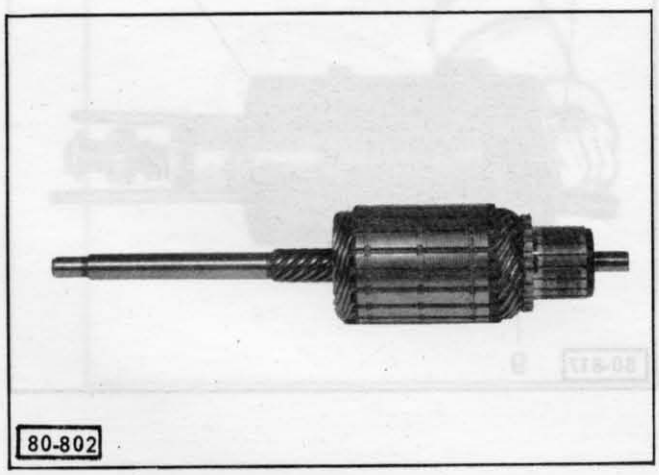
To reassemble the starter motor follow view shown on page 4 *(watch out for the fork direction of fitting).*
Oil the bearings, the starter pinion splines and the various steel and celoron washers.
Fore-and-aft clearance of the armature : **0.1 to 0.5 mm.**
Tightening torque of the rear bearing drawing rods : **0.6 mdaN.**

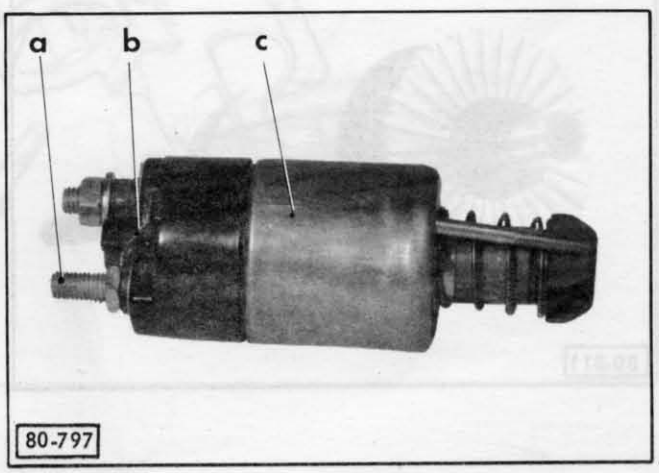

1
80-801

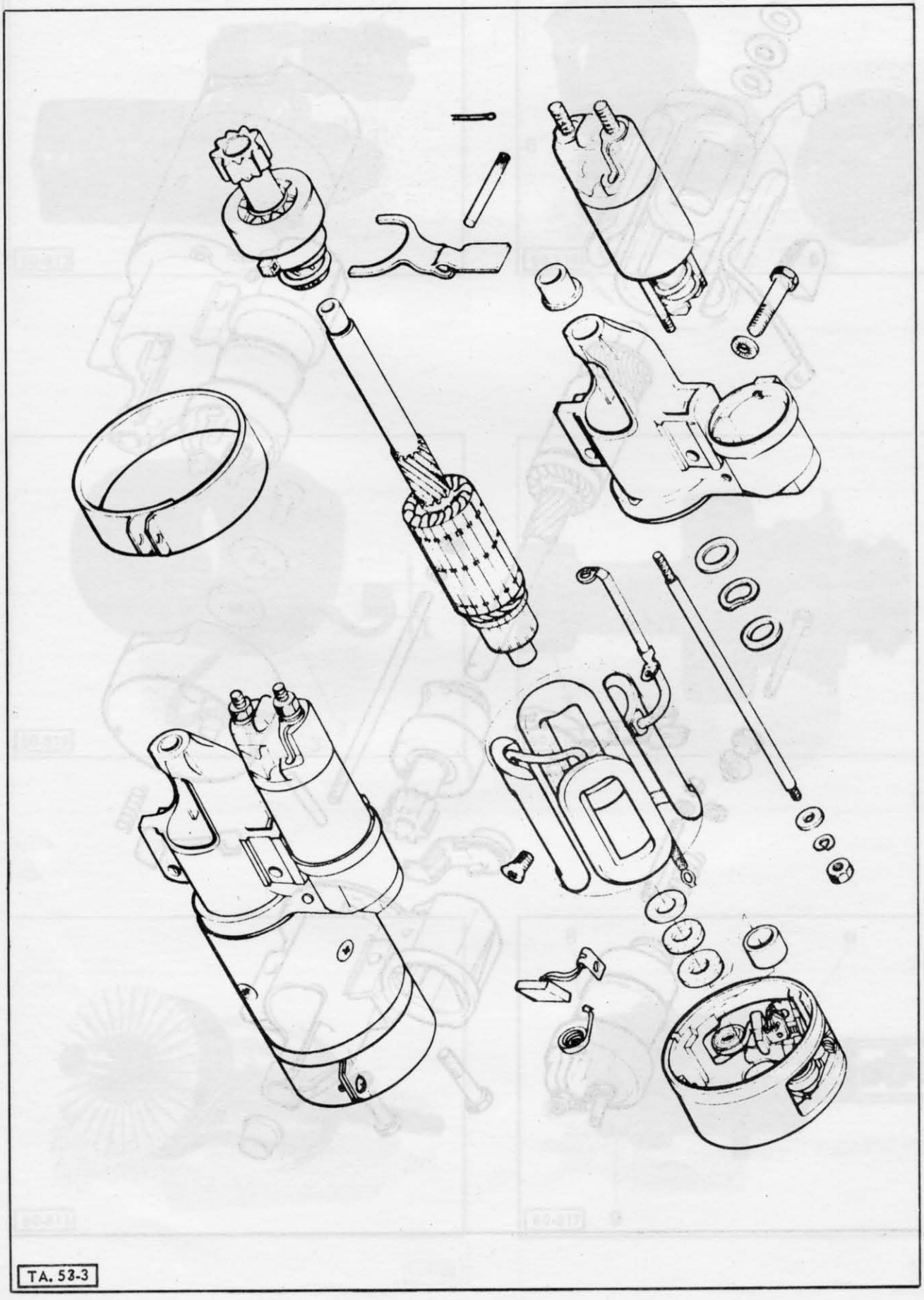

L
80-794


2
3
4
80-810

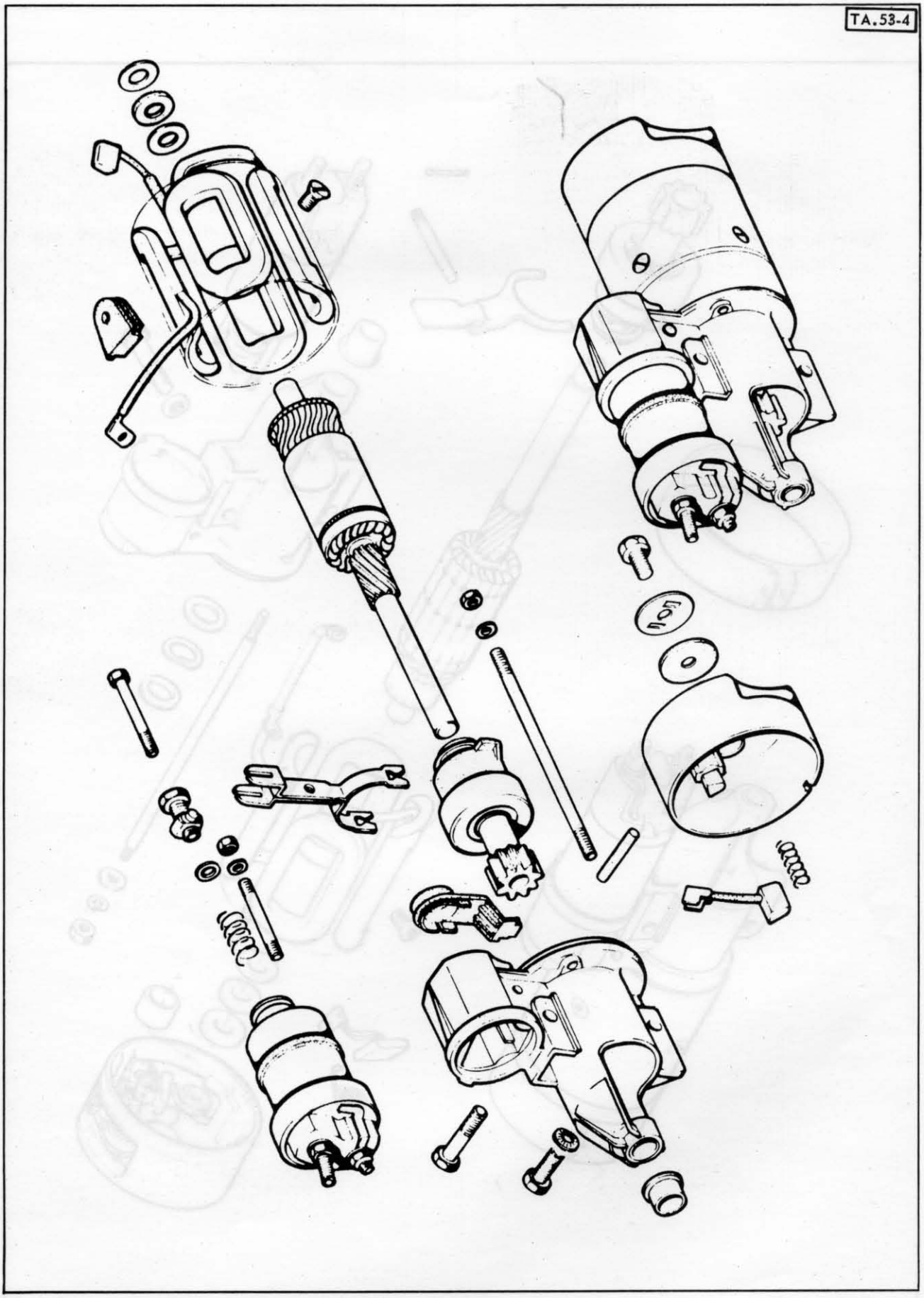

5
80-793

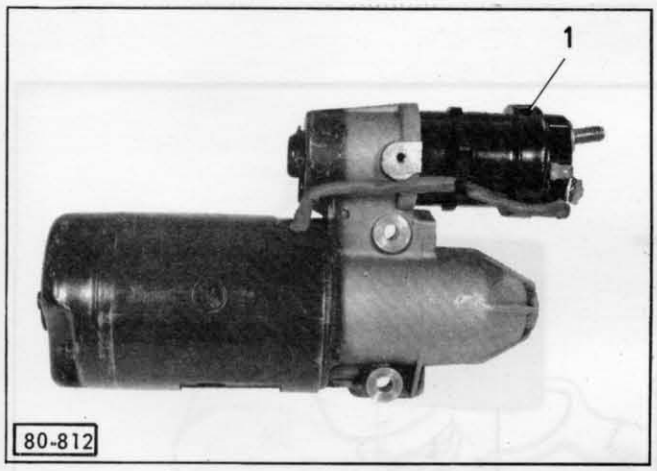

80-802

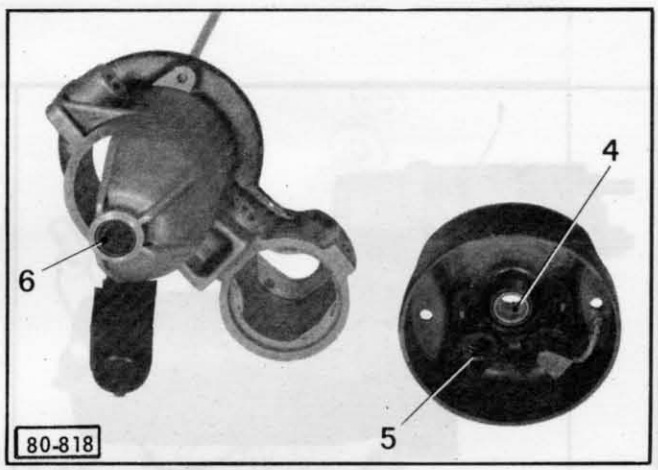

a
b
c
80-797

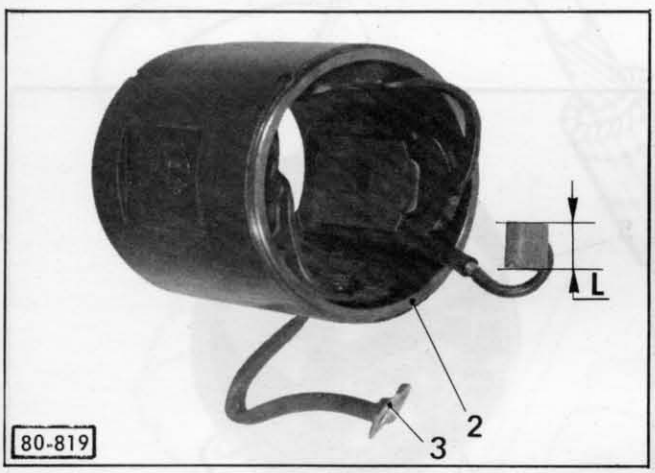


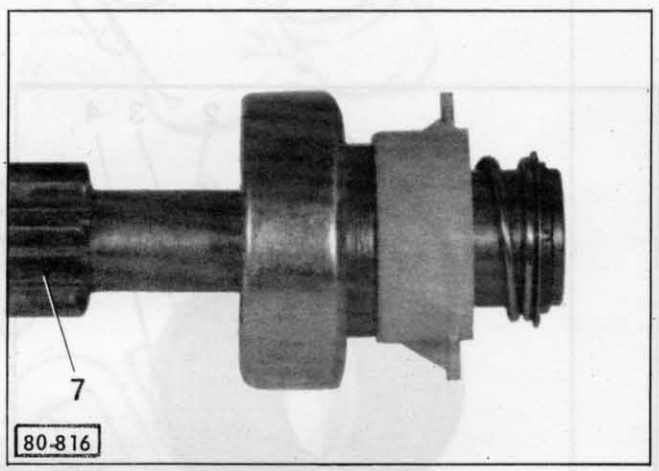
TA. 53-3

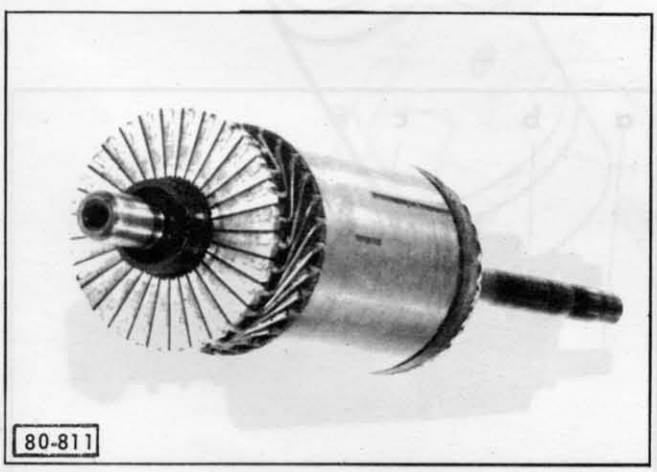

TA.53-4

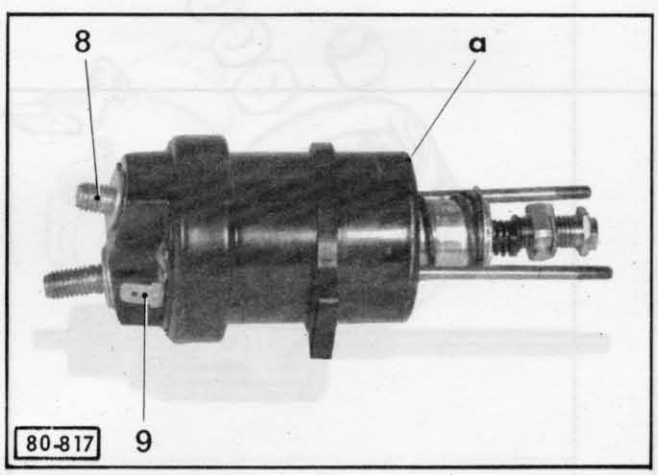

1
80-812


4
6
5
80-818


L
2
3
80-819


7
80-816


80-811


8
a
80-817
9

DUCELLIER 532 016 STARTER MOTOR

DISMANTLING

Note the position of the solenoïd.
Dismantle the starter motor following exploded view shown on page 3 a.

CHECKING THE COMPONENTS
Use an ohmmeter to check the components.

Check the field coils :
Make sure the windings show no signs of heating up or priming
Check the winding insulation :
Set the ohmmeter on position : $\Omega \times$ **1000.**
Place the ohmmeter flat plugs on casing (2) and lead (3). The needle must not deviate (Resistance = ∞).
Check the circuit "continuity" :
Set the ohmmeter on position : $\Omega \times$ **1.**
Place the flat plugs on lead (3) and on the brush. The resistance measured must be inferior to **0.1 Ω.**

Check the armature
Make sure the windings show no signs of heating up.
Use a "growl tester" to check the armature winding.

Check the armature commutate :
Polish the commutate blades and check their insulation. Clean between the blades.

Check the brushes :
Make sure the brushes slide correctly in their guides.
Replace the brushes if their length **L** is smaller than 5 mm (nominal length = **15 mm**).
Weld the new brush wires with tin:

Check the bearings :
Replace the shells of bearings (4) and (6) if the contact surfaces are worn out.
Check springs (5) located in the rear bearing brush-holder.
Check the insulation of the brush-holder.

Check the starter pinion
Check the condition of the teeth of pinion (7).
Make sure the pinion slides correctly on the armature splined shaft.

Check the solenoid :
Set the ohmmeter on position $\Omega \times$ **1,** then carry out the following checks :
Check the secondary winding resistance by placing the ohmmeter flat plugs on terminal (9) and on earth « a ». The resistance measured must be **1 Ω** approx.
Place the flat plugs on terminals (8) and (9). The primary winding resistance must be **0.25 Ω** approx.

REASSEMBLING

Oil the bearings, the starter pinion splines and the steel and celoron washers.
Reassemble the starter pinion following the view shown on page 3 a.
Adjust the position of the starter pinion *(see Op. GX. 533-0).*

PARIS-RHÔNE D 8 E 155 STARTER MOTOR

DISMANTLING

Dismantle the starter motor following exploded view shown on page 8.

CHECKING THE COMPONENTS
Use an ohmmeter to check the components.

Check the field coils :
Make sure the windings show no signs of heating up or priming.
Check the winding insulation :
Set the ohmmeter on position **Ω × 1000.**
Place the ohmmeter flat plugs on casing (1) and lead (2). The needle must not deviate (Resistance = ∞).
Check the circuit "continuity" :
Set the ohmmeter on position : **Ω × 1.**
Place the flat plugs on lead (2) and on brush (3). The resistance measured must be inferior to **0.1 Ω.**

Check the armature
Make sure the windings show no signs of heating up or priming.
Polish and clear between the blades of the armature commutate.
Check the armature windings, using a "growl tester".

Check the brushes
Make sure the brushes slide correctly in the guides of brush-holder (5).
Replace the brushes if their length **L** is smaller than 6 mm (nominal length = **15 mm**).
Make sure there are no cracks on the brush-holder.

Check the bearings
Replace the bearing shells if the contact surfaces are worn out.

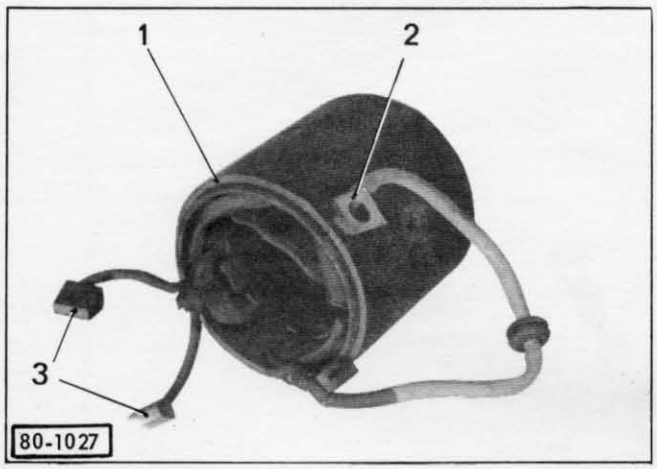
Check the brush springs.
Press on the springs and check that their base does not touch earth « d ».

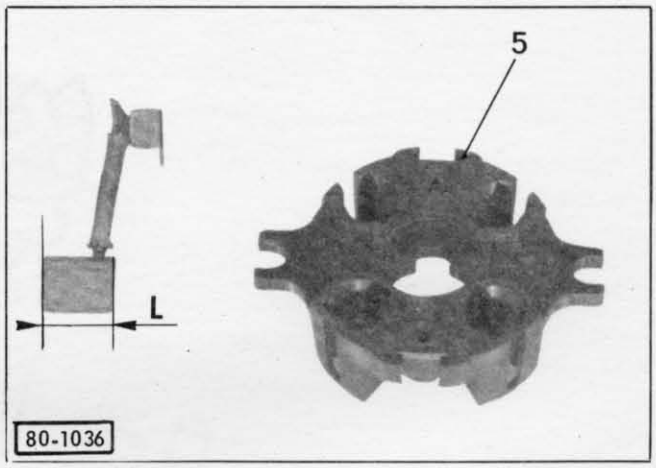
Check the starter pinion
Check the condition of pinion (4)
Make sure the starter pinion slides correctly on the armature splined shaft.

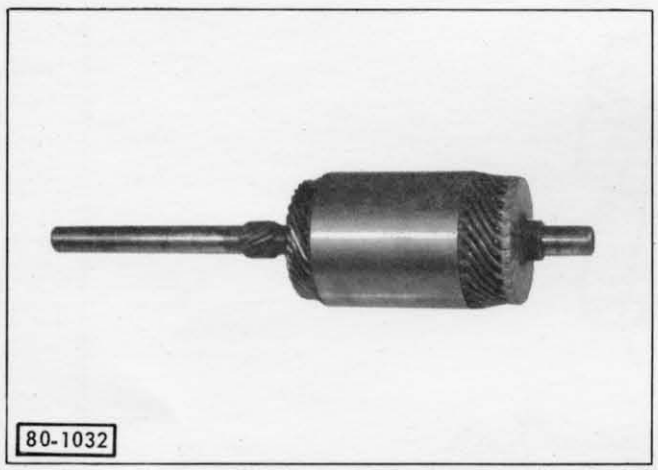
Check the solenoid
Set the ohmmeter on position **Ω × 1,** then carry out the following checks :
Check the secondary winding resistance by placing the ohmmeter flat plugs on terminal « b » and on earth « c ». The resistance measured must be **1 Ω** approx.
Place the flat plugs on terminals « a » and « b ». The primary winding resistance must be **0.25 Ω** approx.

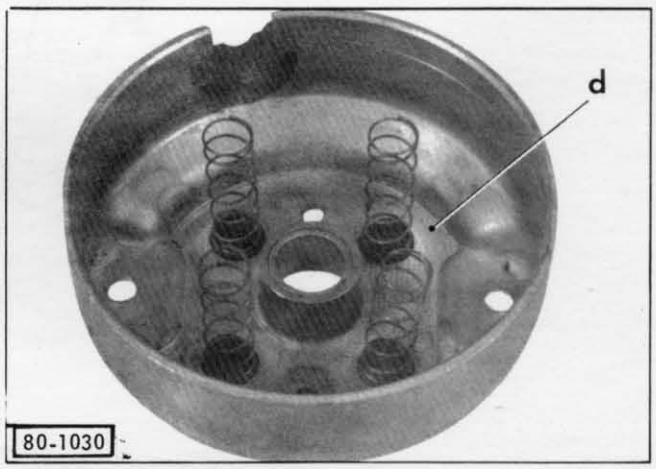
REASSEMBLING

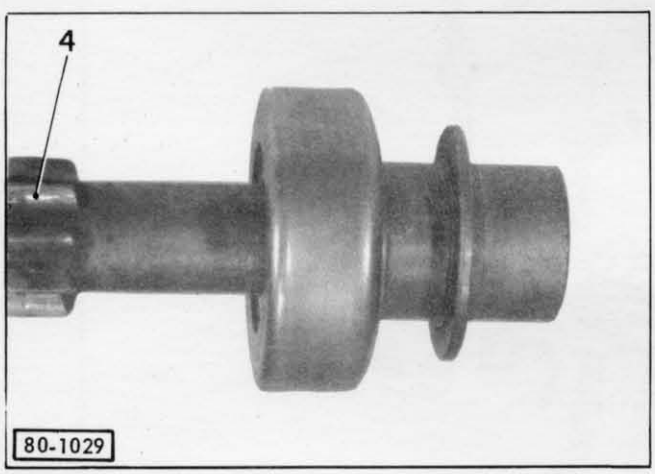
To reassemble the starter motor follow exploded view shown on page 8.
Position the brushes correctly in the guides of the brush holder.
Oil the bearings, the starter pinion splines and the steel and celoron washers.
Adjust the position of the starter pinion *(see Op. GX. 533-0).*

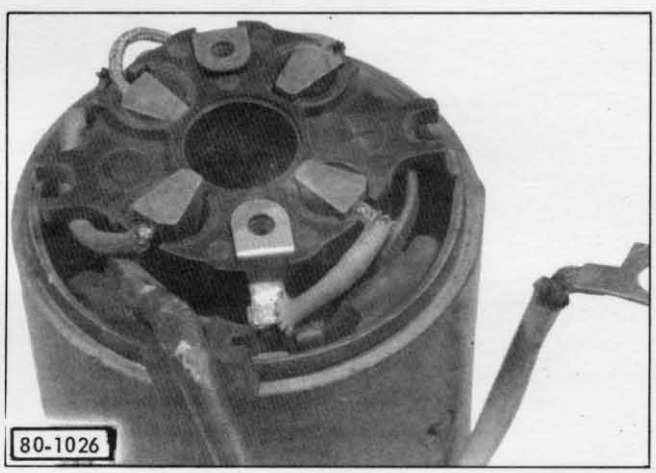

1
2
3
80-1027

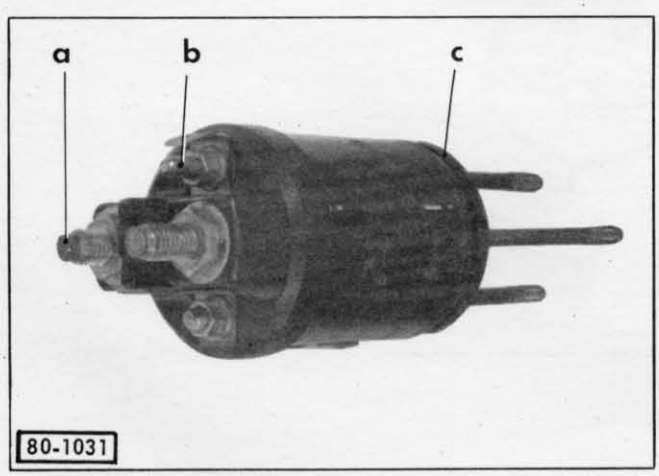

5
L
80-1036


80-1032

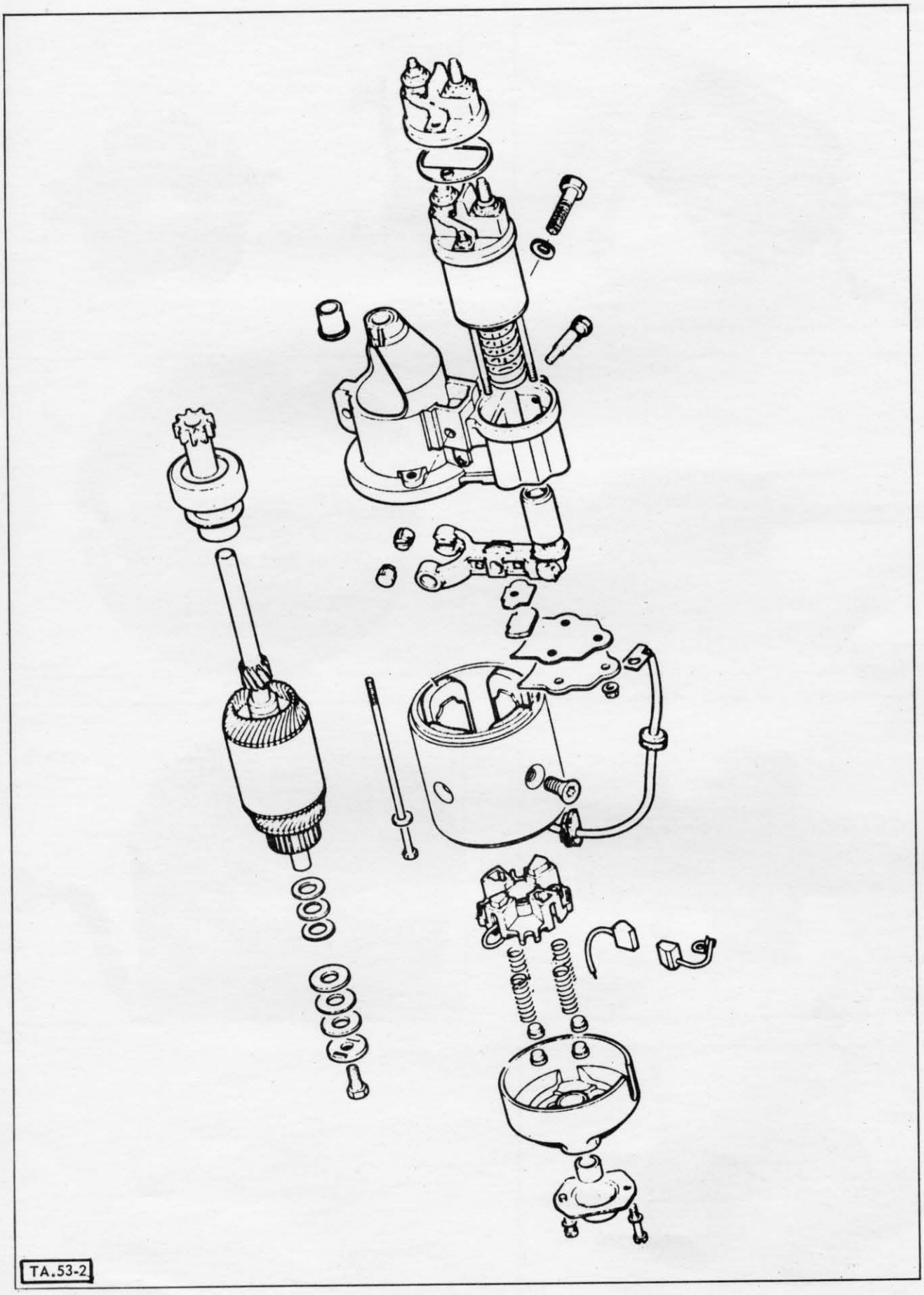

d
80-1030


4
80-1029


80-1026


a
b
c
80-1031

• *811-1 (IV)*



TA.53-2

OPERATION
GX. 640-1

REMOVAL AND FITTING OF A HEATING/ VENTILATION CONTROL

REMOVAL AND FITTING OF A HEATING/VENTILATION CONTROL

REMOVAL

1. Disconnect the earth lead from the battery.

2. Loosen cable-clamp screw (1) (the cable will come together with the control when pulling it out of the dashboard).

3. Remove the dashboard upper section :
- Remove the side vents, the instrument cluster, the ashtray.
- Remove the six securing screws (located at (➡) and free the upper section.
  (Caution : one screw is located at bottom of the ashtray housing).

4. Remove the quadrant plate (façade) (2) :
- Remove buttons (3) by pulling them off.
- Remove securing screw (4).
- Remové the quadrant once its lighting bulb has been taken off.

5. Remove the control :
a) Disconnect the four leads (8) from the control.
b) Remove the two securing screws (9).
c) Using a screwdriver **(A)**, disconnect the following :
- rod (7) from its upper bearing,
- lever (5) from the control shaft (let it rest temporarily aside).

d) Move the control to the right so as to free it from the heating outlet at « a ».
Remove the control *together with the centre lever.*
e) Disconnect lever (5) from its cable (6) and disengage it.

FITTING

6. Prepare the new control :
- Disconnect lever (5) from the control shaft (as in paragraph 5, sub-paragraph c) then connect it to its cable (6) in dashboard.
- Disconnect the centre lever cable from the old control and connect it to the new one.

7. Position the control in the dashboard by engaging the centre lever cable into its sleeve.
♦ Place the control bottom in its housing in the heating outlet at « a ».
Connect the following :
- rod (7) to its upper bearing,
- lever (5) to the control shaft.

8. Fit the two securing screws (9).

9. Connect the four leads in the following order, up to bottom : blue, yellow, green, red.

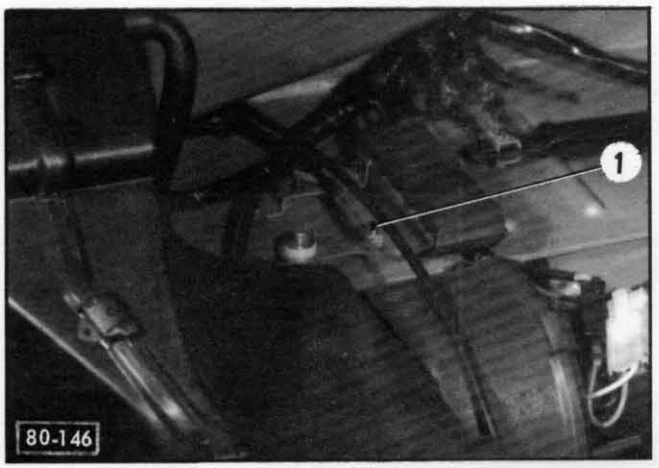
10. Position the quadrant plate by fitting the lighting bulb in its location.
Tighten screw (4). Fit the three buttons (3).

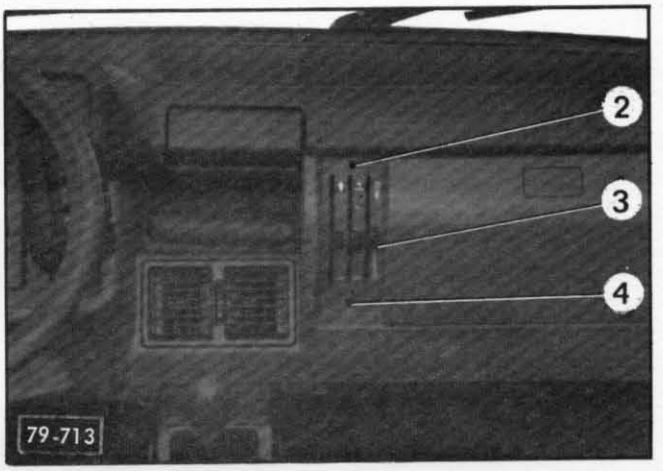
11. Fit the upper section of the dashboard (screws at ➡) and the ashtray.

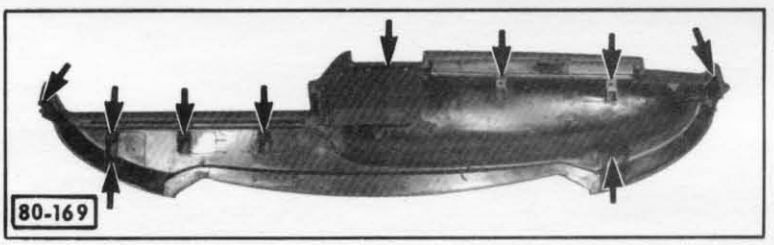
12. Fit the instrument cluster, the side vents.

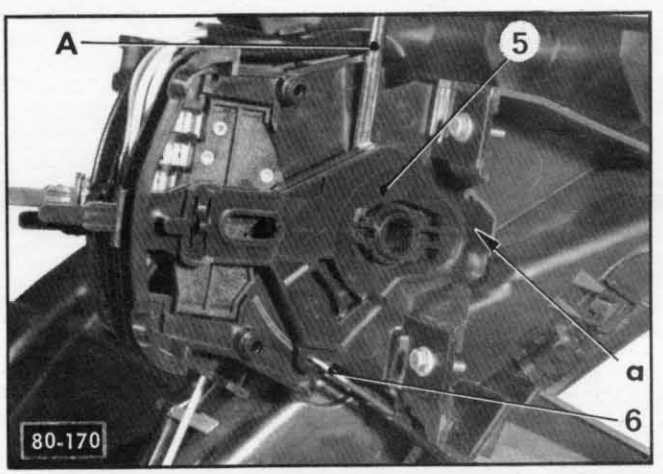
13. Slide the cable in cable-clamp and tighten screw (1).

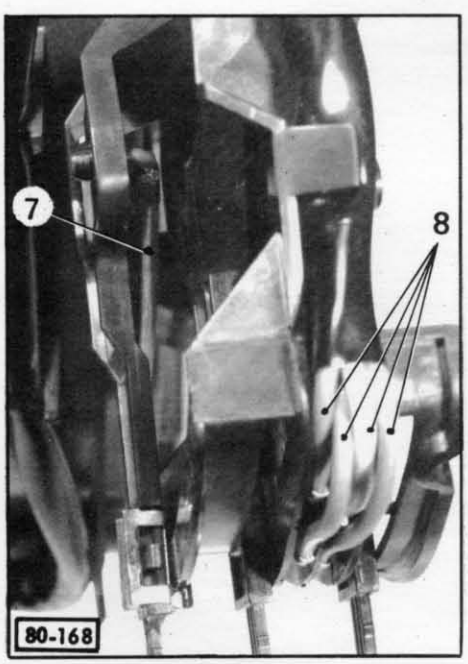
14. Connect the earth lead to the battery.

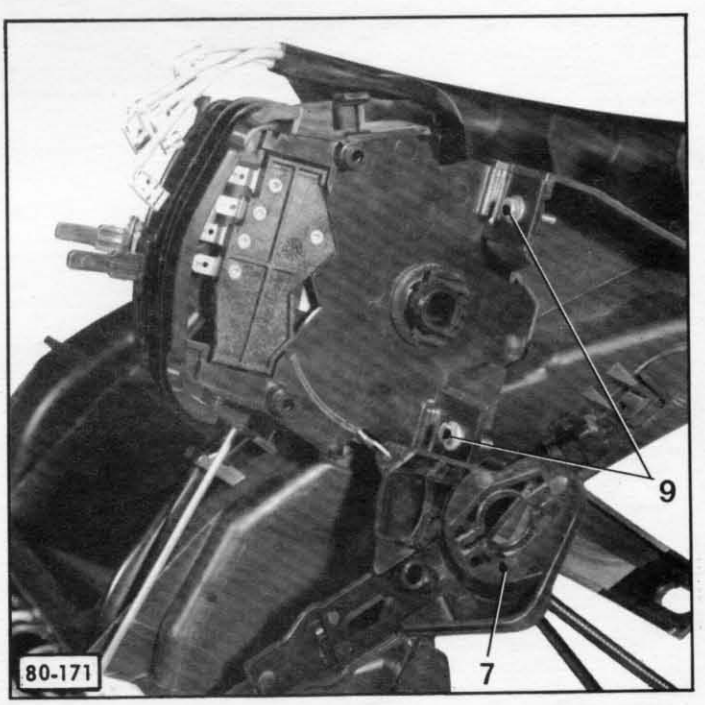

1
80-146


2
3
4
79-713


80-169


A
5
a
6
80-170


7
8
80-168


9
7
80-171

OPERATION
GX. 653-00

GSA TUNER

ARRANGEMENT OF THE RADIO INSTALLATION

CHARACTERISTICS.

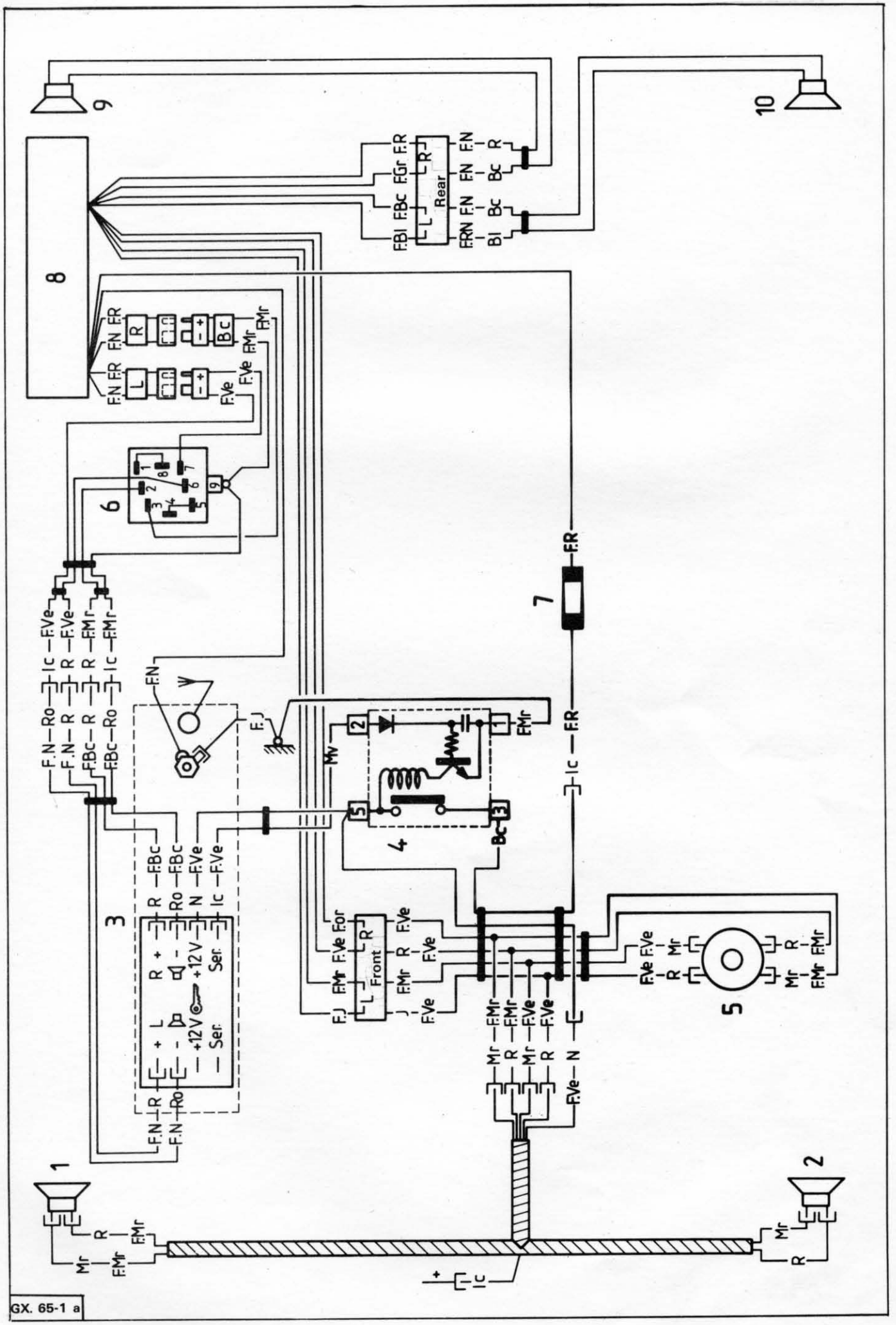
- The GSA « TUNER » vehicle is a variation of the « 1982 Model Year » GSA CLUB.
  The specific radio equipment is made up of the following :
  - a PHILIPS casing, Ref. 22 N 4691 which allows for fitting and removal of a PHILIPS AC 810 set.
    Delivered power : 2 × 6 watts (blocked impedance : 2 × 4 Ω).
  - a PHILIPS equalizer-amplifier, ref. 22 AP120, incorporated in a housing fitted on the console rear section : (Effective signal radiated : 4 × 10 watts),
  - two « Tweeter-Medium » loudspeakers, located in the housings provided for on facia :
    (impedance : 8 Ω),
  - a double-coil « Boomer » loudspeaker, located under the driver's seat (impedance : 8 Ω per coil),
  - two « Medium-Tweeter » loudspeakers, located in the side parts of the supports for rear parcel shelf :
    (impedance : 4 Ω per loudspeaker).
  - a PHILIPS headphone, ref. M 6301, semi-open type, impedance : 32 Ω,
  - a jack, dia. 6.3 mm (mini-jack dia. = 3.5 mm).

- **Interference suppression :**
  - Fitting of two interference suppressors (one on the air blower motor, one on the windscreen wiper motor).
  - Coil interference suppression through a 250 μF condenser (instead of 50 μF).

NOTE : The wiring diagram opposite includes a transistorized relay (4).
If the factory-fitted relay *(not transistorized)* has not been replaced, see Message No. 83005 to carry out the modification (fitting a transistorized relay).

DESCRIPTION OF PARTS

MARK	DESCRIPTION
1	Front loudspeaker, R.H.
2	Front loudspeaker, L.H.
3	Radio set
4	Transistorized relay
5	Boomer
6	Headphone adapter
7	Fuse
8	Equalizer-amplifier
9	Rear mini-loudspeaker, R.H.
10	Rear mini-loudspeaker, L.H.


9
10
8
Rear
Front
6
7
4
3
5
1
2
GX. 65-1 a

OPERATION
GX. 961-0

CHECKING AND REPAIRING A HEATED REAR WINDOW RESISTOR

CHECKING AND REPAIRING A HEATED REAR WINDOW RESISTOR

I. CHECKING.

Power of the heating resistance :
a) *Saloons :* ..... 130 to 150 W at 13.5 ± 0.2 volts
b) *Estates :* ..... 91 to 105 W at 13.5 ± 0.2 volts

To check the heating resistance, measure :

1. Either the current flowing in the resistor, using an ammeter connected in series to the supply lead. The current must be :
a) *Saloons :* ..... 8.6 to 10 amps. at 12 volts
b) *Estates :* ..... 6 to 7 amps at 12 volts

2. Or the resistor, using an ohmmeter. The resistance must be :
a) *Saloons :* ..... 1.1 to 1.4 Ω
b) *Estates :* ..... 1.7 to 2 Ω

II. REPAIRING (on vehicle) :

1. Replacing the terminals :
Tin that part of the terminal to be soldered. Solder it with tin at the required place using a soldering iron.

2. Repairing a section of the heating wire :
Obtain from the Replacement Parts Department :
- 1 kit : reference ZC 9 855 128 U

Proceed following the instructions given in the kit Manual.

MANUFACTURING DRAWINGS FOR TOOLS NOT SOLD
(MR TOOLS)

PARTS LIST

MR. 630-11/16 : Anchor jig for cam shaft pulley Page V
A : 50 x 10 mm flat strip
B : 22 mm round bar

MR. 630-17/1 : Extension piece for fan removal Page V
3/4" extension piece, lorry series, modified for fan removal

MR. 630-23/9 : Small end shell bearing extractor Page VI
A : Threaded rod : 10 x 1.50 mm
B : Semi-hard steel
C : Semi-hard steel
D : Semi-hard steel
E : 2 nuts : 10 x 1.50 mm

Break angles « a »

MR. 630-25/8 : Rocker arm shaft extractor Page VI.
A : Part DX 124-11
B : Nut, 10 x 1,50 mm
C : Threaded rod, 10 x 1.50 mm, length 235 mm
D : Part 75 521 108
E : Tube

a : Braze
b : Arc-weld

MR. 630-25/23 : Sleeve for ball joint removal Page VI
Steel grade CC. 35

MR. 630-27/18 : Clamp for retarding dowels Page VII
A : 5 mm round bar, developed length 180 mm
B : 5 mm round bar
C : 1.5 mm sheet, developed length 26 mm
D : 5 mm round bar, developed length 300 mm
E : Semi-hard steel

MR. 630-31/84 : Mandrels for removing and fitting gear lever Page VIII
Semi-hard treated steel

MR. 630-31/84 A
MR. 630-31/84 B : L = 37.5 mm

MR. 630-31/85 : Mandrel for clutch plate alignment — Page VIII

Semi-hard steel
Zone **A** knurled

MR. 630-31/96 : Mandrel for inserting swivel bearings — Page VIII

Semi-hard steel

MR. 630-31/97 : Mandrel for inserting swivel seal ring — Page VIII

Semi-hard steel

MR. 630-31/133 : Half-shells and ring for fitting ball joint — Page IX

Steel grade CC. 35

MR. 630-33/8 : Mandrel for fitting gearbox drive outlet seal — Page IX

Steel grade CC. 35

MR. 630-43/15 : Foot for engine/gearbox support on bench — Page X

Semi-hard steel - 60 x 12 mm flat strip

A : Rectify face after assembly
B : Two welded feet

MR. 630-43/29 a : Support for gearbox on bench — Pages XI and XII

A : 5 mm sheet, 290 x 286 mm
B : 5 flat strips 20 x 4 mm, length 156 mm
C { **a)** : Angle section, 20 x 20 mm, length 195 mm; **b)** : 3 mm sheet, 17 x 17 mm
D { **a)** : Angle section, 20 x 20 mm, length 195 mm; **b)** : 3 mm sheet, 17 x 17 mm
E { **a)** : Flat strip, 30 x 6 mm, length 126 mm; **b)** : Flat strip, 40 x 6 mm, length 70 mm
F : Flat strip, 20 x 4 mm, developed length 78 mm
G : Flat strip, 20 x 4 mm, developed length 79 mm
H : Two wing nuts, 6 x 10 mm
I : Two hex. head screws, 6 x 100 mm, length 20 mm (brazed)

MR. 630-43/31 : Support for cylinder head on bench — Page XIII

A : 10 mm sheet, 100 x 213.5 mm
B : 2 hardwood blocks
C : Angle section, 50 x 50 mm
D : 4 wood screws, 5 x 20 mm
E : 4 nuts ZD 9 526 100 U
F : 4 screws ZD 9 049 700 U
a : 4 holes countersunk (90°) for flush head screws

MR. 630-44/14 : Safety hook for sling 2511-T Page XIV

L : Square nut, 10 x 1.50 mm
M : 2.5 mm sheet, approx. 50 x 100 mm
N : Threaded rod, 10 x 1.50 mm, length 25 mm
O : Drawn tube, OD 16 mm, length 200 mm
P : Wing nut, 10 x 1.50 mm (welded)

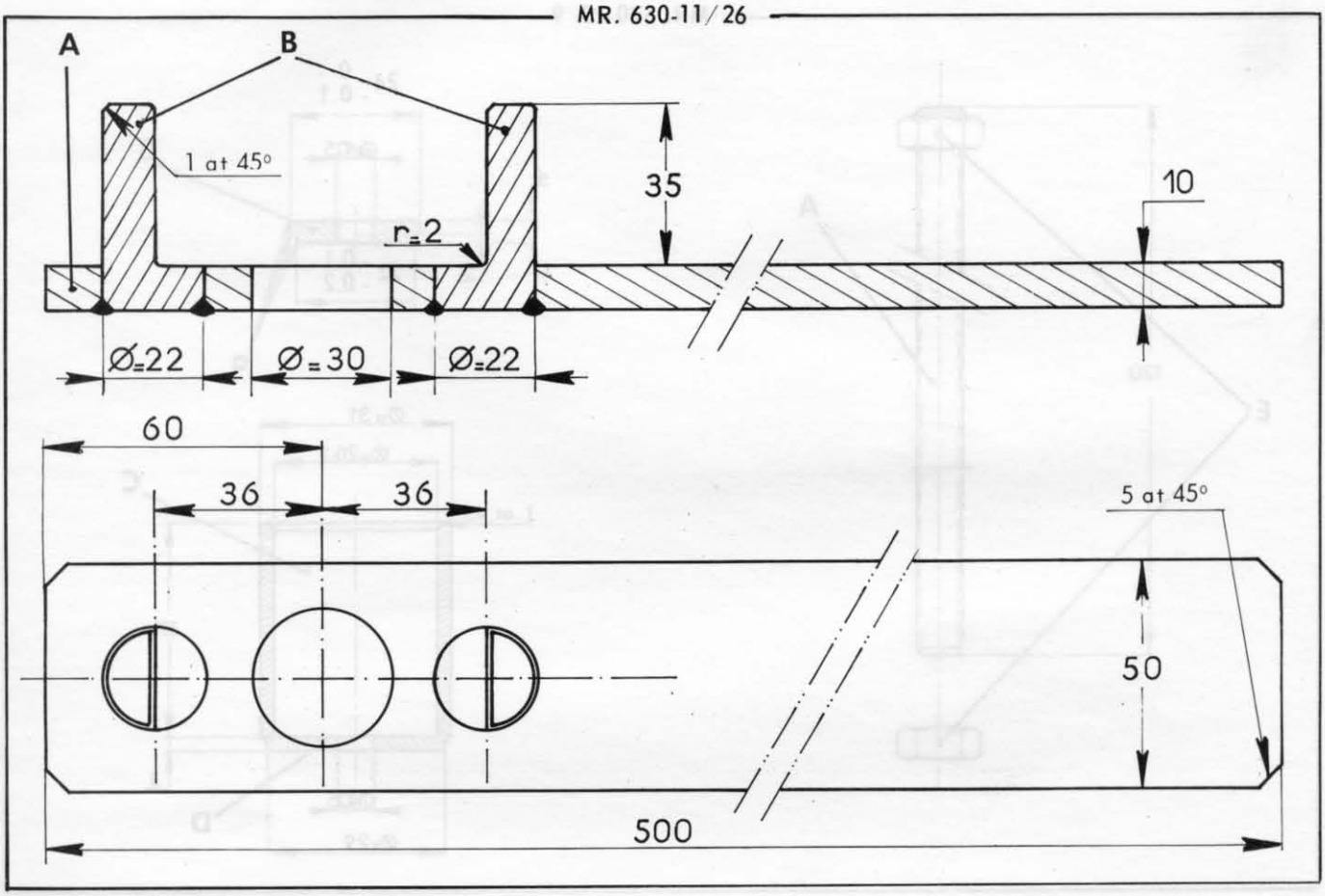
MR. 630-62/14 : Tool for swaging by-pass valve Page XV

Hard-steel

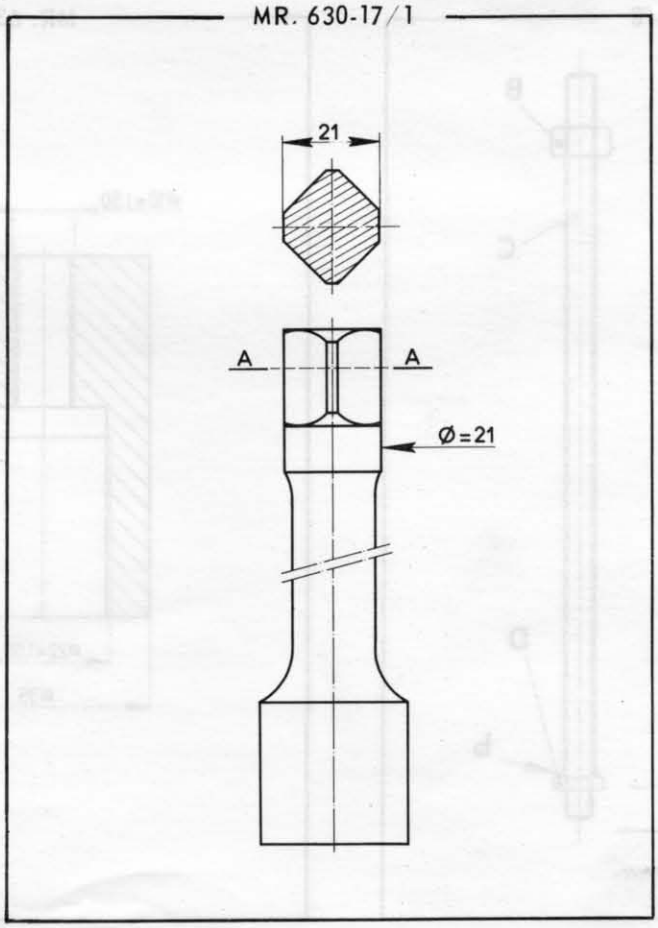
MR. 630-64/55 : Tool for fitting drive shaft dust covers Page XVI

Tube : 15 x 21 mm
a) Break angle on periphery

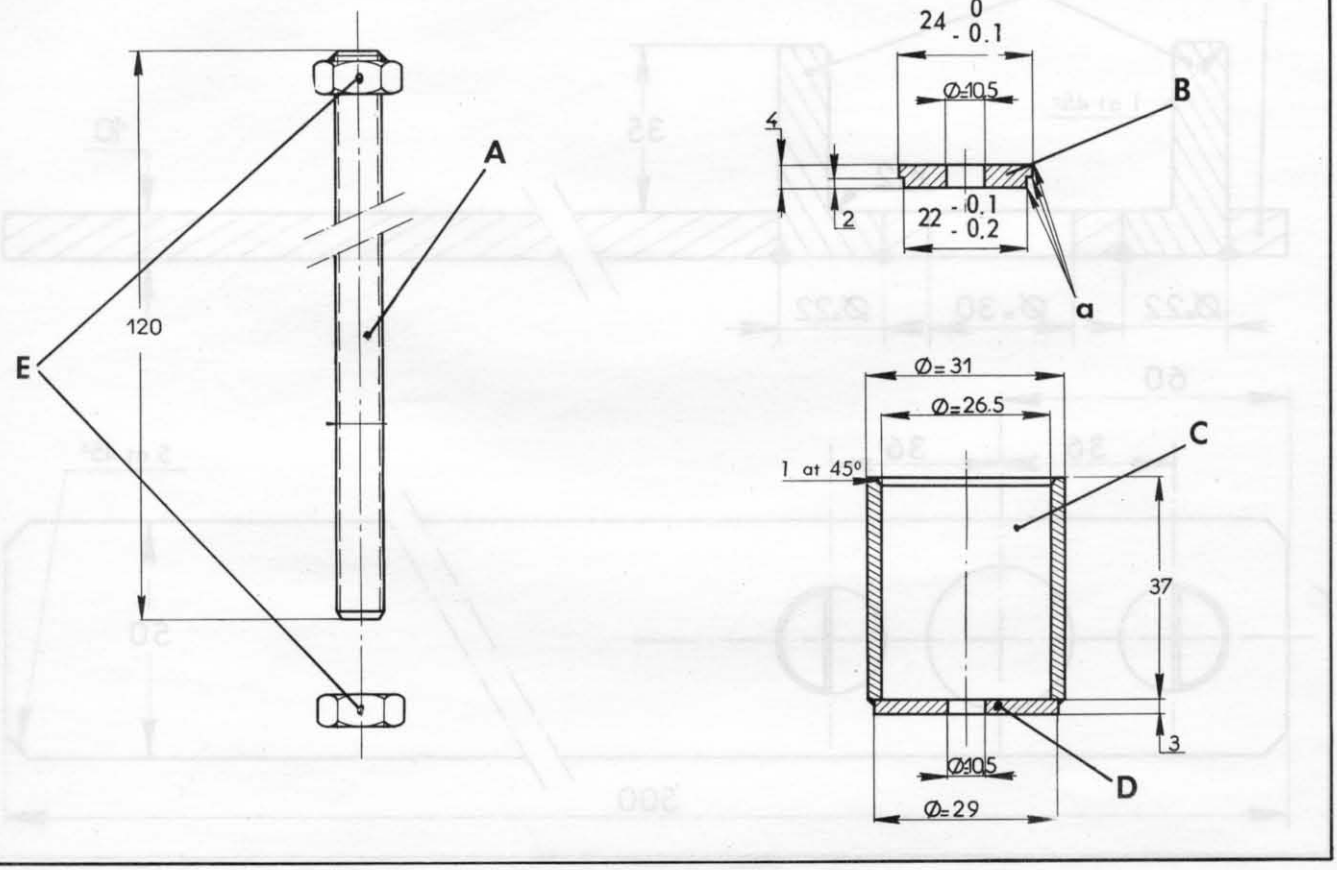
MR. 630-11/26



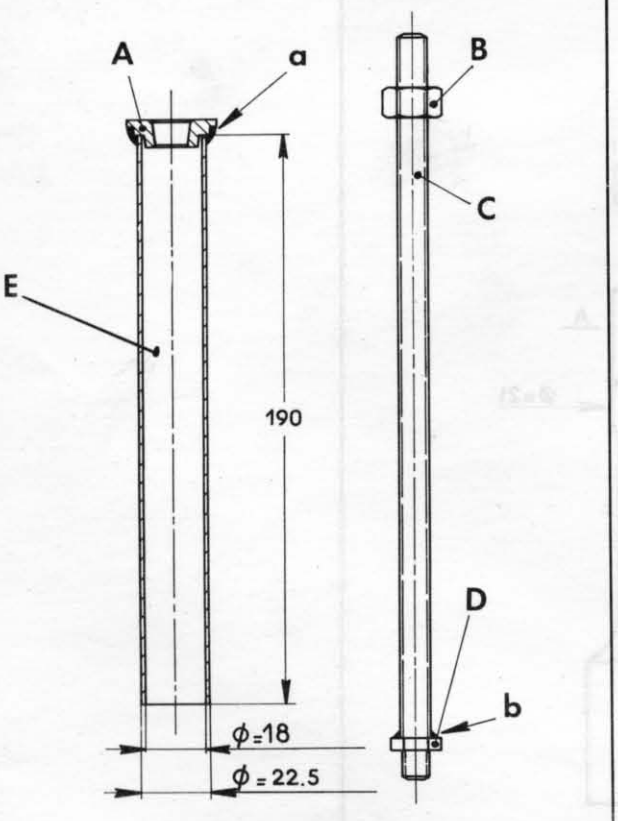
MR. 630-17/1



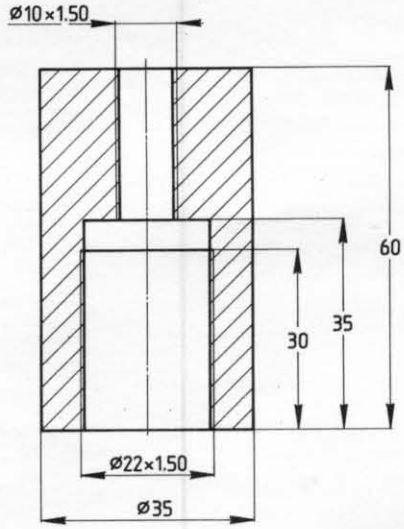
MR. 630-23/9



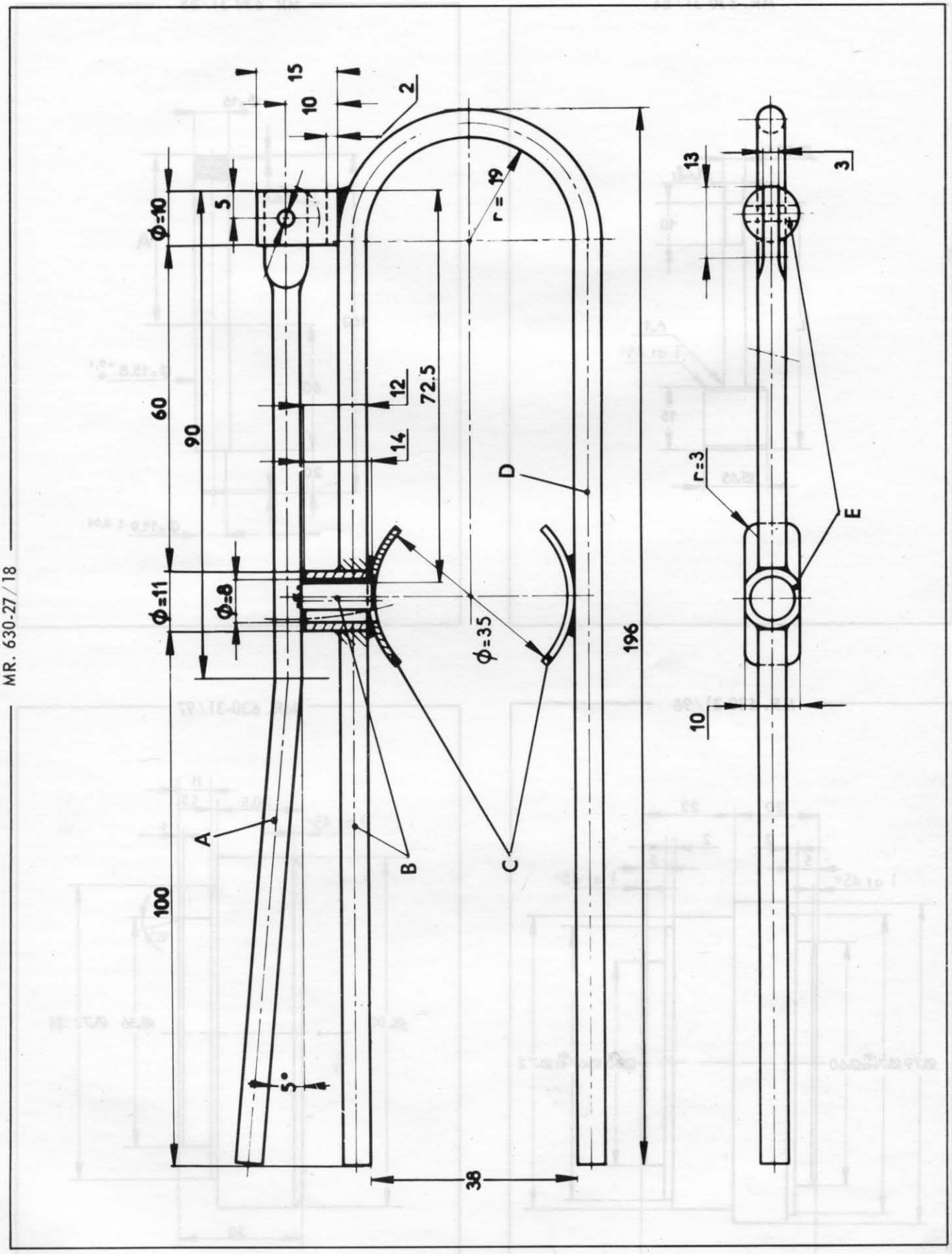
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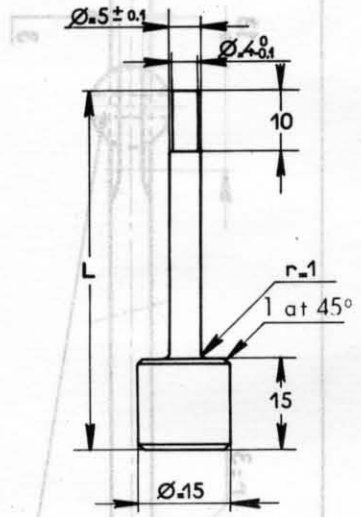
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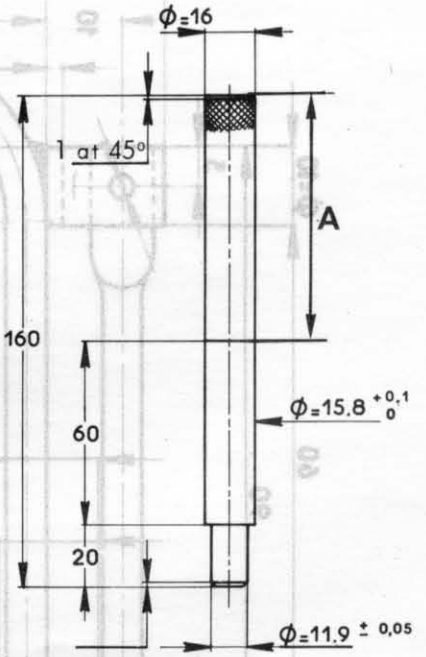
MR. 630-27/18


15
10
2
Φ=10
5
r=19
60
90
12
72.5
14
D
Φ=11
Φ=8
Φ=35
196
A
B
C
100
5°
38
13
3
r=3
E
10

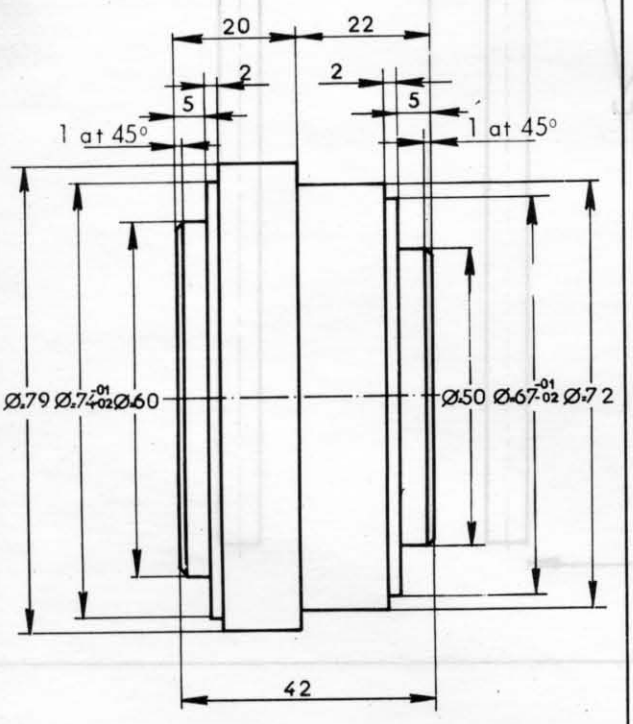
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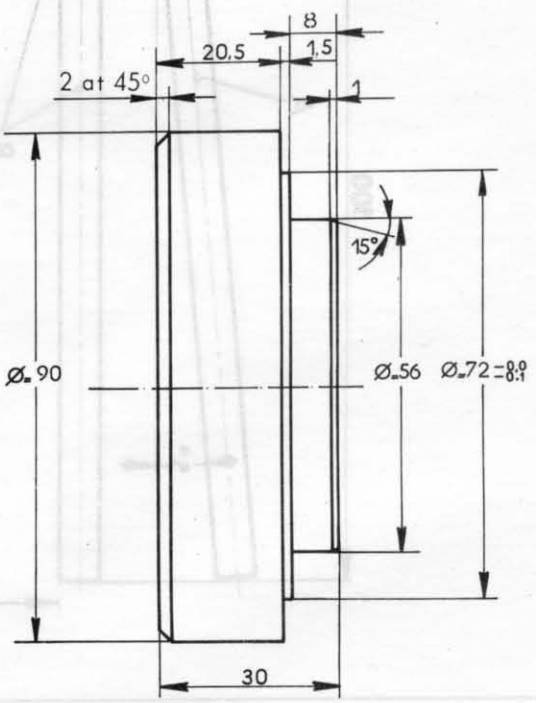
MR. 630-31/85



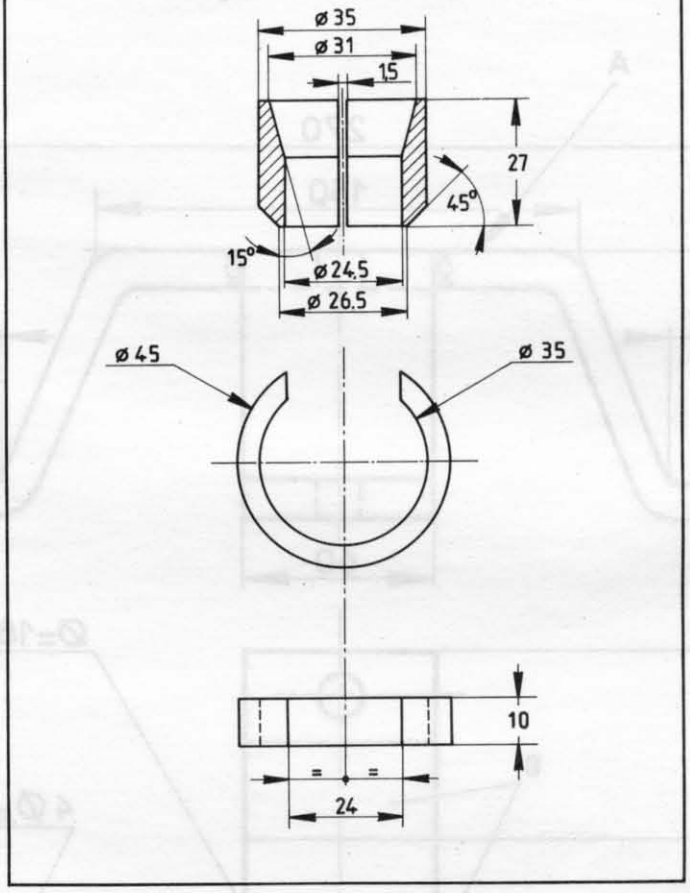
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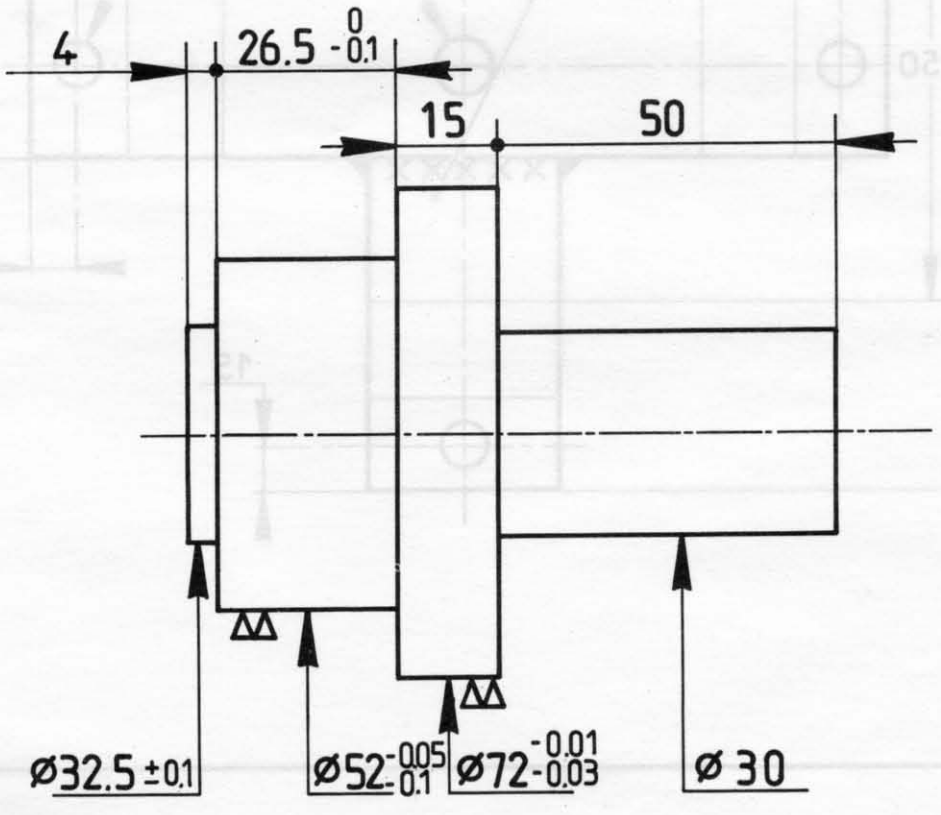
MR. 630-31/97



MR 630-31/133



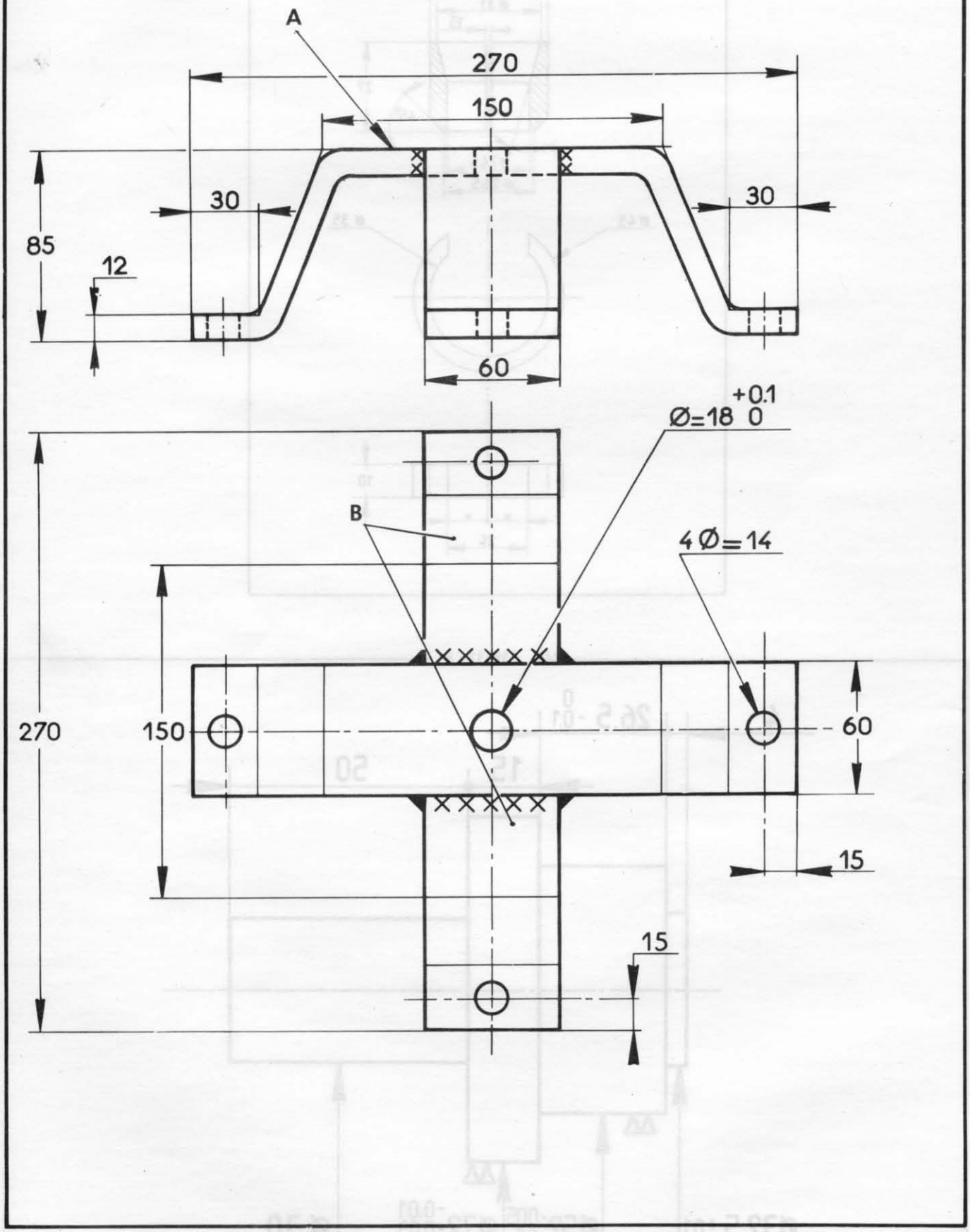
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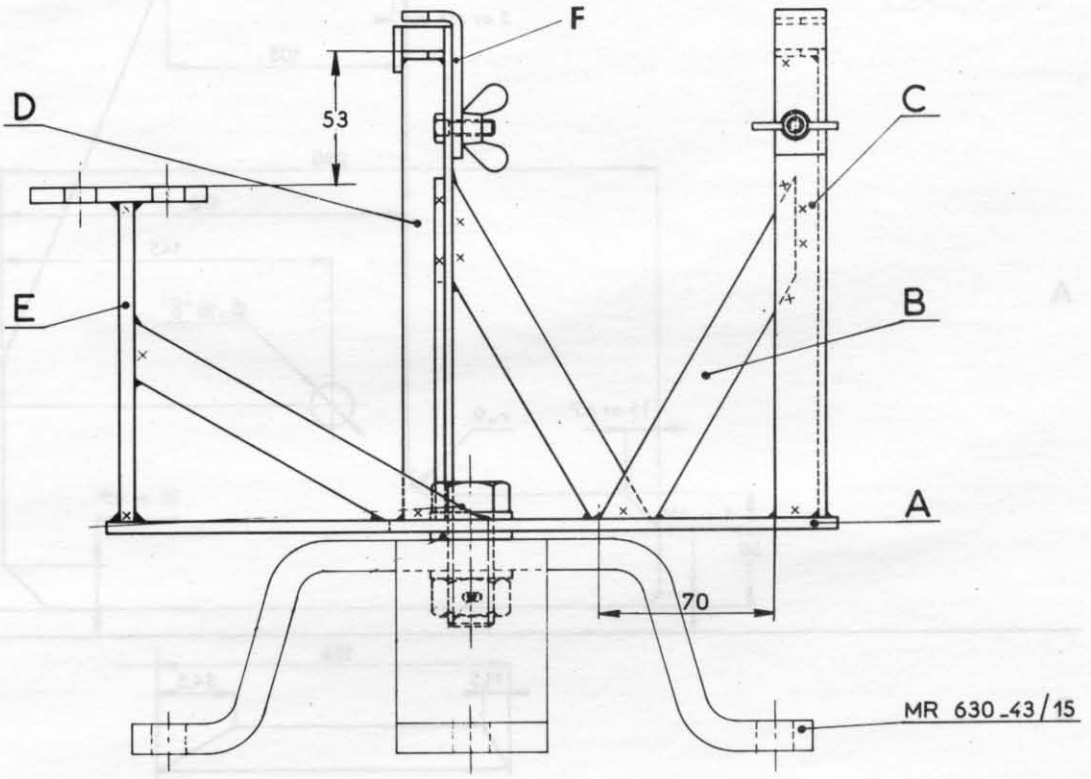
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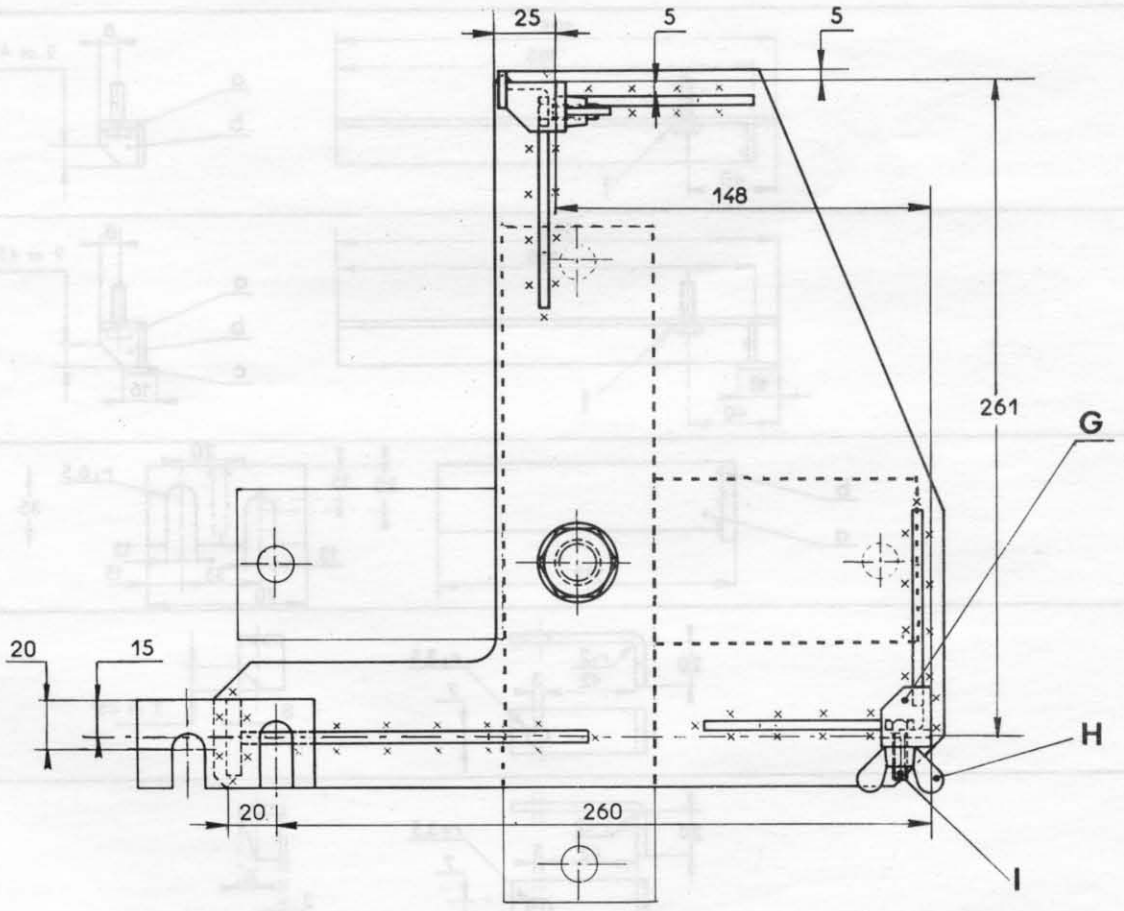
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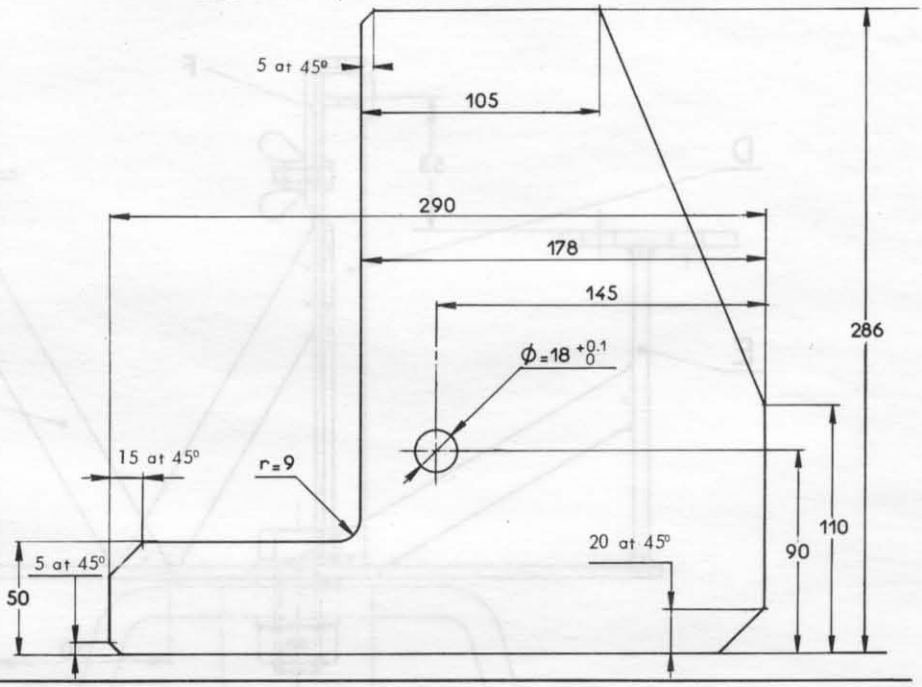
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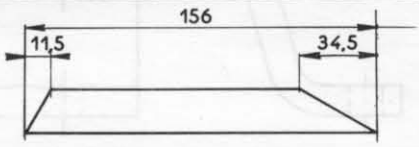


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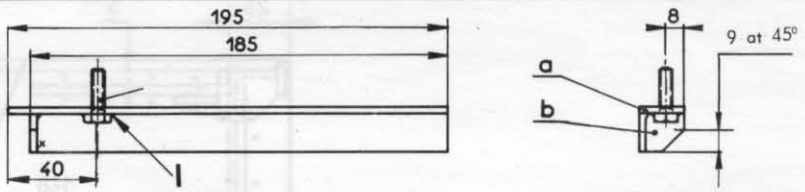
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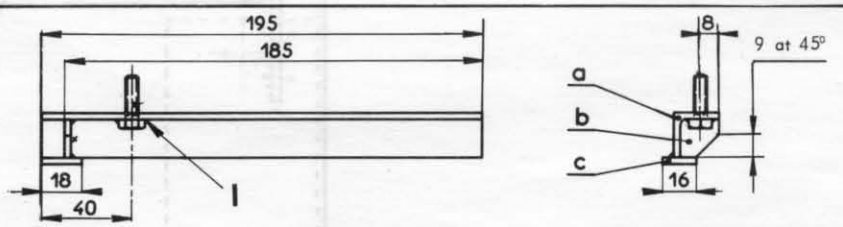
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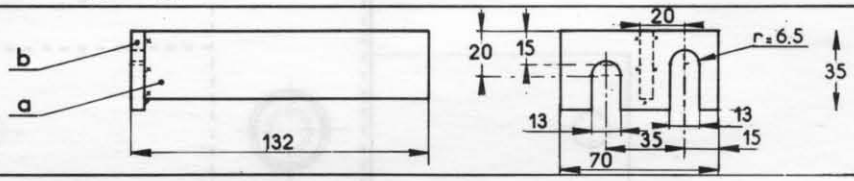
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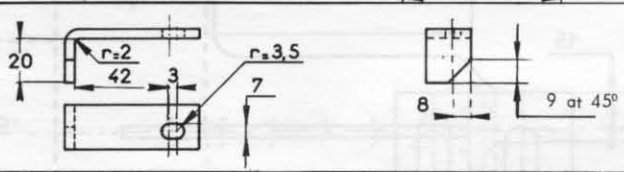
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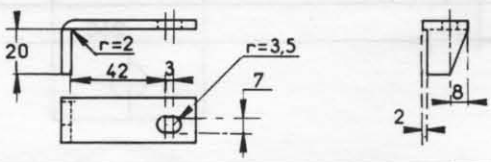
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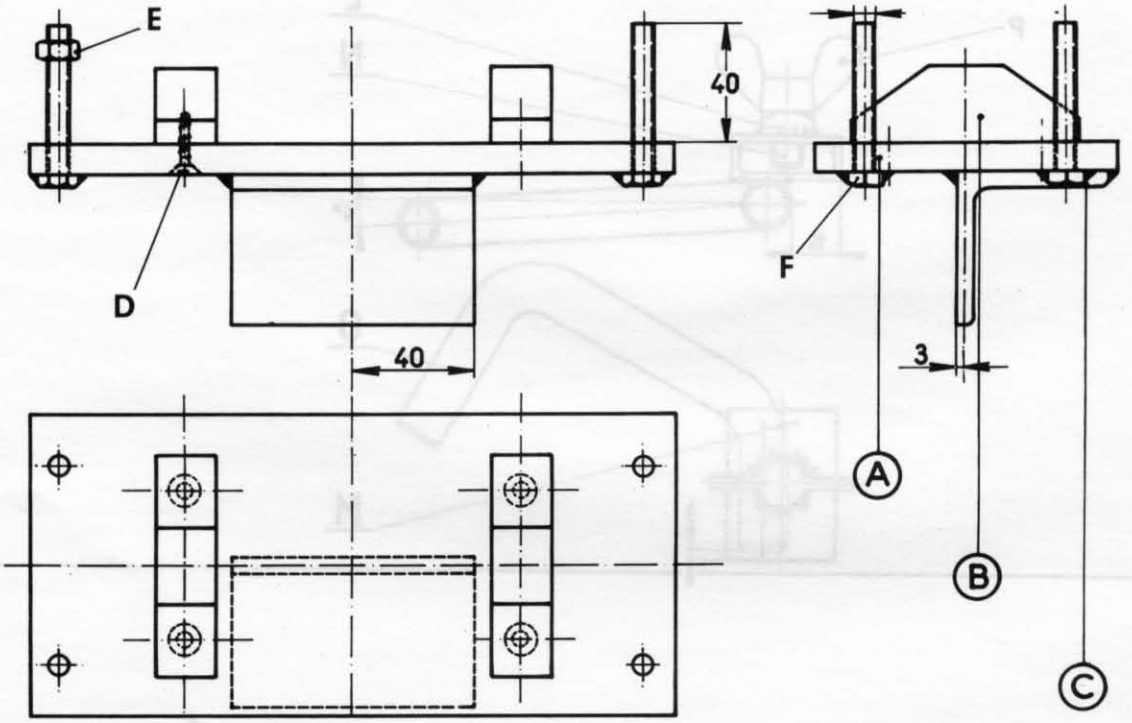
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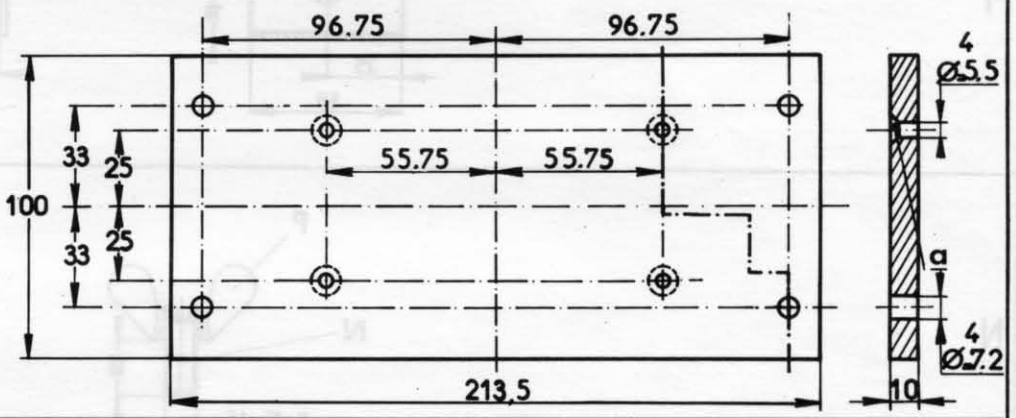
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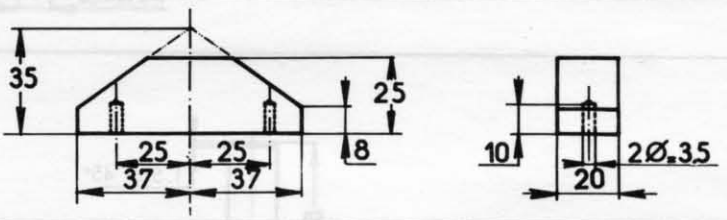
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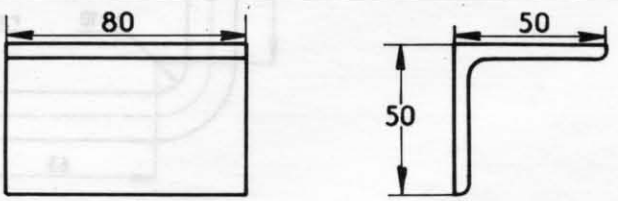
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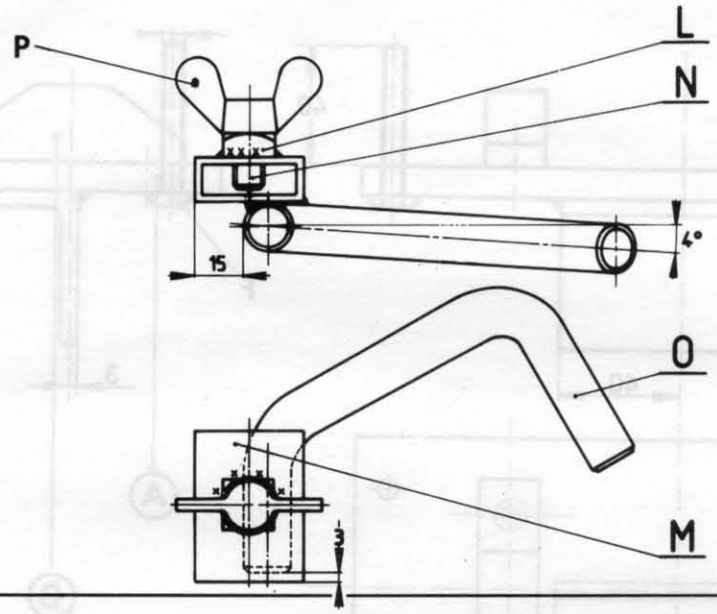
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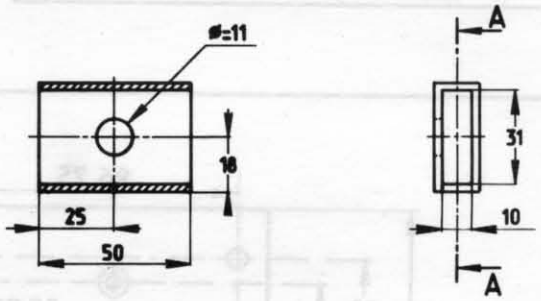


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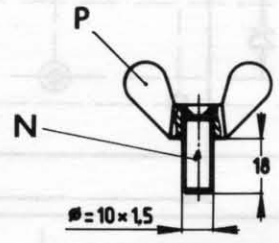


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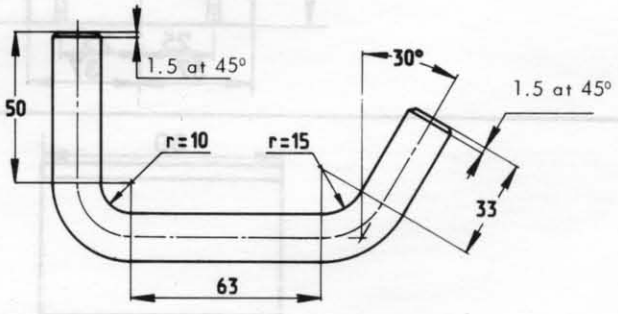
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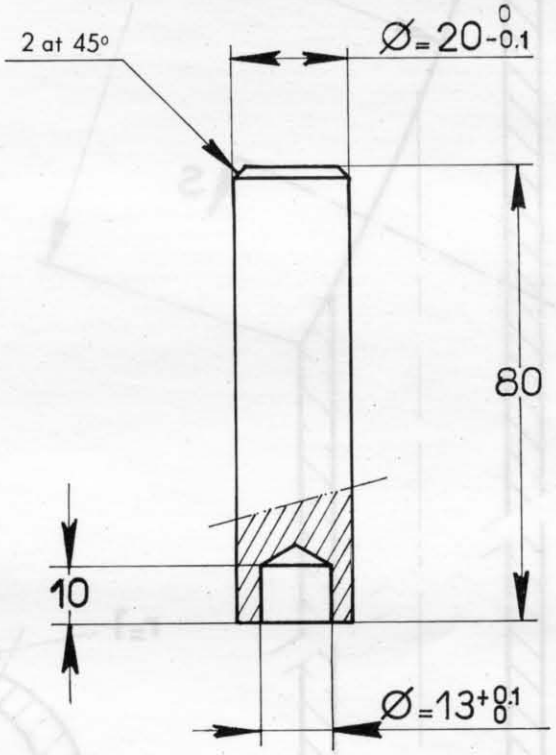


N



O




2 at 45°
Ø=20 0 -0.1
80
10
Ø=13 +0.1 0

MR. 630-64/55

